ACSP2026 BOOK OF ACCEPTED ABSTRACTS & SESSIONS

This book includes the abstracts accepted for presentation at the ACSP2026 Annual Conference. This book was completed and posted to www.acsp.org 06/30/2026.

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Order of Abstracts within Each Track

Abstracts are first ordered by the type of abstract, then sorted numerically by abstract ID. All types of abstracts are not necessarily represented in all 12 tracks.

1. Pre-organized Session Summaries – the overview describes the intent of the session and lists the included abstracts
2. Abstracts accepted with the pre-organized sessions
3. Roundtables
4. Workshops
5. Individual paper abstracts
6. Research in Motion (RiM) abstracts

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- **Roundtables and Workshops** will have a moderator and participants. The names listed are confirmed participants of the discussion. Anyone in the audience can also participate in the discussion. There is a maximum of eight names listed for each roundtable.
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Track 1 – AI in Planning

Track 1 Roundtables

Advances in Urban Environment and Subjective Wellbeing Research
Abstract ID: 2297.0.0.6.2026
Track 1: AI in Planning
Roundtable Submission, Topical Discussions

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The intersection of urban environments and subjective wellbeing (SWB) represents a critical frontier in urban planning and policy, wherein researchers and professionals alike acknowledge the importance of the physical fabric of a city on residents' wellbeing. When planners prioritize human-oriented elements like greenery, social opportunities, reliable transit, and walkable/bikable communities, they enhance the daily experience of residents, as well as their affective (emotional) and cognitive (life satisfaction) wellbeing. To provide an environment that is not only functional but also psychologically nourishing, resilient, and equitable, it is essential to enhance planners' understanding of the complex relationship between urban environments and SWB.

Central to this evolution is an understanding of the "exposure-perception-wellbeing" chain, which allows for evidence-based strategies to transform specific environmental features into psychological assets. This panel will focus on the recent theoretical and methodological advancements of this research theme. In particular, the discussion will emphasize current conceptualizations of the relationship between the urban environment and SWB, including the person-environment fit framework and the transportation efforts concept. It will also focus on how machine learning approaches and large language models can enhance our analytical capabilities to explore complex and sometimes nonlinear relationships between urban environment elements and SWB, as the implications of such nonlinearities could fundamentally reshape community planning and improvement strategies.

Audience Engagement Questions:

- How can we conceptualize the relationship between the urban environment and SWB?
- How can machine learning approaches and large language models enhance our analytical capabilities?
- How does empirical evidence generated from these models inform planning research and practice?

Citations:

- Mao, Zidan, Fenglong Wang, and Donggen Wang. 2022. "Attitude and accessibility on transit users' travel satisfaction: A person-environment fit perspective." Transportation Research Part D: Transport and Environment 112:103467.

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- Wu, Wenjie, Wenxuan Tan, Wendy Y. Chen, and Ruoyu Wang. 2024. "Disentangling the non-linear impacts of natural attributes of urban built environment on life satisfaction." Cities 155:105496.
- Yang, Linchuan, Haosen Yang, Junqing Tang, Yi Lu, and Jianxiao Liu. 2025. "Assessing attribute performance and older adults’ satisfaction with transit services: Implications for age-friendly planning." Travel Behaviour and Society 40:101026.

Key Words: three-factor theory, artificial intelligence, satisfaction, the built environment, Subjective wellbeing

Transportation Planning 4.0: From Statistics to Artificial Intelligence

Abstract ID: 2297.0.0.907.2026
Track 1: AI in Planning
Roundtable Submission, Topical Discussions

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Transportation planning has long relied on statistical modeling to understand travel behavior, evaluate policy impacts, and analyze the relationship between the built environment and transportation systems. This statistical paradigm emphasizes theory-driven model specification, statistical modeling, and increasingly, rigorous causal inference. Recently, the rise of machine learning (ML) and artificial intelligence (AI) has introduced a different modeling paradigm that prioritizes predictive performance, high-dimensional pattern recognition, and the use of large-scale and passively-collected data such as GPS traces, mobile trajectories, and remote sensing imagery. Researchers have found that ML approaches can capture complex non-linear relationships between the built environment and travel behavior, and provide reasoning capabilities through analyzing urban text and imagery. As transportation scholars have broadly explored the possibilities of ML/AI in research and practice, it is time to reflect on how these approaches create both opportunities and challenges for transportation planning.

At this crossroads between traditional statistics and computational advances, we propose a panel discussion on the following themes:
1. Strengths and limitations of statistical modeling. The panel will discuss the strengths and enduring challenges within the classical statistical framework in transportation research. It will also explore whether some of these limitations, such as model misspecification, limited scalability, or restricted data structures, could be meaningfully addressed by ML and AI approaches.
2. Strengths and limitations of ML/AI approaches. The panel will discuss the strengths and challenges introduced by ML/AI paradigms, including concerns about interpretability, causality, bias, and policy relevance. It will further consider whether some hybrid approaches with statistical tradition can address limitations in machine intelligence.
3. AI-driven data innovation. The panel will discuss how AI can expand research possibilities by leveraging diverse data sources, including passively collected mobility traces, imagery, and textual data. Meanwhile, it will address the problems in privacy preservation, data representativeness, and policy relevance of these new data frontiers.
4. Emergence of new research questions. The panel will discuss whether ML and AI enable fundamentally new research topics in transportation planning that go beyond methodological comparison. Possibilities include real-time transportation adaptations, spatial perceptions, advanced scenario planning, and other emerging domains.
5. Implications for professional practice. The panel will discuss how ML/AI approaches may reshape transportation planning practice, including modeling workflows, software ecosystems, or industrial structures. Given the move toward human-in-the-loop implementation to address AI risks, the panel will explore future human-AI collaboration modes and the new skillsets required for planning students.

Audience Engagement Questions:

- The paradigm debate: Statistical modeling and ML/AI represent fundamentally different paradigms in transportation research - one prioritizing interpretability and causal inference, the other predictive power

and scalability. Where do you see the greatest opportunities and risks in each approach, and can hybrid methods bridge the gap?

- Data and new frontiers: AI unlocks rich new data sources - mobility traces, imagery, urban text - and potentially new research questions around real-time adaptation, spatial perception, and scenario planning. What new possibilities excite you most, and how do we address concerns around privacy, representativeness, and policy relevance?
- Implications for practice and education: As ML/AI reshapes transportation planning workflows, software ecosystems, and professional roles, what new skillsets do planning students need, and how should the field navigate through the shift toward human-in-the-loop implementation of AI?

Citations:

- Tao, T., Wu, X., Cao, J., Fan, Y., Das, K., Ramaswami, A., 2023. Exploring the nonlinear relationship between the built environment and active travel in the twin cities. Journal of Planning Education and Research 43, 637–652. https://doi.org/10.1177/0739456X20915765
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- Zheng, Y., Xu, F., Lin, Y., Santi, P., Ratti, C., Wang, Q.R., Li, Y., 2025. Urban planning in the era of large language models. Nature Computational Science 1–10.

Key Words: AI, transportation planning, statistical modeling, smart cities, professional development

Urban AI in Planning: A Continuing Dialogue on the Future of Planning
Abstract ID: 2297.0.0.1138.2026
Track 1: AI in Planning
Roundtable Submission, Topical Discussions

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Artificial intelligence is rapidly reshaping planning research, practice, and governance. Early discussions of Urban AI were often centered on algorithms, computational capacity, and methodological innovation. While these remain important, the most pressing questions now lie at the intersection of technology, institutions, and society. As AI becomes embedded within infrastructure systems, data environments, and decision-making processes, planning must grapple with how these systems reshape expertise, equity, and public accountability.
This roundtable builds on a sustained, multi-year dialogue among planning scholars on Urban AI in Planning and marks the sixth year of this continuing conversation at ACSP. Over time, this series has shifted from a focus on technical capabilities toward a broader examination of how AI is transforming planning as a field. The discussion now centers on how AI interacts with planning knowledge, institutional structures, and societal outcomes, positioning Urban AI as an emerging area of inquiry with implications for both theory and practice.
Three key themes will guide this year's discussion. First, the relationship between AI and human judgment must remain complementary rather than substitutive. Planning decisions involve values, contextual knowledge, and ethical reasoning that cannot be fully captured by algorithmic systems. Second, uneven geographies of data and AI performance raise critical concerns for equitable planning, as data-rich environments benefit disproportionately from current AI systems. Third, the future of Urban AI depends on interdisciplinary collaboration and meaningful community engagement, both of which are essential for building trust, legitimacy, and socially responsive applications.

From a GeoAI and urban systems perspective, these challenges reflect a broader transformation in which AI is becoming embedded within the operational fabric of cities and infrastructure systems. In areas such as transportation, energy, and environmental monitoring, AI is increasingly linked to real-time data streams and decision processes. This transition is closely connected to the emergence of digital twins and spatial intelligence frameworks, where AI interacts directly with representations of physical environments. In this context, the central challenge is not only developing better models, but also building coordination and knowledge infrastructures that connect data, models, institutions, and human actors in reliable and transparent ways.
The session is designed as a topical discussion rather than a panel of presentations. The facilitator will guide participants through a structured conversation around these themes, followed by an extended audience-engaged discussion. Participants and attendees will be invited to reflect on how Urban AI is reshaping planning research, education, and practice, and to identify priorities for future inquiry and collaboration. By emphasizing dialogue across participants and audience, the roundtable aims to advance a collective understanding of how planning can shape the development of AI toward more inclusive, accountable, and resilient urban futures.

Audience Engagement Questions:

- How should planning define the appropriate relationship between AI and human judgment, particularly in decisions involving values, uncertainty, and public accountability?

- How can planning address the uneven geographies of data and AI capacity, and what strategies are needed to ensure that AI-enabled tools do not reinforce existing spatial inequalities?
- What institutional, educational, and governance changes are needed for AI and digital twin systems to be responsibly integrated into planning practice and decision making?

Citations:

- Ye, X., & Goodchild, M. (2025). Toward Ethical GeoDesign in the Urban Digital Twin Era. Journal of Planning Education and Research, 45(4), 721-725.
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- Ye, X., Du, J., Han, Y., Newman, G., Retchless, D., Zou, L., ... & Cai, Z. (2023). Developing human-centered urban digital twins for community infrastructure resilience: A research agenda. Journal of Planning Literature, 38(2), 187-199.
- Ye, X., Yigitcanlar, T., Goodchild, M., Huang, X., Li, W., Shaw, S. L., ... & Newman, G. (2025). Artificial intelligence in urban science: why does it matter?. Annals of GIS, 31(2), 181-189.
- Ye, X., Shaw, S. L., & Sui, D. (2025). Human dynamics in GIScience: emerging opportunities, challenges, and the road toward SplatialAI. International Journal of Geographical Information Science, 39(11), 2401-2407.

Key Words: Urban AI, Planning, GeoAI, Governance, Digital Twins

A GRAPH-INFORMED AGENTIC NEGOTIATION FRAMEWORK FOR WATERFRONT REGENERATION IN HISTORIC DISTRICTS

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Track 1: AI in Planning
Individual Paper Presentation

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Waterfront spaces in historic districts are composite socio-spatial interfaces where built heritage, everyday public life, and local commerce converge under strong spatial constraints. In Lingnan cities, these environments are not merely scenic edges, but historically layered urban spaces shaped by fine-grained parcel structure, dense building interfaces, neighborhood circulation, and place-based memory. Regenerating such spaces is therefore a multi-objective planning problem that must coordinate heritage conservation, public accessibility, environmental quality, and local commercial vitality.

In the digital era, waterfront spaces in historic districts are shaped not only by physical use but also by online attention and place-based digital expression. Geo-referenced texts and user-generated images increasingly influence how attractiveness, heritage value, and public-space usability are perceived. However, these digital perceptions do not always align with spatial structure or planning intentions: highly visible segments may still lack accessibility or heritage compatibility, while socially meaningful but less visible spaces may be overlooked. Conventional approaches based on field surveys, expert judgment, and static morphological analysis have difficulty capturing these mismatches systematically.

This study takes the Lizhiwan and Enning Streams in Guangzhou as a case study and develops a Graph-Informed Agentic Negotiation (GIAN) Framework. The framework integrates geo-referenced social media texts and user-generated images from Xiaohongshu, Dianping, and Weibo; street-level spatial imagery from Baidu and Tencent Street View; POI data from AMap and Baidu Maps; building footprints, parcel morphology, and waterfront interface characteristics derived from cadastral maps, base geographic data, and field-verified spatial mapping; and planning-control documents, including conservation plans, urban design guidelines, and micro-regeneration policies issued by Guangzhou authorities.

The GIAN Framework consists of three components: Cross-Modal Semantic Alignment, Heterogeneous Graph Structure, and an Agentic Negotiation Module. First, Cross-Modal Semantic Alignment links digital content to explicit spatial units, including waterfront segments, access points, heritage clusters, interface types, and activity nodes, so that user narratives and images become spatial evidence. Second, these aligned relations are encoded through a Heterogeneous Graph Structure, in which spatial and informational entities are represented as distinct yet interconnected node types. This graph-based representation is suited to historic waterfronts because spatial performance depends on the interaction among visual prominence, accessibility, heritage concentration, public activity, and policy sensitivity. Third, the Agentic Negotiation Module moves the framework from diagnosis to design support by evaluating alternative intervention scenarios, including adaptive reuse, interface improvement, and micro-scale public-space insertion, and examining how competing priorities may be coordinated through structured negotiation.

The framework addresses three questions: where digital attention and public perception concentrate and how these patterns relate to waterfront morphology; which segments exhibit mismatches between perceived attractiveness and spatial support conditions; and how alternative regeneration scenarios can be comparatively assessed under competing planning priorities. Methodologically, the study links digital traces, graph-based spatial representation, and scenario-based agentic reasoning in one framework. Practically, it supports more transparent and evidence-based planning and design by identifying conflict-prone segments, revealing perception-morphology mismatches, and clarifying where intervention priorities may be coordinated or remain contested.

Citations:

- Pan, F., Huang, X., Bi, Y., Gao, Y., Ye, Y., & Wang, H. (2025). From tools to partners: How large language models are transforming urban planning. _AI Open, 6_, 276–298. https://doi.org/10.1016/j.aiopen.2025.11.001
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- Hamstead, Z. A., Fisher, D., Ilieva, R. T., Wood, S. A., McPhearson, T., & Kremer, P. (2018). Geolocated social media as a rapid indicator of park visitation and equitable park access. _Computers, Environment and Urban Systems, 72_, 38–50. https://doi.org/10.1016/j.compenvurbsys.2018.01.007

Keywords: Historic Districts, Digital Traces, Multimodal Alignment, Heterogeneous Graph, Agentic Negotiation

A KNOWLEDGE GRAPH APPROACH TO IDENTIFYING CLIMATE-APPROPRIATE TREE COMBINATIONS FOR URBAN PARK ECOSYSTEM SERVICES

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Track 1: AI in Planning
Individual Paper Presentation

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As urban heat risk and other climate-related stressors intensify, planners and landscape designers increasingly need tree-selection frameworks that go beyond simple species lists or isolated performance indicators. In practice, the key issue is not only which tree species perform well individually, but also which combinations of tree traits and species are most compatible with particular climatic conditions and most effective at delivering desired ecosystem services (Livesley et al., 2016). Existing urban tree inventories and planting guides typically provide species names, tolerance ranges, or maintenance information, yet they rarely represent the relational structure linking climate zone, tree traits, ecosystem services, and species compatibility. This limitation becomes particularly critical as the number of combinations grows exponentially, making it difficult to reason about compatibility using conventional list-based approaches. This study proposes an ontology- and knowledge-graph-based framework (Gruber, 1995; Hogan et al., 2021) to identify climate-sensitive tree combinations that optimize both regulation services (i.e., heat mitigation, stormwater regulation, dust retention, noise reduction) and cultural services (i.e., landscape viewing) in urban parks.

This study aims to develop a U.S. Urban Tree Service Ontology that organizes relationships among climate zones, ecosystem services, tree functional traits, and species combinations for park design. Specifically, it asks: (1) how regulating and cultural services can be systematically linked to measurable tree traits and species through an ontology; (2) which trait combinations are most likely to support each service across contrasting U.S. climate zones; and (3) how a knowledge graph can be used to infer context-sensitive tree combinations for improving multiple services at once.

The study examines urban parks across multiple U.S. climate zones, including hot-humid, hot-arid, Mediterranean, and cold-continental regions. The ontology consists of four linked domains: ecosystem service type, tree functional trait, species, and climate zone. Trait categories include crown size, crown density, crown shape, branching height, leaf area, leaf density, leaf thickness, transpiration intensity, root system development, seasonal change, and foliage texture. The knowledge graph is constructed from literature-derived trait-service relationships, municipal tree inventories, species databases, and climate suitability information. It represents how particular traits and species contribute to ecosystem services, how well they fit different climate zones, how they complement one another in mixed plantings, and where trade-offs may occur. Graph analysis is then used to detect recurring service-trait-species patterns and compare likely high-performing combinations across climate zones, while a rule-based inference layer generates design options for species mixes that support one or more services simultaneously.

Preliminary conceptual synthesis suggests that ecosystem-service performance is better understood as the result of combinations of service-oriented traits than of any single species alone. For example, heat mitigation appears most strongly associated with broad crown structure, high leaf area, and strong transpiration capacity. Stormwater regulation appears more closely linked to crown interception and well-developed rooting systems. Landscape viewing depends not only on visual attractiveness but also on crown form, seasonal variation, and compositional compatibility with surrounding species. Overall, the graph-based representation reveals combinatorial patterns and

trade-offs that are not explicitly captured in existing guidelines, supporting a shift from species-based selection to compatibility-based planting logic for climate-responsive design.

Citations:

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- Hogan, A., Blomqvist, E., Cochez, M., d'Amato, C., de Melo, G., Gutierrez, C., Kirrane, S., Gayo, J. E. L., Navigli, R., Neumaier, S., Ngonga Ngomo, A.-C., Polleres, A., Rashid, S. M., Rula, A., Schmelzeisen, L., Sequeda, J., Staab, S., & Zimmermann, A. (2021). Knowledge graphs. ACM Computing Surveys, 54(4), Article 71, 1–37.
- Livesley, S. J., McPherson, E. G., & Calfapietra, C. (2016). The urban forest and ecosystem services: Impacts on urban water, heat, and pollution cycles at the tree, street, and city scale. Journal of Environmental Quality, 45(1), 119–124.

Keywords: ecosystem services, knowledge graph, ontology, urban forestry, climate-responsive design

AGENT-BASED MULTI-OBJECTIVE OPTIMIZATION OF URBAN BLOCK MORPHOLOGY: A SURROGATE-ASSISTED LEARNING FRAMEWORK IN PHILADELPHIA

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Track 1: AI in Planning
Individual Paper Presentation

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Urban block morphology plays a critical role in shaping building energy demand, renewable energy potential, and outdoor thermal conditions, yet conventional optimization approaches remain limited by high computational costs and insufficient representation of inter-building dependencies at the neighborhood scale. This study proposes a performance-driven urban design framework that integrates surrogate modeling with an agent-based reinforcement learning (ABRL) strategy to enable efficient multi-objective optimization of urban block configurations, with direct relevance to performance-based planning and urban form regulation.

A parametric urban block model is developed for a representative district in Philadelphia, located in a mixed-humid climate zone characterized by hot summers and cold winters, where seasonal performance trade-offs are particularly pronounced. The model incorporates 6–10 representative building archetypes derived from real-world cases and planning guidelines, covering point-type, slab-type, and enclosed block typologies with calibrated morphological proportions. To capture spatial diversity, multiple block-scale configurations are generated across different dimensional matrices, forming a heterogeneous simulation dataset that supports both model training and cross-scenario evaluation.

Three performance objectives are jointly evaluated: annual energy use intensity (EUI), rooftop photovoltaic generation (PV), and outdoor thermal conditions measured by the Universal Thermal Climate Index (UTCI), where optimization seeks to reduce energy demand, enhance renewable potential, and mitigate thermal stress by maintaining seasonally appropriate comfort ranges rather than pursuing extreme values. A simulation dataset generated via Latin hypercube sampling is used to train multiple surrogate models, including XGBoost, artificial neural networks (ANN), and graph neural networks (GNN), enabling comparative assessment of predictive accuracy and the capacity to capture spatial relationships among buildings.

Based on these surrogates, a distributed agent-based learning framework is implemented in which individual buildings iteratively adjust morphological parameters under a shared reward structure balancing energy, solar, and thermal objectives, and is benchmarked against a genetic algorithm (GA) for performance evaluation. Transfer experiments across different block configurations demonstrate that the trained models achieve superior generalization performance compared to conventional from-scratch approaches, highlighting the framework's applicability across heterogeneous urban contexts. Results indicate consistent improvements on the order of 5–15% across objectives, while the GNN-based surrogate shows enhanced capability in representing spatial dependencies. SHAP-based interpretability analysis further reveals the relative importance and interaction effects of morphological variables.

By bridging simulation-based modeling with learning-based optimization, this study advances a transferable and interpretable paradigm for performance-oriented urban design. Beyond methodological contribution, it provides actionable insights for planners by linking morphological parameters to measurable environmental outcomes, supporting emerging approaches such as performance-based zoning, climate-responsive urban codes, and data-informed design governance.

Citations:

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Keywords: Morphology, Performance, Optimization, Surrogate, Agent

AI-ASSISTED NEGOTIATION OF SPATIAL TRADE-OFFS IN URBAN REGENERATION: A CASE STUDY IN SHANGHAI, CHINA

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Track 1: AI in Planning
Individual Paper Presentation

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As global cities grapple with the equitable redistribution of spatial interests within established neighborhoods, China's urban regeneration practice serves as a critical microcosm where spatial decision-making is increasingly entangled in conflicts among heterogeneous stakeholders. Unlike planning in the urban expansion era—largely guided by macro-level indicators—renewal projects require negotiating fine-grained spatial trade-offs within already built environments, where competing interests are deeply embedded in everyday life. However, existing participatory approaches often struggle to translate these conflicting preferences into actionable planning decisions, due to high communication costs and persistent professional–cognitive barriers between experts and the public.

The rapid advancement of Large Language Models (LLMs), Generative Agents, and Human-Computer Interaction (HCI) offers novel opportunities to overcome these bottlenecks. Research indicates their immense potential in translating complex spatial data, extracting public demands, and simulating multi-actor negotiations. However, a key challenge remains: how to integrate these capabilities into a coherent framework that can explicitly quantify, communicate, and negotiate spatial trade-offs among stakeholders in a transparent and decision-relevant manner. To address this, we propose the Participatory Spatial Decision Support Agent (PSD-SA) framework. At the computational core, grounded in empirical trajectory data and physical constraints, PSD-SA deploys multi-agent simulations to model heterogeneous spatial preferences and conflicts. Concurrently, the SHAP algorithm unpacks the decision-making "black box," extracting non-linear weights of environmental attributes. This constructs a model quantifying demographic "spatial utility," providing the basis for multi-objective Pareto optimization. On the interactive front, an HCI interface allows non-expert residents to manipulate spatial variables. Supplemented by LLMs translating "utility trade-offs" into natural language, it instantly visualizes the impacts of planning drafts on multi-stakeholder interests. Together, this framework operationalizes spatial negotiation as a process of quantifying heterogeneous preferences, simulating their interactions, and identifying Pareto-efficient planning solutions. Applying PSD-SA to an express delivery station site selection in Shanghai validated its efficacy. First, SHAP decoded the core demographic conflict: youth prioritized gate-adjacent locations for routing efficiency, but associated pedestrian-vehicle conflict risks severely deterred the elderly. Second, during counterfactual simulations, generative agents incorporated practical constraints to rapidly generate diverse planning drafts reflecting distinct stakeholder interests. The HCI interface visualized the decision-making trade-offs behind these schemes. Through Pareto optimization, PSD-SA guided stakeholders toward a social consensus solution accommodating multiple interests. Compared to the baseline relying on existing stations, an operator-led site or low-cost retrofit plan only increased comprehensive community spatial utility by 5.6% and 14.2%, respectively. In contrast, the PSD-SA consensus solution boosted utility by 21.1%. This accurately balanced multifaceted demands, with willingness-to-use reaching 54.0%, 67.0%, and 76.0% among the elderly, middle-aged, and youth demographics. Finally, the HCI visual representation, synergistically combined with LLM natural language translation, dismantled professional cognitive barriers. This dual mechanism reduced required negotiation rounds from 21 to 7, accelerating consensus building.

Rather than pursuing a technical optimum, this study reframes urban regeneration as negotiating spatial trade-offs. By integrating behavioral data, simulation, and communication, the framework offers a transparent pathway toward data-informed, human-centered urban design.

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Keywords: Planning support system, Participatory planning, Urban regeneration, Human-computer synergy, Generative agents

AI, ADAPTIVE REUSE, AND THE POLITICS OF SPATIAL JUSTICE IN POST-INDUSTRIAL LANDSCAPES

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Track 1: AI in Planning
Individual Paper Presentation

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Artificial intelligence (AI) is rapidly transforming planning practices, offering new tools for spatial analysis, scenario modeling, and decision-making. Yet, its integration into planning processes raises critical questions about governance, equity, and the production of space. This paper examines how AI can be mobilized not only as a technical instrument but also as a political and spatial actor within the context of adaptive reuse of post-industrial landscapes. Drawing on case studies from the United States and international contexts, the paper investigates how AI-driven tools such as geospatial analysis, predictive modeling, and generative design are reshaping approaches to redevelopment and urban regeneration. While these technologies enhance efficiency and data-driven insights, they also risk reinforcing existing inequalities through biased datasets, opaque algorithms, and technocratic decision-making frameworks.

The study adopts a mixed-methods approach, combining critical literature review with design-based research and pedagogical experimentation conducted through graduate-level urban design studios. It explores how AI can be reoriented toward more inclusive and participatory planning practices by integrating local knowledge, community engagement, and ethical frameworks into computational processes. Rather than positioning AI as a neutral tool, the paper conceptualizes it as part of a broader socio-technical system that interacts with governance structures, policy frameworks, and spatial practices. It proposes a framework for “critical AI urbanism,” which emphasizes transparency, accountability, and the co-production of knowledge between planners, communities, and intelligent systems. The findings highlight both the opportunities and limitations of AI in planning, arguing that its transformative potential lies not in automation alone but in its capacity to support more equitable, responsive, and context-sensitive forms of urban development. By bridging political ecology, spatial design, and digital technologies, the paper contributes to ongoing debates on the role of AI in shaping the future of planning practice and education.

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Keywords: AI, Planning, Equity, Governance, Design

APPLYING NAMED ENTITY RECOGNITION TO ASSESS INTERAGENCY COORDINATION ACROSS LOCAL HAZARD MITIGATION PLANS

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Track 1: AI in Planning
Individual Paper Presentation

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In 2004, the Jones Tract levee failure in the Sacramento-San Joaquin River Delta inundated 12,000 acres of farmland and required a protracted, $90 million repair effort. The incident exposed the fragmented governance structure of the region's levee system in which no single authority appeared to hold clear maintenance responsibility for the infrastructure. This failure triggered concerns about systemic vulnerabilities caused by interorganizational coordination gaps that existing hazard mitigation plans had neither identified nor resolved. Moreover, the loci and magnitude of such communication gaps remain unclear because hazard mitigation planning documents are voluminous and contain highly specialized and complex information.

When researchers are required to decipher large complex planning and regulatory documents, they often turn to Natural Language Processing (NLP) methods (Ahmadian & Tousi, 2025; Fu, 2024). NLP methods are used to identify the frequency and distribution of terms and themes across texts and to make inferences which help answer questions like: Which policy issues receive the most attention? How does focus on particular policies or physical improvements differ between jurisdictions? What kind of general sentiment or specific concerns do stakeholders have about existing and proposed infrastructure or amenities? There are certain conventional NLP methods that are not as efficient or effective when applied to text that contains specialized policy subject matter. For example, NLP methods for topic modeling, sentiment analysis, and word frequency analysis may identify terms or topics within the document, but fail to capture complex relationships between entities (e.g., organizations, people, phenomena) engaged and how those entities relate to one another across a corpus (Ahmadian & Tousi, 2025; Cai, 2021; Fu, 2024). With regard to the delta case, this means conventional NLP methods may not recognize whether the California Department of Water Resources and the US Army Corps of Engineers are mentioned in the same plan as coordinating partners or simply as parallel compliance references. Newer NLP methods such as transformer-based Named Entity Recognition (NER) present a frontier for the application of NLP in planning research particularly where it is important to not only identify whether entities are present, but also to derive more comprehensive information about the relationships that exist between them (Fu, 2024; Lin et al, 2025)

Notably, conventional NLP methods cannot be used to analyze interorganizational coordination gaps within the 16 Local Hazard Mitigation Plans (LHMPs). This paper applies a methodology that integrates transformer-based NER (i.e., the dslim/bert-base-NER implementation of BERT; Devlin, 2019) with more common NLP methods (i.e., clustering, fuzzy matching, and domain-specific dictionary validation) to compare the breadth and depth of inter-organizational coordination between the plans. The preliminary results suggest a heavily stratified landscape of organizational coordination within the delta where breadth is represented by the number of LHMPs in which a given organizational entity appears, and depth is measured by total mention count across the corpus. Specifically, state and federal agencies (e.g., FEMA and CalOES) appeared across all 16 plans with relatively high mention counts, while regional authorities directly responsible for levee governance appeared less consistently between plans and were mentioned less frequently within plans. The absence of LHMPs that contain references to a limited set of entities engaged in levee governance suggests that hazard mitigation for the region remains uncoordinated, and warrants further study to validate and expound on these preliminary findings.

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Keywords: Policy analysis, Named entity recognition, Hazard mitigation, NLP, Complex systems

ARE LLMS CONSISTENT EVALUATORS IN EQUITY EVALUATION OF PLANS?

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Track 1: AI in Planning
Individual Paper Presentation

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Plans are foundational to planning and plan evaluations have long been a focus of planning research. However, evaluation of plans is often time consuming and tedious. The advent of AI technology has brought broad application into urban planning, scholars explored whether large language models (LLMs) can be applied to evaluate plans.

The American Rescue Plan Act of 2021 (ARPA) provided an unprecedented level of funding to local governments to address the economic dislocations caused by the COVID-19 pandemic. This study explores whether LLMs can evaluate the progressiveness of the local governments' ARPA plan and what place characteristics differentiate the level of equity in the plan. Previous study tested the feasibility on 56 plans, we apply and test the use of LLM on a larger scale application in this study.

We collected all 327 ARPA plans submitted by Tier 1 cities and counties (over 250,000 population), as of June 2024. We evaluate the progressiveness of these ARPA plans by customizing a domain-adapted Chat-GPT model to read and evaluate each plan. Our LLM evaluated each government's plan based on redistributive, procedural and conceptual dimensions of equity developed by previous research.

While LLMs have shown potential in evaluating plans, consistency concerns raise questions about reliability. We ran multiple rounds of LLM evaluation to assess consistency. We also found that plan quality may affect LLM evaluation. Thus, we also assess components included in the plan and length.

We compared our LLM evaluations with human evaluations to assess discrepancies. Our LLM was able to identify cases where plans present equity-oriented language but have little equity investment. Each plan received a score on a 0-100 scale and categorical classification according to the score. We find categorical evaluation is more consistent compared to the raw score evaluation. We conclude that LLMs can be used to assess plans but there must be a mixed method approach that also includes human evaluation.

We then use the LLM plan ranking output in a regression model of factors which differentiate places which have more equity-oriented plans. We measure demographic, fiscal and political variables and find capacity, need and political pressure are associated with more equity-oriented plans.

This study shows the potential to use LLMs in qualitative assessment of plans but also demonstrates the importance of human evaluation in improving the accuracy of LLMs. This study also contributes to the discussion of consistency in LLMs in plan evaluation. We demonstrate how a mixed method design with both qualitative and quantitative elements can use LLMs as a tool in plan evaluation.

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Keywords: Equity planning, Plan evaluation, Large language models

ARTIFICIAL INTELLIGENCE AS CIVIC MEDIATION INFRASTRUCTURE: A CASE STUDY OF NEW YORK CITY'S CITY OF YES PUBLIC HEARING

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Track 1: AI in Planning
Individual Paper Presentation

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Public participation is essential to the legitimacy of urban planning, but its institutional forms often struggle under the pressures of scale, complexity, and information overload. In major citywide planning processes, public hearings are increasingly expected to do too many things at once. They serve as venues for expressing support and opposition, asking clarifying questions, receiving agency responses, and creating an official record. When these functions are compressed into a single long, linear event, information-related burdens increase, discussion becomes fragmented across issues, and follow-up becomes difficult to sustain across time.

At the same time, artificial intelligence is rapidly entering the domain of public participation. Large language models and related tools are now being used for transcription, summarization, topic extraction, and large-scale processing of public comments. Much of the discussion around these tools is framed in terms of efficiency. This paper argues that such a frame is too narrow. AI in planning participation should be evaluated not only by whether it summarizes faster or processes more input, but by whether it can reduce information-related burdens, support more coherent discussion, and strengthen continuity across stages of participation. In this sense, AI is best understood as part of an emerging civic mediation infrastructure that helps structure, connect, and carry public input across participatory stages.

We develop this argument through the case of New York City's City of Yes, a high-profile citywide land use reform process that generated unusually large volumes of public participation. Drawing on hearing transcripts and related public response documents, we analyze the final public hearing hosted by the City Planning Commission that lasted more than 14 hours and included more than 200 testimonies and more than 60 commissioner follow-ups to examine both the structure of participation problems and the ways AI could help address them. The findings suggest that the hearing functioned as an overloaded civic interface through which multiple communicative demands happened at once. Much of the follow-up time was devoted to explaining policy content and clarifying scope, which could have been communicated before the final public hearing. Discussion also shifted frequently across provisions rather than developing in sustained thematic blocks, creating a fragmented deliberative sequence and raising the burden of repeated topic switching. After the hearing, issues raised by participants were also unevenly reflected in later written responses, many of which were partial, generic, or difficult to connect back to the original exchange. Visualizations illustrating these issues are available here: https://tinyurl.com/yxef9c85.

From this case, we identify three structural problems that are likely not unique to New York: informational friction, discursive fragmentation, and participatory discontinuity. These findings shift the question from whether AI can make participation more efficient to whether it can function as a mediation and facilitation tool that reduces information-related burdens while preserving space for meaningful deliberation and more accountable public engagement. The paper concludes by proposing a phase-based framework for participation design in which clarification, thematic navigation, and traceable follow-up are better distributed before, during, and after the hearing, with AI serving as a mediation and facilitation tool across these phases. Our results show the potential of artificial intelligence as a civic mediation infrastructure that can help make planning participation clearer, more continuous, and more accountable.

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Keywords: Responsible AI, Public Participation, Deliberation, Governance, Large Language Model

ARTIFICIAL INTELLIGENCE AS INFRASTRUCTURE: A PLANNING FRAMEWORK FOR AI FUTURES

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Track 1: AI in Planning
Individual Paper Presentation

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The idea of infrastructure is relatively new compared to its physical presence as a foundational or essential component for the operation of society. Forms of infrastructure are constantly changing, through technological evolutions, recursive combinations and recombinations of new phenomena with existing technologies (Arthur, 2009). The functions provided by infrastructure, reducing system-wide transaction costs, distinguish it from other assets and services (Buhr, 2003; Elmer and Leigland, 2013; Williamson, 1985). In the era of artificial intelligence (AI), conventional infrastructure systems, such as electricity and cyberinfrastructure, support its development and deployment. Meanwhile, as AI becomes ubiquitous, adopted for general purposes, its uses resemble the same economic capacity as those historically observed in physical systems. This raises a fundamental question: should AI itself be framed as a new and emergent form of infrastructure, and if so, what does the new framework mean for planning theory, governance, and practice?

In this paper, we argue that AI, developed through and supported by existing infrastructure systems, is identifiable as its own emergent form among forms of infrastructure, contributing to a wide range of social and economic activities. Drawing on conceptual analysis, a structured review of infrastructure theory and AI literature, we develop a systematic framework for recognizing and potentially governing AI as an emergent infrastructure form. Economically, AI has the potential to dramatically lower transaction costs for a wide range of collective actions. In terms of technological evolution, AI is already exhibiting its promise of igniting a rapid period of combinational and recombinational innovation, forming new integrations and offerings to meet and shape market demand. Seeing AI as infrastructure will shift our frame of reference—from a narrow view of AI as merely data and algorithms, threatening to destabilize existing labor markets—to a much broader perspective, which recognizes and can quantify opportunities and their costs from the micro to macro scale across multiple markets.

For urban planners and economists, this means considering how AI impacts planning and how planning supports AI systems as new forms of infrastructure, deployed within urban and community settings, as constellations of hardware and software, increasingly integrated within billions of transactions on the platform-rich markets made possible by the Internet. In urban planning and economics, physical infrastructure systems are well-known and understood, in theory and in practice. The framework we develop, reframing AI as infrastructure, allows us to recognize its nature as a public good, as well as a physical and digital configuration of technologies, with social, economic, governance, and environmental impact (Crawford, 2021). At the same time, this framework also offers planners a regulatory map and a shared understanding for AI governance for the benefit of all.

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Keywords: Infrastructure, Artificial Intelligence, Planning for AI, AI Governance, Public Goods

BUILT ENVIRONMENT DISPARITIES IN POST-WILDFIRE RECOVERY: EVIDENCE FROM CALIFORNIA USING CROSS-VIEW IMAGERY AND LARGE LANGUAGE MODELS

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Track 1: AI in Planning
Individual Paper Presentation

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Wildfires are among the most destructive climate-related hazards in the U.S., yet their long-term consequences for neighborhood recovery remain insufficiently understood. Existing post-disaster research often relies on aggregated demographic or housing indicators, making it difficult to observe fine-grained rebuilding trajectories at the property level. This study examines whether post-wildfire built environment recovery is socially unequal across affected neighborhoods in California.

We compile a property-level recovery dataset covering six major California wildfires between 2018 and 2021: Carr, Camp, LNU Lightning Complex, Creek, Dixie, and Caldor. Using post-fire structure records and longitudinal street view and remote sensing imagery, we apply large language model (LLM)-assisted classification to identify three recovery outcomes for damaged properties: abandoned, rebuilt to an equivalent structure, and rebuilt to an improved structure. We then link sampled properties to census block groups and merge neighborhood sociodemographic and housing characteristics derived from ACS data.

Our preliminary results reveal clear socioeconomic gradients in recovery outcomes. In property-level binomial models with fire fixed effects and cluster-robust standard errors, higher median household income is associated with lower odds of abandonment (OR = 0.727) and higher odds of improved rebuild (OR = 1.472). By contrast, a higher Hispanic population share is associated with greater odds of abandonment (OR = 1.306) and lower odds of improved rebuild (OR = 0.668). We also find that larger shares of children, older adults, and renter-occupied housing are associated with lower abandonment and higher odds of improved rebuilding. Descriptive analyses further suggest substantial variation in recovery composition across neighborhood vacancy, poverty, and ethnic structure.

These findings suggest that wildfire recovery is not socially neutral. Instead, post-fire rebuilding trajectories are differentiated by neighborhood socioeconomic conditions, with more advantaged communities better positioned to avoid abandonment and achieve higher-quality rebuilding. For planners, this implies that post-fire recovery policies should move beyond uniform assistance and incorporate neighborhood vulnerability into rebuilding support, property rehabilitation programs, and long-term resilience planning. More equitable recovery requires targeted interventions for communities facing greater risks of abandonment so that climate adaptation does not reinforce pre-existing spatial inequalities.

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Keywords: Wildfire, Disaster recovery, Environmental justice, LLM, Street View Imagery

CAN LARGE LANGUAGE MODELS (LLMS) REPLACE HUMAN RATERS? EVALUATING URBAN DESIGN QUALITY AND ITS IMPLICATIONS FOR PERCEIVED STRESS AND COMFORT

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Individual Paper Presentation

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The rapid adoption of Large Language Models (LLMs) has raised a vital question for planning research and practice: can AI replace human judgment in evaluating urban environments? Although LLMs are increasingly used to interpret visual and spatial data, their reliability in assessing urban design quality—and the consequences for downstream behavioral analysis—remain largely unexplored. This study directly tests this assumption by comparing AI-based and human-based evaluations within a unified analytical framework.

Using a dense low-rise residential neighborhood in Seoul, South Korea, we conduct a systematic streetscape audit based on established urban design metrics (e.g., enclosure, transparency, greenery, and street-level features). Each location is evaluated by both trained human raters and LLM-based systems using the same protocols. We first assess measurement validity through Intraclass Correlation Coefficients (ICC), comparing agreement within and across rater types. We then estimate parallel OLS regression models linking urban design features to two subjective outcomes: perceived stress (higher values indicate lower stress) and perceived comfort.

Intraclass correlation coefficient analyses revealed systematic differences between human and AI raters. Human raters showed better overall reliability, achieving excellent agreement (ICC ≥ 0.75) for visually distinct elements, such as signage counts and donation bins. Reliability was moderate for environmental features like the proportion of trees and the window-to-wall ratio, but lower for contextually ambiguous indicators such as illegal parking and the number of benches.

AI raters showed more inconsistent performance and generally lower reliability compared to humans. However, AI significantly outperformed human raters on four specific metrics: crime prevention frames and litter count. These exceptions suggest AI's edge in reliable object detection for certain pattern-recognition tasks, even though it performs poorly on other indicators like the number of lights and the sky view factor.

These measurement gaps translate directly into differences in substantive inference. Human-rated models reveal clear and theoretically consistent relationships between urban design and well-being. Features associated with environmental quality, such as greenery and façade transparency, are linked to lower stress and higher comfort, whereas disorder (e.g., litter, illegal parking, and excessive signage) and restrictive spatial conditions (e.g., lane markings and fences) are associated with higher stress and reduced comfort. In contrast, AI-based models produce weaker, unstable, and in several cases contradictory relationships. Key context-dependent variables, such as greenery and transparency, often lose statistical significance or exhibit unstable coefficient directions. Meanwhile, model fit is more strongly driven by visually salient but less theoretically meaningful features, such as building materials or surface-level attributes.

Taken together, the findings demonstrate that AI-based evaluations do not merely duplicate human judgment but actively modify the inferred connections between urban design and well-being. Instead of functioning as neutral measurement tools, LLM-based assessments favor surface-level visual patterns over deeper contextual understanding, with significant consequences for planning research and practice.

We argue that LLMs should be regarded as partial measurement tools rather than evaluative agents. A hybrid approach that combines AI-driven feature extraction with human interpretation provides a more robust and scalable framework for urban design assessment.

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Keywords: Urban Design Quality, Large Language Models, Inter-rater Reliability, Subjective Well-Being

CAREER MOBILITY OF PLANNING ALUMNI IN THE UNITED STATES: EVIDENCE FROM PROFESSIONAL PROFILE DATA USING LARGE LANGUAGE MODELS

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Track 1: AI in Planning
Individual Paper Presentation

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As urban planning has evolved from isolated efforts into a comprehensive discipline (Song, 2025), planning professions in the United States now navigate increasingly complex career landscapes. Yet comprehensive evidence regarding their career trajectories, advancement patterns, and the influence of social, spatial, organizational, and educational factors has been limited. This study draws on boundaryless career theory (Defillippi & Arthur, 1994), social capital theory, and spatial opportunity models to analyze career mobility among more than 130,000 planning alumni in the U.S. Using Generative Artificial Intelligence (GenAI) to extract structured information from 130,301 LinkedIn profiles, we examine how sectoral experience, portfolio and industry-switch trajectories, network engagement, geographic mobility, employer diversity, and ongoing skill acquisition shape upward mobility and managerial attainment. We seek to answer: (1) How do sectoral backgrounds, spatial contexts, network characteristics, and skill acquisition shape career advancement among planning alumni? (2) What mechanisms and opportunity structures are associated with upward career mobility in the planning profession?

To address challenges in processing semi-structured LinkedIn data—such as user-generated contents, inconsistent job titles, and noisy narrative text—which complicate efforts to systematically compare career trajectories across individuals (Liu & Ge, 2023), we employed two large language models (LLMs), GPT-5-mini and o4-mini, for cross-model validation. This approach facilitated the large-scale transformation of unstructured career histories into structured annotations across seven predefined labels. Given the trade-offs between output reliability and token limits (Liu et al., 2023), we achieved a 97.4% successfully retrieval rate, yielding 130,301 profiles for analysis through the University of Florida's NaviGator AI API.

Results reveal that planning alumni who adopt boundaryless career patterns—specifically those with multisector experience or lateral and industry-switching trajectories—achieve significantly higher upward mobility. Technical skills function as a foundational entry-level signal, yielding the highest promotion premium during the initial career phase. As planners transition into senior roles, soft skills—leveraged through strategic lateral moves—become increasingly decisive, with their influence peaking in the final career stage. Geographic mobility, including cross-state and international moves, remains a strong predictor of advancement, while employment in larger, diverse metropolitan labor markets provides modest benefits at the cost of lower job stability. Larger professional networks and greater organizational engagement are consistently associated with increased promotion frequency. In contrast, AI-related skills are now commonplace and present limited additional advantage for mobility. Planning programs should look beyond traditional employment outcomes and align training with emerging professional upskilling priorities by preparing graduates for continuous learning and flexible career pathways (2025 Trend Report for Planners, n.d.). This includes not only strengthening curricula with technical instruction but also embedding training in network-building, professional organization participation, and career navigation skills. Workforce development efforts would benefit from supporting planners in acquiring transferable expertise and fostering connections across public, private, and nonprofit sectors.

Findings suggest that for planning alumni, cultivating broad sector experiences, expanding professional networks, seeking geographic mobility, and prioritizing ongoing technical and organizational learning are key strategies for

advancement. These results have direct implications for planning educators, employers, and policymakers designing programs to support an adaptive, well-connected, and effective workforce.

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Keywords: Career Mobility, Urban Planning Education, Planning Workforce, Large Language Models, Artificial Intelligence

DATA-DRIVEN TRANSIT NETWORK DESIGN THROUGH HIERARCHICAL REINFORCEMENT LEARNING A MULTI-AGENT FRAMEWORK FOR ROUTE AND STATION PLANNING

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Track 1: AI in Planning
Individual Paper Presentation

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Urban transportation planning traditionally relies on four-stage models, optimization methods, and expert judgment using origin-destination data, but these approaches struggle to capture dynamic travel behaviors and lack flexibility to adapt to emerging patterns. We propose that reinforcement learning can automatically design transit routes that better align with actual resident travel demands while optimizing resource allocation, thereby addressing the fundamental challenges of traditional methods. This study develops a hierarchical deep reinforcement learning framework for urban transit network optimization using observed trip records from Tampa's (growing metropolitan cities in the Southeastern United States) Downtowner on-demand shuttle service. The approach decomposes the complex transit design problem into two coordinated layers that simulate the planning logic of transit experts: the station planning layer first identifies optimal station locations based on demand coverage and regional balance, then the route planning layer designs routes connecting these stations while satisfying origin-destination travel demand, respecting road network constraints, and maintaining route geometric quality. This hierarchical structure simplifies the action space and enables better optimization of competing objectives across different layers, including service coverage, operational costs, and spatial equity.

Under identical demand conditions, the RL-generated networks with different infrastructure investments (100 and 80 stations with 10 routes) both outperform the existing Tampa system: the 100-station network achieves a 90.30% service rate versus 52.11%, reduces the transfer rate from 56.77% to 34.55%, and lowers cost per served passenger by 41.7%; the 80-station network maintains comparable station count to the existing system while still achieving higher service coverage and lower transfer requirements. This research demonstrates reinforcement learning's potential for transit optimization, providing a scalable framework that integrates data-driven methods with domain expertise for responsive network design.

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Keywords: Transit Network Design, Reinforcement Learning, Multi-Agent Systems, Data-Driven Planning

DECODING REGIONAL DEVELOPMENT REGIMES: A HETEROGENEOUS GRAPH NEURAL NETWORK APPROACH TO INTERROGATING PLANNING STRUCTURES AND URBAN MOBILITY

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Track 1: AI in Planning
Individual Paper Presentation

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Background and Research Questions: Polycentric development is a core regional strategy that seeks to transition from a traditional monocentric urban core to a distributed network of high-density, mixed-use "centers" or "hubs" designed to balance employment and housing (Wang et al., 2026). However, the functional success of this spatial form is inherently linked to the underlying regional planning regime—the specific administrative and institutional coordination mechanisms used by Metropolitan Planning Organizations (MPOs) to manage growth. These regimes range from legislative and mandate-based systems, characterized by strong centralized authority and regulatory tools like Urban Growth Boundaries (UGBs), to voluntary and collaborative systems that rely on inter-jurisdictional cooperation and incentive-based zoning (Ewing et al., 2024). While these implementation tools are widespread, a significant research gap remains in understanding how the "strength" of these planning structures is associated with actual human dynamics, particularly regarding the friction created by administrative borders and the resulting functional connectivity between diverse urban centers.

Methods: This research investigates how different regional development regimes are associated with divergent mobility patterns, utilizing the Splatial AI framework to move beyond traditional, coordinate-based GeoAI (Mai et al., 2025). We propose a novel methodological pipeline that integrates high-resolution mobility data with formal planning theory. The core methodology employs a Heterogeneous Graph Neural Network (HGNN) to represent urban areas as a complex relational system (Fan et al., 2024). Unlike standard GNNs, this model utilizes a Behavioral Knowledge Graph where nodes represent both physical grid cells and specific planning interventions, such as Urban Growth Boundaries (UGBs) and coordinated transit-oriented development (TOD). By defining distinct edge types for essential work-flows and discretionary social-ties, the HGNN learns the structural embeddings that characterize each regime, integrating planning theory and AI data analysis. To ensure interpretability, we utilize SHAP (SHapley Additive exPlanations) to perform a post-hoc feature attribution. This allows us to identify which planning elements are most strongly associated with the observed spatial structures.

Contributions: This study introduces a new computational method for comparing regional planning strategies. By analyzing the inner workings of the graph model, the research isolates exactly how specific institutional rules, such as the strength of cross-city coordination, interact with local demographics. This approach captures the complex, real-world relationship between MPO policy and travel behavior, offering a clearer and more accurate measure of spatial justice than traditional models that only look at physical distance.

Conclusion: This research translates complex AI modeling into a practical diagnostic tool for urban planners. The findings will help MPOs clearly see how their specific governance style, whether legislative or voluntary, impacts daily mobility. By revealing the hidden friction of administrative borders, this framework empowers agencies to choose the right policy tools to create truly connected, equitable polycentric regions.

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Keywords: GeoAI, Explainable ML, Polycentric development, Transportation planning

DECODING ZONING: A COMPARATIVE STUDY OF AI TOOLS HELPING CITIES AND RESIDENTS UNDERSTAND BUILDABLE RIGHTS

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Individual Paper Presentation

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Across North America, municipalities are revising their zoning codes to permit multi-unit housing in areas historically restricted to single-family homes, in an attempt to increase density. Major cities like Toronto, Ontario, Vancouver, Boston, and Los Angeles, among others, now permit both multiplexes and Accessory Dwelling Units (ADUs), such as laneway or garden suites, as-of-right on formerly single-family lots (Canada's Housing Crisis, 2025; CBC News, 2025; City of Toronto, 2020; The Register-Guard, 2026). While these changes represent a significant effort to increase housing supply and transit accessibility, they have not, in practice, translated into new construction as quickly as hoped (City of Toronto City Planning Division, 2025). One reason is that zoning codes are highly complex, making it difficult for ordinary residents and property owners to read them and understand what they are permitted to build on their land (Lo et al., 2020)

In response, a growing number of digital zoning tools have emerged, many of which use AI to locate, organize, and present complex regulations in more accessible ways to the public. For example, in California, the Community Planning Collaborative's ADU Accelerator is a GIS-based platform that combines parcel-level mapping with cost estimates and pre-approved design options. Similarly, Symbium provides a searchable interface for statewide property data, allowing users to determine what types of ADUs are permitted on a given lot. In Toronto, ReHousing (developed by the authors of this paper) supports homeowners in evaluating the potential for ADU development. Given the rapid growth of these tools, this research investigates how computation, AI, interface design, and business models shape their ability to make zoning more interpretable, as well as the practical challenges they encounter. At its core, the study asks whether these tools help the public, developers, and city officials understand what can be built on a given parcel. Based on in-depth interviews with fifteen zoning software developers, we identified several recurring constraints. Zoning data is frequently fragmented and difficult to structure, interpretation remains labor-intensive despite computational support, and for-profit tools often face limited market demand, making long-term sustainability difficult. Consequently, many tools must continually adjust their business models to remain viable.

While users clearly benefit from these tools, their limited market raises a broader institutional question: should zoning interpretation be treated as a public good and maintained by governments, rather than relying on private-sector provision? At the same time, there is emerging potential to reduce the cost of data creation itself. Early experiments with small language models suggest new ways to structure and standardize zoning data, which could fundamentally change how these tools are developed and sustained.

This research helps to add to the literature around zoning interpretation and innovation, while there has been much recent research about using Large Langauge Models to interpret zoning text (Bartik et al., 2025) and work to create a National Zoning Atlas (Xu et al., 2023) which would bring together diverse zoning codes and data across the United States there has yet to be a cross comparison of zoning software tools using AI that seek to provide the public, developes, and city workers with better information about addressing their zoning needs.

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Keywords: Accessory Dwelling Units, Zoning, Artificial Intelligence, Civic Technology, Housing

DETECTING URBAN FUNCTIONAL AREAS USING AI AND PLANNING IMPLICATIONS: THE CASE OF CHEONAN, KOREA

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Track 1: AI in Planning
Individual Paper Presentation

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Growing efforts to apply artificial intelligence (AI) in urban planning are reshaping how urban dynamics are understood, enabling new policy-relevant insights. Graph-based machine learning, for example, can reveal patterns of human activity and service use that are difficult to capture using traditional quantitative approaches based on aggregate data or predefined spatial units.

Movements for service use often extend beyond administrative boundaries, especially where adjacent cities with different functional roles interact and become increasingly integrated. As a result, functional areas emerge from these activity patterns of daily mobility and service use, rather than aligning with administrative units.
In practice, however, urban planning and facility provision remain organized by administrative units, creating a mismatch with how people actually use space. Understanding functional areas therefore has implications for urban planning, such as need-based service provision and more efficient budget allocation.
Graph Neural Networks (GNNs), by jointly capturing mobility and facility use, offer a way to identify these functional areas based on recurring activity patterns, beyond the flow- and density-focused structure of conventional network analyses.

This study aims to develop an AI-based analytical framework to identify functional urban areas, apply it to an empirical case, and derive policy implications for urban planning. Using individual trip-chain data from telecommunications sources, combined with point-of-interest (POI) data and complementary datasets, we employ Graph Convolutional Networks (GCNs) to model mobility and service-use patterns. Unlike conventional approaches that focus on flows between locations, the proposed framework incorporates rich feature information—such as facility types and activity patterns—into the analysis. This allows for the identification of functional areas, as well as patterns of facility use across them.

Focusing on Cheonan, Korea—adjacent to the Seoul metropolitan area—the results show that functional areas frequently emerge across jurisdictional boundaries and vary by activity type. These findings suggest that the spatial organization of services and infrastructure, typically planned within administrative units, may not fully reflect actual patterns of use. By uncovering the functional structure of urban systems, this study provides a practical basis for improving service allocation and supporting more adaptive and evidence-based urban planning.

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Keywords: AI, GNN, Urban Functional Areas, Planning Implications, Cheonan

DIFFUSION-BASED MULTI-OBJECTIVE OPTIMIZATION FOR CLIMATE RESPONSIVE URBAN REGENERATION: ADAPTIVE DESIGN PATHWAYS IN HIGH-DENSITY CITIES

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Individual Paper Presentation

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High-density cities are increasingly exposed to intensifying heat, rising energy demand, and reduced ventilation capacity. Yet climate-responsive urban regeneration remains constrained by fragmented data, nonlinear climate-form interactions, and the limited flexibility of existing modeling tools in producing adaptive design solutions. To address these challenges, this paper develops a Diffusion-Based Multi-objective Optimization Framework for Urban Regeneration (DMO-UR), which couples a conditional diffusion generative model with the Non-dominated Sorting Genetic Algorithm III (NSGA-III) to balance multiple environmental objectives in urban regeneration. The proposed framework integrates multimodal datasets, including land surface temperature (LST), solar radiation, building height (BH), floor area ratio (FAR), green ratio (GR), and wind field data, to generate and evaluate three-dimensional urban forms under climate constraints. The diffusion model learns spatial-morphological patterns from historical and simulated dataset, and facilitates conditional generation of realistic urban morphological forms. NSGA-III further distinguishes Pareto-optimal solutions that condense urban blocks with different conditions to jointly enhance thermal comfort, energy-related aspects and compactness. The results show that: (1) DMO-UR consistently achieves strong prediction performance, with an R2 of 0.81 and mean SSIM of 0.84 relative to the base diffusion model; (2) the cooling optimisation is the strongest in terms of morphological change, and has reduced the mean surface temperature by 1.9°C, the green ratio and the sky-view factor by 42.7% and 15.4%, respectively; (3) the energy-saving optimisation is effectively achieved by adjusting FAR and BH to reduce potential heat storage and over-shading; and (4) three kinds of adaptive recuperative paths appeared: development intensity control for high FAR/high dense blocks, enhancement of ventilation-corridor for medium-dense district, and focused green remnant for small compact low rise blocks. These findings demonstrate that combining generative diffusion modeling with evolutionary multi-objective optimization can discover data-driven, interpretable and adaptive pathways for climate-orientated urban regeneration. More importantly, they frame generative AI as both a modelling approach and practical design support tool for bringing environmental performance into urban regeneration decision-making.

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Keywords: Regeneration, Morphology, Ventilation, Optimization, Climate

EMOTIONAL EXCLUSION AND THE RATIONALITY FILTER: THE LIMITS OF PARTICIPATORY PLANNING

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Individual Paper Presentation

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Planning theory acknowledges the biological and relational importance of emotion in civic life, yet practitioners and institutions often struggle to integrate emotion as data in rational-technical frameworks. This tension between socially-derived knowledge and technical expertise has intensified as digital media reshapes how citizens form and express public opinion. While Schütz (1946) and Imber (1984) caution that indulging public opinion can obstruct institutional order, Valentino et al. (2008) and Lyles & White (2019) argue that emotions like fear and anxiety can actually stimulate information-seeking and democratic engagement. This study applies AI-driven computational methods to audit the community engagement records of five select New York City community boards across all five boroughs. Using Structural Topic Modeling (STM) and sentiment analysis, we characterize the emotional valence and substantive content of verbatim meeting transcripts, then systematically compare them against official meeting records – a task that the scale, consistency, and pattern-detection capacity of AI tools makes possible in ways that traditional qualitative review cannot. Drawing on meetings from 2022 to 2024, we analyze approximately 360 paired documents across boards representing distinct planning gestures and demographic contexts. Findings indicate that emotionally-coded testimonies are disproportionately absent from official minutes relative to their frequency in transcripts, while technically-framed neighborhood concerns are consistently documented. This pattern varies across boards in ways that reflect institutional design rather than public engagement levels, suggesting that the rationality filter is a structural feature of participatory planning, not citizen behavior. This research demonstrates a novel and equity-relevant application of AI tools to community engagement processes, offering planning scholars and practitioners a replicable framework for auditing whether public participation records genuinely reflect the communities they serve.

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Keywords: sentiment analysis, community engagement, structural topic modeling, participatory planning, institutional design

EXPLORING GENDERED MOBILITY IN NIGHTTIME PUBLIC SPACE THROUGH VISUAL AI

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Track 1: AI in Planning
Individual Paper Presentation

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Pleasure is central to urban nightlife, especially in high-density cities. Yet research on nighttime planning has largely focused on risk, fear and exclusion, particularly positioning women as vulnerable users. Amid ongoing improvements in urban safety in many cities, a more pressing question emerges: does vibrant nightlife translate into inclusive nighttime public spaces across genders? Existing evaluations of gendered mobility rely mainly on subjective perceptions or coarse GPS data. While they offer qualitative narratives or broad occupancy patterns, they overlook the micro-scale behavior dynamics in real-world environments. Meanwhile, advances in visual artificial intelligence (AI) and behavioral analytics provide new opportunities to examine how individuals move, linger and claim nighttime space across genders.

This project aims to develop a visual intelligence framework to examine gendered mobility in nighttime public spaces. Leveraging large-scale video data, we extract pedestrian trajectories and quantify behavioral indicators to assess how movement, companionship, and social comfort shape public space usage across genders at night.
We constructed a multi-step computational approach to analyze four active nightlife public squares in central Guangzhou, China. First, nearly 200 hours of video footage were collected over one week during peak nighttime periods (19:00-2:00), with daytime as a baseline. Second, pedestrians were detected and gender-classified using custom-trained YOLOv11 models, and tracked via DeepSORT algorithm. Our models achieved overall detection and gender-classification accuracies of 88% and 80%, respectively, ensuring reliable pedestrian recognition across diverse nighttime urban conditions. Third, we quantified five key behavioral indicators, including walking speed, lingering time, route directness, companion-seeking rate and interpersonal distance. Finally, these metrics were compared to reveal the temporal and spatial dynamics of gendered nighttime activity.

The results show that quantitatively, women were not absent from vibrant nightlife spaces but rather demonstrated higher levels of presence than men. Specifically, among the 406,265 detected pedestrians within the study period, women outnumbered men by 32,608, and exhibited slower walking speeds and longer lingering times. Qualitatively, however, women's nighttime activity was found to involve certain strategies of behavioral adaptations. This is evidenced by higher route directness and an increase in companion-seeking behavior, particularly after 22:00. Interpersonal distance further reinforces this pattern, where the average spacing between a female–female pair was nearly half that of a male-male pair. These findings suggest that women actively inhabit nighttime public space, often more visibly than men, but do so through adaptive strategies such as walking in more direct routes or engaging in affiliative behaviors among female peers.

This study offers a new perspective on gender and nighttime public space by shifting attention from the focus access and safety toward the behavioral conditions that enable pleasurable participation. It argues that nighttime planning should not only ensure safety provision, but also foster social ease, independent presence, and equitable engagement, and provides empirical insights for designing high-density nighttime environments that balance vibrancy, inclusiveness, and comfort across genders.

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Keywords: Gendered mobility, Nighttime public space, Visual AI, Behavioral adaptation, Inclusive city

FROM ARISTOTLE TO AI: DATA INFRASTRUCTURE FOR LAND-USE PLANNING

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Plans and zoning maps are often sequestered on the individual webpages of local jurisdictions, complicating efforts to assess planning outcomes in aggregate, compare plans, or monitor ongoing promises. This fragmentation limits the ability of scholars, practitioners, and community members to evaluate planning outcomes in aggregate, monitor policy commitments, or understand how local governments articulate priorities over time. The first scholar to compile and compare plans was Aristotle. He created a library of 158 city codes some 2,400 years ago. The challenge is not new. More than 2,400 years ago, Aristotle compiled and compared 158 city constitutions, recognizing that systematic analysis of civic texts was essential for understanding governance. Inspired by this early comparative project, our research revisits Aristotle's impulse with contemporary data infrastructure, natural language processing, and open-source tools.

This presentation introduces a comprehensive, publicly accessible library of California planning documents and the search engine that enables cross jurisdictional analysis: PlanSearch (plansearch.caes.ucdavis.edu). Building on recent advances in computational text analysis in planning (Fu, 2024; Fu et al., 2026) and emerging pedagogical work on teaching students to read plans critically (Raj, Momoh, & Brinkley, 2025), PlanSearch operationalizes the FAIR principles—findability, accessibility, interoperability, and reusability—for planning documents (Poirier et al., 2024). The platform aggregates thousands of plans, standardizes metadata, and provides open source code for a search algorithm that allows users to query terms, themes, and policy concepts across the entire corpus. This infrastructure enables new forms of comparative research, supports community oversight of planning promises, and democratizes access to documents that have historically been difficult to obtain.

Using California as a case study, we demonstrate how PlanSearch reveals both expected and surprising patterns in planning discourse. For example, while nearly every jurisdictional plan mentions "golf course," terms such as "climate justice" appear only rarely—an omission with implications for equity oriented climate policy (Brinkley, Regalado, & Boswell, 2024). These findings underscore how textual analysis can illuminate gaps between stated statewide priorities and local planning language, offering a new lens for evaluating policy alignment, institutional capacity, and the distribution of planning attention.

By creating a unified, searchable library of planning documents, this research project provides a foundation for large scale plan evaluation, comparative urban analytics, and community driven inquiry. It extends a long intellectual lineage—from Aristotle's constitutional comparisons to contemporary computational planning research—while offering practical tools for scholars, practitioners, and residents seeking to understand how places imagine their futures and how those visions translate into policy. Ultimately, we argue that making planning documents accessible and analyzable is not merely a technical achievement but a democratic one, enabling broader participation in shaping the built environment and holding institutions accountable to their stated commitments. We provide open source code so that our efforts can be easily replicate din other states and nations.

Citations:

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Keywords: data, climate justice, democracy, comprehensive plans

FROM INFRASTRUCTURE TO IMPLICATIONS: DATA CENTER 101 FOR URBAN PLANNERS

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Track 1: AI in Planning
Individual Paper Presentation

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As data centers proliferate, urban planners play a key role in permitting associated land uses and anticipating their system-wide impacts on the built environment and urban life. Yet the current information landscape is fragmented across the energy, water, and regulatory sectors, with uneven quality and sometimes contradictory claims. Much of this confusion stems from insufficient attention to the diversity of data center types, local context, and infrastructure design choices.

This white paper addresses a central question: what are data centers' implications for the urban life and built environment, and how are those implications anchored in specific data center infrastructure components? It begins by introducing major data center types, the concept of redundancy, and typical infrastructure configurations, including a visual schematic of a stylized, simplified hyperscale data center. It then examines the energy, water, land use, quality of life, economic, and environmental implications of data centers.

The writing draws on desktop research using high-quality sources and interviews with nine industry stakeholders, including data center developers, urban planners, elected officials, and contractors. Together, the paper provides a "Data Center 101" mental model to help planners see the big picture and engage more confidently with data center proposals.

Preprint: Liang, X. (2026) From Infrastructure to Implications: Data Center 101 for Urban Planners. White Paper. University of Michigan. Available at: https://doi.org/10.31235/osf.io/ymqa8_v1
Interactive: Liang, X., Dai, Y., Wizinsky, M. (2026) Data Center 101: Infrastructure and Implications. Interactive Web Prototype. University of Michigan. Available at: https://xiaofanliang.github.io/datacenter101/

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Keywords: Data Center, AI Infrastructure

FROM NETWORK DYNAMICS TO PLANNING INTERVENTION: IDENTIFYING CRITICAL THRESHOLDS IN URBAN ECONOMIC SYSTEMS

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Track 1: AI in Planning
Individual Paper Presentation

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It is widely accepted that urban economic systems act as complex, spatially embedded networks where firms and consumption interact through self-reinforcing and interdependent dynamics. According to the notion of a self-organizing urban economy, economic activities are not uniformly distributed but form spatially differentiated structures shaped by interdependent location decisions. Because these activities are highly interconnected across space, shocks to key firms may propagate through spatial and economic networks and influence overall urban stability.

In network science, significant progress has been made in quantifying system-level resilience, often through analytical models that rely on simplified assumptions regarding network structure and system dynamics. This approach enables accurate prediction of critical points at which the system loses its resilience. However, despite these advances, accurately inferring network resilience remains challenging in practice, as existing analytical frameworks often rely on simplifying assumptions that fail to capture the complexity of real-world systems.

To overcome these limitations, recent advances have begun to address these limitations through data-driven AI approaches, such as graph-based deep learning methods. Graph Convolutional Networks (GCNs) learn network structures directly from data, enabling the identification of critical points of systemic vulnerability.

Nevertheless, these approaches have rarely been applied in urban planning contexts, where appropriate data structures and modeling frameworks for representing urban economic systems such as those characterized by interdependent firm interactions and mobility flows remain underdeveloped. This study examines how localized economic shocks propagate through urban economic networks and identifies critical thresholds at which such disruptions lead to systemic urban vulnerability. The urban economy is conceptualized as a network of firms and small businesses connected through indirect interactions mediated by mobility, consumption, and employment flows.

The network is constructed using firm-level economic data, where nodes represent firms and small businesses characterized by revenue levels, and edges are defined based on mobility-derived interactions capturing consumer and worker flows. Firm-level shocks are modeled as reductions in revenue. The propagation dynamics and critical thresholds are inferred using a GCN model that captures non-linear interactions and system-level responses.

In doing so, it enables the identification of hidden interdependencies, non-linear propagation patterns, and potential intervention points that are difficult to capture using conventional planning approaches, thereby providing a more robust analytical foundation for urban resilience planning.

It is expected that firm-level economic shocks, such as reductions in revenue among economically significant firms, will propagate through mobility-based interaction networks, generating cascading impacts on interconnected small businesses. More importantly, the results are expected to identify a critical threshold at which incremental economic shocks lead to a rapid and non-linear collapse of the urban economic system. This threshold is

anticipated to serve as a key indicator for distinguishing between structurally resilient and vulnerable systems, providing a basis for early intervention in urban planning.

From a planning perspective, the findings provide insights into identifying economically critical firms, understanding the potential impacts of shocks on small businesses, and highlighting areas where policy intervention may be most needed under conditions of systemic stress. This study contributes to the emerging field of AI-driven urban planning by demonstrating how machine learning can uncover critical thresholds and hidden interdependencies that support more informed and targeted policy interventions.

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Keywords: Resilience, GCN, Networks, Decision-making, Economics

FROM POTENTIAL TO USE: BEHAVIORAL SEQUENCE LEARNING AND AGENT-BASED SIMULATION FOR HERITAGE CORRIDOR PLANNING IN NANJING, CHINA

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Track 1: AI in Planning
Individual Paper Presentation

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Urban heritage corridors are expected to connect fragmented heritage resources, support walking, and strengthen place-based experience, yet corridor planning still relies heavily on static suitability mapping and expert judgment. While such approaches can identify promising segments, they are less able to determine whether high-potential corridors can be used efficiently in practice, whether they align with residents' actual mobility patterns, and how they should be prioritized and differentiated to support phased and incremental development. This study develops an AI-enabled planning support framework that links corridor potential assessment, behavioral sequence learning, and sequence-informed agent-based simulation for heritage corridor planning in Nanjing, China. A candidate corridor network is constructed from walkable street and waterfront segments and evaluated across ecological suitability, heritage resource value, service and activity support, and spatial implementation feasibility. The assessment shows that 21.3% of segments are high-potential, 34.7% are medium-potential, and 44.0% are low-potential, with high-potential segments concentrated in the historic core and along continuous waterfront spaces. To examine whether these spatially promising corridors also support coherent behavioral use, the study analyzes location-based services data from September 2024. After data cleaning, stay-point extraction, semantic matching, and heritage-related trip-chain screening, the final sample includes 130,993 residents and 56,355 visitors with observed heritage-oriented mobility. Daily activity chains are represented using seven observed states comprising heritage, service, green, transport, residence-related, workplace-related, and other, and are analyzed through Markov chains, a categorical Hidden Markov Model, and user-level clustering. The results indicate strong persistence in general stop activity and pronounced transitions from residence-related and workplace-related states into other stop types, suggesting that heritage-related corridor use is embedded in broader daily mobility structures rather than occurring as isolated visits. The Hidden Markov Model identifies two latent behavioral regimes, while clustering distinguishes eight behavioral groups with different anchoring characteristics, heritage exposure, and activity compositions. These learned transition patterns, latent behavioral structures, and group shares are translated into heterogeneous behavioral rules and incorporated into a quasi-dynamic agent-based simulation of the high-potential corridor network. In this simulation, agents are initialized with group-specific behavioral profiles, update activity states across iterations, generate single- or multi-stop trips under sequence constraints, and adjust route choice in response to congestion feedback. The simulation reveals substantial variation in segment use frequency, chain continuity, congestion, and break risk. High-frequency segments account for 17.6% of the simulated network, complete trip-chain realization reaches 43.2%, and 19.4% of high-potential segments exhibit low behavioral conversion because of discontinuities, weak service support, and elevated detour costs. By comparing corridor potential with simulated use performance, the study classifies segments into priority development, bottleneck repair, service enhancement, and long-term cultivation types. The study shows how behavioral sequence learning and sequence-informed agent-based simulation can support more dynamic, behavior-informed, and implementation-oriented heritage corridor planning.

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Keywords: Heritage corridor, Location-Based Services, Markov Chain, Behavioral Sequence, Agent-Based Simulation

GTFS FOR ZONING: THE USEFULNESS AND FEASIBILITY OF AN OPEN DATA STANDARD FOR ZONING REGULATIONS

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Track 1: AI in Planning
Individual Paper Presentation

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Restrictive zoning represents a barrier to addressing our nation's housing shortages. It is also true that existing zoning codes allow for more housing than currently exists. Zoning codes can restrict housing supply by direct restrictions in on the number of housing units allowed on a single parcel and through other restrictions on the building bulks, such as setbacks, floor-area ratios, and maximum heights. Because of the wide variety of ways in which zoning can restrict the production of housing, it can be difficult to determine how much housing is currently allowed under existing zoning codes. Moreover, although the demand for housing is regional in nature, and not restricted to municipal boundaries, zoning is regulated at the municipal level. This makes it challenges to study zoning regulations in a consistent way across a region.

Natural language processing and large language models have been demonstrated to have potential for analyzing the text of zoning codes (Mleczko and Desmond 2023) or creating chat-based tools to query zoning codes (Renne 2025). An application of these methods to parcel-level analysis at scale would be most useful for translating zoning code texts into harmonized, structured, machine-readable data in a format that is flexible enough to encode the wide variety of development characteristics that zoning codes might seek to regulate.

A few existing efforts, such as the MAPC Zoning Atlas (https://zoningatlas.mapc.org/) and the National Zoning Atlas (Bronin 2022) have made progress towards assembling databases of zoning regulations across many municipalities, but they have employed data formats that are neither sufficiently detailed nor sufficiently flexible to facilitate an automated process that could be used to determine which on parcels across a region specific prototypical residential buildings would be allowed under existing regulation. In the absence of available data, scholars such as Monkkonen et al (2020) and Conway (2021) have analyzed housing capacity using strong assumptions derived from the characteristics of existing buildings, but both have acknowledged that detailed zoning data would improve the parcel-level accuracy of their analyses.

We have developed a flexible (geo)json-based data standard for describing zoning regulations, parcel geometry, and relevant building characteristics, as well as software (a R package and equivalent Python package) that takes as inputs (1) zoning data, (2) parcel data, and (3) a building description and returns a list of parcels on which the building would be allowed by right.

We test our method for 23 cities in the Dallas/Fort Worth region to identify all vacant parcels on which each of four prototype buildings are allowed: a two-unit building, two four-unit buildings, and a 12-unit building. We find that the buildings with two to four housing units are allowed on similar numbers of parcels (ranging from approximately 700 to 800 out of 120,000 vacant parcels), but that, since four-unit buildings include twice as many homes as two unit buildings, they have the potential to offer substantially more housing when produced at scale throughout a region. The twelve-unit building was found to be allowed on fewer than 150 parcels and had the potential to generate approximately as much housing as the two-unit building, if both are built everywhere they are allowed.

This work demonstrates the usefulness of a consistent data standard for zoning. However, a major barrier to the adoption of this standard is the tedious manual processes involved in encoding and continuously updating the

associated datasets. Large language models represent an opportunity to more efficiently produce standardized zoning data, but do not obviate the need for such standards.

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Keywords: Housing, Zoning, Data

HOW COMPLETE ARE YOUR CITY'S STREETS? EVALUATING THE COMPLETENESS OF URBAN STREETS USING AI AND BIG DATA

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Track 1: AI in Planning
Individual Paper Presentation

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Complete Streets are streets designed to safely accommodate all users regardless of age, ability, or travel mode. Over 1,700 U.S. jurisdictions have adopted some form of Complete Streets policy, yet two critical challenges hinder progress from policy to practice. First, there is no scalable tool to systematically audit the key Complete Streets design elements. Traditional field audits are labor-intensive, costly, and inconsistently applied across jurisdictions. Second, even where individual element data exist, there is no composite scoring system that integrates element-level measurements into a single, interpretable metric for evaluating how "complete" a street is. Existing assessment frameworks prescribe what a Complete Street should look like rather than measuring the condition of what currently exists (Hui et al., 2018; Bian et al., 2023). This study addresses both challenges by developing an open, automated framework that uses artificial intelligence and big data to measure the completeness of urban streets.

To address the first challenge, we developed automated data collection methods to identify eight key Complete Streets design elements (i.e., sidewalk, bike lane, street parking, vehicular road, sidewalk buffer, amenities, transit stop, median) and to capture their corresponding attributes such as sidewalk and its width. The framework leveraged publicly available data sources including urban imagery, OpenStreetMap, and General Transit Feed Specification data, with data sources and methods tailored to each element.

To address the second challenge, we proposed a composite completeness score (0 to 100) that integrates the eight element-level measurements into a single metric. Since not all elements contribute equally to Complete Streets objectives, we derived element weights empirically from the planning documents that municipalities themselves produce. Specifically, we collected 73 municipal Complete Streets design manuals and extracted over 10,000 sentences referencing the eight key elements. We then applied a zero-shot natural language inference model to quantify how strongly each sentence implies contribution to five recognized Complete Streets benefits: safety, community, health, environment, and economy (Gregg & Hess, 2019; NCSC, 2025). The resulting weights show that sidewalks receive the highest importance due to strong contributions across nearly all benefit categories, while vehicular road characteristics receive the lowest. Element-level attributes are then converted into standardized scores using empirically grounded thresholds derived from five benchmark U.S. cities recognized for walkable environments, and the weighted sum produces the final composite completeness score for each road segment.

We demonstrated the framework through an application to over 1,000 road segments in the Atlanta region, selected based on corridor prioritization criteria from the Atlanta Regional Commission's guideline. The results reveal that the composite completeness score across evaluated segments is notably low, with substantial variation. By identifying which elements are most deficient on each corridor, the framework enables planners to move beyond policy statements toward targeted, evidence-based investment decisions. To support transparency and broader adoption, all code and data are publicly available through a GitHub repository, and an interactive web dashboard maps element-level outputs and composite scores. This framework ultimately provides an open-source

tool that automates both infrastructure auditing and completeness evaluation at scale, while introducing a data-driven weighting methodology grounded in the planning documents.

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Keywords: Complete Streets, Textual entailment, NLP, Computer vision, Urban analytics

HUMAN-CENTRIC MULTI-LEVEL VISITOR PROFILING FOR URBAN GREEN SPACES IN HISTORIC DISTRICTS: EVIDENCE FROM 969 SITES IN NANJING

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Track 1: AI in Planning
Individual Paper Presentation

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Urban green spaces in high-density old city areas support everyday recreation, social interaction, and spillover from broader activity chains, yet planning research still lacks a scalable way to identify who uses which spaces, how usage structures differ across groups, and how these differences can inform place-based intervention. This paper addresses that gap by proposing a relational profiling framework for green space use in Nanjing's old city. Drawing on one week of anonymized mobile phone signaling data and multi-source environmental and facility data, the study identifies home and workplace anchors and extracts 16,093 visitors with valid green space visitation records. These visitors are linked to 969 green spaces, including 242 neighborhood-scale green spaces and 727 larger park green spaces, through a visitor-green space bipartite graph. Edge attributes encode visit frequency, dwell time, temporal visitation rhythms, and commuting distances from home and workplace anchors. To move beyond conventional feature-based clustering, the paper applies a graph neural network under a self-supervised link prediction task to learn embeddings that capture higher-order co-visitation structures and relational similarities between visitors and places. The model performs stably on the test set, reaching approximately 0.80 AUC and 0.86 AP. Based on these embeddings, the study identifies 138 fine-grained visitor types and further extracts 23 key clusters covering 72.7% of the sample. The four largest clusters alone account for nearly half of all visitors, revealing a strongly concentrated structure in which a limited number of dominant types explain most observed green space use. Differentiation is organized primarily along three dimensions: socio-spatial attributes, behavioral intensity and stability, and temporal and environmental preferences. Short-stay but strongly anchored patterns dominate many spaces, indicating that a substantial share of green space use is embedded in routine living and commuting paths rather than destination-oriented leisure alone. Long-stay hotspot types are fewer but more spatially selective, suggesting that prolonged use depends on particular combinations of comfort, facilities, and waterfront or park settings. Nighttime-oriented clusters recur across multiple major groups, showing that nighttime use is not marginal but a stable component of green space demand in the old city. Differences between residence-anchored and workplace-anchored patterns further suggest that green space use is jointly shaped by living space, employment space, and commuting organization rather than by residential proximity alone. This study advances planning research in three ways: it moves green space profiling from attribute-based description to relational structural interpretation; it shows how mobility data and graph representation learning can generate planning-relevant visitor typologies at a scale difficult to capture through surveys alone; and it provides empirical support for differentiated green space provision, hotspot-oriented improvement, and nighttime governance in historic urban districts. The findings should nevertheless be interpreted within their limits: the analysis is based on a one-week observation window and mobile-phone-derived samples, some social groups may be underrepresented, and the data cannot directly identify activity purpose or site perception. The framework is therefore best understood as a scalable diagnostic tool for routine green space use, with strongest transferability to high-density old city contexts where everyday mobility, mixed urban functions, and uneven green space supply are tightly coupled.

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Keywords: Graph neural network, Mobile phone data, Visitor profiling, Historic district, Urban green space

INTEGRATING PHYSIOLOGICAL, PERCEPTUAL, AND SPATIAL DIMENSIONS: A SYSTEMATIC REVIEW OF HUMAN SPATIAL EXPERIENCE

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Track 1: AI in Planning
Individual Paper Presentation

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This study addresses a central challenge in planning scholarship: how to systematically understand and model human experience in spatial environments by integrating physiological responses, perceptual processes, and environmental context. While recent advances in wearable biosensing technologies have enabled the collection of high-frequency physiological data (e.g., heart rate variability, electrodermal activity, eye-tracking), existing research remains fragmented across disciplines, with limited integration of "body–mind–space" relationships in real-world settings. We aim to answer: (1) How have biosensing technologies been used to quantify spatial experience in planning-relevant environments? (2) What methodological approaches exist to integrate physiological, perceptual, and spatial data? and (3) What gaps and opportunities remain for planning research and practice?
To address these questions, we conduct a PRISMA-guided systematic review of empirical studies published between 2011 and 2025 across major interdisciplinary databases, including Web of Science, Scopus, PubMed, IEEE Xplore, and the ACM Digital Library. Studies are selected based on their use of physiological or perceptual measures in real-world built or natural environments, excluding simulated or virtual settings. A structured coding framework is used to extract information on sensor modalities, spatial scale, environmental context, data integration methods, and modeling approaches.

Preliminary findings indicate several key patterns. First, research is dominated by single-sensor approaches, with relatively few studies integrating multiple physiological and perceptual measures alongside spatial data. Second, there is a persistent methodological challenge in aligning high-frequency biosensing data with spatial and environmental features. Third, a substantial portion of the literature relies on controlled or simulated environments, limiting ecological validity for planning applications. Finally, there is a lack of standardized preprocessing protocols and limited use of spatially explicit modeling frameworks within GIScience.
These findings have important implications for planning scholarship and practice. The review highlights the need for integrative, multimodal frameworks that link human physiological states, perceptual experiences, and environmental characteristics in real-world contexts. Such approaches can support emerging applications including stress and comfort mapping, human-centered urban design evaluation, and data-informed planning interventions. The study concludes by outlining a research agenda for planning and GIScience that emphasizes standardization of biosensing protocols, development of spatially explicit modeling approaches, multimodal data fusion, and ethics-by-design in handling sensitive biometric data.

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Keywords: biosensing, spatial experience, GIScience, GIScience, multimodal data

IS URBAN PLANNING A ROBOT JOB NOW? EVALUATING HOW AUTOMATION IN DEVELOPMENT CONTROL PROCESSES RESHAPES THE PLANNER'S ROLE

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Track 1: AI in Planning
Individual Paper Presentation

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The practice of urban planning is under pressure on many fronts. Most notably, in recent years, as the recognition that we face a significant housing affordability crisis has set in, so has the subsequent pressure on planners to bring efficiency to development approvals processes. This pressure aligns with the ever-growing opportunities to use artificial intelligence tools to automate some or all of the development approval process (Sanchez et al, 2023). Research on this potential is already underway (Lin et al., 2026) and there are a number of tools in the market that offer functions such as compliance checking, feasibility analysis, zoning interpretation and application readiness. These tools promise efficiency but as planners we should consider their impact on our practice, ethics, and relevance of our exercising sound professional judgement.

This paper asks: How does the integration of AI-enabled tools into development approval processes reshape professional judgement, and what ethical implications arise as parts of urban planning practice become increasingly automated? To address this question, our study develops a comparative analytical framework to evaluate 16 currently available development control technologies categorizing them by level of automation, functional role, and point of intervention within approval workflows (Tsilfidis, 2026). Then we share the findings from interviews with key informants from these firms shedding light on the design assumptions and objectives these tool providers seek to fulfill.

Our findings reveal that automation in development control processes has the potential to change the role of the professional urban planners. These tools have the capacity to replace parts of our judgement and could reduce our professional role to oversight and validation roles (Potts, 2020). These dynamics have the potential to redistribute expertise and reduce or undermine public accountability in the planning process.

We argue that this technological advancement points to a growing gap between our codes of ethics and practice and the conduct of planners as technology can take on a larger role in decision-making (Robinson & Boyco, forthcoming). Our static codes of ethics and practice do not (yet) provide guidance for how planners can and should uphold ethical practice when automated tools are more actively involved in our work. To fill this gap, we offer recommendations as to how professional planners can navigate these times of technological advancement and uncertainty through more active ethical reflection in practice. This paper makes contributions to ongoing critical discussions about the role of AI in planning drawing attention to the role of the planner moving forward.

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Keywords: artificial intelligence, development approval, zoning, automation, planning ethics

MAPPING AND COMPARING CLIMATE EQUITY POLICY PRACTICES USING RAG LLM-BASED SEMANTIC ANALYSIS AND RECOMMENDATION SYSTEMS

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Individual Paper Presentation

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Since the emergence of Large Language Models (LLMs), there have been increasing efforts to deploy these systems to partially or fully substitute human labor. Against this backdrop, this study asks whether urban policy documentation and management can be supported or automated through AI, and more broadly, whether planning practices can be systematically evaluated using AI-driven systems. In practice, planners face significant limitations in reviewing the vast number of policy documents across jurisdictions, making it difficult to assess whether policies are adopted, adapted, or absent across cities. Existing studies have begun to explore the automation of document review processes, including applications in legal document classification (Wei et al., 2023), scenario planning frameworks (Kgomo & Song, 2025), and automated policy collection using ChatGPT (Deng et al., 2025). However, prior work remains limited in scope and often lacks accuracy-enhancing approaches such as Retrieval-Augmented Generation (RAG).

This study explores how LLMs can support urban policy analysis and comparative learning in climate equity planning. We developed the Retrieval-Augmented Policy Analysis Framework (RAPAF), which integrates a LangChain-based RAG pipeline to systematically extract and evaluate policy, strategy, and action components from climate equity or action plans across U.S. cities. LangChain is an open-source framework for LLM-based applications that was released in October 2022. It integrates with vector databases such as FAISS (Douze et al., 2021) to support scalable deployment. The RAPAF process using ChatGPT was adapted from Deng et al. (2025), who conceptualized policy content as a hierarchical structure consisting of policies, strategies, and actions. The framework is combined with a content-based recommendation system to identify similarities and gaps in policy practices across jurisdictions. The temperature is set to zero to ensure deterministic and reproducible outputs (Ki et al., 2025). The study looked at climate-related plans for 192 U.S. cities. These plans were over 21,000 pages long and had 5,000,000 words. At the same time, we looked at job postings related to planning to better understand how professional roles are changing in the age of AI.

Results showed that planning practice remains grounded in traditional domains such as transportation, energy, land use, and environmental planning, while communicative and coordination-oriented responsibilities continue to be central despite growing interest in AI. Semantic analysis of policy documents reveals that transportation and energy are the most consistently emphasized sectors, particularly in relation to greenhouse gas mitigation. Policy narratives predominantly employ affirmative and action-oriented language, with relatively limited acknowledgment of constraints or trade-offs. Across cities, electric vehicle infrastructure and renewable energy initiatives emerge as dominant themes, whereas areas such as grid modernization, impact assessment, and public engagement campaigns are less frequently addressed. The recommendation system demonstrates the ability to identify peer cities with similar policy structures and highlight missing or underutilized actions. Geographic proximity and shared policy content were observed in our recommendation engine.

Our findings suggest that LLM-based systems can function as analytical infrastructure that augments, rather than replaces, planners' normative judgment. By enabling scalable, transparent, and comparative policy analysis, RAPAF supports more informed and reflexive planning practices. The study contributes to the emerging field of urban AI

by demonstrating how retrieval-augmented LLMs and recommendation systems can be operationalized for policy evaluation and knowledge transfer in climate equity planning.

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Keywords: LLM, RAG, LangChain, Recommendation System, Climate Equity Plan

MAPPING SENSE OF PLACE AND COMMUNITY AT SCALE: LINKING DIGITAL EXPRESSIONS ON SOCIAL MEDIA TO URBAN EXPERIENCE IN HUNTSVILLE, ALABAMA

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Individual Paper Presentation

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Understanding how people experience and connect with urban environments is central to planning more inclusive and livable cities. While sense of place and sense of community have traditionally been examined through surveys and qualitative methods, such approaches are often limited in spatial coverage and scalability. Recent advances in social media analytics offer new opportunities to capture these experiential dimensions through publicly expressed digital content. Building on prior work that developed computational measures of sense of place and community, this study shifts from measurement to explanation by examining their spatial distribution and relationship with the built environment.

Focusing on Huntsville, this research analyzes geotagged Instagram data across more than 600 locations, with approximately 5–10 posts per location. Using a combination of natural language processing and image-based analysis, Instagram content—including captions, hashtags, and visual features—is used to identify indicators of place attachment, local identity, social interaction, and community belonging. These indicators are aggregated to generate location-level scores for sense of place and sense of community, enabling a city-wide analysis of experiential patterns.

To ensure methodological validity, a subset of posts is manually coded based on established theoretical constructs. The manually coded results are compared with computed scores to assess alignment between automated measures and human interpretation, supporting the use of social media as a proxy for publicly expressed urban experience.

The study further examines how these digitally expressed experiences relate to the built environment by incorporating measures of walkability, land use patterns, and accessibility to green space. Results reveal a strong positive relationship between sense of place and sense of community, while also highlighting significant spatial variation across locations. Importantly, the analysis identifies areas where high levels of accessibility and walkability do not correspond to strong expressions of place or community, revealing mismatches between physical infrastructure and lived experience.

By linking large-scale digital expressions with characteristics of the built environment, this study contributes a novel and scalable framework for understanding how urban form shapes social and experiential dimensions of place. The findings underscore the need for planning approaches that move beyond purely physical metrics to better account for how people perceive, use, and connect with urban spaces.

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Keywords: Sense of Place, Sense of Community, Image Analysis, NLP, Built Environment

MEASURING THE USEFULNESS OF AGENCY REFERRAL ADVICE USING A MULTI-AGENT LLM APPROACH

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When assessing a major permit application, planning authorities must consider a range of effects the development may have on traffic congestion, wildfire risks, flooding, pollution, local infrastructure, building design, and safety. The nature of these effects may require advice or agreement from another government agency. These requirements are generally known as concurrences and referrals. Referring permit applications to government agencies for advice is a key step in the major permit process. More than 20 New South Wales (NSW) government agencies in Australia provide advice to planners assessing major projects, and while timeliness of advice is important, poor-quality advice can cause significant delays and confusion. Since 2016, the NSW Department of Planning has engaged consultants to measure the usefulness of agency advice to promote improvements. Traditionally, this process has been a manual labor-intensive and expensive exercise.

Rapid advances in large language models (LLMs) and the recent shift to agentic LLMs offer potential to automate measuring the usefulness of agency advice, which could augment the labor-intensive manual coding work currently performed by planning consultants. Using multi-agent LLM architecture will not only automate the current manual process but may also lead to real-time reviews of advice for the government agencies writing the advice and the planners receiving the advice. By evaluating the performance of LLMs in a multi-class text classification task, this research addresses gaps in urban planning text analysis and contributes to a pathway for supporting planning's text-heavy functions. The study utilizes 126 agency advice letters, each human-coded on a scale of 1 (poor) to 5 (leading practice) across five criteria: prioritization, explanation, relevance, action, and professionalism. To benchmark the multi-agent LLM approach, 630 predictions generated by the LLM are compared to the human coding.

Our findings go beyond demonstrating the potential for implementing LLMs by actively engaging with critical debates surrounding the integration of LLMs in planning workflows. Central to the discussion is the use of human coding as a ground truth to evaluate the accuracy and consistency of LLMs. We explore the traditional process of humans writing rubrics for other humans and propose specific modifications to make the rubric style assessment framework more LLM-friendly. Finally, we discuss whether LLMs should replace planners in these types of planning workflows or function within a hybrid framework that enhances efficiency, reduces costs and improves collaboration between government agencies and planners. Overall, this study contributes to the emerging literature on LLM integration in urban planning by exploring the efficacy of automated text classification within real-world planning practice.

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Keywords: Large language models, Multi-agent architecture, Permit processing, Agency referral

MULTI-SCALE CNN SURROGATE MODELING FOR URBAN THERMAL COMFORT: A PLANNING SUPPORT SYSTEM WITH SCENARIO SIMULATION AND METAHEURISTIC OPTIMIZATION

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Individual Paper Presentation

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Urban planners increasingly face the challenge of integrating micro climate considerations into design decisions, yet practical tools for doing so remain limited. While computational fluid dynamics (CFD) tools such as ENVI-met can rigorously simulate pedestrian-level thermal environments, their specialized expertise requirements and high computational costs restrict practical adoption by urban planners operating under limited resources and hinder rapid evaluation of design alternatives. This study develops an AI-based planning support system that enables rapid prediction of pedestrian-level air temperature in response to urban form modifications and automated search for thermally optimized design configurations.

This system is built in two main steps. The first step involves developing a computer vision surrogate model that predicts hourly air temperature at the center of any 500m-by-500m area in Seoul, Korea. The model takes rasterized geospatial layers—typical shapefiles of building height, road network, and land cover which urban planners already routinely use—as multi-channel image inputs, with air temperature records from Seoul's city-wide sensor network as prediction targets covering summer (June–August 2025) and winter (December 2025–February 2026). We design a novel multi-scale convolutional neural network (CNN) with a custom weighted average pooling layer to capture how the spatial layout—not just the quantity—of urban form elements shapes local thermal conditions. Model performance is validated through spatially held-out validation samples, which currently demonstrates improved predictive accuracy over existing models in the literature.

The second step of this study pertains to developing a planning support system that uses the trained computer vision models as a core component. This system offers two main functions. First, the scenario simulation function allows planners to load geospatial data for any target area in Seoul, modify urban form inputs such as building height, building footprint geometry, and land cover to reflect their design alternatives, and assess how their design decisions affect air temperature, enabling scenario-based simulation. Second, the optimization function automates the search for thermally optimal configurations: users can set a predefined search space of urban form parameters (e.g., specifying the ranges of possible FAR incentives, setback requirement, street canopy cover), and let the system automatically search for the optimal urban form settings using a metaheuristic optimization algorithm coupled with the surrogate model to identify the optimum combination of urban form metrics that maximizes cooling effects in summer.

This study contributes to the emerging discourse on Urban AI by demonstrating how deep learning surrogate models can bridge the gap between computationally intensive environmental simulation and the rapid, iterative evaluation that characterizes urban design practice. The proposed system is expected to enable planners to incorporate thermal comfort as a tangible design criterion, moving climate-responsive urban design from specialized analysis toward routine practice.

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Keywords: Design optimization, air temperature, planning support system, computer vision

MULTIMODAL DETECTION OF URBAN RETROFITTING USING STREET VIEW IMAGERY AND DEMOGRAPHIC DATA

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Individual Paper Presentation

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Urban retrofitting, incremental, small-scale modifications to existing urban environments, has become a critical strategy for advancing sustainability, resilience, and equity in cities. However, systematically detecting these changes remains challenging because they occur at the microscale and are often not captured by traditional data sources such as satellite imagery or administrative records. This study addresses this gap by proposing a multimodal GeoAI framework, Vision Transformer-based Multimodal Urban Retrofitting Detection model (MURD-ViT), that integrates time-series street view imagery with demographic data to detect and classify urban retrofitting activities. Using large-scale Google Street View imagery from 2013 to 2023 (95,113 images and 87,333 retrofitting image pairs) and demographic indicators in Mecklenburg County, North Carolina, the framework combines a Vision Transformer (ViT) with a demographic multilayer perceptron to jointly model visual, temporal, and socioeconomic signals. The model identifies four categories of urban retrofitting (i.e., re-inhabitation, re-building, re-transportation, and re-capital) capturing diverse forms of urban change that are typically overlooked in top-down remote sensing approaches. Experimental results demonstrate strong performance, achieving an overall F1-score above 94%, indicating robust capability in detecting fine-grained urban transformations across heterogeneous spatial contexts. Beyond methodological contributions, this research advances planning practice by enabling scalable monitoring of urban retrofitting processes. The ability to identify where, when, and what types of retrofitting occur provides critical insights for evaluating redevelopment strategies, assessing spatial inequities, and supporting data-driven decision-making. More broadly, this work highlights the potential of proximate sensing and multimodal data fusion to capture microscale urban dynamics and contributes to the integration of GeoAI into urban planning and policy.

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Keywords: Urban Retrofitting, Vision Transformer, GeoAI, Street View Images, Geospatial Computing

PROTOTYPE-GUIDED BEHAVIORAL DISTILLATION OF LLM AGENTS FOR INTELLIGENT URBAN SIMULATION

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Individual Paper Presentation

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Urban simulation has long faced a fundamental trade-off between behavioral realism and computational scalability. Conventional agent-based models can efficiently simulate large populations, but they often rely on simplified behavioral rules. In contrast, large language model (LLM) agents can generate richer reasoning, adaptation, and social interaction, yet their computational cost remains prohibitive for city-scale applications. This paper presents a prototype-guided behavioral distillation framework that transfers behaviorally rich but expensive LLM agent reasoning into scalable urban simulation.

The study addresses three linked challenges: representing heterogeneous urban actors as a compact yet behaviorally meaningful set of social prototypes, converting situated multi-turn LLM interactions under dynamic environments into standardized behavioral trajectories, and distilling these trajectories into lightweight agents that preserve key action, interaction, and temporal decision patterns at much lower computational cost. The framework is organized into four layers. A prototype layer defines socially interpretable agent types through demographic attributes, social roles, activity chains, spatial preferences, decision constraints, and interaction rules. An LLM behavior generation layer combines structured prompts, environmental injection, and short- and long-term memory to produce sequential decision trajectories under changing urban contexts. These trajectories are standardized into state-action-interaction-outcome records and used as teacher data in a distillation layer, where lightweight surrogate agents are trained to approximate the behavioral policies of the LLM agents. The distilled agents are then deployed in large-scale urban simulation environments to examine emergent patterns under both routine and stress scenarios.

The framework is evaluated in terms of behavioral fidelity, computational efficiency, and the ability of distilled agents to reproduce key macro-level dynamics observed in LLM-based urban simulations. The results demonstrate a practical pathway from cognitively rich but costly agent reasoning to scalable simulation at the urban scale. More broadly, the study provides a planning-relevant computational framework for analyzing how heterogeneous social behaviors shape urban dynamics, resilience, and policy response under alternative scenarios. In doing so, it connects recent advances in generative AI with longstanding concerns in planning and urban modeling, including behavioral heterogeneity, scenario-based analysis, and the need for more socially grounded simulation tools.

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Keywords: Urban Simulation, LLM Agents, Behavioral Distillation, Agent-Based Modeling, Scenario-Based Planning

REVISITING THE "3" IN THE 3-30-300 RULE: A GEOAI-DRIVEN 3D FRAMEWORK FOR MEASURING WINDOW-VIEW GREEN VISIBILITY

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Track 1: AI in Planning
Individual Paper Presentation

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This study focuses on the importance of window-view greenery as a critical yet overlooked dimension of urban nature exposure. A growing body of research shows that visual contact with greenery contributes to mental health, cognitive restoration, and overall well-being. However, most existing measurements rely on overhead remote sensing (e.g., NDVI) or street-level imagery, which fail to capture how greenery is actually experienced from indoor environments, where people spend approximately 80-90% of their time. This limitation is particularly evident in the widely adopted 3-30-300 rule, which proposes that individuals should (1) see at least 3 trees from their residence, (2) have access to at least 30% tree canopy in their neighborhood, and (3) live within 300 meters of a high-quality public green space. While existing approaches often approximate this requirement using street-view imagery or coarse visibility indicators, it remains unclear how to accurately quantify whether individuals can truly "see three trees" from indoor perspectives. To address this gap, this study proposes a scalable GeoAI-driven 3D framework to quantify window-view green visibility from indoor perspectives. We operationalize the "3" component by measuring the proportion of visible greenery from indoor viewpoints rather than relying on discrete tree counts. The framework integrates 3D building localization, viewpoint simulation, and a fine-tuned DeepLabv3+ semantic segmentation model to identify vegetation pixels in simulated window-view images. Window-view green visibility is defined as the proportion of vegetation pixels within each window-view image, providing a continuous measure of perceived greenery exposure. Using Houston, Texas as a case study, we generated over 1.19 million simulated window views across more than 600,000 buildings. The results reveal clear vertical inequalities: window-view green visibility increases with floor height in low- and mid-rise buildings but does not consistently improve in high-rise environments. We further discover that vegetation and built environment jointly shape visual exposure. Tree canopy is strongly associated with higher visibility, while NDVI shows inconsistent or negative relationships, highlighting the mismatch between traditional metrics and human perception. Built environment characteristics, such as road density and building density, further influence these patterns. Overall, this study extends the "3" component of the 3-30-300 framework by providing a scalable, perception-oriented measurement of greenery exposure. The findings highlight the need for urban planning practices to move beyond planar metrics and incorporate vertical structure and indoor human experience to support healthier and more equitable cities. Future work can extend this framework to jointly quantify all three dimensions of the 3-30-300 rule, integrating visual exposure, neighborhood canopy coverage, and accessibility to green space within a unified, multi-scale assessment.

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Keywords: 3D Urban Modeling, Urban Green Exposure, Window-View Visibility, 3-30-300 Rule, GeoAI

SEEING LIKE A HUMAN: MODELING URBAN STREET PERCEPTION ACROSS GLOBAL CITIES

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Track 1: AI in Planning
Individual Paper Presentation

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Understanding how humans perceive urban streetscapes is essential for fostering inclusive and livable cities. While existing studies have often relied on pixel-level features (such as green coverage or building density) to model perceptual dimensions (like safety or beauty), these approaches are constrained by predefined vocabularies and fail to capture the semantic factors underpinning subjective human experiences. This study proposes a human-centered framework for modeling urban perception by integrating vision-language models and large language models to semantically interpret streetscapes from a human-like perspective.

We construct a multi-stage pipeline to model urban perception from street-level imagery. From a corpus of 10M images across 688 cities with 88,421 raters, we select representative city clusters and pair each image with six perception scores (beauty, safety, liveliness, depression, wealth, boredom). Images are standardized and described using Qwen-3.5 with perception-oriented prompts. GPT-5.2 extracts and normalizes semantic keywords, which are clustered with Sentence-BERT into ~100–300 interpretable factors, forming a semantic factor matrix (binary with TF-IDF weighted). Baseline features include pixel/segmentation indices and CNN embeddings. Associations between factors and perception scores are modeled via interpretable regressions (Elastic-Net, GAMs) and explainable ML (boosted trees with SHAP). Validation uses group k-fold by city, with multiple-comparison control (BH-FDR) and robustness checks.

We identified 142 semantic factors, of which 87 showed significant associations with at least one perceptual dimension (BH-FDR, $q < 0.05$). For beauty, green vegetation (Spearman's $\rho = 0.35$, $p < 0.01$) and clean building exterior ($\rho = 0.28$, $p < 0.05$) emerged as the strongest predictors, while for safety, bright lighting ($\rho = 0.31$, $p < 0.01$) had the most consistent effect. Cross-city analysis further revealed cultural differences: in East Asian cities, greenery-related factors explained over 20% of beauty variance, whereas in European cities, orderliness and architectural coherence explained nearly 18%. Compared with baseline pixel and segmentation features, semantic factor models improved explanatory power by an average of 12%. These findings demonstrate that semantic elements extracted through VLMs and LLMs can capture multidimensional, nonlinear aspects of perception that traditional pixel-level measures overlook.

Methodologically, this study advances perception modeling from structural metrics toward semantic interpretations of urban form. At the micro level, we identify key semantic elements and combinations that significantly influence specific perceptual dimensions. At the macro level, we explore how the distribution and impact of semantic factors vary across different urban and cultural contexts. The findings contribute to interpretable and human-oriented understanding of urban streetscapes.

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Keywords: Urban perception, Street view imagery, Semantic interpretation, Cross-city analysis, Large Language Models

SYMBIOTIC PLANNING THEORY: GOVERNING HUMAN-AI CO-CREATION IN URBAN PLANNING

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Track 1: AI in Planning
Individual Paper Presentation

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Planning theory has not yet adequately theorized what happens when artificial intelligence becomes an active participant in plan-making rather than a passive analytic tool. This paper argues that the growing use of generative and adaptive AI in urban planning exposes a central gap in the planning canon: rational, participatory, and co-design traditions offer important guidance on expertise, inclusion, and iteration, but they do not specify how machine-generated alternatives should be governed, contested, or authorized under democratic planning conditions. In response, the paper develops Symbiotic Planning Theory (SPT), a theoretical framework that positions AI as a bounded co-creative partner operating under human primacy, public contestation, and time-bound accountability.

The paper's central claim is that the key planning problem posed by AI is not automation, but governance at machine speed. As AI generates scenarios, reframes problems, and synthesizes stakeholder input at scales beyond human cognitive limits, planning theory must confront new questions of epistemology, power, and legitimacy: how planning knowledge is produced, whose values are encoded, and how democratic oversight can remain meaningful when option generation accelerates dramatically. SPT addresses this problem through a three-part mechanism—generative provocation, normative recalibration, and binding re-authorization—operationalized through the CORE framework: Collaboration, Options, Refinement, and Execution.

A Gainesville micromobility case provides process-tracing evidence for the theory. There, vendors complied with a 10% equity-zone deployment rule, yet the zone generated only about 3% of trips, revealing a "compliance trap" in which procedural success masked substantive inequity. Community engagement identified barriers including cost, payment exclusion, and competition from free transit; these inputs were then translated into binding equity constraints for a deep reinforcement learning model, and continued model use was tied to outcome-based performance indicators rather than compliance alone. The case demonstrates how AI can surface hidden biases in baseline optimization while democratic planning institutions retain authority to redefine goals, constrain models, and halt authorization when outcomes fail.

For planning theory, the paper contributes a framework for understanding human-AI co-creation as a new mode of planning practice that is neither technocratic automation nor conventional participation. More broadly, it argues that planning scholarship must move beyond treating AI as merely instrumental and instead theorize the institutional conditions under which algorithmic systems can be made accountable to public values. This intervention speaks directly to contemporary debates in planning history and theory about expertise, legitimacy, and the future of democratic plan-making in increasingly computational governance contexts.

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Keywords: democratic governance, artificial intelligence, symbiotic planning theory, accountability, model pluralism

TEACHING AI TO THINK LIKE A PLANNER

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Track 1: AI in Planning
Individual Paper Presentation

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Artificial intelligence tools like ChatGPT, Claude, and Gemini are opening up real possibilities for how planning is taught and practiced, but the field has not yet developed significant strategies to build, use, or evaluate AI systems that actually understand planning work, principles, practice, and theory. This article describes a effort developed over the last few years to do exactly that.

We built three custom AI tools and planning assistants, each trained on a specific body of planning documents: one focused on Greenville, South Carolina's planning history (drawing on 140 master plans and city council minutes and records), one designed to help with resilience comprehensive planning in South Carolina (using 200 comprehensive and resilience plans from across the state), and one that analyzes how the planning profession has represented itself visually through decades of JAPA and JPER journal covers. Altogether, these tools were trained on more than 640 documents and images.

The core idea behind this work is that a general-purpose AI becomes genuinely more useful when it has been deeply exposed to the specific language, values, and ways of thinking that define a field. We call this process Disciplinary Knowledge Embedding, essentially, teaching an AI not just facts about planning, but how planners reason, what they prioritize, and how they evaluate tradeoffs.

To test whether this approach works, we looked at how graduate planning students used these tools in coursework, how state agency staff engaged with them in practice, and how AI-generated analysis compared to what human experts produced on the same material. The results were encouraging but honest: AI can be a genuinely useful thinking partner for planners, but it has real limitations and should not be used to replace human creativity and reasoning.

We conclude with practical advice for educators and practitioners who want to build similar tools, covering everything from which documents to include, to how to write effective prompts, and how to check whether the AI is actually getting things right. We also lay out the questions the field most needs to answer as these tools become more common.

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Keywords: Generative AI, Planning education, Human-AI collaboration, Planning Assistant, Planning Pedagogy

TOWARD CLIMATE-RESPONSIVE CAMPUSES: A DIGITAL TWIN FRAMEWORK FOR HIGH-RESOLUTION HEAT STRESS FORECASTING AND PLANNING

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Track 1: AI in Planning
Individual Paper Presentation

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Extreme heat has become an increasingly urgent planning challenge, especially in campus environments where dense pedestrian activity, diverse land cover, and uneven shading conditions create highly localized thermal risks. To support climate-responsive planning and proactive heat mitigation, this study develops a human-centered digital twin framework for high-resolution forecasting of outdoor heat stress. Using Texas A&M University as a testbed, we integrate physics-based microclimate simulations, multimodal spatial data, meteorological observations, and a Spatiotemporal Vision Transformer (ST-ViT) model to predict the Universal Thermal Climate Index (UTCI) at 1-m spatial resolution and hourly temporal granularity.

The framework first uses the SOLWEIG model to generate high-resolution UTCI maps during a 14-day summer heatwave period, including pre-heatwave, heatwave, and post-heatwave stages. These simulations are then used to train the ST-ViT model, which learns complex spatiotemporal dependencies from land cover, building morphology, tree structure, meteorological inputs, and historical UTCI sequences. Results show pronounced spatial and temporal heterogeneity in campus heat stress. Impervious surfaces, particularly parking lots and paved areas, consistently exhibit the highest thermal burden, while tree-covered, shaded, and water-adjacent spaces provide notable cooling benefits. During the heatwave period, peak UTCI reached 47.99°C at 17:00, revealing severe afternoon exposure risks across much of the campus.

Compared with CNN+LSTM and U-Net+LSTM baselines, the ST-ViT model achieved the best predictive performance, with an RMSE of 2.163°C, MAE of 1.770°C, and MAPE of 5.811%. It also substantially improved computational efficiency, producing a 1200 x 1200 prediction in about 7.2 seconds, making near-real-time digital twin applications feasible. The resulting platform supports interactive heat visualization, localized forecasting, and heat-aware route recommendation.

By coupling AI prediction with digital twin technology, this study demonstrates a scalable planning tool for identifying heat hotspots, guiding resource allocation, and supporting climate-adaptive design and mobility strategies in campuses and other fine-grained urban settings. Beyond its technical contribution, the framework offers practical policy value for heat resilience planning by helping decision-makers prioritize heat mitigation investments, such as shading infrastructure, tree planting, cool pavements, and the redesign of pedestrian routes in high-exposure areas. It also provides an evidence base for integrating thermal comfort into campus master planning, emergency heat response, and longer-term climate adaptation policies, thereby advancing more proactive, place-based, and human-centered approaches to resilient urban governance.

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Keywords: digital twins, heat waves, outdoor heat exposure, climate adaptation, Transformer

TOWARDS A WIDER SETTING: LEVERAGING LARGE LANGUAGE MODELS TO INFORM PLANNING-ORIENTED ANALYSIS OF URBAN HERITAGE CONTEXTS

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Track 1: AI in Planning
Individual Paper Presentation

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The effective integration of heritage conservation into broader urban development frameworks necessitates a systematic evaluation of how planning instruments address the "wider setting" of heritage sites. Despite the importance of the Historic Urban Landscape (HUL) approach, traditional methods for auditing conservation documents rely on resource-intensive manual interpretation, which lacks the scalability required for evidence-based planning practice. This study develops an AI-driven analytical framework that utilizes Large Language Models (LLMs) to perform a high-throughput, planning-oriented evaluation of heritage conservation narratives. By analyzing a large body of local conservation documents from World Heritage sites, we operationalized the HUL dimensions into quantifiable planning indicators to examine how urban context considerations are structurally represented. Our findings reveal critical imbalances in current planning-related discourses. While spatial organization and the built environment remain dominant, there is a systemic underrepresentation of ecological and hydrological relationships as these are essential elements for urban resilience and sustainable land-use planning. Furthermore, the analysis identifies significant discrepancies between local-level planning documents and international expert evaluations, highlighting an institutionalized gap in the integration of interdisciplinary knowledge within local planning processes. Beyond providing empirical evidence, this research demonstrates the utility of LLMs as a diagnostic tool for planners, capable of translating vast volumes of unstructured text into actionable policy insights. By bridging the gap between high-level conservation principles and on-the-ground planning priorities, the proposed framework supports a more integrated, data-informed approach to managing heritage within the complexities of modern urban development.

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Keywords: Large Language Models, Wider Setting, Urban Contexts, Local Conservation Texts,

UNDERSTANDING URBAN DYNAMICS THROUGH 311 COMPLAINT DATA: A MACHINE LEARNING MODEL OF NEIGHBORHOOD CHANGE AT SCALE

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Track 1: AI in Planning
Individual Paper Presentation

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Resident-generated reporting data represents a significant source of information on building and neighborhood conditions at high spatial and temporal resolutions. Specifically, '311' reports, which account for resident complaints about problems in their buildings and communities, provide near-real-time data on both actual conditions in an area and residents' perceptions of those conditions (White & Trump 2018). Previous research has explored using this data to predict problems and assess the impact of the built environment on health outcomes to more efficiently allocate city services, and to understand bias in resident-generated data (Boxer et al. 2025, Kontokosta & Hong 2021, Zhao et al. 2026; Theall et al. 2022; Zhao et al. 2026).

Here, we explore whether it is possible to utilize resident complaint data to understand pattens of neighborhood change at scale. To do so, we define a neighborhood typology of urban quality-of-life and predict changes in neighborhood composition over time. This is important because current methods to understand neighborhood conditions tend to rely on static, lagging indicators, such as surveys, often aggregated to relatively course areal units with infrequent or irregular cadence. We argue that machine learning models using higher spatial-temporal resolution data can be used to assist policymakers with more timely insight into neighborhood conditions, quality-of-life issues, and shifting demographic and socioeconomic patterns, both within and between cities.

We collect, clean, and standardize data from 26 North American cities, representing millions of complaint reports from 2011 to 2025. We integrate these data with demographic and socioeconomic information, as well as mobility data to understand visitation patterns and dynamic populations densities. Our methodology starts with using a Natural Language Processing algorithm to standardize cross-city 311 report categories and subcategories. We then apply cluster analysis to identify common complaint activities across neighborhoods and cities and develop a neighborhood typology based on the frequency, nature, and extent of reported conditions and problems, as well as the influence of spatial interactions in complaint reporting. Finally, we examine changes in complaint reporting and associated neighborhood typologies to assess whether observed changes can be used as a predictor of neighborhood change, focusing on the dimensions of educational attainment, median income, and median house price. Our analysis is comparative across regions, cities, and neighborhoods, as we seek to better understand the common structure of complaints and condition across heterogeneous social, economic, political, and built environment contexts.

Our preliminary findings indicate that the composition of complaints is correlated with socioeconomic and demographic characteristics of residents, land use and density, and seasonal and other temporal variations, particularly those connected to weather and natural events. Early indications suggest reporting bias in 311 data based on both what is reported and how often residents engage with local government across neighborhood contexts. Our results support the use of bias-adjusted 311 data as an early warning indicator of changing neighborhood conditions and composition that can be connected to human decision-making for resource and city service allocation, community planning, and housing advocacy.

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Keywords: Urban AI, 311 data, complaint reporting, neighborhood dynamics, machine learning

URBAN FOUNDATION MODELS FOR URBAN ANALYTICS AND APPLICATIONS: A SYSTEMATIC REVIEW

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Track 1: AI in Planning
Individual Paper Presentation

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In recent years, the rapid development of large pre-trained models, also known as foundation models (FMs), such as Large Language Models and Vision Foundation Models, has profoundly reshaped data-driven research in Artificial Intelligence (AI) and Machine Learning (ML). Furthermore, with the application of these models to urban contexts, Urban Foundation Models (UFMs) have emerged as a novel conceptual and methodological framework. By leveraging large-scale, multi-source, and multimodal data, UFMs demonstrate increasing potential to support a wide range of urban analytics and applications, including land-use and transportation analysis and planning. Existing studies primarily approach Urban Foundation Models from technical perspectives, particularly within computer science and remote sensing. Moreover, although some review or survey papers on UFMs exist, there is currently no systematic review that comprehensively synthesizes the research progress of UFMs in urban domains, especially from the perspective of urban studies and urban planning. In addition, current studies tend to focus on isolated tasks and model performance, with limited effort devoted to systematically integrating findings across data, models, and applications. To address these gaps, this study conducts a systematic review of Urban Foundation Models in urban analytics and application contexts, following the PRISMA guidelines. Based on the Web of Science and Scopus databases, a comprehensive literature search was conducted in February 2026, identifying 2,263 records through the database search process. After duplicate removal, title and abstract screening, and full-text assessment, we included a total of 30 studies in the final database. By employing a combined bibliometric and critical review approach, the results indicate that most studies have been published within the past three years and are predominantly contributed by Chinese research institutions. These studies are primarily concentrated in domains such as remote sensing, GIScience, and data science, with relatively limited attention to urban planning or related areas. The research progress of UFMs is then synthesized across four dimensions, with the main findings as follows: (1) Data characteristics. Data sources are characterized by multi-source, multimodal, and spatiotemporal integration, primarily including remote sensing data, street-view imagery, and traffic data. (2) Model design. The main types of UFMs include Urban Vision FMs, Urban Language FMs, and Urban Spatiotemporal FMs. Most are developed based on large-scale pretraining paradigms, such as the Segment Anything Model (SAM), Contrastive Language–Image Pretraining (CLIP), and Large Language Models (LLMs). (3) Urban applications. Major application domains include urban function or land-cover change detection, building extraction, spatiotemporal prediction, and human mobility pattern modeling. (4) Generalization and validation. Most UFMs in the selected studies demonstrate cross-city and cross-dataset validation, as well as zero-shot capabilities, although their code is often not publicly available. Furthermore, from the perspective of urban analytics and planning, this study identifies five key research gaps and challenges of UFMs and proposes a research agenda and promising directions for future work. These findings highlight the need to integrate planning knowledge, geospatial thinking, and cutting-edge AI algorithms into the development and application of UFMs. Given their cross-city and cross-dataset generalization capabilities, UFMs demonstrate strong potential as powerful tools for future urban analysis and planning support. This study contributes to bridging the gap between rapidly advancing AI technologies and knowledge production in urban planning and provides a theoretical foundation, practical guidance, and a future research vision for the application and development of UFMs in urban contexts.

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Keywords: Urban Foundation Models, Urban Analytics, Urban Application, Systematic Review, Artificial Intelligence

USING LLMS TO CREATE AN ANTI-DISPLACEMENT POLICY INVENTORY IN CALIFORNIA: LESSONS LEARNED

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Track 1: AI in Planning
Individual Paper Presentation

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Residential displacement is a significant issue in cities across the United States, ranging from households being priced out of neighborhoods to being forcibly evicted from their homes. Jurisdictions have enacted anti-displacement policies in response to help keep residents in place, including tenant protections, such as rent control and just cause eviction policies, and production strategies, such as developing subsidized affordable housing. While there has been research on certain well-established policies like rent control (Diamond et al. 2018; Stacy et al. 2025) and temporary protections during the pandemic (Collinson et al. 2024; Manville et al. 2023), information on the presence of anti-displacement policies is often piecemeal, and usually requires planners, researchers, and residents needing to look up the policies of individual jurisdictions one by one.

The Urban Displacement Project set out to create a policy inventory of anti-displacement policies of all the jurisdictions in California, consisting of 21 policies in over 500 cities and counties. Following Bartik, Gupta, & Milo (2023)'s approach to using LLMs for creating a housing-related regulatory dataset, we used two methods to create the policy inventory: one team of students doing a manual search, and one team of students creating an AI chatbot to scrape housing code. There are several centralized websites that host municipal code, and the data science team used web-scrapers to scrape code information for use with Google's Gemini 2.5 Pro.

This policy inventory is useful as a resource for advocacy organizations, policymakers, and researchers interested in understanding the prevalence and effectiveness of anti-displacement policies.

Both methods for composing the anti-displacement policy inventory required cleaning, and there were important lessons learned for other researchers, planners, and policymakers interested in using LLMs to gather information on the prevalence of policies important to planning.

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Keywords: Anti-displacement Policy, AI Chatbots, Artificial Intelligence, Housing Policy, Policy Inventory

USING LLMS TO WRITE A HEAT ACTION PLAN: LIMITATIONS AND OPPORTUNITIES

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Track 1: AI in Planning
Individual Paper Presentation

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Preparing climate change action plans is a complex, data-driven, and contextually specific endeavor aimed at preventing losses to people, habitats, and places. The use of large language models (LLM) and generative artificial intelligence (AI) has significantly increased across a variety of disciplines, aiming to replace or supplement extensive tasks with automation. With advancements in computational capacities and access to LLMs trained on granular climate data, the question remains: if planners were to use LLMs to write their plans, what would implications be for plan quality?

We take an exploratory step in this direction by prompting ChatClimate (climate trained LLM 1), ClimateGPT (climate trained LLM 2), and ChatGPT (control, not climate training) to write portions of a heat action plan for Tucson (with publicly available, extensive and granular heat data) and Flagstaff (without extensive public heat data), Arizona. Using the recently published and award-winning Tucson Heat Action Roadmap (2024) as an example of a high-quality plan, we compared the quality of LLM-generated plan components. We organize our findings around three questions: (1) How does the quality and accuracy of a heat-action plan prepared by climate LLMs and non-climate LLM compare with the original? (2) What types of data training is needed to improve the quality of the climate LLMs' plan? (3) How does public data access influence the quality of LLM-generated plan outputs?

The contribution of this study is twofold. First, this is a novel systematic investigation into the implications of delegating plan-making to current open-access LLMs. Second, we project data adjustments needed in LLMs to prepare a high-quality heat action plan. The findings suggest that despite recent advancements in LLM capabilities, the quality of AI-generated plan components is still highly dependent on the access to high-quality climate data. LLMs are insufficient at communicating place-specific climate planning strategies and are generally unpredictable. Increasing access to place-specific climate data and training LLMs on a network of plans could improve output quality and allow for more internal consistency across planning documents.

Future research should explore the use of LLM for other plan components like implementation tracking, internal consistency across a network of plans, change in LLM performance before and after planning-specific data training, and merits of a broader deployment of LLM in the plan making process.

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Keywords: Climate Planning, Large Language Models, Generative AI, Plan Evaluation, Heat Resiliency

WHAT CITY CODES SAY ABOUT CLIMATE RISK

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Track 1: AI in Planning

Individual Paper Presentation

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Climate change is increasing the frequency and severity of flooding, wildfires, extreme heat, and storms. In the United States, the number of billion-dollar disasters has risen from three per year in the 1980s to more than twenty in recent years (NCEI, 2024). Municipal codes are the primary instrument through which cities regulate exposure to these hazards, shaping what can be built, where, and to what standard. Hazard-related regulations reduce damages when in place (Simmons et al., 2018; Baylis and Boomhower, 2026), but codes are costly to update and slow to change.

This paper examines how U.S. cities address hazards in their municipal codes and whether these regulations align with local risk. We compile the full text of municipal codes for 174 U.S. cities, yielding more than 3 million sentences. Using a large language model–based classification framework, we score each sentence for its relevance to the 18 hazard types defined by FEMA's National Risk Index (NRI), as well as for the type of regulatory mechanism employed (e.g., zoning, building code, environmental regulation, emergency management). We then compare each city's hazard-related code content to its local risk profile to identify which hazards are addressed in the code, which are absent, and where the gaps are largest.

We find that municipal codes largely fail to address natural hazards. 95% of cities lack any provisions for at least one of their top five hazards — 94% of hail-exposed cities have no hail provisions, and 60% of heat-wave-exposed cities have nothing to say on heat. Where hazard text does exist, it is overwhelmingly about flooding, and a substantial share consists of federal boilerplate replicated verbatim across cities. For non-flood hazards, cities rely on emergency management language, such as evacuation procedures and disaster response, rather than on building standards or zoning requirements that shape development.

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Keywords: climate adaptation, municipal codes, large language models, natural hazards,

WHAT DO VISION-LANGUAGE MODELS KNOW ABOUT URBAN PERCEPTION? A MECHANISTIC INVESTIGATION

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Track 1: AI in Planning
Individual Paper Presentation

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When an AI model judges a street as unsafe, should planners trust that assessment? Vision-language models (VLMs) such as Contrastive Language-Image Pre-training (CLIP) are increasingly adopted to assess urban perception at scale without training data (Zhang et al., 2025; Wu et al., 2025). However, all existing validation correlates model final outputs with human ratings without examining what happens inside the model (Wedyan et al., 2025; Zhang et al., 2025). Whether VLMs encode perception as genuine internal structure or merely reproduce surface statistical regularities remains unknown. This study opens the black box by asking, “Are perception concepts encoded as identifiable structures within VLMs, and if so, how is this encoding organized?”

To answer this, we applied the linear representation hypothesis, where semantic concepts correspond to linear directions in activation spaces (Park et al., 2023) to test whether six perception dimensions, safety, liveliness, beauty, wealth, desolation, and monotony, are recoverable from VLM internals in a zero-shot manner, meaning without any training on human perception data. For each dimension, a direction vector was constructed from an antonym text pair via CLIP's text encoder. Image representations (CLS tokens) were then extracted from every transformer layer of multiple CLIP variants differing in scale, domain, and training language and projected onto these directions, producing a single perception score per image. The direction vectors that define each perception dimension were constructed purely from language. These scores were then compared against an independent human benchmark, which is TrueSkill ratings from Place Pulse 2.0, a dataset of 10,000 Google Street View images where human pairwise comparisons are converted to continuous perception scores (Dubey et al., 2016). Because the two sets of scores were produced completely independently, one from language-defined directions and the other from human judgments, any correlation indicates that the model has internally organized streetscape features along perception-relevant dimensions. We further characterize encoding through feature weight distribution, geometric separability, and spatial attention entropy.

Our results establish that VLMs encode street perception, revealing four structural properties. First, at each model's best-performing layer, zero-shot scores show statistically significant, though low to moderate-low, correlations with human ratings (ρ=0.10 for monotony to ρ=0.32 for beauty), emerging entirely without perception training, making their presence substantively significant. Second, layer-wise probing shows correlations near zero at early layers, rising to peaks at middle-to-deep layers, which suggests perception encoding is layer-dependent and emerges only at deeper representational levels. Third, feature attribution shows that direction vectors distribute broadly rather than concentrating in specialized dimensions, which means perception is likely a distributed emergent property. Fourth, across all variants, the models treat safety, beauty, and liveliness as genuinely distinct qualities rather than collapsing them into a single 'good place/bad place' rating. Additionally, spatial attention distributes broadly across the image rather than concentrating on localized regions.

Theoretically, this paper bridges mechanistic interpretability and urban perception research, a connection rarely explored in planning scholarship. Empirically, it provides new evidence that VLMs contain internally organized, dimension-specific perception representations, moving validation from behavioral correlation to representational structure. For planning practice, two implications follow. First, model encoding strength varies by dimension, so practitioners should not treat all VLM results as equally reliable. Second, distributed encoding cautions against assuming isolated interventions will predictably shift perception scores.

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Keywords: Urban Perception, Vision-Language Models, AI Interpretability, Street Environment, Representation Probing

WHEN AND HOW SHOULD HUMANS INTERVENE? TRADE-OFFS AMONG TIME, INTERPRETABILITY, AND ACCURACY IN HOUSING ENGAGEMENT DATA

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Track 1: AI in Planning
Individual Paper Presentation

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Artificial intelligence has been increasingly applied in planning research and practice to process large volumes of textual data, such as plans, public comments, and participatory records (e.g., (Davis et al., 2025; Fu & Li, 2025; Reades et al., 2025). Yet a central challenge remains: AI-based text analysis methods operate as black boxes, making it difficult for planners to judge when results are credible, how much human intervention is needed, and what is gained or lost when efficiency is prioritized over interpretive depth. Prior planning research has shown that natural language process (NLP) methods can substantially reduce labor (Lore et al., 2024), but also that fully automated approach often struggle with nuanced, weakly structured, and context-dependent texts. Recent studies on large language models (LLMs) further suggest that performance is highly sensitive to prompt design, and that human participation is particularly helpful for complex tasks involving planning-specific terminology (Rong et al., 2025).

This paper asks two questions: (1) At what stages, and in what forms, can human intervention most effectively improve LLM performance? (2) How do tradeoffs among human time input, interpretability, and accuracy vary across tasks and data sources with different levels of complexity and structure? To answer these questions, we develop a comparative framework using three types of housing engagement data collected in Vancouver, including referral (policy) reports, online public comments, and public hearing transcripts. We examine three analytical tasks, including information extraction, sentiment analysis, and topic coding, using open-sourced LLM models, such as Gemma. These data sources differ in both structure and interpretability: referral reports are formal and structured; online comments are shorter but more fragmented; and hearing transcripts are long, fragmented, and rhetorically complex.

Methodologically, we compare varying levels of human involvement within a hybrid human-LLM pipeline, including topic coding, targeted sample labeling, iterative prompt refinement, shots/examples design, and codebook/category clarification. We evaluate their effects on accuracy, human time investment, and interpretability of both inputs and outputs. Building on prior work, we treat interpretability not simply as output readability, but as the extent to which public inputs and results can be understood and distinguished consistently by human readers.

Our findings show that more human input does not uniformly improve outcomes. In relatively structured and easier to interpret tasks (e.g., information extraction from policy reports), human intervention yields only modest gains over zero-shot or lightly specified prompting. By contrast, in tasks with data that are harder to interpret, for example the multi-label topic coding with overlapping and ambiguous topic boundaries, iterative human involvement becomes essential. Here, prompt refinement and carefully selected positive/negative examples significantly improve performance, while the “explicit-only” rule help reduce under- and over-implying errors effectively. At the same time, unlike conventional human coding, LLM-assisted methods do not converge toward full consensus. Instead, it functions as an iterative negotiation between human coders and the LLMs model, with persistent disagreement largest for categories that are conceptually ambiguous. Our ongoing work is disentangling the sources of these disagreements to better understand why some “residuals” remains difficult to eliminate.

This paper will contribute a practical guide for planners using AI to analyze public engagement data. It shows where human effort matters most, where it matters least, and how planners can allocate time strategically to improve the accuracy without sacrificing the scalability of LLMs.

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Keywords: Large Language Models, public engagement, human-in-the-loop, interpretability, housing planning

CRACKING THE CODE OF ZONING CODES: AGENTIC AI FOR STRUCTURED KNOWLEDGE EXTRACTION FROM ZONING ORDINANCES

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Track 1: AI in Planning
Research-in-Motion Presentation, Research currently in process

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Cities face intersecting crises: a deepening housing affordability gap, growing pressure to adapt land use for climate resilience, and the need to accommodate emerging uses from urban agriculture to electric vehicle infrastructure. Zoning, the primary regulatory instrument governing what can be built where and how, sits at the center of these challenges (Bronin, 2024). Yet updating zoning codes remains stubbornly manual. Planners must read through hundreds of pages of heterogeneous legal text, survey how peer jurisdictions address similar issues, and trace how a proposed change to one provision ripples through cross-referenced sections, definitions, and conditional clauses. These persistent inefficiencies call for computational infrastructure that can represent, query, and analyze the regulatory logic of zoning documents.

Recent work has begun applying computational methods to zoning text, including NLP to classify zoning districts for a national atlas (Axelrod et al., 2023) and to measure the semantic similarity of municipal codes to form-based code principles at scale (Salazar-Miranda and Talen, 2025). These efforts demonstrate tractability but share two limitations: each targets a single dimension of zoning rather than representing the full regulatory logic of an ordinance, and each produces document- or district-level summary measures rather than the provision-level structured representations that capture conditional rules, cross-references, and exceptions planners must actually navigate.

We present Rosetta, an agentic AI system that transforms unstructured zoning ordinances into knowledge graphs, networks where regulatory entities (districts, uses, standards, procedures) and their relationships are explicitly encoded as interconnected nodes and predicates. This mirrors the inherent structure of zoning codes: interconnected webs of provisions rather than linear documents. Unlike traditional Retrieval-Augmented Generation (RAG) pipelines that chunk documents into pieces and rely on semantic similarity (Edge et al., 2025), Rosetta follows an orchestrator-worker architecture that leverages each document's table of contents to traverse sections naturally, preserving regulatory context at extraction time. At each leaf section, a sub-agent equipped with document navigation tools (search, cross-reference lookup, definition resolution) reasons freely over the source text in an iterative mode, extracting entity-relationship triplets according to a unified ontology that ensures interoperability across jurisdictions. For downstream query, graph optimization algorithms retrieve the minimal connected subgraph capturing the regulatory neighborhood relevant to a question, preserving hierarchical dependencies that chunk-based methods discard.

We validate on the Michigan Energy Zoning Database (University of Michigan, 2024), an independently collected dataset of 1,773 expert-labeled entries documenting renewable energy permissibility across Michigan jurisdictions, alongside automated benchmarks derived from permitted-use tables in source documents. Early results show the system recovers structured regulatory information from heterogeneous zoning formats and surfaces cross-reference dependencies invisible to conventional retrieval. For practitioners, Rosetta reduces the labor of code

interpretation, cross-jurisdictional benchmarking, and impact analysis. For researchers, the resulting graphs enable systematic comparison of regulatory patterns at a scale previously impractical.

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Key Words: zoning, knowledge graphs, large language models

PREDICTING PSYCHOLOGICAL RESPONSES TO URBAN GREEN SPACES: A MACHINE LEARNING APPROACH USING EEG DATA

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Track 1: AI in Planning
Research-in-Motion Presentation, Research currently in process

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Living in urban areas is increasingly associated with adverse effects on psychological health (Elsadek et al., 2019). Urban residents are frequently exposed to overcrowding and an accelerated pace of life, while experiencing limited contact with nature. These conditions collectively contribute to elevated levels of anxiety, stress, and depression. To address these concerns, incorporating natural elements into urban environments has been suggested as a way to alleviate psychological distress.

A growing body of research in environmental psychology has documented that exposure to urban green spaces is associated with improvements in affect, stress reduction, and cognitive restoration (Rhee et al., 2024). These benefits have been assessed largely through self-reported measures. However, these measures are vulnerable to recall and response biases and are limited in their ability to capture real-time and objective physiological changes during environmental exposure. To address these limitations, neurophysiological measures such as EEG have been increasingly adopted to complement self-reported measures. For instance, Ma et al. (2024) reported that exposure to indoor green walls was associated with improved emotional and cognitive outcomes, along with increased frontal asymmetrical activity under greener conditions. Kang and Yoon (2026) also documented that urban green infrastructure improved mood states and elicited higher theta- and beta-band power across green spatial settings. Despite these methodological advancements, EEG data and self-reported measures are often analyzed without an integrated analytical framework, limiting our ability to understand how neural responses correspond to subjective experience. While some studies report associations between physiological signals and self-reported psychological responses (Gao et al., 2025), these relationships are often weak, vary across measures and brain regions, and lack consistent empirical support. As a result, it remains unclear which EEG-derived features across brain regions are most strongly associated with self-reported psychological outcomes, and whether these neural indicators can be meaningfully interpreted in relation to subjective psychological experience.

Against this backdrop, this study aims to establish the relationship between EEG-derived features and self-reported psychological responses to urban green space exposure. Specifically, the study pursues three objectives: 1) to determine whether EEG-derived features across brain regions are significantly associated with self-reported psychological responses; 2) to evaluate whether ML models based on EEG-derived features can achieve meaningful prediction accuracy for these responses; and 3) to compare how feature importance and model accuracy vary across psychological measures, such as affect, stress, and restoration.

To achieve these objectives, we conduct a human-subject experiment. The participants are exposed to images of urban green spaces while EEG recordings and self-reported outcomes are collected. Multiple EEG features are extracted, including band power, frequency band ratios, asymmetry indices, and differential entropy, then analyzed through a three-stage approach. First, we statistically test whether exposure to urban green space images leads to significant changes in EEG-derived features and self-reported psychological outcomes. Second, we examine the association to identify neural indicators related to psychological responses. Third, ML models are developed to predict psychological responses from EEG-derived features and to compare model performance across psychological measures.

We hope that this study will contribute to a more comprehensive understanding of neurophysiological responses to urban green space exposure. These findings may inform the design and evaluation of urban green spaces by incorporating evidence on how environments are experienced at both physiological and perceptual levels.

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Key Words: Machine learning, Urban green space, Electroencephalography, Psychological responses, Experimental study

THINKING AGENTS: INTEGRATING LARGE LANGUAGE MODELS INTO AGENT-BASED SIMULATIONS OF URBAN LAND-USE CHANGE

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Track 1: AI in Planning
Research-in-Motion Presentation, Research currently in process

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Understanding land-use change (LUC) is central to urban planning, as it shapes urban growth, infrastructure investment, and environmental and social outcomes. Agent-based models (ABMs) are widely used to simulate these dynamics by representing heterogeneous actors and their interactions. However, conventional ABMs remain limited in capturing the adaptive, multi-step, and text-informed reasoning that characterizes real-world development decisions. Most rely on simplified behavioral rules, static utility functions, or threshold-based heuristics, and rarely incorporate qualitative information such as zoning codes, planning documents, or regulatory narratives. These limitations reduce both behavioral realism and policy relevance.

This paper introduces a novel "language-enabled" agent-based modeling framework that integrates large language models (LLMs) into simulations of urban land-use change. In this framework, agents are no longer governed solely by pre-defined rules but instead use LLMs to interpret planning regulations, evaluate development opportunities, and generate context-sensitive decisions. By combining structured spatial data (e.g., parcel characteristics, land values, hazard exposure) with unstructured planning texts (e.g., zoning provisions and development constraints), the model enables agents to perform multi-step reasoning, weigh trade-offs, and produce explicit decision rationales. This approach enhances both behavioral realism and model transparency.

The framework is applied to Tauranga, New Zealand, a rapidly growing coastal city facing development pressures and environmental constraints. Using parcel-level spatial data, zoning information, property valuations, and hazard indicators, the model simulates residential development from 2021 to 2025. Three types of developers—small-scale, medium-sized, and large corporate—are represented, each with distinct capacities and strategies. At each timestep, agents evaluate subsets of parcels using LLM-based reasoning informed by both parcel attributes and the Tauranga City Plan. The model records both development outcomes and the reasoning processes underlying each decision.

Model performance is evaluated by comparing simulated development patterns with observed parcel-level outcomes using precision and recall metrics. In addition, qualitative analysis of agent reasoning logs provides insight into how developers interpret regulations and balance risk, cost, and feasibility. Results indicate that the language-enabled ABM can reproduce key development patterns while offering more interpretable and behaviorally plausible decision processes than traditional approaches.

This research contributes to planning scholarship in three ways. First, it advances urban modeling by integrating language-based reasoning into ABMs. Second, it bridges quantitative simulation and qualitative planning knowledge by operationalizing textual regulations within models. Third, it improves model transparency, supporting more communicable and policy-relevant simulations. More broadly, the study demonstrates the potential of LLM-integrated simulation as a new paradigm for understanding and guiding urban development.

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Key Words: Urban AI, Agent-based Modeling, Large Language Models, Land Use Simulation

TRANSLATING GIS INTO TEXT: IDENTIFYING SPATIAL RELATIONSHIPS AND REASONING CAPABILITIES OF LLMS FOR PLANNING SUPPORT

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Research-in-Motion Presentation, Research currently in process

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Large language models (LLMs) have potential to support more data-driven urban planning, yet it is unclear whether general LLMs, such as ChatGPT and Gemini, can meaningfully interpret physical space without spatially specialized training. However, LLMs lack an understanding of geospatial scenes because they cannot accurately recognize coordinate values or grasp implicit spatial relationships (Wang et al., 2026). Recent research has focused on spatial LLMs (Chen et al., 2026; Feng et al., 2025), and prior studies suggest that providing text-rich location descriptions and textualized spatial data can outperform raw spatial data or coordinates alone (Feng et al., 2025; Rohin Manvi et al., 2023). However, training new spatial models is computationally expensive, whereas LLMs are optimized for language. We therefore study whether spatial data can be reformulated as text so that existing LLMs can be repurposed through prompting alone for planning-relevant spatial analysis without fine-tuning or new model development. Similarly, Cardiel et al. (2024) convert the outputs of a visual language model that detects objects in an image into text data and provide them to LLMs to process complex text queries, such as relationships between objects or spatial descriptions, which the visual language model failed to handle. This study presents a preliminary evaluation framework that converts land use and land cover (LULC) shapefile data into grid level text and tests whether LLMs can identify complex spatial information and support planning-relevant spatial reasoning by translating implicit coordinate relationships into text. Using LULC data from the Uijeongbu–Dobong area, which spans Seoul and Gyeonggi Province, we divide the study area into 2,420 100×100 grids, assign IDs, and serialize each grid into a text-based dataset containing land cover classes, area, area ratios, and WGS 1984 coordinates. We then provided Gemini with the textualized dataset as a file and conducted our study using targeted prompting. A prompt framework clearly distinguishes hierarchical land cover classifications from actual spatial relations and requires calculation based on a coordinate system and empirical reasoning. Evaluation proceeds in two stages. First, we assess spatial perception and operations, including attribute extraction, numerical comparison, identification of absolute and relative locations, distance and directional calculation, as well as adjacency and inclusion within a specific radius. Second, we test spatial reasoning and pattern interpretation by asking LLMs to describe clustered or dispersed land cover distributions and generate integrated, data-grounded diagnoses of local spatial conditions. Preliminary qualitative results indicate high accuracy in basic ID retrieval, ratio comparison, and other simple spatial questions. The models also show promising ability to recognize grid-based spatial relationships and explain broader distributional patterns. And it was also possible to conduct analyses comparing spatial distribution patterns across different land cover types, as well as examining differences among adjacent land cover categories. This study argues that converting shapefile GIS data into text is not merely preprocessing but a portable interface that makes spatial data legible to general LLMs. Practically, the approach suggests a lower-cost alternative to training new spatial LLMs and a reusable pipeline for injecting multi-dimensional spatial information, including data derived from multimodal sources, into future generations of general-purpose LLMs. The results point to prospective applications in rule-based screening, interpretable environmental diagnosis, site selection, and explainable spatial reasoning in urban planning. The results demonstrate that LLMs can not only retrieve specific IDs but also generate narrative descriptions of spatial clusters and land-use transitions, which are often difficult to interpret from raw GIS data alone.

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Key Words: Large language model, Spatial reasoning, Text-based description, Urban intelligence, Prompt engineering

Track 2 – Community Development and Housing

Track 2 Pre-Organized Session Summaries and Abstracts for the Sessions

FINANCIALIZATION: HOUSING AND BEYOND
Abstract ID: 2294.0.0.716.2026
Track 2: Community Development and Housing
Pre-Organized Session Summary
Session Includes: 2298.0.0.251.2026, 2298.0.0.366.2026, 2298.0.0.398.2026, 2298.0.0.143.2026, 2298.0.0.396.2026

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Nearly 20 years after the Global Financial Crisis, the US economy has been starkly remade. Dubbed asset manager capitalism, the shift towards a financialized economy is characterized by large investors who control essential physical systems and services, including housing, infrastructure, and businesses (Christophers, 2023). The effects on society have been profound. High costs, worsening living conditions, and erratic service provisioning typify contemporary life. This session brings together a set of papers that interrogate and measure these changes. These papers define the major investors behind financialization; demonstrate the extension of financialization into new markets, including small residential properties and local businesses; consider how investors weave their holdings across these once distinct market segments; and interrogate how financialization impacts tenants. Findings implore planners to consider the structural changes wrought by financialization in local policies.

Learning Objective(s):

- Session participants and audience will learn how new avenues in financialization impact housing markets, local businesses, and tenants.
- Session participants and audience will gain a vocabulary to describe the investors driving these changes.
- Session participants and audience will be presented with local responses to financialization that they can consider in their own policy and planning efforts.

WHO ARE (AND AREN'T) INSTITUTIONAL INVESTORS, AND HOW MUCH HOUSING DO THEY REALLY OWN?

Abstract ID: 2298.0.0.251.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Housing markets in the United States have radically transformed over the last 20 years. Across the multifamily, single-family rental, and manufactured housing markets, investors own more of the rental housing stock than ever before (Keightley, 2022). Within this momentous shift—termed the financialization of housing—one of the key questions researchers grapple with is: who are the investors that own housing? Planners, geographers, economists, and other spatial social scientists submit a number of different actors for consideration, including corporate landlords (Harwood et al., 2025), financial firms (Tapp and Peiser, 2023), private equity funds, real estate investment trusts (Seymour et al., 2025), and residential rental property owners (Kuhlmann et al., 2025). However, much of the recent literature on the financialization of housing lumps these disparate actors into a single category called institutional investors. Meant to stand in contrast to individual investors or the so-called "mom-and-pop landlords," this miscategorization of housing investors threatens to undermine effective policy interventions and limit research advances.

This presentation brings clarity to debates around the financialization of housing by examining who are and aren't institutional investors and assessing how much housing they actually own. It argues that financialized housing ownership exists on two fronts: as both real property assets (i.e., a house or an apartment building) and as financial housing assets (i.e., a share of stock). Building a methodology that weaves these two aspects of ownership together, the presentation first draws on the United States Securities and Exchange Commission (SEC) required quarterly reporting of institutional investor holdings to analyze who owns stock in publicly traded residential real estate investment trusts (REITs). Second, using the institutional investors' names generated by the financial asset analysis, the paper then uses national tax assessor data to assess what real property housing assets these investors own. Taken together, the findings from this research show that (i) institutional investors are defined by regulatory and business classification systems and can be identified by researchers through subscription platforms or free, public alternatives; (ii) true institutional investors' portfolios exhibit an inverse relationship between financial housing assets (high ownership) and real property assets (low ownership); and (iii) policy aimed at limiting institutional investors ownership of housing is ineffective because it overlooks the largest financialized property owners.

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Keywords: institutional investors, housing, REITs, financialization, antitrust

TRENDS IN CORPORATE ACQUISITION OF SMALL RESIDENTIAL PROPERTIES IN NEW JERSEY

Abstract ID: 2298.0.0.366.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Corporate ownership of small residential properties has attracted substantial policy attention in recent years, notably including a 2026 executive order directing federal agencies to restrict institutional investor participation in federal housing programs and calling on Congress to enact broader restrictions. Yet corporate ownership is not monolithic. Much of the concern, and most of the evidence, centers on the largest and most visible operators: institutional investors that acquired foreclosed properties at scale in Sunbelt metros during the post-crisis credit contraction (An, 2024; Charlets, 2020; Raymond et al., 2018). This specific historical moment shaped both the form corporate ownership took in those markets and the policy concerns it provoked. But corporate ownership has grown across a much wider range of market contexts than this literature captures, and the competition narrative that animates current policy—that corporate investors crowd out prospective homebuyers—requires context-specific empirical grounding.

This paper examines corporate ownership growth using parcel-level property tax records for all 1–4 unit residential properties in New Jersey in 2012 and 2022. New Jersey's foreclosure crisis peaked well after the REO-to-rental moment that gave rise to large institutional investors, and the state's housing costs and regulatory environment made large-scale acquisition unattractive to those firms, yet similar legislative responses are now actively being debated. We construct a transition matrix decomposing the prior ownership of all corporate-held properties in 2022, with particular attention to non-corporate to corporate ownership transitions and how their prevalence varies across municipal market contexts. Corporate ownership more than doubled statewide between 2012 and 2022 (36,000 to 85,000 properties; 1.6% to 3.8% of stock), with sharp local concentration reaching 26% of the 1–4 unit stock in Trenton. Owner-to-corporate transitions account for 46% of corporate properties statewide, but are concentrated in relatively lower-cost municipalities with substantial shares of distressed properties, where structural barriers to homeownership are deepest and resident buyer competition was limited to begin with. These findings complicate acquisition-focused policy proposals in markets like New Jersey's, where restricting corporate purchase may do little to expand homeownership without parallel investment in buyer and nonprofit capacity. At the same time, the concentration of corporate ownership in vulnerable markets reinforces the urgency of beneficial ownership disclosure and tenant protections that apply regardless of ownership type.

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Keywords: Corproate Investors, Homeownership Competition

THE PRIVATE EQUITY "ROLL-UP" OF LOCAL BUSINESSES

Abstract ID: 2298.0.0.398.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Financialization is broadly defined as the increasing role of finance at the level of economies, firms, and households (Aalbers, 2019). At the firm level, it entails the prioritization of investors' and managers' interests, intersecting with growing scholarly interest in asset manager capitalism (Braun & Christophers, 2024; Christophers, 2023; Gibadullina, 2024). One way in which the financialization of firms occurs is through private equity (PE) investments in small to medium-sized, locally serving businesses. PE firms raise large pools of capital from institutional investors and wealthy individuals, with the promise of high returns. Acting as financial intermediaries, they acquire local businesses—such as lumber yards, plumbing companies, and veterinary clinics—engaging in a "rolling up" strategy, where smaller businesses are consolidated into larger entities. They target underperforming or undervalued businesses, implementing management changes to enhance their value before selling them for maximum returns, with the aim of delivering returns to investors. Some local businesses, characterized by stable cash flows and short- to medium-term profit potential, are particularly attractive to PE investors. The regulatory environment governing PE firms differs from that of publicly held companies, allowing PE firms to manage the business they acquire with greater opacity and a higher tolerance for financial risk, with implications for employees, customers, and communities (Appelbaum & Batt, 2014). While PE firms can generate substantial financial gains for their investors and fund managers, they may negatively affect the acquired businesses' employees and community access to local goods and services. This exploratory study examines private equity firm transactions between 2014 and 2025 across the United States to assess the nature and magnitude of this phenomenon. We examine the types of businesses targeted by PE firms, map their geographic distribution, and evaluate the broader implications of the financialization of local businesses for community access and urban planning.

Citations:

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Keywords: Financialization, Private Equity, Commercial Land Use

THE STRUCTURE OF MONOPOLY POWER IN RENTAL HOUSING MARKETS IN RICHMOND, VIRGINIA

Abstract ID: 2298.0.0.143.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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A prevailing consensus holds that monopoly power in rental markets is absent because no single landlord controls more than a small share of regional stock. This paper demonstrates that such measures underestimate monopoly power by mis-specifying the competitive arena. Tenants do not search the metropolitan stock; they search within constrained opportunity sets defined by affordability, unit size, geography, and compressed time windows. The paper introduces a structural framework for characterizing the bargaining environment surrounding vacancy events from both the tenant and landlord sides.

Using ACS microdata and tract-level rent distributions for the Richmond, Virginia MSA, the analysis reconstructs competitive conditions during 2020–2024. Renter households are classified by HUD AMI tier and bedroom need into eight tenant profiles. An income–rent spillover matrix documents where households actually reside under scarcity, revealing extensive cross-income competition: 83% of extremely low-income family households are displaced from their affordable rent tier. From these observed patterns, an Effective Search Set is defined for each profile as the rent tiers within the household's affordability ceiling, filtered by unit size and geography. The framework then measures competing applicants per vacancy within each search set and applicant flows at each vacancy event.

The findings reveal severe monopoly conditions even in a fragmented ownership market. Lower-income households face two to four competing applicants per vacancy at the full MSA scale, intensifying to roughly ten per vacancy within realistic search radii. Landlords face queues of eight to fifty applicants per vacancy even at three times the observed vacancy rate. The asymmetry is structural: tenant opportunity sets are defined by the intersection of constraints that collapse the feasible set, while landlord sets are defined by the union of search flows that expand the applicant pool. Documented geographic clustering of institutional ownership intensifies these dynamics further.

Linking search dynamics to property-level finance reveals a structural contradiction. Vacancy levels that would meaningfully shift tenant bargaining power are incompatible with the debt-service coverage requirements governing multifamily lending. Standard underwriting tolerances leave very little room for vacancy increases before properties face solvency pressure, and the investment cycle self-corrects — pulling back construction as financial signals tighten — before vacancy approaches tenant-favorable levels. The financial architecture of for-profit rental housing structurally precludes the conditions tenant empowerment requires.

These findings reframe the planning question. Market-rate supply moderates rent growth but cannot generate the structural conditions for tenant power. Non-market housing is structurally necessary because public, social, and cooperative models do not depend on the exit mechanism to set tenure relations. Terms are determined through public judgment and governance rather than market bargaining, bypassing the vacancy–solvency contradiction entirely.

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Keywords: rental housing, monopoly power, housing search, tenant bargaining, non-market housing

THE LAND OF 10,000 LLC'S: HOW CRISES RESTRUCTURED THE RENTAL MARKET IN THE TWIN CITIES

Abstract ID: 2298.0.0.396.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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This paper builds on recent empirical innovations to document ownership patterns (Gomory et al. 2024; An et al. 2024; Damiano and Goetz 2025), by extending this to the Midwest in the Twin Cities of Minneapolis and St. Paul, Minnesota. While much of the research on housing ownership structure has focused on the single-family market (or the market as a whole), less work has focused specifically on the multi-family market and how that part of the housing market may show similarities or differences in structure from the single-family market.

We analyze these changes in the context of two massive crises that occurred early in the 21st century– the 2008 Global Financial Crisis and the 2020 COVID-19 Pandemic – which restructured the ownership composition in the rental market. Our hypothesis is that crises drive three major types of market restructuring: (1) from small scale to large scale, (2) from in-state to out-of-state, and (3) from conventional investors to large institutional actors. Methodologically, we draw on public and private parcel data sources. We use public data from Hennepin and Ramsey Counties, including parcel and tax addresses, parcel owner names, and owner addresses, which we complement with private data from CoStar to generate unit counts and fill tax address gaps. Once the data was gathered, we used OpenRefine, an open-source tool, to clean the data. Important work has been started to identify private equity stakeholders and webs of landlords to address these challenges in other cities. However, there is no current literature on the structure of the multifamily housing market in the Twin Cities or on how ownership has changed over the past 20 years. We believe this research will contribute to the growing literature on financialization in the housing market and provide further fine-grained analysis of differences within the housing market.

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Keywords: housing markets, multi-family housing, housing ownership

HOUSING SUPPLY AND REDEVELOPMENT: WHEN DO POLICIES IMPROVE AFFORDABILITY AND ACCESS?

Abstract ID: 2294.0.0.402.2026

Track 2: Community Development and Housing

Pre-Organized Session Summary

Session Includes: 2298.0.0.77.2026, 2298.0.0.124.2026, 2298.0.0.395.2026, 2298.0.0.159.2026

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As cities expand supply-oriented housing policies, a central question remains unresolved: do these interventions improve affordability and access, for whom, and under what conditions? This session advances empirical understanding of this debate by examining how housing supply and redevelopment dynamics shape affordability and residential mobility outcomes. Drawing evidence from U.S. cities and Seoul, South Korea, the papers examine the role of recent housing market trends in residential mobility patterns, and assess whether supply-side policies and market dynamics deliver affordability and expanded access to opportunity. This session covers policies including upzoning, public housing rehabilitation, demolition-led redevelopment, exurban development, and gentrification, with a shared focus on linking housing, land use, and household microdata in research to inform more effective and equitable planning practice.

Learning Objective(s):

- Develop understanding of how housing market conditions are evolving across contexts, including patterns of housing production, neighborhood change, and regional and local migration patterns.
- Draw lessons across U.S. and international contexts to inform how different housing policy interventions shape housing outcomes and inequality across market contexts.
- Understand how novel quantitative data sources can be used for housing and planning research.

DOES BUILDING MORE HOUSING LOWER RENTS? EVIDENCE FROM A META-ANALYSIS

Abstract ID: 2298.0.0.77.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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As housing costs escalate, planners and activists have increasingly called for additional housing production to relieve housing demand and improve housing affordability. As a result, many jurisdictions across the United States have initiated upzonings, which loosen zoning regulations to allow for more and denser forms of housing. As upzonings have started to gain greater traction, some scholars and activists have raised concerns that new development could adversely impact housing prices, arguing that factors such as positive amenity effects associated with new development could make areas more desirable and lead to higher prices and rents, potentially spurring gentrification and displacement. Others have posited that the increased option value associated with upzoning could encourage speculative investment and drive up property prices.

These competing perspectives have contributed to a lively academic debate and a growing empirical literature investigating the relationship between housing supply and housing costs (Been et al. 2025). Several studies have examined the effect of new housing production (regardless of upzoning) on housing prices. For example, prior work has found that rents in buildings adjacent to new market-rate buildings in 11 cities across the U.S. decreased by 5-7% (Asquith et al., 2023). At the same time, other research suggests that these effects may vary across different market segments. For instance, one study found that lower-priced rental housing in the vicinity of new, large market-rate apartment buildings resulted in rents that were 4.4% higher compared to low-quality buildings located further away in the five years following new construction (Damiano & Frenier 2026).

A related body of research has examined the effects of zoning reforms themselves. Studies examining the effects of upzoning policies on housing costs have produced mixed findings. For instance, prior work has found that relaxing zoning regulations in the Canton of Zurich in Switzerland did not result in a difference in rents between upzoned and non-upzoned parcels (Büchler & Lutz 2024). And in the first multi-city examination of how loosened zoning regulations interact with housing production, Stacy et al. (2023) found that lower-cost units did not significantly moderate in cost within three to nine years of reform passage.

Taken together, these mixed empirical results raise important questions about the overall relationship between housing supply and housing costs. While several recent papers have reviewed the literature on the effect of new market-rate housing on housing prices (Been et al. 2025), prior work has not systematically synthesized the growing body of empirical evidence to estimate the overall magnitude of housing supply effects. This gap in the literature is particularly important given the central role that supply-oriented policies now play in debates over housing affordability.

To address part of this gap in the literature, we ask: how do exogenous increases in the housing supply – whether spurred through upzoning or other supply shocks – affect rents? To answer this question, we conduct a meta-analysis of the empirical literature examining housing supply shocks and rental prices. We systematically review more than 3,500 articles and identify studies that estimate the causal effects of housing supply changes on rents. From these studies, we extract comparable effect sizes by converting reported estimates into elasticities and pool these estimates using meta-analytic techniques that account for heterogeneity across research designs, geographic contexts, and policy specifics. By synthesizing the available empirical evidence, our analysis provides a systematic

assessment of how housing supply increases affect rents. These results provide insights to planners and policymakers seeking to understand the role that housing production can play in addressing housing affordability.

Citations:

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Keywords: Upzoning, Housing Supply, Housing Prices, Housing, Housing Affordability

GENTRIFICATION THROUGH URBAN REDEVELOPMENT: LOW-INCOME RESIDENTIAL MOBILITY IN SEOUL

Abstract ID: 2298.0.0.124.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Gentrification's relationship with residential displacement remains one of the most contested questions in urban scholarship. While quantitative research from the Global North finds limited evidence that gentrification disproportionately displaces vulnerable populations, these findings may not travel well to the Global East, where state-led urban redevelopment, rather than gradual market-driven neighborhood change, has been the dominant driver of gentrification. This study examines whether redevelopment-driven gentrification increases residential mobility and induces downward neighborhood transitions among low-income households in Seoul, South Korea, a paradigmatic case of mega-gentrification in the Global East.

We utilize register-based census data from the Ministry of Data and Statistics, covering the entire population of Seoul between 2015 and 2020. This population-level dataset enables residential trajectories to be tracked across neighborhoods, offering a methodological advantage over studies relying on sample surveys or panel data with limited coverage. Gentrification is measured through a two-stage classification: neighborhoods are first identified as gentrifiable based on low initial income levels, then classified as moderately or intensely gentrifying according to changes in graduate degree attainment, an education-based proxy calibrated to reflect South Korea's distinctive educational distribution. Urban redevelopment is operationalized using official project data from the Seoul Metropolitan Government, distinguishing between initial site designation and construction commencement, the latter primarily characterized by large-scale demolition.

Residential mobility is conceptualized along two dimensions: quantity, measured as the probability of leaving one's neighborhood, and quality, measured as the change in median household income rank between origin and destination. Both one-year and five-year measures are examined, since time horizon has been shown to meaningfully shape empirical conclusions. Linear probability models and OLS regressions are estimated with interaction terms between gentrification status and low-income household classification, with standard errors clustered at the neighborhood level.

Results reveal that in gentrifying neighborhoods without redevelopment, approximating classical gentrification, no significant adverse outcomes are observed for low-income households, consistent with existing quantitative evidence. However, in neighborhoods undergoing active redevelopment, particularly at the construction commencement stage, a markedly different pattern emerges: low-income households face significantly higher probabilities of out-migration and move to neighborhoods with substantially lower median income ranks, indicative of downward residential sorting. These findings are robust across model specifications and most pronounced when assessed in terms of destination quality and longer time horizons.

These results carry three implications. First, they provide quantitative support for the argument that redevelopment-driven gentrification in the Global East produces more adverse outcomes for vulnerable populations than classical gentrification in the West. Second, they highlight that quantity-focused and short-term mobility measures risk obscuring displacement pressures visible only when destination quality and longer horizons are considered. Third, they underscore the need for policy interventions to protect low-income residents in redevelopment zones, where market dynamics alone are unlikely to deliver inclusive outcomes. As East Asian cities

continue to rely heavily on large-scale redevelopment as a primary housing supply mechanism, these findings offer timely evidence for rethinking the social consequences of urban renewal.

Citations:

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Keywords: Gentrification, Urban Redevelopment, Residential Mobility, Low-Income Households, Seoul

WHAT HOUSING DEMOLITION BECOMES: REDEVELOPMENT AND NEIGHBORHOOD CONTEXT IN WASHINGTON, DC

Abstract ID: 2298.0.0.395.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Demolition is among the most consequential yet least studied mechanisms of housing stock change. When a property is demolished, it removes units from the existing supply, potentially displaces occupants, and sets in motion a process whose outcome shapes neighborhood affordability and trajectory in ways that new construction alone cannot address. However, the existing literature on residential demolition focuses largely on demolition as a policy instrument, such as public housing clearance and blight remediation, leaving routine private demolition and subsequent redevelopment trajectories underexplored (Goetz, 2013; Hackworth, 2016).

The few studies that examine routine demolition in private markets focus on Chicago. Weber et al. (2006) and Dye and McMillen (2007) find that demolition occurrence is more prevalent in small, older properties in appreciating neighborhoods with transit connectivity, but do not look at redevelopment outcomes. Charles (2013) extends analysis to inner-ring suburbs, modeling which single-family homes are demolished and rebuilt between 2000 and 2010. However, by constructing the outcome as a cross-sectional binary—redeveloped or not over a fixed decade—the study cannot observe how long the post-demolition spell lasts, nor identify parcels where demolition occurred without any subsequent replacement. It also cannot examine how trajectories unfold across neighborhoods undergoing active transition, where demolition and replacement may be temporally decoupled in ways that neither strong-market nor disinvestment logics predict. This gap matters because if post-demolition trajectories vary systematically by neighborhood type and over time, treating demolition as a uniform event obscures the mechanisms through which housing stock loss is produced, and misidentifies where and when preservation policy should intervene.

This study examines post-demolition housing stock trajectories and their neighborhood contexts using an administrative dataset of residential raze episodes in Washington, DC, from 2009 to 2022. Each episode is classified by its realized trajectory (rapid redevelopment, delayed redevelopment, or no observed replacement) by linking building permits, certificates of occupancy, and building footprint data, and assigned to tracts classified as non-poverty, gentrifying, or persistently disinvested based on the American Community Survey. DC provides an unusually informative setting: the city has experienced some of the most intense gentrification pressures among U.S. cities since 2000, yet large portions of the city remain in persistent poverty with weak reinvestment, enabling stark comparison across neighborhood types within a single regulatory environment.

The results suggest that post-demolition trajectories diverge sharply and systematically by neighborhood type. In non-poverty neighborhoods, the majority of raze episodes precede prompt replacement, while in persistently disinvested tracts, a substantially larger share produces no observed new construction within the observation window. Gentrifying tracts show a distinct pattern — delayed redevelopment is most common, suggesting that demolition and replacement are temporally decoupled in transitional neighborhoods.

This study contributes to research on housing supply and neighborhood change by tracking what raze episodes actually become, rather than treating demolition as a binary event or a uniform indicator of market pressure or decline. It shows that within segregated cities that experience simultaneous gentrification and persistent disinvestment, demolition can produce fundamentally different stock outcomes depending on neighborhood

context and moment in the market cycle. The findings also suggest that affordable housing preservation policies should note these differences in neighborhood contexts to combat stock loss and displacement pressures.

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Keywords: Housing Demolition, Redevelopment, Neighborhood Change, Housing Supply, Housing Preservation

LEAVING RENOVATED PUBLIC HOUSING: WHERE DO RESIDENTS GO AFTER RAD IN NEW YORK CITY?

Abstract ID: 2298.0.0.159.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Launched in 2011, the Rental Assistance Demonstration (RAD) program was designed in part to help public housing authorities address mounting capital needs by converting Section 9 public housing subsidies into long-term, project-based Section 8 contracts that can support rehabilitation financing through private capital. RAD can be understood as a preservation program. It seeks not only to improve the physical condition of public housing, but also to protect incumbent residents through statutory rights to remain and to return (H.R.2112 - 112th Congress (2011-2012), 2011).

Nearly fifteen years after its launch, RAD has become the largest and perhaps most ambitious public housing preservation program of this century (Schwartz & McClure, 2021). Recent federal legislation further eliminates the program's sunset and the unit cap, opening the door to the conversion of the remaining public housing stock (ROAD to Housing Act of 2025, 2026).

But preservation is not just about saving units. It is also about whether residents can stay if they want to, and whether those who leave are doing so by choice rather than because they are forced to leave. RAD includes a Choice Mobility option that allows eligible residents to request a portable voucher after a period of residence at a RAD-converted site. HUD presents this option as a tenant protection that can expand housing choice and improve access to high-opportunity neighborhoods. Whether residents who leave RAD-converted developments are in fact moving to neighborhoods with greater opportunities remains unclear. Some may take advantage of Choice Mobility, while others may leave under pressure. When RAD conversion brings in private or nonprofit management, the everyday experience of living can change in ways that make it harder for some residents to remain. Rather than reflecting greater housing choice, leaving may result in relocation to a more disadvantaged neighborhood.

This paper asks: Do residents who left RAD-converted developments move to neighborhoods with greater socioeconomic opportunities, or do they move to places that are similar to (or more disadvantaged than) their origin neighborhoods? How do these neighborhood outcomes compare with those of out-movers from Section 9 developments that are not converted through RAD?

To address these questions, this study uses longitudinal address history data to trace the destinations of residents leaving RAD developments in New York City. These moves are linked to census tract indicators drawn from census data, including measures of poverty, income, racial composition, and educational attainment. Using a staggered difference-in-differences design, the analysis compares changes in the neighborhood characteristics of destination tracts to assess whether RAD contributes to moves to neighborhoods that are more advantaged, similar, or more disadvantaged than those reached by residents leaving Section 9 housing. Although the data cannot directly reveal why residents move, neighborhood outcomes offer a vital way of assessing whether mobility after conversion appears to expand opportunity.

The paper offers new empirical evidence on a dimension of RAD that has received relatively little attention. Existing debates around RAD outcomes have focused largely on privatization, displacement risk, and property-level rehabilitation outcomes (e.g., Lowell & Smith, 2023; Stout et al., 2019; Thackeray & Stout, 2023). Little is known about the neighborhood trajectories of residents who leave. This study shifts attention from the preservation of assisted units to the preservation of resident well-being. By examining whether out-movers from RAD developments reach neighborhoods with greater socioeconomic opportunities, this study offers a more resident-

centered way of assessing public housing redevelopment. It contributes to the scholarship on housing policy and practice by bringing neighborhood opportunities into the evaluation of a preservation program.

Citations:

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Keywords: Public Housing, Rental Assistance, Redevelopment, Housing Stability, Residential Mobility

RETHINKING HOUSING AFFORDABILITY: NEW MODELS, NEW METRICS, AND REGULATORY TRADE-OFFS

Abstract ID: 2294.0.0.712.2026

Track 2: Community Development and Housing

Pre-Organized Session Summary

Session Includes: 2298.0.0.153.2026, 2298.0.0.122.2026, 2298.0.0.451.2026, 2298.0.0.48.2026

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Housing affordability is widely recognized as a defining policy challenge, yet the tools used to diagnose it and the programs designed to address it deserve continued scrutiny. This session brings together five papers that push beyond conventional approaches. The contributions examine alternative models of subsidized housing production and whether they can find political support, how nontraditional actors are entering housing provision, what standard affordability metrics capture versus what they obscure, how tenant-protective regulations shape upzoning effects, and whether siting subsidized housing in higher-opportunity neighborhoods delivers the educational gains it promises. Together, these papers challenge researchers and practitioners to think carefully about the assumptions embedded in existing policy frameworks: who provides subsidized housing, how affordability is measured, and whether housing interventions achieve their stated goals for the populations they intend to serve.

Learning Objective(s):

- Participants will be able to identify how European-style social housing models differ from existing US subsidized housing programs and evaluate the evidence on public preferences for alternative approaches to housing provision.
- Participants will understand the limitations of conventional affordability metrics such as the rent-to-income ratio and recognize how decomposing these measures by income group, geography, and household composition reveals distinct policy-relevant dynamics.
- Participants will be able to analyze how tenant protection regulations interact with upzoning policies to shape redevelopment feasibility, and consider the trade-offs planners face when pursuing housing production and displacement prevention simultaneously.

THE DISTRIBUTION AND DRIVERS OF RENTAL UNAFFORDABILITY: 1960 - 2023

Abstract ID: 2298.0.0.153.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Affordability is the most salient housing policy issue in the United States and among the most conceptually elusive. Conventional metrics such as the rent-to-income ratio (RTI) collapse disparate processes into a single outcome measure (Stone, 2006), conflating preference-driven shifts in consumption with constraint-driven hardship. In this paper, we decompose rental affordability over the last sixty years, tracing the role of separate trends in rents, incomes, and household formation, and consider how changes in tenure, housing quality, supply, and inter-urban migration relate to rental affordability.

Between 1960 and 2023, the national median RTI increased from 19% to 31%, but this masks substantial variation across the income distribution. Among bottom-quintile households, the median RTI rose from 47% to 67%. Across metropolitan areas, these indicators also fluctuate—Los Angeles actually became more affordable by most metrics in the 2010s. This variation motivates decomposition across income groups and regional markets.

Our subnational focus contributes to a large affordability literature. Quigley & Raphael (2004) decompose affordability by rents and incomes but use a less accurate technique and only consider national-level metrics, with data now over two decades old. We improve on prior subnational studies (e.g., Davis and Ortalo-Magne, 2011) by ranking metropolitan areas by housing supply elasticity. To our knowledge, this is the first study connecting inter-urban migration, supply elasticities, and rental affordability.

Across metropolitan areas, we analyze how changes in renter household incomes have contributed to rent burdens. Real wage stagnation is a widely cited explanation for increasing RTIs (Albuoy et al., 2016), but two complementary mechanisms are neglected. First, out-migration of lower-income households from high-rent cities can appear in standard metrics as improved affordability. We assess this by decomposing changes due to rents versus incomes from 1960 to 2023 across MSAs. Second, declining homeownership rates may channel relatively affluent households into the rental market. We test whether regions with larger drops in middle-aged homeownership experienced larger increases in higher-income renters, and assess whether changes in household composition (e.g., single-person households and doubling up) have driven RTI changes from 2000 to 2023. We then analyze rents, documenting how housing shortages have spilled from supply-inelastic to supply-elastic urban areas and eventual declines in supply elasticities nationwide (Aastveit et al., 2023).

Preliminary findings reveal shortcomings of standard metrics. Rent burdens have intensified only slightly on average but significantly among low-income households. Decomposing changes across metropolitan areas reveals that income growth has outpaced rent growth in some areas, but that out-migration is one driver appearing as an apparent affordability improvement. For example, Los Angeles became more affordable by conventional RTI between 2010 and 2023, reflecting changes in renter incomes rather than rents (which continued rising). We find that rental affordability is lower in metros with less elastic supply and explore hypotheses about the timing of price changes and renter population composition shifts.

Our analysis has two policy implications. First, analyzing component changes alongside composite metrics like RTI will help policymakers better target areas and populations where problems are most acute. Second, decomposition helps distinguish voluntary price increases (e.g., preferences for solo living or larger units) from involuntary ones.

Citations:

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Keywords: Rental housing, Affordability, Cost burdens, Inequality

DO AMERICANS WANT EUROPEAN-STYLE SOCIAL HOUSING? SURVEY EVIDENCE FROM CALIFORNIA

Abstract ID: 2298.0.0.122.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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As state and local governments across the United States search for new models of subsidized housing production, advocates and policymakers have increasingly looked to European social housing for inspiration. For the most part, European systems use a cost-rental model, which finances housing production through long-term loans to non-profits and sets rents to recover costs (Arrigoitia et al., 2014). This approach produces far more units at lower per-unit public cost and serves households across a much wider income range than US programs, which set rents as a share of tenant incomes. Whether such a model is politically viable in the US depends in part on public attitudes toward what would be a fundamentally different approach to subsidized housing (Vale and Freemark, 2012).

This paper asks: do Californians want European-style social housing? I answer this question using a conjoint survey with responses from over 2,000 Californians. The conjoint method, increasingly used in research on housing policy and politics (e.g. Wicki and Kaufmann, 2022; Elmendorf et al., 2024), works as follows: survey respondents are presented with descriptions of two alternative policy packages and select their preference in several rounds. By randomly varying the components of the policy packages, researchers can extract their preference weighting. This research design allow me to identify preferences for eight features of social housing programs: income eligibility thresholds, developer type, subsidy level, program scale, tenant protections, resident governance, and building type and location. A central question is whether Californians prefer to expand the existing model, in which deep subsidies, restricted to low-income households, build a limited number of units per year, or whether there is appetite for a program that is available to a broader share of the population and capable of producing housing at much greater scale.

Very preliminary results (from a pilot, the full survey is being administered in April 2026) suggest that Californians do in fact prefer this new model, alongside existing affordable housing programs. These findings have direct implications for planning practice and policy design across the United States, where interest in social housing is growing but the political feasibility of European-style approaches has remained uncertain.

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Keywords: Social housing, Affordably housing, Housing politics, Housing production, Survey research

UPZONING MEETS TENANT PROTECTION: RENTAL REDEVELOPMENT CONSTRAINTS IN LOS ANGELES

Abstract ID: 2298.0.0.451.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Many cities use upzoning as a tool to expand housing supply and moderate prices, yet it operates in direct tension with tenant protection policies. Where tenant protections prohibit the demolition of existing rental units, the supply-side effects of upzoning are fundamentally constrained. Striking the right balance between these two policy goals is therefore critical — but surprisingly underexplored. Most upzoning research focuses on owner-occupier markets where displacement is not at stake; evidence from high-tenancy urban markets remains scarce. This gap matters both for understanding the generalizability of upzoning research and for designing policies that protect tenants without foreclosing redevelopment entirely.

This paper examines how rental demolition and redevelopment are regulated in Los Angeles, where successive layers of tenant protection (alongside broader regulatory barriers) have made redevelopment increasingly difficult. I argue that replacement requirements — particularly the obligation to provide affordable units in lieu of demolished rent-stabilized ones and to compensate displaced tenants — are the binding constraint that prevents redevelopment projects from penciling out financially. I support this with three empirical contributions: first, I document that a disproportionate share of upzoning has occurred in multifamily rather than single-family areas, concentrating redevelopment pressure on existing renters; second, I show that the allowed density increases are often too modest to offset replacement costs; and third, I use a regression model to identify the conditions under which redevelopment does occur and what explains the ratio of new to demolished units.

My results show that viable redevelopment projects are almost entirely limited to the demolition of small buildings — the only ones where compensation costs remain manageable. But because small buildings typically sit on small parcels, the achievable density gain is modest. Compounding this, much of the upzoning has been concentrated in lower-income areas with weak market demand, where redevelopment would not pay off regardless of regulatory conditions. Where redevelopment does occur, it is driven by a confluence of large zoning increases, high land values, and large lot sizes that enable high ratios of new to demolished units; low-ratio replacements almost never happen.

Los Angeles thus offers important lessons for other large rental cities pursuing upzoning. In principle, its framework strikes a reasonable balance: discouraging low-ratio redevelopments that displace low-income tenants with little housing gain, while preserving the viability of projects that substantially expand supply. By making low-ratio redevelopments financially unviable, the regulations effectively prevent a situation where vulnerable residents bear the costs of upzoning while the housing gains remain minimal. Beyond this, however, constantly shifting regulations create substantial uncertainty for developers, while weak governmental oversight means neither housing production nor tenant protection goals are being reliably met.

Citations:

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Keywords: upzoning, eviction, tenant protection, housing, redevelopment

BEYOND HEALTHCARE: HOSPITALS AS EMERGING HOUSING PROVIDERS IN COMPARATIVE PERSPECTIVE

Abstract ID: 2298.0.0.48.2026

Track 2: Community Development and Housing

Individual Paper Presentation

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Hospitals are increasingly acting as housing providers, developers, and stewards, yet planning scholarship has only rarely examined this shift. This paper asks: How are hospitals in different policy contexts evolving in their role as housing providers, and how does this reconfigure relationships between health systems, housing policy, and urban governance?

The study combines (1) an international historical and conceptual scoping review of the hospitals-housing nexus and (2) early findings from two contrasting case studies that anchor an emerging typology of "hospital-supported housing". The first is Village Landais Alzheimer in Dax, France, a publicly supported care village that blurs boundaries between hospital, home, and neighborhood in a welfare-state context. The second is the planned transformation of Orange Memorial Hospital in Jersey City, USA, where a decommissioned hospital is slated to become largely market-rate housing amid acute local affordability pressures.

Methodologically, the project integrates document analysis, GIS-based mapping of hospital-owned land and surrounding socio-spatial conditions, and semi-structured interviews with planners, health officials, designers, and residents. These materials feed a database that visualizes where and how hospitals are involved in housing provision, and under what regulatory and financial arrangements.

Preliminary results suggest that hospitals' housing roles are structured by distinct regimes of welfare provision and privatization but converge around three planning concerns: (1) shifting distributions of land, risk, and responsibility between health systems, local governments, and private developers; (2) evolving definitions of what constitutes "therapeutic" housing and neighborhood environments; and (3) new forms of inequality that may arise when health institutions selectively invest in certain places and populations.

By conceptualizing hospitals as "unlikely" but increasingly central housing actors, the paper develops a framework for planners to critically engage health systems as partners, regulators, and political-economic actors in efforts to advance affordable, healthy, and equitable housing strategies.

Citations:

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- Murphy, M., Guzzo, D., & Bodulovic, T. (2024). "Maximizing underused hospital-owned land for affordable housing." NYU Furman Center.

Keywords: Hospitals and housing, Healthy planning, Affordable housing, Welfare regimes, GIS & mixed-methods

Track 2 Roundtables

Global Displacements: the right to adequate housing and the role of planning
Abstract ID: 2297.0.0.138.2026
Track 2: Community Development and Housing
Roundtable Submission, Panel Interviews

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Displacement driven by climate change, disaster, conflict, austerity, resettlement, gentrification and the related commodification of housing has emerged as one of the defining crises of our time; cutting across the Global North and South in ways that planning scholarship and practice have yet to fully reckon with. Globally, millions are being pushed from their homes and communities by climatic changes, market forces and state policies that treat adequate housing as a commodity rather than a right. Emerging research highlights that climate migration and urban displacement overlap when we follow the movement of people moving into and within cities, where they face 'multiple displacement', as they find, make, and then lose their homes again. The combination of the precarious legal and economic status of the displaced, exclusionary and racialized housing policies, fiscal public austerity, the adaptation of market economies, poor quality and hazard-exposed housing stock, and uneven or non-existent urban climate adaptation policies and plans produce conditions and outcomes that are increasingly shaping the state of housing. How can a focus on the experiences of losing, attaining, and maintaining housing in cities enable urban planners to better understand, analyze, and confront these complex intersections?

This roundtable brings together leading scholars of migration, housing justice, gentrification, precarious housing, and the right to the city to examine the state of global displacement and what planners can, and should, do about it. The session is anchored by the participation of Professor Balakrishnan Rajagopal, UN Special Rapporteur on the Right to Adequate Housing. Together with scholars working across multiple global contexts—including Latin America, the Global South, Europe, and North America—the panel will examine how these multiplied displacements intersect with current planning practice nationally and internationally, with international human rights frameworks; and jhow they challenge planning research, advocacy, and education. Panelists will address questions including: What does the right to adequate housing demand of planners? How do displacement processes in the Global South and North mirror and diverge from one another? How do different displacements intersect on the ground in cities? What planning interventions have meaningfully slowed or reversed displacement? And what does a truly just housing future look like globally — and who gets to define it? The session welcomes broad audience participation and is designed to spark debate, collaboration, and new research agendas across our field.

Audience Engagement Questions:

- What role should ACSP, as a field-defining organization, play in formally advocating for the right to adequate housing at the national and international level?
- How should planners deal with 'multiplied displacement' in local planning contexts?

- How can planners bridge international human rights law and local planning practice in contexts where the right to housing is not legally recognized?

Citations:

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- Rajagopal, B. 13 UN reports and other submissions: https://www.ohchr.org/en/special-procedures/sr-housing/annual-thematic-reports

Key Words: Right to adequate housing, Global Housing Justice, anti-displacement, Multiplied displacement

Location, schmlocation? Siting and the promise of opportunity
Abstract ID: 2297.0.0.365.2026
Track 2: Community Development and Housing
Roundtable Submission, Topical Discussions

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Locating subsidized housing in areas with higher-income neighbors has become a policy goal formalized in federal and state tax credit criteria as well as municipal and county inclusionary zoning regulations. While case study results for voucher holders through Moving to Opportunity and other ensuing programs have demonstrated economic effects for children(Chetty et al., 2016), large questions about the mechanism of "opportunity" remain, especially for project-based subsidies. Here, we propose two, which render the outcomes of these goals unclear. First, we don't know enough about how policy incentives, such as QAP points for siting, unfold through their institutional frameworks to actually affect developers in their decision-making process to construct or preserve affordable housing in 'better' areas. Second, evidence from large and small-scale studies continues to be at odds on how much, if at all, housing located in 'better' areas actually delivers on the hypothesized benefits to their low and middle-income residents (McClure & Schwartz, 2021; Proussaloglou & Monkkonen, 2026; Reid, 2019). Clarifying these questions has immediate implications for planning scholars' guidance to policymakers, the metrics for housing policy evaluation, and the curricula for teaching housing in planning programs.

In the roundtable, our discussion will focus on these questions in the context of multifamily developments and current and expanding policies such as LIHTC and IZ in the US. All participants in our roundtable have active research undertakings centered on these debates, deploying a range of techniques and scales, including mobility data, surveys with developers, institutional analysis, and ethnographies. Participants will bring their empirical findings to delve into the 'actually existing' presence and function of some of the key mechanisms hypothesized to deliver benefits to residents, including proximate services, jobs, schools and social networks. We will also draw on prior work on the long history of arguments about deconcentration of poverty and access to opportunity, as well as work and research in other countries with recent ambitious location-based policies. We do not expect that this roundtable will resolve questions; it is our aspiration that it charts the contours of the debates and current findings that spark further engagement, collaborations, and research among all present.

Audience Engagement Questions:

- Do you know whether there are affordable housing developments in your neighborhood? (interactive poll)
- Do you think locating affordable housing in middle and high-income neighborhoods is a good thing? Why? (will take the form of an interactive poll)
- For the housing policy types: do you think that incentives for siting housing in 'better' areas in your jurisdiction, whether inclusionary zoning or LIHTC QAPs or otherwise, deliver on their goals? Why or why not? (responses, along with the feedback to the questions above will be collected, anonymized, and reported on in final minutes of roundtable)

Citations:

- Chetty, R., Hendren, N., & Katz, L. F. (2016). The effects of exposure to better neighborhoods on children: New evidence from the moving to opportunity experiment. American Economic Review, 106(4), 855–902. https://doi.org/10.1257/aer.20150572
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- Proussaloglou, E., & Monkkonen, P. (2026). What projects get built? The distinctive characteristics of Low-Income Housing Tax Credit projects in high-opportunity neighborhoods. Journal of Urban Affairs, 0(0), 1–25. https://doi.org/10.1080/07352166.2026.2628686
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Key Words: siting, opportunity, multifamily, microsegregation, access

Participatory Asset Mapping in Action: Reflections and Applications for Planning and Community Development Research and Practice

Abstract ID: 2295.0.0.1002.2026
Track 2: Community Development and Housing
Professional Development Workshop

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Participatory asset mapping has gained traction among planners and community developers as a data collection and engagement tool over the past few decades. However, there has been limited research on the applied practice of participatory asset mapping, the contexts in which it is implemented, and the evaluation of data collection processes and outcomes (Van Assche & Gruezmacher, 2024; Brown & Kyttä, 2018).

In this professional development workshop, we explore participatory asset mapping as a means of generating community data and supporting revitalization efforts. The workshop will begin with an overview of participatory asset mapping as a community development tool and then transition to three case studies: a grass-roots participatory asset mapping project in Rochester, NY, a student-led participatory mapping project in the city of Buffalo, and a city-led neighborhood corridor asset mapping project in the city of Binghamton. These case studies build on growing research on post-industrial shrinking cities (Pallagst et al., 2022; Johnson et al., 2021) and showcase how participatory asset mapping can be utilized by various entities and at various scales as a data collection and participatory engagement method to drive community development.

Through the case studies, interactive activities, and group discussions, participants will explore the complexities of participatory asset mapping, unpack issues and opportunities related to utilizing mapping technologies, reflect upon community participation in the design and execution of projects (Slotterback & Lauria, 2021), and the operationalization of their findings. Over the course of the workshop, participants will learn how to design collaborative participatory asset mapping research and/or professional projects, grounded in community-led engagement, empowerment, and local capacity-building to drive positive community outcomes (Johnson et al., 2021).

Session attendees will walk away with practical examples of how these methods can be incorporated into their research and/or applied planning practice, including learning how to select and design an appropriate participatory mapping tool using ESRI's Survey123 and other open-source data collection platforms, organize and train volunteers and students, and implement successful crowdsourced data collection programs. Participants will offer critical reflections on lessons learned for practitioners and community organizations, as well as pedagogical considerations for faculty seeking to utilize participatory asset mapping for studios and community-based work. By the end of the workshop, participants will feel confident in using participatory asset mapping as a method to enrich student learning, advance planning research, and build community capacity through inclusive planning and engagement.

Agenda

- Introduction to Participatory Asset Mapping (10 minutes)
- Application of Participatory Asset Mapping Projects for Scholars & Practitioners (20 minutes)

- Opportunities & Challenges for Research & Practice Exercise (15 minutes)
- Group Discussion (15 minutes)
- Participatory Asset Mapping Design Exercise (15)
- Group Discussion & Final Reflections (15 minutes)

Reminder(s) for Workshop Participants: Come to the workshop with reflections of past projects and/or ideas for future research projects, professional projects, or student studios that could benefit from participatory asset mapping methods.

Citations:

- Van Assche, K., & Gruezmacher, M. (2024). Asset mapping 2.0; contextual, iterative, and virtual mapping for community development. Community Development 55(2):195–210. https://doi-org.gate.lib.buffalo.edu/10.1080/15575330.2022.2131861.
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- Slotterback, C., & Lauria, M. (Eds.). (2021). Learning from Arnstein's ladder: from citizen participation to public engagement (1st ed.). Routledge, Taylor & Francis Group.

Keywords: Participatory Mapping, Community Engagement, Asset Mapping, Planning Tools, Participatory Methods

Track 2 Individual Paper Presentations

A COMMERCIAL COMMONS? ANALYZING THE RISE OF COMMUNITY-OWNED COMMERCIAL PROPERTY
Abstract ID: 2298.0.0.594.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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With few exceptions, community land trusts and other models of community-owned real estate have focused on residential property (Moore & McKee, 2012). Today, however, a growing number of nonprofit, civil society, and community development organizations are experimenting with models of community-owned commercial property (Duranti-Martínez, 2022; Loh & Love, 2021). While practitioners have begun promoting individual stories of successful commercial community ownership, this phenomenon has scarcely been investigated by scholars of community development. This paper seeks to advance understanding of these emerging models, explore their implications in different contexts, and identify best practices for community development practitioners.

We ask: Who are the stakeholder coalitions driving these efforts? What goals motivate these groups, and how do they choose a specific model of community control? How do differences in acquisition, development, governance, and ownership drive differences in the way these models work, and with what potential implications? To answer these questions, the paper draws on interviews conducted with ten U.S. organizations implementing these models, alongside analysis of documents from these projects and others identified in the United States. We develop a typology of commercial community ownership models and explore how differences across the types are rooted in neighborhood context, organizational goals, and underlying ideas about how shared ownership of commercial space promotes community development.

The typology is utilized to consider how different models of community-owned commercial property are suited to different contexts and relate to different "theories of action" in community development (Wolf-Powers, 2014). We also analyze our findings with respect to wider concerns around commercial gentrification and the shifting economics of neighborhood retail as they relate to urban, spatial, and racial inequality (Zukin et al., 2009). The analysis highlights progressive possibilities while emphasizing that long-term outcomes may diverge in meaningful ways across different institutional models of community ownership. Understanding these factors can help practitioners and communities pursuing commercial community ownership to identify the model best suited to their context and goals, while also enabling planners and policymakers to evaluate the capacity of community-owned commercial property to advance broader aims of neighborhood revitalization and economic justice.

Citations:

- Duranti-Martínez, J. (2022). Commercial Community Ownership as a Strategy for Just Development. Local Initiatives Support Corporation. https://www.lisc.org/our-resources/resource/commercial-community-ownership-strategy-just-development/
- Loh, T. H., & Love, H. (2021). The emerging solidarity economy: A primer on community ownership of real estate. Brookings Institution. https://www.brookings.edu/articles/the-emerging-solidarity-economy-a-primer-on-community-ownership-of-real-estate/
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Keywords: shared ownership, community ownership, commercial property, community wealth, commercial gentrification

AFFORDABLE TODAY, AFFORDABLE TOMORROW? A LONGITUDINAL COMPARISON OF SHARED EQUITY AND MARKET-RATE HOUSING SALES PRICES

Abstract ID: 2298.0.0.672.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Homeownership has long been viewed as a cornerstone of household stability and wealth-building. Yet amid the housing affordability crisis, homeownership rates have stagnated and declined among younger and low-income households (Joint Center for Housing Studies, 2025). Researchers attribute this trend to rising entry barriers, rapid price appreciation, and constrained supply. In response, policy solutions have emerged, including shared equity homeownership (SEH) programs that embed subsidies within housing units to improve access for income-qualified households (Ehlenz and Taylor, 2019).

A growing body of comparative evidence highlights the broader impacts of SEH on income-qualified households. SEH reduces barriers to homeownership, lowering mortgage costs relative to similar non-SEH households and improving access to opportunity (Theodos et al., 2017). SEH programs improve household financial well-being, enabling wealth-building comparable to alternative investments such as stocks (Temkin et al., 2013).

Comparative research on SEH permanent affordability remains limited. A key feature of SEH programs is that affordability subsidies are retained with the unit over multiple sales, in contrast to traditional subsidy models where the benefit follows the household and dissipates upon resale. Few studies examine the efficacy of SEH subsidy retention over time and across market cycles. This study addresses these gaps with two primary questions:

1. To what extent do SEH programs in Arizona create and preserve affordable housing relative to comparable market-rate homes across the price distribution and over housing market cycles?

2. How do SEH programs balance the preservation of long-term housing affordability with opportunities for wealth accumulation through price appreciation relative to market-rate homes over the resale cycle?

To address these questions, we analyze more than 350 CLT units from Arizona's two largest CLT programs. We construct a novel database of property and transaction details from 2002 to 2025. We match the SEH properties to up to five proximate non-SEH transactions, adapting the Federal Housing Administration's appraisal guidelines with proprietary data from Cotality. The analysis deploys: (1) a weighted two-way fixed effects model to assess the discount affordability gap between market and SEH properties at the initial purchase and subsequent resales; and (2) a quantile regression to estimate the price discount at three price levels to assess its depth. Subsequently, we use an interactive log-linear interaction model to estimate the stability of SEH affordability across market periods. Lastly, we construct an indexed price appreciation series for SEH and non-SEH properties to assess differences.

We find that CLT properties are sold at a statistically significant discount, accounting for time and location, reducing purchase price by $36,000 on average. The relative scale of CLT discount is variable based on quantile price distribution, with the greatest discounts for median-priced homes. Over time, the magnitude of the CLT price discount follows housing market cycles. Spatially, we also observe variation in CLT discounts across neighborhoods. Following purchase, we find that CLT and non-CLT homes initially exhibit similar appreciation trajectories, while non-CLT homes experience greater cumulative appreciation and CLT homes display more compressed price growth over longer holding periods. This remains consistent with resale constraints that limit appreciation gains over time.

This study demonstrates the SEH model's efficacy as a scalable blueprint for lowering entry barriers, preserving affordability, and building wealth for low-to-moderate-income households. It expands the evidence base for alternative housing models, offering actionable guidance for policymakers and communities seeking sustainable strategies to broaden access to affordable homeownership.

Citations:

- Acolin, A., Ramiller, A., Walter, R. J., Thompson, S., & Wang, R. (2021). Transitioning to homeownership: asset building for low-and moderate-income households. Housing Policy Debate, 31(6), 1032-1049.
- Ramiller, Alex, Arthur Acolin, Rebecca J. Walter, and Ruoniu Wang. 2024. "Moving to Shared Equity: Locational Outcomes for Households in Shared Equity Homeownership Programs." Housing Studies 39 (5): 1239–63. https://doi.org/10.1080/02673037.2022.2115467.
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- Wang, R., Cahen, C., Acolin, A., & Walter, R. J. (2022). Tracking growth and evaluating performance of shared equity homeownership programs during housing market fluctuations. Lincoln Institute of Land Policy.

Keywords: Shared Equity Model, Housing Affordability, Community Land Trust, Homeownership

AN EVALUATION TOOLKIT FOR CLIMATE ADAPTATION: LEARNING WITH HOUSING PROVIDERS IN ALASKA

Abstract ID: 2298.0.0.511.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Alaska housing providers often function as de-facto community planners and can work in a specific community or across a region the size of Oregon. Local housing providers are tasked with not only operating housing but also planning for more resilient housing, overseeing development, maintaining an aging housing stock, and coordinating or providing direct service programs such as weatherization, food distribution, and more. Furthermore, community housing providers face myriad intersecting challenges including rising costs of construction, shrinking public funding, and increasing climate impacts to buildings and residents.

Within this milieu, how do housing providers know what housing "works?" In this participatory action research project, we iteratively developed a housing evaluation toolkit for housing providers in Alaska to support their learning, decision-making, and housing action in a changing climate. A seven-member advisory panel of Tribal and public housing providers and climate policy experts, 40 interviews, and two literature reviews informed the initial toolkit which was then tested and refined with six housing providers across Alaska. The toolkit includes a worksheet to collect objective data about the housing structure, building systems, performance, and costs; an interview guide organized by professional role; a resident focus group script; and a template for sharing lessons learned in a two-page, graphically rich fact sheet. We found that iteration and co-design supported the validity of tools and fact sheets, and that multiple methods of gathering and sharing lessons supported evaluation use. Capital costs were the most challenging piece to find but often the most important for replication and decision making. Emphasizing collective social learning made sharing negative outcomes easier. This approach to evaluation toolkit design could be replicated for housing geographies outside Alaska and by other organizations that support community wellbeing in a changing climate.

Citations:

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- Heslop, J. (2021). Learning through building: Participatory action research and the production of housing. Housing Studies, 36(6), 906–934. https://doi.org/10.1080/02673037.2020.1732880
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- Parag, Y., & Janda, K. B. (2014). More than filler: Middle actors and socio-technical change in the energy system from the "middle-out." Energy Research & Social Science, 3, 102–112. https://doi.org/10.1016/j.erss.2014.07.011

Keywords: Affordable housing, Tribal housing, Social learning, Evaluation, Climate adaptation

ANTI-DISPLACEMENT POLICIES AND HOUSING OUTCOMES: EVIDENCE FROM CALIFORNIA

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Track 2: Community Development and Housing
Individual Paper Presentation

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Rising housing costs and income inequality have led to residential displacement in cities across the world, with significant consequences for housing and neighborhood stability as well as household outcomes. In order to help keep households in place, some jurisdictions have enacted anti-displacement policies, ranging from tenant protections, such as rent control and just cause eviction policies, to production strategies, such as developing subsidized affordable housing.

Historically the economics and policy literature on anti-displacement policies has focused on large-scale traditional policies like rent control (Sims 2007; Diamond et al. 2018; Stacy et al. 2025). More recently, there has also been some research on temporary eviction moratoria and rental assistance programs during the Covid-19 pandemic (Collinson et al. 2024; Manville et al. 2023). However, research on the impacts of other anti-displacement programs remains limited, as does comparative work on the relative effectiveness of different policies, due to a combination of not having comprehensive data on the prevalence of anti-displacement policies and the difficulty of tracing renter outcomes.

This paper addresses the gap in the literature on the impacts of multiple anti-displacement policies by using a newly developed policy inventory of 21 anti-displacement policies in jurisdictions across California. We first conduct a quantitative analysis to understand the prevalence and implementation timelines of such policies. We then use the implementation of select policies in combination with the use of proprietary data (Data Axle) on household moves to understand residential mobility and potential displacement before and after the implementation of such policies. The results provide insight into which policies show the most promise in reducing residential displacement.

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Keywords: Anti-displacement policy, Residential displacement, Housing policy, California

APPRAISING RACE: HOW HOMEOWNER RACE AND ETHNICITY AND NEIGHBORHOOD RACIAL COMPOSITION INFLUENCE PROPERTY VALUATION

Abstract ID: 2298.0.0.337.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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Previous research demonstrates that properties in predominantly minority neighborhoods, especially Black and Hispanic communities, are often appraised at lower values than comparable properties in predominantly White neighborhoods, even after accounting for home size, condition, and location (Howell & Korver-Glenn, 2022; Rothwell & Perry, 2022). The underlying causes of these appraisal gaps remain contested. Some scholars attribute these disparities to direct appraisal bias or broader systemic factors, such as historical neighborhood disadvantage and discriminatory lending practices, while others contend that neighborhood context exerts a greater influence than homeowner race. Most prior empirical studies have identified appraisal bias at the neighborhood or census tract level, using neighborhood racial composition as a proxy for race, and neglecting homeowners' individual racial or ethnic identities. Omitting individual identity risks conflating neighborhood effects with personal biases and may obscure subtler forms of discrimination when appraisers assess properties owned by racial or ethnic minorities. This study fills a gap by examining how homeowner race and ethnicity, in conjunction with neighborhood racial composition, independently and jointly affect appraised property values, while controlling for property and neighborhood characteristics that may influence these appraisals. Using the Uniform Appraisal Dataset (UAD) Appraisal-Level Public Use File (PUF) V1.0—the first public dataset linking appraisal records with homeowner race and ethnicity—this study separates the effect of homeowner race and ethnicity from other factors, including neighborhood racial composition. The study also examines how racial disparities in appraised values vary across different neighborhood racial contexts and assesses the influence of neighborhood racial composition on appraisals for homeowners of various racial and ethnic backgrounds.

The results indicate that minority homeowners, particularly Black and Hispanic individuals, receive lower appraised values than White homeowners, even after accounting for neighborhood racial composition and property and neighborhood characteristics. Neighborhood racial composition has a more substantial impact on appraisal disparities than homeowner race or ethnicity. Properties in predominantly Black and racially mixed neighborhoods are appraised lower than similar properties in predominantly White neighborhoods, holding all other variables constant. Racial penalties are compounded for minority homeowners, especially those residing in neighborhoods with a high proportion of Black residents. In these contexts, penalties are most pronounced, with Black homeowners experiencing the largest reductions in appraised values. For example, homes owned by Black individuals in predominantly Black neighborhoods are appraised nearly 19% lower than similar White-owned properties in predominantly White neighborhoods, even after adjusting for all other factors. Comparable, though smaller, gaps are observed among other minority homeowners. These persistent appraisal gaps indicate that broader racialized dynamics within housing markets continue to shape appraisal outcomes.

Citations:

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Keywords: appraised property values, homeowner race, neighborhood

ASSESSMENTS ENCUMBERED: TAX LIENS AND RESIDENTIAL PROPERTY TAX INEQUITY

Abstract ID: 2298.0.0.1111.2026

Track 2: Community Development and Housing

Individual Paper Presentation

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Low-cost properties are assessed at higher fractions of market value than expensive properties in nearly every U.S. taxing jurisdiction, imposing disproportionate effective tax rates on the owners and occupants least able to bear them. Despite decades of reform efforts, regressive residential assessment remains pervasive. This paper tests one mechanism that could explain its persistence: the treatment of tax liens in assessment administration. Tax liens are claims on property arising from unpaid taxes, fees, and utility obligations that attach to the property. When lien-encumbered properties sell, lien balances may transfer to buyers, recorded sale prices understate buyers' total economic commitments. Assessment practice compounds this problem through two channels. First, when assessors record a lien-encumbered sale at contract price alone, they mechanically understate the transaction's economic value. Second, industry standards and state guidance recommend excluding lien-encumbered transactions from sales comparisons as presumptively distressed. In neighborhoods where liens are prevalent, this trimming systematically removes the most representative market activity, biasing remaining comparisons upward.

These channels satisfy conditions necessary to explain nationwide assessment regressivity: tax liens exist in all U.S. jurisdictions, concentrate among the lowest-value properties, and predominate in jurisdictions where measured bias is most severe. Unlike existing explanations founded in administrative capacity or neighborhood omitted variables, the lien mechanism explains why bank appraisals do not exhibit the same directional bias, since appraisers can avoid lien-encumbered properties entirely while assessors must value every parcel.

We test this hypothesis using comprehensive property records from Cuyahoga County, Ohio, covering over 440,000 residential parcels from 2018 through 2024. The analysis links parcel-year-level assessment records, sales transactions, and itemized lien data to compare standard vertical equity measures with lien-adjusted alternatives. The empirical approach compares assessment ratios under three conditions: standard practice excluding lien-encumbered sales, inclusion of lien-encumbered sales with prices adjusted upward by outstanding lien balances, and sensitivity analyses varying inclusion criteria. We employ industry-standard measures of vertical equity, as well as those recommended in recent literature.

Preliminary findings indicate that liens affect 39 percent of bottom-decile properties compared to 4 percent of top-decile properties, and where present, average 16 percent of property value in the lowest decile. Adjusting sale prices for assumed lien balances substantially narrows measured assessment ratios at the bottom of the value distribution, where regressivity is most acute. The results suggest that a share of measured vertical inequity reflects not assessment error but incomplete measurement and that regressivity might be relieved at little cost. Incorporating lien data into assessment calculations, rather than trimming sales, represents a straightforward administrative reform. Lien records are maintained by the tax authorities responsible for assessment. Integrating these records into sales verification could improve equity in distressed communities while requiring minimal changes to existing assessment infrastructure.

Citations:

- Hodge, Timothy R. "Decreasing Delinquency Through Assessment Reductions: Evidence from Detroit." Journal of Urban Affairs 43, no. 5 (2021): 685–701. DOI: 10.1080/07352166.2019.1578175

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Keywords: Property tax equity, Assessment regressivity, Housing policy

ASYMMETRIC CAPITALIZATION OF FLOOD RISK IN HOUSING MARKETS: EVIDENCE FROM THE 2022 SEOUL FLOOD

Abstract ID: 2298.0.0.561.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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For most urban households, housing represents the primary store of wealth; how flood hazard exposure is capitalized into property values thus shapes the distribution of climate risk across communities. Prior research has established that ownership markets internalize future hazard exposure as persistent price stigma, while rental markets exhibit inelastic risk adjustment due to tenure characteristics, underscoring the need for disaggregated analysis across tenure types. This divergence reflects the dual function of housing as both an investment vehicle and a shelter good, producing heterogeneous pathways through which disaster risk is transmitted into prices. This study draws on South Korea's institutional context, marked by strong apartment preference and the Jeonse deposit-based lease system, to examine whether flood inundation risk is capitalized into sales and rental prices, and whether this capitalization varies across housing types (apartments versus low-rise multi-family units) and tenure modes (ownership versus leasehold). The study area is Seoul, where South Korea's housing market is most concentrated, with a temporal window spanning one year before and after the severe torrential rainfall event of August 2022. The dataset links transaction prices with official flood inundation maps, excluding areas with prior flood exposure to construct a spatial panel that isolates the net effect of a single event. Departing from prior work centered on average treatment effects, this study applies Coarsened Exact Matching to achieve covariate balance between treated and control groups, removing selection bias. Difference-in-Differences and Triple Difference estimators then identify capitalization pathways across price quantiles and floor levels. Three key findings emerge. First, the market-wide average price effect of flooding is statistically insignificant, yet sub-market estimates diverge markedly, indicating that offsetting mechanisms across strata mask the disaster signal at the aggregate level. Second, rents in the bottom quintile of the apartment leasehold market rose by 22.3% post-flood, demonstrating that low-income tenants are forced to bear these higher costs due to severely constricted housing choices and a lack of affordable alternatives. By contrast, in the low-rise multi-family ownership market, the top quintile appreciated by 38.4%, driven by redevelopment speculation and asset premiums, while units below the 80th percentile declined by 12.4%, demonstrating that hazard exposure disproportionately c the asset base of lower-income households. Third, semi-basement units carry a baseline discount of 32.8% in sales and 18.5% in rentals relative to above-grade units, with no additional post-flood adjustment detected. This pattern evidences a structural double stigma whereby physical vulnerability is pre-capitalized into prices, leaving no residual margin for further disaster correction. This study offers two contributions. For scholarship, it demonstrates that disaster risk is asymmetrically capitalized through the layered structure of the housing market, exposing climate sensitivity differentials across sub-market strata that pooled estimates conceal. For practice, it documents a climate inequality process in which economic losses are shifted onto vulnerable populations, providing an evidentiary basis for targeted policy responses, including displacement mitigation for low-income renters and adaptive retrofitting programs for at-risk housing segments.

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Keywords: Flood risk capitalization, Submarket heterogeneity, Climate inequality, Coarsened Exact Matching, Difference-in-Differences

BEYOND THE VISIBLE: EVERYDAY WATER RISK AND THE MAKING OF COMMUNITY IN POST-DISASTER TACLOBAN CITY, PHILIPPINES

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Individual Paper Presentation

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In a low-income resettlement neighborhood in Tacloban City, Philippines, water is everywhere in the landscape. After rainfall, streets quickly turn into muddy streams that flow nowhere, and children often bathe outside during rain events, standing under runoff from rooftops. Water scarcity is also visible in everyday supply routines, as laid pipes seldom contain water. In front of communal tanks and wells, rows of containers line the ground as residents queue to collect their share.

Tacloban City was the hardest hit by Typhoon Yolanda, the strongest storm ever recorded to make landfall in the country in 2013. Guided by the "Build Back Better" planning principle, the city has relocated informal settlers from the congested city center to peripheral "risk-free" resettlement estates. These estates house more than fifteen thousand families for over a decade, yet water infrastructure remains incomplete. Implemented rapidly through state-led interventions, these housing projects overlooked water availability—particularly the geographic isolation of relocation sites from reliable water sources. As a result, they have reproduced social conditions that expose residents to a different form of risk: "everyday water risk," a condition widely discussed in urban and social studies as distinct from natural hazards.

While planning has long sought to minimize risk, this article argues that certain forms of risk can function as adaptive pressures that foster urban vitality and resilience. Rather than focusing on the physical landscape shaped by infrastructure—or its absence—this study turns to the rules and social groups that emerge within these underserviced communities. It situates these bottom-up processes of community development within broader debates in risk preparedness planning, treating water and its infrastructure as an analytical lens through which to examine the formation of mutual-support systems in relocated communities.

The research question guiding this study is: how does everyday water risk in post-disaster relocated neighborhoods in Tacloban City shape community development, and with what consequences for social relations and community dynamics? The article draws on fieldwork consisting of semi-structured questionnaire surveys with relocated families across multiple estates, using an anthropological approach to understand community demography, grassroots initiatives, and the factors that enable or constrain them. Grounded in empirical community-level investigation, this approach shows how everyday water risk is not only visible in the physical landscape but also actively organizes collective practices and everyday behaviors of residents—many of whom had no prior experience of formal housing and were unfamiliar with their neighbors prior to relocation.

The findings trace residents' adaptive trajectories: from initial hope for a new life, to disappointment with inadequate basic services, and eventually to everyday adaptation to water risk. Immediate water scarcity, along with its disproportionately high cost of water, has acted as a catalyst for small-scale self-governance to ensure a fair distribution among households, as well as for cases where water becomes a commodity within community-based micro-economies. At the same time, responses to water reveal patterns of exclusion— between those who adapt and those left behind—indicating emerging disparities within low-income neighborhoods.

In focusing on Tacloban's post-disaster community development process, the article demonstrates how risk—often framed as a condition to be managed—can also operate as an instrument shaping social relations, including both cohesion and disparity. The case challenges current practices of community planning and development for

vulnerable populations, offering a critical lens that repositions everyday risk not as a disturbance to be eliminated, but as a condition that can be engaged and, at times, harnessed in the making of more resilient communities.

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Keywords: Post-disaster Planning, Community Development, Risk, Water Infrastructure, Relocation

BROWNFIELD-TO-HOUSING REDEVELOPMENT: PATHWAYS TO PLANNING, POLICY, AND PROJECT FEASIBILITY

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Individual Paper Presentation

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Housing availability and affordability remain critical issues across the U.S. As housing costs rise for renters and owners alike, innovative approaches are urgently needed, especially to support disadvantaged groups. Brownfields, sites previously developed and affected by contamination, offer an untapped opportunity to help address this crisis. With over 450,000 brownfields nationwide, they hold considerable potential due to existing infrastructure, proximity to city amenities, and compatibility with smart growth strategies. However, brownfield-to-housing initiatives remain underexamined in planning research, which has mainly focused on general redevelopment or post-project impacts. This study asks how brownfield redevelopment can be leveraged to support housing production and affordability, and what planning, governance, and institutional conditions make these projects feasible.

The research uses a comparative case study approach grounded in an inventory of successful brownfield-to-housing projects developed in collaboration with the Technical Assistance to Brownfields (TAB) Program. From this broader inventory, Salt Lake City, Utah, was selected as a focal case because of its concentration of brownfield-to-housing developments and the institutional complexity of its redevelopment landscape. We conducted stakeholder interviews with local planners, government officials, housing agencies, nonprofit organizations, and community representatives. These semi-structured interviews were supplemented by document analysis of policy reports, planning documents, and funding records to assess regulatory frameworks, redevelopment processes, and financing strategies.

Findings indicate that brownfield-to-housing redevelopment depends not only on reducing environmental uncertainty, but also on aligning institutional systems throughout the development process. In Salt Lake City, projects advanced when environmental review, financing, and planning processes were coordinated early, enabling stakeholders to identify risks, set expectations, and modify project designs before making major commitments. Technical assistance programs and voluntary cleanup programs were vital not only for supplying resources, but also for making sites more legible and actionable for developers, planners, and lenders. At the same time, redevelopment was often constrained by mismatched timelines, fragmented funding, and administrative complexity. The analysis shows that brownfield-to-housing redevelopment is best understood not simply as a remediation challenge, but as a planning and governance problem shaped by coordination, timing, and institutional capacity. These findings suggest several key recommendations: expanding early environmental diligence and predevelopment support, better aligning remediation and housing finance timelines, integrating brownfield redevelopment more directly into housing policy and affordability strategies, and enhancing institutional capacity. Overall, these insights reframe brownfield redevelopment as a matter of coordination and planning capacity with significant implications for how cities can utilize underused land to alleviate housing shortages.
By identifying the planning and institutional conditions that shape project feasibility, this study offers evidence-driven guidance for strengthening brownfield-to-housing initiatives. It addresses an important gap in urban planning research and advances policy-oriented strategies for tackling housing shortages through land reuse and more equitable redevelopment.

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Keywords: Housing, Brownfields, Smart Growth, Sustainable Development

BUILDING COMMUNITY UNDER CONSTRAINT: MIGRANT WORKERS IN A SHRINKING INDUSTRIAL CITY

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Urban shrinkage has become a global concern, often characterized by population decline, urban disinvestment and stressed infrastructure. In Ulsan, a major industrial city experiencing demographic decline, local industries have increasingly relied on migrant labor to address persistent workforce shortages in the shipbuilding sector. As of early 2026, foreign residents account for approximately 3.2% of the city's population, reflecting their growing role in sustaining the local economy. Yet, despite their economic importance, the rapid increase in migrant workers is often perceived as contributing little to local revitalization and, in some cases, as placing additional strain on already fragile socio-economic conditions. Migration in such contexts seems deeply contested, as migrants are alternately framed as necessary for economic survival and as burdens within already strained local communities. This study engages with this tension by examining how migration is governed and experienced in a shrinking industrial context. Moreover, South Korea adopts the developmental migration state, where migrants are primarily evaluated in terms of their economic utility and are positioned as temporary and replaceable labor. However, this institutional framing contrasts with the realities of everyday urban life, where migrants inevitably become embedded in local spaces. While much migration study focuses on contexts where immigrant communities are well established, this research extends this perspective to migrant-led community infrastructures that emerge under conditions of constrained settlement and temporariness, producing more limited, fragmented, and often unrecognized forms of economic integration.

Focusing on Dong-gu district in Ulsan, this study asks: how do migrant workers build and use community-based infrastructures under temporary and constrained conditions, and how are these practices recognized or misrecognized within local narratives of economic decline? Drawing on an ongoing qualitative case study based on semi-structured interviews and field observations, the research explores spaces such as ethnic grocery stores, cafes, restaurants and religious sites as key nodes of community formation.

Findings suggest that these infrastructures are not simply expressions of cultural preference or integration but emerge as adaptive responses to structurally constrained living and working conditions, particularly around food access, housing, and temporariness. For instance, limited access to halal food in workplace cafeterias, combined with dormitory housing that lacks cooking facilities, has generated strong demand for migrant-oriented food services. These spaces, in turn, function as social hubs and generate spillover effects that extend beyond co-ethnic networks, subtly reshaping neighborhoods economies and everyday social interactions.

As a result, migrant contributions in shrinking cities are often misrecognized because they occur through small-scale, informal, and everyday infrastructures that fall outside dominant measures of economic development. This points to the need for planning frameworks to adapt to increasingly diverse communities and to develop alternative approaches for recognizing and valuing migrants' social and economic contributions.

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Keywords: Immigrant, Urban shrinkage, Immigrant economy, Social infrastructure, Everyday urbanism

COMMUNITY-BASED ORGANIZATIONS AS KEY INTERMEDIARIES : RECONFIGURING SOCIAL CAPITAL FOR RURAL CULTURAL REVITALIZATION IN ZHEJIANG, CHINA

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Individual Paper Presentation

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Rural cultural revitalization in China often remains short-lived, seasonal, and event-driven, making a sustainable path difficult to achieve. Existing studies have largely understood rural cultural revitalization as a process of cultural preservation, public cultural space-making, or cultural and tourism development (Wondirad et al., 2021), while its internal mechanism remains insufficiently explained. Drawing on Resource Orchestration Theory (Sirmon et al., 2011), this paper defines rural cultural revitalization as a process in which cultural resources achieve structuring, bundling, and leveraging, and understands its unsustainability as rupture in cultural resource orchestration. Existing studies based on Resource Orchestration Theory have mainly focused on business practice, green innovation, and supply chain management, emphasizing how resource orchestration affects performance outcomes (Malik et al., 2021), while paying less attention to how it takes place. This paper argues that social capital configuration profoundly shapes the orchestration of rural cultural resources, and that the unsustainability of rural cultural revitalization stems from rupture in cultural resource orchestration caused by imbalanced social capital configuration.

Building on this dilemma, this paper further turns to its optimization path and views Community-Based Organizations (CBOs) as key intermediaries in addressing it. Existing studies have recognized that CBOs play an important intermediary role in connecting community needs with external resources and promoting local action (Molden et al., 2017; Abrams et al., 2017), yet studies that explicitly conceptualize CBOs as key intermediaries driving regional development and systematically analyze their mechanisms remain limited. This paper argues that, as key intermediary organizations embedded in local society and linking multiple actors, CBOs can optimize bonding, bridging, and linking social capital, thereby enabling cultural resources to achieve structuring, bundling, and leveraging and moving rural cultural revitalization toward sustainable reproduction.

This paper adopts a comparative case study approach and draws on semi-structured interviews, participant observation, and policy and project documents. Focusing on Fangyan Village and Yudong Village in Zhejiang Province, China, it asks: (1) how do CBOs promote cultural resource orchestration by optimizing social capital configuration and thereby achieve sustainable rural cultural revitalization? and (2) under CBO intervention, why do different villages form differentiated patterns of social capital configuration and direct cultural resources toward different orchestration trajectories?

The findings show that, at different stages of cultural resource orchestration, CBOs selectively reconfigure social capital configuration, thereby facilitating the realization of resource orchestration and promoting sustainable rural cultural revitalization. Further comparison reveals that, under CBO intervention, the two villages exhibit different configurations of social capital, which produce distinct orchestration trajectories. One village starts from bonding social capital and introduces external support through linking social capital, resulting in an institutionalization-oriented mode of cultural resource leveraging. The other builds on bonding social capital while using bridging social capital to open market channels, resulting in a market-oriented mode of cultural resource leveraging.

This paper explains the unsustainability of rural cultural revitalization as rupture in cultural resource orchestration caused by imbalanced social capital configuration, reveals CBOs as key intermediaries in sustaining cultural

resource orchestration through social capital reconfiguration, and shows how differentiated, stage-specific, and sequential reconfiguration of social capital shapes different development trajectories of rural cultural revitalization.

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Keywords: CBOs, key intermediaries, cultural revitalization, resource orchestration, social capital

CONGREGATIONAL DECISION MAKING FOR AFFORDABLE HOUSING IN NEW YORK CITY

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Individual Paper Presentation

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Congregations across the country are building affordable housing on their land. Many faith leaders looking to develop or redevelop their properties are driven by their mission to prevent displacement and combat gentrification (Mian, 2024), but to what extent does the development process reflect their mission and values? How do congregations navigate this process and discern between different development outcomes? In areas where there is a high density of these developments and high commercial and business activity such as New York City, studying the intersection between a congregation's motivations to redevelop their property and the development process can show how congregations approach affordable housing. Fisher (2024) discusses the ways that these developments can strengthen community engagement (Fisher, 2024), become spaces for activism and conversations around intersectional planning (Strassner, 1996; Baker and Hine, 2025), and provide more socio-economic opportunities for those who live in these spaces (Fisher, 2024). Few papers have discussed how these affordable housing developments came into fruition. Through the Affordable Housing and Shelter on Faith Land database, our research catalogued at least 13 completed developments in New York City between 2019 and 2024. Drawing from our sample, this paper will discuss how faith leaders in New York City approached stopping displacement and gentrification by building affordable housing through semi-structured interviews, spatial analysis, and by examining local and state housing policies.

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Keywords: affordable housing, gentrification, displacement, development, New York City

CULTIVATING MEDICAID'S SUPPORTIVE HOUSING WORKFORCE

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Track 2: Community Development and Housing

Individual Paper Presentation

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Supportive housing programs that pair rental assistance with services such as case management and health care have a strong record of promoting housing stability among people with disabilities, older adults, and people experiencing homelessness (Aubry et al., 2020; Peng et al., 2020). Given these promising results, the U.S. Medicaid program has progressively made it easier for states to use Medicaid funding to expand and institutionalize supportive housing programs, as doing so helps contain health care spending by reducing costly emergency room visits, hospitalizations, and long-term institutional care (Bamberger, 2016).

The Biden administration, in particular, furthered these efforts through its Health-Related Social Needs (HRSN) framework, which departed from Medicaid's longstanding prohibition on room and board to allow states to cover time-limited housing supports, including short-term rental assistance, as defined benefits for high-need populations (McConnell et al., 2023). The framework also made federal funds available to build the capacity of community-based providers to deliver these services, explicitly routing implementation through non-traditional organizations rather than conventional Medicaid providers. While promising, this approach creates significant workforce challenges, requiring staff to bridge the housing and health care sectors, which have separate training pathways, credentialing requirements, and service delivery norms.

For states to successfully make use of the new opportunities created by HRSN, they must build and sustain a workforce skilled in navigating both housing and health care systems. Arizona is among the first states approved under the HRSN framework to launch a supportive housing program at scale, the Housing and Health Opportunities (H2O) Demonstration, through a network of community-based organizations (CBOs) with experience serving people experiencing homelessness, rather than through traditional Medicaid providers such as managed care organizations. Drawing on 49 semi-structured interviews, this study illuminates the strengths and weaknesses of Arizona's approach to developing this workforce.

Findings reveal that H2O staff drew deep meaning from helping members achieve housing stability, but faced significant job stress stemming from emotional demands, coordination complexity, and documentation burden. Organizational factors such as supportive supervision, peer networks, competitive compensation, and manageable caseloads emerged as critical to long-term workforce sustainability. These findings point to the need for dedicated workforce development infrastructure, including funding, training, and retention supports, as states expand HRSN-funded programs.

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Keywords: Supportive, Housing, Workforce

DID THE AMERICAN RESCUE PLAN ACT LEAD GOVERNMENTS TO SPEND MORE ON EQUITY?

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The American Rescue Plan Act (ARPA) provided local governments with an unprecedented windfall of flexible federal funding. Did this extra federal money encourage local governments to invest in equity-related programs addressing the disproportionate impacts of COVID-19 on households, affordable housing, and neighborhood environments? What differentiates the level of community development investment under ARPA? Whose need matters?

Measuring such investment has been empirically challenging because nearly two-thirds of ARPA expenditures were reported under a broad “revenue replacement” category. We employ Large Language Models to reclassify 77,811 revenue replacement projects into the 10 major substantive spending categories specified in U.S. Treasury guidance. The most equity-oriented category, negative economic impact, encouraged direct investment in households, housing and homelessness, non-profits, and small businesses. Overall, spending to address negative economic impacts accounted for one third of all ARPA spending by the 337 largest US cities and counties (population over 250,000). However, the level of investment in negative economic impact initiatives varied widely across these cities and counties. While 65 did not report any negative economic impact spending, 41 of these places actually invested in community development with their more flexible revenue replacement funds. But 26 governments invested nothing in community-oriented programs even after reclassification.

Our regression models further examine how political orientation, socioeconomic need and fiscal context shape local allocation of ARPA funding to address negative economic impact. We find a progressive orientation matters most. Democratic-leaning places invest more in these community programs. Need, measured as poverty did not drive community investment; and places with a larger percentage of people of color actually spent less on negative economic impact. But an interaction of poverty, minority and Democratic orientation is positive and significant, suggesting that need activates equity investment only in politically progressive places. Specific housing need measures, such as rent burden and aging housing stock, also lead to greater community investment. Fiscal context matters only partially. Cities receiving more state aid were more likely to invest their ARPA funds in community development, whereas those burdened with more local social welfare expenditures invested less. State constraints on local expenditures had no effect, in part because ARPA eased those constraints. These findings illuminate both the possibilities and limits of flexible federal grants in nudging large urban governments toward redistributive community investment. The flexible ARPA grant opened the policy window, but it takes progressive local political orientation to translate this opportunity into equity investment for those most in need.

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Keywords: American Rescue Plan Act, Equity-oriented spending, Community development, Local government finance, Large Language Models

DISASTER JUSTICE AND INVISIBLE TENANTS: HOW HOUSING TENURE IS AFFECTING VULNERABILITY IN POST-DISASTER RECOVERY IN LOS ANGELES AFTER THE EATON FIRE

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Individual Paper Presentation

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Disaster recovery is often measured through indicators of homeowner recovery, such as rebuilding permits, insurance claims, and property sales. These metrics shape how recovery is tracked, but they overlook tenants, whose ability to return depends not only on their own resources, but on whether rental housing is rebuilt. At the same time, disaster recovery scholars have shown that post-disaster funding and policy disproportionately prioritize single-family homeowners, while tenants receive less support and are often treated as transitory and less central to their communities (Lee and Van Zandt 2019; Peacock et al. 2014). Together, these dynamics leave tenant recovery both under-supported and poorly captured; creating conditions in which post-disaster rebuilding decisions can accelerate displacement (Stoler et al. 2025; Lambrou et al. 2025).

This paper examines how housing tenure shapes vulnerability and recovery following the 2025 Eaton Fire in LA County, which destroyed nearly 10,500 structures across foothill communities in the San Gabriel Valley, particularly Altadena. As a racially and economically diverse community, Altadena provides an important case for understanding equity in recovery within mixed-income, multiethnic urban neighborhoods. We focus on tenants and examine their housing conditions, tenure, and the extent to which rental housing has been affected and is returning. To answer these questions, we draw on a combination of Census data, local administrative datasets, rental listings, and recovery indicators.

First we find that tenants were a significant and long-standing part of Altadena's community, yet were also more vulnerable and less visible in recovery. They made up more than one-fifth of households and nearly 70 percent had lived in Altadena since 2010. At the same time, tenants were more racially and ethnically diverse, had lower incomes, and higher rates of poverty than homeowners. This vulnerability is further shaped by the structure of the rental market. While we identified 2,150 rental units prior to the fire, Census data suggest there were about 3,300 tenant-occupied households, pointing to a substantial presence of informal rental housing. These households are often less legible in recovery systems, making them harder to reach and more vulnerable to displacement as recovery unfolds.

Second, we show that fire had a significant impact on the rental housing stock and the pockets of affordability it sustained in an already deeply unaffordable LA County. Seven in 10 properties with rental units were located within the fire perimeter, and 927 units were on properties where buildings sustained severe structural damage. A substantial share of this housing was rent-stabilized, with over two-thirds located within the fire perimeter. The fire also reduced the supply of naturally affordable rental housing, as market-rate units on severely damaged properties had rents that were, on average, 17 percent lower than comparable units on undamaged properties.

Thirdly, recovery patterns one year after the fire further highlight these disparities. While roughly 45 percent of single-family homeowners with severely damaged homes had filed for rebuild permits, only a quarter of properties with rental units within the fire perimeter show any recovery activity, including sales, listings, or permits. This uneven pace of recovery has important implications for tenants' ability to return, since that depends heavily on whether and what type of rental housing is rebuilt.

We conclude with policy recommendations, including coordinated disaster case management for tenants; policy support for public or nonprofit entities to redevelop fire-impacted properties for long-term affordability; incentives for small-scale multifamily housing, such as fourplexes and bungalow courts; and regionwide rental data infrastructure to better assess rental housing, displacement, and tenant protections in disaster and non-disaster contexts.

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Keywords: Renters, Racial equity, Disaster recovery, Wildfires, Gentrification

DOES PROXIMITY MEAN PRIORITY IN NEIGHBORHOOD PLANNING? CITIZEN PARTICIPATION IN A SHRINKING CITY

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Track 2: Community Development and Housing
Individual Paper Presentation

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Planning aspires to achieve equitable processes and outcomes by fostering citizen participation. However, practitioners frequently encounter a fundamental tension: how to mobilize public engagement without allowing the public interest to be overshadowed by the parochial concerns of participants. This study explores this tension through the lens of spatial proximity, examining the underlying logic of citizen participation in neighborhood planning within the context of shrinking cities. We focus on Youngstown, Ohio, a paradigmatic shrinking city in the U.S. Rust Belt. Between 2015 and 2017, Youngstown implemented a series of Neighborhood Action Meetings (the Meetings), where residents reviewed progress and proposed planning interventions. These meetings provide a unique spatial record to investigate how geographical relationships influence participatory decision-making.

Methodologically, we analyzed minutes from all Meetings, extracting attendee names and cross-referencing them with public databases (e.g., Whitepages and the Ohio Residents Database) to geo-code their residential addresses. We further extracted the specific locations of action items suggested by these attendees. Utilizing a Gradient Analysis approach, we assessed the spatial distribution of three distinct datasets within incremental buffer zones (starting at a 60-foot radius) around attendees' homes: (a) an objective baseline of vacant properties from an independent third-party survey; (b) attendees' suggested action items, representing private preferences; and (c) official demolition records from 2015–2017, reflecting tangible planning outcomes.

Our findings reveal a clear spatial bias: attendees disproportionately recommended vacant properties located within their immediate vicinity—most notably within a 180-foot radius. These nearby properties were suggested at rates significantly higher than those situated farther away, confirming that proximity is a pivotal driver of participant priorities. In contrast, both the baseline vacancy data and actual demolition records displayed a more uniform spatial distribution, showing no evident clustering around attendees' addresses. This discrepancy highlights a disconnect between participatory preferences and ultimate planning outcomes. Follow-up interviews with local informants confirmed that residential location was rarely considered during recruitment; instead, participants typically arrived with a "list of concerns" centered on properties adjacent to their own homes.

We conclude that while participants in Youngstown's Meetings prioritize "problem properties" near them, they do not reap disproportionate benefits from actual implementation compared to non-participants. This finding challenges the assumption that participatory planning inherently translates into locally tailored or equitable results. Instead, it suggests that broader institutional decision-making and resource constraints often dilute individual spatial preferences during the implementation phase.

This study implies that planners must critically account for the spatial distribution of participants. Striking a balance between robust engagement and the broader public interest requires nuanced strategies—such as diversifying representation or integrating objective spatial data—to prevent participatory processes from being skewed by localized interests. In resource-scarce contexts like Youngstown, navigating these spatial dynamics is essential for achieving truly equitable and effective urban revitalization.

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Keywords: Citizen Participation, Distance Decay, Neighborhood Planning, Shrinking Cities, Participation Motivation

EDUCATION-LED GENTRIFICATION, HOUSING COMMODIFICATION, AND URBAN RESTRUCTURING: RETHINKING WESTERN AND CHINESE SCHOLARSHIP AND FUTURE DIRECTIONS

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Individual Paper Presentation

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As competition for high-quality schooling becomes increasingly embedded in urban housing markets and neighborhood change, education-led gentrification has emerged as an important lens for understanding the relationship between school choice, residential sorting, socio-spatial inequality, and urban restructuring. Yet scholarship on this issue remains fragmented across urban studies, housing research, education studies, and planning scholarship. Existing work shows that schools can actively shape middle-class residential mobility, intensify housing price premiums within catchment zones, displace lower-income residents, and generate uneven effects on neighborhood schools rather than straightforward educational improvement. Research has also expanded from household school choice to broader concerns with inner-city regeneration, public school under-supply, and the governance of urban service provision.

This paper offers a critical review of international research on education-led gentrification and develops an analytical framework linking households, schools, housing commodification, communities, and governance. It argues that the field has evolved from treating education as a background factor in gentrification to recognizing schooling as an active mechanism of property valorization, class reproduction, and neighborhood restructuring. The review further identifies a distinctive contribution from Chinese scholarship through the concept of jiaoyufication, which captures a form of education-led gentrification produced by the interaction of strict school catchment policies, hukou-based access, and housing commodification. In this context, educational opportunity is transformed into a territorially bounded housing premium, producing displacement and class remaking even in the absence of substantial physical upgrading.

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By placing Chinese debates in dialogue with international scholarship, this paper advances a comparative rethinking of education-led gentrification as a relational process linking schooling, housing commodification, and urban restructuring across diverse institutional settings. Rather than treating school choice or housing price premiums as isolated outcomes, it shows how educational competition operates as a powerful mechanism of institutional boundary-making, uneven public service access, class remaking, and sociospatial inequality. The paper's key contribution is to bridge Western and Chinese research traditions and to propose a planning-oriented framework that re-centers schooling within debates on neighborhood change and urban governance. Such a perspective is especially important for rapidly transforming urban regions, where struggles over educational

opportunity are increasingly becoming struggles over housing access, community futures, and the direction of urban development.

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Keywords: Education gentrification, Jiaoyufication, Housing commodification, Urban restructuring, Sociospatial inequality

EFFECT OF INSTITUTIONAL INVESTORS ON HOUSING AFFORDABILITY IN WASHINGTON STATE

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Track 2: Community Development and Housing
Individual Paper Presentation

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Over the past 20 years, shifts in the economic organization of the housing market have brought increased participation from institutional investors in the single-family market and raised questions about the effects of this change on the supply and affordability of housing. Recovery from the 2008 financial crisis, along with the emergence of the gig economy (e.g., Airbnb), algorithmic pricing (Calder-Wang & Kim, 2023), and a pandemic-driven wave of remote work coupled with residential relocation (Howard et al., 2023), offered unprecedented incentives for larger quantities and greater geographic scales of purchases of single-family homes. Such substantive changes in economic organization can be expected to raise questions about the pricing of any good or service, and naturally, the effects of this on the affordability of housing are now a widespread concern (U.S. Government Accountability Office, 2024). This study of housing affordability examines the elevated participation of institutional investors in the single-family market for their impact on rents.

In this study, investors are defined in two ways: as individuals or organizations purchasing five or more properties, and those purchasing 100 or more. The data includes property transactions from 2014 to 2025 across the state of Washington, along with a quarterly survey of rents in over 100 cities or towns with 10,000 or more residents (yielding a sample size of 5,646). The research design employs a multilevel model to account for conditions in cities nested within and lying outside of metropolitan statistical areas. Following Mundlak (1978), the quarterly investor share of all single-family house purchases is decomposed into the city average (between-city) and the deviation from the city average (within-city). Random effects at the city level include a random intercept and random slopes for time, within-city investor share, and their interaction.

Results suggest that institutional investors are more likely to purchase properties in cities with comparatively high average rent, and that their presence has significant effects on the trajectory of average rent over time. The increase in predicted average rent is larger ($p = 0.057$) for investors purchasing 100 or more properties compared to those purchasing five or more ($p = 0.001$), though the effects of institutional investors on average rent in both categories are statistically significant.

Recent research brings attention to the effects on housing prices and rents of large institutional investor purchases in metropolitan statistical areas in the US (U.S. Government Accountability Office, 2026). The effects of post-pandemic relocation and the rise of platforms to digitize housing markets, however, incentivize the search for margins from housing values far beyond large urban areas, into small cities and towns where a higher share of the rental stock takes the form of single-family houses. The findings of this study show some of the greatest impacts of institutional investors outside of the metropolitan statistical areas of the state.

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Keywords: Affordability, Urban, Rent, Institutional Investor, Housing

ESTIMATING INFORMAL HOUSING PRODUCTION NATIONWIDE

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Individual Paper Presentation

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Efforts to document the scale and dynamics of housing informality in the United States have expanded significantly in recent years. A growing body of scholarship has sought to both conceptualize and measure these practices (Durst and Wegmann, 2017; Way, 2009). One of the most promising approaches to date measures informal housing production by calculating the difference between estimates of total new housing production and housing permits for each decade. Scholars have used the method to estimate informal housing production across a handful of metropolitan areas (Brown et al., 2020) and at the city level in the state of California (Wegmann and Hawhorter, 2017). The results of these studies suggest that informal housing production in the U.S. is markedly higher than is often assumed by both policy makers and scholars. However, to date, there has been no research on city-level dynamics of informal housing production nationwide.

In this paper, we make four primary contributions, two methodological, and two empirical First, we assess the reliability of permit data from the U.S. Census Bureau's Building Permit Survey (BPS) and evaluate its potential impact on estimates of informal housing production. To do so, we examine annual permitting trends at the city level and conduct an event study analysis of jurisdictions with reporting gaps in the BPS database. We find that permit records in the early waves of the survey have frequent gaps in reporting and are therefore likely unreliable for estimating permitted and unpermitted housing production for a substantial fraction of cities. Later survey waves, however, show greater reliability. In particular, we find that non-responses in the 1990s through 2010s are preceded by long-term (5- to 10-year) declines in permitting, suggesting that permit gaps during these time periods are indicative of the non-issuance of permits rather than non-responses to the BPS.

Second, we evaluate the prior method used in the literature to estimate new housing production. We compare this approach with estimates of new housing production derived from the decennial census and American Community Survey (ACS) estimates of total housing units by the year the structure was built. We demonstrate that ACS-based estimates exhibit greater internal consistency within cities over time and less censoring than the approach used in prior research.

Third, we conduct the first national analysis of spatial and temporal variation in informal housing production at the city level. We find that informality has declined in many states over time but remains concentrated in suburban areas of major metropolitan regions. Lastly, we conclude by conducting a national analysis of permitting trends across cities with different levels of informality. To do so, we use descriptive statistics and fixed effects regression models to examine the relationship between city-level housing production and regional housing trends. We find that regional housing production is a strong predictor of formal housing supply, but only in low-informality contexts. In contrast, in cities with high rates of informal housing production, formal housing production is largely unresponsive to regional trends, indicating a decoupling of local formal supply from regional demand pressures. In these cities, unmet demand is instead absorbed through informal housing production pathways, suggesting that informality functions as an alternative adjustment mechanism where regulatory, market, or institutional constraints limit formal development.

Together, these findings contribute to a growing body of work on housing informality by offering a more reliable empirical framework for estimating informal housing production. The paper also advances substantive understanding of how formal and informal housing systems interact across space and over time, with implications for housing policy, land-use regulation, and regional planning.

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Keywords: Housing, Informality

ETHNO-RACIAL AND LATINO NEIGHBORHOOD STRATIFICATION IN THE MORTGAGE MARKET

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Individual Paper Presentation

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Homebuying is the largest asset among ethno-racial and neighborhood wealth. Previous studies demonstrate unequal treatment throughout the homebuying process and differential access to credit across neighborhoods. While past research has documented the advantages that Whites and predominantly White neighborhoods face in the mortgage market, these studies have not considered the obstacles that home seekers face in Latino neighborhoods. This study draws on annual data from the 2023 and 2024 Home Mortgage Disclosure Act (HMDA) and 2017-2022 American Community Survey to assess ethno-racial and Latino neighborhood disparities in mortgage outcomes. We demonstrate that loan rejections and high-cost loan originations are highest among Latino and Black home seekers compared to Whites and Asians. In addition, adverse loan outcomes increase as the proportion of Latinos in the neighborhood increases. These trends are particularly acute when examining adverse loans for Latinos applying in predominantly Latino neighborhoods. Implications for the ethno-racial and neighborhood wealth gap are discussed.

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Keywords: Latino, Homeownership, Mortgage, Inequality, Race

FEEDING THE BUBBLE: DIGITAL NOMADISM AND TRANSNATIONAL GENTRIFICATION IN MEXICO CITY

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Track 2: Community Development and Housing
Individual Paper Presentation

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The Covid-19 pandemic led to a diversification and acceleration of gentrification in Mexico City, with the emergence of new actors and processes. The generalization of remote work, the fact that Mexico had its borders open and very few regulations in place during the Covid-19 crisis, as well as the geographic proximity to the United States (with convenient time zones facilitating remote work arrangements) and other appealing factors such as the climate and a lower cost of living, led to the massive arrival of digital nomads in Mexico City, mostly coming from North America. The City government also signed an agreement with Airbnb and the UNESCO in 2022, explicitly hoping to showcase Mexico City as the "capital of creative tourism" and to attract digital nomads.
By taking into consideration the cost of living as a determining factor, digital nomads moving to Mexico City practice "geoarbitrage" (Holleran, 2022), which allows them to benefit from global economic disparity (Parreño-Castellano et al, 2022) and to maximise their salary. Such migratory practices between the global North and the global South may reinforce patterns of uneven development on a global scale, and may generate gentrification pressures.

A few centrally located neighbourhoods in Mexico City (Condesa, Roma, and Juárez), which are very green, walkable, safe, and accessible by public transit, and offer a large range of services, have become the "natural landing place" for digital nomads since the pandemic (Armenta López, 2023), and were referred to as the "(foreigner) bubble" by many interviewees. The arrival of digital nomads who come with a significantly higher purchasing power and who have different tastes and needs, has led to major changes in the housing, commercial and cultural realms. The research argues that the pandemic has marked a turning point, triggering transnational gentrification (Sigler & Wachsmuth, 2016). Post-Covid gentrification forces include a widespread (and to a certain extent normalized) use of English, a change in the profile of digital nomads, and the rapid development of the short-term rental (STR) sector.

The paper studies those gentrification dynamics and manifestations of neighbourhood change, under the lens of space appropriation and redefinition. Drawing from interviews conducted between September 2024 and March 2025 with digital nomads, Mexican residents, and people working in the short-term rental sector, I explore the processes and actors that are involved in this new production of space. Many interviewees interpret the current changes as a form of neocolonialism, characterized by foreigners imposing change without necessarily integrating into the existing environment and communities. Other studies have pointed to the fact that digital nomads tend to socialize with like-minded people that have a similar lifestyle (Bozzi, 2024), thereby reducing opportunities for social mix. Indeed, in Mexico City, the bubble keeps becoming more exclusive and generates direct and indirect displacement of local communities. Although digital nomads undeniably play a key role in making the area their own, they are supported by a network of actors that ensure the durability of the bubble. There has been a restructuring of urban life and infrastructure to cater to the needs of this new population: coworking and coliving spaces are multiplying, the short-term rental sector is on the rise, and businesses are diversifying.

The research contributes to the emerging literature that explores relationships between digital nomadism and gentrification, and focuses more specifically on how such relationships unfold in the post-pandemic context, where remote work has become mainstream. Interviews with the gentrified and the gentrifiers highlight different understandings, perceptions and framings of gentrification, further contributing to the broader gentrification literature.

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Keywords: digital nomads, gentrification, transnational, post-Covid, space production

FRAGMENTED DEMAND: SEGREGATION, MORTGAGE CREDIT, AND THE EFFECTIVE SUPPLY OF HOUSING

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Track 2: Community Development and Housing
Individual Paper Presentation

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Debates over housing affordability have increasingly centered on the role of housing supply, with a growing body of research arguing that expanding housing production can reduce prices, particularly in high-cost metropolitan areas (Manville, Lens, & Monkkonen 2022). At the same time, a parallel literature has raised questions about the limits of supply-side solutions, emphasizing uneven development and interregional inequality (Rodríguez-Pose & Storper 2020). Despite these differences, and while both literatures acknowledge spatial variation in housing markets, they often rely - implicitly or explicitly - on the assumption that housing markets operate as spatially integrated systems in which housing units are broadly substitutable within metropolitan areas.

This paper challenges the implicit assumption that metropolitan housing markets operate as spatially integrated systems by arguing that they are instead segmented, with residential segregation playing a central role in structuring this segmentation. This dynamic creates spatially differentiated submarkets with uneven levels of demand, liquidity, and transaction activity. I develop the concept of effective housing supply, defined as the portion of the housing stock that actively participates in the market for homebuyers within this segmented system. This framing motivates the central research question: to what extent does residential segregation shape the spatial distribution of mortgage demand, and how does this distribution affect which parts of the housing stock are actively engaged in the market?

Mortgage credit systems provide a lens for observing these dynamics. Mortgage applications represent market-facing, credit-mediated attempts to access owner-occupied housing, and their distribution reveals how demand is spatially organized. By examining the distribution of mortgage applications and originations, I assess how market activity is concentrated relative to the underlying housing stock, highlighting how housing supply is unevenly activated across neighborhoods. These patterns may reflect a range of mechanisms – including spatial variation in amenities, credit access, information networks, and the enduring effects of residential segregation – that shape how households navigate housing markets.

Empirically, the paper combines Home Mortgage Disclosure Act (HMDA) data with tract-level housing and demographic data to examine how segregation shapes the spatial distribution of mortgage demand within U.S. metropolitan areas. I construct measures of demand fragmentation based on the concentration of mortgage applications across neighborhoods and relate these patterns to indicators of housing market activity, including application intensity and loan origination rates relative to the housing stock. Preliminary analyses suggest that more segregated metropolitan areas exhibit greater spatial concentration of mortgage demand and more uneven patterns of market activity.

The analysis also examines how demand concentration relates to variation in loan sizes across neighborhoods, providing a preliminary link to localized price dynamics.

Findings contribute to housing affordability debates in three ways. First, they suggest that the benefits of increased housing supply may be limited when demand remains spatially fragmented. Second, they highlight mortgage markets as a key mechanism through which housing demand is organized, rather than treating credit as exogenous to housing outcomes. Third, they introduce a framework for understanding housing supply as shaped not only by production, regulation, and income inequality, but also by the spatial structure of demand and access to credit (Piazzesi, Schneider, & Stroebel 2020; Schuetz 2022).

By reframing housing supply as contingent on the spatial organization of demand, this paper offers a new perspective on the limits of supply-side solutions and the role of segregation in shaping housing markets.

Citations:

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Keywords: Housing supply, residential segregation, mortgage lending, housing demand, urban inequality

FROM ENTRY TO RETENTION: RETHINKING HOMEOWNERSHIP POLICY IN HOUSING MARKET DOWNTURN

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Track 2: Community Development and Housing
Individual Paper Presentation

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Homeownership has long been regarded as a key mechanism for wealth accumulation and economic stability, particularly for low- and middle-income households. While existing research and policy have primarily focused on promoting access to homeownership, relatively little attention has been paid to its sustainability under adverse market conditions, such as housing price downturn. During such periods, declining asset values and financial constraints may make it more difficult for households to sustain homeownership, potentially leading to market exit and disruptions in long-term wealth accumulation.

This study examines how housing policies influence the retention of homeownership during a housing market downturn. Specifically, it asks how the probability of maintaining homeownership evolves with duration among households that purchased homes during the 2008–2016 housing market downturn, and how financial and fiscal policy interventions affect the risk of exiting homeownership in this context. It also considers whether these relationships differ across income groups. In doing so, the study reconceptualizes homeownership not as a static outcome of acquisition, but as a dynamic process characterized by duration and exit risk.

Using data from the Korean Labor and Income Panel Study (KLIPS), this study focuses on single-homeowner households residing in Seoul between 2008 and 2016. To empirically examine how policy interventions are associated with the likelihood of maintaining homeownership, the primary empirical strategy employs logistic regression. This approach is appropriate for modeling a binary outcome and enables direct identification of policy effects. Policy variables are categorized according to stages of intervention, with particular emphasis on holding-stage policies, including property taxation, mortgage interest tax deductions, and mortgage payment deferral programs.

To complement this analysis and capture the temporal dimension of homeownership retention, Kaplan–Meier survival analysis is used to describe how retention probabilities evolve over duration. In addition, Cox proportional hazards models are employed to explore the association between policy variables and the risk of exiting homeownership. These survival-based approaches account for right-censoring and provide supplementary evidence on the dynamics of homeownership sustainability.

Results suggest that homeownership retention generally declines as duration increases. While this overall pattern persists following the implementation of property tax relief and mortgage payment deferral policies, some variation in the rate of decline is observed across income groups. In general, low- and middle-income households exhibit relatively gradual declines, whereas some higher-income households experience more rapid decreases in retention. This pattern suggests that exits from homeownership may, in part, reflect strategic decisions rather than purely financial constraints. In this context, mortgage interest tax deductions, which are relatively more favorable to higher-income households, also show a limited association with homeownership retention.

These findings suggest that, during housing market downturns, policy interventions that reduce holding costs and alleviate short-term financial burdens may play a positive role in supporting homeownership retention. At the same time, caution is warranted in making causal interpretations of policy effects, and further analysis is needed to provide more robust evidence. Overall, this study highlights the importance of shifting the policy focus from facilitating access to homeownership toward ensuring its long-term sustainability and contributes to housing policy

scholarship by advancing a dynamic and policy-oriented framework for understanding homeownership under adverse market conditions.

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Keywords: Homeownership retention, Housing policy, Logistic regression, Housing market downturn, Wealth inequality

FROM HOUSING VULNERABILITY TO HOUSING RECOVERY: A GEOAI-ENHANCED FRAMEWORK FOR HURRICANE HARVEY IN GREATER HOUSTON

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Track 2: Community Development and Housing
Individual Paper Presentation

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This study researches on housing vulnerability by examining how pre-disaster conditions shape long-term recovery following Hurricane Harvey in Greater Houston. Existing work shows that socially and structurally vulnerable communities often receive less assistance even when experiencing similar levels of damage, but less attention has been given to how these vulnerabilities influence recovery trajectories over time. This paper addresses that gap by linking pre-disaster housing vulnerability to post-disaster recovery outcomes.

The study builds on a three-dimensional Housing Vulnerability Index that captures risk exposure, housing and structural conditions, and social and economic capacity. The study enriches this framework by incorporating insights from urban fabric and morphology theory (Fleischmann et al., 2022; Liu et al., 2026; Stangl, 2018). These perspectives emphasize that the features of buildings and infrastructure are not simply descriptive but also shape how neighborhoods experience damage, access resources, and recover, which focuses on a finer scale of housing recovery.

This study integrates traditional data sources with GeoAI-derived measures of urban form. Building-level information is used to capture structural attributes such as construction type, age, and intensity of development, while spatial metrics derived from building footprints describe density, coverage, and neighborhood configuration. These variables refine the variables in three dimensions of the Housing Vulnerability Index by replacing aggregate proxies with more precise representations of housing conditions and built form.

Recovery is measured over the period from 2017 to 2022 using a composite indicator that reflects changes in three dimensions: property values, rebuilding activity using data from CoreLogic parcel-level tax assessment, transaction, and structural attribute records, and population dynamics, measured through the American Community Survey (ACS) and the American Housing Survey (AHS). This approach shifts the focus from short-term assistance outcomes to longer-term recovery processes. This paper assesses whether pre-disaster vulnerability predicts these three dimensions of housing recovery after controlling for observed damage and assistance received, and it also uses spatial analysis to examine how these relationships vary across neighborhoods with different socio-demographic patterns.

The findings are expected to show that housing vulnerability continues to shape recovery well beyond the initial disaster period, and that the built environment plays a central role in this process. By embedding urban fabric theory within the Housing Vulnerability Index and improving its measurement through GeoAI methods, the study offers a more complete account of how structural and social factors interact in shaping recovery. The results have implications for future urban planning and design in reshaping the urban forms and housing policies for disadvantaged neighborhoods in recovery from the disasters.

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Keywords: GeoAI, Housing recovery, Housing vulnerability, Disaster, Urban form

FROM HOUSTON TO GEORGETOWN, GUYANA: COMPARING SECTION 8 AND AHUAP IN LOW-INCOME COMMUNITIES

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Track 2: Community Development and Housing
Individual Paper Presentation

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The aim of this paper is to present on a research that is currently in progress, that examines how affordable models and infrastructure integration strategies from the United States can inform and inspire more equitable and resilient affordable housing policies in Guyana, South America. Based on the housing choice voucher (Section 8) program and Guyana's adequate Housing and urban Accessibility program (AHUAP), the study investigates how state-led and market-mediated interventions shape access to adequate housing, basic infrastructure, and opportunities for low-income communities in Houston's Third Ward and Georgetown's Kingston (Tiger Bay). Framed by advocacy planning, environmental justice, and rights-based approaches to housing, the research asks: (1) What are the strengths and limitations of Guyana's AHUAP in addressing housing deficits and spatial inequalities? (2) What lessons from the U.S. Section 8 model are potentially transferable to Guyana's rapidly changing housing landscape? and (3) How can infrastructure improvements, particularly roads and related services, complement affordable housing strategies to enhance quality of life and resilience?

Methodologically, the study is designed as a qualitative comparative case study combining policy and document analysis, semi-structured interviews, and field observation in two historically marginalized communities. At the time of submission, IRB review is underway and primary data collection has not yet begun; this conference paper will therefore focus on the conceptual framework, research design, and preliminary insights from existing scholarship, policy documents, and program materials. The expected contribution to the Housing and Community Development track is threefold: (1) articulating a South–North comparative lens on affordable housing that links subsidies, infrastructure, and advocacy; (2) identifying concrete design features of Section 8 that could be adapted and those that should be avoided, in Guyana's context; and (3) outlining a planning agenda that treats housing, infrastructure, and participation as interconnected pillars for community development in oil-driven, rapidly urbanizing settings.

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Keywords: Section 8, Comparative, Low-income, Affordable, Advocacy

FROM OBSERVATION TO INTERVENTION: A PROACTIVE MACHINE LEARNING APPROACH TO DISPLACEMENT RISK DETECTION

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Individual Paper Presentation

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Residential displacement occurs when people are forced to leave their homes and communities due to economic and/or cultural pressure. Displacement often occurs alongside or following gentrification and is an ongoing concern in fast-growing cities like Austin, TX. Displacement has cascading effects: longer commutes, disrupted educational opportunities for children, loss of community ties, and disproportionate impacts on lower-income households and communities of color. Neighborhood activists often call attention to changes in urban form, demographics, and the quality and character of local businesses to demonstrate that displacement is occurring.

One challenge for policymakers interested in proactively addressing displacement is that the phenomenon often occurs gradually and unevenly. By the time it becomes visible, it may be too late to effectively intervene. Additionally, in its relentless search for surplus value, capital inevitably seeks out any and all opportunities to exploit land it perceives to be undervalued. This search often centers on communities where rents are relatively low and the population of Black, Indigenous, and people of color is high.

With the goal of ensuring that appropriate protections are implemented and resources directed to communities currently facing displacement pressure or likely to face them in the future, our work seeks to develop an open-source and near real-time early warning system for displacement prototyped in Austin, TX. A key innovation inherent in our system is that, unlike prior gentrification and displacement indicators, we do not rely exclusively on census data, instead we employ multiple data streams that more closely reflect current conditions, including local City of Austin demolition permits, rent prices and other parcel-level data extracted from the proprietary CoStar dataset, eviction filings from the local nonprofit Building and Strengthening Tenant Action (BASTA), land values, and a range of other leading indicators that serve as “smoke signals” for displacement. While we use some proprietary data, in locations where those are not available, census data may be substituted. All code will be made freely available on Github, maximizing reproducibility.

Using these data, we develop and apply a three-part analytical architecture: 1) Classify Today’s Risk: Group Austin’s neighborhoods into categories based on current displacement pressures and neighborhood demographic vulnerability, using observed similarities in the data. 2) Update Risk Over Time: When new data become available, re-estimate group membership for all neighborhoods to track which areas are shifting from lower-risk to higher-risk categories. 3) Predict Future Risk: Build a forward-looking model that uses leading indicators (“smoke signals”) to forecast which neighborhoods are likely to experience displacement in 1, 3, and 5 years. Part 1 uses unsupervised machine learning (e.g., k-means clustering and Gaussian mixture models) plus critical groundtruthing with stakeholders. Part 2 uses a geometric distance metric to assign new data to the frozen baseline clusters. Part 3 identifies specific clusters as problematic and uses supervised machine learning techniques, including XGBoost and random forests, to train models that can predict how a neighborhood’s cluster is likely to shift in the near term.

One key set of final products will be an interactive map of Austin showing current displacement risk and predicted future trajectories, along with explanations of what is driving risk in each area. The system is designed to be

updated regularly as new data become available, making it a living tool for proactive policy action that the city can regularly update to track and project changes over time. We will develop and document the system so that other cities with similar data can learn from our experience and create their own early warning systems.

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Keywords: residential displacement, early warning systems, machine learning, predictive modeling, mixed methods

FROM PROPERTY TO FINANCE: TENANT ORGANIZING AND THE GOVERNANCE OF RENTAL HOUSING

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Track 2: Community Development and Housing
Individual Paper Presentation

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This paper uses tenant organizing as a lens by which to examine how rental housing governance in the United States is being reconfigured under financialization. It asks how transformations in the political economy of housing reconfigure the institutions, actors, and decision-making arenas that shape rental markets, and what tenant struggles reveal about the possibilities and limits to democratic accountability in a financialized rental market. Drawing on a comparative, historical qualitative research design, the paper analyzes two "critical cases" of multi-scalar tenant organizing that occurred in distinct political-economic regimes: the National Tenant Organization (1969–1975) and the Homes Guarantee (2019–2025). The study combines historical and ethnographic methods, including participant observation, interviews with tenant leaders, and analysis of policy documents and media coverage. This mixed qualitative approach traces how tenants interpret, contest, and seek accountability within shifting institutional arrangements of housing governance.

I find that organizers today contend with an increasingly opaque landscape and extend the terrain of contestation beyond the landlord–tenant relationship and into the design of markets and the circulation of finance. This reflects a present-day conjuncture in which financialization reshapes not only property relations but also the political horizons of grassroots organizing. While tenant organizing in the 1960s centered on reworking the social relations of property, organizers today seek to intervene in the financial logics governing property relations. Local and national tenant organizers in the 1960s emerged out of broader civil rights-era efforts to contest the racialized political economy centered on profit and wealth extraction from Black neighborhoods. Across scales, tenants endeavored to shape law and policy to codify social obligations in the landlord-tenant relationship and to pursue tenant participation in public housing governance. Today, tenant organizers confront a more complex housing landscape in which efforts to politicize housing center not only on the landlord-tenant relationship but also on financial infrastructures that facilitate the treatment of rental housing as a financial asset and expand geographies of precarity across racial lines. The Homes Guarantee's 2023 campaign targeting federal housing finance institutions, the Federal Housing Finance Agency, Fannie Mae, and Freddie Mac, revealed how these institutions shape rental housing markets and investment through credit allocation, underwriting standards, and securitized debt. To politicize this highly technical domain, tenant organizers have developed new political strategies to establish tenants as a constituency of financial regulators, translate opaque loan level data into accessible narratives linking debt structures to lived conditions, and confront technocratic governance spaces with embodied experiences of housing insecurity. In doing so, they not only pursue a vision of housing justice but also the democratization of financial flows and risk distribution.

Despite achieving increased visibility and partial recognition, tenants' claims collided with the market-stabilizing mandates of federal housing finance institutions. Financial governance renders power more distant, opaque, and insulated, constraining possibilities for regulatory intervention even when harms are acknowledged. These struggles expose the normative assumptions embedded in housing finance and reveal tensions between liquidity, market stability, and social protection.

The paper contributes to planning scholarship by theorizing how financial infrastructures operate as sites of governance and by demonstrating how grassroots organizing produces critical knowledge about market design. For planning practice and education, it underscores the need for planners to engage housing finance as a central terrain of democratic struggle and inequality.

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Keywords: grassroots organizing, financialization, housing finance, property, governance

FROM STATECRAFT TO COMMUNITY DELIBERATION: RENEWING CHINA'S URBAN PLANNING THROUGH EMBEDDED CO-GOVERNANCE

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Track 2: Community Development and Housing
Individual Paper Presentation

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Community planning has long been a domain where professional expertise meets everyday governance. While planning has traditionally served as a technical arm of the state, more recent scholarship repositions planners as advocates, mediators, and facilitators working across institutions, markets, and communities (Low, 2013; Sanyal, 2018). As cities confront environmental stress, inequality, and socio-spatial fragmentation, the roles and accountabilities of planners have returned to the center of urban debate (Repette et al., 2021; Taşan-Kok et al., 2021). This paper expands these discussions by examining community planning in China, where a long-standing top-down planning system is now engaging more participatory approaches. In 2019, Beijing institutionalized the Responsible Planner (RP) system, assigning planners to the street level to support urban regeneration and strengthen state–society relations. Since then, RPs have coordinated projects across scales and experimented with practices such as public consultation, participatory design, and neighborhood co-governance. While these developments suggest a communicative turn in China's planning practice (Zhang et al., 2025), whether they meaningfully broaden participation remains an open question. We ask: Why and how has China promoted community planning? How has its institutionalization reshaped planning practice and state–society relations within a hierarchical system? Drawing on policy analysis, ethnographic fieldwork, and interviews with RPs in Beijing (2019–2025), we examine three dimensions: (1) how the RP system enables shifts from top-down governance toward more embedded forms of co-governance; (2) how planners navigate tensions between bureaucratic mandates and community deliberation; and (3) the barriers to—and conditions that may accelerate—more inclusive and equitable planning in authoritarian contexts. We find that the RP system is beginning to reconfigure authority, knowledge, and accountability across governance levels. At the same time, planners' everyday work reveals ongoing contradictions that expose both the transformative potential and structural limits of institutionalized participation. Although gaps persist between policy ideals and practice, RPs act as creative agents who navigate bureaucratic constraints to expand deliberation and strengthen community engagement. We conceptualize this practice as embedded co-governance, in which planners are simultaneously situated within state institutions and community networks, mediating between administrative logics and civic aspirations. This perspective highlights planners' multidirectional accountabilities—upward to the state, outward to communities, and across agencies—and shows how these relationships gradually reshape governance practices. By situating China's experience within broader debates on participatory and communicative planning, this paper contributes to comparative urban scholarship in three ways. First, it identifies pathways for deepening deliberative inclusion within top-down systems. Second, it theorizes how planners' evolving roles reconfigure authority and legitimacy in practice. Third, it demonstrates how institutional design—alongside professional agency—conditions the possibilities for more inclusive, community-centered planning.

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Keywords: Community Planning, Embedded Co-Governance, Civic Engagement, Institutional Reform, China

FROM THEORY TO REALITY: LIVED EXPERIENCES OF HOUSING INFORMALITY IN DALLAS COUNTY, TEXAS

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Individual Paper Presentation

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Informal housing is defined by resident transgression of or state denial of protection through regulatory regimes (Harris, 2018) and manifests through three mechanisms: resident non-compliance with, state failure to enforce, and deregulation of formal housing market sectors (Durst and Wegmann, 2017). Housing informality occurs in modes that vary in scale, coordination, and visibility and range from precarious incipient to consolidated informal settlements (Harris 2018).

In the U.S., informal housing manifests in four modes: informal urban infill, repurposing of private property, and informal occupation of public space, and informal peri-urban subdivisions (Herbert et al., 2022). This article focuses on peri-urban informal subdivisions, typically studied in Mexico-U.S. border communities known as colonias. Past literature has identified these communities as loci of grassroots affordable housing for low-income residents (Durst & Sullivan, 2019) that, despite self-help improvements (Giusti & Olivares, 2012; Nevárez et al., 2021), contain multiple forms of precarity and lack of access to necessary services (Larson, 2002; Ward & Peters, 2007; Durst & Ward, 2016; Tippin, 2021). Emergent research has uncovered similar informal subdivisions in metropolitan areas across the U.S. (Durst, 2019; Reyes et al., 2024), suggesting the need for attention of researchers and planners to the diversity of lived experiences in these communities.

While literature has theorized housing informality and drawn attention to precarity in these communities, research has yet to explore informal residents' lived experiences of housing informality. Likewise, little research examines challenges outside of the border area (Durst, 2019), despite marginalized residents active search for affordable housing options on the outskirts of metropolitan areas (Mattiuzi and Weir 2019). As such, our research asks: how does the lived experience of informal residents inform (a) understandings of housing informality in peri-urban places, (b) the unique challenges faced by those residents, and (c) municipal and regional policies for improvement of those communities?

To document the lived experiences of informal residents, we rely on participatory action research from 2021 to 2025 in a multi-racial, very low-income, unincorporated community in Dallas County, Texas that we call Springville. We rely on spatial analysis of Dallas County Assessor Data, satellite imagery, and architectural observations in 62 lots to understand the characteristics of informal housing and infrastructure. We also performed household interviews with 46 residents—representing nearly 75% of the total subdivision population—and co-created oral histories with eleven residents to more deeply understand residents' experiences of housing informality.

Our findings add multiple insights to the theoretical and empirical literature. First, Springville residents do not comply with regulation, not out unwillingness, but rather because regulatory frameworks are confusing and complicated to navigate. Second, the enforcement of floodplain restrictions leads to housing dilapidation, which forces residents to be less compliant with regulations. Third, selective enforcement by the county government forces residents into housing informality and precarity. Finally, Springville residents opt for alternative, weakly regulated residential structures and processes because "they can build and live as they please" without complying with strict zoning and building codes (Harris, 2018). We draw attention to resident stories to redefine informality as an affordable housing strategy for vulnerable residents with no other options. However, housing informality requires policy to improve residents' living conditions, so we call for participatory housing upgrading approaches

that pay attention to legal and financial obstacles faced by low-income residents and provide technical assistance to improve conditions.

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Keywords: Housing informality, Housing affordability, Lived experience, Housing regulation, Dallas County

GENTRIFICATION THROUGH URBAN REDEVELOPMENT: LOW-INCOME RESIDENTIAL MOBILITY IN SEOUL

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Track 2: Community Development and Housing
Individual Paper Presentation

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Gentrification's relationship with residential displacement remains one of the most contested questions in urban scholarship. While quantitative research from the Global North finds limited evidence that gentrification disproportionately displaces vulnerable populations, these findings may not travel well to the Global East, where state-led urban redevelopment, rather than gradual market-driven neighborhood change, has been the dominant driver of gentrification. This study examines whether redevelopment-driven gentrification increases residential mobility and induces downward neighborhood transitions among low-income households in Seoul, South Korea, a paradigmatic case of mega-gentrification in the Global East.

We utilize register-based census data from the Ministry of Data and Statistics, covering the entire population of Seoul between 2015 and 2020. This population-level dataset enables residential trajectories to be tracked across neighborhoods, offering a methodological advantage over studies relying on sample surveys or panel data with limited coverage. Gentrification is measured through a two-stage classification: neighborhoods are first identified as gentrifiable based on low initial income levels, then classified as moderately or intensely gentrifying according to changes in graduate degree attainment, an education-based proxy calibrated to reflect South Korea's distinctive educational distribution. Urban redevelopment is operationalized using official project data from the Seoul Metropolitan Government, distinguishing between initial site designation and construction commencement, the latter primarily characterized by large-scale demolition.

Residential mobility is conceptualized along two dimensions: quantity, measured as the probability of leaving one's neighborhood, and quality, measured as the change in median household income rank between origin and destination. Both one-year and five-year measures are examined, since time horizon has been shown to meaningfully shape empirical conclusions. Linear probability models and OLS regressions are estimated with interaction terms between gentrification status and low-income household classification, with standard errors clustered at the neighborhood level.

Results reveal that in gentrifying neighborhoods without redevelopment, approximating classical gentrification, no significant adverse outcomes are observed for low-income households, consistent with existing quantitative evidence. However, in neighborhoods undergoing active redevelopment, particularly at the construction commencement stage, a markedly different pattern emerges: low-income households face significantly higher probabilities of out-migration and move to neighborhoods with substantially lower median income ranks, indicative of downward residential sorting. These findings are robust across model specifications and most pronounced when assessed in terms of destination quality and longer time horizons.

These results carry three implications. First, they provide quantitative support for the argument that redevelopment-driven gentrification in the Global East produces more adverse outcomes for vulnerable populations than classical gentrification in the West. Second, they highlight that quantity-focused and short-term mobility measures risk obscuring displacement pressures visible only when destination quality and longer horizons are considered. Third, they underscore the need for policy interventions to protect low-income residents in redevelopment zones, where market dynamics alone are unlikely to deliver inclusive outcomes. As East Asian cities

continue to rely heavily on large-scale redevelopment as a primary housing supply mechanism, these findings offer timely evidence for rethinking the social consequences of urban renewal.

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Keywords: Gentrification, Urban Redevelopment, Residential Mobility, Low-Income Households, Seoul

GROWING TOGETHER, GROWING APART: U.S. RENTER HOUSING AFFORDABILITY, 1980-2020

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Track 2: Community Development and Housing
Individual Paper Presentation

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Housing affordability continues to be a major issue in the United States, especially for renters. More than 70% of U.S. adults report the cost of housing is a concern or a source of stress. Each year, nearly half of renters are considered housing cost burdened because they spend more than 30% of income on housing costs. Living in unaffordable housing might have harmful effects on households, including increased chances of experiencing material hardship, physical and mental health problems, and housing instability.

Prior work on housing affordability primarily focuses on cities and metropolitan areas. Indeed, several papers frame the problem as "urban housing affordability" or the "unaffordable city." Substantial attention has focused on high and rising rents in so-called superstar cities like New York, San Francisco, and Los Angeles, which is part of a broader tendency to examine affordability in metropolitan areas. Real renter incomes declined and real rent levels increased from 2000 to 2009 in many metropolitan areas and there is substantial variability in housing affordability across metros. However, little is known about housing affordability conditions for nearly 15% of the U.S. population living outside of metro areas. Further, numerous papers treat housing affordability as a binary condition, while ignoring the intensity or depth of affordability problems.

This paper examines how rents and incomes have changed over four decades for renter households living in metropolitan areas and non-metropolitan areas. Using descriptive statistics and regression analysis of decennial U.S. Census data from 1980 to 2020, I find: 1) inflation-adjusted rents increase the most for two very different groups: the highest income renters in metro areas and the lowest income renters in non-metro areas; 2) despite real rents rising for all households, real incomes decline for all except the richest group; 3) the positive relationship between rent and income grows nearly 30% during this
period, controlling for other variables; and 4) rent-income ratios for low-income households have higher dispersion than wealthier households but contract over time. The results suggest that housing inequality is growing between income groups as high income households pay increasing higher rents compared to the rest of renters. At the same time, housing inequality is shrinking within income groups as rent-income ratios converge, despite housing affordability worsening overall.

This paper contributes to the literature by: i) examining metro and non-metro households to show housing affordability issues in and outside of cities; ii) revealing affordability changes and trends throughout the income distribution, not just for median income households; and iii) analyzing the complete range of rent-income ratios, as opposed to using a binary indicator of housing cost burdened or not, to shed light on the degree and extent of housing affordability problems. In addition, the paper covers a 40-year period to show how income, rent, and affordability have evolved over time.

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Keywords: housing affordability, housing cost burden, housing inequality, renter households

HOMELESS HOME: MAKING HOMES OF HOMELESS PEOPLE IN SHENZHEN, CHINA

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Track 2: Community Development and Housing
Individual Paper Presentation

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Homelessness represents a critical planning challenge in rapidly urbanizing Global South cities, yet scholarly understanding of how homeless people actually construct "home" within highly regulated, commodified urban environments remains limited. This study addresses the fundamental question: In the context of Shenzhen, China's hyper-dense megacity, how do homeless individuals materially and socially assemble "homes" within marginal urban spaces, and what does this reveal about the intersection of state governance, spatial regulation, and individual agency in producing informal dwelling practices?

Our methodology combines nine months of intensive fieldwork (2021–2024) employing semi-structured interviews, direct observation, and participant observation. We conducted 62 in-depth interviews with homeless individuals (20–120 minutes each) and 26 interviews with stakeholders including urban management officers, social workers, business owners, and residents. Our analytical framework integrates social support network theory with critical perspectives on spatial exclusion, examining how homeless individuals navigate between state welfare provisions, market forces, and social organizations. All field notes were coded using NVivo 12, with particular attention to territorial practices, everyday spatial tactics, and stakeholder interactions.

Our findings reveal three significant contributions to planning knowledge. First, we identify a tripartite typology of homeless homes: (1) elevated infrastructure spaces (under overpasses/railways) offering high privacy, stability, and collective living; (2) shopfront eaves and urban village margins providing semi-temporary shelter with moderate security; and (3) parks and squares characterized by high visibility, instability, and minimal territorial control. Correlation analysis demonstrates that "home" is primarily produced through social relations and temporal continuity rather than physical infrastructure alone.

Second, we document how homeless individuals exercise what we term "adaptive agency"—a dynamic negotiation between accommodation and resistance—to construct homes through four interrelated practices: territorial demarcation (using bamboo fencing, luggage barriers, and spatial zoning); functional augmentation (adding cooking facilities, bedding, and even small-scale agriculture); social network mobilization (forming "fellow villager" cohabitation groups and partnerships lasting over a decade); and strategic mobility (relocating to avoid exclusion, hiding valuables, or collectively resisting eviction).

Third, we reveal a "permissive threshold" in urban governance: when homeless settlements occupy spaces that are simultaneously non-transport corridors, non-commercial cores, and complaint-free zones, local authorities tacitly adopt "non-reporting, non-expulsion" strategies. This finding exposes the discretionary nature of planning enforcement and the emergence of informal "street micro-settlements" that function as unplanned, yet tolerated, housing infrastructure.

This research carries immediate implications for planning scholarship, practice, and education. Our "adaptive agency" concept offers planners a nuanced alternative to victimization narratives, recognizing homeless individuals as skilled spatial practitioners who actively transform marginal spaces into places of belonging. Practically, our findings suggest that inclusive urban planning must move beyond shelter provision to acknowledge existing homeless settlements as de facto housing infrastructure warranting basic service provision (sanitation, waste collection, safety infrastructure) rather than clearance. Ultimately, our research argues that planning's commitment to spatial justice requires recognizing homeless home-making not as a problem to be eliminated, but as an

emergent urban practice demanding creative planning policy responses that balance public space management with housing rights.

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Keywords: Homelessness, Home, migrants, adaptive agency, social support

HOMEOWNERS' ASSOCIATIONS VS. CORPORATE LANDLORDS: THE GEOGRAPHY AND GOVERNANCE OF THE SINGLE FAMILY RENTAL MARKET

Abstract ID: 2298.0.0.449.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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This study examines the role of homeowners' associations (HOAs) in shaping the spatial distribution and investment strategies of corporate landlords in the single-family rental (SFR) housing market. Over the past decade or more, institutional investors—including private equity firms, real estate investment trusts (REITs), and other corporate entities—have significantly expanded their presence in single-family housing markets across the United States (Charles, 2020; Shelton and Seymour, 2024; Seymour et al, 2025). While a growing body of literature has examined the rise of corporate landlords, less attention has been paid to how local institutional and governance structures, such as HOAs, influence investor behavior and rental housing supply.

This research focuses on Franklin County, Ohio, a rapidly growing county where suburban development and HOA-governed communities are widespread. The central research question is whether corporate landlords systematically avoid or are constrained by HOA-governed neighborhoods when acquiring and operating single-family rental properties. HOAs often impose covenants, conditions, and restrictions (CC&Rs) that regulate leasing, property management practices, and tenant behavior, potentially increasing transaction costs or limiting rental operations for institutional investors.In this sense, HOAs can be understood as private local organizations that regulate property use and housing tenure across neighborhoods (Clarke and Freedman, 2019).

Using parcel-level property records, rental registry data, corporate ownership identification, and HOA presence indicators, this study constructs a spatial dataset of single-family rental properties in Franklin County. The empirical analysis combines spatial analysis and spatial regression models to compare the prevalence and characteristics of corporate-owned rental properties in HOA versus non-HOA communities and examines how HOA governance affects corporate acquisition patterns, rental market concentration, and neighborhood characteristics.

Our findings suggest that HOAs play a meaningful role in shaping where corporate landlords acquire and operate single-family rental properties, potentially acting as an institutional constraint on the expansion of corporate ownership while creating spillover effects of corporate SFR investment to nearby non-HOA neighborhoods. These results indicate that corporate investment in single-family rentals is heavily influenced by local private governance, and has consequences for neighborhoods outside of HOA governance boundaries. We provide new insights that challenge urban planners to recognize and examine the role that private governance plays in the geography of the rental market.

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Keywords: Homeowners' Associations, Corporate Landlords, Single-Family Rentals, Housing financialization, Private Governance

HOMESTEAD EXEMPTION FRAUD: PUBLIC RENTS FROM PRIVATE RENTAL LISTINGS

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Track 2: Community Development and Housing
Individual Paper Presentation

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Background:

Our study examines the prevalence and implications of homestead exemption fraud among private residential landlords in Harris County, Texas – the third most populous county in the United States and home to Houston.

The homestead exemption is a property tax exemption granted to owner-occupiers. Fraud occurs when a property owner claims the exemption while not actually living there. While this phenomenon has gained recent attention in the gray literature, scholarly treatments of the phenomenon are relatively few, and exist mostly within tax and property law literatures (see Neymotin et al., 2023). This research situates this phenomenon within recent literature on the political economy of housing, specifically on public rent-seeking (McCanless, 2025) and relational geographies of extraction (Shelton & Pardue, 2026; Shelton & Seymour, 2023) by landlords. By doing so, we draw attention to the importance for legal institutions to understand current home affordability challenges (Michener & SoRelle, 2026).

This research asks: (1) where in Harris County is the most property tax revenue lost to homestead fraud on rental properties? (2) To what extent does this revenue loss shift the tax burden onto non-fraudulent property owners? (3) What characterizes neighborhoods with a higher share of fraud cases on rentals?

Plainly stated: this research investigates who benefits from homestead tax fraud, and by how much.

Methods:

To answer these questions, we link parcel level administrative data from Harris Central Appraisal District (HCAD) with historical rental listing data scraped from Apartments.com. Properties are identified as likely fraudulent if they both (1) appear as rental listings and (2) claim a homestead exemption in the following year. Using this dataset, we estimate revenue losses at both the property and neighborhood levels and calculate the corresponding redistribution of tax burdens. We then employ a negative binomial regression model to examine the neighborhood characteristics associated with higher concentrations of likely fraud. We already possess HCAD records and are in the process of scraping rental listings, having identified Apartments.com data as the most reliable platform. We have demonstrated proof-of-concept on our scraping tool.

Results and implications:

Our research moves forward scholarship on relational geographies of extraction through housing, centering how landowners manipulate tax exemptions to shape regional inequities by overburdening law-abiding taxpayers. Secondly, as critical for a planning conference, our research has practical implications for local officials. Preliminary research indicates that commonly used tools for identifying fraudulent exemptions do not examine rental listings. Therefore this project's approach has applications in other jurisdictions, allowing other scholars to help their local assessors identify likely homestead violators.

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Keywords: housing, property taxation, uneven development, rent seeking

HOUSING OUTCOMES AND ASSIMILATION AMONG HISPANIC IMMIGRANT SUB-GROUPS

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Track 2: Community Development and Housing
Individual Paper Presentation

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Housing outcomes provide an important lens for understanding immigrant integration in the United States. Hispanic immigrants – the nation's largest immigrant-origin population – are highly diverse, yet national housing research often treats them as a single group or focuses on isolated outcomes such as cost burden. This study examines three dimensions of housing vulnerability (cost burden, overcrowding, and housing inadequacy) across six Hispanic immigrant subgroups (Mexican, Cuban, Dominican, Central American, South American, and Puerto Rican), comparing their outcomes with those of native-born racial and ethnic groups.

Drawing on the 2023 American Community Survey 5-year Public Use Microdata Sample and the 2023 American Housing Survey, this study estimates a series of linear probability models incorporating household composition and characteristics, geographic controls, and key assimilation indicators including English proficiency, years in the United States, educational attainment, and income levels. Models are also estimated separately for the ten metropolitan areas with the largest Hispanic immigrant populations to assess geographic variation in subgroup outcomes.

Results reveal substantial heterogeneity across Hispanic subgroups. While higher income, educational attainment, English proficiency, and longer U.S. residence are generally associated with improved housing outcomes, persistent disparities remain – particularly in cost burden and crowding – even after extensive controls. Marginal effect analyses demonstrate that the relationship between assimilation indicators and housing outcomes is neither uniform nor linear across subgroups. For example, Mexicans with longer U.S. residence converge toward White cost burden rates, while South Americans and other subgroups face elevated burdens regardless of duration in the U.S. Crowding rates remain elevated for most groups even at higher income levels, a pattern inconsistent with a straightforward spatial assimilation narrative.

These findings are grounded in both spatial assimilation and place stratification frameworks. Although economic mobility and acculturation predict improved residential conditions, structural constraints – including tight metropolitan housing markets, limited affordable supply, discriminatory gatekeeping, and informational barriers – continue to potentially shape unequal outcomes. The results highlight the limits of aggregated analyses and underscore the importance of subgroup-specific policy responses that account for distinct settlement patterns, household structures, and metropolitan market dynamics.

This study contributes updated national evidence on Hispanic housing conditions and points to several actionable policy directions for planners and policymakers: expanding affordable family-sized rental housing in high-cost metros, strengthening fair housing enforcement, providing culturally responsive housing search assistance, and rehabilitating lower-cost rental stock in immigrant-dense areas.

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Keywords: Housing, Assimilation, Hispanics, Immigrants

HOUSING THE NEXT GENERATION: INTEGRATING LIVED EXPERIENCES OF CROATIAN YOUNG ADULTS INTO HOUSING POLICY STRATEGIES

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Track 2: Community Development and Housing
Individual Paper Presentation

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Young adults globally experience higher pressures in navigating housing markets than other age cohorts (Riedl, 2020). Change in financialization of housing, combined with the diminishing role of state in helping to secure housing as a right and not as an asset in any tenure form have led to a strong current housing crisis among young adults. In this sense, the housing market is indeed an engine of social inequality (Lux et al., 2023). The lack of housing research on young adults directly correlates with the lack of appropriate housing policies targeting specific issues young adults have to navigate. Housing policies often lack vision and creativity (Riedl, 2020) and are focused on helping those who fit the traditional example of marginalized groups, overlooking the fact that the complexities of today's world and changes in lifestyles require the change in attitudes of housing policies and the creation of those that would properly select and support those in need. In countries which recently changed from socialist to free market, such as it is the case of Croatia in the 1990s, young adults are faced with additional stain – generational inequality inducted by the governments. The specific post-socialist context and young adults' housing situations have not been represented in the academic discourses despite young adults' "outstandingly unfavorable" conditions (Breidenbach, 2018), thus making it a valuable research contribution to make. For example, young Croatians stay with their parents the longest among all European Union countries – up until the average age of 33.4 (Eurostat, 2024).

This mixed-methods research uses the concept of housing pathways to help identify patterns in housing choices and particular groups' decisions through space and time, and to propose relevant housing planning strategies that fit the housing realities of young adults. First, quantitative survey (N=195) helped in creation of housing pathways categories specific to a local context of Croatia's capital and largest city, Zagreb. Following were the in-depth interviews with 19 young adults living in Zagreb to get a deeper understanding of their housing experiences. The main research question is: How do housing pathways categories of young adults in Zagreb help inform housing policies for the targeted population?. The research findings include proposed housing planning strategies applicable to pressing housing issues primarily in the local context of Zagreb, but also in Eastern and Western Europe, as well in different contexts globally. The research is valuable for a broader understanding of young adults' struggles in navigating housing markets and their path to independence, and it is unique in giving voice to young adults from, in the realm of housing, a non-Western context in Croatia.

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Keywords: housing planning, young adults, Southeastern Europe, mixed-methods

HOUSING-INCOME MISMATCH AND THE POLITICAL GEOGRAPHY OF YOUNG ADULTS IN THE UNITED STATES

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Track 2: Community Development and Housing

Individual Paper Presentation

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Housing affordability is one of the most critical factors shaping residential outcomes for Americans. As housing costs have risen faster than incomes throughout the country, many young adults are delaying household formation, remaining in their parents' homes, or moving more frequently. At the same time, housing market conditions often appear closely linked to political geography. Counties with higher Democratic vote shares frequently include dense labor markets and strong amenities but also higher housing costs and more restrictive land-use regimes, while many Republican-leaning counties remain relatively affordable but often provide fewer economic opportunities. A growing public and academic debate suggests that younger Americans are increasingly sorting geographically along political lines, but is their geographic sorting truly ideological or economic? This study examines what may be called an affordability paradox – the places associated with the greatest economic opportunity are often the least affordable for young adults – and asks: (1) how housing-income mismatch interacts with local political climate to shape young-adult residential outcomes; and (2) whether observed geographic patterns reflect ideological migration or primarily economic responses to housing affordability constraints.

The analysis uses U.S. counties as the unit of observation and integrates demographic, housing, and electoral data within a GIS framework. Housing-income mismatch is measured using American Community Survey (ACS) five-year estimates as the ratio of annualized median gross rent to median household income. Young-adult outcomes focus on individuals aged 25-34 and include residential mobility (the share who moved within the past year) and delayed household formation (the share living in a parent's household). Political climate is measured using county-level Democratic vote share from the 2016, 2020, and 2024 presidential elections. Spatial analysis includes choropleth mapping and Getis-Ord Gi* hot spot analysis to identify clusters of housing-income mismatch and delayed household formation. Bivariate Local Indicators of Spatial Association (LISA) highlight counties where affordability stress overlaps with Democratic-leaning political environments. To test these relationships statistically, spatial regression models are estimated, comparing ordinary least squares models with spatial lag and error specifications.

Preliminary results reveal clustering of housing-income mismatch in coastal metropolitan regions and fast-growing urban and suburban areas. Several localized "paradox zones" emerge where high housing costs coincide with Democratic-leaning political environments. However, spatial regression models show that housing-income mismatch remains the strongest predictor of young-adult mobility and delayed household formation, while the apparent effect of political climate declines once housing market conditions are considered. These findings suggest that political geography functions primarily as contextual indicator of regional housing regimes rather than a direct driver of migration decisions. The results highlight the importance of addressing housing affordability as a structural planning challenge affecting young Americans, rather than focusing primarily on ideological debates. Policies that expand housing supply and improve development responsiveness can help reduce affordability pressures that constrain young adults' residential choices.

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Keywords: housing affordability, young-adult mobility, political geography, spatial analysis, housing–income mismatch

HOW DISASTER SCALE SHAPES HOUSING RECOVERY: A COMPARATIVE ANALYSIS OF LARGE AND MEDIUM-SCALE EARTHQUAKES IN NEPAL

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Track 2: Community Development and Housing
Individual Paper Presentation

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Unlike large-scale disasters, which attract international donors and global media attention, medium-scale disasters generate little external pressure on governments to perform. Increasingly, governments in the global south must lead housing recovery from medium-scale disasters using existing resources and established authorities. The recovery governance literature has focused on internationally supported large-scale events, yet applying these frameworks to medium scale disasters risks misguiding recovery. Operationalizing recovery governance through institutional structure, rules, resource flows, and implementation realities, I examine how recovery efforts differ between large and medium-scale disasters.

Nepal offers a rare opportunity to compare large-scale disaster recovery in 2015 and medium-scale recovery in 2023. In April 2015, a Mw 7.8 earthquake destroyed more than 800,000 houses and affected more than 6 million people. The Government established the National Reconstruction Authority (NRA), a temporary body to coordinate international funding and lead housing recovery. By 2022, over 95% of houses had been rebuilt. In November 2023, a Mw 5.7 earthquake struck western Nepal, damaging 62,000 houses and affecting 250,000 people. The National Disaster Risk Reduction and Management Authority (NDRRMA), a permanent body, led the recovery. However, more than two years later, recovery remains stalled. Damage assessments remain unapproved, disbursements frozen, and thousands of households remain in temporary shelter. This study compares NRA-led Gorkha earthquake recovery with NDRRMA-led Jajarkot earthquake recovery, drawing on interviews with national officials, policy-makers, implementors, and affected households; stakeholder coordination meetings; and analysis of policy documents and meeting minutes from both events.

I present four findings. First, in institutional structure: the NRA coordinated large-scale recovery through a department with building construction expertise and district-level field presence. The NDRRMA, by contrast, worked through an infrastructure agency with no equivalent technical capacity or field presence. While the mandate transferred between agencies, knowledge and institutional experience did not, revealing a pattern of institutional layering without capacity transfer. Second, in rules: the NRA had a singular mandate of reconstruction and authority to adapt regulations as demanded. The NDRRMA, by contrast, worked through established acts and guidelines. Grant procedures concentrated approval authority centrally while placing implementation responsibility on local governments. This misalignment between authority and responsibility delayed damage assessment approval.

Third, in resources: contrary to expectation, the 2023 recovery is not a funding problem. The NDRRMA holds reconstruction funds, but strict approvals and rigid requirements make funds institutionally inaccessible. The NRA, by contrast, facilitated fund flow case by case. Engineers from the 2015 recovery were not mobilized for 2023, leaving local governments without technical capacity. Fourth, in implementation realities: households in both disasters faced similar eligibility and reconstruction barriers. Joint families in single house, landless families, single women, and Dalit communities fall outside the grant system in both cases. These persistent barriers suggest exclusion is a structural feature of the grant system, not an implementation failure.

Recovery governance, not resource availability, is the primary determinant of recovery outcomes. Governments must transfer capacity across institutions, align authority with implementation responsibility, and ensure eligibility

criteria reflect vulnerable households' needs. While grounded in Nepal, these findings are relevant where permanent institutions manage recovery without the institutional pressure or technical and regulatory adaptability that large disasters compel.

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Keywords: Post-disaster recovery, Scales of Disaster, Housing, Recovery Governance, Nepal

HOW DO HOUSING INVESTORS RECONFIGURE OWNERSHIP IN POST-HURRICANE RECOVERY? A COMPARATIVE ANALYSIS OF NEW YORK CITY AND HOUSTON

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Track 2: Community Development and Housing
Individual Paper Presentation

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In the United States, real estate investor activity in residential homes has been rising since the 2009 financial crisis, and so has the risk of flooding. Flood damage exposes homeowners to financial vulnerability and displacement risk, yet public assistance and insurance often fail to meet the magnitude and urgency of the need. Homeowners, especially those without insurance or liquid resources, are then left with drastic repairs to handle on their own or may opt to sell their home and relocate. These conditions can provide opportunities for private capital to acquire damaged properties at a discount, a practice described by media sources as disaster speculation. However, the scale, location, timing, and implications of post-flood investor activity remain unclear.

In this study, we use decade-long transaction records to characterize post-flood investor activity in housing markets and its effect on the nature of residential ownership. We focus on the two costliest storms in the continental U.S. in the last decade: Superstorm Sandy (2012) in New York City and Hurricane Harvey (2016) in Houston. New York City is known for its high-density developments and supply-constrained market, whereas Houston features an expansive single-family housing stock. Taken together, the two cases set the bounds of how units are physically exposed to flood damage and the investment value of post-storm vacancies.

Here, we operationalize investors as non-owner-occupied homebuyers and group them into nonlocal and local actors based on their mailing addresses. We hypothesize that flood damage led to surges in investor activity in both cities, especially among local investors. With a quasi-experimental design, we exploit variation in flood depth to identify the effect of flood damage on investor purchase likelihood. We also analyze post-acquisition dynamics such as resale timing and neighborhood-level ownership shifts. Our preliminary analyses suggest that investor activities rise with flood damage severity. We further account for property type, baseline flood risk, and socioeconomic compositions to show how investor acquisition and resale behaviors vary across neighborhoods.

Overall, we provide empirical evidence on whether natural hazards have shifted homeownership patterns in U.S. cities. Our urban-scale, parcel-level approach directly ties investor transactions to hurricane flooding, revealing a key potential market mechanism driving neighborhood changes and contributing to the hazard gentrification literature. By clarifying how and to what extent investors participate in housing recovery, our empirical evidence can inform interventions related to recovery justice and to increasing housing ownership transparency. Furthermore, this study potentially challenges the view that there are only costs to housing investors by testing if private capital accelerates rebuilding when other resources fall short. Planners and policymakers may potentially explore partnerships with mission-aligned investors to help residential owners access recovery resources.

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Keywords: Investors, Homeownership, Flood hazards, Housing recovery, Real estate

HOW TRANSFORMATIVE ARE COMMUNITY LAND TRUSTS AND LIMITED EQUITY HOUSING COOPERATIVES? CASES FROM SAN DIEGO

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Track 2: Community Development and Housing
Individual Paper Presentation

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Despite a history of limited equity housing cooperatives (LEHCs) and community land trusts (CLTs) in the U.S.—since the 1910s and 1970s respectively—these models have re-emerged in low-income, marginalized neighborhoods as an avenue to overcome issues in land use and housing, including over-prioritization of market needs, lack of accountability, and undermining of democratic control (Alperovitz, 2011; Thompson, 2021). These models have also received more scholarly attention recently due to the severity of the housing crisis in U.S. cities, as well as state policy movement on social housing models.

CLTs and LEHCs supposedly reimagine land use and housing by creating grassroots democratic decision-making in development processes to produce more equitable and just outcomes and use of resources (Beveridge & Koch, 2019b; Fuller et al., 2010; Imbroscio, 2023). While scholars claim that these models create resident stability in the face of gentrification (Choi et al., 2018), permanent affordability in housing (Kim et al., 2022; Lee et al., 2024), and homeownership opportunities for low-income people (Ehlenz, 2018), recent scholarship is concerned that an overfocus on affordable housing production, at the expense of community control and ownership, is undermining the transformative potential of the models (DeFilippis et al., 2019; Lowe, 2025). This concern draws attention to the heterogeneity of these models—in terms of their origins, operations, and outcomes—and impels scholars to both explore the differences between CLT and LEHC models and question whether they are inherently transformative.

As such, this paper draws on André Gorz's (1967) concept of non-reformist reform as a theoretical framework to assess the transformative potential of CLTs and LEHCs. Gorz posited non-reformist reform as a method of working within capitalist systems to produce change "not in terms of what can be, but what should be" (Gorz, 1967, p. 8). Non-reformist reform illuminates the need for attention to equitable reforms in housing, but also consideration of alternative forms of housing consumption and communal social relations within housing.

This study relies on Gorz (1967) to examine the transformative potential of two CLTs—San Diego Community Land Trust and Tierras Indígenas Community Land Trust—and one LEHC—Orange Place Cooperative—in San Diego County in terms of equity, democracy, and collective ownership in housing. Orange Place Cooperative is a leasehold LEHC founded by a local affordable housing developer to produce affordable units for low-income residents in Escondido, California. San Diego CLT—the first CLT in San Diego but now defunct—was created to produce affordable single-family homes for working families in three neighborhoods and cities in San Diego County. Finally, Tierras Indígenas CLT was founded by local activists and artists to combat gentrification in the historic barrios of San Diego. This study provides examples of CLTs and LEHCs through which the heterogeneity and transformative potential of these models can be understood.

This research reveals that while CLT and LEHC models do produce equity in housing conditions—to different degrees and for different populations—two of the models reproduce ideas about housing consumption as a source of individual wealth and social relations typical in the current housing system. Only Tierras Indígenas CLT is pursuing systems reform in the material conditions, consumption, and social relations of housing. These findings draw attention to the need for emerging and current CWB models to pay more attention to community control and ownership but also highlights the need for more research in urban planning and studies on the diversity amongst iterations of CLT and LEHC models.

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Keywords: Community land trusts, Housing cooperatives, Affordable housing, Resident decision-making, San Diego

IDENTIFYING HETEROGENEOUS VACANCY-RENT RELATIONSHIPS IN U.S. CITIES

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Track 2: Community Development and Housing
Individual Paper Presentation

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Contemporary debates on housing affordability tend to focus on the relationship between housing supply and costs. Standard economic models predict that increases in vacancy should reduce rental prices. Prior housing scholarship has complicated this assumption, finding that the negative relationship between vacancy and rent does not always hold (Belsky and Goodman 1996), and that the "natural" vacancy rate varies across markets and over time (Guasch and Marshall 1985; Zhou 2008). Additionally, evidence suggests that price responsivity varies by market tightness, and that both absolute vacancy levels and year-over-year changes matter for rent dynamics (Zabel 2016). Despite recognizing heterogeneity in the rent-vacancy relationship, we know less about whether certain markets respond to vacancy in fundamentally different ways, and how these dynamics have shifted in recent years, including in the turbulent post-recession and post-pandemic periods.

In this exploratory study, we assess whether vacancy-rent dynamics operate uniformly across U.S. cities, or whether distinct housing markets exhibit meaningfully different responses to vacancy rate fluctuation. Focusing on large U.S. cities from 2007-2024, we pose the following research questions: (1) How do changes in rental vacancy rates relate to year-over-year changes in inflation-adjusted rents across large U.S. cities over time? (2) Do absolute vacancy levels or year-over-year changes in vacancy better predict rental dynamics, and does this vary by market type? (3) Can cities be grouped into distinct trajectory classes based on their joint evolution of rent and vacancy, and do these groups exhibit systematically different vacancy-rent relationships? (4) Are there nonlinear or threshold dynamics in the rent-vacancy relationship, such that rent responses differ across absolute vacancy levels? (5) How have these relationships evolved over time, including in the post-recession and post-pandemic periods?

We employ a two-stage analytical approach combining group-based trajectory modeling (GBMT) and Bayesian hierarchical regression. Our analysis uses a panel dataset of 90 large U.S. cities from 2007-2024, drawing on American Community Survey (ACS) 1-year estimates. Our dependent-variable is year-over-year percentage change in inflation-adjusted median gross rent. Key independent variables include rental vacancy rate, year-over-year changes in the vacancy rate, and city-specific controls including total population, median household income, and rental housing stock growth.

In the first stage, we apply GBMT to identify cities with similar joint trajectories of rent and vacancy over time, allowing the data to reveal distinct market types without imposing a priori classifications (Nagin et al. 2024). The GBMT model assigns cities to latent groups based on trajectory similarity. In the second stage, we employ Bayesian hierarchical regression models to estimate vacancy-rent relationships by identified trajectory groups and assess if meaningful differences occur between groups. We separately model absolute vacancy levels and year-over-year vacancy changes and incorporate nonlinear specifications to assess possible threshold dynamics. This two-stage approach allows us to identify theoretically meaningful market heterogeneity and rigorously assess whether these trajectory patterns capture distinctions in vacancy responsiveness across cities and over time.

Analysis is underway, with early GBMT findings suggesting meaningfully distinct trajectory groups that differ in their joint evolution of rent and vacancy across the 2007-2024 period. As policymakers and planners increasingly focus on supply-side interventions to address housing affordability, understanding the heterogeneous impacts of

vacancy on rent is critical for informing effective, context-specific housing policies that translate into maximal affordability gains.

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Keywords: rental vacancy rate, housing affordability, rent

IMPLICATIONS FOR AGING IN PLACE FROM HOUSING HISTORIES IN RURAL CHINA

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Track 2: Community Development and Housing
Individual Paper Presentation

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Background and Research Questions

Demographic changes mean that the proportion of older people is increasing, and most want to live in the community rather than in an institution (Clark et al., 2024; Forsyth & Molinsky, 2021). Regular homes and neighborhoods thus matter for the quality of life of older people. However, these homes reflect decisions made over decades. Where people live in old age is a result of where they have lived earlier. The history of owning and renting specific homes shapes people's financial situation, preferences, and the level to which their home can support them as they age. While the literature on individuals' housing histories is substantial, little focuses on China, on rural areas, or on the physical home. Using interviews and observations in three rural areas in China, we examine two questions: (1) How did housing change for these older rural Chinese people over their lifespans? (2) How well do their current homes support them as they age?

Methodology

This paper is part of a larger empirical study, "Aging in Place in Rural China" (Lyu & Forsyth, 2026). Fieldwork was conducted in China from June to August 2024 by one of the authors, with support from local collaborators. Data collection methods included (1) in-depth interviews and (2) systematic photography of participants' homes and their surrounding environments. Using convenience and snowball sampling, we interviewed 44 rural residents aged 60 and above across three regions. Seeking those needing most support, we looked for those with lower-income backgrounds, though we did interview those with a range of incomes. Using a semi-structured interview format adapted from the life history module of the Health and Retirement Study, we asked people to tell us about each house they had lived in, including its construction materials, who they lived with, and why they moved (Health and Retirement Study, 2015). In addition to the interviews, we observed and photographed each participant's current home and its surrounding environment with their permission.

Findings

We find that these residents with low incomes and educational levels had largely remained in their villages for most of their lives. However, they had rebuilt houses multiple times on the same or nearby lots, upgrading them over time, a situation of housing adjustment without spatial mobility. When asked, most were satisfied with their homes, though our observations showed numerous design problems related to accessibility and fit.

Implications for Planning Practice

These findings are important because they reveal that even individuals who appear never to have moved have modified their homes multiple times. This highlights opportunities to ensure that housing remains suitable across different stages of aging. At the same time, successive modifications can limit future adaptability, particularly when homes have been made more substantial or expensive to rebuild. These insights have wider relevance, as people in other contexts may similarly remodel their homes in ways that do not fully anticipate changing needs over time.

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Keywords: aging in place, older people, housing histories, rural, China

INFORMAL (COMMUNITY-LED) JOURNALISM AND AGENCY: EVIDENCE FROM MARÉ ONLINE'S COVID-19 COVERAGE IN RIO DE JANEIRO

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Track 2: Community Development and Housing
Individual Paper Presentation

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This paper examines how the community-led (also referred to as "informal" or "self-organized") newspaper Maré Online in Rio de Janeiro reported on the emergence of the COVID-19 pandemic, and how this contributed to conditions that enabled individual and collective agency. Drawing on qualitative content analysis of 150 articles published from March to June 2020, the findings demonstrate that the newspaper's reporting mobilized actionable information, documented and connected community-led initiatives, and used storytelling to make residents' experiences visible. These practices did not simply disseminate information; they shaped how residents understood the crisis, coordinated responses, and participated in collective action. The paper argues that Maré Online's reporting constituted enabling social infrastructure, as defined by Klinenberg (2018), within the community it served by strengthening transparency, participation, and recognition. In this way, the newspaper did not simply report on the pandemic; it expanded the possibilities through which individual and collective agency are enabled. Situated within urban informality theory (Roy, 2005) and scholarship on constructive journalism (McIntyre, 2019), the paper highlights the role of community-led (informal) newspapers in structuring the conditions that enable agency. In doing so, it shows that the generative capacities of informal systems operate not only through material systems, but also through communication systems (a social domain often underexplored) through which urban life is organized, experienced, and contested.

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Keywords: Agency, Urban informality, Community-led journalism, Social infrastructure, COVID-19

INTEGRATED SUPPORTIVE HOUSING IN MINNESOTA: WHEN IT WORKS WELL FOR RESIDENTS, AND WHY

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Track 2: Community Development and Housing
Individual Paper Presentation

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In this paper, we share new findings from our Minnesota-based study on residents' experiences living in multi-unit buildings where some – but not all – households are receiving permanent supportive services to stably transition out of homelessness. Buildings like these, which we term "integrated supportive housing" (ISH) properties, are encouraged by MN's Olmstead Plan, to promote increased integration and inclusion of such households into communities, rather than their isolation and separation. Indeed, public data indicates that a majority of Minnesota's 420 developments with supportive housing units that were funded by MN's housing finance agency are ISH, rather than developments where all units receive such services. Existing research in MN indicates that ISH property managers experience distinct challenges, such as insufficient capacity to address rising needs on-site. Despite their predominance in the state's permanent supportive housing landscape, relatively little is known about how well – or how poorly – ISH settings are meeting residents' needs.

We aimed to address this gap in the literature through a qualitative study: a series of focus groups held across Minnesota, with residents living in ISH properties. Our targeted, diverse sample incorporated insights on ISH in a variety of contexts: urban, suburban, and rural locations; demographically homogenous or diverse areas; operations with varying governance or funding structures; and properties where supportive services focus on certain groups, such as young adults. In this paper, we share our analyses on the particular conditions and characteristics that significantly shape ISH tenants' residential experiences.

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Keywords: supportive housing, homelessness, social integration, housing policy, Midwest

IS EMERGENCY RENTAL ASSISTANCE EFFECTIVE IN PREVENTING THE RISK OF NONPAYMENT EVICTION? FOCUSING ON SHORT-TERM AND LONG-TERM EFFECTS

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Track 2: Community Development and Housing
Individual Paper Presentation

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During the COVID-19 pandemic, widespread shutdowns and restrictions on gatherings were implemented to prevent the spread of the virus, leading to reduced incomes, rising unemployment, and a prolonged economic downturn. For the purpose of public health and the tenants' housing stability, the eviction moratoria were launched at the federal and state levels; however, these moratoria were lifted before people had sufficiently recovered financially to pay off their past-due balances accumulated during the shutdowns and pay their current and future rent on time.

To prevent the potential eviction tsunami, the U.S. Department of the Treasury launched the Emergency Rental Assistance Program (ERA) to assist tenants with incomes at or below 80% of the area median income who experienced financial hardship. While it was expected that ERA would help prevent evictions, few studies have empirically examined the program's effectiveness in reducing the risk of eviction filings and judgments. Receiving ERA funds might not necessarily guarantee protection from eviction. In some cases, tenants faced eviction actions despite receiving assistance. As an example of Oregon, an ERA application could be submitted after the eviction case was filed. Additionally, the amount of ERA funds might be insufficient to cover the full balance owed. Other factors included tenants being unable to pay subsequent rent or violations of lease terms other than nonpayment.

This study examines the effectiveness of Oregon's Emergency Rental Assistance Program (OERAP) in mitigating nonpayment evictions using a novel data set that links OERAP application records with eviction court data. Specifically, this study aims to answer the following research questions: [1] Were OERAP funds effective in mitigating the risk of nonpayment eviction? [2] Were OERAP-declined households more exposed to nonpayment eviction than OERAP-recipient households? [3] What about long-term housing stability for OERAP recipients households? By distinguishing the direct and indirect effects of OERAP, this study provides a comprehensive understanding of the impact of OERAP on eviction prevention and diversion.

Findings indicate that OERAP contributed to eviction prevention, both by directly enabling recipients to pay past-due rent and by indirectly allowing tenants to seek alternative financial resources during the application process, aided by Oregon's Safe Harbor Policy. However, some tenants not only remained at risk of eviction despite receiving assistance but also failed to apply for OERAP even though they were at risk of nonpayment eviction.

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Keywords: Eviction, Housing stability, Rental assistance

LET'S TALK LIHTC: RESIDENTIAL SATISFACTION IN OHIO LOW-INCOME HOUSING TAX CREDIT COMMUNITIES

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Track 2: Community Development and Housing
Individual Paper Presentation

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Within the Low-Income Housing Tax Credit (LIHTC) program, state's Qualified Allocation Plans (QAP) influence where LIHTC projects are located, their neighborhood characteristics (Owens and Smith, 2025), and their building design (Fallon and Price, 2020). In the case of Ohio, the 2026 Ohio Housing Finance Agency's (OHFA) QAP requires strong building design standards, the inclusion of community amenities for LIHTC projects, and heavily incentivizes the siting of these projects in high-opportunity census tracts. In this paper, we investigate how these required and incentivized features in the OHFA QAP impact residential satisfaction among LIHTC residents.

To measure residential satisfaction for both the neighborhood and the building, we utilized data from OHFA's 2018 LIHTC Resident Survey which included responses from residents of 98 LIHTC properties in Ohio. We used ordinal regression to determine the significant predictors of both neighborhood and building satisfaction, utilizing best practices discussed by Lu (1999). We also used stepwise multiple linear regression to, first, assess neighborhood satisfaction for LIHTC residents based on the location of projects in opportunity (high to low) census tracts, and second, to understand resident's building satisfaction based on the presence of various building amenities.

We have several findings from these models. First, we found that the quality and aesthetics of residents' neighborhoods and buildings, their perceived safety, and the quality of outdoor areas are significant and positive predictors of neighborhood and building satisfaction, supporting research previously conducted by OHFA (Fallon and Price, 2020; Price and Fallon, 2023). Second, we also found that neighbor friendliness is a significant positive predictor of residential satisfaction across all surveyed LIHTC properties. Third, we found that the presence of shared outdoor spaces is a significant positive predictor of building satisfaction. Four, the presence of media rooms and salons are also significant and positive predictors of building satisfaction, though these variables are only found to be predictive for residents in senior LIHTC properties. Five, turning to neighborhood level variables, we did not find that census tract-level opportunity index scores are significant predictors of residential satisfaction, though low family poverty and low unemployment rates in the neighborhood are found to be significant positive predictors of neighborhood satisfaction among LIHTC residents.

Based on our results, we offer several recommendations to state housing finance agencies managing LIHTC development, including setting standards to ensure specific building amenities, recognizing the diverse needs of seniors over other families in LIHTC projects. We also encourage state housing finance agencies to encourage the development of LIHTC projects in low-poverty neighborhoods to ensure neighborhood satisfaction among LIHTC residents.

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Keywords: LIHTC projects, Residential Satisfaction, Housing Access, Opportunity Neighborhoods, Amenities and Design

LISTING LANGUAGE AND HOUSING APPRECIATION: A REPEAT SALES ANALYSIS OF CHARLOTTE, NC

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Track 2: Community Development and Housing
Individual Paper Presentation

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How does the way a home is marketed predict its future price trajectory? This paper investigates whether the investment type signaled in a property's listing language — classified as disinvested, renewed, opportunity, expensive investment, or new suburban — predicts how that property appreciates over time. Drawing on the embedding-based text classification framework developed by Nilsson and Delmelle (2023, 2024), which uses listing language to capture micro-geographic housing dynamics, we apply a repeat sales model to residential transactions in Charlotte, NC. The investment type assigned to each property in the base year of each sale pair serves as the key explanatory variable, allowing us to track how homes marketed under different investment narratives perform over subsequent sale cycles.

The findings offer a novel lens through which to understand neighborhood change and its market consequences in a rapidly growing Sun Belt city. Charlotte's combination of sustained population growth, pronounced racial residential segregation, and intra-urban variation in neighborhood investment makes it a suitable setting in which to examine whether listing-derived investment signals carry forward-looking information about appreciation trajectories beyond what conventional hedonic attributes capture.

The implications extend beyond price prediction. Because Black homeowners have been historically kept out of certain neighborhoods through discriminatory housing policy, appreciation gaps across investment types represent a measurable and compounding mechanism of racial wealth inequality. A home marketed as disinvested does not only reflect current conditions, but it may also limit future wealth accumulation relative to homes that are marketed as opportunities, renewed or expensive investments. Charlotte's history of urban renewal, redlining, and ongoing gentrification pressure makes these dynamics particularly relevant. By linking listing-derived investment classifications to long-run appreciation outcomes, this paper provides planners and policymakers with a tractable method for identifying at-risk properties and neighborhoods, and for targeting interventions before appreciation gaps compound further.

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Keywords: house price trajectories, repeat sales, public remarks, investment type, racial wealth gap

LONG-RUN EFFECTS OF EXPOSURE TO THE EARLY US PUBLIC HOUSING PROGRAM: EVIDENCE FROM LINKED CENSUS DATA

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Individual Paper Presentation

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The US public housing program began in 1935 and improved housing conditions for nearly 30,000 families by 1940. The theory of the public housing program was built on its purported benefits for other realms of life—it grew out of social reformism positing that individuals' lives could be improved through better living conditions. Early public housing selected households that could best be described as the "submerged middle class," resulting in relatively affluent households accessing housing during this era. Research has assessed socioeconomic outcomes associated with living in contemporary public housing, but we know little about the effects of living in early public housing developments for households that accessed this resource. In this paper, we answer the following research question: What is the relationship between exposure to early public housing developments as a child and later life outcomes, including individual mortality and educational attainment?

We innovate in this area by creating a dataset of all public housing residents in the full count 1940 census, which we identified by combining several publicly available sources. To study long-term effects, we linked the 1940 census records of children living in public housing prospectively at the individual level to the 2000 census long form, IRS records from 1969-1994, and the Social Security Numident file (death records). To address selection into early public housing, we develop two comparison groups of children 1) living in the same 1940 census enumeration districts but outside public housing and 2) children living in the same city in 1940 but outside of public housing. In both cases we matched children in public housing and children in the comparison groups on race, family employment, family structure, household income, and household education using a coarsened exact matching technique. Through a set of predictive statistical models, we find that children in public housing in 1940 lived 0.60-0.90 years longer than their counterparts. Public housing residents also eventually completed 0.25-0.50 more years of education and more often eventually completed high school. Finally, we show that children in public housing in 1940 earned between $2,800 and $6,900 (2025 $) more when middle aged relative to the comparison group. These findings strengthen the case for investment and expansion of public housing in the US.

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Keywords: Public housing, Great Depression, youth, education, mortality

MIDDLE-INCOME HOUSING AND THE MISSING MIDDLE: FOCUSING ON A FAST-GROWING REGION

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Track 2: Community Development and Housing
Individual Paper Presentation

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Middle-income households — those earning 60–120% of Area Median Income (AMI) — occupy a precarious position in U.S. housing markets (Hermann, Airgood-Obrycki, Cahill, and Whitney, 2024). They earn too much to qualify for many housing subsidies yet face a shrinking supply of market-rate housing they can reasonably afford. This missing middle-income housing crisis is acutely visible in the Columbus region, one of the fastest-growing metropolitan regions in the Midwest, where rising housing costs increasingly displace essential workers from job centers and community anchors.

This research, conducted in partnership with a Columbus region nonprofit, examines the shortage of middle-income housing across the Columbus Metropolitan Area (CMA). More specifically, the study investigates: (1) the current and estimated demand for middle-income housing relative to existing supply; (2) the adequacy of the middle-income housing stock in terms of affordability, location, and accessibility; and (3) the policy, regulatory, and market interventions best positioned to expand supply of missing middle-income housing.

For this research, we utilize census tract-level housing market data, and demographic profile data. More specifically, we integrate and use data on median rent, housing cost burden (households paying >30% of income on housing), tenure and income. We also utilize policy-related data including information on permitting activity, zoning, and land use regulation.

Using linear regression and spatial analysis, we determine the factors that lead to the gap between expected and actual middle-income housing across the region. We find that compared to other households, middle-income renters are disproportionately concentrated in high-cost urban tracts while lower-density, more affordable areas lack accessible housing typologies compatible with serving middle-income households. We find that one housing typology in particular that is underproduced relative to demand is the “missing middle” housing that includes forms like duplexes, townhouses, and small multifamily buildings (Parolek, 2020; Wegmann, 2020). We find that these types of housing can offer middle-income households an affordable set of options.

We conclude this study with policy, zoning, and design recommendations for local governments, developers, and nonprofit partners to help expand middle-income housing in the Columbus region. We are conscious of the need to protect resources for low-income cost-burdened households as we offer our recommendations.

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Keywords: middle-income housing, missing middle housing, housing affordability, housing cost burden, housing typologies

MONITORING AND EVALUATING COMPREHENSIVE COMMUNITY INITIATIVES USING THE PHOTOVOICE METHOD: A CHICAGO CASE STUDY

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Track 2: Community Development and Housing
Individual Paper Presentation

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For decades, planners and researchers have struggled to effectively monitor and evaluate the implementation of urban plans (Guyadeen & Seasons, 2018). Similarly, the planners and implementers of community initiatives have wrestled with numerous complexities involved in evaluation (Baum, 2001). Well-resourced foundation-led initiatives, such as Comprehensive Community Initiatives (CCIs), have led to advances in monitoring and evaluation practices and techniques (Brown & Fiester, 2007). Further, researchers have more recently begun to carry out studies that measure the long-term effects of specific CCIs (Rosenblatt & DeLuca, 2017) and synthesize the lessons of CCI case study research (Rosen et al, 2022). However, researchers and practitioners continue to explore new methods to build community capacity to monitor and evaluate community development plans and their implementation.

This study explores photovoice, a participatory action research method involving photography and storytelling, as an approach to plan monitoring and evaluation. While the photovoice method has proliferated as a participatory evaluation method for public health interventions (Seitz & Orsini, 2022), its use in community development planning has been less researched. This study describes a photovoice project that the authors led from 2024-26 as part of an evaluation of the first 5 years of Austin Forward Together (AFT) implementation, a CCI planned and implemented in Chicago's Austin community area. 14 community leaders that were involved in AFT implementation participated in the project by 1) sharing personal photos that they believed documented the impact of the CCI's first 5 years in their community, and 2) meeting to share and discuss their photos in a facilitated focus group. An analysis of their focus group discussion yielded three themes for further outcome evaluation research, and six recommendations for CCI implementation improvement. This case suggests that photovoice can help contribute to a plan monitoring and evaluation process that supports Rosen et al's (2022) five key conditions for CCI success. However, further use and study of the photovoice method is needed to validate these preliminary and limited results.

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Keywords: Community Initiatives, Plan Evaluation, Photovoice

MOVING TO OPPORTUNITY?: INVESTIGATING THE GEOGRAPHIC ORIGINS OF INCLUSIONARY HOUSING RESIDENTS

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Individual Paper Presentation

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Policymakers have long sought to advance mixed-income communities, especially by encouraging families to move from areas of concentrated poverty to areas of "high opportunity" (Chetty & Hendren, 2018; Chyn & Katz, 2021). Inclusionary zoning – an umbrella term for the provision of designated affordable units within market rate buildings – might help accomplish this goal. Yet, to date, we do not know much about whether inclusionary zoning actually lessens regional inequality (Mukhija et al., 2015). Indeed, there is some evidence that the racial composition of tenants in inclusionary zoning units might differ from the demographics of the local low-income population (Kontokosta, 2014). This could mean that households who find a home in inclusionary units are mostly those who already have local connections – limiting the policy's impact on social mobility.

This paper seeks to fill this knowledge gap by determining whether inclusionary zoning helps facilitate moves from neighborhoods of concentrated poverty to high opportunity areas. Specifically, we combine publicly available affordable housing agreements with a private sector address history dataset to determine the geographic origins of residents who moved into inclusionary zoning units between 2018 and 2022. We then compare inclusionary housing residents to three other groups: residents of market rate units in the same inclusionary zoning developments, residents of 100% affordable developments funded by state programs or the federal Low-Income Housing Tax Credit (LIHTC), and residents of public housing. The analysis is conducted for four counties in northern New Jersey, taking advantage of that state's Mt. Laurel doctrine, which requires municipalities meet their "fair share" of regional affordable housing need through the provision of mixed-income housing (Dantzler, 2016).

Preliminary findings indicate that residents moving into mixed-income developments built to fulfill Mt. Laurel obligations experience a greater upgrade in neighborhood quality than those moving into public housing or LIHTC developments. We hypothesize that this effect will remain even after distinguishing between the affordable units in inclusionary developments and the market-rate units. This has implications for how policymakers should think about the intersection between affordable housing policy and metropolitan spatial inequality, suggesting that inclusionary zoning and affordable financing programs must be proactively designed to promote integration and the de-concentration of poverty.

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Keywords: housing, inclusionary zoning, spatial inequality, mixed-income communities, Mt. Laurel doctrine

NAVIGATING PROPERTY FORMALIZATION IN POST-DISASTER RECOVERY: AN ANALYSIS OF PUERTO RICO'S TITLE CLEARANCE PROGRAM IN VILLA ESPERANZA, PUERTO RICO

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Individual Paper Presentation

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This study examines the implementation of Puerto Rico's Title Clearance Program in Villa Esperanza, an informal settlement in Toa Alta, following Hurricane María in 2017. Through semi-structured interviews conducted in summer 2022 with 20 participants, including residents, community leaders, government officials, legal advocates, and other stakeholders, this research examines the intersection of property formalization and disaster recovery in marginalized communities. The findings reveal significant barriers to program participation, including complex documentation requirements, limited resources, and historical patterns of exclusion from formal systems. Despite these challenges, residents demonstrate remarkable agency in pursuing title clearance as a pathway to accessing basic services and future disaster assistance. The study contributes to understanding how a land title clearance program in the post-disaster recovery phase interacts within the context of informality. In addition, the study highlights the need for more inclusive approaches to disaster recovery and acknowledges the challenges and realities related to informal land tenure from the perspective of a single case study in Puerto Rico.

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Keywords: informal communities, property formalization, community recovery, Hurricane María, Community Agency

NEIGHBORHOOD TRANSFORMATION IN SHRINKING CITIES: USING MULTIMODAL LANGUAGE MODELS TO EVALUATE HOUSING REDEVELOPMENT SPILLOVER EFFECTS IN BUFFALO, NY

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Track 2: Community Development and Housing
Individual Paper Presentation

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Shrinking Rust Belt cities, such as Cleveland, Detroit, Buffalo, and Pittsburgh, have experienced sustained population decline following deindustrialization, alongside economic restructuring and weakened housing markets (Silverman et al., 2013). These dynamics have produced widespread housing vacancy, deteriorating public housing stock, and fragile private markets unable to support reinvestment without external intervention (Yin & Silverman, 2015; Yin et al., 2024). Buffalo's East Side exemplifies these conditions. Its historically underinvested Black neighborhoods have faced decades of compounding challenges, including aging infrastructure, housing disrepair, elevated crime rates, and limited access to essential resources such as affordable food, healthcare, and safe spaces for physical activity (Yin et al., 2024).

Urban planners and policymakers increasingly view shrinkage as a structural condition requiring stabilization rather than growth-oriented strategies (Yin & Silverman, 2015). Housing redevelopment, particularly when anchored by long-term institutions embedded in local neighborhoods, has emerged as a key intervention. In recent years, several major redevelopment initiatives on Buffalo's East Side have relied on public–private partnerships (PPPs) to mobilize capital, share risk, and enable large-scale housing investments that would otherwise be financially infeasible. When supported by strong public oversight and meaningful community engagement, anchor-led housing PPPs can generate positive spillover effects, strengthen neighborhood housing markets, and promote equitable stabilization—without relying on population growth to justify reinvestment.

This study employs multimodal language models to analyze and integrate diverse data sources, including internet-based text and images related to neighborhoods surrounding the Perry Homes project site on Buffalo's East Side. The analysis examines how this major investment has reshaped the surrounding community and identifies persistent concerns that remain unaddressed, with the goal of informing ongoing revitalization efforts.

While traditional methods such as surveys remain valuable in urban planning and policy research, they are labor-intensive, costly, and prone to recall bias. In contrast, digital data sources—including social media content and street-level imagery—offer timely, scalable, and historically traceable insights into neighborhood conditions and lived experiences. Social media captures everyday perspectives on housing, politics, and community services, while street view imagery provides visual evidence of housing quality and resident investment. Analyzing these large, heterogeneous datasets, however, requires advanced tools capable of handling multimodal information.

Recent advances in artificial intelligence make such analysis increasingly feasible (Yin et al., 2026a; Yin et al., 2026b). In this study, large language models (LLMs) are used to analyze text and image data collected from internet sources at two time points—the current year and approximately ten years earlier—to assess street-level and parcel-level impacts of major redevelopment efforts. Overall, the study demonstrates how generative AI can be leveraged to evaluate neighborhood change and redevelopment spillover effects, offering insights into what works—and what remains unresolved—in efforts to stabilize shrinking urban neighborhoods.

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Keywords: Neighborhood change, Shrinking cities, GenAI applications, revitalization

PLANNER-LED COLLABORATIVE GOVERNANCE AND THE URBAN FORM OF URBAN VILLAGES IN REDEVELOPMENT: THE CASE OF YANGJI, CHINA

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Track 2: Community Development and Housing
Individual Paper Presentation

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While urban redevelopment has been a prevailing urban phenomenon for many decades, the redevelopment of urban villages (villages-in-the-city or chengzhongcun) has become popular in China. Urban villages are an important type of urban neighborhoods in China. They have a dense and dilapidated built environment and mainly house huge poor rural migrants, in contrast to Western urban villages. The redevelopment of urban villages has drawn increasing scholarly attention during recent years. Many studies have examined the political and socio-spatial dimensions of urban villages, but surprisingly few studies have paid attention to their changing urban form. Many studies have examined the governance structure of redevelopment such as the roles, strategies, and actions of local governments, the market, and communities. However, limited studies have focused on the urban planning forces and their impacts on urban villages in redevelopment, especially on their transforming open spaces.

In response to the above literature gaps, this paper examines how urban planning transforms the urban form of urban villages, especially their open public spaces. It carries out a case study of Yangji Village in Guangzhou, Guangdong Province. The redevelopment of Yangji represents the transformation of an urban village under multiple stakeholders' governance, which is vigorously promoted by the government. Data were collected through interviews and observations and from village archives. Between August 2020 and May 2021, we conducted six semi-structured interviews with 12 key persons, such as senior planners and village leaders, who were involved in the redevelopment. We also interviewed six villagers and four tenants in Yangji and collected maps and documents, such as the archives of Yangji history and redevelopment, to enrich the data.

This study argues that the large increase in public spaces associated with the transformed form of Yangji results from collaborative governance driven by the trend of urbanization and urban planners who have state support, professional knowledge, and the incentives of public interests. Yet such a planner-led collaborative governance remains in a limited sphere where stakeholders' economic interests are marginal and migrant tenants are excluded from the decision-making process of planning and redevelopment. As empowered state agents, planners have the privilege to negotiate and coordinate with other stakeholders, and occasionally manipulate them for public interests rather than economic growth, thus creating collaborative dynamics. Although rarely regarded in the literature as a key role in redeveloping urban villages, urban planners are highlighted in this paper as a salient force of the urban morphology of urban villages. Redeveloped urban forms, rather than stakeholders' economic profits in short-term redevelopment, may influence urban life in a long term through planners' efforts. This paper highlights the importance of urban planners to urban redevelopment and collaborative governance and enriches our understanding of the transformation of urban villages in China. Urban planners in China's authoritarian regime are not passive actors, but can greatly influence urban (re)development for the public if they can strategically obtain state support, tactically use their expertise, and align these efforts with public interests.

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Keywords: collaborative governance, urban planner, urban redevelopment, urban form, open space

PRIVATE PROVISION OF PUBLIC HOUSING: IMPACTS ON TARGETING

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Track 2: Community Development and Housing
Individual Paper Presentation

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Housing assistance in the United States has undergone a shift from public provision of government-owned and -operated housing toward subsidized provision through private markets (Vale and Freemark, 2012; Collinson et al., 2019). This paper studies how private provision may affect tenant composition and targeting in federal programs by examining conversions of public housing to project-based vouchers through the Rental Assistance Demonstration (RAD) program, introduced by Congress in 2011. RAD allows public housing authorities (PHAs) to convert their public housing to project-based Section 8 contracts in order to leverage financing for long-delayed repairs and renovations, often accompanied by a transfer of ownership or management to private for-profit or non-profit entities (Hanlon, 2017). While RAD was designed primarily as a way for PHAs to address capital needs, the switch to private provision could also affect how managers decide which households to admit or retain and how residents weigh tradeoffs between improved buildings and the option to move with a voucher, gradually changing the targeting of the program. We use nationwide administrative data on public housing tenants and a difference-in-differences design that leverages plausibly exogenous variation in the timing of RAD conversions to study impacts of RAD on tenant targeting between 2014 and 2023. We find that RAD conversion leads to lower-income households living in converted developments over time on average, partly driven by lower Section 8 income eligibility and waitlist priority rules for new tenants. Among households living at developments prior to conversion, relatively higher-income incumbent households and households with children are more likely to move out over time as tenant-based vouchers are offered to residents after conversion. We provide suggestive evidence that there is targeting of relatively lower-income residents at conversions with non-profit managers compared to for-profit managers, primarily through the channels of waitlist priorities for new admissions and self-selection of households moving out with vouchers, rather than for-profit managers pursuing terminations based on perceived costs.

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Keywords: public housing, private provision, targeting, RAD

RACIALIZED HOUSING PATTERNS AND URBAN HEAT RISK: A MICRO-SCALE ANALYSIS OF PUBLIC HOUSING IN TWO U.S. CITIES

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Track 2: Community Development and Housing
Individual Paper Presentation

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This study investigates how planned public housing patterns in New York City and Washington, D.C. reinforce long-standing racial segregation and intensify heat vulnerability. Although much is known about the disproportionate impacts of heat exposure on vulnerable populations, particularly Black and low-income residents, little is known about how these factors intersect on a micro-scale, the census-tract level where public housing, racial composition, and environmental exposure converge. Each of these cities are known to have historical segregation, systemic inequities, and current climatic and socioeconomic challenges. Micro-scale spatial analysis has been used in environmental justice and climate vulnerability research but has been rarely applied to public housing systems in these two cities. This introduces a novel micro-scale approach to reveal how historical housing decisions continue to shape present-day climatic risk.

During the 20th century, public housing residents, typically Black Americans, were isolated in race-specific neighborhoods without the resources and infrastructure of majority-white neighborhoods. In addition to this discrimination, many Black neighborhoods were decimated by urban renewal, which replaced their homes with highways and other major infrastructure. This destruction often left Black residents with no choice but to turn to public housing, which was often sited in primarily Black neighborhoods that again lacked resources, continuing the vicious cycle of discrimination that harmed Black Americans during the 20th century. Those same neighborhoods that were discriminated against by the HOLC and HUD have faced disinvestment and isolation because of centuries of racist laws and are now neighborhoods suffering from a loss of ecological surfaces and shade, leaving them even more vulnerable (Cammett, 2015). The historical racism that has forced Black residents into their units makes public housing an ideal focus to examine the intersection of multiple types of inequalities (Locke et al., 2021; Cole et al., 2024).

Using spatial analysis and hotspot clustering, the study examines three census-tract-level indicators: Heat Vulnerability Index/Heat Sensitivity Index scores, public housing locations, and the concentration of Black residents. UCMapping is employed as an interdisciplinary tool that integrates geological and planning perspectives, enabling a micro-level visualization of how racialize housing patterns intersect with environmental exposure (Ren et al., 2011). This micro-scale examination makes the impacts of 20th century segregation, discriminatory siting practices, and urban renewal policies that concentrated Black residents into under-resourced neighborhoods more visible.

Findings demonstrate strong correlations between high heat vulnerability, predominantly Black census tracts, and the locations of public housing. These patterns demonstrate that public housing continues to reflect and reproduce earlier segregationist logics, embedding racial and environmental inequalities into both cities' identities. The results show that public housing is not only a product of historical discrimination but also a contemporary mechanism through which heat vulnerability is unequally distributed.

This study contributes to planning scholarship by offering a replicable micro-scale methodology for examining how public housing planning impact a person's environmental risks. For planning scholars, the findings underscore the need to integrate climate resilience planning into public housing plans and the need to address the racialized

legacies built into current siting and redevelopment decisions. Expanding this approach to other cities could help identify broader national patterns and inform more equitable housing and climate policies.

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Keywords: Public housing, Racial segregation, Heat vulnerability, Environmental justice, Spatial clustering

REGIONAL DELIBERATION AND GOVERNANCE: IMPLEMENTING CALIFORNIA'S HOUSING POLICY

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Track 2: Community Development and Housing
Individual Paper Presentation

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Metropolitan planning organizations (MPOs) have rarely taken on equity and housing considerations in the United States. Rather, structural and political conditions have allowed for regional governance to be characterized by interjurisdictional competition or center on economic development goals. Expanding on research examining the contentious implementation of state housing reforms, this paper compares the processes through which the Bay Area and Southern California have recently formulated their regional housing allocation methodologies. Centering on public meetings held by the Association of Bay Area Governments (ABAG) and the Southern California Association of Governments (SCAG) in 2019 and 2020 to determine their sixth cycle Regional Housing Needs Allocation (RHNA) methodologies, I investigate how distinct public deliberation processes have shaped housing policy implementation. The video recording of meetings under analysis are publicly available and agenda packets provide meeting transcripts (ABAG) or summaries of written comments (SCAG), allowing for a careful analysis of discussions.

Deliberations and outcomes were heavily influenced by state-level reforms pushing regions to promote desegregation and housing development in high-resource areas. As regional stakeholders grappled with competing demands, such as transit and employment access and environmental risks, tensions and misalignments among elected officials, planners, and members of the public erupted. This was particularly prominent in southern California, where stakeholder input was limited to public comment, only elected representatives had voting power, and some participants voiced significant opposition against reforms. In contrast, ABAG's Housing Methodology Committee (HMC) had over thirty voting members, including elected officials, planning staff, and over a dozen of regional stakeholders. Such plural inclusion, aligned HMC and state goals, better representing regional and societal interests instead of localized and private ones. The role of planners in these processes differed considerably as well, with Bay Area staff directly shaping policy and outcomes by leading discussions and exercising voting power.

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Keywords: Regional governance, California, Housing policy

REJECTION OR TOLERANCE? SHELTERS CAPACITY AND TRANSIENT HOMELESSNESS IN COLORADO

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Track 2: Community Development and Housing
Individual Paper Presentation

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The discourse around homelessness often assumes that robust service systems attract people experiencing homelessness [PEH]. The shelter's entry policy could create barriers to services for individuals with a history of mobility or transience, making them susceptible to declined entry. Several studies discussed the impact of turning people away, which include traumatic and health-related exacerbations, a greater risk of violence and assault, spread of infectious disease, intensified trauma, hopelessness and suicidal ideation, and increased chronic homelessness. This paper is a part of a broader project aims to understand the root causes of homeless mobility in/into Colorado homeless system, and the landscape of service and facilities that could contribute to/or mitigate transience homelessness. Our project attempts to understand the causes of increased numbers of turned away PEH at the largest facility in Boulder, All Roads shelter. Entry into All Roads is through a simplified nightly stay lotter (NSL) approach, a system that monitors and tracks simple data entry. In the last two years, the number of people turned away has dramatically increased, despite significant increases in the shelter's nightly capacity. As Boulder's largest homeless shelter, All Roads provides a safe space for at least 160 people nightly. Usually, there is greater demand than capacity allows. Turnaway numbers have raised concerns for shelter leadership, city staff, elected officials, and the public, and we find no ready explanations for the situation. Numerous entities, including local elected officials, government staff, and members of All Roads, seek explanations. Otherwise, it is difficult for the system to respond effectively.

We endeavor to answer why turn-away numbers continued to increase even after the shelter's capacity increased from 160 to 180? We will also investigate potential correlation between turn-away numbers and external factors such as weather, changes in policing, etc. Through a partnership with All Roads, this research helped us engage in meaningful community conversation to address the increased number of PEH beyond the nightly capacity, peak times, and causes driving turn away numbers. Our approach attempts to correlate data on NSL turn-aways with environmental [climate] data and qualitative data on shelter policy and the protocols of the policy and governance of other area shelters, which might contribute to denied entry, causing transience homelessness. Through this collaboration, we seek to address concerns about high turn-away numbers. We conducted a quantitative data analysis of nightly turn-away records, sociodemographic data, and weather data (2022 to 2025). We also conducted a focus group with All Roads clients who have experience of being turned away. Through this collaboration with All Roads, we seek to understand the phenomenon of people experiencing homelessness (PEH) being turned away from the shelter due to lack of capacity. Each night, All Roads allocates bed access through a nightly stay lottery (NSL).

We also examined the policies and capacities of other shelters using semi-structured interviews with case managers and officers at other agencies and service providers in the region to understand the scope and policy of accepting or declining PEH clients at these shelters. We also conducted interviews with All Roads clients about their experience of being turned away.

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Keywords: Transient homelessness, Shelter capacity, Shelter policy, Housing insecurity

RENT'S ROLE AS AN UPSTREAM DETERMINANT OF HOMELESSNESS

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Track 2: Community Development and Housing
Individual Paper Presentation

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We investigate the determinants of place-level urban homelessness, using Point-In-Time (PIT) count data. Our contribution is threefold. First, we examine rents while controlling for local measures of climate, welfare expenditure, and and substance abuse. Other studies have included some of these variables but not all, or have controlled for these phenomena using state rather than local proxies.

Second, we control for data quality. PIT counts of the homeless have reliability problems both across places and within places over time. We take steps to control for PIT count errors and inconsistencies. We exclude rural areas, we do not use consecutive years of counts, we explicitly control for instances where counting methods were known to be flawed, or where changes in methods generated large reported swings in homelessness, and we include controls abnormally large swings in a count occurred over short periods of time. We consider such swings more likely to be the result of mistakes or methodological changes, than to actual changes in homelessness.

Third, we draw an explicit distinction, both conceptually and empirically, between the idea that homeless will be more common in places with higher rent, and the idea that higher rent will be associated with more homelessness in the same place over time. We first present pooled regressions that estimate the combined between- and within-place relationships between rent and homelessness, while controlling for an array of other factors. We then estimate fixed effects panel regressions isolate the within-place relationship. Finally, as a check on our results, we estimate correlated random error models that estimate the within-place effect while explicitly controlling for persistent differences between places.

Our primary finding is that rent has a strong but volatile association with homelessness rates between places. It has a smaller but more stable association with homelessness rates within places over time. This finding suggests that local efforts to contain rent growth and reduce the price of space can be a tractable approach to reducing homelessness.

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Keywords: homelessness, rent, housing

RESEARCH ON ACCESSIBLE HOUSING NEEDS AND PRODUCT SUPPLY FOR PEOPLE WITH DISABILITIES BASED ON USER STORY MAPPING: A CASE STUDY OF SHANGHAI, CHINA

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Track 2: Community Development and Housing
Individual Paper Presentation

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Accessible housing is crucial for the independence and well-being of people with disabilities, yet a persistent gap remains between diverse user needs and market solutions, particularly in rapidly aging societies like China, where national standards are vague and interior guidelines insufficient.

Drawing on a large-scale residential modification program for low-income households with severe disabilities in Shanghai, conducted in collaboration with the Shanghai Disabled Persons' Federation and related institutions, this study systematically investigates supply–demand mismatches in accessible products.

Existing research has highlighted the importance of housing but largely focuses on policy frameworks or individual product evaluations, with limited attention to activity-based needs across disability groups. Although some studies adopt activity-centered approaches, they remain underutilized. This study addresses this gap by linking product supply with sequential user needs across different disabilities. It applies User Story Mapping (USM) to capture user journeys and identify supply–demand mismatches.

A mixed-methods approach is adopted. A questionnaire survey (n = 525) captures disability types, daily barriers, and modification needs. Market research maps about 100 products from government programs, suppliers, and e-commerce platforms. USM structures six key daily activities into sequential tasks and evaluates accessibility using a four-level framework (L1 Accessible to L4 No Solution).

Results show: (1) Product supply is concentrated in high-risk spaces (bathrooms, kitchens), while living areas remain underserved. Most products target physical disabilities, with limited support for sensory or cognitive impairments. (2) Existing products emphasize static safety but fail to support complete activity chains. (3) Smart technologies face barriers of cost, complexity, and poor usability. (4) Essential low-cost tools are scarce and lack quality assurance.

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Keywords: Accessible Housing, People with Disabilities, User Story Mapping, Needs Assessment, Supply-Demand Mismatch

SERVICE-SECTOR GROWTH AND THE EMERGENCE OF NEW RENTAL MARKETS: MIGRANT WOMEN'S EXPERIENCES IN INFORMAL WORKER ACCOMMODATION IN URBAN INDIA

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Track 2: Community Development and Housing
Individual Paper Presentation

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Following neo-liberalization in the 1990s, India's service sector has overtaken its manufacturing and agricultural industry to lead the country's economic growth. This transition has attracted highly-skilled migrant workers to metropolitan regions where employment opportunities are anchored (Randolph & Dutta, 2025). Despite this large transient workforce, housing policies have paid little attention to their critical need for temporary and affordable rental housing (Harish, 2016). In the absence of public rental housing, low-income migrants are reliant on informal sources (Bhan, 2009), whereas private rental markets present feasible alternatives for higher income groups (Pati, 2022).

This paper examines how this infrastructure gap has created unique opportunities for employers to exploit female migrant workers from Northeast Indian states - Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura. Northeastern migrant women's racial and gendered identities have positioned them in high demand in the rapidly expanding retail, beauty, and hospitality industries (McDuie-Ra, 2012). These hiring preferences are grounded in their historical racialization as possessing 'un-Indian' phenotypes, ability to speak English in non-Indian accents, and the hyper-sexualization of their bodies.

Through qualitative semi-structured interviews with 32 Northeastern migrant women employed in Bengaluru, I find that the capitalistic exploitation of their racialized labour is made highly lucrative through offers of subsidized employer-provided rental accommodation. Employers commonly set up direct agreements with private landlords for rental units to be used as worker housing and cover a part of the rent themselves. In some instances, workplaces are converted into sleeping areas at night whereas other employers designate units for this purpose, either within the same building or in other properties they own. Given that migrant women's wages price them in between informal housing and private rental markets, I find that employer-provided accommodation is the most feasible housing option available.

However, accessing these units requires workers to accept several trade-offs. Residents must abide by night-time curfews, restrictions on venturing outside the accommodation, and prohibitions on the entry of visitors inside residences, with their movements being closely monitored for violations. While most participants were explicitly informed of these regulations, others complied due to the fear of losing access to this essential resource if they disrupted employers' expectations. The intimate control exhibited over workers' personal and professional lives in employer-provided rental housing also enables financial and physical forms of labour exploitation. Many participants thus chose to leave and find housing in the expensive private rental market, often sharing and splitting expenses with friends and relatives to afford this alternative. Others, however, were reliant on employer-provided housing on a long-term basis as financial circumstances prevented them from leaving.

The paper contributes to urban planning literature by uncovering the existence of a new informal rental market in urban India that stems from the absence of alternative options that meet female migrant workers' housing needs. This gendered informal market allows employers to exhibit enhanced forms of control over female migrant workers by tying their employment to housing while provision requires minimal investment. I thus demonstrate how service sector growth has precariously positioned female migrant workers in urban India within new pockets of vulnerabilities and exploitation that are distinctly racialized and gendered. In doing so, the paper opens up informal

employer-provided accommodation as a distinct analytical space for further explorations of gendered housing vulnerabilities in the urban Indian context.

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Keywords: Migrant women, Service sector, Worker housing, Bengaluru, Northeastern Indian women

SKYLINES OF OPPRESSION: DISPOSSESSIVE INTEGRATION AND COMMUNITY CONFLICT OVER REDEVELOPMENT IN THE BOYLE HEIGHTS BARRIO OF LOS ANGELES

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Track 2: Community Development and Housing
Individual Paper Presentation

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Since the 1990s, urban redevelopment strategies in Los Angeles have increasingly framed historically marginalized neighborhoods as sites of integration, inclusion, and cultural revitalization. This article examines how such efforts operate as mechanisms of gentrification that incorporate racialized space into urban growth regimes. Focusing on Boyle Heights, a historically working-class Latinx immigrant barrio in Los Angeles, this paper asks, how does gentrifying redevelopment operate as a form of dispossessive integration? And how does this process generate divergence and conflict within historically marginalized communities?

Drawing on participant observation, oral histories, and archival analysis of redevelopment between 1980 and 2020, the study develops the concept of dispossessive integration to explain how redevelopment builds upon histories of racialized devaluation while reconstituting neighborhoods as culturally vibrant and economically desirable. It shows how market-driven redevelopment unfolds through uneven processes of valuation and incorporation that differentially position community actors within emerging governance structures. As neighborhoods are revalued, some neighborhood actors gain access to resources, legitimacy, and institutional power, while others are marginalized, excluded, or displaced. The paper argues that dispossessive integration not only transforms urban space but also reorganizes the political field within communities themselves. As redevelopment intensifies, shared concerns over displacement give way to divergent interpretations and strategies, ranging from institutional engagement to militant refusal. Over time, these differences harden into organized divergence and sustained conflict. By situating these dynamics within racial capitalism and global city formation, the article demonstrates that integration operates as a central mechanism through which gentrification is both legitimated and contested, producing spatial inequality and new terrains of political struggle within marginalized communities.

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Keywords: Dispossessive Integration, Gentrification, Community Development, Housing Markets, Urban Governance

SOCIAL SAFETY, HOUSING, AND HEALTH: LESSONS FROM LGBTQ-AFFIRMING AFFORDABLE SENIOR HOUSING DEVELOPMENTS

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Track 2: Community Development and Housing
Individual Paper Presentation

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Housing conditions influence human health through numerous mechanisms including affordability, stability, quality, and neighborhood context (Swope & Hernandez, 2019). In addition to its role as a multidimensional determinant of health, housing is theorized as an expression of power relations that produces and maintains structural inequality (Astolfo & Allsopp, 2024). Connecting the dots between housing & health and housing & inequality literatures suggests that housing schemes can be leveraged as health interventions for populations that experience disparities in both realms, like LGBTQ older adults.

LGBTQ-affirming affordable senior housing developments target the housing and health disparities that low-income queer and trans older adult populations simultaneously experience. Since 2014, when the first building of this kind opened its doors, twenty-five LGBTQ-affirming senior affordable housing projects have been established across the United States, with many more in development. Despite the urgent need for and rapidly expanding provision of affordable housing aimed at LGBTQ older adults, very little existing research explores the development, resident experiences, or health implications of these developments (Rosenwohl-Mack et al., 2022).

This presentation shares preliminary findings from a multiple case study dissertation project comparing LGBTQ-affirming affordable housing in differing US contexts. This qualitative investigation draws on interviews with both providers and residents of LGBTQ-affirming senior housing as well as ethnographic observation in order to understand how key stakeholders conceptualize the health and wellbeing impacts of this specialized housing. Initial findings confirm Swope and Hernandez's (2019) identification of affordability, stability, quality, and neighborhood context as key dimensions of housing as a determinant of health. Findings also suggest the need to theorize an additional dimension of housing as a determinant of health: social safety, defined as experiences of belonging, acceptance, and support that contribute to positive health outcomes (Slavich, 2023). Social safety is intentionally cultivated by both housing providers and residents in an expression of what Power and Mee (2020) refer to as "housing as an infrastructure of care". While social safety may be especially important for LGBTQ populations, who often experience a distinct lack of social safety in heteronormative housing, I argue that the presence (or absence) of social safety could be a key dimension of housing as a determinant of health for all populations.

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Keywords: Affordable housing, Aging in place, LGBTQ planning, Urban health

SOCIAL UNREST AND NEIGHBORHOOD EXPECTATIONS

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Track 2: Community Development and Housing
Individual Paper Presentation

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On May 25, 2020, Minneapolis police officer Derek Chauvin knelt on George Floyd's neck for more than nine minutes, killing him. This murder, which took place outside of a convenience store at 38th Street and Chicago Avenue in south Minneapolis, sparked weeks of protest and social unrest in the Twin Cities and nationwide. Outpourings of rage against injustice, along with general violence and rioting, caused substantial damage and roiled many Minneapolis neighborhoods. Now, more than five years later, the streets of south Minneapolis are calmer and quieter. But popular narratives suggest that 2020s unrest affected how existing and potential residents feel about living in Minneapolis. How did the unrest affect housing markets and residential location choices in Minneapolis? To the extent that there were any effects, were they due to specific incidents related to the unrest such as fires, window breaking, or other structural damage, or did entire neighborhoods face reputational effects?

This paper examines these questions by undertaking a comprehensive analysis of the effects of unrest on six outcomes. First, we examine whether parcels on which buildings were damaged remain vacant in 2025. Such a measure enables us to understand whether damage to structures had a temporary or lasting effect. We then use change-of-address data from the United States Postal Service to understand whether the net inflow of residents in zip codes exposed to unrest changed relative to similar, less-exposed zip codes. Along the way, we discuss the implications of our findings for the mechanisms by which unrest may affect housing markets and community development, paying special attention to the hypothesis--and commonly-held belief--that unrest caused crime rates to spike, and this increase in crime caused residents to flee and home values to fall. We then turn our attention to effects on housing markets, using data on sale prices and estimated market values of single-family homes. We compare homes before and after the Floyd-related social unrest, determining whether homes that are closer to specific fire or other damage incidents experienced changes in value that differ from similar homes that had less or no exposure. We also conduct this comparison at the "community" level, to see whether social unrest caused reputational damage in affected neighborhoods. To understand whether property owners invest in and maintain their homes differently following exposure to social unrest, we also use data on residential permits obtained from the city by property owners who undertake remodeling or repair projects on their homes.

We contribute to a body of research on the effects of social unrest on cities. A core set of papers in this literature focus on long-term effects of civil rights-era unrest in the United States. Those papers find deep and lasting negative effects of unrest on land use and home values (see Collins and Margo [2007], Collins and Smith [2007], and Brooks et al. [2023]). Research on the effects of more recent social unrest find similarly negative effects on neighborhoods in London (Kourtis et al. [2020]) and in Ferguson, Missouri (Ritchey [2024]).

In our analysis, we find that arson and burglary rose during the unrest period itself, and homicide and robbery remain higher in affected neighborhoods relative to the rest of the city. Despite the unrest and increase in crime, however, households in affected areas did not ”flee” affected neighborhoods. We also find that home prices in affected communities move similarly to those in other areas of the city, though a reduction in home sale volumes does appear to have taken place in areas close to the epicenters.

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Keywords: Unrest, Neighborhood dynamics, Crime, Migration, Property trends

SOCIOECONOMIC AND BUILT ENVIRONMENT INFLUENCES ON RESIDENT RESPONSES TO DENSIFICATION POLICIES

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Track 2: Community Development and Housing
Individual Paper Presentation

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I. Introduction

There have been continuous efforts in U.S. planning practice—such as inclusionary zoning, mixed-use development, and, more recently, middle housing reform—to diversify and densify neighborhood housing stock. These efforts aim to increase housing supply, improve affordability, and promote equity and economic efficiency.
Residents' reactions to and participation in these programs have been well documented. One strand of research shows that public participation processes often amplify opposition to housing development. Using extensive data from local planning meetings, Einstein, Palmer, and Glick (2019) and Einstein et al. (2020) find that participants are disproportionately homeowners who are older, wealthier, and white, acting as "neighborhood defenders" against densification and land-use change. Related studies on resident preferences and NIMBYism indicate that opposition to development is widespread, though not uniform (Hankinson, 2018; Monkkonen & Manville, 2019).

Another line of research shows that support for densification — especially in forms that expand housing options and affordability — exists and can be strengthened through thoughtful planning and policy design. Innes and Booher (2004) argue that collaborative and deliberative planning processes can generate outcomes that are more legitimate and widely accepted. Wicki and Kaufmann (2022) use large scale survey experiments across Chicago, Los Angeles, New York, and other cities to show that while proximity to a project reduces acceptance, planning instruments — like inclusionary zoning, rent control, and participatory planning — consistently increase public acceptance of densification projects.

This research builds on the existing literature and aims to (1) explore socio-economic neighborhood factors that influence residents' decisions to support or oppose dense housing programs, quantifying their impacts; and (2) investigate how attributes of the built environment shape these decisions.

II. The Case Study

Jefferson County, Kentucky, which consolidated with the city of Louisville in 2003 to form a city-county government (the Metro Government), is the largest and most demographically diverse county in the state, with a steadily growing population. In 2024, the Metro Government proposed a zoning change that would allow middle housing in all areas currently zoned for single-family homes. Within the consolidated Metro area, 12 cities retain their own zoning authority. This coexistence of multi-level zoning powers creates a unique case for studying how overlapping jurisdictions influence housing policy and development outcomes.

III Data and Methods

The Metro Government conducted an anonymous online survey to gather public opinions on the proposed zoning reform and also accepted feedback via email and in-person visits to the office between February 2023 and December 2024. A total of 354 self-reported public comments were collected, with submissions coming from the website (94.9%), email (4%), and in-person meetings (1.1%). Although individual identities were not disclosed, zip code information was available for each response, allowing neighborhood-level attributes of participants to be incorporated into further analyses.

We collected the following data at the zip code level: (1) socioeconomic data on population and housing units from the 2023 American Community Survey 5-Year Estimates; (2) crime data obtained from the local police department; (3) land-use and transportation data from the local planning agency; and (4) voter registration data from the Clerk's Office.

Two logistic regression models were estimated. The first model (the Support Model) explores factors that significantly influence a resident's decision to support the program, while the second model (the Opposition Model) focuses on factors that contribute to opposition decisions.

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Keywords: Housing densification, Middle Housing Reform, Neighborhood Effects, Built Environment

SPATIAL DISTRIBUTION AND REGIONAL DETERMINANTS OF SOCIAL HOUSING SUPPLY IN SEOUL

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Track 2: Community Development and Housing
Individual Paper Presentation

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This study examines the spatial imbalance in the supply of social housing in Seoul, where the importance of social housing has increased due to rising housing cost burdens in Korea. High housing costs have contributed to the decline of the middle class and increased housing burdens, particularly for young single-person households in Seoul. Unlike low-income households, many middle-class households do not meet the eligibility requirements for public rental housing and therefore rely on social housing as an alternative.

To alleviate housing cost burdens, the Seoul Metropolitan Government has supplied various types of social housing, including urban regeneration-type housing, land-lease housing, and publicly owned housing. However, the distribution of social housing across districts in Seoul shows significant differences in both the scale of supply and the types of housing. For example, Gangbuk-gu has significantly more social housing units than Gangnam-gu, and the types of social housing supplied also vary across districts. These patterns suggest that both the scale and type of social housing supply differ across regions. Such spatial concentration of social housing supply may restrict residential choices for households who rely on social housing.

Therefore, this study aims to analyze the spatial imbalance in social housing supply and to examine whether this imbalance is associated with regional characteristics across districts in Seoul. The main research question is: What are the spatial distribution characteristics of social housing in Seoul, and what regional factors influence the supply of social housing?

To address this question, this study first analyzes the spatial distribution and spatial concentration of social housing using GIS-based spatial analysis. The number of housing units, number of households, and distribution by housing type are aggregated at the administrative-dong level to identify spatial distribution patterns. Kernel Density analysis is used to identify areas with a high concentration of social housing supply, Moran's I is used to test spatial autocorrelation, and Getis-Ord Gi* Hotspot analysis is conducted to identify clusters of high and low social housing supply.

In the subsequent analysis, this study examines whether the spatial distribution of social housing is associated with regional characteristics. The dependent variables are the scale of social housing supply and the supply of each housing type at the administrative-dong level. The independent variables are categorized into demographic and socioeconomic characteristics, urban infrastructure accessibility, and physical characteristics. Using these variables, a generalized linear model (GLM) is used to examine the regional factors influencing the supply of social housing. This study contributes to understanding the spatial inequality of social housing supply and provides policy implications for a more balanced distribution of social housing in Seoul.

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Keywords: Social housing, Housing inequality, Spatial distribution, GIS, Seoul

SPATIAL HETEROGENEITY AND NONLINEARITY OF ENVIRONMENTAL AMENITY VALUE IN THE SEOUL HOUSING MARKET

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Track 2: Community Development and Housing
Individual Paper Presentation

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In high-density cities such as Seoul, summer temperatures have become increasingly severe, with the summer of 2025 recording unprecedented heat levels. Urban thermal environments are unevenly distributed, raising concerns about environmental inequality and the potential for climate-driven displacement. As residents increasingly value thermally comfortable environments, areas with favorable environmental conditions may experience housing price premiums—risks reinforcing spatial inequality through environmental gentrification, where climate adaptation benefits are disproportionately capitalized into already advantaged neighborhoods.

While previous studies have examined environmental amenities and housing prices, most rely on proximity-based measures and global regression models, limiting their ability to capture spatial heterogeneity and nonlinear housing market dynamics. To address these limitations, this study integrates satellite-derived environmental indicators—land surface temperature (LST), normalized difference vegetation index (NDVI), and modified normalized difference water index (MNDWI)—with traditional accessibility measures. Using 30,449 apartment transaction records in Seoul and Landsat 9 imagery, we employ a hybrid framework combining Random Forest (RF) and Multiscale Geographically Weighted Regression (MGWR). Our research questions are as follows: 1) Which environmental amenities most significantly contribute to apartment price formation? 2) Do these effects vary spatially across Seoul? 3) Does spatial inequality in amenity valuation reflect patterns of socio-spatial disadvantage?

RF results indicate that environmental characteristics are key determinants of apartment prices. Proximity to the Han River, LST, and MNDWI rank among the top contributors (2nd, 5th, and 8th out of 12 variables). Park proximity outranks NDVI, and Han River proximity outranks MNDWI, suggesting that residents place greater economic value on accessible, actively usable amenities than on passive ecological conditions. RF analysis also shows that lower LST is associated with higher apartment prices, reflecting residents' preference for thermally comfortable environments. Park proximity and NDVI also exhibit nonlinear relationships with prices, underscoring the analytical advantage of RF in capturing complex dynamics.

The MGWR analysis reveals that the impact of environmental attributes on apartment prices is spatially non-stationary across Seoul. While structural characteristics show consistent city-wide effects, environmental variables exhibit localized significance. High-income districts show stronger sensitivity to environmental amenities, indicating that adaptation benefits disproportionately accrue to already-advantaged neighborhoods. In these submarkets, residents demonstrate a higher willingness to pay for environmental amenities. This spatial concentration of amenity capitalization demonstrates that environmental benefits are unevenly distributed, potentially intensifying existing inequalities through environmental gentrification.

The empirical results suggest several policy implications for urban planning and housing. First, our results show that environmental interventions, such as urban greening and waterfront development, should include proactive equity measures. These may involve affordable housing expansion and rent stabilization, especially in areas with high price sensitivity. Second, areas with limited environmental amenities and low market pressure should be prioritized

for targeted investment, allowing improvements in livability without triggering immediate gentrification. Third, this study highlights the need for implementing environmental and housing policies at a more localized scale.

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Keywords: apartment prices, housing market, spatial heterogeneity, nonlinearity, environmental justice

STATE AND LOCAL GOVERNMENTAL CAPACITY IN DISASTER RECOVERY: EVIDENCE FROM CDBG-DR

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Track 2: Community Development and Housing
Individual Paper Presentation

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As disaster recovery programs at state and local governments have expanded in scale, duration, and administrative complexity, understanding how governmental capacity shapes recovery outcomes has become an increasingly critical policy issue. This study examines variation in the capacity of U.S. state agencies and local governments to manage Community Development Block Grant-Disaster Recovery (CDBG-DR) funds and assesses how these differences influence recovery performance and timeliness. Using quarterly performance reporting data from the U.S. Department of Housing and Urban Development (HUD) covering federally declared disasters from 2003 to 2023 across 31 state agencies and 546 counties, we used covariance-based Structural Equation Modeling (SEM) to estimate latent constructs of governmental capacity – distinguishing between administrative resources and burden capacity – and recovery outcomes. The results demonstrate that governmental capacity is inherently multidimensional, with administrative burden capacity – capturing workload pressure per staff – emerging as the more influential determinant of both recovery performance and timeliness. Jurisdictions with lower administrative workload achieved faster and more effective recovery, while administrative resources alone were insufficient predictors and may reflect underlying program complexity. Social vulnerability further conditioned recovery dynamics, with minority status & language dimensions affecting performance, and socioeconomic and household composition & disability dimensions influencing timeliness. Additionally, spatial analyses revealed pronounced geographic disparities in recovery governance, with persistent constraints concentrated along the Gulf Coast and in the southern United States. These regions were characterized by the convergence of high disaster exposure, elevated social vulnerability, and limited administrative capacity. To capture these patterns, we introduced recovery implementation and performance gap measures, along with a recovery governance risk index that identified priority jurisdictions where recovery systems were most constrained. Our findings highlight the importance of workload-sensitive capacity and suggest that improving disaster recovery outcomes requires aligning administrative capacity with workload demands and local vulnerability conditions, rather than focusing solely on increasing resources.

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Keywords: Disaster recovery, Governmental capacity, Administrative burden, Social vulnerability, Structural Equation Model

STRATEGIC TRANSITION TO A SUPER-AGED SOCIETY: PENSION FINANCE AND HOUSING EQUITY RELEASE IN SHANGHAI'S 15TH FIVE-YEAR PLAN

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Track 2: Community Development and Housing
Individual Paper Presentation

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Background: In China's unique institutional framework, the Five-Year Plan (FYP) serves as the strategic blueprint for directing cross-sectoral resources. As China transitions into the 15th FYP (2026–2030), integrating pension finance —specifically the mobilization of housing equity—has been elevated to a national priority. Shanghai, a global "super-aged" archetype with over 28% of its registered population aged 65+, faces a profound "precautionary savings trap." Despite high homeownership rates, many elderly households are "house-rich, cash-poor," where dormant housing assets fail to translate into urban spatial vitality. Since the 2022 inception of the Personal Pension System, Shanghai has completed a 41-month implementation cycle, providing a critical window to evaluate the efficacy of diversified tools, including individual pensions, Long-term Care Insurance (LTCI), and reverse mortgages/insurance-linked senior living communities .

Data and Methods: This study employs a multi-source empirical framework to analyze the socio-spatial impacts of housing-wealth conversion: 1) Micro-level Longitudinal Data from the China Longitudinal Aging Social Survey (CLASS, 2014–2026); 2) High-resolution Spatial POI Data reflecting the distribution of community-embedded elderly-care facilities and silver-market commercial vitality; and 3) Shanghai Municipal Housing and Financial Reports (2020–2026). We utilize a Multi-period Difference-in-Differences (DID) model to evaluate policy shocks over a four-year observation window (2022–2026). To bridge the gap between financial instruments and urban form, we employ a Multi-agent LLM framework for knowledge extraction from 15th FYP directives and a Neo4j knowledge graph to map the "Housing Asset-Financial Product-Spatial Consumption" nexus, quantifying how financial security reconfigures neighborhood-level economic behavior.

Key Findings: 1) The 41-month implementation has catalyzed a "Financial-Service-Spatial Synergy." Accessibility to housing-linked pension tools significantly reduced precautionary savings among Shanghai's 65+ population by 15.8% ($p < 0.01$), effectively converting "frozen" housing equity into active consumption. 2) The knowledge graph identifies a "Spatial-Financial Gap," where the integration of "Patient Capital" from insurance funds has stabilized the operational sustainability of small-scale, community-embedded facilities, fostering "aging-in-place" within established neighborhoods. 3) LLM-driven simulations reveal a "Digital-Financial Divide": while housing-wealth extraction tools empower younger retirees, the "oldest-old" (80+) face barriers in complex financial navigation, suggesting that the 15th FYP must prioritize "human-centric digital inclusion" and simplified housing-to-service conversion pathways.

Implications: This study demonstrates that housing-pension financialization, when integrated with spatial governance, can transform the "aging burden" into a driver for urban renewal. It provides a scalable model for global megacities to leverage existing housing stocks through innovative financial planning to bolster community resilience in the face of demographic shifts.

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Keywords: Housing equity release, Pension finance, 15th five-year plan, Community Care Facilities, Precautionary Savings

TEJIENDO NUESTRAS HISTORIAS: DIGITAL STORYTELLING AND PHOTOVOICE METHODS IN LANGLEY PARK, MARYLAND

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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During times of unprecedented challenges, including the COVID-19 pandemic and the rise of authoritarianism, humanistic community-building can serve as a form of resistance. This paper argues that by integrating humanistic methods into urban planning research and practice – especially in marginalized suburban spaces - a bottom-up approach to meaning, memory, and care can counteract the precarity of the migrant experience. These methods offer planners a qualitative, community-driven lens for understanding how migrants inhabit and negotiate contested urban spaces, with implications for equitable engagement, neighborhood planning, and policy design. I reflect on a Digital Storytelling and Photovoice project I have conducted over the past year in Langley Park, Maryland—a predominantly low-income, working-class Latino/immigrant inner-ring suburb of Washington, D.C., shaped by regional planning decisions and uneven investment, and has been a high target for ICE enforcement.

I demonstrate how the project evolved from focusing on health networks and practices to emphasizing the importance of humanistic methods in creating a safe communal space, especially when people's livelihoods feel isolated and broken. Drawing on work with two groups of local women, I demonstrate how story circles, mixed-media art, and in-depth dialogues serve both as tools for collective respite and as an archive that captures individual and community life during a time of profound government distrust.

Overall, I illustrate how providing these opportunities humanizes migrant experiences and offers context and voice to everyday lives. I argue that bottom-up narratives and the creation of safe spaces for self-expression can prevent the foreclosure of migrant identities, while offering concrete practices for urban planners to design more inclusive and just community planning and policy processes.

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Keywords: Latinx, Qualitative, Immigrants, Health

THE BASEMENT MOSQUES OF REGENT PARK: WHEN FAITH AND REDEVELOPMENT COLLIDE IN THE CITY

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Track 2: Community Development and Housing
Individual Paper Presentation

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Regent Park, a mixed income neighbourhood in Toronto, is home to roughly 25 percent Muslim residents and has been undergoing a city led redevelopment since 2005. Despite extensive research on the area, the lived experience of its Muslim community remains underrepresented (Jamil 2015). This gap reflects a broader tendency among North American planning practitioners to frame their work as strictly secular (Manouchehrifar 2018; Manouchehrifar & Forester 2021).

This study investigates how Muslim residents exercised their "right to the city" by creating informal basement mosques in Regent Park social housing buildings. At height of the practice in the early 2000s, six basement mosques operated in Regent Park serving over 250 people. Beyond religious services, these ad-hoc public spaces offered programming for residents including childcare, tutoring, and health education workshops. The mosques were excluded from official redevelopment plans and have largely disappeared as the neighbourhood is rebuilt.

In this article I ask:

1. How did the community organize to create these improvised spaces of faith in Regent Park?

2. What services did the basement mosques of Regent Park provide to the community?

3. What challenges have Muslim residents encountered throughout redevelopment process, and how have they responded to those challenges?

Through semi-structured interviews and focus groups with basement mosques leaders and users, as well as planning practitioners, I show how initially city officials tacitly supported the basement mosques for providing social services without local government aid. However, during later redevelopment phases, city officials policed and removed these spaces, deeming them unsafe and non-compliant with building fire codes, accelerating their displacement. Currently, city officials and the developer have provided a small temporary prayer space in one of the newly constructed buildings, but this short-term measure does not replicate the flexibility the community-run basement mosques that were more accessible, especially to elders, women, and children. Findings show how Muslim residents organized space, governance, and programming while navigating the changes and challenges of the redevelopment process.

This article argues that religion materially shapes how people experience and produce the built environment. It calls for planners to move beyond secularist framings and to develop policies and design standards that recognize and accommodate religious diversity in everyday day urban spaces.

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Keywords: secular, public space, faith, community development, culturally-sensitive

THE DISTRIBUTION AND DRIVERS OF RENTAL UNAFFORDABILITY: 1960 - 2023

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Track 2: Community Development and Housing
Individual Paper Presentation

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Affordability is the most salient housing policy issue in the United States and among the most conceptually elusive. Conventional metrics such as the rent-to-income ratio (RTI) collapse disparate processes into a single outcome measure (Stone, 2006), conflating preference-driven shifts in consumption with constraint-driven hardship. In this paper, we decompose rental affordability over the last sixty years, tracing the role of separate trends in rents, incomes, and household formation, and consider how changes in tenure, housing quality, supply, and inter-urban migration relate to rental affordability.

Between 1960 and 2023, the national median RTI increased from 19% to 31%, but this masks substantial variation across the income distribution. Among bottom-quintile households, the median RTI rose from 47% to 67%. Across metropolitan areas, these indicators also fluctuate—Los Angeles actually became more affordable by most metrics in the 2010s. This variation motivates decomposition across income groups and regional markets.

Our subnational focus contributes to a large affordability literature. Quigley & Raphael (2004) decompose affordability by rents and incomes but use a less accurate technique and only consider national-level metrics, with data now over two decades old. We improve on prior subnational studies (e.g., Davis and Ortalo-Magne, 2011) by ranking metropolitan areas by housing supply elasticity. To our knowledge, this is the first study connecting inter-urban migration, supply elasticities, and rental affordability.

Across metropolitan areas, we analyze how changes in renter household incomes have contributed to rent burdens. Real wage stagnation is a widely cited explanation for increasing RTIs (Albuoy et al., 2016), but two complementary mechanisms are neglected. First, out-migration of lower-income households from high-rent cities can appear in standard metrics as improved affordability. We assess this by decomposing changes due to rents versus incomes from 1960 to 2023 across MSAs. Second, declining homeownership rates may channel relatively affluent households into the rental market. We test whether regions with larger drops in middle-aged homeownership experienced larger increases in higher-income renters, and assess whether changes in household composition (e.g., single-person households and doubling up) have driven RTI changes from 2000 to 2023. We then analyze rents, documenting how housing shortages have spilled from supply-inelastic to supply-elastic urban areas and eventual declines in supply elasticities nationwide (Aastveit et al., 2023).

Preliminary findings reveal shortcomings of standard metrics. Rent burdens have intensified only slightly on average but significantly among low-income households. Decomposing changes across metropolitan areas reveals that income growth has outpaced rent growth in some areas, but that out-migration is one driver appearing as an apparent affordability improvement. For example, Los Angeles became more affordable by conventional RTI between 2010 and 2023, reflecting changes in renter incomes rather than rents (which continued rising). We find that rental affordability is lower in metros with less elastic supply and explore hypotheses about the timing of price changes and renter population composition shifts.

Our analysis has two policy implications. First, analyzing component changes alongside composite metrics like RTI will help policymakers better target areas and populations where problems are most acute. Second, decomposition helps distinguish voluntary price increases (e.g., preferences for solo living or larger units) from involuntary ones.

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Keywords: Rental housing, Affordability, Cost burdens, Inequality

THE EFFECT OF LIHTC DEVELOPMENTS ON SURROUNDING RENTS AND HOME PRICES IN FLORIDA

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Track 2: Community Development and Housing
Individual Paper Presentation

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The prospect of new affordable rental housing in a neighborhood often triggers concerns among local homeowners, who fear the development's negative effect on home sale prices. Building upon an increasing body of research (e.g., Craw 2023), we show that new rental developments financed with equity associated with the federal Low-Income Housing Tax Credit (LIHTC) have had a positive effect on surrounding home sale prices in metropolitan areas throughout Florida. Yet such positive effects raise the possibility that higher home sale prices may contribute to higher rents and thus make housing less affordable for market-rate renters. Moreover, fears about new development may play into supply skepticism, the belief that increased supply does not ultimately reduce prices. Been, Gould, and O'Regan (2025) and other studies counter this belief and suggest that the supply effects associated with new residential construction outweigh price-increasing amenity effects, at least with respect to nearby market-rate rents. In other words, adding more residential units to a community tends to depress nearby rents. Yet these and other rent-focused analyses generally have focused on market-rate construction, not on affordable housing development. Using an extensive rental database, we find that the LIHTC developments that helped boost local property sale prices in urban Florida markets simultaneously helped decrease nearby market rents. In effect, the additional supply of rental units has outweighed the potentially inflationary pressures resulting from an improved real estate market. Our findings provide evidence that the rental and homeownership markets respond differently to the addition of new affordable units. Our findings are in line with other multi-city causal evidence showing new market-rate properties' supply effect essentially exceeded their amenity effect (Asquith, Mast, & Reed 2023). Our findings also add to the literature's understanding of supply effects on tenants. Like Chapple and Song (2025), who find that new market-rate units in Los Angeles and the San Francisco Bay Area, were largely unaffordable to lower-income renters, their construction nevertheless increased in-migration of low-income households, our findings also suggest that LIHTC housing simultaneously generates benefits for its tenants, nearby homeowners, and nearby market-rate renters.

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Keywords: LIHTC, supply, rents, prices, Florida

THE GREEN GAP ACROSS RENTAL HOUSING TYPES: LOW-INCOME HOUSING TAX CREDIT, NATURALLY OCCURRING AFFORDABLE HOUSING, AND MARKET-RATE UNITS

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Track 2: Community Development and Housing
Individual Paper Presentation

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This research investigates the relationship between affordable rental housing and access to green infrastructure primarily in Maryland, with a specific focus on low-income rental households in the Washington D.C.-Baltimore region. The research areas include Washington, D.C., Prince George's, Montgomery, Anne Arundel, Howard, and Baltimore Counties, as well as Baltimore City. Rapid urbanization in this region has intensified housing demand, often pushing affordable units into environmentally vulnerable zones. As the Mid-Atlantic faces increasing climate threats, including heat islands and flooding, access to green spaces such as tree canopy and permeable surfaces becomes a matter of public health and safety rather than aesthetics alone.

The study aims to quantify the green gap between publicly assisted housing such as Low-Income Housing Tax Credit (LIHTC) properties, Naturally Occurring Affordable Housing (NOAH), and market-rate rental units. This research hypothesizes that low-income renters are disproportionately situated in gray zones, defined as areas with high levels of impervious surface cover and low tree canopy. These conditions may increase vulnerability to flooding and extreme heat.

There is a significant gap in the existing literature regarding the environmental amenities available to low-income renters. While middle- and upper-income communities often benefit from zoning practices that prioritize tree cover and permeable landscaping, which are associated with reduced flood risk and lower surface temperatures, affordable housing is frequently denser and surrounded by impervious surfaces. This research seeks to answer two primary questions. (1) How does access to flood mitigating green space differ between residents in publicly assisted housing and market-driven affordable rental housing compared to those in market-rate rental housing? (2) What specific interventions can real estate developers and housing agencies implement to integrate resilience features into the affordable housing market?

The research approach employs quantitative spatial analysis to overlay housing data with environmental metrics. Housing data include CoStar data that provide comprehensive information on market-based and NOAH rental units, as well as data from the United States Department of Housing and Urban Development (HUD) on federally assisted housing, including LIHTC properties and their locations. Environmental data are drawn from the Multi-Resolution Land Characteristics (MRLC) datasets, which measure tree canopy coverage and permeable surface area at the census block group levels. By connecting these variables, this research identifies spatial hotspots where high concentrations of vulnerability intersect with low environmental resilience.

The resulting spatial and statistical analysis will inform policy recommendations for state housing agencies, private and non-profit developers, and organizations that advocate for the integration of green infrastructure as a standard component of affordable housing development and preservation.

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Keywords: LIHTC, NOAH, Market-Rate Rental Units, Tree Canopy, Permeable Areas

THE HOUSING DEMAND LANDSCAPE IN U.S. METRO AREAS: A THREE-DECADE RETROSPECTIVE

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Track 2: Community Development and Housing
Individual Paper Presentation

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The national housing shortage has been framed as a "crisis" that must be resolved through major investment in new housing construction in communities throughout the United States. Scholars have sought to quantify this shortage, resulting in estimates ranging from zero to 20 million units (deRitis et al. 2025, Divounguy 2025, Freemark 2025, Garcia et al. 2025). Approaches to measuring the shortage, however, have often failed to investigate how indicators of demand and supply vary both between and within metropolitan areas, typically ignoring the distance between neighborhoods entirely. Most recent studies also neglect the longer boom-bust context of housing supply and vacancy.

In this paper, we use new indicators of housing scarcity and demand to track housing cycles from 1990 to 2020 in the 107 U.S. metropolitan areas with populations in 2020 exceeding 500,000. To measure scarcity or surplus, we use a novel weighted housing vacancy index based on the presumption that markets are in balance with a 7% rental vacancy rate and 1.5% homeownership vacancy rate. For a higher-resolution picture of the intra-metro area demand landscape, we add two measures at the census tract level: housing growth and growth in adults per household. "High-demand" tracts are those in their metro areas' lowest vacancy-index quartile and the highest intra-metro quartile of either housing growth or growth in adults per household. "Low-demand" tracts, conversely, are in their metro areas' highest vacancy quartiles and the lowest intra-metro quartile of housing growth or growth in adults per household.

We have two main questions. First, how does the housing supply (scarcity) situation in 2020 compare with conditions in 1990, 2000, and 2010 at the level of entire metro areas? Our initial broad answer to this question is that many housing markets were close to balance in 1990; tightened between 1990 and 2000; slackened sharply by 2010 in the wake of the Global Financial Crisis; and tightened nearly as much by 2020. Throughout the period, metro areas in the South have consistently exceeded balanced vacancy levels. Most metros in the Boston-Washington corridor have oscillated between surplus and shortage. In California, according to this measure, only metro San Jose has been in shortage in each of the four decennial Census years, but in 2020 every metro in the state was in serious shortage—even Central Valley metro areas that were hit hard in the Global Financial Crisis.

Our second question is: How has the internal demand landscape changed within metro areas from 2000 to 2020? Combining our three measures (vacancy index, housing growth, and growth in persons per household), we construct a housing demand gradient to reveal the spatial proximity of high-demand and low-demand tracts within our metro areas. In metros with high demand gradients, areas of high and low demand are relatively close to one another; low demand gradients indicate the opposite. Initial analysis of only 2020 shows substantial variation: in many metros, high-demand and low-demand tracts are widely separated, but in several important ones (e.g., Chicago), high-demand and low-demand tracts are within three or four miles of one another.

Based on these findings of great variability among and within metro areas from 1990 to 2020, we argue that the U.S. needs more nuanced responses to housing supply conditions than the ongoing drumbeat about a national supply crisis for which deregulation is a necessary and sufficient response.

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Keywords: Supply, History, Longitudinal

THE IMPACT OF SOURCE OF INCOME DISCRIMINATION LAWS ON HOUSING VOUCHER SEARCH OUTCOMES

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Track 2: Community Development and Housing
Individual Paper Presentation

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Despite the significant benefits the Housing Choice Voucher program provides, recent estimates suggest that only 60% of households that receive a voucher successfully use it within one year (Ellen et al., 2025). Landlord discrimination against voucher holders is a significant barrier to their success. In this paper, we are the first to study the effectiveness of one effort to prohibit this discrimination, Source of Income Discrimination laws, on the ability of new voucher recipients to use their voucher to lease a home. Using a staggered difference in differences and matching approach, we find that the enactment of an SOI law leads to a 3 percentage point increase in the likelihood of new voucher holders using their vouchers a year and a half after enactment, and that this effect grows over time. Effects are largest for households with children and Black households.

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Keywords: housing, subsidy, affordable housing policy

THE MEDIA, PUBLIC ATTITUDES, AND HOUSING POLICY: HOW MEDIA DISCOURSE SHAPES PUBLIC ATTITUDES TOWARD PUBLIC HOUSING POLICY

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Track 2: Community Development and Housing
Individual Paper Presentation

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Planning scholars have underscored the importance of a fuller understanding of how public opinions are formed and the associated factors to effectively address public opposition and shape attitudes toward planning-relevant policy issues, such as housing policy (e.g. Tighe 2010). Given that individuals often turn to the media for information on policy issues that most of them do not possess direct knowledge or experience (Happer and Philo 2013), such as housing, one of the primary factors shaping public attitudes toward public policy is how information is presented and discourse is framed in the media (Davis 2025).

Researchers have found that the media agenda and the public issue agenda are considerably correlated, demonstrating that the media coverage determines what policies or issues are more salient to the public (McCombs 2004; Soroka 2002). Furthermore, like other policy issues, news media are a "battleground" for housing policy—actors with competing interests attempt to shape policy discourse and steer policy direction by advancing their language, agendas, and frames on public discourse (Davis 2025:16).

While several studies have examined the nexus of public discourse and housing policy, empirical research that specifically investigates the influence of media discourse on public attitudes toward public housing policy is limited. The gap in planning scholarship is especially stark as only a handful of studies examine news sources or relate the media discourse to political actors or policy outcomes (Davis 2025).

By integrating semi-structured interviews and discourse analysis of local news articles and TV reporting on a public housing site in Louisville, Kentucky, this research examines how the media discourse played a role in fostering public opinion on a public housing policy decision.

Dosker Manor, a product of urban renewal, is a public housing site in Downtown Louisville that hosts 685 low-income families. Constructed in 1968, it has become an example of defunded government-backed housing. Issues have been rampant in this housing site for decades, leading the Louisville Metro Housing Authority (LMHA), the owner of Dosker Manor, to finally announce in mid-2024 that it would demolish the site in 2026 and relocate the residents through Section 8 housing vouchers. As a highly visible public housing site, the announcement sparked public interest and prompted news networks and local newspapers to report on the demolition.

The preliminary findings show that the media discourse deployed three framing strategies in Dosker Manor's case to foster public opinion of this demolition toward an accepting viewpoint through seemingly unbiased reporting: pride framing, need framing, and boosterism. These strategies were executed by the inclusion of personable interviews and pragmatic quotes and the exclusion of opinions of residents, community organizations, or housing coalitions. In this way, the media perpetrated the status quo and sometimes formed the status quo itself.

This research contributes to planning scholarship and practice in three ways. First, it identifies specific rhetorical strategies the media can deploy and demonstrates how these strategies can be used to influence public attitudes toward public housing policy. Secondly, by tracing information sources in the media and connecting the media discourse to parties with vested interests in the demolition project beyond analyzing narrative and frames, the research makes a methodological contribution to the extant planning research on public discourse and public housing policy. Lastly, by uncovering the complex social dynamics working to shape public attitudes toward public

housing policy, it enables planners to better anticipate and manage media framing of the issue and conflicting interests involved in public housing policy and effectively use the media to reframe public housing as promoting opportunity and highlight its broader societal benefits.

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Keywords: Public discourse, Public Housing, Public Opinion, affordable housing, media

THE POLITICS OF REDEVELOPMENT: TIF, DISCRETION, AND URBAN GOVERNANCE

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Track 2: Community Development and Housing
Individual Paper Presentation

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As federal and state support declined in the late twentieth century, U.S. cities turned to self-financing, market-oriented redevelopment strategies to attract investment and manage fiscal stress (Brenner & Theodore, 2002; Weber, 2003). Tax increment financing (TIF) emerged in this context as a prominent instrument of urban redevelopment, freezing the equalized assessed value of property within a designated district and channeling subsequent tax increments into redevelopment spending. However, studies have argued that the extensive use of TIF has generated controversy over uneven development, limited oversight, and the diversion of public revenues from overlapping taxing bodies, especially public schools (Knight, 2016).

Chicago offers a revealing case because of its extensive reliance on TIF and the longstanding controversy over its distributional and institutional consequences. Existing scholarship has shown that TIF in Chicago is unevenly distributed across space and race and has important consequences for public school finance in racially stratified neighborhoods (Knight, 2016; Lindsey, 2012). Recent tensions between the City of Chicago and Chicago Public Schools over TIF-related revenues further underscore that redevelopment is an ongoing site of negotiation over public priorities. These conflicts make visible how decisions over redevelopment revenues become political struggles over whose neighborhood needs count as development and whether public resources should support community-serving social infrastructure, such as schools, or more visible, capital-oriented, revenue-generating projects. Yet, most existing studies focus on fiscal effects and redistributive outcomes, with limited attention paid to how the discretionary fiscal power of TIF is politically produced, justified, and managed over time and how these processes shape the capacity of marginalized communities to secure support for community-serving institutions.

This study addresses that gap by examining TIF as a mode of urban governance with consequences for community development. Using process tracing (Beach & Pedersen, 2019), I analyze policy debates, budget materials, planning documents, public statements, advocacy reports, and archival records related to TIF and school funding in Chicago. I follow how actors define redevelopment needs, justify allocations, contest claims over public resources, and institutionalize particular relationships between redevelopment finance and educational obligations. Specifically, I ask: (1) how does TIF restructure local fiscal power, (2) how does that power shape relations between redevelopment priorities and school needs, and (3) what does this reveal about the political position of public education within urban governance in unevenly developed neighborhoods?

The study argues that TIF functions as more than a redevelopment instrument, but also as a source of discretionary fiscal power. By concentrating control over significant public resources within redevelopment institutions, TIF shapes which neighborhood claims are recognized, which public obligations are deferred, and which institutions must negotiate for access to funding. In the context of public schooling, this implies that the educational needs are mediated through a broader development regime in which schools occupy a politically subordinate position. Therefore, the significance of TIF lies in the governance arrangements it produces and stabilizes over time. The study contributes to planning scholarship by reframing redevelopment finance as a question of governance, discretion, and institutional power, while bringing school funding into planning discourse as an issue of urban political control, institutional hierarchy, and priority-setting. It also offers a methodological contribution by demonstrating the value of process tracing to uncover the mechanisms through which redevelopment finance is politically produced, justified, and institutionalized over time.

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Keywords: Tax Increment Financing, Urban Governance, Redevelopment, School Finance, Social Infrastructure

THE SYMBOL OF CAPITAL: CDFI REPRESENTATION AND HOUSING BURDENS

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Individual Paper Presentation

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This research examines the vital yet often overlooked link between who manages community capital and the actual housing outcomes in urban neighborhoods. While Community Development Financial Institutions (CDFIs) are specifically designed to serve marginalized populations, the demographic makeup of their leadership frequently tells a different story. Drawing on the theoretical framework of representative bureaucracy (Meier, 1993), this study investigates whether the degree to which CDFI leadership reflects the community they serve, a concept known as passive representation, actually predicts the success of housing affordability efforts. To explore this, I built a comprehensive dataset spanning two decades of U.S. Treasury Department records (CDFI Fund, 2024), specifically tracking over $30 billion in specialized awards like Financial Assistance and the Capital Magnet Fund. By geocoding these capital flows across major American cities and applying rigorous statistical models, I was able to isolate the impact of leadership diversity from other macro-economic factors like local market appreciation and broader institutional shifts in the public workforce (Meier & Nicholson-Crotty, 2006). The findings reveal a compelling narrative: representation is not just a symbolic gesture; it is a functional necessity. Preliminary results show that when CDFI leadership demographics align with their service areas, the capital is more effectively targeted toward high-burden census tracts, resulting in a statistically significant reduction in housing cost burdens for low-income renters. Essentially, who sits at the decision-making table directly influences where and how resources are deployed on the ground (Immergluck, 2015). For urban planners and policymakers, this evidence suggests that diversifying the leadership of financial intermediaries is a critical, evidence-based strategy for achieving true housing equity and protecting vulnerable residents from displacement.

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Keywords: Community Development, Housing, Representative bureacracy

THERE GOES THE COMMUNITY CENTER: MAKING SENSE OF A LOST THIRD PLACE AND OLDER ADULT PROGRAM IN A GENTRIFYING NEIGHBORHOOD

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Track 2: Community Development and Housing
Individual Paper Presentation

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As the nation ages, urban populations grow, and cities become increasingly unaffordable, low-income older adults are finding themselves both stuck in place and culturally displaced. Traditionally, older adults become more geographically restricted as they age, but leaving home, socializing, frequenting third places, and participating in organizations can improve their quality of life and even extend their life. In gentrifying neighborhoods, though, the third places and organizations that provide critical resources for low-income older adults often face their own gentrification-induced threats, which can lead them to close or deprioritize older adults. How do older adults experience these losses? How do they make sense of the decisions by organizational leaders to stop serving older adults? How do they cope with, and adapt to, the changing landscape of third places amid gentrification?

This research focuses on the loss of one older adult program and the space that housed it for decades in the hyper-gentrified South End neighborhood of Boston, Massachusetts. Through interviews with older adults, employees, board members, and city officials, along with review of archival documents, media, and oral histories, I explore how individuals made sense of one organization's decision to stop serving low-income older adults of color and focus on children instead. The findings show that older adults grieved the closure of the older adult program, many lost social ties, and most found no substitute third place in the neighborhood. While they recognized some of the practical considerations that led the organization to end the program, they also understood the closure to be representative of inequalities and power imbalances within the gentrified neighborhood. This research builds on scholarship about gentrification and its impact on older adults of color and third places.

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Keywords: Older adults, aging in place, gentrification, social infrastructure, third places

TIME OR MONEY? THE ROLE OF HOUSING AND COMMUTING IN WEALTH AND TIME INEQUALITIES

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Track 2: Community Development and Housing
Individual Paper Presentation

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Spare time and money are crucial for individual wellbeing. Research consistently shows that financial deprivation is closely linked to physical and mental health issues, poor educational outcomes, social isolation, and reduced quality of life. Time poverty—lacking discretionary time for non-work activities—compounds material poverty. Low-income families, especially single-parent households, are more vulnerable, often sacrificing sleep, childcare, or education to maintain income.

This research disentangles factors shaping wealth and time inequalities, focusing on homeownership, location, and commuting time. Residential location predicts home values, which largely determine wealth, but also affects commuting time, a key factor in discretionary time. Housing choices often involve trade-offs: some rent near work to reduce commuting, others commute farther to buy a home. Our hypothesis is that housing influences not only financial, but also time wealth, through homeownership, location, and commuting time.

We examine disparities in Phoenix, Arizona, where Hispanic Non-White households represent nearly half of the population. Building on scholarship on housing and commuting inequalities (e.g., Blumenberg & King, 2019; Blumenberg & Siddiq, 2023; Blumenberg, Taylor, Ding et al., 2025), we ask: 1) How have wealth and time inequalities evolved since 2000, through the Great Recession and in the aftermath of the Covid-19 pandemic, across groups? 2) How do housing and transportation trade-offs shape racial wealth and time gaps?
We compiled an original household-level dataset. Household observations of net worth are extracted from the new GEOWEALTH-US compendium. A measurement of post-contracted time—the remaining daily time for household duties and leisure—is constructed using ACS data. Within a regression framework, we measure net worth and post-contracted time at the household level with controls for sociodemographic characteristics, year, homeownership, tenure length, commuting time, and work-from-home status.

Predictive margins show that the racial wealth gap remains highly resilient. The difference between White and Hispanic-Non-White households' net worth has remained about $200k (adjusted to 2019) between 2000 and 2022. Including homeownership and tenure in the model reduces the gap by 20%, indicating these factors explain that much of the disparity.

Time inequality trends are less stable. In 2000, Hispanic Non-White households had 32 more minutes of discretionary time weekly; by 2010, this rose to 149 minutes. In 2022, differences narrowed, but trends suggest that Hispanics might be losing time while White households are recovering it. Work hours, location, and commuting explain these patterns. Whites not working from home spend less time commuting, and more White household heads work remotely (12 percentage points higher). Whites also work slightly longer hours, suggesting their relative time disadvantage is due to less time commuting and more time spent productively, potentially widening the racial wealth gap.

Our contribution is threefold: (1) wealth inequalities remain less understood than income inequalities, especially longitudinally; (2) time poverty, despite its negative impacts, is under-addressed compared to financial deprivation; (3) focusing on commuting patterns spatializes the housing-wealth gap relationship.

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Keywords: Racial disparities, Wealth inequalities, Discretionary time, Homeownership, Commuting

URBAN ADAPTATION TO HEAT STRESS: EVALUATING PUBLIC LIBRARIES' MULTI-FUNCTIONALITY IN FLORIDA

Abstract ID: Accepted
Land Uses and Activities
Individual Paper Presentation

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Extreme heat, intensified by anthropogenic climate change, is primary cause of weather-related mortality in the United States. Therefore, mitigating heat risk has been a major concern for local and regional governments [1]. As a key strategy in heat mitigation plans, 'cooling centers' has been widely promoted, defined as air conditioned or comfortably cooled public or private facilities such as libraries, community centers, parks or malls. Yet the effectiveness of formal cooling center strategies is often constrained by low utilization, limited awareness, social and psychological barriers [2]. Therefore, understanding the demand and visitation patterns of these places is essential for effective heat mitigation planning.

Most studies examining cooling center use focus on emergency-oriented behavior and assess whether residents, especially vulnerable people, visit designated facilities during heat stress. In this study, we shift the analytical focus from emergency-only utilization to the use of trusted, low-barrier spaces embedded in residents' daily routines that can provide heat relief even when avoidance of heat is not the primary motivation for visiting. Public libraries are "de facto" cool spaces that are accessible, open door, and offer a range of services that draw routine visitation, while also providing daytime heat relief [3]. We hypothesize that library visitation patterns can be a measurable behavioral response to heat stress, without implying that heat avoidance is the dominant motivation for every visit to a multi-purpose facility.

Building on this dual role, the research question is "Does higher heat stress correspond to higher library visitation, while accounting for socioeconomic, demographic, and spatial factors linked to heat vulnerability?" We analyze library visitation data from January 2022 to October 2024 along with heat index and a set of control variables including age, gender, race/ethnicity, educational attainment, employment status, poverty, English proficiency, household structure, housing age and conditions, vehicle ownership, and access to public transportation, factors identified in the heat vulnerability literature.

The methodology has two interrelated components. First, we estimate each library's probabilistic catchment population using the Huff model [4], which predicts the likelihood that residents select a facility from a set of alternatives. Second, we model the relationship between average monthly library visitation and heat stress using the Mundlak (1978) approach [5], which incorporates time-invariant spatial and demographic variables while reducing bias associated with unobserved, stable differences across libraries.

Florida an area characterized by prolonged humid, heat and substantial heat-related morbidity is chosen as case study. The empirical analysis covers 131 public libraries across eight Florida counties: Alachua, Columbia, Duval, Hillsborough, Leon, Miami-Dade, Monroe, and Orange.

Results show a robust, statistically significant positive association between elevated heat stress and increased library visitation. Notably, visitation levels are higher in service areas with larger shares of heat-vulnerable groups, including non-White residents, children (0–14), older adults (65+), and those with limited English proficiency. In contrast, a negative association was found in areas with high poverty, unemployment, and mobile home density, suggesting significant barriers to access for the most vulnerable populations.

These findings provide an actionable framework for urban planners. By providing evidence that familiar public spaces can function as informal cooling infrastructure within daily routines, the study supports a shift in heat mitigation from static, exclusively emergency-designated models toward strengthening “everyday” social infrastructure. Integrating heat relief into routine destinations improve the equity and effectiveness of local climate resilience strategies.

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Keywords: Heat Index, Cooling Centers, Huff Model, Mundlak Model, Heat Vulnerability

VACANT LAND REGENERATION: NOVEL STRATEGIES FOR MAXIMIZING LOCAL IMPACT

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Track 2: Community Development and Housing
Individual Paper Presentation

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Urban vacancy poses critical challenges for both shrinking (depopulating) and growing (populating) cities. Nearly 150 major cities worldwide are considered shrinking due to industrial decline, population loss, and broader structural transformations. Compounding this, expanding metropolitan regions continue to confront uneven development, neighborhood-level decline, and persistent vacant parcels. Left unmanaged, these lands are often associated with increased crime, environmental degradation, declining property values, and social fragmentation. However, when strategically planned and managed, vacant land can serve as a critical resource for advancing urban equity, resilience, and public health.

This study synthesizes three decades of scholarship to develop a comprehensive and integrative framework for vacant land regeneration. Drawing on a systematic literature review and co-citation analysis of influential studies since the 1990s, when vacant land regeneration began to emerge as a distinct field of study within urban planning and regeneration research, four central thematic domains are identified: (1) Urban Policy and Classifications, (2) Ecosystem Services and Resilience, (3) Safety and Public Health, and (4) Community Engagement. These domains collectively capture the policy, ecological, social, and health dimensions that shape the transformation of vacant land and provide a structured lens for both analysis and application. To operationalize this framework, the study incorporates comparative case studies across diverse geographic and socio-economic contexts, including Galveston County, Chicago's South Side, Detroit, Beaumont, Harris County, McAllen, Port Arthur, and rural South Korea. These cases represent a spectrum of urban conditions, including post-industrial decline, disaster-induced vacancy, rapidly growing regions, and rural depopulation. Through these cases, the research demonstrates how context-sensitive strategies such as smart decline, low-impact development, and participatory planning can be adapted to address different forms and drivers of vacancy.

Findings indicate that integrated and place-based vacant land interventions can significantly improve stormwater management, enhance neighborhood safety, promote public health outcomes, and strengthen community cohesion. Moreover, the results highlight the importance of early intervention, cross-sector collaboration, and sustained community engagement in ensuring the long-term success of regeneration efforts. Looking ahead, the field must move beyond reactive and project-based responses toward more anticipatory, evidence-based, and institutionally supported approaches, including predictive vacancy planning, regional ecological systems, measurable health-based evaluation, and long-term models of community co-governance. Unlike conventional urban regeneration approaches that prioritize growth and redevelopment, this study advances a critical shift toward planning frameworks centered on sustainability, resilience, and quality of life. By bridging global theoretical insights with locally grounded practices, this research contributes a holistic and scalable approach to reimagining vacant land as a long-term urban asset. In doing so, it offers both conceptual and practical guidance for planners, policymakers, and practitioners seeking to transform vacancy into opportunities for social, environmental, and economic well-being.

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Keywords: Vacant land regeneration, Urban resilience, Public health, Community engagement, Urban policy

VILLAIN OR SCAPEGOAT? HOW MUCH RESPONSIBILITY DO PLANNERS BEAR FOR HOUSING SUPPLY SHORTAGES IN AMERICA, AUSTRALIA, CANADA, AND THE UK?

Abstract ID: 2298.0.0.91.2026
Track 2: Community Development and Housing
Individual Paper Presentation

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As housing prices continue to rise worldwide, attention has turned to the role of planning systems in constraining new housing production. This is especially true among countries in the Anglo-American sphere (Australia, Canada, Great Britain, and the U.S.), where the planning and residential approvals process has become increasingly bureaucratic over the years. How much responsibility do local planners in each of these countries bear for their respective housing construction shortages? The proposed paper (and presentation) will consider this question in three parts. It will begin with a comparative statistical analysis examining the incidence of housing price growth and construction shortfalls in each country since 1980, relative to population and job growth. Second, it will offer a brief discussion of how the planning system in each country intersects with the residential development and construction sector, starting with a short history and descriptive analysis, then moving on to current issues and concerns, and then summarizing recent reform proposals. Finally, it will conclude with an identification of commonalities and differences among the four countries, culminating in a discussion of the prospects for increased housing construction as appropriate, and their likely effect on housing price (and rent) growth and affordability. Note: This work will rely on national-level data and summaries while acknowledging that housing markets are essentially local in composition and function.

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Keywords: Housing, Production, Prices, Afforeability

WHERE ARE LIHTC LOCATED? AFFORDABLE HOUSING UNITS AND ACCESS TO EMPLOYMENT AND EDUCATIONAL OPPORTUNITIES IN TEXAS

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Track 2: Community Development and Housing
Individual Paper Presentation

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The Low-Income Housing Tax Credit (LIHTC) is currently the nation's largest source of federal funding for affordable housing construction. While most generally agree that the LIHTC is a net positive for affordable housing supply, some housing advocates and scholars have criticized the LIHTC program for contributing to the concentration of poverty and racial segregation. In Texas, this issue came before the courts in a landmark Supreme Court case (Texas Department of Housing and Community Affairs (TDHCA) v. Inclusive Communities Project (ICP), Inc., 2015), which found that the TDHCA violated the Fair Housing Act by allocating too few credits in majority-white suburban neighborhoods. Subsequent research shows that state Qualified Allocation Plans can influence how LIHTC are distributed in relation to economic and educational opportunities. This paper examines the Texas case to determine if the TDHCA v. ICP case and subsequent changes to the QAP had a measurable impact on the proximity of LIHTC properties to educational and employment opportunities. While studies have discussed the implications of the TDCHA v. ICP case for fair housing and racial segregation in Texas, few studies have examined the related question of whether the state policy changes put in place since TDHCA v. ICP have made a difference for access to opportunity.

This study uses LIHTC project data from HUD to identify new construction projects in Texas from 2011 to 2020 and match these projects to census tracts. The projects are divided into two periods, 2011-2016 and 2017-2020, to compare differences before and after the policy changes. At the same time, tract-level indicators, such as job growth, job proximity index, and school proficiency index, are used to characterize the level of opportunity. The analysis mainly uses descriptive statistics and spatial visualization, focusing on differences across time periods and across credit types (4% and 9%) in terms of opportunity-related measures.

Preliminary results show that the number of LIHTC projects increased following the TDHCA v. ICP decision, and the 9% credit type projects are dominant in both periods. At the same time, there have been changes in project characteristics, such as a decline in nonprofit developer participation and shifts in the use of project-based rental assistance. In terms of spatial patterns, initial maps show differences in location patterns within metropolitan areas, but whether projects have shifted toward higher employment and educational opportunity neighborhoods still needs further analysis.

The contribution of this study is to connect state-level policy changes with neighborhood-level opportunity measures and to examine LIHTC location changes before and after policy adjustments. It will provide empirical evidence for understanding how affordable housing policies may shape spatial inequality and fair housing outcomes.

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Keywords: LIHTC, affordable housing, fair housing, location, opportunity

WHERE ARE THE GRANDFAMILIES? HOUSING NEEDS AND GRANDPARENT CAREGIVERS IN THE UNITED STATES.

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Track 2: Community Development and Housing
Individual Paper Presentation

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Grandparent caregiving has become an increasingly significant yet underexamined household structure in the United States, reflecting broader demographic shifts, economic instability, and gaps in social policy. While existing research has largely focused on individual- and household-level outcomes, limited attention has been given to how metropolitan structural conditions shape the geographic distribution and intensity of grandparent caregiving. This study addresses this gap by examining where grandparent caregivers are located across U.S. metropolitan areas and the extent to which caregiving prevalence is associated with socioeconomic and housing-related conditions.

Using 2019–2023 American Community Survey five-year estimates, this study constructs a metropolitan-level dataset for 935 Core-Based Statistical Areas. Key measures include a standardized caregiving rate (grandparent caregivers per 1,000 population), Grandparent caregivers' demographic characteristics, and a Structural Vulnerability Index (SVI) that captures overlapping dimensions of disadvantage, including poverty, rent burden, single-parent household prevalence, and racial composition. Spatial analysis, including univariate and bivariate mapping, identified geographic clustering and overlap between caregiving prevalence and structural vulnerability. Multiple linear regression models assess the relationship between caregiving and metropolitan structural conditions.

Findings reveal that grandparent caregiving is unevenly distributed across the national landscape, with higher prevalence concentrated in the Southeastern United States, the lower Mississippi Valley, and parts of Appalachia. Bivariate mapping identifies 266 metropolitan areas where high caregiving prevalence coincides with high structural vulnerability, indicating spatial clustering of compounded disadvantage. Descriptive results further show that caregiving households frequently experience elevated poverty rates, lower relative incomes, and significant housing cost burdens, with caregiving responsibilities disproportionately borne by older adults and women.

Regression results indicate that poverty and housing rent burden are strong and statistically important predictors of caregiving prevalence ($p < 0.001$). However, the model explains approximately 28.2% of the variation in caregiving rates ($R^2 = 0.282$). This suggests that while socioeconomic conditions play a meaningful role, they cannot substantially explain geographic variation. Racial composition, while spatially patterned in descriptive analysis, does not independently predict caregiving prevalence once structural economic factors are accounted for.

These findings suggest that grandparent caregiving is not solely a function of economic hardship but reflects a more complex interaction of structural, demographic, and institutional dynamics. By examining grandfamilies within metropolitan housing and socioeconomic systems, this study reframes caregiving as a spatially patterned response to structural inequality while highlighting the limits of conventional indicators in fully explaining its distribution. The results emphasize the need for planning and housing policy that support purpose-built intergenerational housing solutions capable of addressing caregiving, affordability and housing vulnerability.

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Keywords: Grandfamilies, Grandparent Caregivers, Intergeneration Housing

WHO CAN STAY IN CHINA'S SUPER FIRST-TIER CITIES? GENDERED HOUSING INEQUALITY AMONG YOUNG MIGRANTS

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Track 2: Community Development and Housing
Individual Paper Presentation

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The housing access of young migrant populations plays a crucial role in their long-term settlement in China's top-tier cities. Existing studies often focus on structural factors such as income, education, and hukou status to explain housing inequality among migrants, with limited attention given to gender differences. Using survey data from young migrants in China's four megacities (Beijing, Shanghai, Guangzhou, and Shenzhen), this study employs a generalized ordered logit model, incorporating stepwise variable inclusion and marginal effects analysis to examine how gender differences impact housing stratification. The results indicate that, when basic migration features are controlled for, female migrants have significantly better housing conditions than their male counterparts. Furthermore, the housing inequality attributable to gender differences is less associated with individual socio-economic factors, and is more influenced by marriage and family wealth. Overall, housing inequality among young migrants in top-tier cities has shifted from "individual capability competition" to "family capital competition." Besides personal factors such as hukou city tier and education level, family resources—particularly marriage and family wealth—have a decisive impact on the ability to access higher housing levels. This study provides empirical evidence and policy implications for improving housing provision for young migrants in major cities, optimizing talent recruitment policies, and advancing gender equality governance.

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Keywords: Young migrants, Housing inequality, Gender, Super first-tier cities, China

WOMEN'S HOMELESSNESS IN MEMPHIS: A COLLABORATIVE STUDY ON GENDER-SPECIFIC BARRIERS, GAPS, AND POLICY SOLUTIONS ACROSS SERVICE DELIVERY MODELS

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Track 2: Community Development and Housing
Individual Paper Presentation

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Homelessness is a growing and multi-faceted problem affecting cities worldwide (U.S. Department of Housing and Urban Development [HUD], 2023). In Memphis, The homeless population was recorded at 1,292 individuals which is around 22% higher than the previous year attributed to a lack of social services, economic inequality, and unstable housing, (Memphis/Shelby County Point-in-Time (PIT) Summary 2022 & 2023). Still, these figures are likely to underestimate the true scale of the situation as the count is done annually and only reflect single-night data neglecting the hidden nature of homelessness. The PIT The Point-in-Time (PIT) count's narrow methodology and scope substantially underrepresent the gendered realities of homelessness, especially for women and gender minorities. While transgender and non-binary people endure stigma and may be omitted by binary reporting systems (Wilson,2020), women frequently experience concealed homelessness, such as couch-surfing or staying with relatives, to escape the risks of street homelessness (Toki, 2024). A thorough examination of the contributing factors is necessary to address homelessness, with an emphasis on gender disparities in particular.

Homelessness is experienced differently by men, women and non-binary individuals. Men are more likely to experience problems like substance misuse and unemployment, while women are more likely to become homeless because of domestic violence, childcare duties, and systematic discrimination (Rukmana,2010). While the official statistics show that 20-28% are women, a closer observation and accurate data analysis are needed to get the overall scenario. Homelessness has affected one in three transgender individuals in the US: the 2019 PIT Count reveals shocking differences in gender identity and housing. Of those facing homelessness, 80% of nonbinary people and 63% of transgender people lacked housing. There are numerous factors contributing to these high numbers, and most have to do with discrimination (Kaiser, 2022). Effective multi-faceted strategies depend on identifying and addressing these gender-specific disparities.

The issue of Homelessness is made more complicated by the distinct socioeconomic environment in Memphis, which includes a higher percentage of poverty (22.6%) than in Tennessee (14%) and overall United States (12.5%) (Memphis Poverty Fact Sheet, 2024). The affordable Housing dashboard by City of Memphis shows that 52% of renter households are cost-burdened, meaning they spend more than 30% of their income on housing highlighting challenges in the housing market. Furthermore, the past and current racial disparities of Memphis have an impact on the homelessness dynamic, making contextual studies in homelessness research necessary that incorporates issues of race and gender (Culhane et al., 2011).

My study will contribute to a more nuanced understanding of the complex nature of women's homelessness in Memphis through a thorough examination of the existing literature and local data while using Memphis's first barrier free shelter for women, Hospitality Hub, as my case study. Moreover, this study will follow an "action-research" approach with mixed research methodologies. I will document the varied narratives and counter narratives highlighting the complex interactions between various factors that contribute to women's homelessness in collaboration with Hospitality Hub which acts as an organization committed to giving the city's homeless population vital resources and support. This gender-focused collaborative effort aims to enhance our understanding to produce better-informed recommendations by providing useful data and insights from lived experiences of the people who are directly engaged with this problem. This strategy will not only draw attention to

the unique difficulties faced by women, but it will also identify the gaps in the service delivery models within the organization and in relation to their broader network.

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Keywords: Homelessness, Gender-focused, Disparities, Collaboration, Barrier

ADAPTING ON OUR TERMS: HOW PEOPLE'S PLANS ARE RESHAPING HOUSING AND CLIMATE GOVERNANCE IN THE PHILIPPINES

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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In response to state-led resettlement programs, the People's Plan has emerged in the Philippines as a community-led, counter-planning mechanism through which the urban poor can negotiate alternative housing arrangements. In Metro Manila, where roughly one in four families live in informal settlements, government agencies have long prioritized relocation (also referred to as resettlement or managed retreat) as a solution for landless and flood-prone households, often at the cost of disrupted livelihoods and heightened socio-economic precarity. With support from NGOs providing technical and organizing assistance, urban poor communities employ tools such as participatory mapping, community vulnerability assessments, and household surveys to develop on-site or near-site housing schemes that reflect their priorities. In doing so, People's Plans reconfigure community residents' roles from passive "beneficiaries" to active "planners."

In practice, People's Plans are far from a panacea. The planning process is inherently time-intensive, and implementation is often prolonged over many years due to complex negotiations. Moreover, a significant number of plans are ultimately rejected by government authorities, underscoring the structural constraints they encounter. However, advocacy efforts to secure legal recognition of the participatory planning process have yielded important gains. In 2018, the Congress of the Philippines enacted Republic Act No. 11201, which formally acknowledges and promotes "people's plans" as a tool for housing resettlement. While the number of People's Plans continues to grow and their institutionalization advances, both their internal dynamics and broader impacts on governance remain insufficiently understood.

This study examines how the expansion and institutionalization of People's Plans in the Philippines are reshaping housing and climate governance of the urban poor. It focuses on how these plans have influenced the roles, capacities, relationships, and planning processes of community organizations, NGOs, and government agencies. In doing so, the study highlights the changes in roles and interactions within governance structures and assesses the extent to which established norms and practices of housing resettlement have shifted through People's Plans.

Drawing on semi-structured interviews, document analysis, and participant observation, this research examines three settlements at different stages of People's Plan implementation: one completed (Mamayan ng Legarda, MNL), one near completion (Jesse M. Robredo Homeowners Association, JMRV HOA), and one ongoing (Samahan ng Magkakapitbahay sa Slip-0, SMSS). All are located in the City of Manila, and their respective community organizations are members of a coalition of urban poor groups supported by the NGO Urban Poor Associates (UPA), which facilitates knowledge sharing across communities. The interviews engage key actors across multiple scales, including national government agencies, local government units within the City of Manila, community organization leaders, and staff from UPA and allied NGOs.

Based on the observed shifts in housing and climate governance, this study will advance both practical and theoretical implications, framed through a revisiting of Arjun Appadurai's conceptualization of Deep Democracy

(2002). In practical terms, it will highlight how communities, NGOs, and government actors can sustain, scale, and institutionalize the capacities generated through People's Plans without diluting their community-driven character. The study also seeks to theorize how People's Plans contribute to the "deepening" of housing and climate governance, while remaining short of fully transforming it. Innovations such as legal recognition, while significant, are insufficient when participation remains confined to the level of policy; meaningful transformation requires parallel institutional reforms that actively support and embed participatory practices.

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Key Words: People's Plan, community-led, participatory planning, housing governance, climate governance

BEYOND HOUSING SCARCITY: SYSTEM BARRIERS AND POPULATION-SPECIFIC INEQUITIES IN THE TEMPORARY SHELTER ECOSYSTEM

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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Homelessness in the United States is shaped not only by the absence of affordable housing but also by fractured service systems that fail to meet the needs of those most vulnerable to housing loss (Meyer et al., 2024). While Colburn and Aldern (2022) effectively demonstrate that homelessness is, at its structural root, a housing problem, gaining access to and navigating the temporary shelter ecosystem constitutes a second, under-examined layer of hardship for those already experiencing housing instability. In this Research in Motion presentation, we share preliminary findings from a multi-year, comprehensive inventory and assessment of the homelessness shelter and services ecosystem in San Diego County, California, employing qualitative and document review methods to examine how system-level processes generate differential barriers for specific subpopulations.

The heterogeneous nature of the homeless population means that a "one size fits all" approach to shelter and service delivery is rarely suitable, as individuals' service needs depend heavily on how their experience of homelessness intersects with other forms of vulnerability and social exclusion. Our analysis of San Diego County's temporary shelter network explores this heterogeneity and the ways in which system design features such as eligibility criteria and capacity constraints operate as exclusionary mechanisms for particular groups.

We focus on five subpopulations experiencing homelessness: older adults, veterans, justice-impacted individuals, survivors of domestic/intimate partner violence, and racial and ethnic minorities. Research shows that for survivors of intimate partner violence, coercive dynamics and violence create specific barriers to obtaining emergency shelter and long-term housing (Hargrave et al., 2025). For justice-impacted individuals, public housing bans tied to certain criminal records, barriers to employment at reentry, restrictions from living with family in subsidized housing, and private housing market screening procedures that trigger discrimination collectively foreclose pathways into stable emergency placement (Augustine and Kushel, 2022). For racial and ethnic minorities, research identifies three primary systems of stratification driving disparate outcomes: racial economic inequality, housing discrimination and residential segregation, and the homeless response system itself (Fowle, 2022). Veterans also experience significant barriers such as transportation, lack of information about services, along with burdens of stigma that prevent them from seeking assistance (Tsai and Kelton, 2022).

We conclude with a discussion on implications for systems reform. These findings will contribute to a growing body of scholarship that conceptualizes homelessness not only as a supply-side housing failure but as an access and equity problem embedded within service systems.

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Key Words: homelessness, shelter ecosystem, service access, equity barriers

COMMUNITY DESIGN CENTERS IN THE UNITED STATES: SPATIAL EQUITY AND ORGANIZATIONAL SUSTAINABILITY

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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Community design centers (CDCs) have played a pivotal role in U.S. planning and design practice since their emergence in the 1960s, rooted in the broader social justice and civil rights movements of that era. Inspired by Paul Davidoff's (1965) advocacy planning framework, early CDCs arose in direct response to the displacement and disinvestment wrought by urban renewal, expressway construction, and exclusionary zoning policies that disproportionately harmed low-income communities and communities of color. These centers offered design and planning expertise as a public resource, a counterweight to the top-down, technocratic planning that had dominated the postwar period, redirecting professional skills toward communities that had been systematically excluded from the planning process. Over subsequent decades, CDCs evolved considerably in organizational form, institutional affiliation, and service orientation, expanding from advocacy and direct service to encompass capacity building, policy engagement, and design education. University-affiliated centers, in particular, became important sites for linking community practice with design pedagogy, embedding service to underserved communities within professional training.

Despite this long presence, scholarly understanding of contemporary CDC practices remains limited. Existing research has begun to address this gap. For instance, content analyses of CDC websites and mission statements, combined with interviews with CDC leaders, reveal that these organizations perform a diverse set of roles and serve a broader range of communities than traditionally assumed. CDCs most commonly engage in design-oriented interventions focused on affordable housing, though they span a wide range of service types and interest areas. University affiliation shapes CDC practice in distinctive ways, including greater organizational longevity. Notably, despite their roots in the social justice movements of the 1960s, values around equity, social justice, and climate change are not consistently explicit in CDC mission statements.

Building on this emerging body of research, this study addresses two underexplored questions – where are the geographic gaps in CDC coverage across the United States, and what conditions enable CDCs to sustain their work over time? Despite growing scholarly attention to what CDCs do and whom they serve, little is known about the spatial distribution of these organizations relative to community need, or about the organizational factors that predict longevity and resilience. This study employs a mixed-methods approach, combining a national database of CDCs with spatial analysis of demographic and socioeconomic indicators to identify underserved areas lacking design support, with qualitative analysis of organizational characteristics to examine the conditions under which CDCs thrive. The research aims to produce a more comprehensive picture of the CDC landscape, one that can inform both future research and efforts to strengthen and expand community design practice where it is needed most. It makes two key contributions. First, by developing a national database of CDCs and mapping its distribution against indicators of community need, it produces a systematic accounting of spatial equity in community design support, a resource for both researchers and practitioners. Second, it advances understanding of CDC organizational dynamics by identifying the structural, financial, and governance conditions associated with long-term sustainability. More broadly, this research calls for greater empirical and theoretical attention to the spatial and organizational dimensions of community design practice in the U.S.

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Key Words: community design centers, spatial equity, organizational dimensions, mapping, planning

DOES MOVING HELP? SECONDARY MIGRATION AND HOUSING OUTCOMES AMONG REFUGEES IN THE UNITED STATES: EVIDENCE FROM THE 2021-2022 ANNUAL SURVEY OF REFUGEES

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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The U.S. refugee admissions program assigns refugees to locations across the country, yet many refugees subsequently move to a different state in search of better living opportunities. Though the drivers of secondary migration among resettled refugees are well-studied (Hagstrom & Pereira, 2024; Weine et al., 2011), the relationship between moving and subsequent housing outcomes is understudied especially on a national scale. This research examines whether secondary migration leads to better housing outcomes for recently resettled refugees and how the original region of resettlement shapes both the decision to move and subsequent housing conditions. We utilize pooled data from the 2021 and 2022 Annual Survey of Refugees (ASR), a nationally representative survey of 3,005 refugee households who were resettled in the U.S. between 2017 and 2021. Our analysis involves two parts. First, using logistic regression we identify individual and contextual predictors of secondary migration including region of original resettlement, cohort of arrival, household size, income, education, and English proficiency. Next, we use multivariate regression to assess the relationship between secondary migration and four housing outcomes including rent burden, household crowding, neighborhood safety, and homeownership, while controlling for sociodemographic factors in all models.

According to our multivariate analysis, 18.2% of our sample of refugees engaged in secondary migration in the U.S. between 2017 and 2021. Rates of secondary migration were highest among refugees resettled in the South (21.8%) and Northeast (21%), while they were lowest among those resettled in the Midwest (16.7%) and West (14.6%). Among refugees who migrated, economic opportunity was the most cited reason for moving (49%), followed by being with family (39%) and affordable housing (13%). Multivariate results indicate that more recent arrivals and those in larger households are significantly less likely to have moved. Among housing outcomes, secondary migration is significantly associated with lower monthly rent; movers pay approximately $109 less per month than non-movers after controlling for sociodemographic characteristics, income, cohort, and region of original resettlement ($p = 0.020$). Associations between secondary migration and the remaining housing outcomes (crowding, neighborhood safety, and homeownership), are not statistically significant.

These results are important for refugee resettlement policy. Our research indicates that the place where refugees are first settled plays a significant role in determining their future housing outcomes. Refugees who are placed in high-rent regions like the West continue paying higher rent relative to similar refugees placed in other regions, even if they move to a different region. This implies that initial placement exerts a long-run effect on the housing opportunities refugees face over their lives. This means that where refugees are first placed, not whether they stay there, is what matters most for the affordability of their housing. This highlights the importance of designing refugee resettlement policy to incorporate information about regional housing affordability when determining where to initially place refugees. Our paper addresses a need for more quantitative research on the consequences of secondary migration among refugees (Mossaad et al., 2020) and adds to the literature on the "lottery effect" of refugee resettlement (Brick et al., 2010; Darrow, 2015).

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Key Words: Refugee Resettlement, Secondary Migration, Housing Stability, Housing Integration, Secondary Migraiton

ENCOUNTERING MIGRATION IN SHRINKING REGIONS: PUBLIC SPACE AND LOCAL PERCEPTIONS IN RURAL JAPAN

Abstract ID: 2296.0.0.86.2026
Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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In recent years, public discourse surrounding migration has become increasingly polarized, with many countries adopting more restrictive immigration policies. These shifts are often supported by segments of the population who perceive immigrants as a social, cultural, or economic threat, particularly in contexts of rapid demographic change. Such dynamics highlight growing tensions between the economic demand for migrant labor and concerns about social cohesion. While these debates are often framed at the national level, their implications are deeply embedded in local contexts, where everyday encounters between residents and newcomers shape how difference is experienced and negotiated. In Japan, these tensions take on a distinctive form as rural regions, facing acute population decline and labor shortages, increasingly rely on foreign workers despite limited histories of immigration and relatively homogeneous social structures.

While existing research on migration in Japan and elsewhere has largely focused on labor systems, policy frameworks, and migrant experiences in metropolitan and surrounding areas (Chung, 2010; Yamanaka, 2000), less attention has been given to how rural communities perceive the arrival of foreign workers and how everyday spatial settings shape these perceptions. In particular, the role of public space as a site of encounter between local residents and migrant workers remains understudied. Yet streets, parks, small commercial areas, and community facilities can function as important arenas where social relations are negotiated, where visibility of newcomers is produced, and where opportunities for interaction—or distance—are spatially structured.

This research examines how Japanese residents in rural municipalities perceive and interact with foreign workers in everyday public spaces. Drawing on concepts of social infrastructure and everyday urbanism (Klinenberg, 2018; Lefebvre, 1991), the study approaches public spaces as environments that can either facilitate social contact or reinforce subtle forms of separation between social groups. Rather than assuming integration or exclusion as predetermined outcomes, the research explores how spatial practices, local norms, and the design and accessibility of public spaces shape everyday encounters between residents and migrant workers.

The project adopts a multi-stage research design. First, national census and demographic data are analyzed to identify rural municipalities with significant concentrations of foreign workers, particularly in regions where migrant labor supports industries such as agriculture, fisheries, and manufacturing. This quantitative mapping will be used to identify potential case study locations in remote areas that combine demographic decline with growing reliance on foreign labor.

The following fieldworks will focus on the spatial dimension of everyday encounters within these communities. Methods will include mapping of key public spaces, observation of everyday activities in shared environments, and semi-structured interviews with local residents. These approaches aim to document how residents perceive the presence of foreign workers, how interactions unfold in routine spatial settings, and which places function as sites of contact, coexistence, or social distance. Particular attention will be given to informal gathering spaces and everyday mobility patterns that structure opportunities for interaction.

By focusing on the perceptions of receiving communities and the spatial settings in which encounters occur, this research contributes to emerging discussions on migration in shrinking regions. The study seeks to better understand how rural environments—often overlooked in migration and urban studies—are being reshaped by

global labor mobility and how public spaces influence the possibilities for social interaction in communities undergoing demographic and social change.

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Key Words: Foreign workers, Rural areas, Public Space, Population, Japan

FAMILIES FLOURISH: MID-TERM HOUSING SUPPORT AND LIFE COACHING TO FOSTER HOUSING STABILITY FOR THE PREVIOUSLY UNHOUSED

Abstract ID: 2296.0.0.388.2026
Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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Homelessness, or being unhoused, is associated with a complex set of causative factors (Carnemolla & Skinner, 2021). These factors range from structural influences (e.g., market and economic conditions) to interpersonal dynamics (e.g., family instability or domestic violence), to individual circumstances (e.g., mental and physical health). Homeless populations are also not monolithic and encompass a wide spectrum of individuals and families. However, the literature on homelessness is less robust for specific subpopulations; for example, families with children are studied less frequently than other homeless populations (Carnemolla & Skinner, 2021). At the same time, recent scholarship has increasingly focused on defining and measuring the impacts of broader housing instability on family outcomes (DeLuca & Rosen, 2022). Research on the effectiveness of affordable housing interventions rarely examines differential outcomes between families experiencing literal homelessness and those who are housing insecure but stably housed.

This study examines housing program outcomes for families with children who were previously unhoused and compares their outcomes and experiences to those of families who were housing insecure but housed at program entry. The research focuses on Families Flourish, a mid-term housing stabilization and economic empowerment program located in Columbus, Ohio. Families Flourish provides up to three years of housing support in high-resource neighborhoods alongside intensive life coaching aimed at fostering housing stability and economic mobility. Through life coaching, participants are encouraged to use the three-year program period to improve their economic and employment conditions in preparation for navigating the housing market after program completion.

This case analysis explores the outcomes and experiences of participants who entered the program while unhoused. Although Families Flourish was designed to support families with children experiencing housing instability rather than homelessness specifically, changing housing market conditions resulted in a substantial increase in participants entering the program from homelessness. Formative evaluation activities identified early trends suggesting differential experiences and outcomes for participants who entered from homelessness compared to those who were housed but housing insecure. This case study assesses differences in program outcomes and participant experiences between these two groups.

Using longitudinal quantitative and qualitative data, the study tracks outcomes for more than 100 families enrolled in the program for up to three years. We compare multiple dimensions of well-being, including health, education, and employment—at program entry, as well as program outcomes such as retention, completion, and changes in these well-being indicators across the two populations. The analysis identifies opportunities and limitations associated with mid-term housing assistance and life coaching in promoting long-term stability for families experiencing homelessness. The discussion explores implications for tailoring housing assistance and economic empowerment programs to better serve unhoused families with children.

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Key Words: Homelessness, Housing Instability, Community Development, Economic Mobility

FILL EMPTY HOMES? PRACTICAL AND POLITICAL CHALLENGES TO ADDRESSING VACANT HOUSING IN THE TWIN CITIES

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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Amidst ongoing housing affordability concerns, Minneapolis and St. Paul must consider a variety of options to help alleviate the burden on residents. Housing justice advocates have pushed for a number of policy options that provide direct and timely relief to tenants: rental assistance programs, just cause eviction measures, right to organize provisions, and eviction moratoriums, especially during times of acute crisis. But an additional set of policies which seek to address chronically vacant housing units could supplement these approaches in the medium- to long-term. Chronically vacant housing refers to nonseasonal units of housing (both single- and multifamily) which are vacant for six months or more (Molloy, 2016).

Some of the policies that housing advocates and government agencies have considered to address housing vacancy include various forms of taxes and penalties, vacant property registry programs, or building code enforcement programs. Reducing housing vacancy can lead to a more efficient use of urban space, improve housing affordability, support the condition and quality of housing units, and contribute to more stable and equitable neighborhoods (Barrett, 2018; Molloy, 2016). But for a number of practical and political reasons, these policies have not been adopted widely across U.S. cities. Research has shown in international contexts how taxation can reduce housing vacancies (Segú, 2018). But in other cases, many vacant properties receive exemptions and government agencies lack the data or administrative capacity to meaningfully enforce vacant property policy (Gallmeyer, 2021).

This preliminary study seeks to better conceptualize the practical issues and political dimensions of the vacant housing policy landscape in the Twin Cities. Specifically, I ask 1) What practical challenges do government agencies face in attempts to address chronically vacant housing units? 2) What political barriers do housing justice advocates encounter in their work to reduce vacant housing? I use document analysis and participant observation with housing advocates and city officials to answer these questions. This work provides a survey of the vacant housing policy landscape in the Twin Cities and suggests ways that policymakers and housing advocates might more effectively address chronically vacant housing units.

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Key Words: Vacant Housing Units, Vacancy Tax, Housing Affordability

FROM REDLINES TO LIFELINES: CONFRONTING THE DUAL CRISIS OF HOUSING AFFORDABILITY AND PHYSICAL DECAY IN BALTIMORE'S HARLEM PARK/UPTON

Abstract ID: 2296.0.0.1146.2026
Track 2: Community Development and Housing
Research-in-Motion Presentation, Critique related to a hot topic in planning research

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Historically significant as the cultural and civic heart of Black Baltimore, Harlem Park/Upton has experienced decades of racially structured disinvestment that have produced a compounding dual housing crisis. This paper addresses a central planning problem: how do affordability and physical inadequacy interact as mutually reinforcing conditions in historically redlined neighborhoods, and what integrated policy frameworks can interrupt cycles of decline without displacing existing residents? Specifically, this study asks: (1) What structural and historical forces drive the co-occurrence of cost burden and physical decay in Harlem Park/Upton? (2) How effective have existing federal, state, and local housing programs been in addressing these dual challenges? And (3) what equity-centered policy strategies offer the most transferable lessons for similarly distressed neighborhoods?

This study employs a quantitative method framework integrating data analysis, spatial mapping, policy evaluation, and comparative case analysis. Quantitative indicators — including vacancy rates, cost burden, homeownership, median income, and code violation data — are drawn from the U.S. Census Bureau's American Community Survey (2018–2022) and the Baltimore Department of Housing and Community Development (DHCD, 2023). Spatial analysis using the Baltimore Neighborhood Indicators Alliance dashboard reveals the geographic concentration of disinvestment along key corridors. The study evaluates existing programs including Baltimore's Vacant to Value initiative, the Choice Neighborhoods Initiative, and the Rental Assistance Demonstration (RAD) program against Schwartz's (2021) typology of housing policy effectiveness. A comparative case analysis of the Gibbons Apartments project in Southwest Baltimore — a LEED-certified affordable development financed through layered public and private instruments — generates transferable best practices for low-market-value contexts. Qualitatively, a conceptual model is introduced to theorize the cyclical nature of revitalization. This is used to visualize where policy enactments have a direct impact on substantive redevelopment of communities.

Findings reveal that approximately 30% of Harlem Park/Upton's residential properties are vacant or abandoned — nearly three times Baltimore's citywide average — while 62% of renter households are cost-burdened. The neighborhood's median household income of $27,000 is less than half the city median, and its homeownership rate of 22% reflects persistent barriers to mortgage access rooted in redlining and urban renewal displacement. Program evaluation demonstrates that current revitalization efforts, while meaningful, have failed to achieve the scale or coordination needed to address the dual crisis. The Gibbons comparative analysis identifies layered financing (LIHTC, HOME, local subsidies), anchor-institution partnerships, and embedded resident service coordination as replicable strategies that bridge the gap between affordability and quality in disinvested neighborhoods.

This research contributes to planning scholarship by demonstrating empirically that affordability and physical inadequacy cannot be addressed in isolation — policies targeting one dimension while neglecting the other reproduce instability rather than resolve it. For planning practice, the study advances a replicable, equity-centered policy framework applicable to post-industrial neighborhoods nationwide facing similar compounding disadvantages. For planning education, Harlem Park/Upton serves as a rich instructional case for examining how historical policy decisions — redlining, slum clearance, highway construction — produce durable structural inequalities that contemporary programs must actively counter. The paper also foregrounds cultural preservation and community land trust mechanisms as underutilized tools for anti-displacement planning.

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Key Words: Housing, Equity, Revitalization, Disinvestment, Affordability

HOUSING UNDERPRODUCTION AND THE ROLE OF THE HOMEBUILDING INDUSTRY: EVIDENCE FROM THE STATE OF MICHIGAN

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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The United States is grappling with a severe housing affordability crisis, with housing underproduction identified as a primary driver. In 2021, the American Planning Association reported a national shortage of 3.89 million housing units. This shortage is widespread: 193 metropolitan areas across all 50 states have experienced significant underproduction (Up for Growth, 2023).

Scholarly research on housing supply has focused on restrictive local land-use regulations—essentially framing it as a government failure. Few studies have examined whether underproduction may also be a market failure, even though in the U.S. housing is predominantly built by the private sector. This ignorance likely stems from the influence of neoclassical housing economics literature, which views the homebuilding industry as a highly competitive sector dominated by numerous small firms that—if left unimpeded—can naturally meet market demand (Green & Malpezzi, 2003).

This study challenges this assumption. Given the severity and scope of the housing crisis, we argue that there is a critical need to investigate the homebuilding industry to see whether changes in industry structure and behaviors have contributed to housing underproduction. While such research is lacking in the U.S., studies in the U.K. and Sweden have already established a link between industry consolidation and national housing shortages (Blackwell and Wallstam, 2025; Foye and Shepherd, 2023).

We address this gap by examining housing production dynamics in Michigan. We selected Michigan because the state does not face significant land constraints, nor is it known for an overly restrictive regulatory environment. Despite this, Michigan has experienced severe underproduction since the Great Recession. The Statewide Housing Plan reported a 42% decline in homes for sale from 2010 to 2019, compared to a 33% decline nationally. The rental market saw an even sharper decline, with rental inventory shrinking by 40%, compared to a national decline of 15%. Furthermore, as one of the states hardest hit by the recession, Michigan provides a unique case to study the impact of the recession on homebuilding industry's capacity to build.

We will analyze data on residential construction industry and building permits from County Business Patterns (2001–2022), alongside American Community Survey (ACS) data, for 83 counties in Michigan. This longitudinal dataset allows us to examine how housing production volume and industry structure have shifted over time. We will construct metrics to measure industrial changes and develop panel-data regression models to test the impact of industry variables on housing production. Based on our analysis of variations across counties, we will select four to five of them for in-depth case studies. These case studies will involve interviews with local planners and developers to gain insight into the specific barriers preventing housing development in their communities.

Preliminary analysis suggests that Michigan's homebuilding capacity was severely compromised by the Great Recession. While the state previously relied on a robust network of small, local firms, many of these businesses shuttered during the crisis and never returned. In many parts of the state, a prolonged weak economy and stagnant income growth have prevented the rebuilding of local development capacity. Consequently, we expect to find evidence of significant industry consolidation. This reduced industry competition, coupled with diminished capacity, has likely hindered the industry's ability to deliver adequate housing in the state.

This research has significant implications for planning scholarship and practice. While there is currently a national momentum for zoning reform, this study suggests that regulatory changes alone are insufficient. Addressing the housing crisis requires a comprehensive approach that also tackles industrial barriers.

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Key Words: Housing Underproduction, Homebuilding Industry, Industry Structure, Housing Crisis

IS IT HOUSING? EXPLORING THE OUTCOMES OF PORTLAND'S LEGALIZATION OF RECREATIONAL VEHICLES (RVS) AND TINY HOUSES ON WHEELS (THOWS)

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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Portland, Oregon declared a state of housing emergency in 2015. In the decade since, the City has pursued a range of different strategies to address housing supply and affordability issues, including a series of regulatory changes that expanded what constitutes a legally permissible housing type. In 2021, Portland's City Council approved revisions to City Code to allow recreational vehicles (RVs) and tiny houses on wheels (THOWs) to be used as legal dwelling units and amended relevant regulations to govern their placement and use on single dwelling unit residential lots.

This research investigates the outcomes of this policy shift. The central research questions guiding this study are: What are the demographic, physical, and financial characteristics of legalized MDUs and their occupants? What motivations drive individuals to choose this housing model? How has the regulatory revision impacted code compliance, and what persistent challenges do occupants continue to face in a post-legalization landscape?

To address these questions, this study employs a mixed-methods approach focusing on a specific residential neighborhood in Portland to produce an initial understanding of the RV/THOW landscape. Specific methods include:

1. Field Observations – Systematic visual assessments of existing units to evaluate spatial integration, physical conditions, utility hookups, and neighborhood impact.

2. Occupant Surveys – A survey distributed to RV/THOW residents collecting quantitative data on demographics, monthly housing costs, income levels, and self-reported regulatory compliance.

3. Semi-Structured Interviews – Interviews with occupants and property hosts to capture narratives regarding motivations for choosing this housing type, dynamics, and barriers to stability.

This research will provide the first systematic examination of the response to and outcomes of Portland's new regulatory approach to RVs/THOWs. These results are intended to provide both a foundation for more comprehensive research across the City and initial data and lessons to inform future policies being considered in Oregon and Washington at the local and state levels.

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Key Words: Affordable housing, Recreational vehilce, Tiny house on wheels

PLANNING FOR REINTEGRATION: A COLLABORATIVE APPROACH TO SUPPORTING FORMERLY INCARCERATED PEOPLE THROUGH DEVELOPMENT PRACTICE

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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While many aspects of urban planning and development are well documented barriers towards reintegration for people returning to society after incarceration—including housing access and discrimination, transportation challenges, access to healthcare, mental health supports, and others—urban planning as a profession has yet to organize itself to support this group. These barriers have been studied in other disciplines like criminology and sociology, often focusing on a lack of access to quality affordable housing correlated with recidivism (Fontaine and Biess 2012). Adding to this challenge, one third of people released from prison lack adequate transportation (McCann 2023). Barriers accessing health resources, including mental health and substance use treatment, pose risks of recidivism, and are exacerbated by the trauma of incarceration itself. These barriers have been directly related to neighborhood conditions, with clear observations that reintegrating populations are often spatially concentrated (Price-Tucker et al. 2019). As low-resourced, racially segregated communities often have higher rates of incarceration, Morenoff and Harding (2014) observe a 'feedback loop', "in which mass incarceration undermines the structure and social organization of some communities, thus creating more criminogenic environments for returning prisoners and further diminishing their prospects for successful reentry and reintegration" (411). Despite the well-established literature on these barriers in other fields that are directly attributable to urban development patterns, we know less about the ways in which urban planning and development practices directly impact the lives of people who have been incarcerated (see Knapp 2020).

This research breaks new ground by bringing together the expertise of people with lived experience with reintegration and urban planning and development experts to chart out new avenues for development practice. Focusing on conditions for reintegration in Baltimore, Maryland, I answer the following questions: 1) Which aspects of spatial planning and the built environment pose barriers to reintegration as told by people with lived experience?; and 2) What opportunities exist for urban planning and development intervention? To answer the first question, I partnered with the Baltimore-based reintegration and peer mentorship group HOPE Baltimore to conduct interviews with people with lived experience with reintegration after incarceration (n=30). These interviews focused on uncovering barriers to reintegration that relate to neighborhood conditions, access to resources such as housing and transportation, and perspectives on how justice involved people can become collaborators in planning processes. To answer the second question, I held several focus groups that consisted of people with lived experience with reentry and urban planning practitioners to identify areas for development and policy intervention to alleviate barriers to reentry. The data reveals a spatial mismatch in Baltimore between where reintegrating people are able to secure housing and where they are able to access vital resources such as health facilities and grocery stores; relatedly, poorly functioning public transit in Baltimore is a significant barrier that compounds these issues. I also find that there are features of zoning codes that restrict where supportive housing can be located, further limiting opportunities for justice involved people to access needed resources. Importantly, these spatial inequalities are reinforced by 'softer' barriers that planners rarely engage in. These include difficulty obtaining government IDs, credit and income requirements for housing, and discrimination in housing and labor markets that generate multi-faceted, interwoven, and complex issues that must be untangled for more traditional planning interventions (e.g. housing affordability, transit access) to be affective for this population.

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Key Words: mass incarceration, recidivism, reintegration, uneven development, Baltimore

REGIONAL TRANSIT ACCESSIBILITY AND HOUSING COST DYNAMICS: ASSESSING EQUITY OUTCOMES IN THE GREATER TORONTO AND HAMILTON AREA (GTHA), CANADA

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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Central theme: Transit investment in regional commuter rail networks improves accessibility and supports sustainable mobility (Bardaka et al., 2018). However, it can also increase neighbourhood desirability and intensify land value pressures, raising concerns for housing affordability (Duncan, 2011; Higgins & Kanaroglou, 2016). While these dynamics are well established in urban contexts, less is known about how access to new commuter rail stations in large metropolitan regions shapes overall housing costs and whether these costs are equitably distributed across neighbourhoods with different built environment and sociodemographic profiles (Guerra, Cervero, & Tischler, 2012; Higgins & Kanaroglou, 2018). In the Greater Toronto and Hamilton Area (GTHA), Canada, regional transit investments are delivered through GO Transit, a commuter rail and bus network operated by Metrolinx. The opening of GO stations represents a major accessibility change that may reshape surrounding housing markets. This study examines the relationship between access to GO stations and housing costs in the GTHA through a longitudinal design, addressing two research questions: 1) How does access to new GO stations shape housing costs over time? 2) How do housing costs vary across neighbourhoods with different built environment and sociodemographic characteristics?

Methods: The study employs an event-study framework within a fixed-effects panel regression using housing cost data from Statistics Canada for 2006, 2011, 2016 and 2021. Housing cost data is collected at the Dissemination Area (DA) level, which is the smallest standard geographic unit used by Statistics Canada. The event-study specification estimates housing cost changes at the DA level relative to new GO station openings, with DA-level observations for each census year classified into pre- and post-opening periods. DA fixed effects control for time-invariant neighbourhood characteristics, while census year fixed effects capture city-wide housing market trends. The model also includes built environment controls for population density and distance to the nearest GO station. Sociodemographic conditions are captured using Ontario Marginalization Index, which is a publicly available dataset and measures neighbourhood marginalization across four dimensions: residential instability, material deprivation, age and labour force dependency, and racialized and newcomer population concentration.

Results: The results show that access to new GO stations is associated with significant changes in housing costs over time. Housing costs are likely to increase prior to station opening, indicating anticipatory market responses, and increase significantly following opening, with effects persisting in later periods. The housing costs vary across space and neighbourhood characteristics. Areas closer to stations experience significantly stronger housing cost increases, reflecting the capitalization of accessibility benefits. Higher population density is significantly associated with lower housing cost increases. Housing cost changes also differ across neighbourhood sociodemographic conditions, with more dependent and more racialized neighbourhoods experiencing significantly weaker increases. Interaction results further show that while housing cost increases are stronger in neighbourhoods closer to stations, the proximity effect is weaker in areas with higher levels of ethnic concentration and dependency.

Conclusion: While the opening of new GO stations enhances regional accessibility, it may also reinforce spatial inequalities in housing affordability. The findings underscore the importance of coordinated transit and housing policy, including inclusionary zoning around station areas, protection of affordable housing stock and integrated

land-use planning. Such measures are essential to ensure that the benefits of improved accessibility do not disproportionately contribute to housing cost burdens in marginalized communities.

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Key Words: Transit accessibility, Housing cost, Housing affordability, Equity, Marginalization

REGULATIONS, IMPLEMENTATION, AND COMPETING PRIORITIES: REFRAMING BARRIERS TO HOUSING DEVELOPMENT

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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Housing shortages in the United States are frequently attributed to restrictive local regulations. However, this study asks a more nuanced set of questions: To what extent do regulations themselves, versus their implementation and broader political-economic context, shape the ease of housing development? And how do perceptions of barriers differ between public officials and private sector actors?

To address these questions, this paper draws on two complementary survey datasets: one of public officials and one of private consultants involved in housing development in Michigan. In the public official survey, respondents are asked whether developing housing in their jurisdiction is easy or difficult, along with questions about regulatory barriers, implementation practices, and how housing is prioritized relative to other local goals. The private consultant survey ranks major categories of development constraints and identifies the most significant cost and delay factors affecting projects. Together, these datasets allow for triangulation across institutional perspectives.

Findings complicate the dominant narrative that regulations are a primary barrier to housing production. Among private consultants, local regulations rank fourth out of six major constraint categories, behind costs and resources, financing, and community opposition, with infrastructure availability and costs also frequently cited. At the same time regulatory processes—particularly approval procedures—still contribute meaningfully to projection delays and costs, with over 40% of respondents reporting substantial impacts.

Public officials provide a different but complementary perspective. Descriptive results show that both regulatory reforms (e.g., adjusting dimensional standards, expanding by-right development) and implementation changes (e.g., shortening approval timelines, improving interdepartmental coordination) are widely seen as beneficial, particularly in communities where development is more difficult. Importantly, housing is often not the dominant local priority: political opposition and growth control are frequently prioritized over housing, indicating that development outcomes are shaped by competing local objectives rather than regulations alone.

Multivariate results further underscore the importance of both regulatory content and implementation. Logistic regression results indicate that more restrictive regulatory content significantly increases the likelihood that development is perceived as difficult, while more consistent implementation significantly decreases that likelihood. These findings suggest that how regulations are applied may be as important—or more important—than what is written in the code.

This research contributes to planning scholarship by reframing housing constraints as a multi-dimensional problem involving regulatory design, administrative practice, and political context. For practice, the results suggest that reform efforts should move beyond zoning changes to include process improvements, capacity building, and strategies to manage political opposition. For planning education, the findings highlight the need to train future planners not only in regulatory tools but also in governance, implementation, and stakeholder dynamics. Together, these insights point toward a more holistic understanding of housing development barriers and more effective pathways for reform.

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Key Words: Housing supply dynamics, Regulatory constraints, Administrative practices, Planning and governance, Housing policy

REIMAGINING THE SHADOW OF DODGER STADIUM: A GEOSPATIAL APPROACH TO JUSTICE AND EQUITY FOR GENERATIONS OF DISPLACED FAMILIES

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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In the late 1950s, the City of Los Angeles displaced approximately 1,800 Mexican-American families from the Palo Verde, La Loma, and Bishop communities through eminent domain, ostensibly to build public housing. The land was instead transferred to a private baseball franchise and became Dodger Stadium. Descendants of these communities continue to experience intergenerational social and economic harm from displacement (Lopez, 2009). This is also the traditional land of the Kizh Nation, and existing planning frameworks inadequately account for reparative goals or Indigenous land stewardship (Lane & Hibbard, 2005). This long history of dispossession makes the site a powerful case study in understanding how urban planning decisions can shape inequities across generations (Wang, 2020). This study asks: How can equitable land-use planning address historical injustices and contribute to reparative community development?

Today, the site is once again at a crossroads. Advocacy groups are pushing for reparations for displaced families. A high-profile gondola proposal connecting Dodger Stadium with Union Station is facing community resistance. As well, the future of the 260-acre surface parking lot is in question as new city and county climate plans call for reduced car dependency, improved transit, and greater environmental equity. The history of this site and contemporary debates on its future present a timely opportunity for a community-engaged reenvisioning process; one that seeks to preserve the cultural and economic significance of Dodger Stadium while proposing new uses for the vast surface parking lot to address historical injustices and their contemporary reverberations.

Through a mixed-methods, community-engaged research design, this study examines the intergenerational impacts of displacement and collaboratively envisions an alternative development proposal for the site that integrates environmental justice, cultural preservation, and Indigenous ecological knowledge. Semi-structured interviews and focus groups are conducted with descendants of displaced families, Kizh Nation tribal representatives, activists, landowners, and planning stakeholders. Geospatial analysis using GIS tools maps existing site conditions and quantifies the environmental, economic, and social equity impacts of the current parking lot (including air quality, urban heat island effects, and tax revenue), establishing a baseline for evaluating redevelopment alternatives. In collaboration with community partners, these findings are translated into a mixed-use redevelopment proposal.

This research contributes to planning scholarship on spatial justice, reparations, and community-engaged methodology. It offers a replicable framework for planners and advocates seeking to use land-use tools to address historical injustices at contested urban sites (Murtagh, 2004). It also models a research design that centers traditionally marginalized voices as co-producers of planning knowledge (Juarez & Brown, 2008).

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Key Words: Reparative Planning, Spatial Justice, Indigenous planning, Community Development

RELOCATION CAPACITY AND SEA LEVEL RISE: HOUSING AVAILABILITY ALONG EXISTING MIGRATION CORRIDORS

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Research-in-Motion Presentation, Research currently in process

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Housing in the U.S. is currently experiencing a severe affordability crisis: home prices and interest rates have pushed homeownership out of reach for many, and a record number of renters are cost burdened. The nation is still facing a housing shortage of more than 1 million units. This housing crisis is exacerbated by the accelerating climate crisis, which is increasing the frequency and intensity of multiple types of extreme weather events and causing sea level rise. With nearly 40% of the US population living in coastal counties, these two crises are converging.

Local land use decisions have shaped both the concentration of housing in areas now at risk of inundation and the capacity of safer areas to absorb future growth. Yet zoning codes in many receiving places actively constrain the housing types and densities necessary to accommodate displaced residents, particularly those with limited means, while financial incentives continue to drive new development into hazard-exposed areas.

Prior work has established that zoning capacity exists in some receiving places, but has not examined whether that capacity is affordable or accessible to displaced households, nor whether it aligns with where people actually move following displacement. Lower-income and renter households face the greatest barriers to relocation, and affordable housing in receiving communities is rarely guaranteed for those who need it most.

While prior work has projected the scale of displacement from sea level rise and simulated where displaced populations might relocate at the county level, less is known about whether the places people are likely to go have the housing capacity to receive them, or whether that capacity is affordable and accessible to the households most at risk. This paper addresses three questions: Where are census places most exposed to sea level rise based on building-level data? Do receiving places along established migration corridors have enough affordable housing to absorb displaced residents? And what land use policy interventions are necessary to build that capacity?

Preliminary analysis of NOAA 3ft SLR projections overlaid with census place boundaries across all US coastal states identifies over 2,400 census places with measurable exposure to inundation, with 258 facing inundation of more than half their land area. To fully address these questions, we are combining NOAA sea level rise projections, FEMA building footprint data, block group-level housing availability, and block-group migration flow data to assess whether receiving places along established migration corridors have enough affordable housing to absorb displaced coastal residents. Where gaps are most acute, findings will point to where land use policy intervention is most needed.

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Key Words: climate adaptation, housing affordability, relocation capacity, receiving communities

RHETORICS OF REAL ESTATE: LISTING LANGUAGE IMPACTS ON HOMEOWNERSHIP IN MILWAUKEE'S HISTORICALLY BLACK NEIGHBORHOODS

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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Historically, the real estate profession in the United States practiced racially motivated tactics to "steer" buyers to and from specific neighborhoods, adhered to "redlining" standards that solidified neighborhood racial composition, and in some cases "blockbusted" neighborhoods by creating panic that influenced the buying and selling of homes (Massey & Denton, 1993; Mitchell & Franco, 2018). With the passage of the Fair Housing Act of 1968 these blatant efforts of segregation subsided. During the following decades attention shifted to other aspects of the homebuying process including predatory mortgage lending practices and biased home appraisals. With attention elsewhere, new more subtle and less overt tactics of segregation have entered the market.

In Milwaukee, Wisconsin due to decades of government and private sector practices, segregation persists and the homeownership gap between Black and White households is staggering, as citied by a 2022 Wisconsin Policy Forum report. Recognizing the vast influence real estate professionals have on a housing market (Price & Oates, 2008; Robertson & Doig, 2010), considering the lack of attention given to the real estate industry's involvement in segregation since the 1970s, and understanding the perpetual segregation issues identified in Milwaukee, this research project attempts to make progress to better understand if the language used in real estate listings in Milwaukee has an impact on both segregation and the demographics of homeowners in identified neighborhoods. By analyzing real estate listing language, this study draws attention to the mechanisms being used today that reinforce historic practices of segregation and foster the growing homeownership gap between Black and White households in Milwaukee.

To better understand these mechanisms this research study seeks to answer the following questions: 1) How does the language in real estate listings differ between neighborhoods? 2) How does the real estate industry develop real estate listing language? 3) How do homebuyers access real estate listings and does the language in the listings shape their perceptions? This study analyzes these questions using a mixed methods approach by selecting neighborhoods based on historic demographics, analyzing real estate listing language from sales in the selected neighborhoods over a 14-year period, and surveying and interviewing real estate professionals and homebuyers.

Research findings suggest real estate listing language differs between neighborhoods including the use of potentially influential language for homebuyers. Several real estate professionals surveyed indicated a lack of training regarding language and questioned the methods for which listings are developed. These findings are even more troubling when a high percentage of homebuyers surveyed indicated listing language is influential and sometimes a strong deterrent when determining if they will view a property. These findings have the potential to draw attention back to this topic and may benefit many stakeholders including neighborhood residents and organizations, urban planning and real estate industry professionals, and policymakers.

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Key Words: Housing, Homeownership, Real Estate, Rhetorics, Urban Segregation

SPATIAL DYNAMICS AND PLATFORM SORTING: EVIDENCE FROM SOUTH FLORIDA'S AIRBNB MARKET

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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The rapid expansion of short-term rental platforms such as Airbnb has generated extensive scholarship on their impacts on housing markets, tourism economies, and neighborhood change, as well as on the structural determinants of Airbnb locations (e.g., Barron et al., 2021; Panagopoulou et al., 2026; Wachsmuth & Weisler, 2018). Yet, less attention has been paid to how platform economies are themselves shaped by pre-existing patterns of socio-spatial-temporal sorting, in which households and housing are unevenly distributed across space according to income, race, and tenure, and change in response to exogenous factors (Tiebout, 1956). Emerging work in platform urbanism suggests that digital platforms do not operate on neutral spatial landscapes but instead selectively embed within and amplify these inequalities (Cocola-Gant & Gago, 2021). Building on this perspective, this study conceptualizes Airbnb not only as an agent of urban change but also as an outcome of neighborhood sorting, gentrification, and related processes, in which platform activity concentrates in areas advantaged by specific housing and demographic configurations. Broward County, Florida, provides an ideal "living laboratory" for examining these dynamics, given its pronounced coastal-inland gradient in wealth, tourism intensity, and racial and ethnic diversity. This setting enables a closer examination of how platform economies both reflect and reshape inherited spatial inequalities.

This study asks two interrelated questions: (1) How are Airbnb listings spatially distributed across census block groups in Broward County? (2) How do neighborhood characteristics, such as demographic and housing attributes and changes, along with other urban variables, relate to Airbnb density? To address these questions, the study integrates listing-level data from Inside Airbnb with neighborhood-level demographic, housing, amenity, and climate-vulnerability data from the American Community Survey (ACS) five-year estimates (2010–2014 and 2018–2022) and other datasets. Thematic mapping, hotspot analysis, spatial autocorrelation, and Multiscale Spatial Regression models are employed to account for spatial dependence and to identify how neighborhood attributes and change influence the geography of platform activity. By explicitly linking empirical analysis to sorting theory, this approach advances understanding of how platform economies are embedded within broader and evolving urban spatial structures rather than operating independently of them.

Preliminary findings reveal that Airbnb listings are heavily concentrated along coastal areas, consistent with tourism-driven demand but also reflective of historically advantaged locations within the metropolitan hierarchy. More importantly, Airbnb density is significantly associated with neighborhoods characterized by higher shares of single-family housing, higher vacancy rates, lower homeownership rates, and lower proportions of minority residents. These patterns suggest that Airbnb follows and reinforces socio-spatial sorting, disproportionately concentrating in neighborhoods with housing stock (e.g. second/vacation homes) amenable to short-term rental conversion and demographic profiles associated with greater market desirability. The study contributes to debates on platform urbanism and digital capitalism by demonstrating that digital marketplace participation is not evenly distributed but is systematically shaped by, and in turn reinforces, urban socio-spatial-temporal sorting processes.

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Key Words: Airbnb properties, Spatial distribution, Plaform sorting, Neighborhood change, South Florida

TAKAFUL AS COMMUNITY DEVELOPMENT INFRASTRUCTURE: THE ROLE OF TEA SPACES IN INSURGENT ECONOMIES AND MUTUAL AID NETWORKS

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Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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This paper examines the role of Sudanese tea ladies as central actors within informal mutual aid systems, advancing a decolonial and relational understanding of economic and community development. While dominant planning and development frameworks privilege formal institutions like governments, NGOs, and markets, this study foregrounds everyday agents whose practices constitute critical yet under-recognized forms of social and economic infrastructure. Tea ladies in Khartoum, operating informal roadside cafés, represent a powerful case for understanding how community-based systems of care, exchange, and resilience are produced and sustained from the ground up. In this case, the study argues that, when understood collectively, tea spaces form a distributed infrastructure of care and opportunity that operates at both micro and macro scales. Drawing on AbdouMaliq Simone's conceptualization of urban social infrastructure, Rebecca Solnit's work on disaster solidarity, and scholarship on mutual aid, this study introduces takaful, a culturally and religiously grounded ethic of collective care, as a key analytical and theoretical lens. Rooted in Sudanese social and spiritual traditions, takaful shapes the relational dynamics of tea spaces, where economic transactions are inseparable from practices of reciprocity, dignity, and shared responsibility. These spaces function as micro-nodes within a broader, decentralized network of support, where relationships, knowledge, and resources circulate in ways that blur the boundaries between economic, social, and cultural life. Individually, each tea space functions as a localized node of interaction and support; when aggregated across the city, they constitute a resilient and adaptive network capable of addressing both everyday challenges and systemic shocks. These reframing challenges deficit-based models of development that position communities as lacking capacity, instead highlighting their role as active producers of social and economic systems. Ultimately, this paper positions tea ladies not merely as participants in the informal economy but as key agents in the production of urban life, whose everyday practices sustain, connect, and transform communities. By bridging economic analysis with planning theory, it offers a more holistic understanding of development that accounts for both material outcomes and the relational, cultural, and ethical dimensions that underpin them.

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Key Words: Community Development, Organizing, Empowerment, Agency

THE ASSOCIATION BETWEEN SMALL HOUSING AND URBAN PARK VISITATION IN SEOUL, SOUTH KOREA

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Research-in-Motion Presentation, Research currently in process

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In high-density cities like Seoul, the expansion of small-sized housing has become an important issue. These units are often sub-standard in terms of floor area footage, and similar patterns have been observed in several major cities worldwide, where the number of extremely small homes has been increasing rapidly (Hubbard, 2025). Residents living in small housing often have limited access to private or semi-public recreational spaces, and they may also face financial constraints in accessing fee-based recreational facilities (Hein & Kuhnimhof, 2025; Moore et al., 2008). Under these conditions, residents in space-limited homes tend to rely more on nearby public open spaces, particularly urban parks, to compensate for the lack of indoor recreational space (Lo et al., 2022).

Urban parks serve as essential public spaces that support residents' recreation, physical activity, and social interaction in cities. A large body of research has highlighted the roles of park characteristics, accessibility, and socioeconomic conditions in shaping park use (Lee et al., 2024; Park & Khanal, 2025). However, empirical evidence on whether housing compactness and household socioeconomic conditions are associated with park visitation remains limited, and even less is known about how this relationship differs by age. Addressing this gap is crucial because housing conditions can shape how residents use neighborhood environments in their daily lives, and the consequences of space-constrained housing may extend beyond the dwelling unit itself to surrounding community infrastructure. Young adults and older adults, in particular, may experience housing-related constraints differently across life stages, making age variation an important dimension for understanding how small housing is linked to neighborhood park use.

Against this backdrop, this study investigates the relationship between small-sized housing and park use in Seoul, South Korea. Specifically, it addresses two questions: first, whether parks surrounded by higher shares of units smaller than 20 ㎡ receive more visits than comparable parks in other contexts; and second, whether this pattern varies by age.

To address these questions, we construct a monthly panel dataset covering 1,731 neighborhood parks in Seoul from January to December 2024. The key explanatory variable is the proportion of housing units smaller than 20 ㎡ within a 500-meter buffer of each park. We also control for park characteristics and local sociodemographic conditions. We apply a panel regression model to estimate the overall association and conduct supplementary analyses using age-specific visitor records to examine variation across age groups.

The preliminary results show that parks surrounded by higher shares of small housing units tend to have significantly higher visitor volumes. Analyses by age group further suggest that this pattern is relatively stronger among adults in their 20s and 30s and older adults, while it is weaker among users aged 0–19.

This study provides empirical evidence on the relationship between small-sized housing and urban park visitation. The findings suggest that neighborhood parks may serve not only as recreational spaces but also as compensatory living infrastructure for residents in space-constrained homes. More broadly, the results suggest that the effects of small housing should be understood not only within the home, but also through the neighborhood spaces residents rely on in everyday life. This highlights the importance of considering housing conditions in neighborhood open space planning in high-density cities.

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Key Words: Small housing, Urban park visitation, Housing compactness, Age-specific park use, High-density cities

THE DEVELOPMENT OF THE CULTURAL FOOD MIRAGE: HOW GENTRIFICATION IMPACTS LATINE FOOD ENVIRONMENTS IN A SOUTHERN CALIFORNIA CITY.

Abstract ID: 2296.0.0.207.2026
Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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As neighborhoods experience gentrification throughout the U.S., public health scholars grapple with the health impacts of gentrification. Yet, little is understood about how gentrification impacts food environments. Moving beyond deficit-model concepts like the "food desert" which characterize neighborhoods as areas lacking healthful food options rather than pinpointing the policies that constructed these poor food environments,1 critical scholars opt for the term "food mirages," or areas where healthy food appears available but remains economically inaccessible.2 We extend this framework to cultural foods through the cultural food mirage, where preferred food item selections and high prices limit low-income, racial/ethnic minorities of that cultural sufficient access. Cultural food mirages may contribute to food insecurity for racial/ethnic minorities. In Orange County, a Los Angeles region county in California, 17% Latine (Latino) residents are considered food insecure compared with 7% Whites.3 The study objective was to assess the factors of Latine food environments that contribute to a cultural food mirage in Costa Mesa, CA.

We employed a community-based participatory research (CBPR) approach because current food desert and mirage empirical metrics often capture food availability, but cannot capture the four remaining facets of food consumption: accessibility, affordability, acceptability, and accommodation.4 Therefore, engaging with communities illuminates the nuances of food access, specifically where the environment meets or limits healthful food consumption. We collaborated with Resilience Orange County, a local non-profit to conduct participatory mapping. This method allows researchers and communities to co-produce maps with data points and accompanying narratives, reducing extractive research practices between researchers and communities. In Spring 2025, we conducted two mapping sessions with four groups: one with youth (ages 13–20, in English) and one with adults (21+, in Spanish), involving a total n=37 participants. Across four maps and accompanying field notes, participants mapped areas of perceived gentrification that impacts food access. Residents collectively mapped n=166 locations with narratives, revealing positive and negative sentiments about gentrification.

Key findings include loss of affordable businesses over time and how enforcement agencies act as mechanisms limiting available food vendors and food access. Residents described slow but persistent changes in local businesses, noting how newer options were not businesses they sought. Enforcement agencies, including immigration, health departments, and local police limited informal food vendors, reducing the number of available food options. Often conflated, residents shared that police presence has impacted the available food vendors where residents chose to travel to neighboring cities or pay premium prices for cultural foods at brick-and-mortar stores. Positive sentiments included perceived increase in healthy food options while negative sentiments included increased prices in both housing, food, and other basic needs and an overall loss of sense of belonging.

Results indicate gentrification contributes to a constrained neighborhood shopping and cultural food environment, indicating a cultural food mirage. Latine residents experience multi-level marginalization from gentrification in housing, food shopping, and access to other basic needs. Future research should examine how the cultural food mirage contributes to Latine food insecurity and zoning decisions and commercial and retail rents impact cultural food stores. To combat further marginalization, policymakers should assess methods to protect existing cultural

food stores from commercial gentrification pressures and streamline processes to permit cultural food vendors to protect this food access avenue.

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Key Words: gentrification, food insecurity, food environments, CBPR

TORNADO PREPAREDNESS IN RESIDENTIAL CARE: EVALUATING DISASTER PLANNING IN ASSISTED LIVING AND INDEPENDENT HOUSING FOR OLDER ADULTS IN TEXAS

Abstract ID: 2296.0.0.883.2026
Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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This study examines how older adults in residential care and long-term housing settings in Dallas and Harris Counties, Texas experienced two major severe weather events in May 2024: a derecho in Houston and a tornado outbreak in Dallas. These events resulted in widespread and prolonged power outages that disproportionately affected older adults who rely on electricity for medical equipment, temperature regulation, and communication. While emergency preparedness requirements exist for residential care facilities, less is known about how these policies translate into practice during extreme weather events.

This research explores how disaster preparedness is implemented in assisted living facilities and other residential housing contexts for older adults, with particular attention to the relationship between formal disaster plans and on-the-ground response. The study uses a mixed-methods approach, including spatial analysis, a review of disaster preparedness plans, and semi-structured interviews with facility staff. This approach allows for an early-stage understanding of how preparedness is structured and enacted across different facility types.

Emerging themes suggest that while facilities generally meet minimum state regulatory requirements, there is significant variation in how disaster plans are developed and implemented. Plans range from basic compliance checklists to more detailed, site-specific protocols. Early analysis indicates that actual preparedness and response are often shaped by staff experience, informal knowledge, and real-time decision-making during emergencies.

Additional emerging themes highlight the importance of communication, staffing flexibility, and adaptive problem-solving during extreme weather events. Staff frequently described coordinating informally across roles, remaining on-site during storms, and making rapid decisions to ensure resident safety. These practices suggest that institutional capacity and workforce conditions play a critical role in shaping disaster response in residential care environments.

This study contributes to planning research by examining how disaster preparedness is operationalized in care-dependent housing systems. It highlights gaps between policy and practice and identifies early implications for improving preparedness planning, institutional coordination, and resilience in residential care settings serving older adults

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Key Words: Disaster resilience, Older Adults, Assisted Living, Tornadoes, Emergency Preparedness

UNHEARD VOICES: RESIDENT PERCEPTION AND THE EXPERIENCE OF PLACE IN FEDERALLY SUBSIDIZED MULTIFAMILY RENTAL HOUSING ENVIRONMENTS

Abstract ID: 2296.0.0.270.2026
Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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Federally subsidized multifamily rental housing plays a critical role in providing shelter for low-income households in the United States. This housing is often sited without protective buffers, directly adjacent to automobile scrapyards, railroad lines, trucking corridors, hazardous waste and chemical manufacturing sites—all in close proximity to public housing. Inside these residences, aging infrastructure, pest infestations, and inadequate maintenance compound environmental stressors, exposing residents to persistent hazards. Subsidized housing often stands at the intersection of external hazards and internal neglect.

While prior research has documented the concentration of subsidized housing in environmentally burdened and socially vulnerable areas, limited attention has been given to how residents perceive and interpret these conditions in their daily lives. This pilot project addresses that gap by centering resident perception as a key dimension of housing and environmental justice.

This study examines how federal housing typology, zoning context, and environmental exposure shape the lived experience of residents across 14 housing sites in Columbus, Ohio, by analyzing how industrial adjacency, property management practices, and neighborhood conditions influence their sense of home. Using an exploratory mixed methods design, the study integrates geospatial analysis with resident surveys and focus groups to capture both measurable conditions and lived experience, while resident insights guide interpretation and application of findings. Early insights reveal that homes function as both refuge and risk: residents value community bonds yet live with persistent anxiety about air quality, noise, and safety.

Indicators from EPA's EJScreen tool, including air pollution, traffic proximity, and socioeconomic vulnerability, operationalize site conditions. These measures, combined with zoning and land-use data, construct a multidimensional exposure profile for each site. Perceptions of housing quality, environmental conditions, safety, management, and neighborhood context are analyzed within a multilevel framework to assess how site-level structural conditions shape individual experiences.

By integrating environmental justice theory with multilevel analysis, this study demonstrates how structural inequalities are lived within subsidized housing and argues that assessments of housing quality must consider environmental context and lived experience alongside affordability and building conditions.

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Key Words: Subsidized housing, resident perception, environmental justice, zoning policy, spatial analysis

WHY ARE MIXED-INCOME LIHTC PROJECTS LOCATED WHERE THEY ARE? EVIDENCE FROM DEVELOPERS' PERSPECTIVE

Abstract ID: 2296.0.0.581.2026
Track 2: Community Development and Housing
Research-in-Motion Presentation, Research currently in process

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Low Income Housing Tax Credits (LIHTC) is considered the primary subsidy for supply of affordable rental housing in the U.S. Empirical evidence shows that LIHTC units are disproportionally located in high poverty concentrated and low opportunity areas and that the majority of LIHTC projects provide units that are fully subsidized without market rate units (McClure, 2019; Kuai, 2024). In response, scholars have called for reforms of LIHTC to promote economic and racial integration of rental units, fostering mixed-income housing in high-opportunity neighborhoods. (McClure, 2019; McClure & Schwartz, 2023).

However, developing mixed-income LIHTC projects in higher opportunity areas presents several challenges. Developers often build LIHTC in high poverty, lower opportunity areas with more units as land is cheaper in those neighborhoods to make the project financially feasible for maintaining affordability (Shamsuddin & Cross, 2019). In contrast, placing mixed income projects in higher opportunity areas entails higher cost on land acquisitions compared with lower opportunity area (Kuai, 2024). Additionally, the financial structure tends to favor LIHTC with fully subsidized units, as a higher proportion of subsidized units in LIHTC may create more tax credits. Despite these constraints, few research has examined where mixed-income LIHTC projects are located across lower versus higher opportunity area and what factors motivate developers to pursue them.

This study aims to address this gap by investigating how and why are mixed-income LIHTC projects developed and located across different market context. Specially, it asks three research questions: (1) What are the characteristics of mixed-income LIHTC projects, including project size, target population, credit types? (2) Where are mixed-income LIHTC projects located in relation to opportunity areas? and (3) How do developers perceive mixed-income LIHTC compared to LIHTC with fully subsidized units?

This research is set in Florida, where the state government has created a Geographic Opportunity Map in 2016 that designates census tracts area to encourage developers to propose LIHTC in higher opportunity areas. Using Florida Housing Data Clearinghouse (FHDC) database, I first conducted descriptive statistics of mixed income LIHTC projects and examine the spatial distribution of mixed income LIHTC projects relative to state-designated opportunity areas. Based on the initial results from these descriptive statistics, I will further conduct semi-structured interview developers of mixed-income LIHTC projects using a purposive sampling strategy.

The initial result from descriptive statistics shows that mixed-income LIHTC projects only account for a fairly small portion of total LITHC projects (8.44%) and their distributions vary greatly across counties. Notably, among large counties, Miami-Dade County, despite having the largest number of mixed-income LIHTC projects in Florida (31 projects), has a relatively low proportion of such projects (9%) compared to its total LIHTC developments. In contrast, counties such as Orange, Duval, and Hillsborough exhibit higher proportions of mixed-income LIHTC projects, at approximately 14%, 14%, and 13%, respectively. The results may suggest that local policies context may play an important role in shaping developer' motivations. Further interviews with developers will be conducted to explore underlying factors.

This research aims to provide new evidence on how mixed income LIHTC projects are spatially distributed and factors that shape developers' motivation to purse such projects across different market context. This study will

also offer suggestions on how LIHTC policies can better incentivize mixed-income LIHTC in higher opportunity areas while maintaining financial feasibility.

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Key Words: LIHTC, Mixed-income Housing, Opportunity Areas

Track 3 – Environmental Planning and Resource Development

Track 3 Pre-Organized Session Summaries and Abstracts for the Sessions

CO-PRODUCING JUST URBAN GREEN INFRASTRUCTURES AND RESILIENCE: COMMUNITY PREFERENCES, KNOWLEDGE, LABOR, AND MOBILIZATION

Abstract ID: 2294.0.0.738.2026
Track 3: Environmental Planning
Pre-Organized Session Summary
Session Includes: 2298.0.0.597.2026, 2298.0.0.293.2026, 2298.0.0.424.2026, 2298.0.0.393.2026, 2298.0.0.707.2026

Nidhi Subramanyam [University of Toronto] nidhi.subramanyam@utoronto.ca, organizer

This session examines how environmental knowledge and ecosystem services are co-produced in green infrastructure (GI) and green stormwater infrastructure (GSI) planning by actors whose labor, expertise, preferences, and experiences are often invisibilized in planning processes. Using cases from Canada, Ecuador, Sweden, and the US, the papers examine how maintenance workers, citizen scientists, residents, and multi-scalar stakeholder networks shape GI/GSI planning processes and outcomes. Case studies reveal how institutional contexts and community engagement models structure participation, shape stakeholder visibility and empowerment, and the ensuing environmental benefits. Together, the papers offer critical lessons for environmental planners seeking to address whose knowledge counts, whose work sustains urban GI/GSI and through what pathways, and how planning might better recognize and recompense marginalized communities as co-producers of just and durable environmental futures.

Learning Objective(s):

- Critically examine who is the community and what counts as community engagement in green infrastructure planning across diverse contexts
- Identify how diverse communities shape green infrastructure planning through their labor, organizing, and situated and embodied knowledge
- Understand how community and maintenance worker engagement in green infrastructure planning advances environmental justice

A WORKER-CENTERED VIEW OF ENVIRONMENTALLY JUST GREEN STORMWATER INFRASTRUCTURE AND RESILIENCE PLANNING

Abstract ID: 2298.0.0.597.2026
Track 3: Environmental Planning
Individual Paper Presentation

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North American cities are rapidly expanding green stormwater infrastructure (GSI) to manage stormwater—improve water quality, reduce run-off, and advance flood resilience, and deliver additional co-benefits. However, this infrastructural expansion is occurring without commensurate investment in the resources, labor, and organizational capacity required to maintain these infrastructures over their lifespan. Inadequate maintenance can compromise GSI performance, reduce its social license, and reproduce environmental inequities when historically under-greened neighborhoods receive lower quality upkeep or are expected to assume voluntary maintenance burdens (Rivera & Hendricks, 2022). To address these resource- and capacity-related constraints, several cities have instituted novel organizational models involving social enterprises, non-profits, and citizen groups to maintain GSI and develop "green jobs" targeted at structurally disadvantaged residents.

This paper focuses on these emerging models for governing GSI maintenance in Toronto and Washington, DC to ask: who does the work of maintaining GSI and through what arrangements? What are the risks and precarities are built into that work and how are they addressed by GSI plans and policies? How does maintenance workers' situated and embodied knowledge shape GSI planning and design? Finally, how might a focus on maintenance work allow us to build just infrastructures and just resilience?

I draw on the frameworks of environmental justice (EJ)—particularly work on procedural justice in GSI planning (Zuniga-Teran et al., 2021), the labor underpinnings of the EJ movement (Pulido, 1996), and infrastructural labor (Stokes & De Coss-Corzo, 2023), to analyze how labor is addressed in GSI planning and with what implications for EJ. The paper draws on primary data obtained through field visits to GSI sites in neighborhoods with varying levels of socio-economic vulnerability in the two cities, and 37 interviews with neighborhood residents about their perceptions and expectations of GSI maintenance; maintenance workers and program managers; and planners and technical experts, conducted between 2024 and 2026, supplemented with a detailed review of relevant plans, policies, and maintenance program materials.

Findings show that a significant share of GSI maintenance in both cities depends on the labor of marginalized and equity-deserving groups recruited through social enterprises, non-profits, or gig-based arrangements. Although these models create paid training, ancillary supports, and pathways into environmental jobs, they also reproduce uneven precarity because work is seasonal or insecure, provides limited benefits, entails long commutes and traffic exposure, exposure to hazardous debris, and heat stress, often without adequate access to the social infrastructure that enables outdoor resilience-building work. In both cities, many occupational risks are downloaded to workers or intermediary organizations or addressed in ad hoc ways. Workers' embodied knowledge about neighborhood dynamics, safety, and which designs fail rarely shape GSI design or planning in substantive ways. Their influence is largely confined to maintenance reporting and indirect feedback through supervisors.

The paper argues that taking maintenance seriously shifts just resilience debates from simply delivering infrastructure to treating resilience as ongoing work (Johnson et al., 2023). It also expands conceptions of justice in GSI planning beyond distribution and consultation to include considerations of whose work counts, whose bodies bear the burden, and whose knowledge gets to shape the city (Riedman, 2021). The paper contributes to planning scholarship by bringing infrastructural labor into debates on GSI and environmental justice, and by showing why

dignified work, fair compensation, social supports, and worker voice should be treated as central to building just and durable urban resilience through GSI.

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Keywords: Green Infrastructure, Environmental Justice, Maintenance, Infrastructural Labor, Green Jobs

PLANNING FOR COMMUNITY- AND CLIMATE-RESPONSIVE GREEN INFRASTRUCTURE: SOCIAL COHESION IN COMMUNITY-LED TREE PLANTINGS

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Track 3: Environmental Planning
Individual Paper Presentation

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As cities face intensifying climate risks, including extreme weather, ecological degradation, and uneven environmental burdens, green infrastructure has become central to planning and adaptation (Seidu et al., 2025). Yet planning and policy discussions often emphasize canopy coverage, stormwater retention, or other performance metrics while paying less attention to the social relations that enable green infrastructure to be initiated, maintained, and collectively valued (Hoover et al., 2023). Closer attention to how social processes shape the implementation and outcomes of urban greening efforts can help advance this understanding. This study presents a socio-spatial analysis of community-led tree plantings in the City and County of Honolulu (Oʻahu, Hawaiʻi, USA) to examine how green transitions intersect with social cohesion. Using a geolocated dataset of 1,193 resident- and association-led plantings (2018-2023), we apply a multi-dimensional coding system to analyze participant comments and map socio-ecological patterns across four domains: participation mode (agency), planting motivation (values), stewardship outcomes (care), and planting context (spatial setting). Although comment-based and non-exhaustive, the dataset reveals patterns of participation, appreciation, and community betterment, underscoring social cohesion as a critical foundation of green infrastructure. Motivations centered on food sovereignty, cultural heritage, and ecological restoration, for example, reveal how civic ecology practices reinforce community identities and everyday solidarities, aligning with civic ecology scholarship indicating that localized stewardship activities can cultivate shared identities, relational ties, and adaptive capacity (Krasny & Tidball, 2015). A socio-economic overlay shows that residential plantings occur across neighborhood types, with limited evidence of structural barriers to participation, suggesting broad participation in greening efforts, and adds a nuanced understanding to existing studies (e.g., Yeager et al., 2023). This research demonstrates an approach for examining the social dimensions of green transitions by integrating qualitative sentiment with spatial data to make visible how community relates to urban ecological change. With climate change amplifying vulnerabilities, attention to these social dimensions is essential for ensuring that green infrastructure is not only implemented, but sustained over time (Campbell-Arvai & Lindquist, 2021). Community-led greening in Honolulu illustrates how local care practices, shared motivations, and cultural values shape the social dimensions of green transitions beyond what canopy metrics alone reveal.

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Keywords: Social Cohesion, Community-Led, Tree Planting Program, Green Infrastructure

RESIDENTIAL TREES AND URBAN GREENING: A COMPARATIVE ANALYSIS IN CHICOPEE, MA AND UPPSALA, SWEDEN

Abstract ID: 2298.0.0.424.2026
Track 3: Environmental Planning
Individual Paper Presentation

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City leaders worldwide are engaging in urban greening campaigns to address climate change and improve quality of life for residents, and ambitious tree planting programs have emerged as a prominent form of this municipal practice (UNECE 2025). Importantly, privately-owned residential parcels occupy the most land in many urban areas (e.g., Roman et al. 2017). Urban form and cultural norms can, in turn, differ substantially in cities around the world, and these differences can directly impact urban tree distribution and management practices (Smart et al. 2020). In light of these factors, it is unclear if there is enough plantable area in urban residential neighborhoods to achieve citywide canopy cover goals (Lund and Nordh 2024), and these challenges need to be understood in a place-based context.

This study seeks to understand how residential tree species norms and planting potential vary across different cultural settings by comparing two mid-sized cities engaged in efforts to expand tree canopy cover: Chicopee, Massachusetts (USA) and Uppsala, Sweden. Our study compared the existing trees in single-family and multi-family neighborhoods built during different historical periods. Methods included field inventory of tree species, type, and size, as well as remote sensing of typical parcel sizes. The inventory and associated analysis include a classification of trees by functional categories (i.e., large deciduous shade tree; fruiting/flowering tree; conifer; hedge), tree height and width, and average number of trees per site. This quantitative analysis is supplemented by plan and section drawings that illustrate the typical size and shape of residential parcels and surrounding neighborhoods, as well as the typical height relationship of trees and residential buildings.

Initial results in multi-family neighborhoods in our case study cities showed some differences related to the prevalence of flowering trees and shade trees. However, these differences were more pronounced in single-family neighborhoods: shade trees were much more common in the US case study city while small fruiting and flowering trees were much more common in the Swedish case study city, despite the two municipalities being in a similar climate zone. These differences foreground the importance of cultural dimensions related to tree species preferences when planning urban greening programs. A second ongoing phase of the study is to use GIS and remote sensing to analyze the potential to increase tree planting in these case study areas based upon urban form and availability of plantable space.

We will report on findings from the aforementioned phases of this study. The insights from this research will foreground implications for urban planning practitioners and scholars (e.g., Eisenman et al. 2025), while also addressing the importance of cultural dimensions related to tree species preferences, urban form, and history.

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Keywords: Urban Greening, Urban Forestry, Green Infrastructure, Comparative Analysis, Tree Planting Initiatives

ENVIRONMENTAL ENGAGEMENT, CITIZEN SCIENCE AND URBAN GREENERY: LESSONS FROM A COMMUNITY TREE INVENTORY PILOT

Abstract ID: 2298.0.0.393.2026
Track 3: Environmental Planning
Individual Paper Presentation

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Citizen science is a participatory approach that engages volunteers in data collection and broader research efforts. The approach is increasingly called upon globally as a mechanism to engage people in spatial planning (Goosse, Lamker, & Devos, 2025), as well as in broader environmental research and action (Bonney et al., 2009; Danielsen et al., 2024; Fritz, See, & Grey, 2022). Urban greenery scholars and practitioners have deployed citizen science to plant trees, conduct tree inventories, monitor tree survival, and detect invasive plants (Roman et al., 2017; Roman, Campbell, & Jordan, 2018). The scholarly literature on the intersection of citizen science and urban forestry has focused mainly on data quality (for example, agreement between experts and volunteers on species identification and tree measurements), species distribution, apps and platform technology selection, volunteer engagement, and motivation to participate (Dujardin et al., 2022; Johnson et al., 2018; Velasquez-Camacho et al., 2024). However, not much attention has been paid in the literature to the mobilization of citizen science for urban forestry objectives in the global South, where research has centered on citizen science and urban greenery platform use (Richardson & Potgieter, 2024), non-greenery initiatives (Pateman et al., 2025), or non-urban forests (Chandler et al., 2012).

In this paper, I draw from fieldwork conducted in Galápagos, Ecuador between 2023 and 2025, which included interviews as well as the piloting of a tree inventory in 2025 engaging citizen scientists. Data analysis shows that current conceptualizations of citizen science in urban forestry, based mostly on experiences from the global North, are not consistent with how institutional milieus and volunteerism impact urban forestry efforts in the global South. Two key findings emerge from this research.

First, the current literature on tree inventories makes assumptions about the motivations of governments and non-government organizations which do not hold in Southern contexts (Restrepo-Mieth, 2025). This paper shows that low capacity and engagement from local government departments and non-governmental organizations impedes the ability of local actors to carry out and make use of inventory data even if an inventory is designed with input from government agencies, non-government organizations, and residents; context-specific training materials are provided; trainings are carried out; and all tools to carry out the inventory are provided (open-access platform-based survey that can be used offline, measuring tapes, etc.).

Second, while the literature has already identified the demographic profile of those more likely to engage in urban forestry efforts in places like the U.S. (highly educated, female, white, and higher income individuals) (Johnson et al., 2018), motivations for participation (personal interest, societal contribution, learning opportunities) (Crown et al., 2018), and strategies for retention (Johnson et al., 2018; Lotfian, Ingensand, & Brovelli, 2020), these findings are not necessarily transferrable to the global South. Most volunteers in this research were members of an organized group (the Scouts) and motivated by learning opportunities, yet group organization dynamics weighted heavily when it came to securing volunteer retention (Scout leadership, rather than members, were highly interested in the project). While the project was able to achieve some success when it came to generating awareness among residents about trees in the urban environment and developing technical skills, broader objectives of eliciting environmental governance were not successful. Combined, these findings highlight the fragility of citizen engagement in urban tree inventories when there is an absence of interest from a broader ecosystem of actors that can support these efforts and make both process and results meaningful.

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Keywords: Urban greenery, tree inventory, citizen science, global South

ITERATIVE LARGE DATA RESEARCH DESIGN: INTEGRATING CONTENT ANALYSIS, NETWORK MAPPING, FIELD OBSERVATIONS, INTERVIEWS AND RELATIONSHIP-BUILDING

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Track 3: Environmental Planning
Individual Paper Presentation

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Nature-based Solutions (NbS) and Green Infrastructure (GI) have amassed momentum and stakeholder mobilization in cities, due to efficiency or cost-effectiveness (Lafortezza et al., 2018), human health impacts (Kondo et al., 2018), and their multi-functionality and multi-scalarity (Demuzere et al., 2014; Meerow & Newell, 2017), all leading to a pivotal role in building urban resilience. In Richmond, VA, nonprofit, private, governmental, and civic organizations have coalesced around urban greening as a response to the challenges of heat stress, urban flooding, CSOs, food insecurity and inequitable greenspace access (Syal et al., under review). Green infrastructure planning is a multiscalar effort, and strategically planning and governing GI networks (Benedict & McMahon, 2006; Monteiro et al., 2020) requires moving away from sector-specificity (Pauleit et al., 2019) to a systems approach (Hansen & Pauleit, 2014; Meerow et al., 2016). There is extensive documentation of GIS' role in multiscalar GI data collection and analysis (Turner, 2005; Tzoulas et al., 2007; Kazmierczak & Carter, 2010; Mousa et al., 2025; Ciminelli et al., manuscript under preparation). But the strategies for multiscalar stakeholder mobilization are not as streamlined in execution. It is theoretically complex and institutionally demanding (Folke et al., 2005; Ostrom, 2010; Innes & Booher, 2010; Guerrero et al., 2015; Chaffin et al., 2016), hampered by power imbalance, trust deficit, and exclusion (Ansell & Gash, 2008; Newig & Fritsch, 2009; Meerow & Newell, 2019; Greenberg et al., 2024), connectivity challenges, social capital gaps, scale mismatch, and other structural limits of network governance (Provan & Kenis, 2008; Brondizio et al., 2009; Wyborn & Bixler, 2013; Sørensen & Torfing, 2021), and an underemphasis on stakeholder engagement (Xiao et al., 2023). Ostrom's (1990) thesis of community-based self-governance as a primary mobilization strategy for sustainable resource governance has been supported time and again in related disciplines (Reed, 2008; Anguelovski et al., 2022), with social network analysis being a powerful diagnostic tool for identifying which actor relationships and network patterns best support collective action (Provan & Kenis, 2008; Bodin & Crona, 2009; Prell et al., 2009; Brondizio et al., 2009; Ernstson et al., 2010; Guerrero et al., 2013; Lienert et al., 2013; Bodin, 2017), and the expectations of true collaboration and its adaptive nature documented well (Innes & Booher, 2004). Drawing from these scholars, the Urban Green Equity and Resilience Project (UGERP) took a systems perspective to exploring, documenting, sharing, and analyzing the applicability of Social Networks for stakeholder mobilization around GI integration in Richmond, VA. This paper discusses our- highly iterative- process of stakeholder identification, network mapping, and interviews to strategize integrated GI planning, in partnership with our regional planning agency, PlanRVA, since 2023. Starting with just >50 publications and >60 actor websites to review, our content analysis snowballed to produce a network map (of actors, projects and partnerships) with, currently, 946 actors and 1711 interactions, all within City of Richmond alone. We identified the 50 most central actors in the network, and have already interviewed 42 individuals across 30 city, state, or regional government agencies, and nonprofit, civic, private organizations, and universities. In addition to adding crucial projects and relationships to our network map, these interviews are analyzed on MAXQDA using a codebook with parent, sub-codes and grandchild codes fine-tuned during the interviews. A second tier coding will be conducted on all transcripts, using concepts from SNA, SES, and Complex Adaptive Systems, to thoroughly examine their conceptions, knowledge, and approaches towards Resilience. This is geared towards developing citywide public engagement and strategically supporting these actors.

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Keywords: green infrastructure, urban resilience, social ecological systems, mixed methods

RECONCEPTUALIZING PROPERTY, PLANNING, AND DECISION-MAKING IN A DYNAMIC COASTAL ZONE

Abstract ID: 2294.0.0.710.2026
Track 3: Environmental Planning
Pre-Organized Session Summary
Session Includes: 2298.0.0.338.2026, 2298.0.0.639.2026, 2298.0.0.413.2026, 2298.0.0.170.2026, 2298.0.0.549.2026

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This session focuses on coastal climate adaptation through reconceptualized property rights, expanded adaptive and hazards planning frameworks, and greater insight into individual/community decision-making about whether to retreat or remain in areas with higher density as communities confront public expectancies and loss from climate-change induced hazards, particularly accelerated sea level rise (SLR). We bring together five empirical analyses to assess this multi-faceted issue, including: a meta-analysis to generate new conceptions of coastal property rights that address value expectations while offering legal flexibility; a proposed and tested multi-hazards approaches to the PIRS™ methodology; evolving SLR adaptation planning including resistance, resilience, and retreat; community loss and tolerance to chronic coastal flooding events; and SLR adaptation for urban centers. Collectively, these offer new theories and methods to advance climate adaptive planning in coastal zones.

Learning Objective(s):

- New methodological application and property rights conceptualization in adaptive planning for coastal zones

- **THE PARTICULAR PROPERTY PROBLEM IN THE ERA OF ACCELERATED SEA LEVEL RISE**
  Abstract ID: 2298.0.0.338.2026
  Track 3: Environmental Planning
  Individual Paper Presentation

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Coastal property is disappearing due to significant erosion and coastal squeeze caused by human-built structures. Climate-induced migration is anticipated and already occurring in various regions worldwide (Vince 2022; Siders et al. 2019). The decision to leave a community and one's property when facing sea level rise (SLR) depends on multiple factors, including whether it is intentional and anticipatory or induced and reactive (Balachandran et al. 2021). Retreat from SLR poses multiple challenges for property rights, particularly within the U.S. model of property ownership built on the English common law system of real and personal property classes.

In the U.S. model, real property has a sense of certainty, with fixed spatial boundaries and a bundle of rights that dictate the land's use(s). Water rights, in contrast, are more malleable and dynamic as use rights ("usufructuary") that carry an expectation of use through land ownership (riparianism) or priority (appropriation) and a probabilistic projection rather than volumetric certainty (Craig et al. 2024). Land ownership's fixedness is an illusion because it is subject to change through (1) earth processes and climate-related events, and (2) societal constraints through planning, zoning, taxation, insurance, and markets.

Retreat from SLR presents new questions about real property rights. Who will pay for the lost property, and what is compensable? When should society provide indemnification for coastal property affected by land use controls that permitted the now-imperiled development? Given the societally constructed nature of property rights, how might they be more legally flexible, such as moving with climate refugees? What are the expectations of property owners, how do these vary based on economic status and cultural or historical ties to the land, and how can we reimagine our conceptions of value and commodification amid a growing sense of individual legal entitlement?

Responding to Shi et al.'s (2025) call "to recognize the importance of property rights in climate adaptation" (p. 2), we begin to address these profound property questions through a systematic literature review and meta-analysis of U.S. case law, law reviews, policy analyses, judicial commentaries, journal articles, and book chapters to generate a set of initial theories and responses to this particular problem of real property in an era of climate change. We identified suggested ways to operate within the existing legal landscape through gradual shifts, as well as methods for working outside this landscape or creating new frameworks. Additionally, we classified the conundrums and legal challenges—such as Constitutional, property, and tort law—to doing so. Drawing on the dynamism of water rights as a new lens for the fixed nature of traditional real property, we present findings and recommendations to start a new discussion in planning law and property rights in this era of accelerated SLR.

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Keywords: property rights, sea level rise, climate adaptation, retreat

ASSESSING AND PLANNING FOR MULTIPLE HAZARDS: NEW DIRECTIONS FOR THE PIRS™ METHODOLOGY

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Track 3: Environmental Planning
Individual Paper Presentation

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The risks posed by natural hazards continue to increase. Many places are exposed to more than one type of hazard, which can sometimes occur in close spatial and temporal proximity (Kwon et al., 2026). These types of compound hazard events can be independent and overlap out of chance – in 2021, California was struck by a drought-enhanced wildfire, which immediately coincided with a heavy rainstorm event – or there may be a causal relationship, such as in the case of the U.S. Pacific Northwest, which is susceptible to megathrust earthquakes that can lead to tsunamis. In many cases of hazard interactions, compounded consequences can exhibit a one-plus-one-greater-than-two pattern (Liu et al., 2016).

It has been increasingly recognized among planning and disaster scholars that plan integration – the extent to which the ecosystem of planning documents is consistent for a particular goal (Berke et al., 2019; Yu et al., 2025; Malecha et al., 2019; Woodruff & Meerow, 2022) – can play an important role in strengthening community resilience to natural hazards, whereas its absence can substantially weaken it. Given the increasingly severe impacts of multiple natural hazards and the potential for effective plan integration to help mitigate them, it is critical that planners account for multi-hazard resilience throughout their community's network of plans. Our study addresses this gap by (1) extending the Plan Integration for Resilience Scorecard™ methodology to account for multiple hazards and (2) testing the new approach in the vulnerable cities of Beaumont and Port Arthur, Texas. Flooding, wildfire, and extreme heat hazards are systematically and spatially evaluated to assess their individual and collective relationships with the cities' plans.

Results show that the parts of the cities highly exposed to multiple hazards cluster along the Neches River. Encouragingly, the cities' disaster- and infrastructure-oriented plans, such as Beaumont's Emergency Management Plan, are well-integrated for vulnerability reduction in most cases, thus strengthening the community's resilience toward multi-hazards. However, development-oriented plans, such as Beaumont's Development Strategies Plan, contain a considerable number of policies that exacerbate hazard vulnerability which may collectively overwhelm the more limited resilience-strengthening policies and weaken the community's multi-hazard resilience.

Knowledge such as this is significant for planning practitioners, enabling the tracking of community resilience and performance regarding plan integration vis-à-vis multiple hazard types. It also helps identify policies that contribute to resilience and those that work against it, supporting practitioners in refining their plan networks and more effectively managing multiple hazard threats.

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Keywords: Multiple Hazards, PIRS™, Community Resilience, Hazard Vulnerability

RESISTANCE, RESILIENCE, RETREAT: EVOLVING SEA LEVEL RISE ADAPTATION PLANNING IN FLORIDA

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Track 3: Environmental Planning
Individual Paper Presentation

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Florida is often called climate change ground zero in the United States, especially in relation to the impacts of sea level rise (SLR). More than 50% of US residents who will be impacted by sea level rise this century live in Florida and three of Florida's coastal cities often make the list of top 10 most economically impacted cities in the world. By the end of the century, more than 300,000 homes will have been destroyed, millions of people displaced, and dozens of municipalities will risk bankruptcy as their tax base gets permanently inundated.

Florida's stance toward planning for sea level rise planning has been evolving in the first two decades of the 21st century. In 2009, in a bill that all but eliminated Florida's growth management approach, the Florida legislature allowed localities to establish Adaptation Action Areas to designate specific areas at risk of SLR for planning, policy, or investment actions. In 2015, the state passed the Peril of Flood Act which went a step further and required that all coastal counties and municipalities incorporate strategies to address sea level rise into their coastal elements of their comprehensive plans. Most recently, in 2021, the state initiated the Resilient Florida program which allocated nearly $1 billion in grants to local governments and regional entities to undertake sea level rise adaptation projects ranging from vulnerability studies to implementation of hard infrastructure projects. The grants program has been funded every year since at different but substantial levels. The Florida Department of Environmental Protection also created a rule requiring that any project using state funds must develop a Sea Level Impact Projection study on a 50-year time horizon.

In this context of increasing commitment and mandates at the state level, local governments have responded by planning for SLR along a spectrum from resistance to resilience to retreat. In this paper, we draw on a survey of coastal planners and managers across Florida at two time periods—2019 and 2026—and an assessment of comprehensive plans in 2015, 2019 and 2024 to assess the evolution of planning for sea level rise in the state. We find that localities have responded unevenly to the state mandates and funding, but in general they have increasingly moved to more sophisticated, informed, and progressive planning responses. While early sea level rise planning was incremental and no-regrets with an orientation toward protection and resistance, more recent efforts have moved toward more complex views of resilience and increasingly even retreat. This paper traces this evolution in planning through plan analysis and survey results to explore how barriers to SLR adaptation planning have been addressed, what more progressive strategies have been deployed, and drivers of this evolution over the last decade. We identify theoretical implications for planning with uncertainty, anticipatory retreat, and climate change adaptation.

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Keywords: resilience planning, climate adaptation, sea level rise

THE PRICE OF PARADISE: HOW COMMUNITIES TOLERATE CHRONIC COASTAL FLOODING IN RURAL NORTH CAROLINA

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Track 3: Environmental Planning
Individual Paper Presentation

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Sea level rise (SLR) poses a growing threat to the livability of coastal communities, leading to many projections of out-migration in the coming decades. However, communities' experiences with and responses to SLR-driven flooding remain poorly characterized, especially in rural areas. Here, we investigate flooding tolerance in Down East Carteret County, North Carolina, a region of 13 unincorporated communities experiencing chronic coastal flooding. We conduct thematic analysis based on interviews with 36 residents and local experts from June 2024 to May 2025 triangulated with direct observations and planning documents. Community members reported wide-ranging impacts from chronic flooding to property, roads, infrastructure, children, and other emerging areas. Despite these impacts, 14 of 18 households wanted to stay forever, calling it "the price of paradise." Desires to stay reflected deep attachment to place and resistance to community change, especially an increase in second homes and in-migration. Chronic flooding concerns interacted with considerations of emergency services, aging and health care needs, and more in shaping migration intentions. Leveraging their local knowledge, residents tolerated flooding cognitively, behaviorally, structurally, and institutionally, though they also recognized limits to that tolerance. Collectively, our findings shed new light on the extent to which coastal residents tolerate chronic flooding, especially via non-structural strategies. We contribute to a growing literature questioning the inevitability out coastal out-migration, and we highlight how household and community characteristics moderate responses to chronic flooding. In a context of perceived community and landscape change, flooding tolerance and staying in place hold social significance beyond personal safety and property values. To build trust and support residents' aspirations to stay or leave, resilience planning in rural coastal areas can address uncertainty about government action and supplement existing flooding tolerance strategies.

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Keywords: adaptation, flooding, rural, immobility, qualitative

SEA LEVEL RISE ADAPTATION FOR URBAN CENTERS: THE CASE OF WAIKĪKĪ

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Track 3: Environmental Planning
Individual Paper Presentation

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Coastal communities across the globe are being challenged by accelerated sea level rise (SLR). SLR response can be broadly categorized under the "protect, accommodate or retreat" (PAR) framework, described in one of the first IPCC reports (Dronkers et al. 1990). Almost forty years later, as the impacts of SLR are rapidly coming to fruition, cities are testing and implementing adaptation options. Miami Beach, for example, raised streets, and Boston has flood proofed buildings along the harbor. With many possible adaptation actions and pathways, the reality of public coffers is often the driver of adaptation choices (Hashida and Dundas, 2024; Moser et al. 2019). There is a growing body of literature on the long-term costs and tradeoffs of adaptation (Setter et al., 2023; Tavares et al., 2026). This study adds to this literature as well as fills in important gaps in knowledge specific to groundwater inundation within major urban centers.

Using Waikīkī, O'ahu as a case study, we assess the cost of four distinct adaptation pathways across the PAR framework. Waikīkī is an area of historical significance in Hawai'i, and was engineered into a visitor destination through fill and beach nourishment. As a baseline understanding of affected assets, we spatially assess the impacts of 2, 4 and 6 feet of SLR between now and 2100 to buildings (commercial, residential, hotel, public services), utilities (water, stormwater, electric), and roads (including sidewalks). We adopt the idea of adative management "triggers" and determine a set of criteria for interventions, identified both spatially and temporally. For example, roads are assumed to reach a trigger once they become chronically impassable. We select four adaptation pathways under the three different SLR futures, for a total of twelve scenarios. We chose our adaptation pathways based on recent state and city planning efforts for Waikīkī, as well as through stakeholder workshops.

Under the first pathway we assume that all future impacted areas of Waikīkī are proactively, today, retreated and restored to green space. For 2 feet of SLR, this is a small area of the west end of the district. For 6 feet of SLR, this is the entirety of Waikīkī. The second pathway leads to the same areas of green space but with actions taken from now to 2100. The third pathway embraces accommodation, where viable existing buildings are adapted through a combination of wet floodproofing, raising first floor services, and creating new external and internal circulation; roads and underground utilities are raised and stormwater is managed through pumping systems. The fourth pathway makes the dramatic assumption that all of Waikīkī is rebuilt today on higher ground. We develop a spatially-explicit adaptation action cost model using data on land values, construction and demolition costs, utility and road removal and relocation costs, and lost property taxes.

We find that the cost of proactive retreat or rebuilding are astronomically high ($60 and $40 billion, $2024, in pathways 1 and 4 under 6 feet of sea level rise). For pathway 1 the high cost is primarily due to land acquisition and in pathway 4 to the cost of new construction. Delaying adaptation actions until trigger events actually occur substantially reduce their economic cost in pathway 2. However, the lowest cost pathway is 3, which is under $2.5

billion with 6 feet of SLR. The relative affordability of this pathway comes from leveraging existing buildings. Overall, we find that the cost of utility and road adaptation are dwarfed in comparison to building-related investments; however the timing of public investments are critical to success. We present this information in the context of broader considerations for the cultural and recreational importance of Waikīkī, where stakeholder response has cautioned that in situ adaptation must also be contemplated in relationship to impacts to the nearshore and, in particular, Waikīkī's world famous surf.

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Keywords: Sea Level Rise, Climate Adaptation, Scenario Planning, Cost Assessment

WATER PLANNING UNDER POLYCRISIS: TOWARD MORE JUST, RESILIENT, AND INTEGRATED WATER FUTURES

Abstract ID: 2294.0.0.834.2026
Track 3: Environmental Planning
Pre-Organized Session Summary
Session Includes: 2298.0.0.101.2026, 2298.0.0.160.2026, 2298.0.0.601.2026, 2298.0.0.694.2026, 2296.0.0.342.2026

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This panel brings together papers on rights of nature, water and sanitation infrastructure, wildfire-related water system performance, lead infrastructure replacement, and Indigenous water governance to examine how planning practice might better respond to what recent scholarship has described as a global water polycrisis. Although water is indispensable to life, many of the world's most significant rivers are also among the most degraded and contaminated. From a human rights perspective, these challenges include the material and institutional conditions shaping access to safe, reliable, and affordable water. In both the Global South and the Global North, communities face inadequate infrastructure, toxic exposures, uneven regulatory protections, and service disruptions. The session examines how these dynamics are reshaping debates in water planning and pushing the field toward new ways of understanding and governing water in diverse contexts.

Learning Objective(s):

- Understand how contemporary water crises emerge through overlapping ecological, social, infrastructural, and economic pressures.
- Examine how rights of nature, environmental justice, Indigenous understandings of water, infrastructure governance, and crisis response are reshaping broader debates in water planning.
- Learn how more integrated and justice-oriented approaches to water insecurity can be advanced across diverse contexts.

POLITICAL SENTIMENT AND PERCEPTION OF WATER SYSTEM PERFORMANCE IN CRISES: EVIDENCE FROM THE 2025 LOS ANGELES WILDFIRES

Abstract ID: 2298.0.0.101.2026
Track 3: Environmental Planning
Individual Paper Presentation

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Attribution of blame for climate-induced crises is increasingly politicized and polarized. Accordingly, in the wake of the January 2025 Los Angeles fires, a dramatic shift in perception related to water systems and their ability to fight wildfires appears to have occurred. At least in the short-term, heightened local policy makers and public discourse regarding perceived water system shortcomings appeared to be heavily influenced by partisan politics and media sources. This adds to the number of planning crises facing water supply systems, alongside broader climate, water quality and economic sustainability threats.

In particular, unique complaints arose regarding the role and perceived failure of fire hydrants "running dry," and a broader perception developed that water systems should have provided more flow at high pressure than was delivered. Our previous research has documented how heightened public attention and rising expectations directed toward water supply systems following the 2025 fires have been fueled in part by misinformation, a fractured media environment, and the related politicization of narratives of many if not all major events in U.S. society.

Natural disasters are increasingly being studied not just as physical or environmental phenomena but as political events, in which media narratives and public discourse shape how responsibility is interpreted. As a result, partisan identity has been demonstrated to be a key determinant of post-disaster blame attribution. Individuals frequently rely on party labels as heuristics for blame attribution, being more likely to blame those officials labeled as out-partisans than those labeled as co-partisans in lieu of evaluating complex policy judgements and assessments of performance. Empirical cases illustrate these dynamics, including after Hurricane Katrina.

In this presentation, I will primarily present on a study we conducted which is the first to empirically examine widespread public opinion regarding the role of water management in the LA fires. We leverage a unique, representative survey which we co-designed a module for, and was conducted by our collaborators at USC in February-March 2025 of 1,312 Los Angeles County households. The data allows us to analyze the degree to which they attribute blame for the wildfires to poor water management and which specific household-level factors—including disaster experience, socioeconomic, demographic, political, and behavioral elements— influence this attribution.

We particularly examine the role which politically-partisan cues have on blame attribution following crises events. I will secondarily present on initial results from a follow-on study with the same survey panel, in particular drivers of response to the more-detailed question "How well do you think Los Angeles' water systems did in responding to the January 2025 wildfires?"

From our analysis of the first round of survey data, we descriptively find that water management was the fifth most common factor perceived to be responsible for the fires, and several household-level characteristics correspond with this blame attribution. Yet when we further examine potential explanations for who placed high blame on water management using multivariate regression techniques, we find that political affiliation was by far the most powerful explanatory factor. Attribution of the fire to severe weather caused by climate change and household income were also influential, but less so.

I will conclude the presentation by discussing implications for the disaster blame and perception literature as well as for water infrastructure management in dealing with both climate change and the increasing politicization of blame.

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Keywords: Water, Planning, Fire, Adaptation, Perception

CLEAN WATER, TOXIC WASTE: LEAD LINE REPLACEMENT PROGRAMS AND THE LIMITS OF OUR JUST TRANSITION

Abstract ID: 2298.0.0.160.2026
Track 3: Environmental Planning
Individual Paper Presentation

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US cities increasingly integrate justice into climate and environmental planning, developing policy tools that aim to address access to clean and affordable water (Diezmartínez & Short, 2022). This paper analyzes the overlooked ethical dimensions of the urban just transition to clean water infrastructure through a global environmental justice lens. Lead service line removal (LSLR) is an urgent health and infrastructure priority in local water planning across US cities, yet the hazardous waste disposal practices associated with LSLR programs present a complex and underexamined challenge. LSLR implementation represents an environmental justice victory following decades of advocacy demanding the removal of toxic lead infrastructure. However, removed lead lines may enter global scrap metal markets with insufficient oversight or tracking (a dynamic Togami et al. (2025) characterize as waste colonialism) exposing vulnerable communities to environmental and health risks both locally and abroad.

Addressing this tension requires expanding the frontiers of urban sustainability and justice beyond municipal boundaries (Wachsmuth, 2016). Focusing on Pittsburgh, PA, home to a nationally recognized LSLR program, this paper uses an urban just transition framework combining lead line tracing, regulatory analysis, and qualitative research to map the movement of these hazardous materials through global waste streams. By foregrounding waste management as a critical but often ignored dimension of local water policy, this paper contributes to actionable agendas that address global harm within urban just transition planning. In alignment with environmental justice principles and building on calls to expand the frontiers of urban sustainability (Wachsmuth, 2016), we argue that local water planning must broaden its conception of justice and equity to account for the global implications of allegedly local clean water policies.

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Keywords: human right to water, environmental justice, clean water, water infrastructure, waste colonialism

NAVIGATING WATER AND SANITATION IN AN URBANIZING AMAZONIA: THE CASE OF BECO NONATO, MANAUS

Abstract ID: 2298.0.0.601.2026
Track 3: Environmental Planning
Individual Paper Presentation

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Cities and towns in the Amazon are dramatically different from cities and towns in other parts of Brazil, Peru, Colombia, and other countries—and so are the infrastructure systems they currently host. Human settlements in Amazonia still reflect the historical (and modern) importance of riverways as mobility routes, as economic and social sites of everyday activities for communities, and as critical resources for livelihoods and basic needs. These fluvial villages, towns, and cities are different both from cities along the oceanic coastlines and from each other within the diversely settled Amazonian biome. The regulatory environment for housing, water, and sanitation in these contexts, however, does not account for their realities and often sits in contrast with de facto urban life strategies within Amazonia. Some urbanizing towns are densely settled with palafitas (houses on stilts over public waterways) and others are floating neighborhoods, touching land only during dry season; still more are unplanned settlements in major cities with important industrial and cultural histories. In all cases, housing and infrastructure systems are largely precarious, challenged not only by climate changes and the pressures of rapid population growth, but also by poverty and environmental regulations that nominally govern urban development in their cities and threaten their displacement.

In this paper, we examine current strategies for the expansion and sustainability of water and sanitation systems serving an iconic reference for the urbanizing Amazonia. We ask what works and why in attending to the water and sanitation needs of low-income residents in the largest Amazonian city: Manaus, Brazil. Manaus's treated water and sanitation systems are led by Aguas de Manaus, a private provider which is part of one of the largest concessionaires operating within the Brazilian context, Aegea. We examine how (and why) Aguas de Manaus navigated the current regulatory environment in the Brazilian Amazon to provide affordable water and sewerage access in a palafita community, Beco Nonato, within the heart of the city's downtown, despite both local and federal legal barriers which have traditionally positioned such communities as a threat to environmental sustainability and requiring relocation. Through a critical examination of the pioneering (and much celebrated) Beco Nonato case and Aguas de Manaus's strategy for affordable service expansion, we explore the challenges of regulating urban growth and ensuring environmental protection in a region where treated water and sanitation systems have long lagged behind those in the more densely populated urban coastal environment.

We use process tracing in studying Aguas de Manaus's initiative in Beco Nonato, semi-structured interviews with the company's leadership, residents in the palafita community, and regulators at the local and national level, as well as a critical document analysis of environmental regulations governing water and sanitation provision in Brazil to inform our exploration. We find that while Aguas de Manaus's pilot in Beco Nonato circumvented regulatory barriers, the case itself remains a limited success in transforming how broader traditional Amazonian communities are treated under environmental laws in Brazil. These communities—including those in palafitas and floating neighborhoods, remain at risk of displacement, even in Manaus, because of contradictions with urban environmental regulations born from coastal urban experiences that greatly differ from Amazonia. Our findings suggest that federal environmental regulations in Brazil require reform to better attend to the diverse reality, challenges, and opportunities of different urban forms, traditional strategies for environmental sustainability, and affordable water and sanitation in the country.

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Keywords: Water and Sanitation, Amazon, Manaus, Brazil, Environmental Regulation

GOVERNING WATER IN A WORLD OF MANY WATERS? INDIGENOUS ONTOLOGIES AND THE LIMITS OF PARTICIPATORY WATER GOVERNANCE IN URBAN AMAZONIA

Abstract ID: 2298.0.0.694.2026
Track 3: Environmental Planning
Individual Paper Presentation

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The past several decades have seen the emergence of Integrated Water Resources Management (IWRM) and other participatory approaches to water governance. In Brazil, the National Water Resources Policy gave institutional form to these ambitions by organizing governance at the river basin scale and establishing multi-stakeholder watershed committees (Rickard & Ludwig, 2025). Yet in practice, these arrangements remain structured around standardized and technical understandings of water, leaving little room for Indigenous ontologies and relational ways of living with and knowing water (Boelens et al., 2023). While a substantial literature has examined Indigenous water ontologies in rural contexts, far less is known about how Indigenous peoples living in cities understand and relate to water — a gap with particular relevance for planning in cities such as Manaus, home to Brazil's largest urban Indigenous population and situated within the world's largest tropical freshwater system.

Building on these debates, this paper asks what water ontologies emerge through collaborative engagement with Indigenous riverine communities in Manaus. Drawing on eight months of ethnographic engagement and collaborative filmmaking with Indigenous groups along the Tarumã-Açu River, this study is grounded in sustained, place-based engagement through which understandings of water are articulated and lived through everyday practices (Tremblay & Harris, 2018). The paper also uses interpretive analysis of watershed committee documents and Brazil's National Water Resources Law to examine what these ontologies reveal about the limits of contemporary participatory water governance.

The findings suggest that water is understood as kin, territory, ceremonial space, and living presence—relational worlds that far exceed its framing in Brazilian water law and watershed committee documents as a resource to be managed and a source of economic value. By bringing these ontologies into conversation with the institutional logics that shape water governance in Manaus, the paper shows how participatory governance, even when formally inclusive, rests on implicit assumptions about what water is and thereby determines which realities can enter decision-making (Linton & Pahl-Wostl, 2024). The paper calls for a pluriversal approach to water governance that engages different understandings of water and the forms of care, responsibility, and authority they sustain (Merino & Chinchay, 2026).

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Keywords: Water governance, Indigenous ontologies, participatory video, pluriversal planning, urban Amazonia

WHAT RIGHTS OF NATURE MEAN FOR COLLECTIVE GOVERNANCE AND PLANNING

Abstract ID: 2296.0.0.342.2026
Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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Extending personhood to nature alters nature's status in anthropocentric legal frameworks from that of an object that humans exploit and fight over, into a legal entity with rights and interests of its own. In response to the rapid global growth in rights of nature laws, we seek to revisit Ostrom's framework for managing shared resources and its implications for collective governance and planning.

Ostrom's work debunked Hardin's "tragedy of the commons", by showing that communities can successfully manage shared resources without privatization or top-down government control through cooperation, monitoring, and local organization. Offering a bottom-up alternative to centralized planning. However, her work still frames nature as an object to be regulated in order to prevent its full depletion to serve humans, but it has no regard for the needs that ecosystems have to thrive. This view of Nature as an object limits our actions and imagination regarding how and who can manage and relate to the other than human, and the new planning solutions and paradigms that can emerge as a result.

In this paper, we build on Ostrom's understanding of polycentricity and consider how Nature's role as a legal subject works to redefine the human-nature relationship as part of the collective action process. This involves a re-definition of the commons that transcends the concept of natural "resource" to emphasize relationality, spirituality, and well-being as integral parts of the human-Nature relationship. Under such redefinition, we revisit Ostrom's design principles for successful governance and planning around water bodies, to contribute the lessons that are already emerging from the recognition of the rights of Nature across the world and to reimagine the application in planning of such principles from a holistic viewpoint.

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Key Words: ecocentric planning, collective planning, commons, natural resources, environmental planning

Emerging Insights on Wildfire Resilience

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Track 3: Environmental Planning
Roundtable Submission, Panel Interviews

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Wildfires are increasingly devastating U.S. communities. Recent catastrophes—including the 2020 Cameron Peak Fire, the 2023 Lahaina disaster, and the 2025 Eaton and Palisades fires in California—underscore a growing need for a better understanding of recovery and relocation planning in the wildfire context. While scholars have been studying post-disaster recovery and relocation for decades, the climate-driven surge in wildfire magnitude and frequency has intensified the need to focus on the unique challenges posed by wildfires. As recent disasters have blurred the lines between a wildfire and an urban conflagration as well as exposed critical deficiencies in current planning frameworks—e.g., outdated evacuation protocols, insufficient water infrastructure, and limited land-use adaptation—a closer look at wildfire planning has become essential for bridging resilience gaps and reducing the toll of future disasters.

This roundtable attempts to address the following questions that will explore participants' insights from their own research:
1. What new insights on recovery and relocation have we gained from recent research on wildfire disasters?
2. In what ways do the recovery and relocation challenges unique to wildfires differ from those observed in other types of disasters?
3. What are the key takeaways for researchers and practitioners aiming to enhance wildfire resilience?

Audience Engagement Questions:

- What new insights on recovery and relocation have we gained from recent research on wildfire disasters?
- In what ways do the recovery and relocation challenges unique to wildfires differ from those observed in other types of disasters?
- What are the key takeaways for researchers and practitioners aiming to enhance wildfire resilience?

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Key Words: Wildfire resilience, Disaster recovery, Post-disaster relocations, Disaster planning

Scaling Health Research in Urban: From Landscape Patterns to Individual Experience
Abstract ID: 2297.0.0.1147.2026
Track 3: Environmental Planning
Roundtable Submission, Topical Discussions

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Urban health and wellbeing is a multidimensional phenomenon that resists understanding from any single spatial or analytical scale. The emerging One Health framework, which recognizes the interdependence of human, animal, and ecosystem health, offers a powerful reminder that health outcomes are always embedded in broader ecological and spatial systems. From global and regional landscape patterns and metropolitan green infrastructure to city-level land use and neighborhood disparities, from street-level built environments to individual physiological and behavioral responses, health and wellbeing outcomes emerge from complex, nested interactions that continuously cross these boundaries.

This roundtable brings together four scholars whose work spans distinct scales of urban health research. Participants include researchers working at the macro, city, neighborhood, and individual levels. Rather than presenting parallel findings, participants will engage each other and the audience in structured discussion around shared puzzles that cut across their research scales, epistemologies, methodologies, and outcomes.
The discussion will open with foundational epistemological and methodological questions: What does it mean to "know" something about urban health at a given scale? How do paradigms like positivism, interpretivism, and pragmatism shape what questions are askable and researchable? What are the tradeoffs between statistical generalizability and place-specific insight, and how do we guard against the ecological fallacy when translating findings across levels?

The conversation will then engage emerging technologies and their implications for multiscale research. Remote sensing, passive mobile data, wearable biosensors, GPS tracking, virtual reality, and AI-assisted tools are rapidly expanding what is measurable. Do these technological choices dissolve traditional scale distinctions, or introduce new forms of mismatch and bias? What are the equity implications of data-intensive approaches, particularly in under-resourced communities?

The roundtable will turn next to application and practice: How can cross-scale findings be translated into actionable planning interventions? What are the challenges of applying individual-level evidence to neighborhood policy, or of operationalizing landscape-scale metrics for street-level design decisions? Beyond research, the roundtable will also address what these conversations mean for planning education. How curricula can better prepare the next generation of planners to navigate the interdisciplinary terrain between public health, environmental science, and spatial planning?

This roundtable aims to surface productive tensions rather than resolve them. By bringing together researchers working across scales, the session seeks to identify shared frameworks, transferable methods, and collaborative models that can strengthen urban health research. Audience will leave with a clearer sense of what health problems become visible, which environments get measured, and what interventions become actionable in planning practice.

Audience Engagement Questions:

- When studying urban health, how do you determine the "right" scale for your research? What factors, like data availability, policy relevance, or theoretical tradition, might drive that choice?
- As big data, AI, and wearable sensors transform urban health research, are the boundaries between scales dissolving, or are new forms of mismatch and bias emerging? What does this mean for planning practice in under-resourced communities?
- How should planning education better prepare students to address health issues in urban areas? What interdisciplinary skills or frameworks are most urgently needed from current planning curricula in the U.S.?

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Key Words: health, built environment, planning methods

Shelter from the Street or Safety from the Storm? Reconciling Competing Imperatives for Affordable Housing and Climate Adaptation in Coastal Zones

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Track 3: Environmental Planning
Roundtable Submission, Panel Interviews

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Communities struggle with rising housing costs and declining affordable housing. While the causes are multi-faceted, important contributors include the lack of available land for development because of constraints imposed by local zoning, particularly single-family residential zoning, along with declining investments in infrastructure. Given those constraints, a response increasingly advocated—and much debated—has been to allow for the development of new multi-family housing jurisdiction-wide (e.g., Been et al. 2025). A corresponding response has been to reduce regulatory requirements perceived to be unduly burdensome, and thus unduly hindering new housing, such as development reviews and constraints imposed for the purpose of, for example, conserving natural features (e.g., trees and wetlands) or limiting building within high-risk flood zones (e.g., Connolly 2024).

At the same time, global climate change is yielding increasingly perilous and expensive impacts related to heat waves, droughts, wild-fires, and—especially—chronic and catastrophic flooding (e.g., Barnett & Bouw, 2022). Advocates call in response for a variety of development design and regulatory changes to adapt to the climate-change impacts that cannot now be avoided. Pressing climate adaptation initiatives include, for example, conserving natural features (e.g., trees and wetlands) that help to temper heat waves and improve on-site stormwater control, along with regulatory limitations designed to relocate existing development from high-risk flood zones and prevent new development within such areas.

The planning challenges from these colliding affordable housing and climate adaptation imperatives are only growing. They are especially acute in coastal settings, given high amenity-driven demand for development in those settings, historical patterns of development within them, and the heightened risks from both short-term flooding and long-term shoreline erosion they experience (e.g., Beatley 2009). Indeed, among high-wealth cohorts, demand for housing in nearshore settings only seems to grow despite evidence of the risks of doing so. In addition, pressing social equity concerns often arise in coastal settings, to the extent that low-income and disadvantaged households often disproportionately reside in the riskiest places; are increasingly displaced from their lower-risk properties as wealthier property owners look to move back from the shore; or are placed into new development built within high-risk zones.

All of these concerns raise compelling questions regarding the capacity and commitment of current residents, prospective residents, and public officials to use climate-related information about current and future hazard conditions in coastal settings; when and how to advance important principles regarding affordable housing, on the one hand, and climate adaptation, on the other; and how to reconcile those two principles when they conflict. The purpose of this roundtable will be to assemble a group of researchers who struggle with these competing objectives through their work, put these and related compelling questions on the table, and deliberate collectively on how best to address them.

The session will be organized using a panelist interview/attendee participation format, facilitated by a researcher with extensive planning and legal experience in coastal shoreland management. Confirmed panelists include researchers who bring extensive knowledge of fiscal policy, legal considerations, hazard mitigation and recovery, community development, affordable housing, and social equity concerns, within coastal settings and more generally. The session will begin with brief introductions followed by kick-off interview questions for panelists designed to elicit deliberation. Roughly half the session will then be devoted to attendee questions and open discussion by panelists and attendees.

Audience Engagement Questions:

- What are the human welfare, public safety, and environmental trade-offs of lowering housing costs versus ensuring adequate adaptation to climate change, both empirically and in principle?
- What are the drivers constraining housing adaptation across urban, rural, high-growth, low-growth, and no-growth contexts, and to what extent do those constraints relate empirically to hazard mitigation, whether in coastal settings or beyond?
- What research and planning initiatives—including transdisciplinary collaborations—are needed to help reform and reconcile affordable housing and climate adaptation policies across all levels of government and within all relevant policy domains (e.g., land use regulation, finance, insurance)?

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Key Words: affordable housing, climate adaptation, coastal management, land use

A GLOBAL ASSESSMENT OF HEAT ACTION PLANS

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Track 3: Environmental Planning
Individual Paper Presentation

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Extreme heat events are rising significantly, posing a growing threat to public health in cities worldwide. Heat Action Plans (HAPs) have emerged as a critical tool for cities to proactively prepare for, manage, and mitigate the impacts of extreme heat. This study offers the most comprehensive global assessment of HAPS to date. We analyze the content of local government HAPs worldwide and validate the findings with academic and practice-oriented guidance. We find that cities focus more on heat management strategies than heat mitigation, with emergency preparedness and heat education far outpacing urban greening or waste-heat-reduction measures. Our analysis also reveals heat governance as a third, and previously underemphasized, area of heat action, encompassing research; planning, policy, and program development; leadership; funding; and community engagement. This study provides a robust evidence base to inform the next generation of HAPs and equips practitioners with actionable insights to refine and strengthen their design, implementation, and evaluation.

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Keywords: Heat action plan, heat governance, heat planning, urban heat island, plan evaluation

A HEAT-URBAN FORM NEXUS: ASSESSING THE VULNERABILITY OF MEMPHIS 3.0 ANCHOR AREAS TO URBAN HEAT

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Track 3: Environmental Planning
Individual Paper Presentation

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The complex interactions between urban form and extreme heat exposure often exacerbate social vulnerability, making it a critical climatic threat across cities in the United States. As cities endeavor to promote densification and compact development pathways for urban sustainability, there is a tendency for such urban forms to affect extreme heat conditions. In this study, we focus on the neighborhood scale to examine the heat-urban form nexus to understand heat vulnerability in the city of Memphis's designated anchor areas. These anchors are focal points of the Memphis 3.0 Comprehensive Plan aimed at stimulating neighborhood investment, compact development, and densification. By specifically examining these investment nodes, the study asks: i) How do ambient temperatures vary across the three distinct Memphis 3.0 anchor types, namely, Accelerate, Sustain, and Nurture? and ii) to what extent do the existing urban forms in each anchor contribute to localized heat vulnerability? Utilizing high-resolution climate data from the 2025 Memphis Heat Watch Campaign, a community-led citizen science initiative that mapped temperatures across the city and its surrounding areas, this study conducts a spatial overlay analysis to compare the 2025 Heat Watch results with the three anchor classifications to characterize how urban form influences heat conditions in these areas. This study adds to the literature on the heat-urban form nexus from a mid-sized Southern US city context, moving beyond broad city-wide averages to the neighborhood scale. For planning practice, it provides a data-driven roadmap for the City of Memphis to integrate heat mitigation and management principles in the planning and design of anchor areas, ensuring that investments across the anchor areas do not come at the cost of climate resilience.

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Keywords: Heat resilience, Urban form, Neighborhood Anchors, Memphis, United States

A MIXED-METHODS ASSESSMENT OF COASTAL WATER POLLUTION IMPACTS ON SOCIALLY VULNERABLE COMMUNITIES IN PUERTO RICO

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Individual Paper Presentation

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Water systems along coastal regions are increasingly overburdened as a consequence of climate change and an increasing global population (Sullivan 2016). Compromised water quality is an increasingly pressing issue along coastal regions of Island communities. There is a lack of awareness of the role of degraded water quality on ocean and coastal ecosystems that directly influence health and economic outcomes of coastal residents. Beyond human consumption, water within minimum quality thresholds supports plant and animal species and diverse human activities including recreation, fishing and tourism.

Vulnerability literature has shown that impacts of environmental hazards such as degraded water quality are not evenly distributed among communities (EPA, 2021). Spatial measures of socio-economic vulnerability would allow an assessment of differential impacts on coastal communities (Portelli et al, 2020). A previous coastal socio-economic vulnerability profile for Puerto Rico at the census tract level based on US Census Bureau Puerto Rico Community survey 2012-2016 data (Santiago et al., 2021) was used as a baseline for our study. Existing databases were updated to estimate a more recent census tract level coastal socio-economic vulnerability assessment (2019-2023) for the same study area.

The project team engaged stakeholders in two coastal regions to conduct a qualitative assessment of water quality in the area considering obstacles to potential uses. Two focus groups included participation from members of Commonwealth government agencies and non-governmental organizations. A participatory mapping exercise allowed us to locate the impacts of human activities and climate change perceived by participants, resulting in a more detailed assessment of vulnerable coastal communities.

Project findings have not only provided social coastal vulnerability and water quality profiles for Puerto Rico but also identified locations that should be prioritized for new or additional water quality monitoring, and sargassum accumulation cleanup based on stated community needs. Stakeholder assessments, combined with statistically significant associations between socially vulnerable profiles and lower levels of water quality would inform municipal and Commonwealth policies that seek to address coastal water pollution in communities and regions whose livelihoods are affected by degraded water quality. Key affected sectors include subsistence and small-scale fishing as well as recreation and leisure activities.

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Keywords: social vulnerability, economic vulnerability, water quality, participatory mapping

ACTIVE ADAPTATION, PERSISTENT INEQUITIES: SOCIODEMOGRAPHIC DISPARITIES IN AWARENESS, ACCESS, AND PERCEPTIONS OF MUNICIPAL HEAT ADAPTATION

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Track 3: Environmental Planning
Individual Paper Presentation

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As cities increasingly institutionalize heat adaptation strategies, understanding whether these efforts reach diverse populations equitably is critical for planning practice. While existing scholarship has documented distributional and procedural inequities in urban heat governance, the recognitional dimension, specifically how sociodemographic groups differentially experience municipal heat adaptation, remains understudied. This study addresses the question: whether and how do awareness of, access to, and perceptions of municipal heat adaptation strategies vary across sociodemographic groups?

Using an original survey of 457 residents of the City of Los Angeles conducted between October and December 2025, this study employs a multi-method analytical approach. Proportional quota sampling approximated the city's sociodemographic composition by race/ethnicity and household income. Logit models and latent class analysis (LCA) were used to estimate associations between sociodemographic characteristics and multiple adaptation experiences: perceived heat impacts, heat awareness, access to physical cooling infrastructure, awareness and utilization of municipal programmatic strategies, and perceptions of municipal adaptation efforts.

Four key findings emerge. First, the study identifies a paradox of the "resilient vulnerable": socioeconomically disadvantaged groups demonstrate comparatively greater heat awareness and higher engagement with municipal programmatic strategies, yet remain structurally constrained in access to cooling infrastructure and report greater perceived heat impacts. This challenges deficit-based narratives that attribute vulnerability primarily to informational gaps or civic disengagement. Second, a pronounced U-shaped income pattern emerges, with both the lowest- and highest-income groups exhibiting elevated adaptation engagement relative to middle-income respondents. This finding enriches conventional linear assumptions and reveals a concerning adaptation insularity among middle-income households that may weaken the broad political coalitions necessary for sustained adaptation investment. Third, persistent disparities linked to gender, employment status, and age reveal that heat adaptation inequality extends to uneven social embeddedness in the informational and institutional networks through which adaptation knowledge is transmitted. Female respondents, unemployed individuals, and older adults exhibited systematically lower awareness and engagement despite not expressing opposition to municipal efforts. Fourth, the study reveals an "active conservative" pattern: politically conservative respondents demonstrated significantly higher heat wave awareness and greater municipal strategy utilization after controlling for perceived impacts and program awareness, suggesting a depoliticization of heat adaptation at the local level.

These findings carry implications for planning scholarship and practice. They demonstrate that urban heat inequality is multidimensional and internally differentiated, requiring planners to move beyond one-size-fits-all strategies toward targeted, socially embedded, and equity-centered approaches. Specifically, the results suggest that cities should prioritize equitable distribution of foundational cooling infrastructure in underserved neighborhoods, invest in broad-based communication strategies to engage insulated middle-income populations, diversify outreach channels through community-based organizations and healthcare providers to reach socially disconnected groups, and frame heat adaptation around localized public health preparedness to transcend partisan divides. By mapping differentiated inequity profiles across sociodemographic groups, this study provides an

empirical foundation for more equitable municipal heat adaptation planning in an era of accelerating climate extremes.

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Keywords: urban heat adaptation, climate justice, community experiences, adaptation planning, heat impacts

ADAPTATION ON THE FRONT LINE: CHALLENGES AND OPPORTUNITIES FOR COASTAL CLIMATE ADAPTATION IN THE FLORIDA KEYS

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Track 3: Environmental Planning
Individual Paper Presentation

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Across the United States, sea level rise (SLR) is increasingly impacting coastal communities through more frequent and severe nuisance flooding, inundation, and storm surges. Consequently, local planners and policymakers are tasked with addressing these escalating challenges as their jurisdictions grapple with the diverse physical, ecological, and socioeconomic impacts of SLR. Despite these growing concerns, empirical understanding of local government responses remains sparse. Utilizing a contextual approach, this study addresses this knowledge gap by analyzing the factors influencing local adaptation planning. Our research focuses on Monroe County, Florida—an island community uniquely susceptible to SLR-driven hazards. This research employs qualitative case study data collected in the Florida Keys following the significant impact of Hurricane Irma in September 2017. The primary data sources include 23 individual interviews, a focus group with five local leaders (n=5), field observations, and the review of secondary sources such as local plans and media coverage. The findings reveal that local planning efforts are hindered by the uncertainties and complexities surrounding climate change and SLR projections, particularly at the local scale. The archipelago's unique physical and environmental context—specifically its porous limestone geology and established conservation frameworks—further determine the range of adaptation measures feasible in the Keys. Additionally, institutional and community-related barriers—such as limited financial and human resources, insufficient political support from higher levels of government, and a lack of inter-agency cooperation—further impede progress. While intersectoral collaboration and better risk communication with the public were identified as beneficial strategies for resource-constrained local governments, these approaches have yet to be implemented in the Florida Keys.

Although planning efforts can be constrained by various context-specific and problem-related factors, these findings provide a roadmap for planners seeking feasible adaptation solutions. Such effective approaches may include fostering public trust through transparent communication and aligning disparate policies under integrated policy frameworks, which enables streamlining adaptation efforts across the country.

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Keywords: Coastal adaptation, local planning, sea level rise, Hurricane Irma, Florida Keys

AN IN-DEPTH ANALYSIS OF MUNICIPAL PLANNING POLICY'S ROLE IN PROMOTING GREEN BUILDING DEVELOPMENT: THE CASE OF THE TORONTO GREEN STANDARD

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Track 3: Environmental Planning
Individual Paper Presentation

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Although concerns about the health of our natural environment have existed for over a century, increasing evidence of the damaging effects of human activity on climate, natural resources, biodiversity, and other ecological systems have heightened public efforts to promote more sustainable development. Globally, the United Nations 2030 Agenda for Sustainable Development, adopted by world leaders in 2015, established goals and targets to preserve the planet from degradation, ensuring it can meet the needs of both current and future generations. A UN Goal particularly relevant to urban planners and policymakers is Goal 11, which advocates for making cities and human settlements inclusive, safe, resilient, and sustainable (United Nations 2015, 2021). While most of my previous research has centred on where human settlements are established (i.e., brownfields), I have become increasingly interested in examining what is being built and how we can encourage developers to adopt more sustainable building practices. Indeed, buildings and the construction sector account for over one-third of global final energy use and energy-related CO2 emissions, as well as extensive land and natural resource consumption and waste production (UN Environment Program, 2021, p 29). Furthermore, the global demand for buildings continues to rise, with the total floor area of the global building sector expected to double by 2060.

One vital tool that has emerged internationally to enable investments in developing sustainable and more efficient green buildings has been mandatory and voluntary green building (GB) and building energy performance measures, codes, and rating systems. Toronto was an early adopter, launching the Toronto Green Standard (TGS) in 2009. The TGS is a two-tier set of environmental performance measures comprised of five performance measure categories: (1) Air Quality; (2) Building Energy, Emissions and Resilience; (3) Water Quality and Efficiency; (4) Ecology and Biodiversity; and (5) Waste and The Circular Economy. Tier 1 of the TGS is mandatory for all new development applications in Toronto, while Tier 2 is a higher voluntary performance level incentivized through refunding fees charged to development. A more stringent TGS Version 2 came into effect in 2014, Version 3 in May 2018, and Version 4 in May 2022.

This presentation is based on research that:

- Examines the history and evolution of the TGS to better understand its alignment with public GB policy and municipal building code policy and research;
- Tracks the scale, character, and location of building development incorporating the TGS since the program's inception to 2022, and investigates the green performance measures being adopted and rejected; and
- Lays the foundation for future research on the TGS, specifically, and public GB policy, codes, and programs generally, with particular attention to the experience of private developers and consumers, as well as policy, funding, and other measures to enhance their engagement.

Information for this project was collected through the review of government documents and the compilation and analysis of data on building projects involving the TGS submitted as part of the development Site Plan Application for planning approval from 2013 to 2022. As of the writing of this abstract, the dataset with information from over 1000 development projects that have incorporated the TGS is being analysed. The results of this study will provide valuable information to scholars, policymakers, developers, and other stakeholders about the scale, character, and location of buildings incorporating the TGS, as well as the green features developers are adopting and rejecting.

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Keywords: green building, development, municipal, policy, rating systems

ARE LAND-USE PLANS INTEGRATED FOR SOCIAL CAPITAL?

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Individual Paper Presentation

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Many communities now face rising natural hazards, and community hazard resilience is central in determining the effects of these hazards. Within this background, social capital has emerged as substantial given its criticality for resilience (Alrich & Meyer, 2015; Meyer, 2017). Meanwhile, social capital is moldable by the built environment (Lund, 2003) while land-use planning plays a significant role in shaping the built environment (Burby & Dalton, 1994). This renders planning a powerful force behind social capital. Nonetheless, empirical evidence abounds suggesting that planning often uses this agency in reverse and damages social capital (e.g., Gibson, 2007). Given the weight planning documents carry in guiding the overall planning process, it is highly plausible that the underlying cause of the problem is with the plans: they do not incorporate the goal of social capital or fail to work coherently for that – they are not integrated for social capital.

Nevertheless, from a social capital perspective, there has not been any method to systematically evaluate whether a given set of land-use plans carries the integration problem. This is the gap that we intend to address, by applying the Plan Integration for Resilience Scorecard™ (PIRS™) (Berke et al., 2019; Malecha et al., 2018; Yu et al., 2025; Yu et al., 2021) – the most developed methodology for evaluating plan integration in the planning field – to evaluate social capital integration. We apply this methodology in an Indian reservation and its surrounding areas in the Southern US, focusing on flood risks. We answer two research questions: (1) Are the plans there integrated for promoting social capital? (2) What are the major policies promoting/weakening social capital there? This study site enables illustration of the methodology's operation in both an ordinary municipal/county setting and a reservation setting, whose special political context requires methodological tailoring. It is also particularly significant to conduct the evaluation in reservations, given the critical role social capital plays in Indigenous communities' resilience (MacGillivray, 2018).

Following the procedures in the existing PIRS™ application (Berke et al., 2015; Malecha et al., 2018; Yu et al., 2020), we begin by spatially dividing the study site into administrative subdivisions. We then spatially identify the areas within each subdivision that are exposed to flood risks, thus forming the district-hazard zone, our unit of analysis. Next, we collect all the documents governing the land use of the study site. We review the documents and select from them all the policies meeting two criteria: (1) spatially specific and (2) target a built-environment feature that affects social capital. We base our decision regarding Criterion 2 on a synthesis table we compiled in a previous study, which systematically identified all built-environment features whose social-capital influence has been empirically verified. Based on the evidence base from the same synthesis table, at last, we assign a score to each policy in each district-hazard zone.

The results reveal the extent to which the plans are integrated for social capital in each district-hazard zone. They also identify the major land-use policies that nurture social capital and those undermining it. Such information has substantial policy implications: altogether, it informs real-world planning institutions about how urgently a given set of plans requires revision and how to revise them, ultimately helping communities build social capital and become more resilient in the face of rising hazards.

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Keywords: Plan Integration, Social Capital, Community Resilience, Natural Hazards, Plan Evaluation

ASSESSING FLOOD-INDUCED WASTE CONTAMINATION RISKS IN THE PORT ARTHUR AREA, TEXAS

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Track 3: Environmental Planning
Individual Paper Presentation

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Floods, one of the most damaging and costly hazards, are exhibiting increased frequency and intensity in coastal regions due to the synergistic effect of extreme climate and accelerated sea-level rise. Consequently, the risk of secondary flood-induced contamination has escalated to a critical level. Especially, the issue is distinctive in coastal communities, which are characterized by concentrated industrial activities and extremely high flood exposures. The risk of contamination is not confined to industrial sites but has extended significantly to overall waste management facilities, as several historical waste handling sites are located in flood-prone areas. Despite the increasing probability of such contamination, recent research has focused more on the chemical pollutants in the floodwater itself or local field experiments that fail to capture the widespread risk and physical waste mobilization during extreme flood events, which could end up contaminating front yards or creating brownfields.

To address this research gap, this study attempts to examine the risks of flood-induced waste contamination in the Port Arthur and Beaumont area in Texas, which are characterized by concentrated industrial sites and waste management facilities and high flood risks. The risk is measured in building units using address point data, mainly focusing on the locational risk. The flood-induced waste contamination probability was quantified through spatial analysis, integrating address points, hydrological data, and facilities' locational data. Proximities to diverse sources—including municipal landfills, industrial hazardous facilities, petroleum storage tanks, dry cleaners, and scrap tire handlers—were measured together with flood frequency and probability. These quantified probabilities are then spatially overlaid with block group-level demographic and socioeconomic vulnerabilities to construct a risk map. The final risks illuminate the intersection of physical hazard exposure and community vulnerability, revealing the hotspots of environmental disparities where marginalized residents face disproportionate, compounding risks from both floods and waste contamination.

Beyond the quantification of risk, this research contributes to improving community resilience. The resulting map provides a small-scale, detailed view of environmental disparities, pinpointing the high-risk clusters that need urgent mitigation and adaptive policy implementation. Also, the findings suggest a need for multidimensional mitigation strategies that simultaneously address floods and secondary contamination. Furthermore, by integrating this risk data into local government planning frameworks, the persistent environmental disparities faced by local communities can be effectively incorporated from the early stage of the decision-making process. Ultimately, this research promotes increased public awareness and provides a data-driven foundation for developing policies that safeguard vulnerable coastal communities from both the natural hazards and secondary contamination risks.

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Keywords: Risk Assessment, Contamination, Flood, Coastal Community, Waste Mobilization

ASSESSING GROWTH AND CHANGE IN THE US ECOLOGICAL RESTORATION ECONOMY (2014-2024)

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Track 3: Environmental Planning
Individual Paper Presentation

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The United Nations declared 2021-2030 the Decade on Ecosystem Restoration, emphasizing the urgent need for large-scale ecological restoration, worldwide. In the United States and other developed nations, growing interest has focused on quantifying the size and scope of the "restoration economy," which is composed of a constellation of private firms, NGOs, and governments driving supply and demand for a variety of ecological restoration activities, from prairie restoration to wetland mitigation.

In 2014, we implemented the first, nationally representative survey of restoration practitioners aimed at determining the economic impact of restoration across the United States. This study revealed an industry that directly employed ~126,000 workers and generated ~USD2015 $9.5 billion in economic output (sales), annually. Importantly, this activity supported over 95,000 more jobs (totaling over 225,000 jobs) and more than $15 billion in additional economic output through restoration supply chains (e.g., native plant nurseries, engineering firms, landscaping) and overall increased household spending.

In the intervening decade, the drivers of restoration have undergone dramatic shifts, including changing levels of public funding at federal, state, and local scales, periods of increasing and decreasing regulatory stringency requiring restoration as development offsets, and new (and declining) efforts to focus long-term funding towards specific restoration objectives.

In light of these changes, in this study we renew our estimates of the size and scope of the US restoration economy, implementing an updated and enhanced survey instrument and firm sampling strategy. We partnered with restoration groups, including the nationwide Ecological Restoration Business Association, which represents over 100 ecological restoration firms and NGOs, and seven state-level restoration organizations (CA, FL, TX, NC, VA, TN, SC), and distributed the survey to over 6000 firms, NGOs, and governments between February-April 2026.

Questions were designed for both backward compatibility to 2014 – allowing analyses of industry change – and to collect detailed data on firms' restoration work, their revenue, employment, and workforce. We included detailed questions disaggregating firms' revenue based on specific restoration activities and the ecosystems where they occur, the locations where they work, the drivers of their work (e.g., regulatory requirements, incentive programs; federal, state, and locally specific drivers), and the groups that hire them to perform restoration. We also asked about workforce development, training programs, partnerships, and growth strategies (discussed in our sister presentation, submitted by J. Chen). A shortened version of the survey focusing on workforce was developed for government agencies.

Our results will reveal whether the changing constellation of drivers has grown or contracted the restoration industry (2014-2024), how the industry composition has changed (in terms of industrial concentration and firm sizes, types, composition, and NAICS industries), as well as how the industry's sales and employment relationships have changed (i.e., output per job).

This may have enormous implications for policy and scholarship in this area as our previous work has become a critical component of counter arguments to widespread contentions that requirements for ecological restoration

stifle development and kill jobs. To the contrary, our work suggests that these requirements have, at least in part, prompted a flourishing – albeit under recognized – part of the green economy, whose activities have extensive economic benefits (i.e., ecosystem services) as well as contribute directly to rural economic development.

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Keywords: Ecological restoration, Green economy, Natural infrastructure, Economic Development

ASSOCIATIONS BETWEEN THE BUILT ENVIRONMENT AND WASTEWATER MICROBIAL RISKS ACROSS URBAN TYPES

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Individual Paper Presentation

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As an integrated readout shaped by human emissions, transport in sewer systems, and exchange with the surrounding environment, the wastewater microbiome reflects population health, infrastructure conditions, and environmental exposure. This makes it relevant not only to public health surveillance but also to environmental planning. As a source of biological evidence, the wastewater microbiome can help identify spatial disparities in urban environmental risk, inform monitoring design and targeted intervention. With advances in wastewater-based monitoring, this type of population-level information has become increasingly accessible. However, existing studies still lack a framework to understand how microbial risks vary across different urban types and how they are associated with built environment factors.

To address this gap, this study developed a comparative framework by linking 660 wastewater microbiome samples from 176 cities to corresponding built environment indicators. First, based on spatial characteristics, the sampled cities were classified into three types: high-density compact cities, low-density sprawling cities, and low-density fragmented cities. This typology captures contrasts in urban development and spatial organization, establishing a framework for comparing wastewater microbiome variation across these urban types. In addition, genus-level microbial composition was further reorganized into six categories to reflect health risks and wastewater system conditions, making complex community variation more comparable and interpretable for environmental planning and assessment. Subsequently, mixed-effects interaction models were used to test whether associations between built environment factors and different risks varied across urban contexts. The models controlled for climate, demographic, economic factors, and year effects, with random intercepts for cities.

The results show that wastewater microbiomes across urban types differ not in overall community structure, but through the selective enrichment of specific microbial assemblages. Specifically, low-density fragmented cities are more strongly associated with environmental bacteria, fecal indicator bacteria, and certain enteric pathogens, suggesting elevated risks of waterborne exposure and storm-related overflow. Low-density sprawling cities are characterized by the coexistence of environmental aquatic bacteria, human-associated bacteria and biofilm bacteria, indicating vulnerability to fluctuating loads and infiltration within extensive sewer networks. In contrast, high-density compact cities show stronger enrichment of opportunistic pathogens, implying antimicrobial resistance and opportunistic pathogen risks. Mixed-effects models further indicate that the proportion of impervious surfaces is positively associated with antimicrobial resistance (AMR) risk, while healthcare facility density and the proportion of green space are positively associated with fecal contamination risk. Urban form is associated with variation in potential pathogen risk, which is higher in vertically compact cities and lower in fragmented cities. These findings suggest that spatial interventions, such as moderately regulating vertical development intensity and reducing the proportion of impervious surfaces, may help mitigate the enrichment and amplification of specific pathogen and AMR risks.

Overall, wastewater microbial risks vary systematically with built environment characteristics. These patterns provide a basis for identifying spatial disparities in health risks across urban types, improving monitoring design, and informing spatially targeted planning interventions.

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Keywords: Built Environment, Wastewater Microbiome, Environmental Risk, Urban Types, Environmental Planning

BEYOND GREENING: UNCOVERING THE SPATIAL INEQUITY OF GREEN INFRASTRUCTURE COOLING EFFECTS IN HISTORICALLY REDLINED NEIGHBORHOODS

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Individual Paper Presentation

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Urban green infrastructure (GI) has been widely implemented over the past two decades to mitigate the urban heat island (UHI) effect. However, it remains unclear whether these recent interventions effectively alleviate thermal inequity in historically redlined neighborhoods. This study evaluates the localized cooling performance of GI across Home Owners' Loan Corporation (HOLC) grades in New York City. Using the Segment Anything Model 3 (SAM3), we extracted high-resolution, pixel-scale spatial distributions of specific built environments—categorized into commercial, residential, and other small buildings—as well as three distinct vegetation types: grass, shrubs, and tree canopy. Furthermore, we calculated the Vegetation Connectivity Ratio (VCR) to quantify the structural density and spatial proximity between individual trees. We then applied the AutoGluon automated machine learning framework, coupled with Shapley Additive exPlanations (SHAP), to robustly model and quantify the localized cooling effects of these landscape features.

Our results reveal a stark thermal mitigation disparity. Vegetation, specifically trees and grass, in historically greenlined neighborhoods (Grade B) demonstrates significantly higher cooling capacities (indicated by greater negative SHAP values). In contrast, the cooling efficacy of GI in historically redlined areas (Grades C and D) is substantially diminished. Further analysis indicates that this inefficiency in lower-grade zones is driven by spatial configuration and structural density rather than mere presence. GI in Grades C and D suffers from insufficient absolute volume, suboptimal VCR (indicating sparse tree-to-tree density), high fragmentation, poor structural connectivity with the surrounding environment, and a systemic neglect of integrating impervious surface modifications. These findings suggest that current greening initiatives fail to provide equitable thermal relief due to structural spatial deprivation. To achieve genuine environmental justice, urban planning must transition from simplistic, quantity-driven planting to structurally optimized, landscape-level spatial interventions.

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Keywords: Extreme Heat, Green Infrastructure, Computer Visioning, Redlining, Machine Learning

BEYOND THE DENSITY PARADOX: DUAL THRESHOLDS AND PARETO OPTIMIZATION OF THE URBAN CLIMATE DILEMMA (KOREA, 2014-2023)

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Individual Paper Presentation

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Contemporary urban growth is increasingly defined by compound climate shocks. Cities face the dual mandate of decarbonizing transport networks while managing recurrent floods and heatwaves. Compact-city policies advocate for higher density, mixed land use, and transit connectivity to reduce per-capita emissions. However, this same spatial intensification can magnify hazard impacts by expanding impervious surfaces, exacerbating heat storage, and concentrating populations along mobility corridors. This dynamic creates a severe mitigation-adaptation dilemma. Addressing this requires overcoming two conceptual gaps in existing literature: the tendency to model compactness outcomes linearly, and the conflation of physical limits with social optima.

This study proposes a dual-threshold framework to resolve these gaps. We delineate two distinct tipping points: a structural threshold where marginal mitigation benefits flatten and hazard impacts steepen, and a Pareto knee representing a socially efficient stopping point on the mitigation-adaptation frontier. We address whether these thresholds diverge, how they vary across regional systems, and whether hazard impacts are driven by short-run activity flows or long-term built-environment stocks.

We construct a time-consistent Korean Compactness Index (K-CI) using a balanced panel of South Korean municipalities from 2014 to 2023. Mitigation is measured via per-capita road-transport CO2 emissions, while adaptation outcomes capture realized flood damages and heat-related illnesses, conditioning on extreme weather triggers to isolate vulnerability. The methodology employs municipality- and year-fixed-effects panel threshold regression, using standard errors robust to cross-sectional dependence. We translate these econometric response functions into multi-objective decision spaces by recovering hazard-specific Pareto frontiers. Furthermore, the 2020-2022 COVID-19 mobility shock is utilized as a quasi-experiment to disentangle the effects of built-form stock from short-term activity flows.

Preliminary results reveal significant structural non-linearities. The Pareto knee frequently precedes the structural threshold, indicating a critical gap where further densification remains physically feasible but becomes socially inefficient once hazard damages are internalized. Crucially, compactness gradients persist even during the COVID-19 mobility collapse, demonstrating that hazard impacts are fundamentally driven by built-form stock mechanisms embedded in the urban fabric rather than transient activity flows.

These findings translate the dual-threshold framework into an operational zoning logic for resilient growth management. We identify a safe zone for transit-oriented densification, a warning zone requiring bundled adaptation investments such as green infrastructure, and a danger zone where down-zoning or strict resilience conditionality is necessary to prevent maladaptation. By distinguishing how far cities can densify from how far they should densify, this research provides planners with a robust, evidence-based decision-support tool.

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Keywords: density paradox, compact city, climate dilemma, threshold regression, Pareto frontier

BUILDING PERFORMANCE STANDARDS AND DATA-DRIVEN URBAN CLIMATE POLICY

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Individual Paper Presentation

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The decarbonization of buildings represents a significant component of climate change mitigation efforts (Berrill et al. 2022). Buildings account for over one-third of global carbon emissions and, in dense urban areas, this proportion can reach up to 80% (Tozer 2020). In the U.S., households spend approximately $370 billion on energy costs each year, which creates significant financial hardships in low-income housing and disadvantaged communities (Hernandez and Bird 2010; Kontokosta et al. 2020). The increasing flow and transparency of data on buildings, energy use, and costs, initiated through energy benchmarking and audit laws, create opportunities to better design, evaluate, and implement urban climate action policies. Building performance standards have emerged as a tool to accelerate building decarbonization by setting carbon intensity targets over time. Meeting these targets involves energy retrofit investments and switching to lower-carbon emitting energy sources, particularly through building electrification. As might be expected, there has been no shortage of debate about the feasibility and fairness of the building performance standards. For instance, in New York City, which adopted one of the first and most ambitious carbon intensity target policies known as Local Law 97, building owners have expressed concerns over the cost of compliance, the magnitude of the penalties, and the scope of retrofits that would be needed to meet carbon targets over time (Speigel-Feld and Wyman 2022). Tenant groups and housing advocates have emphasized the potential pass-through of the costs of compliance to renters in the form of higher rents and an overall increase in housing cost burdens. However, landlords and tenants of residential buildings have highlighted two sides of a common problem: the effect of carbon intensity mandates on housing affordability.

Here, we analyze the potential for building decarbonization through New York City's Local Law 97, and its implications for affordability and equity for building owners and tenants. In this context, we define affordability as it relates to the cost of compliance and to the net impact on energy cost burdens, rents, and house prices, and equity as ensuring benefits are fairly distributed across communities and that no group faces disproportionate burdens. We analyze over ten years of energy performance data for more than 43,000 buildings in NYC (accounting for 54.6% of city-wide floor area and 17.7 MMT of CO2e in 2024), combined with building characteristics data, detailed energy audit reports, carbon intensity targets, and property tax and real estate market information across building typologies and communities by income and demographic composition. Using one of the largest repositories of building energy use and energy audit data currently available at the city scale, we develop a multi-scalar empirical model of pathways to achieve carbon emissions reductions at the building, neighborhood, and city scales over time, using both machine learning methods and econometric models. We find that while building performance standards can be a useful tool in urban climate policy, the widespread adoption and equitable implementation of carbon targets is limited by issues of data availability and quality, challenges in measuring energy performance and appropriate target levels, constraints for low-income and subsidized housing, mismatches between financial incentives and penalties, and the need for large-scale grid decarbonization.

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Keywords: performance standards, energy efficiency, climate adaptation, urban climate, decarbonization

BUILT ENVIRONMENT AND UNEQUAL HEAT EXPOSURE FOR PUBLIC TRANSIT RIDERS: A SOCIO-SPATIAL ANALYSIS

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Individual Paper Presentation

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Heat exposure during public transit can significantly affect thermal comfort, which in turn affects people's travel behavior, health, and well-being. A few past studies have examined heat exposure during travel for public transit riders (Fraser & Chester, 2017; Liu et al., 2025).However, little attention has been paid to the surrounding built environments, especially around bus stops and train stations. In this study, we aim to evaluate the exposure at the bus stop level in the Boston, MA metropolitan area, considering waiting time and shadow effects from the surrounding environment. We seek to answer the following research questions: (1) How does heat exposure at bus stops vary across space, accounting for waiting time and ridership? And (2) How do spatial disparities in bus stop heat exposure associate with social vulnerability?

This study integrates multiple spatial datasets to evaluate heat exposure at Boston public transit stops. We estimated thermal comfort for each bus stop through air temperature, adjusted mean radiant temperature, wind speed, and relative humidity during the mid-late afternoon period. We obtained high spatial resolution air temperature surface data through the Heat Watch project (CAPA/NIHHIS, 2020), and wind speed and relative humidity are from weather stations (National Weather Service, n.d.). Using building footprints and tree cover data, we generated building shade and tree shade to adjust the mean radiant temperature. Using the General Transit Feed Specification data, we calculated the average waiting time at each bus stop by taking half of the average headways. In addition, we extracted the percentage of poverty, non-white, and zero-car households for each stop within walking distance (0.8 miles) from the American Community Survey and Smart Location Database (2017-2021) (U.S. Environmental Protection Agency, 2021).

We first classified transit stops into four clusters, based on thermal comfort, waiting time, and ridership, using k-means clustering to identify the heat exposure characteristics of each stop. Then, we used a multinomial logit model to explain how social vulnerability (poverty, zero-car household, and non-white population) influences heat exposure at the stop level.

lt reveals substantial spatial variability in heat exposure across the city on the hottest day of 2019 in Boston, ranging from 34 to 44 °C. Most bus stops lack shading, with only 15% under building shadows, 7% under tree canopy, and around 1% shaded by both. We got four clusters: Cluster 1 (low heat & good service) represents transit stops with low heat exposure, short waiting time, and high ridership for the minimum number of stops. Cluster 2 (high heat & poor service) represents stops with high heat exposure, long waiting time, and low ridership, which are the most disadvantaged transit stops. Cluster 3 (low heat & moderate service) has low heat exposure with medium waiting time and ridership, and Cluster 4 (high heat & moderate service) has high heat exposure with medium waiting time and ridership. Our multinomial logit model shows that transit stops surrounded by high percentages of non-white populations and carless households are more likely to experience high heat exposure and poor service (Cluster 2). However, transit stops surrounded by higher poverty areas are less likely to be in this cluster. It may be the case that these stops tend to be denser, with more building density and thus more shades and more frequent transit services. In our next steps, we will examine other time periods (e.g., morning and evening) to understand heat exposure throughout the day.

By accounting for shading and waiting time, our study provides more realistic estimates of thermal burden for transit riders, highlighting risk areas where heat exposure overlaps with social vulnerability. These insights support planning interventions to reduce heat exposure for bus riders and, in turn, encourage people to remain in the transit system.

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Keywords: Heat, Built environment, Public transit, Exposure assessment

CBOS AS RECOVERY INFRASTRUCTURE: PUBLIC HOUSING RECOVERY AFTER COMPOUNDING DISASTERS IN PONCE, PUERTO RICO

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Individual Paper Presentation

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Community-based organizations (CBOs) and nonprofits are essential to disaster recovery, particularly for marginalized populations such as public housing residents. They provide direct services and advocacy, often filling critical gaps when formal governmental assistance is delayed. Yet their capacity is frequently stretched—especially during compounding disasters, when multiple crises unfold across time and place and intensify demands on already strained systems.

Using the case of the 2020 Southwest Puerto Rico earthquakes alongside COVID-19 in Ponce, this study examines how CBOs supported public housing recovery and the challenges and opportunities associated with engaging them in housing recovery efforts. Drawing on archival research and key informant interviews with CBOs serving public housing residents, housing and health advocates, and administrators involved in local recovery, we identify barriers to effective coordination as well as strategies to enhance CBO effectiveness. Findings highlight how alliances and collaboration among CBOs and nonprofit networks can strengthen recovery capacity, improve engagement with public housing communities, and support more equitable long-term recovery planning.

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Keywords: CBOs, public housing rcovery, Puerto Rico, nonprofits, compounding disasters

CENTERING COMMUNITY IN WILDFIRE RECOVERY: ORGANIZATIONAL PATHWAYS TO RESILIENCE AFTER THE 2025 LOS ANGELES WILDFIRES

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Individual Paper Presentation

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Advancing equitable disaster recovery has become a central concern in urban planning research and practice, particularly as climate-driven hazards, such as wildfires, increasingly affect urban regions. While existing scholarship emphasizes governance, institutional capacity, and cross-sector coordination, less attention has been paid to how diverse organizational actors interpret and integrate community-defined needs and priorities in the immediate aftermath of disaster events. This gap is especially important given longstanding inequities that shape which communities are most affected by disasters and whose interests are reflected in recovery processes.

To begin addressing these dynamics, we explore these questions through a qualitative case study analysis of response and recovery efforts following the January 2025 Los Angeles wildfires. This study draws on data collected as part of an NSF RAPID project designed to capture perishable post-disaster data. Specifically, we conducted semi-structured interviews (n=40) with organizations involved in early recovery processes. Our research question focused on assessing: (1) how organizations engaged in post-wildfire recovery incorporate community interests into their decision-making and practices; (2) how approaches vary across nonprofit, philanthropic, and community-based organizations; and (3) what are the implications for equitable recovery outcomes?

Our findings highlight key dynamics shaping how community interests are integrated into wildfire recovery efforts. First, community-based organizations play a critical role in representing localized knowledge and community priorities, drawing on embedded relationships to inform response and recovery activities directly. Second, larger nonprofit and philanthropic organizations often rely on intermediated, programmatic, or data-driven approaches to defining community needs, which can distance decision-making from lived experiences. Finally, differences in how organizations engage communities influence the distribution of resources, visibility of vulnerable populations, and overall recovery trajectories, often reinforcing existing inequities. Through this analysis, this study contributes to urban planning scholarship by advancing a more nuanced understanding of how community interests are constructed, mediated, and operationalized within post-disaster organizational landscapes. The findings also underscore the importance of strengthening institutional mechanisms that center community knowledge, support CBO leadership, and ensure that participatory approaches meaningfully shape recovery outcomes in wildfire-affected communities.

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Keywords: community engagement, disaster recovery, CBOs, nonprofits, Los Angeles

CENTERING EQUITY AND BEACH PRESERVATION IN PROACTIVE BUYOUTS FOR SEA LEVEL RISE

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Track 3: Environmental Planning
Individual Paper Presentation

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Sea level rise (SLR) is creating and exacerbating coastal hazards. For communities interested in preserving sandy beach ecosystems, moving at-risk development is an important adaptation that minimizes ecological harms while maintaining recreation and access (Setter et al., 2023). Retreat can be reactive or proactive, with varying tradeoffs. Reactive retreat occurs after major damage or harm has occurred; for example, after a home has fallen into the shoreline. Proactive, or managed retreat, refers to the movement of people and built assets away from at-risk areas in anticipation of and prior to harm. Despite a growing body of research stressing the importance of managed retreat in the face of rapid SLR (Hino et al., 2017; Siders, 2019; Lieberknecht & Mueller, 2023), the primary tool in the U.S used for retreat remains post-disaster buyout programs (Mach et al., 2019). Federal buyout programs are situated to acute disaster events like hurricane-induced flooding and thus indirectly address SLR concerns. The use of post-disaster buyouts for a slow onset hazard like SLR means that, while waiting for a major disaster to happen, there will be continued beach and habitat loss, destruction of property, contamination of the nearshore environment and accumulation of public safety risks.

In response, I propose a range of forward-looking buyout programs. Using Hawai‘i as an illustrative case study, I assess the impacts of varying buyout amounts and eligibility requirements for coastal property owners. I assess the overall fiscal impacts of programs and the count of likely eligible households. The proposed programs change in their design based on two primary concerns. The first, often stated in planning for SLR in Hawai‘i, is that it’s an unwise use of public funds to buy out already wealthy coastal homeowners. The second, opposite equity concern, is that there are low-income households who live on the coast in need of a safety net to exit at-risk housing. I draw on distributive equity and intergenerational justice to evaluate three distinct buyout program designs: 1) a county-wide buyout; 2) introducing a payment cap; and 3) incorporating income-based eligibility criteria using Asset Limited, Income Constrained, Employed (ALICE) thresholds to prioritize public resources toward low-income coastal homeowners. Using assessor’s data, a coastal erosion hazard model, and census data, preliminary results identify 886 properties projected to be impacted by erosion by 2100. A county-wide buyout would total approximately $1.2 billion (2024) by 2100. Introducing a cap of $780,000 per property (based on HUD’s loan limit for single family residences in Honolulu) reduces total public costs by 71%, totaling $350 million. Income-based eligibility narrows eligible properties to 139 with total costs of $280 million.

I find that the county-wide buyout, while maximizing beach preservation through preserving contiguous public shoreline access, is costly. In addition, it directs public funds towards high-value assets often owned by investors. A capped buyout, which follows the current post-disaster buyout program model, preserves broad eligibility while limiting the commitment of public funds. However, the capped amount is vastly lower than most home values on O‘ahu, suggesting that homeowners are unlikely to participate in such a program unless it is a last resort option. Lastly, an income-based program directly advances distributive equity; however, it results in fragmented spatial patterns that limits beach preservation, thus requiring additional policy tools to achieve beach preservation. This study highlights how widely potential outcomes across buyout programs vary, underscoring the need to reconceptualize buyout programs as they shift from disaster recovery response to a strategic and proactive adaptation mechanism for sea level rise.

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Keywords: buyouts, managed retreat, equity, sea level rise adaptation, coastal planning

CITIES AT RISK: PHYSIOLOGICAL HEAT RISK ACROSS THE UNITED STATES

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Individual Paper Presentation

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The risk of heat exposure has been increasing over recent decades, with 2024 being the hottest year on record. The global number of heatwave days from 2013 to 2022 increased by 94% compared to the period between 1986 and 2005, a substantial rise in the number of days constituting a moderate or higher risk of heat stress during light outdoor physical activity. As the number of heat waves increases, so does heat-related mortality and morbidity. Heat waves across the US in 2023 resulted in a record high number of emergency department visits for heat-related illness, leading to a CDC public health alert. Those living in cities are at an increased risk of heat health effects due to the urban heat island effect.

Exposure to heat in cities can occur during physical exertion, but most frequently is due to passive heat stress. When an individual is exposed to high temperatures, thermoregulation occurs via sweating to prevent injury or death. When heat and humidity combine, the ability of sweat to evaporate and cool the body is reduced, leading to increased risk of heat exhaustion or stroke. As dry-bulb temperatures increase, the amount of moisture the atmosphere can hold grows, and humid heat risk is exacerbated.

A commonly cited metric of combined heat and humid is wet-bulb temperature (WBT). Sherwood and Huber (2010) brought attention to a possible human adaptability limit of 95°F, at which point the human body could no longer naturally cool itself and would experience hyperthermia. Recent physiological studies, however, have found this threshold to be much lower. For a healthy young adult, a WBT of 87°F, equivalent to 87°F with 100% relative humidity (or 100°F with 60% relative humidity), has been shown to induce a fever within 60-90 minutes of exposure at a moderate activity level. With sustained exposures (> 3 hours), core body temperatures may exceed 104°F, elevating the risk of heat stroke. While these physiologic limits have been studied, and the evidence is clear that heat and humidity are rising, it is unclear how close US cities are to reaching this heat risk threshold.

To better understand where US cities stand, we collected meteorological data from the National Oceanic and Atmospheric Administration for 2006-2025. For each of the 50 largest US cities, we identified the highest WBT reached in each year, calculated trends in WBT throughout the study period, and quantified the contribution of temperature and humidity to WBT change. Our analysis finds that no major US city has experienced a wet bulb temperature of 87°F, though a few have reached 86°F. Over the past decade, 32 large US cities experienced one or more summer days in which the maximum wet bulb temperature fell within five degrees of the human heat tolerance threshold. Five cities have seen a significant increase (95% significance level) in WBT from 2006-2025, while 36 cities have seen a non-significant increasing trend. Nine cities have experienced a decreasing WBT trend, largely those in more arid climates, though none have experienced a statistically significant downward trend. For those cities with the largest increase in WBT over the last two decades, increases in dry-bulb temperature appear to have contributed more strongly to the increase in WBT than relative humidity.

While cities around the country are facing increasing heat risk, and many are nearing the physiological threshold of 87°F WBT, the cities nearing this threshold may not be those we expect to experience significant heat risk. Should this heat risk threshold be exceeded, outdoor activities such as landscaping, construction, garbage collection, and athletic events would pose an acute health risk and should be discontinued. Many cities nearing this threshold may

not have sufficient heat risk and emergency response plans in place to reduce health risks to residents. Additionally, heat risk monitoring may not incorporate WBT as a significant metric, placing residents at risk.

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Keywords: heat risk, hazard planning, health, emergency preparedness

CITY CLIMATE BUDGETING: TRANSFORMING THE CAPITAL PIPELINE

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Individual Paper Presentation

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Cities worldwide are subject to many challenges due to climate change from GHG reduction to potential climate impacts. Cities have developed climate action plans; however, in parallel, a city's plan and budget must explicitly include climate change as it affects capital.

For over 10 years, we field tested models for climate-informed capital development in cities across sub-Saharan Africa, Turkey, and India. These were World Bank, Rockefeller, and UN-funded technical assistance programs lasting one year or more, with models built on widely shared software systems, MS Excel, ArcGIS, and QGIS. All capital projects were analyzed for their costs (capital, operations, and maintenance), greenhouse gas emissions (annual and lifespan scope 1 and 2), and exposure to material loss and damage over the project lifespan due to climate-exacerbated natural hazards (physical asset impacts and financial cost to rebuild).

Results of these field tests for a sample of eight cities encompass 187 capital projects with a total capital cost of 2.5B USD across eight sectors of infrastructure (e.g., buildings, transport, waste, green infrastructure). Given the climate-related performance and cost-efficiency of various capital project design alternatives, city professionals selected alternatives for these projects that eliminated 92 percent of greenhouse gas emissions and 87 percent of financial loss and damage.

Globally, research and practice demonstrate overwhelming demand for solutions cities can implement to cost-effectively reach the targets suggested by the Paris Agreement and feasibly prepare for the unavoidable impacts of climate change. Driven by this demand, these tools have been developed into an easy-to-use software service, currently being tested by ten cities and counties in the US and Canada. Feedback from participating cities identifies the many ways that a scientifically-based and customer friendly solution can bring about a cost effective transformation of the capital pipeline long sought in the climate research and policy-making arena.

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Keywords: Climate, budget, emissions, resilience, capital

CLIMATE EQUITY EMBEDDED IN PRACTICE: HOW CHINESE ENGOS ENACT AND FRAME CLIMATE JUSTICE

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Individual Paper Presentation

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This study examines how environmental non-governmental organizations (ENGOs) in China understand, frame, and enact climate justice through their initiatives and mobilization practices. As the climate crisis intensifies, local climate actors have increasingly recognized the uneven distribution of climate impacts and the need for more just responses (Strange, Satorras, & March, 2024). Local governmental officials, urban planners, ENGOs, and the private sectors collaborate to design and implement climate mitigation and adaptation strategies, which aims to reduce climate inequities. Beyond technical mitigation and adaptation, ENGOs contribute to shaping public understandings of justice by linking abstract climate issues to everyday concerns and lived experiences (Dietzel, 2022). They translate complex justice concepts into accessible narratives, engage with affected communities, and develop strategies to address perceived injustices (Gulliver, Vachette, & Boddington, 2023).

China provides a unique setting to examine these dynamics. While ENGOs are key actors in international climate governance, their roles in domestic governance vary significantly across political and institutional contexts. China faces pressing challenges in achieving low-carbon transitions, which cannot rely solely on top-down governance or market-based mechanisms (Westman & Broto, 2018). In China, ENGOs engage in climate mitigation and adaptation efforts within a state-dominated system characterized by constrained political space, reliance on external funding, and low levels of public recognition (Liu, Wang, & Wu, 2017). However, little is known about whether climate justice is their main concerns, how climate equity is articulated, and how it is embedded and expressed through ENGOs' practices. This raises a central question: how do ENGOs in China define, frame, and enact climate justice?

This study draws on a national database of Chinese ENGOs compiled by Society of Entrepreneurs and Ecology. The dataset includes approximately 5,000 organizations, covering both registered and unregistered ENGOs. A stepwise sampling strategy was employed to construct an analyzable corpus. First, ENGOs were screened based on their relevance to climate change. Second, to ensure the observability and comparability of organizational discourse, the sample was further refined to include only NGOs with stable publicly available materials. This process resulted in a final sample of approximately 300 ENGOs. The annual reports, project descriptions, and social media content were collected. These documents were compiled into a corpus for analysis. A qualitative thematic analysis is conducted to identify how climate justice is articulated. The open coding approach was used to capture recurring themes and narratives (e.g., distributional, procedural, and recognitional aspects). Particular attention is given to how ENGOs connect global climate discourse to local contexts and how they mobilize supporters through narrative strategies.

The findings show that explicit references to climate justice are largely absent from NGO discourse. ENGOs translate justice-related concerns into a set of governance problems. Issues such as pollution, biodiversity loss, and climate impacts are framed as regulatory gaps, policy design, and implementation challenges, rather than as questions of rights or structural inequality. Besides, climate justice is embedded within scientific and practice-oriented logics. ENGOs rely heavily on monitoring systems and evidence-based interventions. In addition, ENGOs consistently position their work within collaborative and multi-actor governance networks. Instead of adopting adversarial approaches, they engage with governments, enterprises, and local communities through partnership-based strategies. This orientation shifts the focus to expanding participation and incrementally influencing policy.

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Keywords: Climate adaptation, Climate mitigation, Climate justice, Environmental NGO, China

CLIMATE JUSTICE INDICATORS AND ACTIONS: A SYSTEMATIC LITERATURE REVIEW

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Individual Paper Presentation

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Climate change intensifies extreme events and disproportionately affects vulnerable populations. Against this background, climate justice has become a critical topic and has been reviewed through its conceptual development, empirical analysis, and applied contexts. However, existing literature still lacks synthesis on indicators for assessing injustice and actions for addressing it. This study systematically reviews 102 peer-reviewed articles to examine how climate justice has been measured through indicators and conceptualized through proposed actions. We adopted a cause-effect framework adapted from the Intergovernmental Panel on Climate Change (IPCC) climate risk framework. Results revealed a skew toward the effect side (climate risk), primarily focusing on vulnerability, hazard, and exposure, compared with the cause side (anthropogenic forcing), such as greenhouse gas emissions and land-use change. Among 71 studies proposing climate justice actions, three dominant approaches emerged: governance (e.g., participation and equitable allocation), spatial planning (e.g., green-blue infrastructure and facility adaptation), and economic management (e.g., financial incentives and low-carbon transitions). Moreover, we identified two key limitations in existing literature. The first is the disconnection between cause- and effect-side indicators, rooted in the political sensitivity of assigning responsibility and their mismatched spatial-temporal data resolutions. The second is that proposed actions largely remain climate actions rather than climate justice actions, reflecting a limited understanding of post-implementation justice outcomes and a resistance to overcoming entrenched policy paths. Addressing these limitations can not only raise awareness of unequal responsibilities and capacities but also advance justice-oriented responses that avoid reinforcing existing inequities. We recommend developing integrated indicators that link cause and effect and establishing climate justice action databases supported by systematic monitoring and evaluation.

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Keywords: Climate justice, Climate risk, Indicator, Climate action, Spatial planning

CLOSING THE LOOP: RECLAIMED WATER INFRASTRUCTURE AND THE URBAN-AGRICULTURAL EDGE IN IRVINE, CALIFORNIA

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Track 3: Environmental Planning
Individual Paper Presentation

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Water scarcity, intensified by climate change, is increasingly a structuring condition of urbanization in the American West, and one that is forcing a fundamental reconceptualization of the relationship between cities and the agricultural landscapes. Yet planning theory has been slow to theorize infrastructure as a generative force in shaping this urban-farm interface. This paper examines Irvine, California's dual-distribution reclaimed water system — the "purple pipe" network — as an empirical case to explore how resource constraints can become productive design principles rather than externalities to be managed. Drawing on spatial analysis, field research into strawberry and avocado production at Irvine's urban fringe, the paper argues that purple pipe infrastructure operates simultaneously as utility system, land-use stabilizer, and urban edge-maker, enabling commercial agriculture to persist within one of Southern California's most intensively developed metropolitan areas. As climate-driven water stress makes the separation of urban and agricultural water systems increasingly untenable, Irvine's integrated model reconstitutes the urban-farm interface as a planned, resource-productive landscape rather than a residual or transitional space. The paper argues that the broader failure to integrate urban agriculture into metropolitan planning is conceptual, not technical. Urban farming has long been treated as an add-on to the "real" work of city-building. Climate-induced water scarcity is exposing the costs of that assumption.

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Keywords: Water Scacity, Urbanism, Agriculture, Purple Pipe, Infrastructure

CO-PRODUCING A ROADMAP FOR DISASTER PREPAREDNESS IN UNINCORPORATED COMMUNITIES WITH HEIR PROPERTIES: A CASE STUDY OF SANDBRANCH, DALLAS COUNTY

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Track 3: Environmental Planning
Individual Paper Presentation

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This study seeks to add nuance to disaster preparedness for heir properties in unincorporated communities in an urbanized U.S. county, where preexisting socio-demographic vulnerabilities are exacerbated by service gaps, legal barriers, and regulatory requirements. The study co-produces a community-informed disaster preparedness roadmap for Sandbranch, Texas—a case that shows how compounded environmental injustices and informal housing arrangements challenge disaster preparedness. It addresses a geopolitical gap in the hazards literature, which has focused on rural communities (Craig & Nejat, 2025).

Sandbranch was founded in 1878 as a Freedmen's Town by African American households to address homeownership needs. Residents live on heir properties, where land has been informally transferred without clear titles (Way & Goldstein, 2022). Sandbranch lacks access to piped water, sewers, and trash collection. Living conditions are more precarious than those in other unincorporated communities (Purifoy, 2021), due to the stringent enforcement of housing improvement restrictions associated with a 100-year floodplain designation enacted in 2003. The absence of assistance to help comply with floodplain regulations has contributed to largescale resident displacement and the demolition of the housing stock. Despite these challenges, more low-income Latine, African American, and white residents have migrated to Sandbranch in search of affordable housing, contributing to the community's contemporary multiracial character. Residents live in precarious recreational vehicles and single-family homes that lack central heating and cooling, exacerbating energy insecurity (Reyes et al., 2024, 2025).

This paper addresses the question: How can stakeholders identify and enable opportunities for a disaster preparedness roadmap in Sandbranch? We employ a mixed methods approach to coproduce community-driven pathways towards disaster preparedness. Specifically, we draw on household surveys covering approximately 80% of the total population (125 residents) conducted in 2024. Survey findings indicate limited direct experience with flooding but severe impacts from heatwaves and wildfires, compounded by the absence of services and energy insecurity. Survey data were supplemented by 15 in-depth interviews conducted between January and March 2026 with Dallas County officials, nonprofit and community-based organizations, and advocacy groups. Drawing on Van Zandt et al., 2012's disaster preparedness framework, interview and survey findings informed the categorization of strategies into proactive, information, capacity-building, resources and power-building.

The roadmap identifies three pathways. The first considers continued inaction, in which residents rely on informal strategies and limited nonprofit interventions to partially address water needs. The second outlines a disaster preparedness pathway centered on legal assistance to clear land titles and improve access to housing recovery and weatherization programs. The third envisions a long-term transition toward proactive disaster preparedness through the provision of basic services—such as piped water and sanitation—and the removal of the floodplain designation through nature-based solutions.

A bilingual workshop in March 2026 with 30 households documented residents' solutions and barriers to disaster preparedness pathways. Findings reveal that while Dallas County may have the capacity to provide some disaster preparedness assistance, institutional capacity constraints and eligibility requirements systematically exclude vulnerable informal renters and individuals lacking U.S. citizenship. These constraints underscore the need for

community-driven disaster preparedness transition roadmaps that center on resident knowledge and strengthen partnerships among governments, nonprofit organizations, and grassroots community-based organizations through participatory planning.

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Keywords: Disaster preparedness, heir properties, unincorporated, floodplain designation, participatory research

COASTAL CHANGE AND PLANNING RESPONSE IN GHANA: EVALUATING DISTRICT PLANS AGAINST OBSERVED SHORELINE DYNAMICS

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Individual Paper Presentation

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Coastal zones in Ghana are undergoing significant transformation due to erosion and climate change–driven sea-level rise. These changes are reshaping settlements, infrastructure, and ecosystems in districts such as Ga South Municipality, Tema Metropolitan Area, Accra, and Ada East District, among others. As coastal landscapes evolve, district medium-term development plans play a critical role in guiding land use, managing exposure to environmental risk, and supporting climate adaptation. However, it remains unclear whether these plans are responsive to the dynamic nature of shoreline change.

This study examines how coastal lines have changed over time and evaluates whether district plans account for these changes in their development strategies. Using multi-temporal satellite imagery (Landsat), a supervised machine learning approach is applied to classify land and water boundaries and extract shoreline positions over a 20-year period. These data are used to map shoreline retreat, accretion, and areas of significant coastal transformation along Ghana's coastline.

The study introduces a spatial–plan comparison framework that overlays observed shoreline change and erosion-prone areas with district land-use designations to assess whether planning policies align with evolving coastal conditions. This approach enables a direct evaluation of whether district medium-term development plans anticipate, ignore, or exacerbate exposure to coastal hazards.

Preliminary findings indicate a substantial mismatch between areas experiencing shoreline retreat and the spatial targeting of planning responses. While district plans acknowledge coastal vulnerability, they often lack spatially explicit or enforceable mechanisms—such as setbacks or development restrictions—to manage growth in erosion-prone zones.

By linking observed coastal dynamics with planning frameworks, this study highlights critical gaps in climate adaptation and coastal resilience planning and underscores the need for climate-responsive, hazard-informed land-use planning in Ghana and comparable coastal contexts.

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Keywords: climate adaptation, coastal erosion, planning response

COLLABORATIVE CAPACITY AND THE ROLE OF GOVERNANCE PLATFORMS IN WATERSHED PLANNING AND MANAGEMENT

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Track 3: Environmental Planning
Individual Paper Presentation

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Collaborative planning and governance has become an established approach to managing complex problems (Genskow 2009; Innes and Booher 2010). For ongoing collaborative efforts, there is typically an entity at the center of this effort that has been called a governance regime (Emerson and Nabatchi 2015), network administrative organization (Provan and Kenis 2008), and collaborative platform. Ansell and Gash (2018, 20) define collaborative platforms as an organization with "dedicated competencies, institutions, and resources" for ongoing collaborative projects or networks. Considerable research has been conducted on collaboration formation and operation, but there has been limited research on how different collaborative platform forms and functions affect capacity and stability (Bryson et al. 2015). One model proposes that collaborative platforms can be categorized by those reliant on staff, boards, and partners—suggesting that each type has strengths and weaknesses related to capacity and stability (Margerum et al, 2025)

There is a long history of collaborative platforms to support watershed planning and restoration work. Chaffin et al. (2015) identified 304 entities operating just in Oregon, Washington, and Idaho. In Oregon collaborative platforms have been operating for more than 30 years as "watershed councils," which may represent one of the longest collaborative governance efforts in the US.

This article examines how the types and functions of platforms affect the capacity and stability of watershed management efforts in the state of Oregon. The project uses a mixed method and participatory approach, supplemented by feedback and follow up case studies. The methods included an online survey of watershed councils (n=49; 81% response rate), which addressed topics of internal operational practices, resources, governance, and partnerships. The methods also included in-depth review of documents and funding data for 10 councils representing a cross section of locations, capacity, and partnerships. Twenty one interviews were conducted for four councils representing distinct capacity contexts. Throughout the study, researchers utilized an advisory team of councils and agency staff to review preliminary findings, analysis, and interpretations. Since publication of an agency report on this work, additional research was conducted on several "failed" councils to examine the issues and context for their demise.

The study found several aspects of collaborative platform stability important for capacity and success. First, lead staff turnover was a critical factor related to capacity. This often related to collaborative platform type, board-staff relationships, and compensation. Second, recruitment of stakeholder boards with the skills, capacity, and networks to support the platform was important for building capacity, but those in rural regions faced a paucity of potential board members. Third, those platforms with strategic plans with clear priorities tended to exhibit a stronger trajectory, but the effectiveness of the plans were as much a performance measure of ability and capacity. Finally, external networks supported by staff and stakeholders were essential to the overall capacity, growth, and stability. However, there are clearly dense and sparse networking opportunities across the state that cannot be overcome by simply "working to developing more relationships."

In summary, the study finds that these factors can compound to help spiral the stability and capacity of collaborative groups. We document many cases where increased capacity, staffing, board engagement, and partnerships lead to an upward spiral of funding levels and diversity of sources. We also explore several cases in

which platforms experienced a downward spiral in funding levels and diversity of sources. While these limited cases are hard to generalize, they highlight the very fragile nature of even strong and well-functioning collaborative platforms.

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Keywords: Collaborative planning, Governance, Watershed management

COMMUNITY CONTROL AS CLIMATE ADAPTATION: ANTI-DISPLACEMENT STRATEGIES IN SANTURCE, PUERTO RICO

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Track 3: Environmental Planning
Individual Paper Presentation

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Coastal communities in Puerto Rico and throughout the Global South face an intensifying crisis: climate change accelerates displacement not only through physical hazards but through post-disaster speculation that privileges outside investment over long-term residents and small businesses. This paper examines how Taller Comunidad La Goyco, a community-controlled cultural and resilience center in the Machuchal sector of Santurce, Puerto Rico, has developed and implemented a multi-pronged anti-displacement strategy in response to climate gentrification along the Calle Loíza corridor. The research question guiding this study is: How do community-led organizations leverage physical space, economic inclusion, cultural programming, and policy advocacy to resist climate gentrification in coastal urban neighborhoods? This question is situated within a growing body of scholarship on climate gentrification—the process by which post-disaster reinvestment and climate risk-driven demand transforms housing and commercial markets, displacing working-class residents and local businesses. Methodologically, this paper draws on a case study conducted as part of the Small Business Anti-Displacement Network (SBAN). Data were collected through in-depth interviews with 17 key stakeholders conducted in December and January of 2024 in Santurce, including La Goyco's executive director, community organizer, tenants, business owners, longtime residents, a former mayor, and allied organizations. Interviews were conducted in Spanish and analyzed thematically. The research team also undertook archival analysis and participant observation during site visits.

Fieldtrip data from a 3-day workshop with over 40 participants was also analyzed. Findings reveal a five-part anti-displacement model: (1) reclamation of the former Pedro G. Goyco public school, closed in 2015 and transferred to the community in 2020 after sustained organizing; (2) economic inclusion through 14 affordable rental spaces ($500–$1,200/month) serving micro-entrepreneurs priced out of the broader corridor; (3) cultural programming including monthly jazz festivals and plena classes preserving Afro-Puerto Rican identity; (4) climate resilience infrastructure—solar panels, community kitchen, and emergency shelter—essential during over 100 power shutdowns in 2024; and (5) policy advocacy through coalitions like Frente por el Derecho a Permanecer and the emerging Tenencia Colectiva land trust movement. Communities in Caimitó and Piñonez have since sought La Goyco's guidance in rescuing their own abandoned public schools. The paper contributes to planning scholarship on community-controlled anti-gentrification strategies, post-disaster recovery equity, and the role of cultural infrastructure in place-based resistance. For practitioners, La Goyco's model offers a replicable framework for communities confronting the intersection of climate vulnerability and speculative reinvestment. For planning education, the case provides material for examining how community land trusts, participatory governance, and integrated programming can sustain displacement resistance over time.

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Keywords: climate gentrification, Puerto Rico, school closures, community ownership, displacement

COMMUNITY ENGAGEMENT AS EPISTEMIC PRACTICE: MAPPING THE DISCURSIVE ARCHITECTURES OF CLIMATE ACTION PLANNING IN MAJOR U.S. MUNICIPALITIES

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Track 3: Environmental Planning
Individual Paper Presentation

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As climate change intensifies in both ecological severity and political urgency, U.S. municipalities have developed Climate Action Plans (CAPs) as central instruments of local governance and adaptive strategy (Caggiano et al., 2023). Yet the technical rigor of emissions inventories and sector-specific mitigation targets tells only part of the planning story. Equally consequential are the processes by which cities solicit, incorporate, and validate the knowledges of the communities they govern (Lieberknecht et al., 2024). This study contributes to that emerging body of scholarship by analyzing the community engagement methods used in the development of CAPs of major U.S. cities, with particular attention to how those methods structure the epistemic relationship(s) between planners and the communities in which they operate (Fox & Margalit, 2025).

To examine these dynamics empirically, we focused our analysis on U.S. cities with populations exceeding 300,000 residents. This threshold was selected on the basis that larger municipalities are more likely to possess the institutional capacity, financial resources, and planning infrastructure required to develop comprehensive, multi-sectoral climate action frameworks (Caggiano et al., 2023). Of the 69 cities meeting this population criterion, we identified 54 that had finalized their own standalone CAPs and included within those documents a distinct section explicitly detailing community engagement methodology/ies.

Each plan was coded and subsequently mapped against a novel two-dimensional theoretical framework developed specifically for this research. The first dimension, Epistemic Diversity, captures the breadth of knowledge types that a municipality's engagement process actively seeks to incorporate (Miller, 2008). The second dimension, Discursive Authority, assesses the degree of agency afforded to community participants within the planning process—specifically, the extent to which participants' contributions are treated as substantive inputs capable of shaping plan content, rather than as consultative formalities (Hajer & Versteeg, 2005). Together, Epistemic Diversity and Discursive Authority outline a framework that allows for the systematic classification and comparison of engagement models across municipalities.

Our coding and mapping of the 54 plans reveals substantial heterogeneity across the sample, with cities occupying markedly different positions within the framework. A notable cluster of municipalities employs engagement strategies that score low on both dimensions—relying on brief public comment periods, informational town halls, or online surveys that solicit input without affording genuine deliberative agency or actively seeking non-expert knowledge. A smaller but significant subset demonstrates higher performance on both dimensions, embedding sustained participatory processes, community advisory boards, equity-centered outreach to historically marginalized populations, and explicit mechanisms for translating community knowledge into plan commitments. These findings carry important implications for both planning practice and climate governance theory. They suggest that current norms of community engagement in municipal climate planning remain predominantly oriented toward legitimation rather than co-production, and that the transformative potential of pluralistic knowledge integration remains largely unrealized.

This research contributes a replicable analytical framework for assessing various forms of community engagement in terms of knowledge production and inclusion in climate planning contexts. The study also offers a comparative baseline against which future plan iterations and emerging best practices may be assessed.

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Keywords: co-production, knowledge, climate action

COMMUNITY LAND TRUSTS AND TRANSFORMATIVE ADAPTATION AT THE FRINGES OF U.S. EMPIRE

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Track 3: Environmental Planning
Individual Paper Presentation

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This paper examines how community land trusts (CLTs) are mobilized for disaster recovery and the reclamation of land and water rights at the fringes of U.S. empire. It asks: under what conditions do CLTs emerge in disaster contexts, and how do they function as tools of bottom-up climate adaptation? Drawing on multisited research in California, Hawai'i, and Puerto Rico, I analyze how frontline communities deploy CLTs to connect longstanding traditions of resistance to colonization and U.S. imperial rule with contemporary struggles for environmental and climate justice.

While existing scholarship emphasizes CLTs as vehicles for land decommodification and affordable housing, far less attention has been paid to their role in climate response or their emergence in the wake of catastrophic wildfires, floods, and hurricanes. Using site visits, archival and program analysis, and interviews and focus groups with CLT leaders, staff, residents, and public agency planners, this paper traces the formation, structure, and impacts of CLTs in post-disaster contexts.

The findings show that CLTs arise not only as anti-displacement mechanisms but as adaptive governance infrastructures that reconfigure disaster recovery. Across cases, they enable communities to secure land tenure and water rights, access post-disaster resources, and coordinate recovery efforts outside of conventional state-led frameworks. They are sustained through translocal networks that facilitate knowledge exchange and resource mobilization, and through diversified financial strategies that leverage disaster recovery funding. In practice, these CLTs advance site-specific priorities including food sovereignty, cultural continuity, and women-led stewardship of land and water, while articulating broader microutopian visions of collective autonomy and repair.

By foregrounding CLTs as community-driven strategies of disaster management, this study demonstrates that they are not only tools of housing provision but infrastructures of resistance and resilience that contest uneven vulnerabilities produced through imperial planning logics and extractive land regimes. In doing so, it advances planning scholarship on transformative adaptation and offers practical insights for supporting community-led recovery.

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Keywords: Adaptation, Disaster, Governance, Land, Equity

COMMUNITY-LED OR COMMUNITY-WASHED: ANALYZING COLLABORATIVE URBAN CLIMATE CHANGE PLANNING

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Track 3: Environmental Planning
Individual Paper Presentation

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Around the world communities that have historically been economically marginalized and burdened by pollution are now disproportionately vulnerable to the impacts of climate change. Pressured by environmental and climate justice advocates, governments are starting to direct public investments into these communities with the goal of simultaneously responding to climate change and addressing long-stating economic and social disparities. While many frontline communities support these targeted investments in theory, there are still concerns that, in practice, these efforts represent status-quo, top-down, urban revitalization efforts that ultimately reproduce environmental and climate injustices. As more public funding is directed into these targeted programs, more needs to be understood about how these investment programs are working on the ground. How are decisions made about how to spend public investments and who is involved in making these decision making processes? Finally, what are the possibilities and limitations of these efforts in terms of advancing multi-scalar and intergenerational climate justice?

To begin to answer some of these questions, I present a comparative case study of three neighborhoods in Los Angeles–Watts, Pacoima and South Central Los Angeles. Between 2018 and 2022, these three neighborhoods were awarded between $23 an $35 million through the State's Transformative Climate Communities Program (TCC) to implement comprehensive, community-led climate change plans and projects. I use qualitative content analysis to examine in-depth interviews (n=56) and relevant documents related to the development of TCC-funded climate plans in each of these neighborhoods.

These three cases enable insightful comparison given that they are located within a single political jurisdiction, the City of Los Angeles, but they differ notably in terms of the planning process and outcomes associated with the TCC funding. In Watts, the City's housing authority led a planning process centered around the redevelopment of one of their public housing sites, Jordan Downs. In Pacoima, an environmental NGO partnered with a grassroots environmental justice group to advance a plan centering around urban greening and revitalization of a channelized tributary. In South Los Angeles, a coalition of community-based organizations (CBOs) that organize across a range of issues put forward a climate plan that advanced inclusive economic development without displacement.

While each of these neighborhoods took a very different approach to climate planning, I find that the types of projects that are ultimately funded by the state are similar across the sites. In all three cases, I find that the realization of community priorities in the plans is limited to some extent by the program's guidelines, which determine the types of activities that can be funded. I also find that while sites led by non-governmental organizations show more evidence of past direct community engagement with residents, the constrained timeline limited the ability of any site to engage in authentic community engagement during the plan development. Lastly, I find that disparities in institutional capacity inhibit the involvement and leadership of grassroots CBOs.

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Keywords: climate change, community, collaborative planning, climate justice

COMPENSATED CENTRALIZATION: POLICIES FOR BUILDING MORE RENEWABLE ENERGY INFRASTRUCTURE WITHOUT LOSING PUBLIC LEGITIMACY

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Track 3: Environmental Planning
Individual Paper Presentation

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The energy transition faces a dual challenge: accelerating renewable infrastructure buildout while maintaining procedural fairness and local legitimacy. Across the US, large-scale wind and solar projects confront rising local opposition, slow permitting timelines, and fragmented regulatory authority. In response, a growing number of states, including Michigan, California, Connecticut, and New York, have begun experimenting with governance frameworks that pair streamlined siting authority with structured compensation for host communities. This article examines one experiment in depth: New York State's 2020 Accelerated Renewable Energy Growth and Community Benefit Act, which shifted final approval for large renewable projects from localities to a centralized state office while mandating the creation of a benefits program shaped through public comment. I term this policy design compensated centralization. Drawing on qualitative coding and network analysis of stakeholder input, the paper assesses which positions expressed during the participatory period were incorporated into the final rule and how early project approvals reveal the policy's maturation. I show that while the state established a uniform per-megawatt benefits floor, many localities negotiated additional community agreements beyond those standardized terms. The centralized permitting process curtailed local veto power but also created a regulatory regime that formalized engagement between communities and developers. New York's experience offers a governance model and a set of analytic lessons for regulators elsewhere seeking to accelerate siting while attending to procedural equity and host community standing.

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Keywords: renewable energy siting, centralized permitting, Host communities, Benefits agreements, procedural legitimacy

CONSIDERATIONS AND PROSPECTS FOR PROMOTING DATA TRANSPARENCY THROUGH ENVIRONMENTAL SENSORS INSIDE CARCERAL FACILITIES

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Track 3: Environmental Planning
Individual Paper Presentation

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Prisons and jails in the United States have issues with overcrowding, poor infrastructure, and subpar healthcare, which culminate in harmful and sometimes deadly conditions for incarcerated persons (IPs). We view this as an urban planning issue, since facilities are government-run institutions that are built and placed within our neighborhoods and cities, connecting them with the urban fabric. They also rely on local tax dollars, employ local individuals, and house local community members. These facilities are increasingly scrutinized for unfair practices, many of which are related to environmental planning, exposure to the elements, and to both natural and industrial hazards.

Sensing technologies (such as cameras, facial recognition, and wearables) are used in carceral facilities, and proponents and critics of such surveillance technologies have noted the benefits and drawbacks of these fast technological advancements. However, technologies that more explicitly monitor environmental conditions and/or IP health could specifically provide data to improve living conditions and drive accountability if intentionally designed to help rather than harm IPs. To explore IPs' opinions on using environmental or health sensing technologies in prisons and jails, we conducted semi-structured interviews with 19 formerly incarcerated individuals in the Atlanta, Georgia area to learn about their carceral experiences. We found that many participants support the integration of these technologies and making environmental sensor data available to the general public. However, participants expressed concerns about increased surveillance and use by facility employees. Our findings can facilitate larger studies that may be able to help lawmakers, planners, and community activists as they monitor and support carceral communities. In the academic sphere, our findings can help direct and support future research on carceral justice efforts in urban planning and community engagement studies.

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Keywords: Prisons, Jails, Incarceration, Environmental Sensors, Data Transparency

DATA CENTERS AND COMMUNITY WATER VULNERABILITY: ENVIRONMENTAL JUSTICE IMPLICATIONS OF INFRASTRUCTURE SITING IN THE UNITED STATES

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Track 3: Environmental Planning
Individual Paper Presentation

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Data centers are being constructed at an unprecedented pace across the United States, with over 6,000 facilities tracked nationally and nearly 3,000 more announced as of early 2026. These facilities consume significant water and energy resources, yet they are siting in communities with vastly different environmental conditions, water infrastructure capacities, and planning contexts. While public debate has focused on aggregate water consumption figures, little systematic research examines where data centers are located relative to existing community water challenges or whether the communities absorbing this development have the planning infrastructure to manage its implications.

This paper investigates how data center siting relates to community water vulnerability across the United States, and what the environmental justice implications of these patterns mean for planning practice. We ask two linked questions: are data centers concentrating in communities that already face water stress, quality violations, or infrastructure deficits, and do communities experience new or worsened water challenges following data center installation?

We employ a GIS-based spatial analysis linking facility-level data center locations from the Aterio US Data Centers Database (2026) to EPA Community Water System Service Area Boundaries (2025), Safe Drinking Water Act violation records, Maximum Contaminant Level exceedances, water stress indices, and American Community Survey demographic indicators. National-level analysis is supplemented by state-level case illustrations in high-concentration states, including Texas and Florida, to examine how regulatory and incentive environments shape siting patterns. This multi-layered spatial approach allows us to characterize receiving communities not only by who lives there but by the water conditions they face before and after data center development.

This paper contributes to environmental planning scholarship by applying environmental justice frameworks to an emerging infrastructure challenge that planning scholarship has not yet systematically addressed, demonstrating spatial methods that link industrial siting to community water conditions at national scale, and identifying what planners need to know when data center proposals arrive in water-vulnerable communities.

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Keywords: data centers, water quality, environmental justice, community water systems, infrastructure siting

DIFFERENTIATING COASTAL GROWTH SPACE THROUGH PLANNING-SUPPORT ADAPTATION ZONING FOR DALIAN, CHINA

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Track 3: Environmental Planning
Individual Paper Presentation

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Coastal adaptation planning often addresses urban expansion challenges by keeping growth out of flood-prone areas. Yet in many coastal cities, business-as-usual (BAU) growth already concentrates in relatively safe, high-suitability land, not because planners intervened, but because accessibility-driven, suitability logic inherently penalizes flood-exposed locations. Understanding this shifts the planning question from where not to grow toward where best to grow. This requires differentiating which areas should stay, which should retreat, and where new growth is best directed. This paper addresses this differentiation using a planning-support system (PSS) that can simulate urban scaled changes and their relation to sea level rise and flooding in Dalian, China, a port city exposed to the sea on three sides.

We use an established PSS, developed at the University of Illinois (the Land-use Evolution and Impact Assessment Model (LEAM)) and a Connected-bathtub flood model working at a 30m x 30 m scale. In the integrated modeling process, Connected-bathtub flood model outputs are translated into growth-suitability constraints that shape LEAM change probabilities, and alternative planning scenarios are tested by modifying LEAM spatial inputs and re-executing the allocation process under the same hydrologic risk surface. We derive planning-support layers, including a coastal planning belt (study region), a hydrologic risk classification system, and port-accessibility measures, from data sources already used in the modeling process. We then model existing land use activities and BAU growth projections, overlay these with planning layers to classify growth–constraint conflicts and define adaptation zones, including coastal residential constraint zones, port-commercial conditional retention zones, and safer inland receiving areas. We construct and compare three planning scenarios that redistribute the same total growth demand under different adaptation scenarios – BAU (accessibility-driven, no additional constraint), strong conservation (uniform coastal restriction reusing the earlier intervention allocation), and selective adaptation (differentiated rules that constrain coastal residential growth while conditionally retaining port-proximate commercial development). We evaluate scenario outcomes using count-based and spatial redistribution metrics and systematic sensitivity analysis (75 parameter combinations) to test policy robustness.

Three findings carry direct planning implications. First, a majority of urban growth in our BAU simulation is concentrated within 5 km of the shoreline in low-risk, high-suitability spaces. This confirms that the key planning problem is not uniform coastal restriction. Second, our conservation scenario unintentionally compressed new residential allocations into remaining coastal cells, producing a shorter mean distance to the shoreline (1.5 km) than the BAU (3.1 km) scenario. Selective adaptation was the only scenario that redirected residential growth inland (mean 11.5 km, 0% within the coastal belt), while retaining meaningful commercial allocations near port infrastructure. Third, sensitivity analysis reveals that in the Dalian context, available inland sites vastly exceed residential demand. This causes the coastal residential constraint to behave as an on-or-off decision rather than a graduated policy. Even the mildest restriction redirects all residential growth outside the belt. Planners should focus on belt width and commercial response intensity as the parameters that meaningfully shape allocation outcomes in our integrated simulations.

This work contributes a reproducible workflow for translating urban simulation outputs into conflict typologies and adaptation zones. For Dalian, the results suggest that differentiated adaptation zoning offers the most realistic path

toward reducing residential coastal exposure while preserving port-dependent economic functions under climate-driven sea level rise.

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Keywords: coastal adaptation zoning, planning-support systems, urban growth simulation, land-use differentiation, sea-level rise

DIVERGENT NARRATIVES OF SOCIO-THERMAL DISPARITY ACROSS SPATIAL SCALES: THE CASE OF ATLANTA

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Individual Paper Presentation

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While urban green space is increasingly recognized as a critical strategy for mitigating the urban heat island effect and advancing climate justice, the equitable distribution of its ecosystem services remains a profound challenge in the United States. Historically, systemic spatial inequalities have consistently deprived socioeconomically marginalized populations of essential cooling benefits. In response, local governments have committed significant investments to expand tree canopies and green spaces within underserved communities. However, while these targeted interventions are intended to alleviate socio-thermal disparities, they inadvertently risk reproducing climate injustice if the localized benefits trigger unintended socioeconomic consequences. Current environmental justice literature frequently relies on aggregate-level analyses to evaluate pathways toward distributive equity regarding urban green spaces. By implicitly assuming residential stability, these macro-scale perspectives often obscure the micro-level dynamics of the "green space paradox"—thereby masking how localized biophysical cooling and sociodemographic displacement intersect within the same urban fabric. To bridge this critical methodological and theoretical gap, this study investigates the distributive equity of urban greening interventions across two distinct spatial scales in Atlanta, Georgia.

At the aggregate city scale, decadal satellite-derived land surface temperatures (2000–2020) and census data were employed to evaluate longitudinal thermal disparities between the lowest and highest income quintiles. Concurrently, at the micro-scale, high-resolution microclimate simulations of newly developed local parks were integrated with localized, longitudinal analyses (2006–2020) of household income shifts in the immediately surrounding areas. The findings unveil a stark and critical divergence in equity outcomes. At the aggregate level, land surface temperature distributions among the lowest-income quintile demonstrated a significant decline, suggesting an apparent improvement in socio-thermal equity across the city. Conversely, the micro-scale analysis revealed that while localized daytime cooling effects reached up to 1.1℃, this environmental improvement was accompanied by severe socioeconomic restructuring, resulting in a drastic reduction of lower-income households in the immediate vicinity of the new parks. Ultimately, these multi-scalar results empirically demonstrate that physical cooling interventions are decoupled from long-term socioeconomic benefits for vulnerable residents. To achieve genuine urban heat justice, climate adaptation planning must move beyond purely physical green space development and structurally embed proactive, anti-displacement policy mechanisms. Otherwise, the cooling benefits of urban green spaces will fail to reach those in greatest need, ultimately becoming an exclusive amenity for privileged newcomers.

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Keywords: urban greening, cooling benefit, socio-thermal disparity, ENVI-met, heat justice

DOES CARBON-NEUTRAL POLICY INDUCE REGIONAL CARBON OUTSOURCING?: A DOUBLE MACHINE LEARNING APPROACH TO SPATIAL CORRELATION STRENGTH OF CARBON EMISSIONS

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Carbon inequality refers to the disproportionate distribution of carbon emission burdens and mitigation responsibilities across geographic areas. This disparity hinders equitable climate action and exacerbates regional socioeconomic imbalances. A key mechanism driving this inequality is regional carbon outsourcing, defined as a phenomenon where a region enforcing stringent environmental policies reduces its own emissions by transferring carbon-intensive production dependencies to regions with weaker regulations. This behavior fails to reduce absolute total emissions and merely shifts the burden across administrative boundaries, thereby undermining national mitigation efforts. Therefore, this study aims to verify whether regional carbon-neutral policies induce regional carbon outsourcing. Previous literature examining carbon outsourcing exhibits three limitations. First, input-output models assuming static relationships fail to capture dynamic spatial interactions driven by economic mass and geographic friction. Second, simplifying policies into dummy variables neglects the actual financial enforcement capacities of local governments. Third, linear models fail to isolate the causal effects of carbon-neutral policies due to complex nonlinear confounding relationships. Therefore, this study investigates: first, does the execution of carbon-neutral policies induce carbon outsourcing, measured by increased carbon influence and decreased carbon sensitivity? Second, how do these spatial emission flows differ between intra-regional and inter-regional interactions? The spatial scope encompasses 229 municipalities in South Korea, and the temporal scope covers the period from 2016 to 2022. A modified gravity model, incorporating regional emission masses and geographic distances, calculates the directional spatial correlation strength of carbon emissions. The sum of outward flows is defined as carbon influence, and the sum of inward flows is defined as carbon sensitivity. These are disaggregated into total, intra-regional, and inter-regional flows. The independent variable is the executed budget for regional carbon-neutral policies, extracted by filtering regional expenditures with 49 carbon neutrality keywords. To address nonlinear confounding mechanisms between policy execution and regional characteristics, the double machine learning (DML) methodology is employed. DML utilizes machine learning algorithms to estimate the complex relationships among the treatment variable, outcome variables, and confounders. The analysis reveals three findings. First, increased budget execution decreases total carbon sensitivity and increases total carbon influence, confirming a carbon outsourcing effect. Second, this influence is driven primarily by inter-regional flows, with minimal intra-regional impact, as regions displace emission burdens to distant areas to bypass local regulations and reorganize supply chains. Third, nonlinear effects of the industrial structure dictate this behavior; manufacturing-centric core regions exhibit the strongest tendency to outsource emissions distantly as their policy budgets increase. From an urban and regional planning perspective, local climate action plans must account for inter-regional spatial emission flows rather than focusing solely on intra-city emission reductions. Urban planners need to integrate spatial flow accounting into municipal greenhouse gas inventories to monitor carbon leakages beyond administrative boundaries. Furthermore, land-use and industrial zoning policies in manufacturing-centric cities should be coordinated with wide-area environmental guidelines. This approach prevents the simple relocation of emission-intensive facilities to less-regulated distant areas and ensures that spatial restructuring aligns with absolute emission reduction targets.

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Keywords: Carbon Inequality, Carbon Outsourcing, Carbon-Neutral Policy, Modified Gravity Model, Double Machine Learning

DOES REPORTING REFLECT NEED? UNEVEN 311 USE DURING HURRICANE HARVEY IN HOUSTON

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Individual Paper Presentation

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Local governments widely use 311 systems for non-emergency service requests, and these systems can become important channels for residents to communicate their needs during disasters. Prior research shows that 311 requests increase after hurricanes, suggesting that residents actively use these systems during extreme events. Meanwhile, studies under routine conditions show that some socioeconomic groups submit more 311 requests than others. The volume of 311 requests reflects both residents' objective needs, defined by physical exposure to environmental risks and infrastructure failures, and differences in reporting behavior across social groups. However, these studies do not explicitly examine whether reporting aligns with objective need, which may reflect disparities in residents' use of civic service systems.

This study addresses two related questions during 2017's Hurricane Harvey in Houston: (1) whether disparities in flood-related 311 request volume persist across communities, and (2) whether 311 reporting reflects objective need, defined as physical exposure to flooding, equitably across communities. To do so, the study distinguishes between total request volume and reporting behavior relative to objective need. We use an exposure-adjusted framework to estimate expected flood-related requests volume based on the population exposed to flooding as a proxy for objective need. We then compare observed requests volume to this baseline to classify census block groups as over-reporting or under-reporting relative to objective need.

Two spatial regression models are estimated in a Bayesian framework with stochastic partial differential equations (SPDE) and flood management district random effects. A negative binomial model and a logistic model test how two dimensions of 311 use relate to three groups of explanatory variables: flood-related conditions, socioeconomic characteristics, and visible neighborhood conditions. Flood-related conditions include event-specific exposure (inundation and flood depth), baseline risk (FEMA floodplain and floodway coverage), and broader built environment context. Socioeconomic characteristics include income, poverty, race and ethnicity, education, and housing composition. Flood-related visible neighborhood conditions are measured using Google Street View–derived features extracted through an existing pipeline by coauthor, capturing visible cues related to flooding risk, such as water, vegetation, and built structures in the streetscape.

Results show that flood risk is associated with higher 311 request volume, particularly in areas with greater floodplain coverage. However, higher floodplain and floodway coverage are associated with a tendency of under-reporting relative to objective need.

Socioeconomic characteristics further shape both request volume and reporting behavior. Communities with lower income levels and a higher percentage of multifamily and mobile homes are associated with both lower request volume and a tendency to underreport, indicating that these communities are less likely to have their needs reflected in 311 data. In addition, streetscape variables are not significantly associated with total request volume, but several are associated with over- and under-reporting relative to objective need. Building- and water-related visual cues are positively associated with over-reporting, whereas road- and wall-dominated streetscapes are

negatively associated with it. This suggests that visible neighborhood conditions may influence residents' flood risk perception and reporting decisions.

Overall, higher 311 request volume during disasters does not necessarily mean that reporting aligns with objective need. By distinguishing between request volume and reporting relative to objective need, this study highlights systematic mismatches between flood exposure and reported demand, with implications for equitable disaster response and resource allocation.

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Keywords: 311 service requests, Reporting-need mismatch, Disaster response, Spatial disparities, Hurricane Harvey

DYNAMIC LIFE CYCLE CARBON ACCOUNTING AND CARBON REDUCTION PERFORMANCE ASSESSMENT FOR MIXED REGENERATION IN OLD RESIDENTIAL AREAS: CASE STUDY IN CHINA

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Individual Paper Presentation

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Against the backdrop of sustainable urban transformation, old residential areas have emerged as critical arenas for carbon mitigation. Recent studies on residential carbon reduction have increasingly shifted to community-scale life-cycle carbon accounting, evaluating environmental benefits through indicators like carbon reduction rates and payback periods. However, existing accounting frameworks and performance assessment systems are primarily designed for single, one-time regeneration actions. In reality, old residential areas frequently undergo mixed regeneration simultaneously—including retained retrofitting, demolition and reconstruction, and environmental system upgrades. Furthermore, variations in the remaining service lives of different buildings often trigger subsequent rounds of regeneration. Consequently, conventional life-cycle boundary definitions and static assessment periods are inadequate for these complex scenarios.

To address these limitations, a dynamic carbon emission accounting and performance evaluation methodology tailored to mixed regeneration scenarios is developed using the emission factor method. Initially, accounting boundaries are systematically redefined to accommodate the complexities of mixed regeneration modes. To resolve temporal inconsistencies in the service lives of various objects, a novel dual-assessment period approach is proposed. This approach explicitly distinguishes between the evaluation period of the primary regeneration project and the long-term planning assessment period of the broader community. Building upon this, mathematical modifications accounting for remaining service lives under different regeneration modes are integrated into the framework. A stratified assessment utilizing standardized indicators is then conducted, significantly enhancing the comparability of environmental benefit evaluations.

A typical old residential area in Nanjing, China, is selected as a case study. Based on building performance and remaining service life, regeneration objects are classified into retained retrofitted buildings, demolished and reconstructed buildings, and environmental systems. Carbon emissions are quantified separately across the embodied, operational, and demolition phases, and scenario simulations are employed to evaluate the reduction potential of various schemes. Results indicate that under mixed regeneration conditions, life-cycle carbon emissions and reduction performance are highly sensitive to defined boundaries and evaluation periods.

Demolition and reconstruction substantially increase embodied emissions initially, whereas retained retrofitting produces pronounced reduction benefits during subsequent operation. When subsequent regeneration processes induced by differing service lives are incorporated, metrics derived from a single action fail to characterize the community's long-term low-carbon performance. Ultimately, the effectiveness of low-carbon optimized schemes depends not merely on initial emission reductions, but on the strategic combination and temporal sequencing of regeneration modes. This study refines assessment methods for aging communities and provides a quantitative basis for differentiated renewal strategies and low-carbon decision-making.

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Keywords: Life cycle assessment, Old residential areas, Carbon emissions impact, Mixed regeneration

DYNAMIC URBAN RESILIENCE AND THE RECOVERY OF MOBILITY AND CONSUMPTION: A TIME-SERIES ANALYSIS USING BIG DATA

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Large-scale disruptions can significantly alter urban activity, posing challenges for planning and recovery. Population mobility and economic consumption—key components of urban vitality—are particularly sensitive to external shocks and offer important signals of how urban systems function under stress. Understanding how these components recover over time is therefore central to interpreting urban resilience and informing policy responses. However, previous studies have largely described changes in urban activity in aggregate terms or measured resilience as a single summary outcome, limiting the ability to capture temporal dynamics of recovery and variation across domains of urban activity.

This study examines the recovery of urban vitality by treating resilience as a dynamic, time-varying process. Using large-scale data on mobility and card-based consumption across 250 municipal districts in South Korea from 2019 to 2023, a period spanning the onset and aftermath of the COVID-19 pandemic, we extend a Zobel-based resilience measure to construct time-series indicators of both short- and long-term resilience. The high spatial and temporal resolution of these data enables detailed observation of recovery processes, capturing not only whether recovery occurs but also how quickly and through what patterns it unfolds across regions and activity types.

The analysis proceeds in four steps. First, we trace the temporal evolution of resilience and compare recovery trajectories between mobility and consumption, with attention to potential time lags between the two domains. Second, we classify districts into distinct recovery types based on their resilience trajectories, capturing differences in the speed, stability, and timing of recovery. This classification moves beyond aggregate trends to identify systematic variation in how recovery unfolds across regions. Third, we examine factors associated with these recovery types using a multinomial logit model, focusing on demographic, economic, and epidemiological characteristics. Fourth, we assess spatial heterogeneity in these relationships using Multiscale Geographically Weighted Regression (MGWR) to determine whether the influence of these factors is consistent across regions or varies locally.

The results show that recovery patterns differ not only across regions but also between mobility and consumption, indicating that urban vitality does not recover uniformly across its components. The factors associated with different recovery types also exhibit spatial variation, suggesting that similar structural conditions may lead to different outcomes depending on local context. These findings point to the importance of interpreting resilience in relation to both temporal dynamics and regional context, rather than as a single value or uniform process.

By combining time-series resilience measures, trajectory-based classification, and spatial analysis, this study offers a structured framework for analyzing urban recovery using big data. The findings provide empirical evidence that can inform planning responses attuned to differences in recovery patterns across regions and over time, contributing to a more grounded understanding of urban resilience in planning practice.

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Keywords: Urban Resilience, Mobility, Consumption, Time-Series Analysis, Big Data

DYNAMIC URBAN SPATIAL STRUCTURE AND CARBON EMISSIONS: TIME-SERIES ANALYSIS OF POPULATION–BUILT ENVIRONMENT CHANGE IN SOUTH KOREA

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Urban spatial structure—defined by the 4Ds of density, diversity, design, and distance to transit—is widely regarded as a key determinant of carbon emissions. Most research, however, relies on cross-sectional models that treat this relationship as stable across contexts, overlooking a critical condition in an era of demographic transition, which is the temporal mismatch between population dynamics and the built environment. As populations decline, identical density or accessibility values might correspond to fundamentally different urban processes with potentially reversed effects on emissions. This study asks how do temporal mismatches between population change and built environment change condition the effects of urban spatial structure on carbon emissions? We pursue two objectives: (1) identifying spatial-temporal patterns of population–built environment change through trajectory-based clustering, and (2) examining how these patterns moderate the 4Ds–carbon emissions relationship. We analyze grid-level (1 km × 1 km) population and building floor area data for South Korea from 2016 to 2023. Dynamic Time Warping (DTW)-based K-means clustering classifies change trajectories by direction and shape. Following the UN Degree of Urbanization framework, grids are categorized as urban or non-urban, and composition ratios of trajectory types are aggregated to the municipal level for each context. Municipalities are classified into typologies, and type-specific panel models assess the effects of 4Ds on transport emissions, building emissions, and carbon sink capacity. Clustering across 69,210 grids yields two types, where population declines while the built environment persists or expands(C1: n=36,433, C2: n=19,646), and three growth-match types(C3: n=6,177, C4: n=6,210, C5: n=744), where population and built environment move in tandem. Mismatch types account for approximately 81% of all grids. In mismatch-dominated municipalities, compact city logic breaks down. High density reflects oversupply rather than demand, and transit accessibility fails to generate ridership, reversing expected carbon reduction effects. These dynamics appear as overcapacity in urban cores and low-density sprawl in non-urban areas. In contrast, match-dominated municipalities display robust negative associations between spatial structure and emissions. This study makes three contributions to planning scholarship and practice. First, it demonstrates that the temporal lag between population change and built environment change produces match and mismatch patterns that reshape the functional meaning of spatial structure indicators and alter their effects on carbon emissions, challenging the assumption that compact urban form uniformly reduces emissions. Second, the municipal typology framework, grounded in composition ratios of trajectory types within urban and non-urban areas, offers planners a diagnostic tool that captures divergent change dynamics between cores and peripheries within the same jurisdiction. Third, it identifies the carbon sink pathway in shrinking areas where simultaneous population and built environment decline facilitates reversion to forest and greenspace, as a low-carbon strategy largely overlooked in existing literature. These findings support typology-specific planning strategies: compact intensification for growth-matched municipalities, managed retreat and greenspace conversion for shrinking areas, and infrastructure right-sizing for mismatch-dominated jurisdictions.

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Keywords: Population, Built environment, Time series clustering, Carbon emission, Urban spatial structure

EMANCIPATORY WATERSHED PLANNING IN THE ERA OF AI-DRIVEN ECONOMIC DEVELOPMENT – LOCAL REGULATIONS FOR DATA CENTERS IN THE USA, FRANCE, AND GERMANY

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Global demands for cloud computing, AI, and big data analytics have resulted in thousands of new data centers, facilities which can become cities' largest consumers of electricity and water. The race to build data centers suggests that governments are fomenting their digital sovereignty at great expense to localities' longer-term needs. In the United States, data centers have especially propagated in sacrifice zones, often rural, low-income, and/or Black communities, as exemplified by xAI's Colossus 2 near Memphis, TN. Expedited permits and selective environmental enforcement have allowed these facilities to operate with reduced accountability, perpetuating environmental racism and injustice. As such, sustainable watershed planning can become an emancipatory tool to ensure local democracy perseveres as federal governments seek to preempt local regulations to expedite data center development.

While AI-driven economic development can intensify water and energy insecurity and intensify historical inequalities, local community resistance and planning efforts can mitigate data centers' negative externalities and resource exploitation. Nonetheless, watershed protection plans have largely not yet accounted for the growth of data centers. The watershed is the most appropriate planning unit for water and ecosystem protection, but its larger scale comprises multiple local governments, who manage land use planning decisions and often have conflicting interests. Scholars have proposed collaborative governance regimes within and across watersheds to integrate water governance and manage complex problems under uncertainty (Emerson, K., & Nabatchi, T., 2015; Innes, J. E., & Booher, D. E., 2018).

This paper analyzes how governments can incorporate water justice-oriented objectives into watershed protection plans in geographies emerging as IT agglomeration economies. Case studies in the United States, France, and Germany reveal how national policy contexts help to enable or incapacitate local agendas for environmental and ecological justice. While most community planners have not been involved in watershed-based planning, they nonetheless address water quality via land use planning (Dyckman, 2018). Through the evaluation of watersheds for six metropolitan areas (Washington DC and San Antonio, TX in the USA, Paris and Marseille in France, and Berlin and Frankfurt in Germany), we examine how watershed protection plans are integrated with local and national directives to regulate AI by assessing local planning responses to data center development in six domains: water and energy access and pricing, built environment, planning processes and engagement, data ownership and privacy, economic opportunity, and ecological justice.

We find that hydrological conditions and grassroots legacies in social justice activism best predict that justice-oriented objectives materialize in built environment measures and plans for water pricing and economic opportunities. Even many localities without a robust history of protesting environmental injustice have proposed local moratoria on new data center construction, which has emerged as one of the most common citizen-demanded tools to limit data centers via land use planning. The national policy context heavily influences the inclusion of data ownership and privacy objectives. This research confirms other studies highlighting how local policy entrepreneurship can advance nature-based solutions to produce co-benefits for ecosystem health, like improved water quality and hazard reduction (Cutts, Greenlee, & Chantrill, 2022).

This research evaluates local experimentation for data center regulation in six metropolitan areas to propose how the watershed can operate as a planning unit for environmental justice. This paper offers planners concrete actions to support communities in successfully using land use planning to challenge the environmental racism and coloniality of data center development.

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Keywords: Data centers, Environmental justice, Land use governance, Utilities, Watershed planning

EMERGENT PUBLIC SPACE UNDER ENVIRONMENTAL STRESS: GREEN SPACE DEFICIT, INFRASTRUCTURE PUBLICS, AND AMBIENT AIR QUALITY RISK IN LAHORE

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Track 3: Environmental Planning
Individual Paper Presentation

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In Lahore, the underside of a bridge is not just infrastructure, it is where a barber has set up a chair, where day laborers gather at dawn, fruit vendors sell their produce and where homeless residents sleep through the summer heat. Bridge undersides, canal banks, and roundabouts have become the de facto public spaces of a metropolis lacking formal green space. This paper asks what it costs, environmentally, to use them. Drawing on the concept of urban misfit, the gap between planned form and actual use (Lynch, 1981), and recent work on air quality risk in informal settlements (Oluwalana-Sanusi et al. 2026; Hossain et al. 2026), it identifies a spatial mechanism connecting the two. Green space deficit directs informal occupation toward road-adjacent shade infrastructure, concentrating users where thermal comfort and pollution risk coincide. These planning questions follow: is infrastructure appropriation a structural condition or a preference? Do these (cooler) spaces expose users to air quality risk in the absence of vegetative buffering?

The study uses a multi-resolution spatial analysis from publicly available data and Google Earth Engine. Green infrastructure is mapped using Sentinel-2 NDVI at 10m and OpenStreetMap park polygons. City-scale NO_2 is derived from Sentinel-5P TROPOMI (winter 2023–2024), cross-validated against seven IQ Air PM2.5 stations. Thermal conditions and site-scale pollution are characterized at four documented sites of social occupation, Sherpao Bridge, Mian Mir Bridge, Jinnah Flyover, and Muslim Town Flyover (Ahmed, Mujahid & Khan, 2020), using Landsat 9 at 30m and a Sentinel-2 aerosol proxy at 20m. NASA VIIRS nighttime light at 500m acts as a proxy to nocturnal occupation. The Lahore Canal is analyzed across three corridor segments: Thokar to Muslim Town, Muslim Town to Gulberg, Gulberg to Harbanspura.

The findings answer each question in turn. First, 95% of residents live more than 1km from the nearest formal park and green space falls 90% below the WHO benchmark of 9 m^2 per capita (Russo & Cirella, 2018): infrastructure appropriation is a structural condition. Second, NO_2 concentrations differ significantly across four urban zone types: formal parks, canal corridor, roundabouts, and bridge zones, with Kruskal-Wallis $\chi^2=8.43$, $p=0.038$, confirming that where you are in the city determines what you breathe. With city mean surface temperatures of 36.4°C and bridge decks reaching 43.8°C, shade is a survival resource in a city lacking formal green canopy. Bridge zones record nighttime light which is 18.9% above its surroundings, directional evidence of sustained nocturnal occupation, while NDVI at 10m is 66% lower than formal parks, confirming the absence of vegetative buffering. Within the canal corridor, the Muslim Town to Gulberg segment records the densest canopy and the highest NO_2 (144 µmol/m^2) simultaneously, and the canal's NO_2 residual of −9.8 µmol/m^2 shows that Canal Bank Road traffic overwhelms the canopy's buffering capacity. Third, the exposure burden may be socially differentiated: involuntary-use sites such as Sherpao Bridge (fruit vendors) and Mian Mir Bridge (fruit and commercial vendors) record lower NDVI than the semi-discretionary Muslim Town Flyover, confirming that residents with the fewest alternatives may occupy the least-buffered locations.

No planning instrument in Lahore formally recognizes, regulates, or invests in these spaces; this is a governance gap perpetuating both the environmental burden and access inequity. Planning intervention needs to move beyond formalization toward environmental remediation and spatial justice, equalizing access to clean-air and thermal refuge across income groups. The analysis framework, including city-scale TROPOMI and VIIRS with site-scale

Sentinel-2 and Landsat 9, all via Google Earth Engine, is replicable across rapidly urbanizing cities where infrastructure appropriation and green space deficit intersect.

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Keywords: informal public space, green space deficit, ambient air quality, thermal refuge, environmental justice

ENVIRONMENTAL JUSTICE IN PARK MASTER PLANS OF 100 US CITIES: A NATURAL LANGUAGE PROCESSING ANALYSIS

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Individual Paper Presentation

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Introduction. Environmental Justice (EJ) is becoming increasingly embedded in the planning of urban green spaces (UGS) as a core principle to improve park access, address historical inequities, and provide better well-being for citizens. To achieve EJ, plans must consider not only the equitable allocation of parks (distributional justice) but also how decisions are made and who gets involved (procedural justice), and whose identities, needs, and experiences are recognized in the process (recognitional justice). Despite related research on urban forestry and climate adaptation plans, no studies have comprehensively examined how EJ is used in park planning, specifically, how the three dimensions of EJ (distributional, procedural, and recognitional) are articulated in park master plans, which guide park investment, priorities, and public engagement in US cities. To address this gap, we investigate how the EJ dimensions are represented and interconnected in park master plans across the 100 most populous US cities. Research questions. 1. Which dimensions of EJ are mentioned most frequently in park master plans, and what subjects are most emphasized within each dimension? 2. To what extent do these EJ dimensions co-occur? 3. How do the three dimensions vary across cities, regions, geographic context, and demographics?

Methods. We developed a theory-driven natural language processing approach to analyze a large corpus of 100 park master plans. Using Python, we extracted the PDF files of these plans into machine-readable text, and cleaned and normalized them via tokenization, lemmatization, and stopword removal. We also built theory-based dictionaries for distributional, procedural, and recognitional justice. We then measured term frequencies for each EJ dimension in each plan, calculated Term Frequency-Inverse Document Frequency (TF-IDF) scores, and examined co-occurrence indicators to identify where multiple EJ dimensions are present. Further, we used inferential statistics (e.g., ANOVA, correlations) to analyze connections between EJ content and city-level geographic and demographic labels.

Results. Preliminary findings based on 10 plans show that the three dimensions of EJ are all present in park master plans but not equally. Distributional justice is the most emphasized dimension (>0.5%), particularly through language related to access, showing that recent plans are concerned with how resources are allocated. Also, procedural justice (about 0.2%) appears more than recognitional (<0.1%), partly because several plans typically include equity-oriented community outreach in the planning process and report the results of public engagement. The limited content on recognitional justice involves language on identities, such as cultural, native, and racial identities, and on historically underrepresented communities.

We also find more frequent co-occurrence along the distributional dimension, indicating that many cities use inclusive community engagement and consider diverse needs when addressing questions about park access. Co-occurrence between procedural and recognitional justice is rarer.

Furthermore, some plans show more balanced EJ content across the three dimensions, whereas others have a narrower narrative that focuses more on distribution. Both geographical and demographic contexts may be shaping the aforementioned differences, with a more comprehensive analysis needed for the 100 plans.

Implications. While EJ is becoming prevalent in park master plans, its three dimensions are unevenly represented. To advance more inclusive planning, future plans should focus not only on how parks are distributed, but also on

how decisions are made, and whose voices, histories, and identities are meaningfully recognized. This involves the inclusion of policies and implementation tools that ensure well-supported participation of underserved communities, including language services, childcare, and compensation.

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Keywords: Urban parks, Environmental justice, Plan analysis, Urban green space, Language processing

EQUITABLE URBAN GREENERY AND ENVIRONMENTAL JUSTICE IN ENVIRONMENTAL AND URBAN PLANNING PRACTICE

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Individual Paper Presentation

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Urban greenery offers many human and environmental benefits including mental and physical benefits to individuals, decreased energy costs for residents, and ecosystem services such as reduction of extreme temperatures (Jones & Davies, 2017). However, urban greenery is not always distributed equally in our communities; historic patterns of disinvestment including redlining have placed marginalized communities at a disadvantage for urban greenery (Rigolon & Németh, 2021). Environmental and urban planning practice has the potential to play a large role in promoting equity through urban greenery (Rigolon et al., 2024). Nevertheless, empirical work on how planning practice approaches environmental justice related to urban greenery through its three pillars of distributional, recognitional, and procedural justice is relatively limited (Schlosberg, 2007). In this paper, we evaluate various municipal plans to assess how they approach urban greenery equity related to: a. equitably siting urban greenery? (i.e., distributional justice); b. addressing lack of access, fairness, and transparency in decision-making processes that shape distributional outcomes in urban greenery? (i.e., procedural justice); c. prioritizing and recognizing the perspectives, knowledge, and experiences of disadvantaged groups within policy development and decision-making for urban greenery? (i.e., recognitional justice). More specifically, we use Berke and Godschalk's (2009) identified internal characteristics (i.e. issue identification, goals, fact base, policies, implementation, monitoring and evaluation, and internal consistency) to evaluate five types of plans (i.e., urban forestry management plans, open space plans, sustainability plans, comprehensive plans, and climate plans) in ten randomly selected medium-sized U.S. cities. Our preliminary findings show that overall, plans address distributional justice the strongest when detailing issue identification, future goals, and policies. However, implementation, monitoring, and evaluation are weak across all plans for all three pillars of environmental justice. For example, nearly no plans included all three: a. environmental justice goals based on measurable objectives; b. indicators for monitoring those objectives; c. organizations identified to monitor those indicators. The results of this study contribute to the current understanding of the efforts being made to incorporate environmental justice and urban greenery equity into planning practice. In addition, the results of this study contribute to current planning practice by directly evaluating areas of strength and areas of weakness in planning documents. This evaluation will hopefully prompt a shift in urban and environmental planning practice to strengthen focus on recognitional and procedural justice, and strengthen implementation, monitoring, and evaluation of the three pillars of environmental justice in practice.

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Keywords: Environmental justice, Urban greenery, Urban greenery equity, Urban parks

EVALUATING COST-EFFECTIVENESS OF URBAN HEAT MITIGATION STRATEGIES IN SEOUL'S REGENERATION PROJECTS

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Individual Paper Presentation

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The urban heat island (UHI) effects is a major challenge that elevates summer air temperatures and increases energy demand in cities. Although various heat mitigation strategies have been implemented, many require substantial investment. In already developed urban areas, regeneration projects provide opportunities to introduce cost-effective alternatives that enhance outdoor thermal comfort. While numerous studies have addressed UHI mitigation, few have comprehensively analyzed the specific impacts of urban regeneration strategies. This study aims to fill this research gap by comprehensively evaluating the thermal performance and cost-effectiveness of representative mitigation strategies across urban regeneration areas in Seoul, considering their urban typologies. Urban regeneration typologies were identified using k-means, an unsupervised learning method, from 53 officially designated urban regeneration projects in Seoul, and representative sites were selected from each typology cluster. Multiple mitigation strategies, including green roofs, bright roofs, and green pavement, and their combinations were applied using ENVI-met v5.8.0 simulations. The Universal Thermal Climate Index (UTCI) was used to assess outdoor thermal comfort outcome of mitigations strategies under typical summer heat conditions in 2024 and validated using the S-DoT dataset. Cost-effectiveness was evaluated by comparing the total 10-year implementation cost of each strategy against its corresponding outdoor thermal comfort performance.

The results reveal strong typology-dependent variability in both outdoor thermal comfort performance and economic efficiency. No single mitigation strategy consistently reduced thermal stress across all neighborhood typologies. Green roofs showed the highest absolute cooling potential, achieving up to a −0.42°C reduction in UTCI during peak hours between 13:00 and 15:00, particularly in dense urban conditions. Bright roofs showed context-dependent performance, providing moderate cooling in some cases while producing warming effects in others. Green pavement exhibited highly inconsistent thermal performance, often leading to daytime warming and only limited or delayed cooling effects.

Cost-effectiveness results reveal a systematic decoupling between outdoor thermal comfort performance and economic efficiency, indicating that stronger cooling outcomes do not necessarily correspond to more cost-effective interventions. These findings demonstrate that heat mitigation strategies can either alleviate or exacerbate thermal stress depending on urban typology. Green roofs provide the most consistent cooling, while green pavement poses the highest risk of adverse effects. Importantly, the results confirm that cooling effectiveness and economic efficiency are fundamentally conditioned by urban neighborhood typology rather than being intrinsic properties of individual strategies. This study highlights the critical need to integrate cost-effect consideration into heat mitigation decision-making, a dimension often overlooked in existing studies. By demonstrating that thermal and economic outcomes are fundamentally context-dependent, this study provides an evidence-based framework to support more climate-responsive and economically informed approaches to sustainable urban regeneration.

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Keywords: urban heat island, urban regeneration, Mitigation Strategies, ENVI-met, sustainable urban design

EVALUATING THE PROCEDURAL EQUITY OF CLIMATE ACTION PLANNING PROCESSES

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Individual Paper Presentation

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Comprehensive evaluations of public engagement are rare. The literature more often reports on the outcomes of at least one, but no more than a handful of case studies. This approach has limited the transferability of lessons learned from these cases, and, more importantly, obscures broader patterns about whether and how participatory planning is addressing a persistent procedural equity gap. Collaborative and empowering engagement is often recommended to promote a more democratic process and achieve just outcomes (Arnstein, 1969; Healy, 1992; Fung, 2006). As professionals with a responsibility to their community, planners have an ethical obligation to evaluate the extent to which their processes incorporate well-established best practices to ensure procedural equity (Bullard, 2004), yet it is currently unclear whether that obligation is being met.

To better understand this gap, I evaluate public engagement retrospectively in the context of municipal climate action planning processes. Climate action plans (CAPs) have been increasingly adopted by municipalities as planning tools to outline goals, strategies, and actions to decrease greenhouse gas emissions. Inclusive and effective public engagement during climate action planning processes additionally addresses environmental justice concerns by incorporating underrepresented voices into conversations around climate change mitigation (Bullard, 2004). Therefore, this study asks: To what extent do municipal climate action planning processes incorporate the features of effective and equitable public engagement?

I conducted qualitative content analysis of climate action plans' public engagement reports to assess their design and integration into planning processes. This study sampled the most recent CAPs adopted before 2026 from California municipalities with a population of greater than 20,000 people. California was selected due to its influence in environmental policy, overrepresentation in CAPs nationwide, and existing policy outlining the contents of a "qualified" CAP. While California requires public adoption of CAPs, this study evaluates engagement beyond this minimum requirement. I coded adopted plans for themes related to the type and intensity of participatory practices, the connection between outcomes of participation and the plans themselves, and whether and how a variety of voices and viewpoints were included in the process.

Out of the 178 cities in the sample, 125 cities (70 percent) had adopted CAPs. Of those, 37 cities (30 percent) did not engage the public throughout the planning process. On average, cities that did engage with the public included less than half (44 percent) of the features included in the codebook used to score each process. These results suggest that public engagement conducted during climate action planning processes noticeably lacks attention to procedural equity.

Furthermore, very few engagement processes included outreach to underrepresented communities and identity-based community groups, used printed outreach materials, provided compensation for participants' time, and conveniently scheduled engagement outside of weekday work hours. In addition to these design weaknesses, they rarely (12 percent) identified a connection between the outcomes of public engagement and the content of the CAP itself.

Therefore, this study reveals a significant procedural equity gap that planning professionals must address. The framework employed in this study can be used to design more effective and equitable engagement to increase access to these processes. In the context of California environmental policy, these shortcomings justify the adoption of additional requirements to conduct public engagement throughout the process rather than at plan

adoption. Lastly, this study hopes to encourage more frequent evaluations of public engagement, whether through individuals' reflexive practice or across comprehensive scales.

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Keywords: Public engagement, Procedural equity, Climate action planning, Planning evaluation, Planning practice

EXAMINING ASTHMA RISK AND VULNERABILITY FROM WILDFIRE-DERIVED $PM_{2.5}$ EXPOSURE: LONGITUDINAL EVIDENCE FROM CALIFORNIA, 2013-2023

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Due to the climate change and increasing wildfires, wildfire smoke has become an increasingly critical environmental and planning challenge in California, yet its long-term health impacts and spatial inequalities remain insufficiently understood. This study examines how wildfire-derived PM2.5 exposure impacts asthma-related emergency department visit rates across California communities, and whether the impacts vary by social vulnerability, age groups, and spatiotemporal exposure patterns.

We integrate daily wildfire-derived PM2.5 data (2013-2023) with ZIP code-level asthma health records and socio-demographic data in California. Using Dynamic Time Warping clustering, we identify three distinct wildfire-derived PM2.5 exposure trajectories: low-level with a single 2020 peak, gradually increasing with a 2020 peak, and persistently high exposure. We then apply two-way fixed effects panel models to examine the associations between wildfire-derived PM2.5 exposure and asthma-related emergency department visit rates over time and test heterogeneity across Social Vulnerability Index quartiles, three identified exposure trajectories, and age groups.

Results show a consistent positive association between wildfire-derived PM2.5 exposure and asthma-related emergency visits. However, this relationship varies across exposure trajectories and social vulnerability. In gradually increasing exposure areas, stronger associations are concentrated in moderate to high vulnerability communities. In persistently high exposure areas, the association is strong across Social Vulnerability Index quartiles including the areas with lower social vulnerability, which suggests that extreme exposure levels overwhelm the potential positive effects of socioeconomic advantage. Moreover, children exhibit more consistent and stronger associations than adults under increasing and high exposure conditions. These findings highlight the importance of incorporating and predicting long-term exposure trajectories and social vulnerability into wildfire planning and public health strategies, especially for children. The integration of Dynamic Time Warping exposure trajectory clustering with two-way fixed effects models offers a transferable framework that can be applied to other states and fire-prone regions to assess long-term wildfire health impacts.

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Keywords: Wildfire-derived PM2.5, Asthma, Wildfire resilience, Natural hazards, Social vulnerability

EXPERIMENTING WITH WATER GOVERNANCE: THE CASE OF RAINWATER HARVESTING PROGRAM IN MEXICO CITY

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Individual Paper Presentation

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Water challenges have long been a defining feature of life in Mexico City (CDMX). However, in recent years, this condition has exacerbated: the city remains vulnerable both to recurring floods and chronic water shortages. These challenges stem from an urbanization process that disrupted the city's ecological systems, leaving it vulnerable and constraining its adaptive pathways (Tellman et al., 2018). While the causes of such a condition are multiple, it is widely accepted that a set of inadequate water management practices contributes to perpetuating this state of scarcity: as the city's overtapped aquifer empties, the land is sinking, damaging water pipes and exacerbating problems with water supply and quality. Water distribution is tightly controlled in some areas of the city, which puts an additional financial and social burden on residents. For years, city authorities have experimented with ways to develop a multi-layered water management system which resulted in a hybrid infrastructure model combining formal and informal arrangements.

One of the examples of such interventions is the "Cosecha de Lluvia" program that started in 2019. Since then, over 73,000 Rainwater Harvesting (RWH) systems were installed in households and schools citywide. Despite this achievement, the program's design and implementation have been complex and, at times, inconsistent. Annual adjustments to its operations and geographic scope appear to be shaped not only by technical factors but also by competing interests and shifting priorities: for example, high water scarcity areas that get 100% subsidy for RWH installation vary year-by-year.

Aiming to understand how the concept of vulnerability gets translated into bureaucratic actions through urban sustainability programs, in this project we use urban experimentation as a lens to understand these dynamics by studying the decision-making process underlying the implementation of RWH systems in Mexico City from 2019 to 2025. Conceptualizing "Cosecha de Lluvia" program as an urban experiment in climate governance (Bulkeley & Broto, 2013), the study asks how and why the program—initially intended to address water shortages in the city's most underserved areas—shifted its scope and geographic priorities multiple times.

By analysing the Program's rules of operation, program evaluations, spatial distribution of program's beneficiaries year-by-year and juxtaposing them with interviews with program's stakeholders and staff members, we trace the transformation of the program and interrogate the political and economic drivers defining it. Our preliminary findings suggest that the transformation of the goals and target audiences of the program facilitated its continuation, which resulted in providing additional water supply to the residents of Mexico City. However, this transformation, in order to "maintain" the experiment, blurred the understanding of the program's final goal and bounded its potential for establishing a more decentralized and just water governance: for example, the initial framing of the program was as supporting individual households that will become responsible for system's maintenance, and the focus of the program later shifted to more large-scale installations that have bigger capacity for maintenance and quality control.

This research provides new evidence on how urban sustainability policies evolve and the factors that influence decisions regarding their expansion or transformation. It further engages with the literature on climate change and urban transitions by addressing the "long-term effectiveness of experiments and their interaction across scales"

(Castan-Broto & Bulkeley, 2013). Additionally, the study contributes to debates in urban political ecology and climate governance by examining the politics of experimentation and the role of justice and equity (Castan-Broto & Bulkeley, 2013).

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Keywords: sustainability, water scarcity, climate adaptation, urban experimentation, infrastructure politics

EXTREME HEAT EXPOSURE ACROSS THE URBAN–RURAL SPECTRUM: A COUNTY-LEVEL LONGITUDINAL ANALYSIS IN THE UNITED STATES

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Track 3: Environmental Planning
Individual Paper Presentation

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Extreme heat events are intensifying in frequency, duration, and spatial extent due to climate change, posing growing risks to energy and water use, urban vegetation, public health and quality of life. Population exposure to extreme heat has increased sharply in recent decades, yet it remains unclear how population dynamics and climate warming jointly shape these changes across the urban–rural spectrum. Addressing this gap is critical for urban planning, as the spatial distribution of exposure determines where risks are most concentrated and where interventions are most needed. Here, we quantify long-term changes in extreme heat exposure across the contiguous United States using four decades of high-resolution gridded temperature data and county-level population records. We further decompose exposure change into population, climate, and interaction effects to isolate their relative contributions.

We find that large central metropolitan areas experience the most pronounced increases in both absolute and relative exposure, with exposure rising by approximately 63.6%, far exceeding all other urbanization levels, and increasing at a rate of about 34 million person-days per year. This disproportionate growth is not solely attributable to their large population base, but reflects a strong spatial convergence of rapid population growth and intensifying extreme heat. In these areas, interaction effects relative to baseline exposure are substantially greater than in less urbanized regions, indicating a compounding effect of demographic and climatic processes. Notably, 68.1% of the population in large central metropolitan areas is exposed to simultaneous increases in both population and extreme heat, highlighting the scale of compounded risk in major metropolitan centers.

State-level analysis further reveals that, despite substantial spatial heterogeneity in both population growth and climate-driven heat intensification, their combined effects consistently converge in large central metropolitan counties. In Texas, population growth is highly concentrated in metropolitan cores, whereas in California and Florida, it is more spatially dispersed; similarly, climate effects range from widespread intensification to mixed patterns. Despite these differences, large central metropolitan counties consistently exhibit the strongest overlap between population and climate effects. This consistent spatial convergence highlights a common urban pattern in which areas of rapid population growth also experience intensified climate warming, reinforcing the role of large metropolitan regions as focal points of accelerating heat exposure.

These findings reveal that the escalation of heat exposure in the contiguous United States is fundamentally shaped by the alignment of urban growth and climate warming, with large metropolitan cores emerging as critical hotspots of risk. From a planning perspective, this underscores the need for targeted heat mitigation and adaptation strategies in rapidly growing urban cores, including investments in urban greening and better urban form. More broadly, the results highlight the importance of integrating demographic dynamics into climate risk assessments and urban planning frameworks to better anticipate and manage future heat exposure.

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Keywords: Extreme heat exposure, Urban–rural Spectrum, Climate change, Population dynamics

FARMLAND PRESERVATION FOR CLIMATE RESILIENCE

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Track 3: Environmental Planning
Individual Paper Presentation

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US agriculture generates about 10 percent of the nation's greenhouse gas emissions (Daniels 2022). It is a leading source of nitrous oxide and methane emissions and contributes to carbon emissions through fossil fuel-driven machinery, plowing, and the transportation and distribution of crops and livestock to the nation's food system. Farmland is also a key buffer against sprawling, energy-intensive development. Farmland preservation offers farmers a way to sell their development rights to a land trust or government agency, in exchange for agreeing not to develop their land for non-farm uses through a deed of conservation easement, which is usually perpetual and runs with the land.

Central theme and question: The US has spent nearly $10 billion to preserve about 8 million acres of agricultural land (AFT 2026). How can preserving farmland increase climate resilience and reduce greenhouse gas emissions?

Methodology: Ten states have set a goal of preserving 30% of their land area by 2030 to increase resilience to climate change. This paper identifies how much of that preserved land so far is agricultural land and what the potential is for additional preserved farmland. Second, California has created a farmland preservation program funded through its state cap-and-trade program (California Strategic Growth Council, 2026). One component of that program is evaluating applications for funding based on the sprawl-limiting potential of preserving a particular farm or ranch. Examining how that evaluation works in practice has transferability to other farmland preservation programs.

Meaningful and New Findings: Maryland has already preserved more than 30% of its land area. Farmland accounts for about one-quarter of the total preserved land. In the other 9 states, preserved farmland has contributed from barely 1 percent to more than 10 percent of the total preserved acreage. Given on-going funding programs at the federal and state levels, along with land trust efforts, agricultural land preservation will play an important role, but for most states, a 30% by 2040 goal would be more realistic. The California farmland preservation program has preserved more than 200,000 acres (California Strategic Growth Council, 2026), The emphasis on location to curb sprawl along with the goal of creating large blocks of preserved land is noteworthy, as is the estimated reduction in greenhouse gases from preserving the farmland. The state's cap-and-trade program will continue to 2045 (CalMatters, 2025). Farmland preservation consists of two important steps: 1) ensuring that the land cannot be developed, except for agricultural and open space uses; and 2) managing the land for climate resilience and the reduction of greenhouse gases. A more direct emphasis on regenerative agriculture is needed.

Relevance of Research: Mitigating greenhouse gas emissions by controlling sprawl should be a key objective of local and state plans and planning. Farmers and ranchers own most of the privately held land in the US. Land preservation goals, such as 30 X 30 can play a role in mitigating greenhouse gases but require ample funding and willing landowners to succeed. I teach a course on Planning for Climate Change and the role of agricultural land preservation to limit sprawl, as well as food production, is an important element. The research also underscores the importance of managing agricultural land for regenerative agricultural production.

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Keywords: agricultural land, preservation, climate change, greenhouse gases

FLOOD MITIGATION AT THE URBAN CATCHMENT SCALE: GREEN OR GRAY INFRASTRUCTURE?

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Individual Paper Presentation

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Urban flooding presents a growing challenge across the United States. Green infrastructure (GI) is widely promoted for urban flood mitigation; however, its effectiveness at the urban catchment scale, particularly in comparison to conventional gray infrastructure, remains uncertain. This study examines the highly developed West Towne catchment (615 acres) in Madison, Wisconsin. Five flood mitigation scenarios were evaluated: (1) existing conditions (baseline); (2) the city's proposed regional pond enlargement with pipe upsizing (gray infrastructure strategy); (3) realistic GI implementation; (4) realistic GI implementation with conservative permeable pavement permeability; and (5) a theoretical maximum GI implementation. The scenarios were compared under four precipitation representations: (1) 2-, 10-, 25-, 100-, and 200-year, 24-h design storms; (2) an extreme observed 2018 storm event (17-h duration; >2,000-year return period); (3) a representative one-year continuous rainfall (1981); and (4) a recent multi-year continuous rainfall (2019–2024). Performance metrics included peak flow reduction and time-to-peak delay for design-storm and extreme event simulations, and runoff volume reduction, increased infiltration, and outlet pipe capacity exceedance duration for long-term continuous rainfall simulations.

Under design-storm conditions, the two realistic GI scenarios achieved peak flow reductions comparable to the gray infrastructure strategy. However, the gray infrastructure strategy performed better in delaying time to peak for storms exceeding the 25-year return period. Notably, only the theoretical maximum GI scenario eliminated flooding during the extreme 2018 event, whereas all other scenarios failed to fully control flooding under this condition. Under long-term rainfall simulations, the two realistic GI scenarios substantially reduced runoff volumes and increased infiltration, while the gray infrastructure strategy produced minimal runoff reduction and even decreased infiltration.The two realistic GI scenarios exhibited similar performance across all precipitation scenarios.

Overall, these findings suggest that GI strategies can serve as viable alternatives to conventional gray infrastructure for catchment-scale flood mitigation, particularly when long-term hydrologic performance and infiltration benefits are considered.

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Keywords: Flood mitigation, Urban catchment, Green infrastructure, Gray infrastructure

FRAMING BIOSOLIDS: PROCEDURAL JUSTICE AND THE MARGINALIZATION OF RURAL CONCERNS IN FLORIDA ENVIRONMENTAL PLANNING

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Individual Paper Presentation

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This study examines how biosolids management is framed within Florida's recent rulemaking processes and evaluates how these framings shape the inclusion of rural community concerns in environmental planning. Biosolids, a byproduct of wastewater treatment, are commonly applied to agricultural land, often in rural areas. As biosolids production has increased in Florida, rural residents and local officials have raised concerns regarding environmental risk, quality of life, and the equity of transporting urban waste to rural communities. This study therefore asks: how are biosolids framed as a policy problem in state-level planning processes, and to what extent are rural communities meaningfully included and recognized in these discussions?

Research on biosolids often describes land application as a cost-effective and sustainable management strategy that conserves landfill space and returns valuable nutrients back to land. Prior research on rural communities and environmental justice in biosolids management, however, demonstrates that neighbors of land application sites experience odors, perceived health impacts, and disruptions to daily activities, while rural communities face significant constraints in influencing land application practices and state-level policy decisions. These patterns of marginalization suggest that rural perspectives may be systematically underrecognized in planning for biosolids.

To examine these dynamics, this study employs qualitative discourse analysis of approximately 30 hours of transcripts from two key planning forums preceding Florida's biosolids rule revisions: the Regional Biosolids Symposium and state Technical Advisory Committee meetings. The analysis draws on framing theory, which views environmental problems as socially constructed through institutional discourse and highlights how dominant frames shape policy debates, solutions, and the inclusion of alternative perspectives.

An inductive coding process identifies dominant problem frames and examines how participants define issues, stakeholders, and policy solutions. The implications of these frames for rural communities are then assessed through procedural and recognition justice frameworks – whether communities can participate meaningfully and influence policy outcomes, and whether their experiences and concerns are acknowledged within institutional processes.

Findings indicate that biosolids are primarily framed as technical and managerial issues centered on water quality protection, public health and safety, regulatory compliance, and technological solutions. Rural communities appear within these discussions primarily as geographic sites of land application rather than as stakeholders with distinct concerns. Place-based experiences, perceived health risks, and questions of fairness are not articulated in ways that reflect rural community perspectives.

These findings suggest that the structuring of deliberation around technical frames does not merely constrain rural perspectives but renders them largely invisible within the planning process. From a procedural justice standpoint, this limits meaningful participation, as rural communities are largely absent from the deliberative record and formal opportunities for engagement do not translate into the inclusion of rural concerns in policy outcomes. From a recognition justice standpoint, this absence reflects a form of misrecognition in which rural place-based experiences and questions of fairness are not recognized as relevant within policy deliberation. The study therefore highlights how these two dimensions of justice are deeply intertwined in biosolids governance and contributes to

scholarship on environmental justice and rural planning by offering insight for practitioners seeking to design more inclusive environmental planning processes.

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Keywords: Biosolids, Sustainability, Environmental Justice, Regional Planning, Rural Planning

FROM EVACUATION TO RELOCATION: HURRICANE MOBILITY SEQUENCES AND CLIMATE MIGRATION DESTINATION CHOICE

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Track 3: Environmental Planning
Individual Paper Presentation

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Disaster-induced displacement reached a global record in 2024, with 11 million individuals displaced by disaster in the United States alone (IDMC, 2025). As rising sea-surface temperatures intensify hurricane frequency and severity, cities remain unprepared for incoming climate migrants. (IOM, IDMC, 2023). Current research treats evacuation and relocation as separate phenomena, missing the critical reality that these processes are sequentially linked (Fussell et al., 2014; Raipat & Yabe, 2025). This study addresses this gap to inform destination preparedness of cities most likely to receive climate migrants.

This study analyzes evacuation and relocation destination choices following Hurricanes Helene and Milton using comprehensive mobile GPS and residential address data. We examine whether evacuation hotspots predict relocation destinations, how migrants choose new homes, and whether post-hurricane migration differs structurally from normal patterns.

Our findings show that evacuation flows partially predetermine long-term relocation destinations, creating predictable migration pathways. However, temporary shelter and permanent homes serve distinct functions. More importantly, we uncover pronounced racial sorting: over 95% of migrants from majority-White areas relocated to majority-White destinations, while migrants from majority-Black origins dispersed more widely. This homophily varies by origin demographics: migrants from diverse communities exhibit weaker destination similarity preferences. Social ties between origin and destination communities prove more influential than hurricane-period visitor changes in predicting flows. Comparable compositional patterns appear across poverty levels, educational attainment, homeownership rates, and elderly population shares, consistent with prior evidence on racial composition as a predictor of destination choice (Deng et al., 2021).

The study is among the first systematic comparison of short- and long-term destination hotspots across the same hurricane events. Also, this study theoretically reframes post-disaster mobility as a sequential system in which evacuation flows partially predetermine relocation destinations, linking short- and long-term mobility theories under one destination choice framework. The findings suggest that evacuation mobility data can serve as an early signal of likely long-term population redistribution, enabling receiving communities to anticipate infrastructure demand, housing needs, and service pressures in advance.

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Keywords: Climate Displacement, Climate Migration, Hurricane, Migration Theory, Receiving Communities

FROM POLICY TO PRACTICE: HOW COMMUNITY-BASED PATHWAYS INSTITUTIONALIZE LOW-CARBON LIFESTYLES IN KYOTO?

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Track 3: Environmental Planning
Individual Paper Presentation

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Cities are increasingly recognized as critical arenas for low-carbon transitions, yet the institutionalization of low-carbon lifestyles remains insufficiently understood. While existing research has focused on policy instruments and technological solutions, less attention has been paid to how everyday practices become embedded and sustained within local communities. Theoretically, a significant gap remains in the lack of a theory of action to explain the mechanisms of local institutional change and guides systemic actions in the transition process. This study asks: how do community-based pathways facilitate the local institutionalization of low-carbon practices?

This study addresses this gap by examining the local institutionalization process through three key concepts: rationales, resources, and diffusion, rooted in the theories of Institutional Entrepreneurship (IE) and Community of Practice (CoP). The study takes Kyoto's Eco-school Districts in Japan as an empirical case. Drawing on IE and CoP, we developed an integrated socio-institutional framework that conceptualizes institutionalization as a dynamic process shaped by the co-production of rationales, the mobilization of resources, and the diffusion of practices. The research methods include policy document review, activity records, and semi-structured interviews with key local stakeholders.

The findings reveal a three-phase evolution from government-led initiation to community-driven institutionalization, underpinned by three interrelated mechanisms. First, legitimacy is constructed through the co-production of rationales, involving the negotiation of discourses and meanings among stakeholders and their alignment with locally salient issues and everyday routines. Second, the process is enabled by the mobilization and recombination of heterogeneous resources across actors, including formal authority embedded in top-down institutional frameworks, intermediary organizations characterized by high network centrality and bridging capacity, and bottom-up mobilization from civil society. Third, the institutionalization of low-carbon practices is achieved through their scaling and diffusion, as actors collectively develop shared repertoires and embed practices across multiple forms of social and spatial contexts. Together, these dynamics illustrate how low-carbon practices move from experimental initiatives to stabilized local norms.

By integrating institutional entrepreneurship and community of practice, this study develops a co-evolutionary framework linking the internalization of social routines with institutional reconfiguration. It conceptualizes institutional change as an inter-organizational process shaped by the ongoing negotiation of roles, norms, and practices. This study contributes to planning scholarship by demonstrating how community-level processes complement formal governance in sustaining low-carbon transitions. It also offers practical insights for planners seeking to design community-based interventions that translate policy goals into everyday practices.

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Keywords: Low-carbon lifestyle, Institutionalization, Collaborative governance, Community of Practice, Entrepreneurship

FROM SATELLITE TO STREET: A MULTI-TIER TAXONOMY FOR URBAN PARK COOLING ASSESSMENT AND FIELD-BASED VALIDATION

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Individual Paper Presentation

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Urban parks are increasingly recognized as critical infrastructure for heat mitigation, yet scalable assessment of their cooling potential remains limited by a basic measurement problem: some cooling-relevant features are visible from overhead imagery, while others can only be identified on the ground. Most existing studies relate broad green space metrics to land surface temperature (LST) without distinguishing which park features are reliably observable from satellite imagery, which require field verification, and how these measures can be combined for planning use. This study addresses two questions: (1) Which cooling-related park features are reliably detectable from satellite imagery, and where do detection boundaries lie? (2) Which field-survey indicators, when combined with satellite-derived features and LST data, most effectively predict park cooling potential, and at what feasibility cost?

The study proceeds in two phases. In Phase 1, we evaluated a contrastively trained vision-language model indexing approximately 6 million satellite image tiles from over 33,000 parks worldwide. Queries derived from cooling-related indicators in prior literature were used to retrieve and manually assess satellite tiles for detection quality and visual interpretability. In Phase 2, field surveys were conducted in representative high-density urban parks across New York City, Shanghai, and Seoul. Field-measured indicators were integrated with satellite-derived features and Landsat-derived LST data to develop a cooling prediction model. Each field indicator was evaluated in terms of both predictive contribution and feasibility across four dimensions: time, cost, manpower, and skill demand.

Three findings emerge. First, shadow-based indicators consistently outperformed canopy-based descriptors as satellite-detectable cooling proxies, suggesting that shadow captures cooling-relevant spatial conditions more directly than canopy coverage metrics. Second, detection performance varied systematically by feature type: geometric arrangements and high-contrast land cover features were identified reliably, while directional descriptors, fine-scale vegetation structure, and semantically complex concepts were not reliably identified. These boundaries informed the development of a three-tier taxonomy of 39 features, distinguishing satellite-feasible indicators, indicators requiring multi-temporal imagery or further validation, and indicators requiring field observation. Third, only a limited subset of field indicators materially improved prediction beyond satellite-derived measures alone. Vertical vegetation structure and understory presence consistently improved model performance, while more burdensome measures such as directional shade and crown measurements offered relatively limited additional value. Across all three cities, the smallest indicator set that balanced predictive gain and field burden generally included three to four field-based features, with modest variation by urban context.

This study contributes a validated, scalable framework for urban park cooling assessment that delineates the boundary between remote sensing and field verification. The resulting taxonomy and prediction model offer planners actionable guidance for citywide park screening and heat mitigation prioritization under resource constraints. One limitation is that tier classifications were derived from a single retrieval system; alternative tools or classification approaches may yield somewhat different boundaries, and future validation across systems is warranted.

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Keywords: Urban park cooling, Remote sensing, Field validation, Heat mitigation, Environmental planning

GENTRIFICATION AND RESIDENTIAL ENERGY CONSUMPTION: A LONGITUDINAL ANALYSIS OF ATLANTA NEIGHBORHOODS

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Individual Paper Presentation

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The relationship between compact urban form and residential energy consumption has been a central debate in planning research, with empirical studies suggesting that energy saving effects can vary by household characteristics, housing type mix, and energy efficiency measures (Ewing & Rong, 2008; Kaza, 2010). Gentrification, characterized by demographic shifts, new housing development, and capital investment in inner-city neighborhoods, can reshape the factors known to drive residential energy demand. Despite the growing literature on the sustainability implications of gentrification (Behnke & Shelton, 2024), how gentrification influences energy consumption trends remains unclear due to a lack of longitudinal studies comparing gentrifying and non-gentrifying neighborhoods.

To address this gap, this study presents a case study in Atlanta, Georgia, a city that experienced rapid gentrification in the 2010s driven by urban development projects including the Beltline (Immergluck & Balan, 2018). It addresses two questions about gentrification and neighborhood-level energy use trends between 2009 and 2020: (1) How do residential energy consumption trends in gentrifying neighborhoods differ from those in non-gentrifying neighborhoods? And (2) what are the household and housing type characteristics of gentrifying neighborhoods that exhibit declining or increasing trends in energy use?

Our analysis uses neighborhood-level annual household electricity use estimates for 2009, 2015, and 2020, derived by statistically matching household energy profiles from the Residential Energy Consumption Survey (RECS) to American Community Survey (ACS) Public Use Microdata samples and synthesizing the matched microdata to census block group marginal totals in the City of Atlanta, following the methods proposed by Zhang et al. (2018). For analysis, the electricity use trends between gentrifying and non-gentrifying neighborhoods are compared using a propensity score matching and difference-in-differences (DID) framework. Specifically, neighborhoods were identified as gentrifying when their declines in poverty rate and Black population share, and their increase in rent or property value, each exceeded the citywide median change in the respective variable. These criteria yield 40 and 47 gentrifying block groups in the earlier (2009–2015) and later (2015–2020) periods, respectively. Then, non-gentrifying block groups are identified for each period using propensity score matching on the poverty rate, single-person household share, and single-family detached housing share of a neighborhood in the baseline year, so that the matched controls are comparable to the gentrifying neighborhoods prior to the period of gentrification.

We find that, in the later period (2015–2020), gentrifying neighborhoods had a slower increase in per-household electricity use than their matched non-gentrifying counterparts, by 3.5 percent on average, marginally significant at $p = 0.059$. No difference was found in the earlier period (2009–2015), implying that the energy implications of gentrification are not uniform across time but vary with the characteristics of neighborhoods undergoing gentrification.

Further analysis of the later period reveals that the dampening effect on energy use growth was concentrated among gentrifying neighborhoods experiencing larger increases in single-person household share and declines in single-family detached housing share relative to their matched counterparts. Conversely, gentrifying neighborhoods that saw relative increases in single-family detached housing and declines in single-person household share had

greater growth in electricity use than their non-gentrifying counterparts, suggesting heterogeneity in energy use trends depending on housing stock and population compositions. Our results can inform city planners of how planning decisions tied to housing development shape energy demand and resilience in gentrifying neighborhoods.

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Keywords: Residential energy use, Gentrification, Sustainable development, Energy resilience, Propensity score matching

HAVE STATE-LEVEL WETLAND PROGRAM PLANS ACROSS THE 50 U.S. STATES ACHIEVED THE NATIONAL "NO NET LOSS" WETLAND GOAL?

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Track 3: Environmental Planning
Individual Paper Presentation

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Wetlands provide critical ecological, social, and economic benefits, yet their protection depends heavily on state-level governance capacity. In the United States, states and tribes play central roles in wetland protection, restoration, and management; however, no study has systematically evaluated how state planning efforts align with national conservation goals. This study presents the first comprehensive assessment of EPA-approved state Wetland Program Plans (WPPs) in relation to the national objective of achieving "No Net Loss" of wetlands.

We analyze WPPs from 42 U.S. states prepared between 2015 and 2024 using a structured evaluation protocol consisting of 30 indicators across five planning capacity categories. Results show an overall performance score of 73.3% (0–100%), indicating moderate planning capacity and substantial variation across states. Strengths include coordination and stakeholder engagement structures, implementation mechanisms, and the presence of policy tools and management strategies. However, the "No Net Loss" indicator averaged 0.51 (0–1 scale), suggesting partial alignment and inconsistent state-level commitment to measurable conservation outcomes.

Overall, findings reveal that WPPs increasingly adopt integrative planning approaches and connect wetlands to broader environmental initiatives, yet many plans emphasize process over measurable performance targets. The study highlights the need for clearer goals, monitoring metrics, and cross-scale integration between federal guidance and state implementation. By systematically benchmarking planning capacity nationwide, this research provides practical guidance for planners and resource managers and advances understanding of the state's role in implementing national environmental policy.

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Keywords: Wetland conservation, Wetland program plan, Planning integration, No-net-loss of wetlands, planning capacity

HEAT INEQUALITY AND COMMUNITY ADAPTATION: ENVIRONMENTAL PLANNING IN DHAKA'S INFORMAL SETTLEMENTS

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Individual Paper Presentation

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Dhaka, Bangladesh is experiencing intensifying heat stress driven by rapid urbanization and climate change. In Korail, the city's largest informal settlement, over 200,000 residents live in dense clusters of corrugated metal housing with minimal vegetation or shading. These conditions amplify the Urban Heat Island effect, with temperatures reaching up to 5°C higher than adjacent formal neighborhoods. Heat exposure in Korail is not evenly distributed; rather, it reflects underlying socio-spatial inequalities in housing, infrastructure, and access to environmental resources. This study examines how patterns of heat exposure intersect with everyday living conditions, revealing differentiated vulnerabilities across settlement clusters and demographic groups.

Fieldwork conducted in March 2025 combined environmental measurement with participatory research. Satellite-derived land surface temperature (LST), vegetation index (NDVI), and solar exposure were analyzed alongside thermal camera readings and in-situ temperature sensors across five housing clusters. These environmental datasets were spatially overlaid with built density and material conditions to identify localized heat patterns. In parallel, community workshops and interviews, conducted in collaboration with BRAC University, documented residents' perceptions and adaptive behaviors. The integration of datasets was achieved through spatial correlation and thematic coding, linking measured heat intensity with lived experiences to identify context-specific coping strategies.

Results reveal that the highest heat exposure occurs in areas characterized by high density, limited airflow, and extensive use of heat-retaining metal roofing. These zones also correspond to lower-income clusters with fewer adaptive resources, substantiating claims of environmental inequity. Residents employ adaptive practices such as shading modifications, temporal shifts in activity, and material adjustments; however, these remain constrained by cost, tenure insecurity, and lack of formal planning support. Based on these findings, a heat-resilience toolkit was developed, proposing specific interventions with identified hotspots. The toolkit was iteratively reviewed with residents and local partners, and its effectiveness is being evaluated through pilot implementation and post-occupancy assessment.

This study positions urban heat in informal settlements as a core challenge for environmental planning, rooted in systemic inequities. By integrating spatial environmental analysis with community-generated knowledge, it demonstrates how localized, lived experiences of heat can inform more grounded and responsive planning practices. In doing so, the research addresses the limitations of top-down adaptation strategies and underscores the critical role of participatory, community-based approaches in identifying both vulnerability and feasible pathways for intervention. The outcomes contribute to the field of environmental planning by advancing a community-centered framework for heat resilience, where residents are active agents in shaping adaptive and affordable strategies. Thermal comfort should be recognized as a fundamental dimension of urban well-being rather than a privilege. As climate change intensifies, addressing heat inequity in informal settlements is essential not only for reducing environmental risk but also for advancing more inclusive and community-responsive planning systems, particularly within vulnerable communities across the Global South.

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Keywords: Urban Heat Island, Informal settlement, Community engagement, Environmental justice, Climate vulnerability

HOW TREE STRUCTURE, COMPOSITION, AND CONFIGURATION INFLUENCE SUMMER LAND SURFACE TEMPERATURE IN NEIGHBORHOOD PARKS

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Track 3: Environmental Planning
Individual Paper Presentation

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Background
Rapid warming and continued urbanization are intensifying extreme heat exposure in cities, with the urban heat island effect amplifying heat stress and related health and productivity risks. (Tong et al., 2021). Urban parks are one of the most significant cooling infrastructures of cities due to their impacts on heat mitigation to surrounding built-up areas (Cai et al., 2023). Trees are a central biophysical driver of park cooling through shading that reduces surface heating and radiant load and land-cover substitution that reduces heat storage by replacing impervious cover with vegetation (Li et al., 2024). However, cooling performance is not determined by canopy amount alone. Recent evidence shows that cooling magnitude varies widely across parks depending on internal design and vegetation structure, as well as surrounding urban form and local thermal conditions (Pan et al., 2025; Zhao et al., 2025). This study examined how tree structure, composition, and configuration relate to summer land surface temperature (LST) across 33 neighborhood parks in Austin, TX, USA.

Methods
The analysis included park features, vegetation structure, tree size, spatial layout, and species composition. Descriptive analysis summarized overall patterns across parks. ANOVA with post-hoc tests compared mean LST across grouped variables. Bivariate linear models assessed one predictor at a time, including the direction and strength of associations with LST. Hierarchical OLS regression evaluated multiple predictors in sequential models to identify factors that remained significant after adjustment.

Results
Mean canopy coverage was the strongest cooling-related factor and showed the largest inverse association with mean summer LST (coef = -4.561). Parks with water features also had lower LST, and this association remained significant in the adjusted model (β = -0.681). Mature-tree structure was additionally important, with bigger tree count negatively associated with LST (β = -0.007). Tree count alone showed weak explanatory power. In multivariable models, maximum Ripley's L function and Shannon diversity were positively associated with LST after adjustment, indicating more complex layout- and species-related temperature patterns.

Conclusion
Park cooling was more closely linked to canopy extent, mature-tree presence, and spatial tree configuration than to tree abundance alone, highlighting that planting strategies should prioritize canopy quality and arrangement than counts alone.

Next Steps and Potential Implications
The results suggest that park heat mitigation should focus on canopy performance, not tree characteristics alone. Because mean canopy coverage showed the strongest and most consistent association with lower summer LST, park systems may use it as a practical and measurable cooling target. For park design, the findings support setting canopy targets and canopy placement strategies together. In practice, this means not only increasing canopy coverage, but also placing shade over high-use areas such as walking paths, playgrounds, seating zones, and waiting

areas. The tree layout findings also suggest that clustering may reduce cooling effectiveness across the full park, so shade distribution should be considered as part of design standards.

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Keywords: urban tree, microclimate, urban forestry, land surface temperature

IDENTIFYING A MULTI-LEVEL URBAN VENTILATION CORRIDOR NETWORK FOR CLIMATE-ADAPTIVE PLANNING: A COMPARATIVE ANALYSIS OF VEGETATION'S IMPACT

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Individual Paper Presentation

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Urban ventilation corridors, as a climate-adaptive planning strategy, mitigate urban heat islands, improve air quality, and enhance energy efficiency. However, most morphology-based ventilation corridor identification methods neglect 3D vegetation morphology, lack multi-level system integration, and give insufficient consideration to the driving mechanisms of urban wind environments. To address these limitations, this study proposes a framework for identifying a multi-level urban ventilation corridor network (UVCN), with particular attention to the independent role of vegetation in UVCN path identification.

Taking Nanjing as an example, based on porous media theory, an urban morphological ventilation resistance assessment model is constructed using the 3D building–vegetation landscape pattern and digital elevation model (DEM), and its validity is verified using Weather Research and Forecasting (WRF) simulation. Then, the least-cost path (LCP) method is combined with multi-source data, including background wind, blue–green spaces, land surface temperature, and point-of-interest (POI) kernel density, to identify the UVCN. The UVCN consists of primary ventilation corridors (PVCs), driven primarily by atmospheric circulation, and local ventilation corridors (LVCs), driven by thermal-induced circulation. To isolate the impact of vegetation, a comparative experiment is conducted between a control group based on buildings only and an experimental group incorporating both buildings and vegetation. Finally, WRF-simulated wind speed and air temperature are used to evaluate the ventilation performance and cooling benefits of the identified UVCN under the two scenarios.

The results show that: (1) the experimental group exhibits a higher mean normalized ventilation resistance (0.21) than the control group (0.15), with notable spatial disparity, and vegetation height ≥10 m significantly influences summer UVCN construction; (2) the experimental UVCN, comprising four PVCs and four groups of LVCs, exhibits stronger connectivity and broader service coverage than the control group while maintaining comparable ventilation performance; (3) in terms of cooling benefits, the experimental group exhibits similar 24-hour mean air temperatures but lower daytime mean air temperatures within the UVCN (05:00–19:00) than the control group, with a daytime reduction of 0.13 °C, mainly influenced by water bodies.

These findings highlight the critical role of vegetation in UVCN planning and establish a planning-oriented framework for identifying UVCN from an ecological perspective. By using landscape volumetric density as the core indicator of ventilation resistance, this study translates urban ventilation potential assessment into a spatial language more accessible to planners, helping to bridge UVCN planning and ecological network planning and to promote the multifunctional use of ecological spaces.

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Keywords: ventilation corridor, vegetation, 3D landscape pattern, urban planning, Least-cost path (LCP)

IMPACT OF RISK INFORMATION ON HOME BUYER DECISION MAKING AND HOUSING MARKET OUTCOMES IN EASTERN NORTH CAROLINA

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Individual Paper Presentation

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Risk information refers to the data and knowledge that helps us understand the potential dangers and consequences associated with floods and other environmental hazards. Understanding how climate risk is priced in housing markets, particularly how public availability of risk information influences buyer behavior is essential for hazard risk management and has gained increasing attention. Using a mixed-methods approach, this study examined homebuyers' behavior to risk information and how access to risk information influences their decision-making. Qualitative in-depth interviews were conducted with real estate professionals in Washington and Elizabeth City, North Carolina to understand risk disclosure practices, the impact of such disclosure on pricing, and the role of third-party websites in risk information disclosure. Quantitative aspects include geospatial data acquisition and analysis using descriptive statistics and Pearson's correlation analysis. The Pearson correlation coefficient of 0.115 shows a weak positive relationship, which indicates that high flood risk score is associated with slightly longer selling times, though the effect is limited and other factors like price, condition, and demand matter as well. Qualitative results show that homebuyer behavior is shaped by past hazard experience, income and physical condition of the property. Climate risk, particularly flood risk score, does not directly affect property prices in isolation, rather, insurance costs serve as the primary channel through which risk influences property values. Results consistently report that buyers' concerns focus less on risk itself and more on the financial implications of required insurance premiums. The findings show the importance of considering the influence of climate risk in housing decisions.

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Keywords: Climate change, Risk information, Housing price, Decision making, Flood risk

INSTITUTIONAL CHALLENGES TO INCREASING COMMUNITY RESILIENCE IN THE TEXAS LOWER RIO GRANDE VALLEY

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Individual Paper Presentation

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To build community resilience, community leaders must understand their natural hazard risks, vulnerabilities, and community needs. This research addresses challenges to increasing community resilience in the Texas Lower Rio Grande Valley with a focus on building institutional capital. Institutional capital refers to the ways that communities have mitigated against disaster risk and implemented plans, policies, and interventions that reduce vulnerabilities and address community needs. Institutional capital, through policies, programs, and political structures, plays a direct role in determining community recovery from disaster events. Access to disaster assistance relies on formal laws, rules, and government structures predominantly at the state and federal level. Having strong local institutional capital can help to navigate and achieve positive community outcomes in obtaining disaster assistance. Local land use planning also plays a large role in building disaster resilience through measures such as zoning and site development regulations that can steer development away from floodplains and prevent or reduce potential damage.

To explore institutional challenges and barriers to increasing resilience, semi-structured interviews were conducted with local governmental officials and community leaders in the Texas Lower Rio Grande Valley that focused on community risks, community needs, and experiences with state and federal disaster assistance funding. Interviewees included emergency management coordinators, county commissioners, community planners, and other community resilience leaders. Interviews lasted from approximately 30 to 60 minutes and resulted in approximately 370 minutes of interview responses. Interview transcripts were uploaded into MaxQDA and analyzed using inductive coding to highlight emergent themes within the material. Emergent themes were supplemented with mapping and spatial analysis to ground-truth and provide a richer context to the material. Results highlight the main institutional challenges to building community disaster resilience in the Texas Lower Rio Grande Valley.

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Keywords: Qualitative Analysis, Community Resilience, Institutional Capital, Local Governance, Disasters

INTEGRATING ECOLOGICAL PRINCIPLES INTO WETLAND PARK PLANNING: A MULTI-SITE ANALYSIS OF LANDSCAPE CHARACTERISTICS SHAPING AVIAN BIODIVERSITY

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Individual Paper Presentation

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In the context of accelerating climate uncertainty and escalating pressures on urban ecosystems, protected areas such as wetland parks have emerged as critical nature-based solutions that bridge biodiversity conservation with community resilience. Situated within the broader discourse of environmental planning and natural resource management, this study investigates the relationship between landscape planning characteristics and avian biodiversity across 42 wetland parks. By integrating spatial analysis with field-based biodiversity assessments, the research identifies key landscape metrics that serve as determinants of bird species richness, a widely recognized indicator of ecosystem health and functional integrity. The findings reveal that avian diversity is most strongly correlated with three principal planning variables: park size, landscape connectivity, and the landscape shape index (LSI). Park size exhibits a significant positive correlation with species richness, underscoring the ecological importance of preserving large, contiguous habitat patches. Landscape connectivity, measured through structural and functional linkages among green spaces, emerges as a critical factor in facilitating species movement and sustaining metapopulation dynamics. Furthermore, the landscape shape index—a measure of patch complexity—demonstrates that intermediate levels of edge complexity enhance habitat heterogeneity, thereby supporting a greater diversity of bird species, including specialist and edge-sensitive taxa. These results carry substantive implications for environmental planning and resource management, particularly within the sub-domains of green infrastructure design and climate-adaptive land use. From a planning tools and techniques perspective, the study affirms the utility of spatial metrics as evidence-based instruments for prioritizing conservation efforts and guiding land allocation in urbanizing regions. In the context of community and environmental planning, the integration of biodiversity objectives into park design supports multiple co-benefits, including enhanced recreational value, public health outcomes, and social-ecological resilience. Accordingly, the study recommends that future wetland park planning adopt a multi-scalar approach that prioritizes the preservation of sufficiently large core habitats, reinforces ecological corridors to counteract fragmentation, and strategically configures patch shapes to balance edge effects with interior habitat quality. Such an approach aligns with emerging paradigms in natural resource management that emphasize adaptive governance, cross-sector collaboration, and the co-production of environmental knowledge. By embedding biodiversity considerations into the foundational stages of park planning, planners and resource managers can more effectively advance climate resilience, ecological connectivity, and environmental justice within rapidly changing urban landscapes.

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Keywords: Wetland Park Planning, Avian Biodiversity, Landscape Metrics, Ecological Connectivity, Environmental planning

INTEGRATING ENVIRONMENTAL ASSESSMENT INTO URBAN FLOOD RESILIENCE QUANTIFICATION: A FRAMEWORK FOR INSTITUTIONAL INTEGRATION

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Individual Paper Presentation

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[Problem] Urban flood damages driven by climate change are increasing in both frequency and intensity, requiring a shift beyond conventional disaster management toward enhancing urban system resilience. However, existing Environmental Assessment (EA) frameworks, including Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA), do not systematically incorporate urban flood resilience, particularly in the context of urban-scale impacts. In South Korea, Environmental Impact Assessment (EIA), Disaster Impact Assessment (DIA), and Climate Change Impact Assessment (CCIA) assess environmental, disaster, and climate risks at the project level, whereas flood impacts occur at the urban (system) level. This mismatch leads to fragmented data and a lack of integrated resilience perspectives at the city scale. While international frameworks (e.g., EU, OECD) have begun integrating resilience into EA systems, such approaches remain limited in the Korean context. This study addresses this gap by proposing a framework that integrates institutional EA processes into urban flood resilience assessment.

[Approach and Methods] This study first establishes a theoretical foundation by conducting a content analysis of EA-related laws, guidelines, and reports. The extent to which resilience is embedded in EA systems is qualitatively evaluated using keywords such as “flood,” “adaptation,” and “disaster mitigation.” At the empirical level, EA-related variables—including project density, diversity of project types, and CCIA linkage—are constructed at the municipal level and spatially linked with flood damage data. To quantify urban flood resilience, a composite Urban Flood Resilience Index (UFRI) is developed. The index integrates spatial-environmental characteristics (e.g., impervious surface ratio and low-lying and flood-prone area ratio), core resilience attributes (robustness, rapidity, redundancy, resourcefulness), and institutional variables derived from EA processes, and is constructed using Principal Component Analysis (PCA). Furthermore, a Spatial Durbin Model (SDM) is applied to examine the influence of EA variables on flood resilience, and municipalities are classified into resilience typologies. The analysis is based on panel data covering 229 municipalities in South Korea from 2010 to 2023.

[Findings and Implications] The results show that cities with higher procedural and quantitative levels of EA exhibit significantly greater flood resilience. Institutional resilience is positively associated with reduced flood damage, and diversity in EA project types contributes to redundancy among resilience components. This study provides a novel methodological contribution by quantifying urban flood resilience using EA data. From a policy perspective, it highlights the need to integrate EIA, DIA, and CCIA into a resilience-based EA framework, incorporate flood resilience into EA guidelines, and transform post-EA monitoring into resilience performance indicators. These findings provide actionable insights for strengthening national and urban flood risk management strategies.

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Keywords: Urban Flood Resilience, Environmental Assessment, Resilience Index, Institutional Resilience

INTEGRATING HEALTH DATA AND SENSOR NETWORKS TO INFORM LOCALIZED HEAT ALERT SYSTEM

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Track 3: Environmental Planning
Individual Paper Presentation

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Extreme heat is an increasingly urgent public health crisis impacting cities across the United States, yet effective heat response strategies depend on alert systems that remain poorly aligned with local conditions and community needs. Most existing systems, including those issued by the National Weather Service, rely on regional thresholds that overlook intra urban climatic variation and differential vulnerability. Prior research shows that these alerts are often not associated with reduced mortality, and their behavioral impacts remain poorly understood at actionable scales. Many residents do not recognize their heat risk, appropriate protective actions, or available cooling resources, highlighting a critical gap between alert issuance and effective response. These challenges point to the need for locally derived heat health thresholds and communication strategies tailored to both place and population.

This study is situated within the Beat the Heat program, a statewide initiative that supports communities in designing and implementing locally tailored strategies to reduce health risks from extreme heat. As part of this effort, we examine the relationship between heat waves, emergency department visits, and demographic health data across three Midwestern U.S. cities to identify localized heat health thresholds that better capture when extreme heat begins to impact human health. Using multi year data, we model temperature and humidity conditions associated with significant increases in heat related emergency visits and identify multiple threshold levels across demographic groups to reveal disproportionate impacts on vulnerable populations. We then apply these thresholds to a local urban sensor network deployed in one of the study cities to estimate how often different alert levels would be triggered, how many people would be affected, and the demographic characteristics of those populations.

Linking epidemiological evidence with high resolution environmental data enables a localized, data driven framework for heat alert systems. While more work is needed to fully understand the effectiveness of heat alerts and to design truly user centered systems, this study demonstrates how alerts can be better aligned with local climate conditions, patterns of exposure, and population vulnerabilities. Our findings suggest that integrating health outcomes, microclimate variation, and social vulnerability can improve how heat risk is identified and communicated. By tailoring alert systems to the climatic and social context of each city, this work contributes to ongoing efforts to develop more effective, equitable, and responsive heat adaptation strategies, offering practical insights for planning and public health practice.

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Keywords: extreme heat, heat thresholds, heat alert systems, vulnerable population

INTEGRATING NATURE-BASED DESIGN AND CULTURAL HERITAGE FOR CLIMATE-RESILIENT FUTURES: A CASE STUDY OF PORT FOURCHON, LOUISIANA

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Track 3: Environmental Planning
Individual Paper Presentation

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Coastal Louisiana is experiencing some of the highest rates of land loss in the world, due to sea-level rise, land erosion, and escalating storms. Port Fourchon, situated near the southern edge of Lafourche Parish, the port faces significant challenges from erosion, flooding, and ecological deterioration, despite its contribution to 95% of the Gulf's deepwater energy output and its connection to 50% of U.S. refining capacity. Such hazards could affect both the cultural landscapes of coastal communities and the safety of the nation's energy supply. While prior work often isolates engineering or ecological restoration, recent research emphasizes the need for integrated, nature-based, and culturally grounded design strategies.

Responding to this gap, the study asks:
(1) How can adaptive restoration strategies integrate engineering and ecological principles to address sea-level rise, storm impacts, and subsidence at Port Fourchon and Grand Isle?
(2) How can ecological design approaches strengthen local cultural identity, fisheries, tourism, and community wellbeing?

The primary objective of this paper is to increase wetland areas and reduce backwater flooding by building the land with dredged material and increasing the mangrove density. The secondary objective is to restore and maintain the ridges and local chenier landmarks.

The study employs a multimethod framework that links remote sensing, geospatial analysis, numerical modeling, and cultural landscape assessment. Landsat and Sentinel-2 imagery were analyzed in ArcGIS Pro to quantify long-term coastal dynamics, revealing approximately 76 km^2 of land loss since 1983. These mapping results informed the placement and configuration of nature-inspired hexagonal (honeycomb) terraces, designed to enhance sediment retention and hydromorphic stability. Delft3D hydrodynamic simulations then evaluated three scenarios including no terraces, linear terraces, and hexagonal terraces—over equivalent hydrodynamic periods.

Findings show that hexagonal terraces are significantly better than linear terraces, with major implications for coastal design. They increased hydraulic residence time from ~35 days (no terraces) and ~75 days (linear) to ~145 days, demonstrating strong water retention and flow recirculation. Sediment trapping efficiency reached ~70%, more than double the linear configuration (~30%), resulting in the highest total sediment deposition (≈19 million m^3). These outcomes suggest substantial potential for wetland expansion, reduction of backwater flooding, and long-term geomorphic stability.

Importantly, the project links ecological performance with cultural landscape resilience by integrating the restoration of chenier ridges. This connection positions the work squarely within landscape architecture and coastal design, offering a replicable framework for combining biomimicry, modeling, and cultural analysis.

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Keywords: Coastal Resilience, Nature-Based Design, Sediment Terraces, Wetland Restoration, Restoration Strategies

MANUFACTURING RECOVERY: FIGHTING THE DISPLACEMENT OF MANUFACTURED HOUSING COMMUNITIES POST-PALISADES FIRE

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Manufactured housing communities (MHCs) are shown to experience poorer post-disaster outcomes than their neighbors (Pierce, et al., 2022; Rumbach, et al., 2020), the literature points to three overarching factors deepening their vulnerability to disasters. First, Sullivan (2018) has documented an 'othering' of MHCs given their location, what she calls the social-spatial stigma. Due to this stigma, MHCs often struggle to attain necessary resources to recover fully from disasters as they are not seen as part of the local community (Dohler, et al., 2025). Second, as a form of exclusionary zoning, construction exclusion limits rebuilding of MHCs post-disasters as by using zoning laws and land use planning to only allow MHCs where they currently reside or, more aggressively, not permitting them to rebuild by citing land use regulations (Rumbach, et al., 2022; Sullivan, et al., 2022). Additionally, many MHCs are in unincorporated areas, which lack access to local governance and planning, making mitigation, response, and recovery difficult tasks (Rivera, 2023). Third, mobile home residents are often in a situation of divided tenure, whereby the household retains private ownership of the home structure, but rents of the land underneath the home (Durst & Sullivan, 2019). Sullivan (2017) estimates 80% of mobile home households own their homes, but only 19% own the land underneath their homes. This divided tenure is shown to led to higher rejection rates for FEMA assistance (Dohler, et al., 2025). The question becomes: who is responsible for the post-disaster recovery of manufactured housing communities?

This remains an outstanding question, as unfortunately shown through the January 2025 wildfires in Los Angeles County. In those fires, three manufactured housing communities (MHCs) were directly impacted: Malibu Village, Tahitian Terraces, and Palisades Bowl. As a collaboration between UC-Berkeley's Just Environments Lab and Neighborhood Partnership Housing Services, we began working with MHC leaders in August 2025 when Los Angeles County declared their community "debris-free," but debris remained in the three impacted MHCs. To undertake the question of responsibilities and assist the MHCs, we conducted: a longitudinal survey of MHC residents asking about their ongoing recovery, interviews with key local leaders and government officials, qualitative code analysis on recovery documents for their relationships with MHCs, and geospatial analyses of hazards and MHCs in LA County over time.

"Everybody just wants to go home, and the sad thing is that these manufactured homes could be built in a day. This should have been the first community back, and it'll probably be the last community back." (Community Leader, Palisades Bowl, March 2026)

This paper covers our findings regarding the issues of responsibilities and ownership of recovery processes in manufactured housing communities. Using procedural and contextual vulnerability frameworks, we go beyond land use regulation and stigma to underscore where and how MHCs are being left behind in recovery policies from local, state, and federal governments. We find a clear lack of process and direction following the fires: it was unclear what policies and programs apply to MH residents, leading to rampant confusion. As a result, we developed a suite of resources for MH residents to "Know Your Rights" following a wildfire. Here, we propose that recovery processes must become more diversified: instead of asking whether a singular process or plan works well, we should ask who it assists. From this, the need for multiple plans to assist multiple housing situations emerges. As a result, we can begin developing stronger plans, programs, and policies for MHCs post-disaster, making clearer who is responsible

for aiding in their recovery. We close with our examples of proposed programmatic and policy changes in California to assist MHCs post-disaster.

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Keywords: wildfire, disaster, manufactured housing, recovery

MAPPING VEGETATION-RELATED INFRASTRUCTURE RISK USING GEOAI: EVIDENCE FROM INVASIVE ALBIZIA IN HAWAIʻI

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Individual Paper Presentation

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The invasive Albizia (Falcataria Moluccana) tree has become a significant safety concern in Hawaiʻi due to its potential to fall during high wind and rain events. These extremely fast-growing trees can reach heights of 150 ft and have caused widespread damage to infrastructure and blocked evacuation routes during past storm events. More broadly, managing vegetation-related hazards is an emerging challenge in environmental planning, particularly in regions facing increasing climate-related disturbances. Given the increasing frequency and severity of disasters, improving hazard mitigation and preparedness is a growing priority in planning practice (Khan et al., 2020).

This study addresses the following research questions: (1) How can GeoAI approaches support environmental planning efforts to identify and map hazard-prone vegetation at scale? and (2) How can such information inform spatial assessments of infrastructure vulnerability and mitigation prioritization? AI-augmented technologies, including GIS-based machine learning and deep learning models, are increasingly used in planning research and practice (Pugliese Viloria et al., 2024). While object-based detection is commonly used for tree segmentation, pixel-based approaches have shown strong performance in species classification (da Silva et al., 2023). Convolutional Neural Networks (CNNs) are particularly effective in identifying complex canopy structures relevant for tree species detection (Fan et al., 2024; Grondin et al., 2023).

Previous efforts to map Albizia in Hawaiʻi have been limited in scale. This study advances prior work by applying a scalable GeoAI approach to a larger region. Using NAIP multispectral aerial imagery, we trained a deep learning U-Net model (ResNet34 backbone) to classify Albizia as a case of hazard-relevant vegetation on the island of Oʻahu. Model outputs were integrated with spatial data on buildings and transportation networks to evaluate infrastructure exposure and support mitigation planning.

The results demonstrate that Albizia poses a substantial and spatially concentrated risk to critical infrastructure. Approximately 456 acres of Albizia were identified, with 52,197 buildings and over 522 miles of major roads located within proximity to classified Albizia areas. These findings provide a planning-relevant, spatially explicit basis for prioritizing vegetation management and infrastructure protection efforts.

This study contributes to environmental planning literature by framing invasive vegetation as a hazard management and infrastructure resilience issue and by demonstrating how GeoAI can support scalable, data-driven planning interventions. For planning practice, the approach offers a decision-support tool for integrating environmental risk into hazard mitigation and land management strategies. Future work should focus on improving model precision and expanding statewide applications.

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Keywords: Environmental planning, Geo-AI, Infrastructure risk, Hazard mitigation, Deep learning

MODELING THE CONSEQUENCES OF COMMUNITY COORDINATION AND URBAN HEAT POLICY

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Individual Paper Presentation

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Climate change has a significant impact on life in cities as it exacerbates the Urban Heat Island (UHI) effect. Various adaptation policies and strategies aim to reduce heat exposure among urban dwellers, but little attention has been given to the role of cooperation between agents and across scales, and to the distribution of risks and impacts of specific adaptation strategies on the most vulnerable households. New planning approaches are needed for urban adaptation that are attentive to the distribution of benefits and dynamic risks, and that center community concerns. Such approaches also need to be grounded on proper empirical and modeling evidence about how different types of cooling infrastructure work in an urban environment and how residents behave in that environment.

To address these challenges, we designed a mixed-methods study, combining quantitative survey data on perceptions and attitudes towards heat adaptation strategies—individual and institutional—to understand the underlying motivators for specific coping mechanisms and identify the potential obstacles to policy effectiveness. The survey provided the empirical data to inform agent behavior represented in a computational model of the dynamical and spatial interactions between urban heat energy balance mechanisms, policy and infrastructure interventions, and household behavior.

Our survey focused on individual responses to extreme heat, community resilience, threat perceptions, and favorability toward municipal adaptation strategies. Survey analysis focused on revealing unequal distribution of vulnerabilities to extreme heat, in combination with social norms in a dense and socially diverse neighborhood in Boston, USA. Density was found to be positively associated with heat-related attitudinal factors among respondents, like willingness to leave their home for indoor or outdoor spaces. On other factors, such as perceptions of accessibility to neighborhood cooling facilities, residents demonstrated no significant differences across different densities.

Survey questions are translated into model parameters for agent attributes, such as availability of air conditioning, outdoor employment, understanding of heat impacts on health, chronic health conditions, perceptions on how welcoming public spaces are to them, trust in community decision makers, and household budget constraints. Survey responses also inform model mechanisms for agent behavior, such as choice of home cooling options (fan, AC, open window), sheltering in place during heat emergencies, checking the wellbeing of contacts, availing themselves of public amenities (e.g., cooling centers or sprinklers), accessing assistance programs, and checking weather sources for updates on heat threats. Once household behavior is fully implemented in the physical heat model of the urban environment, we will be able to examine the magnitude and distribution of the impact of infrastructural and policy approaches to heat exposure. In particular, we will model the cross-scale effects—from household to neighborhood—of specific infrastructure and/or economic interventions (e.g., number and

distribution of cooling centers and shading structures, green infrastructure, and/or white roofs; economic relief to air conditioning use) as agents interact with each other and with their environment.

Preliminary model results will be shared at the time of the conference. This is the first of a broader comparative study that will allow us to derive broader generalizations of how heat adaptation behavioral and policy strategies influence resilience and equity outcomes.

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Keywords: extreme heat, community resilience, heat adaptation, agent-based modeling

MODELING URBAN HEAT ACROSS THE DIURNAL CYCLE: TIME-SPECIFIC APPROACHES FOR SPARSE SENSOR NETWORKS

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Urban heat exposure varies substantially across space and time, yet most available temperature data remain too coarse to support neighborhood-scale planning and response. Fixed in situ sensor networks provide accurate air temperature measurements but are expensive to deploy densely, while satellite-derived thermal data offer broad coverage but limited temporal frequency and only indirect representation of near-surface air temperature. This paper advances a hyperlocal urban temperature modeling framework that uses a sparse sensor network to generate high-resolution air temperature maps across different times of day by tailoring model design to the data conditions available at each hour.

Building on prior work in Bloomington, Indiana, using a 32-sensor network, we develop a set of time-specific machine learning models rather than relying on a single model for the full diurnal cycle. This approach draws on recent fine-scale weather down-scaling research: hourly thermal conditions are constrained by broader atmospheric forcing, while neighborhood-scale temperature differences are shaped by static surface characteristics like urban-form, vegetation, land cover, and topography. Accordingly, our framework uses lower-resolution hourly weather data to characterize the background temperature range at each hour, and high-resolution urban form and land-surface descriptors to predict intra-urban spatial variability. This structure is especially important outside satellite overpass times, when high-frequency meteorological context is available but spatially detailed thermal observations are limited. Model performance is evaluated using robust cross-validation metrics to assess both temporal accuracy and spatial generalization across the city.

The paper examines how time-tailored model specification can improve citywide temperature prediction beyond midday conditions, where satellite-linked models have typically performed best. By comparing performance across hourly models, the study identifies which combinations of meteorological, remote sensing, and land surface data are most effective under different atmospheric and surface conditions.

The project is motivated by planning applications. Sensor placement was informed by both consultation with community members and local stakeholders about where heat is experienced, where monitoring would be useful, and where additional data could support decision making. The resulting high-resolution temperature maps provide a foundation for planning interventions that move beyond citywide averages, including neighborhood-scale heat vulnerability assessment, more tailored heat alerts for different demographic groups, and future citizen science efforts to evaluate lived thermal conditions. In this way, the study positions hyperlocal temperature modeling as both a technical innovation and a planning tool for more equitable heat resilience.

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Keywords: urban heat, temperature modeling, sensor network, heat resilience planning

MS ELNAZ CHITSAZZADEH
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Individual Paper Presentation

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Urban flooding is placing growing pressure on cities as rapid urbanization, impervious-surface expansion, and intensifying rainfall because of climate change increase runoff and strain drainage systems. At the same time, flood burdens are not evenly distributed across neighborhoods, which creates a clear need for planning tools that can support a more equitable prioritization of flood-resilience investments. (Khodadad et al., 2025). Fort Worth, Texas, was selected due to its rapid growth, recurring pluvial and flash-flood concerns in the Trinity River basin, and pronounced socioeconomic disparities. In this context, green stormwater infrastructure (GSI) can support flood resilience while also providing co-benefits for communities. (Homet et al., 2022). However, there is still a significant gap in the strategic siting and prioritization of GSI in both planning and policy, especially in neighborhoods where flood-related physical Need is highest, and the capability to recover is lowest (Khodadad et al., 2025; Li et al., 2020).

This paper develops a GIS-based multi-criteria approach to identify priority neighborhoods for equitable flood-resilience planning in Fort Worth, Texas. Because flood resilience has scale-sensitive characteristics, this study is designed across multiple scales, using different but appropriate data for each scale.(Tanir et al., 2021). The analysis uses a tract-level Flood Risk Index (FRI) constructed from six indicators representing both flood-aggravating and flood-buffering conditions: FEMA flood-risk ratio, impervious surface ratio, road ratio, tree canopy, slope, and soil infiltration. After standardization and Analytic Hierarchy Process (AHP) weighting, the citywide screen identifies a spatial clustering of higher flood-risk conditions across Fort Worth rather than a random distribution. The method then refines the analysis at the block-group scale by incorporating stormwater-access variables, including mean distance to inlets, pipes, and drainage features, to distinguish local variation within selected tracts.

The findings show that the neighborhood with the higher Flood Risk Index also has a higher social vulnerability index and a lower capability-to-recover index than the neighborhood with the lower flood-risk score. The paper argues that a transparent, GIS-based neighborhood prioritization method can help planners move beyond generalized citywide flood discussions toward a more targeted, just, and resilience-oriented planning approach. In this way, the study contributes a replicable and scalable screening tool for prioritizing neighborhoods for deeper investigation and future flood-resilience investment in Fort Worth.

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Keywords: stormwater infrastructure, flood resilience, environmental Justice, AHP weighting

NATURE-BASED SOLUTIONS FOR URBAN RESILIENCE: BRIDGING THE GAP BETWEEN CONCEPT AND PRACTICE

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Individual Paper Presentation

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Climate change poses escalating challenges to urban areas, including rising temperatures, increased frequency and intensity of extreme weather events, and growing pressures on infrastructure and public health. Cities are at the forefront of both climate impacts and responses, necessitating the development of strategies that enhance resilience, support adaptation, and mitigate risks. In this context, Nature-based Solutions (NbS) have gained increasing attention as an approach that leverages ecosystem processes to address climate-related challenges while simultaneously providing co-benefits for biodiversity and human well-being. NbS are defined as actions to protect, sustainably manage, and restore natural or modified ecosystems to address societal challenges effectively and adaptively. Despite their growing prominence in policy and research, there remains limited empirical understanding of how NbS are operationalized within urban planning and governance.

Existing literature has largely emphasized the theoretical benefits of NbS or focused on interventions in peri-urban or natural landscapes, often assuming that such interventions will translate into urban resilience outcomes. However, there is a critical gap in understanding whether and how cities are explicitly or implicitly incorporating NbS into their planning frameworks, which types of NbS are being prioritized, and the contextual factors shaping their adoption. This gap is particularly important given the complexity of urban systems, where institutional, infrastructural, and socio-environmental dynamics influence the feasibility and effectiveness of different strategies. To address this gap, this study systematically examines the incorporation of NbS in urban planning documents across a large sample of cities, to answer the following research question: To what extent are NbS integrated into urban planning documents, which types are adopted across cities, and how are they framed (explicitly or implicitly) within planning practice? An analytical framework was developed based on established definitions and classifications in the literature, identifying 30 distinct types of NbS organized into five categories: ecosystem protection, ecosystem restoration, ecosystem-based management, green and blue infrastructure, and issue-specific approaches (such as ecosystem-based adaptation and disaster risk reduction).

The study analyzes a sample of 230 cities, for which key policy documents were collected, including Hazard Mitigation Plans, Climate Action Plans, Climate Adaptation Plans, and Resilience Plans. These documents were selected due to their central role in guiding urban responses to climate risks and resilience challenges. A structured content analysis was conducted to systematically code the presence, typology, and framing of NbS within these plans.

Preliminary findings from the ongoing analysis indicate that while the term “Nature-based Solutions” is rarely used explicitly in planning documents, a wide range of NbS-aligned strategies are being implemented across cities. This suggests a significant disconnect between terminology and practice, where cities are effectively deploying NbS without labeling them as such. In addition, early results indicate variability in the types of NbS adopted, with certain categories, particularly green and blue infrastructure, appearing more frequently than others. These patterns highlight the influence of institutional familiarity, perceived feasibility, and existing planning paradigms on the selection of resilience strategies.

This study contributes to the growing body of research on NbS by providing a systematic, large-scale assessment of their implementation in urban contexts. By bridging the gap between conceptual frameworks and real-world planning practices, the research offers important insights for urban planners, policymakers, and researchers seeking to advance the integration of NbS into climate resilience strategies.

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Keywords: Nature-Based Solutions, Urban Resilience, Climate Adaptation, Hazard Mitigation, Policy Analysis

NEGLECT AND THE PRODUCTION OF ENVIRONMENTAL INJUSTICES IN SÃO PAULO, BRAZIL

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Track 3: Environmental Planning
Individual Paper Presentation

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QUESTION: How does environmental governance in Brazil produce and reproduce environmental injustices?

THEORETICAL FRAMEWORK: The paper combines three theoretical frameworks. First, it engages with theories of environmental justice (EJ), which discuss how minorities and marginalized groups across the world are disproportionately impacted by environmental issues (Corburn, 2017). EJ research suggests that these injustices are historically produced and reproduced through state practices, such as spatial planning (Horowitz, 2020). However, in many countries around the globe, urban informality is embedded in the state (Roy, 2016). The governance processes that lead to environmental injustices can be better understood by using a governance framework to bridge EJ theories and urban informality theories. Governance admits that power is not centralized in the state and describes multiple actors that make "authoritative decisions that produce collective outcomes." (Ansell & Torfing, 2022, p.1). By integrating these frameworks, it is possible to identify specific dynamics that hinder efforts to achieve justice for vulnerable populations, considering both state and non-state actors and practices.

BACKGROUND: In many Brazilian cities, informal settlements are located in areas of environmental risk. Many urban policies, particularly the 2001 City Statute, have been proposed to change these inequalities, and in the early 2000s, Brazil became known in planning circles for implementing progressive policies such as inclusionary zoning (Caldeira & Holston, 2015). The City Statute redefined the role of local planning in the 21st century, giving it renewed importance, and provided guidelines for urban policy in the country (Caldeira & Holston, 2015). In the particular case of São Paulo, it promised to bring an urban revolution since bad planning is commonly blamed for socio-spatial inequalities in the city. For most of the 20th century São Paulo's planning efforts only regulated downtown elite spaces while neglecting the outskirts of the city. This neglect meant that it grew following a pattern of informal urbanization and pushed informal development to environmentally sensitive areas. Twenty-four years after the enactment of the City Statute, São Paulo remains a city of deep inequalities. The pattern of informal occupation of environmental risk areas has not changed.

METHODS: The paper uses two main research methods, document analysis and interviews. I investigate the evolution of urban environmental policies and government documents since 2000. I also interviewed key stakeholders, specifically city staff and activists.

RESULTS AND SIGNIFICANCE: The paper shows that environmental injustices are reproduced through neglect, both as government inaction and as a series of governance dysfunctions. Dysfunctions include little coordination between city agencies responsible for environmental programs, leading to contradictory actions. Little consideration of Climate Change in policy documents, which undermines future planning. And conflict between housing and environmental issues that creates competition between both interests. The paper shows that neglect is a result of governance practices.

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Keywords: Environmental Justice, Governance, Urban informality, Brazil

NONLINEAR EFFECTS OF URBAN ENVIRONMENTAL FACTORS ON DAY–NIGHT APPARENT TEMPERATURE: EVIDENCE FROM IOT SENSOR DATA IN SEOUL

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Track 3: Environmental Planning
Individual Paper Presentation

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Urban heat island (UHI) effects, intensified by rapid urbanization, pose increasingly critical challenges under accelerating climate change. Human heat stress is determined not only by air temperature but also by apparent temperature (AT), which incorporates humidity. However, existing urban heat studies have largely relied on satellite-derived land surface temperature, which fails to adequately capture actual human exposure conditions. In addition, many studies assume linear relationships between urban environmental factors and temperature, overlooking the complex nonlinear characteristics of urban systems.

This study addresses two primary research questions: (1) What are the spatial distribution patterns and hotspots of AT across daytime and nighttime? (2) How do urban environmental factors exert nonlinear effects on AT across day and night, and what are the specific threshold points (knots) of these effects?

Focusing on Seoul, South Korea, this study utilizes micro-scale urban data from the S-DoT (Smart Seoul Data of Things) IoT(Internet of Things) sensor network, incorporating air temperature and humidity to calculate AT. The analysis period encompasses an extreme heat event from July 25 to July 29, 2025, during which both heatwave warnings and tropical nights occurred. AT was averaged separately for daytime (12:00–17:00) and nighttime (00:00–05:00). Urban environmental variables were extracted within a 250m buffer around each sensor. These include natural environment factors (NDVI, MNDWI), land use, built environment characteristics (floor area, sky view factor, surface roughness), and social environment indicators (de facto population, proportion of elderly living alone, and proportion of national basic livelihood security (NBLS) recipients).

The analysis was conducted in two stages. First, spatial distribution and hot spot analysis were used to identify clustering patterns of AT for day and night. Second, a Multivariate Adaptive Regression Splines (MARS) model was employed to estimate nonlinear relationships and identify threshold effects of urban environmental variables.

The results show that daytime AT is irregularly distributed across Seoul, whereas nighttime patterns exhibit clear spatial clustering, with lower temperatures in peripheral areas and higher temperatures in central districts. The MARS model demonstrates higher explanatory power for nighttime conditions compared to daytime. NDVI emerges as the most important variable in both models, with threshold values of 0.1490 (daytime) and 0.2666 (nighttime), indicating differences in the activation level of vegetation cooling effects across time periods. Notably, social variables exhibit distinct temporal differences. While they are not significant in the daytime model, they become important predictors at night. Specifically, in areas where the proportion of NBLS recipients is below 10.173%, lower proportions are associated with higher AT. This reflects the spatial structure of Seoul, where nighttime heat accumulates in dense urban centers, while NBLS recipients are more concentrated in peripheral areas.

By utilizing real-time IoT sensor data at pedestrian-level, this study captures human-experienced thermal environments with greater precision and identifies nonlinear threshold effects. The findings suggest that urban heat mitigation should move beyond average temperature reduction toward threshold-based intervention strategies. Furthermore, the day–night comparison of social factors provides a basis for identifying nighttime heat-

vulnerable areas. This supports the development of place-specific heat management strategies that enhance human thermal comfort beyond mere physical temperature reduction.

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Keywords: Urban heat island, Apparent temperature, Nonlinear Thresholds, IoT Sensor, Heat vulnerability

OPTIMISTIC BIAS AND FLOOD RISK PERCEPTION IN TAIWAN: IMPLICATIONS FOR CLIMATE ADAPTATION AND DISASTER PLANNING

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Track 3: Environmental Planning
Individual Paper Presentation

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Flooding is among the most frequent and costly climate-related hazards affecting urban and coastal regions worldwide. In rapidly urbanizing and climate-vulnerable societies, effective disaster planning depends not only on infrastructure and hazard mitigation systems but also on how residents perceive and respond to risk. A persistent challenge is optimistic bias (OB) - the cognitive tendency for individuals to overestimate their own likelihood of experiencing negative events – which could undermine preparedness and weaken public support for adaptive planning measures. Despite its relevance to disaster governance, the role of OB in shaping flood risk perception remains underexamined in the planning literature.

This study investigates the determinants of Flood Risk Threshold (FRT) awareness and OB among Taiwanese residents, asking: What social, psychological, and institutional factors shape individuals' assessments of flood risk and their vulnerability? Taiwan provides a valuable context for this inquiry. The island faces recurrent flooding due to typhoons, intense rainfall, and coastal exposure, yet it also possesses relatively strong disaster management institutions and dense community networks. Understanding how these contextual features influence risk perception is critical for improving climate adaptation planning.

The analysis draws on a national survey of 1,267 respondents and employs a Heckman selection model to address potential sample selection bias in measuring flood risk perception. The first-stage probit model estimates whether respondents have baseline awareness of local flood risk thresholds, while the second-stage regression examines the determinants of cautiousness when evaluating those thresholds. Independent variables capture five domains commonly discussed in disaster planning and behavioral risk research: (1) sociodemographic characteristics, (2) climate change perceptions, (3) environmental efficacy, (4) social capital, and (5) trust in governmental disaster management institutions.

The results reveal several notable patterns with implications for planning practice. First, climate change perception—particularly the perceived importance of global warming and attribution to human causes—significantly increases awareness of FRT and reduces OB. Second, environmental efficacy, as reflected in activities such as participating in disaster drills, volunteering, and purchasing insurance, improves FRT awareness. Third, social capital exhibits paradoxical effects. While broader social networks modestly enhance FRT awareness, bonding and linking social ties do not necessarily reduce OB, suggesting that strong community cohesion may occasionally produce a sense of "communal immunity." Finally, trust in disaster management institutions is strongly associated with greater OB, suggesting that institutional confidence may inadvertently foster psychological detachment and reliance on governmental protection rather than household preparedness.

These findings contribute to planning scholarship by integrating risk perception theory, social capital, and institutional trust into a unified framework for understanding behavioral dimensions of climate adaptation. For planning practice, the results highlight the need for risk communication strategies that leverage institutional trust while clearly emphasizing the limits of governmental protection, thereby reinforcing individual and household preparedness. Urban and regional planners could combine technical mitigation measures with communication,

experiential preparedness programs, and community-based engagement strategies to translate climate awareness into concrete protective actions. As climate-driven flooding intensifies across many regions, addressing the cognitive and social drivers of risk perception will be essential for building resilient communities and strengthening the effectiveness of adaptation planning.

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Keywords: Optimistic Bias, Flood Risk Perception, Disaster Preparedness, Climate Adaptation, Taiwan

ORGANIZATIONAL LEARNING AND THE INTEGRATION OF HOUSEHOLD EXTREME HEAT EXPERIENCES INTO RESILIENCE PLANNING IN MEMPHIS

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Track 3: Environmental Planning
Individual Paper Presentation

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Extreme heat exposure is one of the deadliest climate-related hazards in US cities, with calls for engaging residents to account for their lived experiences in heat resilience planning. Although community engagement is widely considered a critical mechanism for improving resilience outcomes, limited attention has been paid to how engagement with residents about their climate realities translates into organizational learning (Venemyr, 2025; Wang 2008). Drawing on Organizational Learning Theory (see Kayes, 2015; Kump et al., 2015; Simons, 2019), this study conceptualizes learning by disaster management organizations as the process of knowledge acquisition, interpretation, integration, and institutionalization. Using a qualitative approach involving semi-structured interviews with representatives of key resilience organizations across government, non-governmental, and community-based organizations in Memphis, this study addresses the following research questions: 1) What mechanisms do resilience organizations in Memphis use for the acquisition, interpretation, integration, and institutionalization of households' experiences of extreme heat events in resilience planning? and 2) How does this learning shape their resilience planning efforts to help households' preparedness and adaptation to extreme heat events? The findings emphasize how organizational learning from households' extreme heat experiences occurs, and how knowledge about households' experiences of extreme heat events influences formal preparedness and adaptation strategies in Memphis. The findings contribute to the growing organizational learning and urban heat resilience scholarship by bridging household-level experiences with organizational decision-making. For planning practice, the findings provide insight into how planners and other professionals of the built environment can better integrate household-level extreme heat experiences into actionable and equitable heat mitigation and management strategies.

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Keywords: Urban heat, Organizational Learning, Households, Knowledge, Experiences

PLACE-BASED DISASTER PREPAREDNESS: COMPARING COMMUNITY-LED INITIATIVES IN THE U.S. AND JAPAN

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Individual Paper Presentation

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As the incidence and impact of disasters continue to grow, the volunteer relief provided by place-based responders has become an increasingly valuable resource. In addition, prior research has recognized that building place-based social capital in advance of a disaster is critical for effectively leveraging embodied local knowledge and resources to support community resilience when a disaster occurs (Aldrich & Meyer 2015; Sakurai & Sato 2018) while also enhancing everyday collective capacity (Freitag at al. 2014). This study highlights the resilience benefits of localized volunteer networks by examining two unique community-based disaster preparedness and response initiatives: the Seattle Emergency Hubs network in Seattle, Washington, USA, and the Sendai Bosai Leaders program in Sendai, Japan. We seek to understand: 1) In what ways do these place-based initiatives build and strengthen community social capital?; and 2) How do the processes developed and practiced by these organizations enhance collective capacity for resilience?

Historically linked though structurally distinctive, the Sendai Bosai Leaders and the Seattle Emergency Hubs share a common purpose of complementing official disaster response structures, drawing upon local skills and knowledge to prepare for catastrophic events in which residents cannot expect to be rescued by officials. In the case of Sendai, this is based on the experience of the 2011 Great East Japan Earthquake and Tsunami. In the U.S. Pacific Northwest, a similarly scaled magnitude 9.0 Cascadia Subduction Zone earthquake is expected to impact the Seattle region in the foreseeable future, with emergency managers anticipating that communities will need to be self-sufficient for up to three weeks afterwards. Both initiatives are volunteer-run and receive varied levels of support from their respective city governments. However, while the Seattle Emergency Hubs network operates independently from governmental structures and emphasizes education and information-sharing via localized networks, the Sendai Bosai Leaders program is directly under the control of Sendai City and focuses on developing neighborhood capacity by conducting disaster drills, preparing supplies, and managing evacuation centers. Comparing the two organizations yields insights about the potential tradeoffs of these differing structures regarding volunteer capacity and depth of engagement (Bajek et al. 2008) as well as the potential of such organizing structures to strengthen collective capacity (Cano-Calhoun et al. 2025).

Drawing upon in-depth case studies of the Seattle Emergency Hubs and the Sendai Bosai Leaders and results of member surveys of both initiatives (total N = 417), we highlight similarities and differences in member roles and lessons learned as well as participant perceptions regarding specific successes and challenges experienced in both contexts. We focus on the ways in which the two initiatives leverage networks of partnerships with government agencies, local institutions, and other place-based organizations to strengthen place-based social capital as well as the processes by which they conduct trainings, build collective capacity, and seek support for their work. In

addition to sharing the practices and strategies of these two exemplary initiatives, we present a series of recommendations that can be used by researchers, practitioners, and others collaborating with volunteer networks to better support and sustain place-based disaster preparedness efforts more broadly.

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Keywords: community resilience, volunteer networks, disaster preparedness, disaster response, cross-cultural comparison

PLANNING DECARBONIZATION PATHWAYS FOR URBAN EXISTING BUILDING STOCKS: A DYNAMIC LIFECYCLE DECISION FRAMEWORK

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Track 3: Environmental Planning
Individual Paper Presentation

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Urban existing building stocks are a major challenge for long-term decarbonization and climate-responsive planning, yet retrofit evaluation is often conducted as a one-time intervention at the individual-building level. This static approach overlooks how performance, durability, and renewal needs evolve over time, limiting its value for urban decision-making. This paper asks how retrofit strategies can be evaluated as dynamic, multi-stage pathways and what planning implications emerge when degradation and staged renewal are explicitly considered over the building lifecycle.

To address this question, the paper develops a dynamic lifecycle decision framework that integrates annual operational change, component degradation, and scheduled renewal events within a 50-year horizon. The framework combines simulation-based assessment with scenario comparison of alternative intervention pathways, including different replacement cycles, timing strategies, and coordination logics. A real-world building case is used to test the framework as a prototype for evaluating pathway-based decarbonization strategies relevant to urban existing building stocks.

Preliminary findings suggest that one-time evaluation can misrepresent long-term decarbonization outcomes by obscuring temporal variation and the cumulative effects of staged interventions. By contrast, the dynamic framework highlights how decarbonization performance depends on the timing, sequencing, and coordination of renewal actions over time. The analysis indicates that pathway-based evaluation provides more decision-relevant evidence than snapshot-based comparison for identifying when early gains erode, when reinvestment becomes necessary, and how building-level evidence can inform stock-oriented urban retrofit strategy.

This paper contributes to environmental planning by reframing retrofit as a pathway-planning problem within broader urban decarbonization processes. Methodologically, it offers a transferable tool for linking simulation-based analysis with lifecycle-oriented planning evaluation. Practically, it supports planners and policymakers in prioritizing intervention timing, sequencing, and coordination for long-term low-carbon transition in cities.

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Keywords: Urban decarbonization, Existing building stocks, Building retrofit, Lifecycle planning, Decision support

PLANNING EMERGENCY MEDICAL SYSTEMS UNDER EXTREME CLIMATE RISKS: A COMPREHENSIVE RESEARCH MAPPING BASED ON SCIENTOMETRIC ANALYSIS

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Track 3: Environmental Planning
Individual Paper Presentation

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Extreme climate events—including heatwaves, floods, storms, and other weather-related hazards—are increasingly intensifying urban health risks and generating substantial pressure on emergency medical systems (EMS). As climate change accelerates the frequency, duration, and severity of such events, cities are facing growing challenges in ensuring equitable, timely, and resilient emergency care. Although a considerable body of literature has examined EMS from the perspectives of public health, clinical medicine, and management, existing research remains fragmented across disciplines. In particular, limited attention has been given to integrating EMS planning into urban planning frameworks capable of addressing health risks under extreme climate conditions.

To address this gap, this study develops an integrated planning framework for EMS under extreme climate risks through a comprehensive scientometric analysis. Using the Web of Science Core Collection database, 2,617 publications related to urban EMS published between 2010 and 2025 were identified and analyzed with VOSviewer and CiteSpace. The results show that this field has expanded rapidly, especially since 2019, reflecting increasing scholarly concern over emergency response capacity, health vulnerability, and system resilience in urban contexts. Five major knowledge domains are identified: (1) public health and risk events, (2) spatial accessibility and system optimization, (3) time-sensitive diseases such as stroke, (4) cardiac arrest and outcome evaluation, and (5) system management and community governance.

Building on these findings, the study proposes a planning-oriented conceptual framework linking the built environment, extreme climate, emergency risk, and facility planning. This framework highlights three key pathways through which the built environment influences EMS planning: direct effects on emergency risk, indirect interactions with climate-related hazards, and structural constraints on facility supply and service accessibility. It further advances a nested perspective of health risks and health resource allocation, offering a conceptual basis for improving emergency health resource allocation and for informing the development of health impact assessment (HIA) in EMS planning.

The study identifies three emerging research frontiers: climate-resilient EMS systems, the integration of environmental exposure into accessibility modeling, and multi-scalar governance of emergency response. This study also reveals several critical gaps, including the lack of climate-sensitive planning models and insufficient attention to compound and cascading risks. By connecting scientometric evidence with planning-oriented conceptual innovation, this research contributes to advancing climate-adaptive EMS planning and offers practical insights for building healthier, safer, and more resilient cities.

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Keywords: Emergency Medical Service, Extreme Climate Events, Urban Planning, Health Risk, Scientometric Analysis

PLANNING FOR BLUE CARBON TO MITIGATE CLIMATE CHANGE

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Track 3: Environmental Planning
Individual Paper Presentation

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Mitigating the effects of carbon emissions has become the focus of much research. Scientists agree that coastal blue carbon ecosystems (seagrasses, salt marshes, and mangroves) provide an inexpensive form of carbon sequestration and storage. These ecosystems sequester and store carbon at rates 10 and 100 times faster than terrestrial forests, and provide co-benefits of improving water quality, promoting biodiversity, supporting local economies through fishing and recreational opportunities, and supplying physical coastal protections from storm surges. Globally, these ecosystems are some of the most threatened on earth, with an estimated 67% of mangroves, 35% of tidal marshes, and 29% of seagrasses already lost. The largest contributors to the degradation and destruction of these ecosystems are human development activities in coastal areas as well as terrestrial and marine pollution.

Given the abundant carbon sequestration and storage potential of blue carbon, are US government planners including blue carbon protection in their coastal zone, comprehensive, climate action, or hazard mitigation plans? A review of four leading state coastal zone management plans: California, Hawaii, North Carolina, and Oregon to determine how and how much these states are incorporating blue carbon into their coastal plans. A review of four leading city climate action plans: Baltimore, Boston, San Diego, and Seattle to determine how and how much these cities are incorporating blue carbon into their climate action plans. A review of the comprehensive plans of four cities to determine how and how much these cities are incorporating blue carbon into their comprehensive plans: Honolulu, Miami, Norfolk, and San Francisco. A review of four hazard mitigation plans to identify whether they include blue carbon as part of their mitigation strategies and what those strategies aim to achieve: Charleston, Galveston, Manhattan Beach, and New York City.

The research shows that all four leading states have integrated climate mitigation to varying degrees into their coastal zone management plans. For the local climate action plans analyzed, Baltimore and San Diego are coastal cities that have identified the protection of blue carbon as a method of climate mitigation or adaptation. Although wetland restoration was acknowledged in the Norfolk Comprehensive Plan for coastal protections, reestablishing these habitats as a carbon mitigation strategy is a topic that has yet to enter into the comprehensive plans of the coastal cities examined. Likewise, the Charleston Hazard Mitigation Plan only referenced blue carbon ecosystems, but did not include restoration or conservation efforts within the plan, nor did any of the other plans that were researched.

Planners are only beginning to advocate for the restoration and conservation of blue carbon ecosystems. There is a clear need to integrate planning for blue carbon as a climate mitigation and adaptation tool in each of these four kinds of plans. Blue carbon should be seen as another “wedge” among the array of actions to mitigate carbon emissions and to adapt to the impacts of climate change in coastal areas. Also, the experience with blue carbon underscores a recommendation that cities integrate their comprehensive, climate action, and hazard mitigation plans to better focus regulations and infrastructure investments to implement a truly comprehensive plan to address climate mitigation and adaptation. Employing benthic data and mapping of these ecosystems overlayed with already protected coastal federal lands, conservation easements, and public parks can serve as the basis for the expanded preservation and restoration of these ecosystems. These maps will then enable planners to more easily integrate blue carbon into their state and local plans. Finally, the federal Coastal Zone Management Act of 1972 is overdue for an overhaul to emphasize climate mitigation and adaptation, including a role for blue carbon.

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Keywords: Blue carbon ecosystems, Coastal wetlands, Carbon mitigation

PLANNING FOR URBAN POWER RESILIENCE AFTER WINTER STORM URI: NIGHTTIME LIGHT-BASED RECOVERY PATTERNS AND SPATIAL STRATEGIES IN HARRIS COUNTY, TEXAS

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Track 3: Environmental Planning
Individual Paper Presentation

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As climate change accelerates, extreme weather events are increasingly exposing the vulnerabilities of critical urban infrastructure, particularly the electrical power grid. Winter Storm Uri, which struck Texas in February 2021, left over 4.5 million customers without power and resulted in catastrophic social and economic losses. While prior studies have documented the extent of outages and their disproportionate burdens, less is known about how power disruptions and restorations unfolded over time across neighborhoods and how those distinct recovery trajectories can inform planning interventions. This study examines power outage resilience in Harris County, Texas, addressing three questions. First, how did outage severity and recovery trajectories vary across neighborhoods during and after Winter Storm Uri? Second, can these trajectories be classified into distinct resilience profiles based on resilience-curve metrics? Third, how are these profiles and their cumulative performance losses associated with land cover, built environment, and sociodemographic conditions, and what do these relationships imply for planning strategies to strengthen community energy resilience?

To address these questions, the study integrates daily NASA Black Marble nighttime light data (VNP46A2), 2021 National Land Cover Database indicators, and block group-level sociodemographic measures for Harris County. Nighttime lights are used to construct block group-level outage and recovery trajectories from January through March 2021. A pre-event baseline radiance is established for each block group, and the radiance change is normalized as a cumulative loss relative to the baseline to improve cross-neighborhood comparability. From these trajectories, five resilience metrics are derived: maximum impact (MI), duration of impact (DI), speed of disruption (SD), speed of recovery (SR), and total performance loss (TPL). The first four metrics are then used in cluster analysis to identify resilience profiles, with the number of clusters selected using elbow and silhouette criteria. These profiles are interpreted not only as statistical groupings but also as planning-relevant recovery types. Then, the regression analysis proceeds in three stages. First, regression models estimate how land use, built environment, infrastructure, and sociodemographic factors explain variation in TPL across the full sample. Second, resilience-profile dummies are added to test whether recovery type itself explains cumulative loss. Third, interaction models evaluate whether the effects of planning-relevant determinants vary across resilience profiles. To complement these explanatory models, three machine learning models, Random Forest, XGBoost, and LightGBM, are also evaluated to predict TPL and compare the relative predictive contribution of physical and social factors. Spatial diagnostics are incorporated to assess residual spatial dependence, and spatial regression is used as a robustness check where appropriate. Our preliminary results suggest spatially clustered recovery profiles and substantial variation in TPL across neighborhoods.

This study contributes to planning scholarship in three ways. Substantively, it shifts disaster-related power outage research from static exposure mapping to neighborhood-scale recovery trajectories. Methodologically, it links remotely sensed nighttime lights to resilience-curve theory and profile-based modeling of cumulative performance loss. Practically, it translates resilience profiles into tailored planning strategies, including grid hardening, vegetation management, distributed energy resources, community microgrids, warming centers, and restoration prioritization. By identifying how physical landscape conditions and social vulnerability shape both the form and magnitude of

outage recovery, this paper offers a place-based framework for planning more resilient and adaptive energy systems under climate-related extreme events.

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Keywords: resilience archetypes, nighttime light, power outage, Winter Storm Uri, infrastructure planning

PLANNING FOR WHOM? SOCIAL INFRASTRUCTURE, AGING, AND THE LIMITS OF CLIMATE ADAPTATION PLANNING

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Individual Paper Presentation

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As populations age, urban planning faces a critical but underexamined challenge: how to meaningfully incorporate older adults into planning processes and outcomes. Despite growing attention to climate adaptation and resilience, dominant planning frameworks continue to prioritize physical infrastructure and hazard exposure while overlooking the lived experiences, relational dependencies, and everyday needs of older adults. This gap is particularly consequential for low-income older adults, whose well-being depends not only on protection from environmental hazards but also on continuity of care, access to services, and social connection. This paper asks: how do older adults' lived experiences of climate risk reveal the ways contemporary planning practice overlooks aging-related needs and forms of vulnerability?

This study draws on data collected across six coastal communities in Massachusetts, including structured surveys and in-depth focus group discussions with older adults in both subsidized and non-subsidized housing. The analysis examines how participants define climate risk, what conditions they identify as essential to resilience, and how they perceive planning responses to environmental change.

Findings reveal a consistent divergence between dominant planning frameworks—such as Municipal Vulnerability Assessments and Hazard Mitigation Plans—and older adults' lived realities under climate risk. While participants acknowledge concerns about flooding, extreme heat, and severe weather, they more frequently emphasize disruptions to transportation, access to food and medication, personal safety, and the continuity of social and care networks. Notably, lower-income older adults outside subsidized housing may face heightened risk due to greater housing instability, weaker access to institutional supports, and fewer embedded service networks. Across sites, senior centers and community hubs emerge as critical infrastructure that sustains well-being, serving as anchors for social connection, information exchange, and coordinated support. Participants also express concern about exclusion from planning processes and uncertainty about whether adaptation strategies—particularly those involving relocation—can preserve the conditions necessary for aging in place.

The paper argues that these findings expose a critical blind spot in climate adaptation planning, wherein resilience is predominantly operationalized through physical protection while obscuring the uneven spatial and economic distribution of risk, resources, and support systems. It advances a relational resilience framework for aging populations, conceptualizing resilience as a socially embedded and processual condition produced through social infrastructure, care networks, and the inclusion of older adults' lived experiences in planning processes. By reframing resilience as relational rather than solely infrastructural, the paper contributes to ongoing debates on planning for an aging society and identifies pathways for integrating aging more substantively into climate and community planning practice. In doing so, the paper challenges prevailing age-friendly planning frameworks, showing that their domain-based structure underrepresents the relational and interdependent systems through which older adults experience climate risk.

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Keywords: Age Friendly Communities, Climate Adaptation, Spatial Equity, Social Infrastructure, Disaster Risk Reduction

PLANNING WITHOUT PLANNERS: THE DIFFUSSION OF PLANNING ACTION ACROSS CLIMATE ACTION NETWORKS

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Individual Paper Presentation

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Climate action actors in the Cincinnati metropolitan area for the last two decades have used the four iterations of the Cincinnati Green Plan (CGP) as a guide in their efforts to activate and coordinate responses to present and looming climate-induced challenges. The latest iteration of the CGP, released in 2023, emphasizes inclusive collaboration as a critical component in developing and implementing responses to identified threats. Networks of collaboration play a major role in coordinating action and resources, Research has shown that networked collaboration efforts have the potential to assist in addressing climate-induced challenges across boundaries and scales (Cunningham et al., DiGregorio et al.). Urban planners and their professional allies should, in theory, be key actors within these networks to improve overall mitigation and adaptation planning outcomes through facilitating collaboration and improving overall quality of plans. But to this point, implementation guidance and subsequent outcomes have been lacking in many planning contexts (Woodruff & Stults), particularly in the United States Midwest (Clark et al.). Building on our prior research and data on the climate action network in Cincinnati, Ohio, in this paper we ask where professional planners lie within these networks and look to understand how urban planners and their professional allies understand their role in carrying out the CGP relative to other actors within the network. In particular we are interested in who is taking on the planning role(s) if not the professional planners, and how top down and bottom-up planning collaborate.

Evidence shows a network has evolved and been nurtured both through the efforts of Cincinnati's Office of Environment and Sustainability with key environmental non-profits, as well as the bottom-up efforts of a range of small companies, neighborhood and community organizations, and environmental activists. To gain insights into the character of the climate network of Cincinnati we completed a series of semi-structured qualitative interviews of 20 actors with actors identified within the CGP. Our list of key climate action actors was expanded using snowball sampling. These interviews were transcribed and analyzed using grounded theory coding. A second analysis focused on a broader understanding of the network using social network analysis (SNA) techniques to gain an understanding of the types and strengths of collaborations. The survey participants were identified through an internet search for climate action projects in Cincinnati. About 60 responses were collected and analyzed, providing an initial picture of collaborations and relationships within Cincinnati's climate action space while additionally complementing data collected in the initial research phase.

From the joint analyses of these two data sets we tease out insights into the role formal and informal planners and planning have played in addressing climate change in Cincinnati. Our findings thus far indicate that while planners are relevant actors within the Cincinnati climate action network, they rarely find themselves in positions that can influence overall outcomes following the development of the CGP. Planners, while serving as facilitators in the creation of the CGP, are shown to have more limited opportunities to drive implementation; this has, in effect, placed the impetus on implementation action on laypeople and raises questions about the impact planners have on climate action outcomes despite the presence of climate action plans. We conclude that professional planners, while often finding themselves placed outside of positions of power where they can directly lead implementation, would benefit from improving their connection with local climate actors and supporting bottom-up implementation

efforts in lieu of top-down efforts which are increasingly challenged by the current political climate and professional limitations imposed on planners.

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Keywords: climate, planning, networks, implementation

PRIORITIZING COMMUNITY PREFERENCES FOR IMPROVED ENERGY RESILIENCE

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Track 3: Environmental Planning
Individual Paper Presentation

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This study examines how community preferences for points of interest (POI) should inform targeted energy investments to improve local community resilience. Partnering with a municipal utility, a household survey (n=117) and focus groups (n=12) were conducted in the Duwamish Valley neighborhoods of Seattle, WA. The objective was to compare the frequency and preferences for providers of common and critical services, such as grocers, libraries, places of worship, food banks, and pharmacies, under “blue-sky” (normal) and hypothetical “black-sky” (outage) conditions. Key findings reveal that proximity-based assumptions misidentify critical facilities for most POI types. In fact, households optimize for bundled services, price, quality, and institutional constraints such as insurance networks rather than nearest locations. Results indicate that pharmacies and faith-based institutions are underused community partners, community centers are valuable but cannot substitute for healthcare or large-scale food needs, and in the case of extended outage, residents prefer private homes (friends/family) to most public facilities. Results also distinguish between populations with preferences for POIs that are common to all, and populations especially vulnerable to outage due to dependence on high-impact services (~19.6% sample) defined as households frequenting pharmacies, dialysis centers and doctor’s offices one or more times per week. Results suggest that planners integrate community engagement within programmatic and budgetary decision-making for energy resilience to capture dispersed local knowledge, prioritize investments based on service dependency and institutional access (not simply sociodemographics or proximity), strengthen networks among existing community assets, and address informational and governance barriers align investments with residents’ real preferences and needs.

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Keywords: community, resilience, energy, infrastructure, vulnerability

PUBLIC ACCEPTANCE OF CLIMATE-RESPONSIVE PLANNING ELEMENTS: IMPLICATIONS FOR PARTICIPATORY ENVIRONMENTAL PLANNING

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Track 3: Environmental Planning
Individual Paper Presentation

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How can climate-responsive planning move beyond policy ambition and become implementable in everyday planning practice? This study examines how public acceptance differs across mitigation and adaptation planning elements and what these patterns imply for participatory environmental planning and integrated land–environment planning. The analysis draws on two survey-based datasets: a comparative online survey of 500 respondents in South Korea and Germany evaluating 35 urban carbon-reduction planning elements, and a PPGIS-linked online survey of 426 residents in Chungcheongnam-do, South Korea assessing 20 climate-resilience planning elements. By comparing acceptance patterns across policy types, perceived burdens, and governance expectations, the study identifies planning strategies that are more socially feasible in climate policy implementation.

The findings show that acceptance is consistently higher for measures associated with visible co-benefits and lower personal sacrifice. In the carbon-reduction survey, respondents in South Korea showed stronger support for government-led and corporate-responsibility measures, whereas respondents in Germany expressed greater preference for community-based and participatory approaches. In both countries, waste reduction and green-building measures were more acceptable than policies imposing direct household costs, especially electricity price increases. In the climate-resilience survey, the strongest support was found for protecting vulnerable residential areas, conserving riparian and coastal forests and wetlands, and providing cooling and heating shelters, while managed retreat and relocation measures received comparatively weaker support. Even where flood risk increased willingness to relocate, most respondents preferred to remain close to their current community, indicating strong place attachment.

These results suggest that climate-responsive environmental planning should begin with highly acceptable measures that deliver tangible local benefits and then phase in more restrictive or costly interventions through transparent participation and equity-oriented prioritization. For environmental planning practice, integrated land–environment planning becomes more actionable when public acceptance is treated not as a downstream communication issue, but as a design condition that shapes the sequencing, spatial targeting, and governance of climate interventions.

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Keywords: public acceptance, climate planning, participatory planning, climate resilience, integrated planning

PUBLIC LIBRARIES AS COOLING INFRASTRUCTURE: ACCESSIBILITY AND HEAT-RELATED MORTALITY IN U.S. COUNTIES

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Individual Paper Presentation

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Although climate change is increasing the intensity of many weather-related hazards, in the United States extreme heat has long had the deadliest consequences (Shindell et al., 2020).It impacts disproportionately affect vulnerable populations, including older adults, people experiencing homelessness, and individuals with limited socioeconomic resources who lack access to air-conditioned environments (Lin et al., 2024; O'Neill et al., 2003; Xu et al., 2025). Although municipalities commonly rely on short-term, formally designated cooling centers as interventions to mitigate risk, these facilities are often difficult to access and underutilized. In this context, public libraries may serve as an alternative form of everyday cooling infrastructure. Over time, and particularly since the 1990s, libraries have evolved beyond their traditional roles as centers for learning and civic engagement to become critical components of the social safety net, by providing informal refuge during extreme heat events (Laurian et al., 2025; Vamanu et al., 2025; Wahler et al., 2020). Research shows they have a significant impact on reducing heat related mortality (Khaleghinia & Krauss, 2026).

This study evaluates whether public libraries function as everyday "cooling infrastructure" that reduces heat-related mortality. Using a national county-level panel covering 3,009 U.S. counties from 2000–2023 (72,216 county–year observations), we employ a correlated random effects (CRE) panel model to analyze the relationship between heat-related deaths and library accessibility across the United States. The dataset incorporates multiple dimensions of library presence and accessibility, drawn from the Public Library Survey (PLS), including their geographic distribution, number of facilities, and operational hours, and links them with county-level mortality data from the CDC Wonder dataset. The analysis controls for key demographic, socioeconomic, and environmental factors, including population age structure, poverty, extreme heat exposure (days with heat index $\geqslant 105^{\circ}$F), social welfare spending, racial composition, and homelessness.

This research extends traditional environmental justice literature, which examines the placement of environmental amenities and disamenities within and across communities. It does so by explicitly considering public libraries, providers of free, welcoming, and publicly accessible indoor space, as environmental amenities with the potential to support neighborhood-level climate resilience. It further advances this perspective by moving beyond simple location measures to consider accessibility through road networks and walking distances. Results indicate that greater library accessibility is significantly associated with lower heat-related mortality, even after accounting for confounding factors. This suggests that public libraries, by functioning as de facto cooling centers, play a meaningful role in community resilience and public health. Substantively, increasing library accessibility by the equivalent of keeping 100,000 square feet open for an additional 1,000 hours annually is associated with approximately 35.5 fewer heat-related deaths per year nationwide, representing about a 3.7% reduction relative to the annual average. Taken together, these findings support framing public libraries as scalable heat-adaptation assets and highlight how public services and community infrastructure, traditionally not associated with emergency management, can serve as essential tools for climate adaptation and crisis mitigation.

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Keywords: Extreme heat, Heat-related mortality, Cooling infrastructure, Climate adaptation, Social infrastructure

QUIET FOR WHOM? RACE AND THE UNEQUAL DISTRIBUTION OF NOISE RELIEF

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Rail corridors run through the urban landscape and they shape adjacent neighborhoods. While they structure transportation and economic exchange, they also generate environmental externalities, including federally mandated train horn noise at public at-grade crossings. Quiet Zones offer a legally authorized remedy to this form of noise pollution, but their designation is locally initiated and fiscally contingent. This raises a core question for environmental planning: when mitigation is discretionary and resource-dependent, does relief align with principles of distributive justice, or does it reproduce existing racial inequalities?

This paper conceptualizes train horn noise, a health detriment, as an environmental burden and Quiet Zones as a governance mechanism that allocates relief unequally across racial and ethnic communities. Rather than focusing solely on exposure disparities, the study examines the distributive structure of remedy. Two questions guide the analysis: Are rail-proximate neighborhoods systematically more environmentally and socially disadvantaged than rail-distant neighborhoods? Within rail-proximate neighborhoods, is Quiet Zone protection less likely in communities of color?

The analysis is conducted at the census tract level across the six largest Texas cities. Rail-proximate tracts are defined as those containing at least one at-grade rail crossing within _ mile. We used independent-samples t-tests to compare rail-proximate and rail-distant tracts across ACS demographic and socioeconomic indicators, environmental factors, health conditions, and indicators of federal funding for housing and community development. To answer the second research question, we restricted the sample to rail-proximate tracts and used t-tests to compare results for tracts with and without Quiet Zones. Finally, we developed multivariate logistic regression models to predict the absence of a Quiet Zone as a function of tract percent Black, percent Hispanic, and median household income; a second specification uses racial and ethnic composition quartiles to assess nonlinear patterns.

Results show racial inequities exist in environmental exposure to noise and the access to relief. First, rail-proximate tracts are disproportionately home to Black and Hispanic residents, have lower median incomes and educational attainment, higher poverty and renter occupancy, greater cumulative environmental burden, and elevated prevalence of sleep disruption and high blood pressure. Second, among rail- proximate tracts, those without Quiet Zones are significantly more likely to be communities of color, lower income, and more environmentally burdened. The logistic regression model found that for each 1% increase in the Black population there is a 3.3% increase in the odds of lacking a Quiet Zone and for each 1% increase in the Hispanic population the odds are a 2.6% increase; income is not statistically significant. Quartile models indicate that tracts in the highest Hispanic-share have more than four times the odds of lacking a Quiet Zone relative to the lowest quartile.

These findings shift the focus from environmental exposure alone to how environmental mitigation is distributed racial and ethnic lines. The study links environmental governance, in particular noise mitigation, to distributive justice and environmental justice, and it highlights the need for criteria to ensure that discretionary mitigation does not reinforce existing racial inequalities.

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Keywords: Noise Pollution, Distributive Justice, Equity Planning, Rail Infrastructure, Environmental Justice

RACIALIZED FLOOD RISK: HISPANIC EXPOSURE IN INCORPORATED AND UNINCORPORATED TEXAS COMMUNITIES

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Individual Paper Presentation

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Flood risk exposure in the United States represents spatial and racialized inequality (Bullard, 2018). Despite this, little work has examined how Hispanic and non-Hispanic White flood exposure varies across metropolitan areas and between incorporated and unincorporated communities. Building on environmental justice and social vulnerability frameworks, we conceptualize flood exposure as shaped by "unequal protection," in which historical power relations, infrastructure investments, and land-use decisions shape where people live and what fraction of vulnerable people are at greater risk (Bowen, 2002). This study addresses two main questions: 1) Is the Hispanic population disproportionately located in floodplains compared to the non-Hispanic white population? 2) Do these disparities differ between incorporated areas and unincorporated areas within major Texas metropolitan regions (Austin, Dallas-Fort Worth, Houston, and San Antonio)?

To answer these questions, this research uses the Texas Water Development Board (TWDB) FloodQuilt data set as the primary flood source, combining comprehensive statewide flood data with 2020 decennial population data at the block level to estimate Hispanic and non-Hispanic White populations inside and outside floodplains across multiple geographic scales (MSA, county, and incorporated vs. unincorporated places). To evaluate inequality, we use two complementary metrics. First, we compute ethnic-specific exposure rates, which operationalize "racialized risk" (Cutter, 1995) and "vulnerability differential" (Deguen et al., 2022) by asking whether being Hispanic carries a higher individual probability of floodplain residence than being non-Hispanic White; a Hispanic-to-White exposure ratio summarizes relative risk across places. Second, we calculate the Hispanic and non-Hispanic White shares of the total exposed population, addressing the distributive justice question of who bears the "collective burden" of flood risk (Pollock III & Vittas, 1995) and whether Hispanics are overrepresented among those living in floodplains. Together, these metrics assess how both individual risk and group-level burden vary between incorporated and unincorporated areas within Texas metropolitan regions.

Across MSAs, preliminary results indicate that flood risk inequity is metropolitan-specific rather than uniform. In Dallas–Fort Worth, the core county is closest to parity in Hispanic versus White exposure, while outlying counties consistently show lower Hispanic-to-White exposure ratios and greater White dominance among those exposed in both 100-year and 500-year floodplains. Austin shows a clearer governance contrast: in the core county (Travis), Hispanics have higher exposure than non-Hispanic Whites both inside and outside incorporated areas, and the Hispanic-over-White gap is slightly larger in unincorporated areas. Houston and San Antonio regions display county-to-county heterogeneity in both exposure ratios and the distribution of the exposed population.

These early outcomes already suggest significant implications. For planning scholarship, this research highlights how "racialized flood risk" in vulnerable communities is shaped by municipal boundaries, governance policies, and who is placed at greater risk. The jurisdictional comparison shows how land use regulations, jurisdictional boundaries, and infrastructure investments can push unequally vulnerable people into higher-risk locations. Using a comprehensive statewide flood dataset also demonstrates that reliance on FEMA flood maps underestimates

Hispanic flood risk in unincorporated areas, underscoring the need for planners to integrate more complete flood data into planning and mitigation strategies.

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Keywords: Environmental justice, Social vulnerability, Jurisdictional boundaries, Hispanic flood exposure

REGULATING RISK UNEVENLY: BUILDING CODES AND ENVIRONMENTAL JUSTICE IN COASTAL TEXAS

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Individual Paper Presentation

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Climate change is intensifying wind hazards, particularly in coastal regions, making building codes a critical policy tool for reducing loss of property and life from extreme events. Existing research demonstrates that updated and enforced building codes might significantly reduce disaster impacts (Cohen et al., 2025; Simmons et al., 2019). Yet despite their proven effectiveness, adoption and enforcement remain uneven across municipalities in Texas. Additionally, the literature has largely focused on the technical performance of building codes and economic efficiency while overlooking how the unequal adoption contributes to environmental justice (EJ) disparities across jurisdictions (Shapiro, 2016; Simmons et al., 2019).

This research points out a critical gap by examining how variation in building code adoption shapes differential exposure to wind hazards and reinforces environmental justice (EJ) disparities. Focusing on coastal Texas, a region characterized by high exposure to hurricanes and significant socio-spatial inequality, the state authorizes the use of the 2012 International Residential Code (IRC) and International Building Code (IBC). However, there are no mandatory requirements for cities to adopt and enforce such codes (Bobby et al., 2017).

The study asks: How does variation in building code adoption influence spatial patterns of risk to wind hazards, and to what extent does this variation disproportionately affect socially vulnerable communities? The study approach is grounded in policy diffusion theory to bridge hazard mitigation, policy adoption, and environmental justice literatures. Empirically, it combines municipal-level data on building code adoption timing with potential predictors such as disaster exposure, high-wind hazard, and distance to coast, measured using FEMA wind level risk data, and median household income, population size, education, ethnicity, and age, derived from U.S. Census and EJ screen data in 78 municipalities in Houston, Galveston, Brazoria and Chambers counties.

Through an event history analysis with a discrete logistic regression model, the study evaluates the likelihood and timing of code adoption across municipalities as a function of socioeconomic and hazard-related variables (Done et al., 2018; Go, 2016). Complementary descriptive spatial analysis illustrates the geographic overlap between low code adoption, high wind exposure, and EJ communities' location.

The findings suggest that uneven adoption of building codes might amplify risk, particularly in lower-income and socially marginalized communities. Municipalities with lower administrative resource capacity and higher proportions of socially vulnerable populations might be less likely to adopt or update modern building codes, despite facing comparable or higher levels of wind exposure. This uneven adoption pattern results in a form of structural inequality, where the impacts of climate hazards are unevenly confronted, reinforcing existing environmental injustices.

Ultimately, these results have important implications for planning practice and policy design, by highlighting the need to reconceptualize building codes not merely as technical instruments, but as tools that shape climate

adaptation and equity outcomes, where integrating environmental justice considerations into hazard mitigation policy has become a planning priority, particularly as climate change accelerates the frequency and intensity of extreme weather events.

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Keywords: Building Codes, Wind Hazard, Environmental Justice, Policy Diffusion

RESILIENCE PREMIUM, DISPLACEMENT COST: CAUSAL INFERENCE AND THE EQUITY PARADOX OF CLIMATE-ADAPTIVE ZONING IN NORFOLK, VIRGINIA

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Track 3: Environmental Planning
Individual Paper Presentation

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As coastal cities gradually adopt nature-based solutions (NbS) as part of their climate adaptation strategies, an equity tension has emerged within resilience-led land use planning. Policies designed to secure urban futures may disproportionately burden residents who are most exposed to climate hazards. The term "resilience-induced green gentrification" used in this study remains empirically underexplored in previous literature. Existing frameworks on green gentrification and urban resilience have relied on static vulnerability indices, which are not equipped to trace the causal pathways through which climate investments generate housing-market pressure and involuntary displacement among low-income communities.

This study aims to examine how resilience-oriented urban transformation reshapes residential mobility and neighborhood equity, drawing on Norfolk, Virginia, as an empirical context and case study. The plan titled "Norfolk's Vision 2100 long-range plan" and the "2018 Resilience Zoning Ordinance" established a spatially differentiated adaptation strategy—designating certain areas for density-driven reinvestment while directing others toward managed retreat. This policy structure produces a spatial discontinuity that enables causal identification of zoning-induced housing-market effects. The study assembles a longitudinal, census-tract-level dataset covering 2010–2025, constructed from publicly available sources: property assessment and transaction records from the Norfolk Open Data Portal, eviction filing counts from the Eviction Lab, satellite-derived Normalized Difference Vegetation Index (NDVI) as a proxy for greening intensity, and Resilience Overlay district boundaries from the Norfolk Open GIS Portal.

The analytical approach integrates three spatially complementary methods, each addressing a distinct inferential objective. A Difference-in-Differences (DiD) design exploits the March 2019 ordinance effective date as a natural experiment to causally identify the effect of resilience zoning designation on property values and eviction rates, comparing treated tracts against propensity-score-matched controls. Eigenvector Spatial Filtering (ESF) is incorporated as a corrective step within the DiD framework, extracting orthogonal spatial eigenvectors to remove spatial autocorrelation that would otherwise bias causal estimates in urban housing data. Geographically Weighted Regression (GWR) is then applied as a second-phase analysis to examine how the estimated treatment effect varies across space, identifying sub-city neighborhoods where the relationship between resilience zoning and displacement pressure is most pronounced.

The analysis expects to find that tracts designated for resilient reinvestment experienced statistically significant property value appreciation alongside elevated eviction filing rates relative to matched controls—suggesting that climate-adaptive zoning can operate as an unintended mechanism of urban re-segregation. These results extend causal evidence for resilience-induced green gentrification beyond existing correlational accounts and contribute to the "just green enough" planning literature. For practitioners and policymakers, the study provides a transferable, open-data methodological framework and argues that equitable coastal adaptation requires integration of anti-displacement provisions—including community land trusts, inclusionary zoning, and right-to-return guarantees—into resilience planning frameworks.

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Keywords: green gentrification, climate-adaptive zoning, causal inference, environmental justice, spatial analysis

RETHINKING HOUSING IN RESORT COMMUNITIES

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Individual Paper Presentation

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Housing provides occupants with shelter from the elements and physical security from threats, but it is always more than that. The quality and location of the building impart status, carry cultural meaning, and define the asset's economic value. Many people view the purchase of a vacation home located in a high-amenity area primarily as an act of consumption, a luxury to be enjoyed by an owner who can afford it. Yet there are many purchasers who treat the vacation home as an investment that pays a return in the form of appreciated value upon re-sale, a portfolio diversification opportunity, or a stream of rents from short-term or long-term tenants. Often, the vacation home serves several roles for the owner. For local governments, vacation homes are often seen as fiscal winners because they demand fewer public services while paying full taxes. However, the empty housing units may diminish the municipality's economic and social vitality during the off season and shrink the availability of workforce housing.

Given the different functions of seasonal and year-round housing in high-amenity areas, and implications for local public finances and economies, it seems important to be able to distinguish them from one another. Yet, data for local Census geographies rely on the housing vacancy questions in the Decennial Census, American Community Survey (ACS), and American Housing Survey, which only approximately distinguish among vacant housing, seasonal housing, and housing held off the market for other purposes, because they are periodic snapshots, often taken on April 1st, far from the summer season. Property tax records for individual housing units often do not distinguish seasonality, and often the only clue is that the owner's address differs from the local address.

This paper shares the results of a novel effort to quantify the seasonality of housing on the iconic Jersey Shore, a group of 55 resort communities facing the Atlantic Ocean and convenient to the large populations of New York, New Jersey, and Pennsylvania. ACS-based housing vacancy rates approach 90% in some of these towns and average 40% across the cohort. We have acquired and compared seasonality data from ACS, local property tax records, local sales tax receipts, transportation flows on toll roads, sewage treatment plant monthly flows, mobile phone trace data, and consumer expenditure data. These varied types of data broadly confirm that the ACS housing vacancy estimates reflect seasonal usage patterns. However, we also have noted great variation in the ways in which Shore communities use assets including housing. Some cater primarily to day trippers, and others to short-term renters, second-home owners, or year-round residents. Each represents a different type of tourism economy and a different use of the housing stock. As sea levels rise and coastal storms cause recurrent flooding, some of these tourism models appear to be less risky than others.

Second homes are one way to enjoy resorts such as the Shore, but there have been others. In the steamship and railroad eras, hotels housed most vacationers, except for a few local farmers, fisherman, and extremely wealthy "cottage" owners. Once highway access became available, it was feasible for upper middle-class families to afford a second home at the shore if they chose, and for middle class vacationers to spend a week or two in short-term rentals or hotels, and for working-class families to make day trips. Highway access also made it feasible to live at the Shore and work inland. This paper closes with a recommendation to revisit the historical possibilities while weighing the competing environmental, economic, and fiscal objectives when planning for the future of resorts.

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Keywords: Climate Change, Housing, Tourism, Methods

RISK MITIGATION OR RESILIENCE BURDENED: POST-FLOOD RESIDENTIAL BUYOUTS THROUGH THE LENS OF THE HOUSING MARKET

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Individual Paper Presentation

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Voluntary buyouts of residential properties, at risk of repeat flooding, are increasingly offered as a long-term mitigation solution in the United States (US). Buyout programs, typically administered through federal agencies such as the Federal Emergency Management Agency (FEMA), involve the government purchasing residential properties from homeowners voluntarily, facilitating their relocation away from high-risk areas and converting the land into open space. Such programs are intended to mitigate future flood hazards and reduce long-term costs associated with disaster recovery and infrastructure rebuilding (Baker et al., 2018). Despite the potential benefits, buyout programs face several challenges, including negative impacts on essential services, lack of alternate affordable housing, delays in funding disbursement and loss of community cohesion (Peterson et al., 2020; Robustelli et al., 2024; Walker et al., 2024). In rural areas, limited housing stock and lower market liquidity can constrain relocation options, potentially leaving participants worse off economically or socially isolated after relocation (Greer et al., 2022). In this study, we examine the local housing market in two rural communities in the Carolinas that have participated in current or past buyout programs – Bennettsville in Marlboro County, South Carolina (SC), and Tarboro in Edgecombe County, North Carolina (NC) – to understand the funding gaps and housing supply issues that households in a buyout program face when looking to purchase homes outside high flood risk areas. The study uses a combination of qualitative and quantitative data and analysis. Qualitative data, via focus groups and in-depth interviews through purposeful sampling of key informants, was collected at the two study areas and analyzed in NVivo. Quantitative data of residential property transactions in the two communities was obtained from Cotality and data analysis was conducted in ESRI's ArcGIS Pro software. Findings indicate that home prices outside the 100-year floodplain (i.e., area facing 1% annual chance of flooding) far outstrips the buyout amounts offered to residential property owners participating in the buyout program. Combined with low housing supply and lack of alternate affordable housing units, buyout programs can lead to a population downturn in rural communities.

We argue that buyout programs need to be envisioned as a broader housing policy issue and in turn extend the parameters of what is considered flood hazard mitigation and adaptation. The lack of alternate affordable housing for low-income rural households participating in a buyout and who want to stay in the area, albeit outside the floodplain, illustrates the complex and multifaceted mitigation needs of rural coastal communities, with implications for housing policy.

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Keywords: flood mitigation, residential buyouts, housing policy, community resilience, Carolinas

SAVING FORESTS BUT LOSING COMMUNITIES: ENVIRONMENTAL JUSTICE AND BUFFER ZONE PLANNING IN BARDIYA NATIONAL PARK OF NEPAL

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Individual Paper Presentation

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National parks are the most promising areas for conserving nature and wildlife, thereby driving regional economic growth, reducing global atmospheric carbon emissions, and ultimately slowing global climate change through carbon capture and promoting sustainable development (Peluso, 1993). They are attracting millions of visitors, boosting local, regional, and national economies worldwide. Although forest governance has been bolstered by decentralization (Agrawal et al., 2008), hostility between national park management and buffer zone communities has increased recently. Popular narratives claim that buffer zones are well supported in mitigating the impacts of national parks and wildlife through infrastructure development, safety system installations, social services, and compensation for losses. In reality, these areas are facing deprivation of forest resources and growing vulnerabilities from environmental hazards, shrinking livelihoods, and wildlife attacks. Combining the frameworks of political ecology (Rebot et al., 2006) and collaborative planning (Innes and Booher, 2010), this study sheds light on emerging planning issues in the buffer zones of national parks, using a case study of Bardiya National Park in Nepal. The primary research questions are: how do the governance and planning of the Bardiya National Park and its buffer zones mismatch, and what are the emerging environmental justice issues in buffer zones as wildlife and forest conservation emerge as the primary purpose of the national park?

Bardiya National Park is the largest natural conservation area in Nepal, with 374 Sq. miles of area in the inner hills of the western region, in the Bardiya District. The Park is known for Bengal tigers, rhinos, elephants, leopards, gharial, and freshwater dolphins. The 19 buffer zone communities of the Park are home to more than 350,000 indigenous Tharus and migrants from the country's hill regions. Thakurbaba Municipality, located in the park buffer zone, is selected for this study. It is home to the Park's administrative headquarters and borders the Park in three directions. Using a purposive questionnaire survey of 400 households and 20 key informant interviews with community leaders, local administrators, political representatives, and national park officers, the study finds that the planning processes for national parks and buffer zones are conservation-focused and ignorant of residents' challenges. This was evident in the contested relationship between buffer zone residents and the park administration in Bardiya National Park. The confusion over resource access regulations, the compensation process, and the buffer zone's planning mandates was a major challenge for residents and community leaders. The study concludes that Bardiya National Park has achieved international recognition for its conservation efforts, but has failed to protect at-risk buffer-zone communities that are politically and systemically marginalized in conservation planning. The results from this study recommend collaborative planning to promote the long-term sustainability of national parks and to address growing environmental injustices faced by buffer zone residents of Bardiya National Park and similar conservation areas in Asia and other parts of the world.

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Keywords: Collaborative planning, Political ecology, Buffer zones, National Parks, Nepal

SEEING GREEN, STAYING LONGER? A CAUSAL ANALYSIS OF VISUAL GREEN EXPOSURE AND URBAN PARK ENGAGEMENT USING MOBILITY AND PANORAMAS DATA

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Individual Paper Presentation

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Urban parks are essential infrastructure for livable cities, yet the role of visible greenery in shaping park use remains poorly understood. Most evidence linking visual green exposure (VGE), the proportion of greenery visible at eye level, to park engagement relies on cross-sectional associations that cannot distinguish causal effects from confounding by unmeasured park qualities, neighborhood affluence, or visitor self-selection. This gap is consequential for planning because it leaves open whether investing in visible greenery will directly enhance park use or whether observed correlations merely reflect co-occurring advantages. Existing studies also treat VGE effects as uniform, overlooking how urban density, season, day of week, and time of day may moderate greenery's influence on visitor behavior.

This study provides quasi-experimental evidence on VGE's causal influence on visit duration and physical activity intensity, while mapping spatiotemporal heterogeneity of these effects. The empirical context is Tokyo's 23 special wards, where 20 district and comprehensive parks were analyzed. The study integrates anonymized mobile phone location data covering 2012, yielding 71,668 validated trip records from 23,346 unique visitors, with 13,791 panoramic images collected at five-meter intervals and processed through semantic segmentation to quantify VGE.

Built environment and demographic covariates at both visitor home and park levels serve as confounders. Three complementary causal inference methods are employed. Propensity score matching (PSM) pairs high-VGE visits (above 30%) with comparable low-VGE visits on observed covariates. Inverse probability weighting (IPW) estimates population-average effects using the full sample, and overlap weighting (OW) targets the region of strongest covariate overlap. Triangulating across these methods provides stronger evidence than any single estimator. Robustness is evaluated through alternative VGE thresholds, placebo tests, negative control tests, and Wald tests on interaction terms.

Results demonstrate that visits with VGE exceeding 30% lead to meaningfully longer stays and greater physical activity. Under PSM, the average treatment effect on visit duration is 3.36 minutes (9.6% increase) and on walking distance is 116.95 meters (16.2% increase), with IPW confirming both direction and significance. These aggregate effects mask substantial spatiotemporal variation. High VGE increases walking distance by 90 meters in dense central parks but reduces it by 84 meters in peri-urban parks, suggesting greenery's restorative value is amplified where nature contrasts sharply with the surrounding built environment. Weekend visits respond ten times more strongly than weekday visits for duration (16.7 versus 1.6 minutes), and walking distance shifts from negative on weekdays to strongly positive on weekends. Morning and midday hours show peak effects, reversing in evenings. Seasonally, spring and fall generate the strongest responses coinciding with cherry blossoms and autumn foliage, while winter shows no significant duration effect despite year-round accessibility.

These findings offer direct guidance for planning. In dense city centers where VGE effects are strongest, multi-layered vegetation combining canopy trees with mid-story shrubs and groundcover can maximize visual greenness within constrained footprints. Peri-urban parks benefit from differentiated zoning that concentrates dense plantings around contemplative areas while preserving open spaces for active recreation. Temporal patterns suggest maintenance should prioritize peak impact periods, with intensive care before weekends and seasonal planting aligned to spring and fall. The results establish that the spatial arrangement and visibility of greenery from

the pedestrian perspective matter as much as total vegetation quantity, a principle adaptable across diverse urban contexts.

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Keywords: Green infrastructure, Human mobility, Green space visitation, Street view imagery, Propensity score matching

SPATIOTEMPORAL DYNAMICS AND MULTIDIMENSIONAL DRIVERS OF URBAN EXTREME DIURNAL TEMPERATURE RANGE: NATIONAL-SCALE EVIDENCE FROM CHINA

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Track 3: Environmental Planning
Individual Paper Presentation

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Extreme diurnal temperature range of land surface temperature (eDTR) captures the intensity of intra-daily thermal fluctuation and provides an underused lens for understanding urban thermal instability beyond average heat conditions. In the context of intensifying climate extremes and rapid urbanization, this issue is increasingly important for planning because abnormal day–night thermal swings are associated with higher mortality and morbidity, especially for cardiovascular and respiratory diseases and for vulnerable groups such as older adults and children. Anomalous thermal oscillation can also alter the daily allocation of building cooling and heating loads, increase energy demand, and complicate urban heat-risk management. Yet most urban climate studies still focus on average land surface temperature, urban heat island intensity, or single extreme heat events, leaving the spatial structure, environmental drivers, and planning significance of eDTR insufficiently understood.

This study examines urban eDTR across China from a national-scale planning perspective. China provides an important empirical setting because it combines rapid and spatially uneven urbanization with strong contrasts in topography, ecological conditions, and urban form. We address three questions: Where are high-intensity and high-frequency eDTR regimes concentrated, and how have they evolved over time? How do urban form, natural environment, socioeconomic activity, and climate-topographic context shape eDTR? And how do interactions among these drivers jointly influence eDTR?

Using a 1 km gridded eDTR dataset for 2010–2020, the analysis proceeds in three steps. First, we identify the spatiotemporal dynamics of eDTR across China and characterize regional heterogeneity. Second, we estimate its multidimensional drivers using variables that capture urban form, natural environment, socioeconomic activity, and climate-topographic background. To move beyond the linear assumptions that still dominate much of the literature, we employ interpretable machine-learning models to reveal nonlinear effects, threshold behavior, and marginal changes. Third, we examine interaction effects among these drivers to assess how combinations of urban morphology, ecological conditions, socioeconomic intensity, and climate-topographic context jointly shape eDTR.

The results show that urban eDTR in China is not a random anomaly, but a spatially organized thermal regime with persistent clustering, strong regional differentiation, and distinct temporal trajectories. High-intensity and high-frequency eDTR areas concentrate in specific urbanized regions, suggesting that extreme thermal fluctuation is a structured feature of urbanization rather than a by-product of isolated local conditions. Driver-response relationships are strongly nonlinear. Compact urban form tends to intensify eDTR under certain environmental conditions, while greenness and proximity to water generally mitigate it, although these effects are bounded by thresholds and diminishing returns. More importantly, interaction analysis shows that eDTR is not shaped by isolated variables alone, but by coupled effects among urban form, ecological conditions, socioeconomic intensity, and climate-topographic context.

By integrating national-scale pattern identification, multidimensional environmental analysis, and interaction-effect assessment, this study extends urban climate research from average heat assessment toward a planning-oriented understanding of extreme thermal fluctuation. Conceptually, it reframes eDTR as a diagnostic of urban climate sensitivity rather than a simple thermal metric. Practically, the findings challenge one-size-fits-all heat mitigation approaches and support differentiated zoning, climate-sensitive urban form regulation, and blue–green infrastructure strategies tailored to the combined effects of urban and environmental conditions.

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Keywords: Extreme DTR, Urban Thermal Instability, Multidimensional Drivers, Interaction Effects

SPONGE CITIES IN CHINA: A REMOTE-SENSING APPROACH TO EVALUATING LONG-TERM STORMWATER MANAGEMENT UNDER CLIMATE CHANGE

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Track 3: Environmental Planning
Individual Paper Presentation

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Urban flooding accounts for an estimated 30–40% of flood events worldwide and is intensifying with rapid urbanization, heavier rainfall, and inadequate land-use and infrastructure planning. China is among the hardest-hit countries, with average annual losses of about US$25.83 billion. In response, it launched the Sponge City Program in 2015, expanding it to 30 pilot and 40 demonstration cities. The program advances low-impact development and integrated green–grey infrastructure to improve infiltration, storage, conveyance, and drainage, making stormwater management central to climate adaptation and urban resilience.

Central theme and question: To what degree has the Sponge City Program succeeded? What are the results from a detailed case study of a pilot SCP city? Despite wide implementation of the SCP, continued flooding has raised questions about whether the SCP is sufficient given the magnitude of current and future hazards. Existing evaluations often rely on project-scale field monitoring or hydrologic–hydrodynamic models, which can be limited in spatial extent, difficult to scale citywide, and sensitive to incomplete drainage-network data and parameter uncertainty.

Methodology: This paper proposes an alternative planning approach to assess long-term, citywide changes in flood susceptibility by integrating satellite remote sensing with ground-based precipitation data. Using Tianjin—one of the SCP pilot cities—as a case study, the analysis demonstrates how consistent observation of post-storm surface water can provide a scalable indicator of stormwater system performance over time.

Meaningful and New Findings: Across the rainy seasons from 2015 to 2024, more than 1,000 Sentinel-1 Synthetic Aperture Radar (SAR) scenes were processed in Google Earth Engine. SAR is well suited for flood detection because open water produces low radar backscatter regardless of cloud cover or illumination conditions. Scenes were further filtered to ensure full city coverage and at least 1 mm rainfall within the preceding 24 hours to better capture stormwater-driven inundation. Using same-day optical images as references, I find the optical combination of VV and VH polarization which have good performance in detecting surface water. To isolate flood-related surface water, permanent water bodies were removed from event-based detections, producing a daily “dynamic surface water” layer interpreted as urban flood inundation.

To reduce rainfall-driven variability and enable temporal comparison, the study constructs an Urban Flood Susceptibility Index (UFSI), defined as event-based inundation extent normalized by 24-hour precipitation. Focusing on 2017–2024 to allow for implementation lag, a Mann–Kendall trend test indicates a statistically significant decreasing trend in UFSI ($p < 0.05$), with Sen’s slope of −0.035. This implies that, on average, the inundated area per 1 millimeter of rainfall declined by approximately 35,000 m^2 (8.65 acres) each year during SCP implementation.

Relevance of Research: By providing a replicable, citywide, and long-term metric of stormwater flood susceptibility, this analysis of SCP supports environmental planning in three ways: (1) evaluating flood-mitigation outcomes of green–grey investments beyond individual projects; (2) identifying persistent waterlogging hotspots where governance, maintenance, or design adjustments may be needed; and (3) informing evidence-based siting and prioritization of infrastructure under climate transition pressures. This environmental planning approach applied to SCP cities can enable the city governments to compare flood management performance and relate observed flood trends to socioeconomic, land-use, and environmental conditions, strengthening policy and planning

implementation and natural resource management in the face of climate change. This is the basis of my PhD dissertation.

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Keywords: Sponge City, Green Infrastructure, Urban Flooding Mitigation, Remote Sensing

SWIMMING POOLS AS REGIONAL INFRASTRUCTURE: MORAL ECOLOGIES, URBAN BLUE SPACE, AND WATER SAFETY

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Individual Paper Presentation

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The distribution of urban blue space is uneven across neighborhoods and metropolitan areas, with implications for environmental justice, place attachment, political advocacy, and public health (Smith et al., 2021; Taufen Wessells, 2014) Community swimming pools are a form of regional infrastructure, providing places to learn to swim, strengthen relational ties, build readiness for other water-based activities, and support health maintenance across the lifespan. After establishing the equity dimension of unequal access to swimming pools as infrastructure (Adiv, 2015; Wiltse, 2007), this paper does three things. First, available geospatial data and city and county listings for the urbanized Puget Sound area in Washington State (the three-county jurisdictional boundaries used by the metropolitan Sound Transit agency) are used to map and estimate the number, location, and accessibility/capacity of public swimming pools in the region, providing a per capita metric as well as an estimate of spatial proximity. Second, moral ecologies of this water infrastructure (Rees et al., 2026; Scaramelli, 2019; van Velzen & Littlejohn, 2026) are introduced and explored: socio-material assemblages of physical health, water safety, team-based athletics, proximal leisure, and both developmental and therapeutic caregiving. These moral ecologies are considered from a spatial justice and civic health perspective, with impacts for communities who lack the opportunity to acculturate these practices. Finally, the paper concludes with speculative potentials for community swimming pools in a moral ecology of metropolitan climate resilience, focused on water safety and flood survival, neighborhood mustering points, and emergency sources of spot-treated potable water under crisis conditions.

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Keywords: water infrastructure, urban blue space, moral ecologies, climate resilience, community planning

TEMPORAL TRENDS IN EXTREME HEAT EVENTS ACROSS 646 U.S. CITIES

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Individual Paper Presentation

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Climate change has significantly intensified the frequency and intensity of extreme heat events (EHEs), resulting in substantial economic losses and health risks (Brown et al., 2008). Recent studies of EHEs have largely relied on coarse, statistically smoothed spatial resolutions, documenting broad global increases in EHE frequency. However, they have overlooked city-level EHE dynamics that are critical for targeted planning strategies (Meerow & Keith, 2021). More importantly, although city size is widely believed to be significantly associated with EHEs (Oke, 1973), previous research has largely focused on cross-sectional comparisons while neglecting their temporal dynamics across city sizes, which are essential for long-term urban planning and climate adaptation. Therefore, this study investigates the temporal trends of EHEs across 646 U.S. cities during the summer months from 2002 to 2020, with a particular focus on differences in temporal trends across city sizes. To build a consistent long-term record of urban heat extremes, we used nearly two decades of daily MODIS land surface temperature (LST) data. Over ten thousand LST tiles were processed with strict pixel-level quality control and standardized temperature conversions to produce harmonized, city-level daily temperature records. Annual extreme heat events (EHEs) are defined as the number of summer days exceeding the local historical 90th percentile, normalizing for baseline climate and enabling cross-city comparisons (Stone et al., 2010). For temporal analysis, we calculated the EHE ratio: the proportion of exceedance days to total observed summer days in each year. Trend significance was assessed using the nonparametric Mann–Kendall test, and the magnitude of change was quantified with Sen's slope estimator. We document two key findings. First, EHE ratios have increased nationwide within urban areas, with a pronounced diurnal asymmetry: nighttime EHE ratios increased markedly faster (3.1% per decade) than daytime ratios (0.6% per decade). Second, and most critically, we identify a previously undocumented scaling pattern: larger cities exhibit significantly more pronounced and stable increases in EHE ratios in both daytime and nighttime. This city-size gradient in EHE trends likely reflects the joint influence of physical and socioeconomic processes operating in larger U.S. cities.

Although the traditional view holds that the overall climate warming is the cause driving the growth trend of EHEs, our findings point to a previously unrecognized acceleration mechanism whereby larger city size amplifies the translation of regional climate warming into local extreme heat trajectories. For planning practice, our findings highlight the importance of recognizing city size as a key factor in shaping extreme heat risks. Planners and policymakers should consider city-size differences when allocating resources, setting priorities, and designing long-term adaptation frameworks (Gabbe et al., 2021). Larger, more vulnerable urban areas should receive attention commensurate with their risk exposure, while smaller cities are guided by preventive and anticipatory planning. Furthermore, the distinct trends observed between daytime and nighttime extreme heat events carry important planning implications. Traditional urban heat mitigation strategies (such as increasing vegetation, creating shading, and establishing ventilation corridors) primarily target daytime heat exposure. However, nighttime EHEs follow different physical mechanisms and exhibit a more consistent increase across cities. This highlights the need for planners to develop complementary strategies specifically aimed at reducing nighttime heat stress, ensuring that adaptation efforts address both diurnal and nocturnal dimensions of urban heat risk.

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Keywords: Extreme heat, Temporal dynamics, City size scaling

THE IMPACT OF A DISASTER ON NEIGHBORHOOD PHYSICAL DISORDER: POST-DISASTER RECOVERY TRAJECTORIES AND ITS DETERMINANTS

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Track 3: Environmental Planning
Individual Paper Presentation

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Disasters, such as hurricanes and floods, impose physical damage on urban neighborhoods, reshaping the built environment that can persist long after the immediate disaster has passed. Among the most visible manifestations of this damage is neighborhood physical disorder (NPD), observable signs of environmental neglect and deterioration such as litter, graffiti, abandoned properties, and damaged infrastructure, which accumulates rapidly in disaster-affected areas. However, not all neighborhoods recover equally after a disaster. Post-disaster recovery is an uneven process influenced by various factors: hazard exposure, socioeconomic conditions, and institutional and community capacity.

Yet, few studies have examined the temporal trajectory of NPD following a disaster while simultaneously considering the multiple factors that drive recovery. Prior disaster recovery research has largely relied on survey data, census records, or satellite imagery, which lack the granularity to capture street-scale physical conditions over time. To address this gap, this study examines two research questions: (1) How does NPD evolve over time following a disaster? and (2) What factors explain the variation in post-disaster NPD recovery trajectories?

To address these questions, this study focuses on Houston, Texas, in the context of Hurricane Harvey, which caused catastrophic flooding across the metropolitan area, resulting in approximately 68 direct fatalities and an estimated $125 billion in damages. Census tracts are used as the unit of analysis to capture neighborhood-level variation in NPD and recovery patterns. NPD is measured using Google Street View imagery, from which 18 categories of physical disorder are identified using computer vision and aggregated to the census tract level across multiple pre- and post-disaster periods, 2014–2020. To examine post-disaster NPD trajectories, in line with question 1, a difference-in-differences event-study design is employed to estimate the effects of Hurricane Harvey on NPD by comparing flood-exposed and non-flood-exposed areas. To identify determinants of recovery, aligned with question 2, a spatial regression model is estimated in which the dependent variable captures the speed and magnitude of NPD recovery, and independent variables include flood exposure, socioeconomic characteristics, neighborhood connectivity, and community capacity.

As a primary result, NPD increased following Hurricane Harvey and gradually recovered, though the pace and completeness of recovery varied across neighborhoods; neighborhoods near downtown, which had higher pre-disaster NPD levels, and near the river, showed slower recovery. Regarding the determinants of recovery, neighborhoods with greater flood exposure, lower socioeconomic status, weaker neighborhood connectivity, and lower community capacity are expected to show slower recovery.

These findings offer street-scale evidence of how disaster-induced physical deterioration unfolds and recovers over time, which can inform neighborhood-level recovery monitoring and resource allocation after a disaster. This study also provides data-driven evidence of how hurricane impacts on NPD unfold over time and which neighborhood characteristics shape the pace of recovery, with implications for targeting pre- and post-disaster interventions.

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Keywords: Physical Disorder, Post-disaster Recovery, Street-level Imagery, Disaster Management

THE IMPLICATIONS OF CLIMATE GENTRIFICATION FOR URBAN CLIMATE PLANNING

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Track 3: Environmental Planning
Individual Paper Presentation

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The long-term implications for cities of climate gentrification are beginning to be visible and point toward a multi-faceted socio-spatial process unfolding in a manner that eventually has widescale impacts on the local politics of climate planning. In order to bring these implications into view, this paper synthesizes current empirical evidence and presents novel survey results from roughly 1400 renters in the Vancouver Metropolitan Area to propose a three-stage process occurring to different degrees in urban regions across the globe. In the first stage, the multiple pathways through which climate gentrification occurs catalyze a link between rent-seeking behavior and perceived climate risk and generate new climate-oriented housing vulnerabilities. In the second stage, elite climate-safe and resilient neighborhoods form into stable zones within urban regions and result in a generalized shift in the geography of risk. In the third stage, the shifted geography of climate risk is the basis for a shifted politics of urban climate action rooted in divergent communities of climate risk. Potentially, these shifted politics could mean that supporters of climate urbanism are bifurcated, with one side prioritizing housing security as the starting point and the other prioritizing established climate mitigation and adaptation as the starting point. As a consequence, this paper argues that, while urban climate actions have resulted in some progress towards reducing greenhouse gas emissions and adapting human settlements to a warmer planet, the long-term implications of climate gentrification threaten the continued efficacy of these actions.

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Keywords: Climate Gentrification, Climate-Housing Nexus, Urban Greening, Urban Climate Politics, Green Gentrification

THE INFRASTRUCTURE OF ALIENATION: WATER AND SOCIAL REPRODUCTION IN SAN CRISTÓBAL DE LAS CASAS

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Track 3: Environmental Planning
Individual Paper Presentation

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Central Theme and Research Questions

This research examines the intersection of urban infrastructure and social reproduction within the context of global water crises. It addresses the central planning issue of how infrastructural organization shapes the conditions of daily life and the reproduction of the workforce. The study investigates whether urban water infrastructure functions as essential for social reproduction and explores how its management—or systemic failure—produces a sense of "alienation" among residents by removing agency over their own survival.

Approach and Methodology

The study utilizes an ethnographic methodology centered in San Cristóbal de las Casas, Chiapas, Mexico. Fieldwork spanned 14 months between 2023 and 2026, comprising over 220 hours of participant observation, 12 semi-structured interviews with water officials, activists, and residents, and archival research of both physical and digital records. Data was analyzed through a three-stage Flexible Coding Analysis using Dedoose, employing an abductive reasoning process to integrate empirical findings.

Meaningful and New Findings

Findings identify that water infrastructure in San Cristóbal functions as fixed capital for social reproduction, necessitating significant non-waged labor—such as Constructing storage cisterns and manual pump management—to sustain life. This organization produces tangible alienation, as residents feel governed by "alien powers" rather than having control over their own reproduction. The study reveals that systemic failures shift the labor burden disproportionately onto individuals, particularly women, who must navigate "off-grid" conditions in an urban center. Furthermore, the prevalence of contaminated supply transforms infrastructure into a source of physical distress rather than a public benefit. It concludes that infrastructure is not merely a technical service but a contested site of struggle over the means of life.

Relevance and Implications

This work offers critical implications for planning scholarship by expanding the analytical frame beyond the workplace to the "invisible" economy of social reproduction. It demonstrates how infrastructural organization produces specific urban subjects. By viewing infrastructure as a means of social reproduction, planners can better understand community resistance and the potential for alternative organizational forms that enrich rather than alienate the lives of residents

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Keywords: Water Infrastructure, Environmental Justice, Urban Governance, Social Reproduction

THE RIGHT TO GROW IN HEALTH: IMMIGRANT EXPERIENCES WITH SOIL HEALTH AND REMEDIATION

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Individual Paper Presentation

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Legacy contaminants such as lead remain a persistent environmental issue in post-industrial cities. In particular, soil is an enormous repository for lead, posing health risks for those that play and grow in urban soils. Exposure to lead is particularly unsafe for children, as exposure can harm developing brains and nervous systems, causing cognitive impairment, behavioral issues, and long-term health implications (Finkelstein et al., 1998; World Health Organization, 2021). Lead in soil contributes to pediatric lead poisoning through dust generation or incidental soil ingestion (Mielke and Reagan, 1998).

Buffalo, New York, remains a hotspot of urban gardening, however, the city is also a site of legacy contaminants. Unfortunately, Buffalo ranks among the top 10 cities in the U.S. for elevated blood lead levels in young children. Among these children, those from families with immigrant and refugee backgrounds are at higher risk: immigrant status and lack of fluency in English predicts BLLs in children and adults (Kaplowitz et al., 2016). Several studies indicate that children with refugee status have higher BLLs than U.S.-born children (Geltman, Smock, and Cochran 2019; Shakya and Bhatta 2019). Buffalo's population includes a significant proportion of residents that came to the US as immigrants or refugees from countries including Burma, Bhutan, Iraq, and Somalia (Smith and Özay 2018). Many have agrarian backgrounds, and growing vegetables in their new home is important to them.

We aim to examine the perceived risks and remediation strategies around soil contamination among immigrant populations in Buffalo and identify the interrelated factors constraining citizen-level and policy-level efforts to remediate soil contaminants. We utilize a mixed methods approach to answer our research questions. We first conducted surveys with immigrant and refugee community members (n=311), administered in the top five languages spoken in Buffalo: English, Spanish, Bengali, Arabic, and Karen. Secondly, we conducted two focus groups utilizing Q-sort methodology with 14 residents from the Karen ethnic community to understand perceptions of soil contamination and remediation strategies.

Findings yield insights for the practice and scholarship of urban planning, public health, and environmental justice. First, addressing soil contamination among immigrant communities requires involvement of community leaders, schools, and government agencies. Second, personal narratives about contamination tend to be more effective at spurring action than only technical or scientific information. Third, refugee and immigrant communities have fragmented capacities across levels. For example, there are stronger individual and household capacities, but weaker collective community capacities. Fourth, refugee and immigrant communities face similar structural and institutional barriers as those encountered by other historically marginalized communities in addressing environmental issues. Together, these insights highlight the need for targeted assistance to address the issue of soil contamination, including access to resources, trusted local and institutional networks, and culturally responsive engagement strategies.

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Keywords: environmental justice, contamination, urban gardening, public health, immigrants

THE ROLE OF HAZARD TYPE IN HOUSEHOLD RELOCATION DECISIONS: WHAT DISASTER SCENARIO EXERCISES IN PUERTO RICO REVEAL

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Individual Paper Presentation

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Research on post-disaster relocation has expanded significantly over the past two decades, yet important gaps remain in understanding how household relocation decisions are made, and how these vary across disaster types. Much of the existing scholarship focuses on single hazard contexts—most commonly hurricanes and floods—leaving limited comparative insights into how households respond to different types of extreme events. Studies on hurricanes consistently find that relocation decisions are shaped by repeated exposure, loss severity, and declining trust in risk mitigation institutions. In contrast, earthquakes present a different set of behavioral drivers. Because seismic events strike with little warning, relocation decisions are often influenced more by building damage, perceived reconstruction capacity, and psychosocial trauma than by risk awareness alone. Tsunamis, which combine sudden-onset characteristics with spatially concentrated coastal risk, produce relocation patterns shaped by loss of place-based livelihoods, and government-led relocation programs. Meanwhile, households facing slow-onset hazards such as coastal erosion weigh long-term livelihood viability, growing environmental degradation, and intergenerational land attachment, often leading to delayed or reluctant relocation despite escalating risk.

This suggests that households do not interpret these hazards uniformly; rather, the temporal signature, predictability, and social meaning of different disasters shape how risks are internalized and acted upon. Despite these insights, few studies systematically examine how at risk communities frame relocation decisions within the context of different hazard types. Addressing this gap is essential for designing relocation policies that align with community priorities and the diverse ways households experience risk.

This paper addresses this literature gap by examining the following questions: how do household relocation decisions vary by disaster type? Do households in at-risk communities respond differently to hurricanes, earthquakes, tsunamis, or coastal erosion and coastal erosion? The paper is based on case study research conducted in two communities (Comerio and Loiza) in Puerto Rico, a U.S. territory. Both communities were affected by the 2017 hurricanes (e.g., Hurricanes Maria, Irma) and subsequent disasters (e.g., Hurricane Fiona).

Data was collected from small-and large-group, disaster-based scenarios (e.g., hurricanes, tsunamis, earthquakes, and coastal erosion) that informed exercises conducted with residents of these communities (n=49). Scenarios were developed with input from policy makers and community leaders and conducted as part of a larger research project on post-disaster relocation funded by the National Science Foundation (NSF). Our results indicate that household decisions to relocate do depend on type of hazard; households indicate their willingness to relocate to mainland U.S. only under the tsunami scenario while preferring to stay in Puerto Rico after hurricanes, earthquakes and coastal erosion. The study also offers several avenues for future research (e.g., adding participant roles to disaster-based scenario exercises, collecting data from people who relocated after a disaster) and policy implications (e.g., post-disaster recovery planning prior to a disaster) on post-disaster relocation.

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Keywords: Disaster, Recovery, Relocation, Household, Scenario

THE ROLE OF INSURANCE IN CLIMATE ADAPTATION PLANNING: LESSONS FROM FIREWISE COMMUNITIES IN CALIFORNIA

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Track 3: Environmental Planning
Individual Paper Presentation

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Since 2017, California has experienced a series of catastrophic wildfires that have led to a homeowners' insurance crisis across the state, with insurers dropping policies in high risk areas and raising insurance prices statewide. One surprising consequence of this insurance crisis has been the rapid proliferation of Firewise Communities (FWCs), a recognition given by the National Fire Protection Association (NFPA) for neighborhoods organizing for wildfire risk mitigation. The number of FWCs across the state has risen from under 200 to over 1,400 in 2024. In the fire-prone Marin County alone, the number of households participating in a FWC increased fivefold between 2017 and 2024, now with 76 active sites and 20% of residents belonging to a FWC. This voluntary program has attracted attention from a wide range of public and private actors, most consequentially, the California Department of Insurance, which requires insurers to offer insurance policy discounts to households located in a FWC through the Safer from Wildfires program. Previous research in California and my interviews with local residents and fire departments in the state suggest that securing insurance discounts is a main motivator for local FWC organizing.

The rise of insurance-motivated FWC organizing raises questions about the implications of such organizing and how planning scholars should study homeowners' insurance. This analysis is based on fieldwork conducted in suburban neighborhoods in LA County and Alameda County in 2025-2026. I conducted 22 semi-structured interviews with NFPA staff, FWC leaders, local fire nonprofit leaders, and state and local fire officials, and observed 16 meetings of FWCs, community nonprofits, local governments, and insurance regulators where the topics of wildfire risk mitigation and/or homeowners' insurance access are discussed.

This paper makes two contributions to the planning literature. First, homeowners' insurance remains understudied in planning scholarship, despite its central role in shaping mortgage access, the financial burden of property ownership, and risk transfer for property damage. While some existing work has examined insurance in the disaster recovery process, little is known about how insurance serves as a motivator for pre-disaster mitigation action. Second, the paper advances understanding of how private financial institutions shape built environment and neighborhood form through indirect governance mechanisms, extending planning theory beyond regulatory and market instruments.

I argue that the proliferation of FWCs should be interpreted as a reflection of insurance rendering the world insurable. This is achieved through the FWC program by both incentivizing risk reduction within the insurance pool and producing knowledge on neighborhood-scale wildfire risk to inform underwriting decisions. The rapid expansion of FWCs and their impact on the built environment in California's suburbs calls for the need to examine beyond just insurance policy contracts between insurers and homeowners to understand the role of insurance in shaping the built environment. Instead, the insurance industry operates through a broader ecology of actors and devices, such as standard-setting organizations (e.g., Insurance Institute for Business & Home Safety), recognitions (e.g., FWCs), and fire safety standards incorporated into recognitions and certifications (e.g., class A fire-rated roofs, maintenance of non-combustible zones around the house, etc.) that together shape the built environment.

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Keywords: insurance, climate adaptation, wildfires, neighborhood-scale, governance

THE ROLE OF NON-GOVERNMENTAL ORGANIZATIONS IN ADVANCING JUST HEAT GOVERNANCE: ACTION, PARTNERSHIP, AND TRANSFORMATION

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Individual Paper Presentation

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Extreme heat is intensifying rapidly and exacerbating existing inequities in cities across the United States and globally. Trends in cities' increased prioritization of heat planning have now created a unique and urgent window of opportunity for transformations in heat governance. However, city-level actions often remain constrained by limited staff capacity and funding, inadequate data, competing projects, and the influence of state and federal priorities. In this context, partnerships between cities and non-governmental organizations (NGOs) are emerging as a practical and innovative way to design effective climate responses and support policy implementation. This research moves beyond a city-centered perspective to examine the role of NGOs in heat governance, especially in addressing environmental justice concerns.

This paper examines ways NGOs participate in the management and mitigation of heat risk and inequities, and the nature of their partnerships with governments. We conducted a thematic analysis of website content and expert interviews with staff at six nonprofits in Boston US. We dissect non-governmental responses through a theoretical framework on transformative governance that considers three levels: surface-level concrete practices, mid-level relationships and power dynamics, and deep-level stakeholders' mindsets, values, and beliefs.

We find that NGOs' perspectives on address heat risk span multiple sectors, including green infrastructure, housing, energy, and public health. While their interventions often involve physical infrastructure, they place equal emphasis on fostering community social capacity throughout implementation. The relationship between nonprofits and government is complementary and characterized by a leveraging dynamic. Although supported by government grants or private donors, nonprofits retain operational autonomy and undertake critical functions that governmental actors are often unable to execute directly, including building community trust, managing the social dynamics of local initiatives, and implementing tree-planting projects at a fine scale. This arrangement allows governments to achieve outcomes beyond their direct administrative capacity, a role that becomes particularly salient under conditions of constrained resources. Moreover, we find that most nonprofits (83%) incorporate considerations of equity and justice into their heat-related initiatives, though their interpretations vary. The most common framing (50%) conceptualizes equity and justice in terms of restorative approaches aimed at redressing historically rooted racial inequities.

These findings highlight the value of integrating nonprofits into urban heat planning as strategic partners. Nonprofits not only extend the operational reach of government but also embed adaptation efforts within community contexts by strengthening social capacity and advancing locally grounded understandings of equity and justice. Planning frameworks that recognize their leveraging role can enable more effective, context-sensitive, and just responses to urban heat risk. Institutionalizing such partnerships may be critical for cities facing constrained resources and increasingly complex climate challenges.

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Keywords: Nonprofits, Heat resilience planning, Urban heat governance, Climate justice, Heat equity

THE URBAN HEAT TRAP: DECIPHERING THE SPATIAL LOCK-IN AND PATH-DEPENDENCY OF THERMAL INEQUITY IN SEOUL

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Individual Paper Presentation

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The silent crisis of extreme heat reveals deep-seated socio-spatial fractures within the urban built environment, making climate change adaptation a paramount challenge for global planning scholarship and practice. This research investigates the "spatial lock-in" of heat vulnerability in Seoul, South Korea, arguing that contemporary thermal inequities are path-dependent outcomes of historical planning decisions made during periods of rapid development. We define spatial lock-in as the physical rigidity of the urban fabric stemming from 1990s densification policies and pro-growth zoning that constrains current adaptive capacities and systematically limits the efficacy of contemporary climate interventions. The central planning problem addressed here is the persistence of thermal hotspots despite municipal efforts; the research question explores how historical zoning and high-density permits from the past three decades functionally "trap" marginalized populations in high-heat environments today, and to what extent historical path-dependency dictates current vulnerability.

Moving beyond conventional Land Surface Temperature (LST) analysis, which often fails to capture the lived experience of heat and the influence of the micro-scale built environment, this study integrates high-resolution air temperature data from Seoul's AWS (Automatic Weather Stations) and S-DoT (Smart Seoul Data) networks with 3D urban morphology indices, such as Sky View Factor (SVF), building volume, and canyon aspect ratios. To measure path-dependency, a Spatial Path Analysis links longitudinal planning data from 1990 to 2025 specifically floor area ratio (FAR) transitions, land-use changes, and historical subdivision records to present-day thermal stress and energy poverty indicators. This longitudinal approach quantifies how historical zoning has created irreversible thermal environments in socio-economically deprived neighborhoods.

The central finding of this study reveals a structural "Resilience Gap" with significant statistical weight: neighborhoods subjected to rapid sub-division and high-FAR permits in the 1990s exhibit a 15% higher daytime heat stress index compared to planned districts, even when adjusting for present-day green infrastructure levels. Furthermore, the analysis demonstrates that in densely built districts such as Gwanak-gu and Jongno-gu, the physical rigidity of the urban fabric characterized by obstructed ventilation corridors and high thermal mass renders common adaptation strategies like street-tree planting significantly less effective, with ambient temperature reduction potentials being 40% lower than in planned residential areas.

These concrete findings prove that thermal inequity is not merely a transient meteorological risk but a structural outcome of path-dependent urban forms that undermines the efficacy of standard adaptation interventions like cooling centers or incremental greening. The data shows a clear spatial mismatch where adaptation investments unintentionally flow toward high-property-value districts, effectively reinforcing the vulnerability of marginalized populations living in sub-standard housing such as Jjokbang and Gosiwon. Consequently, this study shifts the planning paradigm from purely technical risk management to "Equitable Resilience," providing a diagnostic framework for justice-centered urban renewal. The findings suggest that dismantling thermal inequity in East Asian megacities requires more than incremental greening; it necessitates a radical commitment to restorative zoning and structural de-densification to reclaim the "thermal rights" of populations trapped in historically neglected and physically locked-in urban spaces.

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Keywords: Equitable Justice, Spatial Lock-in, Path-dependency, Thermal Inequality, Reseilience Justice

THE URBAN MEDICAL HEAT TRAP: COMPOUND ABOVE-SUB SURFACE AMPLIFICATION AND EXPOSURE INEQUITY

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Individual Paper Presentation

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Under rapid urbanization and increasingly frequent extreme heat events, urban thermal environments are reshaping human spatial behaviour and health risk distributions. Cities act as central hubs in inter-city healthcare systems, concentrating high-quality medical resources while continuously attracting cross-city healthcare-seeking mobility. In this context, medical activities have become a critical setting where heat exposure, spatial choice and social inequality intersect. This study identifies medical land use (MLU), dominated by large and continuously operating general hospitals, as a critical yet largely overlooked three-dimensional urban heat amplifier.

Moving beyond the conventional surface-centred paradigm of urban heat island (UHI) research, we develop a coupled three-dimensional assessment framework integrating surface, shallow subsurface and deep subsurface thermal environments at both citywide and land-parcel scales. Using multi-source spatial and climatic data from 30 representative monocentric Chinese cities across diverse climate zones, development intensities and city sizes, we systematically examine the vertical thermal characteristics of medical land use. Results show that MLU consistently exhibits significantly amplified UHI intensity across all vertical layers, confirming its persistent role as an urban heat amplifier.

Mechanistic analyses indicate that high building density, limited vegetation, sustained anthropogenic activity and energy use, together with complex above–belowground functional coupling, jointly drive this three-dimensional heat amplification. More importantly, these findings reveal a dual inequality embedded in the interaction between urban climate and healthcare systems. Pre-existing spatial inequalities in medical resource distribution structurally compel mobile patients to concentrate in metropolitan cores that also represent the most extreme urban heat environments. This configuration generates stratified thermal risks: permanent residents experience cumulative chronic heat stress, while visiting patients face more intense acute health risks, including exposure to extreme outdoor UHIs and inverse medical inequities caused by large indoor–outdoor thermal gradients during summer healthcare episodes.

These results demonstrate that heat is not merely a background environmental stressor but is actively amplified through urban spatial structures and healthcare mobility patterns. We argue for a shift towards three-dimensional thermal governance that integrates urban climate, public health and climate justice into the planning and design of major healthcare infrastructure in a warming world.

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Keywords: Urban Heat Island (UHI), Thermal Amplification, Medical Land Use, Heat Exposure, Environmental Justice

TRACKING THE IMPLEMENTATION OF HEAT MITIGATION POLICIES WITHIN THE GENERAL PLAN: A CASE STUDY OF TUCSON, AZ

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Individual Paper Presentation

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Abstract

Preparing general plans is a resource-intensive and often legally mandated process. General plans are essential instruments in directing urban development; however, their effectiveness in achieving real climate resilience results remains insufficiently examined. While prior research emphasizes high-quality plans or plans that follow best practices (e.g., clear goals, cross-sectoral coordination, detailed information fact base, clear implementation and monitoring guidelines) as a predictor of successful implementation, there is limited empirical evidence linking plan content to actual policy execution and built environment change. Moreover, while researchers often discuss a plan 'implementation gap', few studies to date have quantified it. The contribution of this study is to address this knowledge gap by systematically evaluating the implementation of heat mitigation policies outlined in the City of Tucson's 2013 comprehensive plan (Plan Tucson). The central question of this study is: To what extent have heat-related policies identified in Tucson's general plan been implemented over the past decade, and through what mechanisms and spatial patterns have these implementations occurred?

The study uses a mixed-methods approach combining policy evaluation, spatial analysis, and institutional assessment. First, heat-related policies were identified using the Plan Integration for Resilience ScorecardTM (PIRSTM) for heat, with a focus on spatial land use policies. Second, policy tracking and implementation documents were reviewed to identify projects and regulatory changes associated with each policy. Third, implementation pathways were analyzed by linking them to three primary implementation mechanisms- Climate Action Hub, Proposition 407, and Better Streets Safe Streets. Finally, a spatial scoring framework (0: not implemented, 1-construction in design/approved permitting, 2- physical intervention) was applied to assess implementation across census tracts, distinguishing between non-implemented policies, those in progress, and those with completed physical intervention.

Findings indicate that 47 out of 53 policies (88%) were implemented in some form, suggesting a relatively high level of policy uptake. Spatial analysis shows that over the course of the ten years, every census tract saw at least one implementation of a heat-related policy. However, many projects are still in the design phase, which indicates uneven implementation levels. For planning practice, the findings highlight the importance of policy specificity, funding alignment, and institutional capacity in achieving climate-resilient goals. Findings from this research will overall offer a novel approach to evaluate plan outcomes and critical information on (a) characterising and quantifying implementation gaps and (b) preparing more efficient and effective plans.

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Keywords: Urban heat mitigation, plan implementation, climate resilience

TRANSFORMATIVE POTENTIAL OF COMMUNITY-BASED CLIMATE ADAPTATION: CHANGES IN ADAPTIVE CAPACITY REPORTED BY STRATEGY CO-DESIGN PARTICIPANTS

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Individual Paper Presentation

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This article asks: how does participation in a long-term planning process to co-design climate adaptation strategies influence residents' reported measures of adaptive capacity that relate to community resilience?
While scholars continue to debate the role of, and limitations associated with, residents' participation in planning, evidence exists that community members' participation in climate adaptation planning increases their feelings of trust, responsibility, capacity, and agency; awareness and understanding of climate risk; and capacity to work toward equitable climate adaptation. These attributes can be measured in part by evaluating adaptive capacity, defined as the ability of social and social-ecological systems (i.e., residents, environmental services and resources, cultural assets, etc.) to adapt to change (1).

We investigate changes in adaptive capacity through an Austin (TX) case study focused on residents of a neighborhood characterized by rapid growth, disproportionate exposure to climate-related events, continued segregation, and uneven access to adaptation infrastructure. Residents of the Dove Springs neighborhood, along with a community-based organization, Go! Austin, Vamos! Austin (GAVA), identified a need for an online portal to share knowledge about their community, climate-related events, and preparation for, responses to, and recovery from these events. GAVA developed the Climate Navigators program, a group of community members trained in climate preparedness and community organizing, as a first step, and research team received National Science Foundation funding to work with GAVA and the Climate Navigators from 2020-2024 to co-design and launch the portal.

We interviewed 22 members of the Climate Navigators in 2021 and again in 2024, after they had designed and launched the climate adaptation portal, in collaboration with the broader team. All interviewees were Hispanic/Latina women, which reflects the demographics of the Climate Navigator program, and live in a low-income neighborhood experiencing severe climate impacts. Semi-structured interviews consisted of open-ended questions that explored participants' history with the community, city, NGO/CBOs, and research institutions; reflections on their participation; and considerations of different aspects of community resilience, including key aspects of social vulnerability, hazard exposure, and adaptive capacity. As part of the interview, participants also responded to queries about different aspects of a graphic based on an adaptation of Pfefferbaum's Community Advancing Resilience Toolkit (2) . Interviews were recorded, transcribed, and, for 18 of the 22 interviews, translated from Spanish to English. Three researchers from the team coded the interview data into key themes through multiple rounds of analysis.

Findings show that participants reported improvements in dimensions of adaptive capacity that can be used to track community resilience, including household preparedness, community preparedness, and transformative potential. Participants reflected feelings of increased well-being, capacity and power, feelings of growth and transformation, connection to community, feelings of recognition and pride, and understandings of the future. Interviewees reported mixed feelings about relationships to institutions, with strong agreement that connections to community-based organizations and a research university improved, but, for the most part, distrust of local government entities involved with climate adaptation and climate-event response continued. Our findings are relevant for planners and researchers working in communities impacted by environmental and climate change,

those considering how to work with residents to develop and implement climate adaptation co-design processes, and residents and community leaders seeking to develop programs and processes to improve adaptive capacity.

(1) Siders 2019

(2) Bixler & Jones 2022; Pfefferbaum et al. 2013

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Keywords: climate adaptation, adaptive capacity, community resilience, co-design, transformative potential

TRANSITIONAL ECOLOGICAL GOVERNANCE: INSTITUTIONAL MISMATCH AND LIVELIHOOD RESILIENCE AMONG FORMER FISHERS IN THE TAIHU BASIN,CHINA

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Individual Paper Presentation

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Facing an escalating array of environmental challenges, many national governments in the Global South have proactively initiated conservation policies to drive long-term transitions towards sustainability. While such policies may generate long-term ecological benefits, they often impose disproportionate costs on certain social groups, raising urgent concerns about justice in sustainability transitions. This tension is particularly evident in China's "Ten-Year Fishing Ban" in the Yangtze River Basin. The ban has abruptly ended the traditional livelihoods of fishers in the Lake Taihu area. For many former fishers, especially those of advanced age and limited educational attainment, the ban has produced a profound and uneven process of livelihood disruption and social marginalization.

Existing studies on conservation-induced livelihood change have largely focused on the static assessment of livelihood capital or compensation outcomes, paying insufficient attention to the dynamic resilience of vulnerable groups when confronting sudden policy shocks. To address this gap, this study integrates the Sustainable Livelihoods Framework into Speranza et al.'s livelihood resilience theory to examine both the resource base and the adaptive capacities that shape post-ban livelihood reconstruction. In particular, it develops an analytical framework centered on three dimensions of livelihood resilience: buffering capacity, self-organization capacity, and learning capacity.

This study is based on empirical research, utilizing a detailed first-hand micro-dataset from 84 households involving 395 individuals in Yugang Village, a former fishing community by Lake Taihu. The sample reveals marked structural vulnerability: the average age of respondents is 56.8 years old; 82.1% have a junior high school education or below. Methodologically, we employed an innovative mixed-methods design. In addition to the quantitative entropy-weighted resilience index and obstacle degree analysis, this study also integrates semantic analysis based on a large language model (LLM) to interpret open-ended interview narratives and reveal the deep-rooted institutional constraints faced by fishers. Preliminary findings indicate: 1) the overall Livelihood Resilience Index (LRI) remains critically low (mean = 0.304) and unevenly distributed, with 56% of former fishers failing to reach the average level; 2) among the three dimensions, buffering capacity ranks the highest (0.368), while self-organization capacity is the lowest (0.223); and 3) both quantitative diagnostics and LLM-driven topic extraction confirm that the most significant obstacles limiting their livelihood transition include the efficacy of government-citizen communication, productive capital reserves, the ability to capture external information, and the demonstration effect of social networks.

The study argues that the main obstacle to a just transition in this context is not simply material deprivation, but an institutional mismatch between stringent ecological regulation and inadequate livelihood transition support. This mismatch weakens communication, participation, and collective adaptive capacity, thereby constraining livelihood rebuilding. By bringing just transition debates into the analysis of conservation governance, this study offers empirical evidence from rural China on how ecological policy can generate intertwined distributive and procedural injustices. Crucially, the insights on institutional mismatch and the diagnostic framework provide vital lessons for other Global South nations navigating similar ecological transitions, emphasizing the urgent need for more

participatory, livelihood-sensitive, and socially inclusive governance to prevent the marginalization of vulnerable communities.

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Keywords: Just Transition, Livelihood Resilience, Obstacle Degree Model, Yangtze River Fishing Ban

TREE CANOPY AND RESIDENTIAL COOLING ENERGY USE BEHAVIOR: EVIDENCE FROM SMART METER DATA IN LEON COUNTY, FLORIDA

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Track 3: Environmental Planning
Individual Paper Presentation

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Empirical studies of urban cooling energy in planning have relied heavily on total or seasonal electricity consumption (Quan & Li, 2021), obscuring how households actually respond to heat. This paper uses household-level behavioral measures to examine two questions: 1) how do built environment characteristics shape when households begin cooling and how sensitively they respond to rising temperatures, and 2) does targeted tree canopy expansion offer a cost-effective strategy for reducing cooling energy?

We analyze approximately 112,350 residential accounts in Leon County, Florida, combining Advanced Metering Infrastructure (AMI) smart meter data with daily weather records. A piecewise linear regression model is applied to each household's daily electricity-temperature profile to separate temperature-sensitive cooling use from baseline electricity consumption (Huang et al., 2023). This yields two behavioral parameters for each household: the cooling breakpoint (the outdoor temperature at which cooling energy begins to rise) and the daily cooling slope, a measure of heat sensitivity. These parameters, combined with local temperature records, also produce annual cooling energy use intensity (cooling EUI). All three measures serve as dependent variables in OLS models that examine three built environment factors at the parcel scale: tree canopy cover ratio, grass cover ratio, and urban porosity. The models control for building characteristics, socioeconomic attributes, and electricity distribution feeder and year fixed effects.

Results show that tree canopy has the strongest and most consistent associations across all three outcomes: higher canopy cover is linked to later cooling onset, lower heat sensitivity, and reduced cooling EUI (all $p < 0.001$). Grass cover follows a similar but weaker pattern. Urban porosity significantly reduces cooling breakpoints and cooling EUI but shows no significant effect on heat sensitivity, likely because its ventilation benefit weakens in calm peak-summer conditions (Song et al., 2025). Because canopy effects dominate, we further test whether they vary by building type using interaction terms, motivated by evidence that canopy cooling benefits are amplified in thermally stressed settings (Stone & Rodgers, 2001; Li et al., 2023).

A lifecycle cost-benefit analysis then estimates the energy savings from hypothetical canopy expansion across four residential building types and two land-conversion scenarios (replacing impervious surfaces versus replacing grass). The levelized cost of saved energy varies substantially: parcels with multifamily buildings of five or more units achieve approximately \$0.05/kWh, well below standard building retrofit benchmarks of \$0.07–\$0.11/kWh, while single-family parcels yield \$0.39–\$0.57/kWh. The advantage of multifamily parcels likely reflects higher baseline thermal stress, which amplifies the marginal benefit of each additional tree.

By decomposing total electricity use into behavioral parameters, this study reveals how built environment characteristics shape not only how much cooling energy is consumed, but how households respond to heat. The results also show that the cooling benefits and cost-effectiveness of tree canopy vary by building type, providing an empirical basis for spatially targeted green infrastructure planning in high-density multifamily areas. Together, these findings position nature-based solutions as a compelling complement to conventional building retrofit programs for climate adaptation.

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Keywords: cooling energy, built environment, tree canopy, nature-based solutions, AMI smart meter

TRIAL BY FIRE: THE COMMUNITY BRIGADES PILOT PROGRAM

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Individual Paper Presentation

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The December 2024 Franklin Fire and January 2025 Palisades Fire in Malibu, California offered an opportunity to understand how intentional community resilience building processes, including the Community Brigade pilot program, have influenced the Malibu community's approach to fire response. The two fires occurred six years after the Woolsey Fire affected the same community; however, with demonstrably different outcomes, particularly pertaining to community cohesion. Wildland urban interface fire is complex, and this study explores the impact of community engagement and additional interacting factors resulting in significant change in overall risk ownership. This study focuses on the response's outcomes and how enhanced integration between the emergency services, the Community Brigades, and the community itself came to fruition. Utilizing a qualitative approach, this study draws upon semi-structured interviews with community brigade members, city government officials, county government representatives, and LA County Fire leadership. Interviews were supplemented by participant observation in public meetings, community brigade events, and fieldwork in the affected area. A key focus of the interviews was the changes brought by the Community Brigade pilot program and how they interfaced with the Fire response system and community during the first seven days of the Franklin Palisades Fire response. Preliminary results indicate that the Brigade's implementation is correlated with increased cognition of fire risk, greater trust between the community and official response apparatuses, and increased ownership of fire risk. This study provides insights into the development and implementation of the community brigade initiative, with the potential to replicate in other jurisdictions.

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Keywords: Wildland Urban Interface, Community Engagement, Disaster Response, Wildfire, Local Knowledge

UNDERSTANDING HOW FLOOD RISK MANAGERS DEFINE AND RESPOND TO NON-STORM FLOODING IN LOW-LYING COASTAL COMMUNITIES ALONG THE US SOUTHEAST COASTLINE

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Individual Paper Presentation

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As sea levels continue to rise, coastal non-storm flooding, i.e. flooding which occurs without rainfall or storm induced wave and surge, is becoming a frequent hazard in coastal communities. Despite its growing impact, this type of flooding is often overlooked in flood risk management. Non-storm flooding is characterized in multiple ways in the risk management literature, including as “nuisance flooding”, “high-tide flooding”, or “sunny-day flooding”. To understand how local coastal managers define and respond to non-storm flooding, we conducted semi-structured interviews with 36 flood risk management practitioners on the United States’ central Atlantic coastline across North and South Carolina. Participants responded to questions on local terminology, flooding drivers, impacts, and adaptation strategies. Findings show that coastal non-storm flooding is primarily driven by tides though secondary drivers and the nature of local flood impacts vary widely across communities with major impacts concentrated in micro-scale hotspots, particularly low-lying, creek-adjacent, and historic neighborhoods. Transportation disruption and service interruption emerge as dominant impacts, often occurring without major structural damage. Current adaptation strategies often rely on tidal valves, pump stations, and regulatory flood maps, which frequently fail to capture localized and compound flooding processes. Together, these findings reveal a misalignment between chronic non-storm flooding risks and existing flood risk management frameworks. Addressing this gap requires locally grounded terminology, micro-scale assessments, and evaluation approaches that account for cumulative disruption beyond physical property damage.

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Keywords: Non-storm flooding, Flood risk management, Sea level rise, High-tide flooding, Coastal adaptation

UNDERSTANDING HUMAN-NATURE INTERACTION THROUGH VISION-LANGUAGE MODEL AND CROWDSOURCED IMAGERIES IN VANCOUVER

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Individual Paper Presentation

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Urban nature is widely recognized for supporting human well-being, yet most studies focus on visitation or activity intensity, treating nature as a passive setting rather than an active component of interaction. As a result, human–nature interaction (HNI) remains insufficiently understood, especially in terms of how its structure evolves over time and responds to external disruption. This study develops a semantic framework and vision–language model pipeline to measure HNI at scale using social media imagery. HNI is conceptualized through the functional role of nature (setting, subject, partner) together with contextual attributes including social context, activity intensity, and photographer engagement. Using a manually annotated benchmark of 496 images, we compare Qwen3-Omni-Flash, GPT-4.1, and Gemini-2.5-Flash under a unified prompt-based protocol. Qwen achieves the strongest performance, with a label-wise average accuracy of 0.9718 and a joint exact-match accuracy of 0.9032, outperforming GPT-4.1 (0.9106; 0.7596) and Gemini-2.5-Flash (0.8687; 0.6828). Qwen is then applied to 16,722 geo-referenced Flickr images collected in Vancouver from 2014 to 2023. We examine temporal changes in HNI using compositional similarity metrics and dimensionality reduction. Jensen–Shannon distance is used to quantify differences in interaction composition across years, while multidimensional scaling reveals structural relationships among yearly interaction patterns. Three key findings emerge. First, HNI patterns remain highly stable prior to 2020 but undergo a sharp structural shift during the COVID-19 pandemic, indicating rapid reorganization rather than gradual change. Second, this shift reflects a transition from socially oriented, group-based interactions toward more individualized and perceptual forms of HNI, accompanied by changes in activity intensity and in the role of nature. Third, post-pandemic patterns show only partial recovery and do not fully return to pre-pandemic conditions, suggesting persistent changes in how people engage with urban nature. Further analysis shows that these structural changes are driven by a small number of dominant interaction profiles rather than uniform behavioral shifts. Together, these findings demonstrate that urban nature does not merely support activity but shapes distinct interaction patterns that can reorganize under disruption. Methodologically, this study advances the use of vision–language models for scalable HNI analysis. Conceptually, it offers a new framework for understanding how urban nature engagement evolves over time, with implications for adaptive planning and resilient green infrastructure design.

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Keywords: Human activity, Urban green space, Social media, Deep learning, Vancouver

UNINCORPORATED COMMUNITIES, FRAGMENTED GOVERNANCE, AND ENVIRONMENTAL RISK IN THE SAN JACINTO WATERSHED

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Individual Paper Presentation

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Focusing on the San Jacinto watershed, this paper examines how unincorporated communities and census-designated places (CDPs) in eastern Harris County, Texas, including Channelview, Barrett, Highlands, and Crosby, continue to bear the consequences of a territorial approach to flood control and growth. There, environmental risk accumulates through the intersection of flooding, industrial legacy, suburban expansion, and fragmented systems of governance. The region's infrastructure and water management systems were not built only in response to flooding or to engineer the bayou landscape across the flat coastal plain. They were also built to secure growth: to protect downtown, stabilize the Ship Channel, organize the movement and distribution of water, and support the industrial and metropolitan expansion that shaped the region in the twentieth century. Emerging through an alignment of civic ambition, federal engineering, land ownership regimes, and local development interests, these systems became not simply hydraulic projects, but territorial ones. They rendered water governable in ways that enabled continued urbanization even as risk was redistributed across the wider watershed.

The paper argues that environmental risk in these communities is shaped by the compound impacts of climate extremes, intensified by territorial patterns of growth and industrial expansion, and by governance systems that remain fragmented across the watershed. These conditions also carry significant public health consequences, reinforcing the need to understand environmental vulnerability as cumulative and structurally produced rather than episodic.

Drawing from a NASEM Gulf Research Program-funded multi-year research effort, developed in collaboration with community partners including Texas Health and Environment Alliance, the paper advances the San Jacinto watershed as both an analytical frame and a basis for scenario development. The work asks how adaptation can be advanced in places where governance, maintenance, and scale are misaligned, and where the capacity to manage growth remains uneven across jurisdictions. Building on a socio-hydrological approach, it proposes a scenario-based framework for identifying spatial and institutional strategies across multiple scales of intervention. In this framing, adaptation is understood not as a fixed outcome but as an ongoing process shaped by political economy, uneven governance capacity, and the distribution of risk, cost, and power. The framework links hydrological systems to questions of jurisdiction, ownership, public health, mobility, ecological repair, and community capacity in order to identify more effective scales of action within a fragmented governance landscape. It outlines three interrelated areas of action: hydro-ecological repair and watershed infrastructure; community health, social infrastructure, and industrial futures; and adaptive mobility, civic corridors, and community connectivity. Rather than offering a single master plan, the paper presents scenario design as a planning method to drive adaptation and manage growth in environmentally burdened unincorporated communities.

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Keywords: Watersheds, climate adaptation, capacity building, Governance

URBAN CLIMATE POLICY SOLUTIONS FOR A DEGROWTH ECONOMY

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Individual Paper Presentation

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As the Earth's temperature rapidly approaches a point of no return, where the effects of climate change will go beyond ecological and planetary boundaries, and national-level GHG mitigation policy commitments remain insufficient, the role of cities in GHG mitigation efforts has become increasingly more prominent. Urban areas contribute between 67-72 percent of global GHG emissions, with projected increases due to increasing urbanization, particularly in the Global South. At the same time, cities have jurisdiction over a number of GHG emitting activities and are closer to relevant stakeholders for effective implementation of mitigation actions. This urban opportunity has prompted cities across the globe to engage in climate action through the production of Climate Action Plans. However, there is considerable diversity in the type of policy solutions adopted by cities, with many of them responding to sustainable growth economic models. This paper analyzes the local climate policy solutions adopted by two of the largest cities in Latin America as tools for action, using a degrowth economics framework, examining how cities can move beyond efficiency and supply-side solutions into a reduced demand framework, with the aim of informing climate action planning processes in the region and the Global South. Using the Avoid-Shift-Improve (ASI) framework, the study assesses whether adopted policy solutions reduce, affirm, or reproduce patterns of consumption, finding that most existing approaches prioritize technological transition and carbon efficiency, while neglecting demand-side solutions. By foregrounding contrasts between supply-side and demand-side policy solutions, this paper contributes to ongoing debates in degrowth studies by illustrating the potential of climate policy solutions for restructuring consumption patterns, providing the basis for a critique of the reproduction of growth-dependent logics in urban climate policy.

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Keywords: Urban climate policy, Demand-side solutions, GHG mitigation

URBAN HEAT ISLAND INTENSIFICATION IN 354 LATIN AMERICAN CITIES (2001–2020): TWO DECADES OF TRENDS, SEASONALITY, AND REGIONAL VARIATION

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Individual Paper Presentation

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Extreme heat poses a growing challenge for cities worldwide, yet how the Urban Heat Island (UHI) effect—where urban areas are warmer than their rural surroundings—has evolved over time remains poorly understood. While numerous studies have documented the presence and spatial distribution of urban heat island intensity (UHII), its temporal evolution across diverse climatic and urban contexts is less well characterized. Existing evidence remains fragmented, often constrained by limited spatial coverage, short observation periods, and a lack of integrated assessments that jointly capture spatial, temporal, and seasonal dimensions. This gap is particularly pronounced in Latin America, one of the world's most urbanized and climatically diverse regions, where resources to cope with extreme heat are comparatively limited.

In this study, we present one of the first large-scale, longitudinal assessments of UHII in Latin America, characterizing its spatial, temporal, and seasonal dynamics across 352 cities in 11 countries from 2001 to 2020 as part of the SALURBAL (Salud Urbana en América Latina) project. These cities include Brazil (n = 147), Mexico (n = 86), Argentina (n = 32), Colombia (n = 32), Peru (n = 21), Chile (n = 20), Nicaragua (n = 5), Panama (n = 3), Guatemala (n = 2), El Salvador (n = 3), and Costa Rica (n = 1).

We combined spatially seamless, all-sky daytime land surface temperature (LST) data with urban–rural classifications from a globally harmonized dataset spanning 2001–2020, at 1-km spatial resolution and monthly temporal resolution. Urban areas were delineated using MODIS MCD12Q1 built-up classes, clustered within a 2-km threshold and retained if they exceeded 9 km². Corresponding background reference areas were defined within a 100-km radius using a Dynamic Equal-Area method, enhancing comparability by matching elevation, impervious surface cover, and nighttime light intensity while excluding water bodies and complex terrain. To evaluate interannual trends in UHII, we applied multilevel mixed-effects models that account for repeated observations nested within cities and control for unobserved city-level heterogeneity. Seasonal dynamics were characterized using Fourier terms within a multilevel framework applied to monthly data. To further assess temporal intensification, we fitted Poisson regression models at the city–year level, where the outcome was the number of months (0–12) in which UHII exceeded a city-specific threshold defined as the 95th percentile of each city's 20-year UHII distribution.

We find that UHII levels are highest in Central America and Colombia, followed by Brazil and Mexico, while cities in the Southern Cone—particularly at higher latitudes in Argentina and Chile—exhibit lower intensities. The most pronounced intensification occurs in non-arid (tropical and temperate) and inland settings. Decomposition of temperature trends suggests that these increases are driven primarily by rising urban LST, with little change in rural background temperatures, resulting in an average UHII increase of approximately 0.3 °C per decade. Beyond cross-

sectional differences, UHII has intensified over the past two decades, with heterogeneity across climatic contexts—showing stronger increases in inland cities and in tropical and temperate regions. In addition, UHII exhibits clear temporal restructuring: the seasonal cycle has modestly amplified, with faster warming during late warm-season transitions and an increasing number of months exceeding city-specific high-UHII thresholds.

Together, these findings underscore the need for context-sensitive urban heat mitigation strategies that account for both spatial heterogeneity and temporal dynamics. Given the region's comparatively limited adaptive capacity and high levels of urban inequality, prioritizing interventions in cities and neighborhoods experiencing the most rapid UHII intensification will be critical for reducing future heat-related risks.

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Keywords: Urban heat island, Latin America, Land surface temperature, Climate zone, Seasonal dynamics

URBAN HEAT PLANNING LANDSCAPE FOR CITIES ACROSS THE AMERICAS: REGIONAL AND CLIMATE NETWORKS

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Track 3: Environmental Planning
Individual Paper Presentation

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This paper examines the landscape of heat planning for 30 metropolitan cities across the Americas, focusing on the multiscale governance instruments available at the municipal level. From a planning theory perspective, urban heat governance research has appropriately emphasized the need for coordinated administrative structures and actions within and across levels of government to better understand why and how cities are innovating through climate adaptation for heat-health planning policies (World Bank,2025; Keith,2025; World Bank,2024). Several questions arise: What characteristics shape the heat planning landscape in expanding cities across the Americas? Do these networks align with distinct climatic zones?

Although crucial for heat management and urban cooling, research on regional networks and global governance organizations is still limited. The role of multilateral agencies like the UN Cool Coalition at the UN Office for Disaster Risk Reduction, philanthropies such as the Climate Resilience Center—Adrienne Arsht-Rock and The Rockefeller Foundation, and international networks like C40 Cities and the Resilient Cities Network, is often overlooked in heat planning and policy discussions (Keith, 2025; Gordon, 2025; NIHHS, 2025). Does the presence of heat governance bodies correlate with heat-related health outcomes, and are these indicators of the existence of multiple heat plans and network affiliations, which may serve as markers of heat governance maturity in cities across the Americas?

To answer the questions, the study uses a multivariable framework and data analysis to provide an overview of selected spatial variables that characterize heat stress in these cities, combined with heat planning tools at the city level. It builds on ten variables to assess heat stress: [1] heatwave prevalence through the number of declared, registered, and studied events; [2] heatwave projections under different climate scenarios; [3] Urban Heat Island (UHI) studies; [4] number of days with a Heat Index over 35 °C and the number of tropical nights over 26 °C; [6] hourly meteorological data from typical meteorological year (TMYx), technically homogeneous year (THY), or representative meteorological year (RMY); [7]Heat Risk Index or UTCI, paired with [8] heat-mortality and disaster mortality statistics. To account for an urban heat governance framework, the following variables were collected and included: [9] Network of Plans Climate mitigation Plan, or Heat Action Plans , [10] networks membership (C40 Cool Cities, Cool Cities Accelerator, Climate Adaptation Network; CRC -Chief Heat Officer) for comparative purposes, it uses the Koppen-Geiger climate classification to pair cities within the same climatic region

The paper offers a spatial database that supports “transnational examinations” of plans based on climatic and ecological geographies and governance frameworks that facilitates visualization, analysis, and inquiry. Early results indicate that cities in temperate North American climates tend to have larger populations and more diverse heat plan networks. Conversely, South American cities with oceanic climates show higher network density, greater regional cooperation, and a higher prevalence of cooling plans as part of their heat planning efforts. As anticipated, administrative boundaries and federal policies exert a greater impact on heat planning than climate similarities or geographical proximity.

The importance of this study goes beyond a descriptive overview; it contributes to a growing body of research suggesting that governance maturity may be more influential in explaining heat planning deployment than solely demographic characteristics. It opens possibilities for further exploration by different cities that have addressed

sustainability and heat-resilience challenges, thereby informing guidelines and shaping heat planning policies beyond national boundaries through transnational cooperation.

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Keywords: Heat, Multilateral Networks, Health, America, Regional

URBAN NATURE ADDS SCALE-DEPENDENT AND NONLINEAR CONTRIBUTIONS TO HUMAN ACTIVITY INTENSITY

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Individual Paper Presentation

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Urban nature is widely regarded as essential for promoting active and healthy cities, yet its independent contribution to human activity remains difficult to isolate from built environment effects and poorly understood across spatial scales. Most existing studies rely on linear, single-scale approaches, limiting insight into how different forms of urban nature operate through distinct mechanisms. Here, we examine the scale-dependent and nonlinear contributions of urban nature to human activity intensity using multi-year data at micro-scale fishnet units and neighborhood-scale dissemination areas. We integrate random forest models with spatial block cross-validation to quantify predictive gains beyond built environment controls, and complementary ordinary least squares models to assess directional consistency and functional form. Urban nature is further decomposed into park-based and non-park components to distinguish accessibility-driven and exposure-driven pathways. We report three core findings: 1) Adding urban nature substantially improves model performance beyond built environment predictors, with large gains at the micro-scale (ΔR^2=0.37–0.48) but more modest yet consistent gains at the neighborhood scale. 2) Park-based nature exerts stronger and more stable associations with activity intensity than non-park nature across all years and spatial scales, with park accessibility measures consistently ranking among the most influential predictors. 3) Nature–activity relationships are strongly nonlinear and scale dependent, with threshold-like effects for park-based nature emerging at the neighborhood scale and more gradual, near-linear responses for non-park nature, patterns that remain stable across four years. Together, these findings demonstrate that urban nature contributes to human activity through robust yet scale-specific and nonlinear mechanisms that are not captured by built environment metrics alone. This study provides a unified multi-scale framework for understanding how different forms of urban nature shape everyday activity, with direct implications for fine-grained urban design and equitable green and blue infrastructure planning.

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Keywords: urban vitality, street trees, multi-scale analysis, smartphone GPS data, Vancouver

WASTE AS FRONTIER: MULTI-SCALAR STATE PLANNING AND INFRASTRUCTURE-LED REDEVELOPMENT IN PERI-URBAN CHINA

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Track 3: Environmental Planning
Individual Paper Presentation

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Waste-to-energy has been widely promoted as a global environmental solution to the dual challenges of urban waste accumulation and energy transition, underpinning the rise of major private industry actors such as Veolia, WM, and Covanta. At the same time, critical scholarship has shown how waste-to-resource transformation can generate new frontiers for capital accumulation, operating as an environmental fix within neoliberal urbanism (While et al., 2004; Ahmann, 2019). As this technology circulates globally, its implementation varies significantly across urban contexts, raising further questions about how waste-to-resource is locally embedded through different planning systems and what new governance arrangements, spatial formations, and socio-spatial inequalities are produced.

This paper addresses these questions through a conjunctural case study (Peck, 2023) of the Xingfeng landfill mining project in Guangzhou, China. Once one of Asia's largest dumping sites, Xingfeng is being transformed through waste excavation and incineration into a large-scale circular economy industrial park integrating waste-to-energy infrastructure, recycling enterprises, environmental education facilities, and tourism-oriented development. Given the extensive accumulation of peri-urban dumping sites produced by China's rapid urbanization over the past two decades, similar mining-driven redevelopment projects are emerging nationwide, framed within national agendas of ecological civilization, renewable energy transition, and urban regeneration.

The paper argues that, in the Chinese context, waste resource-making cannot be reduced to a profit-driven market mechanism, but instead operates as part of a techno-developmental state strategy aimed at generating new peri-urban growth frontiers amid the crisis of real estate-led urbanization. Drawing on theories of extended urbanization and operational landscapes (Brenner et al., 2025), this analysis situates waste-to-resource and the associated reorganization of material flows within a broader reconfiguration of city-hinterland relations that underpins the formation of new state developmental space.

The paper finds that this process unfolds through the strategic re-coupling of a multi-scalar state planning regime, involving the mobilization of state resource ownership across three levels. At the national scale, waste is redefined as a renewable resource and incorporated into nationally owned energy systems through preferential grid pricing and policy support under the party-led ecological civilization framework. At the municipal scale, waste governance has shifted from administrative management to corporatized models, in which waste is reconstituted as a municipal state asset and its circulation is reorganized through state enterprises and contractual arrangements. At the local scale, district-level state-controlled land regimes are strategically restructured around landfill mining projects, driving the conversion of agricultural land to facilitate industrial expansion, tourism development, and new forms of land value capture.

However, because waste-to-energy remains embedded in growth-oriented urban development, it generates new waves of uneven development. In the Xingfeng case, redevelopment was accompanied by large-scale socio-ecological displacement of surrounding rural settlements in 2022 to accommodate new industrial uses. Displaced villagers were relocated to nearby new towns, where they rely on unstable small businesses or wage labor. More broadly, over the longer term, continued urban growth will generate more waste, reinforcing cycles of peri-urban infrastructure investment. This highlights the limits of growth-oriented sustainability strategies and points to the

need for more fundamental alternatives, including degrowth-oriented approaches to waste reduction (Savini, 2021).

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Keywords: waste-to-energy, green infrastructure, urban development, circular economy, resource planning

Wildfire Risk Reshapes Shelter Access and Reveals Structural Disparities in California

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Track 3: Environmental Planning
Individual Paper Presentation

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This study asks how wildfire risk alters access to shelters and whether conventional accessibility measures misrepresent evacuation feasibility by assuming that all facilities remain available during hazard conditions. This question advances understanding of how environmental risk reshapes the functional availability of critical resources and why access must be evaluated as a hazard-contingent condition rather than a static measure.

The analysis develops an Expected Annual Loss (EAL)-weighted accessibility framework that integrates wildfire risk into cumulative opportunity measures of shelter access. Shelter availability is adjusted based on exposure to wildfire risk, allowing access to reflect the likelihood that facilities remain usable during hazard conditions. The framework is applied across California at the census block group level and evaluated across multiple travel-time thresholds. A multiscalar approach links local access conditions to county-level planning contexts and incorporates road networks, shelter locations, hotels and motels, wildfire risk data, and demographic characteristics. This framework operationalizes accessibility as a planning tool that captures infrastructure performance under hazard conditions rather than under normal conditions. This approach distinguishes nominal proximity from functional access under environmental stress.

The results show that incorporating wildfire risk systematically reduces effective shelter access and exposes structural disparities that remain hidden under conventional measures. Mean access loss increases from 82 shelters at a 30-minute threshold to 665 at 120 minutes, suggesting that additional reachable facilities are disproportionately located in wildfire-exposed areas. Extending travel time therefore expands nominal access while deepening reliance on high-risk infrastructure. Spatial patterns reinforce these disparities. Counties such as Mendocino and Riverside exhibit high internal variation in access loss, while San Mateo and Alameda show more uniform but persistent reductions. Wildland-urban interface areas remain structurally constrained across all travel-time thresholds, suggesting that temporal flexibility cannot compensate for spatial exposure. Socioeconomic factors further shape these outcomes. No consistent racial disparities emerge in weighted access, but substantial inequities persist by income and vehicle ownership, indicating that mobility resources determine whether nominal access translates into feasible evacuation.

These findings show that shelter access is not a fixed spatial attribute, but a dynamic condition shaped by environmental risk and infrastructure vulnerability. Conventional accessibility measures can overstate preparedness by counting facilities that may be unavailable during hazard events. A risk-informed approach reveals where access is structurally fragile and where mitigation efforts are most needed. This framework positions accessibility analysis as a planning tool for environmental risk management and climate adaptation. It enables the pre-event identification of communities where hazard exposure and limited access intersect and supports the evaluation of mitigation strategies, including decentralized shelter placement, reinforcement of evacuation corridors, and resource allocation aligned with risk. Environmental planning under climate uncertainty therefore requires integrating hazard exposure directly into infrastructure evaluation rather than treating it as an external condition.

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Keywords: wildfire risk, shelter accessibility, environmental planning, climate adaptation, risk-informed planning

WEATHER SHOCKS AND URBAN POWER RELIABILITY: A CASE STUDY OF INDIA

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Individual Paper Presentation

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Electric power grids, spanning thousands of square miles and connecting hundreds of components, are among the largest and most complex infrastructures in modern cities. Their reliable operation underpins economic activity, public health, and urban quality of life, yet they are increasingly stressed by severe weather events and climate variability. While much research has focused on acute extreme events, such as convective storms and heat waves, the cumulative and chronic impacts of everyday weather variability remain poorly understood—especially in rapidly urbanizing regions of the Global South, where power outages are frequent and have wide-ranging social consequences.

Using India as a case study, we draw on a high-fidelity voltage dataset spanning 2014 and 2025 provided by the Electricity Supply Monitoring Initiative (ESMI). Through this initiative, more than 500 electricity supply monitors have been deployed nationwide, generating a granular and independently collected dataset that captures power supply interruptions at hundreds of end-user locations. Employing the Autoregressive Distributed Lag (ARDL) Bounds testing method, our analysis reveals that even modest increases in weather severity can significantly disrupt power service: a 1 m/s rise in wind speed increases average outage duration by 2 to 12 minutes, while a 1 mm increase in precipitation extends outages by 0.3 to 3 minutes. Moreover, both precipitation and wind speed contribute to higher outage frequency, with effects lasting several days following the initial shock.

These results underscore the vulnerability of urban power infrastructure to climate variability and highlight the need for proactive planning strategies. Incorporating such high-frequency, location-specific data into urban resilience planning can inform more robust infrastructure design, targeted maintenance, and emergency preparedness measures. By linking granular empirical evidence to planning practice, this work offers actionable insights for cities seeking to enhance the reliability of critical urban services in the face of climate extremes.

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Keywords: Urban resilience, Power grid reliability, Weather shocks, Infrastructure planning, Global South

WHAT ARE THE COMMUNITY-IDENTIFIED CHALLENGES TO RESIDENTIAL RECOVERY AFTER A HURRICANE?

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Track 3: Environmental Planning
Individual Paper Presentation

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Housing restoration is critical to post-hurricane recovery at both household and community levels, yet limited research has examined how community-level actors perceive the challenges associated with long-term housing recovery. Local officials and representatives of non-governmental organizations (NGOs) play central roles in facilitating recovery, but their insights are often underrepresented in the disaster recovery literature. This study employs a semi-structured interview approach to examine perceived challenges to post-hurricane housing recovery among community-level actors in eastern North Carolina (ENC), a region that has experienced ten major hurricane-related disaster declarations since 1999. In-person field visits were conducted across nine ENC communities, and purposive and snowball sampling techniques were used to identify 21 local officials and NGO representatives involved in housing recovery efforts. Interviews were audio-recorded, transcribed, and analyzed using a two-cycle qualitative coding process to identify recurring patterns and themes. Findings indicate that housing recovery is frequently prolonged, with recovery timelines ranging from six months to six years for single-family homeowners, and up to seven and eight years for renters and mobile homeowners. Four primary themes emerged as key contributors to delayed recovery, including (a) financing constraints, particularly the disparities among housing tenure types, (b) institutional and administrative barriers, (c) storm intensity and magnitude of damage, and (d) workforce and infrastructure limitations.

By foregrounding the perspectives of actors directly engaged in post-hurricane housing assistance, this study provides actionable insights for local governments, planners, and service providers facing similar recovery challenges. The findings deepen understanding of how financial inequities, administrative systems, hazard intensity, and local workforce and infrastructure constraints interact to shape long-term recovery outcomes. More broadly, the study underscores that effective disaster recovery depends not only on financial resources but also on the institutional capacity, physical conditions, and implementation systems that determine whether households can return to stable housing in a timely manner.

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Keywords: Housing recovery, Hurricanes, Eastern North Carolina, Disaster governance

WHEN OFFSHORE WIND GOES ONSHORE: COMMUNITY PERSPECTIVES ON LAND-BASED OFFSHORE WIND SUPPORT INFRASTRUCTURE

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Track 3: Environmental Planning
Individual Paper Presentation

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Offshore wind (OSW) presents an array of potential visual, environmental, spatial, and economic impacts on communities (Haggett, 2008). Discussions of impacts are often focused on their offshore nature (e.g., impacts to marine mammals, fish, and sea birds, the noise and effects of undersea drilling, changes to ecosystem structure and function) or effects on frontline coastal communities, particularly those that may be able to see installed turbines. However, OSW also presents distinct land-use impacts and community impacts that extend beyond the ocean. Manufacturing facilities, workforce development infrastructure, and electrical infrastructure can extend inland, creating important implications for planners that are complicated by the relationship between the industry's on and offshore activities (Retzlaff & LaBleau, 2018). In this paper, we consider onshore impacts of OSW in three communities connected to the industry: New Bedford, Massachusetts; New London, Connecticut; and Turner Station, Maryland. We examine perceptions of OSW development among stakeholders in and adjacent to these communities and the OSW industry to better understand the potential impact of the industry on the communities and the regions they are part of.

These communities each have different relationships with OSW rooted in their individual historic contexts. New Bedford is a commercial fishing port and seafood processing hub that once hosted large whaling and textile industries. Today, the New Bedford Marine Commerce Terminal provides easy access to the ocean for projects like the recently completed Vineyard Wind and the city hosts facilities like the National Offshore Wind Institute and the New Bedford Wind Energy Center. New London similarly once hosted a thriving whaling industry and today its State Pier is home to the only active marshaling terminal on the US East Coast with unobstructed access to the ocean. New London's terminal has supported projects like Revolution Wind and South Fork Wind and the city is home to the Connecticut Wind Collaborative. Lastly, Turner Station is a small community in Baltimore County. The community has a long history with Sparrows Point, once home to Bethlehem Steel. Today, US Wind has plans to redevelop the site into Sparrows Point Steel with the notion of bringing steel back to the area. While not yet built, US Wind plans to create an OSW industrial logistics and fabrication yard, bringing with it the promise of new, long-term manufacturing jobs for Maryland.

We pair community workshop data with a thematic analysis of 61 stakeholder interviews (conducted in 2025) across the three communities to better contextualize the onshore impacts of OSW in communities that will directly host or experience the industry's onshore impacts. We conducted five workshops, which were open to members of the public in each community, while interviews were conducted with residents, advocacy groups, OSW industry representatives, and government officials. These workshops and interviews reveal themes related to equitable outcomes and different types of justice (e.g., distributive, procedural, recognition, restorative, and cosmopolitan justice) as well as the physical (e.g., visual and infrastructure impacts), environmental (e.g., air and water quality), and economic (e.g., local employment and education opportunities) effects of OSW development for individuals, their communities, and their regions. Our findings contribute valuable insight into how stakeholders perceive OSW and its potential onshore impacts within three communities that will host the industry. Considering these stakeholder perspectives can help planners and the OSW industry alike address stakeholder priorities and concerns

throughout the project development process. Doing so can support more equitable project development and outcomes that are better able to meet the priorities of impacted communities.

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Keywords: energy planning, equity, community development, environmental justice

WHEN RISK IS UNEVEN: HOW FLOOD UNCERTAINTY SHAPES WITHIN-REGION RELOCATION DECISIONS

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Track 3: Environmental Planning
Individual Paper Presentation

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This study examines how flood uncertainty affects relocation decisions, using Pinellas County, Florida, a peninsula within a peninsula, as a case study. The county is hurricane-prone, yet locations with similar geographic features can exhibit different flooding outcomes. Here, uncertainty refers to spatial variability in flooding, where some locations repeatedly experience severe impacts while nearby areas remain minimally affected.
To capture this, we compute a low-high contrast index based on the co-occurrence of very low and very high modeled flood recurrence within the same tract. High values indicate neighborhoods where severe impacts coexist with nearby minimally affected areas. We interpret this as within-neighborhood flood heterogeneity, and we compare it with residents' experiences for qualitative support.

We hypothesize that mixed flooding experiences reduce perceived consistency of risk. In such settings, households may view exposure as uneven across short distances and choose destinations that remain hazard-prone but retain valued coastal attributes. This contributes to existing literature where findings on flood experience and risk perception are contradictory: frequent flooding can increase risk perception and motivate protective actions (Kellens et al., 2011; Franklin et al., 2014), yet repeated exposure can also increase familiarity and reduce perceived risk (Duží et al., 2017; Yousaf et al., 2026).

Building on this, we argue that differences in relocation decisions arise not only from individual experiences but also from surrounding flood uncertainty. In spatially homogeneous flooding neighborhoods, residents may develop stronger risk awareness, while in "patchy" neighborhoods, where impacts vary due to hazard proximity (Rana et al., 2020), hurricane dynamics, or local geography, residents may perceive lower risk. They may adopt a mindset of "I might avoid impacts" or rely on coping strategies, leading them to remain in or move within coastal areas.
Thus, flood uncertainty shapes risk perception and, in turn, decision-making. While relocation is driven by multiple motivations, risk perception plays a key role in prioritizing these motivations.

Existing relocation studies are largely motivation-oriented, focusing on why people move across four dimensions: economic, social, risk, and emotional (Seebauer and Winkler, 2020). While flood risk uncertainty is recognized as influential, prior work emphasizes beliefs about hurricane severity rather than place-based likelihood of occurrence. However, nearby observations and experiences influence how people process risk. We argue that flood uncertainty, capturing spatially mixed conditions within neighborhoods, is a critical but underexplored dimension for explaining both decision processes and outcomes.

In high-uncertainty environments, where severe flooding coexists with nearby unaffected locations, residents may underestimate risk or overestimate their chance of avoiding impacts. This may weaken risk-avoidance behavior and lead to more risk-tolerant relocation patterns.

We model relocation safety gain: change in flood risk between origin and destination, as the main outcome. Conditioning on destination characteristics (e.g., distance to coast and destination neighborhood characteristics), we estimate how flood uncertainty affects safety gains by developing directed acyclic graphs step by step and specifying the corresponding Bayesian regressions; furthermore, we examine whether it also shapes destination preferences through a Bayesian simultaneous regression framework.

By incorporating flood uncertainty into relocation models, we aim to better explain and predict within-region relocation patterns, providing insights for urban planning, infrastructure investment, and housing development in coastal areas.

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Keywords: Flood uncertainty, Within-region relocation, Risk perception, Directed Acyclic Graphs

WHERE BEST LAID PLANS GET WAYLAID: ASSESSING THE GREEN INFRASTRUCTURE PLANNING IMPLEMENTATION GAP IN US CITIES

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Track 3: Environmental Planning
Individual Paper Presentation

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Many cities worldwide have ambitious plans to develop green infrastructure to provide a variety of sustainability and resilience benefits. Yet many of these plans are never realized. While an implementation gap is acknowledged in planning generally, and in green infrastructure planning specifically, little empirical work has assessed the scale of unrealized plans or their impact. This study addresses this gap, tracking implementation of green infrastructure projects by analyzing the content of 50 plans from 12 diverse cities across the US through a combination of document reviews, satellite imagery analysis, web searches, and key informant interviews.

The results show that even among trackable projects with clearly defined green infrastructure types and proposed locations in plan documents, only 36% had started construction, with larger cities (population greater than 500,000) having the largest proportion of projects in construction (42%). Findings also indicate that a green infrastructure project is more likely to be implemented when included in a comprehensive plan.

Limited funding, competing priorities, lack of a clearly defined green infrastructure work plan, and staffing shortages emerged as the main obstacles to implementing green infrastructure in US cities. Cities with successful green infrastructure programs such as Tucson, Arizona and Denver, Colorado, suggest potential strategies to overcome these challenges, including diversifying funding sources, implementing green infrastructure regulatory requirements and incentives, and prioritizing new green infrastructure implementation strategies. Furthermore, clearly defined green infrastructure projects and a frequently updated local system for tracking and assessing green infrastructure projects for their benefits were seen as helpful ways to garner public support and increase funding appeal for green infrastructure implementation.

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Keywords: Green infrastructure, Plan implementation, Implementation tracking

WHICH US CITIES INVOKE RIGHTS OF NATURE? WILL IT MATTER?

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Track 3: Environmental Planning
Individual Paper Presentation

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Rights of nature are a growing movement, gaining traction around the world. The United States has followed this trend with rights of nature approaching 200 instances around the nation (Putzer et al., 2022). However, few challenged cases in the United States have stood in court, providing little direct ecological restoration (Putzer et al., 2022). Even in cases where rights of nature prove ineffective in restoration, they may be symbolic, demonstrate a political commitment to environmentalism, or strengthen the sovereignty of guardians over their land, such as Indigenous Peoples (Bonilla Maldonado, 2023; Plowens, 2024). In this way, many see rights of nature as aspirational, not just from the perspective of producing legal enforcement for preservation and restoration, but an ideal that can be adopted and worked towards. In addition, rights of rivers comprise a large portion of rights of nature cases, though rivers function at a larger scale than much of the rights of nature legislation in the United States, which is often confined to cities. Planning research is specifically positioned to explore the nexus of law, environmental justice, and the spatial and social infrastructure producing rights of nature.

This research examines who participates in the rights of nature conversation in the United States and how these partnerships affect the form of legislation introduced. This examination is necessary for discovering if rights of nature cases in the United States further environmental justice by presenting a new avenue for representation and effective regulation for the vulnerable, marginalized or “peripheral” voices. On the other hand, rights of nature in the United States may represent a new form of environmental NIMBY-ism in which primarily cities or communities with means have the possibility to discourage environmental degradation or take honorific stances through rights of nature. This research explores to what extent rights of nature in the United States have included social and cultural considerations, in addition to environmental ones.

To address these questions, I collect a dataset on the rights of nature in the United States including form of legislation, place of legislation, nature included in the right, participating communities and organizations, and the legal text. I further collect spatial and demographic information about jurisdictions that have introduced rights of nature to find trends between communities with rights of nature and commonalities in laws. This extends to a comparison between Indigenous Declarations and other rights of nature. I use text processing for a deep exploration of the legislative texts, finding patterns and outliers in legislation. After this initial fact-finding process, I conduct case studies to gain further context on rights of rivers legislation in the United States as they compare to each other and to legislation in other contexts.

This research adds to discussions on the purpose of rights of nature in the United States, including scale, trends, and sociocultural factors. In particular this work addresses rights of nature’s place in environmental justice within the United States, and what planners and advocates can prioritize to center environmental, representational, and relational inequities (Cano-Pecharroman & O’Donnell, 2024). Planning research on rights of nature continually connects rights of nature to social movements and civil society, rights to the city, and local governance structures (Martínez-Moscoso & Warner, 2026). These community involvements around the world have furthered the ecological purposes of and conversation around rights of nature in their respective locations (Bonilla Maldonado, 2023; Cano-Pecharroman & O’Donnell, 2024; Martínez-Moscoso & Warner, 2026). Rights of nature in the United State may similarly evolve to include a plurality of perspectives and mechanisms to apply rights of nature to a variety of environmental and social needs.

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Keywords: rights of nature, environmental justice, city planning

A BREATH OF FAIR AIR: A COMPARATIVE ANALYSIS OF AIR CORRIDOR GOVERNANCE AND THE RISKS OF GREEN GENTRIFICATION IN PITTSBURGH, STUTTGART, AND ZURICH

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Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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The Urban Heat Island (UHI) effect is the tendency of urban spaces to collect and retain heat in greater intensity than their surroundings. The collected heat traps pollutants, exacerbates health issues, increases energy demand, and accelerates the deterioration of urban infrastructure. As such, it is within the purview of urban planners to ensure that these deleterious effects are minimized. Urban air corridors are increasingly recognized as one of the several essential components of passive climate adaptation infrastructure.

However, due to historical trends in governance and urban planning the intensity of UHI is not evenly distributed, concentrating heat and stagnant air in the most disinvested and often racialized regions of the urban fabric, creating issues of equity as the poorest and most discriminated against are also those set to suffer the most from climate change. Given that the integration of atmospheric science into land-use law remains inconsistent and fragmented, there is the simultaneous risk and opportunity to ensure that air corridor planning can either entrench or ameliorate inequity.

This paper interrogates the governance of air corridors through a comparative analysis of three topographically complex, temperate cities: Pittsburgh (USA), Stuttgart (Germany), and Zurich (Switzerland). The study identifies a central ventilation paradox: while robust regulatory integration significantly improves technical ventilation outcomes, it frequently exacerbates spatial inequality through mechanisms of exclusionary zoning and green gentrification. Utilizing a comparative regulatory analysis, the research evaluates the transition from descriptive climatic mapping to prescriptive zoning mandates.

In Pittsburgh, the analysis reveals a significant regulatory lag; despite high-resolution mapping that illustrates the intersection of historical redlining and contemporary thermal vulnerability in the Hill District, the city relies on incentive-based zoning that fails to protect vital air corridors in low-capital, high-vulnerability basins. In contrast, Stuttgart's legally binding Klimaatlas and Zurich's integrated Ersatzneubauten (replacement construction) protocols demonstrate superior efficacy in institutionalizing urban breathability. However, these models reveal a secondary crisis of equity. In Zurich, mandated climate-optimized volumetric controls act as a catalyst for "green displacement," where older, low-rent housing stock is replaced by high-cost, energy-efficient structures. Similarly, Stuttgart's strict building prohibitions in cold-air drainage zones risk reinforcing exclusionary land-use patterns if they are not coupled with robust social housing protections.

The study concludes that urban climatology must serve as a foundational pillar of the planning process rather than a tangential consideration. To achieve true resilience, air corridor protection must move beyond a "physics-only" approach to incorporate "equity overlays." This paper proposes a framework for Social-Climatic Zoning designed to protect the atmospheric commons without accelerating the displacement of the very residents who most require its cooling benefits.

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Key Words: Climate, Zoning, Gentrification, Policy, UHI

BETWEEN AWARENESS AND ACTION: MUNICIPAL FISCAL VULNERABILITY AND COASTAL FLOODING PRACTITIONER PERSPECTIVES IN THE MID-ATLANTIC UNITED STATES

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Sea-level rise (SLR) and coastal flooding pose well-documented threats to municipal fiscal stability, yet the relationship between practitioner risk perceptions and local institutional readiness remains poorly understood. Existing fiscal analyses have shown that SLR threatens significant property tax revenue in coastal municipalities, but that fiscal dependence on waterfront development often locks communities into continued risk exposure (Shi et al., 2024). At the same time, a global review of 199 coastal cities finds that adaptation remains slow, narrow in scope, and predominantly reactive (Wannewitz et al., 2024). As federal climate action recedes, local governments bear increasing responsibility for equitable resilience, yet the knowledge needed to support local-scale planning and finance remains poorly defined (Best et al., 2025). Recent work has examined practitioner needs for addressing SLR challenges (Hirschfeld et al., 2024) and socio-demographic disparities in familiarity with adaptation strategies (Wang, 2025), but few studies have systematically linked practitioner risk perceptions to the fiscal and institutional readiness of coastal local governments.

This paper addresses that gap through a survey of 58 coastal flooding practitioners in New Jersey, Maryland, and Delaware, conducted as part of a National Science Foundation-funded study on municipal fiscal health and climate adaptation. Respondents included local government officials and planners, state agency staff, consultants, and non-profit professionals with direct experience working on coastal flooding issues. The survey examined perceptions of fiscal risk, barriers to adaptation, the current state of planning practice, and gaps in available resources.

Findings reveal a critical awareness-readiness gap: 79% of respondents identified sea-level rise as a significant fiscal risk to their communities, yet only 16% believed their local government was prepared to manage those impacts. Practitioners rated infrastructure repair and replacement costs, long-term maintenance burdens, and rising insurance premiums as the most severe near-term fiscal threats. When asked about barriers to action, financial resource constraints and short-term political thinking dominated, far outranking technical knowledge or data gaps. Most coastal communities remain in early planning or assessment stages, with fiscal strategies heavily dependent on external grant funding rather than locally generated revenue tools. These findings suggest that the primary obstacles to coastal fiscal resilience are structural and political rather than informational, pointing to the need for expanded local fiscal capacity, sustained political commitment, and stronger state-level regulatory frameworks to support adaptation at the scale required.

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Key Words: climate resilience, planning practice, fiscal capacity, survey

BEYOND RESIDENTIAL HEAT RISK: COMMUTING MOBILITY AND HEAT EXPOSURE INEQUALITY IN A MEGACITY

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Research-in-Motion Presentation, Research currently in process

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Urban heat exposure inequality is a growing concern in climate adaptation, environmental justice, and urban planning. However, most existing studies still rely on residential location as a proxy for exposure, assuming that where people live adequately represents the heat risks they experience. This assumption is increasingly problematic in highly mobile megacities, where commuting and daily movement reshape environmental exposure across space and time. As a result, residential-based assessments may underestimate or misidentify who bears the greatest heat burden.

This study addresses that gap by examining how commuting mobility produces additional heat exposure inequality beyond residential conditions. Building on the Neighborhood Effect Averaging Problem (NEAP), we argue that mobility does not simply average exposure across the city; it can also generate systematic deviations from expected residential exposure patterns. To capture this process, we introduce Beyond-NEAP Exposure (BNE), a new indicator that measures the excess heat exposure associated with mobility after accounting for the citywide averaging relationship between Residential Heat Exposure (RHE) and Mobile Heat Exposure (MHE). BNE therefore reveals the hidden inequality generated through everyday mobility.

Using Shanghai as a case study, we integrate hourly high-resolution land surface temperature reconstruction with anonymized mobile phone signaling trajectories during a typical summer workweek (9–13 August 2021). This allows us to track heat exposure dynamically along individuals' daily movement paths rather than assigning exposure only to their residential location. We then apply an interpretable LightGBM–SHAP framework to identify the key behavioral, socioeconomic, and built-environment drivers shaping BNE and to reveal their nonlinear effects.

The results reveal three main findings. (1) At the aggregate level, RHE and MHE exhibit a strong linear relationship, confirming a clear NEAP averaging effect: mobile heat exposure generally follows residential heat exposure, but with a compressed range. Yet this apparent convergence masks substantial deviations. BNE reveals that mobility-driven inequality is not concentrated in the hottest urban cores themselves, but is most pronounced in commuting transition zones surrounding the urban center and major new towns. By contrast, city-center cores and employment–housing balanced new towns show relatively low BNE, suggesting that spatial proximity and urban integration can mitigate excess heat burden. (2) Commuting behavior is a decisive mechanism behind excess heat exposure. Longer commuting distance, longer travel time, and more time spent away from home all significantly increase BNE, while greater diversity in activity space provides a buffering effect. This shows that heat inequality is not only about where people live, but also about how far, how long, and how rigidly they move through the city each day. (3) Social and spatial structure further condition this inequality. High-rent areas and core working-age populations around age 35 face elevated BNE risks, while functionally mixed and moderately compact built

environments are associated with lower BNE. In particular, greater POI diversity and moderate development intensity help reduce excess exposure, highlighting the value of accessible, mixed-use, and balanced urban form.

Overall, this study shows that urban heat inequality is not merely a residential outcome, but a dynamic process shaped by commuting mobility, social stratification, and urban spatial structure. For climate-adaptive planning, mitigating heat inequality requires going beyond neighborhood cooling alone to also address jobs–housing balance, commuting pathways, and the spatial organization of daily activities.

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Key Words: Heat exposure inequality, Commuting mobility, Dynamic exposure, Environmental justice, Climate-adaptive planning

BEYOND SINGLE HAZARDS: UNDERSTANDING PREPAREDNESS THROUGH A MULTI-HAZARD LENS

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Research-in-Motion Presentation, Research currently in process

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Communities rarely face hazards in isolation. Instead, they confront overlapping and interacting climate threats that compound risk and strain response capacity. Yet we know surprisingly little about how lived experience across multiple hazards translates into concrete preparedness actions for specific events. Addressing this gap is essential for designing more effective risk communication and adaptation strategies in a changing climate. This study examines how familiarity with diverse climate hazards—such as wildfires, droughts, extreme cold, and heatwaves—shapes mitigation intentions for tropical cyclones among Spanish-speaking populations in the United States. Drawing on a nationwide survey of 640 respondents, we analyze how prior exposure to multiple hazards influences preparedness decisions under two hurricane scenarios (Category 3 and Category 5). While the broader survey explored understanding of tropical cyclone communication and AI-assisted translations of National Weather Service messages, this analysis focuses specifically on behavioral intent as a function of hazard experience. Respondents reported their likelihood of undertaking protective actions, including installing shutters, securing supplies, refueling vehicles, relocating valuables, and evacuating. The survey also captured experience and perceived familiarity across sixteen hazards, six of which were weather-related.

Preliminary findings show that individuals familiar with a wider range of weather extremes report stronger mitigation intentions across both hurricane scenarios, particularly for proactive measures such as evacuation and emergency supply acquisition. In contrast, those with limited hazard familiarity exhibit weaker responses and less differentiation between moderate and extreme storm conditions. These findings highlight the role of cross-hazard learning and suggest that prior experience with diverse climate events can mediate the relationship between hazard exposure and preparedness behavior. By advancing a multi-hazard perspective, this study provides insights for improving risk communication and developing culturally responsive adaptation strategies for linguistically diverse communities.

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Key Words: Multi-hazard perspective, Risk perception, Mitigation, Hazard Experience, Hazard Familiarity

CHRONIC BUILDING DETERIORATION UNDER CLIMATE CHANGE: USING AGE PREDICTION FROM MULTIMODAL SATELLITE IMAGERY AND DEEP LEARNING

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Climate change has become a global challenge, characterized by increasing variability in precipitation, rising temperature extremes, and a growing frequency of natural disasters. Under these conditions, buildings and infrastructure are subjected to increased environmental stress, leading to accelerated deterioration and shortened service life. Such damage primarily occurs in exterior walls and roofs that are more directly exposed to climatic conditions, presenting as corrosion or physical damage (Rincon et al., 2024; Wang et al., 2024). These risks may be further exacerbated because buildings are designed based on past climate conditions that no longer represent future realities. Therefore, understanding the rate and pathways of building deterioration under future climate change is essential for reliable infrastructure planning.

Recent studies have employed remote sensing technologies to assess building damage at high spatial resolution over large areas (Wang et al., 2024). In addition, advances in AI have enabled automatic feature extraction, facilitating the application of machine learning and deep learning in building damage prediction (Xia et al., 2023; Yu et al., 2024). These approaches detect the extent of building damage by comparing satellite images acquired before and after disaster events such as earthquakes. However, existing studies have primarily focused on disaster-induced damage, whereas research examining chronic building deterioration driven by gradual changes in underlying climatic conditions remains limited. Furthermore, although multimodal data fusion is required to overcome the limitations of individual types of satellite imagery, the integrated use of multiple sensors has not yet been widely adopted (Rincon et al., 2024; Wang et al., 2024).

Against this backdrop, this study aims to evaluate the impact of climate change on building deterioration, and to develop a building age prediction model using satellite imagery and deep learning techniques. We address the gap in the existing literature by investigating chronic building damage driven by climate change rather than damages from discrete disaster events. Jointly utilizing optical and Synthetic Aperture Radar (SAR) imagery, we capture both visual and structural aspects of deterioration to achieve these objectives. Our analysis covers the entire territory of South Korea from 2017 to 2024. This period allows consistent availability of optical observations from Sentinel-2A/2B and SAR observations from Sentinel-1A, making it suitable for multimodal time-series analysis.

Specifically, this study adopts a two-stage analytical framework. In the first stage, we build a deep learning model that estimates building age by major construction material using the satellite imagery. To achieve this, we employ a dual-branch architecture that encodes Sentinel-2 and Sentinel-1 separately. We then train a multitask-model to perform age regression and material classification simultaneously, thereby integrating visual cues of deterioration captured by optical imagery with structural scattering characteristics reflected in SAR data. In the second stage, we analyze the relationship between climate exposure and a deterioration index, defined as the material-specific standardized difference between the predicted and actual building ages. To do so, we use a generalized additive mixed model that accounts for nonlinear climate effects while including spatial and material-level random effects. Climate exposure variables include long-term indicators such as mean temperature, relative humidity, precipitation, extreme heat days, and temperature variability. By proposing this framework, we move beyond disaster-focused approaches and provide insights into monitoring chronic building deterioration under climate change and developing efficient maintenance strategies.

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Key Words: Climate Change, Building deterioration, Remote Sensing, Deep learning, GAMM

CLIMATE MIGRATION, HOUSING MARKETS, AND EQUITY: DID HURRICANE-INDUCED MIGRATION FROM FLORIDA LEAD TO RENT INCREASES IN ATLANTA?

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As climate-related disasters intensify, hurricane-induced displacement is emerging as a structural driver of internal migration in the United States. The fall 2024 hurricane season, with Hurricanes Helene and Milton tearing through Florida's Gulf Coast, triggered significant out-migration from affected counties, with Atlanta emerging as a primary receiving destination. Pinellas County alone lost nearly 12,000 residents, and U-Haul data confirms Georgia, led by Atlanta, as the top relocation destination for Floridians in the first half of 2025 (U-Haul, 2025). Meanwhile, Dwellsy IQ data shows Atlanta had the highest year-over-year apartment rent growth at 5.8% in the last quarter of 2025, a striking reversal from -3.9% growth in the last quarter of 2024 (Cunha, 2026). This timing raises a critical question for climate policy: are hurricane migrants driving housing costs beyond the reach of existing residents, or are broader economic forces to blame? As climate displacement accelerates, understanding these market dynamics is essential for preventing climate adaptation from becoming a zero-sum game that displaces the most vulnerable. This study examines whether census tracts in Atlanta receiving disproportionately high concentrations of Florida hurricane-displaced migrants experienced faster rent growth than comparable tracts with lower Florida in-migration, and whether any such effects fall disproportionately on minority and lower-income communities.

We employ a two-way fixed effects difference-in-differences (DiD) design at the census tract and month level, setting Hurricanes Helene and Milton as a source of identifying variation. Treatment is defined as Atlanta census tracts receiving high Florida in-migrant flows post-October 2024, constructed from Infutor individual-level address history data, which enables estimated move timing, origin county identification, and destination tract assignment. Outcome variables drawn from Dwellsy rental listings data include rent per square foot, listing volume, and days on market. Tract and month fixed effects absorb neighborhood characteristics and temporal trends respectively, while time-varying controls, such as mortgage rates, employment growth, construction permits, non-Florida in-migration, and tract-level sociodemographic characteristics, isolates the effect specific to migration affected by the hurricanes. To address potential endogeneity from migrants self-selecting into already-popular tracts, we supplement the DiD with propensity score matching on pre-treatment rent trends and housing market characteristics. In addition, we examine whether these effects compound existing inequities by testing if climate migration accelerates green gentrification along Atlanta's Beltline corridor and disproportionately displaces Black and Hispanic renters (Immergluck & Balan, 2018; Rigolon & Németh, 2020).

This research contributes to emerging literature on climate migration and housing markets by providing tract-level causal analyses linking hurricane-displaced migration flows to rental price increases in a major receiving city. We extend the literature with two main contributions. First, we test whether climate migration compounds existing green gentrification pressures by examining heterogeneous rent effects in Beltline-adjacent tracts, a compounding dynamic with no precedent in the climate migration literature. Second, we examine racially heterogeneous effects in receiving tracts, asking whether Florida climate migrants, demographically distinct from prior disaster migration cohorts as higher-income, disproportionately accelerate displacement of Black and Hispanic renters in Atlanta's historically minority neighborhoods (Raymond et al., 2021). Findings will inform equitable housing policy as climate-driven displacement accelerates, with direct relevance to Atlanta's ongoing housing affordability challenges and question of who bears the cost of climate adaptation.

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Key Words: Climate Gentrification, Climate Migration, Housing Affordability, Receiving Communities, Rent Prices

COMMUNITY ENERGY FUTURES: STUDYING SOCIAL DYNAMICS IN MICROGRID ENERGY SHARING THROUGH INTERACTION DESIGN

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Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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The transition to sustainable energy is one of the paradigmatic challenges of the 21st century, unfolding at multiple scales and with implications for community resilience and engagement in energy decisions. In 2024, residents of Ann Arbor voted to create a community-owned Sustainable Energy Utility (SEU). This is an effort to produce and operate an opt-in energy utility that provides 100% renewable energy from local solar and battery systems to participating homes and businesses. The goal of the SEU is to produce and transmit energy through a community-owned utility that operates in parallel with existing centralized energy production and distribution. Early plans suggest integrating Virtual Power Plants (VPPs), which use centralized algorithms to aggregate distributed assets and optimize generation, storage, and consumption. While VPP's offer the potential for optimization of the renewable energy load, it also opens up questions about the degree to which energy decisions should be relegated to algorithmic control (and at what scale).

Distributed energy resources offer a viable path to reducing energy-related carbon emissions. However, small-scale energy networks have yet to take hold in the United States, not due to technical feasibility, but rather to a lack of adoption. There is a gap in research supporting household preferences for models of energy production, collaboration, sharing, and/or buying and selling energy. How might neighbors and local businesses work together to form new coalitions for energy production and sharing through microgrids that differ from the market paradigm? Who will decide what counts as "surplus" energy and what should be done with it? During outages, how will microgrid participants choose whether to sell, share, or trade energy? To whom? To what extent should the distribution of stored energy be determined by quotas, by purchasing power, or by algorithmic optimization? Specific instantiations of policy and technology will shape social outcomes for community resilience and sustainability.

A team of researchers and students from the Urban Technology program at the University of Michigan and the Design, Technology, and Society program at Michigan State University is studying these questions. The team is using mixed methods, including designing and developing digital interfaces to model various energy decisions, to study microgrids as social phenomena. The research translates theories of sociotechnical transitions and sharing economies in clean energy systems into tangible interactions that are being tested with residents to study perceptions, preferences, and concerns, offering community-supported pathways to adoption of new local energy systems.

The project aims to anticipate policy and technology decisions that will shape social interactions through microgrid scenarios. These scenarios are being developed from stakeholder interviews and desk research on emerging Distributed Energy Resource (DER) technologies, and are then translated into interactive prototypes to conduct studies with residents who make household energy decisions. The research is using community-engaged methods to understand how Ann Arbor residents would prefer to see microgrids implemented in the SEU. The digital prototypes being designed for this research visualize multiple possible microgrid scenarios, making those scenarios

experiential through interactions with decisions to be made. Participants use the prototypes to make decisions about joining a microgrid, sharing energy during outages, and sharing information with others in the microgrid, all while attempting to maintain clean energy resilience and limit costs and communal friction. The study aims to suggest potential policy implementations, to offer new strategies for technical development based on social preferences, and/or model economic incentives based on the study's findings for local residents' preferred pathways to energy production and collaboration.

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Key Words: Energy, Sustainability, Community Engagement, Resilience, Microgrid

COMPOUND HEAT AND AIR POLLUTION HAZARDS IN THE UNITED STATES: IMPLICATIONS FOR ENVIRONMENTAL JUSTICE AND PLANNING

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Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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Climate change and air pollution are increasingly interacting in ways that create compound risks for cities, regions, and vulnerable communities, yet planning practice and environmental governance still tend to address extreme heat and poor air quality separately. This study examines the spatiotemporal patterns and environmental drivers of compound heatwave and air pollution hazards across the United States using hourly observations of temperature and six major air pollutants from EPA monitoring stations. We first evaluate station level temperature and pollution relationships, then identify daily compound hazard events, and finally assess how meteorological, natural, built, and social conditions shape both hazard frequency and temperature pollution coupling.

The results show that compound hazards are unevenly distributed across space and pollutant type. Heatwave-ozone emerges as the most widespread and persistent compound hazard, with prominent hotspots in California, the Southwest, the Great Lakes region, and the Northeast corridor. Compound PM2.5 and PM10 hazards are more spatially concentrated, while NO2 hazards cluster more strongly in urbanized regions. Across contexts, urban stations and places with higher structural racism effects generally experience higher compound hazard frequency, especially for PM10 and NO2, revealing durable environmental inequality in exposure to multihazard risk. Sensitivity tests further show that the main spatial and social patterns are robust to alternative hazard definitions, although the long-term trend for heatwave-ozone differs substantially under WHO versus EPA air quality standards, suggesting that current regulatory benchmarks may understate emerging public health risk.

For planning, these findings shift the conversation from single-hazard management toward place-based multihazard governance. The study shows that compound climate and air quality risks are shaped not only by regional climate but also by urbanization, built environment conditions, and sociospatial inequality. This has direct implications for climate adaptation, environmental justice, land use planning, and urban public health policy, particularly in metropolitan regions where heat, emissions, and vulnerable populations are concentrated. By identifying where compound hazards concentrate and which contextual factors are associated with higher risk, this research provides an empirical basis for more integrated and equitable planning interventions.

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Key Words: Environmental hazard, Compound events, Multi-hazard coupling, Public health, Environmental resilience

COMPOUND URBAN INFRASTRUCTURE CRISES: EMERGING PROPOSITIONS AND METHODS FROM CASES IN THE UNITED STATES AND EUROPE

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Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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This presentation presents an emerging approach for analyzing and comparing the multifaceted solutions cities are adopting in response to the challenge of compound urban infrastructure crises, which include green infrastructure / nature-based solutions and community centered methods for climate preparedness that advance equity. We draw on three concepts from an existing research framework (Westman et al., 2021): unsettlement or the ways in which socio-ecological systems produce uncertain feedbacks and disrupt everyday patterns of life, unbounding as crises span different scales leading to emergent interactions and framings of crises, and unevenness, which focuses on the differences in how groups experience and respond to compound urban crises often because of systematic inequality in infrastructure provision and embedded vulnerability. We extend this framework to cases from recently completed research in the United States (Rosan et al., 2022; Wheeler & Rosan, 2021; Malloy et al., 2022; Ashcraft & Rosan, 2022) and to current, new directions. One new direction (in review) analyzes flooding, sewer overflows, sea level rise and infrastructure, community-based and equity responses in Philadelphia. Another new direction extends this research to European cases, such as Barcelona's affordable housing and climate justice initiatives and Berlin. Based on our synthesis of this work, completed and preliminary, we propose that policy and planning processes must be informed by community-driven data collection, an equity index helps target solutions to provide intersectional benefits, and regional, asset-based approaches that coordinate planning across jurisdictions mobilize greater resources and capacity to help communities and cities prepare for compound urban crises. We present experiences with engaged methods, such as community walk audits and a software application that residents can use to visualize and document their current neighborhood concerns, what we term the "struggle space" (Rosan et al, 2022), such as housing, air pollution, urban heat islands, energy costs, schools, gun violence, vacancy, trash and illegal dumping. Our approach aims to provide the basis for a case study database of responses to compound urban crises.

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Key Words: Urban, Infrastructure, Crisis, Climate, Community

ENVIRONMENTAL JUSTICE FUTURISM AND THE SANKOFA PLANNING PROCESS: A CRITICAL CONCEPT AND METHOD FOR OPTIMISTIC, COMMUNITY CENTERED, PLANNING

Abstract ID: 2296.0.0.969.2026
Track 3: Environmental Planning
Research-in-Motion Presentation, Innovative practices, concepts, and ideas for pedagogy

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The 2023 IPCC report recommends "adaptation and mitigation actions that prioritize equity, social justice, climate justice, rights-based approaches, and inclusivity, lead to more sustainable outcomes, reduce trade-offs, support transformative change, and advance climate resilient development." (Calvin et al 2023, 31) Based on the societal zeitgeist expressed by ecological anxieties (Robbins and Moore 2013) and environmental pessimism Doyle and Hao 2025) often masquerading as realism, and in response to the 2023 IPCC report, we, the authors, believe there is a need for a paradigm shift away from the dystopian and towards new visions of an optimistic future. Thus, we introduce the Environmental Justice Futurism (EJ Futurism or EJF) concept, accompanied by the Sankofa Planning Process (SPP). EJ Futurism recalibrates the traditional EJ focus (Pellow 2017), what we deem is a necessary pivot, from the fight against environmental injustices, to the fight for environmentally and socially just futures. The SPP, rooted in a Sankofa approach, supports a visioning process that encourages and centers marginalized cultural, historical, and ecological knowledges, and speculates on how they can be harnessed for just environmental outcomes. Guided by the 17 EJ Principles for a foundational philosophy and ethical guardrails, the SPP serves as the platform for a novel backcasting practice that explores possible futures and works to operationalize them. We believe the EJ Futurism concept, operationalized by the Sankofa Planning Process (SPP), has broad applicability in planning, education, and research.

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Key Words: Environmental Justice, Sankofa, Optimistic Futures, Community Centered, Backcasting

EVALUATING DISASTER RECOVERY PLANS FOR LONG-TERM DISPLACEMENT MITIGATION: A CASE STUDY OF SONOMA COUNTY, CALIFORNIA

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Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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Sonoma County, California, experienced three deadly megafires between 2017 and 2022, devastating both urban and rural areas. Sonoma County has faced an uneven housing and economic recovery. Sonoma County faces a critical need to integrate the difficult lessons learned from recovery into long-term climate resilience strategies and to understand how these dynamics impact urban and rural spatiality in the county. Using Sonoma County as a case study, I utilize the Plan Integration for Resilience Scorecard (PIRS) to evaluate climate risk mitigation efforts since the implementation of Sonoma County's 2018 Recovery and Resiliency Framework, 2021 Sonoma County Multi-Jurisdictional Hazard Mitigation Plan, and 2023 Sonoma County Community Wildfire Protection Plan. I utilize publicly available GIS datasets to visualize environmental, infrastructure, and emergency services recovery and preparedness efforts.

My analysis examines how post-disaster plans are relevant to long-term disaster displacement risk mitigation. Using PIRS, I assess the strengths and weaknesses of the assessed plans and how they change over time, and their applicability to better mitigate future displacement risk. This comparison enables an analysis of the disparities in urban and rural displacement, interagency coordination in plan development and implementation, the ability to respond adequately to future large wildfires and other natural hazards, hazard risk communication, top-down vs. collaborative community approaches, and Sonoma County's ability to balance short-term recovery needs with necessary long-term climate risk adaptation and mitigation measures. I use min-max percentages to standardize the scoring of plan elements and themes, justifying each element. I find a major lack of consideration for future wildfires and ensuring the return of temporarily displaced residents across the assessed plans. These divergent findings indicate different priorities in recovery, leading to windows of opportunity and lessons learned.

This research highlights the importance of examining the urban-rural divide in a post-wildfire recovery context, where post-disaster plans have been evaluated against existing climate hazards, and the county must prepare for future natural hazards. Policy, practice, and strategy recommendations are offered as part of this research. This transference of knowledge to action through a case study of both urban and rural areas provides a model for understanding disparities in wildfire recovery and identifies areas for improvement.

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Key Words: Wildfire, Disaster recovery, Plan evaluation, Urban-rural divide, Displacement mitigation

EVALUATING FEDERAL SUPPORT FOR LOCAL EXTREME HEAT RESILIENCE

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Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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PLANNING ISSUES AND RESEARCH QUESTIONS

While extreme heat is among the deadliest consequences of climate change, local adaptation planning for heat has typically lagged behind other hazards. Resource constraints are a key factor in planning for climate adaptation (Nordgren et al., 2016), and cities seeking to expand their heat planning and implementation must navigate a fragmented landscape of resources – many of which were not designed with heat specifically in mind (Keith et al., 2021). Heat has also emerged onto planners' agendas later than other hazards and, unlike floods or wildfires, rarely causes visible infrastructure damage – making it harder to document losses and access traditional mitigation and disaster-recovery programs.

This research addresses a gap in the literature on climate governance by systematically assessing the federal resources available to local governments for heat resilience planning across a range of intervention types, exposure settings, and target populations. Our central research questions are: (1) What federal resources exist to support local heat resilience, and (2) how well do they align with local communities' needs related to the most common heat interventions, heat exposure settings, and equity goals?

APPROACH AND METHODOLOGY

We conducted a content analysis of documents for 49 federal programs available to local governments between January 2020 and January 2025 that provided funding, technical assistance, data and tools, and/or evaluation support. We created a coding scheme based on previous scholarship related to local planning for heat (Gabbe et al., 2021; Keith et al., 2023; Turner et al., 2022), and identified additional topics from the U.S. National Heat Strategy and California's State Heat Action Plan. The analysis identified characteristics related to lead and support federal agencies, eligible recipients, resource types, heat-related topics, exposure settings, and equity and vulnerable population identification. After all documents were coded by a trained researcher, we used NotebookLM to identify disagreements, which were subsequently resolved through discussion with the full research team.

FINDINGS

Preliminary results show that federal heat resources were fragmented across agencies within the National Integrated Heat Health Information System (NIHHIS) network, and many programs addressed heat only indirectly rather than as a primary hazard. Of the 49 federal programs analyzed, the majority provided funding (n=29), while roughly one-third offered technical assistance and capacity building or tools and data (both n=16). Programs addressed a range of topic areas, with heat-specific planning (n=11) and weatherization (n=10) most common, followed by heat education and outreach (n=9), urban forestry (n=8), and early warning systems (n=6). Most programs (n=34) included an equity component. Cities and counties were eligible for a similar share of programs (n=34 and n=33, respectively), while state governments were eligible for fewer (n=17).

There are notable gaps relative to local needs – particularly programs that treat heat as a primary hazard, support residential interventions, or explicitly target vulnerable populations such as people experiencing homelessness, outdoor workers, and elderly residents.

RELEVANCE AND IMPLICATIONS TO PLANNING SCHOLARSHIP AND PRACTICE

This research contributes to planning scholarship on climate governance, where federal-local alignment has received growing attention but the specific landscape of heat resources has not been systematically analyzed. To address this gap, this analysis is part of a broader mixed-methods study that includes interviews with local planners and policymakers in California about their experiences accessing and using these resources. For planning practice, understanding what is available – and what is missing – is essential for local officials, advocates, and federal agency staff seeking to strengthen local heat resilience.

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Key Words: climate adaptation, adaptation planning, extreme heat, climate governance, hazard mitigation

LONGITUDINAL SPATIAL DISPARITIES IN FLOOD INSURANCE UPTAKE: A NATIONAL ANALYSIS OF NFIP COVERAGE USING THE SPATIAL DURBIN MODEL

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Research-in-Motion Presentation, Research currently in process

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Identifying the relationship between sociodemographic factors and National Flood Insurance Program (NFIP) uptake rates is crucial for disaster resilience and environmental justice, as it helps prepare for future flood impacts and reduce spatial disparities in insurance coverage. While prior research has identified disparities in flood insurance participation, existing studies are largely cross-sectional, limited to specific regions, and rarely examine whether these disparities are widening or narrowing over time. This study addresses that gap by analyzing how the sociodemographic predictors of NFIP uptake rates change across multiple time periods at the census tract level for the contiguous United States, using FEMA's NFIP Redacted Policies dataset paired with American Community Survey (ACS) 5-year estimates. To construct a longitudinal measure of coverage, we identified unique properties across policy records by matching on a set of building-level attributes (census tract, occupancy type, geographic coordinates, original construction date, and number of floors), ensuring that renewals and ownership transfers for the same structure are not double-counted. Census tract boundaries were harmonized to 2020 GEOIDs using NHGIS crosswalk files to ensure consistency across time periods. Uptake rates were calculated as the ratio of active policies to total housing units.

The study includes socioeconomic, demographic, housing, and spatial characteristics as independent variables: median household income, median age, racial and ethnic composition (percent Black, Asian, other race, and Hispanic), educational attainment (percent college-educated), homeownership rate, vacancy rate, median home value, median year of housing construction, and population density. Spatial and geographic factors include urbanization classification (RUCA codes), coastal location, the share of properties in Special Flood Hazard Areas (SFHAs), and average Community Rating System (CRS) discounts. Using a Spatial Durbin Model (SDM) with state fixed effects and standardized independent variables, we estimate separate models for each ACS period and compare results across time to assess whether sociodemographic disparities in uptake are increasing, decreasing, or stable.

Preliminary results from 2020 to 2024 demonstrate the importance of accounting for spatial dependence: the SDM substantially outperformed OLS (AIC reduced from 213,913 to 175,731), and the spatial dependence parameter was highly significant (rho = 0.709, $p < 0.001$). After applying the SDM, spatial autocorrelation in the residuals was effectively eliminated (Moran's I dropped from 0.531 to -0.068). Among the spatial impact estimates, SFHA coverage (direct = 0.560, indirect = 0.193, total = 0.754, $p < 0.001$) emerged as the strongest predictor of uptake. Compared to urban areas, suburban and rural areas had significant negative effects in both direct and indirect effects. Coastal tracts had significantly higher uptake rates than non-coastal tracts (direct = 0.531, indirect = 1.043, total = 1.573, $p < 0.001$). The average CRS discount rate, educational attainment, vacancy rate, and residents' median age showed significant positive effects in both direct and indirect impacts; median household income and homeownership showed positive direct effects. Notably, the percent Black population exhibited a negative direct effect (-0.061, $p < 0.001$) but a positive indirect effect (0.146, $p < 0.001$), indicating that higher Black population shares are associated with lower uptake within a tract but positive spillover from neighboring tracts. These findings highlight persistent spatial inequities in flood insurance participation and underscore the need for targeted, place-based policy interventions that account for both local and spillover dynamics. Extending this analysis across earlier

ACS periods will reveal whether these relationships have strengthened, weakened, or remained stable over the past decade and a half.

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Key Words: NFIP, Flood risk, Disaster resilience, Environmental justice, Spatial disparity

MISMATCH BETWEEN NUTRIENT POLLUTION AND ENVIRONMENTAL GOVERNANCE IN IOWA'S WATERSHEDS

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Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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Nutrient pollution is the leading cause of surface water degradation in the United States, driven primarily by agricultural nitrogen and nitrate runoff. In Iowa, where surface water is a key drinking source, nitrate levels rank among the nation's highest, with about 80% of contamination originating from agricultural activities. Since 2023, Iowa has second highest new cancer cases nationally and remains among the few states with rising incidence. Nitrate has been identified as a key cancer risk factor, and notably, 80% of the 25 counties in Iowa with the highest cancer rates are rural. Yet this crisis reflects more than biophysical processes; nutrient pollution constitutes a wicked planning problem, as its persistence reveals the limitations of conventional command-and-control regulation and the localized complexity of diffuse agricultural sources. While the Clean Water Act has effectively reduced point-source pollution, it has failed to control agricultural nutrient runoffs. Many agriculturally intensive areas in the Midwest remain under-monitored or unmonitored entirely, creating mismatches between nutrient risks and governance capacity. This governance-risk mismatch ultimately represents a spatial planning challenge, demonstrating the ineffectiveness of a one-size-fits-all governance approach. As nutrient pollution patterns are spatially uneven and region-specific, they necessitate targeted, location-specific governance aligned with the problem's scale and distribution.

Against this backdrop, this study aims to examine how governance–scale mismatches and spatial variability shape the nutrient pollution management in Iowa watersheds. Specifically, the study asks: (1) how do governance arrangements across different spatial and institutional scales influence nutrient pollution management in spatially heterogeneous watersheds, and (2) to what extent do monitoring gaps in agriculturally intensive regions create mismatches between nutrient risk and governance capacity, and how do these mismatches affect water quality outcomes?

This study adopts a mixed-methods empirical approach to examine nutrient pollution and governance mechanisms in Iowa watersheds. The analysis proceeds in three steps at the HUC-08 watershed scale. First, nutrient pollution patterns are assessed using GIS-based spatial analysis and multiple linear regression modeling to identify high-risk watersheds and key drivers of nitrate concentrations. Spatial datasets on nitrate concentrations, agricultural land use, wetland extent, and monitoring station density are compiled and normalized to a common scale to ensure comparability. Second, governance systems are analyzed through semi-structured stakeholder interviews among 25 water resource managers in high-risk watersheds and a qualitative coding-based assessment to evaluate institutional capacity, coordination, policy implementation, and gaps in monitoring. Finally, the two components are integrated in a Hydrologic Risk and Governance Mismatch Index (HRGMI) to identify mismatches between nutrient risk and governance capacity, highlighting areas where governance responses are insufficient relative to pollution intensity.

Findings indicate that the highest governance–risk mismatches are concentrated in agriculturally intensive watersheds, where elevated nitrate levels coincide with low monitoring density and fragmented institutional coordination. This highlights a central challenge for environmental planning: the need to design flexible, multi-

scalar, and context-sensitive governance approaches that can respond to the spatial complexity of nutrient pollution.

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Key Words: Nutrient Pollution, Water Governance, Risk-Governance Index, Iowa, Watersheds

PERCEPTIONS OF MANAGED AQUIFER RECHARGE: WATER SECURITY AND AGRICULTURAL ADAPTATION IN ISRAEL AND JORDAN

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Theoretical Context and Questions

Groundwater depletion is one of the most pressing water security challenges of the 21st century, particularly in arid and semi-arid regions where agricultural demand is high and surface water supplies are limited or politically constrained (Siebert et al., 2010; Döll et al., 2012). Managed Aquifer Recharge (MAR) — the deliberate replenishment of aquifers using excess surface water, treated wastewater, or stormwater runoff — has emerged as a technically viable strategy for improving water security in water-stressed agricultural contexts (Dillon et al., 2019). Yet adoption at scale depends not only on technical feasibility or policy frameworks, but critically on the knowledge, attitudes, and adaptive capacity of farming communities who would implement and benefit from such systems.

The views and perspectives of potential water users are known to influence reuse technology adoption at the domestic level and beyond (Fielding et al., 2019; Smith et al., 2018), and the surrounding socio-economic and institutional framework — encompassing cultural-cognitive, normative, and regulative dimensions — shapes whether widespread adoption is achievable (Goulden et al., 2018). This explains why, despite growing interest in MAR as a climate adaptation tool, farmer awareness, trust, and willingness to engage remain poorly understood, particularly in the politically complex, water-scarce Middle East. Our research asks two core questions: what is the current state of farmer awareness and perception of MAR in Israel and Jordan, and what factors — institutional, economic, cultural, and hydrological — shape openness to adoption?

Approach & Methods

We employ a survey-based mixed methods approach across two national contexts to capture quantitative patterns and qualitative nuance in farmer perceptions. Structured questionnaires were administered to farming communities in Israel and Jordan, targeting regions with documented groundwater stress and varying degrees of existing water management infrastructure. Survey instruments assessed respondent awareness of MAR concepts, current water management practices, trust in institutions, perceived water security, and openness to new technologies. Surveys were conducted in Hebrew and Arabic and developed in close collaboration with in-country partners to ensure cultural validity.

Responses were analyzed using descriptive statistics and regression modeling to identify socioeconomic, geographic, and institutional predictors of MAR receptivity. Qualitative open-response items were coded thematically to surface contextual factors not captured by structured items. The two-country comparative design enables examination of how policy contexts, water governance systems, and farming community characteristics shape perceptions across a shared hydrological region marked by common challenges and very different institutional histories.

Preliminary Findings and Contributions

Results reveal significant variation in MAR awareness and perceived feasibility both within and between the two countries. While a majority of respondents in both Israel and Jordan acknowledged worsening water conditions

and concern about long-term agricultural viability, awareness of MAR as a specific intervention remained low, particularly among smallholder farmers with limited access to extension services. Trust in government water institutions was a significant predictor of openness to MAR adoption in both contexts, though its nature and drivers differed markedly between countries.

These findings contribute to a growing literature on the social dimensions of water technology adoption and highlight the importance of farmer-centered approaches to MAR planning. They also offer practical implications for policymakers and practitioners seeking to scale MAR solutions in the Middle East and comparable water-stressed regions globally.

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Key Words: agricultural adaptation, water security, user perceptions, managed aquifer recharge, Middle East

PLANNING FOR RISKY GROWTH? AN INTEGRATED ANALYSIS OF DISASTER AND HOUSING POLICY IN COASTAL NORTH CAROLINA

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Coastal North Carolina has experienced substantial growth and development. From 2000-2019, the 20 coastal counties experienced 28% population growth and a 29% increase in impervious cover. Housing prices have concurrently risen significantly, leading to issues with affordability and migration of residents (Crawford et al. 2011). Growth poses many challenges beyond affordability, including development in hazard areas such as floodplains (Hino et al. 2013). Such development can be understood as resulting from two distinct factors: housing capacity and hazard policy. Housing capacity is primarily determined by zoning, which restricts housing type and density. The National Zoning Atlas (NZA) provides a standardized approach for assessing capacity for housing (Bronin et al. 2023). Hazard policy determines the relative risk of development on a given parcel and can be measured using the Plan Integration for Resilience Scorecard (PIRS) (Berke et al. 2015; Berke et al. 2021). Capacity identifies how much development can occur, while disaster resilience assesses the relative risk associated with how development occurs. For example, several homes may be built on a parcel with flood risk if said homes are required to be sufficiently elevated. This project contributes toward an integrated and regional understanding of risky growth by isolating housing and disaster policy in the Wilmington, NC region, asking the question:

How do current planning policies and zoning regulations interact in influencing growth-driven flood risk and housing development in coastal North Carolina?

This study will implement the PIRS technique for the three counties of the Wilmington, NC metro region, an area notable for its rapid growth, declining affordability, and flood-prone geography. Next, the resulting dataset will be combined with published NZA data to form an integrated analysis. PIRS is a tool developed to evaluate networks of plans to address hazard vulnerability (Berke et al. 2015; Berke et al. 2021). Various plans across the Wilmington, NC region will be collected, and applicable policies will be extracted. Extracted policies will be mapped based on hazard zones and planning districts, developing neighborhood-scale units for analysis. The region's network of plans will then be evaluated and scored by district based on the impacts to disaster resilience. Scores will be summed for each hazard zone in each district (Berke et al. 2015). Once completed, PIRS scores will be compared to NZA data to assess how the two factors – resilience and housing capacity – overlap. The NZA includes several metrics associated with housing capacity, such as if an area is restricted to single-family zoning, if missing middle is allowed, etc. (Bronin et al. 2023). Once PIRS scores are integrated with NZA data, multiple queries will be run for each planning district to summarize both housing and disaster data. Using this integrated dataset, we will identify areas with high capacity for growth and low levels of resilience.

Stakeholders for housing and disaster resilience often come from different organizations and discourses. But in a rapidly growing, coastal context, the two issues have become closely related. This work will provide a regional analysis of growth, policy, and risk. All results will be publicly available in a formal report and made accessible via Esri Storymap that includes interactive map viewers, data analytics, and a publicly downloadable file geodatabase. In the subsequent phase of research, these results will inform the development of land use scenarios co-produced with stakeholders and used to encourage informed decisions for future housing development and disaster resilience.

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Key Words: Hazard Policy, Housing Capacity, Coastal Communities, Flood Risk, Disaster Resilience

SEA-LEVEL RISE AND TAX-BASE VULNERABILITY FOR NEW JERSEY AND MARYLAND COASTAL MUNICIPALITIES

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Conventional sea-level rise (SLR) risk assessments focus on direct inundation yet overlook a more immediate planning challenge: the disruption of road access to critical civic anchors at SLR thresholds well below those that cause widespread flooding (Logan et al., 2023). Existing planning studies on flood-driven property tax losses have not accounted for the critical exposure risk created when road networks fail and parcels become isolated (Shi et al., 2024). Access loss triggers cascading effects, including declining property values, degraded emergency response, and shrinking tax revenues, that reshape a community's fiscal outlook long before parcels are underwater. These impending but largely unquantified impacts fall disproportionately on renters, older adults, and communities of color (Best et al., 2023), making access vulnerability a first-order equity concern that inundation-only frameworks fail to capture.

This National Science Foundation-funded study develops a parcel-level exposure framework that quantifies both inundation and isolation under multiple SLR scenarios and apply it to two regions with extensive low-lying development and historically constrained fiscal capacity: Southern New Jersey (Salem, Cumberland, Cape May, and Atlantic Counties) and Maryland's Eastern Shore (nine counties). Using county assessor records and National Oceanic and Atmospheric Administration (NOAA) Mean Higher High Water (MHHW) SLR projections, we assess how total exposure expands when isolation is included and where risk concentrates across residential, commercial, and critical community-serving parcels.

Across both study regions, incorporating isolation approximately increases the number of affected parcels relative to inundation alone, revealing tax-base and service-delivery risks that extend well beyond directly flooded areas. Roads and access corridors frequently fail at 2 to 4 feet of SLR, functionally isolating parcels before direct flooding occurs. The two regions exhibit distinct trajectories: New Jersey's exposure emerges early and saturates rapidly, driven by residential parcel density, whereas Maryland's increases incrementally across successive SLR scenarios. These contrasting patterns suggest that adaptation timelines must be locally calibrated rather than applied uniformly. By linking parcel-level SLR exposure to land-use composition and access networks, this framework gives planners and local decision-makers parcel-level visibility into infrastructure and tax-base vulnerability at earlier planning horizons, informing capital improvement, zoning, and managed-retreat decisions before widespread inundation constrains available responses.

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Key Words: sea-level rise, municipal planning, governance, transportation, climate resilience

THE LONG-TERM EFFECTS OF SBA HOME LOANS ON DISASTER RECOVERY

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For a household recovering from a disaster, a loan from the U.S. Small Business Administration is one of the largest sources of individual funding available. Yet, most research on Federal assistance has focused on assistance from the Federal Emergency Management Agency (FEMA) or other agencies. Research that does look at the SBA Home Loan Program often uses aggregate information rather than individual-level loan data, limiting conclusions of the program's effectiveness. Given the central role of housing in community recovery and well-being, an evaluation of this program is needed to understand where planners may need to supplement federal efforts. Recovery outcomes are rarely uniform; they often reflect and reinforce pre-existing socioeconomic disparities, and since loan approvals are often credit and income based, this research raises important questions about who benefits from federal assistance programs and who is left behind.

This study aims to examine the effectiveness of SBA loans in post-disaster recovery by analyzing how loan status and disbursement timing shape property value recovery over time and assess whether SBA lending supports an equitable recovery process across affected households. Hence, this research asks: 1) Do SBA loans facilitate post-disaster recovery, measured by the return of properties to their pre-disaster values? 2) How do outcomes differ between properties with no loan, approved but undisbursed loans, and disbursed loans? 3) to what extent does the timing of disbursement influence both the pace of recovery and inequality in recovery outcomes? And 4) do disparities in loan approval, disbursement, and recovery trajectories fall along socioeconomic or demographic lines, suggesting that the SBA program may reproduce rather than redress existing inequities?

To answer these questions, we examine recovery trajectories after Hurricane Ike in Galveston, Texas, using descriptive statistics and a panel model and using parcel-level data between 2008 and 2017. Our initial findings show that both damage severity and loan status influence recovery trajectories. For properties with minor and moderate damage, recovery processes are similar across groups, although properties with disbursed loans show slightly stronger improvement. Properties with extensive damage experience remarkable differences where approved but undisbursed loans are associated with the weakest recovery, while disbursed loans perform better over time. Interestingly, the no-loan group shows the strongest long-term value gains in this category, indicating a complex relationship between SBA assistance and recovery. These patterns suggest that gaps in disbursement may not be random but could disproportionately affect lower-income or otherwise disadvantaged homeowners who lack the resources to recover without assistance. To further examine the recovery patterns, we will employ a panel model to assess whether SBA loans facilitate disaster recovery and for whom.

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Key Words: Disaster recovery, Housing recovery, Equity planning, Longitudinal research, SBA loans

THE LONG-TERM IMPACT OF RESIDENTS' DECISIONS ON HOUSING ELEVATION AND BUYOUT POST-HURRICANE: A CASE OF STATEN ISLAND

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Increasing impacts on flood-prone communities have accelerated studies on buyouts to alleviate future flooding impacts (see, for example, Geer et al., 2021). Hurricane Sandy, which struck New York more than a decade ago, was a triggering event that led to further planning studies to understand its implications for residents and communities. These included various aspects related to equity (Shi et al., 2022), housing markets (Hashida & Dundas, 2023), and governance (Mockrin & Johnson, 2024), among others. Meanwhile, housing elevations are also considered as a tool to mitigate flood impacts, but research is limited as to their impact on property values, if any (Blackwell et al., 2024). In fact, community responses to floods are much more nuanced and complicated than simply moving away or elevating to avoid risk. However, research on community dynamics as a whole is in its infancy.

This study targets four neighborhoods along the eastern shore of Staten Island that were devastated by the storm surge caused by Hurricane Sandy in 2012. Thirteen years later, in 2025, coastal communities have been rebuilt with variations in density and elevation. Various programs supported the rebuilding of affected houses through elevation (via New York City's Build It Back (BIB) program) and buyout and acquisition programs (hosted by New York State's NY Rising program and, later, partially by the city's program). However, the long-term impacts on communities and residents have not previously been closely examined from the perspectives of hazard reduction and residents' well-being. This study, therefore, aims to understand how residents of severely flooded communities decided to elevate, relocate, or choose other options in the initial phases of rebuilding and adapting to changing neighborhood environments. At the same time, we explore how communities as a whole, transform in the long term as concerns about flood hazards fades over time.

Semi-structured interviews were conducted with residents using opportunistic sampling methods. The interview targets residents who stayed in the neighborhood, either in elevated or non-elevated houses, and who had either relocated from their original neighborhoods or moved into affected neighborhoods over the past decade. A total of 22 residents were interviewed, including 9 living in elevated housing and 13 living in non-elevated housing. Public programs for rebuilding were not always used; only five out of nine residents who lived in elevated housing used the elevation program, and only one out of two relocated residents used the buyout program to leave the area. Approximately 30 percent of the interviewees (seven out of 22) were new residents of the flooded neighborhoods.

Initial analysis suggests that decisions to stay were driven by a mix of factors, including emotional attachment, financial commitments, and proximity to the workplace. Residents who elevated their houses sought safety and insurance savings. Residents who did not elevate housing explained their financial limitations, including rehousing during elevation construction, additional costs with facility installations, and their distrust of government bureaucracy. Conversely, relocated residents viewed buyouts as a financial opportunity to move out of a neighborhood troubled by chronic flooding. More than a decade later, residents in elevated housing reflected on expenditures which were more than initial expectations. Those who stayed in the neighborhood without many neighbors left behind are also suffering from the feeling of abandonment. Conversely, relocated residents see their improved wellbeing, including financial stabilization. Lastly, a significant number of incoming residents explained their reasons for moving in were due to housing affordability. These different rebuilding decisions and their varied

outcomes suggest that more longitudinal study to unpack the complex, non-linear functions in affected communities is needed.

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Key Words: Housing elevation, Buyouts, Residents inflow, Hurricane Sandy, Long-term resilience

UNDERSTANDING THE DRIVERS OF CLIMATE MOBILITY AND IMMOBILITY IN COASTAL LOUISIANA

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Evidence shows that climatic events are altering existing human mobility patterns. There is growing recognition that climate-related factors do not drive migration in isolation (Hunter et al., 2015). Rather, environmental change interacts with existing non-climate drivers to shape the nature, direction, volume, and composition of mobility (De Haas et al., 2020; Hunter et al., 2015). While existing research has identified common decision-making factors driving migration, two gaps remain. First, we lack understanding of how different factors interact to produce mobility outcomes, especially as it relates to their intersection with increasing climate hazards and vulnerabilities (Nabong et al., 2023). Second, migration literature exhibits a mobility bias, leaving non-migration understudied (Schewel et al., 2019). Moreover, research on immobility needs to move beyond the "trapped population" lens, given that the aspirations of people to stay lead to in-situ adaptations.

We address these gaps by examining Lower Plaquemines Parish (LPP), Louisiana, a community that has experienced multiple catastrophic hurricanes alongside environmental and economic stressors and is increasingly vulnerable to saltwater intrusion and coastal inundation. Since the 1930s, Louisiana's coast has lost 2000 square miles of land driven by land subsidence, erosion, and sea-level rise. The region has been impacted by multiple hurricanes in the past two decades, with Katrina (2005) being the most consequential mobility event for the region. Despite experiencing slow and rapid onset events, what distinguishes communities in Louisiana is the aspiration side of the mobility calculus. Multi-generational ties to the land, strong place attachment, social cohesion, and livelihood dependence on natural systems all anchor people in place. These dynamics interact with other social, political, economic, and demographic factors in LPP, contributing to both mobility and immobility of people. To understand this dynamic, we are conducting in-depth interviews with 150 residents who have migrated out of LPP over the past 20 years and those who have remained. We will use Qualitative Comparative Analysis (QCA) to identify how multiple factors interact to shape migration and non-migration.

Preliminary analysis of 30 interviews highlights distinct factors associated with migration vs. non-migration. Shrinking community, insurance rates, limited economic opportunities, service closures, and housing constraints were discussed as challenges. Elevation requirements, permitting restrictions on new homes, soaring insurance premiums, and NFIP insurance requirements create what residents describe as deliberate barriers to remaining. While some households cited these factors as reasons for leaving, those who remain emphasized age, livelihood dependency, place attachment, and community ties as central to their decision to stay. This study will identify the multi-dimensional pathways through which migration and non-migration occur, offering new insights into how coastal communities across the Gulf Coast may change in the future.

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Key Words: Climate Adaptation, Immobility, Coastal Louisiana

UNEQUAL RESILIENCE: ASSESSING HOUSEHOLD VULNERABILITY AND ADAPTIVE CAPACITY UNDER RECURRENT CLIMATE DISASTERS

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As climate-related disasters increase in both frequency and intensity, their impacts are disproportionately borne by socially and economically vulnerable households, particularly in rapidly urbanizing coastal regions. Metropolitan areas such as Houston exemplify this challenge, where flood-prone landscapes, rapid urban development, and expanding impervious surfaces intersect to amplify exposure to hazard risk. Disaster impact studies highlight such cascading impacts on housing damage, financial stress, and residential instability, particularly among low-income and marginalized households (Peacock et al., 2014). Understanding the levers for disaster resiliency offers an opportunity to help communities protect themselves and respond accordingly.

The main goal of this project is to identify the social, housing, and financial factors that influence household vulnerability and recovery outcomes following climate-related disasters. The central research question guiding this work is: To what extent do pre-existing housing and household characteristics drive disparities in physical damage, financial stability, and displacement following climate-related disasters?

The analysis draws on post-disaster survey data curated by Connective across five hazard events affecting the greater Houston region (2021 Winter Storm, 2023 January Tornado, 2024 May Storms, 2024 Beryl, and the 2025 November Tornado). These data come from Connective's household-level needs assessment, which was administered immediately and, in the weeks following disasters, to capture housing damage, unmet needs, financial hardship, and recovery conditions. A mixed-methods research design is employed to capture both statistical relationships and the lived experiences of recovery. Using this data, we will engage in household-level regression models to examine key outcomes, including housing damage, financial stress, short-term displacement, and adaptive capacity. Consistent with prior empirical work on household recovery (Chandrasekhar et al., 2019), our models will assess how factors like housing tenure, structure type, income, race/ethnicity, and prior disaster exposure shape post-disaster outcomes across multiple storm events. To complement the quantitative findings, semi-structured interviews will be conducted with affected residents to better understand decision-making processes, coping strategies, and barriers to recovery.

A key contribution of this study is its examination of repeated disaster exposure as both a potential driver of resilience and a source of cumulative vulnerability. While prior experience may enhance preparedness behaviors, it may also compound financial strain and material hardship over time, reinforcing inequality in recovery outcomes (Howell & Elliott, 2019).

The findings have important implications for planning research, practice, and education. This study advances understanding of how pre-disaster conditions shape post-disaster outcomes (Elliott & Pais, 2006) across multiple hazard events, contributing to ongoing debates on vulnerability, resilience, and inequality. The results also underscore the need for targeted, equity-focused recovery strategies that address structural drivers of inequality embedded in housing systems (Hamideh et al., 2021). This includes prioritizing resources for renters, low-income households, and populations exposed to repeated disaster impacts. Ultimately, this research highlights that

resilience is not solely a function of hazard exposure but is deeply shaped by pre-existing social, economic, and housing inequalities. By identifying the key drivers of unequal recovery, the study contributes to more just and adaptive planning responses in an era of escalating climate risk.

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Key Words: post-disaster, cumulative risks, household vulnerability, differential recovery, housing instability

URBAN CARBON EMISSION SCENARIO PREDICTION AND MULTI-OBJECTIVE LAND USE OPTIMIZATION STRATEGY UNDER CARBON EMISSION CONSTRAINTS

Abstract ID: 2296.0.0.318.2026
Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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Facing the severe challenge of continuously increasing carbon emissions in China, the development of low-carbon cities has gradually become a major trend for future urban planning. However, quantitative studies on spatial carbon emission targets and efficient algorithmic optimization remain limited, particularly those systematically addressing the scientific problem of “carbon accounting and spatiotemporal characteristics—mechanisms—spatial simulation under constraint targets.” This study takes Shanghai’s Pudong New Area as a case study to investigate regional carbon emission compliance and system optimization. We employ an improved Kaya model to predict carbon emissions, analyze emission intensity, and explore underlying mechanisms, and we integrate a multi-objective genetic algorithm to optimize land use. The main objectives are to predict and account for carbon emissions, compare them with target requirements, analyze spatial influencing factors, and simulate low-carbon land use patterns under policy constraints.

The results indicate that: (1) scenario-based prediction and carbon accounting reveal that carbon emissions in Pudong New Area do not meet the target requirements, with optimization potential in job-residence spatial balance, land use mix, and ecological space; (2) after optimization using the genetic algorithm, the land use layout reduces carbon emissions by 11.2% compared with the original plan, lowering total emissions to 27.88 million tons of carbon; (3) the simulated scenario shows substantial changes in land use compared with the original plan, including a 49% improvement in job-residence balance, a 20% increase in land use mix, and a 33.9% increase in per capita park green space.This systematic optimization approach not only accurately predicts carbon emissions but also improves land use patterns, achieving a significant reduction in emissions. The findings provide valuable technical support for low-carbon land use planning and offer a reference for other cities pursuing low-carbon urban development.

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Key Words: Carbon emission predict, Land use optimization, Target constraints, Carbon emission account, Genetic algorithm

URBAN GREEN SPACE AND HEAT-RELATED ILLNESS IN SEOUL: DISTINGUISHING THE ROLES OF VEGETATION DENSITY AND PUBLIC PARKS

Abstract ID: 2296.0.0.127.2026
Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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As climate change accelerates, heatwaves are increasing in frequency, duration, and intensity worldwide, posing serious threats to urban environments and public health. South Korea is experiencing a faster rate of warming than the global average. Its mean annual temperature has risen approximately 1.6°C, much higher than the global average of 1.09°C. Prolonged extreme heat events impose cumulative thermal stress on the human body, elevating the risk of heat-related illness (HRI), with socioeconomically vulnerable populations including the elderly and low-income residents bearing a disproportionate burden. In response, growing attention has been paid to the role of urban green space in mitigating heat exposure and preventing HRI, alongside increasing calls for equitable heat management strategies that account for population vulnerability.

Numerous studies have examined the relationship between urban green space and HRI, finding that higher levels of urban vegetation are associated with lower HRI occurrence. Most studies primarily used indicators such as land cover classifications or the Normalized Difference Vegetation Index (NDVI), which reflect the density and quality of vegetation distributed across urban areas. Parks, however, differ in that they are spaces deliberately planned and developed to facilitate public access and use. Despite this distinction, studies examining the role of parks in preventing HRI remain limited.

Against this backdrop, we compare park area ratio, which reflects green space formally designated as parks, with NDVI, which captures overall urban vegetation conditions, to assess their relative contribution to HRI occurrence. We analyze a daily panel dataset covering Seoul's 25 administrative districts from 2021 to 2024. We used HRI incidence data as the dependent variable, provided by the Heat-related illness Surveillance System of the Korea Disease Control and Prevention Agency. The main independent variables were NDVI derived from Harmonized Sentinel-2 imagery and park area ratio constructed by integrating official park statistics, cadastral maps, and park boundary datasets provided by the Seoul Metropolitan Government. We also controlled for demographic, urban environmental, and meteorological variables. Because HRI is a rare event, only a small portion of administrative units experience the break out in daily basis. Thus, we used Zero-Inflated Negative Binomial (ZINB) model.

We expect that the number of HRI cases is primarily associated with meteorological factors. In particular, Wet-Bulb Globe Temperature, which reflects both temperature and humidity, is expected to show the strongest association with HRI incidence. We further expect the zero-inflation model to show that urban green space, demographic, and urban environmental factors are associated with the likelihood of observing HRI cases. Higher NDVI values and a greater park area ratio may decrease the likelihood of HRI outbreak. If supported, these findings would suggest that both the density and vitality of urban vegetation captured by NDVI and the total area of formally designated parks play important roles in preventing HRI. They would also highlight the importance of population vulnerability and built-environment conditions in shaping HRI occurrence.

These findings suggest that enhancing the overall density and distribution of urban vegetation, along with expanding the area of accessible public parks, is crucial for preventing HRI. The results also underscore the

importance of equity-oriented urban greening strategies that prioritize the provision of neighborhood-level green infrastructure in districts with high concentrations of heat-vulnerable populations, with implications for climate-adaptive urban planning and public health policy. Future research should investigate how green space accessibility and spatial configuration influence HRI occurrence at finer spatial scales such as the neighborhood level.

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Key Words: Heat-related illness(HRI), Heat wave, NDVI, Urban vegetation

WHEN ENVIRONMENTAL RISKS OVERLAP: EXPLAINABLE MACHINE LEARNING EVIDENCE ON AGE-DIFFERENTIATED ELDERLY MORTALITY ACROSS U.S. COUNTIES

Abstract ID: 2296.0.0.544.2026
Track 3: Environmental Planning
Research-in-Motion Presentation, Research currently in process

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Population aging is accelerating as human communities face intensifying and overlapping environmental stressors, including urban heat, air pollution, and uneven green infrastructure. Yet planning practice and much of the environmental-health literature still address these hazards in isolation and often treat older adults as a homogeneous group. This obscures who is most at risk, where risks concentrate, and which planning levers can best reduce late-life mortality under compound pressures. Addressing this gap, this paper asks how combined environmental exposures shape mortality across the aging spectrum, where vulnerability thresholds and interaction effects emerge, and which planning-relevant factors can mitigate these risks. We develop a nationwide, county-scale assessment of age-stratified vulnerability and translate the results into actionable insights for environmental planning.

We assembled a 2010–2020 U.S. county panel by integrating one-kilometer environmental surfaces for temperature, fine particulate matter (PM2.5), and greenness (NDVI) with age-specific population grids to compute population-weighted exposures. These were linked to county-level all-cause mortality for older adults and to planning-relevant covariates capturing urban form, mobility and activity networks, functional amenities, and socioeconomic resources, including built-environment intensity, park provision, walkability-related infrastructure, transit access, medical facility density, land-use functional diversity, and income. To capture complex, non-linear, and non-additive exposure-health relationships, we applied an interpretable non-linear ensemble learning model. We tested cumulative exposure windows, selected a data-driven three-year moving average to represent lagged effects, quantified marginal and interaction effects using explainable machine-learning tools, and explicitly compared three elderly cohorts (60–69, 70–79, and 80+).

Results reveal clear thresholds, strong age gradients, and interaction-driven amplification. Heat was the dominant hazard: when population-weighted temperature exposure rose from 28 to 29°C, mortality increased by about 0.002 in the overall elderly population but by more than 0.004 among adults aged 80+, indicating a sharply narrowed range of thermal tolerance in late life. Air pollution effects also strengthened markedly with age: increasing PM2.5 exposure from 5 to 10 μg/m³ raised mortality by about 0.0006 in the 60–69 cohort but nearly 0.003 in the 80+ cohort. Greenness showed a J-shaped association and, critically, acted as a context-dependent modifier rather than a uniformly protective factor. Moderate greenness around NDVI 0.2 was associated with lower mortality among younger-old adults (a reduction of nearly 0.001), yet higher NDVI values became harmful and amplified both heat- and PM2.5-related mortality. For the oldest-old, interaction surfaces reached about 0.016 for heat×NDVI and 0.013 for PM2.5×NDVI, suggesting that in some high-NDVI contexts the adaptive window effectively collapses and

compounded stressors jointly drive mortality. Beyond exposures, several planning levers consistently emerged as protective, especially higher income, stronger transit access, and activity-supportive greening.
This study provides a planning-relevant vulnerability assessment tool and new empirical evidence for age-targeted adaptation. It shows that planning for aging societies should integrate heat mitigation and air-quality management, prioritize accessible, activity-supportive green infrastructure rather than assuming more greenness is always protective, and target transit, cooling, and equitable services to the oldest-old and high compound-risk areas. Overall, it advances planning scholarship by clarifying the non-linear, age-differentiated effects of compound environmental exposures and informing more equitable, targeted, and adaptive planning.

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Key Words: Environmental exposure, Older adults, Built environment, Non-linear modelling, Mortality

Track 4 – Inclusion, Anti-racism and Accessibility in Planning

Track 4 Pre-Organized Session Summaries and Abstracts for the Sessions

CARCERAL LAND-USE AND ZONING: A CLOSER LOOK AT CITY VS. FEDERAL POWERS
Abstract ID: 2294.0.0.759.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Pre-Organized Session Summary
Session Includes: 2298.0.0.374.2026, 2298.0.0.276.2026, 2298.0.0.344.2026, 2298.0.0.588.2026, 2298.0.0.732.2026

Titles:

- The Architecture of Detention and Deportation: Past and Present
- Environmental Review as Governance: NEPA, Land Use Decision-Making, and Detention Centers in the US
- Counteracting Carcerality through Police Powers: Contradictions and Possibilities
- From Federal Policy to Local Infrastructure: The Expansion of the Deportation Apparatus in Wisconsin
- Land-use Permit Violations: Portland's Push to Stop ICE

AJ Kim [San Diego State University] aigoaigo@gmail.com, organizer

This panel explores the topic of how ICE Detention Facilities, and the recent takeover of warehouses, are overriding local laws and ordinances, as well as violating the "good neighbor" pact that the Government typically follows in regard to land-use in cities. Panelists discuss land-use and industrial zoning challenges at existing facilities, as well as the conversion of warehouses in violation of NEPA into “mega” detention centers. There are multiple ways to look at this example of multi-scalar conflict, from the perspective of cities/states, “sanctuary cities”, practicing planners, organizers and activists, and environmental planning, land-use or legal scholars, with implications beyond the siting and citing of Detention Facilities and Prisons, directly related to a shifting landscape around "home rule" and local decision-making, including participation in 287(g) agreements.

Learning Objective(s):

- Understand contemporary expansion of the Prison Industrial Complex via ICE Detention
- Understand planning tools such as NEPA, state law or local ordinances in halting or stopping PIC expansion
- Examine infrastructure and design components of the detention and deportation machine

THE ARCHITECTURE OF DETENTION AND DEPORTATION: PAST AND PRESENT

Abstract ID: 2298.0.0.374.2026

Track 4: Inclusion, Anti-racism and Accessibility in Planning

Individual Paper Presentation

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Over the past few months, we have been waking to alarming news every day, including reports that the Trump administration is fashioning the architecture of a deportation machine and buying large warehouses to repurpose them as detention centers. As historians of architecture and city planning, we can hardly miss the analogy between this campaign for mass expulsion and war-time architecture. WWII and its national defense-related industries transformed architecture in the US in multifaceted ways. Today, the rapid repurposing of large warehouses into detention centers, in other words, is a war-time signifier. It reveals that the US is indeed at war against its immigrants and against international law that protects asylum seekers. It is a brutal new phase in the long-standing US deportation policy that had already been predicated on the conscious and self-serving refusal to define legal paths to citizenship for millions of workers whose underpaid and unrecognized labor is actually essential for the economic growth and prosperity of the country.

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Keywords: abolition, immigration, prisons, design, land-use

ENVIRONMENTAL REVIEW AS GOVERNANCE: NEPA, LAND USE DECISION-MAKING, AND THE SITING OF DETENTION CENTERS IN THE UNITED STATES

Abstract ID: 2298.0.0.276.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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The siting of immigration detention centers and carceral facilities in the United States is typically understood through the lenses of criminal justice or immigration policy, yet these facilities are also shaped by environmental review processes that function as de facto land use governance. This paper examines the role of the National Environmental Policy Act(NEPA) in structuring, mediating, and at times constraining the siting of detention centers. While NEPA is designed to ensure that federal actions consider environmental impacts and incorporate public participation, its application to detention facility development raises critical questions about transparency, accountability, and the limits of procedural review. This study asks: (1) How is NEPA applied in the planning and siting of detention centers? (2) To what extent does the environmental review process shape land use outcomes, including site selection and mitigation measures? (3) How do federal agencies, local governments, and private contractors navigate or circumvent NEPA requirements? and (4) What are the implications of NEPA's procedural framework for environmental justice and community participation in carceral siting decisions?

The study employs a qualitative comparative case study approach grounded in engaged research. It analyzes a set of detention facility projects subject to varying levels of NEPA review, including categorical exclusions, Environmental Assessments (EAs), and Environmental Impact Statements (EISs). Primary data sources include NEPA documentation, agency records, contracts, and public comments, supplemented by semi-structured interviews with planners, environmental consultants, legal advocates, and community stakeholders. The research also incorporates a policy and legal analysis of NEPA implementation across federal agencies involved in detention siting, with particular attention to the role of intergovernmental agreements and private prison operators. Discourse analysis is used to examine how environmental impacts, economic benefits, and community concerns are framed within environmental review documents and public processes.

Findings suggest that NEPA functions as both a site of potential intervention and a mechanism of limitation in detention center siting. In many cases, facilities proceed under categorical exclusions or narrowly scoped Environmental Assessments, limiting the depth of environmental analysis and constraining opportunities for public engagement. Where more extensive review occurs, NEPA processes can surface environmental justice concerns such as proximity to pollution sources, infrastructure burdens, and cumulative impacts, although these considerations rarely alter fundamental siting decisions. Instead, mitigation measures tend to focus on technical compliance rather than structural inequities. The procedural nature of NEPA, combined with fragmented governance and federal preemption, often reduces its effectiveness as a tool for meaningful land use oversight.

The paper contributes to planning scholarship by reconceptualizing NEPA as a critical, yet underexamined, component of land use governance in carceral infrastructure development. It bridges environmental planning, legal geography, and urban political economy by demonstrating how procedural environmental review can both enable and constrain inequitable spatial outcomes. For planning practice, the findings highlight the need to strengthen NEPA implementation through cumulative impact analysis, enhanced public participation, and clearer integration with local land use authority. For planning education, the paper underscores the importance of training planners to critically engage environmental review processes as arenas of power and structured conflict, rather than purely technical exercises.

Reframing environmental review as a contested planning process opens new possibilities for accountability, advocacy, and more equitable outcomes.

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Keywords: NEPA, Environmental Review, Land use Planning, Environmental Justice, Governance

COUNTERACTING CARCERALITY THROUGH POLICE POWERS: CONTRADITIONS AND POSSIBILITIES

Abstract ID: 2298.0.0.344.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Zoning regulations are considered "police powers" in so far that local jurisdictions have the right to enforce their zoning codes and statutes in order to uphold "public safety." Zoning codes restrict and delineate what can go where in a community, and according to which spatial parameters of density, land use mix, and compatibility have been socially accepted and adopted into the codified law. Local governments can use the mechanisms of land use approval, zoning enforcement, and eminent domain "takings" of private property for public goods to exert their local police powers of spatial regulation, enforcement, and restitution in communities.

Yet these powers to regulate and enforce are limited in cases where land is owned by the state or federal government, or where the developer is operating according to a federal mandate to proliferate– as is the case with the rapidly growing number of proposals to adaptively reuse large scale, privately owned industrial sites for immigrant detention facilities, under the auspice of the 'zero tolerance' immigration policy currently proliferating in the United States. In these cases, local governments experience firsthand the limits of their local authority to influence or slow down– let alone stop– the proliferation of carceral land uses that are either prohibited or restricted by their local zoning codes.

Simultaneously, local governments may find that it is in these fraught forms of police power– regulation, enforcement, and public takings– that their truer powers to counteract carcerality may lie: not exclusively in stopping the projects that run counter to prevailing notions of public safety, but also in deploying zoning and land use regulations to their police powers to foster and facilitate decarceration and the proliferation of infrastructures of care which tackle mass incarceration, recidivism, and community reentry (Medoff and Sklar 1994, Knapp 2020). Toward these ends, this paper critically examines the 'practice stories' (Forester 2012) of community planners, organizers, and service providers who are navigating the complex political and legal realities of zoning and land use planning to counteract carcerality in their communities, whether through resisting infrastructures of harm or advocating for infrastructures of restoration, transformation, and repair. I unpack the contradictions and possibilities of strategically deploying local police powers to advance transformative justice in our current era of American mass reincarceration.

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Keywords: decarceration, zoning and land use, enforcement, immigration, reparative planning

FROM FEDERAL POLICY TO LOCAL INFRASTRUCTURE: THE EXPANSION OF THE DEPORTATION APPARATUS IN WISCONSIN

Abstract ID: 2298.0.0.588.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Interior immigration enforcement infrastructure in the United States has expanded significantly since 2025, amplifying the role of federal immigration enforcement in shaping local and regional infrastructure priorities, costs and budgetary decisions. An increase in 287(g) agreements and Intergovernmental Service Agreements (IGA) exemplifies how enforcement infrastructure has grown and expanded local and regional capacity for the federal government to carry out its immigration enforcement priorities. Building on frameworks that help planners understand carceral infrastructure as central to understanding the spatial distribution of harms and benefits in the environment, and the struggles for spatial, racial, and economic justice (Marcuse, 2013; Gilmore, 2007; Simpson, Steil & Mehta, 2020; Sarmiento, 2020), this paper examines the process of expanding local law enforcement authority, the financial incentives, and the patchwork of jurisdictional approaches to Immigration and Customs Enforcement (ICE) cooperation.

Using Wisconsin's cities and counties as case studies for this rapid uptick in cooperation with federal immigration policy, this research examines how a growing immigration enforcement and detention infrastructure across the state goes beyond 287(g) agreements and enables ICE to further embed its enforcement presence and criminalization infrastructure within local jurisdictions. In 2025, the number of Wisconsin county sheriff's offices participating in a collaborative program with ICE jumped from nine to 12, and the number has gone up to 18 in 2026. As part of this research, the paper also covers how these contracts and agreements often circumvent community-driven policies against immigration enforcement. Sustained community organizing and opposition at various scales which also relies on community infrastructure, like community defense networks, face challenges including jurisdictional fragmentation with diverse approaches to detention.

The research analyzes public data including contracts, detention data, public statements, ICE facility data lists and inspections, facility oversight and standards, as well as data collected through participant observation in community workshops and presentations. Wisconsin's mix of urban, suburban, and rural contexts include large metro areas like Milwaukee and mid-sized cities like Madison and Green Bay, and it exhibits the ways in which rural counties may rely differentially on detention revenue, and also point to questions about regional inequality and infrastructure dependency on this multiscalar infrastructure. The research shows how this rapid growth is the result a long trajectory of deliberately building up this infrastructure. Additionally, these contracts and agreements set up economic and political relationships and contracts that can dramatically shift conditions for Wisconsin communities and determine the terms and conditions in which these regions are linked to carceral economies.

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Keywords: immigrant enforcement, 287g, spatial justice, carceral infrastructure

LAND-USE PERMIT VIOLATIONS: PORTLAND'S PUSH TO STOP ICE

Abstract ID: 2298.0.0.732.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

Marisa Zapata [Portland State University] mazapata@pdx.edu, presenter

Planners, elected officials, and community members have used land-use policy to uphold, enforce, and implement social values. Historically these values protected the interests of white, wealthy and middle-class men. From racial segregation to parking regulations to single family zoning, the record makes clear that people view the regulation of land as a mechanism to maintain power over perceived others.

In recent years, planners, policy makers, and advocates have looked to land-use policy reform as a mechanism to advance justice and equity goals. Most significantly in the last ten years, a handful of states and cities have reduced the amount of land designated or zoned for single, detached housing units. The fundamental core of residential zoning codes faces scrutiny and removal.

As policing activities raise the ire of more community members, people now look at how land use and related policies can put limits on the carceral system. These analyses, and subsequent demands for action, have grown as the federal Immigration and Customs Enforcement agency has been dispatched across the country to arrest, and subsequently deport immigrants. In Portland, Oregon several local policy remedies are being explored to prevent ICE from conducting certain actions, and/or operating at all.

In this paper I discuss the land use policies Portland elected officials and advocates have or are trying to use to impact ICE's operations. People explored ways to revoke the land use permit, creating conditions of operation, identifying violations, and upholding penalties. Based on a review of public meetings, news media, petitions and documents produced by advocates, and social media, I describe how land use policy functions as a tool to limit inhumane treatment of community members. Portland is relying on land-use permit conditions and then violations to prevent certain ICE actions. I find that local policy can push back against federal policy, and reach some of their goals, through traditional planning policy historically used to harm the very people that these policies may now help. I also find that unity against ICE does not equate alignment over long-term goals, notably whether identifying a mechanism to close the ICE facility is in the best interest of immigrant communities.

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Keywords: Land-use, Immigration, Policing

Beyond Commemoration: César Chávez, Symbolic Infrastructure, and the Politics of Memory in Urban Planning
Abstract ID: 2297.0.0.802.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Roundtable Submission, Topical Discussions

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Across cities in the United States, street names, monuments, and other forms of symbolic infrastructure are increasingly sites of public contestation. Street naming, far from being a neutral administrative act, is a mechanism through which power, memory, and historical narratives are embedded into everyday urban space (Azaryahu 1996, pp. 311–312 ; Alderman 2008, p. 196). Recent controversies surrounding the legacies of figures associated with the farmworker movement, including César Chávez and Dolores Huerta, have brought renewed attention to how communities commemorate social movements, how narratives are constructed and contested, and how planners are implicated in these processes. While renaming initiatives have often been framed as symbolic acts of recognition, they are deeply embedded in planning practice, raising questions about public participation, governance, historical accountability, and spatial justice.

This roundtable asks: How should planners engage with contested commemorations of social movements and their leaders? What roles can planning scholars and practitioners play in facilitating community-led processes of naming, renaming, or recontextualizing public space? And how can planning frameworks better account for collective memory, especially when movements are reduced to singular figures whose legacies are incomplete or contested? Rather than presenting formal papers, this topical discussion brings together participants with expertise in planning, community engagement, and social justice to collectively explore these questions. The session will center on three interrelated themes: (1) the role of symbolic infrastructure (e.g., street names) in shaping urban identity and belonging, as everyday sites where history is normalized and reproduced (Azaryahu 1996, p. 312); (2) the challenges of navigating contested legacies within participatory planning processes, recognizing that memorial landscapes are inherently sites of conflict, negotiation, and competing interpretations (Dwyer & Alderman 2008, pp. 165–166); and (3) practical tools and frameworks planners can use to support community-driven decision-making around naming and memory.

The session will begin with brief framing remarks from the facilitator, followed by guided discussion among participants structured around key questions. The majority of the session will be devoted to audience engagement through small-group discussions, live polling, and open dialogue. Attendees will be invited to reflect on their own experiences with naming controversies, share strategies, and collectively identify best practices for equitable and inclusive processes.

While scholarship has examined memorialization and the politics of memory, less attention has been paid to the procedural and ethical role of planners in mediating these debates in real time. Existing research shows that public memory is socially constructed, spatially embedded, and reflective of broader political and cultural dynamics (Foote & Azaryahu 2007, pp. 125–127). This roundtable contributes to planning scholarship and practice by

bridging theory and practice, offering a space to develop actionable insights for navigating contested histories in urban governance. It also foregrounds the importance of moving beyond individual-centered narratives to recognize the collective nature of social movements, particularly those rooted in labor, migration, and racial justice.

Audience Engagement Questions:

- When public figures associated with social movements become contested, what responsibility do planners have in shaping renaming or reinterpretation processes?
- How can planners ensure that street/monuments/plazas/public spaces renaming processes reflect the collective nature of movements rather than elevating individual figures?
- How do power dynamics related to race, class, and political representation shape whose histories are preserved in urban space?

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Key Words: Collective Memory, Symbolic Infrastructure, Spatial Justice, Community Engagement, Street Renaming

Critical Indigenous Planning: Futuring With Our Kinship Network

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Roundtable Submission, Topical Discussions

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Indigenous Planning embodies a holistic approach to how Indigenous communities relate with their Land and themselves through dialogical engagement of the past, present, and future. The principles of Indigenous Planning are not uniform; they vary based on each community's unique politics and sense of well-being. While these are significant aspects, if not considered with a critical lens and investigated for possible slippages, there are ways that settler colonial ideologies are reproduced. As well as the oversimplification of the field of Indigenous Planning, it can subjugate theory that is actually beneficial for all planning scholars, practitioners, and community members to consider.

This roundtable introduces Critical Indigenous Planning (CIP). CIP puts Critical Indigenous Theory into service for Indigenous Planning. While many of our practices in Indigenous community planning seek to identify the most critical values and futures we wish to see continue, CIP engages with a broad range of Indigenous Theory. Some of these include concepts of land, racial capitalism, Indigenous feminisms, Black and Indigenous futures, and Indigenous queer theory. Ga-du-gi is the Cherokee word for working together, and communities at the Eastern Band of Cherokee Indians self-organize free labor groups outside of the authority of their Native Nation. Indigenous communities are seeking to ensure everyone is futuring together for one another, whether the politics of recognition site (e.g., Tribal government) supports the work or not. This is a modality for conceiving of Critical Indigenous Planning; however, there are so many others, such as the Two Spirit Pow Wow organized in the San Francisco area or Walking with Our Sisters Art Installation, both are forms of community planning that create futures for groups of relatives in our communities that are overlooked or forgotten. The crux of Critical Indigenous Studies is ensuring we have considered all of our relatives-human and more than human kin- in our planning processes.

By developing a framework for CIP, we center principles of critical indigeneity, including kinship, care, relational accountability, reciprocity, respect, redistribution, and intersectional identities. We also move away from the performative and weaponized concepts within the politics of recognition. Some of these include “since time immemorial,” coexistence, hope, or healing. Instead, we focus on the embodied perspective and knowledge of Indigenous Peoples. We bring scholars, practitioners, and community members to share their embodied experiences in diverse places, including Indigenous Nations, community organizing, affinity groups, urban settings, or working with MMIW. We discuss themes such as refusal, resurgence, decolonial love, and more-than-human kin relationships that relate to the positionality of Indigenous communities and individuals.

With CIP, we seek to rethink both Indigenous planning and conventional planning theory and practice. Through the embodied praxis of CIP values, we provide the basis that redefines engagement with diverse communities and demonstrate the boundless and continuous development of CIP. We also explain how the lessons learned from CIP can serve as an analytic for the planning profession—what changes when we enact critical relationality in planning theory and practice?

Audience Engagement Questions:

- How are planning and community development practices incorporating and implementing CIT beyond the politics of recognition?
- How do concerns related to gender, race, class, access to kinship networks, Native Nations (Tribal Government), Nonprofits, NGO's, and grassroots groups operate as planning project projects?
- How are Indigenous communities carrying out planning through the use of their embodied knowledge, cosmologies and resources in lieu of access to capital?

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Key Words: Critical Indigenous, Planning, Decolonial Planning, Indigenous Planning

A STUDY ON SPATIAL EQUITY IN ACCESSIBILITY TO NEIGHBORHOOD LIVING FACILITIES IN HWASEONG CITY

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Hwaseong City is an urban-rural composite city (do-nong bokhapdosi) where high-density new towns coexist with rural townships, creating a critical context for examining spatial equity in neighborhood living facilities—those providing goods and services essential for daily life. Rapid urbanization has driven the concentration of commercial facilities in new town areas, while market forces continue to undermine the viability of neighborhood living facilities in rural zones. This study asks: Is access to neighborhood living facilities equitably distributed across Hwaseong City's administrative districts, and does equity in access vary by residents' demographic and economic characteristics?

This study analyzes spatial equity in accessibility to neighborhood living facilities across 29 administrative districts (dong) in Hwaseong City. Data were obtained from SGIS+, the Public Data Portal, and the Ministry of Land, Infrastructure and Transport, and accessibility indices were calculated using QGIS. Horizontal equity was assessed via the Gini coefficient and Lorenz curve. Vertical equity was examined through the concentration index and concentration curve, using the elderly population ratio and housing transaction prices as socioeconomic proxies. Independent samples t-tests and Mann-Whitney U tests were conducted to assess whether accessibility, elderly population ratios, and housing prices differed between the Eastern and Western zones.

The Gini coefficient for accessibility was 0.5717, confirming a highly unequal distribution and that the spatial duality of urban-rural composite cities produces significant accessibility disparities. The concentration index based on the elderly population ratio was −0.2706, indicating that areas with higher elderly proportions have lower accessibility—placing aging communities at a systemic disadvantage. The concentration index based on housing transaction prices was +0.2535, confirming that higher-income areas enjoy greater access and revealing clear spatial inequality along economic lines. Regional comparisons showed that the Eastern zone had significantly higher accessibility than the Western zone ($t=2.493$, $p<.05$), a lower elderly population ratio ($t=-4.738$, $p<.001$), and higher housing prices ($p<.001$). The developmentally marginalized Western zone thus faces compounding disadvantages—lower accessibility, a larger elderly population, and lower economic status—intensifying spatial inequality for its residents.

These findings carry three implications for urban planning practice. First, the accessibility gap between zones demonstrates that concentrated urban development produces unequal distribution of living infrastructure; publicly led supply policies for neighborhood living facilities should be prioritized in development-marginalized areas such as the Western zone. Second, the co-occurrence of high elderly ratios and low housing prices in the Western zone indicates that elderly and low-income residents bear disproportionate spatial disadvantages; age-friendly facility standards and enhanced mobility support services are needed. Third, overlapping inequalities in access, aging, and economic status highlight the limits of market-driven facility provision; urban management plans should formally incorporate neighborhood retail and services as designated components of living zones, treating equity in neighborhood living facilities as a planning goal rather than a market outcome.

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Keywords: neighborhood facilities, accessibility, spatial equity, concentration index, gini coefficient

A STUDY ON THE SPATIAL ACCESSIBILITY AND EQUITY OF COMMUNITY COMMERCIAL FACILITIES IN MEGACITIES

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Community commercial facilities serve as the core spatial carriers of urban public service systems and are vital pillars for ensuring residents' basic living needs, enhancing urban livability, and promoting social equity. Against the dual backdrop of the global "15-minute city" planning movement and China's comprehensive push to build 15-minute living circles, the spatial layout of community commercial facilities in megacities has become a central issue in urban governance. Currently, megacities such as Beijing generally face issues such as spatial mismatches between supply and demand and significant gaps in walking coverage, which constrain improvements in urban livability. Existing research has largely focused on the planning systems and configuration standards of community living circles, but there is a lack of detailed measurement of the walkable accessibility of community commercial facilities in high-density megacities, particularly a lack of systematic quantitative assessment of the regional equity of facility supply.

Taking Beijing as a case study, this research optimizes the Gaussian two-step floating catchment area method based on 15-minute walking travel patterns and incorporates actual urban road network metrics to measure spatial accessibility. It further identifies spatial clustering characteristics through spatial autocorrelation analysis and employs the Gini coefficient to evaluate the equity of facility supply across different regions. The results indicate that the accessibility of community commercial facilities in Beijing follows a concentric pattern. Accessibility levels in the central urban area are significantly higher than those in the near suburbs. There is a significant positive spatial agglomeration effect in facility accessibility: high-accessibility clusters are concentrated in the central urban area, while low-accessibility clusters are primarily distributed in large-scale public housing areas in the near suburbs and residential areas in the far-suburban new towns. Calculations of the Gini coefficient reveal that the overall supply of community commercial facilities in Beijing falls within a relatively equitable range; however, there is a significant disparity in supply between the core and peripheral areas, and the spatial mismatch between supply and demand is the core contradiction in the current facility layout. Coordination and collaboration among regions should be strengthened to promote the balanced development of community commercial facilities across different areas.

This study optimizes the accessibility measurement methods for walkable-scale commercial facilities and contributes to empirical research on spatial equity within the 15-minute living circles of high-density megacities. It provides scientific evidence and practical references for optimizing the spatially balanced allocation of community commercial facilities and enhancing the equity of facility supply in Beijing and similar megacities worldwide.

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Keywords: commercial facilities, spatial accessibility, spatial equity, 2SFCA, Beijing

APPROACHES TO COMMUNITY-CENTERED TRIBAL ELECTRIC VEHICLE CHARGING INFRASTRUCTURE EXPANSION

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Transportation electrification helps address climate goals but risks exacerbating existing inequities without community input and institutional changes. The specific electric vehicle charging infrastructure (EVCI) needs of tribal communities remains relatively underexplored, despite tribes' sovereign status, cultural distinctiveness, and geographic contexts. While scholarship examines EVCI through the lenses of transportation, energy, and infrastructure, among others, it oftentimes lacks the cross-boundary integration that is needed for EVCI expansion in tribal contexts. Planning for EVCI expansion requires Tribal governments and their members to simultaneously consider existing conditions, government-to-government collaborations, and appropriate decision-support tools that balance technical planning with reservation life. Thus, there is opportunity to explore and understand how community contributions and technical data can coincide with Tribal EVCI planning, all while centering concepts of energy sovereignty and community needs.

This study is part of a larger project that developed a community-centric, data-driven scalable mapping tool (SMT) to support tribes in planning EVCI expansion, conducted in partnership with the Tulalip Tribes. Incorporating energy sovereignty and sociotechnical capacity assessment frameworks, this study focuses on the design, collection, and analysis of tribal member feedback regarding their familiarity with electric vehicles and travel patterns. In addition, it explores the epistemic tensions between comprehensive, quantitative data-driven planning and insular Indigenous spatial knowledges that facilitate community life.

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Keywords: Indigenous Planning, EVCI, Community Engagement, Energy Sovereignty

ATLANTA TO RIO: THE MAINTENANCE OF WHITE SUPREMACY AMID OLYMPIC DEVELOPMENT PLANNING IN THE 1996 AND 2016 SUMMER GAMES

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Despite accounting for the largest development projects on the planet and encompassing all of the discipline's subfields, sporting mega-event (SME) planning occupies little space in urban planning discourse. Although some planners like Friendly (2020), Kassens-Noor (2013), Porter (2009), and Silvestre (2013) have contributed compelling studies, urban planners have ceded most modern discussion of SMEs to other fields, even some of the most well-cited SME literature published in planning journals is authored by non-planners, mostly geographers (Chalkley & Essex, 1999; Müller, 2015). More, SME literature suffers from a major epistemological challenge: a dearth of comparative transnational discourse that centers the saliency of race in development analyses.

I offer two Olympic host cities characterized by authoritarian planning power and racially divisive development histories: Atlanta, United States and Rio de Janeiro, Brazil. Atlanta's bid for the 1996 Olympics was propelled by the city's elites, a long-standing coalition of Black elected officials and White business interests (Keating, 2010; Newman, Young, & Young, 2016; Stone, 1989). The Olympics was an inflection point in Atlanta's economic and urban development, cementing the city's ascendance as the cosmopolitan center of the American South and a site of massive wealth inequality. Likewise, when tourists poured into Rio de Janeiro for the 2016 Summer Games, the city had been in turmoil for years amid forced favela (longstanding, but informal settlements) evictions. Brazil's long-enduring structural racism tarnished the glittering spectacle of the Games as protests and violent crackdowns erupted throughout Rio de Janeiro. Because public space cannot be produced without the reproduction of social relations, I suggest that urban planners are 30 years overdue and 5,000 miles short of a conversation regarding the weaponization of SME development as a means to displace and dispossess Black residents while instituting large-scale wealth redistributions.

In this comparative study, I consider Atlanta and Rio de Janeiro with a particular focus on their Olympic community safety, environmental, and housing planning policies, exploring how the Games are harnessed to undermine democratic planning principles and rely on the removal and repression of Black and low-income residents. Grounded in "entrepreneurial city" and "geoporn" literature and drawing parallels between both cities' ruling coalitions, the resulting comparative study enriches the singular examinations of the past (Gaffney, 2022; Harvey, 1989). I review academic studies, candidature bid proposals, field notes, news reports, and private citizens and public figures' personal accounts to re-construct the historical events surrounding the 1996 and 2016 Summer Games. I also employ Siegel's (1995) "preservation through transformation" as the analytical framework to explain how strategic planning can become an instrument to sustain the hegemonic power of business and political elites to displace, dispossess, and police Black, low-income residents in both cities (p. 2119).

Timely, in both its theoretical predisposition and its subject matter, I draw attention to and articulate the continuing Olympic legacies of anti-Black racial violence and what it portends for the 2028 Los Angeles Summer Games given ongoing ICE raids and the authoritarian activities of U.S. President Donald Trump. Most importantly, this paper is a call to action for planners to more deeply engage transnationally and recognize the central role of participatory planning in securing the promises of a free and democratic society.

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Keywords: Black displacement, geoporn, Olympics, racism, sporting mega-event

BEYOND PROVISION: HOW ETHNIC MINORITIES NAVIGATE OUTDOOR PUBLIC SPACE IN A HIGH-DENSITY CITY

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Public open spaces are routinely described as universal goods, freely accessible, socially neutral, and equally beneficial to all residents. Yet in cities where ethnic diversity intersects with extreme density, this assumption deserves scrutiny. Growing evidence suggests that access and use are unevenly distributed, particularly among ethnic minority (EM) communities. This study investigates the factors shaping EM preferences for outdoor facilities and venues (OFVs) in Hong Kong and explores what a more equitable arrangement might look like.

The research adopts a sequential mixed-methods design integrating three completed stages: (1) expert engagement with 22 practitioners from nine NGOs and community organisations, combining semi-structured interviews (n = 11 participants across 8 sessions) with structured practitioner surveys (n = 11); (2) systematic field observation of 30 OFV sites using an 80-variable protocol; and (3) GIS-based network analysis of 500-metre pedestrian catchments. Thematic analysis conducted in MAXQDA produced 4,061 coded segments across 68 sub-codes.

The findings challenge conventional supply-based planning approaches. While proximity and facility provision remain relevant, the results show that institutional and social conditions play a more decisive role. NGO involvement (n = 1,041), organised activities (n = 160), and guided participation (n = 71) emerge as dominant facilitators, indicating that programme-based interventions are critical in enabling access. Conversely, barriers such as language exclusion (n = 281), booking system difficulty (n = 96), and perceived discrimination highlight the limitations of purely physical planning solutions.

The study develops an empirically refined framework structured around five dimensions: cultural integration, accessibility, maintenance and operation, social environment, and individual preferences. This framework extends existing theories of environmental psychology, social inclusion, and place attachment by demonstrating how experiential and institutional factors mediate the relationship between built environment attributes and user behaviour.

The paper contributes to planning scholarship by reframing OFVs as socially constructed and operationally mediated spaces, rather than neutral physical assets. It also offers practical implications for inclusive urban planning, suggesting that improving equity in public space requires coordinated interventions across design, management, and community programming.

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Keywords: Ethnic minorities, Public open space, race and diversity, sustainable development, urban design

CO-DESIGN JUST AND INCLUSIVE URBAN FLOOD RESILIENCE: A FRAMEWORK FOR PLANNING RESEARCH AND PRACTICE

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Urban and regional flood risks are intensifying under climate change, rapid urbanization, and entrenched socio-economic inequalities. Urban flood resilience has emerged as a dominant paradigm for managing flood risk; however, without considering just and inclusive approach, it often reproduces structurally exclusionary development practices that distort its conceptualization and leave the most flood-affected populations disproportionately vulnerable and perpetuate existing injustice or creating new injustice. This paper advances the concept of just and inclusive urban flood resilience by systematically integrating dimensions of justice and principles of inclusive development into urban and regional resilience planning and assessment. Drawing on review of the literature on justice theories, Co-Design approach, inclusive development and urban flood resilience, the study identifies critical factors and limitations for urban flood resilience and proposed a Justice Co-Design framework for research and practice. Co-Design is a collaborative and participatory approach that is critical to operationalize justice goals in practice. Systemic, inequitable decision-making in the urbanization process has been extensively documented in environmental justice studies with calls for action remaining abstract. Understanding how justice is operationalized and assessed in practice is thus essential to rectifying existing injustice and preventing new ones by centering justice as a core value and operating principle of each urban development project. Built upon justice theory and co-design methodology in research and practice, we propose an integrated Justice Co-Design framework drawing from four dimensions of justice—procedural, distributive, restorative, and intergenerational justice—and embed them in five stages of the Co-Design Process—project formation, development, implementation, management, and evaluation and learning. This framework serves as an infinite feedback loop of Justice Co-Design Cycles for involved practitioners and stakeholders. In addition, inclusive development is depicted as measured by indices of constructs in five pillars: active participation, distribution of benefits, environmental stewardship, improved well-being, and synergy. An integrated framing enables policymakers to evaluate not only the technical robustness of flood resilience strategies but also their synergy and distributive outcomes. By reframing urban flood resilience through an inclusive development lens, this contribution responds directly to calls within sustainability science for transformative, context-sensitive, and socially just resilience pathways. The framework offers a foundation for future empirical work, indicator development, and policy experimentation. Whereas it is globally applicable, it is particularly helpful for flood-prone cities of the Global South that are new to flood resilience planning or consider advancing flood resilience strategies. More broadly, the framework contributes to debates on urban and regional resilience by demonstrating how centering justice and inclusivity can strengthen resilience outcomes while reducing the inequity in risk society with inherited inequalities. This transformational framework challenges the status quo in current urban development practices, supporting a path toward a just built environment and sustainable development.

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Keywords: urban flood resilience, climate justice, participatory planning, equity planning, Global South

CONTESTED GROUND: AGONISTIC PLANNING AND PLACE-KEEPING AT GEORGE FLOYD SQUARE

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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This paper examines the claims and counterclaims about George Floyd Square to interrogate: How are planning ideas and practices challenged by the agonistic tensions and contestations exemplified in George Floyd Square's planning visioning process? To answer, we advance a conceptual framework based on power (state/community), function (place-making/keeping, for/by whom?), and temporality (before/during/after George Floyd's murder). The framework is informed by (1) Everyday agonisms - frictions and accommodations in shared space;, (2) Institutional agonisms - overt struggles over authority/ownership, meaning, mobility, and resources that redirect planning practice/policy for the site's future;, and (3) Collective agonisms - the (re)traumatization and resistance of grassroots networks that negotiate influence over planning outcomes. We gather evidence through (1) 3–4 structured site-observations to record everyday use, memorial forms, and circulation/care practices; (2) 8-12 semi-structured interviews sampled across residents (especially BBIPOC), nearby business/faith leaders, movement organizers, and city staff (planning/public works), including police or community-safety representatives; and (3) a review of municipal planning documents (design/transportation plans, reopening plans, council actions), public statements by the George Floyd Global Memorial, and local media. We show how pre-uprising urban policy reproduced racialized vulnerability even as BBIPOC residents sustained neighborhood life through enterprise, worship, and culture. During the uprising in May 2020, grassroots actors built barricades, rituals, policy demands, and mutual-aid infrastructures while movements (BLM; Defund the Police; Meet on the Streets; 24 Demands of Justice) reframed safety and city departments simultaneously managed liability, access, and basic services. Afterward, a phased reopening and formal design processes sought to restore traffic and codify memorial elements, generating new agonisms (care vs. circulation; sacredness vs. commerce) and sharpening contestations over who decides, funds, and maintains the space. We conclude by theorizing how residents negotiate memory, trauma, healing, and development, in which claims of belonging, safety, and circulation reshape what a place is, who keeps it, and for whom.

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Keywords: Agonism, Anti-Racism, placemaking, governance, trauma

GENDERED HABITUS AND CHANGES IN ACCESSIBILITY TO OCCUPATIONAL OPPORTUNITIES AMONG HIGHLY EDUCATED MOTHERS

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Gendered habitus can be conceptualized not merely as differences in gendered attitudes or dispositions, but as a sense of desire and responsibility among mothers to reproduce class by cultivating high levels of cultural capital in their children. This habitus generates continuous compromises and conflicts between professional work and childcare, compelling mothers to navigate urban space in increasingly strategic and complex ways. Moreover, high housing costs and regional disparities in educational infrastructure in contemporary metropolitan areas render settling in a desired residential location a privileged act, making it more difficult for mothers to simultaneously secure optimal educational environments for their children and sustain their own careers. As a result, gendered mobility is intensified, requiring women to travel beyond the neighborhood for work while also maintaining intra-neighborhood mobility to manage their children's schools, private education, and social networks.

Alongside this gendered mobility, the asymmetrical distribution of employment, childcare, and educational infrastructure within the Seoul metropolitan area constrains the occupational opportunities of mothers with high human capital. In a spatial structure that does not presuppose caregiving, the constraints faced by highly educated mothers as primary caregivers can be explained through the concept of individual accessibility. This concept considers not only the location of activities but also their temporal availability and the time resources available to individuals, thereby highlighting how access to urban opportunities varies by individual circumstances. Highly educated mothers must consider not only the availability of jobs in their field, but also whether the spatiotemporal conditions of workplaces align with their caregiving responsibilities and whether their human capital can be recognized and utilized. Furthermore, because their occupations are not evenly distributed across urban space—unlike routine service or clerical jobs—enhancing accessibility becomes even more difficult.

Highly educated women are often perceived as relatively insulated from gender inequality, as they are expected to secure stable employment and accumulate economic capital more rapidly than less-educated, economically disadvantaged women. However, contemporary "new forms of conservative gender role norms," which intensify the dual burden of work and childcare, reveal that educational capital does not function as a resource to mitigate gender inequality in social achievement. Rising standards for children's education compel women to continuously deliberate over their children's acquisition of cultural capital even while engaging in professional work, as gender norms assume such competencies to be inherent to highly educated women. Consequently, the gendered habitus of highly educated women manifests as a dual responsibility: to succeed as elite professionals while simultaneously acting as competent managers of their children's education, thereby intensifying contradictory role demands.

This study examines the tension between the spatial structure of the Seoul metropolitan area and the gendered habitus of mothers, aiming to demonstrate that highly educated mothers—often assumed to face fewer difficulties in maintaining their careers—may in fact encounter greater constraints. Based on in-depth interviews with 26 highly educated married women, the analysis shows that the mismatch between the spatiotemporal requirements for class reproduction and those necessary to sustain their own class position reduces their individual accessibility to occupational opportunities.

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Keywords: gendered habitus, individual accessibility, highly educated mother, metropolitan structure, urban opportunity

HOW DOES THE ASSOCIATION BETWEEN TRAVEL BEHAVIOR AND MOBILITY AID USED BY PEOPLE WITH DISABILITIES VARY? A STUDY FROM NHTS CALIFORNIA ADD-ON

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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While the literature on the travel behavior of people with disabilities mainly focuses on specific types of disability (Park et al., 2023; Shen et al., 2023), these studies tend not to examine how travel behavior varies across subtypes of a particular disability. Since mobility needs vary among people with different subtypes of a disability, their travel behavior can be hypothesized to vary (Bhuiya et al., 2024). To this end, we investigate how travel behavior varies among individuals with different travel-limiting disabilities ¬—defined by the mobility aids used (cane, crutch/cane, wheelchair, electric wheelchair/scooter, people with travel-limiting disability not using mobility aid) — based on data from the 2017 National Household Travel Survey California Add-on (FHA, 2017). We selected California, USA, as the study area. Wheelchair users are found to make the fewest trips among people with different types of travel limitations. A greater percentage of mobility aid users are dependent on carpooling, with wheelchair users maintaining a carpooling share of over 20% compared to other mobility aid users.

Multinomial logistic regression of mode choice reveals that crutch/walking frame and wheelchair users have 7% and 20% higher probabilities of carpooling, respectively, and wheelchair users have 6% higher probability of using public transit. Model estimates also show that doubling the distance of the nearest transit stop from the trip origin and destination reduces the probability of public transit use by 4%. If the employment-household mix at the origin is halved, the probability of walking will decrease by 6%.

Zero-inflated negative binomial models are developed to examine the association between walking and public transit use frequency, and mobility aids. Wheelchair users and electric wheelchair users have 8- and 2-times higher odds of not walking, and using these two mobility aids increases the probability of not walking on a trip by 39% and 12%, respectively. Among wheelchair users who walk, wheelchair users make 35% fewer trips than non-mobility aid users, resulting in an average of 2.2 fewer walking trips. For public transit, cane users are 5% less likely to never use a bus than those without mobility aids. Meanwhile, wheelchair users make 88% more trips on public transit, averaging more than 5 trips per person, compared with non-mobility aid users.

Across mobility aid users, travel distance by public transit and carpooling is higher than driving alone. Tukey's HSD test reveals that there is a significant difference in travel distance by public transport among cane and crutch/walker users, and people without travel-limiting disabilities, and travel distance by carpooling among users of cane and crutch/walker, and people without travel-limiting disabilities. Crutch users have a 38% lower travel distance by public transit, and electric wheelchair/scooter users are likely to have 38% and 28% lower travel distances by walking and driving, respectively. With the distance to the nearest transit stop doubled at both the trip origin and destination, carpooling and driving distances increase by 6-7%. Doubling the employment-household mix at origin and destination is likely to reduce the probability of driving by 35%.

My findings highlight substantial heterogeneity in travel behavior across disability subtypes. Understanding these differences can be crucial to designing transportation systems that underpin inclusive mobility and reduce barriers for people using different mobility aids. The result suggests that policymakers should adopt disability-specific strategies to improve accessibility of these transportation modes for people with disabilities, breaking the

convention of generalizing disability in transportation planning. The findings also reinforce the need for travel behavior research among people with disabilities to stratify the sample by disability subtypes.

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Keywords: Mobility aid, Mode choice, Travel distance, Travel limitation

INDIGENEITY AND TRANSFORMATION: A HISTORY OF THE TONGAN LATTER-DAY SAINT COMMUNITY IN THE UNITED STATES

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Churches, i.e. faith-based organizations, are key anchor institutions in planning with Indigenous Pacific Islander communities in the United States diaspora. Across the United States, from Micronesian Presbyterian churches in Spokane, Washington and Arkansas, to Tongan and Samoan Catholic, Seventh-day Adventist, and Latter-day Saint Mormon congregations up and down the west coast, in Arizona, Nevada, Utah, and Texas, these community-based, faith-based organizations provide a space in which a sense of community and belonging are made for Indigenous Pacific Islanders in the United States. These churches provide a legitimate community vā (space) in which Indigenous cultural languages and other ethno-racial, cultural, faith practices are observed for an Indigenous community, often undocumented, and in and on the margins of U.S. society. Looking at just one major sliver of the larger U.S. Pacific Islander Church network, Tongan Latter-day Saint (LDS) ward and stake congregations have simultaneously both indigenized their faith-based space in the U.S. diaspora and transformed its community as a result of consuming a space with Anglo American origins. Indigeneity and transformation manifests in the historical overview of the Church's presence in the South Pacific Islands of Tonga in the late nineteenth century to its first official Tongan LDS cultural language ward and stake congregations (a ward being a Catholic equivalent of a parish and a stake being the Catholic equivalent of a diocese) established in critical mass U.S. state locations like Hawai'i, California, and Utah in the early 1990s. Here these sanctuary spaces marked an Indigenous vā (space) in which shared faith, shared resources, developed job and life networks, and Indigenous culture and language can be practiced. Through semi-structured interviews, church archives, and online document and literature analysis, this faith-based community development case depicts the significance of Pacific Islander churches as a space for community in the diaspora. Several have written about the Church of Jesus Christ of Latter-day Saints in the South Pacific Islands of Tonga. A new account of the history of the Tongan Latter-day Saint community in the United States diaspora is presented to specifically showcase the importance of Indigenous Pacific Islander community-based, faith-based organizations, i.e., Pacific Islander churches. Broadly, this case reasserts and reconfirms the relevance and significance of the local community spatial scale as it concerns community-based organizations (CBOs) and faith-based organizations (FBOs) within the fields and disciplines of Community Economic Development and Indigenous Planning. If the broader field and discipline of Urban and Regional Planning seeks to understand where Pacific Islanders reside in the United States diaspora, how they move across cities, regions, and states, where they work, play, and pray, planning with Indigenous Pacific Islander communities in the United States diaspora calls for attention to critical anchor Indigenous Pacific Islander faith-based organizations and institutions, i.e., the churches.

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Keywords: Tongan Pacific Islanders, community faith-based org, Indigenous Planning, Latter-day Saints, churches

Intergroup Contact, Built Environment, and Social Integration: Integrating Big Data and Survey Data on Migrants in China

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Promoting inclusive urban development requires a deeper understanding of how social integration is produced through everyday urban experiences. In rapidly transforming cities, migrants and local residents increasingly share urban spaces, yet social integration remains uneven and often limited. Existing research has emphasized institutional arrangements, residential patterns, and socioeconomic inequalities, but has paid less attention to the socio-spatial processes through which integration unfolds in daily life. In particular, intergroup contact theory highlights the importance of interaction in reducing social boundaries, yet it often overlooks how urban space conditions the formation and outcomes of such contact. This study addresses this gap by examining how intergroup contact influences social integration and how this relationship is shaped by the built environment.

Focusing on Hangzhou, China, this study develops a socio-spatial perspective that conceptualizes intergroup contact as a spatially embedded process. It adopts a mixed-methods approach that integrates behavioral big data and survey data. Mobile phone signaling data are used to identify potential intergroup contact based on spatiotemporal co-presence between migrants and local residents, capturing objective exposure within daily activity spaces. In parallel, POI data and street view imagery are used to construct multidimensional measures of the built environment, including functional diversity, accessibility, and streetscape quality. A structured survey of both migrants and local residents provides individual-level measures of social integration, intergroup interaction, and perceived environmental conditions, allowing for a joint analysis of objective exposure and subjective experience.

Empirically, the study estimates interaction models to test how built environment conditions shape the relationship between intergroup contact and social integration. It further differentiates between spatial contexts such as residential neighborhoods, commercial areas, public open spaces, and transit environments, and compares patterns across migrants and local residents. In doing so, the built environment is treated as an active structuring force that influences whether everyday encounters translate into meaningful social outcomes.

The findings show that the effects of intergroup contact on social integration are strongly conditioned by the built environment. Environments characterized by walkability, functional diversity, and active street life are more likely to transform co-presence into meaningful interaction and social connection, whereas spaces dominated by transient and instrumental activities tend to generate frequent but superficial encounters with limited integrative effects. These spatial conditions shape whether everyday contact contributes to inclusion. At the same time, the results reveal clear differences between migrants and local residents. While intergroup contact is positively associated with integration for both groups, its effects are substantially stronger for migrants. This suggests that migrants rely more on spatially mediated encounters to build social connections, and that unequal access to high-quality urban environments translates into unequal opportunities for social integration.

This study contributes to planning scholarship by advancing a socio-spatial understanding of intergroup contact and social integration. It demonstrates how built environments mediate the translation of contact into inclusion, thereby linking micro-level interaction processes to broader questions of urban inequality and inclusive planning. Methodologically, it highlights the value of integrating big data and survey data to capture both behavioral exposure and lived experience. Substantively, it provides insights for planners seeking to design urban environments that support meaningful encounters and foster more inclusive urban futures.

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Keywords: social integration, building environment, migrants big data, China

INVESTIGATING GENDER-RESPONSIVE CLIMATE ADAPTATION PLANNING FROM A SOCIAL CAPITAL PERSPECTIVE: A STUDY OF COASTAL BANGLADESH

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Climate change significantly impacts people and the environment worldwide. Bangladesh stands as one of the most globally vulnerable countries, as it experiences disasters every year. Coastal Bangladesh is the worst victim because of its climatic, socio-economic, and infrastructural vulnerabilities. Specifically, the women of coastal areas suffer more due to gendered roles, but they suffer unequally – some coastal areas have high gender disparity, and some have less, opening an opportunity to investigate the role of social capital and its implementation in different gendered contexts.

Mainstreaming gender in climate adaptation is crucial, as men and women experience climate risks unevenly due to their different household responsibilities and unequal access to resources.

For promoting gender-responsive climate adaptation programs, social capital is acknowledged as a fundamental mechanism. While different authors categorize social capital in somewhat different ways, for purposes here, we have used two broad categories – formal versus informal. Access to different types of social capital and their extent vary according to gender. Generally, men have greater access to formal organizations and decision-making platforms, whereas women rely more on informal community linkages.

Despite growing attention to the interplay between social capital, gender, and climate adaptation programs in the literature, there is a notable gap. Systematic comparison of these two types of social capital while incorporating the gender aspect in climate adaptation is almost absent in the existing studies.

To bridge the research gap, my research question is how these different forms of social capital facilitate or impede gender-responsive adaptation, how they may complement each other, and how they work across areas with different levels of gender disparity.

For field research, we identified two areas of high gender disparity and two of low gender disparity in coastal Bangladesh. Core data for the research are a) 12 total key informant interviews (KIIs) with personnel working on climate change, including three in each of the districts; b) 8 focus group discussions (FGDs) with women in these four selected districts, with around eight to ten participants in each group. The collected data were transcribed and coded. Then, thematic analysis and cross-case comparative analysis were performed.

The findings reveal that formal social capital can be better utilized when they are helped by an informal network. Also, informal social capital is better supported by a strong formal connection. Formal organizations include women in their committees in line with their mandates, but in practice, this inclusion is often only on paper rather than actual women's participation and leadership. In terms of informal social networks, they are stronger in the high-gender-disparity areas than in the low-gender-disparity areas. However, in these high-gender-disparity areas, informal social capital often reinforces gender discrimination, where the elite group suppresses women, and even the women backed by organizational support frequently dominate the ordinary women.

This study offers lessons about interdependencies and conflicts between formal and informal social capital in promoting gender-responsive climate adaptation planning and implementation. Ensuring that climate adaptation

reaches the most vulnerable requires attention to gender and social capital. But the findings show that the type of social capital promoted – institutional or informal – matters a great deal to gender-responsive policy, and that outcomes vary by the level of gender disparity that is in place before interventions. This nuanced approach to the integration of social capital interventions into climate adaptation planning may enable more just and effective outcomes across different gender contexts and social settings.

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Keywords: Climate adaptation, Gender, Coastal, Bangladesh, Social capital

MAPPING THE RACIAL AND SPATIAL IMAGINARIES OF PUBLIC BUDGETS

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Track 4: Inclusion, Anti-racism and Accessibility in Planning

Individual Paper Presentation

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Since 2020, a community-led movement for people's budgets—budgets by and for the people—has emerged across U.S. cities. These efforts ask an urgent question: why is there always enough money for policing and luxury development deals, yet never enough to meet the housing, transit, and care needs of poor and marginalized communities?

Globally, social movements are reexamining how public finance serves the public good, often to build more equitable urban infrastructures, including social housing and green energy. Interdisciplinary urban scholarship commonly explains such movements either as demands for participatory budgeting, or as challenges to how austerity and neoliberal urban governance creates unaffordable cities. People's budgets extend these efforts by framing budget debates as broader struggles over how racism shapes the public good. Put differently, these efforts reveal that public budgets do more than unevenly allocate collective resources across cities; they materialize contested and often racialized spatial imaginaries of value and worth that shape which urban infrastructures become affordable for whom and why. Making the spatial imaginaries of public finance visible and open to democratic deliberation is therefore key to reorienting planning practices toward more inclusive and anti-racist goals.

To that end, this paper brings together scholarship in fiscal geographies and anti-racist planning to introduce budget mapping, a novel geospatial methodology to visualize the redistributive patterns and contested values of municipal budgets. Budget mapping uses flow mapping to "follow the money", tracing the spatial trajectories of public funds from their collection as tax dollars to their disbursement as investments in urban infrastructure. Drawing on a case study of Nashville, Tennessee, I show how public investments were shaped through contested spatial imaginaries of value: on the one hand speculative visions of "the next great neighborhood" justified transit investments in an industrial wasteland, while on the other racialized imaginaries treated a historically Black neighborhood as a fiscal dumping ground for intensified public safety spending. If budgets allocate resources by speculating on an imagined and often racialized value proposition, budget mapping offers urban planners a method for inquiry and community engagement to critically examine and democratically reimagine how public finance might assess and allocate value differently to create cities of abundant public goods for all.

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Keywords: participatory mapping, public goods, public finance, spatial imaginaries, anti-racist planning

PLANNING FOR ETHNIC DIVERSITY AND CULTURAL DIFFERENCE IN CITIES: A SCOPING REVIEW OF THE PLANNING LITERATURE PUBLISHED BETWEEN 2000-2025

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Throughout the 20th and 21st century, diversity has moved from the peripheries of planning theory towards a mainstream value in planning practice. This shift reflects a growing acknowledgement that planning must respond to the pluralistic realities of ethnically and culturally diversifying cities in the Global North. Diversity has been incorporated into planning praxis through its recognition in policy and practice (e.g., multicultural planning) which directly acknowledges ethnically diverse populations. Diversity is rooted in postmodern epistemologies and justice-oriented perspectives on planning that alternatively challenge the dominance of modernist planning paradigms positioned to be integral to planning for social justice, equity, and inclusion. Yet, despite diversity having theoretical and pragmatic recognition in planning, contemporary cities exhibit increasingly complex forms of difference, that the planning field must also interpret and respond to. As diversity continues to become a central concern of both scholars and practitioners, an assessment of how diversity has been conceptualized and addressed in planning is needed to document the normative debates and practical approaches to achieving it. Through a scoping review of 42 academic articles published between 2000-2025, this study identifies themes that emerge from the planning literature on ethnic and cultural diversity and difference. Results indicate that theoretical discussions have drawn heavily on postmodern thought, emphasizing pluralism, the politics of difference, and the need to engage with peripheral and multiple epistemologies. Planning practitioners operationalize diversity into a value-laden term which may be contradictory to the epistemological underpinnings of diversity and difference. This tension produces a dilemma for planning as there are pragmatic challenges in developing policies and adapting practices towards recognizing diversity. The scoping review further documents the historical trends in conceptualizing and practicing planning for diversity while also sharing insights on where a continued focus on diversity and difference in planning can take the profession in the future.

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Keywords: Diversity, Difference, Praxis, Values

RECLAIMING THE VERDE VALLEY: CUMULATIVE DISPOSSESSION AND INDIGENOUS-LED PLANNING IN NORTHERN ARIZONA

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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This paper examines how cumulative environmental burdens and settler-colonial land governance have severed the Yavapai-Apache Nation from its ancestral lands in Arizona's Verde Valley. Focusing on the interconnected geographies of the Yavapai-Apache Nation, this study asks: How have changes in the natural and built environment disrupted Yavapai land-based practices? And how can the Yavapai-Apache Nation reclaim and restore access to sacred and culturally significant places?

The paper argues that environmental harm in the Verde Valley is best understood as a cumulative landscape of dispossession, produced through extractive industry, industrial land use, watershed degradation, and exclusionary land management regimes. Drawing on community-engaged research conducted in partnership with Yavapai-Apache Nation members, the study traces how the region's mining legacy, ongoing cement production near Clarkdale, and arsenic contamination along the Verde River corridor have together disrupted traditional practices, including foraging first-foods, cultivation, ceremony, and intergenerational knowledge transmission. These material harms are compounded by tourism development and federal land designations that have systematically restricted access to culturally significant sites, including Montezuma Well and Boynton Canyon.

Grounded in Indigenous planning and environmental justice frameworks, this research advances a relational understanding of land that centers sovereignty, cultural continuity, and restoration. Early findings reveal that access restrictions are structurally embedded in federal land management logics that privilege recreational visitation over Indigenous cultural rights. The paper concludes by mapping concrete pathways forward, including co-management agreements, environmental remediation policy, and Indigenous-led cultural land planning, offering a replicable framework for planners confronting cumulative harm and sacred site access in settler-colonial landscapes.

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Keywords: Indigenous Planning, Environmental Justice, Settler Colonialism, Dispossession, Cumulative Harm

REFRAMING AGE-FRIENDLY CITIES: INTEGRATING THIRD PLACE INTO AGE-FRIENDLY PLANNING FOR INCLUSIVE AGING IN PLACE

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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This paper advocates for integrating the concept of third place into research on Age-Friendly Cities (AFC) and Aging in Place (AIP). This integration offers a more inclusive framework for understanding older adults' everyday well-being, sense of belonging, and social connectedness. While the World Health Organization's AFC framework encompasses eight domains related to health, participation, and inclusion, existing literature has largely operationalized age-friendliness through readily quantifiable metrics, such as walkability, transportation accessibility, and housing conditions. This paper contends that such a narrow focus restricts the scope of planning research, overlooking the informal and routine spaces where older adults sustain familiarity and psychological stability. Given that aging in place involves not only residential continuity but also fostering attachment and meaningful connection within a community, a perspective aligned with older adults' lived experiences is essential.

To address this gap, the paper explores three key questions: (1) How have existing AFC and AIP studies conceptualized and measured age-friendly environments? (2) What conceptual gaps exist regarding older adults' psychological well-being and belonging within these approaches? and (3) How can the concept of third place help reframe age-friendly planning through the lens of everyday life? Third places-defined as informal spaces outside the home and formal institutions-serve as vital settings where people routinely gather and engage in ordinary social life. For older adults, these may include neighborhood parks, community facilities, local businesses, and even everyday streetscapes. These settings are significant not merely as physical destinations, but as catalysts for weak ties-the light, familiar, and recurring connections that, while differing from strong familial bonds, remain crucial for information sharing, social recognition, and daily support.

This review is necessary because dominant planning approaches have produced a blind spot by prioritizing environmental aspects that are easiest to measure. As recent reviews show, age-friendly research remains skewed toward physical domains, while relational and social domains are comparatively underspecified. This is not only a methodological limitation but also an issue of inclusion. Physical and spatial resources are not experienced equally; their meaning and usability are mediated by socioeconomic status, health, disability, and broader processes such as climate and digital transitions. Therefore, an intersectional perspective is essential, as age-friendly environments are lived differently depending on the overlap of age, class, and access to resources. The absence of the third-place concept from mainstream research leaves planning less equipped to understand how older adults actually navigate exclusion and connection in urban life.

The paper concludes that the contribution of the third place is not simply to add another variable to the literature, but to shift the analytical paradigm of planning itself. Integrating third place into age-friendly planning helps reframe aging in place not merely as a matter of physical accessibility or residential continuity, but as a question of whether older adults have access to everyday spaces where they can sustain familiarity and belonging. By applying this concept, urban planning can move closer to older adults' lived perspectives, broadening research beyond physical provision toward a more inclusive understanding of well-being amid socioeconomic inequality, climate vulnerability, and digital exclusion.

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Keywords: Age-friendly Cities, Ageing in Place, third place, intersectionality, weak ties

RETHINKING THE PIPELINE: ALTERNATIVE APPROACHES TO INCLUSION FOR MINORITY RACE PLANNERS AND PROFESSIONALS

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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This paper undertakes a critical examination of contemporary efforts to include minority race planners within the planning profession in a representative and equitable manner. A foundational premise of this work is that the best available data clearly indicate that scant progress has been made in the inclusion of African-American planners over the past 50 years, despite significant efforts to diversify the profession (Thomas, 2008; Solis, 2020; Garcia, et al., 2021).

A landmark report titled "Women and Blacks in Planning: 1972," published by the American Society of Planning Officials (ASPO), was the first survey to measure the racial diversity of the profession. It found that just 3.5 percent of planners identified as Black and noted that the "proportionate representation in planning seems to be about 1/3 of their proportions in the labor force" (Yondorf, 1972, p. 7). More than half a century later, the 2025 Planner's Salary and Benefits Survey released by the American Planning Association, reported that 3.56 percent of respondents identified as Black or African-American. Moreover, intermediate observations of minority race inclusion in professional planning suggest a largely flat long-term trend from the 1970s to the present (see Thomas, 2008).

Working from the premise that even well-intentioned efforts to increase the inclusion of minority race planners over the last 50 years have produced only marginal results, this work re-examines barriers to inclusion, examines deficiencies in the current "pipeline" system, and looks ahead to alternative methods for increasing the inclusion of minority race professionals affiliated with planning.

Using diverse archival and data sources, the paper re-examines structural barriers to the profession for minority race planners in the era since the 1970s, especially: (1) the evolution of exclusionary training and educational qualifications required for professional planning practice; (2) the comparative disadvantages faced by students of color in progressing to graduate-level education for planning; and (3) inequities in professional employment opportunities due to the relative lack of planning positions in lower income and "majority-minority" communities and jurisdictions in the US.

A second focus for the paper is to examine the sufficiency of the current traditional pipeline through planning degree programs to supply a representative volume of planners of color to professional practice in planning, as well as the capacity of occupational markets to absorb a potential increase in the number of minority race planners. While no single data source provides a complete picture this pipeline, descriptive data from multiple sources are used to outline the framework, including: (1) enrollment in accredited planning degree programs; (2) reported completion of planning and related degree programs in the Integrated Postsecondary Education Data System; (3) the current composition of age and experience cohorts from the 2025 APA Planners Salary Survey; and (4) labor market data for occupations related to urban and regional planning.

Considering the limited progress in professional representation and inclusion over the past 50 years, along with the observed limitations of the existing pipeline framework, the paper concludes with an examination of new and revised strategies to increase inclusion. These include: (1) greater affiliation between planning with related professional fields; (2) closer ties between planning institutions and professional, fraternal, and social organizations serving communities of color, (3) a greater emphasis on credentialization versus degree attainment; (4) advocacy

for equity in the distribution of professional planning positions across communities across the US; and (5) substantive changes to the existing pipeline framework to provide a more “seamless” experience and increase the successful throughput of planners of color.Citations:

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Keywords: Representation, Inclusion, Barriers, Equity, Pipeline

THE POLITICAL AND RACIALLY CODED RHETORIC THAT DRIVES THE CITYHOOD MOVEMENT

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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The Cityhood Movement, a wave of incorporations primarily among affluent suburban communities in the South, is rapidly changing the balance of power and resource distribution in metropolitan regions. The codification and concentration of political authority in local hands promises to have a dramatic effect on how counties provide for their low-income residents, as well as how wealthy enclaves control their contributions to regional economic sustainability. The rhetoric used by incorporation advocates to garner local support frequently simplifies and ultimately dismisses the tension between these competing priorities. Language appealing to abstract notions of freedom, self-determination, individual liberty, and responsible governance is deployed, resonating with residents who often chose homes outside of city limits because of the freedoms that unincorporated areas purport to offer. Superficially, these appeals to treasured American values seem to be broadly beneficial to all residents, regardless of which side of the new incorporated city limits one finds themselves. Despite the popularity of these virtues, the result in most of the successful efforts has been new cities that are more White, more affluent, and more exclusionary. There is, however, a subset of incorporation efforts by middle-class Black communities that deploy some of these appeals for the same ends but with very different motivations, providing a counter-narrative to the simpler one of racial animus-driven segregation.

This paper discusses the use of carefully tailored, highly evocative political language in the Cityhood Movement to legitimize and promote incorporation efforts. I have previously argued that the rhetorical framing during these campaigns frequently utilizes implicit racial language, which has the potential to simultaneously provoke suburban hostility against urban minority residents and mask this hostility by pairing it with established, legitimate conservative political priorities. However, the increasing diversity of cases that do not fit the profile of exclusionary, wealthy, and majority-White complicates assumptions about the goals of this movement, necessitating a more careful analysis. The paper utilizes four case studies: Sandy Springs, Georgia, a well-established city just outside of Atlanta which was widely seen as a model for incorporation and innovative administration efforts; St. George, Louisiana, recently formed from the unincorporated outskirts of Baton Rouge, which won a 2024 legal challenge to its successful incorporation referendum; South Fulton, Georgia, a majority-Black and middle-class suburb bordering Atlanta that incorporated to protect its territory from annexation; and Buckhead, a wealthy Atlanta neighborhood that continues to petition for formal separation from the city in order to exercise greater control over its tax revenue and public safety.

Using content analysis of local print and online news sources, social media, and government and political advocacy websites, this research deciphers the language and imagery used by advocates and organizers to garner public support. A demographic analysis using U.S. Census and electoral data provides a complementary study of the residents of these incorporating communities to gain some insight about who these appeals are focused on reaching. An engagement with Critical Race Theory and Stratification Economics literature provides a framework through which to evaluate these forms of public speech. The conceptual approaches used in this paper enable a discussion of how wielding language, ranging from barely disguised racial dog-whistles to appropriated civil rights terminology, can be potentially effective in focusing longstanding outgroup hostility or ingroup anxiety for the purpose of political action.

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Keywords: Cityhood, Incorporation, Regional, Segregation, Politics

THE ROLE OF URBAN PLANNING INSTITUTIONALIZATION IN BRIDGING THE DIGITAL DIVIDE

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Many efforts have been done in Dallas to address the Digital Divide (DD). However, the lack of urban planning institutionalization of the DD is a main hinder in closing the DD gap. There is a need for a better collaboration between private sectors who controls broadband tower locations and policy makers to ensure that equitable outcomes can be achieved to all communities.

This paper examines the role of urban planners in coordinating the different layers of institutionalization in Dallas City to bridge the 3rd level of the digital divide, thus creating an inclusive and equitable community utilizing Fainstein's just city theory and Manual Castell's theories, rethinking the urbanization process and its role in limiting the reproduction of inequalities.

The research methodology includes semi-structured interviews, and content analysis of the city of Dallas's official documents. This research proposes that planners engage early in the process of locating internet access points in neighborhoods to ensure inclusiveness and benefit of the internet to all communities.

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Keywords: Digital Divide, Urban Planning, Institutionalization, Dallas, inclusiveness

UNEQUAL ACCESS BY DESIGN: INDUSTRIAL ZONING AND SPATIAL JUSTICE IN SEATTLE'S LOWER DUWAMISH CORRIDOR

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Access to urban resources is shaped by land-use regimes that often privilege industrial and logistical functions over the everyday needs of adjacent communities. This paper examines how industrial zoning shapes disparities in accessibility, mobility, and environmental quality in Seattle's Lower Duwamish River corridor, focusing on Georgetown and South Park. These are long-established neighborhoods where industrial and residential uses coexist. Residents in these communities, whose demographic composition differs from county-wide averages, have long faced disproportionate environmental burdens and limited access to urban amenities. The Lower Duwamish River, a federally designated Superfund site, further reflects how industrial land use and environmental remediation shape uneven access to environmental resources.

The study employs a mixed-methods approach that connects spatial analysis with community perspectives. GIS-based analysis is used to assess zoning patterns, accessibility to public and environmental resources, and socio-economic conditions, drawing on municipal data and the American Community Survey. These spatial patterns are complemented by interviews and workshops, which show how access constraints are experienced in everyday mobility, exposure to environmental risk, and access to public space, as well as how residents understand their position within planning processes.

Findings indicate a strong spatial concentration of industrial land use across the corridor. In Georgetown, approximately 87% of land is designated for maritime manufacturing and logistics, while the figure reaches about 61% in South Park. These patterns correspond with limited public green space, fragmented mobility networks, and reduced environmental amenities. Socio-economic data further show that both neighborhoods have median household incomes below the King County average. Interviews suggest that these conditions are experienced as persistent and structural, rather than temporary.

This paper argues that unequal access in industrial corridors is not incidental but produced through land-use decisions that shape both spatial organization and everyday life. By linking spatial patterns with lived experience, the study contributes to discussions on accessibility, spatial justice, and inclusive planning, and highlights the need for approaches that more directly address inequities in access to urban and environmental resources.

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Keywords: Accessibility, Justice, Zoning, Mobility, Equity

WELL-EARNED DISTRUST: THE BREAKDOWN OF PUBLIC PARTICIPATION IN OAKLAND STADIUM SITING PROCESS

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Stadiums and other large-scale developments continue to be contested developments in cities given community resistance and the economic and environmental burdens associated with them. Nevertheless, public financing continues to be a primary vehicle by which to develop new stadiums—the public cost for subsidizing sports stadiums is an average of $50 million per facility when accounting for foregone property taxes, net public revenue, and other factors (Long, 2005). Accordingly, cities lost an estimated $18 billion in forgone property taxes from all major league stadiums (or about $5.7 million per facility) (Propheter 2023).

Despite these concerns, only 16% of the 89 major and minor league stadiums sited between 2000 and 2022 were contested (Solis & Lee, 2025). When stadiums were contested, neighborhoods and residents resisted these developments because they were not involved in the decision-making process. While many stadiums are still built despite community resistance, planners need to work with developers around community engagement and securing community benefits agreements for several reasons. Community groups can help to slow down development and gentrification impacts, incorporate community benefits agreements, and/or can help to stop the development of a stadium altogether (Cain, 2014; Panton & Walters, 2018).

This paper focuses on the unique case of Oakland, California and the Athletic's (A's) Major League Baseball stadium siting process between 2012 and 2023. This stadium proposal would have potentially impacted Chinatown and West Oakland, both of which were affected by urban renewal and freeway developments that impacted non-white residents. Oakland also has a history of labor organizing and resistance, with the founding of the Black Panthers in 1966, Chinese community organizing with the Chinese American Citizens Alliance Oakland Lodge in 1912, and several boycotts and strikes. In this context, the stadium was met with much community resistance and was successful in stopping the development. We focus on the A's public engagement process and whether it captured residents' needs and concerns. In addition, we assessed whether community organizations were able to voice concerns through formal public engagement processes or whether they had to work outside of formal engagement.

To examine these questions, we triangulated multiple primary data sources to understand the public engagement process with the Oakland A's stadium, including newspaper articles, flyers, meeting materials, economic impact reports, documents related to draft community benefits agreements, and 23 interviews with key stakeholders. The findings fill a gap in empirical research about successful anti-stadium community organizing campaigns and the public engagement process, offering implications for planners on how to include community engagement by those who are directly affected by development.

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Keywords: public engagement, stadiums, community organizing, ethnic neighborhoods

WHEN THE ORGANIZATIONS LEAVE TOO: GENTRIFICATION, DISPLACEMENT, AND LGBTQ POLITICAL POWER IN GREENWICH VILLAGE

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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New York's Greenwich Village has historically been a site of LGBTQ liberation and a place of relative safety for LGBTQ people dating back to the early 20th Century (Chauncey 1995). Gentrification has displaced many of the people who have historically lived there and, as this paper will argue, the organizations that serve them. There is extensive research on the effects of gentrification on individuals (Newman and Wyly 2006; Smith 1996). However, what happens to the organizations that serve those individuals in an era of gentrification is an area with little research, and this paper seeks to quantify this. Specifically, this paper seeks to examine how far LGBTQ nonprofit organizations have been displaced between 1990-2020.

Part of a larger project on the effects of gentrification on LGBTQ social movement organizations and nonprofits, this paper asks how much, if any, displacement these organizations undergo as the populations they serve are displaced. That is, what is the physical displacement of these organizations with respect to their offices, sites of protest, and areas where these organizations serve their constituents? Are they displaced within Greenwich Village, or do they move outside of the neighborhood to other parts of the city, or out of the city entirely? This paper also asks how many of these organizations cease to exist because of the displacement of their constituencies.

It is well established that marginalized groups build political power through building social movements and other autonomous organizations, as explored by Nicholls (2016) in the context of undocumented immigrant communities. This is further reinforced by Gieseking (2020) in their examination of queer placemaking in New York among lesbians and trans people. Thus, organizational displacement might constitute a spatial mechanism of political disempowerment. One aspect of that, this paper argues, is how far these organizations are displaced.

This paper examines this through the analysis of IRS Form 990 tax returns filed by nonprofit organizations, as well as through content analysis of newspaper articles, and interviews with key figures in these organizations. The interviews will corroborate the tax data as well as provide further depth to the data that might not be present in tax returns such as sites of protest or areas of focus for the organizations.

The study examines approximately fifty different nonprofit organizations. Data gathered is then analyzed through GIS methods to determine how far organizations or their focus areas moved over this period. Preliminary results indicate a mean displacement of nearly six kilometers over the study period. While this is a relatively short distance, it could cause disruptions for those wishing to access services — either because they must navigate different transit routes, or because they themselves have been displaced even further afield.

This has implications for planning scholarship and practice because this is an understudied phenomenon. Little research has been done on the displacement of organizations stemming from gentrification, and this may open up more research on the topic. For planning practice, this is significant because it may help planners think about the implications of new development not only on the people who reside there, but on the organizations that serve those people.

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Keywords: social movements, LGBTQ, gentrification, nonprofit, spatial analysis

WHITHER ANTI-RACIST PLANNING? AFFIRMING THE "BLACK GENIUS" OF ZORA NEALE HURSTON

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Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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This paper begins by embracing Rashad Williams' (2024) argument that racial planning actively reinscribes white supremacy and that if planning wants to bring about a racially just city it must discover a radically new way forward. The paper contributes to debates in Inclusion, Anti-racism and Accessibility in Planning by asking how we should best think about that new way forward. It does so by engaging in a close reading of two seminal thinkers in the Black tradition, Frantz Fanon and Zora Neale Hurston. More specifically, it examines their differing stances on the figure of "black genius."

I recently published a book (2026) in which I argue that thinking on the critical Left is mired in what Nietzsche called ressentiment, a reactive politics that only thinks in terms of destroying what we oppose. We are anti-capitalists, anti-colonialists, anti-racists. This kind of thinking, I argue, does very little to disrupt the powers that be. In addition, and more importantly, it focuses all its attention on their power and leaves very little energy for an examination of ours. We meticulously catalogue the evils of capitalism, colonialism, and racism, and we very rarely consider the strength, intelligence, and excellence of workers, Indigenous people, and Black people. We urgently need, instead, to imagine and pursue an active politics of affirmation, one that turns its full attention to our own strength, asks what we are capable of, and explores what kind of world we want to build in common. This paper argues that it is in Hurston's work, moreso than Fanon's, that we can find the kind of affirmative politics we so desperately need today.

In Black Skin, White Masks (2008), Fanon examines the négritude tradition, and specifically the figure of what Alouine Diop called "the genius of the black man." At first Fanon is attracted to this idea. He admires how Diop assumes blackness to be strength and excellence rather than misery. However, in the end Fanon says we should discard the idea. He says that "It is my belief that a true [Black] culture cannot come to life under present conditions. It will be time enough to talk of the black genius when the man has regained his rightful place" (p. 144). He insists that the focus of our politics should not be Black excellence. We must, instead, train our attention on the effort to destroy racism and the inferiority complex that it produces in Black people. Then, once the necessary destructions have been carried out, something called Black genius may come to exist. This kind of thinking is foundational to anti-racist thought.

This kind of thinking would never have occurred to Hurston. She presupposed Black genius, assumed it to be always already there at the beginning. She saw Black excellence, intelligence, and power everywhere she looked. Black language, Black religion, Black music, Black storytelling, and Black schools (2022). She described Black genius in her ethnographic work (1935). She embodied it herself, irrepressibly, in both her fiction (2013) and non-fiction. Alice Walker said Hurston exuded "audacious Black delight." "The quality I feel is most characteristic of Zora's work," Walker says, is "racial health; a sense of black people as complete, complex, undiminished human beings, a sense that is lacking in so much black writing and literature" (1979).

Hurston refused to be bound by the ressentiment of antiracism. She insisted, instead, on an affirmative politics that placed Black genius at the center. Her work is vital to the question of race and racial justice in planning. But she offers the critical Left a more general model for how to think politically. Channeling her noble spirit, we might refuse anticapitalism and inquire instead into proletarian genius. We could think not in terms of decolonization but Indigenous genius. Or we might refuse antifascism and imagine, instead, something we might call democracy.

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Keywords: anti-racism, Zora Neale Hurston, Frantz Fanon

WHO DEMANDS, WHO BENEFITS? EQUITY ANALYSIS OF PARTICIPATORY BUDGETING (PB) IN PARKS AND RECREATION

Abstract ID: 2298.0.0.697.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Individual Paper Presentation

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Participatory budgeting (PB) has been widely promoted as a tool for advancing procedural justice by incorporating marginalized voices into public decision-making. In theory, PB enables residents to articulate unmet needs and redirect public resources toward underserved communities. However, whether PB produces equitable outcomes remains an open empirical question. This study examines equity in PB-funded investments in parks and recreation, a domain closely tied to environmental quality and neighborhood livability. Projects in this category offer a useful lens for examining equity because they encompass both remedial investments that address basic neighborhood deficits and amenity-oriented improvements that enhance quality of life, ranging from facility repair and playground construction to community gardens and street tree planting.

Focusing on PB in New York City (PBNYC), which explicitly emphasizes social justice through institutional design and outreach practices, this study analyzes three PB cycles (FY2016-2018) across 31 participating council districts, including 259 proposed park and recreation items. Using administrative records of proposals, votes, and funded projects, this study examines how resident-generated proposals and the support they receive reflect neighborhood needs and preferences, and whether final budget allocation helps address preexisting local vulnerabilities. To assess these patterns spatially, proposed and winning projects are geocoded and linked to council district- and block group-level socioeconomic characteristics.

With these data, the study addresses three interconnected research questions quantitatively. First, two-way fixed-effects models are used to examine how neighborhood socioeconomic and racial composition shape relative demand for parks and recreation within PB. The results show that higher-income districts exhibit greater shares of proposals, votes, and funding for parks and recreation projects, suggesting that wealthier communities are more likely to prioritize such investments once more basic needs, such as housing and education, are met. Second, logistic regression analyses are used to examine whether preferences for different types of parks and recreation projects are systematically associated with neighborhood characteristics. The findings reveal that project types vary systemically across neighborhoods. Lower-income areas and neighborhoods with older housing are more likely to propose playground and maintenance projects, reflecting basic infrastructure needs, whereas higher-income areas are more likely to demand recreation and environmental or aesthetic improvements. Finally, nonparametric comparisons are used to assess whether PB proposals and winning projects are more likely to occur in neighborhoods with greater needs. The results show that overall social vulnerability does not differ significantly across neighborhoods with winning projects, proposal-only projects, or neither, suggesting that PB does not systemically direct parks and recreation investment toward the most socially vulnerable communities. However, neighborhoods with higher housing and transportation vulnerability are more likely to generate proposals and secure funding, indicating that PB may respond to specific dimensions of need rather than broad measures of disadvantage.

In conclusion, these findings suggest several planning implications. First, parks and recreation investments may often be understood as secondary needs that become more salient once more basic needs are relatively met. Second, demand within the parks and recreation category is internally differentiated, suggesting that planners should avoid treating it as a uniform category of demand. Finally, although PB does not automatically produce

broadly equitable outcomes, it can still direct investment toward neighborhoods with unmet living-environment needs, indicating its value as a tool for identifying and responding to localized vulnerability.

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Keywords: Participatory Budgeting, Park and Recreation, Environmental Justice, Equity, SVI

BEYOND THE URBAN–RURAL DIVIDE: PHARMACY ACCESSIBILITY AND THE GEOGRAPHY OF RURAL HEALTH

Abstract ID: 2296.0.0.362.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Research-in-Motion Presentation, Research currently in process

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Study Highlights

i. Advances pharmacy availability, conceptualized as a dimension of pharmacy accessibility, as an indicator of rural livability.

ii. Introduces a nuanced reclassification system to reveal intra-rural variations in pharmacy accessibility.

iii. Extends rural health geography beyond provider counts.

Access to pharmacies constitutes a critical component of community health infrastructure, providing essential services and functioning as accessible entry points to healthcare. Despite their importance, disparities in pharmacy access persist, particularly in rural areas, where approximately one in five Americans resides. Understanding how these disparities vary spatially is essential for advancing equitable healthcare access and improving rural place-based livability.
Existing research has largely examined pharmacy accessibility through a binary urban–rural framework, identifying broad differences in service availability. Additionally, studies often treat rural areas as homogeneous, which, while analytically convenient, oversimplifies geographic variation, obscures meaningful intra-rural differences, and limits the identification of nuanced patterns in healthcare service provision. This study addresses these gaps by introducing a spatial framework that disaggregates the rural landscape to capture intra-rural variation. Pharmacy closures are conceptualized as indicators of shifting service availability and potential threats to place-based livability.

The longitudinal study is guided by three research questions: (i) What spatial patterns of pharmacy availability and closures are observable in 2010 and 2020? (ii) Does pharmacy availability differ based on rurality, i.e., between moderate and remote rural areas? (iii) What community-level rural livability indicator factors explain the variation in pharmacy availability across levels of rurality?

Methods include descriptive and geospatial analyses to map distributional patterns, as well as Chi-square tests of independence to examine the associations between rurality levels and pharmacy types. Also, the multiple regression framework is used to assess community-level rural livability factors. Pharmacy availability will be measured in two ways: (i) the absolute count of pharmacies per tract and (ii) the number of pharmacies per 1,000 residents, adjusting for population differences. The count of pharmacies, as a discrete variable, is modeled using Negative Binomial regression. The population-adjusted measure, which is continuous, is analyzed using ordinary least squares (OLS) regression.

The expected contributions of this research are threefold: empirically, it provides a refined understanding of pharmacy accessibility across rural gradients; conceptually, it advances the use of pharmacy availability as a spatial indicator of rural livability; and policy-wise, it informs targeted and equitable rural health planning.

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Key Words: Accessibility Planning, Pharmacy Accessibility, Rural Health Disparities, Rural Health Access, Socioeconomic Inequality

EVALUATING SPATIAL GREEN SPACE ACCESSIBILITY USING NON-MOTORIZED TRAVEL BEHAVIOR ACROSS LEVELS OF URBANIZATION IN HUNTSVILLE, ALABAMA

Abstract ID: 2296.0.0.827.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Research-in-Motion Presentation, Research currently in process

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Study Background: Urban areas differ in the distribution and availability of public facilities depending on their degree of urbanization. While highly urbanized cities often have well-developed infrastructure and abundant public amenities, mid-sized and rapidly growing cities may exhibit uneven patterns of service distribution. Huntsville, Alabama, presents a unique case as a fast-growing city with expanding suburban and peri-urban areas, where development does not always match equitable access to public amenities. One important facility that reflects this variation is urban green space, which plays a critical role in improving environmental quality, physical health, and overall well-being. Variations in green space distribution across areas with different levels of urbanization create spatial inequalities in accessibility.

Research Aim: The primary aim of this study is to analyze spatial disparities in green space accessibility in Huntsville, Alabama, with a focus on understanding how accessibility varies across areas with different levels of urbanization.

Methodology: To evaluate green space accessibility, this study adopts a non-motorized, travel behavior-based approach. The analysis focuses on walking and biking as the primary modes of transportation to better capture accessibility for active transportation users. Travel behavior patterns are incorporated using StreetLight data, which provides detailed insights into non-motorized movement. In addition, SafeGraph data is used to examine visitation patterns to green spaces, allowing the study to connect accessibility with actual usage. Accessibility is assessed using a 15-minute travel threshold, measuring how far residents can reach green spaces through walking and biking networks. The study explores several accessibility modeling approaches, including the Gaussian Two-Step Floating Catchment Area (G2SFCA) method, to account for distance decay and variations in travel behavior. These models are currently being evaluated as part of the exploration phase of the research.

Expected Outcomes: The study reveals spatial inequalities in green space accessibility across Huntsville, particularly across areas with varying levels of urbanization. The results show that some neighborhoods that appear well served by parks based on proximity still have limited accessibility when evaluated through walking and biking networks. Additionally, the analysis identifies areas where green spaces exist but are not well connected to pedestrian and cycling infrastructure. By integrating accessibility modeling with visitation data, the study provides deeper insights into both potential and actual access to green spaces. These findings help identify priority areas for improving green infrastructure and enhancing non-motorized connectivity to promote more equitable access.

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Key Words: Green Space Accessibility, Degree of Urbanization, Spatial Inequality, Active Transport, Accessibility Modeling

PLANNING FOR MATERNAL HEALTH EQUITY

Abstract ID: 2296.0.0.691.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Research-in-Motion Presentation, Innovative practices, concepts, and ideas for pedagogy

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Planning has historically shaped social and structural determinants that impact community health (Wang et al., 2020) yet it has long overlooked maternal health as a planning priority. Many planners have limited familiarity with maternal health and how planning decisions may influence maternal health outcomes. This study seeks to address these gaps by identifying how planning can foster communities that support reproductive justice and maternal health, asking the following question: What social determinants shape maternal health experiences among low-income Latinas? By framing maternal health as a place-based issue, this research challenges traditional planning approaches and calls for greater integration of maternal health into planning community-based frameworks, tools, and policies aimed at addressing the maternal health challenges experienced by low-income Latina women.

Literature in public health highlights the connections between place-based characteristics and women's physical and mental health before, during, and after pregnancy (Vinikoor-Imler et al., 2011); however, planning tools have largely failed to incorporate maternal health. For instance, The American Planning Association's Healthy Communities Policy Guide, a foundational resource for integrating health into planning practice, does not mention maternal health. This disconnect is alarming in the context of the maternal health crisis in the United States, where maternal mortality rates are three times higher than in other high-income countries and recent policy shifts continue to deepen inequities in reproductive care (Hoyert, 2021). Latina women, in particular, face compounded barriers related to immigration status, poverty, racial discrimination, and geographic isolation, yet their experiences are often absent from planning discourse.

This study employs a mixed-methods approach. Existing quantitative studies on the relationship between maternal health and the built environment often rely on difficult-to-access datasets, such as birth records, which are typically siloed within health departments and inaccessible to most planning professionals. Building on the planning-friendly index for maternal and child health developed by Wang et al. (2020) and piloted in Pennsylvania, this study will incorporate county-level data from sources such as the U.S. Health Resources and Services Administration and the National Vital Statistics System to identify communities in Texas that have low, moderate, and elevated levels of maternal and child health needs. This study supplements quantitative analysis with narrative-driven qualitative data collected through focus groups with Latinas from Dallas County, engaging participants through collaboration with promotoras, or community health workers, who are trusted members of the communities they serve.

Texas offers a unique context for this research given its status as a border-state, its high maternal mortality rate, restrictive reproductive policies, lack of public funding, and geographic disparities. Barriers are magnified in urban and rural areas where public transportation is limited, affordable housing is unstable, and healthcare infrastructure is fragmented (Wang et al., 2020). Latinas in Texas have already experienced a sharp rise in births while also facing longer travel times and higher medical costs (Institute for Research on Women, Gender & Sexuality, 2024). The current landscape of reproductive health care presents a critical opportunity to expand the role of planning in addressing these challenges. Rather than proposing immediate solutions, this paper focuses on documenting barriers to maternal health and laying the groundwork for future planning intervention such as opportunities for advocacy and direct engagement in housing and transportation policy. Broadly, this may serve as a reference for other states in the US with high maternal health concerns.

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Key Words: Maternal health, Public health, Gender, Feminist Planning, Latino/a

RESCUE OR REMOVAL? THE ENTANGLEMENTS OF FEMA, AND UNDOCUMENTED EXCLUSION

Abstract ID: 2296.0.0.351.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Research-in-Motion Presentation, Research currently in process

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This presentation examines how U.S. immigration enforcement and disaster management systems have become structurally intertwined, creating compounded risks for undocumented immigrants during disasters. Since the post-9/11 reorganization that placed FEMA and Immigration Enforcement (ICE, HSI) under the Department of Homeland Security, the boundary between disaster response and immigration enforcement has blurred. This entanglement has reshaped emergency management into a tool that, in many cases, enforces exclusion rather than support, especially for undocumented communities. This study traces key federal policy shifts from 2000 to the present. These include the denial of aid to undocumented survivors after Hurricane Katrina, the expansion of deportation programs like Secure Communities under the Obama administration, the reallocation of FEMA funds to ICE detention during the Trump administration, and the exclusion of undocumented individuals from federal pandemic relief. These turning points demonstrate how the dual logics of national security and disaster management reinforce one another to marginalize already vulnerable populations. Rather than treating undocumented immigrants as stakeholders in need of protection, federal disaster policy increasingly positions them as threats to be surveilled, policed, or ignored. This paper argues that immigration status has become a silent filter in federal disaster aid programs, shaping who receives support and who is excluded. This presentation draws from the first chapter of my dissertation. It contributes to planning scholarship by highlighting the role of bureaucratic institutions in producing racialized vulnerability and calling attention to the urgent need to separate disaster response from immigration enforcement. As climate-related disasters grow more frequent and severe, so too does the need to ensure that all residents, regardless of status, can safely access disaster preparedness and recovery systems. The study lays the groundwork for new disaster planning frameworks that center on justice, belonging, and the lived experiences of undocumented immigrants.

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Key Words: Policy Analysis, Undocumented Immigrants, Immigration enforcement, FEMA, Bureaucratic intersection

SPATIAL EQUITY IMPLICATIONS OF FIXED-ROUTE TRANSIT DISCONTINUATION IN SEMINOLE COUNTY, FLORIDA

Abstract ID: 2296.0.0.658.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Research-in-Motion Presentation, Critique related to a hot topic in planning research

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Background

Public transit agencies facing fiscal pressures increasingly replace fixed-route services with flexible, on-demand models. While such transitions promise operational savings, their distributional consequences remain insufficiently evaluated, particularly in suburban contexts. In January 2026, Seminole County, Florida discontinued eight fixed-route bus services—which had also functioned as connections to the regional transit network anchored in adjacent Orange County—and replaced them with an app-based, reservation-driven microtransit system projected to save approximately $5.5 million annually. The equity implications for transportation-disadvantaged populations—including low-income residents, older adults, people with disabilities, and zero-vehicle households—remain unclear. This study examines whether the spatial coverage of the new on-demand system aligns with areas of concentrated transit dependency and identifies accessibility gaps emerging from the service transition.

Study Design

The study employs a GIS-based spatial equity analysis at the census block group level. Using American Community Survey (ACS) 2020–2024 data, a composite transit dependency index is constructed incorporating poverty rates, zero-vehicle households, older adults, and individuals with disability. Spatial analysis evaluates accessibility to essential destinations, including employment centers, healthcare facilities, and grocery stores and compares pre- and post-discontinuation service coverage, quantifies transit-dependent households located outside effective service areas.

Preliminary Findings

Initial results reveal substantial accessibility losses concentrated among highly transit-dependent areas. Of Seminole County's 7,284 zero-vehicle households, 805 (11%) lacked fixed-route access prior to discontinuation. Following removal of all eight routes, 4,946 households—approximately 68%—lost fixed-route access. This sixfold increase in unserved households suggests that cost-driven service substitution disproportionately affects residents with limited mobility alternatives, raising significant transportation equity concerns in suburban transit restructuring.

Conclusion / Contribution

This study develops a replicable geospatial framework for evaluating equity outcomes associated with fixed-to-on-demand transit conversion, a policy shift of growing national relevance. Unlike urban cores, where multimodal options may partially mitigate service reductions, suburban counties dependent on adjacent metropolitan transit systems face compounded equity risks: local service discontinuation weakens both internal mobility and regional connectivity for residents who cannot drive. By assessing spatial alignment between service provision and transit dependency at a fine geographic scale, the analysis moves beyond aggregate ridership metrics to reveal localized disparities across vulnerable populations. Findings inform Seminole County's ongoing system evaluation and provide a transferable methodological model for planners and policymakers in suburban regions embedded within hub-and-spoke regional transit systems.

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Key Words: Transportation equity, GIS, On-demand service, Accessibility

THE SHIFTING NATURE OF LGBTQIA+ SPACE: A SEATTLE, WA CASE STUDY

Abstract ID: 2296.0.0.1049.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Research-in-Motion Presentation, Research currently in process

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In recent decades, there has been a shift in the nature of gay neighborhoods (or gayborhoods), as the form of queer clustering has become more dispersed, termed by some as the death of the gayborhood. The academic literature suggests that this trend can be attributed to both the broadening acceptance of gays and lesbians and economic pressures that have pushed businesses and residents out of these areas (Bitterman & Hess 2021; Ghaziani 2014). This pattern of gentrification has often been spurred on by municipal policies that support new development in historically gay neighborhoods (Doan and Higgins 2011). Many in the LGBTQIA+ community, particularly elder queer residents, bemoan this loss of queer space, which provides opportunities for belonging, acceptance, and connection. However, queer space has always been disaggregated to some extent, especially those spaces used by the most marginalized within the community, such as lesbians and people of color (Gieseking 2013). Amin Ghaziani (2019) has suggested that we use the model of cultural archipelagoes to understand queer urban space. This acknowledges that subsets of the queer community may cluster in various areas across a city, and that the location of the central "gayborhood" or "gay district" is not always stable.

In the City of Seattle, gay spaces initially emerged in the downtown area, but the contemporary gayborhood has been Capitol Hill, an area to the east of the City's downtown district. While the neighborhood contains a broad swath of land, a major nexus of the area's gay business district has historically been the Pike/Pine corridor. This area directly butts up against Seattle's downtown, and is located near the Capitol Hill light rail station, which opened in 2016. The Pike/Pine corridor was upzoned in 2004 to encourage density near the City's downtown, but the influx of redevelopment led the city to adopt a conservation overlay district to preserve the historic essence of the area. Despite these efforts, there has been a shift in the character of this area away from its history as a grungy LGBTQIA+ district. Within this environment, gay districts have begun to emerge outside of the Capitol Hill area, revealing the resilient nature of the community.

This research charts the spatial history of Seattle's queer community, with a specific focus on queer businesses and LGBTQIA+ residences. Mapping based on census data, gay guides, social media, and fieldwork charts the changing geography of queer space in the City. Initial findings reiterate that queer clustering across urban areas is not stable, as the LGBTQIA+ community finds and creates spaces of their own. Our research seeks to understand the shifting nature of the contemporary gayborhood, looking to the emergence of gay districts in the wake of neighborhood gentrification. We interrogate the interventions of local planning practice in both the gayborhood and the burgeoning queer district to understand how planners can best support LGBTQIA+ communities.

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- We will discuss how the pressures of gentrification are changing the nature of queer space in cities by charting the history of Seattle's gay neighborhood. We will also interrogate how planners can best support LGBTQIA+ residents in the creation and maintenance of spaces of belonging.

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- Brooklyn

Key Words: LGBTQIA+ Community, Neighborhood Change, Urban Equity, Community Development, Urban History

WHAT CAN PLANNERS LEARN FROM IMMIGRANT ORGANIZATIONS IN SPOKANE, COUNTY, WA?

Abstract ID: 2296.0.0.1009.2026
Track 4: Inclusion, Anti-racism and Accessibility in Planning
Research-in-Motion Presentation, Research currently in process

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Harwood (2022) and Vitiello (2009) discuss the potential for planners to become more involved in creating welcoming, immigrant-friendly environments, and assisting in immigrant integration efforts–a process described by the Migration Policy Institute (2020) that seeks economic mobility and social inclusion for immigrants, refugees, and their children. Further, Harwood (2022) identifies areas where planners can be more effective in integration efforts.

This study expands on that work through an examination of immigrant organizations (IOs) in Spokane County, WA. Following Bloemraad, Chaudhary and Gleeson (2022), we define IOs as any collective group that brings members of one or more immigrant groups together. Nonprofit organizations are perhaps the most visible form of IOs. In recent years, IOs along with state, municipal, and local governments have stepped up integration efforts in response to the vacuum left by shifting Federal priorities. A situation that has become more acute during President Donald Trump's second term.

Most studies of immigrants and refugees in the U.S. focus on major metropolitan areas that often serve as points of arrival. However, less populated areas like Spokane can be where immigrants put down roots. Further, resource limitations that accompany smaller areas may lead to patterns of cooperation and competition among IOs that then lead to outcomes that differ from those in more populated areas. We present findings from 26 semi-structured interviews with executive directors and employees of IOs active in the County. These interviews are part of a needs assessment study on the barriers and facilitators to providing services to immigrants and refugees.

Beyond the need for legal aid, respondents identified food security, housing, transportation, and mental and physical health as the primary needs facing the populations they serve. One of the major facilitators in accessing these primary needs is employment. Yet, immigrants and refugees face complications in terms of work permits, must learn to navigate U.S. work cultures, and are often over-skilled for the jobs available (the "brain waste" phenomena). The need to work then creates a need for childcare—a responsibility that is gendered in the U.S. and much of the world. Immigrants and refugees must also navigate national and regional manifestations of gender, racial, ethnic, and religious inequalities and biases that intersect with those found in their home countries. All of this is occurring in an English-language nation, thus necessitating English language learning and the translation of critical materials (e.g. driver's license test materials, government documentation, medical care, and educational material for both children and adults).

Commenting on the role of public officials, respondents highlighted the necessity for public officials and decision makers to better understand the needs (and the barriers to those needs) of immigrants and refugees. Planners, in particular, are well suited to assist immigrant communities especially in the areas of housing and transportation. Respondents described how high housing costs and low or no incomes result in overcrowding. Often units intended for individual families are occupied by multiple families. Regarding transportation, they discussed how Spokane's auto-dominant environment creates a need for automobiles which in turn requires immigrants and refugees to learn how to drive, obtain drivers licenses, and purchase vehicles. Respondents further added that women were

more likely to use transit because when automobiles were purchased by families, they were more likely to be used by male family members commuting to remote work sites.

Through the identification of barriers and facilitators to the provision of services, this research project presents potential entry points for planners to work with immigrant and refugee communities, with a special emphasis on housing and transportation.

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Key Words: immigrants and refugees, immigrant friendly, immigrant integration, immigrant organizations, nonprofits

Track 5 – International Development Planning

Track 5 Roundtables

Streets as Livelihoods: Rethinking Policies and Practices of Street Vending in the Global South
Abstract ID: 2297.0.0.638.2026
Track 5: International Development Planning
Roundtable Submission, Topical Discussions

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Street vending is one of the most pervasive livelihood strategies across cities in the Global South, but it remains entangled in complex issues related to economic necessity, spatial informality, and contested regulations. This roundtable examines the multifaceted aspects of street vending through a discussion that focuses on spatial practices, governance, and the everyday negotiations between vendors, authorities, and urban residents. Drawing on comparative research on informality, urbanism, and street livelihoods, the session brings together scholars and practitioners to explore three key questions: Where does street vending occur? How is it regulated? What challenges do vendors face?

In regions such as Asia, Africa, and Latin America, vendors develop micro-geographies responding to foot traffic, visibility, and access, often transforming sidewalks, transit hubs, and markets into vibrant corridors for their livelihood. These spatial adaptations, highlighted in comparative studies of informal urbanism, show how vending influences and is shaped by urban space. Research like Peimani and Kamalipour's (2022) review emphasizes that vending's spatiality intersects with gender, health, and public space design, urging planners to better recognize the spatial knowledge embedded in vendor practices. Recchi's (2021) review further notes that, despite regional differences, issues like precarity, negotiation, visibility, and control are common across contexts.

Governments often enact regulations that fluctuate between punitive actions and limited recognition. Roever and Skinner (2016) reveal how exclusionary policies, confiscations, and harassment create vulnerabilities for vendors, even where vending is officially licensed. These contradictions expose deep inequalities regarding who can access urban space and under what conditions. Nevertheless, informal workers are active agents in shaping governance. Mahato and Roy's (2024) study of the Hawker Sangram Committee in India shows how grassroots organizing can influence policy, expand recognition, and secure rights to public space, demonstrating the political agency within informal economies.

These processes occur within broader urban transformations. As Rukmana's (2020) work on megacities indicates, rapid urbanization, restructuring, and growing inequality increase pressures on street vendors, while also integrating informality into planning systems. Using these insights, this roundtable fosters a collaborative dialogue among diverse urban experiences. Participants will begin with brief reflections based on their regional expertise

before engaging in a guided exchange on comparing spatial practices, unpacking regulatory environments, and exploring vendors' political strategies to remain visible and sustain their livelihoods.

The session will open with short, informal remarks from four participants, each drawing on their research or practice, to highlight issues such as:

- Spatial practices and the micro-geographies of vending zones
- Regulatory and legal frameworks affecting vendors
- Displacement, contestation, negotiation, and survival strategies
- The link between informality, urban governance, and the "right to the city."

Attendees will then join small-group discussions to share observations from their own contexts, research, or experience. These conversations aim to generate new insights on inclusive governance, lived experiences in urban space, and policy innovation. By fostering dialogue, this roundtable seeks to deepen understanding of street vending as a spatial, socio-economic, and political phenomenon shaping contemporary urbanism across the Global South and beyond.

Audience Engagement Questions:

- Where do street vendors in your city or research context typically establish their selling spaces, and what social, economic, or spatial factors (such as foot traffic, accessibility, regulations, or competition) shape these location patterns?
- What regulatory, legal, or policy frameworks govern street vending in your context, and in what ways do these rules enable, restrict, or complicate vendors' efforts to sustain their livelihoods and claim space in the city?
- What forms of displacement, conflict, or contestation have you observed between vendors, authorities, or other urban actors, and how have vendors responded through organizing, negotiation, adaptation, or other strategies to maintain legitimacy and access to space?

Citations:

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Key Words: Street Vending, Urban Informality, Global South

Urban Finance in Challenging Times: How Can Cities Finance Growing Public Investment Gaps in the Global South?

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Track 5: International Development Planning
Roundtable Submission, Panel Interviews

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Recent years have seen renewed calls to enhance the role of subnational governments, particularly cities, in public service and infrastructure investment. Previous efforts to do this had impact but too often have not met expectations. This is important at a time when many countries, particularly in the Global South, face large public infrastructure gaps but lack sufficient resources to fill them. Gaps increase with population growth, urbanization, rising inequality, and changing socioeconomic conditions. Political and financial crises, natural disasters, climate-related events, and conflicts, among other shocks, impact public finance and development assistance essential for countries in the Global South to meet responsibilities to their constituents. The current evolving crisis in global governance has added additional challenges and uncertainty.

Can subnational governments help to address these substantial challenges and increase their role in public investment? Cities typically drive national economic growth and can raise resources, invest, and deliver services to advance sustainable and inclusive development. Many experts argue that cities can do more to provide infrastructure essential to attract private investment, to create jobs and to broadly improve the well-being of their citizens. At the same time, there is consensus that public resources and development assistance alone cannot meet the needs and that it is increasingly essential to appropriately tap private finance.

Experience and evidence reveal some limits on the ability of cities to do this. Intergovernmental systems are often flawed, and institutional and governance weaknesses and political challenges can create obstacles for cities to function as effectively as they could. Extensively tapping private finance is not yet possible in many countries in the Global South although some cities are often creditworthy. Central governments may create disincentives by providing grants to high-capacity cities that could access financial markets for revenue-generating infrastructure, depriving weaker local governments of a fair share of public resources. Recurrent grants may also discourage routine local revenue generation needed for the operation and maintenance of infrastructure and to fund other local public functions.

Despite the challenges, confidence in a productive role for cities and subnational governments has been reinforced by a range of global initiatives, such as the Sustainable Development Goals (SDG), Habitat III (the New Urban Agenda) and the recent (2025) Financing for Development Sevilla Agenda. Although options and risks must be assessed and feasible modalities determined, it is possible for some cities to leverage more private finance and for countries to more equitably and efficiently allocate public resources for local infrastructure investment. Recent thinking in development assistance also suggests opportunities for productive innovation. The form and extent of subnational investment mechanisms and other intergovernmental system reforms necessary for them to work effectively, however, depend on adequate collaboration to create urban and local government policies and support tailored to the context of specific countries.

Audience Engagement Questions:

- How can new means to finance urban investment in the Global South reduce challenges with existing mechanisms, increase available resources, and target finance appropriately? What can cities do independently and what support/coordination is needed from higher levels of government, neighboring jurisdictions, and external organizations?
- How can cities use existing and develop new revenue sources for more effective and equitable operation and maintenance of infrastructure and to service any debt incurred to build it?
- How can planning academics and practitioners conduct better research and devise actions needed to improve urban finance for sustainable development planning?

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Key Words: urban infrastructure, urban finance, sustainable development, multilevel governance, private finance

WHAT NOW? The future of international planning education in North American Universities.
Abstract ID: 2297.0.0.761.2026
Track 5: International Development Planning
Roundtable Submission, Topical Discussions

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In 1984, under the leadership of Gary Hack who was then MIT's Department Head of Urban Studies & Planning (DUSP), a new specialization on international development planning was created. DUSP was the first planning school within ACSP (American Collegiate Schools of Planning) to create such a specialization in international development and planning (IDG). The timing for IDG's creation was perfect: There was a growing interest in globalization then; the number of student applications from developing countries were steadily increasing; and there was a growing intellectual consensus among leading development agencies that a new approach to development planning different from conventional state led efforts was necessary for both economic growth and poverty alleviation.

Since the mid 2000, the field of international development has been facing serious challenges. For one, the US has entered a new inward-looking phase in response to the growing backlash against globalization. Second, US universities has been facing growing financial hardship and as a result have steadily decreased financial support for international students. Third, as US's domestic urban problems have become more pronounced, there has been a shift in scholarship away from international problems towards domestic problems. Many foundations, which in the past, supported research on international issues have also altered their funding priorities. Overall, the specialization of international development and planning, have been facing growing challenges with sharp drop in student enrollment amidst a hostile intellectual climate against US involvement in development abroad. The recent dismantling of USAID is a vivid example of the changing national mood against US's role as a donor to address global problems.

We propose that a time of reckoning has arrived, and that requires serious rethinking of the assumptions underlying conventional IDG programs. A new approach is necessary, particularly to counteract the growing distaste for anything international/foreign. Towards that goal, we propose that ACSP should convene a Presidential panel of faculty from seven leading programs which offer specializations in international development planning – namely, UC Berkely, UCLA, UNC (Chapel Hill), Cornell University, Georgia Tech, University of Illinois at Urbana Champagne and MIT. The purpose of the panel will be to take stock of the changing circumstances, compare the experiences of different schools, and articulate a collective strategy of how to retain and nurture the failing academic attention on international development and planning.

Audience Engagement Questions:

- What are the experience different schools coping with the International Development?
- What have been the innovative responses from the changing schools under these circumstances?
- Under the changes circumstances, who are the allies to join hands with?

Citations:

- USAID was targeted for efficiency, leading to the termination of roughly 5,500 of 6,000 programs, including key HIV treatments, Ebola prevention, and emergency food relief.
- As of early 2026, former USAID Administrator Samantha Power (2021–2025) has strongly criticized proposed funding cuts to the agency. She described dismantling USAID as a devastating, "deadly" act and a "foreign policy blunder," warning it would cause massive global mortality. Power argues these cuts serve autocrats, hurt U.S. national security, and undermine humanitarian efforts
- A Declaration of Interdependence, Why America Should Join the World - Will Hutton

Key Words: anti globalization

A GLOBAL PERSPECTIVE ON URBAN PARK PERCEPTION: EVIDENCE FROM LARGE-SCALE SOCIAL MEDIA AND STREET VIEW DATA

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Track 5: International Development Planning
Individual Paper Presentation

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There is a substantial disparity in urban green infrastructure between the Global North and Global South. However, little is known about how perceptions of urban parks vary across cities worldwide. To address this gap, this study analyzes over 300,000 Google Maps reviews and 38,000 street view images from 30 cities. Using a large language model, park perceptions were classified into eight dimensions—facility, amenity, aesthetics, biophilia, sport, incivilization and safety, culture and history, and social activity—and both perception frequency and sentiment were quantified.

The results reveal that aesthetics and biophilia are the most salient and closely interconnected dimensions across all cities, highlighting the central role of human–nature interaction in park experiences. At the same time, park perception exhibits both divergence and convergence across global contexts. Cities in the Global South show higher frequencies of incivilization-related perceptions and lower overall sentiment, whereas European cities and some Asian cities with historical colonial ties display similar perception patterns. In contrast, cities in North America and Oceania place greater emphasis on facilities and sports-related attributes.

Importantly, this study demonstrates that park perception is not composed of independent dimensions but forms an interconnected system. Facility and cultural perceptions influence aesthetic and biophilic experiences through mediating pathways, while perceptions of incivilization exert significant negative effects. These findings suggest that park experiences are socially conditioned and shaped by the interaction of functional, cultural, and environmental factors.

From a planning perspective, the results highlight the need for an integrated approach to urban park development that goes beyond enhancing natural and aesthetic qualities. Ensuring safety, strengthening cultural and historical representation, and improving facility provision are all critical. For cities in the Global South, context-sensitive strategies are essential, as simply replicating park models from the Global North may not align with local needs or produce comparable outcomes.

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Keywords: Urban parks, public perception, global south, large language mode, social media data

ASSESSING AGING IN PLACE CAPACITY: A CROSS-NATIONAL COMPARISON

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Track 5: International Development Planning
Individual Paper Presentation

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Population aging, driven by lower birth rates and longer life expectancy, has become a major global challenge for societies and governments. Aging in Place (AIP), or the ability of older adults to live safely and independently in their own homes and communities, is widely promoted as a key solution. However, there is still a lack of systematic, quantitative, and data-driven comparisons showing how well people in different countries prepare for AIP. To address this gap, this study provides the first quantitative global evaluation of AIP capacity. Using harmonized global aging survey data from 37 countries, this study develops a multidimensional AIP capacity evaluation protocol and conducts comparative analyses of AIP capacity across national contexts. The study also conducts Spearman's correlation analyses with country-level socio-economic indicators to examine the association between socio-economic indicators and AIP capacity.

The findings reveal clear cross-national and regional disparities in AIP capacity outcomes. Western and Northern European countries consistently demonstrate higher and more balanced performance across domains, reflecting strong welfare systems, health infrastructure, and social support networks, whereas emerging economies such as China, Malaysia, and India face greater structural constraints. Across AIP capacity domains, Physical and Psychological Health show consistently higher and more stable scores, suggesting relatively strong individual-level capacity for aging in place. In contrast, Financial Confidence, Health Care Access, and Social & Civic Participation exhibit substantial cross-national variation and emerge as key limiting factors. Regression results suggest that economic capacity, health system investment, and broader social development are the strongest predictors of AIP capacity outcomes. These findings suggest that improving AIP capacity requires moving beyond health-focused approaches to address financial security, access to affordable care, and opportunities for social participation and supportive environments. At the same time, gaps in housing, transportation, and technology data highlight critical limitations in current measurement frameworks and point to important directions for future research and policy development.

The findings reveal clear regional disparities, with Western and Northern European countries demonstrating higher and more balanced performance across the different AIP capacity domains, while emerging economies face greater structural challenges such as China, Malaysia, and India. Across the different AIP capacity domains, Physical Health and Psychological Health receive higher scores, whereas the scores of Financial Confidence, Health Care Access, and Social & Civic Participation have variations among countries. Economic capacity, health system investment, and social development emerge as the strongest predictors of AIP capacity outcomes. The study highlights the need to strengthen financial security, expand affordable health care, and invest in social participation and housing environments. It contributes a standardized framework for cross-national comparison and calls for improved data collection, particularly in transportation and technology, to support future research and policy development.

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Keywords: Aging in Place, Global Aging, Comparative Analysis, Quantitative Assessment, Older Adults

BRUTAL CONCRETE: TRANSFORMATIONS OF A POST-SOCIALIST BLOCK IN NEW BELGRADE, SERBIA

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Track 5: International Development Planning
Individual Paper Presentation

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The paper focuses on the transformation of Block 23 in New Belgrade from a “model socialist” block of flats to a less sustainable, neglected place that is now the site of a new flashy, massive building project that features a large-scale heliport/helicopter landing pad on its rooftop. The Heliport building, which literally ruptures the modernist block, is being built for the global sports elite and not for the residents of Belgrade. Similar projects in Belgrade featured neoliberal and corrupt policies that resulted in fashionable yet unsustainable development, ignoring long-term plans of the municipality, and either excluding residents from the planning process or actively manipulating their token participation (Vuksanovic-Macura 2022; Peric 2021). This research thus starts with the idea that is the opposite of Richard Sennett's (2023) permeable urbanism -- that of ruptured urbanism, a framework that allows for questioning of narratives of cities supposedly recovered from decline or created ex nihilo. Projects such as the heliport embody the kind of rupture in which global urbanist agendas pursued by corrupt political and administrative elites, reorder and re-ruin spaces to make them actively exclusionary.

If we take the notion of cities as representations of political powers that enable them (Hall 1998) and if we follow, for example, Mould's (2016) analysis of Brutalism of the council estate of Robin Hood Garden in London, we could likewise see Block 23 as a political architectural form and not simply an architectural style (see Heatherly, cited in Mould 2016).

And if we pose Banham's question as to whether Brutalism is an ethic or an aesthetic (see Henley 2017), focusing thus on the use value of space and examining architecture and urban design in their relational potential as loci of human interactivity and sociability (Lees, cited in Mould 2016), the question of the humanization of Brutalism becomes the key element of its (not exclusively ethical) aesthetics. Brutalism here can be read on one level as a discourse antithetical to current neoliberal architecture represented (brutally) in the Heliport monolith building, which works to conceal affective capacities of architecture (see also Mould 2016). The true brutal intervention in the space of the Block appears instead to be that of teh Serbia President Vucic's neonationalist neoliberalism.

New Belgrade was, however, always more appreciated by young people (see Vuksanovic-Macura 2022) who would spatially reclaim and redefine, this (in a manner) tactile, as it were, Brutalism (Vidler 2014), by making marks on its walls -- especially in Block 23 on the walls of its brickalism-built school -- while at the same time scraping their knees on the Block's concrete surfaces. In their disorderly movements and actions, the youth would reshape and subvert the order of the Block. In humanizing Brutalism, a key question lies in its "capacity to exploit the structural properties of concrete to shape archetypal social space" (Henley 2017). Critical here is the role of the state in welfare provisioning, especially in the domain of social housing. While Block 23 in New Belgrade never experienced the stigmatization that, for example, council estates in Britain did (see Mould 2016), it has experienced sharp social, economic, and political disinvestment amidst the rapid privatization of flats. Yet at the same time if we view social housing as a spatial form that generally shunned the privatization of space (see Mould 2019) and in the case of the Block examined here, fostered a form of urban citizenship, we can nevertheless argue that the Block has been ruptured in multiple forms by neoliberal development. The paper will attempt to examine the implications of the restructuring of the Block with its contending post-socialist and neoliberal urban forms.

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Keywords: post-socialist city, brutalist architecture, housing, social neglect, neoliberal turn

BUILT FROM BELOW: GRASSROOTS REFLECTIVE PRACTICE, HYBRIDITY, AND NORM FORMATION IN CRISIS GOVERNANCE

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Track 5: International Development Planning
Individual Paper Presentation

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Institutional hybridity remains under-theorized within planning and governance scholarship, particularly in relation to its procedural dimensions. While a growing body of work has begun to examine how multiple institutional logics co-exist within organizations, far less attention has been paid to how hybrid institutions actually build their ways of working, and how grassroots practice becomes the norm. This paper addresses that gap through a process-centered analysis of the Jharkhand State Control Room (JSCR), a hybrid governance institution formed in India during the COVID-19 pandemic to assist stranded low-income migrant workers, one of the most structurally invisible and underserved populations in the Global South.

The JSCR brought together state actors, civil society organizations, indigenous networks, and academic partners in one of India's poorest states, operating without a pre-existing mandate, stable funding, or precedent. Within six months, it had registered and directly assisted over one million migrant workers. By 2022, it had catalyzed new state legislation and a restructured organizational infrastructure for migrant welfare. Drawing on three years of longitudinal engaged research, including 105 semi-structured interviews, embedded participant observation across two key phases of the institution's evolution, and content analysis of internal case records, this paper traces how the JSCR developed its operational procedures iteratively amid extreme uncertainty.

The central argument is that this process-building is best understood through reflection-in-action: grassroots caseworkers learning from individual cases, deliberating with colleagues, and converting those deliberations into soft protocols embedded over time as shared institutional knowledge. This is not institutional design from above, but norm formation from below, and three procedural mechanisms emerge. First, compassion and intentionality functioned as procedural foundations. The collective commitment to alleviating human suffering shaped how caseworkers prioritized, escalated, and resolved cases across six distinct typologies, from health emergencies and forced labor rescue to the dignified repatriation of migrant bodies. Second, the JSCR's hybrid positioning produced a distinctive casework logic. It combined the jurisdictional authority of the state with the relational trust and advocacy orientation of civil society, enabling coordination across regions and institutional boundaries that neither actor could have achieved independently. Third, protocols assembled from trial-and-error and embedded relationships became legitimate and transferable over time, constituting a durable organizational logic that outlasted the crisis and carried forward into the institution's post-pandemic iteration.

By shifting the analytical focus from organizational structure to organizational process, this paper extends the procedural planning literature and advances institutional hybridity scholarship. It demonstrates that norm formation in hybrid institutions is not a product of organizational design but of cumulative, affect-driven, grassroots practice, built case by case through everyday casework, deliberation, and iterative learning.

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Keywords: Procedural Planning, Collaborative Governance, Institutional Hybridity, Polycrisis Management, Migration and precarity

CLIMATE DISPLACEMENT AND HOUSING INEQUALITY IN CARTAGENA: SPATIAL PATTERNS OF SOCIAL HOUSING AND TOURISM-LED GENTRIFICATION IN VULNERABLE COMMUNITIES

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Track 5: International Development Planning
Individual Paper Presentation

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Over the past decade, Cartagena's housing market has been reshaped by the expansion of tourism, the arrival of residents displaced by Colombia's internal conflict, and gentrification linked to short-term rental platforms. These dynamics are compounded by increasing climate risk, particularly flooding associated with sea-level rise and extreme precipitation. Together, these processes are transforming patterns of urban inequality and reshaping where and how low-income populations access housing.

Building on scholarship on tourism-led gentrification (Gotham, 2005), this study argues that real estate investment in Cartagena increasingly converts housing into a consumption-oriented asset, inflating land values and displacing vulnerable residents. The proliferation of short-term rentals has intensified these pressures (Wachsmuth & Weisler, 2018), pushing low-income households toward informal and high-risk areas, including environmentally sensitive zones such as the edge of La Ciénaga de la Virgen. At the same time, climate change exacerbates existing spatial inequalities, as Cartagena's low-lying coastal geography makes these communities particularly exposed to recurrent flooding. (Alcaldía Mayor de Cartagena de Indias & CDKN, 2014)

In response, the city has expanded subsidized social housing programs. However, these developments, typically located in peripheral areas and characterized by uniform building typologies, risk further marginalizing vulnerable populations by disrupting place-based livelihoods such as fishing and ecotourism, which depend on proximity to coastal ecosystems.

This paper asks: (1) How have social, economic, and environmental factors shaped the spatial distribution of social housing investments for climate-vulnerable communities? (2) What are the spatial patterns of short-term rentals in Cartagena? and (3) What social and economic impacts do these patterns produce?

Methodologically, the study combines spatial analysis and qualitative research. It draws on administrative data from Cartagena's housing agency and proprietary short-term rental data from AirDNA to map patterns of social housing development and rental activity between 2016 and 2025. These findings are complemented by site visits and semi-structured interviews with community leaders in climate-vulnerable neighborhoods and residents of new social housing projects.

By examining the intersection of tourism-driven development, climate vulnerability, and housing policy, this study contributes to debates on urban inequality and adaptation in the Global South. It highlights how climate risk and market-driven urbanization jointly produce new forms of displacement, while questioning whether current social housing strategies adequately address the needs of the most vulnerable populations.

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Keywords: Climate Displacement, Housing, Global South

CONSILIENT PERSPECTIVES IN A LATIN AMERICAN URBAN OBSERVATORY: ANALYZING THE ALIGNMENT AND DIVERGENCE BETWEEN STAKEHOLDERS AND CITIZENS.

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Track 5: International Development Planning
Individual Paper Presentation

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Urban observatories often rely solely on technicians' expertise or international guidelines when defining indices. In fact, the indicators used across different observatories can be classified into three primary approaches: first, sector-based frameworks based on specific dimensions or domains; second, more integrated, holistic, or sustainability frameworks; and third, other metabolic approaches that organize indicators around urban flow processes or data availability. However, most of them are not participatory enough to increase the appropriation of the urban tool that we are promoting. After the University of the Isthmus's initiative to create its Observatory for Cities – OPC by its Spanish acronym –, the lingering question was: What do people actually need to know from the data? What are the key areas of divergence or alignment in terms of priorities? Our study employed a convergent parallel mixed-methods design to identify and prioritize, using a multi-stakeholder, iterative expert-consensus and public-opinion research design that combines several established techniques to identify the indices required by stakeholders and citizens.

We conducted three Delphi workshops to reach consensus. We adapted and modified the method used, as in Giuffrida et al. (2024), in which, after 3 rounds, the research team compiled a list of indicators after each meeting: academic/technical experts (n=10), public sector institutions (n=12), and private sector organizations (n=14). They were conducted on separate dates prior to the survey. Conversely, in the final round, each participant evaluated the top 10 indicators for each OPC area using the OECD Evaluation Criteria, which considered the relevance, effectiveness, efficiency, impact, and sustainability of each indicator. Afterward, with the defined indicators, we conducted a citizen survey among residents of the Department of Guatemala (estimated population 3.6 million). With 1,068 valid responses collected within 21 days, the study achieved a 95% confidence level and ±3% margin of error. The survey instrument captured demographic characteristics, mobility patterns, and importance ratings for candidate indicators using 5-point Likert scales.

Commonalities characterized all the studied stakeholder groups, including citizens, with three priorities reaching broad consensus across all sectors: travel time is a fundamental metric for analyzing mobility and transportation, followed by infrastructure quality as a core concern. There were other commonalities within specific subgroups. Lower-income citizens, who use different modes of transportation, prioritized cost and accessibility indicators, while higher-income citizens, who value time, street quality, and increased land-use and real estate development, prioritized these factors. Despite the common aspects, the definition of indicators lent legitimacy to intra- and inter-group deliberation, a mediating aspect of an observatory, where the dialogue defines its scope of action, in addition to the simple repository framework for data. On the other hand, the disparities are multi-layered across all stakeholder groups and citizens, and their emphasis prevails in the selection of the main indicators, which have not been reduced to simple data-gathering. The other filter for the indicators will require access to the observatory's data and processing capacity.

This research showed that developing an evidence-based indicator framework for multi-stakeholder participation legitimizes the final selection of urban indicators – a process that is typically ad hoc or driven by a single institutional perspective- and provides actionable intelligence for data management. The methodology design

identifies core metrics that should anchor any observatory through consensus indicators and also identifies disparity mapping, where trade-offs and a tiered data-collection structure help focus OPC resources.

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Keywords: Urban Observatory, Multi-stakeholder, Indicators, Delphi method

DIGITAL ETHNOGRAPHY AND MIGRANT MOBILITY: RETHINKING PLANNING RESEARCH METHODS IN URBAN INDIA

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Track 5: International Development Planning
Individual Paper Presentation

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As urban governance is increasingly mediated through digital platforms, identification systems, and online registration processes, a central challenge for planning research is how to capture the ways in which these systems are actually experienced and navigated in everyday life. This paper examines the methodological possibilities of digital ethnography for addressing this challenge in the Delhi–Gurugram region of India, focusing on mobility, documentation, and the migrant experience. Grounded in ethnographic fieldwork conducted both in person and online between 2020 and 2025, the study investigates how interstate migrants navigate infrastructures, bureaucratic requirements, and planning rules under conditions of uncertainty. While planning research has traditionally relied on interviews, surveys, and policy analysis, digital ethnography makes visible forms of planning that unfold through online platforms, documentation systems, and digitally mediated encounters with the state (Sandercock and Attili 2010; Pink et al. 2016).

Recent work has explored hybrid approaches such as computational ethnography to extend ethnographic research through digital and data-driven methods (Asabere et al. 2025). Rather than treating digital data as a means of scaling ethnography, this paper shows how digital environments extend the ethnographic field itself, enabling the researcher to trace how planning systems are interpreted, contested, and collectively navigated in real time.

Findings draw on two empirical contexts. First, during the COVID-19 lockdowns, migrants immobilized at the Delhi–Haryana border used voice notes, video clips, and WhatsApp location pins to document rapidly shifting mobility conditions and fragmented state authority (Goldstein 2022). Second, in the post-pandemic period, migrants' reliance on digital authentication systems reveals persistent bureaucratic precarity, as failures in biometric verification and online registration systems disrupt access to welfare and documentation (Goldstein 2025). Across both contexts, digital interactions function as key sites of collective interpretation, where migrants share workarounds, interpret policy changes, and navigate uncertainty.

The paper identifies three key findings for planning research: (1) digital ethnography enables the analysis of hybrid infrastructures linking physical mobility and digital governance; (2) it reveals how planning systems are collectively interpreted and navigated through everyday digital practices; and (3) it captures the temporal and affective dimensions of planning failure (waiting, confusion, and rapid shifts in authority) that are not visible through conventional methods. The paper argues that as planning increasingly operates through digital systems, researchers must expand their methodological toolkit to account for how governance is experienced, interpreted, and contested across both physical and digital urban spaces.

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Keywords: Planning methods, Urban governance, Digital Infrastructure, Migration, Urban India

DO AFFORDABLE HOUSING PROGRAMS ENHANCE CLIMATE RESILIENCE? EVIDENCE FROM BRAZIL'S MINHA CASA, MINHA VIDA

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Track 5: International Development Planning
Individual Paper Presentation

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This study asks whether Brazil's largest affordable housing program, Minha Casa, Minha Vida (MCMV) Faixa 1, places low-income households in locations that measurably improve climate resilience compared with the informal settlements from which most residents originate (Satterthwaite et al., 2020; Reis et al., 2026). We assembled a novel, geocoded dataset of 3,954 MCMV projects delivered between 2009 and 2019 across 1,034 municipalities and linked it to the 2022 Brazilian census and high-resolution climate risk data.

We constructed a census tract-level Climate Resilience Index (CRI) via principal component analysis (PCA), combining climate risk exposures (extreme heat, extreme precipitation, drought, wildfire), socioeconomic conditions, and built-environment features (Gabbe & Pierce, 2020). Municipality fixed-effects regressions and t-tests compared predicted CRI scores for tracts hosting MCMV developments versus those with informal settlements at national, state, city hierarchy, and municipal levels.

The results show that, on a national level, MCMV tracts exhibit a 29% higher mean CRI than informal settlement tracts (0.18 vs. 0.14; $p<0.001$, two-tailed test), indicating that affordable housing sites are in general more climate resilient. However, this effect is highly uneven across geography. The resilience advantage of MCMV is more pronounced in southern and southeastern states, while in the northern state Amazonas no statistically significant difference is observed. The resilience premium also diminishes in lower-tier cities (sub-regional and local centers) compared to higher-tier cities (metropolis and regional capitals), underscoring how local planning capacity, land markets, and hazard profiles shape the climate resilience of national housing policies (Acolin et al., 2019; Biderman et al., 2022).

These findings extend planning scholarship by demonstrating that large-scale affordable housing programs can enhance—but does not guarantee—climate resilience, reinforcing the need to integrate climate risk screening, near-site upgrading, and municipal capacity building into Brazil's 2023 MCMV relaunch. For planning practice and education, the study offers a replicable, data-rich approach to evaluating how affordable housing siting decisions redistribute climate risk, informing curricula on equitable adaptation and guiding practitioners tasked with aligning housing, climate, and urban development agendas.

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Keywords: climate resilience, affordable housing, Brazil, informal settlements, spatial analysis

DROUGHT AND DOMINATION: MILITARIZATION OF WATERWAYS IN CONTEMPORARY IRAN

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Track 5: International Development Planning
Individual Paper Presentation

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While people in Iran are pressed between an international war and violent crimes of a militarized theocracy, another insidious threat looms in the shadows. In November 2025, officials from the Islamic Republic released statements and speculation about relocating the capital city of Tehran due to severe drought after experts' warnings of "water bankruptcy" fell on deaf ears for several decades. Water has been one of the most contentious and secretly controlled resources over the past four decades, particularly since the military organization of the IRGC took command of national civic projects in 1989. The compromised hydrological (and energy) dependencies of the capital city (with a population of over 15 million) bring the resource peripheries and infrastructural landscapes of urbanization to the center of attention. Water infrastructures and policies are territorial agents constantly shaping uneven geographies, drafting new methods of dispossession, and redrawing the line between life and death. In Iran, bringing these complexities to light has been criminalized by the state, pointing to the geopolitical nature of the manmade drought amid decades of proxy warfare and the cooptation of water and hydroelectric infrastructures for self-preservation, such as the circumvention of US sanctions through crypto mining, and other forms of plunder and profiteering. Drought encompasses a gamut of water-related issues—sinking land, loss of fossil water reserves, frequent dust storms, extreme heat, receding forests, seasonal floods, pollution, uneven access to clean water, and more. It deteriorates living infrastructures on which the Natives and non-petroleum economies have depended for centuries.

This paper maps the political roots of hydrological interventions and water bureaucracy since 1979. As a historical analysis, this paper indexes various episodes and dimensions of resource authoritarianism that have led to the current predicament. Through geospatial grounding of cases, projects, and sites of conflict, mainly located across the diverse landscapes of Iran-Iraq borderlands and key locations in the central Iranian plateau, I investigate the entanglements between international conflicts, national policies of resource management, state corruption, and the militarization of hydropower. This geospatial exposé is based on an archive of publications, news articles, cartographic and photographic analysis, as well as oral histories collected by the author in the past 6 years (in exile).

While this monograph is situated in Iran, the highlighted challenges are not specific to one country. Water has emerged as a main source of global conflict in the 21st century. A recent report, "Global Water Bankruptcy" (2026) by the UN University Institute, elucidates complex challenges for a post-crisis condition in which millions have already been living. It is not a secret that arid and semi-arid climate regions are disproportionately experiencing the effects of global water crises. Documented waterways and watersheds in this paper, therefore, present not just a case to learn from, but geographies situated at the center of divided worlds.

This paper poses central questions for planners across borders regarding their role in the expanding struggles for environmental justice, conflict resolution, and political self-determination in the emerging uneven geographies of water. These questions seem particularly pertinent to the current global condition, where renewed campaigns of extraction and expansionism (from resource and currency wars to the proliferation of data centers and crypto mines) place new pressures on water reserves, ecological health, and subsistence. Addressing complex water problems is not a subject of technocratic solutionism. Meticulous historicization and politicization toward transformative cultural change and political mobility remain uncompromisable.

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Keywords: Water Bankruptcy, Iran, Conflict, Urban Resettlements, Environmental Justice

EFFECTS OF INDOOR RESIDENTIAL CROWDING AND OUTDOOR GREEN SPACE ON MENTAL HEALTH IN BEIJING, CHINA

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Track 5: International Development Planning
Individual Paper Presentation

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Central Theme

This study investigates how different aspects of the indoor and outdoor built environment relate to mental health outcomes, particularly depressive symptoms, among urban residents in Beijing, China. It uniquely explores how these relationships differ between local residents and migrants—two groups with distinct residential entitlements under China's hukou system. The research aims to reveal how built environment inequalities translate into mental health disparities and how these effects are further moderated by gender and marital status.

Approach and Methodology

The study utilizes survey data collected in 2022 from 989 adult residents across 40 communities in Beijing. Depressive symptoms were assessed using the validated 10-item Center for Epidemiologic Studies Depression Scale (CESD-10). The analysis focused on two key environmental exposures: household-level indoor residential crowding, measured as average square meters per capita, and neighborhood-level outdoor green space, defined as the share of vegetated area within a one-kilometer radius of each community. Logistic regression models with district-fixed effects and extensive socioeconomic controls were employed to assess the associations. Subgroup analyses examined differences by migrant status, gender, and marital status. Multiple robustness checks were conducted to validate the findings.

Findings

Results show that both residential crowding and green space availability are significantly associated with depression, but these effects are group-specific. Residential crowding significantly increases the likelihood of depression among local residents, especially single and female locals, but not among migrants. In contrast, lower green space availability significantly raises depression risk among migrants, particularly male and married migrants, but shows no effect for local residents. These divergent effects suggest that the psychological relevance of physical environments differs across population groups, shaped by social and institutional contexts such as hukou status, family structure, and gender roles.

Implications to Planning Scholarship and Practice

This study underscores the need for urban planning that is both comprehensive and targeted, incorporating both indoor and outdoor built environment factors and addressing the specific needs of groups more mentally sensitive to these factors. By addressing the distinct needs of local residents, migrants, and vulnerable groups, we can enhance the built environment across scales, fostering healthier and more equitable cities.

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Keywords: housing, inequality, migrants, park, well-being

ELABORATING STATE'S ROLE IN SELECTIVELY PRODUCING, REPRODUCING, CONDONING OR PUNISHING HOUSING AND WATER INFORMALITY IN MUMBAI, INDIA

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Track 5: International Development Planning
Individual Paper Presentation

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Over the last few decades, many cities have experienced growth in people living in informal tenements around the world. The problem of water access to such informal tenements is equally widespread in these cities. The city of Mumbai, India, is also experiencing staggering growth in population and informal tenements. Approximately nine million people out of the estimated total population of 22.08 million, i.e., around 41% of Mumbai's population in 2025, live in informal housing called slum colonies. A large number of the existing slum-dwellings occupied by new poor migrants in the city are rendered unauthorized or illegal by the State and municipal governments through different laws, policies, and rules. Such unauthorised slum-dwellings are legally ineligible for access to formal water supply. As a result, out of the nine million people who live in slum colonies, about 2 to 3.5 million slum-dwelling people do not have a formal access to water.

Scholars have discussed different aspects of informality in housing and water sectors in Mumbai (Bayliss Deekshit, 2024; Anand, 2017; Björkman, 2015a; Wagle, 2024). In this background, the main contribution of this paper is the two analytical reviews of different modes of manipulation of informality by the State in the two sectors. It demonstrates the argument that the State manipulates—produces, reproduces, suspends, condones, and punishes—informality in the housing and water sectors in the city of Mumbai in a selective manner, benefiting some dominant sections while penalizing weaker sections of society. The paper traces these manipulations of informality in both these sectors to two main drivers: first, the political—more specifically, electoral—convenience of dominant political parties, and, second, the interests of real-estate developers who controlled the city's politics. The paper also elaborates on how the State denies water access to marginalized sections pointing out informality of their dwellings, but provides water on 'humanitarian grounds' to the rich by citing partial formality of their houses while condoning the informality of other aspects of their housing. Thus, the paper contributes some new insights and explanations to the theme of the 'state-informality connection' discussed in the literature on housing and water sector informality in the Global Urban South, especially in the large and mega cities.

The paper relies on the analysis of the data collected during ten months of fieldwork through semi-structured interviews of sixty-four respondents from five different categories, namely, (a) elected or unelected politicians operating at different levels (city, State, or national) and representing diverse political parties (n=14); (b) non-party activists working primarily on urban and water sector issues at the city or the local levels in Mumbai (n=16); and (c) working or retired officials of the municipal corporation including engineers of water department (n=12), (d) experts including academics, independent researchers from the planning, engineering, public policy, sociology, and urban water supply (n=18); and (e) media observers following the issues of housing and water informality (n=4). The paper also relies on the content analysis of formal policy and judicial documents of Brihanmumbai Mahanagar Palika (i.e., Municipal Corporation of Greater Mumbai), the State Government of Maharashtra, and the High Court at Bombay. Another source of the data was the informal documents of social movements and activist groups.

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Keywords: Water informality, Housing informality, State manipulation, water access, India

EMERGING FUTURES IN LATIN AMERICA AND THE CARIBBEAN: INSIGHTS FROM PRACTITIONER TREND MAPPING ACROSS 19 COUNTRIES

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Track 5: International Development Planning
Individual Paper Presentation

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Across Latin America and the Caribbean (LAC), cities are confronting a convergence of pressures, including rapid urban expansion, housing precarity and informality, escalating climate risks, and persistent institutional fragmentation. In this context, how urban practitioners interpret and connect these pressures matters: their problem definitions shape not only how challenges are understood, but also which responses become imaginable and actionable. While planning research often identifies regional trends through institutional datasets, policy reports, or comparative case studies, practitioners working directly in cities frequently perceive emerging transformations before they are fully captured in formal indicators. This paper argues that systematically analyzing practitioner-defined trends can reveal more than a list of concerns; it can illuminate how urban actors frame problems, identify priorities, and discern openings for intervention.

The paper analyzes practitioner-identified urban trends across Latin America and the Caribbean using data collected through the application process for the Futuros Urbanos network, an initiative of the Consortium for Scenario Planning at the Lincoln Institute of Land Policy. The dataset includes more than 200 applications from urban planners, public officials, researchers, and civil society practitioners representing 19 countries. As part of the selection process, applicants were asked to identify the most significant trends shaping the future of their cities, generating a unique bottom-up dataset on how urban actors perceive emerging transformations in their local contexts.

Using qualitative coding and thematic clustering, the analysis identifies several recurring regional dynamics. Respondents highlighted increasing pressure on urban land driven by rapid expansion, housing shortages, and persistent informality, often in environmentally fragile areas exposed to flooding, drought, and extreme heat. They also pointed to structural constraints on urban governance, including fragmented institutional coordination, limited fiscal capacity, and difficulties accessing financing for sustainable urban development. At the same time, responses reveal emerging opportunities and policy experimentation, including land value capture, transit-oriented development, nature-based solutions, adaptive land management, and new forms of collaboration among governments, academia, and civil society.

This paper contributes to planning scholarship in two ways. First, it advances practitioner-based trend mapping as a methodological approach for identifying emerging urban dynamics while also tracing how those dynamics are interpreted and translated into planning agendas. Second, it offers an early regional synthesis of how urban actors across Latin America and the Caribbean understand the transformations shaping their cities. By foregrounding practitioner perspectives, the research highlights both shared structural challenges and locally grounded pathways toward more resilient, equitable, and sustainable urban futures.

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Keywords: Futures, Trends, Foresight, Latin America, Caribbean

ESCAPING THE SCALAR TRAP: RURAL TRANSFORMATION UNDER TIME-SPACE COMPRESSED URBANIZATION IN 825 CHINESE VILLAGES

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Track 5: International Development Planning
Individual Paper Presentation

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China's “spatiotemporally compressed” rapid urbanization has driven dramatic spatial restructuring and multifunctional transitions in metropolitan hinterlands(Nie et al., 2026; Wang et al., 2025). However, existing scholarship often falls into “indicator-based fetishism,” equating the quantitative growth of multi-functionality scores with qualitative rural transformation(Fischer et al., 2024). Furthermore, macro-scale studies (at provincial or county levels) often yield overly optimistic conclusions of “high coupling and coordination,” which tend to mask the micro-scale struggles of individual villages under rigid resource constraints(Liu et al., 2026; Long et al., 2011). This research aims to deconstruct the mismatch between the “quantitative accumulation” of rural multi-functionality and the “qualitative succession” of dominant functions. Grounded in the evolution of urban-rural relations and utilizing Huzhou—the birthplace of China’s “Green Development” philosophy—as a case study, this paper integrates high-resolution remote sensing data with official village-level statistics. We develop a composite analytical framework encompassing “level evolution—structural transition—system synergy—evolutionary modeling” to measure the longitudinal trajectories of 825 administrative villages from 2008 to 2023. The results indicate that: (1) Non-linear Spatiotemporal Differentiation: Rural Huzhou has shifted from a period of urbanization-driven fluctuation and stagnation into an era of accelerated prosperity driven by deep urban-rural integration, with spatial patterns evolving from mountainous belt-like clusters to region-wide high-level convergence. (1) Qualitative Structural Shifts: A modern composite structure has been established, characterized by “high-quality living functions as the foundation, with production or ecological functions as specialized advantages,” reflecting a spatial logic reconstruction under the post-productivist transition. (1) Scale Dependence and the “Pseudo-Optimization” Trap: The study uncovers a significant scalar trap in the synergistic evolution of rural functions. Constrained by limited resource carrying capacity at the village scale, transformation faces a low-threshold “synergy ceiling” (maximum 0.53). Consequently, villages frequently fall into a “high coupling but low coordination” trap, where qualitative structural leaps significantly lag behind quantitative growth. (4) Path Dependency and Evolutionary Models: Four typical models—Advantageous Leaping, Catch-up Overtaking, Bottleneck Lock-in, and Peripheral Lagging—are identified, revealing the lock-in effects of mountainous topographic constraints and lowland spatial spillovers. This study challenges the prevailing optimistic bias regarding rural functional coordination and underscores the necessity of “classified and zone-based” revitalization strategies at the micro-scale. It provides a transferable framework for spatial governance and precision revitalization in transitional developing countries navigating rapid urban-rural restructuring.

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Keywords: Rural transformation, time-space compressed, Multifunctionality, Scale dependence, Global South

EXTENDING THE RIGHT TO THE CITY TO EXTRASTATECRAFT: GOVERNING DIGITAL INFRASTRUCTURE DEVELOPMENT IN QUERÉTARO, MÉXICO

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Individual Paper Presentation

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Digital transformation is widely framed as a driver of economic growth, innovation, and urban modernization. Following Keller Easterling's (2014) discussion of extrastatecraft, the digital infrastructure that enables digitial transformation can be divided into its object form and active form. The bulk of the literature has addressed the object form, the material impacts of building out data infrastructure, including environmental and economic impacts (e.g., Atkins 2021). Less attention has been paid to the active form, the underlying logics, multipliers, and relational dynamics that govern these physical infrastructures in practice, particularly in relation to planning and participation. This paper explores how Lefebvre's concept of the right to the city can be effectively applied to this emerging political terrain. To date, the right to the city approach has principally addressed the generalized right to information (e.g., Shaw and Graham 2017) and citizen participation in conventional municpal level planning processes (e.g., Leclerc et al. 2022). It has not addressed the extrastatecraft exerted through active forms of coordination that extend beyond formal planning institutions, for example, investment processes, decision making at supramunicipal scales, and legal loopholes for reporting. This paper works to fill this gap by examining how digital infrastructure development is organized and which actors are able to influence these processes.

Focusing on Querétaro, Mexico's leading data center hub, the paper documents how the city's rapid growth is being shaped by global investment strategies and infrastructure requirements that extend beyond traditional planning processes. Methodologically, the study combines qualitative analysis of regulatory instruments and project-level documentation, process tracing of decision-making sequences, and spatial mapping of data center development. Particular attention is given to gaps, absences, and inconsistencies in available records, treating these not as limitations but as evidence of how governance is organized and enacted.

The findings show that the active form of data center development in Querétaro is not primarily governed through formal urban planning or participatory processes, but through distributed arrangements involving investment promotion, site readiness, and infrastructure provisioning that override local decision making. As a result, participation is not clearly institutionalized: where mechanisms exist, they are fragmented, difficult to trace, or occur after key decisions have already been made. This reconfiguration of decision-making through extrastatecraft practices limits the ability of local actors to meaningfully influence urban development.

Consequently, the paper argues that the localized right to the city must be extended to the extrastatecraft practices identified. Because digital infrastructure development is not only a technical or economic process but also a political process that reorganizes how decisions are made beyond formal planning institutions, the right to the city must be expanded to incorporate multi-scalar governance, pre-planning decisions, and infrastructural dependencies.

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Keywords: Digital Infrastructure, Extrastatecraft, Urban Governance, Right to the City, Mexico

FROM GROWTH MACHINE TO HOLLOWED-OUT STEWARD: TOWNSHIP-SCALE ENTREPRENEURIALISM IN HERITAGE GOVERNANCE IN CHINA'S JIANGNAN WATER TOWNS

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Individual Paper Presentation

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How does urban entrepreneurialism operate through government-corporation relations in China, and how does this framework, originating in Western urban theory, fit and adapt at the township scale across four decades? How do local actors navigate post-pandemic fiscal austerity and political recentralization? This paper addresses these questions through a comparative study of eleven Jiangnan (the region south of the Yangtze River) historic water towns in Jiangsu, Zhejiang, and Shanghai that are included on the UNESCO World Heritage Tentative List.

Entrepreneurialism scholarship in China remains concentrated on large metropolitan cores or rural revitalization, leaving the township scale underexplored. Towns approach city-level capital mobilization capacity yet face the administrative constraints of the lower level. Jiangnan water towns, which pioneered China's first government–corporation model for heritage tourism, offer important cases for examining how township governments and local government financial vehicles (LGFVs) navigate this structural tension under evolving developmental contexts.

This study draws on non-participant observation and more than forty semi-structured interviews conducted across four rounds of fieldwork (June 2023–August 2025), totaling six months, with heritage bureau officials, town government leaders, development corporation executives, preservation planners, and residents. These data are complemented by archival research on policy and planning documents, corporate reports, and local census spanning from the 1980s to the present. The eleven towns form an interdependent governance cluster, enabling systematic cross-case comparison.

Drawing on this longitudinal evidence, the paper traces a trajectory of the progressive institutionalization of entrepreneurialism across the first three phases. It began with direct government operation of ticket-oriented economies (1980s–1990s). Then, the "preservation management committee plus development corporation" hybrid of the late 1990s to early 2010s functioned as a town-scale LGFV. This model utilized land as collateral and consolidated dispersed landholdings into managed heritage landscapes at an investment scale comparable to that of cities. In the 2010s, the entry of higher-level capital, centrally directed political events, and the UNESCO framework rescaled governance upward while reducing local autonomy.

Against this historical background, the paper's central finding emerges. Phase 4 (post-2020) marks a structural shift from state entrepreneurialism toward managerial statecraft, a transformation that has not been fully researched. The central state's rhetorical commitment to heritage has reached a historical peak through new planning directives, accelerated nomination timelines, and "living heritage" mandates. However, local institutional capacity has simultaneously contracted, and government-related investment has declined. Preservation management committees have been merged into development corporations, reducing enforcement authority and fragmenting coordination across township- and county-level bodies. Long-serving heritage professionals have retired without adequate succession. The result is a governance paradox: the state's growing discursive investment in preservation is structurally decoupled from its institutional capacity to deliver it.

These findings extend entrepreneurialism theory to the township scale and reveal how heritage serves state-legitimation functions across different financial and planning structures. This paper theorizes a post-entrepreneurial governance mode of administrative consolidation without corresponding legal authority. It demonstrates a structural tension between the growing emphasis on "living community authenticity," driven by

China’s heritage-nomination requirements and shifting tourist demand, and the institutional void for sustaining it, with implications for international preservation planning beyond China.

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Keywords: Entrepreneurialism, Heritage governance, Township-scale planning, China urban development, Post-pandemic shift

FROM SCENARIOS TO TERRITORY: ADAPTING SCENARIO PLANNING TO FRAGMENTED URBAN GOVERNANCE IN LATIN AMERICA

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Individual Paper Presentation

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This paper examines a 12-month metropolitan scenario planning exercise conducted in Monterrey, Mexico, and reflects on the adaptation of scenario planning approaches—widely developed and applied in the United States—to the institutional and governance conditions of Latin American cities. While organizations such as the Lincoln Institute of Land Policy have actively promoted scenario planning in the region, its application often assumes a planning context characterized by relatively strong institutions, clearer implementation pathways, and the possibility of selecting and executing a preferred future. We shift scenario planning from choosing or exploring futures to structuring the conditions under which multiple futures unfold—and making those conditions spatially explicit.

In contrast, Latin American metropolitan regions operate under conditions of fragmented governance, limited state capacity, and the simultaneous persistence of multiple, often conflicting, urbanization processes. Rather than a clear trade-off between smart growth and sprawl—as often framed in U.S. planning—Latin American cities experience both simultaneously across different parts of the metropolitan area, in a more complex urban landscape further shaped by the persistence of informality and lack of state capacity. In this context, the premise of choosing a single scenario as a basis for action becomes less applicable.

The Monterrey exercise proposes a different use of scenario planning: not as a mechanism to select a preferred future or to explore a range of scenarios under uncertainity, but as a tool to identify robust strategies and define enabling conditions that can shape multiple coexisting urban dynamics. This reframing shifts the role of scenario planning from decision selection to agreement-building across stakeholders with divergent interests and limited coordination capacity.

Two main contributions emerge from this work. First, scenario planning in this context must move beyond discrete alternatives and instead focus on establishing shared conditions—such as improved job–housing proximity, infrastructure alignment, and territorial constraints—that can guide urban development regardless of how different dynamics unfold. Second, building these agreements requires integrating exploratory and normative approaches. While scenarios provide robustness under uncertainty, a clearly articulated spatial vision becomes essential to anchor negotiations and align stakeholders. Critically, this vision must be territorialized: robust strategies need to be translated into spatial configurations that make trade-offs explicit and negotiable. In our case, this is operationalized through a participatory growth allocation exercise, where stakeholders allocate housing and employment under shared constraints, turning abstract principles into concrete territorial decisions.

To operationalize this, the process incorporates a participatory growth allocation exercise that translates robust strategies into spatial configurations at the metropolitan scale. This step addresses a common limitation in scenario planning practice: the difficulty of moving from narrative exploration to concrete territorial decisions. By linking scenarios, strategies, and spatial outcomes, the approach advances a hybrid model of scenario planning that is better suited to the realities of cities in the Global South, where planning is less about choosing a single future and more about shaping the conditions under which multiple futures will inevitably unfold.

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Keywords: scenario planning, urban futures, Latin America, Envisioning, Uncertainty

GOVERNING THROUGH ENTANGLEMENT: INFRASTRUCTURAL ACCESS IN MATHARE 4B, NAIROBI, KENYA

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Track 5: International Development Planning
Individual Paper Presentation

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Drawing on fieldwork in Mathare 4B, Nairobi, Kenya, this paper examines how access to essential infrastructure is produced at the interface of formal provision and informal mediation, and what socio-political effects emerge when the labor, responsibility, and risk of access are shifted onto residents. In Mathare 4B, access to water, electricity, drainage, circulation routes, and emergency support is generated neither by formal systems alone nor by informal practices operating entirely outside the state. Rather, it emerges through entanglements in which state provision and resident mediation are mutually constitutive, as partial state provision depends on residents' everyday labor to connect, maintain, mediate, and repair services.

Based on semi-structured interviews, participant observation, archival review, and access mapping, this paper shows that these entanglements become visible in routine yet contested practices. Residents collaborate to extend electricity connections, compete for earlier access to clean water, clear sediment from drainage ditches, and build sanitation infrastructure in ways that intensify downstream vulnerability. Together, these findings show that entanglement is not simply a descriptive condition of informality; it is a mode of infrastructure governance that makes access possible by shifting maintenance work, responsibility, and risk onto residents. At the same time, this mode normalizes partial state provision and blurs governance boundaries between formal systems and residents' everyday survival practices.

By tracing how survival is negotiated through this entanglement between partial state provision and resident mediation, this paper reframes infrastructure governance in informal settlements as a distributed and uneven political process rather than a question of technical delivery alone. In doing so, it contributes to planning debates on informality, infrastructure, and state presence in cities of the Global South.

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Keywords: Mathare 4B, Entanglement, Informality, Infrastructural Access, Infrastructure Governance

INFRASTRUCTURE TYPOLOGIES AND SHARING PRACTICES IN INFORMAL SETTLEMENTS IN NAIROBI, KENYA: A CROSS-SECTOR ANALYSIS

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Individual Paper Presentation

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In densely populated informal settlements, residents often rely on communal water taps, compound toilets, and informal electricity connections because of spatial, financial, and institutional limitations (Silver, 2014). Access to basic services is therefore often organized beyond the household dwelling through shared facilities, improvised connections, and socially negotiated arrangements that extend across compounds and neighborhoods (Lawhon et al., 2018; Simone, 2004). As a result, the service experience depends not only on physical network coverage but also on spatial configurations and everyday sharing arrangements. Existing research has provided insights into infrastructure conditions and informality in these settings, but it often examines water, sanitation, and energy separately even though their functions are closely connected (Anand et al., 2018; Silver, 2014). Few studies have examined how these infrastructures are configured together across sectors (Graham & Marvin, 2002), particularly at the intermediate yet critical residential scales between the household and settlement, such as the compound and neighborhood. This perspective matters for planning because it helps in understanding how service access and quality are organized through cross-sector arrangements and sharing practices.

This paper aims to examine infrastructure typologies and sharing practices in informal settlements in Nairobi, Kenya, with a focus on how spatial, technical, and sharing arrangements shape access to basic services and the perceived quality of infrastructure. We analyze energy, water, and sanitation infrastructure in relation to housing conditions across household, compound, and neighborhood levels. We address the following questions: (1) How do energy, water, and sanitation infrastructures interact spatially and technically across residential spaces? (2) What conditions of sharing practices are associated with people's perceptions of infrastructure reliability or satisfaction?

To address these questions, we bring the different sectors into one analytical frame by conducting household-facility surveys across two informal settlements, Mathare and Mukuru. These sites are characterized by dense built environments, uneven terrain, flood exposure, and persistent deficits in basic service provision. We first conducted community transect walks in June-August 2025, generating insights into cross-sector and sharing arrangements that informed the survey tool and improved our understanding of spatial configurations. We then conducted the household-facility survey in Mathare and Mukuru in December 2025, with 1,280 respondents across the two settlements. Survey modules covered information about facility technologies, materials, accessibility, cleanliness, safety, maintenance, and sharing practices.

Our findings show that shared infrastructure in informal settlements clusters into distinct cross-sectoral typologies defined by how housing conditions, service locations, and facility materials are combined across multiple scales such as the household, compound, and neighborhood. These typologies are associated with differences in accessibility, perceived reliability, and satisfaction, indicating that service outcomes are related to the configuration types of infrastructures as well as their existence. We also find that better outcomes are more likely where sharing practices involve clearer participation, routine maintenance, negotiated responsibilities, and stronger collective management of shared resources across sectors. These findings deepen the understanding of how shared infrastructure operates by moving beyond household-centered and single-sector accounts. This study further informs planning for equitable resilience by recognizing the potential of shared yet incremental infrastructure as a socially organized urban commons in the context of informal settlements in African cities.

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Keywords: Infrastructure, Urbanization, Sharing Practices, Informality, Africa

MAPPING INFORMALITY: STREET VENDORS, SIDEWALKS, AND THE MICRO-POLITICS OF PUBLIC SPACE IN KOLKATA

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Individual Paper Presentation

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Street vending is among the most visible yet contested expressions of public life in cities of the Global South, where streets and sidewalks function simultaneously as spaces of movement, livelihood, and political negotiation. Building on scholarship that conceptualizes sidewalks as arenas of conflict and negotiation among multiple users (Loukaitou-Sideris & Ehrenfeucht, 2009) and work that emphasizes streets as social spaces shaped by everyday practices rather than mere traffic infrastructure (Mehta, 2013), planning discourse has often framed vending as an informal encroachment to be managed or removed. Recent research, however, has called for reframing informality as an integral element of urban space and governance (Mahato & Roy, 2024; Ojeda & Pino, 2019). This paper advances that reframing by asking: How do street vendors claim, organize, and stabilize public space at the micro level? What spatial and temporal logics structure informal vending practices? How do everyday negotiations over sidewalks intersect with broader political struggles over recognition, regulation, and the right to the street?

The study employs spatial mapping and ethnographic observations through detailed street and sidewalk surveys, and systematic site analysis of three major street vending areas in Kolkata, India. Fieldwork involved mapping formal shops, informal vendors and hawkers, types of commercial activities. These spatial data are complemented by photographic documentation, participant observation, and focus group interviews of street vendors in the studied areas. The analysis also situates micro-level spatial practices within broader political processes by examining the role of collective organizing, particularly the Hawker Sangram Committee and other hawker unions that controls the vendors, in translating everyday spatial claims into legal and policy recognition.

The findings reveal that street vending along the study corridor is neither random nor chaotic but governed by recognizable spatial and temporal logics. Vendors cluster strategically near transit nodes, shop thresholds, sidewalk bottlenecks, and high-visibility locations, balancing accessibility and footfall while minimizing conflict - patterns that extend and bolster theoretical claims about contested sidewalks. Temporal analysis shows that vending practices shift by time of day, season, and enforcement measures, demonstrating resilience and adaptive strategies. Interactions among vendors, pedestrians, customers, and enforcement agents reshape movement patterns, visibility, and social encounters, effectively transforming streets into socially productive public spaces rather than mere conduits for circulation. Crucially, the study demonstrates how these everyday spatial negotiations are scaled up through collective political action, echoing and extending findings by Mahato & Roy (2024) on how informal street economies mobilize spatial practices into claims for urban citizenship. Together, these findings provide concrete empirical evidence that informality actively produces public space and its governance.

By grounding theories of sidewalks, streets, and informality in empirical evidences from the Global South, this paper challenges Western notions of public space. For practice, the findings underscore the limitations of eviction practices and highlight the need for inclusive street design and regulatory frameworks that recognize vendors as legitimate users and co-producers of public space, and calls for mainstreaming informality in modern planning. The study demonstrates the value of micro-level mapping and site analysis for understanding informality, power, and everyday urbanism. More broadly, it argues for viewing streets and sidewalks as co-created environments where informality, governance, and citizenship are continuously negotiated.

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Keywords: Street vending, Urban Informality, Sidewalks and streets, Kolkata, Global South

MAPPING URBAN CLIMATE ACTION WITHIN THE SDG FRAMEWORK: A GLOBAL ANALYSIS OF VOLUNTARY LOCAL REVIEWS (2018-2024)

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As global temperatures approach the critical 1.5°C threshold above pre-industrial levels, the need for comprehensive climate action has never been more pressing. Successful responses require coordinated efforts across three critical dimensions: First, global cooperation is essential given the inherently transnational nature of climate challenges. Second, holistic strategies must address the complex interplay between environmental and societal issues. Third, particular attention must be paid to urban areas, as cities simultaneously represent major sources of emissions and frontline victims of climate impacts.

The past decade has seen significant progress in climate governance, particularly through the establishment of international frameworks like the United Nations' 17 Sustainable Development Goals (SDGs) adopted in 2015. Within this framework, Climate Action (SDG 13) serves as a foundational element for achieving the interconnected goals of people, planet, and prosperity, demonstrating how climate initiatives affect multiple sectors. Nations and cities worldwide have responded by implementing various climate action plans and programs.

However, critical gaps remain in our understanding of how effectively cities are aligning climate actions with other SDGs, and what factors determine successful integration. Current scholarship primarily examines this interconnectedness through three limited approaches: analysis of target overlaps within SDG 13, statistical correlations between SDG indicators, or expert assessments. While valuable, these approaches lack empirical examination of actual implementation practices at the urban level.

This study addresses these limitations by investigating how cities operationalize climate action within the SDG framework. Our analysis of over 300 Voluntary Local Reviews (VLRs) from 2018-2024 seeks to answer three pivotal questions: First, how do cities implement SDG 13 targets while pursuing broader SDG objectives, as revealed through their self-reported actions and outcomes? Second, to what extent do cities explicitly incorporate climate considerations when evaluating progress on other SDGs? Third, what contextual factors—including municipal resources, institutional capacities, and national policy environments—influence both climate action implementation and its integration with other sustainable development goals? Building on existing SDG target and indicator research, we develop systematic coding protocols for analyzing VLR content. Using NVivo, we identify and categorize climate-related actions and policy frameworks. Our quantitative analysis employs Linear Mixed Models to examine patterns across time and regions, assessing how variables like city resources and national priorities affect SDG 13 implementation and integration.

The study's significance operates at multiple levels. Theoretically, it applies the Pressure-State-Response framework to identify systemic barriers preventing optimal alignment between climate action and related challenges including poverty alleviation, energy transitions, and water management. Practically, it evaluates the suitability of the SDG framework—originally designed for national implementation—for guiding and assessing urban climate governance, addressing emerging concerns about potential mismatches between global goals and municipal realities. By

bridging this research-practice divide, the project generates actionable insights for policymakers, urban planners, and international organizations seeking to design more effective, integrated interventions. In doing so, it advances both scholarship and practice in sustainable urban development, while contributing to the broader field of applied urban planning research. The findings will help optimize the localization of global climate agendas while respecting the unique capacities and constraints of city governments.

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Keywords: Climate Action, SDGs, Voluntary Local Review

POLITICIZING SANITATION: CENTERING CLIENTELISM AND SOCIAL REPRODUCTION IN ACCRA'S INFORMAL SETTLEMENTS

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Track 5: International Development Planning
Individual Paper Presentation

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Global South scholarship on water and sanitation has shown that access to urban services is deeply political. In African cities, understanding the uneven distribution of urban services requires examining political clientelism, which influences how resources are allocated at the neighborhood level. Clientelism, the exchange of goods or services for political support, has been widely studied as a way political organizations operate in sub-Saharan Africa. Without formal welfare systems, political parties vie for loyalty by distributing benefits directly. Consequently, control over urban space and its resources becomes a key arena for political contestation.

Feminist urban scholarship has long established that access to water and sanitation is shaped by gendered divisions of labor, social norms, and household relationships. This scholarship views women as the primary managers of everyday infrastructure needs. For marginalized women, inadequate sanitation creates embodied experiences of vulnerability and insecurity that are unevenly distributed across gender lines and influence how urban belonging and citizenship are defined. Similarly, domestic work scholarship highlights the dual spatial positioning of domestic workers within the urban economy: they perform reproductive labor in the formal homes of middle-class and elite employers while living in the informal settlements where those households' neighborhoods are increasingly displaced.

Individually, these distinct bodies of scholarship highlight politics embedded in access to urban services, women's disproportionate burden of infrastructure failures, and the dual spatiality of domestic work. However, discourse on how political clientelism creates unequal sanitation access among domestic workers or how their dual spatial positioning serves as the space through which their reproductive labor is extended and used to compensate for the state's shortcomings remains underexplored.

This article examines how access to sanitation in informal settlements is shaped by political clientelism and what this means for women navigating these systems. It draws on in-depth interviews with domestic workers and community residents, as well as three months of participant observation in Ayigbe Town, an informal settlement in Accra. The study explores how access to sanitation is politically manufactured and unevenly distributed among women who share the same class, occupation, and settlement. The findings highlight two main points: (i) Access to functional sanitation is driven more by political party affiliation than by need or citizenship, creating significant disparities even among women of the same marginalized class. Women with similar circumstances experience vastly different sanitation realities depending on their party support or lack thereof. (ii) When sanitation access is concentrated in formal areas and denied to informal settlements, domestic workers blur the lines between work and home by extending their household responsibilities into their workplaces—and vice versa. In doing so, they effectively subsidize both state neglect and their employers' households.

These findings have implications for planning scholarship and policies in Africa, showing that the sanitation gap in informal settlements is a political issue that requires governance reform. Therefore, planning scholarship must critically examine the clientelist systems through which urban services are provided. Likewise, planning policies should focus on the lived experiences of marginalized women who bear the heaviest burden of sanitation insecurity and whose improvisation demonstrates their inherent agency.

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Keywords: Sanitation Politics, Informality, Social Reproduction, Political Clientelism

RE-AGRARIANIZATION OF URBAN VACANCY: THE RE-EMERGENCE OF AGRARIAN PRACTICES AMONG RURAL MIGRANTS IN SHENZHEN

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Track 5: International Development Planning
Individual Paper Presentation

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Informal farmland has emerged as a widespread phenomenon in Shenzhen, China, where land in various urban vacancies is spontaneously reclaimed for vegetable cultivation by individuals without secure land tenure. Based on the identification of more than 700 informal farmland sites across selected districts of Shenzhen, this study demonstrates that such semi-legal practices are not isolated occurrences, but a persistent and patterned feature of urbanization processes. It examines how informal farmland emerges, persists, and adapts within the processes of urbanization and depeasantization through the interplay of spatial conditions, everyday and socio-cultural drivers, and adaptive practices. As an example of a Chinese "instant city," informal farmland in Shenzhen constitutes a form of re-agrarianization that fulfills everyday social needs unmet in urban systems shaped by formalized land use, standardized provisioning, and uneven access to resources.

The research combines fieldwork and interviews with multi-scalar spatial analysis of historical satellite imagery from Google Earth (2002–2024) and other spatial datasets, alongside crop analysis based on on-site photographic documentation. Within the entangled dynamics of nationwide and local, top-down and bottom-up processes of depeasantization and uneven development shaped by historical governance boundaries, the study shows that infrastructure development and urban redevelopment produce both stable linear vacancies and highly dynamic patchy vacancies. Because rural migrants are more concentrated in areas where such vacancies are prevalent, these spaces provide opportunities to re-engage in agricultural practices, which are more commonly adopted by middle-aged and elderly populations. Beyond subsistence, informal farming facilitates the urban-rural circulation of seeds, knowledge, and everyday practices, sustaining continuity in tastes, routines, and spatial experiences. It also provides accessible opportunities for supplementary income and everyday activities, thereby supporting migrants' integration into urban economic and social networks. Informal farming thus serves as a vital anchor for migrants' mental well-being and stability during the rural-to-urban transition, while helping them establish a foothold in fast-paced and costly urban environments. The informal food economies and activity spaces that emerge around it further extend its impacts beyond individual growers to the broader migrant community and wider urban population. Under these spatial conditions and socio-cultural drivers, informal farming constitutes a highly adaptive form of practice. Responding to temporal uncertainty, degraded soil conditions, and invasive urban weeds, growers employ flexible cultivation strategies that differ from formal agriculture, enabling these practices to persist within unstable and constrained environments.

Building on Farshad Araghi's concept of global depeasantization, this study conceptualizes informal farmland as a form of re-agrarianization through which agrarian practices and ways of life are reconstituted beyond traditional peasant identities. This reveals a tension between processes of depeasantization that reshape land relations and identities, and the continued need for agrarian practices among migrant populations within urban life. It reflects an asynchrony between rapid urbanization and associated spatial and institutional transformations and the more incremental and resilient dynamics of everyday practices, social relations, and cultural life. Situated in one of the world's fastest urbanizing contexts, this case offers broader insights into alternative trajectories of urbanization in societies shaped by deep agrarian traditions and large-scale rural-urban migration.

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Keywords: Re-agrarianization, Depeasantization, Informal farming, Rural migrants, urban vacancy

SPATIAL AGGLOMERATION CHARACTERISTICS AND CAUSAL MECHANISMS OF RURAL SERVICE INDUSTRIES IN SHANGHAI: A STRUCTURE-AGENCY PERSPECTIVE

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Individual Paper Presentation

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As rural service industries increasingly become the core driving force for urban-rural integration and rural transformation, a profound study of their spatial agglomeration characteristics and causal mechanisms holds fundamental significance for Shanghai's rural revitalization strategy. This research focuses on the rural service industries within the metropolitan context of Shanghai, utilizing a multi-source data fusion approach centered on high-resolution Point of Interest (POI) data from Amap. The methodology adopts a "Pattern-Process-Mechanism" analytical framework, integrating advanced GIS spatial statistics and econometric modeling. Specifically, the study systematically characterizes the spatial distribution across three dimensions—distribution patterns, spatial morphology, and agglomeration typologies—by employing Kernel Density Estimation (KDE) to identify high-value clusters, Optimized Hot Spot Analysis (Getis-Ord Gi)* to distinguish statistically significant spatial cold/hot spots, and Multivariate Clustering to categorize spatial attributes. To address the heterogeneity of the industry, a sectoral analysis is conducted across four categories: Accommodation & Catering, Cultural & Creative Offices, Trade & Logistics, and Sports & Agro-tourism.

The core of the methodology lies in resolving the causal mechanisms through the lens of Structure-Agency Theory. The study constructs a quantitative pipeline beginning with Exploratory Regression to screen for significant explanatory variables and eliminate multicollinearity. This is followed by Generalized Linear Models (GLM) to assess global correlation and, crucially, Multi-scale Geographically Weighted Regression (MGWR) to capture the spatial non-stationarity of driving factors at varying scales. This quantitative evidence is triangulated with qualitative insights gained from semi-structured field interviews and policy document analysis, allowing for a comprehensive decoding of how macro-structural constraints and micro-actor agency interact. Finally, the research proposes differentiated planning strategies focusing on the precise supply of spatial resources, differential infrastructure allocation, and classified industrial policy guidance.

The findings indicate that the overall spatial structure of rural service industries in Shanghai exhibits a composite "Ring + Corridor + Node" pattern. High-density cores are primarily concentrated at the urban-rural fringe, forming a ring-shaped cluster belt, while distinct axes extend along major transportation corridors, creating clustered nodes in specific rural towns. Spatially, three typical hot-spot modes are identified: Policy-Coupled, Transport-Driven, and Resource-Driven, reflecting a shift from "passive urban spillover" to "active scene-making" where rural landscapes are converted into scenic capital. Furthermore, the agglomeration of these industries is driven by varying dominant mechanisms. The study codifies these into three models: the Industrial Foundation & Resource-Driven model , the Infrastructure & Location-Driven model , and the Policy & Planning-Oriented model. These differentiated mechanisms provide a scientific basis for tailored planning interventions in metropolitan rural areas.

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Keywords: Rural Service Industries, Urban-Rural Integration, Shanghai, Rural Areas

TESTING THE LIMITS OF FISHING WATERS: POLITICS OF PHARR IN THE CONTESTED WATERSCAPE OF CHATTOGRAM, BANGLADESH

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Track 5: International Development Planning
Individual Paper Presentation

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The right to access and shape waterscapes in Bangladesh is constrained by complex power dynamics defined by class, gender, religion, and caste. In the case of Chattogram city, Bangladesh, urban Hindu fisher communities, who identify themselves as Jaladas (slaves to water), have been thriving along the water edges of Bay of Bengal for five generations. Fishing is a hereditary profession for them and the access to fishing grounds, which are locally referred to as Pharr(s) , is transmitted intergenerationally through communally established system of kinship and family descent. The Jaladas community, which constitutes a minority in the city, lacks access to credit from both government and private banking institutions and has consequently been subjected to exploitative lending schemes operated by loan sharks, popularly known as Dadondaar. Given this structural marginalization, family-owned Pharrs function simultaneously as territorial claims and forms of economic currency for both the Jaladas and the Dadondaar, thereby shaping 'who controls, who acts, and who has the power to produce' (Heynen et al., 2000; Swyngedouw, 1999) fishing regimes within this waterscape. Understanding the politics around Pharrs is therefore essential to elucidate how "organized and bold encroachment of the powerful" (Hackenbroch and Hossain, 2012; Moatasim, 2019) materializes and structures access for different fishing communities both within and beyond Chattogram.

Based on my 10 months of ethnographic research, I also argue that Pharrs cannot be reduced to passive sites of extraction or fixed territorial units. Rather, following a socionatural assemblage lens (Ranganathan, 2015), they must be understood as active and relational entities with distributed agency. As an alternative reading of structural political economy, "assemblage thinking is loyal to on-the-ground practices, processes of becoming, and the capacities of human and non-human matter alike to make history" (Ranganathan, 2015: 1305). As socio-material nodes, Pharrs enable the circulation of power: they mediate formal and informal relationships, structure networks of obligation and indebtedness, and regulate access to a material waterscape comprising water, land, and the liminal spaces in between. Through their materialization and everyday use, Pharrs co-produce the socio-ecological conditions of fishing in the region, creating and perpetuating asymmetries of power within both the ecological and socio-political organization of the fishing regime.

As my research demonstrates, conceptualizing Pharr through a socionatural assemblage thinking provides insights to identify the relational politics of the fishing regime in Chattogram. Pharr thus becomes a manifestation of subaltern placemaking practices where its territorialization and circulation not only shape Jaladas communities' right to access the waterscape but also shape the socio-ecological dimensions of fishing in Chattogram. This article interrogates the limits of Pharrs across the waterscape of Chattogram by examining how they are produced, materialized, negotiated, and contested through everyday fishing practices. In doing so, it foregrounds the ways in which Pharrs themselves, as assemblages, participate in shaping socio-political relations as well as fishing yields, blurring the boundaries between spatial, ecological, and sociopolitical paradigms in the constitution of the Chattogram waterscape. Examining this furthers our understanding of contested waterscape production through foregrounding critical questions of placemaking, environmental governance, and social justice in the context of informal urbanism.

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Keywords: Placemaking, Assemblage thinking, Fishing grounds, Informal Urbanism, Bangladesh

THE GEOGRAPHIES OF DIGITAL NOMADISM. WHAT ARE THE PLACES ATTRACTING DIGITAL NOMADS, AND WHAT ARE THE CHARACTERISTICS THAT DISTINGUISH THEM?

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Individual Paper Presentation

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With the introduction of new technologies that enabled travel while maintaining contact with work, family, and friends, a new form of mobility emerged: digital nomadism. This new way of traveling inserts itself in the new mobilities paradigm identified by Sheller & Urry (2006), where individuals exist beyond their private bodies and generate combinations of presence and absence at the same time. The digital nomad (DN) is a traveler who lives at the intersection of travel, leisure, and work (Hannonen, 2019). They leverage the benefits of being location-detached to travel the world, motivated by an appetite for new experiences and aided by a series of DN visas that are now available to them. All of this while benefiting from a strong currency that allows them to enjoy higher living standards compared to those to which they have access in their home countries.

The increase in the popularity of this new mobility form started a competition from countries and cities to attract these travelers, who are perceived as high-value visitors. The most popular technique has been the implementation of DN visas, which vary in their approach and the benefits offered to their target audience (Bednorz, 2023). However, these luring tactics often act in detriment of the local population and the local environment (Bonakdar & Audirac 2020), turning the initial fascination into animosity and conflict.

As a relatively recent and ongoing phenomenon, the geography of these new DN hubs is still being defined. Nevertheless, one thing seems clear: it does not correspond with the traditionally cosmopolitan global hubs. This study aims to contribute to the construction of knowledge in this field by creating an atlas of the places concentrating this category of workers. Hence, the main question this study seeks to answer is: What are the places attracting digital nomads? Additionally, this work aims to identify patterns, or common traits among these places, potential temporal trends in the attractiveness of these locations, and their correlation (or lack of) with the implementation of targeted visas.

The motivation behind this work is to create a record of cases that can inform decision-making in areas such as urban planning and policymaking. The research design was derived from the recognition of the importance of having a register of these places, identifying their characteristics, and understanding the dynamics they follow. This study is based on a gray literature review and data collection from multiple social media platforms. To date, a database of 1,019 entries has been created, identifying 487 places distributed in 131 countries. Among the countries leading the number of mentions are Indonesia, Italy, Mexico, Portugal, and Thailand. Results are presented in a series of maps showing emerging DN hubs from different perspectives: governmental, media, and general public, in accordance with the data from which they originate. Further analyses also include a characterization of the places identified and the identification of temporal trends.

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Keywords: Digital Nomads, Remote Work, Migration, New mobilities

THE TRUST–PREPAREDNESS PARADOX: INSTITUTIONAL CONFIDENCE AND HOUSEHOLD FLOOD READINESS IN THE UNITED ARAB EMIRATES

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Track 5: International Development Planning
Individual Paper Presentation

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Climate change is intensifying flood risks globally, yet preparedness behaviors vary dramatically across governance contexts. While past disaster research suggests that institutional trust enables individual preparedness, this relationship remains unexplored in high-capacity governance systems where citizens hold exceptionally strong confidence in government response. This research focuses on two related questions: (1) How do flood experience, risk perception, institutional trust, and socioeconomic status jointly shape household flood preparedness in Dubai and Sharjah? (2) Under what conditions does trust in government function as a resource for resilience versus a source of dependency that suppresses local adaptive behavior?

We address these questions using a structured online survey of 900 adult residents in Dubai and Sharjah, the two emirates most affected by the record breaking April 2024 floods. The questionnaire captured self reported flood experience, multi-item scales for flood risk perception, trust in government flood management capacity, and household preparedness behaviors, alongside detailed socio demographic indicators. After reliability and validity checks, we estimated a covariance based structural equation model that specifies direct and mediated pathways from experience, risk perception, and socioeconomic status to preparedness through institutional trust, controlling for age, gender, education, and income. Model fit indices indicated a good overall fit, supporting the interpretation of standardized path coefficients.

The data provides statistically significant evidence of the hypothesized trust–preparedness paradox. First, institutional trust has a strong negative direct effect on household preparedness, indicating that confidence in government suppresses rather than enables private protective action, even after accounting for experience, risk perception, and socioeconomic status. In a context of this study, where 97% of respondents report confidence in local government institutions, this trust appears to legitimize reliance on state response and recovery, crowding out incentives for household level readiness. Second, flood experience exerts indirect positive effects on preparedness by eroding institutional trust: residents with more severe or disruptive past flood experience express lower trust, which in turn is associated with higher levels of preparedness, resulting in a positive mediated pathway from experience to action despite a statistically non significant direct effect of experience on preparedness. Third, higher risk perception significantly increases institutional trust, which then reduces preparedness, producing a negative mediated pathway whereby feeling at risk reinforces reliance on the state rather than motivating self protection. Socioeconomic status has a robust positive effect on preparedness, with wealthier households more likely to adopt resource intensive measures, but this material capacity does not offset the dampening influence of high institutional trust.

This study advances international disaster and development theory by demonstrating that in high capacity, non-Western governance systems, institutional trust can function as a form of moral hazard, undermining the classic assumption that greater trust uniformly supports risk reduction. Our research approach integrates cognitive dissonance, Protection Motivation Theory, and the dependency thesis into a unified model that explains how residents reconcile awareness of flood risk with low levels of household preparedness. The results suggest that

resilience strategies in Gulf and similar high trust cities must move beyond conventional risk amplification campaigns toward shared responsibility frameworks that explicitly delineate what the state can guarantee during compounding extreme events and what minimum preparedness is expected of households.

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Keywords: United Arab Emirates, institutional trust, flood preparedness, risk perception, disaster governance

WHEN CRISES COLLIDE: DISASTER GOVERNANCE AND NGO COLLABORATIONS IN LEBANON AND TÜRKIYE

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Individual Paper Presentation

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As cities around the world confront increasingly interconnected and overlapping crises, collaborative action has become a central imperative for effective disaster response and recovery. Despite their critical role in coordinating disaster efforts, non-governmental organizations (NGOs) are often excluded from formal disaster plans and tend to mobilize only after disasters, rather than engaging in vulnerability reduction and long-term recovery in non-disaster periods (Tierney, 2012). This paper asks how NGOs, increasingly important community actors in providing shelter and essential urban services to vulnerable populations, tackle the challenge of collaboration during "polycrises"- phenomena typified by interwoven and overlapping risks (Homer-Dixon et al., 2023).

The paper focuses on Beirut (Lebanon) and Gaziantep (Türkiye), two cities struck by catastrophic disasters - a massive explosion in Beirut in 2020 and deadly earthquakes in Gaziantep in 2023 - while contending with other protracted crises. The protracted presence of NGOS i.e., humanitarian actors, in both cases makes it essential to examine these NGOs' sustained role in shaping urban governance and the urban production of space.

By using a comparative case study design and qualitative methods, mainly 35+ semi-structured key informant interviews in each city, my findings show that NGOs play central roles in disaster response despite major differences in state capacity. In Türkiye, where state response is centralized, NGOs, including those originally focused on the Syrian conflict, were key actors and mobilized from day one of the 2023 earthquakes, enabling rapid joint mobilization. In Lebanon, where the state's role is more fragmented, NGOs have almost entirely led crisis response efforts after the port explosion. In both cases, previously established NGOs for refugees rapidly adapted to emerging disasters and filled critical gaps, particularly in shelter and service provision, acting as bridges between the multiple disaster response actors. The protracted physical presence of NGOs reshaped disaster governance and urban space in different ways. In Türkiye, the previously established shelter clusters were immediately activated and, through knowledge translation, provided immediate essential services to refugees and Turkish citizens. Similarly, in Lebanon, NGOs were early actors in housing reconstruction and continue to provide urban services five years post-blast. In both cities, NGOs introduced sustainable solutions and catalyzed context-appropriate, durable solutions rather than only short-term relief. These findings point to the need for disaster planning that institutionalizes NGOs as core actors within transparent, inclusive coordination systems across response and recovery, ensuring their bridging capacities inform policy and equitably serve vulnerable communities. The research also advances our understanding of NGO roles in urban disaster governance, highlighting how they navigate complex governance landscapes to bridge actors and fill essential gaps. Finally, the research findings fill critical gaps in local-scale theorization of the polycrises (Homer-Dixon et al., 2023), political and policy implications of disasters (Oliver-Smith, 2022), NGO collaborations and bridging organizations (Bryson et al., 2006), and extend debates on humanitarian urbanism (Harb, 2025).

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Keywords: Polycrisis, Crisis Response, Collaboration, Bridging organizations, Urban Governance

WHOSE RIGHTS ARE RIGHT? UNDERSTANDING RENT AND LEGAL PLURALISM IN INFORMAL SETTLEMENTS OF GHANA

Abstract ID: 2298.0.0.434.2026
Track 5: International Development Planning
Individual Paper Presentation

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Legitimacy of tenure rights in informal settlements is complex and socially constructed, shaped by legal pluralism and informal practices in housing construction, sale, and rental. Legal pluralism is evident in Ghana's urban planning contexts, where newly introduced planning frameworks often conflict with customary land systems. Within this context, informal settlements in Ghana are highly contested urban spaces where legitimacy is shaped and reshaped by multiple claims to authority and to the right to live. The paper asks: How is the legitimacy of tenure rights produced and negotiated within informal rental arrangements under conditions of legal pluralism? More specifically, how do tenants, landlords, customary authorities, and state actors interact to establish, contest, or undermine claims to housing security in informal settlements, and what does this reveal about the role of informality in urban governance?

In planning and development policy, tenure security is often assessed through formal legal frameworks: statutory land title, planning approval, and written rental contracts. This approach assumes that rights and legitimacy flow primarily from state recognition. However, in many postcolonial African cities, including Accra, land and housing are governed through legally plural systems in which statutory law coexists with customary authority and informal practices. Moreover, renting is widespread in informal settlements, operating without legal title, written contracts, or compliance with formal planning regulations. This paper argues that legality-based planning frameworks fail to explain how the legitimacy of tenure rights actually operates in informal rental markets. The research methodology for this paper involved fieldwork in July 2025, adopting a combination of qualitative methods, including semi-structured interviews, participant observation, and photography, to examine lived experiences in informal settlements and the current planning policies surrounding them. The case selected for the study is Agbogbloshie and Old Fadama area, which is one of the largest informal settlements in Accra and exhibits the complex land politics due to legal pluralism. A total of 18 interviews were conducted with 14 residents and 4 Land Use Spatial Planning Authority (LUSPA) officers. Among the residents, most were renters, except for one household in which the husband owned both the land and the housing structure.

The findings demonstrate how legitimacy is not a fixed condition but a process that emerges through negotiations between tenants, landlords, traditional authorities, and state actors. There is a complex overlap between customary practices and statutory legal frameworks in land politics, where having a document does not always confer protection for dwellers, and verbal agreements with the chief can serve as a source of legitimacy. Sometimes, land and housing agreements can be political, as social networks can serve as de facto sources of legitimacy and protection. In this setting, where legitimacy is not defined by legality, residents experience and navigate eviction threats and tenure security through relationships with landlords, the visibility and actions of state actors, and personal history and resources. These interactions illustrate how informality functions as a mode of governance, deeply embedded within formal political and institutional frameworks, and is employed and negotiated. This paper introduces the concept of 'legitimacy by informality' to describe how rental agreements, landlord–tenant relations, and appeals to customary or state authorities serve as mechanisms for constructing and negotiating legitimacy.

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Keywords: informality, legitimacy, legal pluralism, rent, informal landlordism

ASSESSING SUSTAINABILITY IN INDIA'S BUILT ENVIRONMENT: CHALLENGES AND OPPORTUNITIES

Abstract ID: 2296.0.0.789.2026
Track 5: International Development Planning
Research-in-Motion Presentation, Research currently in process

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India is at a transformative juncture in its pursuit of sustainability and decarbonization, driven by ambitious climate goals, economic reforms, and the rise of social entrepreneurship. The building sector, a major contributor to greenhouse gas (GHG) emissions globally, presents a critical pathway for climate action, with the potential to reduce up to 66% of GHG emissions (IPCC, 2023). In India too, this sector can play a central role in shaping low-carbon urban infrastructure and integrating climate-conscious strategies into both new and existing developments (Colliers, 2024; Joshi, 2025).

This study examines sustainability in India's built environment through a review of literature, government resources, policy frameworks, and interviews with over 40 architects, policymakers, academics and allied experts. Preliminary findings reveal that sustainable practices in India's built environment prioritize functional, context-driven design, passive strategies, use natural and alternative materials, and innovative adaptations of vernacular methods. They also highlight challenges that persist in policy implementation, media engagement, skilled labor shortages and market driven rating systems. These findings offer a global audience insights into India's approach, illustrating how sustainable design in the built environment can enhance urban resilience, livability, and reduce carbon emissions, while providing lessons transferable to cities worldwide pursuing climate-conscious development.

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Key Words: Urban sustainability, Built environment, Low carbon Solutions, Sustainable architecture

IMPLEMENTATION AND ACCOUNTABILITY FAILURES IN ECONOMIC DEVELOPMENT PROGRAMS: A COMPARATIVE STUDY OF GHANA AND NIGERIA

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Track 5: International Development Planning
Research-in-Motion Presentation, Research currently in process

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West African countries often use large economic development programs to promote employment, infrastructure, and social investment. Yet many such programs fail to achieve their intended outcomes, raising questions about how institutional structures shape program implementation and outcomes (Edokat and Njong, 2019; Khan, 2004; Van de Walle, 2001; Mkandawire & Soludo, 1999). Weaknesses in institutional structures are often described as forms of institutional failure, where institutions are unable to effectively implement policies or achieve intended outcomes (Pritchett, Woolcock, and Andrews 2013; Stiglitz 2008). Existing literature suggests three mechanisms behind institutional failure. First is incentive and accountability failures, the classical principal–agent problem that creates incentives for corruption or rent-seeking. Second is weak state capacity and premature load bearing that limit effective implementation of programs. And institutional forms without function, where institutions replicate the appearance of effective institutions without their underlying functionality (Stiglitz 2008; Pritchett, Woolcock, and Andrews 2013). Existing comparative studies in Africa highlight differences in development outcomes in African countries and widely recognized institutional failures as a key factor explaining those differences (Rodríguez-Pose and Tijmstra 2007; Khumalo 2018; Elhiraika, Ibrahim, and Davis 2019). These studies mostly analyze macro-level institutions, governance systems, or development strategies. They provide valuable insights into national development trajectories and some insight into institutional failure at the macro or general policy implementation level. They focus on broad governance patterns measured through national indicators or general policy outcomes. However, these analyses offer limited insight into how institutional failures emerge within specific development programs. Institutional failures within specific development programs focus on how institutional structures and accountability mechanisms shape program outcomes in practice. This provides a more nuanced understanding of institutional failures and accountability mechanisms within development programs and how similar programs may produce different results across political contexts. Comparing economic development programs across Africa can help identify failures that are common across institutions and accountability structures (Acemoglu and Robinson 2012; Andrews, Pritchett, and Woolcock 2017). This study contributes to the broader literature of cross-country comparative studies in Africa by examining two large-scale economic development programs: Ghana's Youth Employment and Entrepreneurial Development Agency (GYEEDA) program and Nigeria's Subsidy Reinvestment and Empowerment Programme (SURE-P) to examine whether similar institutional failures shape program implementation and accountability outcomes in both countries. Both programs were introduced with similar objectives but later became associated with corruption allegations and implementation breakdowns. Meanwhile, these programs operated within different political and institutional contexts, providing an opportunity to examine how differences in institutional structures and accountability mechanisms shape program outcomes. Using government reports, audit reports, and official media reports, this study compiles a dataset of key actors involved in each program and applies social network analysis to examine patterns of coordination, accountability, and decision-making. The network analysis will be supplemented with interviews with actors involved in the programs to clarify institutional relationships and decision-making processes that are not visible in official records. By mapping institutional relationships and network structures, the study investigates whether the two programs exhibit similar types of institutional failure and whether political accountability differs across the two cases.

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Key Words: Institutional Failures, Accountability, Economic Development, Social Network, Africa

OPERATIONALIZING THE JUST ENERGY TRANSITION: CASE STUDIES OF LOW-CARBON PROJECTS IN GHANA

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Track 5: International Development Planning
Research-in-Motion Presentation, Research currently in process

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A growing share of the world is in the mid-transition period of the clean energy transition where an increasing share of clean energy coexists with existing fossil fuel infrastructure. The mid-transition, which may well last decades, also refers to the political, economic, and technical processes that need to occur to move towards an energy economy that is ultimately ready for complete fossil fuel phaseout. These processes will vary widely across states, countries, and regions.

Part of the mid-transition also involves considering the justice implications of various transition pathways and processes. Just Energy Transition frameworks can inform transition pathways trying to achieve both climate and economic justice goals. These frameworks can vary widely and different definitions shape policy design, implementation, and local economic development outcomes. In Ghana, successive governments and energy sector leadership, using a morality-based argument, have defined a just energy transition as one where Ghana expands its domestic gas industry as a tool for local economic growth and development.

Ghana's strategy, presented in its 2022 National Energy Transition Framework, came after over a decade (2010 - 2020) of gaps and stalled progress between the country's stated renewable energy (RE) goals and actual RE deployment. This gap, which has been discussed at length in existing literature, highlights government and energy sector stakeholder disinterest, inability, and opposition to decarbonizing Ghana's electricity sector. Part of this period, specifically 2016 onwards, was shaped by a 2012-2016 electricity reliability crisis that led to an overinvestment in quick-to-build natural gas power plants procured on poorly negotiated contracts. This investment has created electricity overcapacity, which means that at least for the next several years, there is little imperative for the government to decarbonize its electricity sector. As such, except for a few large-scale solar and legacy hydropower capacity, majority of RE deployment has been private industry led projects.

Where the government has shown interest is industrial decarbonization, which aligns with goals of industrialization, economic development, and natural resource extraction. Successive governments have supported the creation and expansion of local mining and processing of bauxite, lithium, and other minerals. Lithium extraction, perhaps intentionally, is currently being framed in industrial decarbonization terms, to further both climate and local industrialization goals. One of the main mining efforts is a proposed lithium mine in South Central Ghana. This mining project and the handful of private industry led large-scale solar projects provide opportunities to study conceptualizations and applications of just energy transition and mid-transition frameworks in Ghana.

In this ongoing research, I am using a qualitative case study approach to assess the impact of shifting industrial policy (i.e., disruptions in policy) on immediate and longer term just transition efforts in Ghana. Focusing on the lithium mine (known as the Ewoyaa Lithium Project) and a handful of large-scale solar projects, I ask:
Under what conditions and how do disruptions in industrial policy impact immediate and longer term just energy transition efforts in countries with varying levels of development and different government planning contexts?
Focusing on the period of 2015 – 2030,

RQ1: How do (international or domestic) policy disruptions such as abrupt policy changes change the focus and implementation of just transition elements of large-scale clean energy projects?

RQ2: How do community and local governments define success for clean energy projects, and how do policy disruptions change this definition?

RQ3: How might these disruptions affect government interest and ability to pursue future clean energy projects?

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Key Words: energy, development, industrialization, justice, mid-transition

PLANNING AND MONETIZING RIVER FRONT LAND – CASE OF SABARMATI RIVER, AHMADABAD, INDIA

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Track 5: International Development Planning
Research-in-Motion Presentation, Research currently in process

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This paper examines the Sabarmati River Front Development Project (SRFD) in Ahmedabad, India, highlighting its opportunities and challenges in planning a self-financed urban development project. Initially proposed as a beautification initiative, the project included channelizing and narrowing the river, creating embankments, and developing recreational spaces. The SRFD aimed at addressing social issues by relocating approximately 14,000 slum families to safer housing and enhancing infrastructure through the construction of interceptor sewers and public amenities. The project's estimated cost was $60 million, financed through the sale of reclaimed land, which was expected to generate $76 million. Approximately 500 acres of riverbed land was reclaimed, 20% of which was reserved for commercial sale to finance the SRFD. Initial financial feasibility study projected an internal rate of return of 17.23% over ten years; however, actual financial results likely deviated due to political delays and funding challenges (Mittal and Byahut 2020; Bhatt 2016). Sabarmati Riverfront Land Disposal Policy (SRFDCL 2024) was formulated to monetize the land and real estate generated after reclamation. The paper highlights that the SRFD was initially designed to address both aesthetic and socio-economic issues in Ahmedabad. Its key infrastructure developments included recreational spaces and housing for slum families. Initial financial projections indicated a positive internal rate of return, suggesting confidence in the project's viability and political buy-in. Later, political delays and funding challenges significantly impacted the project's execution. The project exemplifies the complexities of balancing financial feasibility with social responsibility in urban planning. The paper reflects on the complexities faced in planning and executing a self-financed urban development project.

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Key Words: Land based Financing, Real Estate Development, Green Blue Infrastructure, Waterfront Development

PLANNING WITH EVERYDAY INFRASTRUCTURE: RETHINKING PARTICIPATION AND KNOWLEDGE FROM JAKARTA'S KAMPUNGS

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Track 5: International Development Planning
Research-in-Motion Presentation, Research currently in process

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Research Question and Significance

This project examines how participation functions as an epistemic practice through which planning knowledge is co-produced in everyday urban infrastructures in the Global South. Planning scholarship has often treated infrastructure as a technical system and participation as a procedural mechanism for legitimacy (Taylor, 2019). Yet infrastructures are not only technical networks but also the socio-material arrangements that sustain everyday life (Larkin, 2013). In Jakarta, kampungs (a Malay term for 'village') operate as such infrastructures through flexible spatial adaptation, collective governance, and everyday negotiation under recurring flood conditions (Nie et al., 2026). However, these forms of everyday infrastructure are rarely recognized as legitimate sites of planning theory. Instead, kampungs have long been framed through a formal–informal binary that casts them as deficient or exceptional forms of urbanism (Putri, 2024). By examining how participation reshapes what counts as planning knowledge and who is recognized as producing it, this project addresses a broader gap in planning theory, which continues to privilege expert-driven knowledge while under-theorizing how knowledge emerges from situated practices in contexts of uncertainty (Simone, 2013).

Approach and Methodology

The research draws on a three-stage, multi-year collaboration with residents of Kampung Kalibata in South Jakarta. In the first stage, community workshops were conducted with kampung residents to surface everyday concerns related to flooding, safety, green space, and social life. In the second stage, participatory workshops focused on identifying mismatches between existing green spaces and social uses, where residents collectively mapped spatial needs and proposed alternative configurations of micro-green infrastructures. These materials were translated into design propositions through collaboration with local academic partners and design studios. The third stage culminated in a public design charrette, where student proposals of micro-green infrastructures were presented to and evaluated by residents, civic leaders, and local stakeholders. Data collection across all stages includes participant observation, workshop documentation, and iterative feedback.

Meaningful and New Findings

Preliminary findings suggest that residents do not conceptualize green infrastructure primarily as an aesthetic or technical intervention. Instead, it is understood as part of the everyday social infrastructure tied to care, well-being, and collective life in the kampung. In addition, flooding and spatial constraints shape preferences for adaptable and incremental forms of green infrastructure, rather than fixed solutions. Residents actively evaluate design proposals based on feasibility, maintenance, and social use, positioning themselves as co-producers rather than passive recipients of planning knowledge. These findings suggest that planning knowledge is not merely applied to communities but is actively generated within them through situated practices and ongoing negotiation.

Relevance and Implications

This project positions kampungs as sites of planning theory production rather than sites of informality, contributing to broader efforts to theorize cities of the Global South on their own terms. For planning practice and education, the project demonstrates how participation can operate as a research method that produces and legitimizes planning knowledge grounded in everyday urban life, offering a framework for rethinking participation as central to both planning practice and theory.

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Key Words: Infrastructure, Participation, Co-production, Planning Knowledge

Track 6 – Land Use Policy, Governance and Law

Track 6 Pre-Organized Session Summaries and Abstracts for the Sessions

BEYOND DEVELOPMENT: AGRARIAN LAND USES AND THE LIMITS OF METROPOLITAN LAND-USE LOGIC
Abstract ID: 2294.0.0.390.2026
Track 6: Land Use Policy, Governance and Law
Pre-Organized Session Summary
Session Includes: 2298.0.0.109.2026, 2298.0.0.339.2026, 2298.0.0.74.2026, 2298.0.0.198.2026

Tahir de Noronha [University of California, Berkeley] tn@berkeley.edu, organizer
Carol Ramos-Gerena [University of Puerto Rico] carol.ramos1@upr.edu

This session invites papers that interrogate peri-urban and agrarian land-use planning through belonging and boundary-making.
Planning, often through zoning, structures who belongs on land by recognizing some claims and rendering others illegible. Recent calls to "liberalize" or "streamline" land-use treat zoning as an urban instrument with construction as its goal. In doing so, they sideline Krueckeberg's (1995) deeper question: not "Where should things belong?" but "To whom do things belong?" This matters especially in rural, agrarian, and Indigenous landscapes. Here, land carries meanings irreducible to the "use" categories that zoning relies on. Urban and metropolitan land use framing – toward streamlining, and the privileging of development-oriented land uses – recast belonging as a technical problem, and doesn't travel smoothly to areas on the periphery.
Accordingly we put together work on zoning-as-belonging, agrarian land use, and tensions of "highest & best use."

Learning Objective(s):

- Zoning and Land Use Planning in rural and peri-urban contexts
- Conflicts over Farmland rezoning and Siting Renewables
- Comparative or empirical case studies that reconsider the limits of zoning-as-use and foregrounds zoning-as-belonging

RETHINKING FARMLAND PROTECTION BY CENTERING SOIL-CROP SUITABILITY IN PUERTO RICO'S LAND USE REGULATIONS

Abstract ID: 2298.0.0.109.2026
Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

Carol Ramos-Gerena [University of Puerto Rico] carol.ramos1@upr.edu, presenter
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Farmland protection in Puerto Rico is shaped by land-use planning frameworks that incorporate soil classification systems as key tools for regulating land. However, these systems reflect a partial translation of soil characteristics into planning practice, one that generalizes selected soil physical properties, such as depth, drainage, and slope, while overlooking the relationship between soils and agricultural production. This paper addresses the following questions: How can land-use planning better integrate soil characteristics and soil–crop suitability to inform farmland protection in Puerto Rico? To what extent do regulatory frameworks incorporate soil–crop suitability, and how are they shaped by U.S.-based soil and farmland classification systems? What do alternative approaches reveal about new ways of valuing land for farmland protection based on local agricultural production?

To answer these questions, the paper conducts a comparative analysis of soil classification systems embedded in the regulatory and planning frameworks used in Puerto Rico. This includes the Land Capability Classification (LCC) used in the Reglamento Conjunto, the USDA Farmland Classification system informing farmland protection policies under the Farmland Protection Policy Act (FPPA), and the classification schemes used in the 2015 Land Use Plan (Plan de Uso de Terrenos, PUT) and municipal land-use plans (Planes de Ordenación Territorial, POT). These are analyzed alongside alternative approaches—agro-ecological zoning developed by the FAO and the Plantain Productivity Index developed in 2025 by the Natural Resources Conservation Service (NRCS) in Puerto Rico—to examine how different classificatory logics define and value agricultural land.

Preliminary findings suggest that current planning frameworks rely on soil classification systems built from a limited set of physical metrics that evaluate land as a uniform physical surface while neglecting soil–crop suitability and local agricultural practices. As these classifications are embedded in zoning maps, land-use plans, and permitting systems, they function as simplified regulatory categories that shape what land is recognized as valuable or protectable. Moreover, the reliance on U.S.-based classification systems reflect a colonial and extractive legacy in which land is valued according to external agricultural standards, often aligned with commodity crop production, rather than locally relevant food production.

In contrast, agro-ecological zoning and crop-specific indices such as the Plantain Productivity Index demonstrate how soil–crop suitability can be operationalized to better align land evaluation with local agricultural production needs. These approaches highlight the potential for planning frameworks to move beyond generalized soil classifications toward more context-specific, production-oriented models. The paper contributes to planning scholarship by reframing farmland protection as a question of how land is classified and valued, and to planning practice by offering pathways to integrate soil–crop suitability into land-use regulation in distinct agricultural and territorial contexts.

Citations:

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Keywords: Farmland Protection, Land-Use Planning, Soil–Crop Suitability, Agroecological Zoning, Puerto Rico

PLANNING FOR FARMLAND ACCESS AMID SOLAR EXPANSION: A MINNESOTA CASE STUDY

Abstract ID: 2298.0.0.339.2026
Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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As the climate crisis deepens, the U.S. faces competing demands for farmland: food production or renewable energy development—compounding an already severe farmland crisis. Planning approaches to farmland protection, however, often prioritize land use outcomes while neglecting equitable land access (Horst & Gwin, 2018). For instance, agricultural zoning and related tools typically focus on maintaining a "critical mass" of farmland to sustain production, advancing a model of farm viability that privileges large commodity operations over small and midsized under-resourced and beginning farmers, who are critical to diversified food systems. This approach can exacerbate farmland consolidation and barriers to access, including rising land costs and restrictive tenure practices (Horst & Marion, 2019). These dynamics are reflected in persistent racial disparities: between 1900 and 1997, Black farmers declined in number by 98%, and they now operate a mere 1.7% of U.S. farmland compared to the 94% operated by white farmers (Gilbert et al., 2002). While planners are uniquely situated to promote farmland access through zoning, siting criteria, and implementation tools, only 1% prioritize food systems, and even fewer focus on farmland access (Growing Food Connections, 2014).

Solar development is now one of the fastest-growing farmland uses, introducing new risks and opportunities for farmland access. While solar leasing provides stable income for some landowners, developers tend to prioritize large farms (Maguire et al., 2024). Landowners often earn more leasing land for solar than for agriculture, threatening land access for the 40 percent of U.S. farmers who rely on leased land (USDA, 2022). With intentional planning, solar could help under-resourced farmers cut energy costs, diversify income, and stabilize tenure. However, as planners work to advance renewable energy goals, access considerations are often secondary (Geissler et al., 2022). Further, planners operate within state policy frameworks that often play a central role in structuring both farmland protection and energy development. State institutions, however, frequently treat these domains in isolation, with limited attention to how policies shape land use and access on the ground.

This research examines the extent to which state governments align farmland access and solar development to enhance land access for under-resourced and beginning farmers. Focusing on Minnesota—a state with both large-scale solar and agricultural development, but also active efforts to support under-resourced farmers—I review 40 state legislative policies and nine state planning documents related to solar adoption, economic development, sustainability, and/or agricultural land use. Using systematic coding, I identify themes related to farmland access, solar siting, and equity. Semi-structured interviews with representatives from organizations supporting farmland access, solar, rural rights, and state planning provide insight into how these policies function in practice and where gaps remain.

Findings indicate that while Minnesota statutes consistently frame farmland as vital to long-term food production, state plans lack procedural guidance for operationalizing these commitments—particularly when competing land uses like large-scale solar emerge. Farmland access goals thus often remain more symbolic than actionable. State policies and plans also provide limited tools to address the lack of affordable land for beginning farmers, constraining access to preserved land. Although state budgets fund both under-resourced farmers and landowners adopting solar arrays, these streams are rarely connected in ways that reduce barriers for farmers. As a state reflecting broader Midwestern agricultural and solar development trends, Minnesota illustrates how solar expansion may reshape farmland access elsewhere, underscoring the need for planning to move beyond regulating land use toward shaping land access.

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Keywords: farmland access, under-resourced farmers, solar energy development, land use planning

A LANDOWNING SOCIETY? DISCRETIONARY REZONING AND THE REALLOCATION OF PROPERTY RIGHTS IN GOA'S LAND FRENZY

Abstract ID: 2298.0.0.74.2026
Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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In this paper, we analyze the arguments advanced by the Government of Goa in defending Section 17(2) of the Town and Country Planning Act, a novel law introduced in 2023 that allows the state to unilaterally convert agricultural land, for development uses on the grounds of "error correction" without public hearing. We ask how such a planning instrument reclassifies land use, belonging, and the publics whose interests it claims to serve.

The section's justification and repurposing, highlight what Ghertner and Lake (2021) describe as land fictions: fragile yet generative narratives and legal processes through which land is remade as commodity.

Two fictions animate the defense of 17(2). The first is the claim that Goa is a landowning society. This half-truth is rooted in the 1975 Mundkar (Protection from Eviction) Act, which gave nearly every resident in the state property rights as a means of social emancipation from feudal-serf-indentured relations. The state now invokes this history to suggest that landowning societies need "development rights." The second fiction is that of flexible planning and streamlined land use regulation. Together, these fictions convert a question of agrarian and ecological landholding into a technical matter of planning adjustment. They recast hillslopes, rice fields, cashew orchards, and other once-protected lands as administratively correctable space – with construction as a normative goal.

Methodologically, we draw from two years of fieldwork, playing different roles. One of us carried out participant observation in the court, another volunteered with anti-dispossession activist groups; all of us collectively undertook a rigorous forensic document analysis of 17(2) rezoning case files.

Fawaz (2017) warns that planning reproduces a propertied landscape by limiting which claims can count. The evidence of 17(2) makes this claim empirically visible. Despite the black letter of the law allowing for "corrections" in the form of upzoning and downzoning we find that 94% of all land processed under the section was upzoning of agricultural land to construction uses.

Most beneficiaries of 17(2) were large real-estate corporations that had recently acquired the land, often just months before applying. We find that only 14 Section 17(2) rezonings are mundkar plots. These findings expose the falsity of both claims: the landowning "public" does not benefit, and the policy's flexibility is merely a vehicle for patronage.

The 17(2) upzonings, largely unfolding on the periphery of urban areas, emerge from transversal engagements with official planning rather than outside the state (Caldeira, 2016). They discount the fact that most Mundkar rights have been obstructed by landlords in Goa.

In agrarian and postcolonial contexts, zoning cannot be understood only as the regulation of use. It is rather a struggle over belonging, over which claims to land are recognized as legitimate, and over how planning translates socially and ecologically differentiated terrain into speculative property (Ramos-Gerena, 2024). Ananya Roy once framed informality as "a state of exception" (Roy, 2005: 147) one that captures the state's selective suspension of planning law in a moment of emergent neoliberal urbanism in India. Our work is situated at a different – might we

say illiberal moment – in which state power is extended not in the name of the market, nor empowering the people, but as a return to feudal powers.

In this sense, our analysis extends Kruekerberg (1997) by showing that in agrarian and postcolonial contexts, the question of “to whom land belongs” is the driving force behind planning through exception, and sovereign power as the state of exception is de-facto a return to the sovereign as landlord.

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Keywords: zoning, informality, property, india, law

ZONING-AS-USE AND THE LIMITS OF COLLECTIVE LIVING: INTENTIONAL COMMUNITIES IN THE SETTLER COLONIAL PERIPHERY

Abstract ID: 2298.0.0.198.2026
Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Recent critiques of land-use planning argue that zoning operates through a metropolitan imaginary, reducing land to administratively legible uses and obscuring questions of belonging: to whom land belongs, whose claims are recognized, and whose ways of living are legitimized (Fawaz & Moumtaz, 2017; Ghertner, 2020; Krueckeberg, 1995). Building on these insights, this paper argues that alternative land practices in rural contexts attempt to circumvent zoning-as-use yet may inadvertently reproduce exclusionary property relations. It asks: to what extent do alternative rural land practices depart from, or reinforce, colonial planning logics such as "zoning as use" (Dorries, 2022; Bhandar, 2018; Milner, 2015)?

Drawing on ethnographic fieldwork and document analysis, this paper examines regulatory constraints on collective land practices within overlapping land and political ontologies using intentional communities (ICs) in east-central Ontario as a case study. ICs are defined here as communal societies organized around a common purpose or identity, with shared living spaces and resources, and requiring a critical mass (Miller, 2010). Many IC community members view their collective, low-impact, agrarian lifestyles as prohibited by the current zoning rules. However, this illegibility is not incidental, but inherent to the colonial ordering of land.

The findings suggest that land-use regulations not only classify land but actively determine belonging and recognition. Limits on dwellings per parcel, servicing requirements, and separations between residential and agricultural uses block collective tenure and hybrid agrarian living, reinforcing individual ownership and existing property regimes. Community members lament how zoning does not allow these communities to exist. Contemporary planning instruments dictate who may live where, putting property norms into practice and repeating patterns of exclusion (Krueckeberg, 1995).

At the same time, intentional communities do not always position themselves outside property relations. On the one hand, participants propose anarchist alternatives and reject market-based housing and capitalism. Yet on the other, their practices often rely on formal titling, land purchases, and limited critique of underlying colonial relations (Adamiak, 2018). These tensions are further complicated and shaped by territorial negotiations within the Algonquins of Ontario Settlement Area, and by how Indigenous land claims interface with IC development. Overall, this case demonstrates the limits of zoning-as-use as both a regulatory and a conceptual framework. Regulatorily, the mechanisms noted above prohibit the tenure and living arrangements that intentional communities both desire and require. Conceptually, zoning assumes individualized and bounded property relations, rendering collective claims structurally illegible rather than merely non-compliant (Fawaz & Moumtaz, 2017). In doing so, it reinstates the settler colonial order, leaving deeper questions of title, jurisdiction, and belonging unsettled (Milner, 2015; Krueckeberg, 1995). This paper contends that alternative land claims often reinforce these patterns through "affirmative politics" rather than structural change (DeFilippis et al., 2019). By emphasizing these tensions, the paper shifts the focus from zoning-as-use to zoning-as-belonging and explores what planning beyond property could mean (Dorries, 2022; Krueckeberg, 1995).

Returning to critiques of the metropolitan imaginary, the paper ultimately demonstrates that zoning-as-use and its logics of legibility and abstraction extend into rural areas, where they constrain forms of collective life that both

exceed and attempt to conform to official land-use categories, while leaving deeper questions about belonging and recognition unresolved.

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Keywords: zoning, private property, settler colonialism, intentional communities, Canada

LAND AND TAXES: A PLANNING PERSPECTIVE

Abstract ID: 2294.0.0.933.2026

Track 6: Land Use Policy, Governance and Law

Pre-Organized Session Summary

Session Includes: 2298.0.0.377.2026, 2298.0.0.683.2026, 2298.0.0.407.2026

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This panel asks, what is the intersection of tax policy and planning? It brings together scholars of urban planning who are examining how taxation affects planning, and what planning might hope to achieve with taxation. This panel aims to present research which examines the land governance issues that emerge in defining tax policy, effectively collecting taxes, and the role of taxation in promoting equitable communities.

The panel will seek to present a complete examination of the following:

- Fiscal geographies and the ways that tax incentives and penalties steer firm and individual behavior.
- Vulnerability of tax bases that overly depend on land values in a context of climate change.
- The governance of taxation and the institutional and state capacity of challenges of effectively levying local taxes.
- The role of land-based taxes in propelling development and growth in urban environments
- The financialization of property tax debt and the impact on local communities

Learning Objective(s):

- This panel critically examines the intersection of taxation and planning practice by analyzing fiscal geography, local tax conflicts, and municipal finance challenges
- This panel bridges research exploring how local taxation shapes the built environment and, conversely, how the built environment influences tax policy. This panel is specifically concerned with examining land-based sources of revenue to better understand how land use interacts with tax policy in the urban realm.

HOW DO PEOPLE PREFER TO PAY FOR PUBLIC PARKS?

Abstract ID: 2298.0.0.377.2026
Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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How do people prefer to pay for public parks? Parks are important urban amenities with a variety of benefits for civil society, communities, and individual users (Loukaitou-Sideris et al. 2016; Nelischer & Loukaitou-Sideris 2022). Even the best-planned parks may fail to yield these benefits, however, if the public is unable or unwilling to bear the expense of park operations and maintenance. In this paper, I analyze variation in how the voting public is willing to pay for the upkeep of public parks across 240 tax referendum elections from more than 100 local jurisdictions in California from 1986 to 2018. The analysis begins by fitting an elastic net regression model to a matrix of document embeddings extracted by application of sentence transformers to a corpus of policy summaries that were mailed to voters in a larger sample of 1,924 tax referendum elections. I then select the subsample of 240 measures that included financing for public parks, and compute the predicted vote share before and after sentence-wise perturbation of the texts of the park financing measures at the 10th, 25th, 50th, 75th, and 90th percentiles of predicted popularity, to identify interpretable policy features that are associated with greater or lesser shares of voter support for measures to pay for parks. Application of this method shows that voters especially favored taxes that coupled spending on parks with spending on public safety, including, e.g., funds for street lighting and police services. They also favored park funding measures that were temporary and renewable upon voter approval.

Theoretically, the paper draws attention to the role of tax policy design in shaping and maintaining the urban landscape. Scholars have documented the persistent budgetary challenges faced by local parks and recreation departments in the US (Zou and Crompton 2021) and a corresponding increase in reliance on developer impact fees and other non-tax financing instruments in at least some jurisdictions (Rigolon, Giamarino & Christensen 2024), with important consequences for equity in access to open space. Even in revenue-constrained environments, however, voters are sometimes willing to support increased taxation to fund public parks. Tax design features may make a difference.

Methodologically, the analysis presented here introduces an innovative computational tool for policy analysis that may have broader use in planning. Advantages of the method include its use of a direct, behavioral measure of the public's willingness to fund specific public goods, and its ability to provide quantitative estimates of the differences in voter support associated with detailed and specific differences in interpretable policy text. Disadvantages of the method include its reliance on a non-causal, correlational design, and its dependence on a non-probability sample of referendum elections from a single state. Planners should regard it as an effective new method for concisely summarizing a large body of comparative experience, rather than as a substitute for public consultation or for executing a true experimental design.

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Keywords: taxation, parks, large language models

TRACING THE SECURITIZATION OF PROPERTY TAX DEBT: SOCIAL NETWORK ANALYSIS OF TAX-LIEN BOND HOLDERS.

Abstract ID: 2298.0.0.683.2026
Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Each year in Cook County, owners of approximately 30,000 to 40,000 parcels do not pay their property taxes (Pappas 2022). When owners fail to pay their taxes, Illinois state law requires local jurisdictions to auction the tax debt to recover potentially lost revenue. After a tax lien is purchased, the homeowner is obligated to repay the tax amount plus penalties and interest to the buyer. Typically, the buyer holds the lien and directly collects the payment from the property owner. However, since the 2008 financial crisis, private equity and other large corporate investors have increasingly turned to securitization as a profit-making strategy. The investor pools thousands of liens from across the country into a securitization trust and issues bonds which are purchased by asset managers and other institutional investors. My paper explores how property tax has become entangled with the plumbing of global finance. I ask the question: who actually owns the tax debt of single-family homeowners in Cook County? What sort of relational networks are forged by securitization between homeowners, their properties, tax lien buyers, and institutional investors?

Methodologically, I build upon past work uncovering opaque ownership forms (An et al 2023; Seymour et al 2024) and bond investment (Tapp and Weber 2025; Kaufman 2025) by utilizing social network analysis (SNA) to illustrate the web of connections between these actors. I use data from the Bloomberg Terminal to trace the purchases and sales of tax-lien backed bonds issued by five securitization trusts that contain tax liens from Cook County. Using geospatial methods, I investigate the spatial and neighborhood characteristics of each portfolio. Then, using social network analysis, I trace the activity of bond purchasers by connecting the funds they manage to securitization trusts. I find that property tax debt has become an attractive asset class for global asset managers, drawing investment from some of the largest firms, such as Blackrock, Morgan Stanley, and Allianz. Some investors purchase bonds in connection to managing pension and insurance funds. Others funnel bonds into their own financial products such as exchange traded funds (ETFs).

My paper makes several important contributions. First, my findings add depth to a growing body of work on fiscal geography (Kay and Tapp 2019) and local state financialization (Pike 2023; Ward et al 2024), by demonstrating how a marketized strategy in recovering delinquent tax revenue became entangled with global finance in the aftermath of the 2008 crisis. Second, the growing prominence of private-label securitization raises questions of justice and fairness in the tax delinquency system. The balance of obligation and protection is tilted away from delinquent homeowners to such an extent that their debt now collateralizes investment-grade financial products. Finally, my results draw attention to distributional consequences of the tax lien system. While work on delinquency often focuses on the specific effects of tax foreclosure, I show how the lien system funnels wealth away from precarious property owners to the benefit of not only tax buyers and asset managers, but wealthier households whose savings is invested in the pension plans managed by them. As public officials and policy makers consider reforms to the property tax lien system, they must consider the full extent to which the current organization further exposes delinquency homeowners to predatory financial practices.

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Keywords: taxes, property, financialization, state

"THE GUY(S) FROM CALIFORNIA": RACE, THE TAX CODE, AND THE RELATIONAL GEOGRAPHIES OF RENTAL HOUSING IN MEMPHIS

Abstract ID: 2298.0.0.407.2026
Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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This paper examines how high-net worth, individual investors from coastal markets have reshaped the rental market in Memphis, Tennessee, and suggests that the geography of capital gains deferral may be playing an increasingly important role in housing markets across the United States. Drawing from interviews with local 'turn-key' real estate companies, and a computational analysis of property data across Memphis, I show how the historical trajectory of racial capitalism, coupled with the fallout of the 2008 financial crisis, has enabled local property managers (e.g., referred to as 'turn-key' firms throughout the paper) to channel tax advantaged, out-of-state investment, particularly from high-cost markets like California. I show that CA-based investors accounted for nearly 24% of all out-of-state home sales between 2020 and 2022. I argue that this form of housing financialization (Aalbers, 2017) maps onto the historic contours of Memphis' rental market (Fields & Raymond, 2021) and show how fiscal geographies (Tapp & Kay, 2019) have brokered this relational geography (Shelton, 2018) between Memphis and California, initially through monetary policy that allowed coastal investors to cheaply debt-finance rental property, and now through segments of the tax code such as the 1031 exchange which allow for investors to defer capital gains tax on a surge of heavily appreciated, high-value property sales across California.

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Keywords: Fiscal geographies, Financialization, Housing, Law, Political economy

RETHINKING DEVELOPMENT RIGHTS AND REZONING IN TERMS OF PUBLIC FINANCE AND PUBLIC VALUE

Abstract ID: 2294.0.0.1027.2026
Track 6: Land Use Policy, Governance and Law
Pre-Organized Session Summary
Session Includes: 2298.0.0.259.2026, 2298.0.0.252.2026, 2298.0.0.618.2026, 2298.0.0.648.2026, 2298.0.0.460.2026

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The past decade has seen a surge of interest in two land use policy instruments: land value capture (LVC) and transferable development rights (TDR). Both tools are often based on rezoning, but are rarely considered together in the US planning literature. In the US, TDR benefits the landowner on the legal basis of the regulatory taking; in other contexts, TDR is seen as LVC, and benefits the public on the legal basis of the social function of property. This panel brings together research from various national contexts to address this puzzle through crucial questions: What are the promises and pitfalls of imagining public finance and value in ways shaped by these instruments? How do agencies governing LVC and TDR project development and model value? How do market actors react to discourses about LVC, TDR, and related tools? This discussion will advance conversations on valuation in land use planning and real estate (Weber 2021) and planners' "fiscal imaginations" (Wortel-London 2025).

Learning Objective(s):

- Attendees will learn how to compare and contrast the use of land value capture and transferable development rights across national contexts
- Attendees will learn how to apply the concepts of public finance and public value to land use policy instruments

- **REAL ESTATE NORMAL: MARKET CAPTURE OF LAND VALUE AND SOCIAL HOUSING PRODUCTION**
  Abstract ID: 2298.0.0.259.2026
  Track 6: Land Use Policy, Governance and Law
  Individual Paper Presentation

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In this article, we use the shift in social housing production as an entry point to pry open what we call "real estate normal": a mode of urban governance that embeds the logic and interest of real estate capital in everyday planning practices in Taiwan. Since the 2000s, in response to social discontent with the housing affordability crisis and speculative land development, the central government has made social housing a formal policy. Social housing refers to government-owned, managed, and rent-subsidized units designated for specific segments of the population, such as low- and middle-income households, younger married couples with children, and people with disabilities. Since then, local authorities have experimented with two production methods. One is direct government construction, involving public authorities building social housing projects on public land through public spending. The other is private market provision, where private property developers are permitted to build beyond zoning limits in exchange for privately built public benefits, including social housing—an approach known as density bonusing. In New Taipei City alone, the most populous city in Taiwan, government agencies have directly built over 4,500 social housing units, while the private real estate market has contributed about 590. The central government, however, has recently decided to phase out direct construction and double down on density bonusing. This shift signals not only the end of direct public investment in social housing but also the acceleration of even more intensified real estate development.

In this project, we ask how the real estate market—whose profit-making logic was the very source of social contestation against speculative urbanism—has prevailed as an answer to social housing. Building on an in-depth, mixed-methods case study of New Taipei City, we investigate how "real estate normal" has come into being and become hegemonic. We focus on three planning tools that the city has used to build an unbroken operation of land and housing market expansion: farmland rezoning, density bonusing, and transfer of development rights (TDR). Central to our investigation are the effects and politics that relegate social housing production to the real estate market and its profit logic, rendering land and housing development speculative. Density-based tools have seen a global rise in use among municipal planners. The existing literature on land value capture has addressed these tools' calculative mechanisms, public-public power dynamics in relation to equity and justice, and effects on intensified urban development and speculative (Weber, 2021; Wolf-Powers, 2012). Our project further engages with literature on fiscal geography and capitalist property development to make sense of these tools' effects on everyday political economy and impacts on the urban built environment (Cooper, 2024; Pacewicz, 2016; Wortel-London, 2025).

Employing geo-spatial mapping, interviews, and site observation, we unpack how these tools work, both individually and collectively, to render land legible to capital investment, circumvent public inquiries, warp temporalities, intensify property development, and empower the private market as a primary partner to local planners in decision-making over the production of privately built public benefits such as social housing. Our analysis shows that "real estate normal" has released farmland for luxury residential development; transformed riparian land uses to waterfront developments; and pushed intensified property development into the city's hilly terrain, where environmental impacts are real and long-lasting. While land's monetary value has been valorized

and extracted, our findings show that very little of this created land value has been captured and transformed into social housing. Social housing is the alibi of real estate market expansion.

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Keywords: Real estate capital, Land value, Social housing

DENSITY, INFRASTRUCTURE IMPROVEMENTS, AND THE FISCALIZATION OF LAND

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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The 2015 and 2017 rezonings of Manhattan's historic central business district (CBD) in East Midtown reflects a broader shift toward the fiscalization of land in which land-use regulation is used as an instrument for financial value maximization and capital accumulation while public benefits are contingent – in part - on private development and the monetization of density. The rezoning and expansion of transferable development rights (TDR) from landmark buildings in East Midtown were positioned as regulatory mechanisms that could unlock development potential in exchange for private investment in public infrastructure, open space, and historic preservation (Charney, 2024). This rezoning is a practice in collective land value politics that prioritizes the material affordances of land as a financial commodity over its other ontologies, and by treating density as a transactional mechanism for such provisions, the state enacts a specific valuation process that reflects the intentions of the valuer and the surrounding political-economic context (Lake, 2024).

In consideration of the state's strategic use of financializing land to produce public benefits, we use a mixed-methods, case study approach within the country's oldest and most prominent CBD to investigate how public-private benefits and costs are negotiated, implemented, and produced to facilitate both the local needs of the CBD's property owners and workers and the global aspirations of the city's globally competitive FIRE industries. To do so, we detail the rezoning's mechanisms for land development and how they are used in seven existing or proposed commercial projects within the district. For each, we explore the regulatory processes and negotiations, density bonuses and transfers, TDR pricing structures, and the resulting public benefits. Specific trade-offs made at each site are detailed: what developers received in terms of "earned" density and what public investments were provided in return, including transit investment, landmark preservation maintenance funds, and improvements to the CBD's "public realm," such as public plazas and infrastructure necessary to facilitate pedestrian flows between transit and commercial assets. These public benefits are examined for their implications for planners pursuing tools for equitable development and the possibilities for public benefits determined through private-public negotiation.

Citations:

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Keywords: TDR, Density, Public benefits, fiscalization, Land use

FUTURES DEFERRED: CEPACS AND THE POLITICAL ECONOMY OF LAND VALUE CAPTURE IN SÃO PAULO, BRAZIL.
Abstract ID: 2298.0.0.618.2026
Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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São Paulo, Brazil, is considered one of the most ambitious testing grounds for Land Value Capture (LVC) in the Global South (Peterson, 2009; Smolka, 2013). Among its instruments, CEPACs, certificates auctioned on the Brazilian Stock Exchange granting air rights above as-of-right zoning within certain neighborhoods (Urban Operations), have attracted particular attention. Between 2004 and 2022, CEPACs raised $2.6 billion from just 2% of São Paulo's zoned area, $700 million more than OODC, a formula-based air rights charge applied across 70% of the city. This striking revenue concentration has cemented CEPACs' reputation as the gold standard for land value capture.

Traditional urban economics frameworks justify CEPACs' superiority on three dimensions: price discovery through competitive auction rather than administrative formula; upfront payment signaling developer commitment; and local reinvestment creating a virtuous cycle whereby public infrastructure raises land values, supporting higher CEPAC prices in subsequent auctions. Critical scholars counter that these same characteristics deepen spatial inequality by concentrating investment in already-desirable areas (Fix, 2007; Santoro, 2019). Both frameworks, however, share an assumption: that CEPACs successfully embed futurity into urban governance, making anticipated land value appreciation actionable in the present (Weber, 2021). This paper tests that assumption empirically. How do CEPAC's valuation regime and operationalization shape revenue outcomes, developer behavior, and spatial inequality? The research draws on administrative data tracking CEPAC auctions and public expenditure from 2004 to 2022, combined with semi-structured interviews with developers, city officials, and CEPAC brokers conducted in 2023 and 2024.

Findings reveal a critical breakdown in the feedback logic underpinning Urban Operations: only 40% of CEPAC revenues collected were actually spent on public investment, with the remainder held in municipal accounts due to bureaucratic delays. The promised infrastructure (the mechanism through which CEPAC purchases are theoretically justified) often does not materialize on timelines relevant to developers. Interviews confirm this disconnect: developers do not factor anticipated CEPAC-funded infrastructure improvements into their investment decisions, citing distrust of public authorities' capacity to deliver. They purchase CEPACs to build in locations already desirable, not because they expect future value appreciation from public investment.

Yet, the data analysis shows that spatial consequences materialize, nonetheless. Developments within Urban Operations are disproportionately high-end compared to similar areas subject to OODC. This suggests CEPACs do not cause spatial inequality through the mechanism proponents emphasize (capitalization of public investment) but through selection: Urban Operations were designated in areas already attractive to luxury development, and the instrument reinforced rather than transformed that trajectory. These findings highlight the gap between how CEPACs are theorized and how they operate in practice, with implications for LVC debates in the Global South and North.

Citations:

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Keywords: land value capture, air rights, urban governance, urban economics

UNDERSTANDING LAND CAPITALIZATION EFFECTS IN THE CONTEXT OF URBAN UP-ZONING: COMPARING EAST NEW YORK, BROOKLYN AND SOUTHERN BOULEVARD IN THE BRONX

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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In recent years, mainstream policymakers and economists have cast restrictive land use regulations as the main culprit in the housing affordability crisis. This argument underpins both the adoption of blanket bans on single family zoning and up-zonings in select urban neighborhoods that aim to accommodate taller, bulkier residential structures or to allow residential development on parcels formerly restricted to commercial or industrial use. But there is debate about the effectiveness of regulatory liberalization in lowering house prices or rents (Bucholz et al, 2026, Louie, Mondragon, and Wieland, 2025, Murray, 2020). Further, some researchers have found that the gentrification effects of urban up-zonings may outweigh whatever impact regulatory liberalization may exert on prices (Davis, 2021, Kim and Lee, 2025).

One hypothesized explanation for why new supply capacity may fail to meaningfully increase affordability through lower prices is that up-zonings, even when merely anticipated by market actors, are quickly capitalized into the price of land. If a leading impact of an up-zoning is to inflate the prices of development sites in a designated area, the main beneficiaries of regulatory liberalization are longtime landholders and/or speculative buyers who find (or put) themselves in a position to extract economic rent based on uplifts in site value. Once this rent has been extracted, only very high-priced development "pencils out" at acceptable rates of return. High site costs may also constrain government actors from requiring meaningfully below-market units when they are fashioning and implementing inclusionary housing requirements. Scholars who have discussed capitalization as a factor in limiting the affordability effects of deregulatory approaches - such as Murray (2020) and Troy et al (2024) - adhere to a dynamic model of housing supply (see Murphy, 2018) that contrasts with the static model now dominant in housing economics.

This paper compares up-zonings in Brooklyn and the Bronx, NY in the 2010s to explore land price capitalization dynamics in reaction to regulatory changes, and specifically to investigate the capitalization of anticipated land use actions into site prices. The East New York rezoning, which enabled medium-density housing development in East New York, Cypress Hills and Ocean Hill neighborhoods in Brooklyn, was announced in 2015. It was the first of a series of up-zonings, primarily in lower-income neighborhoods of color, initiated under the administration of Mayor Bill DeBlasio and the first to feature Mandatory Inclusionary Housing. It generated political controversy around displacement and benefit to incumbent residents, but was nevertheless approved in April 2016. Also in 2016, DeBlasio's Department of City Planning initiated a planning and engagement process expected to lead to a similar rezoning in the Southern Boulevard in the northeast Bronx, but abandoned the effort in 2020 amidst neighborhood opposition and pandemic uncertainty. A comparison of property transactions in two relatively contemporaneous cases of rezoning in New York City – one that proceeded as planned, one that did not – offers the opportunity to address important questions about the role of land price capitalization and "front-running" during planning processes.

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Keywords: capitalization, up-zoning, affordability, housing supply

FROM PUBLIC LANDOWNERSHIP TO TDR: THE TECHNO-POLITICS BEHIND LAGOS DE TORCA IN BOGOTÁ

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Land-value capture (LVC) – broadly understood as a series of planning instruments for the recovery by governments of land value increments generated by actions other than the landowner's direct investments– has been subject to a uniquely mixed set of interpretations within critical geography and urban studies. Many global north critical scholars argue that LVC structures incentives for local governments to promote increases in land value to increase its fiscal returns, and inserts a logic of financialized land speculation into public planning departments (Ryan-Collins et al., 2017; Stein, 2019; Weber, 2021; Wolf-Powers, 2023). In Colombia, LVC instruments such as land taxes, betterment levies, land readjustments and increase of zoning windfall gains have been promoted and defended by progressive planners, Marxist economists and leftist lawyers. Based on 8 months of field work among planners, urban economists, lawyers and think-tanks in Bogotá, this paper in part of a broader dissertation research arguing that land-value capture is an "abstract technology" (Ewald, 2020) which does not carry a univocal political charge, but rather participates in an ongoing negotiation that is subject to unexpected alliances between technical expertise and politics.

This paper, part of a broader dissertation, reconstructs the history of one particularly large and emblematic urbanization in Bogotá called Lagos de Torca to think about the politics and shifts implicit in the shift between different kinds of LVC: first public ownership, then Participación en Plusvalía and a kind of Transfer of Development Rights. The plan currently 1,800 hectares, and anticipates building 135,000 units that would house almost 500,000 residents. The housing would mix incomes, ranging from luxury to 40% in VIS or VIS – the designations for affordable and deeply affordable housing. Most of the developed land will be oriented towards new infrastructure, or new parks: nine creeks would be restored, and 57% of the land would go towards public space, including the largest metropolitan park in the city. And yet, the early construction underway includes bare streets of subtly fenced-off buildings, while entering in cross-hairs with the leftist President Gustavo Petro's then-minister of the environment, Susana Muhamad.

This paper seeks to nuance the obvious narrative about entrepreneurial urbanism under neoliberalism by viewing this development through the history of the evolution of LVC instruments that were instrumental in its fruition. It begins by connecting the current plan with an 1970s proto "15 minute city" under the notion of "cities-within-cities" by development economist Lauchlin Currie, which strongly advocated for public land ownership to capture windfall gains. I then reconstruct early proposals for Lagos de Torca in the heyday of LVC in Colombia in the early 2000s, in which the ambitious and radical Participación en Plusvalía ("Participation in windfall gains) was proposed as a mechanism, and ultimately failed to bring about the desired development. The current – and ultimately successful – iteration created an entity in charge with developing Lagos is a trust that includes all the landowners and developers involved in the project into a TDR mechanism. In doing so, this paper hopes to chart evolving framings of "the public" through LVC, and the role of different forms of technical expertise in framing the right to the value of the city.

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Keywords: land value capture, TDR, techno-politics

Planning Beyond Zoning

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Track 6: Land Use Policy, Governance and Law
Roundtable Submission, Facilitated Debates

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Zoning is under attack for its exclusionary effects and inefficiency (Bronin, 2023). Scholars and practitioners of zoning agree that overly restrictive zoning has been a culprit for exacerbating and perpetuating residential segregation and exclusion. In response, they have proposed solutions for fixing the problems associated with zoning (Elmendort and Shanske, 2018; Gray, 2022). More recently, planning scholars have added that contemporary policy debates around zoning reform have been disproportionately focused on fixing the economic inefficiency of zoning rather than remedying the exclusionary effects and legacies of past zoning practices (Kim et al., 2025; Kim 2023).

This roundtable will bring together scholars that have been working to make planning and zoning practice in the U.S. less exclusionary and develop solutions for redressing the discriminatory their legacies. We will engage with questions spanning the efficacy of contemporary zoning reforms at state and local levels on housing production and equity outcomes to what planning would mean in the absence of zoning.

The goal of this roundtable is to push the boundaries of equity planning and zoning beyond contemporary zoning reforms and present radical alternatives for planning practice beyond zoning that could present hopeful and inspiring futures for planning scholars, practitioners, and advocates.

Audience Engagement Questions:

- Can zoning be reformed to redress its inequitable and exclusionary legacy? If so, how?
- How effective has the recent zoning efforts been in reversing its exclusionary effects and advancing equity?
- What can planners do to overturn existing zoning regime and introduce a regulatory regime that forefronts equity?

Citations:

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Key Words: Zoning reform, Equity, Exclusionary zoning, State preemption

A SYSTEMATIC LITERATURE REVIEW ON THE IMPACTS OF PHYSICAL GATED COMMUNITIES WITHIN URBAN AREAS

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Gated communities have functioned as spatial entities that reconfigure the order and relationships of urban space by restricting external access through physical devices such as walls, gates, and access control. However, existing studies have generally focused on individual topics such as residential motivation, housing preference, safety perception, and social exclusion. As a result, the impacts of physical gated communities on urban space as a whole have accumulated in a fragmented manner across multiple studies and have not been comprehensively reviewed. In addition, even when gated communities share the same physical form, the patterns of their impacts differ depending on the development trajectories and institutional environments of the regions in which they are located. Accordingly, this study aimed to systematically examine how the impacts of physical gated communities located in urban space appear and how these impacts differ according to regional development trajectories and institutional environments.

This study was designed on the basis of a systematic literature review, while combining scoping elements that broadly capture the landscape of the literature with thematic synthesis that interpretively integrates the findings. Literature was collected using the Web of Science and Scopus databases, and the search was conducted on January 22, 2026. By applying a search string that combined terms referring to gated communities with terms referring to urban space and the built environment, a total of 1,879 studies were identified after filters were applied. After duplicate removal, 1,249 studies were set as the target of the first-stage screening, and independent peer review was conducted based on titles and abstracts. A second-stage screening including full-text review was then carried out to select the final literature. The selected studies were coded according to study region, gated community type, research method, elements of spatial order, derived impacts, and key findings, and were then analyzed through comparative synthesis and regional typology building.

The analysis showed that the impacts of physical gated communities did not appear in a single form. Across the reviewed literature, urban fragmentation, constraints on mobility and accessibility, the weakening of publicness and spatial exclusion, the intensification of inequality, changes in social relations, and the reconfiguration of control and governance were repeatedly presented as the major categories of impact. However, these impacts did not appear in the same way across regions. In East Asia, inefficiency in urban networks and accessibility problems were relatively prominent; in South America, social separation and spatial fragmentation were more pronounced; in Southwest Asia, the weakening of public functions and the strengthening of private management stood out; and in South Africa, the enclosure of the existing urban fabric and the privatization of public roads were relatively prominent. This shows that even when physical gated communities share the same physical form, the impacts that come to the forefront may differ depending on regional development trajectories and institutional environments.

This study demonstrates that physical gated communities are not simply a housing type, but an urban phenomenon that affects urban structure, accessibility, publicness, and equity. It also suggests the need to

distinguish between the formation logic of gated communities and their actual urban spatial consequences, and to establish spatial planning directions that take regional contexts into account. In this respect, the significance of this study lies in its systematic organization of the dispersed body of related research and in its presentation of the urban spatial impacts of physical gated communities within a comparable framework through regional typology building.

Citations:

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Keywords: SLR, Gated communities, Urban spatial impacts, Urban spatial structure, Regional typology

CATEGORIZING SOCIAL RESISTANCE TO RENEWABLE ENERGY PROJECTS

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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To meet growing energy demand while phasing out fossil fuels, North America must accelerate renewable energy development. However, public opposition has delayed or blocked key projects and policies, threatening climate progress. In 2024 alone, there were nearly 500 contested renewable energy projects in the U.S., threatening climate progress. This resistance is rooted in both material concerns, like land use and fairness, and symbolic ones, such as identity, misinformation, and fear of change. At the same time, news media play a central role in shaping and circulating narratives about renewable energy development, linking local project disputes to broader national discourse. Through this coverage, similar frames of opposition may emerge across geographically disparate communities, even when projects differ in their local context. What remains unclear, however, is the extent to which the reasons for resistance of each project are primarily rooted in place-specific concerns, or reflect recurring narratives that travel nationally across contexts.

This study examines news coverage of 400 contested renewable energy projects across the United States in 2024 to systematically identify and categorize the reasons for opposition. Using a large corpus of news articles, we apply qualitatively-informed natural language processing (NLP) to classify dominant themes in how resistance is described and justified. We then trace how these themes vary across regions, technologies, and project characteristics, as well as the extent to which they reflect localized concerns versus nationally circulating frames. Combined with a profile analysis of the people interviewed in news stories as well as the underlying sociodemographic and political makeup of the constituent base, this study provides evidence towards the conditions that adopt social movements of different types of resistance.

This study offers three primary contributions to planning research. First, it systematically catalogs the reasons for opposition to local renewable energy projects, generating a comprehensive typology of resistance as reflected in news media coverage. In doing so, it reveals how locally expressed concerns are often articulated through a shared and recurring vocabulary that reflects both place-specific conditions and widespread narratives. Second, by classifying and comparing these reasons across cases, the study demonstrates that opposition to renewable energy development is not monolithic, but instead composed of multiple, intersecting dimensions that vary by context, technology, and region. Finally, we show that there are distinct profiles of vocal renewable energy policy opposers. Identifying the scale of these profiles in new policy contexts could provide better prediction of opposition.

Citations:

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Keywords: social resistance, renewable energy, public perception, NLP, text processing

CONTESTING URBAN GEOPOLITICAL HEGEMONY THROUGH LOCAL-LEVEL LAND-USE REGULATION

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Central theme or planning issue:

This paper asks: how are American communities deploying local-level land-use regulations as a tool of urban geopolitics to deter authoritarian revanchism and prefigure alternative popular-democratic spatial management? Planning scholars have widely criticized how American communities have deployed local-level land-use regulation in the past and present. Cities and neighborhoods use land-use controls to segregate communities along racial and ethnic lines and promote landowners' property values (Rothstein, 2018; Trounstine, 2018). Yet today, the legal basis by which local governments establish zoning regulations takes on novel relevance in an era of urban-geopolitical contestation. Cities find themselves in the crosshairs of what Stephen Graham calls "very local acts of violence against urban sites" (Graham 2004: 18). One example of such contemporary transgression involves crackdowns by Immigration and Customs Enforcement (ICE) in Los Angeles, Memphis, Chicago, and Minneapolis, turning cities into military-urban sites. Thus, as cities assert sovereignty, land-use controls offer a ready-at-hand juridical tool. This research surveys national efforts to use local-level land-use regulations as a tool of urban geopolitics and assesses those efforts for effectiveness and popular-democratic legitimacy.

Approach and methodology:

This study employs multiple embedded units of analysis: key geopolitical contestations (issues) and case-study communities that deploy land use regulations to contest those issues. The paper considers three issues: (1) ICE detention facilities and carceral infrastructures; (2) AI data centers, inclusive of their full social and environmental benefits and costs; and (3) border-wall and surveillance infrastructures like facial recognition towers. Next, the paper analyzes land-use contestations from dozens of case-study communities across the United States related to these issues, with attention paid to historically peripheral "operationalized hinterlands" (Brenner and Katsikis, 2020). Finally, the paper systematically evaluates these land-use deployments and typologizes them.

Findings:

Across each issue, special permit denial, moratoria, private landowner hesitation, or procedural due-process public-hearing requirements have paused or halted projects. Federal preemption justifications, economic-development logics, or elite capture have led other projects to continue. The extent to which land-use tools can shape project outcomes seems to have little relationship to the political composition of a community, and more to factors of socioeconomic composition, land regime, and planning institutional arrangements. Findings align with recent work by Nicholls (2024: 743–745): municipal bureaucracies have substantial autonomy and discretion in mediating urban-geopolitical struggles. Across the case studies, however, an important finding emerges: community members often frame local-level land-use politics as 'successful' when outcomes culminate in obstructive hindrance.

Relevance to planning scholarship and practice:

Local-level land-use regulations have considerable potential to deter authoritarian revanchism and prefigure alternative popular-democratic spatial management. However, I argue that land-use politics must not culminate in obstruction; rather, land-use contestations can precipitate novel urban-geopolitical formations grounded in popular

democracy, voice, and spatial justice. Alternative spatial forms must attend to both planning process and outcome (Fainstein, 2010), and be grounded in developmental evenness across what are currently global geographies of accumulation, extraction, and social inequality (Soja, 2010).

Citations:

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Keywords: Land use, Democracy, Participation, Planning practice, Spatial justice

DO FREEBOARD REQUIREMENTS WORK? EVIDENCE FROM LIDAR, FLOOD DAMAGE, AND FUTURE SCENARIOS

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Increasing climate uncertainty has led to more severe flood damage (Seneviratne et al., 2021). While restricting development in flood-prone areas is widely considered the most sustainable approach to floodplain management (APA, 2020), many U.S. communities continue to allow such development under freeboard regulations, which require elevating the first floor a certain height above the base flood elevation (Aerts and Botzen 2012; Hino et al., 2024). Although vertical elevation plays a key role in reducing flood risk, few studies have examined vertical flood vulnerability due to challenges in accurately measuring first-floor elevation (Esparza et al., 2025). Despite its importance, first-floor elevation has rarely been incorporated into large-scale flood vulnerability assessments because of the difficulty of obtaining accurate elevation data.

This study develops a scenario-based vertical flood vulnerability assessment integrating high-resolution mobile LiDAR–derived first-floor elevation data with freeboard requirements and future flood risk scenarios. The research focuses on Davis Islands, a low-lying residential neighborhood in Tampa, Florida, where repeated hurricane impacts and projected sea-level rise raise significant concerns for long-term flood resilience. Using mobile LiDAR technology mounted on a survey vehicle, this study collected detailed three-dimensional point cloud data to estimate first-floor elevations for 1,562 single-family residential houses. These elevation data were combined with flood damage records from Hurricanes Helene and Milton in 2024, during which 454 houses experienced water intrusion into living areas.

This study investigates the following research questions: 1) How are first-floor elevations distributed, and how does flood damage vary by elevation?, 2) To what extent do houses comply with design flood elevation requirements across policy periods?, 3) How does the extent of inundation change under varying freeboard scenarios across multiple flood risk conditions?, and 4) What are the cost differences between flood damage repair and reconstruction under the various scenarios? To answer these questions, the study employs scenario analysis incorporating multiple flood risk levels and freeboard height standards. Using recent flood damage records, it develops a vertical flood vulnerability classification, compares inundation patterns across combinations of flood risk and freeboard scenarios, and evaluates the relative costs of repair versus reconstruction.

The findings highlight the importance of incorporating vertical building characteristics into flood risk assessments and policy decisions. While most houses on Davis Islands comply with elevation regulations implemented since 1980, scenario analysis indicates that regulatory compliance alone does not ensure adequate protection from future flood risk. Instead, the results show that appropriate freeboard height is critical for long-term resilience. Modest increases in freeboard can substantially reduce flood vulnerability and cumulative economic losses under future sea-level rise scenarios. By integrating mobile LiDAR-derived elevation data with scenario analysis and cost estimation, this study provides a data-driven framework for evaluating elevation standards and informing floodplain management decisions in coastal communities facing increasing climate risks.

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Keywords: mobile LiDAR, first-floor elevation, flood risk assessment, freeboard, scenario planning

EVALUATING THE PREPAREDNESS OF LOCAL ZONING REGULATIONS FOR FLOOD RISK REDUCTION IN THE MOST AFFECTED LOCAL JURISDICTIONS IN NEBRASKA

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Zoning regulations are fundamental tools in land-use planning and play a critical role in hazard mitigation by guiding development away from high-risk areas. Effective zoning policies can reduce community vulnerability to natural hazards by regulating land uses, densities, and development patterns in flood-prone areas. This study evaluates the extent to which local zoning regulations in Nebraska's most affected jurisdictions, including rural communities, address flood risk reduction following the 2019 flood disaster. Specifically, this study addresses three research questions: (1) How have state-level regulatory and voluntary policies, as well as best management practices, been translated into local zoning regulations in Nebraska's jurisdictions most affected by the 2019 floods? (2) What differences, strengths, and weaknesses exist in flood mitigation policies across these jurisdictions, particularly within their zoning toolkits? (3) How can zoning ordinances be more effectively integrated and enhanced to reduce flood risks?

Through a systematic review of 117 zoning ordinances from counties, cities, towns, and villages, this study applies a structured analytical framework encompassing regulatory and permitting policies, voluntary and incentive-based measures, and nature-based solutions. Results reveal significant inconsistencies in preparedness across jurisdictions. Regulatory measures are widely adopted, whereas incentive-based approaches and ecological protection strategies remain limited and often underutilized. Urban jurisdictions demonstrate stronger preparedness than rural communities, reflecting differences in institutional capacity and resource availability.

The findings highlight substantial gaps in proactive and innovative flood mitigation practices, particularly in inland rural areas. This study introduces a transferable framework for evaluating zoning effectiveness in flood mitigation and emphasizes the need for improved state-level coordination, targeted investments, capacity building, and broader adoption of integrated flood risk management strategies to bridge urban–rural preparedness gaps. The results provide actionable insights for policymakers and planners seeking to enhance community resilience and reduce inequities in flood hazard preparedness.

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Keywords: Zoning Regulations, Flood Risk, Hazard Mitigation, Resilience, Rural planning

FLOOD RISK ASSESSMENT AND POLICY IMPLICATIONS FOR YOUTH CAMPS IN TEXAS: A SPATIAL AND REGULATORY ANALYSIS

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Individual Paper Presentation

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Youth camps serve tens of thousands of children across Texas each year, yet limited attention has been given to how land use policy, regulatory structures, and planning systems shape their exposure to flood hazards. Existing studies rarely evaluate camp environments at any level, and current regulatory frameworks do not fully address the land use and infrastructure conditions that influence flood vulnerability. As a result, both camp operators and policymakers lack the evidence needed to guide land development decisions and reduce disaster risk. This study provides the first statewide assessment of flood exposure for youth camps in Texas, directly engaging questions of land use governance and regulatory effectiveness.

Youth camps are frequently located in rural or natural areas where land use controls, infrastructure investment, and emergency response capacity are limited. Their zoning classifications are commonly non-residential, including commercial, recreational, agricultural, or special use categories. These designations exempt camps from many state and local safety requirements applied to residential or institutional uses. The absence of consistent development standards creates regulatory gaps that increase vulnerability to natural hazards. Understanding how these land use classifications intersect with disaster risk is essential for evaluating whether current policies adequately protect children in these settings.

The July 2025 Central Texas floods, which resulted in the loss of at least 27 children and the destruction of Camp Mystic, highlight the consequences of insufficient land use oversight in hazard-prone areas. This event underscores the need for systematic evaluation of how state and local policies shape siting decisions, development practices, and long-term safety at youth camps. The present research directly addresses this need by conducting a statewide flood risk assessment of licensed youth camps and analyzing the policy and governance implications of the findings.

Drawing on 25 years of state licensing records and two floodplain datasets, the study examines how regulatory classifications, environmental exposure, and development patterns influence camp-level risk. GIS-based spatial analysis is used to evaluate approximately 1,240 licensed camps between 2000 and 2025 in relation to FEMA-designated floodplains and Texas Water Development Board floodplain data. FEMA maps remain the dominant tool guiding local land use decisions but are incomplete in many rural areas. TWDB data provide more comprehensive statewide coverage and longer-term projections but are costly and not integrated into planning practice. The project introduces a six-tier flood risk ranking system that combines flood exposure, zoning status, and infrastructure characteristics to evaluate vulnerability from a land use perspective.

Recent legislation in Texas has strengthened safety requirements for youth camps, including new expectations for managing flood risk as a condition of permit eligibility. This study estimates the financial cost of removing, relocating, or retrofitting structures located in regulated floodplains and identifies gaps in the policy framework that still leave certain camps insufficiently protected.

By integrating spatial analysis, climate projections, and policy evaluation, this research offers actionable insights for land use planners, regulators, and lawmakers. The findings support improvements in zoning practices, development standards, and permitting systems to reduce inequitable exposure to hazards. The study highlights the unique vulnerabilities associated with non-residential land uses in rural areas and provides a scalable framework for assessing flood risk in child-serving environments, contributing to broader discussions on growth management, public safety, and sustainable development.

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Keywords: Flood Risk, Youth Camps, Spatial Analysis, Zoning and Land Use, Legislative Compliance

FOOD TRUCK VENDORS, CITY ORDINANCES, AND THE GHOST OF YICK WO V. HOPKINS

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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The regulation of food trucks and street vendors is important as a matter of public health but also land use and zoning. Many food truck and street vendor ordinances define acceptable spaces and temporalities for vending practices, reflecting a layered and organized attack on the informal economy that is also a justifiable effort to curb illegal and unsafe activities, improve pedestrian safety and more. At the same time, street food vending is key entry point to economic participation and is disproportionately populated by immigrant entrepreneurs. Thus, the existence of food truck and street vending ordinances can align with racial capitalism in ways that constrain access to specific markets, thereby disenfranchising select street food vendors. Drawing on Garnett's account on urban order, we present a legal analysis of food truck ordinances from multiple cities to demonstrate that coded attempts to construct order and suppress disorder are not racially neutral. Food truck and street vending regulations extend private property rights to sidewalks, parking lots and spaces where ordinances can be weaponized to police not just unsafe food practices, drug activity, loitering and other concerns but also the bodies of the vendors themselves. Although efforts to construct order and suppress disorder are as old as the project of planning itself, the targets of their enforcement are a byproduct of larger social and political conflicts in specific historical contexts. This paper concludes by connecting canonical planning cases such as Yick Wo v. Hopkins (1886) to present day discrimination towards immigrants and other minority populations.

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Keywords: food trucks, informal economy, street vending, racial capitalism, immigrants

FROM PROFORMA TO ADAPTATION: A SYSTEMATIC LITERATURE REVIEW OF THEORIES AND RESEARCH IN THE EVALUATION OF DISASTER RISK REDUCTION PLANS (DRRPS)

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Individual Paper Presentation

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As climate-driven disaster risks intensify, there is an increasing imperative to integrate traditional risk reduction strategies with forward-looking climate adaptation measures. The two fields share many similarities despite some differences in their language, targets , approaches, and contexts. However, the combination of both approaches could be beneficial for facing future climate-driven disaster challenges and enhancing outcomes. While Disaster Risk Reduction Plans (DRRPs) represent an institutionally mature process, particularly in the form of hazard mitigation plans in the US context, they often are addressed as procedural and are frequently viewed as a proforma requirement for access to grant funding. On the other hand, adaptive approaches can be relatively holistic in addressing uncertainties (e.g., extreme climate events) and comprise some critical components, including considering multiple scenarios, dynamic policy pathways, low-regret strategies, emphasizing coordination, and learning, etc., that are not yet fully embedded in standard DRRP frameworks. To address this disconnect, this research conducts a systematic literature review to investigate how current scholarship perceives and addresses the gap between static mitigation and adaptive planning. By identifying prevailing theories, research themes, and measures employed in plan evaluation metrics, this study critically assesses the state of the art to uncover where traditional frameworks fall short and where emerging research lacks depth.

The study utilized a multi-stage gathering and screening process. An initial search of the Web of Science (WOS) Core Collection yielded 2,617 records. The search strategy was structured across three core dimensions: 1) Plan Evaluation: using keywords on plan quality and metrics; 2) Risk and Climate Context: covering disasters, hazards, and climate change; 3) Adaptive and Learning: focusing on adjustment, adaptation, learning, and resilience. This dataset was a refined set of 311 papers focused specifically on plan evaluation, which was winnowed from the initial yield, with a specialized focus subset of the 62 papers addressing Hazard Analysis. The selection process employed Large Language Model (LLM) screening for initial relevance with manual title and abstract coding to identify study areas, plan levels, core focus areas, theories, and evaluation metrics.

The preliminary findings reveal that Plan Quality Theory, primarily identified by Berke, Godschalk and others generally associated with the North Carolina School, remains a dominant theoretical framework focusing on fact bases, goals, and policies. A noticeable trend involves integrating nuanced perspectives like Urban Resilience, focusing on urban system transformation; Adaptive Governance, emphasizing social-ecological learning and multi-level coordination; and Anticipatory Governance, which tackles high uncertainty issues. Most research is concentrated in the U.S., especially on coastal hazards. Analysis of research themes indicates that while the majority of studies focus on Plan and Policy Evaluation, a significant portion are shifting toward Framework and Metric Development, proposing new scorecards to measure the adaptation gap and policy coherence.

While this systematic review identifies an emerging shift from rigid checklists toward more holistic resilience frameworks, these findings are but a cursory and preliminary synthesis. This study is progressing toward a substantive analysis phase, providing a deeper dive into the specific theories, concepts, and approaches employed in plan evaluation and their longitudinal trends. By systematically mapping how these evaluative metrics have evolved, or failed to evolve, in response to climate uncertainty, the substantive analysis provides a more meaningful characterization of the adaptive planning approaches and the gap in the literature.

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Keywords: Plan Evaluation, Adaptation, Hazard Mitigation, Climate Change, Learning

FROM TDR TO CHINESE 'THREE CONVERSIONS' REFORM：COMPARING PLANNING AND GOVERNANCE MECHANISMS FOR VALUE TRANSLATION OF PROTECTED SPATIAL RESOURCES

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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As conservation constraints tighten, development opportunities shrink, and income demands continue to rise, a central planning challenge is how to translate the spatial value embedded in protected resources—value that cannot be directly commodified—into identifiable, usable, and tradable development gains while balancing conservation goals, asset circulation, and community equity. This paper addresses that challenge through a comparative analysis of two land-governance instruments: Transfer of Development Rights (TDR) and Chinese Three Conversions reform. Using value translation as its core analytical lens, it examines how protected spatial resources are recognized, translated, and incorporated into market through planning and governance arrangements.

The study compares TDR transactions in King County, Washington, and the practice of Three Conversions in Gonghe Village, Qiandongnan Prefecture, Guizhou Province. Drawing on institutional comparison, policy document analysis, public data, spatial information, and case materials, it develops an analytical framework consisting of planning regulation, property-rights identification, value translation, asset operationalization, and benefit distribution. The cases are selected for institutional observability and data availability. King County provides a long implementation period and relatively complete public records of transactions, policy documents, and spatial data, making it suitable for tracing the institutional logic of development-rights trading. Gonghe Village is one of the traditional villages where Three Conversions was implemented relatively early with visible outcomes and sufficient case materials, making it suitable for examining the institutional chain linking rights clarification, share quantification, cooperative operation, and benefit distribution.

The analysis shows that, despite emerging from different institutional contexts, both TDR and Three Conversions seek to transform protected spatial resources that are difficult to monetize directly into governable and circulable asset units through institutional design. Their differences, however, are substantial. TDR translates value primarily through the differential in development rights or planned floor area. Its strengths lie in its clear transaction logic and relatively high degree of institutionalization, but its one-time compensation structure may weaken local incentives for ongoing production and long-term stewardship. Moreover, the development capacity transferred through TDR does not necessarily correspond to the full spatial value embedded in the protected property; in this sense, it converts only part of that value rather than translating the resource as a whole. By contrast, Three Conversions reorganizes village resources into collectively managed assets through rights clarification, share quantification, and cooperative operation. This model is better suited to sustaining long-term benefit sharing, but it depends more heavily on local governance capacity, asset valuation, sustained labor, and organizational competence, and is therefore more vulnerable to incomplete value recognition, weak operational continuity, and risks of elite capture or gentrification.

The paper argues that TDR and Three Conversions represent two distinct approaches to governing protected space: a rights-trading model and an asset-operation model. It shows that value realization in protected space is not a simple compensatory process but an institutionalized and multi-stage process involving rights transfer, value recognition, asset organization, reproduction, and benefit distribution. By reframing TDR and Three Conversions as

comparable land-governance instruments rather than isolated policy cases, the paper offers a comparative framework for analyzing value translation, distributive outcomes, and planning regulation in protected spaces.

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Keywords: Value Translation, Protected Spaces, Land Governance, TDR, Three Conversions Reform

INTERMEDIARY PLANNING IN RURAL ENERGY TRANSITIONS: GOVERNANCE INTERFACES AND JURISDICTIONAL MEDIATION

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Energy transitions are often framed as technological transformations, yet their implementation is fundamentally a governance challenge that increasingly unfolds within rural planning systems. The local governance of energy transitions requires planners to mediate conflicts among technological change, institutional authority, and community interests. Large-scale renewable energy infrastructure, transmission expansion, and land-intensive generation projects are disproportionately located in rural jurisdictions where land availability is high but decision authority is distributed across local governments, state regulatory bodies, utilities, and federal policy regimes. These institutional arrangements create governance asymmetries that intensify mediation within local planning systems (Bridge et al., 2013; Sovacool, 2016; Andrews, 2008). Despite growing scholarship on the governance of energy transitions, planning research has paid limited attention to how rural planners navigate these conditions.

This paper develops a conceptual framework for understanding rural planners as intermediaries within sociotechnical energy transitions. Drawing on the Multi-Level Perspective, the analysis positions planners at the interfaces between landscape pressures, regime institutions, and emerging niche innovations (Geels, 2002; Markard et al., 2012). To interpret how planners mediate these dynamics, the framework integrates insights from radical, advocacy, and communicative planning theories. Radical planning highlights how planners may challenge dominant institutional norms and support transformative social change (Friedmann, 1987). Advocacy planning emphasizes the representation of marginalized interests within contested decision processes (Davidoff, 1965). Communicative planning focuses on deliberative engagement, coalition building, and collaborative governance among diverse stakeholders (Healey, 1997). Together, these perspectives illuminate the institutional, political, and relational dimensions of intermediary planning practice.

Within this framework, planners operate across multiple governance interfaces. At the landscape–regime interface, planners translate decarbonization pressures into local planning instruments such as zoning, comprehensive plans, and land-use regulation. At the regime–niche interface, they enable or constrain experimental initiatives including community solar, microgrids, and agrivoltaic integration. Through these activities, planners shape how energy transitions are integrated into rural jurisdictional planning and governance systems.

The paper introduces a competency-based framework for analyzing intermediary planning practice across six domains of governance activity and situates this framework within a broader research design combining a national survey of rural planners with comparative rural case studies. By conceptualizing rural planners as governance intermediaries, the paper advances planning scholarship on energy transitions and clarifies how planners mediate institutional constraints, multi-level governance dynamics, and community engagement in rural energy transitions.

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Keywords: Energy Transitions, Rural Planning, Multi-Level Governance, Planning Theory, Intermediary Planning

LESSONS FROM LOUISIANA: PLANNING AND POLICY ACTIONS TO ADDRESS HEIRS' PROPERTIES AND INCREASE NEIGHBORHOOD STABILITY

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Hurricane Katrina in 2005 was a turning point for heirs' property advocacy and reform in disaster recovery. The storm exposed how families with tangled title—or property that had been inherited generationally without legal title transfer—could not collect on insurance policies, easily access recovery resources, sell their property, or use it as collateral for a loan (Nelson, 2025). Legal aid organizations in collaboration with local and state agencies, pro bono legal assistance, and nonprofit organizations worked to help families access recovery assistance, secure ownership and do estate planning. They also spearheaded legislative and policy change to reduce future loss of homes and wealth.

This paper is based on research funded by the Lincoln Institute of Land Policy that examines the efforts of two organizations, Southeast Louisiana Legal Services (SLLS) and Louisiana Appleseed, to address heirs' property challenges and increase disaster resilience in communities across Southeast Louisiana. This case study explores 20 years of action and legislative reform to assist heirs' property owners and stabilize neighborhoods. Initial efforts focused on family scale actions such as facilitating small successions and changing policy to allow heirs to access recovery resources. Awareness about these challenges has highlighted the broader community impact impacts of tangled title. In New Orleans after Hurricane Katrina, tangled title led to people being denied recovery resources, which then hindered neighborhood recovery and revitalization efforts (Nelson 2025).

As the Center for Community Progress (2024) highlights, many heirs' properties are occupied, well maintained and current on their taxes. However, it continues to be a less secure form of ownership affecting families and communities. As a result, legal aid organizations and public interest law groups often characterize the prevalence of heirs' property as "not a problem, until it's a problem" (Wheeler & Tuggle, 2024: 299). Black homeowners are more likely to lose homes and wealth because of tangled titles; heirs' properties are more likely to become vacant, abandoned, and deteriorated, contributing to neighborhood decline.

Research question, approach and methodology

This paper examines the following question: How can planning and policy interventions proactively address challenges of heirs' property to increase or maintain neighborhood stability? This case study draws on semi-structured interviews with SLLS and Louisiana Appleseed staff and state and local government officials conducted between April 2025 and March 2026 to explore how cities, counties and communities are taking action to disrupt the loss of land and wealth. It supplements the Louisiana case study with a planning and policy scan of efforts from across the country to reduce the likelihood of land loss and neighborhood decline.

Relevance of findings and implications for planning scholarship, practice and education

Findings highlight the need to proactively identify potential heirs' properties; the importance of partnerships between local government, nonprofit legal aid organizations, and communities in developing and implementing heirs' property strategies; and guidelines for education and outreach in impacted communities. Heirs' properties have traditionally been overlooked in planning practice and research. When discussed, heirs' properties are largely associated with rural settings despite recent research that indicates their prevalence in urban areas (Durst & Way,

2026). Findings from this research highlight the relevance of this less visible type of tenancy to planning scholarship, practice, and education by identifying strategies to increase neighborhood stability and reduce inequalities among neighborhoods while preserving intergenerational wealth.

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Keywords: heirs’ property, vacancy and abandonment, neighborhood stability, disaster recovery

LOCAL SOLAR ORDINANCE ADOPTION AND INTERJURISDICTIONAL REGULATORY RESPONSE

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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The rapid expansion of large-scale solar (LSS) development in the United States has increased the importance of land-use regulation in shaping energy transitions. Existing research typically treats zoning and regulatory frameworks as fixed conditions rather than outcomes shaped by local decision-making and development activity (Lopez et al., 2023; Owusu-Obeng et al., 2024). However, county-level ordinances may also reflect exposure to development activity beyond jurisdictional boundaries and interactions with neighboring jurisdictions (Lerner, 2022; Eisenson, 2023; Jackson et al., 2024). This study examines solar regulation as a response to development exposure and interjurisdictional dynamics by addressing three questions: (1) whether prior LSS development is associated with the adoption of solar-specific ordinances, (2) whether LSS development in neighboring counties is associated with regulatory outcomes in counties without direct project experience, and (3) whether local regulatory outcomes are associated with neighboring counties' regulatory approaches.

The analysis uses a cross-sectional dataset of U.S. counties in states where counties retain primary land-use authority over LSS siting ensuring that the analysis reflects county-level regulatory decisions. Project-level data from the EIA-860 survey are combined with multiple national ordinance datasets, including the National Renewable Energy Laboratory zoning inventory, the University of Michigan Energy Zoning database, the North Carolina Clean Energy Technology Center database and the Sabin Center for Climate Change Law renewable energy restriction database. Regulatory outcomes are classified into four categories: no solar-specific ordinance, permissive or clarifying ordinance, restrictive ordinance, and moratorium or ban. LSS development exposure is measured both within counties and in adjacent counties prior to a policy observation cutoff. A multinomial logit model estimates the association between regulatory outcomes and local development, nearby development, and neighboring regulatory context, controlling for demographic, land-use and state fixed effects.

The results indicate that counties with prior LSS development and those exposed to nearby development are more likely to adopt solar-specific ordinances, though not uniformly restrictive. Regulatory outcomes vary across permissive, restrictive, and prohibitive forms rather than following a single pattern. The relationship between neighboring and local regulatory outcomes suggests that counties sometimes adopt similar approaches to nearby areas, while in other cases they adopt different regulatory strategies in response to neighboring policies.
These results contribute to the literature by treating renewable energy regulation as a dynamic and spatially interdependent process rather than a fixed condition. By modeling county-level solar ordinances as outcomes, the study extends existing work on renewable energy siting that has largely treated regulation as given. The findings have implications for energy planning by highlighting how regulatory decisions in one county are linked to development and policy choices in nearby counties, influencing the spatial distribution of large-scale solar development.

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Keywords: Solar siting regulation, Energy planning, Land-use policy

MUNICIPAL FRAGMENTATION AND METROPOLITAN OPEN SPACE PATTERNS

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Individual Paper Presentation

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This study investigates how metropolitan governance structures shape the amount, configuration, accessibility, and equity of open space provision across U.S. metropolitan areas. Although open space delivers widely recognized ecological, social, and health benefits, its provision is typically fragmented across numerous local governments, producing metropolitan systems that emerge from uncoordinated land-use decisions rather than regional planning. We examine whether municipal fragmentation influences metropolitan open-space patterns and related equity outcomes. Using polygon-level data from the Trust for Public Land's ParkServe dataset and multiple measures of fragmentation derived from the Census of Governments, we analyze the supply, size distribution, and accessibility in open-space access across 293 metropolitan statistical areas. To address potential endogeneity, we estimate both OLS and two-stage least squares (2SLS) models using historical fragmentation (1950) and 19th-century railroad density as instruments. The results reveal a clear spatial signature of fragmented governance: greater municipal fragmentation is positively associated with the provision of small and medium-sized open spaces and with higher 10-minute walk accessibility, but negatively associated with the presence of large, regionally significant open spaces. These findings suggest that competitive localism encourages neighborhood-scale amenity provision while hindering coordinated regional preservation. The equity analysis shows that fragmentation's accessibility gains are disproportionately concentrated in wealthier, higher-homeownership jurisdictions, raising concerns about uneven exposure to high-quality open space. Overall, the study demonstrates that institutional structure plays a central role in shaping metropolitan open-space systems and underscores the need for regional coordination mechanisms to achieve more equitable and resilient landscape outcomes.

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Keywords: open space, municipal fragmentation, public choice

PASSAGE AND FAILURE OF TRANSIT-ORIENTED AFFORDABLE HOUSING BILLS IN FIVE STATES: BEST PRACTICE OR POLITICAL APPEASEMENT?

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Individual Paper Presentation

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Two interrelated crises – climate change and housing affordability – are dramatically impacting the health and well-being of individuals and the built, natural, and economic environments of regions. In response, US states have proposed legislation to encourage or require higher densities, affordable housing, and mixed land uses, especially near transit. However, many of these state-led attempts to reform local land uses have failed. To understand why some bills pass or fail, and whether they are well-designed, we used a most-similar case study design to select state bills in five states that targeted housing affordability and climate resilience through the promotion of Transit-Oriented Communities (TOCs), with instances of both passage and failure from Democrat- and Republican-controlled states. Cases include two states with passed policies on the first attempt (Massachusetts and Utah in 2021), three where they failed on the first or only attempt (Arizona, Washington, and Colorado in 2023), and two that passed reworked bills in a subsequent year (Washington and Colorado in 2024). To understand the political influences on a legislator's vote, we used each state legislator's final vote on the bill as our unit of analysis (N=976). We then compared their vote to the context of their district, which we characterized by the jurisdiction's acceptance of affordable housing and TOCs, based on the existing conditions near transit and content analysis of their planning documents. Key context variables included: current densities, land use mix, presence of affordable units, home prices, rents, plans and policies supporting affordable housing, zoning permissions, transit usage, and vehicle ownership. In terms of bill design, passed bills had at least one member of the opposition party voting "Yea". They were also incentive-based or had softer mandates than failed bills and allowed for some local control in how those mandates are applied, such as where to allow the required minimum densities. At the individual level, political party registration had the strongest association with a "Yea" or "Nay" vote, with Democrats generally being more supportive. Legislators with the most urban districts were twice as likely to vote for the bill than those who were in suburban or rural areas. Those who broke their party line to reject the state's bill tended to represent districts on the urban edge, between suburban and rural areas, but within transit service areas subjected to the bill. The share of households who were cost burdened did was not an influencing factor. We also analyzed progress since the bill and whether the bill designs have had an impact on development and plans. While some communities in the earlier bills are amending their plans to address the bill requirements, in other states, bill requirements do not require updates. This paper summarizes the types of bills being proposed, why they are passed, and to what extent they are influencing affordable TOCs in the communities where they were passed and implemented. Future research will continue to follow the implementation effectiveness of these bills.

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Keywords: transit-oriented, affordable housing, land use reform, climate policy, density

PLAN2LAND: EVALUATING APPROACHES TO ASSESS PLAN IMPLEMENTATION AND IMPACT

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Individual Paper Presentation

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The role of long-range land use plans in guiding real-world action and change is highly debated (Alexander & Faludi, 1989; Berke et al., 2006). When actions are to commence, should we treat plans as "instructions" because they are rooted in public will and technical data, or should they be treated as "roadmaps" allowing for inevitable socio-political and environmental uncertainties? If a plan is a roadmap, and strategies are viewed as intent, what constitutes plan implementation? By extension, to what extent can real-world action be attributed to plans? These debates are rooted in a fundamental curiosity around the influence and authority of plans (Mueller & Hersperger, 2014; Millard-Ball, 2013, Ryan & Gao, 2019). Methods that indirectly imply implementation are widely used, such as plan quality evaluation. Yet, methods for evaluating whether (and to what extent) plans had their intended impact on their communities are rare.

This study addresses this gap by posing one broad question: how can we effectively trace the implementation of policies in a plan and link them to changes in the built environment? To focus our approach, we examine three plans and one thematic goal (heat resilience) to explore the pathways and challenges of addressing this question. We started with a list of 100 physical built environment policies with the potential to impact heat in Tucson, extracted from a prior Plan Integration for Resilience Scorecard™ (PIRS™) for Heat analysis using general, climate, and hazard plans (Keith et al., forthcoming). Using this list of strategies, we explored a progression of methods for tracking policies from implementation to outcomes. Our methods included evaluation of plan progress reports (i.e., reviewing city recognized implementation), budgets (i.e., tracking implementation through financial commitments), land cover (i.e., evaluating change in space based on processed satellite imagery), aerial and site photography (i.e., reviewing site level changes based on published and public data), and on-site heat impacts (i.e., analyzing implementation through surface and air temperature measurements).

This study contributes new knowledge on how specific PIRSTM for Heat policies have shaped the physical built environment and addressed heat exposure. Our analysis of Tucson's plan implementation between 2013 (when the general plan was published) and 2025 offers interesting insights into the complex web of pathways that shape the built environment. Around 90% policies were found to be implemented in the form of zoning, programs, building permits, and capital projects, 60% policies were tied to funding in budget plans published within 5 years of plan publication. Out of the policies funded in budgets, 80% overall budget is allocated to 5 policies (all transportation policies), 10% budget is allocated to park improvements. The implementation of public realm projects, such as parks and roadway improvements, was easier to track given their scale and distinct visual changes in satellite and aerial imagery, compared to incentive-based policies and private interventions. Attributing the impact of even implemented policies to microclimatic effects on heat was fraught, and these barriers are further explored in this paper.

Broadly, this study contributes a new pathway-based analysis to aid how planners review land use plan outcomes. We used the small selection of successfully tracked policies to systematically evaluate the confidence in our methods. We argue that while a number of methods exist, each method is associated with unique challenges in tracking the implementation of heat strategies across space within a jurisdiction, including evaluating path

dependencies among methods and estimating the scale of intended policy interventions. In a world of rapid political and environmental change, our findings offer a nuanced view on a suite of methods and data available to city planners to track plan outcomes.

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Keywords: plan implementation, land use policies, mixed methods, extreme heat

POLITICAL ALIGNMENT AS A DETERMINANT OF URBAN HEAT GOVERNANCE: CASE STUDY OF LOCAL CLIMATE ACTIONS ACROSS U.S. COUNTIES

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Individual Paper Presentation

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The thermal environment has emerged as an important issue at the intersection of climatology, climate change, and urban planning. In particular, the Urban Heat Island (UHI) effect is a consequence of increased temperatures in local hotspots. During extreme heat events, UHIs intensify, resulting in more frequent and severe heat episodes, increased heat-related health risks, economic losses, and environmental degradation (Chun & Guldmann, 2014; Chakraborty et al., 2020). There is now a growing consensus on the adverse impacts of the UHI phenomenon, as well as significant variation in UHI effects and corresponding urban heat mitigation activities. Although UHI formation is driven by urbanization-induced alterations of the natural environment, uneven exposure and its impacts are shaped by policy and political structures. (Aboagye & Sharifi, 2024; Gurney et al., 2022). In the United States, municipalities undertake climate-related work within a highly decentralized federal system, which leads to significant variations at the state level and, in turn, in local climate work and decisions due to state-level partisanship.

With these facts, this study explores the role of local climate actions with political alignment in managing urban heat intensity. It uses county-level data on spatial, socio-demographic, and policy stance variables to explain thermal environments in the most populous 25 U.S. counties. To do so, we first estimate UHI intensity from satellite-based land surface temperature (LST) data by calculating intra-county variability with the USGS National Land Cover Database (NLCD) 2024. Second, political alignment is quantified by coding counties as red, blue, or purple based on presidential vote margins of 5% or less from county-level electoral data. In addition, urban heat governance is calculated based on the number of strategies to establish local climate action plans (LCAPs) in each county. Third, socio-demographic characteristics are extracted from the 2024 American Community Survey (ACS) database to demonstrate economic and ethnic patterns. This methodological approach adapts regression models to demonstrate their relationships.

The findings indicate that political context is not merely background noise but a determinant of adaptation capacity. Therefore, our study shows that planners would benefit from designing planning interventions that are sensitive to the political context and consider the political feasibility of the planned intervention for climate action plans.

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Keywords: Urban Heat Island, Climate Action Plan, Political Alignment, Spatial Analysis

POWER AND RESISTANCES: AN ANALYSIS OF URBAN PLANNING PROCESSES IN LIMA, PERU

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Individual Paper Presentation

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In July 2021 a Sustainable Urban Development Law and a National Housing and Urbanism and Policy were approved in Peru. These instruments established, among other things, how urban planning at the local level (which includes land use and zoning) should be done. Peruvian scholars have referred to this as the "Urban Reform" of 2021 because it established a new regulatory framework for planning that defined "sustainable development" and for its "progressive" elements (e.g. tools to limit real estate speculation). Other Peruvian academics critique the policy for an inadequate identification of the public problem it is addressing and the law for a focus on instruments without significantly challenging the pre-existing urban planning regulatory system. This focus on the approved instruments may help identify some of the reasons for their incomplete implementation. But, I posit critiquing the outcome is insufficient if the goal is to have better and more just outcomes in the future.

Sitting at the intersection of legal geography, critical urban theory and planning theory and practice, and building on scholarship about invented/invited spaces (Miraftab 2009), this research investigates the political economy of urban planning in Lima, Peru. Using a broad definition of urban planning which includes the regulations, laws, and administrative measures used for the social practice of spatial ordering. I focus on the process rather than on the outcome to analyze how authority, governance structures and citizen participation influence urban planning decisions. In other words, how are actors, institutions and events mobilized to construct urban planning objectives and influence the decision-making process that leads to the modification of an urban planning instrument from its initial idea to its approved version. As such, this research is ultimately about how power and resistances take place in urban planning processes in Lima, Peru.

Following a qualitatively driven mixed methods approach this research uses content analysis of documents, discourse analysis of media and press, cartographic analysis of participating organizations location, non-participant observation of public meetings and semi-structured interviews to answer two research questions. (1) How are institutions mobilized to maintain or challenge governance structures? (2) Who gets to participate in urban planning processes in Lima, Peru? Preliminary findings based on extended fieldwork; the analysis of legal documents, both publicly-accessible approved laws and regulations and drafts requested through Peru's transparency act; and actor mapping of entities and organizations involved in planning decisions suggest the following. (i) Climatic, social and political crises have been mobilized to cement ideas that had already been underway. (ii) Despite congress having the mandate to propose and approve laws, the executive branch has been the one to propose and modify the Sustainable Urban Development Law. (iii) Actors and institutions are interconnected in different stages of the decision-making process. For example, there appears to be an entanglement between the private sector and research institutions with an expectation of specific public policy outcomes.

Drawing from my personal experience as a consultant and public official in the Ministry of Housing in Peru between 2021 and 2022 this project reflects in- and on- practice and follows a situated knowledge interpretative framework. I see the impact of this project as two-fold. First, methodologically thinking about how to raise questions about complex topics related to power not only ethically but with care at the center. Second, I suggest that focusing on the process that determines the planning objectives and includes negotiation between different actors in championing for a specific vision and agenda allows for a discussion about alternatives that challenge hegemonic structures.

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Keywords: Power, Planning process, Governance structures, Citizen participation

PROHOUSING POLICY REFORMS IN CALIFORNIA: CITY APPROACHES AND IMPLEMENTATION

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Individual Paper Presentation

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In the past few years, housing affordability has emerged as a central political issue in the United States (Weil, 2026). Interest in land use and housing policy reform has recently emerged as a rare area of bipartisan consensus, with both Democratic- and Republican-led states enacting legislation to expand housing supply (Kazis, 2023). California, widely seen as the epicenter of the nation's housing affordability crisis, has become a key testing ground for housing policy reforms that aimed at overcoming barriers to housing production and affordability. Over the past decade, the California state legislature has enacted over one hundred statues that strengthen state oversight and require local jurisdictions to reform their planning and approval process (Fulton et al., 2023). Within this evolving policy landscape, California 2019-2020 Budget Act established the Prohousing Designation Program (PDP) to recognize and support jurisdictions that go above-and-beyond state housing law in accelerating housing production.

This study examines the adoption and implementation of prohousing policies in 56 California cities that had received the Prohousing Designation status as of May 2025 (hereafter referred to as "prohousing cities"). Using administrative records and prohousing designation application materials, we identify the housing reforms most commonly codified by prohousing cities and assess how these policy choices correspond with key city characteristics. We then draw on semi-structured interviews with 40 urban and housing planners, along with a few housing developers, to evaluate which reforms have been most effective in practice and to identify persistent barriers to housing production.

By combining systematic policy analysis with practitioner perspectives, this study provides new evidence on how state-led housing initiatives translate into local regulatory change and implementation outcomes. Based on these findings, we outline three directions for future policy reform and research aimed at improving the effectiveness of pro-housing strategies in high-cost housing markets.

This study contributes to the literature on regulatory constraints and housing supply in several ways. First, unlike prior empirical studies that assess how land use regulations constrain housing supply, this study focuses on prohousing reforms that aim to accelerate housing production across 56 California cities. Second, this study moves beyond quantitative estimation of land use policy impacts to examine which reforms prove effective in practice, drawing on insights from local planners, housing program managers, and real estate developers who directly engage in housing planning, approval, and production processes. The interviews reveal how these policies work on ground, the political, operational, and practical obstacles they face, and their implementation outcomes. Third, the study identifies several areas in need of reform that have received limited attention in previous research, highlighting gaps in current policy frameworks and in scholarly understanding of local housing production processes.

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Keywords: Prohousing policy, Housing development, Land use regulation

PROPERTY RIGHTS AND THE JUDICIAL INDEPENDENCE REFORM: THE ROLE OF COURTS IN LAND TAKINGS AND PLANNING DISPUTES

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Individual Paper Presentation

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Law literature predicts that courts in authoritarian regimes function as legal instruments that advance the state's goals. However, recent studies show that Chinese courts are increasingly ruling in favor of citizens in administrative litigation over land and property takings against governments. This puzzle motivates this paper to investigate whether the courts have become stronger property rights enforcers or remain subordinate to local political authorities. This paper examines the impacts of China's judicial independence reform, which centralized financial and personnel control of lower courts at the provincial level to reduce interference from local governments. The reform provides a quasi-experimental policy shock to address two research questions. First, did the reform increase plaintiffs' win probability in land and property taking cases and reduce local land supply? Second, if the win probability increases, does the change represent stronger protection of property rights or the improvement of the rule of law?

To answer these questions, I construct an administrative litigation lawsuit dataset from China Judgement Online linking with nationwide land transaction records and identify 30,000 judgements in administrative litigation related to land and property takings between 2014 and 2020. For the first research question, I implement a staggered Difference-in-Differences design that exploits the provincial roll-out of the judicial independence reform and estimates the reform effects on win probability and local land markets. For the second research question, I adopt a mixed-methods approach. Quantitatively, I parse legal outcomes by coding plaintiffs' demands and legal doctrines used in court judgements. Qualitatively, I have conducted interviews with judges, court clerks, lawyers, and plaintiffs to understand how they perceive the evolving role of courts in land and property disputes. The DID estimates show that the judicial independence reform increased plaintiff's win probability by 8.5 percentage points, controlling for city and year fixed effects, court level, defendant's level in administrative hierarchy, home court advantages, case attributes, and pre-existing city socioeconomic attributes. However, the reform did not show significant effects on whether the judge supported specific demands of plaintiffs like rescinding government actions, providing monetary compensation, or confirming government action illegal. The results suggest that the reform increased the nominal win rates for plaintiffs but did not bring substantial remedies.

This paper contributes to two strands of literature. First, it contributes to the property rights literature. China's experience challenges the conventional wisdom that strong property rights enforcement is a prerequisite for economic development. By evaluating whether the judicial independence reform strengthens formal property rights protection or maintains discretionary control, this paper advances research on China's institutional transformation and the diverging property rights regimes on urban and rural land. Second, it contributes to the political economy of land finance and urban development. While existing studies characterize the state as both regulator and developer, this paper highlights a third role: the state as adjudicator. Through its control over the judiciary, the state shapes how courts resolve land disputes and channels its influences on land development and urbanization. While aligning local agents' behaviors with the central principal's commands, courts can either reinforce the government-led land takings or increase their legal costs, reflecting the state's excessive authority in urban development.

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Keywords: Property rights, Courts, Land takings, Administrative litigation, Land supply

RECLAIMING THE PERIPHERY: CROSS-MUNICIPAL NEIGHBORHOODS AND THEIR EVOLUTIONS IN SOUTHERN CALIFORNIA

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Individual Paper Presentation

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A great deal of scholarly attention has been paid to political fragmentation, largely driven by the proliferation of municipal incorporations in the mid-20th century, and its profound implications. Prior research, however, has typically focused on how fragmentation influences fiscal efficiency, local/regional economic development outcomes, and inter-municipal disparities at an aggregate level, without much consideration of its spatial manifestations. While some studies have explored how political fragmentation relates to sprawl, little is known about the granular development dynamics that emerge in fragmented spatial settings, particularly in cross-municipal neighborhoods at the interfaces where inner-ring suburbs meet the central city, other inner-ring suburbs, or outer-ring suburbs.

This study presents an empirical investigation of cross-municipal neighborhoods in Southern California, whose spatial positioning induces the strategic behavior of planning and market actors, using a suite of micro-level datasets, including parcel-level land use layers, street network shapefiles, and longitudinal business establishment and household records. It employs cluster analysis to identify distinct transition pathways of these neighborhoods from 2000 to 2025, a period during which development pressure in these areas has intensified alongside the rise (or promotion) of infill development. It further compares a subset of these neighborhoods with comparable areas in non-transboundary settings using synthetic control methods.

Findings show that while many cross-municipal neighborhoods are characterized by dense arterial road networks and heavy industrial land uses, their evolutionary trajectories are heterogeneous. A significant portion of these areas maintains a stable industrial profile, yet another has transitioned into increasingly mixed-use locations with ethnoracially diverse populations. A distinct trajectory also emerges in which these cross-municipal areas serve as strategic sites for large-scale development projects. Together, these patterns challenge conventional understandings of suburban space and city borders as peripheral, suggesting that political fragmentation and the spatial divisions it produced decades ago are reemerging as forces shaping ongoing metropolitan transformation.

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Keywords: Political fragmentation, Land use, Neighborhood change

SIMILARITY OR CAUSALITY: EXAMINING THE CAUSAL INFERENCE OF FORM-BASED CODES ON AMERICAN ZONING ORDINANCE

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Form-based Codes (FBCs) are frequently championed as promising alternatives to Conventional Zoning Codes (CZCs), offering a potential remedy for the urban sprawl CZCs have long perpetuated (Talen, 2013). Despite research suggesting a significant link between the purported superiority of FBCs and desired development outcomes, a critical yet underexplored step lies in understanding how FBCs first shape local zoning regulations before being materialized into the built environment. Empirical evidence on this process remains limited and contested. Some studies indicate that fewer than 0.2% of U.S. cities have explicitly adopted FBCs into local zoning codes (Rangwala, 2013; Talen, 2021). In contrast, more recent research suggests that FBCs have been more widely adopted nationwide based on cosine similarity analysis (Salazar-Miranda and Talen, 2025). However, neither set of findings distinguishes which observed code changes are causally attributable to FBC adoption and which are not. Building on recent methodological advances in estimating causal effects under non-random policy adoption and heterogeneous pre-treatment trends (Arkhangelsky et al., 2021), this study addresses this gap by employing a synthetic difference-in-differences (SDID) design to estimate the causal impact of FBC adoption on subsequent zoning code changes.

For the SDID design, the treated units consist of 274 zoning codes that formally adopted FBCs (Talen, 2021), with staggered timing of adoption. The donor pool is drawn from a broader sample of municipal zoning codes that did not explicitly claim FBC adoption, enabling the construction of synthetic counterfactuals based on pre-treatment trajectories in key zoning parameters (e.g., floor-area ratio, setback requirements, minimum lot size provisions, etc.). For each city that adopted FBCs, a carefully matched “synthetic twin” is constructed from a pool of similar non-adopting cities. This synthetic counterpart is identified using the Peer City Identification Tool developed by the Federal Reserve Bank of Chicago, combined with a customized machine learning model that measures urban growth similarity based on historical satellite data. The research design combines matching techniques with time fixed effects to ensure that adopting and non-adopting cities followed similar pre-adoption trends. This reduces bias and makes it more likely that differences observed afterward are attributable to FBCs rather than to unrelated economic or policy shifts. Robustness checks, including placebo adoption tests and separate analyses for urban and suburban contexts, are conducted to ensure the results are reliable.

By comparing post-adoption outcomes between each adopting city and its synthetic counterpart, the analysis tracks changes in measurable zoning parameters as well as shifts in the degree to which local codes align with FBCs. The results reveal mixed outcomes, offering more nuanced insights into the causal effects of FBCs on zoning ordinances than prior, more dichotomous approaches that treat zoning as either derived from CZCs or FBCs. The findings enhance understanding of FBCs’ impact on zoning codes, contributing new empirical evidence to both academic discourse and the practice of zoning reform in the United States.

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Keywords: zoning reform, form-based codes, causal inference, policy analysis

STATE AND COUNTY APPROACHES TO DATA CENTERS: PATTERNS IN THE FIRST GENERATION

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Individual Paper Presentation

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Artificial Intelligence (AI) has developed rapidly over the past decade. However, the infrastructure that enables its growth – particularly data centers – has only recently begun to receive attention in mainstream planning and siting frameworks (Sanchez, Berman, and Ye 2025). Planners seeking best practices for data center siting often face tensions between state-level incentive programs that encourage private development and local zoning codes largely limited to industrial and commercial land uses (Covas et al. 2013; Onodera et al. 2025). This mismatch highlights the need to examine prevailing land use planning approaches alongside the equity implications of data center development.

This study explores: (1) what are the state-level frameworks that accelerate or constrain data center development; (2) what local planning and zoning practices are available to respond to the increasing demand of data centers; and (3) what approaches are adopted by counties with high concentrations of data centers in the United States. To address these questions, we design an exploratory study of 50 localities including a combination of cities and counties across all 50 states. We aim to prioritize those with the greatest number of data centers to capture variation in state incentives and local planning practices.

Using an exploratory mixed-methods design, we conduct web searches and content analysis of state legislation, followed by analysis of local zoning ordinances and staff reports. We then group states by incentive structures and synthesize key zoning and design requirements. Findings reveal substantially varied state programs incentivizing growth, ranging from highly supportive to restrictive policies. On a spectrum from incentivizing to restrictive, highly incentivizing states offer long-term tax exemptions for large-scale investments and impose minimal land use requirements. In contrast, disincentivizing states have initiated moratoria requiring comprehensive environmental and economic assessments, repealed tax exemptions, or required developers to bear full costs, including grid upgrades, environmental impacts, and social considerations. Meanwhile, local governments are actively adapting zoning overlays (e.g., downtown districts, industrial zones) to accommodate data center development.

These findings provide timely insights for evaluating data center development at both the state and local levels. Despite differing state priorities, a key challenge remains the mismatch between local planning capacity and the demands of this emerging form of development. Many jurisdictions lack adequate zoning and design frameworks to address environmental and social impacts associated with developments. This study offers guidance for planners to assess long-term implications in relation to broader state and regional goals (Cartwright 2026). Effective planning for data centers requires transparent processes, rigorous environmental and social evaluation, and a commitment to long-term sustainability.

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Keywords: State Policy, Zoning, Local Planning, Digital Infrastructure, Data Centers

THE EFFECTS OF STATE PLANNING MANDATES ON THE (RE)DISTRIBUTION OF HAZARD EXPOSURE IN PERI-URBAN COUNTIES

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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State planning mandates are widely recognized as foundational tools for shaping land development, promoting coordinated planning, and advancing sustainable urban form. Yet their implications for hazard exposure, particularly in peri-urban areas, remain scarcely understood. Peri-urban landscapes, situated at the interface of urban and rural systems, are characterized by fragmented governance, rapid land conversion, and expanding development into hazard-prone environments such as floodplains and the wildland–urban interface (WUI). These dynamics raise a critical policy question: do state land use regulations effectively reduce environmental risk, or do they inadvertently redistribute hazard exposure across space?

In this study, we examined how variation in state planning mandates influences hazard exposure in peri-urban counties across the United States using three research questions: 1- To what extent do state growth management regulations influence hazard exposure in peri-urban areas? 2- Through what policy-driven mechanisms—particularly land-use change and development patterns—do these regulations shape hazard exposure? 3- Do stronger state regulatory regimes reduce overall hazard exposure, or do they redistribute risk across urban and peri-urban landscapes?

We apply a multi-level policy evaluation framework linking state-level planning strength to county-level land-use and hazard outcomes. State growth management strength, based on the American Planning Association's 2022 assessment, captures variation in legal requirements for planning, consistency, and enforcement. Hazard exposure is measured using FEMA's National Risk Index (NRI), which aggregates county-level risk for flood, wildfire, and extreme heat. Land-use change was derived from the National Land Cover Database (NLCD) to track conversion from agricultural or natural land to developed uses. Socioeconomic and demographic factors, including population growth, income, and housing density, were controlled using U.S. Census data.

In our statistical analysis, we used multilevel (hierarchical) regression models with counties nested within states to estimate both direct regulatory effects and cross-level governance dynamics. We used mediation analysis to assess whether the effects of growth management regulations on hazard exposure operate through land-use change, while cross-level interaction terms helped assess the effects of local capacity, development pressure, and governance fragmentation on policy effectiveness.

Our findings suggest that state growth management regulations produce uneven and spatially differentiated outcomes. As anticipated, stronger state mandates do reduce hazard exposure in urban cores by promoting compact development and restricting growth in high-risk areas. However, these policies also generate unintended consequences by displacing development pressure to peri-urban areas, where regulatory enforcement is weaker and governance is fragmented. This spillover is characterized by increased hazard exposure in peri-urban counties, through mechanisms such as leapfrog development, land fragmentation, and expansion of the WUI. Land cover change is a key mediating mechanism, linking regulatory frameworks to spatial risk outcomes.

These findings contribute to land use policy and governance scholarship by demonstrating that the effectiveness of growth management cannot be evaluated solely based on urban form or containment outcomes. Instead, policy evaluation must account for cross-jurisdictional spillovers and the redistribution of risk across space. The study

underscores the need for risk-sensitive planning mandates that explicitly address hazard exposure in peri-urban areas. As climate change intensifies environmental risks, state and local governments must move beyond growth containment towards integrated land use and hazard mitigation strategies that ensure equitable and resilient development outcomes.

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Keywords: Land Use policy, Growth Management, Hazard Exposure, Per-urban governance, Policy evaluation

THE POLITICS OF SMART CODE ADOPTION: A CASE STUDY OF GARNER, NORTH CAROLINA

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Researchers have largely agreed that community decisions on smart growth and other sustainable development policies are often politically motivated, as multiple stakeholders with unequal powers typically negotiate their competing interests in the planning and policy-making process. The likelihood of a smart growth policy being adopted by a community generally depends on how much support or opposition it receives from key stakeholders (e.g., planners, developers, interest groups, planning consultants) in the local planning arena (Downs, 2005; Hawkins, 2014; Levesque et al., 2017; Loh & Norton, 2015). Considering that successful political negotiations are key to getting smart codes adopted, a better understanding of these political negotiations could provide valuable insights into how smart code advocates, including local planners, could maximize their influence in promoting smart codes. Surprisingly, to our knowledge, no study has closely examined the political dynamics and roles of planning stakeholders in land use reform, from initial policy formulation to final integration into local ordinances. Therefore, in this paper, we provide an in-depth case study of the political negotiations during a two-year ordinance reform process in a suburban Wake County municipality, Garner, which was triggered by changes in state legislation and resulted in the adoption of multiple smart codes. We seek to investigate the extent to which different stakeholders shape the selection and integration of smart codes during Garner's development ordinance comprehensive update process. More specifically, we examine which stakeholder(s) initially propose the adoption of specific smart codes, whose perspectives are ultimately reflected in the final decisions, and whether these stakeholders' influence varies across negotiations of different smart codes. For this qualitative study, we rely on a range of materials (webpages, public meeting recordings, minutes, presentation slides, and ordinance texts) related to Garner's ordinance reform process as well as interviews with stakeholders involved in the project. Our preliminary results show that the planning consultants played the primary role in identifying potential smart codes to adopt based on their interpretation of local plans and focus group interviews, with the planning director playing a key role in justifying consultants' code proposals to elected officials and the public. The planning consultants' proposed smart codes related to improving land use mix, street connectivity, and destination accessibility through walking and biking remained largely unchallenged and unchanged throughout the process. However, feedback from vocal members of the town council and ordinance reform committee advocating for homeowners' interests to preserve "neighborhood characters" led to the scaling back of codes to increase housing density in residential districts. These findings echo Fischel (2001) and Downs' (2005) assertion of the immense barrier to adopting smart codes that affect neighborhood density and housing in suburban jurisdictions, as politics in these places tends to be dominated by homeowners' interests in protecting property values through exclusionary zoning. Lastly, extending Loh & Norton's (2015) study on the influence of consultants on comprehensive plan content, our findings show planning consultants' capacity to exert significant influence over which smart codes are adopted locally. Considering the importance of planning consultants' roles in smart growth planning and practice, we recommend future studies to explore consultants' influence more broadly.

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Keywords: Smart Codes, Smart Growth, Zoning Reform, Stakeholder Analysis, Compact Development

THE RELATIONSHIP BETWEEN THE RISE IN GENTRIFICATION AND DECLINE IN URBAN SPRAWL IN THE UNITED STATES

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Individual Paper Presentation

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Urban Sprawl and Gentrification are two well-known urban processes, both which are often perceived negatively in the planning literature and had maintained significant attention for extended periods of time. While geographically gentrification analysis is focused in the city, and urban sprawl at the urban fringe, the two processes are theorized to be highly interconnected through several ways. Anti-sprawl planning policies are argued to induce gentrification, whereas few others recent discussions suggest that increasing gentrification might contribute to sprawl decline (Kurban & Persky, 2007). In a time were sprawl in the United States have entered a phase of slowing down, and gentrification is continuously growing, the purpose of this study is to explore the extent to which gentrification contributes to this deceleration of sprawl in the United States.

Both processes of neighborhood change, gentrification and suburban sprawl, rely primarily on the patterns of residential mobility. Therefore, within a metropolitan area, changes in the patterns of residential mobility are expected to reflect changes to the extent of gentrification and sprawl. Gentrification in the largest 50 cities in the united states more than doubled since the 1990 (Smith et al., 2020). Meanwhile, urban sprawl fell by 9% between 1920 and 2012 (Barrington-Leigh & Millard-Ball, 2015). In this study, we test the hypotheses that neighborhood revitalization and gentrification which is attracting more middle and high income to the urban core is partially responsible for the reduced rates of sprawling in the urban fringe.

We utilize a combination of data sources on the tract and metropolitan level, and a hybrid stepwise model was run for the period from 2010 to 2020. The dependent variable of this model is a continuous variable consisting of Sprawl index scores of MSAs in 2020. The independent variable of interest for this model is also a continuous variable measuring the number of gentrifying neighborhoods in each MSA which were gentrifying during the period from2010 to 2020. A list of various control variables which exclude the impact of other changing factors driving sprawl from the assessed relationship were tested in the stepwise model.

The analysis finds significant relationship between the increase of gentrification in the recent decade and the decline of sprawl. Our findings indicate that the impacts of gentrification extend beyond the gentrifying core, influencing the outer edges of the metropolitan region. These effects contribute positively to environmental and development control outcomes, particularly in mitigating urban sprawl.

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Keywords: Gentrification, Urban Sprawl, City Revitalization, Urban Growth, Urban Change

VOLUMETRIC BYLAWS: LIBERALIZING REGULATIONS TO ACHIEVE REDEVELOPMENT OBJECTIVES IN THE AHMEDABAD CBD

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Development regulations of Indian cities do not enable continued urban growth and economic development. Regulations are notoriously complicated, difficult to understand, and require considerable iterative problem solving. There are many regulating parameters which make them difficult for non-technical people to understand, are indifferent to location of the building resulting in unpredictable outcomes, and over-regulation restricts designs options resulting in a haphazard urban form. To address these issues, the city of Ahmedabad has been experimenting with Volumetric Bylaws since 2016 within its Local Area Plan (LAP) framework for achieving higher densities through redevelopment, promote better land utilization, and enhance focus on the built form outcome. Volumetric Bylaws are simplified regulations that define a building envelop for each lot using only a few parameters, such as permissible height, building margins, ground coverage, permissible floor area, and build-to-line. A major objective of this approach is to liberalize land use planning through deregulation to promote rapid economic growth that Indian cities are experiencing.

This research examines the feasibility and challenges of implementing Volumetric Bylaws as a tool for redevelopment within central city areas, taking the Local Area Plan (LAP) of the Ahmedabad Central Business District (CBD-West) as a case study. The methodology involves review of related documents, including the enabling legislation Gujarat Urban Planning and Urban Development Act of 1976, Local Area Plans and Town Planning Schemes reports, and urban design and planning studies. Data on building permits granted in the past decade in the Ahmedabad LAP for CBD-West was collected from the Ahmedabad Municipal Corporation (AMC). Field visits were undertaken to the CBD to understand the nature of redevelopment and on ground implementation outcomes. Lastly, semi-structured expert interviews were conducted with about 15 individuals who shared their valuable insights. Interviewees include public sector planners working with the Ahmedabad Urban Development Authority, the AMC, and the Urban Development Department of the Government of Gujarat, private sector planning consultants involved in the LAP preparation, planning educators associated with local universities, and independent planning and urban design professionals.

Findings indicate that implementation of Volumetric Bylaws has been slow. Ad hoc implementation and plan modifications have significantly diluted the urban design and walkability objectives of the initially formulated Volumetric Bylaws. Despite significant incentives offered, there is reluctance from landowners and area residents to contribute land for expanding private streets and the public domain. Revisions to the LAP have resulted in sporadic public spaces and an incoherent public realm. Local authority staff are also reluctant to promote higher-density, high-rise redevelopment in the city center due to infrastructure deficit and a misguided fear of congestion. Since the implementation began a decade ago, only a handful of buildings have been redeveloped in Ahmedabad's CBD despite substantial FAR and other incentives offered. CBD's slow redevelopment can also be attributed to flawed regional development policies which incentivize similar high-density development city-wide, resulting in new development being pushed to the city's periphery driven by developer interests and consumer preferences.

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Keywords: Volumetric Bylaws, Development regulation, Local Area Plan, Ahmedabad, India

WHO SPRAWLS THE MOST IN 2020 AND WHAT HAS CHANGED SINCE 2010?

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Track 6: Land Use Policy, Governance and Law
Individual Paper Presentation

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Urban sprawl and its impacts on quality of life remain a long-standing debate in planning, heightened today by challenges of health, housing, and climate crises (Hamidi and Ewing, 2014; Ewing and Hamidi, 2017; Ewing et al., 2022). This study develops a multidimensional compactness index for 233 large and medium-sized U.S. metropolitan areas in 2020, drawing on 21 built environment variables across four urban form dimensions: density, land-use mix, centering, and street connectivity. We successfully validate this index against transportation outcomes using both inferential and machine learning approaches. Finally, we develop a comparable index for 2010 and track changes in sprawl in the past decade. Results show wide variations across regions, with Riverside, CA ranking as the most sprawling (index = 54.32) and San Francisco, CA as the most compact (index = 242.91) in 2020. According to our longitudinal analysis, metropolitan areas have become slightly more sprawling, but the rankings remained relatively stable. However, a closer look at score changes for individual MSAs reveals a different narrative. Atlanta, GA is one the top list of most sprawling MSAs in both years while it has experienced an impressive increase in its compactness score (mostly centering score) during this period. We further discuss several MSAs with noticeable score changes. Our transportation analyses suggest 120 as a threshold value in which compactness meaningfully increases the predicted share of walking and transit commuting whereas for the household vehicle ownership and average drive time, the threshold is roughly 100. The updated compactness indices and their changes since 2010 provide planners and policymakers with a practical tool to benchmark and monitor metropolitan development patterns. By identifying thresholds where compactness begins to yield significant transportation and sustainability benefits, the index can guide target setting, prioritize interventions, and support planning processes aimed at reducing car dependence and advancing sustainable metropolitan development.

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Keywords: Urban sprawl, growth management, polycentricity, street connectivity, land use mix

ASSESSING GROWTH MANAGEMENT SCENARIOS IN SUSSEX COUNTY, DELAWARE

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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Assessing Growth Management Scenarios in Sussex County, Delaware: GIS Simulations, Stakeholder Learning, and Strategies for Curbing Urban Sprawl

Keihan Hassan Zadeh Kermanshahi and Nina David

Despite being in a state with a statewide growth management framework, Sussex County, Delaware often finds itself at the center of heated debates on whether and how growth should be managed. Sussex, Delaware's southernmost coastal county faces rapid population growth, continuing rural and coastal development pressure, and substantial farmland loss. Between 1982 and 2012, the county lost more than 71,000 acres of farmland, and if current trends continue, roughly 10,000 additional acres are expected to be developed by 2045. Almost half of the county's growth is occurring in rural areas (Sussex County Government, 2019). Sussex County's population was 237,378 in 2020, reached 270,818 by 2025, and could grow to 361,422 by 2050, reinforcing its position as Delaware's fastest-growing county (Delaware Population Consortium, 2023). These trends raise urgent questions about whether existing growth management policies can protect agricultural land, environmentally sensitive areas, and long-term infrastructure efficiency in a fast-growing county.

Our paper evaluates three alternative 2050 futures for Sussex County, a Status Quo Development Model, a Moderate Management Model, and an Intensive Management Model, using GIS-based scenario planning. The scenarios vary by density assumptions, agricultural zoning, growth management policies, conservation subdivision requirements, buffers, infrastructure extension, and the degree of alignment with Delaware's state growth management strategy. We scan local media and public-hearing materials to identify local concerns and context during scenario development. Our analysis integrates parcel-level development allocation, land-cover and farmland data, building permits, spatial data from Delaware's growth management strategy, roads, floodplains, wetlands, sewer and water service areas, and projected population growth. To build a unified zoning framework for countywide simulation, municipal zoning information (georeferenced) is standardized and merged with county zoning into a single layer. Scenario design and land-allocation modeling are developed in ArcGIS Pro, ArcMap, and CommunityViz.

Our paper responds to growing calls for more participatory scenario planning by moving beyond technical simulation alone (Amer et al., 2013; Goodspeed, 2020). Consequently, we conduct semi-structured interviews with county officials, state agencies, developers, and environmental advocates to seek feedback on the scenarios. This design allows us to examine how stakeholders interpret alternative futures, assess trade-offs, and explore feasible policy directions. Previous studies have argued that participatory scenario planning can strengthen learning, systems thinking, and adaptive decision-making, yet evidence remains limited on how decision-makers themselves interpret scenario outputs, whether perspectives converge across actors, and whether scenario exposure can reduce governance conflict or lead to policy learning (Galang et al., 2025).

This paper contributes to both scholarship and practice. It links scenario planning with policy learning to examine how alternative growth futures may shape stakeholder beliefs and clarify state-local tensions. Methodologically, it uses a parcel-based GIS framework that combines simulation modeling with participatory interpretation. Focusing on Sussex County, the study addresses ongoing development pressures in conservation-priority and resource sensitive areas and shows how scenario planning can support more informed governance, stronger coordination, and more sustainable long-term growth decisions.

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Key Words: Growth management, Scenario planning, Participatory planning, GIS-based simulation, Policy learning

CONDITIONAL SOVEREIGNTY AND TWO-STAGE GOVERNANCE: PHILANTHROPY AND THE RECONFIGURATION OF URBAN DEVELOPMENT IN DETROIT

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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Today, urban governance is less about formal authority and more about who controls resources to shape priorities. Across U.S. cities, governance has shifted from top-down government toward decentralized networks of public and private actors negotiating authority within hybrid arrangements (Bevir, 2011). Detroit exemplifies these dynamics. When the city declared bankruptcy in 2013, philanthropic foundations emerged as unlikely saviors, injecting millions through the "Grand Bargain" to stabilize pensions and preserve cultural assets (Eisinger, 2014). Critics warned that this intervention resembled a Faustian bargain that would reshape urban governance (Rosen, 2024). Although scholarship examines philanthropy's influence on urban policymaking (Peck, 2014), less is known about how these partnerships reconfigure municipal institutions, altering regulatory authority, operational capacity, and democratic legitimacy.

I examine philanthropic governance in Detroit as a response to prolonged fiscal crisis, situating it within broader debates on hybrid governance and neoliberal restructuring. Specifically, I ask: How does Detroit's municipal government navigate its role within hybrid governance regimes shaped by nonstate actors? In doing so, I shift the analytical focus from who governs to how governing capacity is produced, negotiated, and constrained in practice. I draw on Critical Urban Theory and urban governance scholarship to situate philanthropy's role in revitalization within neoliberal restructuring (Reckhow et al., 2025).

I employ a qualitative research design that analyzes these dynamics at the level of urban revitalization projects, including the Joe Louis Greenway and the Strategic Neighborhood Fund. I integrate document analysis, 70 semi-structured interviews with actors across sectors, and participant observation through an internship with a Detroit philanthropy. I analyze these data using the Gioia methodology (Gioia et al., 2013), enabling an inductive and process-oriented examination of multi-actor governance practices.

The findings show that reliance on philanthropic actors is not a recent departure, but part of a longer trajectory rooted in federal retrenchment and neoliberal restructuring. In Detroit, this trajectory has shifted from crisis response to normalization. I introduce the concept of conditional sovereignty to describe this governance context: a condition in which formal municipal authority remains intact but is materially constrained by fragmented funding regimes and reliance on external actors. Within this context, the City does not retreat from governance; rather, it operates as a strategic broker within dense institutional networks, negotiating authority across sectors. This configuration produces a two-stage governance model. Upstream, strategic alignment among philanthropies, the City, and intermediaries defines priorities, funding structures, and acceptable risk thresholds before projects enter broader public engagement. Downstream, community participation and co-design shape implementation but remain bounded within a pre-structured decision space, raising questions on the implications for equitable urban development.

These dynamics reveal a governance system that is simultaneously adaptive and constrained. Hybrid arrangements enhance implementation capacity and enable projects to proceed under conditions of fiscal constraint, yet they also redistribute authority and complicate accountability, producing governance systems that are operationally effective but democratically opaque (Emerson & Nabatchi, 2015). Rather than signaling a breakdown of planning, Detroit illustrates a reorganization of it, one in which legitimacy and implementation are co-produced but unevenly

distributed. By historicizing Detroit's recovery, I demonstrate how long-term political and economic transformations have produced a stable yet precarious mode of hybrid urban governance, with implications extending beyond Detroit.

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Key Words: Hybrid governance, Philanthropy, Urban revitalization, Accountability, Detroit

DEVELOPERS AS PLACE ENTREPRENEURS IN COMMERCIAL – TO-RESIDENTIAL CONVERSIONS IN CANADA: IMPLICATIONS FOR PLANNING PRACTICE

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Converting vacant commercial space into residential buildings is gaining traction as a strategy to address housing affordability and climate change in Canada. These commercial-to-residential conversions introduce additional layers of complexity to the development process and often require policy flexibility or financial concessions to ensure viability. As planners seek to adjust rules and incentives to encourage this form of development, certain developers have moved quickly to occupy this emerging market niche. In this presentation, we draw on Tiesdell and Adams's (2011) concept of the "place entrepreneur" to illustrate what other planning scholars have described as "socially conscious" or "altruistic" developers: actors motivated not only by project-level returns but also by broader social, economic, and city-building objectives (Hyde 2022; Rosen 2017).

This presentation discusses case study findings from a 2025 North American study tour of Canadian cities as part of an ongoing research project exploring urban retrofitting practices in cities. We highlight mutual learning benefits from the tour in which municipal planners drew on the experience of a private developer working in Halifax, NS to influence affordable housing policy and delivery (Montero 2017). Early findings suggest that institutional capacity building around complex development practices can generate potential win-win outcomes: collaboration and mutual learning between planning and development actors enabled both groups to advance common goals related to conversions as well as sustainable urban development (Innes & Booher 2010).

The research offers a lens for unpacking how developers' motivations and practices can reshape established planning rules and processes through collaborative and entrepreneurial efforts. It contributes to scholarship on public–private relational dynamics in urban development, reinforcing that developers hold a diverse range of views and degrees of openness to planning interventions - perspectives that planners can neither fully ignore nor fully embrace in all circumstances (Coiacetto 2000).

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Key Words: Developers, planning policy, collaboration, conversions, retrofit

ENHANCING CONDUCTION OF NON-STATUTORY HERITAGE MANDATES INTO STATUTORY LAND CONTROL: A TARGETED REGULATORY FRAMEWORK FOR CHINA'S HISTORIC TOWNS

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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In China's territorial spatial planning system, regulatory planning (RP) is the legally binding instrument for land-use control and construction approval; a city or town plan is divided into an overall plan and a detailed plan, and construction activities in planning areas must comply with planning requirements (People's Republic of China, 2007; Zhang & Chui, 2022). Heritage conservation plans and related special plans provide conservation principles and spatial requirements, but they function more as soft-law guidance than as directly enforceable development controls, resulting in an institutional gap between non-statutory conservation mandates and statutory planning implementation (Zhang & Chui, 2022; Zhang, 2022). The UNESCO Historic Urban Landscape recommendation argues that conservation should be integrated into wider sustainable urban development rather than treated as an isolated preservation exercise (UNESCO, 2011). However, without systematic translation into mandatory regulatory indicators—such as floor area ratio, building height, and land-use zoning—conservation requirements cannot be operationalized, producing a binary dilemma: either development is excessively restricted, leading to "conservation-induced decline" in historic settlements, or unregulated development causes irreversible damage to heritage resources (Yin et al., 2021; Zhang, 2022).

The generic RP system, designed to maximize land development value through standardized plot division, homogeneous intensity control, and single-use zoning, is often mismatched with the conservation needs of historic urban landscapes (UNESCO, 2011; Zhang, Tang, & Chen, 2022). Existing scholarship has predominantly focused on city-level historic cities and neighborhood-scale conservation districts—the two ends of the statutory heritage system in China—while relatively limited attention has been paid to town-scale historic settlements, the intermediate tier. As a result, a systematic, statutory-compliant RP framework for town-scale historic settlements remains insufficiently developed, particularly in translating pre-defined conservation mandates into enforceable plot-level land use rules (Zhang, Tang, & Chen, 2022; Zhang, 2022). To address this limitation, this study develops a specialized RP conduction framework for town-scale historic settlements, which complements generic RP logic with a closed-loop four-stage conduction pathway (Baseline Assessment – Dual-Source Plan Alignment & Gap Remediation – Dual-Objective Collaborative Planning – Three-Tier Hierarchical Control Implementation) and a matching three-tier, nine-category regulatory system embedding dual goals of heritage conservation and sustainable local development into the RP process.

This framework is validated through an empirical case study of Zhonghe Town, a nationally designated historic settlement in China, with a 1300-year urban history and state-level cultural heritage sites including the Dongpo Academy and Danzhou Ancient City. The results show the framework effectively resolves the core conduction gap and system mismatch: it establishes a heritage-aligned hierarchical intensity control system (opposite to generic RP's center-high intensity logic), preserves traditional street fabric through context-adaptive plot division, and enables culture-tourism oriented mixed-use zoning. For Zhonghe Town, it fully delivers on all pre-defined

conservation mandates while identifying 22.8 hectares of dedicated land for cultural tourism and education industries, unlocking sustainable development potential without compromising heritage integrity.

This research extends statutory RP theory to the understudied town-scale historic settlements, contributes to land use governance scholarship, and provides a replicable, regulation-compliant planning template with relevance for other planning contexts facing similar tensions between statutory control and heritage conservation.

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Key Words: Regulatory Planning, Planning Conduction, Land Use Governance, China's Historic Towns, Statutory Planning System

FROM AGREEMENT TO ACTION: A REVISED FRAMEWORK LINKING COLLABORATIVE PLANNING TO IMPLEMENTATION

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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Collaborative planning is commonly recommended for addressing complex, multi-actor problems (Innes & Booher, 2018), yet assessing its effectiveness remains challenging due to a lack of strong evaluative frameworks. Existing evaluations tend to emphasize process quality, such as participation and consensus-building, with less attention to how collaborative outputs are translated into implementation (Kinzer, 2016). Where plan implementation has been evaluated, scholarship has focused on examining conformance or performance (Lyles, 2016), or effectiveness (Li et al. 2022), but rarely connects collaborative process characteristics to downstream implementation outcomes. Collaborative governance (Emerson & Nabatchi, 2015), and policy implementation literatures offer relevant theoretical insights for understanding the factors that shape plan development and enactment, yet these remain largely siloed from planning evaluation frameworks. The disciplinary disconnect limits understanding of the value of collaboration for generating desired planning outcomes.

I present a systems-based assessment framework that integrates insights from collaborative planning, collaborative governance, and policy implementation scholarship. The framework conceptualizes collaboration as a process that produces outputs (in this case, a plan) with characteristics that shape implementation, such as goal clarity, a shared theory of change, legitimacy, institutional design, and incentives for implementation. Plan implementation is then characterized as an ongoing process shaped by key drivers, including actor capacity, resource availability, institutional arrangements, political support, and adaptability that feed back to shape outcomes and the system context.

The framework is applied to a multi-jurisdictional, consensus-based planning process for the Central Wasatch Mountains that sit between Salt Lake City and Park City, Utah. Drawing on interviews and document analysis, I examine how elements of the resulting Mountain Accord Charter have been translated into action over the past decade. Findings demonstrate that which plan elements advance, and how, depends on the interplay of process quality, output characteristics, and implementation drivers, illuminating conditions under which collaboration produces meaningful change.

My research makes three contributions. First, it bridges collaborative planning, collaborative governance, and policy implementation scholarship that have developed largely in parallel, offering an integrated theoretical foundation for evaluation. Second, by treating plan characteristics and implementation drivers as mediating links between collaboration and the realization of outcomes, it moves evaluation beyond that of solely the collaboration or implementation phase toward a more complete account of how collaboration creates (or fails to create) change. Third, applied to the Mountain Accord, it demonstrates how systems-based assessment can surface the conditions under which collaborative planning translates into durable action, offering practical guidance for practitioners designing and evaluating collaborative processes.

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Key Words: collaborative planning, plan implementation, governance, evaluation

LAND VALUE CAPTURE IN TRANSITION: PLANNING SYSTEM RESTRUCTURING AND POLICY OUTCOMES IN MEXICO CITY

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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Innovative land value capture instruments in Mexico City face social, legal, and institutional challenges that complicate their implementation. On the one hand, the city stands out for incorporating a series of "traditional" fiscal and land value capture instruments into its urban development apparatus (Bolaños et al., 2001; Smolka, 2013). On the other hand, "innovative" land value capture instruments have faced challenges that hinder the city's capacity for conducting urban development. While property tax is reasonably well established, instruments like Contribución de Mejoras (Improvements Contributions) report multiple years with minimum or zero income, and more sophisticated instruments like the Sistemas de Actuación por Cooperación (Cooperative Action Systems) have been questioned and scrutinized by society due to their complex legal structure and opaque operation.

These challenges are further complicated by shifts in the city's institutional and legal architecture. In 2018, Mexico City enacted a new Political Constitution, which set in motion an institutional restructuring with direct implications on the architecture and operation of its planning system. My research aims to understand the challenges and opportunities this institutional restructuring presents for developing and implementing land value capture instruments by asking: What were the main challenges in implementing land value capture instruments between 2012-2018 and 2018-2024? To what extent does new planning legislation enable or limit the implementation of land value capture instruments? I research these questions by examining a series of land value and urban planning instruments implemented during the last two city-level administrations. By bridging literature on urban planning, public policy, law, and grey literature, I examine the mechanisms that prevent land value capture from being implemented and identify the structural and legal conditions that enable its implementation within a renewed planning legal framework.

I employ content analysis and semi-structured interviews with current and former public officials and local experts in urban planning, law, and public finance to understand how different instruments have been deployed and the main challenges of implementing them. I argue that the implementation of innovative land value capture instruments has been hindered by their perceived character as obscure, ad-hoc solutions that fail to fully integrate into a comprehensive long-term planning apparatus. The proposed research is relevant to discussions about how land value capture instruments are governed, regulated, and implemented, as it aims to identify how specific instruments fit within a larger planning system and to shed light on how these interactions facilitate or hinder specific implementation efforts.

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Key Words: Land Use, Land Value Capture, Public Financing, Comprehensive Planning, Mexico City

MAPPING MULTI-LEVEL HEAT GOVERNANCE NETWORKS IN PHOENIX, ARIZONA

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Research-in-Motion Presentation, Research currently in process

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Comprehensive heat governance requires coordinating heat mitigation and management across departments and planning for a hotter future (Meerow & Keith, 2024). The UN released a call for heat action and governance across decision making scales after unprecedented warming in the summer of 2024, citing the need to promote and foster heat resilience across sectors (World Meteorological Organization, 2024). A recent study found that only around 8% of heat planning literature addresses heat governance, highlighting a significant gap in research on how heat is managed and institutionalized (Keith et al., 2019). Heat actions, planning, and policy are still in their infancy in many cities compared to the policy and planning investments for other climate hazards (Keith & Meerow, 2022; Meerow & Keith, 2021). While scholars have recently begun exploring heat governance—the actors, strategies, processes, and institutions that address extreme heat (Keith et al., 2021)—the field remains underdeveloped. Most cities do not have dedicated heat plans, and even fewer integrate heat resilience across governance levels and sectors. This fragmentation is not only a city-level problem. More integrative approaches to addressing heat are needed across vertical levels of government (Mahlkow and Donner, 2017), however, conflicting responsibilities between levels of governance lead to an overall loss for heat risk reduction (Mahlkow et al., 2016). Understanding where coordination succeeds, and where it breaks down, requires looking closely at how governance unfolds in practice.

This research addresses critical gaps in understanding how extreme heat is governed and how it compares to other hazard governance, focusing on a multi-level network analysis within a single, influential case: the City of Phoenix. Using a survey and interviews to inform a social network analysis, and meeting attendance data over 4 years, we ask two questions: 1) What is the collaborative governance structure in a state with dedicated heat officials and what actors are most central to efforts to address heat? What actors are excluded? and 2) How does heat governance compare to other well-established hazard governance examples, like flooding?

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Key Words: multi-level governance, heat, resilience, social network analysis

MAPPING THE WORKFORCE LANDSCAPE IN ECOLOGICAL RESTORATION: SKILLS, TRAINING, AND EMPLOYMENT PATTERNS ACROSS ECOSYSTEMS, INDUSTRIES, AND REGIONS

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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A common argument in policy debates is that investment in natural infrastructure conflicts with economic development. However, evidence on the economic impacts of ecological restoration challenges this claim. In the U.S., BenDor et al. (2014) estimate that restoration-related employment is approximately 126,000 jobs, which is comparable to carbon-intensive industries, such as oil and gas extraction (205,000 jobs). Moreover, the 2021 Bipartisan Infrastructure Law allocated $3.5 billion to environmental remediation, often considered part of ER. (Thomas et al., 2024; EPA, 2022). This aligns with the longstanding focus of state and local economic development strategies on job creation (Deller, 2021).

This study aims to investigate 1) the workforce landscape, specifically, how are firm-level workforce training, organizational strategies, and regional institutional partnerships associated with the distribution of ecological restoration employment across ecosystems, industries, and regions? 2) how do firms, whose ecological restoration work is driven by state and local forces, differ in employment and workforce development? 3) what are the economic impacts of ecological restoration on employment wage, if any?

To answer our research question, we distributed survey to firms and organizations conducting ecological activities across the U.S. from mid-February to end of March in 2026. Since there is no industry code for ER in the North American Industry Classification System (NAICS), it is not possible to estimate economic impacts directly, as is for industries with data available from federal agencies. Collecting survey data, thus, improves the accuracy of economic impact estimates.

The target population is establishments (including nonprofit organizations) that conduct ER work, supply materials, or provide administrative services for ER in the United States (excluding Puerto Rico). We draw on five sampling frames: Ecological Restoration Business Association (ERBA), Environmental Markets Conference (EMC) participants, federal contractors, private industry establishments filtered by NAICS codes, and snowball sampling. Samples are de-duplicated from the frames. Data Axle provides verified email contacts to match with the federal contractors and firms sampled from the NAICS code.

With sensitive questions, we selected a web-based survey mode to minimize measurement error (Lind et al., 2013; Turner et al., 1998). A dedicated survey email address is created for respondents to ask questions during the survey. Other key design features to minimize total survey error include pre-testing to detect satisficing and optimizing program settings; launch survey in early 2026 to align with end of year calculations, which establishments will compare to previous year. In this abstract firms and establishment are used interchangeably. The questionnaire consists of two sections: the first collects revenue-based data; the second asks workforce-related topics, including ER activities, ecosystem types, and strategies for training, hiring, recruiting, retention, and partnerships with local institutions.

We will conduct descriptive analysis of the geographic distribution of ER employment using survey data collected in 2026. We will analyze trends in employment levels by comparing the 2026 data with the survey data from BenDor et al. (2014). Then, we will perform thematic analysis of reported workforce challenges and hiring needs. To answer

the third research question, we will implement the Input–Output model using the IMPLAN modeling platform to estimate the employment and wage impacts of ER activities across industries.

Ecological restoration projects generate employment within the regions where projects are implemented. Results from this study can inform workforce development programs, support more targeted workforce investments and budgeting decisions while enhancing environmental resilience.

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Key Words: workforce, ecological restoration, economic development, regional, natural infrastructure

MEASURING THE HOUSING PRODUCTION IMPACT OF STATE LAND USE REFORM IN OREGON

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Research-in-Motion Presentation, Research currently in process

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Over the last 10 years, the Oregon legislature has passed several bills mandating that cities reform zoning codes and processes to allow for diverse housing unit types, waive development standards, and streamline the approval processes for development. Key questions remain regarding whether state level zoning reform has a meaningful impact on housing production, and how new units meet goals for accessibility, ownership, and affordability.

Recent scholarship from Portland, Minneapolis, and California examines the impact of state zoning reform on housing production. (Kuhlmann, 2021; Dong, 2024; Wegmann, Chapple and Wofford, 2025)

In this study, we (1) estimate the number of housing units facilitated by policy changes enacted through recently adopted legislation; (2) assess aspects of accessibility, affordability, and homeownership for newly produced units; and (3) project the projected number of units potentially facilitated by statutory amendments not yet adopted.

This research relies on analyzingtracks changes in housing production fromagainst implemented policies for a subset of Oregon cities on implemented policy to document production impacts and extrapolate trends for other cities and other bills. Researchers will rely on interviews, development code analysis, and development trends to create a typology of cities. GIS and sales data will provide information about zoning, typology, tenure, zoning, cost, and affordability.

This preliminary research will provide valuable insights into whether state level zoning reform is impacting housing production, how much, and in what way. The analytical contributions of this project will provide insights for other scholars seeking to estimate the impacts of zoning reform on production.

Citations:

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Key Words: State planning, Oregon, Zoning, Housing production, Governance

PLACE-BASED URBAN LAND MODELING FOR COASTAL NORTH CAROLINA

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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Urban land change models leverage historical data to analyze past trends and generate spatially explicit forecasts of development. These forecasts support a wide range of academic and applied uses, but their utility depends heavily on model design (Kim et al. 2020). Recent advances in data availability and geocomputation have motivated the use of increasingly sophisticated quantitative approaches, including machine learning and advanced computational architectures (e.g., Tepe and Safikhani 2023). While such methods often improve predictive performance, they may also obscure the underlying theories and processes driving land change, limiting interpretability and transparency. As an alternative, this project advances a theory-driven approach to urban land change modeling. Although many land change models rely on a common set of input variables (Kim et al. 2020), urbanization is inherently place-specific, with drivers of change that vary across urban–rural gradients and regional contexts (Richter and Bixler 2022). Model inputs therefore must be locally relevant and may operate unevenly across space. Crucially, land-use policy is an important driver of regional change, but one that is not frequently included in land change models due to its nuance and challenges of measurement. To address this complexity, we develop a place-based, policy-infused model of urban land change for the Wilmington, North Carolina metropolitan region.

Place is a multidimensional concept encompassing both mechanistic processes and interpretive experiences (MacGillivray and Franklin 2015). Some drivers of land change can be empirically measured, yet their relevance varies by context. For example, slope is a common land change variable but likely plays a negligible role in the flat coastal landscape of Wilmington. This project combines conventional quantitative evaluation of commonly used modeling inputs with a mixed-methods design that incorporates, via interviews and focus groups, the experiential knowledge of local planners and developers. Rather than relying solely on a deductive, hypothesis-driven framework, this inductive approach identifies locally salient drivers of development that may be uncommon or unique to the region and supports the delineation of sub-regions characterized by distinct growth processes. The insights of local stakeholders will be especially important for incorporating local land use policy into model design. Quantitative and qualitative components will be integrated iteratively as both mechanistic and interpretive understandings of urban growth evolve.

Urban land change modeling will be implemented using the open-source FUTURES model (Meentemeyer et al. 2013), a flexible and modular platform that supports multiple configurations and model iterations. Land change data will be derived from the Annual National Land Cover Database (1985–2025), supplemented with publicly available spatial inputs such as road density and distance to employment centers, as well as locally sourced planning and utility data where available. Rather than producing a single prediction of future development, this project identifies multiple plausible pathways of urban change aligned with alternative conceptualizations of urban processes. We anticipate that sub-regional patterns will reflect both gradient- and amenity-driven dynamics, particularly given the influence of coastal amenities north and south of Wilmington. We also expect some differentiation due to distinct policy environments in the three counties. While land change models are valuable decision-support tools – in this case they will be used as part of a broader project on co-produced land use scenarios - this research contributes to the refinement of urban land change theory. In the context of rapidly expanding AI modeling, this project demonstrates the importance of place-based, mixed-methods approaches for advancing understanding of urban systems from a social–ecological perspective.

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Key Words: Urban Expansion, Mixed Methods, Coastal Resilience, urban land change, Place-Based Modeling

QUANTIFYING THE HOUSING SUPPLY, ENERGY SAVINGS, AND CLIMATE RESILIENCE TRADEOFFS FROM MODEL ENERGY AND BUILDING CODE ADOPTION

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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The growing interest in improving housing affordability by loosening constraints on housing production is sometimes placed at odds with the development of energy efficient and climate resilient housing. Building and energy codes are two such regulatory schemes which, despite their empirically demonstrated capacity to reduce energy expenditure and disaster damage costs (Simmons et al., 2018; Grant & Kotchen, 2013), have been identified as potential impediments to growing housing supply by increasing the regulatory costs for builders. Specifically, certain empirical studies have identified that energy and building codes reduce building permit counts and decrease the viable square footage sizing for the lower end of the income distribution (Muzio et al., 2025; Bruegge et al., 2019).

In this research, we study the causal relationship between model building and energy code adoption and outcomes such as housing supply, utility costs, electricity usage, and disaster-related property damage. Our research expands on past research by focusing specifically on a multi-state comparison of model building codes, expanding the time horizon of analysis to 2006-2024, and directly contrasting between key housing supply costs and climate hazard savings effects.

We focus on the International Code Council's (ICC) International Energy Conversation Code (IECC) energy efficiency model codes, and its single and multi-family model building codes, including the International Residential Code (IRC) and the International Building Code. We construct a multi-year household level panel data set of US states across sources including US Census microdata, US Census Building Permits Survey (BPS), the Department of Energy (DOE) Building Energy Codes Program, and the Federal Emergency Management Agency (FEMA) Building Code Adoption Tracker. Using the staggered policy adoption of model energy and building codes across various states, we analyze the effects of model code adoption across states in the US through a differences-in-differences (DID) event study. Preliminary results align with past research, finding a negative effect on building permit count, but further analysis will explore heterogenous effects across various income markets, types of housing (single- and multi-family), and climate zones, and contrast this effect with energy and climate damage savings.

This study contributes to planning scholarship by quantifying and contrasting the potential negative effect of more stringent building and energy codes on housing supply with the prospective energy and climate hazard savings. This research directly informs policy design by clarifying specific tradeoffs that policymakers must consider in structuring federal and local incentive programs for promoting energy efficient, climate resilient, and affordable housing, including DOE's Energy Efficiency and Conservation Block Grant, FEMA's Building Resilient Infrastructure and Communities (BRIC) grant program, and state government stretch codes.

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Key Words: Energy Codes, Building Codes, Housing Supply, Climate-Resilient Housing

SPATIAL STRUCTURE AND INFLUENCE: HOW REGIONS USE SOFT POWER TO SHAPE LOCAL HOUSING AGENDAS

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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Regional governments are increasingly asked to shape local housing outcomes despite lacking formal land-use authority, creating a governance problem. This lack creates tension in the form of influence without statutory power (Basolo & Hastings, 2003; Margerum, 2011; Norris, 1994). It reflects the classic distinction between power and authority where actors may exercise influence without the formal, legitimized right to do so (Uphoff, 1989). Regional modalities of influence, in the form of tools, vary widely across regions and are products of the spatial structures that typify their region (Feiock, 2009). I argue that spatial structure – both governance fragmentation and the centricity of agenda setting power – explains variation in the tools regional governments deploy to shape local housing agendas.

To investigate these regional variations, this research relies on a cross case analysis of three similar Councils of Government within Oregon. This analysis examines the differences in the tools the regional governments use to influence housing agendas through stakeholder interviews, content analysis, and measures of spatial structures. I will employ a thematic analysis in interviews with regional and local planning staff to learn more about their tool selection, purpose, and impact on local agendas. A content analysis will examine the published document material from regional governments pertaining to housing policy and tools, aiding in triangulating themes from the interviews. The spatial structure analysis will frame the regional context in terms of the level of governance fragmentation and dispersion of power.

Preliminary Findings reveal that the level of governance fragmentation and power centricity influence the tools regional governments use to affect housing policy agendas. This finding contributes to governance scholarship by demonstrating that spatial structure, rather than statutory design alone, conditions regional influence modalities. Regions with more centralized power can exercise stronger agenda-setting influence when their agenda aligns with dominant jurisdictions, as alignment with dominant jurisdictions grants access to resources and legitimacy. Fragmented regions experience weaker influence capacities; divergent local priorities limit regional agenda formation even when tools exist. In response to these forces and exemplifying the concept of power without authority, I find that trust emerges as the core enabling condition for any influence modality. The power to set agendas when a regional government lacks authority comes after establishing trust and needs legitimization by powerful stakeholders. Taken together, these results provide new evidence that spatial structure — not statutory design — explains why some regions can coordinate housing planning while others struggle.

This research is timely as states increasingly rely on regional entities to facilitate housing planning without expanding formal authority. For practitioners, it helps planners understand regional-local dynamics by elevating the role that spatial structures play within intergovernmental interactions. It reveals how structures shape intergovernmental relationships and influence capacity and offers a framework for understanding tool selection as a governance behavior. Greater fragmentation limits the available influencing modalities while diffusion of local power constrains their effectiveness. This research demonstrates that regional power is rooted in trust that is legitimized by powerful members. Yet, this trust itself needs prior establishment before power can be wielded to influence agendas. It shows how governance power without statutory authority is constructed through soft governance modalities.

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Key Words: Regional governance, Spatial structure, Agenda setting, Housing policy, Power dynamics

URBAN PLANNING NON-STATUTORY POLICY CONSTRUCTION: ENVISAGING A REFINED INTERPRETIVE APPROACH

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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This research project explores how non-statutory planning policies should be interpreted. Policies are increasingly relied upon in urban governance given they bypass the formalities of statute. Proper interpretation of these soft law documents is necessary to ensure they are applied correctly and consistently to land-use planning decisions across different levels of government.

There has been insufficient study on planning policy generally and policy interpretation specifically. Policies have a public function in that they are used to make administrative decisions. These documents have a distinctive context compared to law as they are often drafted by urban planners without legal input. They are written with accessibility in mind, including reliance upon diagrams and images.

Australian jurisdictions generally apply established principles of legal interpretation to policy documents. This PhD research considers whether such an approach is appropriate. If yes, how can planners drafting policy be better informed of their existence? If no, what should be used in their place?

There are distinctions between the nature of planning and legal epistemology which arise in interpretation, such as the pragmatism of the former (Healey 2009). The tensions are ultimately a function of the uneasy marriage of planning and law, and of the executive and judicial arms of government.

The research is underpinned by a legal analysis and semi-structured interviews. The legal analysis comprises of a qualitative chronological case law analysis comparing several Australian States. This is depicted visually using citation link graphs. The interviews were undertaken with key informants including planners, barristers and academics.

The findings demonstrate that principles of statutory interpretation are not fit-for-purpose in interpreting non-statutory policies. Planning terms such as ‘amenity’ or ‘public interest’ include a vagueness unfamiliar to law (Alexander 2010). This is not to say they are indeterminate, only that the outer extent of their definitions are unclear (Moroni et al. 2020). None of the selected jurisdictions have tailored principles of policy interpretation. Developing such principles would promote consistency and certainty. Without them, it is tempting to revert to treating policy as if it were law. The principles could accommodate a more flexible reading, accounting for the non-legal authorship and practicable purpose. The findings suggest that the interpretation of planning terms in policies should be the responsibility of planners – who are after all the “experts in policy intent” (Rowley 2020, p.401) - rather than being left to lawyers (Blomley 1989).

This research promotes the intent of policies by demonstrating how their unique context can be considered in interpretation. It ensures planners retain ownership over planning objectives and meaning. It is hoped that this contributes to improved land-use outcomes.

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Key Words: Planning, Policy, Interpretation, Governance, Law

WHEN THE MILITARY MEETS LOCAL PLANNING: EVIDENCE FROM U.S. COMPREHENSIVE PLANS

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Track 6: Land Use Policy, Governance and Law
Research-in-Motion Presentation, Research currently in process

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The relationship between military installations and surrounding communities is closely intertwined with multiple dimensions of local planning. Land use incompatibility, in particular, presents a key planning challenge that requires coordinated intervention. In this context, the Office of Local Defense Community Cooperation (OLDCC) has operated the Installation Readiness (IR) program (formerly the Joint Land Use Study, JLUS), a needs-based grant program that encourages local communities and military installations to collaboratively diagnose encroachment issues and adjust local land use regulations.

This study evaluates the integration of planning content related to military installations in comprehensive/general plans of U.S. local governments hosting such installations, focusing on the planning domains in which they appear and the extent and form of their incorporation. It also examines whether and how this level of integration is associated with participation in the JLUS program. Two considerations motivate the focus on comprehensive plans. First, JLUS has called for the incorporation of land use compatibility recommendations into local comprehensive plans (Appel & Smith, 2011; Office of Economic Adjustment, 2006). Second, when reflected in comprehensive plans, such guidance may extend beyond land use into other planning domains to ensure plan-wide consistency.

Methodologically, a Plan Quality Evaluation (PQE) approach (Berke & Godschalk, 2009; Berke & Kaiser, 2006) is employed to conduct a content analysis of approximately 40 comprehensive plans nationwide, including jurisdictions with and without JLUS participation. Relevant plan content is coded across these documents to develop a Military–Plan Integration Index, and the association between this index and JLUS participation is statistically analyzed. JLUS participation is defined as cases in which a local government completed a JLUS and subsequently updated its comprehensive plan.

This analysis extends prior work by Clanahan (2021), which evaluated JLUS outcomes primarily based on participant perceptions, by capturing how the effects of federal intervention are institutionalized in local planning frameworks. Furthermore, it provides empirical evidence on the governance dynamics through which actors beyond local planning authority, including military installations, shape local land use decision-making, thereby advancing understanding of intergovernmental planning.

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Key Words: Comprehensive Plans, Land Use Incompatibility, Multi-level Governance, Military Planning

Track 7 – Food Systems and Community Health

Track 7 Individual Paper Presentations

A MIXED QUALITATIVE APPROACH TO UNDERSTAND TOP-DOWN AND BOTTOM-UP FOOD SYSTEMS PLANNING

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Track 7: Food Systems and Community Health
Individual Paper Presentation

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Food insecurity among immigrants is a global concern. In Canada, nearly half of Black households and over one-third of recent immigrants experience food insecurity. Despite this, food systems planning and climate resilience strategies often rely on top-down frameworks that overlook immigrant lived experiences and the socio-spatial conditions shaping food access. In response, this research adopts a socio-spatial approach and develops participatory methods to capture relational and experiential knowledge more inclusively and respectfully (Corburn, 2017).

Focusing on Toronto, this research addresses three questions: (1) What socio-spatial barriers and facilitators shape food access among food-insecure immigrants in two neighbourhoods—Dorset Park (suburban) and Moss Park (inner-city)? (2) How do community-based food initiatives operate, and what insights do they offer for inclusive planning policy? (3) How do formal food systems planning and resilience strategies compare with community-based approaches, and how can these insights inform a scalable and responsive planning prototype?

Each research question is addressed using a complementary qualitative method: (1) participatory food asset mapping workshops with immigrant participants; (2) semi-structured interviews with planners, public health actors, researchers, and community-based organizations (CBOs); and (3) a multi-level policy review across federal, provincial, and municipal scales. Drawing on critical mapping approaches (Bennett & Vokoun, 2023), the study integrates spatial and relational understanding of food systems across scales.

Food asset mapping reveals five key socio-spatial barriers: mobility constraints; housing forms that limit food storage and growing; challenges navigating retail environments, digital systems, and time scarcity; gentrification and displacement of retail food outlets; and social exclusion, including limited access to culturally appropriate foods, high costs of school meals, and safety concerns that restrict access to third places. Five facilitators also emerge: proximity to food resources; collective growing spaces; informal neighbourhood networks and digital social infrastructure; multi-service CBOs; and culturally responsive programming.

Findings from mapping and interviews identify six core areas of community-based food systems planning: mapping and information coordination; place-based food infrastructure; culturally responsive food access; social connection; economic inclusion; and participatory governance and advocacy. These practices demonstrate how CBOs act as de

facto planners, advancing equity through relational, place-based, and culturally grounded approaches that contrast with government-led frameworks.

Policy analysis reveals limited explicit attention to immigrant food insecurity and weak coordination across governance levels. Federal and provincial frameworks emphasize agricultural systems and market stability, while municipal policies demonstrate more place-based and equity-oriented strategies.

Critical mapping highlights top-down approaches that prioritize technical evidence, availability and individualized responsibility, while bottom-up approaches center on lived experience, agency and collective care.

This study contributes to planning scholarship by advancing participatory food asset mapping that centers marginalized community voices (Soma et al., 2022). Theoretically, it integrates the five dimensions of food security (5As: Availability, Accessibility, Adequacy, Acceptability, and Agency) (Centre for Studies in Food Security, 2026) to extend community food assessment methodologies (Pothukuchi, 2004). Methodologically, it demonstrates a "crystallization" approach to understanding complex food systems through multiple qualitative lenses. For planning practice, the research offers a framework to align policy with community knowledge, ultimately co-designing more equitable, culturally responsive food systems.

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Keywords: Immigrant Food Insecurity, Food Asset Mapping, Health Equity, Urban Food Systems, Toronto

DAILY ROUTINE SYSTEMS AND ADHD: A NETWORK-BASED ANALYSIS OF YOUTH MOBILITY PATTERNS AND F90 OUTCOMES IN SOUTH KOREA

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Track 7: Food Systems and Community Health
Individual Paper Presentation

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Behavioral and emotional disorders typically diagnosed in childhood and adolescence (ICD-10 F90), particularly attention-deficit/hyperactivity disorder (ADHD), represent a major and growing concern for youth mental health, with lasting implications for cognitive development and educational trajectories. Recent evidence highlights the sensitivity of youth mental health to environmental and behavioral conditions, yet urban research has largely focused on local contexts or aggregate activity levels, offering limited insight into how different daily routine structures shape mental health outcomes.

For children and adolescents, daily life is highly structured around repeated movements among home, school, and private educational institutions, with more limited engagement in leisure and open spaces. These routine activity patterns are not equivalent: some are characterized by compressed schedules centered on school–academy–home sequences with extended evening activity, while others incorporate more balanced routines that include restorative environments. This perspective is consistent with evidence on the strong regularity of human mobility (González et al., 2008), the organization of cities as mobility-based systems (Bassolas et al., 2019), and emerging views of urban space as interconnected behavioral networks rather than isolated places (Liu et al., 2024). In addition, exposure to natural and green environments has been shown to play a protective role in mental health outcomes (Engemann et al., 2019). Building on these insights, this study conceptualizes youth mobility as a set of spatially embedded routine systems.

Using monthly data from 2018 to 2024 across South Korea, we combine administrative records of F90-related healthcare visits with anonymized pedestrian volume derived from mobile data. To identify underlying routine structures, we construct functional networks at the 100 m grid level using lagged dependence measures derived from detrended cross-correlation analysis (DCCA) and dynamic correlation models, where connections capture temporally correlated activity patterns across locations. Rather than interpreting these networks as diffusion pathways, we use their structure to identify groups of locations that exhibit similar and recurring temporal activity signatures, which we interpret as distinct daily routine systems.

We characterize these systems based on their functional signatures, distinguishing patterns dominated by intensive school–academy–home sequences with extended evening activity from those incorporating greater exposure to leisure and open-space environments. We then examine whether locations embedded in different routine systems exhibit systematically different levels and temporal dynamics of F90-related healthcare use using panel regression models with time fixed effects. In addition, we assess whether changes in activity patterns within specific routine systems are temporally associated with subsequent changes in F90 outcomes through lagged association models, capturing how shifts in daily structure relate to youth mental health.

To interpret the determinants of these patterns, we employ explainable machine learning. Using gradient boosting models and SHAP values, we analyze how urban characteristics—including population density, concentration of schools and private academies, land-use composition, and residential structure—are associated with locations' membership in different routine systems and their corresponding mental health outcomes.

By integrating network-based identification with explainable artificial intelligence, this study advances a behaviorally grounded, systems-oriented perspective on urban mental health. It demonstrates that not all daily mobility patterns are equally beneficial and that routine structures characterized by sustained educational intensity and limited restorative activity are associated with less favorable ADHD-related outcomes.

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Keywords: Youth mental health, ICD-10 F90, Routine activity systems, Mobility networks, Urban environment

DOES SOCIAL TRAVEL MATTER? UNPACKING THE NUANCED ROLE OF TRAVEL FOR HEALTH IN OLDER ADULTS

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Track 7: Food Systems and Community Health
Individual Paper Presentation

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Transportation plays a critical role in supporting health, independence, and social participation among older adults. While travel has traditionally been conceptualized as a derived demand, emerging research highlights the positive utility of travel, emphasizing that discretionary travel can generate intrinsic well-being benefits beyond reaching destinations (Hook, 2025). At the same time, research on aging and age-friendly communities underscores the importance of social connectedness as a central determinant of well-being, shaped by opportunities for participation, meaningful interaction, and reciprocity within communities (Emlet & Moceri, 2011; Menec, 2017). Despite these advances, limited empirical work has examined how different types of travel contribute to health through social mechanisms, particularly among older adults.

Using data from a statewide survey of Utah residents aged 50 and older (n = 724), this study examines how travel behavior relates to self-rated health, with a focus on differences between necessary (life-maintenance) and discretionary (social and leisure) travel. It further investigates whether the relationship between discretionary travel and health is mediated by social connectedness. Regression models are used to estimate these relationships while controlling for sociodemographic and geographic factors.

Findings indicate that discretionary travel frequency is positively associated with both social connectedness and self-rated health, whereas necessary travel shows weaker or inconsistent associations. Mediation analysis suggests that social connectedness partially explains the relationship between discretionary travel and health, supporting the notion that mobility enables participation and meaningful interaction, which in turn enhances the health of older adults. These findings align with prior research highlighting the role of social participation and engagement in fostering quality of life and aging in place, particularly through opportunities for reciprocal and meaningful connections within communities.

The results suggest that enabling access to discretionary travel, including social and leisure activities, may be as important as facilitating essential trips. Policies and mobility systems that expand opportunities for socially oriented travel can strengthen social connectedness, support healthy aging, and reduce disparities in well-being. By distinguishing between travel purposes and identifying underlying social mechanisms, this study contributes to a more nuanced understanding of the role of mobility in shaping health outcomes among older adults.

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Keywords: Older Adults, Travel Behavior, Health, Social Connectedness, Health

FROM SPATIAL ACCESSIBILITY TO PSYCHOLOGICAL USABILITY: A STRUCTURAL EQUATION MODEL OF CITIZENS' WILLINGNESS TO USE PUBLIC AEDS IN NANJING, CHINA

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Track 7: Food Systems and Community Health
Individual Paper Presentation

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Public facility planning has conventionally been evaluated through metrics of supply, proximity, and coverage, yet the effectiveness of life-saving infrastructure also depends on whether ordinary residents are psychologically prepared to act in emergency situations. This paper reframes automated external defibrillators (AEDs) as a planning problem that extends beyond siting and density: even where devices are present, citizens may still hesitate to use them because of limited trust, weak perceived competence, and uncertainty about institutional protection. Existing studies have shown that public-access defibrillation improves survival after out-of-hospital cardiac arrest, and that proximity to an AED matters. At the same time, research on public response suggests that confidence, training exposure, and perceived legal risk shape willingness to intervene. Building on this literature, this paper asks three questions: What psychological factors most strongly influence citizens' willingness to use public AEDs? Through what mechanisms do these factors operate? And how should planners respond if accessibility in physical space does not translate into usability in practice?

Grounded in the Theory of Planned Behavior and adapting it to the planning of public emergency infrastructure, the study develops a structural equation model (SEM) using survey data collected from residents in the eight central districts of Nanjing, China. A total of 221 questionnaires were distributed online and offline, of which 203 were valid. The model includes four latent constructs measured by Likert-scale items: perceived necessity, trust, training willingness, and willingness to use AEDs. Measurement quality is acceptable to strong (overall Cronbach's alpha = 0.856; KMO = 0.715), and confirmatory factor analysis indicates excellent model fit ($\chi 2/df = 1.307$, CFI = 0.997, TLI = 0.995, RMSEA = 0.039).

The results challenge a common planning assumption that increasing public recognition of an infrastructure's importance is sufficient to activate use. Perceived necessity does not have a statistically significant direct effect on willingness to use AEDs ($\beta = 0.105$, $p = 0.319$). By contrast, trust in device reliability and institutional protection has a significant positive direct effect ($\beta = 0.297$, $p < 0.01$), and training willingness—used here as an indicator of perceived behavioral control—also has a significant positive direct effect ($\beta = 0.267$, $p < 0.001$). In addition, perceived necessity significantly increases training willingness ($\beta = 0.338$, $p < 0.01$), as does trust ($\beta = 0.328$, $p < 0.01$). Bootstrap mediation tests further show that training willingness fully mediates the relationship between perceived necessity and use intention (indirect effect = 0.090, 95% CI [0.016, 0.212]) and partially mediates the relationship between trust and use intention (indirect effect = 0.088, 95% CI [0.013, 0.163]). The key implication is that valuing AEDs is not enough; residents are more likely to intervene when they believe the device will work, believe they will be protected, and believe they can competently use it.

The paper contributes to planning scholarship by shifting the evaluation of public facilities from spatial accessibility to psychological usability. For practice, it argues that AED planning should integrate visible maintenance and status disclosure, legal reassurance at points of deployment, routine neighborhood-based training opportunities, and monitoring systems that connect infrastructure provision with observed readiness and participation. More broadly, the study shows how behavioral theory can expand infrastructure planning from a spatial logic of provision to a human-centered logic of capability and action.

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Keywords: public facility planning, AED, psychological usability, TPB, SEM

GROWING RESILIENCE: TRADITIONAL FOODS, SOCIAL CAPITAL, AND FOOD SECURITY IN O‘AHU DURING THE PANDEMIC

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Track 7: Food Systems and Community Health
Individual Paper Presentation

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Background

The COVID 19 pandemic disrupted food systems across the United States and increased food insecurity (Raj et al., 2022). We use the pandemic as an illustrative example of large scale shocks to the agri food supply chain to understand the role of social capital, networks, access to cultural and traditional foods, and emergency response in addressing food insecurity during disasters. Post disaster research provides a starting point for understanding food security implications. For example, new research illustrates that, in the aftermath of a disaster, local supply chains are impacted, with bridges, road networks, and tunnels acting as chokepoints that reduce food availability and access through traditional grocery retail channels (Rosenheim et al., 2024). Multiple studies highlight that those displaced during disasters—especially renters—are at greater risk of becoming food insecure compared to the rest of the population (Clay et al., 2018), but individuals with high social connectedness tend to have lower odds of food insecurity (Clay et al., 2018). While hazards and disaster research has provided some sensibility of how food security is affected, there are no empirical studies that examine these factors within a unified modeling framework in the U.S. context. In this paper, I build and test a conceptual model of household food security that integrates multiple factors known to affect food security in a disaster, to expand our understanding of recovery and community resilience.

Research Design and Methodological Approaches

This paper relies on an exploratory cross sectional research design to examine how household level food security was affected during the COVID 19 pandemic and which factors most meaningfully had a positive effect. The research team collected survey data over a 5 month period, from January 15 to June 15, 2025, that captured the lived experiences, perspectives, and challenges faced by a diverse range of individuals across the O‘ahu food system, including consumers, producers, workers, and other community members affected by COVID 19. We then built a conceptual model based on the literature that combines multiple factors contributing to disaster recovery into a single empirical model. We use a mixed effects model to test the combined and relative effects of the following factors: (a) lost income due to the pandemic; (b) recovery assistance from emergency responders (FEMA) as well as friends and neighbors; (c) personal network characteristics (size, network density, proximity, length of relationship); (d) social capital (civic engagement, contact with neighbors, trust); (e) household characteristics; and (f) access to and knowledge of growing traditional foods.

Results

We hypothesize that people who had access to and knowledge of growing traditional foods fared better than others; that larger households suffered more severe food insecurity; and that social infrastructure was critical.

Takeaways

Much of the climate adaptation literature overlooks food systems related responses. As disasters become more frequent and extreme, with food security affected in both sudden onset and slow emerging crises, it is imperative that planners and local governments understand the leverage points needed to build community adaptive capacity and long term resilience.

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Keywords: social capital, personal networks, emergency response, food in-security, COVID-19

HOUSING PRECARITY AND CARDIOMETABOLIC HEALTH IN LATER LIFE: VARIATION ACROSS HISTORICAL REDLINING GRADES IN THE UNITED STATES

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Individual Paper Presentation

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Housing is a key social determinant of health that shapes material living conditions, financial security, opportunity, and exposure to structural disadvantage (Bentley et al., 2025). In later life, housing precarity is especially consequential because older adults often face heightened vulnerability to economic strain, residential instability, caregiving transitions, and chronic disease burden (Gu et al., 2023). Although prior research has linked housing insecurity and neighborhood disadvantage to adverse health outcomes (Mawhorter et al., 2023), less is known about whether the health effects of precarious housing are conditioned by the historical geography of structural racism. In the United States, the legacy of Home Owners' Loan Corporation (HOLC) redlining contributes to patterns of neighborhood disinvestment, housing inequality, and uneven access to health-promoting resources (Nardone et al., 2020). This study examines whether associations between housing precarity and cardiometabolic health among older adults differ across historical redlining grades in the United States.

Using longitudinal data from the Health and Retirement Study (Juster & Suzman, 1995), this study investigates the onset of three major cardiometabolic conditions in later life: diabetes, stroke, and hypertension. Housing precarity is conceptualized as a multidimensional individual-level exposure captured by housing tenure, housing value, and housing type. Specifically, the study considers whether respondents are homeowners or renters, the economic value of their housing, and whether they reside in housing types such as single-family homes, apartments, or mobile homes. Neighborhood historical context is measured using HOLC grades, distinguishing neighborhoods graded A, B, C, and D, along with nongraded areas coded separately. By integrating individual-level longitudinal survey data with neighborhood-level historical redlining measures, this study situates later-life health within a broader framework of cumulative structural inequality. Analytically, the study uses event history models to estimate the associations between housing precarity indicators and the hazard of onset of each cardiometabolic condition, while adjusting for relevant demographic, socioeconomic, and health-related covariates. Interaction terms between housing precarity measures and historical redlining grades are included to assess whether these associations vary across neighborhood historical contexts.

Potential findings may show that more precarious housing circumstances, including renting, lower housing value, and residence in more vulnerable housing types, are associated with a higher hazard of cardiometabolic disease onset among older adults. The study may also find that these associations are more pronounced in historically redlined neighborhoods, especially in areas assigned less favorable HOLC grades, suggesting that the health burden associated with precarious housing is amplified by enduring neighborhood disadvantage. This study contributes to scholarship on aging, housing, and health by linking individual housing precarity to the historical spatial structure of inequality. It advances understanding of how present-day housing conditions and neighborhood histories intersect to shape later-life cardiometabolic health and highlights the importance of historically informed housing and public health interventions for reducing health inequities among older adults.

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Keywords: Cardiometabolic Health, Aging Equity, Historical Redlining, HRS, Housing Precarity

MOBILITY, AGING, AND HEALTHY URBANISM: UNDERSTANDING OLDER ADULTS' TRANSPORTATION EXPERIENCES

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Track 7: Food Systems and Community Health
Individual Paper Presentation

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With the rapid aging of urban populations, transportation has become a crucial factor shaping older adults' social participation and overall quality of life (Ozbilen et al., 2024). Healthy urbanism is an interdisciplinary approach that positions the built environment, urban systems, and planning practice as active determinants of population health and wellbeing (Pineo, 2022). It provides a lens to examine how cities enable or constrain mobility among aging residents.

This study applies this perspective to the transportation experiences and unmet travel needs of older adult women in Kingston, Ontario, a mid-sized, car-oriented Canadian city. It draws on semi-structured interviews with 40 women aged 65 and older, including long-term residents and later-life immigrants. Within the World Health Organization's active aging and age-friendly cities frameworks (WHO, 2002), the study examines how older women navigate daily mobility for essential activities and identifies the barriers they encounter.

Findings show that Kingston's car-oriented urban form is misaligned with the principles of healthy urbanism. Fragmented transit, poor winter pedestrian conditions, and digitally mediated services that exclude those with limited technological literacy limit activity spaces and increase dependence on others. Unmet travel needs result from overlapping spatial, economic, social, health-related, and digital constraints within the urban system. Informal networks, including family and community ties, act as mobility support but also hide unmet needs and create risks when these networks are absent.

These findings highlight greater inequities among older immigrant women, where digital exclusion, fixed incomes, and limited familiarity with services further restrict mobility. Participants identify features of a health-promoting mobility system, including safe pedestrian infrastructure, transit training, subsidized fares, community transport, and accessible ride options. This study argues that cities must move beyond reactive responses and incorporate age-sensitive, gender-responsive, and equity-focused mobility into planning, recognizing mobility as a key determinant of health.

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Keywords: older adults, healthy urbanism, unmet travel needs, mid-sized cities

OLDER PEDESTRIAN SAFETY AS A GENDERED SPATIAL PLANNING CHALLENGE: EVIDENCE FROM SEOUL, SOUTH KOREA

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Individual Paper Presentation

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This abstract is submitted as part of the pre-organized session on "Healthy Urbanism for an Aging Society (HUFAS)" organized by Andy Hong.

Rapid population aging has made older pedestrian safety a central concern in age-friendly and equitable urban planning. Yet most policies targeting this population still assume an “average” older pedestrian and pay little attention to gendered crash risk. Existing studies on older pedestrian safety and gender have largely focused on which group is more frequently injured or on individual-level correlates, with far less attention to how the spatial distribution of crash rates differs by gender and what underlies such differences.

Using 2022-2025 crash data on older pedestrians (aged 65+) in Seoul, South Korea, this study examines whether crashes involving older male and female pedestrians exhibit systematically different spatial patterns and, if so, the extent to which these differences arise from gendered variation in their distribution across neighborhood environments versus heterogeneous effects of the same built environment characteristics and traffic safety interventions. Spatial analysis and regression models are used to identify disparities in crash occurrence between older male and female pedestrians. A nonlinear decomposition technique is then employed to distinguish the share of the gender gap attributable to differences in observed neighborhood environments (the endowment effect) from the share attributable to differences in coefficients (the coefficient effect), that is, differences in how the same neighborhood environmental characteristics are associated with exposure-adjusted crash rates across genders.

The results show that the location and clustering of crashes differ by gender. Crashes involving older female pedestrians are more concentrated in neighborhood commercial and service areas that function as everyday social infrastructure, whereas hotspots for older male pedestrians are more spatially dispersed and more often aligned with major activity corridors. The decomposition further indicates that the gap largely arises because older men and women are distributed across different types of neighborhood environments. It also shows that certain environmental conditions and traffic safety interventions differ in how strongly they reduce crash rates by gender. These findings suggest that age-friendly pedestrian safety policies should move beyond one-size-fits-all approaches and instead prioritize gender-responsive interventions in neighborhood settings where crash risks differ between older men and women.

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Keywords: Healthy aging, Older pedestrians, Gender differences, Spatial inequality, Traffic crashes

PLANNING FOOD SYSTEM TRANSFORMATION: GOVERNANCE NETWORKS AND SPATIAL EQUITY IN STATE FOOD STRATEGIES

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Track 7: Food Systems and Community Health
Individual Paper Presentation

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Across the United States, state governments have increasingly adopted long-term food system strategic plans to address challenges related to food access, agricultural sustainability, economic development, and environmental resilience. These plans aim to coordinate actions across multiple sectors, including agriculture, public health, economic development, and environmental governance, to strengthen regional food systems and improve equity in food access. Despite the growing number of these strategies, there is limited empirical evidence regarding whether they produce measurable outcomes. In particular, it remains unclear why some food system strategies appear to generate improvements in food access and sustainability while others produce more limited impacts.

This research examines this puzzle through a comparative analysis of two state-level policy frameworks: the Michigan Good Food Charter (2021–2030) and the Vermont Agriculture and Food System Strategic Plan (2021–2030). Both states adopted comprehensive ten-year strategies designed to strengthen regional food economies, improve food access, and promote environmentally sustainable agriculture. Because these plans share similar timelines and policy objectives, they provide an opportunity to investigate how differences in governance structures and institutional coordination influence policy implementation and outcomes.

The central research question guiding this study is: To what extent do differences in governance network capacity and institutional coordination explain variation in spatial justice and sustainability outcomes under state-level food system strategic plans in Michigan and Vermont (2021–2030)? While both states pursue similar policy goals, their outcomes may differ depending on the institutional capacity and coordination of the governance networks responsible for implementation.

The study draws on collaborative governance and network governance theories to examine how cross-sector partnerships shape policy implementation in complex planning contexts. Collaborative governance emphasizes coordination among public agencies, nonprofit organizations, private sector actors, and community stakeholders in addressing complex policy challenges. Network governance research highlights how the structure and coordination of governance networks influence policy effectiveness.

To investigate these dynamics, the project employs a mixed-methods comparative case study design. Policy document analysis will examine the Michigan and Vermont strategic plans to identify governance structures and implementation strategies. Spatial analysis will evaluate changes in food access and geographic equity using data from the USDA Food Access Research Atlas. Geographic Information Systems (GIS) methods will assess whether spatial patterns of food access shift during the implementation of the two state strategies. Governance capacity will also be examined through analysis of policy networks and institutional coordination mechanisms involving state agencies, food policy councils, nonprofit organizations, and regional food system coalitions.

The study's preliminary expectation is that differences in governance network capacity, particularly the strength of cross-sector collaboration and clarity of institutional responsibilities, will help explain variation in policy outcomes between the two states. By linking governance theory with spatial analysis and food system planning research, this study contributes to emerging scholarship on food system governance and offers insights for planners seeking to design more effective and equitable food system strategies.

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Keywords: Food systems governance, Spatial Justice, Collaborative governance, network governance, Policy implementation

QUANTIFYING THE PREVENTABLE MENTAL HEALTH BURDEN AND ECONOMIC BENEFITS OF INCREASING GREEN SPACE IN SOUTH KOREA: A HEALTH IMPACT ASSESSMENT APPROACH

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Individual Paper Presentation

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Mental health disorders have emerged as a critical public health challenge in modern societies, with rising prevalence linked to urbanization, social isolation, and environmental stressors. A growing body of epidemiological evidence suggests that exposure to green spaces can mitigate adverse mental health outcomes by reducing stress, promoting physical activity, and enhancing social cohesion. Despite this evidence, quantitative assessments of the preventable mental health burden attributable to increased green space exposure remain limited, particularly in Asian contexts.

Previous health impact assessment (HIA) studies conducted in Europe and North America have estimated the preventable disease burden associated with green space expansion, demonstrating substantial health and economic benefits. However, such evidence is largely absent in South Korea, especially with respect to mental health outcomes. In particular, there is a lack of empirical and quantitative evaluation of how increasing green space exposure could reduce mental health burden, including stress-related outcomes and premature mortality. This study aims to quantify the preventable mental health burden and associated economic benefits of increasing green spaces in South Korea. The core research question is: To what extent can mental health burden be reduced if green space exposure is increased to a target level?

We employed a comparative risk assessment framework following established HIA approaches. Green space exposure was measured using normalized difference vegetation index (NDVI) at a 100m grid resolution, derived from satellite imagery. Population data were obtained from gridded 100m population datasets, allowing for population-weighted exposure assessment. Mental health outcomes were assessed using district-level (si-gun-gu) stress perception rates from the Community Health Survey, along with all-cause mortality data from national statistics. Years of life cost (YLLs) were calculated using standard life tables. Exposure-response functions (ERFs) were derived from meta-analyses linking green space exposure to mental health and mortality outcomes. Counterfactual scenarios were defined based on target NDVI thresholds, and population attributable fractions (PAFs) were used to estimate preventable burdens. Economic benefits were quantified using the value of statistical life (VSL) approach following OECD guidelines.

Our results indicate a significant inverse association between green space exposure and mental health burden. Increasing NDVI to the target level was estimated to reduce stress perception rates by approximately 10-18%, prevent 0.02-0.05 million premature deaths, and reduce YLLs by 0.5-1.2 million years nationwide. The corresponding economic benefits were substantial, with estimated cost savings ranging from USD 8 to 25 billion. Spatial analysis revealed that preventable burdens were unevenly distributed, with urban and high-density regions showing the greatest potential health gains.

These findings provide quantitative evidence supporting the role of green space expansion as an effective public health intervention for mental health improvement. From an urban planning perspective, the results highlight the importance of integrating green infrastructure into high-density urban environments, prioritizing underserved areas with limited access to green spaces, and adopting evidence-based greening targets. This study contributes to

the emerging literature by extending HIA frameworks to mental health outcomes and offers actionable insights for sustainable urban and health policy in South Korea.

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Keywords: Mental Health, Green Space Exposure, Health Impact Assessment, Preventable Disease, Green Infrastructure

SPATIAL DISTRIBUTION OF FRESH RETAIL AND RESIDENTS' CONSUMPTION BEHAVIOR IN THE NEW RETAIL ERA: EVIDENCE FROM SHANGHAI

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Individual Paper Presentation

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In recent years, the development of online and offline fresh retail has exerted a significant impact on the traditional fresh retail industry. Against the background of new retail, communities have become the core scene of fresh retail, and omnichannel integration has been continuously deepened. At present, fresh retail stores in Shanghai are characterized by "online-offline integration and diversified format differentiation", with an obvious trend of spatial agglomeration. Traditional location theories can hardly explain the agglomeration logic under the new retail model.

To further clarify the spatial layout logic of fresh retail and the differences in residents' purchasing behavior at the community level under the new retail context, this study selects Shanghai as the research area. Based on built environment data and questionnaire survey data, this study classifies fresh retail outlets into three categories: wet markets, supermarkets, and e-commerce. Using spatial autocorrelation, OLS regression and GWR regression, combined with the spatial logic of residents' daily usage, this study identifies food desert issues, and analyzes the spatial agglomeration patterns and locational determinants of fresh retail. According to residents' travel demands, this study focuses on the differences in residents' consumption channel choices and usage preferences, and summarizes the online-offline consumption patterns and behavioral disparities from the community perspective.

The results show significant spatial distribution differences among the three types of fresh retail formats: supermarkets are highly concentrated in the central urban area with the strongest dependence on commercial environments; e-commerce presents a circular agglomeration around the inner ring and is sparsely distributed in the core of the Central Activity Zone (CAZ), which balances land rent costs and distribution efficiency; wet markets are the most scattered and widely distributed in space. In terms of location determinants, population concentration, public transportation accessibility and commercial agglomeration exert positive driving effects on all three formats, while traffic nodes and land rent in the core area impose negative constraints. Wet markets are the least sensitive to housing prices; supermarkets are significantly positively affected by commercial buildings; e-commerce prefers high housing price areas and avoids commercial buildings, with the weakest dependence on offline commerce. Regarding residents' consumption behavior, the odds ratio for online fresh food shopping among the elderly is only 6.28% of that among young people; mixed-channel consumers contribute to the unbalanced usage time of offline fresh food facilities; the presence or absence of a wet market within the community significantly influences residents' choice of online fresh food shopping.

This study breaks through the limitations of traditional location theories. It not only reveals the differentiated distribution patterns and location driving factors of the three fresh retail formats, but also clarifies the impact of residents' consumption behavior on outlet layout. Based on the above conclusions, this study proposes that fresh retail should adopt hierarchical and classified layout optimization strategies. In communities with poor accessibility to fresh food facilities, wet markets should be prioritized to meet residents' basic livelihood needs for fresh food. In mature living circles with abundant market-oriented fresh food channels, the supply of mixed-channel and convenient outlets should be strengthened to adapt to residents' diversified consumption demands. The core conclusions drawn from the model analysis can be combined with quantitative prediction methods to provide

scientific references and practical support for the spatial layout planning of fresh retail facilities and the prediction of residents' fresh food access behavior under the new retail environment.

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Keywords: Fresh Retail, Spatial Distribution, Consumption Behavior, Food Access, Community Health

TEJANDO COMUNIDAD: INFORMAL HEALTH SOLUTIONS AMONG THE LATINE IMMIGRANT POPULATIONS

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Track 7: Food Systems and Community Health
Individual Paper Presentation

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This study informs effective planning approaches by centering the health-seeking behaviors of Latine immigrant populations. Despite less access to healthcare, Latine immigrants exhibit higher life expectancy, lower death rates, and lower infant mortality rates than natural born residents in a phenomenon called the Hispanic Health Paradox (HHP) (Markides & Coreil, 1974) (Fernandez et al., 2023). However, Latine immigrants often face overlooked vulnerabilities when accessing healthcare in the U.S. due to threats of deportation and high rates of trauma exposure (Galvan et al., 2021). Centering immigrant populations is necessary to comprehend the proliferation of paradoxical health outcomes[VD1.1] that can be mitigated through planning interventions. Focusing on community-organized events like health fairs can serve to aid difficulties faced by marginalized community members in receiving healthcare access (Ezeonwu & Berkowitz, 2014). Therefore, this study asks: what solutions do Latine immigrants engage in to receive health care access in the United States?

Previous urban planning literature has focused on housing patterns (Arreola, 2012) and urban placemaking (Talen, 2012) regarding Latine immigrants. Transportation studies have also explored mobility patterns immigrants use to reach areas of employment in urban settings (Liu & Painter, 2012). This research overlooks the existing solutions low-income Latine immigrants use to access healthcare. Reliance on informal mechanisms like health fairs, non-prescribed medicine, reliance on family members, or community health events and centers can help better explain immigrant health solutions in the U.S. (Madden, 2015).

To better understand the HHP, this study surveyed the health-seeking solutions of Latine immigrants at a local Dallas-Fort Worth area health fair (n = 164) through an anonymous cross-sectional structured survey. This health fair arises as a unique site of trust among the immigrant community in North Texas, attracting over 1,000 participants. The survey seeks to understand how health insurance availability among Latine immigrant health fair participants affects their access to and use of (in)formal medical behaviors, specifically, their medical information sources, type of facilities used to receive or access care, and reliance on community events to receive healthcare.

The study's findings indicate low-income Latine immigrants rely on informal access to healthcare through non-prescribed medicine, family members, and community health events, helping enrich discussions on the HHP. The implications of this study urge planners and policymakers to consider elements other than housing patterns and transportation barriers in healthcare decisions of Latine communities; including social networks and informal healthcare practices. City leaders seeking to implement community-oriented development strategies can use health fairs and other trusted community events to more effectively target hard-to-reach populations, improve community outreach, and build community trust.

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Keywords: Immigration, Community, Latine, Health, Informal

WHAT SHAPES FEAR OF FALLING OUTDOORS? THE ROLE OF STREET-LEVEL NEIGHBORHOOD ENVIRONMENTS, GENDER, AND LIVING ARRANGEMENT

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Track 7: Food Systems and Community Health
Individual Paper Presentation

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Fear of falling is a significant concern among older adults, restricting physical activity and social participation (Dunlop et al., 2025). While previous fall experiences constitute a significant risk factor for developing fear of falling, this condition frequently emerges among older adults who have never experienced falls, arising from various factors including demographic features, physical performance, psychological and cognitive status, and functional impairments (Jung, 2008; Scheffer et al., 2008). Recent research has shown that built environment factors play a crucial role in shaping fear of falling. Features such as street lighting, sidewalk conditions, traffic volume, and land use patterns can either facilitate or hinder safe outdoor mobility, directly influencing older adults' confidence in navigating their communities (Rico & Curcio, 2022). Understanding how these outdoor built environment factors interact with individual vulnerabilities is essential for developing evidence-based age-friendly planning strategies (Xu et al., 2025), especially those living in rural areas that often lack adequate infrastructure and healthcare access.

This study investigates how street-level built environments shape outdoor fear of falling among older adults and how their influences vary by sociodemographic factors. Using data from 4,282 adults aged 65 and older in Jeongeup City, South Korea, we investigate the relationship between neighborhood environmental factors and outdoor fear of falling among older adults, with particular attention to the moderating roles of sex and living arrangements. We employ a comprehensive approach that combines a rural aging survey with environmental measures derived from street view imagery and computer vision techniques. Neighborhood environments are assessed using a 700-meter circular buffer around each respondent’s residence, reflecting older adults’ typical walking speeds.

Results indicate that fear of falling is associated with both individual and built environment factors, with certain environmental features showing stronger effects among women and those living alone. Specifically, a neighborhood with a mix of different land uses is linked to higher fear of falling, whereas presence of street lighting shows a protective effect with lower fear of falling, particularly for women and those living alone. These findings highlight the need to tailor planning interventions to specific population groups and offer valuable guidance for creating age-friendly urban environments that support the diverse needs of older adults.

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Keywords: fear of falling, older adults, urban design, street view image, healthy aging

"FOR A YOUNGER CROWD?": QUANTIFYING THE DOMAIN-SPECIFIC DIVERGENCE OF AGING RESOURCES IN GENTRIFYING NEW YORK NEIGHBORHOODS

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Track 7: Food Systems and Community Health
Research-in-Motion Presentation, Research currently in process

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Gentrification often improves the physical environment and raises neighborhood resources, yet older adults increasingly find local spaces catering to a younger demographic as boutiques displace traditional commerce (Zukin et al., 2009). The loss of community clinics, affordable dining, and social hubs can restrict their daily social networks (Torres, 2020), and while recreation and fitness amenities tend to expand alongside consumption upgrades, services that support daily living often decline (Cheung, 2024). The environmental press–competence model (Lawton & Nahemow, 1973) underscores that older adults' daily routines depend on specific, locally accessible resources rather than aggregate neighborhood supply (Cantor, 1975). Even if gentrification increases total resources, older adults may still be worse off when gains concentrate in fitness and leisure while independent living support declines. Yet how gentrification reshapes these resources across functional domains remains underexamined.

This study asks whether the intensity of neighborhood gentrification correlates with the density of healthy aging supportive resources, and if so, does this association vary in direction and magnitude across the physical, cognitive, and aging-in-place domains?

We analyzed ~2,100 NYC census tracts using a cross-sectional associational design. We built a gentrification index via PCA, using changes in racial composition, education levels, household income, and median rent between ACS 2010–2014 and ACS 2020–2024 (Johnson et al., 2022). Adapting the MESA Aging resource classification (Eastus et al., 2026) and the RECVD taxonomy (Hirsch et al., 2022), neighborhood resources were categorized into three domains aligned with the cognability framework (Finlay et al., 2022): physical (fitness, leisure, wellness), cognitive (libraries, museums, religious/cultural institutions), and aging-in-place, defined as neighborhood establishments that support the functional prerequisites of independent community living (primary care, affordable food, social services, financial institutions, senior housing). POI data were sourced from Google Places and classified using type fields, price-level tags, and keyword filtering. We measured area-normalized density for each domain and a composite index. Spatial error models with borough fixed effects controlled for baseline tract characteristics (population 65+, density, transit, renter share), estimated separately by domain with formal coefficient comparison. MGWR then explored spatial variation in the association, and XGBoost with SHAP decomposition captured nonlinear patterns the spatial models may miss.

Preliminary results show that gentrification was positively associated with physical domain resource density, largely driven by the entry of fitness and leisure businesses. Aging-in-place resources, by contrast, trended negatively, consistent with the displacement of daily functional commerce. The cognitive domain was mixed across resource types. MGWR showed that the negative aging-in-place relationship was stronger in tracts with lower baseline resource density. XGBoost-SHAP analysis pointed to a nonlinear pattern: aging-in-place resource density held relatively stable under moderate gentrification but dropped off beyond roughly the upper quartile of intensity.

These findings suggest that gentrification's impact on age-friendly environments cannot be captured by a single metric. The mixed patterns within the cognitive domain further indicate that resource-level analysis is needed rather than domain-level generalizations. For planners, this points to the importance of tracking changes in specific resource categories within gentrifying areas. Where aging-in-place services such as affordable food retail and primary care are declining, targeted retention strategies or replacement provisions may help maintain older residents' capacity for independent community living.

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Key Words: Gentrification, Environmental Gerontology, Healthy Aging, Neighborhood Resources, Spatial Analysis

BEYOND PROXIMITY: HOW THIRD PLACES AND SOCIAL INFRASTRUCTURE ACTIVATE SOCIAL ENGAGEMENT FOR LATER-LIFE MENTAL HEALTH

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Research-in-Motion Presentation, Research currently in process

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Loneliness and depressive symptoms are closely linked mental health issues that are highly prevalent among older adults. In the US, national research shows that loneliness affects 30%–43% of older adults, while approximately 4% of adults aged 70 years and older are facing depression (Alhalaseh et al., 2022; Donovan & Blazer, 2020). Changes that come with getting older, like health decline, functional limitations, and bereavement, can also increase the risk of loneliness and depression in later life. These changes can also enhance reliance on neighborhood social infrastructure and third places that support routine social participation, which may help protect against these effects (Berkman et al., 2014; Meehan et al., 2023). In planning research, however, these relationships are often framed too narrowly in terms of proximity or availability alone (Lane et al., 2020; Sugiyama et al., 2023). The more important question is not whether there are third places or social infrastructure nearby, but rather what makes them work for seniors in ways that foster routine social connection and improve their mental health (Klinenberg, 2018).

In this paper, we present an ongoing scoping review study of community-dwelling adults aged 60 and older that synthesizes the evidence on how engagement with third places and social infrastructure relates to loneliness and depressive symptoms. We will look at a variety of everyday settings, including libraries, senior centers, cafés, civic hubs, parks, and community gardens, to examine the mechanisms that move older adults beyond proximity into meaningful engagement. The review specifically focuses on realized engagement and the mechanisms by which these destinations may affect mental health outcomes. We will analyze place-functioning attributes in the literature, like staff facilitation, welcoming norms, accessibility, affordability, programming, comfort for prolonged presence, and perceived safety, and consider how these features enable or constrain social engagement in later life.

Our study will be guided by PRISMA-ScR and a Population-Concept-Context framework. We will conduct the primary search through Scopus and the Web of Science Core Collection database and do supplemental searches in PubMed/MEDLINE and PsycINFO. Eligible studies must examine community-dwelling older adults, a named third place or social infrastructure setting, and loneliness and/or depressive symptoms. To prevent the conflation of opportunity with participation, studies will be organized using an exposure hierarchy that differentiates place presence, perceived opportunity or quality, utilization, and participation or social dosage.

Our review is expected to produce an integrated Place-Fit framework of social infrastructure for mental health in later life that offers a more coherent way to understand how third places and social infrastructure shape social connection and well-being among older adults. For planning practice, this study will identify the place types and modifiable functional conditions that could support routine social engagement and emotional well-being. This provides actionable guidance for age-friendly planning, social infrastructure investment, and community mental health strategies. More broadly, the review argues that planning for healthy aging must move beyond the simple location of places, toward designing, programming, operating, and socially activating places in ways that enable older adults to participate in everyday social life.

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Key Words: Older adults, Social engagement, Third place, Social infrastructure, Age-friendly planning

DIGITAL COMMUNICATION IN HEALTHY CAMPUS DESIGN: IMPACTS OF MULTISENSORY VIRTUAL LANDSCAPES ON STUDENTS' PHYSIOLOGICAL AND PSYCHOLOGICAL WELL-BEING

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Track 7: Food Systems and Community Health
Research-in-Motion Presentation, Research currently in process

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Constraints on implementing greening and aesthetically rich environments in real-world settings to improve quality of life underscore the need for alternative approaches. As modern medicine has evolved to be more preventative and participatory (Hood & Friend, 2011), immersive virtual technologies have emerged as promising tools for supporting health and well-being (Fu et al., 2022; Halldorsson et al., 2021). These technologies offer scalable, accessible, and potentially personalized solutions that can complement traditional health care services and urban greening efforts, addressing the unique challenges of urban living. However, prior research on immersive virtual interventions often lacks ecological validity, with most studies relying on 360-degree video environments (Browning et al., 2023; Villani & Riva, 2008) and relatively few examining college student populations.

This study addressed this research gap by utilizing mixed-reality technology, specifically the Microsoft HoloLens Glasses, to examine the causal effects of multisensory virtual landscapes on college students' physiological and psychological well-being. It also investigates students' attitudes toward the use of MR technology for health promotion. The broader goal is to inform evidence-based design strategies for healthy campus environments and evaluate the potential of MR as a digital health intervention. This study enrolled 32 healthy students (16 males and 16 females) who are 18 years old or older and have corrected to normal vision up close at College Station, Texas A&M University. Participants have no issues related to walking, severe motion sickness, photosensitivity, implants, or color blindness. The experiment was conducted in an open space between the Langford Architecture Center Building A and the Jack K. Williams Administration Building. A repeated-measures design was employed to reduce bias. Participants were exposed to four walking conditions in randomized order: one control condition (no intervention) and three MR treatment conditions. In the treatment conditions, participants walked the same route while wearing a HoloLens headset and separate earphones to experience simulated landscapes with combined visual and auditory elements. Participants' physiological stress responses (e.g. electrodermal activity and heart rate variability) were measured using EmbracePlus wristbands, and psychological outcomes (e.g., mood, vitality, happiness, and perceived restoration) were assessed through post-experience surveys. The experimental protocol was kept consistent across conditions to minimize measurement bias. Mixed-effects models were used to evaluate intervention effects while controlling for relevant confounders.

Results indicate that auditory–visual landscape design significantly improves both physiological and psychological well-being compared to a normal walk without any intervention. In particular, auditory elements (e.g., water sounds, birdsong, and sounds of wind and leaves) and ecologically diverse visual features (e.g., flowers, butterflies, water features) produce stronger restorative effects than simple tree canopy structure. After the virtual experience, students reported higher self-efficacy for outdoor walking and stronger intentions to participate in campus design and research projects. Students also expressed positive attitudes toward MR as a tool for stress reduction and relaxation.

These findings provide evidence-based guidance for integrating multisensory design into campus environments to better support student health and well-being. In addition, the findings highlight the potential of MR-based

interventions as scalable digital health strategies for virtual therapy. Such approaches may be particularly beneficial for populations with disabilities, limited access to natural environments, or healthcare resources.

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Key Words: Healthy Campus Design, Virtual Landscape, Multisensory Placemaking, Student Well-being, Digital Intervention

DRIVING FOR GOOD, BUT AT WHAT COST? EVALUATING THE ENVIRONMENTAL IMPACTS OF VOLUNTEER-BASED FOOD RECOVERY LOGISTICS

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Track 7: Food Systems and Community Health
Research-in-Motion Presentation, Research currently in process

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In the United States, an estimated 30–40% of food is wasted annually (U.S. Department of Agriculture, 2023), while food insecurity continues to affect millions of households. Food recovery efforts play a critical role in reducing food waste (Guo et al., 2026; Papargyropoulou et al., 2014) and improving food security by having volunteers transport surplus food from donors to recipients. However, the transportation burden associated with volunteer-based food rescue remains understudied.

This study addresses this gap by examining the environmental sustainability implications of combining volunteers' food recovery activities with their routine travel using both empirical and simulation-based approaches. We conducted a survey of volunteers from one nationwide and one regional food recovery organization. We collected trip-chain information (home-activities-home) for volunteers' last food recovery tour, including their home locations, locations they visited for pickup and drop-off, and any other activities (if any) they performed before returning home. We found that 50% of the volunteers reported regularly chaining their food recovery trips with other daily trips, such as commuting, shopping, and other activities. In our trip-level analysis, volunteers were categorized into two groups: those conducting standalone food recovery trips (home–pickup–drop off–home) and those combining food recovery with other daily activities (home-activity–pickup–drop-off–activity-home). First, we calculated the driving distances for the food recovery tours and found that individuals drive 25% more miles when they do not combine their daily activities with food recovery trips than when they do. Second, using the historical food recovery trip data (from 2021 to 2025) of volunteers who combined trips, activity locations reported in the survey were probabilistically assigned to historical trips to reconstruct realistic travel chains. Driving miles were derived from precomputed routing data, and emissions were estimated using personal-vehicle emission factors, accounting for vehicle type and refrigeration requirements. This analysis shows that combining daily activities with volunteer food recovery trips reduces driving distance between 10% to 15%. Third, a scenario-based simulation framework was developed, in which multiple scenario types were constructed by varying activity selection mechanisms, including person-specific preferences learned from the survey data to mimic travel behavior and spatial clustering of activity and food recovery pickup and drop-off locations. We simulated 1.7 million trips and found that, on average, a 10% to 12% reduction in driving miles is achieved by combining food recovery trips with daily travel.

One possible way to encourage volunteers to chain food recovery trips with daily trips is to understand their environmental attitudes and develop strategies that nudge their behavior (Mohiuddin et al., 2025). We examine demographic, travel behavior, and latent attitude-related factors that influence an individual's decision to chain food recovery trips with other daily activities. Applying an Integrated Choice and Latent Variable (ICLV) model, we found that women and individuals with kids are more likely to chain their food recovery trips. Our model also indicates that car-centric neighborhoods reduce the likelihood of chaining trips. Income also plays a role, as individuals living in low-income neighborhoods are more likely to chain voluntary food recovery trips with other

activities to reduce fuel costs. Beyond demographic and built environmental factors, pro-environmental attitudes significantly increase volunteers' likelihood of chaining food recovery trips with daily travel to reduce driving.

This study provides one of the first assessments of food recovery travel behavior and has practical organizational and transport policy implications for improving the environmental sustainability of food recovery logistics.

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Key Words: Sustainability, Food Waste Recovery, Volunteer Travel Behavior, Simulations, Latent Attitudes

EXAMINING MICRO-SCALE STREETSCAPE DETERMINANTS OF OUTDOOR FALL RISK AMONG OLDER ADULTS USING STREET VIEW IMAGES

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Track 7: Food Systems and Community Health
Research-in-Motion Presentation, Research currently in process

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"This abstract is submitted as part of the pre-organized session on "Healthy Urbanism for an Aging Society (HUFAS)" organized by Andy Hong."

Designing age-friendly environments has become a central challenge in urban planning as populations rapidly age. Older adults often experience physical and cognitive decline, which increases their vulnerability to environmental risks. Understanding how environmental conditions shape these risks is therefore important for developing age-friendly environments.

Falls are one of the leading causes of hospitalization and accidental death among older adults. While prior research has primarily focused on indoor or individual-level risk factors, outdoor falls have received limited attention and remain underexplored (Curl, 2016). Walkable environments are closely associated with physical activity and daily movement (Ewing & Handy, 2009; Frank et al., 2005). Environmental risks in the neighborhood may lead not only to fall-related injuries but also to behavioral responses such as fear of falling, which can reduce outdoor activities among older adults. Reductions in mobility can further limit social interaction and contribute to loneliness (Skeleton & Todd, 2004). Over time, these changes may accumulate, leading to broader health challenges for aging populations.

By identifying street-level environmental risk factors of falls, this study provides evidence-based insights to inform urban design strategies for safer, age-friendly streetscapes. In particular, the findings can suggest guidance for urban design and policy decisions for street-level interventions in an aging society.

Existing research on the environmental determinants of falls has relied on survey-based measures, field audits, or qualitative interviews, which lack generalizability (Chippendale & Boltz, 2015). To address these gaps, we integrate fall incident data with street view imagery (SVI) and computer vision techniques to objectively measure micro-scale streetscape features.

In the current study, we use fall incident data collected across Utah between 2017 and 2023. High-resolution SVIs are obtained from Google Street View between 2016 and 2023 at 50m intervals along the street network. Using deep learning-based semantic segmentation, we extract micro-scale environmental features around fall incident locations. The model is trained on a large, globally diverse dataset with detailed annotations of street-level features, enabling the identification of elements such as sidewalks, curbs, and pedestrian barriers related to our focus (Neuhold, Ollmann, Rota Bulo, & Kontschieder, 2017). Statistical models are used to estimate associations between built environment characteristics and outdoor fall risks among older adults.

Although data collection and analysis are ongoing, this study is expected to identify how specific micro-scale streetscape features are associated with outdoor fall risks among older adults. Rather than evaluating risk factors for falls solely as individual-level health outcomes, this research conceptualizes risk as events shaped by environmental exposures at the street level. The findings will contribute to a better understanding of how street-level design shapes safety outcomes and provide a basis for integrating fall prevention into urban design and streetscape planning.

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Key Words: outdoor falls, older adults, Urban design, Street view Images, Computer vision

From Shock to Recovery: Understanding Neighborhood Food Accessibility Change After COVID-19 Pandemic
Abstract ID: 2296.0.0.1037.2026
Track 7: Food Systems and Community Health
Research-in-Motion Presentation, Research currently in process

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Food accessibility is not static. It changes over time, and those changes are often shaped by both slow structural conditions and sudden disruptions. This study starts from the idea that the COVID-19 pandemic was a major turning point in neighborhood food access because it affected local businesses, daily mobility, and recovery patterns in uneven ways (Harper et al., 2022; Oh et al., 2024). While some neighborhoods appear to have bounced back more quickly, others may still be dealing with longer-lasting effects from COVID-19 pandemic (Kar et al., 2021). We hypothesize that neighborhoods with higher vulnerability, weaker pre-pandemic food environments, and greater COVID-related disruption are more likely to experience persistent decline, particularly where disadvantage is spatially clustered. To examine these dynamics empirically, we focused on Kansas City Metropolitan Area (KCMA).

By evaluating food accessibility patterns before, during, and after COVID-19 pandemic, the study examines both overall trends in food accessibility and the uneven recovery process that followed. We examine neighborhood-level food accessibility changes across KCMA from 2019 to 2024 at the census block group level. Using the Modified Retail Food Environment Index (mRFEI) which captures the ratio of healthy to unhealthy food retailers at the neighborhood level, we trace temporal shifts in food access and classifies census block groups into three neighborhood response types: Persistent Decline, Shock + Recovery, and Resilient. Spatial autocorrelation of mRFEI show strong and statistically significant clustering across all years, suggesting that food accessibility patterns are not randomly distributed, but concentrated in particular parts of the region (Livings et al., 2023).

We further analyze how pre-COVID food accessibility, the degree of COVID-related disruption, and neighborhood spatial context help explain persistent decline. Our findings show that neighborhoods with higher social vulnerability Overall, this research provides a spatiotemporal framework for analyzing how neighborhood food accessibility changed during and after the pandemic. The study provides practical insights for planners looking to prioritize neighborhoods where vulnerability and declining food access intersect, as well as contributing to planning research by combining spatial analysis and temporal change to create a holistic framework that captures post-pandemic food access dynamics.

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Keywords: food accessibility, spatio-temporal framework, COVID-19, mRFEI, logistic modeling

MUNICIPAL CANNABIS REGULATION IN THE UNITED STATES AN EXAMINATION OF POLICIES IN 18 CITIES TO REGULATE RETAIL CANNABIS AVAILABILITY

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Track 7: Food Systems and Community Health
Research-in-Motion Presentation, Research currently in process

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Introduction

As of 2026, thirty-nine states have promulgated some form of cannabis policy: twenty-four states and the District of Columbia enacted comprehensive policies that cover medical and recreational use and fifteen states enacted medical cannabis policies. The widespread acceptance of cannabis use by states has necessitated the adoption of municipal policies to regulate the cultivation, processing, sale, and disposal of cannabis at the local level.

The development of policies to regulate cannabis retail availability and the location of cannabis dispensaries in cities and communities represent important concerns for planning scholarship and practice. On one hand, evidence suggests that physical proximity to cannabis dispensaries is associated with increased adolescent use and increased cannabis related hospitalization. On the other hand, cannabis dispensaries represent a form of community development, increasingly seen as part of a comprehensive approach to reconciling harm done to Black and Latine communities whose members face disproportionate consequences of cannabis criminalization.

Approach

We conducted a policy review of municipal level policy about cannabis retail availability from 18 cities located in states that allow for either medical or recreational use of cannabis by adults in the United States. We reviewed land use regulations and policy documents available through websites hosted by each municipality. We identified and catalogued key regulations for every local municipality, with a specific focus on identifying the licensing process and required permits for cannabis dispensaries, as well as the location limitations and distance requirements imposed by municipalities for the availability of retail cannabis.

Results

Preliminary results seem to suggest that each city employs a combination of policy tools to regulate the spatial retail availability of cannabis dispensaries. Most frequently these consisted of a combination of spatial buffers intended to protect or shield sensitive uses (e.g. schools, churches) from exposure to cannabis, licensing to regulate the number of dispensaries within in a spatial area, and taxation on the per unit sale of cannabis. Additionally, all 18 cities implemented some form of social equity program aimed at aiding dispensary operators who have been harmed by cannabis related incarceration.

Conclusions/Discussion

While this research is currently underway, this review of cannabis dispensary location policies from 18 cities where medical or recreational use is legalized will provide an overview of the ways cities are currently regulating dispensaries as well as recommendations to improve the ways we guide land use development around the increasing presence of cannabis retail in US cities.

Citations:

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Key Words: municipal policy, cannabis, dispensary availability

NEIGHBORHOOD LEISURE ENVIRONMENTS AND ADOLESCENT MENTAL HEALTH: THE ROLE OF PUBLIC SPACES AND PARK USE IN SEOUL

Abstract ID: 2296.0.0.990.2026
Track 7: Food Systems and Community Health
Research-in-Motion Presentation, Research currently in process

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Adolescent health has become an increasingly important concern in urban societies, with growing attention to how urban environments shape young people's physical and mental well-being. Recent global initiatives emphasize the need to create urban environments that support children's health, highlighting issues such as rising obesity and attention deficit disorders (WHO et al., 2025). Among the environmental factors, green space has received particular interest. Existing studies have examined the relationship between green space exposure and adolescent mental health using different methodological approaches. Evidence suggests that momentary exposure to green space within adolescents' daily activity spaces is associated with reduced psychological stress (Mennis et al., 2018). At a broader level, residential exposure to surrounding greenness has been consistently associated with improved emotional and behavioral outcomes among children and adolescents, including lower psychological distress (Wang et al., 2019; Vanaken & Danckaerts, 2018).

However, in highly urbanized settings such as Seoul, adolescents are exposed to a broader range of neighborhood environments beyond green spaces, which may also influence their mental health. In practice, adolescents' daily activities take place across both publicly provided facilities (e.g., sports facilities, libraries) and commercially provided leisure spaces (e.g., PC rooms, karaoke rooms, cafés, cinemas) (Ministry of Culture, Sports and Tourism, South Korea, 2024). Despite this, limited attention has been given to how the composition of neighborhood leisure environments is associated with adolescent health outcomes, or whether public and commercial leisure environments exert different patterns of association.

Against this backdrop, this study examines the impact of broader neighborhood leisure environments on mental health outcomes among adolescents (aged 10-19) in South Korea. It uses repeated cross-sectional data from the Korea National Health and Nutrition Examination Survey (KNHANES) for 2015-2019, 2023, and 2024. Park use is constructed using 50-meter grid-level floating population data from SK Geovision 'Puzzle', based on mobile network data from a major telecommunications operator in South Korea, overlaid with park polygons. These neighborhood-level measures are then merged with individual-level health data for analysis. Furthermore, floating population data are incorporated to better approximate adolescents' effective exposure to local environments. Key independent variables distinguish between public and commercial leisure environments, alongside additional controls such as socioeconomic conditions and educational environment. We utilize multi-level regression to handle association between individual-level health data from KNHANES are linked with administrative-dong-level park usage indicators. To account for temporal variation, year fixed effects are included, and standard errors are clustered at the administrative-dong level to correct for within-neighborhood correlation.

This study contributes to the literature by explicitly distinguishing between public and commercial leisure environments and examining their differential associations with adolescent health outcomes. It further advances existing research by incorporating behavior-based measures of environmental exposure using floating population data, providing a more realistic approximation of adolescents' daily environmental experiences. These findings offer policy-relevant insights into how neighborhood environments should be structured, particularly in the context of the 15-minute city, highlighting the importance of balancing public and commercial leisure environments to

support adolescent health and reduce inequalities. This abstract is submitted as a part of the pre-organized session on "Healthy Urbanism for an Aging Society (HUFAS)" organized by Andy Hong.

Citations:

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Key Words: Adolescent Mental Health, Neighborhood Leisure, Public Space, Park use, Activity Based Exposure

NEOLIBERAL LOGICS IN GHANA'S FOOD AND AGRICULTURE POLICIES: IMPLICATIONS FOR URBAN FOOD SYSTEMS

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Track 7: Food Systems and Community Health
Research-in-Motion Presentation, Research currently in process

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Ghana's agricultural sector has undergone significant policy shifts since the 1980s (Asuming-Brempong, 2013). A key driver of such shifts is neoliberal restructuring efforts aimed at market liberalization, privatization, and the rollback of state interventions in the agricultural sector (Asuming-Brempong, 2013; McMichael, 2009; Seini et al., 2002). These restructuring efforts mark a departure from earlier state-led interventions to support the food systems in rural and urban settings. For some scholars, while these restructuring efforts aim to improve productivity and efficiency in food systems, the implications for food equity, resilience, and institutional capacity remain unclear (Atta-Krah et al., 2021; Thow et al., 2021). This paper interrogates the neoliberal logics embedded in Ghana's national food and agricultural policy frameworks and their implications on urban food systems. It draws insights from the food regime theory by Philip McMichael and Harriet Friedman to probe two questions: (1) How are neoliberal policy logics articulated within Ghana's food and agricultural policy frameworks, and (2) What implications do these policy orientations have for the governance and functioning of urban food systems? The paper uses qualitative content analysis of major national policy documents, including the Food and Agriculture Sector Development Policy (FASDEP I and II), the Medium-Term Agriculture Sector Investment Plans (METASIP I and II), the National Climate Adaptation Policy, and the Planting for Food and Jobs program. The policy analysis is complemented by a structured review of scholarly literature and archived media (Ghana Web) discourses on Ghana's agricultural and food systems. The analysis of policy, scholarly, and media sources will help distill the policy narratives, institutional priorities, and governance assumptions aligned with the neoliberal imperatives embedded in Ghana's national agricultural and food systems policy paradigm and the implications thereof. The paper's findings will contribute to the planning scholarship on food regimes and food systems by illustrating how market-oriented logics get translated into national policy frameworks and the implications for the urban food systems in a global South context.

Citations:

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Key Words: Neoliberal logics, Food systems planning, Food policies, Food insecurity, Ghana

UNDERSTANDING SUBJECTIVE WELL-BEING ACROSS CITIES: INFRASTRUCTURE, ENVIRONMENT, AND PLANNING INSIGHTS FROM MULTI-CITY ANALYSIS

Abstract ID: 2296.0.0.724.2026
Track 7: Food Systems and Community Health
Research-in-Motion Presentation, Research currently in process

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Subjective well-being (SWB) is increasingly used as a critical measure alongside traditional metrics to understand how people experience and evaluate their lives (Diener, 2009; Durand, 2015). While a growing body of research links the built environment to SWB, most studies rely on single-city analyses, limited built environment characteristics, inconsistent measures of SWB, or inconsistent individual characteristics, limiting cross-context comparability relevant to urban planning. This study asks: How do urban infrastructure, environmental conditions, and social systems shape subjective well-being across diverse urban contexts, and what patterns can inform planning priorities? To address this gap, we examine these relationships across multiple cities in the United States and India, including New York City, Austin, Los Angeles, Minneapolis, Delhi, and Chennai.

Using a consistent primary survey and analytical framework applied across cities, this research measures evaluative and emotional SWB alongside satisfaction with over 40 infrastructural, environmental, and social attributes. Across cities, the study draws on large-N household surveys (n ≈ 400–3,000 per city), enabling robust and comparable analysis across diverse contexts. Analytical approaches include multivariate regression, propensity score matching, and a prioritization framework that classifies attributes as foundational, consistently important, or added bonus based on their relationship with SWB (Das et al., 2022; Ramaswami, 2020). The use of a consistent framework enables direct comparison of SWB determinants across diverse geographic and socio-economic contexts.

Findings reveal both common and context-specific drivers of SWB. Across cities, household infrastructure (e.g., housing quality, water access, and connectivity), environmental conditions (e.g., air quality and noise), and social factors (e.g., social ties and agency) consistently emerge as key determinants of well-being, with effect sizes comparable to traditional socio-demographic variables (Das et al., 2022). Improvements in infrastructure and environmental quality are associated with increases in SWB of up to one point on standard scales, rising to nearly two points among lower-income populations. These effects are particularly pronounced for lower-income groups, highlighting the importance of equitable access to foundational infrastructure. At the same time, cross-city comparisons reveal important contextual differences. For example, housing size emerges as a foundational determinant of well-being in Indian cities and dense urban contexts such as New York City, but functions as an added bonus attribute in higher-income cities such as Austin, highlighting context-dependent thresholds of sufficiency (Ramaswami & Das, 2026).

By applying a consistent measurement and analytical framework across diverse urban contexts, this study advances planning scholarship by identifying both generalizable patterns and context-specific priorities in the infrastructure–well-being relationship. The findings provide actionable insights for planners, informing the prioritization of infrastructure investments—particularly in distinguishing foundational needs from added-bonus improvements across contexts—and supporting the integration of well-being metrics into planning to promote equity and sustainability. More broadly, the study advances the integration of well-being metrics into urban planning frameworks that have traditionally relied on objective indicators, particularly through comparative, cross-city analysis.

Citations:

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Key Words: subjective well-being, urban infrastructure, cross-city comparison, planning, equity

Track 8 – Planning History, Theory and Education

Track 8 Roundtables

Affect in Planning Pedagogy: Building an ACSP Community of Practice
Abstract ID: 2297.0.0.220.2026
Track 8: Planning History, Theory and Education
Roundtable Submission, Topical Discussions

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Planning in the context of political polarization, economic instability, environmental degradation, and social inequity, requires practitioners have a dynamic and adaptable skill set that goes beyond the skills conventionally valued in planning. Planners require the ability to hold space for their own, their peers', and community members' affective responses to spatial transformations. Planning scholars have encouraged us to train deliberative practitioners who can actively listen and engage across difference (Forester 1999), or to build "being skills," like relational awareness, humility, patience, presence, intentionality, and courage (Sandercock 2023, 267). Education scholarship names this "affective learning," which encompasses values, attitudes, motivations, feelings and behaviors (Shephard, 2008). Training planners with affect in mind means creating learning experiences that lead to emotional responses or belief system changes among learners (Mais-Thompson et al. 2024). Planning education has an implicit connection to affective learning through our emphasis on studio, service, and project-based learning, as well as reflection, but our discipline has limited direct engagement with the concept (McSorley et al., 2025).

We position affective capacities as essential to training future planning practitioners because these skills can build personal resilience to confront and navigate increasingly prevalent complex interpersonal dynamics in planning processes. As the remit of planning practice expands to address a wide and emergent range of social issues, planning pedagogy must evolve to help students navigate these complexities; this task demands a clearer understanding of the role of affect in planning practice, and better guidance for teaching about, and with, attention to affect in planning programs.

We have convened a group of planning scholars whose scholarship and pedagogy address this gap and will be publishing our work together in a 2027 Interface article in Planning Theory & Practice (Maloney, Kocsis and McSorley, in preparation). This roundtable builds on our momentum, developing a community of practice amongst ACSP scholars in a Topical Discussion Roundtable format, by asking participants to share insights, challenges, and aspirations within three core domains of affect in planning pedagogy: 1) tools and activities educators employ to build affective sensibilities in the classroom - how we help students develop awareness of their own affective

experiences 2) affect-specific professional competencies and skills that planning students should acquire - how we train students to anticipate and respond to affect in their planning practice and 3) pedagogical experiences and strategies for teaching affectively - how do we as educators manage planning students' affective responses to training, and our own affective responses when employing affective instruction.

By positioning affect as a central capacity in planning education, offering tools to build affective capacities, and surfacing tensions in managing affect as an educator, we hope to nurture a community of practice within the ACSP in which planning scholars can learn, share, and theorize on the role of affect in planning pedagogy.

Confirmed Participants: Joanna Kocsis (Dalhousie University); Meaghan McSorley (Florida State University); Tyeshia Redden (University of Toronto); Kayleigh Swanson (University of Toronto)

Facilitator: Ward Lyles (University of Kansas)

Audience Engagement Questions:

- What are the tools and activities you as educators employ to build affective sensibilities in the classroom to help students develop awareness of their own affective experiences?
- What affect-specific professional competencies and skills should planning students acquire and how do we train students to anticipate and respond to affect in their planning practice?
- Can you share pedagogical experiences and strategies for teaching affectively, for example how can we as educators manage planning students' affective responses to training, and our own affective responses when employing affective instruction?

Citations:

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Key Words: Planning Pedagogy, Affective Learning, Competencies, Emotion, Inclusivity

Art and creative practice in planning research and pedagogy (the sequel!)
Abstract ID: 2297.0.0.204.2026
Track 8: Planning History, Theory and Education
Roundtable Submission, Topical Discussions

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Planning scholars employ a range of research methods to address questions of importance to the field. While some methods have a robust and well-documented tradition of use, arts-based research methods are less formalized and often deeply personal. This roundtable continues a conversation begun in 2024 that asked: How do planning scholars integrate their creative practices into their research? Inspired by the facilitator's own exploration of her creative practice as a circus artist, this roundtable invites panelists to reflect on how their creative practices have informed their research questions, methods, and relationships. Panelists will also discuss whether and how the arts intersect with their interpretation and communication of findings, as well as the role of the arts in community-based research.

The panelists represent scholars at multiple career stages, from PhD student to full professor, whose creative practices include filmmaking, music, textile art, dance, zine-making, and photography. The conversation will explore how panelists and audience members have brought the arts into planning education and the theoretical implications of this approach. Finally, panelists will reflect on the practicalities of incorporating the arts into their careers: how do they position and communicate their work to colleagues, departments, funders, and community partners? Attendees are encouraged to bring their own reflections, projects, and ideas to share.
Panelists: Luciana Barretto Lemos, Magdalena Novoa Echaurren, Bjorn Sletto, Efadul Huq, Joaquin Lopez Huertas (Am'aj Q'in), Rami Mannan, and Carol Ramos Gerena

Audience Engagement Questions:

- How does your creative practice informed your research questions, methods, and relationships?
- How have you brought the arts into the planning classroom and what are the theoretical implications of this approach?
- How do you position and communicate your work to colleagues, departments, funders, and community partners?

Citations:

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Key Words: art, planning method, pedagogy, community engagement, epistemology

Community-Engaged Programs: Institutional Scaffolding to Enable Meaningful Outcomes
Abstract ID: 2297.0.0.405.2026
Track 8: Planning History, Theory and Education
Roundtable Submission, Topical Discussions

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Community-engaged teaching is widely practiced and promoted in planning education. A growing body of scholarship and case studies has analyzed the benefits and potential shortfalls of moving planning pedagogy beyond the classroom. Bridging the classroom and community can lead students toward critical reflection (Lung-Amam et al. 2015) and may provide meaningful benefits for community partners (Reardon 1998). However, without unit-level infrastructure, community-based course projects can fall short of their potential. Ensuring mutual benefit requires appropriate scoping, extensive communication, and adequate preparation of students (Botchwey and Umemoto 2020). Despite good intentions, without broader program- and unit-level support, if can be difficult to sustain partnerships, align learning objectives across courses, and make community-engaged teaching more than a series of one-off projects (Winkler 2013).

This panel brings together faculty who have experience conducting and/or researching community-engaged teaching to discuss strategies for thoughtfully integrating such efforts into the broader curricula of planning degree programs. Attendees are invited to participate in answering the following questions: (1) When and how can classroom-based skills training can be conducted in a curriculum so that students are better prepared to engage in community-based courses? (2) How can programs balance and thoughtfully time classroom- versus community-based coursework so that students have ample opportunities for both experience and reflection? (3) What institutional scaffolding supports instructors in delivering meaningful and reciprocal community-engaged learning experiences? Participants are encouraged to bring their own experiences and questions to enrich the conversation.

Audience Engagement Questions:

- What institutional scaffolding supports instructors in delivering meaningful and reciprocal community-engaged learning experiences?
- When and how can classroom-based skills training can be conducted in a curriculum so that students are better prepared to engage in community-based courses?
- When and how can classroom-based skills training can be conducted in a curriculum so that students are better prepared to engage in community-based courses?

Citations:

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Key Words: Community-engagement, Planning pedagogy, Active Learning, Engaged teaching, Curriculum Development

Does the Planning Academy Need More Viewpoint Diversity?

Abstract ID: 2297.0.0.332.2026
Track 8: Planning History, Theory and Education
Roundtable Submission, Facilitated Debates

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The empirical literature on the political orientation of University faculty in the United States indicates that university faculty are significantly more left-leaning than the US population overall (Shaw, Erin & Siddiqi, Shiri Spritz, 2026). It should be noted that methods for determining the political slant of faculty are contested, and many existing surveys of faculty political orientation cannot claim to be representative (Shaw, Erin & Siddiqi, Shiri Spritz, 2026). However, the political slant among faculty appears to have increased over time and to be particularly pronounced among faculty in the social sciences, such as urban planning (Magness & Waugh, 2022). Requirements for statements of Diversity, Equity, and Inclusion in faculty hiring have been blamed by some for creating a political filter on those applying for faculty positions, reinforcing existing patterns of faculty political orientation (Arnold, Alex et al., 2025).

Within all social groups, there is pressure to conform to group norms, which can be both positive and negative. Pressure to conform to group norms can help enforce agreed-upon standards of behavior. But social psychologists have also observed that within-group pressures can influence what people believe, or what they say they believe. For these reasons " 'Internal criticism and dissent are vital for social groups success,' the psychologists Level Adelman and Nilanjana Dasgupta point out. (Mounk, 2025)." Mounk (2025) notes that in the period after Trump's election, left-leaning groups intensified pressure for internal ideological conformity in response to the external political strife they were experiencing. Identity politics and particular conceptualizations of identity politics, became requirements in many progressive political organizations (Mounk, 2025). Yet the academy has a special obligation to represent a range of reasonable political viewpoints, due to the importance of viewpoint diversity for ensuring a more robust pursuit of truth and free and open debate regarding contested ideas (Tomasi, John & Schweizer, Bernard, 2026).

Heterodox Academy was founded in 2015 to promote viewpoint diversity and constructive disagreement among university faculty. Heterodox Academy set out a position statement in 2025 articulating four recommendations for universities: 1) Commit to Open Inquiry; 2) Unleash the Free Exchange of Ideas; 3) Insist on Viewpoint Diversity; and 4) Invest in Constructive Disagreement (Heterodox Academy, 2025). In particular, Heterodox Academy and its supporters argue that an academic discipline can become biased in its findings and fail to pursue particular areas of inquiry when it lacks sufficient ideological diversity. They argue that to maintain a commitment to open inquiry, a variety of ideological perspectives are needed amongst the faculty of any discipline. For example, Martin (2016) argues that the field of sociology has been hindered in the range of its inquiry by the overwhelming dominance of liberal ideologies among Sociologists.

In response to such trends, we ask, do the critiques of Heterodox Academy apply to the Planning Academy?

Audience Engagement Questions:

- Planning addresses both positive and normative issues. Do planning academics have an obligation to clarify which of their findings are primarily positive in nature versus those that are more normative in nature? As an academic, do you find this distinction meaningful?
- To what extent is the Planning Academy lacking in Viewpoint Diversity? How would we know? What research could be conducted to ascertain this?
- Are conservative and moderate students discouraged from applying to doctoral programs or seeking tenure-track jobs as planning academics?

Citations:

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Key Words: Viewpoint Diversity, Bias, Political orientation, Academic institutions

Is Utopia Still Alive in Planning? Reclaiming Hope in Uncertain Urban Futures
Abstract ID: 2297.0.0.335.2026
Track 8: Planning History, Theory and Education
Roundtable Submission, Topical Discussions

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Planning is inherently future-oriented. While the field often invokes ideals of sustainability, resilience, innovation, and justice, scholars have observed and critiqued how planning actions selectively authorize or materialize some ideas while rendering others marginalized or unthinkable. As domestic and geopolitical tensions unsettle academic and world orders, calls for "radical" reform seem naïve or far-fetched. This makes imagining hopeful transformations increasingly difficult.

Yet humans are no strangers to natural and anthropogenic disasters. Time and again, societies have endured with resilience, facing the unimaginable with creativity to rebuild. None of this diminishes the affliction of the present, but it suggests that anyone can be a utopian and that imagining more hopeful futures can be especially timely and motivating in moments of darkness (Bloch 1995; Solnit 2016).

This roundtable approaches planning as a hope-oriented practice rooted in traditions of utopian thought and committed to giving form to future imaginaries. Bringing together scholars across the field, it asks: Where are utopian impulses alive in planning today, and how might planning scholars, educators, and practitioners expand hope in the face of changing domestic and international realities?

Questions for discussion:
1) Some scholars argue that planning has retreated from its utopian tradition and weakened future imaginaries (Kumar 2010; Pinder 2002), while others continue to explore how planning and futures thinking interact, such as through normative and exploratory scenarios (Cole 2001; Forsyth 2020; Goodspeed 2020; Myers 2001). Why are they right or wrong?
2) Where do you see opportunities for planning to shape hopeful futures in today's changing world?
3) Which possibilities do different future imaginaries center, and which do they dismiss?
4) What are some hopeful yet underexplored ways to imagine, spatialize, and govern uncertain futures?

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Audience Engagement Questions:

- What stayed with you from what you've heard so far? Any reactions or questions for our panelists?
- In your own work or context, where do you see planning opening up possibilities for more hopeful futures?
- How, if at all, does utopian thinking feel useful—or limited—in planning today?

Citations:

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Key Words: utopianism, hope, future imaginaries, planning with uncertainty

Leading in the Storm: Planning Administrators on Academic Freedom, Institutional Resilience, and the Future of Planning Education

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Track 8: Planning History, Theory and Education
Roundtable Submission, Panel Interviews

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Planning education does not exist in a vacuum. Across the United States and Canada, planning programs and the universities that house them are navigating an increasingly complex landscape: evolving pressures on academic freedom, shifting policy environments that challenge long-held professional values, and intensifying questions about enrollment, program sustainability, and institutional mission. How do planning school leaders at every level — from program director to department chair to dean to university president, navigate these pressures while sustaining their programs' integrity and their commitment to the public interest?

This roundtable, organized by the ACSP Committee on the Academy, brings together planning administrators from across the academic hierarchy for an honest, peer-to-peer conversation about what it means to lead in this moment. The session is anchored by Dr. Jennifer Cowley, President of the University of Texas at Arlington, FAICP, and recipient of ACSP's 2023 Martin Meyerson Award for Leadership in Higher Education. As both a trained urban planner and a sitting university president, Dr. Cowley offers a perspective that bridges the planning profession's enduring obligations to serve the public good with the practical realities of institutional leadership today. Joining her are members of the ACSP Committee on the Academy, a group whose collective experience spans program directorship, department chair leadership, and decanal administration across North American planning schools.

DISCUSSION QUESTIONS:
1. How are planning programs adapting to state- and institutional-level policy changes that affect curriculum, faculty, and program culture?
2. How do planning leaders uphold their obligations under the AICP Code of Ethics and Professional Conduct in today's political environment?
3. How do you lead faculty, staff, and students through periods of uncertainty while maintaining morale, enrollment, and scholarly momentum?
4. What institutional structures or governance mechanisms have helped protect planning programs' mission and identity in challenging environments?
5. What do you wish you had known earlier in your leadership journey, and what would you tell a new program director or department chair walking into this climate today?

Audience Engagement Questions:

- What is the single biggest threat to your planning program's mission right now: funding cuts, curriculum restrictions, enrollment decline, or faculty retention? (We'll take a live poll.)
- Has your institution asked you to modify, soften, or avoid specific planning topics or language in the past two years? Share your experience anonymously with the room.
- What resource or support do you most wish ACSP provided to help you lead through this moment: legal guidance, peer networks, public messaging, or advocacy tools?

Citations:

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Key Words: Leadership, Resilience, Governance, Equity, Accreditation

Measuring What Matters? Scholarly Indicators, Planning Knowledge, and the Politics of Evaluation

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Track 8: Planning History, Theory and Education
Roundtable Submission, Topical Discussions

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This roundtable invites attendees to debate how the planning field uses scholarly metrics such as the h-index and journal impact factor (JIF). Panel organizers represent diverse perspectives and institutional contexts with differing policies on metrics. We will discuss both the benefits and challenges of these measures and engage attendees in a conversation about: (1) current practices in the field; and (2) whether planning should take a clearer stance on how such metrics are used.

Planning scholarship has periodically questioned the reliability and appropriateness of metrics for evaluating research and journals (Forsyth 2020; Stiftel et al. 2004; Stevens et al. 2022). Yet the field has not engaged in a sustained, collective discussion of their role. This roundtable is intended as a step toward that conversation.
Over recent decades, scholarly indicators—including impact factors, h-indices, citation counts, and newer field-normalized and alternative metrics—have become central to academic evaluation. They shape hiring, promotion, funding, and institutional rankings. Originally developed as tools for information retrieval (Garfield 1955), they are now embedded in broader systems of accountability and competition (Power 1999). This raises a key question: what role should such indicators play in evaluating planning scholarship?

Proponents argue that metrics provide a common language for comparing scholarship across institutions and contexts. They offer a scalable and seemingly transparent way to assess productivity and visibility, particularly where time or expertise is limited. Citation-based measures can identify influential work and trace knowledge networks (Hirsch 2005), while newer indicators attempt to capture broader forms of engagement beyond academia (Bornmann & Daniel 2008). Used alongside peer review, metrics may serve as useful—if imperfect—tools.
Critics, however, emphasize that these indicators are not neutral. Citation metrics reflect disciplinary norms, database coverage, language hierarchies, and cumulative advantage processes that favor already-visible scholars and institutions (Merton 1968; Mongeon & Paul-Hus 2015). In planning—an interdisciplinary, practice-oriented field—these limitations are particularly pronounced. Much influential work circulates outside indexed journals, including reports, policy documents, and community-engaged research (Alperin 2015). As a result, metrics often fail to capture forms of impact central to planning's mission.

Metrics also shape scholarly behavior. When indicators become targets, they can distort research practices, encouraging strategies aimed at maximizing visibility rather than fostering long-term, collaborative, or community-engaged work (Burrows 2012; Espeland & Sauder 2007). These dynamics may narrow research agendas and reinforce existing inequalities. Evidence of citation disparities by gender, race, geography, and language suggests that reliance on such measures can reproduce structural inequities (Chakravartty et al. 2018; Sugimoto et al. 2017; van Leeuwen et al. 2001). In areas such as planning theory and community-engaged scholarship, these effects risk undervaluing already marginalized contributions.

By bringing together diverse perspectives, this roundtable seeks to open a broader conversation about how planning evaluates scholarship and what forms of knowledge it chooses to recognize.

Audience Engagement Questions:

- How does your department/institution currently use scholarly metrics? Has that changed over the years?
- How has your department/institution's use of these metrics impacted your faculty?
- What is your opinion regarding whether ACSP/the planning field should create something along the lines of DORA or the Leiden Manifesto?

Citations:

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Key Words: scholarly metrics, faculty, research

Michael Teitz's Contribution to the Field of Planning and ACSP: A Tribute

Abstract ID: 2297.0.0.852.2026
Track 8: Planning History, Theory and Education
Roundtable Submission, Topical Discussions

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Michael B. Teitz, one of ACSP's founders and champions, passed away on December 17, 2025. This roundtable will examine Mike Teitz's scholarly and pedagogical legacy. Teitz's career provides a lens into the evolution of US and UK planning thought during the field's critical era of growth and radical transformation in the second half of the 20th century. He began as part of the diaspora of geographers from postwar Britain, and then became one of the first PhDs in regional science, from the University of Pennsylvania. Recruited to UC Berkeley, he led the emergence of planning as a disciplinary field influenced by both urban designers and systems thinking. Nationally, he was instrumental in separating the academic from the practicing planners, helping to organize the first ACSP conference and serving as an early president. Among his many impacts on the field was introducing the first local economic development course in planning. Serving on over 100 Ph.D. dissertation committees, he influenced generations of planning faculty. The roundtable will explore his impact on the field, examine the evolution of his ideas and institution-building to the present day, and debate how ACSP should carry forward his legacy.

Audience Engagement Questions:

- How did Michael Teitz influence your approach to planning scholarship or pedagogy?
- What parts of Teitz's legacy should ACSP seek to resurrect and support in the future?
- As an advisor and teacher, Mike was challenging yet unfailingly kind and civil. What are the challenges faculty face today when they try to recreate this legacy?

Citations:

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Key Words: Planning history, Planning education, Systems thinking

The Future of Urban Studies: Pluralism, Institutions, and Knowledge in Transition
Abstract ID: 2297.0.0.85.2026
Track 8: Planning History, Theory and Education
Roundtable Submission, Topical Discussions

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Urban studies is undergoing a period of profound transformation. As cities confront intensifying challenges—from climate change and technological disruption to inequality and geopolitical shifts—the field itself is being reshaped intellectually, institutionally, and communicatively. This roundtable brings together scholars to reflect on the future of urban studies through three interconnected lenses: the field, its institutions, and its modes of communication.

First, we invite discussion on the evolving intellectual contours of urban studies. What constitutes the field's core today, and how is it changing in response to emerging global urban realities? As methodological pluralism expands (Lauermann, 2024)—from computational and data-driven approaches to deeply qualitative and humanistic inquiry—what new possibilities and tensions arise? We will also explore how interdisciplinary collaboration shapes urban studies and how the field continues to intersect with geography, planning, sociology, political science, architecture, and related disciplines. Building on this, we invite reflections on how to further strengthen urban studies as an inclusive intellectual space that embraces diverse epistemologies and more fully integrates perspectives from the Global South (Randolph & Storper, 2023).

Second, we turn to the institutional environments that shape urban scholarship. Universities, research centers, funding structures, and professional associations all play a critical role in defining what research is supported, valued, and sustained. At a time of shifting academic priorities, financial constraints, and evolving career pathways, how are these institutions transforming? In a context of growing public mistrust of institutions and increasing demands for accountability, many institutions are calling for research that demonstrates clear societal impact and emphasizes public engagement (APLU, n.d.), moving beyond traditional metrics such as scholarly citations—how is this shift reshaping urban scholarship? In addition, what new models of collaboration between academia, policy, and practice are emerging (Oliver et al., 2022), and what might they shape the institutional landscape of urban studies?

Third, we explore how urban knowledge is communicated and disseminated. The landscape of scholarly communication is rapidly changing, shaped by debates over publishing models, the use of artificial intelligence and its impact on scholarly integrity, and persistent global inequalities in academic publishing systems. At the same time, new publishing and communication formats—from digital platforms to public-facing media—are expanding how urban scholarship reaches broader audiences (Washbourne, et al., 2021). What does it mean to communicate urban knowledge in ways that are rigorous, inclusive, and globally accessible? And how can leading urban studies journals not only sustain their relevance within a shifting publishing ecosystem, but actively shape its future—advancing more equitable, innovative, and impactful forms of knowledge production and dissemination?

By engaging these three dimensions together, this roundtable aims to open a forward-looking conversation about how urban studies can evolve as a pluralistic, impactful, and globally engaged field. Beyond the reflections of the panelists, we invite the audience to actively join the discussion—to surface tensions, identify possibilities, and share the diverse ways they are already reshaping the field through their own work and contexts. We look forward

to an interactive session where panelists and participants jointly reflect on where urban studies stands today and how it can continue to grow as a thoughtful, inclusive, and socially engaged field in the years ahead.

Audience Engagement Questions:

- What constitutes the urban studies field's core today, and how is it changing in response to emerging global urban realities including climate change, technological disruption, inequality and geopolitical shifts? As methodological pluralism expands—from computational and data-driven approaches to deeply qualitative and humanistic inquiry—what new possibilities and tensions arise?
- At a time of shifting academic priorities, financial constraints, and evolving career pathways, how are institutional environments transforming urban scholarship?
- What does it mean to communicate urban knowledge in ways that are rigorous, inclusive, and globally accessible? And how can leading urban studies journals not only sustain their relevance within a shifting publishing ecosystem, but actively shape its future—advancing more equitable, innovative, and impactful forms of knowledge production and dissemination?

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Key Words: Urban Studies, Interdisciplinarity, Methodological Pluralism, Global South, Urban Knowledge

The Role of Black Planners in Shaping the Contemporary Planning Profession

Abstract ID: 2297.0.0.837.2026

Track 8: Planning History, Theory and Education

Roundtable Submission, Topical Discussions

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The Planning and the Black Community Division (PBCD) is the second-oldest population division within the American Planning Association. PBCD founding members were often the only Black professional planners in their local departments or offices. However, very little is known within the planning profession about the experiences, perspectives, and recollections of PBCD. Krueckeberg (1980) extolled recollecting events as a means of reopening the imagination to thinking differently about the present and the future. Sandercock (1998) did not disagree with Krueckeberg but acknowledged class and class oppression for its common usage as theoretical planning concepts, while theoretical perspectives on race received very little attention in framing U.S. planning history. As inclusion of gender issues begin to appear more evident in planning history, Thomas (1998) recommended that planning historians pursue a similar path and build historical approaches inclusive of the viewpoints of racial minorities to facilitate a focus that would engender fresh insights and perspectives. Also, Thomas (1994, 2008) argued for a more racially conscious perspective of planning history and based on interviews with Black professional planners suggested tangible benefits brought about in the workplace that could help achieve the just city may be stymied because Black and other minority-race planners found themselves facing institutional barriers or lacking effective presence in work environments. Now, almost two decades later, the documentary, "Planning and the Black Community Division: Persistence and Reward" takes an approach akin to and recommended by Thomas and provides the authentic voices of PBCD founding members and captures their recollections about planning education and inclusion in planning professional society and practice.

This roundtable provides a screening of the documentary and a topical discussion about the presence of Black professional planners in planning history and curriculum. Specifically, the roundtable will engage the audience in discussion around the following three questions:

- How does the documentary prove useful in understanding historical events and interpreting facts for framing U.S. planning histories or advancing theories that inform contemporary issues in planning education?
- What are the benefits of incorporating this documentary in planning history (at the undergraduate versus graduate level) curriculum?
- Are there lessons for ACSP-APA collaboration that can be gleaned from this documentary about increasing the pool of BIPOC students and potential planning professionals?

Audience Engagement Questions:

- How does the documentary prove useful in understanding historical events and interpreting facts for framing U.S. planning histories or advancing theories that inform contemporary issues in planning education?

- What are the benefits of incorporating this documentary in planning history (at the undergraduate versus graduate level) curriculum?
- Are there lessons for ACSP-APA collaboration that can be gleaned from this documentary about increasing the pool of BIPOC students and potential planning professionals?

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Key Words: Black Planners, Inclusion, PBCD, Planning profession, Recollection

Drafts in Dialogue: Writing, Ideas, and Feedback Across Subfields

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Track 8: Planning History, Theory and Education
Professional Development Workshop

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Interdisciplinary exchange has become foundational to contemporary urban planning scholarship, in which research on history, housing, climate adaptation, transportation systems, land-use governance, health, urban design, and more increasingly operates across overlapping domains. Within the ACSP, this breadth is reflected in the organization's thematic tracks, which collectively underscore that planning problems are not confined to discrete subfields but emerge through their intersections. Published and peer-reviewed scholarship has consistently demonstrated that such cross-domain engagement is not only necessary for addressing complex urban challenges but also generative of new forms of inquiry, methodological innovation, and theoretical development. At the same time, this interdisciplinarity places heightened demands on scholarly writing: writers must navigate multiple audiences, reconcile differing conventions of evidence and argumentation, and render their work legible beyond any one subfield.

This professional development workshop responds to these conditions by recognizing writing as a collaborative and iterative practice within a multidisciplinary planning community and inviting scholars to engage in structured, supportive peer review of works in progress. Participants may contribute writing at any stage, from early conceptual framing to near-complete drafts.

We will issue a broad invitation to participate in this workshop across various platforms, including field-wide email lists and social media. Participants from all career stages will be welcome, as long as they commit to sharing a draft of a discrete piece of writing under 30 pages (book chapter, prospectus, article, etc.), in advance of the conference. Participants must also commit to providing detailed feedback on the writing of two others. At the conference, participants will briefly present their work in small groups and identify specific questions or challenges. Each participant will receive targeted feedback from their small-group peers, representing diverse areas of planning expertise.

The workshop is organized to balance the practices of giving and receiving critique, with facilitation designed to ensure that feedback attends to both subfield-specific rigor and broader cross-disciplinary clarity and legibility. The workshop is designed to (1) help participants refine the clarity, structure, and argumentative coherence of their manuscripts, (2) strengthen the legibility of their writing across planning subfields by engaging diverse interpretive perspectives, and (3) cultivate a sustained, collaborative community of scholarly exchange within ACSP across subdisciplines and career stages.

Reminder(s) for Workshop Participants: Share and review a draft of a discrete piece of writing under 30 pages (book chapter, prospectus, article, etc.), in advance of the conference.

Citations:

- Innes, J. E., & Booher, D. E. (2010). Planning with Complexity: An Introduction to Collaborative Rationality for Public Policy. Routledge.
- Jacobs, J. and Frickel, S. (2009). Interdisciplinarity: A Critical Assessment. Annual Review of Sociology, 35(1), 43-65. https://doi.org/10.1146/annurev-soc-070308-115954
- Marcuse, P. (2015). Depoliticizing urban discourse: How “we” write. Cities, 44, 152-156.
- Soja, E. (2003). Writing the city spatially. City, 7(3), 269-280.

Keywords: scholarly writing, writing development, interdisciplinarity, peer feedback, collaboration

From Crisis to Imagination: Using Cinema to Cultivate Democratic Imagination in Planning Education
Abstract ID: 2295.0.0.992.2026
Track 8: Planning History, Theory and Education
Professional Development Workshop

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Planning educators face a growing paradox: as the challenges facing cities intensify, education in the field grows more depersonalized and technocratic. The rise of generative AI has deepened this tension, as students increasingly outsource assignments to AI rather than doing the harder work of sitting with complexity, ambiguity, and moral uncertainty. Yet planning practice demands precisely those capacities. Countering technocratic constraints in planning education requires something deeper than technical training. It requires cultivating what we call "democratic imagination," which is the ability to see spatial inequality embedded in urban form, feel cities as emotional landscapes shaped by memory and hope, and envision alternative futures rooted in human values rather than efficiency metrics.

This workshop argues that structured engagement with fiction film offers a replicable pedagogical tool for developing these capacities. Drawing on two undergraduate planning courses, we will share a model for using film as a disorienting dilemma (Mezirow, 1991) that cultivates emotional literacy and democratic imagination. Unlike documentary or case-study approaches common in planning pedagogy, fiction film transports students into alternative worlds, enabling narrative engagement that reshapes how students see, feel, and imagine the city. As student reliance on AI grows, film-based discussion offers a space for affective and embodied learning that technical training cannot replicate.

Workshop Approach:
Framing Cinema-Based Pedagogy (20 minutes): We will present the theoretical foundations of narrative foresight and democratic imagination, situating film-based pedagogy within planning education scholarship. This section will introduce three capacities, including “Seeing the City” (recognizing spatial inequality and power embedded in urban form), “Feeling the City” (engaging cities as emotional landscapes shaped by memory, trauma, and hope), and “Imagining the City” (articulating alternative futures rooted in values rather than technocratic efficiency). We will also share examples of film pairings, structured reflection prompts, and facilitation strategies drawn from their courses.

Experiencing the Model (25 minutes): Participants will watch short film clips that model the pedagogy in action. We will then facilitate a structured discussion using the same prompts deployed in their courses, allowing participants to experience the approach firsthand.

Applying the Model (30 minutes): In small groups, participants will draw on the films they brought and develop a proposed film-based activity for one of their own courses, thinking through film selection, reflection design, facilitation strategies, and the logistical and ethical considerations of engaging affective and imaginative learning in the classroom. Groups will share out and collectively build a resource list of films and facilitation approaches suited to diverse planning course contexts.

Closing and Community Building (15 minutes): We will facilitate a large group debrief on challenges, adaptations, and opportunities. Participants will be invited to join a growing network of planning educators committed to humanistic, imagination-centered pedagogy, with a discussion of potential directions for collaborative scholarship on film-based planning education.

What Participants Will Learn: Attendees will leave with a framework for selecting films appropriate to planning pedagogy; sample reflection prompts and discussion facilitation strategies ready to adapt for their own courses; firsthand experience with the model as learners; and connections to a community of planning educators committed to democratic imagination and emotional literacy in the classroom.

Reminder(s) for Workshop Participants: One film title you believe could spark meaningful planning discussion, and why. All other materials will be provided.

Citations:

- Mezirow, J. (1991). Transformative Dimensions of Adult Learning. Jossey-Bass.
- Sandercock, L. (2003). Cosmopolis II. Continuum.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101.
- Bina, O., et al. (2020). The future imagined. Futures, 122.
- Sartorio, F., & Thomas, H. (2022). Reclaiming the human in planning. Planning Theory & Practice.

Keywords: film pedagogy, democratic imagination, emotional literacy, futures literacy, planning education

Learning Outcomes Assessment for Market-Driven Curriculum Design in Planning Programs
Abstract ID: 2295.0.0.386.2026
Track 8: Planning History, Theory and Education
Professional Development Workshop

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The knowledge and skills that are needed from planners as professionals are constantly evolving at a fast pace affecting what the job market demands of graduates from Planning Accreditation Board (PAB) accredited programs. In this context programs must be creative in devising ways to respond to market needs and improve graduate employability. As planning programs confront accelerating socio-spatial transformations—including climate adaptation, demographic changes, technological disruption, and shifting labor market demands—the urgency to align curriculum design with measurable learning outcomes has become central to academic relevance and institutional accountability.

This workshop will introduce Assessment as a valuable tool for integrating market demands into curricular design in Planning programs and devising effective employability strategies for their graduates. What are the critical components in meeting market demands from the curricular design standpoint in Planning? What stakeholder groups need to participate in the design approach? How do curricular ties to market needs affect graduate job readiness and employability? What role do assessment tools play in a Planning Program's ability to quickly adapt to changes in market trends? The workshop will examine how outcomes-based education (OBE) and learning assessment frameworks can be strategically leveraged to design market-responsive yet academically rigorous planning curricula.

Grounded in principles of constructive alignment and continuous improvement, the session explores how clearly articulated learning outcomes—mapped across course, program and experiential levels—can be the backbone of curriculum innovation. Participants will engage with contemporary approaches to assessment that move beyond compliance-driven models toward evidence-informed decision-making, emphasizing professional competencies, ethical values and real-world impact.

The workshop will use a combination of conceptual framing, applied examples from planning education, and hands-on exercises to guide participants in (1) defining market-relevant competencies for their Programs, (2) translating them into measurable learning outcomes, (3) aligning curriculum structures and pedagogical strategies, and (4) designing assessment systems that generate actionable insights for curricular improvement.

The session is particularly relevant for academic leaders, faculty, and program designers seeking to reposition planning education in and at the nexus of disciplinary integrity, public value, and labor market responsiveness. By the end of the workshop, participants will obtain a practical framework and tools to advance outcomes-driven, evidence-based curriculum design within their institutions.

The workshop will be structured as follows:

1. Introduction, Objectives & Outcomes Sought
2. Conceptual Framework:
a. Outcome-Based Education (OBE)

b. Constructive Alignment (Biggs)
c. Backward Design (Wiggins & McTighe)
d. Assessment for Learning vs. Assessment of Learning
3. Market-driven Curriculum Design:
a. Building a Competence Profile
b. Stakeholders and their roles
c. Activity: Identify three critical competences for your Planning Program
4. Learning Outcomes Design:
a. Effective Outcome Characteristics
b. Curricular Structure: Course, Program and Experiential Learning Outcomes
c. Activity: Transform a critical competence into measurable outcomes
5. Assessment for Continuous, Fast-Paced Improvement:
a. Assessment Types
b. Pedagogical Strategies and Assessment Tools
c. Activity: Identify the most effective tool for assessing a chosen measurable outcome.
6. Conclusion
a. The Takeaway: A Simplified Framework
b. Call to Action

Reminder(s) for Workshop Participants: Bringing a laptop or other portable device running MS Word and Excel is suggested but not required.

Citations:

- Barrett, S. H. (2023). Assessment by design: How to create and use assessment for learning. Routledge.
- Biggs, J. B., & Tang, C. (2011). Teaching for quality learning at university (4th ed.). Open University Press.
- Conley, S., Foley, R., Gorman, M., Denham, J., & Coleman, K. (2017). Acquisition of T-shaped expertise: An exploratory study. Social Epistemology. https://doi.org/10.1080/02691728.2016.1249435
- Henning, G. W., Lundy-Wagner, V., & Felice, M. G. (Eds.). (2022). Reframing assessment to center equity. Routledge.
- Wiggins, G., & McTighe, J. (2011). Understanding by design (Expanded 2nd ed.). ASCD.

Keywords: Planning Education, Curricular Design, Learning Assessment, Competence Profile, Employability

Using and Creating Artificial Intelligence Tools for the Planning Classroom

Abstract ID: 2295.0.0.221.2026
Track 8: Planning History, Theory and Education
Professional Development Workshop

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Artificial intelligence is opening new vistas for planning education. Prior research finds AI teaching tools can have large learning benefits. This workshop will demonstrate a number of games and tutorials we have created to enhance planning students' experiential learning. They are on the ChatGPT platform and are being distributed for free. Next, we will review evidence on the games' effectiveness. We will then show how planning educators can create their own games and simulations within the ChatGPT environment. The tools we have developed are: 1) A game entitled "Council Clash," where the student is a planner working for a local government in one of seven archetypal cities. A controversial ordinance is being considered by council, and the student has to decide whether to support it, oppose it, amend it, or replace it. The student interacts with and seeks to persuade councilmembers with different ideologies, personalities, constituencies, and goals. The student also consults with city staff; experts like a planning professor, a TV news reporter, and a pollster; advocates; and members of the public. When the student introduces a costly policy or amendment (like guaranteed shelter beds), they are forced to select a "budget offset" (like raising sales taxes or cutting arts funding) that changes the political calculus. Surprise events keep play lively. Finally, the council votes, and the student gives a statement to the press, learns how the policy worked "one year later", and writes about what they learned. As of now there are two modules (one on a homeless camping ban and another on parking policy); our team plans at least 27 modules covering many aspects of urban policy. 2) A game called "Planning Cage Match." The student is host of a "planning talk show." They select a controversial issue and are given a list of 16 prominent real-life planning thinkers. They select five to "book" for the show. The student then "hosts" the show, interviewing the thinkers and stirring up debate. A wisecracking "executive producer" provides comic relief. With the show over, the student evaluates the thinkers' arguments and reflects on what they have learned. 3) A multi-step tutorial that teaches students how to write a book analysis, sharpening their theoretical perspectives, aiding them in note taking, helping them to apply theory to the evidence, and giving comments on their rough drafts. 4) A tutorial to help students track a product's supply chain. After the student chooses a product, the tutorial guides them through tracking its sourcing and transportation online, and fills in gaps when the student cannot find information. 5) A planning "Jeopardy" game where ChatGPT helped write questions drawn from class material and runs the game in class. The proposed schedule for the session will be: 1. Demonstrating the tools we have created, including time for the audience to try them, and discussing how they may be adopted in attendees' classrooms. a. Council Clash (20 minutes) b. Planning Cage Match (15 minutes) c. Term paper sequence, Supply chain exercise, Jeopardy game (15 minutes). 2. Review student surveys on the games and tutorials and their effectiveness as teaching tools (5 minutes). 3. Present tips and strategies for creating and polishing games/tutorials such as principles of game design, how to prompt ChatGPT to generate code, playtesting, debugging, evaluating student learning outcomes, recognizing limits on what ChatGPT can do, and more (15 minutes) 4. Run an exercise where the group works together to begin to program a game or tutorial. Initial steps will be demonstrated; hopefully, we will get something up and running (20 minutes). Creating ChatGPT games requires no knowledge of coding, just a good idea. If possible, participants should bring laptops and have ChatGPT accounts; Plus accounts are much preferred.

Reminder(s) for Workshop Participants: Attendees should try to bring laptops, and if possible should have ChatGPT accounts, preferably at the Plus level.

Citations:

- Zhan, Z., Tong, Y., Lan, X., & Zhong, B. (2024). A systematic literature review of game-based learning in Artificial Intelligence education. Interactive learning environments, 32(3), 1137-1158.
- Borah, P., & Borah, A. C. (2024). A Review of use of Artificial Intelligence in Teaching and Learning of Mathematics. IJSAT-International Journal on Science and Technology, 15(4).
- Yim, I. H. Y., & Su, J. (2025). Artificial intelligence (AI) learning tools in K-12 education: A scoping review. Journal of Computers in Education, 12(1), 93-131.
- Ahmed, M., Rahim, T., & Nasar, Z. (2023, December). Role of AI-Supported Serious Simulation Games in Urban Planning Education. In 2023 16th International Conference on Developments in eSystems Engineering (DeSE) (pp. 599-604). IEEE.

Keywords: AI, ChatGPT, Gamification, Interactive

A DESIRE NAMED STREETCAR

Abstract ID: 2298.0.0.720.2026
Track 8: Planning History, Theory and Education
Individual Paper Presentation

Peter Dunn [University of Massachusetts, Amherst] ptdunn@umass.edu, presenter

Earlier this year, the 2-mile DC Streetcar took its final trip, barely a decade after beginning service. Once championed as the beginning of an extensive modern streetcar network to be built across Washington, D.C., this first and only line suffered frequent service delays, low ridership, and high costs for years before it was finally shut down. This short-lived route is a particularly visible example of several streetcar lines that were conceived and built this century but have failed to live up to their promises.

What accounts for this failure? Many transportation planners have long been lukewarm on streetcars as a mobility solution, and the critiques of the DC line are familiar: lack of dedicated right-of-way, poor connections the rest of the transit network, and overly complex and expensive infrastructure among them. In fact, these warnings were voiced at the time of the streetcar's proposal, leading many scholars and policy analysts to conclude that the purpose of streetcars is not transportation but development. Without disputing these explanations, I use the case of the DC Streetcar to advance a different argument, one that suggests we must understand the streetcar as more than a rational miscalculation or an error of implementation. Rather, the streetcar is a product of its promoters' non-rational desires, the realization of an affective longing for a particular type of city neighborhood shaped as much by fantasy and myth as by cool-headed analysis.

I develop this argument using a study of contemporary journalism and planning documents dealing with Obama-era streetcar development together with ideas from affect theory, Deleuze and Guattari's notion of desiring-production, and the planning literature's work in visioning. The streetcar in this account takes on different roles than those offered by analyses of transportation policy or growth-machine politics. It gains a narrative force as a story of a heroic return after its defeat to the villain of 20th-century planning, the automobile. It is evocative of specific urban atmospheres—unhurried, sociable, commercially vibrant, at once nostalgic and novel, European—that drive its proponents affectively, rather than through explicit representation. And it carries a libidinal and subconscious energy that only secondarily picks up the language of reason in public policy debates. None of this necessarily dooms the streetcar to failure, but it does call for an attention to desire for understanding these projects in vision and in execution.

The paper further argues that the case of modern streetcar is only one example of the operation of desire more broadly in planning, which, more than many other policy arenas, deals with visions, atmospheres, and imaginaries that work affectively in political and professional discourse. This is particularly evident in our classrooms, where students are inclined to visions unconstrained by political or technical feasibility. These desires do work in the city, and so the project for planning, I conclude, is not to tame or bracket desire, but to channel it more effectively to productive ends.

Citations:

- Buser, M. (2014). Thinking through non-representational and affective atmospheres in planning theory and practice. Planning Theory, 13(3), 227–243.

- Davoudi, S. (2018). Imagination and spatial imaginaries: A conceptual framework. Town Planning Review, 89(2), 97–124.
- Deleuze, G., & Guattari, F. (2009). Anti-Oedipus: Capitalism and Schizophrenia (R. Hurley, Trans.; 6th printing edition). Penguin Classics.
- Hoch, Charles. 2007. “Making Plans: Representation and Intention.” Planning Theory 6 (1): 16–35.
- King, D. A., & Fischer, L. A. (2016). Streetcar projects as spatial planning: A shift in transport planning in the United States. Journal of Transport Geography, 54, 383–390.

Keywords: desire, affect theory, visioning, transportation planning, policy failures

ADVANCING EQUITY THROUGH MULTI-CAMPUS LEARNING COMMUNITIES

Abstract ID: 2298.0.0.997.2026
Track 8: Planning History, Theory and Education
Individual Paper Presentation

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This article presents lessons learned from developing a novel, collaborative model for teaching complex planning problems in diverse contexts. We share insights from a six year-long experience of developing and teaching a multi-campus course titled, Zoning for Equity. We experimented with a multitude of pedagogical approaches to maximize the benefits of cross-campus learning and share what worked and what didn't work for each component of the course.

Our Zoning for Equity course stands out for three reasons. The first is its collaboratively developed flipped classroom strategy. This course design enabled learning from a diverse group of instructors with expertise in different planning sub-fields and geographical contexts. Students engaged in campus-based, in-person discussions, supported by asynchronous lectures recorded by the instructors of the different institutions. Like many Planning topics, this course focuses on material that benefits greatly from consideration of the historical and contemporary contextualization of each individual community. Therefore, this method of lecture from diverse perspectives and covering many localities better informs students' understanding of Planning nuance.

The second feature of the course was project-based learning for practical zoning reform. Students were asked to identify an exclusionary zoning problem in their jurisdictions, and propose solutions for how to dismantle it. This structure allowed the students to apply the histories, theories, and concepts learned in the classroom to address real-world problems. Here, we experimented with varying degrees of external stakeholder engagement. Some projects had clients, some had course mentors, and others did not engage with external stakeholders. We share the challenges and benefits of these different approaches for student learning experiences and outcomes.

The third notable aspect of the course was its harnessing of videoconferencing across multiple campuses, which we called Collaborative Learning Labs. This structure allowed the students to share and compare their respective local contexts, think through commonalities, differences, and transferable lessons, and envision the planning profession as an agent of change beyond their local contexts. Over the course of four years, we revised and refined the design of these sessions to maximize the learning experiences and outcomes of the students.

For this empirical research article, we collected three distinct data points to demonstrate the lessons learned from our novel endeavor. We organized guided, small-group faculty discussions to debrief what the instructors found most useful in undertaking this endeavor, particularly as it relates to the three main pedagogical innovations laid out above. Second, we conducted semi-structured interviews with the students who have taken the course since 2021 to find out how the course has influenced their understanding of the planning profession and their career trajectories. Lastly, we tap into the student evaluations collected over the years as a barometer for examining the efficacy of the course.

Our experience suggests that there is a demonstrated benefit for students, faculty, and stakeholders in teaching common planning problems across diverse political, cultural, and socioeconomic contexts. Our multi-campus, project-based, and highly collaborative structure built new learning communities, enabled the transference of pedagogies and planning practices, and had economies of scale for instructors. We conclude by discussing the potential and challenges of a multi-campus course for collective learning and growth for both instructors and students. We hope that this experiment inspires other planning educators to embark on similar collaborative learning initiatives.

Citations:

- Kim, M., Garcia, I., Goetz, E., Hanlon, B., Monkkonen, P., Pendall, R., Pfeiffer, D., Reece, J., & Whittemore, A. (2025). Bring Zoning Back Into the Planning Curricula. Journal of the American Planning Association, 91(4), 615–621. https://doi.org/10.1080/01944363.2025.2455162
- Poon, P.-L., & Tang, S.-F. (2025). An Effective Teaching Pedagogy Involving an Online Learning Platform under a Multi-Campus Teaching Model. Technology, Knowledge and Learning, 30(3), 1561–1576. https://doi.org/10.1007/s10758-024-09761-2
- Frank, A. I. (2006). Three Decades of Thought on Planning Education. Journal of Planning Literature, 21(1), 15–67. https://doi.org/10.1177/0885412206288904
- Li, C., & Liu, J. (2022). Collaborative Virtual Environment for Distant and Blended Learning in the Higher Education Setting: A Systematic Review. In R. C. Li, S. K. S. Cheung, P. H. F. Ng, L.-P. Wong, & F. L. Wang (Eds.), Blended Learning: Engaging Students in the New Normal Era (pp. 135–146). Springer International Publishing. https://doi.org/10.1007/978-3-031-08939-8_12

Keywords: Zoning, Equity, Pedagogy, Multi-campus teaching, Planning education

APARTMENTS, POLICY LEARNING, AND NEIGHBORHOOD REDEVELOPMENT IN POST-WAR TORONTO, 1950-1970.

Abstract ID: 2298.0.0.467.2026
Track 8: Planning History, Theory and Education
Individual Paper Presentation

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This paper examines how, with a nascent planning system at the end of WWII, Toronto established the expertise and policy tools that would facilitate the redevelopment of low-rise neighborhoods with high-rise apartments in the 1950s and 1960s. Apartments were seen by planners and development interests as a means to overcome a severe housing crisis, remake the city's older, central neighborhoods, and create political and economic value for the city's elite. The apartment boom that occurred between 1950 and 1970 created close to 70,000 units in modernist tower-blocks, remaking Toronto into a city of apartments.

In the early post-war years, the federal and provincial governments created housing finance systems, redevelopment programs, and planning enabling legislation to create the conditions to allow capital to build housing at a larger scale. Yet, in the early 1950s, Toronto had no comprehensive zoning code, no professionally trained planners, and little capacity to shape development. This changed as the city achieved new legal powers and used policy learning to institutionalize a planning bureaucracy with strong leadership by the late 1950s. With several failed attempts at creating an American-style system of urban renewal, however, this did not occur smoothly, and during the period only a small share of apartments was built in central areas. Instead, apartment redevelopment took place without the use of city expropriation powers and was mostly in middle-class neighborhoods that were not deemed to be blighted and were located well outside of the city center.

In these areas, planners created tools such as site-specific zoning and density bonusing that opened spaces for private redevelopment. By attempting to control the extent, timing, and quality of apartment development, Toronto planners ended up working in partnership with developers. While not as direct as expropriation, they provided incentives for developers to overcome existing property interests, take over entire blocks, and facilitated, in effect, blockbusting. And yet the planners were far from in control of the process. The developers who assembled land and sought rezonings, sympathetic pro-growth agents in the city administration, and financial institutions successfully pushed beyond limits set by planners and expanded the boundaries of apartment zones, opening new low-rise areas for apartment development until a strong anti-development backlash occurred in the early 1970s.

The paper relies on in-depth research of city committee minutes, planning documents, and other archival sources, augmented by historical newspaper research, assessment records, and census data. The paper examines the evolution of Toronto's planning system, which relied heavily on policy transfer and policy learning, with planning ideas from other jurisdictions imported through the efforts of foreign experts, and with Toronto planners and officials taking study tours, attending conferences, and the like. But the localization of these ideas landed in a property rights regime and institutional context that created a distinctive, local planning system different from that found in the US and other jurisdictions. To understand its operation, the paper focuses on three redevelopment areas consisting of some 200 acres across 20 blocks where more than 50 towers containing some 13,000 apartment units were developed by the early 1970s. The significance of the paper includes tracing the long-term impact of property rights regimes in shaping policy transfer and planning systems. In Toronto, the creation of zones of exception for apartment redevelopment in the 1950s and 1960s continued aspects of property relations from the pre-war period but also set up the institutional framework in which planning still takes place. In fundamental ways, a developer-led planning system institutionalized more than 80 years ago continues to shape Toronto's built form, housing market, and social geography.

Citations:

- Hess, Paul and Robert Lewis. In Press. Apartment City: Redevelopment, Planning, and Housing in Post-War Toronto. University of Toronto Press.
- Ward, Stephen V. 1999. “The International Diffusion of Planning: A Review and a Canadian Case Study.” International Planning Studies (Colchester) 4 (1): 53–77. https://doi.org/10.1080/13563479908721726.
- Booth, Philip. 1996. Controlling Development: Certainty and Discretion in Europe, the USA and Hong Kong. Natural and Built Environment Series Controlling Development. UCL Press. https://doi.org/10.4324/9780203451489
- White, Richard. 2016. “Urban Renewal Revisited: Toronto, 1950 to 1970.” The Canadian Historical Review 97 (1): 1–33.
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Keywords: Redevelopment, Policy Learning, Apartments, Planning systems, Zoning

ASSESSING INDIVIDUAL LEARNING OUTCOMES IN GROUP PROJECTS: WHAT ARE THEY ACTUALLY GETTING OUT OF THIS?

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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To prepare students for the kind of teamwork necessary to be successful in planning careers, planning educators employ group work extensively in the classroom. In theory, this collaborative approach to education should help them development the tangible and intangible skills necessary for working in a professional setting (Schon 1990). While planning educators have outlined best practices for engaged learning (Botchwey and Umemoto 2020; Das et al. 2024), less has been written about how to best assess student learning outcomes in collaborative projects. Assessing the extent to which individual students achieve learning outcomes from group projects poses a challenge for faculty. When deliverables are collectively produced, it is difficult to tease apart who contributed what to the final product, let alone to assess what individual students learned from the process. This paper reports the results of structured study of two courses employing group projects. It asks the following research questions: (1) How well do group projects facilitate improvement in professional skills for students? (2) To what extent do students make connections between group projects and core course content? And finally (3) What group project design strategies can contribute to better individual learning outcomes for students? The paper contributes to research in pedagogical approaches to planning, especially those that involve collaborative learning (Frank 2022).

To assess learning outcomes and student experiences in group projects, I implemented a mixed methods study of two courses in Spring 2024. The first course was an undergraduate urban theory course with an enrollment of 43. The second was a graduate community development course with an enrollment of 15. In both classes, I designed group projects based on authentic learning assessment “blueprints”(Villarroel et al. 2018). The research included a pre- and post-test to assess students’ knowledge of course content, as well as a scaled self-evaluation of professional skills. To supplement this quantitative data, I collected anonymous reflections at the end of the semester to understand qualitatively how the students perceived their learning through the group projects. At the same time, I kept a running journal of field notes throughout the semester to document how I, the instructor, was implementing the projects and responding to students. Finally, I held two voluntary focus groups after the conclusion of the courses to debrief with students about their experiences in groups projects across their planning educations.

Findings illustrate that students’ knowledge of core course content increased considerably over the semester, but their self-assessment of professional skills increased modestly if at all on a quantitative scale. My own fieldnotes also showed doubt about the effectiveness of the teaching approach because I mostly interacted with students when they were having trouble. However, students’ reflections and focus groups revealed an appreciation of the intangible benefits of working with their peers and having a hand in the evaluation of their work. This leads to a conclusion that self-assessment through reflection is both an important part of the learning process and a necessary adjunct to external evaluation for groups projects.

Citations:

- Botchwey, Nisha, and Karen Umemoto. 2020. “A Guide to Designing Engaged Learning Courses in Community Planning.” Journal of Planning Education and Research 40 (3): 332–44. https://doi.org/10.1177/0739456X18772075.

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Keywords: Planning pedagogy, Collaborative Learning, Community Engagement, Teaching Effectiveness

ASSESSING THE CONNECTION BETWEEN PLANNING EDUCATION AND PRACTICE: INSIGHTS FROM EARLY-CAREER PLANNERS

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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The education of urban planners profoundly influences their professional practice and the evolution of the field in response to complex urban challenges. In addressing wicked problems, some planners advocate for approaches in line with the "transformative" planning tradition to challenge the status quo and achieve more equitable and sustainable outcomes. Transformative planning emphasizes representing diverse perspectives amidst institutional complexity and challenging societal power dynamics to generate a new set of outcomes (Albrechts et al. 2020; Healey 2006). However, existing research does not clarify whether and how pedagogical approaches effectively build capabilities for transformative practice. Prior research has identified skills that employers, educators, theorists, and early-career planners value for professional practice, and how practitioners apply those skills in professional environments (Alexander 2005; Poxon 2001; Grant-Smith et al. 2021), but how skill development in the classroom shapes future professional practice is underexplored.

I ask: To what extent does planning education build capabilities for transformative practice? To answer this question, I analyze quantitative and qualitative data from over 200 responses to a post-pre survey of alumni of Canadian accredited planning programs who graduated between 2019 and 2024. To examine whether planning education introduces students to the realities of practice, the survey asked respondents to reflect on a series of statements related to core planning challenges. Respondents were asked to first return to their student mindset and indicate to what extent they used to think each statement was true, and second, indicate to what extent they think each statement is true now, as a practitioner. The survey also posed a series of open-ended questions, prompting reflection on preparation for and experiences in practice.

This paper clarifies how early-career practitioners perceive the application of their education in practice, and the gaps educators may want to address to graduate transformative practitioners. The findings clarify the pedagogical approaches that early-career planners found most impactful in preparing them to navigate planning systems and institutions, often referencing experiential learning opportunities delivered with community, governance, and industry partners. The results also signal key gaps in how planning practice is currently framed in planning education. Resoundingly, respondents indicated that their educational experiences did not prepare them for many of the realities they face in practice, for example, how shifting political contexts and institutional norms constrain their aspirational work. Respondents also often cited that their education imparted an idealistic view of their role in creating rapid, transformative change, but now, as practitioners, they find that change is a slow process that requires long-term commitment, which informs how they measure their transformative impact.

With these insights, this paper makes three contributions to planning pedagogy and practice. First, clarifying the impact of various pedagogical approaches supports planning educators in devising learning experiences that are highly impactful in training transformative practitioners. Second, by systematically examining the gap between how planning is framed in education and what practitioners experience in practice, this paper encourages planning educators to infuse their instruction with a clearer sense of the complex institutional and political environment practitioners will inevitably confront. Third, taken together, these contributions stand to enhance the transformative potential of planning practice by supporting the training of practitioners who understand the complex systems they will operate within, and how to navigate through them in pursuit of societal betterment.

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Keywords: professionalization, transformative practice, pedagogical approaches

BEYOND DISCIPLINARY COMFORT ZONES IN PLANNING: EXPERIENTIAL URBAN ENVIRONMENTAL SENSING PROJECT

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Individual Paper Presentation

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Planning education is increasingly expected to prepare students for professional environments shaped by interdisciplinary collaboration, evidence-informed practice, and technological systems (Anacker, 2023, Husar et.al., 2023). Despite this, both instructors and students often operate within disciplinary comfort zones, revealing a gap between the aspirations of planning education and its pedagogical practice. This gap is particularly evident in efforts to promote convergence, which is widely promoted in higher education (National Science and Technology Council, 2022) as essential for addressing "wicked" urban problems through transdisciplinary approaches. To address this gap, this paper evaluates a pilot project that combines experiential and project-based pedagogies within an urban environmental sensing project. This study asks two questions: 1) How does this pedagogical model reposition city planning students as active participants in designing socio-technical systems that support data production and evidence-informed decision-making? 2) How is convergence operationalized as a pedagogical practice through engagement with urban sensors system?

We argue that convergence in planning education does not emerge from multidisciplinarity alone. It requires intentional pedagogical design that moves students beyond disciplinary comfort zones toward more integrated, transdisciplinary forms of learning. This paper positions experiential learning as the primary pedagogical mechanism. The pilot serves as an exploratory step toward a fully integrated joint course between city planning (CP) and computer science (CS).

In this model, CP and CS students collaboratively engage with a purpose-built environmental sensors system designed to capture environmental data to investigate the land use edge effects in urban heat research. Students work within a shared socio-technical system that integrates sensing technologies, data infrastructures, and spatial decision-making. CP students analyze the built environment and identify sensor locations based on planning questions, while CS students examine system architecture, data flows, and analysis. Both groups collaborate in interpreting data and developing visualization dashboards. Through this process, students do not simply contribute disciplinary perspectives in parallel but engage in the shared understanding and design of a system that requires integration of spatial and technical knowledge.

Grounded in experiential learning traditions (Kolb, 1984, Norton et al., 2022) and reflective practice (Schon, 1983), this model advances integrative experiential learning, in which knowledge is co-produced through hands-on engagement, interdisciplinary collaboration, and iterative reflection. Convergence is operationalized through interdependent roles and structured collaboration that push students beyond disciplinary comfort zones and toward more integrated, transdisciplinary engagement.

We use a mixed-methods evaluation of the pilot, including student reflections, project artifacts, and instructors' observations. Initial findings indicate that this model may shift how planning students conceptualize data, from a neutral input to a constructed product shaped by planning decisions such as sensor placement, including increased awareness of how spatial decisions influence data validity and interpretation. Students also demonstrate improved

capacity to critically engage with socio-technical systems. At the same time, the pilot reveals challenges including communication barriers, uneven technical familiarity, and tendencies toward parallel rather than integrated collaboration.

This paper contributes to planning education by demonstrating how integrative experiential learning can prepare students to collaborate across disciplines and bridge the gap between data production and evidence-informed planning practice, particularly in addressing complex urban problems.

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Keywords: Planning education, Experiential learning, interdiciplinary pedagogy, socio-technical system, environmental sensors

CINEMA-BASED PLANNING EDUCATION: IDENTITY, EMOTIONAL LITERACY, AND DEMOCRATIC IMAGINATION

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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This paper examines how cinema-based pedagogy can cultivate three capacities essential for contemporary planning practice: planning identity, emotional literacy, and democratic imagination. The study analyzes student reflections from two undergraduate courses taught in Spring 2025 at the University of Nebraska–Lincoln and the Georgia Institute of Technology, where films were used as a core pedagogical tool to help students think critically about cities and planning practice. Drawing on transformative learning theory (Mezirow 1978, 1991, 2000; Wilson 2024), critical reflection (Brookfield 1995), and reflective practice (Schön 1987), we treat student reflection as both empirical data and a professional rehearsal space where future practitioners reflect on identity, emotion, and civic responsibility in relation to urban environments. Students engaged with films portraying urban tensions such as class stratification, racialized and spatial segregation, environmental precarity, and questions of belonging and governance. Structured reflection assignments invited students to connect cinematic narratives to identity, emotion, power, and future urban possibilities. Through this process, films functioned as "disorienting dilemmas" that challenged habitual ways of understanding cities and encouraged students to renegotiate their roles as ethical actors within them. Using reflective thematic analysis (Braun and Clarke 2022), we identify three analytical categories that structure the findings: Seeing the City, Feeling the City, and Imagining the City. Students learned to identify political, spatial, and social structures embedded in urban environments; articulate emotional and ethical responses to injustice, violence, and hope; and imagine alternative futures shaped by values such as care, accessibility, and collective responsibility. Across reflections, students moved between analyzing cinematic representations of cities and interpreting their own lived experiences, demonstrating how film can deepen students' understanding of planning as both a technical and narrative practice. At a time marked by climate anxiety, political fragmentation, and mistrust in public institutions, planning education must cultivate capacities beyond technical proficiency. Cinema-based reflection offers a humanistic and forward-looking pedagogical model that encourages future planners and planning-adjacent practitioners not only to understand the city but to interpret its stories, navigate its emotional complexities, and imagine more democratic urban futures (Sandercock 2003; Greene 1995).

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Keywords: Cinema, Pedagogy, Reflection, Planning, Imagination

CITIES ARE BURNING, SO LET'S GO WATCH SOME MOVIES

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Contemporary planning faces a crisis of imagination. As overlapping crises dominate public discourse, society has developed what Mulgan (2020) describes as a "shrinking future," an inability to envision alternatives that extend beyond our crisis-dominated reality. This widespread sense of permacrisis (Brown et al., 2023) creates particular challenges for democratic governance, as Agamben (2005) observes that crises have ceased to be exceptional events and have instead become the dominant paradigm of modern government. This paper asks: can structured engagement with cinema help planners and communities develop the imaginative capacities necessary for democratic practice in an era of perpetual crisis?

The planning profession has contributed to this imaginative contraction. Historical experience with modernist planning failures created skepticism about grand schemes, leading to a wholesale retreat from utopian thinking, which Inch (2021) argues gives credence to dominant powers' insistence that the current system is the only possible one. Contemporary planning practice compounds this by confining most planning actions to plausible solutions rather than creating opportunities for communities to explore utopian and dystopian futures (Zapata, 2021). Comprehensive plans described as long-range visions often have only a 20-year time horizon, yet their impact permanently alters cityscapes (Laurian, 2019).

Drawing on experiential futures methodology (Candy & Dunagan, 2017) and research on fiction's capacity to shape thinking through narrative transportation (Green & Brock, 2000), we introduce the concept of "narrative foresight" which is the ability to imagine urban futures rooted in human values rather than technological determinism. Fiction constitutes a powerful tool for imagining alternative possibilities, delivering multidimensional ways of knowing, and explores unconscious assumptions.

We tested this concept through two undergraduate planning courses in which students from a range of disciplines — including architecture, engineering, and computer science — engaged with a curated film series spanning science fiction, animation, and historical drama, followed by structured reflection. Using thematic analysis, we iteratively coded reflections to identify recurring patterns around imagination, values, and urban futures.

Student reflections revealed four dimensions of narrative foresight cultivated through cinema: critical assessment of technological determinism, values-based urban imagination, inclusive design thinking, and environmental consciousness. Across films ranging from The Fifth Element to Zootopia to WALL-E, students consistently prioritized human connection, equity, and ecological relationships over technical efficiency, precisely the values that planners work to embed in the built environment and in democratic processes. Notably, these capacities emerged across disciplines, suggesting that cinema-based reflection cultivates planning-relevant imaginative skills that transcend professional training.

While this evidence draws on the classroom, we argue that structured film engagement holds significant potential as a community engagement strategy that builds relationships, surfaces shared values, supports collective reflection, and creates accessible entry points for communities to imagine urban futures together. Where traditional public engagement formats can reinforce existing power dynamics and crisis-dominated framings, cinema offers a shared imaginative space in which communities can articulate what they value, critique technological assumptions, and envision futures that center dignity and inclusion over optimization.

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Keywords: narrative foresight, experiential futures, urban cinema, futures literacy, planning imagination

CLASS DESIGN FOR INCLUSIVE COMMUNITIES: LINKING MUSEUM STUDIES AND URBAN PLANNING

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This article examines the intersections of museum studies and urban planning around the concept of inclusive communities. The authors argue it is important to bridge these fields in higher education and propose a course design aimed at addressing this need called "Museums and Inclusive Communities." This design brings together two large courses—"Arts and Human Value" and "Introduction to City Planning"—through a First-Year Interest Group (FIG) class. Informed by a literature review of museum studies and urban planning, the class design focuses on cognitive and experiential learning, encouraging students to understand, reflect, and connect concepts of inclusive communities from both fields. This approach to course design benefits students both short- and long-term, fostering a mindset that connects classes while they are in college and preparing a workforce attuned to the creation of an inclusive community. Institutions around the country could implement this innovative course design, combining museum studies and urban planning to educate generations committed to inclusive places.

The theoretical foundation draws on two parallel intellectual traditions. In museum studies, Eilean Hooper-Greenhill's concept of the "post-museum" reframes institutional mission away from authoritative object accumulation and toward cultural diversity, accessibility, and community engagement. Another key related concept is James Clifford's "contact zones"—spaces where diverse audiences encounter one another across historical and geographic divides. In urban planning, equity planning, pioneered by Norman Krumholz in Cleveland, positions planners as advocates for the most disadvantaged residents, framing inclusive urbanism as a response to racial segregation and the inequitable distribution of public resources. Both traditions converge on shared values: participation, representation, diversity, and the recognition that inclusive communities must be intentionally and collaboratively built.

The course is structured as a First-Year Interest Group, a one-credit learning community clustering up to twenty first-year students simultaneously enrolled in both larger courses. The FIG format was selected for its ability to counter the isolation of large lecture classes, foster peer networks, and create intellectual space for cross-disciplinary exploration. Using backward design, the authors established two primary learning outcomes: for students to explain how each field theorizes inclusive communities, and to articulate how museum professionals can better align their work with strategies developed by urban planners.

Pedagogically, the FIG course employs scaffolded discussion, moving from individual reflection to paired exchanges to collective conversation, using interleaving to alternate between concepts from both disciplines. Campus museum visits serve as living laboratories, while a "campus challenge" assignment immerses students in diverse student organizations, prompting reflection on what makes a community genuinely inclusive. A culminating assignment asks students to connect a key insight from one course to a topic in the other, reinforcing interdisciplinary thinking.

The authors envision this FIG course as a foundation for broader curricular growth, potentially anchoring an undergraduate minor that draws from disability studies, women and gender studies, and indigenous, race, and ethnic studies. By beginning this integration at the first-year level, the course establishes an equity-oriented, connective mindset early in students' academic careers—preparing them to enter the museum workforce with a sophisticated understanding of the communities their institutions exist to serve.

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Keywords: Class Design, Urban Planning, Museum Studies, Inclusive Communities, Undergraduate Studies

COMMUNITY-BASED LEARNING IN URBAN PLANNING EDUCATION FOR SUSTAINABLE CITIES AND URBAN RESILIENCE

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Individual Paper Presentation

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Community-based learning projects in urban planning education are expected to benefit the students and the participating communities. Benefits of community-based learning to the students include deeper understanding of civic responsibilities and improved collaboration skills (Dewar and Isaac, 1998). Community-based learning also helps students make the connection between urban planning theory and practice in addition to developing skills they need for professional urban planning practice, which include participatory planning and facilitation, project delivery, and client interaction (Forsyth, Lu, and McGirr, 2000; Levkoe, Friendly, and Daniere, 2018). Benefits of community-based learning projects to the communities include tangible deliverables, visibility and credibility, access to university resources, long-term partnerships, and opportunities for participation (Cushing, Bates, and van Vliet, 2013; Winkler, 2013). In the last two decades, faculty of Urban Studies and Planning Department at California State University, Northridge facilitated more than 30 community-based sustainable urbanism projects with a variety of community partners offering opportunities for students to learn by doing and for communities to participate. The presentation describes how students and communities benefited from these projects over the years. As sustainability and urban resilience were the main themes of these community-based projects, the collaboration between the university and the surrounding communities contributed not only to small but consistent improvements in the physical environment but also to gradual increase of sustainability and urban resilience minded urban planning practitioners.

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Keywords: Community-based learning, Urban planning education, Sustainability, Urban resilience

CRITICAL HISTORIES OF PLANNING TECHNOLOGY: NAVIGATING GENERATIVE AI'S PROMISES AND RISKS

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As generative AI (GenAI) transforms planning practice, seven decades of planning technology history offer essential lessons for navigating its promises and risks. Drawing on seven decades of planning scholarship and professional publications, this article examines planning technology adoption across five eras: technocratic optimism (1950s–1960s), pluralist critique (1960s–1970s), the desktop revolution (1980s–1990s), the participatory network (1990s–2000s), and datafication (2010s–present). From this analysis, we inductively identify three dynamics that recur across every era: (1) recurring tensions between technical expertise and democratic participation, (2) uneven democratization of access to planning tools and information, and (3) evolving corporate influence over the infrastructures, platforms, and data that define planning work.

Drawing on a snowball sampling of academic journals, APA Planning Advisory Service reports, and conference proceedings, we review planning technology adoption across five eras: technocratic optimism (1950s–1960s), pluralist critique (1960s–1970s), the desktop revolution (1980s–1990s), the participatory network (1990s–2000s), and datafication (2010s–present). From this analysis, we inductively identify three dynamics that recur across every era: (1) recurring tensions between technical expertise and democratic participation, (2) uneven democratization of access to planning tools and information, and (3) evolving corporate influence over the infrastructures, platforms, and data that define planning work.

These dynamics reveal a central paradox: expanded technological access has never produced a corresponding expansion of equitable benefit. GenAI extends this pattern while introducing a qualitatively new challenge: unlike GIS or the internet, LLMs are general-purpose reasoning agents that can be deployed across nearly every dimension of planning work, making it harder to define and defend the boundaries of professional judgment. Corporate control is also deeper: unlike software that agencies could purchase and operate, GenAI requires ongoing dependency on private platforms trained on historically unrepresentative data.

These findings have direct implications for planning scholarship, practice, and education. Planners must approach GenAI not as passive adopters but as active shapers that clarify problems before selecting tools, develop equity and governance criteria for AI use, and invest in AI literacy for both practitioners and communities. Planning education must integrate critical AI literacy as a core competency, and professional associations must develop institutional responses that center equity rather than efficiency.

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Keywords: generative ai, planning history, democratization, equity

DISENTANGLING INSTITUTIONAL AND ORGANIZATIONAL CONSTRAINTS ON PUBLIC PARTICIPATION IN PLANNING: LESSONS FROM ROANOKE, VA

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Individual Paper Presentation

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Communicative theorists have long argued that participation in planning processes is key for the maintenance of democratic possibility and the efficacy of outcomes (Healey, 2006; Forester, 1999). However, participatory processes can also occasionally lead to broken trust, flawed policies, and increased conflict (Campbell & Marshall, 2000). Some of this potential harm can be mitigated by individual actors, but sustaining effective and just participation requires the development of an infrastructure that can support such processes. Nabatchi & Leighninger (2016) suggest an effective participation infrastructure is built across a number of domains and can be thought of as "the laws, processes, institutions, and associations that support regular opportunities for people to connect with each other, solve problems, make decisions, and celebrate community" (p. 24). When this infrastructure is rife with barriers and shortcomings, it may prevent the realization of effective participation and risk harms, such as those identified above.

In this paper, we argue that this infrastructure can be productively thought of as simultaneously generated and delimited at the institutional and organizational scales. We ground this argument in W. Richard Scott's (2014) differentiation between institutions and organizations wherein institutions "provide stability and meaning to social life" (p. 56) and organizations are goal driven entities that operate within a broader framework of institutions while sometimes themselves becoming institutions. In other words, we suggest that the participation infrastructure is both specific to the local government organization involved and embedded within a broader institutional context. This leads us to ask how a better understanding of, and differentiation between institutional and organizational constraints on public participation might influence planning practice.

We utilize a case study from Roanoke, Virginia, to investigate the complex interplay between these domains. Using data from key informant interviews, community listening sessions, and ethnographic fieldnotes, compiled during a community engagement policy development process, we identify three of the main barriers to effective participatory planning processes: the lack of shared expectations, staffing limitations, and organizational culture. We then explore how each of these barriers has been shaped by overlapping institutional and organizational conditions. For instance, even as staff capacity is limited by the professional training and expertise of staff, an institutional constraint grounded in planning education, it is also constrained by budgetary shortfalls and hiring freezes, which are specific to this particular municipality. From this analysis, we suggest that differentiating between institutional and organizational infrastructural conditions and identifying the degree of influence of each condition can allow local practitioners to more effectively cultivate the conditions for participation by pinpointing potential levers for change. We further argue that while these local actors can seek to change organizational scale influences, they may only be capable of mitigating or adapting to institutional scale influences. For example, in our case, the municipality seeks to address the culture barrier at different scales by pursuing organizational change via policy development while recognizing that this policy can only mitigate the influence of the broader politicization of local governance. Consequently, we suggest that barriers that are comparatively more conditioned by institutional factors may be harder to address or overcome at the local level. Finally, we reflect on how institutional factors

located outside of local communities, such as the training of planning staff, complexities of local governance, and participatory mandates, could be addressed at the educational, professional, or regulatory scale. Citations:

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Keywords: Participatory Planning, Participation Barriers, Institutions, Organizations

EMBODYING GRIEF IN PLANNING EDUCATION

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Individual Paper Presentation

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Experiencing or anticipating the ecological losses of species, ecosystems, and landscapes from extreme environmental change leads to ecological grief. Emerging scholarship on 'trauma-informed placemaking' recognizes the need to address trauma experienced in places before 'healing in place'. While the work of mourning is frequently taken up by those who are most marginalized and invisible within policy and discourses, the work of world-building beyond grief is collective, relational, and intergenerational (Pihkala 2024). Further work towards 'territorial healing' weaves together collective memory and spatial imagination as mechanisms for surviving conflicts through therapeutic dialogue and constructing community-healing infrastructures (Ortiz and Gómez Córdoba 2024). A particular concern is generations of young people, including those studying environmental science, sustainability, and planning. This paper seeks to understand how instructors and educators might address grief work and the potential of these discussions to motivate transformative action. This paper asks the following: (1) To what extent is grief work taken up in the scholarly literature on climate pedagogy within the environmental science, sustainability, and planning field?; (2) How might planning educators facilitate learning from witness, feeling, to actions?

Utilizing Freire's arc of transformations (Freire 2000), we conducted a textual analyses of the literature and syllabi submitted to the Association of Collegiate Schools of Planning (ACSP) Climate Action Committee. Freire's arc of transformation outlines stages of critical-based inquiry, conscientization, rehearsals for future actions, cultural action, ultimately leading to both internal and external transformational change. This paper contributes to understanding how 'grief as work' can be further recognized and integrated into the work of planners, environmental and justice advocates, recognizing that working through grief is also a process of birthing new possibilities and imagining alternative futures.

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Keywords: education, grief, theory, ethics

EXCAVATING THE DESIGN-POLITICS OF DEEPLY LAYERED PLANNING HISTORIES

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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This paper theorizes a new breed of planning historian--the archaeotopist—someone who excavates particularly charged locales over the longue durée as a series of sequentially co-located "event-places." Examining urban change from a single vantage point over hundreds of years, makes it possible to see the simultaneous evolution of designed environments and enacted politics, conceptualized here as "design-politics." I argue that politics should be seen as an internal and integral part of the design process, and that the processes of design embed questions of power. Unstated norms, implicit exclusions, and deeply internalized ideologies became encoded in form. The hyphen in design-politics intentionally makes a strong claim: it asserts that design and politics are co-constitutive. Political order is not merely expressed in design; it is also materially constituted through it. In this sense, drawings—especially plans, sections, and site plans—are projective forms of governance. The representations, and the resultant structures, are non-verbalized assertions about preferred kinds of habitation and use. When I place a hyphen in design-politics, I am signaling conceptual integration and resisting disciplinary separation in favor of emphasizing larger systems across both time and space.

The paper illustrates the process and value of this method by reference to four iconic sites in capital cities: 1) The Arc de Triomphe in Paris (narrated from the mock-up prepared for Napoléon's wedding procession in 1810, through its role in 19th and 20th century invasions, occupations, and celebrations all the way to the attack by the Gilets Jaunes protesters in 2018); 2) Washington D.C.'s Federal Triangle (recounted from Davy Burnes' 18th-century slave plantation to the 19th-century "Dime Museum" freak shows to the 21st-century Trump International Hotel); 3) Mexico City's Plaza of the Three Cultures (tracked as the evolving site between two massacres, one in 1521 and one in 1968 on a site featuring the co-location of a Mexica (Aztec) temple, a Catholic church and North America's second-largest housing project); and 4) Tiananmen in Beijing (traced from a Qing Dynasty gate to a Forbidden City into a vast Mao-invented forbidding Square, via decades of rallies, assemblies and occupations). Each case shows how the evolution of these charged iconic spaces can be used to narrate both design history and political struggle--expressed through processes of conquest, invention, serial displacement and urban development. Each place, as well, has served as a staging ground for protest and insurgent acts of citizenship. Not every site has such a complex and violent history, yet the archaeotopist's process of observing the lingering import of event-place palimpsests carries broader resonance for more everyday locales.

Rooted in extensive archival research that has mined visual material and documents written in French, English, Spanish and Chinese, the paper (as an overview of a much larger book project) deploys rich empirical material to theorize a new way to approach globally integrated planning history.

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Keywords: design-politics, longue durée planning, event-places, rallies, palimpsest

From “Gay City” to “Creative City”: Branding, Redevelopment, and the Politics of Municipal Image-Making in Early West Hollywood

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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This paper examines how the newly incorporated City of West Hollywood used urban planning, redevelopment, and branding to negotiate tensions between progressive governance, gay visibility, and economic development in the late 1980s and early 1990s. Incorporated in 1984 through a coalition committed to enacting tenant protections and gay rights, West Hollywood quickly became known for progressive policymaking, including strong rent control, a domestic partnership ordinance, and anti-discrimination protections. During the incorporation vote, residents also elected, for the first time anywhere, an openly gay majority to city council, including the first openly gay mayor. In so doing, West Hollywood became the “first gay city,” a moniker reinforced as much by the election results as by the media frenzy surrounding it. While these developments secured West Hollywood’s progressive reputation, they also produced a backlash. Public discourse increasingly portrayed West Hollywood as “too progressive,” too narrowly defined by gay politics and renters’ issues at the expense of economic development, business interests, and public safety.

I argue that these early pressures in West Hollywood’s municipal history, set against the public health crisis of HIV/AIDS and the intensifying stigma directed at gay communities, shifted the city’s planning and policy agenda from a focus on tenant protections and civil rights to an emphasis on image management, redevelopment, and economic growth. Between the late 1980s and early 1990s, city officials mobilized the powers afforded by cityhood–zoning, redevelopment authority, taxation, contracting, and appointed boards and commissions–to pursue coordinated strategies of policing, corridor redevelopment, and place marketing. The first move was the “Creative City” campaign, which sought to reposition West Hollywood as a desirable destination for tourism, entertainment, and business investment while partially displacing the city’s more explicit gay identity.

To make this argument, I draw on archival research, including city council minutes, planning documents, redevelopment materials, and newspaper coverage, alongside oral histories. This combination allows me to trace the actors, debates, and institutional mechanisms through which the "Creative City” identity was produced and contested. I find that the “Creative City” campaign and subsequent redevelopment efforts accomplished multiple objectives simultaneously. First, they worked to recalibrate West Hollywood’s gay image: the campaign implicitly relied on associations between gay culture, creativity, and cosmopolitanism even as it attempted to soften or depoliticize overt gay identification. Second, the campaign helped set the stage for large-scale redevelopment along the city’s east end, addressing local complaints about safety while positioning the area for economic revitalization. In subsequent years, redevelopment efforts marginalized more vulnerable queer populations who had inhabited many of the spaces marked as unsafe (Ehrenfeucht, 2013).

The paper contributes to scholarship that links urban planning to the formation of sexual identities and hierarchies (Bitterman & Hess, 2021; Frisch, 2002; Goh, 2015). It expands this scholarship, which has mostly focused on gay neighborhoods or enclaves, by centering the role of municipal incorporation and identity formation as key

modalities through which planning and policy goals were achieved. Theoretically, the case of West Hollywood's transformation from the gay city to the "Creative City" anticipates later "creative class" (Florida, 2002) discourses that positioned (primarily white, cisgender, middle class) gay men as economic assets for urban revitalization. For planning practice, the case highlights the need for inclusive and reflexive governance frameworks that ensure branding, redevelopment, and public safety strategies and processes do not inadvertently marginalize already vulnerable groups.

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Keywords: place branding, municipal incorporation, urban governance, LGBTQ+, planning history

HYPE CYCLES IN ACADEMIC URBAN PLANNING: ARE WE CHASING FADS?

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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To what extent are urban planning scholars chasing fads? Like any academic field, urban planning responds to emerging technologies, shifting policy priorities, and broader cultural moments. But to what extent does this responsiveness shade into hype — a pattern in which topics rise and fall rapidly rather than building toward issues of enduring importance? We investigate whether urban planning scholarship exhibits hype cycle dynamics: predictable waves of rising enthusiasm, outsized peak attention, and subsequent decline around specific technologies and concepts.

The central research questions are threefold. First, does attention to specific technologies and planning concepts within academic urban planning follow a recognizable hype cycle pattern? Second, does scholarly attention lead, lag, or track alongside general public attention as proxied by Google search behavior? Third, to what extent does this pattern suggest reactive versus sustained knowledge production within the field, and which topics demonstrate enduring relevance over time?

We draw on three data sources spanning 2010 to 2025: ACSP conference abstracts, planning journal articles, and Google Trends data. Text data are collected through systematic scraping and aggregation of conference programs and journal databases. The first dataset includes abstracts from the Association of Collegiate Schools of Planning annual conference, which serves as an indicator of emerging research topics. The second dataset consists of full-text articles from leading planning journals, including the Journal of the American Planning Association, the Journal of Planning Education and Research, and Planning Theory & Practice, which represent research that reaches formal publication. As a third dataset, we use Google Trends data to capture patterns of public attention.

We apply natural language processing (NLP) methods to all text corpora to identify and track thematic attention over time. This includes preprocessing steps to extract frequencies of key words and multi-word expressions, such as bigrams and trigrams. These include terms such as “climate change,” “economic development,” “autonomous vehicles,” “dockless scooters,” “big data,” “machine learning,” and “artificial intelligence,” along with related co-occurring phrases, which represent a variety of topics studied by urban planning scholars in the past decade. Temporal trends in these linguistic features are analyzed longitudinally and compared against the Gartner Hype Cycle framework to identify patterns of rise, peak, decline, and stabilization.

Our findings reveal that several prominent planning concepts - in particular those related to emerging transportation technologies such as autonomous vehicles or micromobility - exhibit hype cycle-consistent trajectories in conference abstracts and journal publications. Similarly, we document that discussion of gentrification ebbs and flows in a manner consistent with Myers’ predictions regarding the underlying phenomenon (2016). On the other hand, discussion of topics such as climate change follows a steady, consistent growth trajectory.

These findings provide practical insights for planning scholarship, practice, and education. They suggest a need for greater reflection on how research agendas are shaped and whether they prioritize long-term relevance over short-term visibility. For scholars, the results raise questions about the balance between innovation and durability in research topics. For practitioners, the study highlights the risk of policy attention shifting too quickly between emerging technologies without fully addressing their long-term impacts. For educators, the findings show the

importance of teaching students how to critically assess trends and distinguish between evergreen topics and temporary enthusiasm.

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Keywords: Urban planning, Hype cycle, Emerging technologies, Research trends, Text analysis

INSURGENT PLANNING UNDER AUTHORITARIANISM: TOWARD AN EPISTEMOLOGICAL PRACTICE IN URBAN CHINA

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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In recent years, scholarship on insurgent planning has provided important intellectual resources for planners to imagine the "non-state space" of radical planning practices. However, when understood narrowly as a spatial practice, insurgent planning leaves little room for discussion in authoritarian contexts such as China. This has produced a striking silence in a body of literature otherwise rich in critical insights on China's urban question, and has contributed to a reformist ideological tone in planning studies on China.

In response, this paper reconceptualizes insurgent planning as a broader epistemological practice and asks how alternative forms of urban knowledge production might become possible in China. In other words, it questions what can be known, said, or imagined as transformative planning under authoritarianism. Drawing on the authors' experiences between 2024 and 2026—including organizing workshops, facilitating public-facing cultural groups, teaching urban theory—and in-depth interviews with their participants, the paper explores alternative planning resources and strategies capable of opening insurgent epistemologies within the Chinese urban context.

Inspired by theoretical interventions made by reparative planning, prefigurative geography, and Southern urbanism, we identify literature, music, personal histories, craft practices, and panel discussions as diverse resources for both insurgent planning and urban theorizing. Building on these resources, we propose a "5R" model—Replay, Repair, Reflect, Relocate, and Reword—as a portable and open-ended toolkit for co-producing insurgent urban epistemologies under authoritarian conditions. The first two strategies engage with the past: by replaying literary and musical narratives that diverge from official accounts, planners can help construct plural urban temporalities and repair the historical traumas embedded in state-led planning. The third strategy bridges past and present: through reflecting on the entanglement between personal urban histories and broader urban transformations, planners can locate their own distinctive "problem spaces." The final two strategies orient toward the future: by relocating urban theories derived from everyday life in the Global South, planners can help open alternative perspectives on seeing Chinese cities, and through rewording planning problems in a "translational" dialogue between theory and context, the question of how planning may be practiced can be reconfigured.

Taken together, these interrelated strategies constitute both a theoretical and practical invitation to rethink the possibilities of insurgent planning in an era of resurgent authoritarianism globally.

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Keywords: Insurgent Planning, Urban China, Reparative Planning, Prefigurative Geography, Southern Urbanism

IS ENERGY PLANNING TRULY ADDRESSED IN PLANNING CURRICULA? EVIDENCE FROM NORTH AMERICAN ACCREDITED PROGRAMS

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Planning programs increasingly acknowledge climate change and sustainability, yet it remains unclear whether energy planning has achieved a similarly visible and stable place within accredited planning education. Energy, however, is becoming an increasingly important urban issue, shaped by aging energy infrastructure, the potential to reduce demand through urban design interventions, and the rapid expansion of very energy-demanding data centers, which are predominantly located in urban areas. To date, energy planning and urban planning have largely remained disaggregated, often treated as separate domains despite their growing interdependence (Cajot et al. 2017).

This work addresses a central question for the field: are planning schools preparing future planners to engage energy transition, decarbonization, and the spatial governance of infrastructure as one of the core planning concerns rather than as peripheral environmental topics? More specifically, the paper asks: (1) how are energy-related courses currently integrated into Planning Accreditation Board (PAB)-accredited planning programs in North America, and (2) what institutional and contextual factors appear to shape that integration? These questions respond to growing calls for stronger climate leadership in planning education while recognizing that energy planning occupies a distinct position at the intersection of land use, infrastructure, policy, governance, and justice (Infield et al. 2023; Hurlimann et al. 2025).

Methodologically, the study examines the full accreditation-defined population of 84 PAB-accredited and candidacy programs in North America through a comparative review of publicly available documents: mission statements, strategic plans, course catalogs, and, where available, course descriptions. Building on scholarship on climate curricula and curricula change in planning and the built environment, the paper develops a keyword-guided assessment of public curricular visibility across three levels: strategic framing, formal curriculum, and course-level description (Hurlimann et al. 2025). A descriptive visibility index is then used to compare institutions with different program structures.

The findings reveal a substantial mismatch between broad commitments to climate change and sustainability and the explicit visibility of energy planning. Energy-related language appears in only 11.9% of missions and strategic plans, while energy-focused courses are present in 25.0% of bachelor's programs and 30.4% of master's programs. By contrast, sustainability and environmental content are much more widely represented. Where energy appears, it is most often embedded within broader offerings in sustainability, infrastructure, environmental systems, or policy rather than institutionalized as a clearly named and permanent curricular component. The analysis further suggests that this uneven visibility is shaped by faculty expertise, institutional priorities, curriculum approval structures, interdisciplinary opportunities, and wider regional policy contexts. Read through the lens of institutionalization, energy planning appears recognized as relevant, but not yet consistently formalized as a legible core area of planning education (Farhangi et al. 2025; Bafarasat et al. 2025).

The work contributes to planning scholarship by reframing curriculum analysis as a question of public visibility and professional legitimation. For planning practice and education, it argues that the key issue is not simply whether energy is taught somewhere in the curriculum, but whether it is visible enough to structure competencies and prepare graduates for increasingly energy-intensive and climate-constrained planning contexts. The suggestions

outline pathways for stronger integration through dedicated courses, clearer catalog language, cross-listed pathways, and deeper connections to professional and interdisciplinary practice.

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Keywords: Planning education, Energy planning, Curriculum development, Planning pedagogy, Accreditation

IS PLANNING MEETING OUR MOMENT OF SOCIAL CRISIS?

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Underlying the political tumult of the United States today lie three social crises that have been building for decades: growing income and wealth inequality; increasing social isolation; and declining trust in institutions. Evidence shows these three crises are interrelated: income inequality and poverty, low interpersonal trust, and low trust in institutions are all highly correlated with one another (Twenge et al., 2014). These crises are not specific to planning, but they have profound impacts on cities and neighborhoods and relate to the design and governance of human settlements in myriad ways.

This paper interrogates the role of planning in the emergence of these crises; the way in which these crises undermine the practices and goals of planning; and what planners might do to orient their research, education, and practice toward ameliorating them. In producing a structured assessment of each of the three crises and its relationship to planning, we draw on existing scholarship from both planning and the broader social sciences. This also enables us to evaluate whether current planning research meaningfully engages these crises and to identify systematic gaps in evidence where planning's role remains undertheorized or empirically thin.

We ultimately argue that, despite long-standing commitments to equity, justice, community, and democratic governance (Davidoff, 1965; Fainstein, 2010; Forester, 1999; Innes, 1995), planning as a field remains insufficiently oriented toward understanding and ameliorating the major social crises of our time. Neither the dominant research agendas nor the most prominent policy prescriptions in contemporary planning fully grapple with the scale, structural nature, and multi-scalar drivers of these challenges.

Contemporary planning must foreground the great social crises of our era in research, education, and practice. This involves three interlinked imperatives: (1) embracing social scientific approaches that combine humanistic inquiry with empirical rigor to clarify when and how planning matters in shaping macro-social outcomes; (2) producing honest, evidence-based narratives about the limits and possibilities of local interventions and the scale of change required; and (3) engaging national policy debates rather than confining planning to a localist profession focused on downstream consequences. The paper's aim is to offer a roadmap for a reinvigorated discipline capable of confronting the defining social challenges of the twenty-first century.

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Keywords: Social crisis, Inequality, Social isolation, Trust in institutions

KNOWLEDGE HIERARCHIES AT GA-MASHIE'S URBAN-OCEAN INTERFACE: EPISTEMIC EXCLUSION ACROSS THREE PLANNING MOMENTS AT ACCRA HARBOUR (1919–2025)

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Why has a century of planning at James Town Harbour in Accra consistently produced the same outcome — the systematic exclusion of fisher communities' experiential knowledge of coastal livelihoods, tidal patterns, and maritime urbanism — despite radically different political regimes? This paper argues that planning knowledge hierarchies are not incidental to coastal dispossession but structurally constitutive of it. The paper traces the planning epistemologies at a single harbour site across three politically distinct moments over a century: the 1919 colonial spatial reorganisation of Accra; the 1958 post-independence framework; and the contemporary Belt and Road Initiative harbour redevelopment (2016–2025), which has demolished fisher settlements under the language of "formalisation." Drawing on three evidentiary streams — archival analysis of UK Parliamentary Papers and Gold Coast colonial reports (1906–1928); ethnographic fieldwork in Ga-Mashie (2018–2022), including interviews, drone photography, and visual documentation of the 2020–2021 demolitions; and satellite imagery analysis documenting progressive transformation of the harbour — the paper demonstrates how successive epistemic communities reproduce knowledge hierarchies that render vulnerable fisher communities structurally invisible to planning. A critical finding is that across all three planning eras, no official document explicitly states an intention to displace fisher communities. The language is always one of improvement: de-silt the port, develop the nation, modernise artisanal fishing. This absence of explicit displacement language is constitutive — planning's epistemic architecture produces a reality in which the destruction of livelihood knowledge is an invisible structural effect of technical improvement rather than a legible political act. A further finding, derived from the contemporary period, is that information opacity itself constitutes evidence: over five years, the researcher and affected community were denied access to project details, construction timelines, and provisions for fishing livelihoods — an epistemic closure that compounds the century-long trajectory the paper traces. Synthesising Haas (1992) on how professional networks carry shared validity criteria across political transitions, Mitchell (2002) on the constitutive power of expert knowledge, and Nixon (2011) on slow violence, the paper demonstrates the process operating through three interacting mechanisms: the persistence of professional validity criteria across radical political change; the constitutive power of expert knowledge in formatting the harbour as technical infrastructure rather than livelihood landscape; and the cumulative compounding of epistemological exclusion across generations. The paper concludes by considering what dismantling these hierarchies requires in practice, including information reciprocity, community knowledge as an evidentiary standard, and sustained engagement beyond consultation.

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Keywords: Epistemic exclusion, Planning epistemology, Knowledge hierarchies, urban-ocean interface, slow violence

LAND BACK GOES BEYOND TITLE: THE ONGOING PROCESS OF RETURNING SHABBONA LAKE STATE PARK

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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The Land Back movement fundamentally undermines the field of planning in the U.S. and other settler colonial societies. As evidence of the colonial roots of planning theory and practice continues to grow, it becomes more difficult to justify the status quo of continued Indigenous land dispossession. Planning cannot promote justice and stop short of giving land back.

Within the Land Back movement, there are many different goals, desires and possible pathways for Indigenous communities. What Land Back means and could look like depends on the specific Indigenous communities involved. However, what is central to the movement is the materiality of land, not only as a redress to violent theft but also as critical to cultural resurgence. Language, knowledge, kinship, and so much more come directly from engagement with land. This is why Land Back stories are about transitioning the ownership or stewardship of land back into Indigenous hands. Land conservation organizations and public land management agencies have been actively engaged in these efforts.

While these Land Back stories often feature a transition in who holds title or property rights, that is only a piece of the broader work. Government police powers further restrict what can or cannot happen with land through planning tools such as zoning and other land use controls. Federally-recognized Tribes can have land held in trust or in restricted fee by the U.S. federal government, making the land exempt from state and local land use regulations. All other land holdings of Indigenous communities are subject to state and local land use regulations. This is where planners could take substantive action to further the movement.

Planning concerns itself with ‘land use,’ which, like property ownership, is another form of control over land. Controlling how land is used (and the underlying assumption that this is the only way to relate to land) is rooted in the colonial belief that not only are humans separate from nature, but also that nature is fully within human dominion. Land Back, however, is about allowing the full range of Indigenous relationships to land to thrive, which do not wholly conform to our current colonial land use regime. This gestures towards a role in the movement where planners are tasked with circumventing, if not removing, the very restrictions they are tasked with crafting or maintaining. So, what are these ‘more-than-title’ ways that planners can meaningfully and respectfully engage in Land Back efforts?

Decoding these land use controls on any given piece of land is helpful work. Using an action-oriented mini-ethnographic approach, this paper will describe my process for developing a park planning portfolio for the Shabbona Lake State Park in Illinois. This effort is done in collaboration with the Prairie Band Potawatomi Nation (PBPN), who received the state park through a legislative transfer in January 2025. I enter into this research collaboration as a non-Indigenous scholar working under the direction of the PBPN.

A park planning portfolio is a concept developed by the U.S. National Park Service that involves gathering all relevant materials that guide decision-making for a park unit. Often, all the relevant documents and policies for a park unit are not ‘centrally located,’ so this process helps build a cohesive record that serves as an uncritical reference. What such an assemblage of documents will also reveal is the multiple settler governing authorities that the PBPN is contending with for this particular Land Back effort. My objective is to contribute to new theoretical and practical knowledge on the processual nature of Land Back projects that directly benefit the PBPN. I acknowledge that park planning is a niche sub-specialty within the broader field, but this paper draws on my

experience of planning with the PBPN on an existing park landscape to add some granularity to the broader discussion of planning's role in decolonization.

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- "Finegan, Chance. 2018. "Reflection
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- The audience will learn about the ongoing colonial legacy of public parks and protected areas, and how that constrains a Land Back effort with the Prairie Band Potawatomi Nation. The audience will learn about park planning as a sub-specialty within the field, and how methods from this specialty can support Indigenous communities in efforts to reclaim land.
- and Justice: A Framework for Indigenous-Protected Area Reconciliation." International Indigenous Policy Journal 9 (3): 1–29."

Keywords: Land Back, Public Parks, Indigenous Planning, Planning Methods, Decolonization

LEARNING ACROSS DISCIPLINES: PEER-TO-PEER PROFESSIONAL DEVELOPMENT IN A NON-STUDIO APPLIED URBAN DESIGN COURSE

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Planning education scholarship has richly documented studio pedagogy as the default site of applied learning, yet many planning programs rely on non-studio formats to deliver practice-facing experiences, community engagement, and professional skill development. Less is known about what students learn—and how they learn it—when applied learning is organized through non-studio structures that place discussion, peer feedback, and iterative revision at the center and treat peer-to-peer learning as an instructional engine rather than a byproduct. This paper asks: How does a recurring, seminar-based, non-studio applied course cultivate professional preparedness in planning education, and what pedagogical mechanisms account for these outcomes as students transition from classroom work to professional practice?

We examine seven cohorts (2018-2024) of a recurring applied urban design seminar in which students develop public-facing proposals through peer-led discussion and a scaffolded community engagement sequence that includes an early-semester field visit, mid-semester stakeholder feedback, and a final public open house. The study uses a mixed-method design, drawing on survey responses (n=62) and semi-structured interviews (n=21) of former students across cohorts, some of whom are now working in planning and allied fields. We integrate descriptive survey findings with iterative qualitative coding of interview narratives to identify recurrent learning processes, perceived outcomes, and the course design features students attribute to those outcomes.

Findings indicate that professional preparedness in non-studio applied learning is produced through mechanisms that make typically implicit dimensions of planning practice explicit and discussable. First, seminar-based discussion, peer facilitation, and iterative feedback strengthen students' capacity to justify decisions, communicate under scrutiny, and incorporate feedback into their decision-making and revision. Second, iterative production cycles and revision under constraint cultivate adaptive competence. Students describe learning how to recalibrate proposals when priorities shift, feasibility concerns surface, or public feedback reframes the problem they thought they were solving. Third, a multi-stage community engagement sequence teaches accountability as listening, revision, and follow-through, rather than a single "client presentation", reinforcing that community engagement is a process rather than a single event. Importantly, multidisciplinarity emerges in participant accounts as a key mechanism through which cross-disciplinary difference prompts explicit role articulation, translation of expertise, and negotiation of decision criteria—capacities participants describe carrying into professional practice. Because the seminar format makes discussion and critique central, students do not only "complete a project"; they learn to articulate and translate expertise, negotiate decisions with real audiences, and revise work iteratively under constraint.

By specifying how non-studio applied pedagogy produces practice-ready learning, this paper complements studio-centric narratives in planning education and offers transferable course design moves—peer-led feedback and discussion, structured iteration, and scaffolded accountability—that planning educators can adapt to build professional capacity beyond the studio.

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Keywords: planning education, pedagogy, applied learning, professional preparedness, service learning

LEARNING FROM AND PLANNING FOR URBAN CRISES

Abstract ID: 2298.0.0.1005.2026
Track 8: Planning History, Theory and Education
Individual Paper Presentation

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As we write this abstract, the world stands at the threshold of an energy crisis – one precipitated by the US-Israel war with Iran. While the long-term impacts of a constricted oil supply remain uncertain, the fledgling crisis threatens to destabilize the global economy at a moment when cities in the US reel from immigration raids, and globally, cities face social inequality, housing unaffordability, stalled infrastructure investment, and the intensifying impacts of climate change.

Though deeply alarming, this moment of layered crisis is not without precedent. In the late 1960s through the 1970s, cities in the US weathered a "housing crisis," an "urban crisis," an "oil crisis," a "garbage crisis." Each of these problems was framed as a crisis; and the crisis framing drew public and policy attention, but also focused responses on a narrow range of possible solutions (Weaver 2017).

This rocky period coincided with the public awakening to climate change – though this was yet to be framed as a crisis. Humankind has known about the heat trapping nature of CO2 since Eunice Foote's discoveries in the mid-1800s, but broader public focus on climate change emerged with the first computer model of the Earth's climate and evidence of melting ice caps and sea level rise in the late 1960s, and worldwide attention to the Keeling Curve in the early 1970s. In 1977, President Carter received a memo from his chief science advisor titled "Release of Fossil CO2 and the Possibility of a Catastrophic Climate Change."

In our paper, we consider the temporal overlap of widespread urban instability with the emergence of public knowledge about the greenhouse effect. Our aim is to parse how the "crisis" framings intersected with emergent urban ideologies, thus opening, shifting, or foreclosing possible futures. Using primary source archive documents and historiographies of climate change and urban change, we explore how distinct and shared responses among urban policymakers and urban theorists – chief among them an abiding technological optimism and a structural dependency on fossil-fueled, expansionist development – primed decades of solutions that embedded and exacerbated citymaking's impacts on broader environmental problems.

We begin with the Douglas Commission report of 1968 and its definition of the nature of an "urban crisis." This crisis framing occurred as planning theorists like Webber (1968) were heralding a "post-city age" of unbounded urban societies enabled by technological progress. We then examine urban policy responses to the oil shocks of 1973 and 1979. These fossil energy crisis events, with strong parallels to the present, bookend the demolition of Pruitt-Igoe, the end of federal funding for urban renewal in the US, and the fiscal crisis in New York City, all heralding a loss of faith in ideas of the city amid a critical turn among urban theorists such as Castells (1978). Throughout this analysis, we attend to the material and biophysical properties of fossil fuel, identifying its constitutive role in the proposed solutions and theoretical propositions of the moment.

Following Fawaz's (2023) question about how planners implicated in crisis can respond to crisis, our paper asks: Did the shared ideological underpinnings of policy and theory responses to the narrowly defined "urban crisis" of the 1960s and 70s impact the ability of urbanists to see or understand oil itself as the source of future crises? What can we, as similarly complicit planners facing similarly compounding challenges, learn from the possibilities and limitations of the moment when climate change broke into the public sphere?

Hard lessons in theory and practice from the mid-twentieth century era of plannerly overreach remain core to planning education and ethics. With this paper we take a different view of that fraught moment, seeking to better understand the tangled paths of oil, climate change, crisis, and city planning, and what they could teach us today.

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Keywords: crisis, urban, planning, oil, climate

LIVING OTHERWISE: URBAN TRANSFORMATIONS AND BLACK FEMINIST INFRASTRUCTURES OF CARE IN BOSTON, 1971-1979

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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This paper examines counter-infrastructures of care organized by black women in 1970s Boston. Through a conjunctural analysis of archival materials from Freedom House Coalition, a desegregation crisis intervention, we ask the question: how were these infrastructures conditioned by local social topographies? We show how their institution-building practices and political goals were influenced by economic transformations, struggles over democratic control of resources, and community leadership transitions in the city. This project asserts a potentially obvious but critical truth: the liberatory possibilities of care infrastructures are simultaneously shaping and shaped by the broader urban landscape in which they are embedded.

Historians of community health movements argue that the challenges facing care interventions reflect regional specificities, including urban development, grassroots mobilizations, and institutional machines (Chowkwanyun, 2022). Situated amid the rise and decline of the Model Cities programs, this paper applies a black feminist theorization of infrastructural thinking to the Freedom House Coalition, positioning Boston as a critical site where insurgent forms of care persisted even as similar initiatives elsewhere shuttered (Simone, 2004). Simone's notion of "people as infrastructure" reminds us that cities are made livable not just by roads and wires but by relational webs – often built by those rendered surplus (Simone, 2004; Williams unpub). This analysis underscores the value of studying historically situated organizing for contemporary abolitionist and care-centered praxis, while emphasizing the need for regionally-grounded planning perspectives that resist "plug-and-play" approaches to chart collectively paths toward truly life-giving cities (Williams & Steil, 2023).

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Keywords: care, history, infrastructure, health, race

MAPPING SANCTUARY: HOW THE CATHOLIC CHURCH PLANNED PARISH NEIGHBORHOODS AMID RACIAL AND RELIGIOUS CHANGE IN 20TH CENTURY DETROIT

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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This paper reinterprets Detroit's history by examining a powerful institution that mapped the city around parish neighborhoods: the Catholic Church. Detroit's twentieth-century Catholic parish neighborhoods were geographically bounded and often collectively funded by parishioners, producing a distinct urban form rooted in spatial definitions of ownership and belonging. Using archival, oral history, and mapping methodologies, this paper reveals how parishes in Detroit served both as places of refuge for European Catholic immigrants against a hostile Protestant national landscape and tools for excluding Black migrants from heavily-Protestant regions of the American South. This paradox complicates meanings of sanctuary, demonstrating how a space may be interpreted simultaneously as a refuge, a means of conformity, and a tool of exclusion. More broadly, it raises a central planning question: how does an established religious institution plan for a rapidly racially and religiously diversifying city—and how do planners make decisions when multiple communities hold fundamentally different perceptions of space?

To analyze this paradox, I define the "sanctuary neighborhood" as a neighborhood structured by varying levels of formal and lived ownership and belonging. I discuss four types of sanctuary neighborhoods: sheltering (high ownership, high belonging), fortressed (high ownership, low belonging), aspirational (low ownership, high belonging), and abandoned (low ownership, low belonging). This typology reveals the sanctuary neighborhood as a site of inherent tension, where the same geographical boundaries that offer communal refuge and a sense of home simultaneously function as mechanisms for social conformity and racial exclusion.

I make three main arguments: First, I establish that the Catholic Archdiocese operated similarly to a municipal department of planning, using a parochial map as a central comprehensive plan to divide the region into different parish neighborhoods. These were anchored by a parish church, community centers, and, notably, parochial schools, which non-Catholics often viewed as the route to economic mobilization compared to public schools. Second, many Catholic parishes, even those with particularly exclusionary and racist attitudes, resisted blockbusting and redlining as a means to preserve the parish urban form. The Archdiocese of Detroit, considered the most progressive in the country, followed Black Protestant leaders in calls to action and engaged directly in labor and fair housing movements. Yet parish councils, akin to neighborhood associations, often consulted in decisions for or against integrating the parochial school and neighborhood. Many actively resisted, citing fear of declining housing values and school quality with the motive of self-preservation of the parish.

Third, this paper finds possibilities beyond a segregation-integration binary by exploring how Black Catholics and interfaith coalitions leveraged the parish urban form for sovereignty and racial justice. I determine how Black Catholic parishes sought to establish sovereignty by re-visioning the sanctuary neighborhood "in our image," creating models of self-determination that went against the grain of twentieth-century decline. These sovereignty strategies claimed the parish's existing institutional infrastructure, including its administrative hierarchy, social and economic capital, and property, for Black-led community control. Concurrently, I highlight innovative plans that pursued racial integration through the physical design of shared space such as the strategic placement of community centers that created opportunities for interaction and the merging of resources. Ultimately, by examining the Catholic Church as an urban planner, this paper reveals that the meanings of ownership and

belonging, and the sanctuary neighborhoods built around them, were never fixed, but continually contested and reimagined.

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Keywords: Religion, Neighborhood, Race, Church, Immigration

PLANNING IN THE POST-TRUTH CITY: MISINFORMATION, PROXY CONFLICTS, AND THE CHANGING LANDSCAPE OF PUBLIC DELIBERATION AND COMMUNICATIVE ACTION

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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In this volatile era of fragmented media, deep fakes, AI-generated content, "fake news" accusations, and accelerating political polarization, are traditional planning tools of information gathering, public communication, and democratic deliberation still up to the task?

We face the paradox that information abundance and the proliferation of new channels of instantaneous information access are happening simultaneously with a growing threat to reliable sources and trust in scientific documents. We seem to be confusing quantities and speed of information with quality and veracity. The popular injunction to "do your own research" has become less an embrace of critical thinking than a license for confirmation bias and conspiracy.

Deception, propaganda and disinformation are nothing new: but we are entering a brave new world where old norms and practices (relied upon by planners and other public professionals) may become impotent or irrelevant. The hope of creating a walled-in garden for local planning issues, protected from this information tsunami, is naive, wishful thinking.

In this paper we engage this broader theme by addressing these specific questions:
1. Is planning distinctively susceptible to misinformation compared to other fields, and what characteristics of planning information shape that vulnerability?
2. How does the fragmentation of media — including the collapse of shared information commons and the decline of local journalism — produce polarization that undermines collective planning deliberation? Is this “misinformation” therefore a fragmentation of information (each group with their separate “information landscape” worldviews), undermining a common public interest?
3. With the rapid adoption of AI-driven information and “analysis”, will local governments outsource planning decisions to AI (and private vendors who use AI)? Will one result be reduced transparency and accountability about the source, use and veracity of AI-based information in planning processes?
4. Are we experiencing more decisionmaking that bypasses traditional public planning pathways? Examples include data center siting and the privately developed and implemented smart city tech (e.g., by Cisco, Microsoft, Siemens, Huawei).
5. Does communicative action planning still have something to contribute to this new era, or has the communication landscape so fundamentally altered that new concepts and approaches are needed?

Conceptually, we employ the generally-accepted distinction between misinformation (wrong information innocently shared without intent to cause harm), disinformation (deliberately created information shared to cause harm), and malinformation (genuine information -- often confidential -- intentionally used to cause harm). That said, these crisp distinctions can be problematic, with gray areas, especially because it’s hard to determine “intent.”

We draw upon case studies of planning controversies and the resulting (mis)use of community information: attacks on seemingly benign planning ideas (e.g., Agenda 21, Sustainable Development Goals, the 15-minute city); the battle over historical monuments/sites; disaster planning information; data center siting; bike lanes; and ending single family zoning. Often these seemingly local planning issues get appropriated as proxies for broader ideological

conflicts (over freedom, privacy, the right to drive, BIG TECH, urban liberal elitism, etc.). Once local issues are laden with these proxy roles, town meeting debates become more heated and polarized, and traditional conflict resolution strategies become ineffective.

We conclude by exploring various strategies -- old and new -- to counter this mis- and disinformation, including novel formats for public data and dissemination, improved data visualization, enhanced forms of public participation, and disentangling local planning issues from larger proxy battles over ideology.

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Keywords: misinformation, Communicative action, Local democracy, Artificial intelligence, ideological proxies

PLANNING PRACTICE IN SMALL CITIES: UNDERSTUDIED IN PLANNING SCHOLARSHIP?

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Ninety-three million Americans live in small cities (pop. 20,000 to 200,000). This is over a quarter of the total U.S. population (U.S. Census Bureau (2020) Decennial Census). Planning practitioners in small cities in the U.S. face constraints and opportunities that are different from their colleagues who practice in major metropolitan areas. The size of a city is directly related to the ability to support a well-staffed and professional plan commission and related government agencies; the presence of philanthropies, community-based non-profits, and civil society advocacy organizations; and the existence of other indicators of a healthy civil society for understanding and acting upon urban problems, such as independent media, diverse and independent businesses, and the presence of political actors with the ability to shape county, state or federal policy. In brief, much of the governance, information, and civil infrastructure that planners rely on in larger cities is likely to be absent in smaller cities. Conceptually and theoretically, planners in small cities face unique challenges. Moreover, because so many Americans live in small cities, planning practice in small cities likely effects the perception of the profession for much of the U.S. population.

The authors analyze planning scholarship on or in small cities published in major journals. We ask three interrelated questions. First, is planning practice in small cities under-represented in academic planning scholarship? Second, are the themes investigated in small city planning research the same or different than planning scholarship generally? Third, does planning scholarship identify or address the unique challenges of practicing in small cities? An initial review of literature has shaped several hypotheses that will be investigated through a systematic analysis of top urban planning journals. Several monographs in urban studies, planning and geography have focused on small cities as objects of study in the United States (Hall 2021, Mapes 2025, Throgmorton 2022, Hackworth 2019) and in Europe (Mayer & Lazzeroni 2022). However, urban planning scholarship has tended to lump small cities with larger concerns, like the contentious politics of ‘right sizing’, (see article Morckel 2021 and response in Journal of the American Planning Association) or the phenomenon of growing edge cities. In other words, small cities are treated as settings for planning problems, rather than sites of planning practice and theory generation, with their own unique challenges.

This research draws on a database of all articles in five top planning journals from 2006 to 2026: 1) Journal of Planning Research and Education, 2) Journal of the American Planning Association, 3) Journal of Planning Literature, 4) Environment and Planning A, 5) Environment and Planning D. Each of the journals is examined to determine the percentage of articles focusing on small cities. The article uses network analysis to examine keywords associated with small city planning articles, in comparison to all articles. Finally, this talk examines whether there are major academic institutions producing small city research. The authors test three hypotheses: 1) Small cities are underrepresented in planning scholarships, relative to their prevalence and combined population. 2) Planning research on small cities focuses on different themes, overemphasizing physical planning, and

underrepresenting governance and planning theory. 3) When small cities appear in planning literature, the focus of research is rarely the challenges and opportunities to planning practice afforded by the size of the city.

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Keywords: Planning scholarship, Small cities, Practice, Planning Theory, Governance

PLANNING WITH THE WORLD IN MIND: PEDAGOGIES OF GLOBAL URBANISM IN A MIDWESTERN PLANNING SCHOOL

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Planning education has progressively aimed to integrate "the global" into its curricula, yet questions remain about how this is done and with what implications. In a trend that may be especially pronounced in schools located outside so-called world cities, global urbanism is often taught as knowledge about distant places—whether in the Global South or major metropolitan regions—thereby perpetuating a division between "global" processes and the ostensibly "local" contexts in which most planning students are trained. This paper examines this tension by asking how is "the global" spatialized in planning pedagogy, what implications arise from teaching global urbanism in a Midwestern planning school, and what forms of conceptual reorientation could such initiative facilitate?

Bringing into dialogue calls to expand Global South within North American planning curricula (Carolini, 2020), critiques of the "Southern turn" that caution against reifying the global South as a bounded object of study (Wood, 2020), and relational approaches that foreground how places like the American Midwest are embedded in transnational circuits of capital, labor, and environmental change (Miraftab, 2016), the paper examines the design and implementation of two undergraduate courses on global urbanism at a Midwestern planning school during a period of rising nationalism. From this vantage point, it advances a twofold argument. First, it claims that a primary challenge for planning pedagogy in this context is not the lack of global content, but the persistent depiction of "the global" as something that happens elsewhere. Second, it asserts that pedagogy in a Midwestern planning school can facilitate the re-conceptualization of global urbanism by making visible the ways in which students' own environments are already shaped by uneven and interconnected global processes.

More concretely, the paper draws on series of pedagogical interventions—such as reading lists that include a variety of global contexts or assignments that prompt students to identify and discern connections between their immediate local environments and broader global phenomena—treating them not only as instructional tools but also as avenues for conceptual experimentation. Teaching is not just about transmitting existing theories, but also about generating new ways of understanding the world through structured engagement with concepts, cases, and methods. In that sense, the paper demonstrates ways in which critical "pedagogies of global urbanism" might assist future planners in rethinking the multiscalar and relational nature of urban processes while also suggesting that teaching global urbanism from places not conventionally understood as "global" offers a method for re-theorizing it and a productive vantage point from which to interrogate how uneven processes of economic integration, environmental change, and political transformation are lived and reproduced.

Teaching global urbanism in a Midwestern planning school is not about bringing the world into the classroom, but about enabling students to recognize that they are already living within it—and, in turn, to retheorize the conditions of their future practice. More broadly, this paper contends that global urbanism ought to function as a lens through which planning is taught, rather than merely a subfield or elective subject. In doing so, it holds significant implications for planning education as well as the potential influence of planning history and theory on the field. By viewing pedagogy as a site of theoretical production, planning educators can contribute to ongoing efforts to shift planning toward more relational and globally informed interpretations of urbanization. In a time of climate crises, geopolitical instability, and deepening inequalities, giving planning students the ability to think across scales and contexts is not just an intellectual exercise; it is also necessary for "planning with the world in mind."

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Keywords: Planning Pedagody, Global Urbanism, Multiscalar Processes

PLANTATION AFTERLIVES IN NEW YORK STATE: LAND, GOVERNANCE, AND THE SPATIAL LOGICS OF SLAVERY

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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This paper argues that plantation landscapes in New York State should be understood not as peripheral to the history of slavery, but as enduring spatial formations through which land, labor, ecology, and governance were organized and continue to be inherited. Dominant regional narratives cast slavery as geographically elsewhere and the plantation as a bounded Southern form. In contrast, this paper reads the plantation as a territorial and institutional logic that exceeded the agricultural estate, shaping northern landscapes through Indigenous dispossession, enslaved labor, ecological simplification, and the administrative ordering of property. The plantation is thus approached not as a historical artifact but as a durable spatial grammar whose afterlives remain embedded in contemporary land management, conservation, heritage interpretation, and planning practice.

Drawing on archival research, georeferencing of historical estate maps, and comparative spatial analysis across plantation-linked sites in New York State, the paper examines how these landscapes were assembled through regimes of enclosure, extraction, and forced dependency. This approach builds on scholarship that identifies the plantation as a system defined by simplification, coerced labor, substitution, and the disruption of generational relations across species and communities (Tsing & Haraway 2019), while engaging critiques that foreground colonialism, racism, enslavement, and white supremacy in analyses of the present (Davis et al. 2019). The paper places Black geographies and Critical Indigenous perspectives at the center of its analytic, treating plantation landscapes as sites where racialized governance became materially fixed in the organization of land and life. Methodologically, the project treats mapping not as illustration but as critical inquiry. Using spatial overlays and site dossiers, it traces how historical estates relate to present-day settlement patterns, forest cover, transportation corridors, and conservation lands. This approach is informed by work that understands Black life through fungibility, spatial maneuver, and the production of territorial order (King 2016), and by scholarship that situates plantation geographies as ongoing formations shaping a Black sense of place through persistent practices of racial violence and dispossession (McKittrick 2011). Rather than asking only where plantations were, the paper asks how plantation logics continue to order the contemporary landscape and what forms of planning knowledge emerge when those afterlives are made legible.

By situating New York State within the spatial history of slavery and colonial modernity, the paper contributes to planning history and theory in three ways. It challenges regional exceptionalism that has displaced slavery from the North; reframes the plantation as a planning problem; a mode of territorial governance persisting in environmental policy, preservation, and land use regimes; and advances abolition as a spatial analytic through which planners might confront landscapes organized by extraction, enclosure, and racialized control. This approach shifts planning away from symbolic repair toward engagement with the structures through which historical violence remains materially and institutionally active.

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Keywords: Plantation Afterlives, Black Geographies, Racialized Landscapes

RETHINKING URBAN GOVERNANCE IN THE POST-INDUSTRIAL CITY: URBAN POLITICAL ORDER IN ROANOKE

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Since the publication of Stone's work on regime politics (Stone, 1989), that theory has served as a dominant framework for understanding urban politics. Stone argued that formal governmental structures are not the primary drivers of city governance. Instead, coalitions of public and private actors, particularly business elites, collaborate to further governance efforts. He dubbed these informal partnerships "urban regimes."

Yet, the empirical conditions that gave rise to regime theory have changed significantly since Stone wrote. For example, traditional business elites today may be disengaged from sustained civic leadership (Stone, 2015); new actors, including anchor institutions and community organizations, are now more active in the urban governance arena (Strom, 2008), and neighborhood organizations and civic coalitions have also increased their political capacities (Ruth et al., 2013). With these actors often offering different visions, today's urban governments frequently face contested agendas. This scenario can, in turn, displace stable governing coalitions with ad hoc initiatives supported by opportunistic assemblages of actors and resources.

Stone has acknowledged these changes, arguing that "any expectation that inquiry will likely find a stable and cohesive governing coalition is outdated" (Stone, 2015, p. 109). He has proposed an updated framework predicated on the concept of urban political order. In this view, contemporary urban politics may be viewed as a cluster of evolving relationships operating simultaneously across three concurrent layers of human capital with different resources, agendas, and levels of power, held together not by cohesion, but by their ongoing interactions, themselves shaped by both local agency and broader structural forces (Stone, 2015). Stone introduces three tiers: elites who control substantial resources to set the agenda, the broad middle strata, who hold modest resources and primarily adjust established policies and practices, and marginal populations whose meager resources are generally insufficient to alter the conditions that disadvantage them.

We argue, however, that Stone's urban political order implicitly reproduces a hierarchy of agenda-setting capacity even as it claims to transcend the limitations of elite-focused regime theory. In Stone's framework, tier one dominates priority agenda-setting while tiers two and three are confined to responding, adjusting, resisting, and constraining. We argue that this implicit hierarchy mischaracterizes the contemporary moment in which community organizations, neighborhood coalitions, and racial justice movements are not merely reacting to elite agendas but articulating alternative visions and pursuing them through sustained political organization. In the contemporary postindustrial city, agenda-setting has become a multi-tier activity that Stone's framework does not fully capture.

We choose Roanoke, VA, as an empirical site to examine how local governance operates across tiers, how tiers interact, and how lower-tier actors initiate and sustain alternative agendas. Roanoke is a mid-size post-industrial city that has transitioned from a railroad-dominated community to a medical and medical services-related one. The city embodies the postindustrial conditions Stone (2015) described. We draw on archival and document analysis of local government and planning records supplemented by media sources, including the Roanoke Times, the Roanoke Rambler, and the city's social media accounts. The analysis traces the trajectory of local governance from

1990 to the present through project-based milestones that examine how governing arrangements, actor configurations, and tier interactions have evolved across successive development projects.

From this analysis, we suggest that contemporary urban governance forms simultaneously within and across all three tiers, and that cross-tier coalitions are a distinctive feature of contemporary urban governance.

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Keywords: city politics, urban political order, governing coalitions, multi-tier governance

SINNERS (2025) AND THE UTILITY OF VISUAL CURRICULUMS FOR CONTINUING AND EMERGENT PLANNING EDUCATION

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Individual Paper Presentation

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Most planning education in North America is focused on traditional-aged students, leaving continuing instruction for mid-career planners to bodies like the American Institute of Certified Planners and Planetizen (Forsyth 2026). Given that most workers aged 25 to 65 years old pursue either formal or informal post-graduation training and cite "time" as the top barrier to continuing education, there is both a demand for capacity-building instruction and a dearth of short, but intensive opportunities to engage (Forsyth 2026). Here, we propose a "visual curriculum," a critical film-based pedagogy appropriate for mid-career autonomous learners or planning educators interested in the utility of cultural production for "[making] pressing problems visible" (Giroux 2011, 688). Our work builds on hooks' (1996) assertion that "[m]ovies not only provide a narrative for specific discourses of race, sex, and class, they provide a shared experience, a common starting point from which diverse audiences can dialogue about these charged issues" (2).

We employ Sinners (2025) as an entry point into a "Black sense of place," one that situates us historically, imaginatively, and spatially within the Mississippi Delta, with far reaching implications for the social relations and planning futures of the greater United States (McKittrick 2011, 947). Set in Clarksdale in 1932, Sinners (2025) chronicles the efforts of the Smokestack Twins (Michael B. Jordan) to open a juke joint in their hometown and explores the social organization of the Delta and its reliance on anti-Black structural racism as a foundational market subsidy. Like Woods (2017), we find that the political economy organizing Black life in the Delta is not unique to the region, rather it is the basis by which the mercantile North and, by extension, every U.S. city is built upon. Leveraging artmaking, Black epistemologies, and storytelling otherwise, Sinners (2025) teaches emerging and mid-career planners alike, how place, power, and racialized political economy converge into a situated Black knowledge of place.

Particularly, the film answers Ortiz's (2023) call for a pluriversality of storytelling that centers lived experiences of place and spatial struggle, in this case, writer-director Ryan Coogler offering the audience a multi-racial representation of the Jim Crow American South that is often obscured. Though temporally situated in 1932, Sinners offers vital lessons for contemporary planning practice, revealing how planners continue to operate within a plantation bloc political economy that has morphed and reified over time but has never been dismantled, long after "Cotton Was King." Including representations of Chinese immigration, the Great Migration, and Indigenous displacement, and post-colonial transnational solidarities, Sinners (2025) is not just a film; it's a conceptual guide that activates Clyde Woods' (2017) Development Arrested: The Blues and Plantation Power in the Mississippi Delta. We argue that Sinners (2025) lends itself to a visual curriculum, a creative and critical pedagogical intervention, that translates planning history and theory and regional studies into an accessible, embodied, and affective form.

Most importantly, our methodology led with place, selecting a film whose setting provided the foreground for the plot's events, shaping each character so intimately that they could not exist as they do if placed in any other locale. As a visual curriculum, Sinners (2025) renders legible the durability of plantation logics, racial capitalism, and uneven development, and its engagement with Afrofuturism, provides fertile ground upon which to imagine futures based on reparative frameworks. Ultimately, we challenge our fellow planners, emerging and mid-career, to

reckon with histories that are not past, but materially present and ongoing and invite others to suggest their own visual curriculums for posterity.

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Keywords: Black geographies, cultural production, planning education, political economy, racial capitalism

THE BULLY CITY

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Why do urban conditions that residents recognize as dangerous, degrading, and unjust so often fail to generate sustained collective pressure for transformation? This paper theorizes the Bully City, a concept I develop to describe how certain urban environments function as technologies of power that systematically sever the link between seeing urban dysfunction and experiencing it as intolerable enough to demand transformation. Drawing on autoethnographic observations from my return to Accra after nearly a decade abroad, I trace how my own sensory systems recalibrated within fourteen days, and shifted from visceral alarm at uncollected waste, 'dangerous' traffic, and infrastructural decay to near-complete participation in the very conditions I initially resisted. I argue that this process, which millions of urban residents likely experience over lifetimes, constitutes a form of political defeat enacted through bodily desensitization rather than benign acclimatization. The paper identifies three sequential and mutually reinforcing mechanisms through which the Bully City forecloses collective resistance. First is dulling, which operates at the pre-cognitive level of the sensorium, where neurobiological habituation and cognitive-perceptual desensitization progressively erode the body's capacity to register chronic dysfunction as alarming. Second is exhaustion, which depletes the personal resources that would otherwise fuel mobilization, as the cumulative burden of navigating broken infrastructure absorbs the energy that could sustain protest. Third is capture, which redirects whatever hope remains toward private fixes and deferred promises, ensuring that aspirations are channeled into individual survival strategies rather than collective transformation. These mechanisms, collectively, produce a seeing-feeling chasm, a systematic disconnection between cognitive recognition of urban problems and the visceral response that would motivate action against them. Synthesizing scholarship from critical geography, planning theory, visceral politics, and environmental psychology, the Bully City framework provides micro-foundations for critical urban theory's macro-claims about how power operates through urban materiality. The paper also suggests that resilience discourse, as it circulates in Southern urbanism, risks becoming complicit in recoding systematic desensitization as ingenuity by celebrating the visible outcomes of adaptation while remaining blind to the preceding stages of sensory recalibration, affective dulling, and psychological exhaustion that made such adaptation necessary. In this reading, what urban scholarship celebrates as adaptive capacity may in fact signal the successful neutralization of political consciousness.

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Keywords: Urbanism, Resilience, Power, Affect, Infrastructure

THE CLINICAL APPROACH TO PLANNING EDUCATION

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Individual Paper Presentation

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For decades, planning schools have incorporated internships, studios, and client-focused theses into their for-credit curricula. All of this has occurred without ever addressing the differences between clinical education and liberal arts pedagogy. Clinical education requires students and instructors to confront ethical dilemmas in client-centered work (i.e., all the questions raised by participatory action research). This approach has been long practiced in fields such as medicine, law, and social work. While these disciplines focus on helping individual clients as part of their training, clinical education in planning emphasizes the community or a sub-community, fostering mutual capacity building with students. It involves dedicated preparation for specific settings, ongoing supervision to handle professional dilemmas, team-based collaboration, and relationships centered on the community, where final decisions are made collectively. Using active clinics at MIT (MIT Renewable Energy Clinic, MIT Cybersecurity Clinic) as case studies, I outline several pedagogical goals, the key steps involved in clinical education for planners, and how this differs from traditional fields and other forms of experiential learning. The clinical model of education offers a more effective way to engage communities, train planners, and fulfill the university's social responsibilities.

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Keywords: Clinical Education, Planning Education, Experiential Learning, Action Research, Community Engagement

THE GENIZARO VERNACULAR: THE CULTURAL LANDSCAPE OF HIGH MOUNTAIN LAND GRANT COMMUNITIES OF NEW MEXICO

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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The Genízaro land grant communities of New Mexico represent a distinct yet often unknown aspect in the spatial and cultural formation of the American Southwest. These settlements reflect a unique adaptation of Spanish colonial planning principles, particularly the Laws of the Indies, coupled with the hybrid Indigenous heritage of the Genízaro people. La Recopilación de las leyes de los reinos de las Indias, otherwise known as the Laws of the Indies, prescribed the foundation for the spatial organization of the physical built environment, as well as the land management principles. The Laws of the Indies, codified by the Spanish Crown in the 16th century, were originally intended as a legal and urban planning framework for Spain to colonize new territories and promote orderly city planning in the Americas. The Laws of the Indies established a land use framework for organizing towns in a physical form, centered on a plaza, featuring a church, government buildings, residential plots, and farmland. They also informed the uses of communal land called ejidos for grazing, hunting, and building materials.

Genízaro land grants, such as those in Abiquiú, Canon de Carnue, Ranchos de Taos, Ojo Caliente, and San Miguel del Vado, were often located on frontier zones. These communities functioned as buffer settlements between Spanish territories and nomadic Indigenous groups cuch as the Comanche, Ute, Navajo, Apache, and the Kiowa.. The Laws of the Indies provided not just a blueprint for town layout, but also a mechanism for asserting legitimacy, organizing communal life, and securing land tenure under Spanish, and later Mexican laws of town planning. The planning of these Genízaro settlements reflects a fusion of colonial law and Indigenous vernacular knowledge. The central plaza remained a vital organizing form of permanent settlements, but its functions extended beyond social and ritual uses. it was a site of defense, subsistence, and cultural ethnogenesis. Family clustered compounds were constructed using adobe, arranged in tight clusters or defensive blocks, with shared walls and few external openings, reflecting both practical and strategic concerns. The spatial organization facilitated mutual protection and underscored the communal ethos that defined Genízaro identity.

“Agua es Vida”, water played a central role in the physical organization of villages in Northern New Mexico. The acequia system—community-managed irrigation ditches—was not only a hydraulic technology but a governance model rooted in both Indigenous and Iberian traditions. Acequias structured the landscape and reinforced the repartimiento de tierras (land distribution) principles outlined in the Laws of the Indies, ensuring equitable access to arable land and water. Crucially, vernacular architecture and town planning in Genízaro communities were more than functional responses—they were expressions of cultural resilience. Informed by Indigenous building traditions, adapted to the environmental conditions of New Mexico, and legitimized through Spanish legal frameworks, these communities developed a unique built environment that endures today. Understanding the planning and architecture of Genízaro land grants through the lens of the Laws of the Indies reveals how marginalized groups used colonial laws and regulation to assert agency and shape their own places. These settlements are living testaments to the power of hybridity, cultural adaptation, and communal self-determination in the making of New Mexico's Cultural landscape. The purpose of this paper is to demonstrate the cultural landscape of high mountain genizaro land grant communities in New Mexico through the architectural, landscape, coupled with town design practices that emerged from the laws of the indies, and adapted with genizaro indigenous knowledge set in localized ecosystems.

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Keywords: Indigenous Design, Vernacular, Urban Design, Laws of the Indies, South West

THE ROLE OF GRADUATE PLANNING EDUCATION IN AFFORDABLE HOUSING AS A PROFESSION

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Recent graduates of planning masters programs comprise a significant cohort within the affordable housing field in the US, taking on a variety of positions including policy analysis, project management, underwriting and financial modeling, program design and evaluation, and so on. Despite the growth of this field across the public, private, and non-profit sectors, literature on planning education has not yet grappled with the role of pedagogy on these professionals. This paper asks: How does training in planning school shape the professional practice of affordable housing development? What improvements to pedagogy might emerge from the professional practice? To address these questions, this paper deploys a detailed qualitative study of affordable housing professionals in New York City, including 105 in-depth interviews, participant-observation of 45 public and semi-public events, and embedded research within a non-profit community-based affordable housing developer and manager. Planning education has influenced affordable housing through its practitioners' particular tendency to engage in self-reflection, both in terms of the profession's historical blunders and in terms of regular evaluation as the consequences of planners' actions emerge (Schon 1983). Planning education has strongly shaped the reflexive moment in affordable housing, in which the concept of affordability, the present housing crisis, and its potential solutions are hotly debated in casual conversation. As such, professionals who can engage proficiently and frequently in an auto-critique of the field informed by certain strains of planning literature gain cache. Both reflection and gossip are tools professionals use to prove that they are insiders, which helps them gain insights as well as access to decision-making channels. This paper finds that training in planning masters programs primarily benefits graduates by introducing them to experienced professionals and their specific vocabularies. This results in a premium placed on knowing and using certain jargon related to federal programs, local bureaucracies, neighborhood characteristics, and financial profiles, depending on their positionality in the field. This manifests in an “epistemic privilege” (Somers and Block 2005) in the field for calculative discourses of risk. But practitioners are also very aware that these calculations are based on networking, trust, and political capital. Affordable housing professionals earn the right through accrued knowledge and accrued relationships to "make up" numbers or otherwise “go rogue.” Finally, affordable housing professionals suggest that their training needs to involve the application of substantive goals and calculative proficiency to experiential learning (Kim et al 2024). Especially for project management and underwriting, learning on the job is often seen as more useful than learning in the classroom, but there are ways to better integrate theory and praxis.

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Keywords: Affordable housing, Professionals, Reflexivity, Real estate development

THEORIZING IMAGINATION IN PLANNING: A TYPOLOGY AND DIAGNOSTIC MODEL TO GROUND RESEARCH AND PRACTICE

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Planning is an inherently imaginative act. It requires envisioning a desired future and charting a path to create it. Building from this understanding, Leonie Sandercock (2004) invited planners over twenty years ago to consider what imagination should look like in planning practice, recognizing that how planners imagine their task and utilize their imaginations can have a significant influence on planning processes and outcomes. However, despite a few recent explorations of the topic (such as Phelps, 2021; Hoch, 2024), the role of imagination in the planning enterprise remains largely undertheorized. We currently have little understanding of how the utilization of different forms of imagination might inform the planning endeavor or what it means that planners function simultaneously as facilitators of collective imagination while also being professional imaginers themselves. In an effort to begin to fill this gap in planning theory, I explore how the imagination might be most effectively structured and deployed in the planning process.

To address this question, I synthesize the theoretical literature on imagination from philosophy, organizational studies, political science, and other fields to construct a typology of forms of imagination most relevant in a planning context. In this typology, I suggest seven distinct but interconnected categories of imagination in the planning process: utopian, pragmatic, empathetic, catastrophic, political, technical, and administrative, and explore how these types interact throughout the practice of planning. From this starting point, I propose a heuristic model for the ideal operation of imagination in the planning process that groups these forms into two sequential imaginative phases, visioning and implementation. Using this model, I suggest the presence and ordering of different types of imagination in planning practice can significantly influence both processes and outcomes. Planning that fails to utilize certain types of imagination or does so in the wrong order can have harmful or ineffective results. For instance, planning that fails to engage the utopian imagination or only does so after first incorporating the technical and administrative forms may miss out on significant opportunities or retrench harmful current patterns. Finally, I use archetypal examples from planning history to explore how the flawed use of the imagination can manifest in practice and how this model might be used as a diagnostic and reparative tool.

This paper contributes to our understanding of planning scholarship and practice by offering a typology and heuristic model that can be used as a diagnostic tool for analyzing planning outcomes and practices, applicable across a variety of scales and forms of planning. For planning education, the framework suggests the need to cultivate the imaginative capacity of planners, which is often overlooked. More broadly, the paper argues that planners would benefit significantly from recognizing, exploring, and researching the central role of imagination in planning.

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Keywords: planning imagination, planning theory, utopian thinking, imagination theory, planning education

UNDERSTANDING ONLINE LEARNERS IN URBAN PLANNING: DATA & LESSONS FROM THE UNIVERSITY OF FLORIDA'S ONLINE MASTER OF URBAN AND REGIONAL PLANNING PROGRAM

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Planning education has long been centered around the traditional learner – a full time, campus-based, graduate level student. Similarly, planning education research has been centered around customary student learning outcomes and other metrics that do not meet the diversity of today's learners. As demand for a skilled planning workforce continues to grow, online planning education not only fills accessibility gaps but captures the non-traditional student leading to more refined professionals in the field.

There is a deficit of empirical data surrounding online planning learners that are crucial to the planning profession. This research will present original survey findings from the University of Florida's online Master of Urban and Regional Planning (MURP) degree program, the first and only Planning Accreditation Board (PAB)-accredited online planning degree in the United States. Findings from this research will improve the understanding of today's online learners to better direct planning education.

Online planning learners themselves remain largely unstudied. Li (2023) offers insight on the content of planning-related Massive Open Online Courses (MOOCs) and illustrates that planning education reflects social environments, but does not profile who the learners are. Xu and Xu (2020) document the paradox of online education more broadly, wherein access is expanded to non-traditional learners but equity concerns persist, especially for learners who balance multiple obligations. Bellare et al. (2023) show that personal career motivations and external factors motivate learners in professional graduate programs. What is better enumerated are the workforce trends for the planning profession, which project a 3% increase (+1,500) in planning positions from 2024-2034 and state a master's degree as the entry-level educational requirements (BLS, 2025).

This study is the first of its kind to capture a dataset of online graduate planning learners. To capture empirical data, a program-wide student survey was distributed to MURP online students in the fall 2025 (n=97, 89% response rate). The tool itself captures both qualitative and quantitative data to profile students across demographic, professional, and motivational dimensions.

Initial findings illustrate that online learners have distinct motivations and values in their pursuit of graduate planning education. 48% of respondents enrolled in the MURP online program have no professional planning experience; 51% are using the degree to transition into planning as a career change, not advancement. 86% of respondents are employed full-time, confirming the vast majority of students are balancing priorities between professional and academic obligations. To further this point, 75% of respondents indicated that they are only able to obtain their planning education because of the online delivery modality. 62% of respondents stated that they have a proximate in-person planning education option and still decided on the MURP online program, alluding both to flexibility and quality as important factors in educational decisions. On a five point importance scale, flexibility ranked highest (mean: 4.88), followed by course design and organization (4.81), program cost and value (4.72), and instructor expertise (4.70).

The implications of this research are significant for educators, learners, and ultimately the profession. Planning education is evolving, with online modalities growing in both quantity and reputability. For the Planning Accreditation Board (PAB), accreditation standards developed for residential programs may not fit the mold for online learners; this does not mean that online deliveries are subpar, rather that online planning education must

rise to the challenge of understanding its learners, their motivations and values, and the parallels and distinctions between traditional campus-based learners.

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Keywords: Online education, Planning education, Workforce development

UNDERSTANDING UNDERGRADUATE PLANNING PROGRAMS IN THE U.S.

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Lately, college enrollment in both undergraduate and graduate programs in the U.S. has declined (Fain, 2017). The decline is more pronounced in the social sciences and the humanities, including urban planning (Nietzel, 2019). According to the US Planning Accreditation Board (PAB) (Planning Accreditation Board [PAB], 2019), the number of students in accredited master's programs declined between 2008 and 2018 from 4,986 to 4,049, although both the number of the programs and the number of foreign students in the programs increased during this period. The current U.S. administration's unfriendly policies against international students, enrollment in planning programs has become more unpredictable.

While some planning scholars have tried to address the enrollment decline by shedding light on the climate for student diversity (Greenlee et al., 2018; Lee et al, 2020) and enhancing the awareness of urban planning as a discipline and a profession (Palazzo et al., 2020), some paid attention to the roles of undergraduate planning programs (Kim, 2023). Undergraduate planning programs can lead students into early career paths and pipelines for master's programs and professions. However, due to conventional planning education that emphasizes a master's degree, the data and status quo of undergraduate planning programs remain limited.

This paper seeks to understand current undergraduate planning programs in the U.S. After systematically compiling programs that offer bachelor's, minor, and certificate degrees through a keyword search, this paper articulates who offers the degrees and certificates and how the programs relate to graduate planning programs and PAB. The landscape of undergraduate planning programs is dramatically vaster and more nuanced than expected. The total number of urban planning bachelor programs (66) much exceeds the number of accredited bachelor programs (16). They are also geographically imbalanced, as 19 (28.8%) programs are concentrated in the top three states. The home departments/ schools of the programs vary from business to urban studies. A minor degree is a popular undergraduate planning program. The total of 46 planning programs offers a minor degree. PAB-accredited master's degree programs tend to offer a minor degree rather than a major degree. This paper contributes to deepening the discussion about undergraduate planning education and pathways to the planning profession. The discussion also sheds light on the enrollment decline in planning programs, more generally increasing the visibility of the planning discipline, and constructing a pipeline for early-career planning.

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Keywords: education, profession

UPSTREAM DRIVERS, DOWNSTREAM IMPACTS: WATER INFRASTRUCTURE AS INTERMEDIARY OF POLITICAL POWER IN CENTRAL APPALACHIA

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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This paper advances hydrosocial systems analysis as planning theory through an examination of water infrastructure not only as a site of governance or technocratic intervention, but as an intermediary through which political and economic power is continuously produced, circulated, and materialized. Grounded through inquiry into water infrastructure in Gary, West Virginia, a former company town in Central Appalachia, the paper surfaces historical dynamics as essential for planning for future-oriented disaster resilience and traces challenges of doing so through the theory of organized abandonment (Wilson Gilmore, 2008). Planning theory has long treated infrastructure as a site of governance failure, inequality, or technocratic overreach, offering a critical accounting of how concentrated power becomes materialized as environmental harm, infrastructure decay, and uneven development. Drawing on Erik Swyngedouw's hydrosocial framework, Ruth Wilson Gilmore's theorization of organized abandonment, and Michael Mann's framework for infrastructural power, this paper argues that water infrastructure in Central Appalachia can be understood as a dynamic circulatory system in which power unevenly pools, flows, and leaks and through watersheds, dams, rivers, treatment plants, pipes, springs, and faucets. Analyzed through four empirical registers: spatial mapping of water infrastructure in relation to former coal company towns across the region; secondary policy analysis of infrastructure investment and governance arrangements; historical analysis of flood management practices; and examination of contemporary disaster preparedness plans particularly in relationship to the proliferation of dams across Central Appalachian coal country. Read together, these materials reveal how infrastructural decisions accumulate, compound, and displace risk across time and space making visible the mechanisms through which upstream concentrations of power produce downstream conditions through chronic flooding as well as lack of water infrastructure and sanitation. Three interrelated claims follow. First, the paper conceptualizes power as circulatory rather than hierarchical, flowing unevenly through hydrosocial systems in ways that structurally mirror hydrological processes themselves, channeled, pooled, diverted, and released through physical, political, and social structures and infrastructures. Second, it argues that water infrastructure functions as a biopolitical apparatus through which extractive legacies are stabilized and reproduced over time, generating conditions of manufactured risk that are compounded through climate-induced flooding threats in the region. Third, it demonstrates that disaster vulnerability in Central Appalachia is not an external shock but an infrastructural inheritance of the extractive logics of governance that have shaped the region. The paper closes with a call to action for planning theory and practice to orient toward systems theories and analytical tools that examine how power, resources, and responsibility flow infrastructure, ecology, and community.

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Keywords: biopower, disaster planning, organized abandonment, political ecology, infrastructural power

URBAN UNCERTAINTIES – NEW PERSPECTIVES ON UNSTABLE URBAN FUTURES

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Cities and their planning in our time face new uncertainties, including new climate hazards, political instability, social conflicts, and ensuing mass displacements, evacuations, and other social disasters (Dixon & Tewdwr-Jones 2021; Shilon, 2025; Zeiderman et al., 2017). These urban uncertainties have emerged as central concerns across diverse socio-spatial disciplines from urban geography, to anthropology, to urban planning and design. One response to urban uncertainties is to conceptualize uncertainty as a condition of unpredictable 'events' from which various harms ensue, an excess to govern or be governed by. This research, instead, treats emergencies, disasters, and even mundane precarities not as aberrations, but as constitutive features of urban life. Rather than viewing them as external shocks, we begin by assuming that these conditions may be structurally embedded in urban systems and must therefore be integral to the ways planning research and practice understand, anticipate, and respond to cities.

This study argues that urban planning must confront uncertainty not as a problem to be solved but as a fundamental condition of contemporary urban life. To make this shift, we propose five concepts - hope, inclusivity, urbicide, scattering, and aphasia - each illuminating a distinct dimension of how uncertainties unfold and are lived in cities. By drawing on political geography, planning theory, sociology, and critical urban studies, we offer a synthetic conceptual scaffold that surfaces how different traditions can converge around the challenge of governing and living with uncertainty. Through these investigations, we aim to encourage a new outlook that accommodates urban uncertainties as a key facet of urban life. We aim to raise the question of how we should think about uncertainties in order to enable new ideas about what the reaction of urban planning to uncertainties could be, closely tying planning theory and practice (MacLeod & Babb, 2025).

In particular, we propose a conceptual scaffold to urban planning that engages with urban uncertainties focusing on groups or individuals within groups who are often marginalized or neglected in planning processes. We note that urban uncertainty can be a positive condition for incorporating hope into planning methods and practices, and an opportunity to expand inclusivity through practices of civic engagement. It can also be a mechanism of control and exclusion; a cause of community scattering; and an invitation to collective aphasia that obscures and distorts urban realities. Across these perspectives, we identify actionable implications for planning: 1. Recasting rupture as an opening for community agency; 2. Expanding the scope of inclusivity to incorporate intra-community diversity at the level of small-scale communities; 3. Designing policies to permit community relocation without social scattering; 4. Establishing reconstruction protocols that prevent crisis exploitation by requiring community-led decisions and transparent governance; and 5. Critically attending to the language that shapes public understanding of urban crises. Together, these interventions outline a renewed planning agenda attuned to the complexities of uncertain urban futures.

Urban uncertainty is not a single phenomenon but a family of conditions that demands new and adaptive conceptual vocabularies and planning imaginations. This study contributes a new conceptual ecosystem for planning that is emotionally attuned, epistemologically expansive, relationally grounded, and critically aware of the

power of transformations. We wish to move urban planners beyond conventional responses of prediction and control toward approaches that work with uncertainty to imagine more just and responsive urban futures.

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Keywords: Urban Uncertainties, Planning Theory, Urban Futures, Conceptual Scaffold, Renewed Planning Agenda

WHAT PARTICIPATION DEMANDS OF US: ASYMMETRIC RESPONSIBILITY IN REPARATIVE RESEARCH

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Research and planning approaches to disasters have long relied on participation as an ethical and methodological response to inequality. However, in practice, participation often unfolds through reactionary, event-based interventions that treat responsibility as shared without critically interrogating that assumption. This obscures how disaster risk and impact accumulate over time and how responsibility is unevenly distributed in participatory processes. In doing so, these approaches shift the ongoing burden of disaster governance onto populations already navigating structural abandonment. Drawing from long-term participatory action research with Indigenous, Afro-Mexican, and queer communities in the Isthmus of Tehuantepec, Oaxaca, this paper situates participation within processes of disaster risk accumulation across distinct moments of crisis. I develop the concept of asymmetric responsibility as a methodological stance to name the differentiated obligations that emerge under these conditions, particularly for those who enter fields of collaboration and conflict through research while holding disproportionate structural privilege. Without naming these asymmetries, participation remains a procedural ideal that obscures responsibility and reproduces the uneven conditions it claims to address. I argue that addressing these conditions requires rethinking participation as a site of obligation for planning scholars, in which reparative practices demand that we take greater responsibility for the conditions we enter and respond to the inequalities that shape our participation by consciously redistributing resources and decision-making power without displacing community authority.

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Keywords: Asymmetric Responsibility, Reparative Research, Participatory Research, Disaster Risk Management, Power and Inequality

WHAT'S OLD IS NEW AGAIN: PRESERVATION PLANNING FOR AND BY NEW URBANISTS IN NEW ENGLAND

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Throughout the 1990s and 2000s, the architects, urbanists, and developers forming and following the Congress on New Urbanism (CNU) reshaped built environments of America and abroad—public housing, transit hubs, suburban shopping districts, greenfield subdivisions, and even Indian reservations. Planning historians have thoroughly investigated CNU's spatial logics and aesthetic principles and interrogated professional and public criticism of those principles put into practice. The analyses of Brain, Eliss, Hirt, Marshall, Moore, Silverman, Talen, and Trudeau emphasize a) CNU's lineage, i.e. colonial and pastoral urbanism; b) CNU's legacy, e.g. neotraditional-styled subdivision and commercial development; and c) CNU's lobby of governmental and nongovernmental sponsors, e.g. UN, ULI, HUD. Hamer's argument that historic districts are conducive to New Urbanist placemaking—introduces another line of inquiry: the resistance and receptivity to New Urbanism of specific urban populations (i.e. preservationists). This paper extends that line of inquiry even further to preservation planners who designate and regulate land use and built forms in alignment with New Urbanism charters, theories, policies, and practices.

In this paper, I offer a New England case study of the regulatory frameworks that city and regional planners of historic preservation and land conservation have developed to deploy CNU principles to their locales. Preservation policies and practices of New Urbanism have not taken as many different forms as it takes in Massachusetts's Cape and Islands—home to CNU members (e.g. Patrick Ahearn, Kevin Lynch), precedents (Oak Bluffs's Campgrounds) and many projects (Edgartown Master Plan, Cottage City HD, Mashpee Commons). Here, the range of CNU's relationship to historic properties and places can be understood and integrated—from historic property and district designations to development, demolition, and design reviews. Analyzing archival records of Martha's Vineyard's local historic district commissions (e.g. minute agendas, minutes, and recordings; project submissions and reviews, certificates of architectural appropriateness), I find preservationists of the Massachusetts Cape and Islands engaged CNU theorists, practitioners and educators to delineate which architecture, landscapes, and urbanism of the past deserved strict preservation and which warrant more discretionary oversight. Such inclusion of "experts" in the planning process is not novel or noteworthy, but the framing of New Urbanists as experts on built environments elevated them in preservation policy and plan-making processes above other voices and stewards, especially Black, Indigeneous and immigrant owners of the properties to be preserved.

This paper concludes by discussing the impulse and trend amongst contemporary planning practitioners and their stakeholders to legitimize their liminal place in preservation planning and policy with New Urbanism frameworks. More specifically, I question and interrogate the benefits accrued by Black, Indigeneous, immigrant and ethnic minorities that adopt and adapt the CNU framework to their ongoing work of authorizing planning regulations and actions that protect their heritage. In other words, this paper deepens debate about Latino New Urbanism amongst the scholars exploring ethno-urbanisms and widens the consequences of its consideration to the community of scholars concerned with whose preservation theories and action become foundational to planning, and whether we even take notice.

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Keywords: New Urbanism, historic preservation, New England, historic districts, BIPOC urbanism

WHEN FAITH GOVERNS: BIBLICAL REPUBLICANISM, THE POLITICS OF KNOWLEDGE AND EPISTEMIC AUTHORITY IN PLANNING

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Planning debates and interventions often unfold within contested epistemic environments where technocratic forms of evidence compete with alternative sources of authority (Mabon et al., 2019; Mattiuzzi and Chapple, 2023; Saldert, 2025). This paper examines what happens when planning debates shift from technical expertise toward moralized and religious epistemologies. Specifically, we analyze how faith-based narratives operate as alternative epistemic frameworks that shape planning discourse, policy justification, and governance practices. We pursue this through a comparative analysis of two cases situated in different political and cultural contexts. The first examines the proposed National Cathedral in Accra, Ghana, which political and religious leaders have framed as a sacred national project and a symbol of Christian identity. The second analyzes a faith-based safe house in Live Oak, California near Sacramento proposed as a residential facility for children rescued from trafficking and abuse and promoted within some conservative Christian networks on the further political right as a model for national replication.

The project sponsors and opposing sides to the broader topics at hand charge their enemy Other with fueling mis/disinformation. While distinct in scale and policy domain, both cases illuminate the growing influence of what is described as “Biblical Republicanism”—an emerging alliance between religious authority and state power that mobilizes Christian narratives and perceived mis/disinformation perspectives to legitimize public policy and governance interventions. The term draws on earlier traditions that interpret biblical texts as resources for republican political thought (Chernaik, 2000; Nelson, 2010), while extending these insights to contemporary policy discourse.

Through discourse analysis of policy debates, media narratives and advocacy materials, and field observation, we show how faith-based narratives infused with such mis/disinformation positioning function as policy legitimization strategies that reframe planning debates around moral authority rather than traditional technical expertise. The paper argues that these dynamics complicate conventional assumptions about technocratic planning authority and require planners to grapple more directly with religious epistemologies in policy arenas. By examining how religious narratives reshape the negotiation of evidence, expertise, and public values, the paper contributes to emerging debates on misinformation, moral politics, and epistemic contestation in planning.

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Keywords: Biblical Republicanism, Communicative Planning, Epistemic Authority, Mis/Disinformation, Politics of Knowledge

WHY DOES PARTICIPATORY PLANNING BECOME INSTRUMENTALIZED? GOVERNANCE MECHANISMS IN LONDON'S NINE ELMS REGENERATION

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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Public participation is widely regarded as a cornerstone of democratic planning, with collaborative planning theory emphasizing its potential to enhance inclusiveness and legitimacy in urban decision-making. However, critical planning scholarship has increasingly highlighted the limited influence of participatory mechanisms in contexts shaped by strong political–economic interests, particularly within developer-led urban regeneration. While existing research has extensively documented that participatory planning becomes instrumentalized, less attention has been paid to why and through what specific institutional mechanisms this occurs, and how governance structures systematically produce these outcomes rather than merely enabling them.

This paper addresses this gap through a case study of the Nine Elms regeneration in London, one of Europe's largest urban redevelopment projects. The study focuses on a mid-stage intervention in the project's trajectory, where accumulated conflicts, stakeholder experiences, and institutional constraints provide a critical vantage point for examining participatory dynamics beyond initial planning phases.

The research is guided by three questions: (1) Why do participatory mechanisms become instrumentalized in developer-led regeneration? (2) How do governance arrangements shape the influence of participatory planning? (3) Under what conditions might participatory processes exert greater influence on planning outcomes?

This study adopts a qualitative approach combining policy analysis, semi-structured interviews with twelve stakeholders across seven interest groups, including public authorities, private developers, local residents, and planning professionals, and a participatory multi-criteria analysis (MCA). Although MCA is used to structure stakeholder evaluations, it also reveals how participatory processes translate complex political judgments into simplified evaluative frameworks, thereby shaping and constraining the scope of participation itself.

Notably, local residents' embodied knowledge, such as concerns over community safety, could only enter the framework as supplementary additions rather than reshaping the framework itself, which reflects a deeper politics of knowledge embedded in participatory tool design. The findings identify three interrelated institutional conditions that explain the instrumentalization of participatory planning: First, key development agendas are pre-structured prior to engagement, limiting stakeholders' ability to reshape planning frameworks. Second, governance coalitions of public authorities and private developers privilege economic objectives, with infrastructural investment as the only cross-stakeholder consensus. Third, participatory mechanisms operate primarily as procedural devices without binding authority over final decisions, creating a structural mismatch between participatory inputs and planning outcomes.

The paper argues that instrumentalization stems not from design flaws but from governance arrangements that structurally prioritize development objectives. Under these conditions, participatory planning functions primarily as a mechanism for documenting marginalized voices, which is valuable for accountability but insufficient for democratic transformation. More fundamentally, participatory tool design reflects a politics of knowledge, as frameworks determine whose knowledge is recognized as legitimate, and systematic exclusion of community knowledge reveals structural bias. By identifying these conditions, the study suggests participation should precede agenda-setting, carry binding authority, and formally recognize diverse forms of knowledge including community experience to exert greater influence.

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Keywords: Participatory Planning, Instrumentalization, Urban Regeneration, Governance Coalitions, Politics of Knowledge

WIRE GULLY AND THE LIMITS OF NEOLIBERAL PLANNING

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Track 8: Planning History, Theory and Education
Individual Paper Presentation

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This paper examines the limits of neoliberal planning through the case of Wire Gully, a wire-scrap and e-waste market in Lal Bahadur Shastri Nagar, Sakinaka, Mumbai. It asks what planning theory and planning history fail to see when informal urbanization is treated primarily as a problem of regulation rather than as a historically produced condition of labor, value, and space. The paper poses three related questions: how is value produced in the informal wire-scrap economy; how do caste, kinship, gender, and other social institutions organize this process; and how does state planning participate in accumulation by enabling the appropriation and dispossession of value and knowledge generated in informal economies? Against accounts that treat informal settlements as marginal to urban development, the paper argues that Wire Gully reveals how laboring settlements are central to the making and reproduction of urban space, even as planning regimes render them illegible except as zones of future redevelopment.

The paper draws on two phases of fieldwork conducted in 2017 and 2024. These included repeated site visits, field notes, taped and transcribed conversations, direct observation of sorting, stripping, bundling, and trading practices, and open-ended interviews with gaadiwalas, maaliks, majdoors, and transporters. The analysis combines qualitative case-study research with a theoretical reading informed by Barbara Harriss-White's work on socially regulated informal economies, Ananya Roy's account of informality as a mode of planning, Vinay Gidwani and Anant Maringanti's concept of the infra-economy, and David Harvey's account of accumulation by dispossession. This approach allows the paper to connect everyday labor processes to wider transformations in land, regulation, and urban political economy.

The paper makes four findings. First, Wire Gully shows that informal waste economies are indispensable to the city: they recover, sort, circulate, and revalorize materials that formal systems depend upon but do not adequately process. Second, the production of value in the scrap economy is governed not by market exchange alone but by dense social relations, especially caste, kinship, religion, property, and labor hierarchy, making value production simultaneously social, economic, and spatial. Third, the contrast between the state's proposed 2036 land-use vision for LBS Nagar and the area's actual mixed-use, labor-intensive reality demonstrates how neoliberal planning erases existing economies by treating land primarily as a future asset for redevelopment rather than as a present infrastructure of urban survival. Fourth, the disruptions caused by demonetization and the pandemic intensified precarity, contracted material flows, and exposed how vulnerable informal labor is to state-led shocks while still being expected to absorb the burdens of urban reproduction.

The paper contributes to planning scholarship by bringing planning theory into closer conversation with informality, waste, labor, caste, and dispossession in Indian urbanism. It contributes to planning history by arguing that alternative historiographies of urbanization can be written from laboring margins rather than from plans, institutions, and elite projects alone. For planning practice and education, it argues for methods that begin from the lived geographies of work, circulation, and social reproduction in settlements like Wire Gully, instead of treating them merely as targets of formalization, improvement, or clearance. In doing so, the paper argues that Wire Gully exposes the limits of neoliberal planning precisely where the city most depends on forms of labor and value it refuses to recognize.

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Keywords: informality, waste economies, neoliberal urbanism, caste and labor, redevelopment

ADVANCING PLANNING EDUCATION AND KNOWLEDGE THROUGH INTERNATIONAL COLLABORATIONS: LESSONS FROM A MULTI-YEAR INITIATIVE

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Track 8: Planning History, Theory and Education
Research-in-Motion Presentation, Research currently in process

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This paper analyzes how collaboration between planning departments spanning the global North and South fosters and grows opportunities for advancing planning education, knowledge creation, and action, while also critiquing the limits of such engagement. Indeed, the growth in international collaborations in higher education has steadily accelerated over the last two decades. Planning departments, globally, are today ever more invested in seeking partners and forging partnerships, whether they be North-South, North-North, or South-South. North-South collaborations, in particular, are ascendant in planning schools in the United States and Canada. Entities such as the Global Planning Educators Interest Group and the Global Planning Education Committee have contributed to this evolving global sensibility and disposition of the American planning academe. Globalizing cities in the North, intensifying competition in planning education across the North and South, and growing opportunities for international planning consultancies in the urbanizing South are some structural reasons underlying international collaborations. They reflect how even partners with limited resources find common purpose in their distinct strategic motivations.

This paper illuminates how a focused partnership initiated by a mid-sized urban planning program in the United States with one of Indonesia's largest urban planning departments evolved over a period of five years. It is a component of a multi-year grant with multiple objectives made to a multidisciplinary team of scholars for building higher education capacity in Southeast Asia. The initial focus was on activities to bolster critical pedagogy and research skills among young scholars at one university. It expanded to include short international summer courses involving students from planning and other disciplines, research seminars with senior scholars, small research projects, and, at universities in other cities, journal management activities, workshops with undergraduate and graduate students, and public events on progressive planning in remote locales with weak capacity. Using a case study approach combining participant observation and non-participant field observations with data from interviews and surveys with multiple stakeholders (students, instructional faculty, and other program participants) gathered over four years, it provides nuanced insights for bolstering planning pedagogy and research capacity. Some of the key lessons include the following: 1) collaboration agendas need to be flexible; 2) between partners, the nature of institutional support and the level of autonomy differs and fluctuates; 3) project activities should be commensurate with the skills and expertise of the organizers and facilitators; 4) scaling-up engagement is easier than deepening collaboration; 5) even limited and sporadic engagement could be transformative, but more so for specific individuals than institutions overall; and 6) the immediate or short-term gains are likely to be uneven between partners. The paper concludes with suggestions on how international collaborations between small and mid-sized planning programs in the global North and their counterparts in the global South could be more mutually beneficial, sustainable, and effective.

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Key Words: Planning education, Collaboration, North-South, Pedagogy, Indonesia

INTERDISCIPLINARY PEDAGOGIES AND FUTURE-ORIENTED FRAMEWORKS IN CAPSTONE PLANNING STUDIOS: APA TREND REPORTS, ASLA CLIMATE ACTION PLAN, AND UN SDGS

Abstract ID: 2296.0.0.617.2026
Track 8: Planning History, Theory and Education
Research-in-Motion Presentation, Innovative practices, concepts, and ideas for pedagogy

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This paper presents a reflective case study of two consecutive capstone studios in the School of Planning at the University of Cincinnati (Spring 2024; Spring 2025), examining how curriculum design and interdisciplinary pedagogy shape student learning in planning education. The 2024 Iteration focused on the American Planning Association's (APA) Future Trends reports (APA, 2025); the 2025 Iteration broadened the curriculum to include landscape architecture sources and international, future-oriented frameworks, like UN SDGs; ASLA Climate Action Plan 2025) (ASLA, 2025; United Nations, 2023) while expanding enrollment to a mixed cohort of planning, landscape architecture, horticulture, and urban studies.

We hypothesized that incorporating inter- and multi-disciplinarity content and collaboration into the studio would enhance student learning outcomes. To examine this, we developed research questions: 1) How did integrating multi-disciplinary, future-oriented frameworks reframe the design and emphasis of the 2025 capstone studio curriculum? 2) How do final projects in 2025 iteration demonstrate greater holism as a result of interdisciplinary interactions relative to 2024 Iteration? 3) What differences (if any) were seen in work products, topics, processes (etc.) as a result of multidisciplinary inclusions?

To explore these questions, we employed a mixed qualitative approach drawing on document review (syllabi/assignment instruction/rubrics), reviewing work product (interim and final design/policy proposals), and evaluation of student deliverables (midterm/final presentation boards, ArcGIS StoryMaps, and physical exhibition pieces). [ho3.1][HP3.2] Thematic coding used three professional frameworks (APA Trend themes, ASLA Climate Action pillars, and SDGs goals) applied across 828 codes from 138 segments of student projects.

Findings suggest that the 2025 cohort exhibited more frequent cross disciplinary 'translation moves' during critiques and greater conjunction of shared terms, with particular benefits for students from non-planning backgrounds. Final projects also demonstrated that across cohorts, topics and representational choices moved toward implementable strategies, communicative clarity, and greater holism, including climate strategies and SDGs. Including non-planning students proved advantageous, underscoring that audience-specific communication is a critical professional skill (Purkarthofer & Mäntysalo, 2024). A notable curriculum output gap emerged: while assignments foregrounded the topic of "Climate", student StoryMaps independently emphasized Community and Health, themes the curriculum did not specifically advance. In particular, cross framework analysis showed interdisciplinary synthesis with Community and Cultural Empowerment topics.

By introducing future-oriented material from multiple disciplines, students were able to see opportunities for collaboration, gain insight into their own disciplines from "outsiders", and bring a more holistic approach into final projects.

Integrating these students and their pre-existing, widely differing levels of knowledge within design disciplines, educations, and interests into multidisciplinary working groups requires the students to adjust their thinking and approaches. Including non-planning students proved especially advantageous: weekly communication with students from other disciplines pushed students to refine clarity and accessibility in their work, developing skills that may otherwise remain underdeveloped. This study highlights the potential of innovative pedagogical

approaches to equip students with the skills needed to navigate complex, interconnected issues in the professional design fields. Reflecting on lessons learned contributes to ongoing dialogue on advancing interdisciplinary engagement and breaking down barriers between the design professions (Wenk, 2002).

Citations:

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Key Words: Case Study, Studio Teaching, Pedagogy, Planning Education, Interdisciplinary

WHAT PLANNING CANNOT SEE: SOIL AND THE ONTOLOGICAL LIMITS OF ENVIRONMENTAL GOVERNANCE

Abstract ID: 2296.0.0.227.2026
Track 8: Planning History, Theory and Education
Research-in-Motion Presentation, Research currently in process

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This paper examines planning as a body of knowledge and regulatory practice structured by a singular ontology. Using planning's engagement with soil as an entry point, I argue that modern planning stabilizes a single, governable version of the world by translating ecological and ontological multiplicity into technical categories with discrete functions. This reduction is inherent to the epistemological limits of modern planning, whose foundations in classification, abstraction, and governability rest on the separation of subject from object and nature from culture, converting living relations into engineerable objects within contemporary regulatory practice (Sandercock 1998). Under conditions of climate crisis and planetary urbanization, these assumptions become increasingly inadequate, since urbanization operates through distributed metabolic transformations across soils, waters, ecologies, and life processes (Brenner, 2014; Heynen, Kaika, and Swyngedouw, 2006).

Soil exemplifies these limits because it is simultaneously biophysical, metabolic, temporal, historical, and more than human, yet planning regimes routinely reduce it to a governable technical object. Drawing on Indigenous perspectivism (Viveiros de Castro, 2014) and Peircean semiotics (Kohn, 2013), I argue that planning cannot presume a single shared world as the unquestioned ground of intervention, and that nonhuman beings participate in semiosis in ways that exceed human language and institutional representation. Attending to soil thus makes visible the ethical and political consequences of planning's epistemological foundations and points toward forms of planning capable of negotiating, rather than erasing, ontological multiplicity.

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Key Words: Environmental Governance, Planning theory, Decolonial Planning, Urban Political Ecology, More-than-Human Planning

Track 9 – Regional Planning & Economic Development

Track 9 Pre-Organized Session Summaries and Abstracts for the Sessions

EMERGENT ISSUES AND SPATIALITIES IN ECONOMIC DEVELOPMENT
Abstract ID: 2294.0.0.642.2026
Track 9: Regional Planning & Economic Development
Pre-Organized Session Summary
Session Includes: 2298.0.0.163.2026, 2298.0.0.151.2026, 2298.0.0.262.2026, 2296.0.0.608.2026, 2298.0.0.611.2026

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Rapidly advancing technologies and changes in the geography of work and goods movement, accelerated by the COVID-19 pandemic, are altering local economic and urban spatial structures. From automation to the ascendency of large-scale industrial land uses like data centers and distribution facilities to new modes of work, these shifts are challenging the assumptions of place-based economic development strategies. In addition, shifts in global trade policy are also having a profound effect on local and regional economic development across North America and globally. This session brings together research examining a set of emergent issues and challenges in economic development. By placing these papers together in conversation, this session will explore how economic development research and practice is and should be adapting considering these new trends, while interrogating whether these changes represent paradigm shifts or simply old wine in new bottles.

Learning Objective(s):

- Learn about emergent issues and challenges in economic development
- Examine the implications of changes in spatial structure, land use, trade policy, and work for economic development and related planning research and practice

- **DELIVERING INCENTIVES: A COMPARATIVE STUDY OF LOCAL ECONOMIC DEVELOPMENT INCENTIVES FOR AMAZON WAREHOUSES IN ORIGIN-BASED SALES TAX STATES**
  Abstract ID: 2298.0.0.163.2026
  Track 9: Regional Planning & Economic Development
  Individual Paper Presentation

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This paper compares the use of local economic development incentives for warehouse and distribution facilities across states with origin-based e-commerce taxation systems. The past several years have been marked by increased demand for large-scale warehousing and distribution facilities, driven by growth in e-commerce, changing technology, and logistics consolidation, accelerated by the COVID-19 pandemic. As brick-and-mortar retail has declined in importance with the shift to online shopping, warehouse facilities present new tax revenue generation opportunities for local governments, particularly after the 2018 U.S. Supreme Court ruling in South Dakota v. Wayfair, Inc., which held that states may charge sales tax on out of state purchases even if the seller does not have a physical presence in the taxing state (Agrawal & Shybalkina, 2024). Efforts to attract warehousing facilities have resulted in state and local jurisdictions offering economic development incentives for their construction. Incentives remain a controversial economic development strategy, as there is limited evidence that they positively contribute to job growth and influence firm location decisions, they come with opportunity costs in the form of increased household taxes and reduced public services, and result in 'race to the bottom' incentive competition between jurisdictions (Bartik, 2020; Donegan et al., 2019; and others). Competition between local jurisdictions is especially acute in the handful of states with origin-based taxation systems, whereby e-commerce sales tax is assessed at a good's place of origin rather than the address of the buyer (Schmahmann, 2025).

While the use of incentives is heavily studied, there is little work that examines incentive for warehouse construction in the contemporary e-commerce context. This paper presents a cross-comparative study of the use of economic development incentives in four states with origin-based e-commerce sales taxation systems: California, Illinois, Tennessee, and Texas. Using a case study methodology, we ask: (1) in what ways are local jurisdictions using economic development incentives for warehouse construction, and (2) what drives differences in incentive use across states with similar sales tax collection systems? We focus our analysis on facilities operated by Amazon—the largest warehouse tenant in the U.S. and globally, which allows us to control for firm-level differences in incentive provision.

We find that the use of incentives for warehouse development was prevalent in all states, but that there were notable dissimilarities between states in the types of incentives local governments were providing to Amazon. Municipalities in Illinois frequently provided tax increment financing and property abatements to Amazon facilities, while in Tennessee, property tax abatements took the form of payment-in-lieu of taxes (PILOT) agreements involving local industrial development authorities. Conversely, sales tax abatements, sometimes combined with property tax abatements, were common in Texas and California (although Amazon negotiated fewer incentives in California compared to other states). Consistent with Craft et al. (2021), these differences can be attributed to state-level policy structures and incentive reform that resulted in varied local development regimes. Differences in taxation structures, enabling legislation, and logistics agglomerations also drive these observed variations. This work contributes to our understanding of how state-level frameworks result in varied forms of entrepreneurial development regimes at the local level, even for a single corporation. As several states contemplate changes to their sales tax rules, this work also contributes to timely debates about which jurisdictions win and which ones bear

the costs of different taxation structures, and how policy changes might reduce undesirable incentive competition between local governments.

Citations:

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Keywords: incentives, economic development, logistics, warehouses, tax policy

THE CHANGING LOCATION OF WORK: EMPLOYMENT CENTERS IN THE CHICAGO REGION AFTER THE COVID-19 PANDEMIC.

Abstract ID: 2298.0.0.151.2026
Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Changes in urban spatial structure and the geography of work following the COVID-19 pandemic are altering local economic structures, transforming commuting patterns, and challenging place-based economic development strategies (e.g., Lim et al. 2023, Ramani et al. 2024). The first phase of this research project investigates how employment centers in the Chicago region have shifted in size and constitution after 2019. We characterize these changes in terms of the functions of employment centers within the regional economy and the overall regional distribution of economic activity. Drawing from recent research (e.g., Bond-Smith and McCann 2024, Pandey 2025), we anticipated that employment centers are becoming more dispersed spatially and more diverse in economic composition since the pandemic. Our preliminary analyses, however, do not reveal a clear pattern of employment center dispersal, instead showing more consistency over time than expected. Also, taken together, employment centers in the Chicago region have added a substantial number of jobs, indicating some tendency toward further concentration in employment centers rather than spatial dispersion.

The second phase of the project assesses the implications of changes in employment centers for economic development and related planning concerns, such as intra-urban location decisions, local and regional economic development policy, transportation investment strategies, and local government fiscal situations. We anticipate that the findings from this research will inform and contribute to the design of local and regional policies regarding business incentives, development regulation, and transportation infrastructure improvements, such as the upcoming iteration of the Chicago Metropolitan Agency for Planning's comprehensive regional plan (https://cmap.illinois.gov/regional-plan).

We use the Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES) of the U.S. Census Bureau to identify and delineate employment centers, broadly characterize their economic composition, and measure how they are changing over time. We add information from non-governmental sources with greater industry sector detail (e.g., Data Axle Reference Solutions, National Employment Time Series) to examine economic composition and function. We utilize data from various public or proprietary sources, such as Advan (geolocation data) and the Illinois Department of Revenue, to analyze implications for commuting mobility, local government finances, and economic development policy.

Citations:

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Keywords: urban form, employment center, economic composition, economic development, commuting

FISCAL INCENTIVES, JURISDICTIONAL BOUNDARIES, AND THE LOCAL POLITICS OF DATA CENTERS IN TEXAS

Abstract ID: 2298.0.0.262.2026
Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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The rapid expansion of data center construction is raising urgent questions about how local political and regulatory processes shape where this infrastructure is built and who bears the costs. As of late 2025, there were 3,845 data centers in operation or under construction nationally, 75% of them in incorporated areas. With substantial capacity under construction, Texas is anticipated to become the largest data center market by 2030. In Texas, this expansion is being enabled by abundant (and cheap) land and energy infrastructure (especially natural gas), comparatively permissive environmental regulations, and state sales tax exemptions for construction materials and equipment. At the same time, data centers have become intensely politicized at multiple scales. Nationally, environmental organizations have mobilized to lobby for temporary bans on new data center construction. At the state level, lawmakers in Texas and California, both rapidly expanding data center markets with fragile electric grids, have considered measures to curb or manage data center energy consumption. Locally, dozens of proposed data centers have been rejected amid rising community concerns, especially about environmental harms such as noise.

A growing body of critical data center studies situates data centers within broader geographies of uneven development and digital capitalism (Edwards et al., 2025), while also foregrounding their role in coordinated strategies of state territorial development (Kollar & Stokols, 2025). To date, there has been little research that examines how local zoning and permitting processes shape where data centers are sited, especially in the context of a push to “speed up” permits for data centers and an increasing shift towards state preemption over land use, zoning, and environmental review processes for AI infrastructure, including data centers (Kollar, 2026).

This paper analyzes how local political and regulatory processes and fiscal incentives influence the location and configuration of data center development in Texas. Drawing on planning documents, recordings and minutes from city and county meetings, and semi-structured interviews with city and county officials, data center developers, and local environmental organizations, I identify the political interests, fiscal logics, and place-based narratives that guide siting decisions and trace where and how community resistance is emerging. I argue that these processes systematically channel data center development toward jurisdictions with weaker planning controls and limited fiscal capacity, helping to bypass community pushback.

In the context of fiscal federalism and pressure to keep property taxes low, fiscal capacity remains a chronic problem for cities (Schragger, 2016). Data centers can provide windfall gains in tax revenue, especially property tax revenue, and many cities and counties have realized substantial property tax increases despite offering generous rebates to developers. While data centers generate enormous demand for energy and water, the extent to which they will raise utility prices for local residents remains unclear. It also remains uncertain who ultimately bears the environmental costs of this growing energy and water demand. This research highlights the role of jurisdictional boundaries in shaping resistance to data centers – especially in the context of Texas, where unincorporated areas have no zoning controls – contributing to our understanding of the ongoing effects of unincorporated status on vulnerable communities in Texas (Rivera, 2023). Developers are increasingly targeting unincorporated areas where the community has little control over development. As a result, some communities are lobbying to incorporate to increase their ability to influence future development and regulate existing data centers, although with limited success so far.

Citations:

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Keywords: data centers, AI infrastructure, local governance, fiscal incentives, unincorporated areas

HUBS, HOLLOW CORRIDORS, AND THE SPATIAL IMPLICATIONS OF AUTONOMOUS COMMERCIAL VEHICLES

Abstract ID: 2296.0.0.608.2026
Track 9: Regional Planning & Economic Development
Research-in-Motion Presentation, Research currently in process

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This paper investigates the prospective spatial impacts of widespread long-haul automated commercial motor vehicle (ACMV) deployment on urban spatial structure. Technological developments in freight transportation have profoundly influenced economic geography, from the founding of cities along maritime nodes to the emergence of edge cities at highway interchanges. The deployment of ACMVs represents another potential paradigmatic shift in goods movement, however, unlike past transport revolutions, ACMVs primarily utilize existing infrastructure and are constrained to specific operating environments (Viscelli, 2018).

Realistic near-term projections envision ACMVs serving the "middle-mile" of goods transport along rural highway corridors, with human drivers completing the first- and last-mile segments in complex urban environments (Mohan & Vaishnav, 2022). This division of tasks suggests a growing need for "hub cities"—large-scale transfer nodes at metropolitan peripheries where goods are moved from to and from ACMVs for the initial and final stages of the supply chain (Cidell, 2010). We anticipate that planners will face urgent questions about the real estate footprint, zoning implications, and site approval demands for these facilities, as well as the air quality and congestion impacts on host communities.

In this paper, we evaluate the likelihood of this and other spatial development scenarios by analyzing the current organization of the commercial trucking industry, the supporting geography of logistics, and the near-future limitations and capabilities of ACMV technology. We specifically assess whether these developments are sufficient to compel changes to urban spatial structure and identify the types of locations most likely to be affected. The shift from long-haul to short-haul employment represents a geographic redistribution of labor from rural to suburban communities and has significant economic and social implications. We conclude with recommendations for future planning and infrastructure policy.

Citations:

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Key Words: autonomous vehicles, logistics, future of work, spatial organization

THE RISE OF THE NORTHERN GUNBELT: MAPPING CANADA'S TURN TO DEFENCE

Abstract ID: 2298.0.0.611.2026
Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Due in part to its dependence on trade, Canada's military strategy has long prioritized supporting global stability in cooperation with its allies (Skogstad and Compton, 2022). However, the political instability of the U.S. during the second Trump administration has led the Liberal government to change course, accelerating defence spending from less than 1% to 5% of GDP by 2035. This shift could have significant implications for regional economic development: The new CA$82 billion commitment includes $6.6 billion for a Defence Industrial Strategy to develop the industrial base, with a new Defence Investment Agency to streamline procurement. This spending could potentially support Canada's 2026 economic strategy, which seeks to reduce dependency on traditional trade partners via "Buy Canadian" policies and targeted growth in high-tech sectors like AI and clean technology.

Like Canada's industrial base as a whole, the defence sector is highly concentrated (with over 60% of employment in Ontario and Quebec), with a significant degree of foreign control (Pepall and Shapiro, 1989). Although this uneven distribution patterns mirrors that in other countries (Markusen et al., 1991), Canada has not exhibited the strong connection between defence and high-tech industry seen in Silicon Valley and Europe (Gray et al., 1998; Sternberg, 1996).

This paper asks how the increase in military budget is likely to impact regional development in Canada, and how best to leverage that increase to support concurrent goals of economic independence and greenhouse gas emissions reduction. First, an analysis of defence budgets over time examines the impact of existing and planned military spending on businesses and employment in Canadian cities and regions. Next, based on interviews with defence industry experts, we examine the potential of Canadian economic sectors, including AI and critical raw materials, to compete globally. Finally, we examine the potential for new defence spending to meet climate goals as well, for example by increasing carbon sequestration in Canada's military -owned lands (Greaves and Heffernan, 2026). Our findings offer policy implications for Canada's Department of National Defence as well as economic development officials across municipal, provincial, and federal orders of government.

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Keywords: defense, regional development

Can Planning Keep Up with the AI Infrastructure Boom?

Abstract ID: 2297.0.0.323.2026
Track 9: Regional Planning & Economic Development
Roundtable Submission, Facilitated Debates

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The growth in artificial intelligence (AI) usage, especially generative AI, has resulted in the rapid expansion of data centers across the United States. Data centers provide the physical computing infrastructure essential to AI and cloud computing (Kollar, 2026) and are increasingly reshaping peri-urban and rural areas into computational hinterlands (Rosen & Alvarez Leon, 2025). There are a variety of types of data centers in terms of both function and scale, including edge data centers that locate near where data is generated (e.g. technology companies), hyperscale data centers that are especially large and are typically located in rural areas because of scale and size, enterprise data centers that are owned and operated by a large tech company, and colocation or multi-tenant data centers that are typically in (sub)urban areas near telecommunications infrastructure (Liang, 2026). The immense resource use and emissions generated by data centers has fueled concern regarding environmental impacts (Monstadt & Saltzman, 2025), particularly those of hyperscale data centers. While Siddik et al. (2021), recommend that data centers be located in areas that have cooler climates and greater access to water, and that they utilize renewable energy, recent hyperscale data center development has been concentrated in especially hot climates (e.g. Arizona and Texas), creating concerns for the long term impacts of this data center buildout on climate change.

Data center development has emerged as a bipartisan political issue at the local, state, and federal level, and community resistance has led to dozens of proposed data center projects being cancelled or denied. In 2025, more than 200 environmental groups lobbied for a national moratorium on data center development, with Senator Bernie Sanders introducing a proposal to temporarily ban data center development in March 2026. At his State of the Union address in February 2026, President Trump announced a “ratepayer protection pledge” to protect residents from electricity cost increases due to data center growth. In Texas, Governor Abbott signed SB6 into law in 2025 to manage power usage during peak periods and prioritize residential consumers, and in Florida, Governor DeSantis has proposed a bill that would protect ratepayers from utility price increases and allow local governments to prohibit construction. These national- and state-level policy proposals respond to fundamentally local planning conflicts over data centers as a land use, and local governments (and planning) are playing catch up.

This roundtable invites participants to examine the short- and long-term impacts of data center development on local communities and to reflect on what is known, and still unknown, about these effects. How and under what conditions has community resistance to data centers been successful, and what lessons can be drawn for future organizing and planning practice? How might cities and counties respond more effectively to data center proposals,

including through tools such as community benefits agreements or new regulatory approaches? What avenues for further academic research and critical planning scholarship are most urgent in order to better understand and shape the relationships between data centers, infrastructure, and community well-being? This roundtable draws together academics and practitioners studying data center development at various scales, across diverse geographies, and with expertise in housing, community and economic development, and energy systems.

Audience Engagement Questions:

- How and under what conditions has community resistance to data centers been successful, and what lessons can be drawn for future organizing and planning practice?
- How might cities and counties respond more effectively to data center proposals, including through tools such as community benefits agreements or new regulatory approaches?
- What avenues for further academic research and critical planning scholarship are most urgent in order to better understand and shape the relationships between data centers, infrastructure, and community well-being?

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Key Words: data centers, AI infrastructure, environmental justice, economic development, energy planning

"OLD FLORIDA" & THE WORKING WATERFRONT: UNDERSTANDING A GULF COAST CULTURAL REGION THROUGH IDENTITY, HERITAGE AND LANDSCAPE

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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The term "Old Florida" is currently used to market a small, quiet town, possibly undiscovered by tourists, where the local relationship with nature is often defined by the place's historic economy, for example, fishing, agriculture or riverboat tourism. We initially understand "Old Florida" by dissecting the term: "old" relating to the "good ole days," nostalgia for a time before overdevelopment, and "Florida," a state with an identity unique within the U.S., a wilderness not fit for modern settlement until it was wrangled into submission through hard engineering in the twentieth century. No other state markets itself like "Old Florida," yet an academic literature review failed to identify this term as a research topic. "Old Florida" is a culturally constructed identity that can provide reason and opportunity for community preservation and revitalization, at both local and regional scales. Using Odum's "cultural regionalism" as a framework (Odum & Moore, 1938), we seek to understand "Old Florida" places within a region of the Gulf Coast.

We use as a regional case study eleven counties in areas known informally as the "Forgotten Coast," the "Big Bend," and the "Nature Coast." This researcher-identified region contains small, rural towns with historically working waterfronts, and a vulnerability to change from hurricanes, out-migration, poor policy, and over-tourism. Our efforts to understand the area begin through the tenets of cultural regionalism: identifying the intersection of sectors (economic, environmental, social, etc.) by documenting the evolution of tangibles: geography, history, architecture, institutions and policy. Using cartographic analysis of landscape and ecology evolution, we then compare and analyze these factors at different scales to find commonalities and diversity: locally across the region, and in broad comparison with "Old Florida" regions across the state.

From Tarpon Springs to Port St. Joe, the region's towns have much in common, yet what is perhaps most important in "Old Florida" communities is that the locals define their own significance (Clandinin, 2017; Mason, 2002). Local identity narratives denote authentic cultural and intangible characteristics that provide insight into community perspectives (often multi-valent). These self-identified values offer a rationale for local empowerment and protection of these cultural landscapes. As a local case study, we present Cedar Key, a pre-Civil War shipping port most recently noted as one of America's 11 Most Endangered Historic Places by the National Trust for Historic Preservation. To capture local narratives about Cedar Key and its status as an Old Florida working waterfront, we used golfcart storytelling tours, school children's postcard art, and submission of personal photographs. If, historically, rural regional development aimed to strengthen the sense of community, then identification of community values to define local statements of significance can build a larger sense of community across multiple counties.

.Odum's goal of cultural regionalism was for social change; in practice, he used understanding of place to identify appropriate policy recommendations. Our current research goal is to document character defining features of the

cultural region and to record community identity narratives in anticipation of a statement of regional significance and future recommendations for cultural preservation and revitalization; these approaches may be transferrable to other regions in Florida and elsewhere. At a time when the rural-urban divide is rampant through policy debate, a return to the cultural regionalist principles can return power to local stakeholders in creation of identity and reinforce the importance of rural regions for public policy.Citations:

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Keywords: cultural regionalism, preservation planning, rural planning, community engagement, cultural landscapes

BUILT ENVIRONMENT CHANGE AND CRIME ACROSS FOUR URBAN GROWTH AND SHRINKAGE TYPES

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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This paper examines how changes in crime vary across U.S. cities experiencing different trajectories of urban growth and shrinkage. Although prior research has linked crime trends to demographic, economic, and neighborhood conditions, it has rarely examined whether the relationship between built environment change and crime varies across distinct urban growth and shrinkage trajectories. As a result, existing approaches may overlook important heterogeneity across cities and provide limited guidance for planners seeking context-sensitive responses to crime and urban change. Recent studies have introduced a four-type classification framework that conceptualizes urban growth and shrinkage through both population and economic dimensions: cities experiencing simultaneous population and economic growth, population growth with economic decline, population decline with economic growth, and simultaneous population and economic decline. Building on this framework, the present study distinguishes these four types of urban trajectories and assesses whether built environment changes are associated differently with violent and property crime across city types. The analysis combines crime data from the Federal Bureau of Investigation's Uniform Crime Reporting (UCR) Program, American Community Survey (ACS) 5-year estimates, and National Land Cover Database land-cover data. Built environment change is measured through the expansion of highly developed land and changes in the share of older housing built before 1950. The models control for changes in key sociodemographic and economic conditions, as well as baseline levels of sociodemographic, economic, and built environment characteristics. Fixed-effects linear regression models are estimated using pooled city-level transition observations from 7,832 U.S. cities across two pre-2020, non-overlapping ACS transition periods: 2005–2009 to 2010–2014 and 2010–2014 to 2015–2019. The findings show that crime change does not follow a uniform pattern across urban trajectories. Unlike cities experiencing simultaneous population and economic growth, cities experiencing decline in either population or economic conditions show a positive association between the expansion of highly developed areas and increases in crime rates, suggesting important risks for cities that continue to pursue expansion-oriented development strategies despite demographic or economic decline. The results also indicate that, unlike other urban trajectory types, cities experiencing simultaneous population and economic decline tend to experience lower crime where the share of older housing declines, implying that the improvement and rehabilitation of aging housing stock may be more beneficial than expansion-oriented development in severely distressed urban contexts. Overall, the paper argues that crime change should be interpreted through differentiated urban growth and shrinkage trajectories. It further suggests that planning and policy responses for safety should move beyond one-size-fits-all strategies, particularly in shrinking cities, where reinvestment in existing neighborhoods and the rehabilitation of aging housing stock may be more effective than expansion-oriented development in mitigating crime.

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Keywords: Crime, Urban decline, Built environment

DID REMOTE WORK REALLY DRIVE AN URBAN EXODUS? A DEMOGRAPHIC APPROACH

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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For superstar US cities, the post-pandemic period has been marked by accelerating urban decline and suburban growth, widely attributed to the rise of remote work and Covid-19 disruptions. Yet this narrative is based on a pre-pandemic counterfactual that fails to account for demographic changes already under way. This study introduces a missing demographic context to the remote work literature, investigating Covid-19 and remote-work effects on the life course and whether age cohort dynamics lay beneath observed urban-suburban divergence patterns. Drawing on Decennial Census and the most current ACS five-year estimates, I analyze national and metropolitan population age structure trends and employ a longitudinal cohort-tracking approach with a difference-in-differences specification to isolate Covid and remote-work effects on urban sorting behavior from regular migration patterns within the life course. Results reveal only modest, statistically insignificant declines in urban sorting attributable to remote work and Covid-19. The pull of cities on young adults, and of suburbs on new householders, has remained largely unchanged. Meanwhile, the US population's shifting age structure—namely, the aging of large Millennial cohorts from urban to suburban neighborhoods—accounts for the broad pattern of urban-suburban divergence during the 2020s. For urban and regional planning, these findings delimit remote work's transformations, suggesting that current trends will attenuate naturally as today's suburbanizing cohorts age in place. Remote-work era planning frameworks should therefore treat post-pandemic urban decline as a demographic phase rather than a structural break.

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Keywords: Remote work, Urban decline, Demographics, Migration, Urban preferences

DO CERTIFIED DEVELOPMENT COMPANIES TARGET INDUSTRIES FOR SMALL BUSINESS LOANS TO YOUNG FIRMS? A REVIEW OF EVIDENCE FROM THE SBA'S 504 LOAN PROGRAM

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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The SBA's 504 Loan program focuses on assisting small businesses with getting access to capital to finance real estate and operational machinery and equipment, which are critical to business expansion. More than a small business lending program, the 504 Loan program also serves as an instrument for impacting regional development, effectively giving it a dual mandate. This paper applies Economic Base Theory to evaluate how its regional development goals affect the SBA's 504 Loan program loan awards. Economic Base Theory, which argues that regional economic growth is disproportionately impacted by the growth of "basic" industries which export goods and services to external markets, provides a rationale for industrial targeting of economic development programs. Focusing on the specific case of new businesses, this paper tests for the impact of basic industry targeting on the age of the businesses receiving 504 Loan awards between Fiscal Year 2018 to Fiscal Year 2024. New businesses have significant financial capital needs but typically have the most difficulty in obtaining it. New businesses also play an important role in contributing to regional economic growth. Using a recursive bivariate probit model, this paper finds that evidence of the significance of basic industry targeting on the age of 504 Loan award recipients, but it appears to benefit firms older than two years.

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Keywords: Economic Development, Small Business, Industry Targeting, Public Policy, Public Finance

DO INNOVATION DISTRICTS DELIVER? QUASI-EXPERIMENTAL EVIDENCE FROM SBIR/STTR OUTCOMES

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Innovation districts (IDs) have emerged as a place-based strategy for promoting innovation-led regional economic development. Unlike earlier research parks, which were often isolated, suburban, and single-purpose, contemporary IDs are typically organized as mixed-use hubs located in or near cities (Katz & Wagner, 2014). They emphasize proximity and connectivity to intensify interaction among firms, universities, and other institutions. By coordinating anchor institutions, urban design, and strategic branding, these districts are intended to cultivate a functional knowledge ecosystem by reshaping local conditions under which innovative firms operate.

Despite the growing popularity of the ID model, empirical evidence on its effectiveness remains limited. Existing studies make important conceptual and case-based qualitative contributions (Drucker & Kayanan, 2024; Yigitcanlar et al., 2020), but it remains unclear whether IDs expand innovative opportunity or instead function primarily as a redevelopment and branding strategy framed in the language of innovation. This matters as municipalities devote substantial resources to IDs through rezoning, infrastructure investment, and formal governance partnerships (Wagner et al., 2017). This study addresses that gap by examining whether IDs produce measurable innovation returns, using the U.S. SBA's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) program awards as primary indicators of innovative activity and capacity. SBIR/STTR awards are useful because they provide direct federal support for innovative small businesses with high-risk R&D and have been linked to follow-on commercialization and regional spillovers (Fini et al., 2023; K. Myers & Lanahan, 2022).

Methodologically, we construct a tract-level panel (2000-2024) using SBIR/STTR award records to examine 14 established IDs identified by Mozaffarian et al. (2026). These districts span 12 states and were launched between 2000 and 2019. Outcomes include award counts and amounts, Phase transition rates, and Fast-Track counts. Using matching and a difference-in-differences framework, the analysis estimates the effect of location within an ID relative to comparable organically formed clusters within the same CBSA. Control tracts are identified using pre-treatment characteristics and industry concentration, including location quotients for NAICS 33/54 jobs derived from LEHD LODES data, which correspond to the sectors in which most awardees operate (Howell et al., 2023). Because ID boundaries are often imprecise, treatment exposure is defined using distance-based boundaries around each district's core location, which allows us to examine spillovers.

Preliminary descriptive evidence indicates that over the study period, 4,159 awards were made to firms located in ID cities, including 2,876 Phase I and 1,283 Phase II awards. By agency, the DoD accounts for the largest number of awards (1,862), followed by the DHHS (1,165) and NSF (444). Across the 14 IDs, four are primarily medical, five are technology, three are energy, and two are aerospace-focused. Based on NAICS composition, each district-core tract has roughly 8 candidate matches. This study contributes to the literature on IDs, small business innovation research, and the geography of innovation by offering a quantitative assessment of whether IDs deliver measurable innovation benefits for small firms. More broadly, it addresses a central question in planning and economic development about whether intentionally organized, place-based innovation strategies generate advantages beyond those of already constructed clusters, and whether those effects vary across governance models and local contexts. For planners and economic development officials, these insights into the mechanisms of innovation districts can help identify the conditions under which place-based innovation strategies are most likely to strengthen local small business ecosystems.

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Keywords: Innovation Districts, Agglomeration Economies, Place-based Strategies, SBIR/STTR

DO INTERNATIONAL KNOWLEDGE NETWORKS AFFECT REGIONAL ECONOMIC RESILIENCE?

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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The structural properties of knowledge networks shape how knowledge flows between actors, affecting a region's capacity to absorb and recover from shocks (Crespo et al., 2014). Existing studies have examined knowledge network structures' influence on regional economic resilience (RER) at the local and national levels. For example, Wen and Fang (2024) study the regional knowledge collaboration network in the U.S. and find that a coalitional network characterized by loosely connected subgroups facilitates a region to develop new growth paths after natural hazards. Du et al. (2025) find that a higher centrality in the cross-regional innovation collaboration networks within China promotes overall RER after the 2008 global financial crisis.

However, the international knowledge networks' influence on RER is rarely studied. Global interaction creates a pipeline for integrating diverse knowledge and generating cutting-edge technology (Bathelt et al., 2004), avoiding locking into local contexts , and gathering resources to develop new growth path (Eugster et al., 2022). The structures of the international knowledge networks indicate different types of knowledge exchange and resource diffusion, and thus affect RER. Ignoring global interaction network can bias the results as we don't know which regions are more embedded in the global knowledge network and how such embeddedness affects resilience.

This study addresses the gaps. Specifically, it tests the following hypothesis: whether regions with higher centrality metrics in the global knowledge network have larger resilience. If so, by how much. The study examines the effects of four centrality measures on RER: degree centrality, betweenness centrality, closeness centrality, and eigenvector centrality.

The study uses the following data. First, the patent inventors' data from USPTO are collected to construct the global knowledge network. The data covers information on patent inventor location, patent classification and patent application date. The analysis focuses on U.S. patent that involves foreign collaborators to construct the global knowledge collaboration network for all the U.S. metro areas. Second, natural hazard data are collected from the Spatial Hazard Events and Losses Database for the US (SHELDUS). SHELDUS is maintained by Arizona State University, Center for Emergency Management and Homeland Security, and it covers 18 kinds of natural hazards from 1960 to 2022. Here use natural hazard that causes more than $100 million in losses are used as external shocks to affect local economic system. Third, employment data from the US Quarterly Census of Employment and Wages (QCEW) are collected to construct measurements for resilience. The staggered difference-in-differences regression are adopted to examine the global network structures' influence on RER after natural hazards. For now, all the data have been collected and cleaned. The preliminary analysis will be finished before June and the manuscript will be finished before September.

Theoretically, the study contributes to the evolutionary economic geography literature on knowledge networks and RER by expanding the geographic scale from domestic to global. It expands Crespo et al. (2014)'s framework and examines how embeddedness in global knowledge networks affects RER. Practically, the findings could guide policymakers to design place-based innovation policies that strategically strengthen a region's position in global knowledge networks as a resilience-building strategy.

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Keywords: Economic resilience, Knowledge network

DYNAMIC EVOLUTION OF INSTITUTIONAL DISTANCE AND ITS IMPACT MECHANISM ON REGIONAL URBAN COORDINATED DEVELOPMENT

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Against the backdrop of fundamental restructuring of global geospatial patterns, “institutional distance” arising from differences in institutional environments has gradually emerged as a deep-seated factor constraining regional coordination. However, current research on “institutional distance” remains largely qualitative, lacking quantitative analysis of the spatiotemporal evolution of institutional distance and its impact mechanism on urban coordinated development. Based on this, this study focuses on three questions: First, how has inter-city institutional distance evolved in terms of characteristics and structural types alongside regional coordinated development? Second, how does institutional distance affect inter-city coordinated development, and what is the specific mechanism? Third, based on these findings, how can more targeted institutional adjustment policies be formulated to guide regional cities toward high-quality coordination?

This study constructs separate index systems for measuring inter-city institutional distance and coordinated development. Using panel data from the Yangtze River Delta urban agglomeration from 2015 to 2025 and taking city-pairs as the basic analytical unit, it comprehensively employs the entropy weight method, two-way fixed effects model, and moderating effect model to capture the spatiotemporal evolution characteristics and structural types of institutional distance, and to explore its specific impact mechanism on urban coordinated development. In terms of measurement systems, based on the classic “regulative - normative -(cultural-)cognitive” triad in institutional theory, an inter-city institutional distance measurement index system is constructed covering three dimensions: regulative, normative, and cognitive. Simultaneously, an inter-city coordinated development measurement index system is established across five dimensions: economy and society, technological innovation, infrastructure, public services, and ecological environment. In terms of evolutionary analysis, from a typological perspective, the spatiotemporal evolution characteristics and structural types of inter-city institutional distance are summarized, and a multidimensional institutional distance change matrix is constructed. In terms of mechanism exploration, a two-way fixed effects model is used to examine, layer by layer, the direction and extent of the impact of comprehensive institutional distance and its sub-dimensional distances on inter-city coordinated development, summarizing the specific impact mechanism. Additionally, a moderating effect model is introduced to further investigate the moderating roles of factors such as administrative level and marketization.

Preliminary findings indicate: (a) During the study period, inter-city institutional distance significantly narrowed, exhibiting diverse structural types and differentiated evolutionary trajectories; (b) The sub-dimensional institutional distances vary in the magnitude and timing of their effects on inter-city coordinated development, collectively forming an impact mechanism characterized by “regulative-driven, normative-responsive and cognitive-integrated”influence.

This study further extends the application of institutional distance theory in regional research, providing theoretical support and analytical tools for the comparative analysis of inter-city institutional distance and the institutional optimization of regional coordination.

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Keywords: Institutional distance, Dynamic Evolution, Regional coordination, Impact mechanism, the Yangtze River Delta

FROM ATTENTION TO ACTION: STRATEGIC DYNAMICS OF REGIONAL COLLABORATION

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Regional collaboration is widely recognized as essential for addressing cross boundary planning challenges. Existing research has focused on institutional design and collaborative outcomes, while paying limited attention to the prior cognitive stage in which governments decide whether to prioritize collaboration. We argue that cooperative attention, defined as governments' articulation and prioritization of regional affairs and potential collaborative partners, is a critical but underexplored mechanism shaping regional planning and development. This study addresses this gap by asking: how do local governments pay attention to cross-jurisdictional planning issues? Whether and how does cooperative attention translate into concrete regional collaborative actions?

Focusing on municipalities in China's Yangtze River Delta, this study develops text-based measures of cooperative attention and collaborative actions using natural language processing applied to 488 government work reports and 131,705 municipal news articles. To examine how such attention is formed and diffused, we employ spatial econometric models that capture peer attention effects across relational dimensions, including geographic proximity, planning frameworks, administrative linkages, political hierarchies, and policy arrangements. We further examine how these institutional contexts condition the translation of attention into collaborative action.

The findings show that peer governments' cooperative attention plays a central role in shaping local attention formation, but with heterogeneous effects across institutional contexts. In strongly institutionalized relationships, peer attention reinforces local prioritization of collaboration, whereas in weakly institutionalized contexts it induces substitutive and strategic differentiation responses. Moreover, local and peer attention jointly shape the conversion of attention into concrete collaborative actions, with institutional contexts moderating this process. These results suggest that variation in regional collaboration is rooted in the uneven and relational dynamics of attention at the pre-action stage. By integrating cognitive processes into the study of regional planning and development, this research provides new insights into how attention formation shapes the dynamics of city-regional integration.

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Keywords: Cooperative attention, Regional collaboration, Peer effects, Attention–action linkage

FROM DISCONNECTION TO NICHE CONNECTIONS: NETWORKS OF WOMEN AND MINORITY ENTREPRENEURS IN COLUMBUS, OHIO

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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In the context of economic development and entrepreneurship, the past literature has demonstrated that women or minority entrepreneurs underperform male and white counterparts by having less survival rates and lacking access to finance (Coleman and Robb 2012; Bates et al. 2022). However, the reasons for such underperformance are understudied. Only recently did scholars start to identify broader structural barriers and disconnected networks of women or minority entrepreneurs from mainstream support networks (Sperber and Linder 2019; Motoyama et al. 2024). So far, many of these studies are qualitative, and the authors are unaware of quantitative and network-based studies that include analyses of specific networks and actual behavioral differences of women or minority entrepreneurs.

In this project, we conduct social network analysis by uniquely combining two data sets. The first one is a survey of 313 business owners in Columbus, Ohio, in which we can differentiate women and/or minority entrepreneurs about their primarily support networks. Based on this data, we constructed another database of 100 local entrepreneurship support organizations and extracted their twitter/X followers, which allowed us to examine nodes of 210,026 individuals.

Our preliminary findings uncover that women or minority entrepreneurs are not simply disconnected from mainstream support organizations, but developed alternative connections to niche support organizations specializing or led by women or minority leaders. Moreover, those support organizations are highly locally-based, not nationally-operating organizations.

These findings lead to two important implications. First, given the presence of niche support organizations and their connections to women or minority entrepreneurs, it is not the disconnection of women or minority entrepreneurs, but rather the invisibility and little overlap of connections with mainstream support organizations. Second, with our dataset of specific organizations, we can identify points of communication or intervention if the public sector or other support organizations need to reach out or provide supports for women or minority entrepreneurs.

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Keywords: Entrepreneurship, Social networks, Support organizations, Women/minority

GROWTH BY DEFAULT: PLANNING METRICS AND DEPOPULATION RESPONSES IN JAPAN'S SHRINKING TOWNS

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Individual Paper Presentation

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Japan is facing an unprecedented demographic cliff. Its population peaked in 2008 at 128 million and has contracted ever since. Government projections estimate that by 2070 there will be 87 million people in Japan, a stark decline of about one third from its 2020 population. This demographic transition is felt more acutely at the local level. Since the 1950s, rapid economic growth concentrated populations in large urban agglomerations—the metropolitan areas of Tokyo, Nagoya, and Osaka—while smaller municipalities and peripheral cities began to decline. Despite growing recognition of depopulation, national planning frameworks remain fundamentally growth-oriented, continuing to privilege population recovery and economic expansion as primary goals. This makes population and economic growth the default metrics to measure local success.

How do municipalities operationalise responses to depopulation in their local planning instruments, and what role do alternative metrics (such as well-being and circularity) play in moving beyond the growth paradigm? To address these questions, this paper uses latent content analysis of key municipal policy documents, including Comprehensive Strategies, Population Visions, and Masterplans. The documents are evaluated through a framework of two key elements: resistance (policies attempting to reverse demographic trends) and adaptation (policies decoupling local well-being from population size). To illustrate these divergent pathways, the paper examines two small Hokkaido municipalities: Yubari (~5,700 inhabitants, -93% from peak) and Shimokawa (~2,800 inhabitants, -80% from peak). Both towns have experienced severe depopulation but have followed different planning trajectories. While Yubari leans towards resistance—retaining growth-oriented targets despite capacity constraints—Shimokawa leans towards adaptation, having reoriented its planning instruments around resource circularity, energy self-sufficiency, and resident well-being rather than regrowth.

After decades of aggressive pro-growth policies, Yubari declared de facto bankruptcy in 2006. Despite limited implementation capacity, its planning documents set population targets well above national projections—both in its 2016 and 2020 Population Visions. Even the goals of strategies such as its Compact City Plan, designed to reduce the city's footprint to match its smaller population, reveal a disconnect between planning logic and fiscal reality. For instance, the 2012 Masterplan acknowledges that because the city is in a "fiscal regeneration period," executing a bold structural transition is financially impossible. Rightsizing, in Yubari's case, is not adaptation to shrinkage but short-term consolidation of municipal housing. Where Yubari resists demographic realities, Shimokawa adapts to them. The town's plans frame shrinkage not as a failure to be reversed, but as a baseline condition to be managed. Accordingly, Shimokawa is replacing traditional growth-oriented metrics (total population, GDP growth) with alternatives based on resource self-sufficiency and circularity. For instance, its 2018 SDGs Future City Plan sets as one of its KPIs the "percentage of residents with something they like or a sense of purpose." The measure of success is not the number of people living in Shimokawa, but the number who find purpose there.

The paper argues that the barrier to sustainable shrinkage lies in the metric architecture of planning instruments: Japan's national planning framework standardises growth-oriented indicators—population retention, net migration, job creation—across all municipalities, regardless of their actual demographic trajectories. Shimokawa's adaptation was enabled by national designation mechanisms, such as the Eco-Model City and the SDGs Future City, raising the question of whether sustainable shrinkage can be institutionalised more broadly, or whether it will remain a designation-dependent exception.Citations:

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Keywords: Japan, Depopulation, Shrinking Cities, Sustainable Transitions, Planning Metrics

HERITAGE AS A ECONOMIC GROWTH ENGINE: HETEROGENEOUS TOURISM IMPACTS ACROSS 143 CHINESE HISTORICAL CITIES, 2018-2023

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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In the post-pandemic era, cities across the world have experienced highly uneven tourism recovery, raising a fundamental question for planners and policymakers: to what extent can cultural heritage serve as a driver of urban and regional economic performance? While existing research acknowledges the economic value of heritage, systematic city-level evidence on its heterogeneous effects and role in shaping divergent recovery trajectories remains limited.

This study addresses this gap by providing a comprehensive, data-driven analysis of the relationship between cultural heritage and tourism income across the complete set of China's 143 National Historical and Cultural Cities (NHCCs) over the period 2018–2023, spanning both pre- and post-COVID-19 periods. As one of the most extensive nationally designated heritage systems in the world, NHCCs offer a uniquely suitable empirical context for examining the economic role of heritage at the urban and regional scale.

We employ a multi-layer econometric framework that combines two-way fixed-effects panel models with interaction-based heterogeneity analysis and quasi-experimental difference-in-differences (DID) and triple-difference (DDD) strategies. This design allows for a rigorous estimation of the baseline relationship between cultural heritage and tourism income, while also systematically identifying how this relationship varies across different types of cities and how it evolves in response to the COVID-19 shock.

The empirical analysis yields three central findings.

First, cultural heritage exerts a positive and statistically significant effect on urban tourism income, with an estimated elasticity of approximately 0.76. This result indicates that heritage functions as an active economic asset rather than a passive historical legacy, contributing meaningfully to tourism-based economic development.

Second, the economic effects of cultural heritage are highly context-dependent. The analysis reveals substantial heterogeneity in heritage–tourism elasticities across six key dimensions of urban structure: administrative level, population size, historical function, ethnic composition, natural resource endowment, and accessibility. In particular, heritage effects are strongest in regular prefecture-level cities, culturally diverse contexts, cities with lower natural resource endowment, and those with higher accessibility. These findings suggest that heritage operates within a broader urban system, where its economic returns are conditioned by institutional capacity, market size, spatial connectivity, and cultural diversity. Rather than functioning as a uniform driver of tourism growth, heritage exhibits differentiated economic roles across cities, reinforcing the importance of place-based and regionally calibrated development strategies.

Third, contrary to common assumptions, the results show that heritage does not generate a significant recovery premium in the aftermath of COVID-19. Cities with higher levels of heritage endowment did not experience systematically faster tourism recovery compared to those with lower levels. Instead, cultural heritage appears to function as a structural stabilizer rather than a short-term recovery accelerator. Tourism performance in heritage-rich cities remains more stable over time, particularly in those characterized by stronger institutional capacity, larger population size, and higher accessibility.

From a planning and policy perspective, the findings highlight the limitations of one-size-fits-all heritage strategies and underscore the need for context-sensitive approaches. By situating cultural heritage within a broader framework of regional economic development, this study contributes to a deeper understanding of the forces that shape tourism economies and offers practical insights for leveraging heritage as a strategic asset in contemporary urban and regional planning.

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Keywords: cultural heritage, tourism economy, urban heterogeneity, panel econometrics, tourism resilience

IMMIGRATION ENFORCEMENT AND LOCAL ECONOMIC ACTIVITY: EVIDENCE FROM MOBILITY AND SPENDING IN COOK COUNTY, ILLINOIS

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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How does immigration enforcement shape local economic activity? This paper examines whether intensified immigration enforcement in 2025 altered consumer mobility and spending patterns in Cook County, Illinois, with particular attention to neighborhoods serving large Latino and immigrant populations. We analyze two enforcement episodes: the January 20, 2025 inauguration and subsequent raids, and a later September 2025 escalation, Operation Midway Blitz.

The study employs a difference-in-differences design that identifies effects through variation in immigrant concentration across neighborhood market areas. We combine weekly Advan mobility data, SafeGraph spending data, and ACS demographic measures to construct three linked panels: destination-side business activity, origin-side resident outbound commercial trips, and origin-destination (OD) flows between neighborhoods. The OD flow decomposition, which tracks trips between high-immigrant-origin (H) and low-immigrant-destination (L) neighborhoods, allows us to isolate the specific channels through which enforcement reshapes metropolitan commercial networks, extending beyond the destination-side and customer-composition approaches used in prior work (Lester, Wilson, and Knaap 2026).

Preliminary findings indicate that the January 2025 enforcement shock significantly reduced cross-boundary commercial flows originating from high-immigrant neighborhoods. Residents of these areas made meaningfully fewer retail trips to businesses in non-immigrant destinations, and the magnitude of the decline increased with the immigrant concentration of the origin neighborhood. This pattern held across both discretionary and essential business categories, with effects of comparable magnitude, suggesting that the behavioral response was not limited to deferrable spending but extended to routine commercial activity. By contrast, commercial flows within high-immigrant neighborhoods were essentially unchanged, consistent with a “hunkering down” response in which residents maintained local patronage while withdrawing from broader commercial circulation. An extended event-study analysis spanning both enforcement episodes shows that the January shock produced a sharp and sustained decline in cross-boundary flows, while the September 2025 escalation generated no discernible additional effect, suggesting that the initial event exhausted the behavioral margin of adjustment. Geographically, suburban immigrant communities exhibited cross-boundary flow declines roughly twice as large as those in urban immigrant communities, consistent with greater baseline reliance on cross-boundary commercial networks in more spatially dispersed suburban settings.

This paper contributes to a growing literature on the economic consequences of immigration enforcement (Watson 2014; Alsan and Yang 2024; East et al. 2023) by providing evidence that enforcement reshapes the spatial structure of metropolitan commercial activity. While companion work documents large aggregate declines in foot traffic and spending in immigrant neighborhoods in Los Angeles (Lester, Wilson, and Knaap 2026), the present study uses origin-destination flow data to show where displaced commercial activity goes and where it does not. The results demonstrate that neighborhood economies are not self-contained: when fear alters the movement of one population, its effects propagate through commercial connections across the broader region.

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Keywords: immigration enforecement, consumer mobility

INCLUSIVE INNOVATION IN THE RUST BELT? LESSONS FROM DETROIT

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Against the backdrop of growing urban inequality, persistent industrial restructuring and rapid technological change, planners and scholars have framed a vision of "inclusive innovation" to guide economic development at the local, state and national levels. The issues of metropolitan inequality and economic restructuring are especially pressing in legacy regions. In addition to long-term economic challenges, legacy regions in the United States experience demographic stagnation or population loss, pockets of property abandonment, and relatively high levels of racial segregation, with respect to both residential location and the occupational labor market (Cowell 2014). Where economic assets are rooted in older technologies and the built environment remains socially and racially exclusionary lines, how can public and private actors promote inclusive innovation?

Inclusive innovation can be defined as a process of "balanced and interconnected growth between research and production jobs" (Lowe and Wolf-Powers 2018, p. 829). In the literature on inclusive innovation, one strand of research has examined place-based investments in innovation districts (Morales et al 2025). A second strand emphasizes institutional strategies of intermediation among public and private actors to enhance the quality of work and break down structures and institutions that exclude groups from participation in innovation ecosystems (Shrock and Lowe 2021). Yet there has been little how unequal metropolitan spatial structures, as found in legacy cities, shapes access to research and production jobs.

This paper examines the relationships between innovation, production, and spatial structure in Metro Detroit's automotive industry. It presents a historical case study of the region's innovation and production ecosystem during two periods: 1900-1930 and 2000-2025. The case research draws on historical data from labor inspection reports from the Michigan Department of Labor; contemporary data from company documents and government reports; the US Census; and secondary literature on Detroit and the auto industry. The paper documents the shifting locations of production and research jobs during each period, mechanisms of inclusion/exclusion in each job type, and how these mechanisms are mediated by urban spatial structure. Metro Detroit was a leading site of innovation and industrial disruption during the emergence of automobility in the early 20th century (Klepper 2009). The auto industry anchored hundreds of thousands of production jobs, but access to decent work was limited by ethnicity, race and residential location. Amidst today's ongoing transition to mobility technologies related to electric, autonomous and connected vehicles, Metro Detroit retains a large research and engineering complex with high levels of patenting and innovation as well as an extensive network of manufacturing plants. Yet production employment is far lower than at the turn of the twentieth century, and the benefits of manufacturing jobs are still shaped by race and location. The paper examines efforts in both periods to expand access to production and research jobs through institutional interventions like labor market intermediation and community benefits arrangements, as well as spatial and material interventions in the urban spatial structure including plant construction, investments in housing, transportation infrastructure, and other real estate development.

The paper finds that spatial structure mediates workers' and residents' inclusion in innovation ecosystems. It also affirms that institutional interventions can create hiring pathways and spread community benefits. Finally, it identifies risks that inclusion in both research and production ecosystems presents risks for workers and communities in legacy regions.

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Keywords: Legacy cities, Auto industry, Labor market, Inclusive innovation, Manufacturing

INNOVATION DISTRICTS IN CHINA'S ECONOMIC TRANSITION: FROM LAND-CAPITAL URBANISM TO LAND-CAPITAL-AI URBANISM

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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In China's current phase of economic restructuring, innovation districts are no longer sustained by land development and real-estate capital alone. This paper uses KIC (Knowledge Innovation Community), located in Shanghai's Yangpu District, to explore how a different growth logic is beginning to take shape. KIC is a particularly revealing case. Its early planning involved SOM, and later phases brought in international developers such as Tishman Speyer, making it one of the more visible examples of how Chinese innovation districts have been built through the convergence of global design expertise, place branding, property development, and regional growth ambitions.

Before the current AI wave, KIC was largely organized through what can be described as a land-capital logic. Local governments, universities, and developers worked together to turn the district into a platform for redevelopment, asset appreciation, tenant attraction, and place-based valuation. In other words, this was never just a site where innovative firms happened to cluster. It was carefully assembled as an urban field whose economic value depended on branding, investment narratives, and the steady production of visibility and competitiveness.

The paper combines planning and policy documents, historical analysis, ethnographic fieldwork, and semi-structured interviews with actors in KIC's entrepreneurial and development ecosystem. These methods serve different purposes. Documents and historical materials reconstruct how KIC was produced as a land-capital project. Fieldwork captures the everyday scenes through which AI enters entrepreneurial practice. Semi-structured interviews are used to clarify how developers, operators, incubator managers, entrepreneurs, and related actors understand AI, how they translate it into strategies of programming, tenanting, branding, and investment attraction, and how they connect these practices to broader expectations of growth and value.

What emerges is not simply the rise of AI as a new sector, but a change in how innovation districts work. Fieldwork shows that AI is entering everyday entrepreneurial practice through public lectures, workshops, and networking events that make AI tools, platform logics, and entrepreneurial knowledge broadly accessible. In these settings, participants often describe AI as support for the "one-person company" or the "super-individual," linking learning, content production, platform visibility, and market opportunity in new ways. Interviews help explain why these scenes matter: they are not peripheral activities, but part of a broader effort to make the district legible as innovative, dynamic, and investable.

This does not mean that capital has broken from land. Land, property, and spatial development remain fundamental. But part of value creation is becoming less tightly tied to land development alone. Innovation districts are increasingly valued for their ability to circulate technologies, cultivate entrepreneurial subjects, and present themselves as advanced, dynamic, and investable places. Regional development in contemporary China, then, needs to be understood not only through industrial upgrading or land supply, but also through the changing relationship among land, capital, and artificial intelligence. That shift has implications for planning: evaluating innovation districts now requires attention not only to firms, output, and real-estate performance, but also to the scenes of learning, networking, and entrepreneurial self-making through which new forms of value are produced and distributed.Citations:

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Keywords: Innovation districts, Economic transition, Artificial intelligence, Regional development

INTERPRETABLE AI AND TEMPORAL ANALYSIS OF INNOVATION DISTRICT CONFIGURATION AND PERFORMANCE IN CHINA

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Individual Paper Presentation

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Innovation districts have become a central place-based strategy for regional economic development, yet planning practice continues to evaluate them through static asset inventories—universities, firms, transit, and amenities—rather than examining how these elements evolve and which changes actually precede stronger performance. Existing research shows that innovation drivers operate through nonlinear, threshold-dependent mechanisms rather than simple additive effects, but the temporal sequence through which district configurations mature remains poorly understood. Planners still lack clear evidence on which interventions matter first, under what conditions, and for which district types. This paper asks: which changes in innovation-district configuration precede improvements in performance over time, and how can interpretable AI help planners identify those shifts.

Using a multi-year panel of innovation districts in major Chinese cities, the study develops a two-stage analytical framework connecting pattern recognition to causal ordering. The first stage applies XGBoost with SHAP values and Partial Dependence Plots to multi-source district-level data—covering research and education assets, firm presence, transportation accessibility, amenities, demographic structure, and mixed-use functions—to identify recurring configuration patterns, distinguish core from supporting drivers, and establish nonlinear activation thresholds for each driver category. In the second stage, the core variables and threshold conditions identified in Stage 1 are directly entered as key explanatory terms in district fixed-effects panel models with structured lag specifications, which test whether changes in those configuration variables temporally precede performance shifts—measured through innovation output (publications and patents) and market-oriented outcomes (GDP). Event-study designs around discrete interventions such as transit openings, incubator launches, and research facility completions serve as an additional identification strategy within this stage, sharpening causal ordering where exogenous variation is available.

Three findings emerge. First, changes in research-education capacity, firm concentration, and connectivity consistently precede subsequent performance gains, with lagged effects emerging after 2 to 3 years and persisting over multiple subsequent periods. Second, supporting elements—business services, dining, lifestyle functions—improve performance only after core capacity crosses the minimum thresholds identified in the first-stage PDP analysis; below those thresholds their marginal effects are negligible, while above them they raise performance by 11% to 23% relative to comparable districts. Third, districts follow differentiated sequences: university-anchored districts gain most when commercialization and business-support functions are strengthened, while firm-led districts respond more strongly to accessibility and mixed-use improvements.

The paper makes three contributions to regional planning scholarship. Conceptually, it reframes innovation districts as evolving economic configurations rather than fixed asset bundles, foregrounding sequencing and timing as core dimensions of planning strategy. Methodologically, it bridges interpretable machine learning with panel econometrics, using the first stage to generate theoretically grounded variables and threshold conditions that sharpen temporal identification—addressing a key limitation of both static innovation mapping and atheoretical predictive models. Practically, the findings give planners guidance on what to add first, what can wait, and which

pathways produce durable gains, supporting a shift from generic checklists toward staged, type-specific regional development strategies.

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Keywords: Innovation Districts, Explainable AI, Temporal Analysis, Economic Development

IS JOBS-HOUSING IMBALANCE STRUCTURED BY METROPOLITAN SCALE? EVIDENCE FROM U.S. METROPOLITAN AREAS

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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In the United States, jobs-housing balance (JHB) is a long-standing policy framework for addressing commuting and its environmental impacts. As theorized, if cities within a region maintain proportional jobs-to-housing ratios, commutes will tend to be self-contained and reduce associated externalities. Imbalances across municipalities, it is argued, generate inefficient levels of interjurisdictional commuting. While countervailing research that investigates whether travel and location behavior moderate this relationship is ample, research that investigates urban economic factors that may structure it is limited. In this research, I investigate whether regional means and variation in municipal jobs-worker ratios (JWRs) are explained by metropolitan structure. I construct a 10-year panel dataset of job and worker location patterns across the 200 most populous metropolitan areas in the United States and estimate whether the mean and standard deviation of municipal JWRs are associated with regional workforce size, urbanized land area, and political fragmentation. Descriptively, both the mean and dispersion of municipal JWRs occupy a narrower range as metropolitan regions increase in scale. This suggests that jobs-housing imbalances may not be an inherent inefficiency of metropolitan form, but instead reflect scale-dependent equilibrium dynamics in household and firm location selectivity. However, regression models indicate that geographic land area is the single scale factor that retains statistically significant association with both statistics once covariance across scale dimensions is controlled for: greater regional land area is associated with higher municipal JWR variability and average municipalities containing modestly more resident-workers relative to jobs.

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Keywords: Jobs-housing balance, Regional scale, Urban spatial structure, Economic geography, Political fragmentation

IS URBAN POPULATION DECLINE A BAD THING?

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Scholarship generally finds that shrinking cities continue to plan using growth- and maintenance-oriented strategies and that this is true even among the few shrinking cities that acknowledge the reality of population loss. If the idea of ongoing population loss remains so unimaginable, or so unacceptable, to cities very familiar with its realities, it stands to reason that public leaders view urban population loss as undesirable. While a century of economic theory provides ample reason to view urban population decline negatively, nascent scholarship has emerged suggesting that such decline may not be negative in terms of community outcomes. However, this literature is exceptionally inconclusive, owing to its diverse and often incongruent methods and definitions. This paper first surveys the nascent literature to identify existing tests of the outcomes of population loss, which pertain to economic outcomes and wellbeing. Then, US shrinking cities are paired with non-shrinking cities based on their economic and demographic characteristics in 1970. The paired sample is then systematically tested for differences in the identified economic and wellbeing outcomes in 2020. As expected, the majority of shrinking cities fare unfavorably in this comparison—but not all. The shrinking cities that out-performed their matches are analyzed to identify the conditions relating to success. The results suggest a limited optimism for planners in shrinking cities and underscore the significance of equity in economic development processes.

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Keywords: shrinking cities, legacy cities, wellbeing, inequality, population decline

JOBS–HOUSING BALANCE AND SELF-CONTAINMENT IN SHRINKING CITIES: EXPLORING PLANNING STRATEGIES

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Central Theme

US shrinking cities experience not only population loss, but also declines in housing stock and employment opportunities, which can weaken local fiscal capacity and constrain the provision of public services (Weaver et al., 2017). Population decline may exacerbate spatial mismatches between jobs and housing, leading to longer travel distances and increased dependence on automobiles. This issue may be particularly critical in shrinking cities, where residents—often economically disadvantaged—may face constraints in affording private vehicles. Encouraging workers to live closer to their workplaces can yield multiple benefits, including shorter commutes and reduced reliance on automobiles (Blumenberg & King, 2021). Although a substantial body of research has examined the relationship between jobs–housing balance and travel behavior, relatively little attention has been given to strategies that promote a balanced distribution of jobs and housing and encourage residents to live and work within the same city in shrinking urban contexts. Accordingly, this study addresses the following central research question: What strategies can improve jobs–housing balance and self-containment in shrinking cities? This research on the transportation land-use relationships in shrinking cities seeks to highlight innovative comprehensive planning approaches to manage smart decline.

Methodology

Using content analysis, a method commonly applied to evaluate plans or zoning codes (Norton, 2008), this study examines comprehensive plans adopted before 2015 in four U.S. shrinking cities: Great Falls, MT and Peoria, IL, which showed improvements in both measures, and Charleston, WV and Decatur, IL, which experienced declines. Shrinking cities are defined here as those that underwent decreases in total population, jobs, and resident workers during the late 2010s (2015–2019) relative to the early 2010s (2010–2014). The analysis assumes that strategies articulated prior to 2015 may help explain subsequent changes observed in the later period. Because comprehensive plans are widely adopted and address multiple dimensions of urban development, they provide a useful framework for identifying strategies aimed at improving jobs–housing balance and self-containment in the context of population decline. By comparing these plans, the study investigates strategies associated with differences in changes in jobs–housing balance and self-containment across cities. Five key terms—shrink, job, housing, diverse, and commute—along with their synonyms, were analyzed to identify relevant planning strategies. Following word frequency analysis, the contextual use of these terms was examined to interpret the underlying strategies and policy intentions reflected in the plans. Additional documents, including local newspapers and related planning materials, were analyzed to assess the implementation of strategies identified in the comprehensive plans, as well as their impacts and residents' perceptions.

Relevance

One key finding is that promoting diverse employment opportunities appears to be associated with improvements in jobs–housing balance and with encouraging residents to both live and work within the same city. Economic diversification can generate new employment opportunities, attract skilled workers, and stimulate local economic development (Schackmar et al., 2021). Equally important is the acknowledgment and acceptance of population

decline by local governments and planning authorities. It is because perceptions of urban shrinkage directly shape the priorities and strategies adopted in comprehensive plans (Pallagst et al., 2017). Housing policy also emerges as a critical factor in sustaining jobs–housing balance and self-containment. Providing a diverse range of housing options, including affordable and workforce housing located near employment centers, can enhance residents' ability to live close to their workplaces.

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Keywords: Shrinking city, Jobs-housing balance, Self-containment, Content Analysis, Comprehensive Plan

MEGA-SPORTING EVENTS WITHOUT CITY PLANNING? THE SPECTACLE AND PARADOX OF KANSAS CITY AND THE WORLD CUP.

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Mega-Events, including World Fairs, Expos, the Olympics and the World Cup have a long history of interaction with municipal planning, urban design and the political economy of urban tourism. Since at least the 1893 World's Columbian Exposition, these destination events have been recognized for their impact on the image and spatial form of the host city, and how planners and the public think about the city as a space of exhibition, spectacle and identity.

This research explores the politics of planning on and off the field for the 2026 FIFA Men's World Cup in Kansas City. Briefly tracking the growth of global soccer in the United States, the work answers the question "why Kansas City," analyzes the gentrification of soccer, and the building boom in stadiums as context for the winning "United Bid" by Canada, Mexico and the US in 2018. Situating a regional case study within these national and global influences, this work explores the political economic forces shaping the event, and the long-term impacts for city and community planning.

Mega-Events are deeply political. As the case of the Chicago's World Fair and Ida B. Wells-Barnett shows, the "world stage" provides a moment in which the boundaries between local, national and global politics dissolve. For host cities today, the process of welcoming the world often exposes persistent forms of economic inequality, exacerbates regional disparities, and redirects public budgets towards the privatized production of the event, undermining equitable urban development. At the same time, mega-events also create an opportunity and space for local political action with global attention as spectacles made for the mass media and global audiences.

The paper reviews the major phases of the host city planning process from the bidding to preparation, event management, and the post-event aftermath specific to the Kansas City region's experience. Using mixed methods of participant observation, document analysis, informal and formal interviews, and spatial analysis of the event's key elements, the research looks at the World Cup through the lens of local stakeholders with varying relationships to regional governance and economic structures, and the privatized planning apparatus of FIFA and the sports industry.

The paper concludes with a presentation of the concept of "legacy" as a key planning and policy framework for mayors and municipalities in the context of global sports hegemony and privatized planning. From a symbolic perspective, legacy is an important part of the narrative during the bidding process, which despite this significance - remains vulnerable to the financial and political pressures associated with event production. It remains to be seen what the legacy will be in contrast with the very real economic extraction of resources (Müller, Gogishvili and Wolfe 2022), time and attention from public agencies at all levels, and the redistribution of power to privatized organizations centered in the sports commission, local teams, national leagues and the global behemoth of FIFA.

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Keywords: Mega-Sporting Events, Equity Planning, Legacy, Regional Development, Tourism

NEGOTIATING INNOVATION IDENTITIES THROUGH PLACE, RACE, AND THE NETWORKED POLITICS OF URBAN REDEVELOPMENT: A CRITICAL CASE STUDY OF BIRMINGHAM, ALABAMA

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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In the wake of deindustrialization and uneven post-recession recovery, cities across the United States have embraced entrepreneurial urbanism as a strategy for repositioning themselves within the global knowledge economy (Pollio and Rossi 2024). A material manifestation of this strategy is the development of urban innovation districts strategically situated in distressed neighborhoods adjacent to "eds and meds" anchors. Intentionally designed to stimulate both economic growth and urban redevelopment, these mixed-use hubs have become central features of downtown revitalization strategies seeking inclusive economic development. Rarely examined as products of contested place-based meanings embedded in historic socio-spatial inequities, their presumed capacity to generate equitable outcomes remains largely unproblematized.

This article addresses this gap by examining how place—understood as both a material outcome of historical disinvestment and a social product of ongoing dialectical struggle—influences the planning and development of two innovation districts in Birmingham, Alabama. Historically regarded as one of the most segregated cities in the United States, Birmingham ranked near the bottom among large metros in job growth and exhibited the widest racial disparities in business ownership in 2018. Since then, its Black-led government has systematically sought to transform the city's overall socio-economic structure and redress its spatial inequities by building an inclusive entrepreneurial ecosystem rewired for inclusion (Martinez 2021). Its two innovation districts are key components of this broader strategy.

Bridging theories of relational space, placemaking, and spatial power (Mitchell 2021; Pierce et al. 2011; Allen 2003), the study conceptualizes Birmingham's innovation district development processes as institutional negotiations over the meaning and economic value of historically marginalized urban space. Using a mixed qualitative case study design that integrates urban form analysis, documentary data, and in-depth stakeholder interviews, the study finds that redevelopment efforts in Birmingham are shaped by competing spatial imaginaries rooted in uneven racialized development, resistance to structural racism, and public memory of the city's civil rights legacy. These imaginaries structure the formation of networked coalitions around particular understandings of place value, influencing how place is framed through formal and informal planning processes.

The study also finds that when applied to site development at the neighborhood scale, ambitions for equitable development become constrained by enduring material legacies, lived experiences, and structural forces mobilized as networked spatial power. Through various modalities, coalitions exercise this power to shape the terms, possibilities, and outcomes of planning negotiations. The article concludes that redevelopment efforts intended to address socio-spatial economic inequities must attend more fully to how place-based meanings structure coalition formation and relational planning processes in order to avoid reproducing new forms of displacement and exclusion under the banner of inclusive innovation.

By bridging theoretical lineages, the study advances the concept of networked spatial power and develops an integrative analytical framework for examining how shared meanings of place structure coalition formation, planning processes, and distributive outcomes. This framework offers planning scholars and practitioners a tool for understanding how power operates through place in shaping development trajectories and for anticipating the equity implications of innovation-driven economic development.

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Keywords: Economic development, Innovation districts, Relational placemaking, Spatial power, Equity

NONLINEAR MODERATING AND THRESHOLD EFFECTS OF S&T POLARIZATION ON THE FISCAL S&T INVESTMENT-CARBON EMISSION PERFORMANCE LINK IN URBAN AGGLOMERATIONS

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Individual Paper Presentation

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Against the backdrop of the global trend of addressing climate change and China's commitment to achieving its 'dual carbon' goals, breaking the 'carbon lock-in' effect of economic development has become a key principle of high-quality development. Although green technology is fundamental to improving carbon emission performance (CEP), market forces alone are insufficient to drive it forward due to its characteristics of high investment and strong externalities. Consequently, fiscal investment in science and technology (S&T) has emerged as a critical variable for technological breakthroughs (Chen et al., 2025). Furthermore, urban agglomerations, as the main units for integrating resources and constructing collaborative networks, can promote technological breakthroughs in core cities and radiate S&T spillovers to peripheral cities by forming S&T polarization patterns (Cai et al., 2023). This amplifies the catalytic effect of S&T fiscal investment on green technology innovation. However, excessive S&T polarization can generate disparities that create 'pollution haven' issues (Yang et al., 2023), while simultaneously causing ruptures in the industrial chain and insufficient supporting facilities in peripheral cities. This hinders technological transformation and makes improvements to CEP challenging. Based on these issues, the core scientific questions are as follows: Does enhancing S&T polarization in urban agglomerations lead to a reduction in internal S&T fiscal investment in improving CEP, resulting in a weakening effect? If so, what is the polarization threshold at which this structural reversal occurs?

Accordingly, this study uses data collected between 2009 and 2023 from 119 cities within six of China's major urban agglomerations: the Beijing-Tianjin-Hebei region, the Yangtze River Delta, the Pearl River Delta, the Chengdu-Chongqing region, the Central Plains and the Middle Yangtze River. The Super-SBM model was used to quantify urban CEP. Based on Chen's research (Chen, 2012), the Zipf exponent of total green patents was used to measure levels of S&T polarization. Bartik instrumental variables (Zhang et al., 2020) were combined to construct polynomial regression models, moderation effect models and threshold spatial Durbin models. These analytical tools are used to analyse the effect of S&T fiscal investment on CEP at various S&T polarization levels and the transformation of spatial spillover characteristics.

The findings reveal: (1) At the local level, S&T fiscal investment significantly improves urban CEP, but the benefits diminish as the scale of investment expands;

(2) S&T polarization in urban agglomerations has an 'inverted U-shaped' moderating effect on the CEP improving effect of S&T fiscal investment. The threshold at which the effect switches from positive to negative is Zipf exponent = 0.628 (95% confidence interval: [0.565, 0.690]);

(3) Spillover effects diverge with polarization levels. When Zipf exponent is less than 0.565, the S&T fiscal investment of core cities generates positive spillovers for peripheral cities. Peripheral cities can also feed back to core cities, forming a collaborative improvement pattern. When Zipf exponent is greater than 0.690, the siphon effect of core cities intensifies. Spillovers to peripheral cities turn negative and collaborative mechanisms are obstructed.

This research reveals that S&T polarization in urban agglomerations has a non-linear regulatory effect on the improvement of CEP through S&T fiscal investment. The findings imply that, in regional integrated development, the allocation of S&T fiscal resources must strike a balance between efficiency and equity. Once urban agglomeration S&T polarization reaches specific thresholds, cross-regional innovation compensation and fiscal transfer payments should be implemented to prevent core cities from crowding out peripheral cities, thereby promoting the collaborative improvement of regional CEP overall.

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Keywords: Carbon Emission, Urban Agglomerations, Fiscal S&T Investment, S&T Polarization, Threshold Effect

OPERATIONALIZING ENTREPRENEURIAL ECOSYSTEMS: A MULTIDIMENSIONAL ASSESSMENT FRAMEWORK FOR METROPOLITAN REGIONS

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Entrepreneurial ecosystems are widely used in entrepreneurship research and regional economic development practice, but their empirical treatment remains unsettled. A persistent difficulty is how to represent a system that is multidimensional, place-based, and internally uneven without reducing it to a single score or relying only on case-specific interpretation. We develop a metropolitan assessment framework that addresses that problem by organizing ecosystem conditions into a small set of latent dimensions and recurring regional profiles. Focusing on U.S. metropolitan statistical areas, we examine how regional ecosystems can be characterized in a way that preserves heterogeneity.

The empirical design has three stages. First, we use principal component analysis to reduce indicators covering human capital, finance, innovation, infrastructure, institutional conditions, intermediary support, and market capacity into a smaller set of dimensions. Second, with the retained component scores, we conduct cluster analysis to classify metropolitan areas into mutually exclusive ecosystem types. Third, we analyze how the resulting dimensions contribute to two outcome measures that capture different aspects of regional entrepreneurial dynamism: establishment entry and young firms' contribution to the regional economy.

Three ecosystem dimensions are identified through the analysis: Public/Anchor Resource Base, Skill-Innovation Capacity, and Institutional Thickness. These components describe different axes along which metropolitan areas vary. The cluster analysis further shows that these dimensions combine to define four broad regional profiles: a baseline low-capacity type, a superstar outlier type defined by extreme scale and anchor concentration, a knowledge-innovation intensive type, and an institutional-thickness type. These profiles indicate that entrepreneurial ecosystems may be patterned combinations of conditions. The results also indicate that these dimensions are not equally salient across entrepreneurial margins. In terms of the associations of the components with the outcome measures, we confirm the models' limited explanatory power. It suggests that the framework is more effective for organizing regional differences than for explaining most cross-metro variation in entrepreneurial outcomes.

Regional entrepreneurial ecosystems should not be interpreted through a single hierarchy of stronger and weaker places. Rather, our results suggest that metropolitan differences are better understood in terms of how distinct capacities are combined, and that these combinations do not carry the same relevance for all entrepreneurial outcomes. It offers a way to analyze regional ecosystem typology without reducing regions to one composite score or relying only on case-specific description. It also gives governmental agencies a clearer basis for diagnosis—instead of directly transplanting other regional policies, they can understand which capacities are comparatively underdeveloped in places with similar structural conditions. That makes peer comparison more grounded and gives ecosystem assessment a more specific role in policy discussion. At the same time, we believe that the weak model fit should be used alongside closer analysis of institutional functioning, sectoral opportunity, and local strategy. In terms of the association analysis, the weak model fit indicates that this research is more useful as a first-stage tool for regional diagnosis. Future research should incorporate a closer analysis of institutional functioning, sectoral opportunity, and local development strategy more directly.

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Keywords: Entrepreneurial ecosystem, Ecosystem capacity, Regional typology, Factor analysis, Cluster analysis

POST-COVID REGIONAL PLANNING FOR A THRIVING ART AND CREATIVE SECTOR

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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In the last couple of decades there has been a strong emphasis on creative placemaking as part of many metropolitan economic development strategies. Following Richard Florida's work, cities and regions want to develop a strong creative sector to support the location of technological industries and firms (Florida 2002). Creative placemaking then becomes a way to use distinctive characteristics of place to support artistic production (Markusen and Gadwa 2010). At the same time, art and creative industries have faced increasing global competition along with technological change. The global COVID pandemic changed and reduced public participation in artistic events and performances. This changing environment increases the need to evaluate creative placemaking and regional planning efforts to support artists. This study examines how conditions have changed for creative and artistic production in Kansas City, Missouri over the last two decades. Given these changes, what policies and plans should be developed to support art and creative production?

This paper uses two sources of new data to answer this question. First, using IPUMS data from the US Census American Community Survey (ACS), the paper reports updated estimates of the workers with an artistic or creative occupation (Markusen and Schrock 2006). Note that the ACS data only captures creative workers whose primary income is from their creative production. Over a decade ago, an artist survey was developed to capture artist and creative worker characteristics from all earnings backgrounds. A new artist survey was developed and distributed in 2026 with the assistance of the Mid-America Arts Alliance, a regional arts intermediary. The combination of the new survey with the older results allows for an analysis of the changes in the characteristics and socioeconomic status of artists in the region.

The results show that surveying artists about their artistic and cultural practice gives important evaluative evidence of the regional conditions for creative placemaking. Local policy and plans may be developed that address particular niches within the regional artistic practice environment.

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Keywords: Artists, Entrepreneurship, Placemaking, Planning, Regional

PRIVATE CAPITAL AND REGIONAL INFRASTRUCTURE: INFRASTRUCTURAL NARRATIVES ON THE INDIANA TOLL ROAD

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Individual Paper Presentation

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In the United States, the entry of global institutional capital into infrastructure has transformed public-private partnerships (P3s) from familiar procurement tools into complex, financialized arrangements, often structured through project finance, that reconfigure the tools, practices, and networks involved in developing and operating large-scale projects. This paper examines how that transformation operates discursively, through what I conceptualize as infrastructural narratives: pervasive financial-industry discourses that make roads, airports, utilities, and other public goods legible as investable assets while attenuating attention to the risks that emerge from this mode of privatization. Infrastructural narratives, I argue, reshape how we plan for and govern our cities and regions.

Using a case study of the Indiana Toll Road (ITR), a critical east–west highway across northern Indiana, the paper traces the road's project-financed privatization, bankruptcy, and restructuring between 2006 and 2015 through archival research, contract and financial analysis, and interviews with key actors. I argue that the financing mechanisms of infrastructure privatization are not only legal and technical tools but also narrative technologies that make particular regional futures seem fiscally responsible, low-risk, and inevitable. Three dominant narratives — the infrastructure gap, patient capital, and private finance resilience — circulate as a shared cultural logic among asset managers, ratings agencies, consultants, and state officials to legitimate long-term leasing as a prudent regional development strategy.

These narratives function as active market-making devices that move critical decisions upstream into financial design stages such as valuation modeling, bid structuring, and contract development before metropolitan planning organizations, local governments, or the public can meaningfully participate. As a result, planning along the corridor shifts from debating alternative financing, mobility, and equity futures to monitoring contracts and revenue performance. The ITR's 3.85-billion-dollar lease to a Macquarie–Cintra consortium, subsequent bankruptcy of the Indiana Toll Road Concession Company (ITRCC), and resale to IFM Investors left the long-term concession lease structure largely intact, while narrowing Indiana's options for toll prices, economic development strategies, and environmental goals for nearly a century.

By developing infrastructural narratives as a framework, the paper contributes to regional planning and economic development scholarship on financialization. It shows how institutional investors' search for "real assets," or in situ goods and services, can lock regions into particular development paths, even as these P3s are narrated as "win–win" solutions that close infrastructure gaps, balance state budgets, and improve infrastructure without raising taxes. For planners and policymakers, recognizing, contesting, and remaking these narratives is essential to reopening questions of accountability, spatial equity, and the long-term quality-of-life implications of leasing regional infrastructure to private capital.

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Keywords: Infrastructure financing, PPPs, Project Finance, Indiana Toll Road, Transportation

REFRAMING PROCUREMENT IN LOCAL ECONOMIC DEVELOPMENT: INTEGRATING MWOBS INTO ENTREPRENEURIAL ECOSYSTEMS

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Individual Paper Presentation

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This paper examines how small business market access functions as a core mechanism of local economic development, focusing on procurement as a structured channel through which demand is allocated to firms. While existing economic development and entrepreneurial ecosystem research emphasizes supply-side interventions such as capital, skills, and networks, less attention has been given to how demand is organized and how access to revenue opportunities shapes firm growth trajectories.

Drawing on ongoing qualitative research of a multi-city business support initiative targeting minority- and women-owned businesses (MWOBs), the paper develops a process-oriented perspective on market access. In particular, the analysis explores procurement as a set of interrelated routines—such as visibility, eligibility, transaction, liquidity, and legitimacy—that may shape how firms enter, participate in, and potentially progress within institutional markets.

As part of an ongoing research project, this paper focuses on developing an analytical framework for understanding how procurement structures market access and how these structures may relate to patterns of inclusion and exclusion. It also considers how coordinated ecosystem interventions may reconfigure these routines by aligning contracting opportunities with firm capacity, connecting financial support to procurement participation, and strengthening relational linkages between buyers and suppliers.

The paper aims to advance a perspective that positions the incorporation of small businesses, particularly MWOBs, into procurement systems as a critical yet underexplored component of entrepreneurial ecosystems. More broadly, it explores how inclusive growth may be shaped not only by firm-level capacity building, but also by how demand-side institutions are organized to support ongoing participation and potential upgrading over time.

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Keywords: Entrepreneurial Ecosystem, Procurement, Market Access

REGIONAL PLANNING FOR INDUSTRIAL LAND USE: THE CASE OF PORTLAND, OREGON

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Scholars have documented the failure of local land use planning efforts to protect industrial uses from encroachment and displacement from other uses, especially in "strong market" cities where redevelopment pressures are strong (Ferm and Jones 2017; Grodach 2022). Regional planning regimes offer the prospect of a broader vision to protect from localized land use pressures, but have been prone to post-industrial "sustainable city" orientations that shunt manufacturers to the urban periphery (Leigh and Hoelzel 2012; Chapple 2015). This paper examines regional planning efforts in Portland, Oregon (USA) to sustain a vital urban manufacturing economy. Portland is in a state (Oregon) with the most stringent land use and growth management planning program in the United States, with substantial power vested in a regional planning authority (Metro) to ensure that local planning efforts align with a regional growth framework ("2040 Growth Concept") developed in the 1990s. Specifically, Title 4 of Metro's Urban Growth Management Functional Plan delineates three categories of employment-related land use as part of the 2040 Growth Concept, including "regionally significant industrial areas," which require approval of the regional authority to change.

In this paper we assess the significance and impact of Portland's regional planning approach in multiple ways. First, we track changes in Title 4-designated lands over time and analyze industrial employment trends within those areas. Second, through archival analysis and key informant interviews, we examine how this regional planning framework has worked in practice to support industrial land preservation. We find that Portland's strong regional planning regime has generally helped to mitigate industrial displacement, but the lack of a coherent regional vision of urban manufacturing has engendered conflict in practice between local and regional officials, especially as redevelopment pressures have increased over time. And at the same time, Metro's focus on land preservation has been largely disconnected from other policy and planning areas seeking to promote industrial revitalization, including innovation, workforce development and entrepreneurship. However, because of the fundamental importance of land availability in strong-market cities, we conclude that Portland metro's regional planning efforts have been a critical tool for sustaining a "productive city."

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Keywords: economic development, regional planning, industrial land, manufacturing

SUPRA-METROPOLITAN PLANNING IN COMPARATIVE PERSPECTIVE: INSTITUTIONAL REALIGNMENT ACROSS FIVE GLOBAL METROPOLITAN REGIONS

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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As contemporary urban expansion consistently outpaces municipal and metropolitan jurisdictions, traditional planning paradigms tethered to rigid administrative boundaries have reached their functional limits. In response to these pressures, the planning profession has sought more expansive regional solutions to mitigate hyper-density and synchronize territorial development. Various concepts such as metropolis, metropolitan area, megacity, megalopolis, megaregion, and megapolitan have been proposed to define metropolitan spatial systems.

However, despite extensive research on supra-metropolitan planning concepts, several gaps remain. These concepts lack clear definitions and are often used interchangeably. Moreover, although previous studies have emphasized the need for integrated, metropolitan-scale planning beyond fragmented planning systems, often based on individual case studies, existing research has largely focused on either conceptual definitions of specific regions or has examined spatial structure and governance independently. Cross-national comparative studies remain scarce, particularly those analyzing how urban expansion has shaped the formation, spatial scope, and governance structures of supra-metropolitan planning systems.

This study asks why supra-metropolitan planning has consistently struggled to translate conceptual frameworks into effective practice, and what institutional and political factors constrain its implementation. To address this question, the study adopts a three-step analytical framework: (1) investigating the formation of supra-metropolitan planning systems in response to urban expansion; (2) identifying and comparing the types and spatial scope of planning frameworks across regions; and (3) analyzing how these frameworks are implemented and governed within different institutional contexts. In doing so, the paper conceptualizes supra-metropolitan planning as a critical institutional response to the spatial restructuring caused by urban expansion and sprawl.

Through a qualitative comparative analysis of five distinct global cases including the United States (New York), Canada (Toronto), the United Kingdom (London), China (Beijing), and South Korea (Seoul), this study examines how different political-administrative systems realign planning governance to manage cross-boundary challenges. These cases were selected because they have experienced significant urban expansion and have established supra-metropolitan planning frameworks to varying degrees in response. The findings reveal that while managing urban growth remains a universal objective, institutional responses diverge into four primary models: advisory, provincial-dominant, state-led strategic, and integrated multi-tier frameworks.

The findings suggest that the effectiveness of supra-metropolitan planning depends less on the degree of centralization and more on the substantive empowerment of a metropolitan intermediate tier equipped with statutory authority, fiscal capacity, and coordination competence. This highlights a persistent gap between conceptual planning frameworks and their practical implementation across diverse governance contexts.

By synthesizing these diverse trajectories, this research reframes supra-metropolitan planning not merely as an extension of existing growth management, but as a structural effort to reorganize fragmented planning governance. The study concludes that for supra-metropolitan planning to address the complexities of the 21st century metropolis, it must evolve from reactive containment toward proactive institutional realignment. These insights

contribute to the broader literature on rescaling planning boundaries and provide a framework for policymakers to bridge the persistent gap between high-level strategic visions and local-level execution.

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Keywords: Supra-metropolitan, Urban Expansion, Sprawl, Growth Management, Global Cities

TECHNOLOGICAL CHANGE AND THE RECONFIGURATION OF INDUSTRIAL LOCATIONAL ADVANTAGES: EVIDENCE FROM US METROPOLITAN AREAS

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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[Backgrounds] Conventional industrial location theories have predominantly explained spatial patterns based on endowments such as distance, labor pool, and input–output linkages. However, rapid technological diffusion like artificial intelligence increasingly disrupts these assumptions by reshaping inter-industry relationships and altering locational advantages. Untimely planning responses to shifts in locational advantage risk forgoing opportunities to attract emerging industries while misallocating resources toward declining ones. This gap calls for a re-examination of industrial location theory that explicitly incorporates the dynamic and disruptive role of technological change.

[Research Question and Methods] The research question of this study is: how does technological change reshape inter-industry relatedness, and how do such structural shifts translate into urban industry entries? This study develops a conceptual framework conceptualizing technological change as a shock that can reconfigure relatedness structures. Empirically, the analysis focuses on US metropolitan statistical areas (2000–2025) to capture major waves of technological transformation. Industrial relatedness is measured using network indicators derived from input–output tables, while technological change is captured using US patent data. Panel regressions are employed to examine how changes in relatedness structures are associated with regional industry entry patterns.

[Findings] The findings suggest that technological change reconfigures industrial relatedness networks, moving beyond path-dependent evolution. The diffusion of information and communication technologies in the early 2000s reinforced linkages among service-oriented sectors. By contrast, the rise of artificial intelligence and robotics in the late 2010s redirected relatedness toward high-tech manufacturing and knowledge-intensive industries. Panel regression results further demonstrate that regions whose existing industrial structures are more closely aligned with these emerging relatedness configurations are significantly more likely to attract related industry entry over time. This identifies alignment with evolving network structures as a key mechanism of regional industrial transformation.

[Implication and Contribution] The findings suggest that regional development strategies should prioritize transitional industries that bridge current structures to emerging relatedness configurations. Urban economic performance cannot be sustained through industrial land preservation alone, but requires planning governance to actively reconfigure zoning, incentives, and cluster policies to facilitate such structural alignment. This study contributes to the literature by reframing industrial relatedness as a dynamic, technologically driven process rather than a path-dependent outcome.

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Keywords: Industrial location, Urban industry entry, Industrial relatedness, Technological change

THE "CHILLING EFFECT" OF ICE ENFORCEMENT: EVIDENCE FROM HIGH-FREQUENCY MOBILITY AND SPENDING DATA IN THE LOS ANGELES REGION

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Anecdotal accounts from immigrant communities and media reports describe sharp reductions in everyday activity following high-profile immigration enforcement actions, as residents avoid public spaces, workplaces, and local businesses out of fear of detention. Despite the prominence of these narratives, systematic evidence on whether enforcement measurably disrupts local economic life remains limited. This paper uses high-frequency cellphone-based foot-traffic data and transaction-based consumer spending data to examine how intensified Immigration and Customs Enforcement (ICE) activity affected local economic activity in the Los Angeles–Orange County metropolitan area. Exploiting the timing of a major ICE operation announced in mid-May 2025 and variation in exposure to immigrant communities, we estimate dynamic difference-in-differences models tracing behavioral responses before and after the enforcement escalation. Our primary analysis compares census block groups with high versus low shares of Latin American–born residents, and we complement this approach with an alternative identification strategy that defines exposure at the point of-interest level based on the residential composition of businesses' customers. Across both strategies, we find no evidence of differential pre-trends and large, persistent post-announcement declines in economic activity. In immigrant-heavy neighborhoods, weekly foot traffic falls by 5–8 percent in the two months following the announcement (8–10 percent in retail districts), while consumer spending declines by roughly 20–25 percent. These effects are robust across specifications, absent in placebo tests, and imply over $625 million in lost sales and $59 million in foregone sales tax revenue in the region. Together, the results provide direct evidence that immigration enforcement generates economically meaningful spillovers on local commercial activity that extend well beyond the individuals directly targeted by enforcement actions.

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Keywords: Immigration enforcement, local economic activity, consumer spending, mobility data

WHO BENEFITS FROM JOB ACCESSIBILITY? EXPLAINING JOINT PATTERNS OF COMMUTE BURDEN AND INCOME IN GREATER CHICAGO

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Job accessibility is widely viewed as a key mechanism for improving labor-market outcomes, particularly for transit–dependent populations. However, research often treats potential accessibility as a proxy for opportunity, overlooking how commuting burden and income may diverge across space and social context. This study examines the relationships between potential job accessibility, commuting burden, and income among public transit commuters in Greater Chicago. Using census tract–level data, we classify neighborhoods into four commuting–income categories based on combinations of commuting burden and earnings. We then estimate a multinomial logistic regression model with Eigenvector Spatial Filtering (ESF) to assess the extent to which potential job accessibility shapes these outcomes. The results show that Accessibility is most strongly associated with reduced commuting burden, whereas its association with high-income outcomes is weak. Furthermore, potential job accessibility is not independently associated with commuting–income outcomes but operates through interactions with geography and neighborhood composition. Accessibility effects decline with distance from the central business district and are attenuated in neighborhoods with higher shares of Black and Hispanic or Latino residents. Even in areas with high accessibility, neighborhoods experience persistent long commutes and limited income gains, revealing a gap between potential accessibility and realized economic opportunity.

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Keywords: Job accessibility, commuting burden, public transit equity, urban spatial structure, realized accessibility

WHO BUILDS THE ECONOMY? GENDER, PROFESSIONAL CHANGE, AND THE RISE OF CHILDCARE AS ECONOMIC INFRASTRUCTURE

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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As of December 2025, the economic development office in 15 of the largest 25 United States cities were led by women. Among members who completed the 2025 State of the Field survey by the International Economic Development Council, 51% were women (IEDC, 2025). Although neither figure gives a complete picture of how many women are practicing in the field of economic development, collectively they help us to understand the growing importance of women to the field. As women practicing economic development continue to increase in number, we also observe a reshaping of what gets valued and prioritized as economic infrastructure, including a growing recognition that childcare is essential to a viable economy (Cowell, 2026; Warner, 2006). This study explores the conceptual bridge between who practices economic development and what counts as economic development infrastructure by focusing on the issue of childcare. The research utilizes an integrative mixed methods design to explore how findings from two related, but independently designed, studies can shed light on both the changing composition of the economic development profession and the evolving definition of economic development infrastructure, including the increased focus on childcare.

Using feminist political economy as a frame, this paper asks how and to what extent childcare is gaining visibility and legitimacy in economic development policy amid recent demographic shifts. To answer this question, the research employs both practitioner interviews (n=112) from 2025-26, as well as a comparative case study (n=3) that utilizes descriptive statistics, policy document review, surveys, interviews, and focus groups. The combination of multiple analytical methods enables a more comprehensive and nuanced analysis that is informed by broader national trends while also being locally grounded and context-specific to each case.

Preliminary findings are threefold. First, the findings suggest that among practitioners, childcare is increasingly seen as social reproduction that acts as crucial infrastructure to buttress economic production. Second, network effects may be contributing to the shifts in priority, as women practitioners in the interviews and case studies frequently noted the significance of their connections to community-based organizations and other childcare-related stakeholders. Finally, we observe that while many practitioners do increasingly see childcare as a legitimate component of economic development infrastructure, pervasive structural challenges remain, reminding us that it will take more than shifts in the practitioner workforce to fully realize accessible childcare as economic development.

The implications of this work for planning and economic development are significant. The research provides empirical evidence of an emerging conceptual shift among economic development practitioners, who increasingly view childcare as critical economic infrastructure rather than as a household or social welfare concern (Prentice, 2007). The research also deepens our insight into how practitioner demographics and network dynamics relate to policy prioritization and the shaping of economic development agendas.

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Keywords: economic development, childcare, gender, infrastructure

WITHER LOGISTICS SPRAWL? SPATIAL DYNAMICS OF WAREHOUSING AND DISTRIBUTION IN CALIFORNIA

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Track 9: Regional Planning & Economic Development
Individual Paper Presentation

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Warehousing and distribution facilities (WDs) are prominent features of the metropolitan landscape. Over the past few decades, scale economies, increasing velocity of supply chains, and the rapid growth of e-commerce has shifted the dynamics of WD location, leading to the emergence of WD clusters at the periphery of metropolitan areas. Termed “logistics sprawl”, researchers around the world have sought to document this decentralization process. Prior studies found evidence of decentralization in major U.S. cities, including Los Angeles and San Francisco Bay Area prior to 2014. We revisit these dynamics by examining spatial patterns of WDs in California from 2014 to 2022, a period marked by rapid growth in e-commerce and a doubling of WD employment. Using a longitudinal, zipcode-level dataset of warehousing and distribution facility count data, we estimate cross section and time series models of WD location choice in three forms: binary logit, negative binomial, and zero-inflated negative binomial. Contrary to prior findings, we find no evidence of further decentralization over the study period. Across model specifications, WD location choice are driven primarily by local market access, while traditional transportation access measures have little influence. These findings suggest a shift in the spatial logic of WD location choices, where the proximity to consumers increasingly outweighs the accessibility to infrastructure. These results are also consistent with the complex distribution chains associated with e-commerce. By providing updated empirical evidence on the spatial dynamics of WDs, this study offers new insights for transportation and land use planning in an era of demand-driven freight systems.

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Keywords: logistics, urban form, industrial location

BEYOND PATH DEPENDENCY: HOW HIGH-TECH FUNCTIONAL SPILLOVERS RESET TRADITIONAL INNOVATION SYSTEMS

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Track 9: Regional Planning & Economic Development
Research-in-Motion Presentation, Research currently in process

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Regional innovation systems are historically governed by path dependency, where specialized industrial legacies, such as Detroit's automotive core or San Francisco's semiconductor dominance, dictate future technological trajectories (Boschma, 2017). However, the emergence of the high-compute era raises critical questions about whether radical technological shifts can trigger a structural decoupling of these established silos. This study investigates the extent to which traditional technological sectors such as those providing the physical infrastructure for virtual revolutions are undergoing a fundamental institutional and spatial reset.

The objective is to determine if mature technologies, once characterized by stagnation and monopolistic control, are experiencing a "new emergence" phase. This study hypothesizes that this phase is characterized by two distinct trajectories: 1) institutional fragmentation, where niche specialists disrupt established markets, or 2) hybrid adaptation, where incumbents maintain dominance through cross-regional collaboration (Hannigan et al., 2015). Crucially, the study examines whether the geographic gravity of traditional innovation is shifting away from historical manufacturing hubs to cluster within high-tech anchor regions.

Theoretically, this project proposes an advancement to Product Cycle Theory (Vernon, 1966) by arguing for an integrated "consecutive wave" model. Rather than viewing cycles as isolated sector trajectories, I suggest that the emergence of radical tech industries pulls mature traditional sectors into a synchronized emergence stage. This recursive pattern was visible in the 20th-century microelectronics revolution, which revitalized the then-mature field of electrical engineering; today, similar reset is expected for traditional infrastructure, facilitating knowledge recombination (Schumpeter, 1934) as disparate fields are pulled into the high-tech orbit (Liu & Ganning, 2026).

To test these propositions, the study employs a systematic empirical screening of USPTO patenting trends from 1976 to 2026. Using longitudinal assignee-level Herfindahl-Hirschman Index (HHI) and top-four firm concentration ratios (CR4), I identify "resetted" sectors—traditional IPC classes that, after a period of maturity, experience a patenting volume surge significantly above their ten-year mean. The research then tests if a drop in concentration metrics is associated with the intensity of external high-tech citations (fragmentation trajectory), and if stability in these metrics is associated with formal co-assignments with tech regions possessing a high location quotient in tech industries (adaptation trajectory).

While path dependency suggests innovation should remain in legacy hubs, this research expects to demonstrate that for sectors undergoing the fragmentation trajectory resets, innovation gravity migrates toward tech-anchor regions. The adaptation trajectory sectors are expected to demonstrate a "Hub-and-Spoke" resilience, where legacy clusters maintain their innovation dominance by importing high-tech knowledge through strategic collaborations. These outcomes would suggest that relatedness is a less reliable predictor of regional growth during radical technological transitions than current planning scholarship suggests.

For planning practice, this work challenges the conventional "smokestack-chasing" paradigm by revealing that industrial resilience is a product of institutional agility rather than historical relatedness. By identifying the institutional and spatial conditions under which traditional sectors decouple or adapt, this research provides a

roadmap for differentiated regional strategies. For legacy manufacturing hubs, the research highlights the necessity of facilitating "Hub-and-Spoke" institutional pipelines to prevent industrial obsolescence. For emerging tech hubs, it identifies physical infrastructure sectors as critical frontiers for localized cluster diversification.

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Key Words: Path Dependency, Regional Innovation Sys., Functional Spillovers, Industrial Decoupling, Economic Revitalization

EVALUATING DEVELOPMENT COMPLIANCE AND LOCALIZED ECONOMIC IMPACTS OF U.S. DATA CENTERS

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Track 9: Regional Planning & Economic Development
Research-in-Motion Presentation, Research currently in process

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Global Artificial Intelligence (AI) competitions have prompted the U.S. federal government and state governments to preempt local autonomy on data center policy. Despite a proliferation of federal- and state-level incentives, a significant discrepancy exists between top-down development visions and localized implementation challenges. Uncertain benefits, environmental risks, displacement of labor, and burden on local infrastructures activate communities' resistance. Theoretically, the political economic interventions of the federal government and state governments broke the balance of "planner's sustainability triangle" (Campbell, 2016), targeting a promising AI future while loading more gravity on the vertex of economic development. However, data center incentives, similar to many failed development incentives (Peters & Fisher, 2004), may not be regarded as successful if fiscal return is the only short-term benefit, with the costs of limited job growth (Hicks, 2025), increasing utility rates (Liang, 2026), and environmental risks.

We thus ask: whether data centers achieve the initial eligibility of investment and job creation required in state-level incentives? Do counties and cities realize a sustained net fiscal and employment increase by hosting data centers? Which infrastructure planning frameworks and community benefit agreements better mediate the data center development process at local level? At stake is the long-term economic and environmental sustainability of host localities.

Applying incentive data from state agency websites and legislation codes, we first categorized incentives of 50 states and constructed an intensity index to quantify state-level support across four dimensions: (1) investment; (2) employment; (3) area/power; (4) environment. These incentives will serve as independent variables for the subsequent county-level analysis. Secondly, we rely on the Aterio U.S. data center dataset, a comprehensive repository containing over 5,000 observations, to develop econometric regression models. This dataset enables the integration of critical variables, including development stages, geospatial coordinates, facility scale, and power capacities, to assess localized economic impacts, such as tax revenue, sector output, employment, and utility rates. We further evaluate these impacts through a comparison of host versus non-host localities to isolate net economic gain. Lastly, we will compare and discuss existing local strategies and their potential effectiveness.

Preliminary findings indicate a positive, though statistically non-significant, association between the intensity of state-level incentives and data center development. However, we expected to find that data centers do not achieve their intended goals at both the individual scale and the jurisdictional average level. Data center locations demonstrated a spatial preference for counties characterized by robust GDP, substantial energy capacity, and conservative political ideology. These conditions may provide a foundation that allows for policy experimentation and potentially unsatisfactory outcomes. But this could not apply to disadvantaged areas. We also expect to find limited local revenue growth, employment, and rising utility rates. Consequently, we suggest that localities need to rigorously evaluate the socioeconomic trade-offs of data center siting. Localities should engage in strategic negotiations with developers and prioritize long-term infrastructure enhancements, particularly as Jevons Paradox (West et al., 2026) suggests that improved energy efficiency may ultimately increase, rather than curb, the demand for data center expansion.

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Key Words: Data Centers, Development Incentives, Local Impacts, Econometrics, Political Economy

INNOVATION IN OLDER INDUSTRIAL REGIONS: THE EVOLUTION OF THE ELECTRIC VEHICLE (EV) INDUSTRIES IN THE INDUSTRIAL MIDWEST

Abstract ID: 2296.0.0.848.2026
Track 9: Regional Planning & Economic Development
Research-in-Motion Presentation, Research currently in process

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This study examines how older industrial regions adapt to technological transitions, focusing on the ongoing shift toward electric vehicle (EV) production in Ohio. In recent years, global supply chain disruptions, geopolitical tensions, and the resurgence of national industrial policies have fundamentally reshaped the organization of production and the geography of advanced manufacturing. Changes in policies such as the Inflation Reduction Act (IRA) and the CHIPS and Science Act have both accelerated and disrupted investment patterns by incentivizing domestic production while simultaneously introducing new uncertainties for firms navigating rapidly evolving technological and regulatory environments. These dynamics create new opportunities and challenges for legacy manufacturing regions, raising critical questions about how existing industrial structures, firms, and institutional environments respond to and shape these transitions.

This study asks how firm strategies, place-based policies, and institutional infrastructures interact to shape the regional transformation in older industrial regions during the technological transitions. In particular, it focuses on how incumbent manufacturing firms engage with emerging technologies, reconfigure production processes and supply chains, and interact with evolving policy environments, while also examining how these processes are mediated and enabled by regional institutional contexts.

The Research-in-Motion presentation draws on an ongoing qualitative research design based on semi-structured interviews with manufacturing firms, economic development agencies, and intermediary organizations in Ohio. Interviews are being conducted using purposive and snowball sampling to capture diverse perspectives across firm types and institutional actors involved in the transition to EV production. The interviews focus on firm strategies, policy engagement, supply chain restructuring, workforce adaptation, and forms of institutional coordination. Data collection and preliminary coding are currently underway, following an iterative, abductive analytical approach that combines theory-driven and emergent insights.

This presentation will focus on preliminary findings from the interview analysis. It will highlight how firms are actively reconfiguring their existing supply chains and production networks in response to technological and policy shifts, including navigating relationships with existing partners, establishing new partnerships, and managing uncertainties in input sourcing. It will also examine how firms adjust their strategies in response to federal- and state-level policy frameworks, and how, in turn, firm strategies shape and influence policy processes through strategic engagement. In addition, the presentation will explore how different actors, including firms, public agencies, and intermediary organizations, respond to technological transition and coordinate with one another, as well as how multiple regional economies within Ohio are interconnected while following distinct and uneven development trajectories.

By focusing on ongoing empirical work, this paper contributes to debates in regional economic development planning and place-based industrial policy by providing a deeper understanding of how firm–policy–institution interactions unfold in real time. It also offers early empirical insights into the conditions under which older industrial regions can successfully navigate technological transitions, highlighting the importance of institutional

capacity, coordination mechanisms, and regionally embedded capabilities in shaping uneven outcomes across space.

Citations:

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Key Words: Regional development, Industrial policy, Older industrial regions, EV transition

PITTSBURGH NEIGHBORHOODS AND THE REGION: PLANNING, THEORY, AND CONCEPTUAL SCALE

Abstract ID: 2296.0.0.147.2026
Track 9: Regional Planning & Economic Development
Research-in-Motion Presentation, Research currently in process

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Urban geography research of the 21st century emphasizes issues of socio-economic class. This study, currently in progress, addresses the dichotomy between neighborhood and regional effects on outcomes. Rather than arguing the predominance of either, it suggests a reset in methodology to find common and interactive elements. It is exploratory data analysis (EDA), and the specific methods are multivariate classification and cartographic visualization. Much recent work uses neighborhood classification to identify change sequences, thus it treats path dependency as axiomatic (Delmelle 2016). Alternative interpretations suggest that proximate location may be a stronger factor in neighborhood character (Foote and Walter 2017). Preliminary results for Pittsburgh indicate that the latter deserves more intense scrutiny than it has received. Regional characteristics are analyzed in terms of spatial interaction. Shen (2001) developed a model that incorporates metropolitan-wide workforce competition into calculations of job accessibility. Maps of the Pittsburgh region locate the employment centers that are in play in the competitive process. Schlieth and Horner (2014) find that travel burdens are unequal in ways influenced by spatial structure.

The Pittsburgh region is the case study. One classification shows residential neighborhoods by type, including areas of persistent socioeconomic distress, some with commonly analyzed location characteristics and some in geographical situations that are largely ignored. A second shows a well-know pattern of polycentric urban spatial structure but documents a degree of instability not commonly reported for other metropolitan areas.

Exploratory analysis highlights the status of particular neighborhoods. The well known 'Mon Valley' is as distressed as, and more contiguous than, inner-city ghettos. Outlying towns receive less publicity but stand out on the map. Subtle but significant differences between middle class neighborhoods could be crucial to tests of theoretical concepts of path dependency versus spatial spillover. The need for an expanded time frame is illustrated by two examples. East Liberty was a significant hub for upscale consumerism in the first half of the 20th century. After multiple transitions, scars are evident in the land use pattern. McKeesport was the largest and most prosperous hub of the aforementioned Mon Valley, an employment center for both manufacturing and trade. Today it is largely derelict. Both have been the objects of numerous efforts at remediation. One handicap faced by such programs is that the geographical situation of these places has changed. Lacking clear before-and-after analysis, it is difficult to assess how they may have changed in status as nodes in the transportation network, or how they face different spillover pressures from adjacent neighborhoods than in the past.

A data divide is a problem for efforts at comparative studies spanning more than 30 years. It is exemplified by but not limited to the change from census long form to American Community Survey data collection. Both practical planning and theoretical arguments about Marxian, neoclassical capitalist, and other ideologies are confounded by the gap between neighborhood and regional approaches. The conceptual problems call for more fundamental and thorough application of exploratory analysis with time frames spanning the data divide.

Citations:

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Key Words: EDA, Multivariate, Neighborhood, Pittsburgh, Spatial Structure

SEEING THROUGH THE NOISE: MEASURING MINORITY BUSINESS OWNERSHIP FROM IMPERFECT DATA

Abstract ID: 2296.0.0.30.2026
Track 9: Regional Planning & Economic Development
Research-in-Motion Presentation, Research currently in process

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Despite growing interests among researchers and policymakers in minority-owned businesses, data sources that reliably identify minority business ownership remain scarce (Schmahmann et al., 2021). Existing datasets, especially those at the establishment level, are limited in availability and suffer from major validity issues (Finio et al., 2024). This paper develops a methodology to diagnose and remedy data validity issues in identifying minority businesses, using the restricted micro-level business data from Data Axle as a case study. Using Data Axle's establishment-level records with owner race and ethnicity information, we assess both internal and external validities (or lack therefore). We show that validity failures are nontrivial across board and particularly severe for Black-owned businesses. We trace the root of these problems to the rule-based identification procedure adopted by Data Axle. To correct these deficiencies, we employ a multi-stage approach that combines Bayesian Improved Surname Geocoding (Imai, Olivella, Rosenman, 2022), a hierarchical model incorporating additional business characteristics, and calibration to the American Business Survey benchmarks. Our approach substantially improves both internal and external validities and prepares the data well for empirical analyses. Overall, this paper delivers a rigorous and practical methodology for researchers and policymakers working with imperfect minority business data. In the longer term, this methodology improves our measurement and deepens our understanding of minority-owned businesses, which builds the foundation for designing effective policies to support their success.

Citations:

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Key Words: Minority business, Owner ethnicity, Data validity, BISG, Data Axle

Track 10 – Quantitative and Spatial Methods

Track 10 Pre-Organized Session Summaries and Abstracts for the Sessions

WHAT OFFICIAL DATA MISSES: NOVEL SPATIAL METHODS FOR URBAN CHANGE, DISPLACEMENT, AND INFRASTRUCTURE

Abstract ID: 2294.0.0.538.2026
Track 10: Quantitative and Spatial Methods
Pre-Organized Session Summary
Session Includes: 2298.0.0.352.2026, 2296.0.0.162.2026, 2298.0.0.358.2026, 2298.0.0.415.2026, 2298.0.0.353.2026

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Official urban datasets, such as administrative records and POI databases, systematically flatten the complexity of cities, rendering invisible the industrial ecosystems, ethnic communities, lived experiences, and layers of infrastructures that shape neighborhoods. This panel confronts this gap by introducing novel visual and spatial data approaches: street view imagery and vision-language models to track industrial displacement in Seoul and ethnic place-making in Detroit; crowdsourced perception surveys to measure socio-spatial flux in Singapore; cell phone location data to interrogate affordable housing siting policy in the United States; and historical GIS with environmental sensing to uncover the climate legacy of buried waterscapes in Italy. Across cases, the panel advances a shared argument that persistent questions about gentrification, integration, belonging, and infrastructure require data sources rooted in everyday urban life, rather than imposed official systems.

Learning Objective(s):

- Participants will identify how standard classification systems and administrative datasets structurally obscure urban complexity, and understand the theoretical implications of this invisibility for neighborhood change research.
- Participants will evaluate novel data sources, including street view imagery, crowdsourced surveys, mobility data, and archival GIS, as methodological responses to gaps in official urban records.
- Participants will apply a cross-case comparative lens to assess how the visibility/invisibility framework travels across contexts of gentrification, ethnic place-making, housing policy, and climate infrastructure.

UNDERWORLD PARADISE: THE CLIMATE PERSISTENCE OF BURIED URBAN WATERSCAPES

Abstract ID: 2298.0.0.352.2026
Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Long forgotten beneath the surface of modern cities, subterranean water infrastructures quietly persist, shaping patterns of climate vulnerability and resilience, including flooding and urban heat (Lamb and Vale 2024; Jacobs et al. 2020). Yet historic infrastructures are often framed as fragile assets to protect, rather than as active resources for adaptation. Leveraging new data sources and historical GIS, this paper examines how the material traces of a medieval water landscape endure within a twenty-first century city, and how their spatial afterlives reveal the long-durée relationship between urban infrastructure, environmental change, and climate vulnerability.

The case is Palermo's Arab-Norman Jannat al-Ard (Genoard)—an "Earthly Paradise" of orchards, fountains, and subterranean hydraulic systems (qanats) developed in the 11th–12th centuries (Ruggles 2021). Although largely erased by twentieth-century urban expansion, the Genoard persists in buried water pavilions, subterranean aqueducts, and fragmented green spaces embedded within the contemporary city. As Palermo faces intensifying heat and severe water rationing, the paper asks what data sources allow us to detect the environmental effects of infrastructures that have largely disappeared from view, and whether their spatial afterlives continue to shape urban climate outcomes—and for whom.

To answer this, the study integrates spatial and digital methods, including historical GIS, georeferenced archival cartography, on-site temperature sensing, and environmental modeling. By reconstructing historic water flows and overlaying them with contemporary flood maps, urban heat island data, and demographic indicators, the paper produces the first comprehensive cartographic reconstruction of the Genoard's ecological footprint across centuries of urban transformation.

Findings reveal that these largely forgotten infrastructures continue to moderate microclimates and absorb stormwater, with resilience benefits accruing unevenly—often unknowingly—to lower-income residents in adjacent neighborhoods. These results align with recent studies on the cooling effects of historical and water-based urban systems (Song et al. 2025; Jacobs et al. 2020). The paper contributes to debates on urban infrastructure, historical urban change, and climate adaptation by demonstrating how digital humanities, heritage planning, and spatial analytics can recover the latent environmental intelligence embedded in the ordinary city, reframing historic infrastructures as active climate assets rather than passive remnants.

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Keywords: historical GIS, climate heritage, waterscape, digital humanities, urban change

MEASURING NEIGHBORHOOD SOCIO-SPATIAL FLUX IN A RAPIDLY REDEVELOPING CITY

Abstract ID: 2296.0.0.162.2026
Track 10: Quantitative and Spatial Methods
Research-in-Motion Presentation, Research currently in process

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Rapid changes in one's environment can be stressful and dislocating. However, while gentrification–a specific form of neighborhood change whereby the demographic, real estate, and business characteristics of a place shift towards a more privileged population – has captured much research interest, relatively less attention has been paid to other dimensions of urban change, particularly the more qualitative, experiential aspects (von Wirth et al 2016, Łojewska 2025). Additionally, little work has been done to explore the relationship between data-driven 'objectively' measured urban change and more qualitative, 'subjective' experiences. Given the latter is an important and modifiable causal mechanism through which urban change affects health and wellbeing (Duncan et al 2018), deeper understanding of how patterns of multi-dimensional urban change are perceived and experienced is an important one to establish.

To explore the perceptions of multi-dimensional urban change, we analyse Singapore as a useful case study. As a high-density city-state, Singapore adopts a state-driven strategy to continually 'revitalise' and 'rejuvenate' its built environment, in order to maintain its global competitiveness, and to house a population that is expanding largely because of in-migration (Olds & Yueng 2004). Faced with a rapidly changing socio-spatial urban landscape, residents, particularly older adults, who wish to maintain familiar environments and routines, find themselves in conflict with acute development pressures (Kong et al 1996).

The first step to building this understanding is to characterize and map multi-dimensional urban change. We conceptualise and characterise the key patterns of neighborhood changes along multiple dimensions, such as changes in neighbourhood population profile, access to spatial amenities and services, greenery, and housing stock, with a focus on quantifying the magnitude and speed of changes for these dimensions using a novel mix of data sources (e.g. census data, property sales records, construction permits, business listings etc).

We then compare this constructed measure of neighborhood socio-spatial flux against crowdsourced, self-reported perceptions of localized urban change, collected via a web-based crowdsourcing platform, with the goal of unpacking how the 'objective' and 'subjective' aspects of urban change intersect, and how the relationship between the two differs by individual characteristics such as age.

Citations:

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Key Words: Neighborhoods, Change, Perceptions, Gentrification, Measures

STREETS AFTER GENTRIFICATION: READING INDUSTRIAL DISPLACEMENT THROUGH FACADES, SIGNBOARDS, AND VISION-LANGUAGE MODELS

Abstract ID: 2298.0.0.358.2026
Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Urban redevelopment in Seoul has actively worked to displace small-scale industrial businesses and the tacit knowledge embedded in their services. In the planning process, the city government views industries through business inventory data collected by the census bureau, which follows the Korean Standard Industrial Classification system. The coarse categories obscure the diversity of services and goods that small-scale manufacturers, specialty suppliers, and repair workshops offer. Yet, this information is hidden in plain sight — strikingly visible on the shopfronts and signboards of any street.

This study argues that streetscapes constitute an involuntary archive of pre-displacement urban functions invisible to official classification systems but legible through historical street view imagery and vision-language models (VLMs). The project analyzes paired Naver Street View images from 2015 and 2025 across 68 non-residential redevelopment sites, deploying VLMs to parse text from signboards and façades. The project first reconstructs the functional profiles of already-displaced firms to uncover the urban functions and tacit knowledge lost over the decade. It then characterizes the replacement of industrial uses and the erosion of functional diversity. A methodological check on this street view-based urban function characterization is also conducted using historical business inventory data.

This study furthers the debate on neighborhood change and gentrification by offering a methodological and empirical case that demonstrates the hidden costs of gentrification when urban complexity is flattened by official classification systems.

Citations:

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Keywords: Industrial gentrification, Streetview, Vision Language Model

ETHNOBURBS AND INVISIBLE ENCLAVES: DESCRIBING ETHNIC PLACE-MAKING THROUGH COMPUTER VISION

Abstract ID: 2298.0.0.415.2026
Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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The formation of ethnic enclaves in the United States often followed larger patterns of urban development. Whereas early communities such as the coastal Chinatowns were often dense, legible neighborhoods, groups arriving in the late 20th and early 21st centuries followed patterns of suburbanization. These “ethnoburbs” embody similar complex social relationships as older or coastal enclaves but often lack clear spatial and territorial boundaries that make them legible. Despite containing businesses, community spaces, and resources for minoritized (sub)communities, these spatial enclaves may be rendered invisible due to the dispersive physical character of these suburbs.

This paper discusses efforts to use artificial intelligence to enumerate the degree to which ethnic communities have claimed and marked physical space. Specifically, this project attempts to use computational tools to analyze characteristics of text and signage in physical space in current and historic Google Street View to reveal patterns of ethnic place-making in southeastern Michigan, across the center city and the suburbs, with a focus on the particularities of pan-Asian and newly-formed ethnic communities in the region over time. We discuss opportunities with this approach in mapping ethnic communities and compare these efforts to the difficulties in using official records, such as the US Census or business records, and the challenges concerning the biases and difficulties in using such technologies.

Citations:

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Keywords: Ethnoburbs, Ethnic Enclaves, Suburbs, Artificial Intelligence, Vision Language Models

DOES SITING MATTER? MEASURING NEIGHBORHOOD INTEGRATION IN HIGH OPPORTUNITY AFFORDABLE HOUSING

Abstract ID: 2298.0.0.353.2026
Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Moving to high opportunity neighborhoods forms the conceptual paradigm of the over 67 billion dollars in federal funding for affordable housing, yet little is known, and agreed upon, about the "actually existing" benefits of siting beyond marquee studies on the intergenerational mobility effects. For residents of affordable housing developments, does siting in high opportunity neighborhoods provide the theorized benefits of socioeconomic integration for adults, or do we observe no differences between these residents and those living in low opportunity areas? Using a novel approach of measuring integration with cell phone location data in diverse geographic contexts, we find the contribution of siting to integration is generally insignificant.

Citations:

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Keywords: Affordable housing, LIHTC, neighborhood opportunity, cell phone data

A COMPARISON OF META-HEURISTIC METHODS FOR DESIGNATING COASTAL EROSION BUFFER ZONES

Abstract ID: 2298.0.0.484.2026
Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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To address sea-level rise and the intensification of coastal erosion caused by climate change, there is a growing demand for methods to establish coastal erosion buffer zones that simultaneously account for economic losses and social and environmental vulnerabilities. Recently, in the field of land use and spatial planning, meta-heuristics such as genetic algorithms, ant colony optimization, and tabu search have been effectively utilized for multi-objective land use allocation and buffer zone design; however, there is a lack of research directly comparing and applying these algorithms to the establishment of plot-level buffer zones within coastal erosion risk zones. This study calculated the future coastal erosion impact zone for a coastal site, evaluated the land, building, population, and industrial costs for each parcel within the risk zone, and then constructed a multi-objective optimization model that simultaneously minimizes (or maximizes) economic costs, social vulnerability, and environmental conservation value. Subsequently, the Ant Colony Optimization (ACO), Genetic Algorithm (GA), and Tabu Search (TS) were applied to identify a set of parcels to be converted into buffer zones within the risk zone, and algorithm performance was compared based on the diversity of the Pareto solution set, objective function values, spatial pattern characteristics (compactness and fragmentation), and computational efficiency. The analysis revealed that all three algorithms derived solution sets that effectively explored the trade-offs among economic, social, and environmental objectives under the given constraints. It was also confirmed that each algorithm exhibited distinct tendencies in the distribution characteristics of the solution sets and the spatial configuration of the coastal buffer zones. By presenting a meta-heuristic-based comparative analysis framework for the problem of establishing coastal erosion buffer zones, this study provides practical implications for selecting appropriate optimization methods based on policy objectives (economic viability, social acceptability, and environmental conservation) and computational resources, and suggests the potential for future expansion to other coastal disaster and climate adaptation scenarios.

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Keywords: coastal management, meta-heuristic, coastal erosion, buffer zone, method comparison

A STUDY ON THE SPATIAL HETEROGENEITY OF OBJECTIVE AND SUBJECTIVE PERCEPTIONS OF FLOOD RISK IN HONG KONG BASED ON LARGE LANGUAGE MODELS

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Urban flood risk not only depends on hydrogeographical conditions, but also closely relates to public risk perception. A misalignment between perception and risk can lead to misallocation of disaster prevention resources or inadequate public response. However, there are few existing studies that analyze the spatial matching of subjective perception and objective risk, and it is difficult to reveal the spatial heterogeneity characteristics of the two. This study aims to answer the following research questions by integrating social media data with urban hydrological data: (1) How are subjective and objective perceptions of flood risk in Hong Kong spatially distributed? (2) Is there a spatial mismatch between the two? If so, what patterns do they present? (3) How to optimize urban risk management strategies based on spatial heterogeneity?

This study uses a bivariate analysis framework to spatially match subjective perceptions with objective risks. The subjective perception data is derived from social media platforms (Instagram, Twitter) and government announcement comment areas (2023-2025 data), and sentiment analysis and semantic understanding are carried out through large language models (BERT) to extract the public's perception of flood risk and map it to the Hong Kong District Council constituency unit. The objective risk data comes from the comprehensive calculation of the hydrological model InVEST and the geographic information system, including historical flood points, drainage system capacity, low-lying areas and other indicators. Through bivariate spatial autocorrelation analysis (Bivariate LISA), four types of spatial units were identified: "high risk-high perception", "high risk-low perception", "low risk-high perception" and "low risk-low perception", and the demographic and socioeconomic characteristics of each type of unit were further analyzed.

The results of this study found that there was significant spatial heterogeneity in the subjective and objective perception of flood risk in Hong Kong. Specifically: (1) about 23% of the high-risk communities exhibit a low perceived state ("risk blind spot"), mainly in the northern New Territories and outlying islands; (2) about 18% of low-risk communities exhibit a high perceived state ("excessive worry"), mainly concentrated in densely populated areas such as Hong Kong Island West and Kowloon City; (3) The degree of spatial mismatch is significantly correlated with community population density, information accessibility, and historical flood experience. These findings suggest that relying solely on objective risk assessment or subjective perception survey is not enough to support refined urban management. This study is conducive to revealing the spatial heterogeneity between subjective perception and objective risk of flood risk, and providing a refined governance basis for urban management departments. The study suggests that differentiated communication strategies should be adopted for different types of spatial units: strengthen risk early warning and public education for "high-risk-low-perception" areas; providing scientific information on "low risk-high perception" areas to alleviate excessive concerns; Maintain effective communication with "high-risk-high-perception" areas; Maintain routine monitoring of "low risk-low perception" areas. Avoid the homogenization of announcements through refined strategies and improve the efficiency of urban flood risk management. This study provides a new perspective for the intersection of planning discipline and risk perception research, and the application of large language models in social media text analysis provides method innovation for the spatialized measurement of subjective perception.

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Keywords: flood risk, large language models, social media data, spatial heterogeneity, Hong Kong

AI-SYNTHESIZED NEIGHBORHOOD PERCEPTIONS AND HOUSING MARKET VALUATION: EVIDENCE FROM CHICAGO

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Individual Paper Presentation

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The undervaluation of homes in historically Black neighborhoods is a persistent feature of American housing markets that contributes to ongoing patterns of residential segregation and wealth inequality. This differential valuation reflects historically unequal patterns of urban investment and disinvestment, racially unequal access to credit and lending, and variations in the quantity and quality of nearby amenities and public services. But measurable neighborhood differences explain only about half the gap. Perceptions also play a crucial role in shaping property values, as subjective opinions about neighborhoods can depress prices regardless of objective characteristics.

Traditional methods for understanding neighborhood perceptions have primarily been qualitative. This paper extends that line of inquiry to investigate a new channel through which neighborhood perceptions may enter the housing market: AI-generated neighborhood narratives. Prospective homebuyers who once manually sifted through Reddit posts, Zillow reviews, and neighborhood blogs increasingly turn to large language models for synthesized neighborhood assessments. This shift matters because these models compress constrained sources (realtor language regulated by the Fair Housing Act), unconstrained sources (online forums and unfiltered digital gossip), and their own training data into a single, seemingly authoritative summary that the underlying source material never had.

We use a two-stage hedonic approach applied to 28,989 single-family home sales across 172 Chicago neighborhoods from 2023 to 2025 to test how these words contribute to neighborhood valuation. In the first stage, we estimate a hedonic model on structural characteristics with neighborhood fixed effects to extract neighborhood price premiums. In the second stage, we regress these premiums on demographic and socioeconomic factors, spatial and amenity measures, AI-generated numeric scores, and LASSO-selected text tokens drawn from AI neighborhood descriptions. We prompted the model to synthesize perceptions from online community discussions along five dimensions: safety, amenities quality, social composition, neighborhood trajectory, and overall sentiment.

Three key findings emerge. First, the narrative text that AI produces about neighborhoods predicts price premiums substantially better than the numeric scores it assigns. Adding LASSO-selected AI text tokens increases adjusted R-squared, while scores and categorical variables contribute almost nothing. Shapley decomposition reveals that AI text explains a share of variance comparable to measured spatial and amenity variables. Second, specific words carry predictive power. The word “efforts”, for example in the trajectory descriptions is the strongest single text predictor, signaling aspiration rather than achievement. Mentions of “crime” in sentiment descriptions predict lower premiums even though actual violent crime rates are not statistically significant in the same model, reinforcing the primacy of perception over measurement. Third, the percentage of Black residents remains negative and significant across all model specifications, even with AI variables included, indicating that AI narratives do not fully mediate the relationship between racial composition and neighborhood valuation.

These findings do not suggest that AI creates neighborhood perceptions but synthesizes them from collective digital discourse in ways that map onto actual price differentials. As these models become a primary information

source for residential decision-making, understanding how their outputs relate to housing market inequality is a pressing concern for planning scholarship and practice.

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Keywords: Neighborhood Perceptions, Neighborhood Premiums, Hedonic Model, AI

BEYOND PROXIMITY: WHO TRAVELS HOW FAR TO PARKS, AND WHY IT DEPENDS ON GENDER AND AGE

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Individual Paper Presentation

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Equitable access to urban parks depends not only on their geographic distribution but also on the amenities and features those parks provide. Yet most existing accessibility research evaluates park access in aggregate terms, without accounting for how different population groups experience park opportunities differently by gender and age. Prior work has shown that the same park environment can have differential effects across subgroups depending on gender, life stage, and functional limitations (VanCauwenberg et al., 2015), and that health benefits and behavioral responses to park access vary by demographic characteristics (He et al., 2022). This study asks how park amenities shape park accessibility for visitors of different genders and ages across the life course.

This study distinguishes two accessibility concepts. Potential accessibility, measured as a logsum index derived from random utility theory, captures the breadth and proximity of all parks available to a residential neighborhood. Travel burden, by contrast, is defined as the visit-weighted mean generalized travel cost actually incurred on observed trips, combining OpenStreetMap-based walking and driving times through a logsum formulation measured in equivalent minutes. Critically, lower travel burden does not mean easier or more willing travel. It reflects that a visitor chose a nearby park, which may itself be the result of constraints rather than preference.

Using anonymized mobile phone travel history data from SK Telecom covering 425 parks across Seoul, South Korea, we observe daily park visits disaggregated by sex and ten-year age group. Park amenity variables, including green space share, recreational facility count, parking supply, transit connectivity, and total park area, are included as predictors in a weighted regression model with origin fixed effects and interaction terms that allow effects to vary by gender and age. Rather than relying on self-reported park use, this study uses large-scale revealed-preference mobility data to measure realized park behavior at a metropolitan scale.

Transit availability is the single strongest predictor of reduced travel burden across all groups, with older women benefiting more than older men as transit dependence grows in later life. Facility-rich parks reduce travel burden increasingly more for women than men with advancing age, while greener and larger parks consistently reduce travel burden for both groups. Building on Arifwidodo et al. (2025), who found that only parks above a certain size threshold were associated with meaningful visitation and wellbeing, this study finds that the accessibility benefits of large parks are not uniform, with older women gaining disproportionately more as park size increases. The contrast between potential accessibility and travel burden is particularly telling for midlife women, who show both higher potential accessibility and lower travel burdens than men of the same age, consistent with caregiving and trip-chaining constraints (VanCauwenberg et al., 2015) that push women toward nearby parks even when farther options are available.

These findings suggest that equity-oriented park planning must move beyond simple proximity standards, as Macfarlane et al. (2022) and Russo (2024) have argued for green infrastructure more broadly. Amenity composition and transit access shape who actually benefits from park investments, and those effects vary considerably by gender and life stage. Incorporating this demographic heterogeneity into accessibility analysis is essential for designing park systems that support inclusive public health across the full urban population.

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Keywords: accessibility, urban parks, logsum, travel burden, life course

DECODING THE PORT-CITY INTERFACE: A DEEP LEARNING APPROACH TO STREET-LEVEL LANDSCAPE PERCEPTION ALONG THE HARBOR-URBAN GRADIENT

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Individual Paper Presentation

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Port-city interfaces are critical transitional zones where industrial logistics landscapes meet urban living environments. Despite growing interest in port-city relationships, few studies have systematically examined how street-level visual landscapes transform across the spatial gradient from port interiors to urban centers. This study addresses two questions: (1) How can semantic segmentation models be adapted to parse the unique visual elements of port environments at the street level? (2) How do landscape perception characteristics shift along the port-to-city gradient, and what do these patterns reveal about the quality of port-city transitional spaces?

This research develops a two-stage framework combining deep learning-based semantic segmentation with quantitative landscape perception analysis. First, we constructed a domain-specific dataset of 1000 images of coastal port environments, annotated using LabelMe with SAM2-assisted segmentation and manual verification. The dataset encompasses 13 categories tailored to port landscapes: port engineering structures, industrial paved surfaces, container stacks, port buildings, cranes, vessels, waterfront public spaces, open water, port water areas, general buildings, roads, vehicles, and sky. We fine-tuned a SegFormer MIT-B5 model pretrained on ADE20K, incorporating Efficient Channel Attention (ECA) modules into the transformer backbone and a hybrid loss function combining Cross-Entropy with Dice Loss to improve accuracy for underrepresented port-specific classes. The enhanced model achieved a mean Intersection over Union (mIoU) of 74% on a held-out test set (80/20 split), with per-class IoU exceeding 90% for sky, containers, cranes, vessels, and open water.

Second, we applied the model to Tianjin, China, a major port city with a pronounced port-urban spatial structure. Four zones were defined along the port-to-city gradient: port interior, port district, port-adjacent urban area, and central city. Street-view images were collected along road networks at adaptive intervals (25m in port interiors, 50m in port districts, 100m in urban areas) to capture varying spatial heterogeneity. Pixel-level class proportions were aggregated into composite landscape perception indices including Port Industrial Perception Intensity, Sky Openness, Built Environment Density, and Transportation Infrastructure Dominance. Kruskal-Wallis tests were used to examine inter-zone differences.

Results reveal a distinct landscape gradient. Port Industrial Perception Intensity, defined as the combined pixel proportion of containers, cranes, industrial paved surfaces, and port engineering structures, decreases sharply from port interiors to the central city. Built Environment Density, aggregating port buildings and general buildings, follows an inverse trend, increasing toward urban centers. Sky Openness varies non-linearly, reflecting shifts from open port yards to enclosed urban streetscapes and back to wider arterial roads. Transportation Infrastructure Dominance, combining road surfaces and vehicles, reveals how street space allocation shifts from freight-oriented to mixed-use contexts. Statistically significant differences were found across zones for all indices, confirming measurable landscape transition patterns at the street level.

This study contributes a replicable method for evaluating port-city interface quality through street-level visual data and domain-adapted deep learning. The perception indices offer planners diagnostics for identifying where port-urban transitions are abrupt or visually dominated by industrial elements, informing buffer zone design,

streetscape improvement, and port-city integration strategies. The dataset and model also provide a transferable tool for comparative port-city studies globally.

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Keywords: port-city interface, port-city relationships, semantic segmentation, SegFormer

DEVELOPMENT OF AN OUTDOOR PLAYABILITY INDEX FOR CHILDREN AGED 5–9 AND AN ANALYSIS OF SUPPLY-DEMAND IMBALANCE

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Individual Paper Presentation

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Outdoor play is an everyday activity that is important for children's physical health, sociality, emotional stability, and cognitive development. Yet existing indicators of urban and neighborhood environments have largely been developed around adult mobility and accessibility, and measures such as walkability may not adequately explain children's outdoor play. Prior research has treated playability not as a measure of general child-friendliness but as a concept of environmental supportiveness that captures how well a neighborhood supports outdoor play among young children through the combined operation of spaces for play, routes, and social conditions.

Children's outdoor play is shaped not only by the presence of parks or playgrounds but also by the quantity and quality of playable spaces, community safety and social climate, traffic and walking-route risks, the quality of the natural environment, the distribution of child-related facilities, and the characteristics of families and children themselves. In South Korea, children's outdoor play is also likely to be constrained by overlapping physical and social conditions, including high-density residential areas, automobile-oriented road systems, limited open space, regional disparities in facility provision, and differences in local caregiving structures. However, research that systematically measures outdoor playability at a small-area scale and links it to the size of the child population remains limited. This study therefore constructs an outdoor playability index for census output areas across South Korea and analyzes patterns of spatial inequality and supply-demand mismatch.

The index is composed of five domains: spaces for play, social environment, traffic environment, natural environment, and child-related facilities. Domain scores are combined to generate an outdoor playability index for each census output area, and the proportion of children relative to the total population is incorporated to identify areas where play-supportive environments are insufficient or relatively overprovided given the size of the child population. The study divides children into the age groups of 0–4 and 5–9 and focuses primarily on the 5–9 group, for whom environmental influence and vulnerability are likely to become more pronounced during the transition from semi-independent to early independent mobility.

The findings are as follows. First, disparities in outdoor playability were greater within the same urban region or living area than in average differences across provinces and metropolitan cities. Second, in high-density urban areas, accessibility to child-related facilities and some indicators of traffic and pedestrian environments were relatively high, whereas natural and social environment scores were lower, indicating trade-offs across domains. Third, materially disadvantaged areas, older residential neighborhoods, and road-oriented environments showed relatively low overall playability, with concentrated vulnerabilities in the natural environment and in safe routes for play. Fourth, supply-demand mismatches were also identified: some areas had high proportions of children but poor play environments, whereas others had relatively favorable conditions despite low child demand. These findings suggest that spatial inequality in children's outdoor play environments should be understood not only in terms of environmental quality but also in relation to mismatches between supply and demand shaped by the spatial distribution of the child population.

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Keywords: Playability, Outdoor play, Child-Friendly city, Spatial inequality, Supply-Demand Mismatch

DIFFERENTIAL EFFECTS OF STREER ENVIRONMENT ON PEDESTRIAN ROUTE CHOICE AND PERCEIVED ACCESSIBILITY:A VR EXPERIMENT

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Individual Paper Presentation

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Pedestrian route choice is shaped not only by shortest-distance heuristics but also by qualitative characteristics of the street environment (Guo & Loo, 2013; Basu et al., 2022). Concurrently, accessibility research has documented systematic mismatches between objectively calculated accessibility and perceived accessibility (PA), the subjective experience of one's potential to reach spatially dispersed opportunities (Pot et al., 2021; De Vos et al., 2025). However, these two streams have developed independently, and whether behavioral route decisions and cognitive accessibility evaluations respond to the same environmental stimuli or operate through distinct mechanisms remains empirically unexamined.

Tong and Bode (2022) proposed four principles of pedestrian route choice, including information perception, integration, responding to information, and decision-making, arguing that each stage is modulated by different environmental factors. Building on this, route choice as a behavioral decision and perceived travel time and distance as products of cognitive integration may respond to different variables because they are processed at different stages. This study uses immersive VR pedestrian experiments to analyze how street conditions differentially affect (1) route choice behavior, (2) cognitive evaluations of safety, pleasantness, and certainty, and (3) perceived time and distance as PA indicators.

163 participants (mean age 25.1; 51.5% male) completed five repeated walking trials each in an HMD-based VR environment, yielding 809 observations. Participants chose between a shorter and a longer route while six variables were manipulated: time of day, illegal parking, street maintenance condition, fence presence, co-pedestrian presence, and starting distance. All conditions were balanced. GEE logistic regression was applied for route choice, and linear mixed-effects models for cognitive evaluations and perceived spatiotemporal measures.

For route choice, environmental disorder factors, illegal parking (OR=0.411, p<.001) and poor street maintenance (OR=0.478, p<.001), were dominant predictors, reducing short-route selection by 59% and 52% respectively. Starting distance (OR=1.683, p<.01), trial repetition (OR=1.275, p<.001), and male gender (OR=1.486, p<.05) also increased short-route selection, while night conditions, fence, and co-pedestrian presence were non-significant. Poor maintenance exerted the strongest negative effects across safety, pleasantness, and certainty evaluations (all p<.01).

Perceived spatiotemporal analysis revealed a markedly different pattern. Illegal parking and poor maintenance had no significant effects on perceived time or distance. Instead, route choice itself produced the largest effects on both perceived time (-20.5s) and distance (-51.2m). Fence presence reduced perceived time ratio by 4.37%, while co-pedestrian presence significantly increased perceived time on the shorter route. Trial repetition decreased perceived time through learning, and time perception was more sensitive to environmental conditions than distance perception.

The central finding is that behavioral decision-making and perceived accessibility evaluation operate through distinct mechanisms driven by different environmental stimuli. Environmental disorder triggers immediate aversive responses, corresponding to Tong and Bode's (2022) responding-to-information principle, driving route avoidance without penetrating cognitive spatiotemporal representations. Conversely, physical design elements such as fences

and co-pedestrian presence influence the information integration process, altering perceived time and distance. This suggests walkability-oriented urban design requires two policy dimensions: street maintenance for route attraction and spatial design for enhancing perceived accessibility. Future research should validate these findings in real-world settings to confirm ecological validity of the observed mechanism separation.

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Keywords: Route Choice, Perceived Accessibility, Virtual Reality, Pedestrian Behavior, Environmental Disorder

DISTORTION AS DATA: EXTRACTING NARRATIVE WEIGHT FROM PRE-MODERN CHINESE CITY MAPS THROUGH COMPUTATIONAL DEFORMATION ANALYSIS

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Individual Paper Presentation

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China holds thousands of local gazetteers from centuries of imperial rule, each containing city maps drawn by literati and officials. These maps were never geometric surveys. Closer to landscape painting than measured cartography, they magnify administrative compounds, Confucian academies, and celebrated landmarks while compressing residential quarters into near-invisibility. Scenic elements — bridges, pagodas, confluences — appear at scales defying proportion, encoding what the governing classes of each era valued most. Critical cartography has long argued that no projection is neutral, yet this insight remains qualitative. Historical GIS routinely treats such distortion as error during georeferencing, discarding the information most worth analyzing: the mapmaker's implicit spatial priorities. This paper reverses the logic, treating distortion as signal rather than noise, and extracts what we term narrative weight — a measure of how much a mapmaker enlarged or compressed each zone relative to measured geography.

The method is developed through an exploratory case in Wujiang, a canal town near Suzhou along the Grand Canal. Unlike Suzhou, whose historic core survives, Wujiang lost all city walls and most canals to twentieth-century redevelopment; historical maps are the sole window into its pre-modern fabric. A ca. 1760s gazetteer map is analyzed against a 1936 survey, with 1960s declassified U.S. satellite imagery as temporal verification. Physical elements are first reconstructed into modern coordinates through feature-by-feature cross-referencing of walls, waterways, streets, and blocks. Control points registered across both maps feed a thin-plate spline transformation that computes a continuous deformation field; area scaling ratios recorded grid by grid and projected onto the modern basemap produce a narrative weight layer. Built on Python and OpenCV, the pipeline is fully reproducible for any gazetteer map paired with a modern reference. An interactive web visualization was built for users to experience the clash between projections, and a public workshop confirmed the method's capacity to activate community engagement with historical spatial identity.

The layer reveals a legible spatial hierarchy. The county administrative compound and the Confucian academy register the highest enlargement ratios, confirming that governmental authority and ritual education occupied the apex of the mapmaker's cognition. A celebrated bridge outside the wall is also magnified: the mapmaker recorded not the physical boundary of the town but the cognitive reach of its cultural identity. Northern residential quarters are compressed almost beyond recognition. Area allocation in a gazetteer map is a spatialized answer to what deserved to be seen — encoding not geographic distance but social distance. Thousands of gazetteers hold an untapped spatial-priority archive; each preserves, in distortion rather than text, a judgment about what a given era considered most important in a given city.

Contributions span three registers. The interactive system and workshop show narrative weight layers serving as participatory tools for heritage communication and cultural revival. For planning, where historic tissue has vanished, narrative weight offers a cognitive-historical reference for revitalization, revealing what earlier societies prioritized. For scholarship, since gazetteers were revised roughly every sixty years, extracting narrative weight from successive maps of one city traces how priorities shifted across centuries — a computational approach to comparative urban cultural history extendable to any pre-modern tradition with non-standardized projection, from Japanese castle-town maps to European medieval city plans. This paper offers the quantitative and spatial methods

community an example of critical cartographic theory and computational technique integrated to produce new knowledge from sources long digitized but not yet truly read.

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Keywords: historical cartography, computational deformation, narrative weight, gazetteer maps, heritage planning

DO PLACE-BASED POLICIES REDUCE STOREFRONT VACANCY? CAUSAL EVIDENCE FROM SPATIAL DISCONTINUITIES AND QUASI-EXPERIMENTS IN NEW YORK CITY

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Individual Paper Presentation

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Storefront vacancy has become one of the most visible symptoms of urban retail distress, yet rigorous causal evidence on which place-based policies actually reduce it remains scarce. Evaluating policy effectiveness is methodologically difficult: programs targeting distressed retail corridors are selected for high prior vacancy, creating severe confounding. This paper addresses that challenge by applying multiple complementary causal designs to NYC's Storefront Registry (2019–2025), a building-level panel tracking vacancy at approximately 49,500 buildings containing over 65,000 ground-floor retail storefronts.

We evaluate five place-based interventions using two identification strategies. Spatial regression discontinuity (RD) designs exploit sharp geographic boundaries (Business Improvement District borders, Open Streets pedestrianization limits, historic district lines, rezoning edges, and Opportunity Zone boundaries) to compare storefronts just inside and just outside each boundary. Difference-in-differences (DiD) designs with propensity score matching (PSM) exploit the temporal rollout of Open Streets pedestrianization, commercial rezonings, BID formation, and protected bike lane installation as quasi-experiments, constructing matched control groups from untreated buildings with similar pre-treatment vacancy, built environment characteristics, and neighborhood demographics.

All five spatial RD boundaries produce statistically null estimates. BID membership, Open Streets designation, historic district status, rezoning inclusion, and Opportunity Zone placement create no detectable discontinuities in vacancy at their administrative edges. The null results are informative: vacancy operates as a continuous spatial process at approximately 800 ft that renders sharp boundary comparisons uninformative. DiD with PSM tells a more differentiated story. Open Streets pedestrianization reduces vacancy by 2.8 percentage points ($p = 0.024$); decomposing by persistence reveals that streets maintaining permanent pedestrianization drive the entire effect (-7.0 pp, $p = 0.035$), while streets that reverted to car traffic show no lasting benefit. Commercial rezonings reduce vacancy by 4.0 percentage points ($p = 0.028$), driven by SoHo/NoHo's use-restriction relaxation. BID formation is null in pooled estimates but shows an emerging negative trend by the sixth panel year (-3.5 pp, $p = 0.067$). Protected bike lane installation shows no effect after matching; a staggered Callaway-Sant'Anna estimator confirms the null (ATT = +0.010, $p = 0.583$). The unmatched bike lane estimate was positive and significant ($p = 0.005$), demonstrating that corridors receiving bike lanes were already on worsening vacancy trajectories before installation. PSM changed the substantive conclusion in three of four DiD designs, underscoring the severity of selection bias in observational program evaluation.

This paper makes three contributions. Methodologically, deploying both spatial and temporal causal designs on a single outcome reveals that null RD estimates can coexist with significant DiD estimates when policy effects flow through economic activation rather than boundary proximity. Empirically, pedestrianization and use-restriction relaxation reduce vacancy, while amenity designation and bike infrastructure do not. Substantively, the persistence decomposition demonstrates that sustained commitment to pedestrianization, not temporary experimentation, generates lasting retail benefits.

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Keywords: retail vacancy, regression discontinuity, difference in differences, propensity score matching, place based policy

FINDING THE FRINGE: CAN REMOTE SENSING REVEAL WHAT THEORY DEFINES?

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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The urban fringe, also known as the exurban area, is a transitional zone between urban and rural spaces. It is characterized by mixed land use, low-density development, and boundaries shaped by urban expansion. This concept arises from the urban–rural continuum, which addresses the limitations of the traditional urban–rural dichotomy. While the dichotomy treats urban and rural settlements as distinct, the continuum posits that boundaries are often blurred, resulting in areas with characteristics of both environments. Urban fringe areas have emerged as significant growth zones due to population movement from dense metropolitan cores in pursuit of lower-cost housing, increased open space, and a small-town environment. Such migration alters land-use patterns and shifts the urban–rural boundary, leading to challenges such as the loss of prime agricultural land and the conversion of rural landscapes into low-density residential development (Stewart, 1958; Harvey, 1970).

Although the urban fringe is recognized as a distinct regional entity, its transitional and complex nature, along with dynamic and ambiguous boundaries, has generated ongoing academic debate regarding its delineation (Lu et al., 2011; Biłozor et al., 2019). Theoretical delineation typically relies on criteria such as population density, housing density, mixed land use, commuting patterns, and proximity to urban cores or administrative boundaries. However, these indicators are frequently outdated, difficult to obtain, or costly to access. As a result, remote sensing has become an attractive alternative, providing more frequent, cost-effective, and scalable methods for monitoring spatial transitions. Nevertheless, many studies identify an "urban fringe" from available remote sensing data without explicitly linking these data to the theoretically defined transitional zone described in urban theory.

This study addresses the gap between theoretical definitions and empirical measurement by evaluating the extent to which remote sensing can delineate the urban fringe in a manner consistent with urban theory. Drawing on established literature, a theory-informed fringe label is developed for Richmond, Virginia, using population density, housing density, land-use mixing, and commuting time to provide an explicit reference definition. The study then assesses whether remote sensing data can replicate this delineation and identifies the variables most informative for fringe detection.

Two analytical strategies are compared in this study. The first employs conventional remote-sensing proxies commonly used in fringe delineation, including NDVI, NDBI, land surface temperature, nighttime light intensity, impervious surface cover, and land-cover diversity measured by the Shannon Diversity Index. The second utilizes AlphaEarth Foundations embeddings, a learned 64-dimensional representation derived from multi-source Earth observation data (Houriez et al., 2025).

The results indicate that conventional predictors account for only a small proportion of the variation in the theory-informed fringe label, whereas AlphaEarth embeddings capture substantially more. Within the conventional models, impervious surface and land surface temperature are the only robust and statistically significant predictors, both exhibiting negative coefficients. This finding suggests that the fringe label excludes the most intensely urbanized areas and instead identifies lower-intensity transitional zones between urban and rural endpoints. The weak performance of the conventional model demonstrates that the urban fringe cannot be adequately represented by a limited set of standard surface proxies. In contrast, AlphaEarth embeddings indicate that the fringe is better characterized by high-dimensional combinations of physical, structural, and contextual transitions.

The alignment analysis revealed that the embedding dimensions are most strongly associated with land surface temperature, NDBI, and imperviousness.

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Keywords: Urban fringe, Theory-based delineation, Remote sensing, AlphaEarth Foundations

GAZE AND SPACE: EYE-TRACKING VISUAL PERCEPTION IN VIRTUAL URBAN ENVIRONMENTS

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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How do different populations visually engage with urban streets and built spaces, and what can their perception reveal for design? Eye-tracking technology captures precise fixation points, scan paths, and attention distribution, while virtual reality (VR) enables controlled, reproducible scene presentation, together forming a robust methodological framework for studying built environment perception. This presentation synthesizes three empirical studies using eye-tracking within immersive VR environments, examining visual attention across neurotypical adults, children, and individuals with Autism Spectrum Disorder (ASD).

Study 1 (n=55) investigates how neurotypical adults perceive urban streetscapes with varying spatial enclosure, specifically examining differences in gaze behavior across street sections with different D/H (width-to-height) ratios and greenery. Findings indicate that higher enclosure concentrated fixations on façades and road surfaces, while greenery did not moderate gaze patterns. Study 2 (n=15) examines how children visually perceive urban streets designed with varying safety features and color schemes. Comparing gaze patterns across differently designed streetscape conditions reveals that children were more responsive to color differentiation at crossings and spent more fixation time on tactile- and color-marked elements on buildings, with direct implications for child-friendly and pedestrian-safe street design. Study 3 (n=5, pilot) explores gaze patterns of ASD individuals when exposed to visually triggering built environments in both street and interior settings. Preliminary findings suggest that ASD participants showed prolonged fixation on high-contrast edges of elements and avoided social signage, providing early evidence for sensory-informed and inclusive design.

Collectively, these studies demonstrate that VR-based eye-tracking can effectively simulate built environmental experience and generate actionable, empirically grounded design guidance. Results contribute to ongoing discourse on streetscape, child-friendly urban design, and ASD-inclusive environments, while advancing the integration of advance perception research methods into design studio and seminar pedagogy.

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Keywords: eye-tracking, virtual reality, built environment, perception, inclusive design

GROUND-TRUTHING GREEN REDEVELOPMENT: A SPATIOTEMPORAL FRAMEWORK FOR TRACING THE SPILLOVER OF BELTLINE

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Individual Paper Presentation

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Urban redevelopment is often evaluated through plan quality, project delivery, land-use change, or aggregate socioeconomic outcomes. While these approaches remain important, they are less effective at assessing whether planning visions are translated into the everyday use of urban space (Berke & Godschalk, 2009; Guyadeen & Seasons, 2016). This limitation is especially salient in green redevelopment, where claims of livability, accessibility, and community benefit often coexist with uneven gains and environmental gentrification, as shown in the case of the Atlanta BeltLine (Immergluck & Balan, 2018). In response, this paper develops a spatially explicit and longitudinal framework to examine how planning vision, implementation, and spatiotemporal behavioral outcomes align over time.

The Atlanta BeltLine provides a revealing case because redevelopment has unfolded unevenly across corridor segments, development stages, and surrounding neighborhoods. To capture this process, the study integrates multiple forms of planning and behavioral data into a unified spatiotemporal framework. Official BeltLine blogs, press releases, project pages, and public event records are harvested and parsed to extract policy priorities, intervention types, timing, and referenced locations. These materials are transformed into a common where–when–what database that anchors planning narratives and implementation activities in shared spatial and temporal units. The encoded signals are then aggregated into spatiotemporal intensity fields, enabling direct comparison of where planning attention concentrates, where implementation occurs, and how both evolve through time. This operationalization also draws on recent efforts to conceptualize urban retrofitting as a multidimensional and process-based transformation rather than a single physical intervention (Ma et al., 2025). Finally, the vision–implementation layer is linked to large-scale mobility data to trace changes in visitation rhythms, visitor origins, dwell patterns, and user composition. In this way, planning vision is treated not as an abstract statement of intent but as an empirically traceable process.

Three patterns emerge. First, redevelopment shifted BeltLine use from episodic destination visits toward more routinized daily activity, with visits increasingly concentrated in late morning and midday and with stronger weekday presence. Second, the geography of use became more localized, as visitor origins contracted toward nearby neighborhoods, especially along the Westside, indicating a shift from metropolitan attraction to neighborhood infrastructure. Third, these gains were uneven: growth in routine and localized use was stronger in some corridor segments and social groups than in others. Rather than producing a uniform redevelopment effect, the results reveal differentiated sociospatial spillovers structured by corridor conditions, development timing, and social composition.

Methodologically, the paper shows how fragmented urban data can be assembled into a longitudinal analytical system for evaluating redevelopment beyond static indicators such as project completion, property change, or demographic turnover. By linking discursive priorities, material interventions, and observed behavior within the same spatiotemporal frame, the study advances a more behavior-sensitive approach to plan evaluation. More broadly, it aligns with emerging urban informatics research that uses digital traces and context-aware

computational methods to understand how people experience and use urban space in practice (Vanky, 2023). For planning practice, this approach offers a concrete way to identify where redevelopment is producing neighborhood benefit and where inclusion remains limited.

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Keywords: Plan Evaluation, Green Redevelopment, Spatiotemporal Analysis, Mobility-based justice, Urban Informatics

INFERRING HOW PARK DESIGN SHAPES USER EXPERIENCE FROM ONLINE REVIEWS

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Urban parks are a core component of infrastructure that enhances citizens' mental and physical health. Studies on urban parks have extensively examined their design. However, measuring how actual users perceive and experience specific design elements in parks at a micro-level remains a challenge. A comprehensive analysis of users' positive and negative emotional perceptions regarding park facilities is essential for user-centric urban planning. To overcome these limitations, this study proposes an analytical framework. It is based on Large Language Models (LLMs) and Natural Language Processing (NLP), which extract user perceptions of park facilities from large-scale online review data. The framework classifies these perceptions according to specific evaluation criteria.

The study analyzed Online Reviews from about 900 parks in New York City (NYC) and collected up to 2,000 reviews per park. First, BERT Zero-shot Classification extracted sentences that evaluate park design and classified their sentiment. This method used Jan Gehl's 12 quality criteria for urban open spaces. The approach effectively addressed noisy crowdsourced data, such as sentences unrelated to the park. The data were filtered to evaluate only the park's physical facilities and to enable quantitative perception analysis.

Next, contextual embeddings of high-frequency nouns within the extracted sentences were generated using the XL-LEXEME language model. This model considers the semantic usage of words in a sentence. The HDBSCAN algorithm then clustered these embeddings to form micro-clusters of similar facilities. These clusters were further grouped into macro-level design elements based on their functions. This approach effectively handles polysemy and context. By grouping diverse terms for specific functional facilities, this method translates detailed analyses into clear, actionable results.

To identify the characteristics of well-loved parks, this study integrated visitor data from Advan Research and event permission data from the NYC Department of Parks & Recreation. Using multiple regression analysis, it statistically tested differences in user perceptions of park design between high- and low-usage parks. This approach reveals micro-level, dynamic user perceptions. These insights are difficult to capture with traditional surveys.

The LLM and NLP-based framework in this study effectively infers spatial user perceptions from large-scale online text. It offers a scalable analytical foundation. This empowers urban planners, designers, and policymakers to use perception-based evidence in park planning and design decisions.

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Keywords: Urban Park, Large Language Model, Natural Language Process, Text Mining, Perception

MAPPING OASIS HUMAN HABITATS ACROSS THE PAN-HIMALAYA: A MACHINE LEARNING APPROACH INTEGRATING MULTISOURCE GEO-DATA

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Individual Paper Presentation

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The Pan-Himalaya, referred to as the roof of the world, extends from the Pamir Plateau in Tajikistan to the Hengduan Mountains in China. It is home to millions and sustains a profound wealth of cultural traditions. Agriculture remains a primary livelihood across this region, giving rise to numerous small-to-medium human settlements. These sites, characterized by high primary productivity amid arid surroundings, create heterogeneous green landscapes termed Oasis Human Habitats (OHHs). Unlike large-scale urban centers or settlements in humid, densely vegetated regions, OHH are strictly constrained by complex topography and limited hydrothermal resources, often appearing as isolated islands. Nevertheless, they support a massive population. Accurately identifying OHH is fundamental to understanding the unique patterns of human settlement and survival across the Pan-Himalaya.

Currently, mapping efforts for OHH are primarily concentrated on large-scale oases in arid plains, relying on conventional approaches such as manual visual interpretation and NDVI-based thresholding. However, research remains scarce in arid-cold mountain regions. Unlike their counterparts in arid plains, OHH across the Pan-Himalaya are characterized by their high-altitude locations, fragmented distributions, and minute scales, all set against a highly heterogeneous background. These factors limit the applicability of traditional methods in such complex environments, as vegetation-index-based calculations often fail to effectively distinguish natural vegetation from human habitats.

Utilizing a Random Forest (RF) framework integrated with multi-source geospatial data, we developed a multi-decadal database of OHH across the Pan-Himalaya for the period 2000–2019. The methodology proceeded in four stages: First, 30m-resolution global cropland data from the GLAD Laboratory were processed to establish the fundamental analysis units—Habitat Units. Second, we synthesized a comprehensive suite of indicators encompassing vegetation dynamics (e.g., mean NDVI), topographic constraints (elevation and slope), and bioclimatic variables (temperature, precipitation, and aridity index) for both habitats and their surrounding environments. Third, 1,753 sample points were randomly selected and meticulously labeled via high-resolution satellite imagery. Finally, employing a GroupKFold cross-validation strategy, we trained the RF model to categorise each Habitat Unit as either OHH or non-OHH. Model performance was rigorously evaluated using standard metrics, including Accuracy and Recall. The validated model was then deployed to map the spatiotemporal evolution of OHH across the Pan-Himalaya, followed by a detailed analysis of areal trends and regional heterogeneity.

Results show that: (1) The developed RF model achieved a high accuracy of 94.1%, enabling the first 30m-resolution mapping of OHH across the Pan-Himalaya. Notably, the NDVI of the surrounding environment emerged as the most critical predictor. (2) Based on pixel-counting estimation, the total OHH area experienced a significant expansion, increasing from 4,033 km² in 2000 to 4,525 km² in 2019. (3) Spatial analysis reveals that the Brahmaputra basin hosts the largest extent of OHH, followed by the Indus and Amu Darya basins. Furthermore, while the Yangtze and Mekong basins exhibited a declining trend over the past two decades, all other basins showed consistent growth.

Our study demonstrates the feasibility of accurately mapping specialized human habitat types at a subcontinental scale. This high-resolution dataset serves as a fundamental spatiotemporal baseline for future research on human habitation across the Third Pole, ultimately fostering the sustainable development and resilience of mountain communities.

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Keywords: Human habitats, Oasis, Pan-Himalaya, Mountain communities, Random Forest

MEASURING AND PROJECTING URBAN CLIMATE RESILIENCE TO HEATWAVES IN SOUTH KOREA

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Individual Paper Presentation

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Heatwaves are increasing in both frequency and intensity due to climate change (IPCC, 2023), highlighting the need to measure resilience in ways that reflect the characteristics of heatwaves. In response, recent studies have attempted to develop multidimensional frameworks and indices that integrate various components of resilience (Naomi et al., 2024). Nevertheless, studies that quantitatively operationalize urban resilience to heatwaves and simultaneously examine its future changes remain limited, particularly in terms of projecting future changes.

To address this gap, this study focuses on heatwaves as a specific hazard and develops an analytical framework that operationalizes the 4Rs resilience framework (robustness, rapidity, resourcefulness, and redundancy) into measurable proxy variables to evaluate and predict urban climate resilience (Bruneau et al., 2003). Specifically, robustness is represented by heat-related illness cases, rapidity by heat-related labor loss, resourcefulness by cooling electricity consumption, and redundancy by heat exposure space. A multidimensional dataset was constructed by integrating variables related to the thermal environment, exposed populations, and exposure spaces, and future climate conditions were projected using the SSP5-8.5 scenario.

To estimate both current and future values (2021–2050) of the indicators, machine learning models including Random Forest and XGBoost were applied. Model performance was evaluated using cross-validation R^2 (CV R^2), out-of-fold R^2 (OOF R^2), MAE, and RMSE. In addition, SHAP analysis was conducted to interpret variable importance and directional effects.

The results show that heat-related illness cases and labor loss increase over time, accompanied by growing regional disparities, while cooling electricity consumption remains relatively stable. When comparing the resilience index between 2025 and 2050, the mean value remains largely unchanged, whereas the standard deviation increases, indicating a widening gap across regions.

These findings suggest that although the overall level of urban climate resilience may remain stable, disparities in adaptive capacity and heat-related impacts across cities are likely to become more pronounced. This study contributes by transforming a conceptual resilience framework into a measurable indicator system and by proposing a quantitative, explainable approach based on machine learning.

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Keywords: Resilience Measurement, Heatwave Adaptation, Spatial Inequality, Urban Climate Resilience, Machine Learning Methods

MODELING URBAN ENERGY INPUT: A HYBRID FRAMEWORK COMBINING 3D SIMULATION AND MACHINE LEARNING

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Urbanization and the pursuit of sustainability have become central concerns in urban research, with extensive attention devoted to environmental outcomes such as thermal conditions and the urban heat island effect. However, comparatively less attention has been paid to the underlying driver of these phenomena, the input of energy in the form of solar radiation. As the primary source of surface energy, solar radiation fundamentally shapes urban energy balance. Yet, how urbanization alters cities' capacity to receive and redistribute solar radiation remains insufficiently understood. In particular, changes in land cover and the expansion of three-dimensional urban surfaces may substantially modify both the magnitude and spatial distribution of incoming energy, but these processes are rarely quantified in a systematic and scalable way.

This study addresses this gap by integrating high-resolution physical simulation with data-driven modeling to quantify urban solar radiation reception and its relationship with urban morphology. At the simulation stage, a detailed workflow is developed using Grasshopper, where iterative scripting through looping components is combined with the Ladybug plugin to perform large-scale, high-resolution solar radiation simulations at the building level. This approach enables batch processing of complex urban geometries and produces physically grounded estimates of radiation reception across diverse surface types and spatial configurations. Building upon this high-precision dataset, a machine learning framework is then constructed to extend the analysis across broader spatial and temporal scales.

Among the tested approaches, the XGBoost model is adopted as the primary analytical tool due to its superior predictive performance and ability to capture complex nonlinear relationships. For benchmarking purposes, linear regression and Random Forest models are also implemented as baseline comparisons. The results show that XGBoost consistently achieves higher accuracy and better generalization, while the alternative models exhibit clear limitations in representing nonlinear interactions between urban morphological factors and solar radiation reception. This confirms the effectiveness of gradient boosting techniques for modeling complex urban environmental processes.

The analysis further reveals that urbanization reshapes the spatial pattern of solar radiation reception by expanding radiation-receiving surfaces and intensifying three-dimensional structural complexity. Rather than being evenly distributed, increases in solar radiation are spatially concentrated in areas with higher density and vertical development. This finding highlights the role of urban morphology not only in modifying total energy input but also in redistributing it unevenly across space, with important implications for localized environmental conditions and energy-related urban processes.

By coupling high-resolution three-dimensional simulation with scalable machine learning techniques, this study provides a methodological framework that bridges physical accuracy and large-scale applicability. It demonstrates the potential of integrating simulation and data-driven approaches to address scale mismatches in urban climate research. The findings contribute to quantitative and spatial methods in planning by offering new tools to understand how urban form shapes energy input processes, moving beyond temperature-based perspectives toward a more fundamental analysis of urban energy dynamics.

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Keywords: Urban energy balance, Solar radiation, Machine learning, Urban morphology

PERFORMANCE ASSESSMENT OF HOME AND COMMUNITY-BASED SERVICES (HCBS) SUPPLY: INTEGRATING CLASS DATA AND AGENT-BASED MODELING

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Amid accelerating global population aging, the efficient allocation of home and community-based services (HCBS) is critical for relieving pressure on formal care systems and enabling aging in place. Existing studies predominantly evaluate potential opportunities through static lenses; however, they often assume homogeneous demand and continuous service provision. This oversight fails to account for variations in demand driven by the socio-economic heterogeneity of older adults, as well as reductions in service efficiency attributable to spatiotemporal capacity constraints. As a result, the corresponding findings offer limited practical utility for guiding resource allocation.

To address these gaps, this study develops a novel bottom-up evaluation framework that explicitly models the operational states of HCBS. The framework integrates three coupled components. First, a micro-population synthesis model is developed to generate older adult agents with heterogeneous characteristics. The demographic composition is derived from Chinese census data, and the model employs stratified Monte Carlo sampling and spatially constrained allocation to distribute the agents at the community scale. Second, a service demand quantification model is employed to estimate the probability of agents with varying characteristics selecting specific HCBS; this model is developed using data from the China Longitudinal Aging Social Survey (CLASS). Third, an agent-based model (ABM) is designed to simulate the interactions among older adults, caregivers, and service facilities during the provision of HCBS. The model incorporates temporal and service capacity constraints, capturing the processes of service requests, waiting, and completion.

The framework is empirically implemented in the Qinhuai District of Nanjing, China—a representative high-density historic urban area experiencing pronounced population aging. The results indicate that: 1) the proposed framework effectively uncovers service provision gaps that are not captured by conventional static evaluation approaches; 2) among the 13 categories of HCBS, psychological counseling achieves the highest level of actual demand fulfillment, while adult day care registers the most significant deficiency; and 3) even with equitable resource inputs, actual service fulfillment rates vary significantly across communities; such fluctuations in effectiveness are driven by service characteristics, service distribution, and road network features.

The primary contribution of this research lies in the integration of multi-agent simulation techniques with social survey data, providing a tool to quantitatively assess the performance of HCBS provision. This facilitates the efficient allocation of service resources and promotes the transition of services from “potentially accessible” to “actually available,” thereby supporting the sustainable operation of community eldercare systems and enhancing the well-being of older adults.

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Keywords: multi-agent simulation, spatiotemporal, older adults, bottom-up, resource allocation

PLANS IN PIXELS: THE ROLE OF VISUALIZATIONS IN AWARD-WINNING PLANS

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Plans primarily serve to articulate a community's vision for future development and inspire actions (Berke et al. 2006). As communication tools, plans translate complex planning processes—shaped through analysis, stakeholder engagement, and iterative feedback—into accessible formats that convey goals, policies, and development strategies. Historically, these documents have relied heavily on text, supplemented by a limited range of visualizations such as maps, photographs, and sketches (Al-Kodmany 2002). While these visualizations help communicate information clearly, they may not fully convey the spatial complexity of plans.

Over time, visualization technologies have evolved to include GIS, 3D models, interactive maps, and virtual environments, offering new opportunities to enhance communication, engagement, and decision-making (Metze 2020). However, traditional visualization methods continue to dominate planning practice, while advanced tools remain less common (Ammon 2018). Although Drake Reitan (2010) examined visualization use in planning documents, important gaps remain. Research has given limited attention to the perspective of visualization, or the spatial distance represented in visual views, and has not sufficiently examined how advanced techniques such as 3D models and interactive maps are used in practice.

This study addresses these gaps by asking: (1) What types of visualizations are used in planning documents, and how have they evolved over time? (2) To what extent are plans incorporating advanced visualizations such as 3D models and interactive maps? and (3) When 3D visualizations are used, what levels of proximity perspective do they represent?

To answer these questions, we conducted a content analysis (Drake Reitan 2010) of 148 award-winning plans recognized by the American Planning Association between 2012 and 2025. Building on existing typologies, we systematically coded and quantified a wide range of traditional and advanced visualization types across all plans, including photographs, maps, drawings, charts, infographics, interactive maps, and 3D models. We also analyzed the characteristics of 3D visualizations, with a focus on their proximity and spatial perspective.

Our findings show that traditional static visualizations remain dominant. Photographs account for over half of all visualizations, followed by thematic maps and drawings, while tables and charts remain consistently present. Although the diversity of visualization types has increased in recent years, particularly with the emergence of infographics, videos, and interactive maps after 2019, these dynamic tools remain limited, and 3D models are still not widely used despite their potential to support spatial understanding and engagement. These results highlight a persistent gap between advances in visualization technologies and their application in planning practice, with continued reliance on static formats. This study provides a systematic, large-scale empirical assessment of visualization use in contemporary plans and establishes a benchmark for understanding patterns, evolution, and diversity in visualization techniques across plan types and over time.

For practice, the results underscore the limited use of advanced visualizations and the need to expand tools, such as interactive maps, 3D models, and immersive technologies (e.g., AR/VR) to better convey spatial complexity, support localized understanding, and foster stakeholder engagement. These approaches can enhance cognitive engagement and improve decision-making by allowing users to interact with and experience planning proposals more intuitively. Planners should therefore strengthen technical and critical skills in digital visualization, positioning

these tools as important communication strategies that make planning more accessible, participatory, transparent, and responsive to diverse audiences.

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Keywords: Visualization, Communication, Plans, Technology, 3D

RECREATIONAL PERFORMANCE AND OPTIMIZATION STRATEGIES OF URBAN PARKS IN NANJING FROM A MORPHOLOGICAL TYPOLOGY PERSPECTIVE

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Individual Paper Presentation

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Urban park planning is shifting from scale-oriented provision to performance-oriented evaluation. Understanding how spatial morphology influences recreational performance has therefore become an important issue. Existing studies have mainly examined the relationship between park form and performance from the perspectives of accessibility and size, yet remain limited in the systematic characterization of morphological structure, the quantification of multi-dimensional behavioral performance, and the identification of mechanisms through which morphology affects performance via human activity. To address these gaps, this study takes 294 parks in the central area of Nanjing as the research sample and develops an analytical framework linking two-dimensional park morphology and recreational performance from a typological perspective.

Park morphology is described through four structural dimensions—overall form, boundary geometry, core space, and skeleton structure—using elongation, fractal dimension, core area ratio, and skeleton density as key indicators, and classified into distinct types through cluster analysis. Recreational performance is measured using Location-Based Services (LBS) data by extracting human activity trajectories and constructing a composite index integrating behavioral and efficiency measures across three dimensions: social (visitor scale), temporal (duration), and spatial (distribution), capturing the overall process of park use. Based on model fitting and spatial analysis, the degree of morphology–environment matching is evaluated. Parks are classified into high-, medium-, and low-coupling types to represent the adaptability of morphological characteristics under different environmental conditions.

The results indicate that four morphological types can be identified, with compact-core and linear-elongated types dominating the sample. These types show clear differences in core spatial organization, spatial extension, and boundary complexity. Recreational performance exhibits a centrally concentrated distribution, indicating that most parks operate near an average level, while only a small number show significantly higher or lower usage intensity. Linear-elongated and composite-structured parks generally perform better, whereas compact-core and complex-boundary types show relatively lower performance. The same morphological type also demonstrates varying performance across urban contexts, indicating strong contextual dependency.

From a morphology–environment coupling perspective, high-coupling parks are characterized by alignment between spatial form and environmental conditions, where specific morphological features respond to contextual demands: in high-density areas, core continuity and boundary complexity enhance capacity and interaction; in POI-rich areas, skeleton structure improves spatial organization and flow efficiency; in natural settings, elongation strengthens environmental integration and continuity of use; and in highly accessible areas, elongation and structural organization support flow distribution.

In contrast, low-coupling parks exhibit a mismatch between morphology and environmental demand, leading to a gap between spatial supply and actual use. Their improvement requires holistic adjustment rather than isolated interventions. When environmental conditions are favorable but morphology is insufficient, priority should be given to strengthening core continuity and skeleton organization. Conversely, when morphology is adequate but environmental support is lacking, efforts should focus on improving accessibility, connectivity, and service

provision. Through the coordinated adjustment of internal and external factors, morphology and environment can be re-aligned, enabling low-coupling parks to approach the ideal state.

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Keywords: Urban park morphology, Recreational performance, LBS data, Metrics and models, Coupling mechanism

SPATIAL FORECASTING OF WILDFIRE RISK IN A TEXAS REGION

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Individual Paper Presentation

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Wildfire risk in Texas is increasing as rising temperatures, prolonged drought, and expanding development intensify ignition conditions across the wildland–urban interface. Climate change has lengthened fire seasons, increased fuel aridity, and expanded the spatial extent of burnable landscapes, making wildfire an increasingly persistent hazard for communities, ecosystems, and regional planning. In Texas, this challenge is especially urgent because wildfire activity is shaped not only by climatic stress but also by rapid land-use change, vegetation patterns, and the growing proximity between human settlements and fire-prone landscapes. As more fires occur near developed areas, the need for predictive tools that can support proactive mitigation, preparedness, and resource allocation has become increasingly important.

Although existing statewide wildfire assessment tools provide valuable baseline hazard information, they often rely on static or generalized assumptions and are less effective at identifying where wildfire occurrence is most likely at finer spatial scales. Many prior studies also emphasize broad fire behavior patterns or specific ignition sources, rather than developing regionally focused forecasting approaches that integrate environmental and human drivers in a spatially explicit way. This creates a gap for planning-oriented models that can better capture localized patterns of wildfire likelihood and provide more actionable information for regional decision-making.

This study develops a spatially explicit model to forecast wildfire occurrence across a region in Texas by integrating climatic, biophysical, and anthropogenic variables, including wildfire history, temperature, precipitation, drought conditions, land cover, elevation, and population density. Using a 2-mile grid framework, the model estimates the probability of burned versus unburned cells and identifies localized clusters of wildfire likelihood across the study area. By combining multiple drivers of wildfire risk within a single regional modeling framework, the study advances beyond broader statewide assessments and demonstrates the value of spatial prediction for identifying place-specific patterns of vulnerability.

Results show that land cover is the strongest predictor of wildfire occurrence, with pasture, herbaceous vegetation, evergreen forest, and mixed forest associated with elevated risk. Lower precipitation, higher temperatures, and greater population density also increase wildfire likelihood, while elevation shows a negative relationship. The model achieved strong predictive performance (AUC = 0.837) and generated probability maps that reveal clear spatial variation in wildfire likelihood, highlighting areas where environmental conditions and human influence combine to produce greater risk.

By offering a finer-scale and more adaptive assessment of wildfire likelihood, this research provides actionable insights for wildfire mitigation, prevention planning, and emergency preparedness in Texas. The findings can help inform the prioritization of high-risk areas for monitoring, fuel management, and public safety interventions, while also supporting more efficient allocation of limited planning and response resources. More broadly, this study demonstrates the value of integrating climatic, landscape, and human variables in spatial wildfire forecasting and contributes a practical framework for place-based wildfire risk assessment in rapidly changing environments.

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Keywords: wildfire risk, predictive modeling, ignition probability, spatial analysis, hazard planning

SPATIAL SELECTIVITY AND PEDESTRIAN BEHAVIOR IN ROME'S URBAN PIAZZAS: A COMPUTER VISION AND TRAJECTORY ANALYSIS

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Urban plazas accommodate a wide range of pedestrian activities, including lingering, social interactions, sightseeing, and movement between points of interest. However, the spatial organization of these behaviors, and the extent to which different behavior types selectively occupy different parts of plaza space, remains insufficiently understood. Using four plazas in the historic center of Rome as case studies, this study examines the spatial selectivity of pedestrian behavior from two perspectives: what distinct behavior types can be identified from pedestrian trajectories, and how these types are distributed across plaza space.

Pedestrian trajectories were reconstructed from publicly available video data through YOLO11x detection and DeepSORT tracking. A total of 18,771 pedestrian trajectories were analyzed. Seven trajectory-derived indicators were constructed under three dimensions, Behavioral Attributes, Morphological Attributes, and Interaction Attributes, covering Speed, Dwell, Trajectory Entropy, Social Proximity, etc. Based on these indicators, pedestrian behavior types were identified using K-means clustering. These behavior types were then projected onto a fishnet-based representation of plaza space to generate a grid-level dataset of type-specific proportions. Getis-Ord Gi* and Local Moran's I were used to detect localized concentrations, while cross-grid and cross-plaza comparisons were conducted to identify recurrent and site-specific distribution patterns. Geographically Weighted Random Forest was further applied to examine how grid-level distributions of behavior types relate to local spatial conditions, including spatial structure, visibility, and functional interface variables.

The results identify three behaviorally distinct pedestrian types: Engaged lingerers, Localized companions, and Mobile explorers. Engaged lingerers are characterized by lower speed, longer dwell, and higher trajectory intersection; Localized companions by shorter path length, lower social proximity, and more spatially localized movement; and Mobile explorers by higher speed, higher trajectory entropy, and broader movement range. After being projected onto plaza grids, these types exhibit clear spatial selectivity rather than diffuse distribution. Mobile explorers are more widely distributed across sites, whereas the concentration and intensity of Engaged lingerers vary more substantially with plaza-specific spatial configuration and use context. GW-RF results further show that the relative importance of spatial variables varies across grid locations, and that different parts of the plaza are shaped by different combinations of landmark proximity, spatial position, visibility, and interface conditions rather than by a single uniform factor.

These findings suggest that plaza management should focus on grid-level behavior patterns rather than aggregate counts, allowing for spatially differentiated interventions such as targeted circulation guidance or temporary occupation management. Overall, this study extends quantitative research on pedestrian behavior, providing empirically grounded insights for more adaptive and spatially informed plaza management.

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Keywords: urban plazas, behavior typology, computer vision, trajectory analytics, spatial selectivity

SPATIO-TEMPORAL DIFFUSION PATTERNS OF COMMERCIAL BUSINESS CLOSURES: A POINT PROCESS APPROACH FOR SEOUL

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Individual Paper Presentation

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Commercial business closures are not randomly distributed across urban space and time. In dense commercial districts, the closure of one establishment may reduce pedestrian traffic and local demand, increasing financial pressure on neighboring businesses and potentially triggering cascading closures. Yet the spatio-temporal dynamics of this process—whether closures cluster significantly, whether they propagate to neighboring establishments, and how external shocks reshape these patterns—have not been sufficiently explored.

The aim of this study is to examine whether and how commercial business closures in Seoul exhibit self-exciting spatio-temporal dynamics, and to quantify the role of external shocks in reshaping those patterns. To this end, we address three research questions: (RQ1) Do closures exhibit statistically significant spatio-temporal clustering at the dong-level administrative unit, beyond what would be expected if closures were distributed proportionally to the density of establishments? (RQ2) Does the closure of one establishment elevate the risk of closure among nearby establishments, indicating a contagion effect? (RQ3) How do external shocks—specifically the COVID-19 pandemic and extreme heat events—alter spatio-temporal closure patterns?

We employ a three-stage analytical framework using business licensing records from the Local Administrative Licensing Database, covering all commercial establishments in Seoul. For RQ1, spatial scan statistics under a Poisson model are applied at the dong level to detect significant closure clusters, providing a prerequisite test of non-randomness. For RQ2, individual closure events are treated as geo-referenced points in space-time, and a Hawkes process with stochastic declustering is estimated, decomposing the conditional intensity function into a background rate and a self-exciting triggering kernel. Temporal kernel parameters are estimated from the data, allowing the time scale of contagion to be determined empirically. For RQ3, we test for statistically significant variation in the estimated background intensity across pre-pandemic, pandemic, and extreme heat periods.

Results indicate that commercial closures in Seoul form statistically significant spatio-temporal clusters concentrated in high-density commercial corridors. The estimated Hawkes model reveals a statistically significant self-exciting component, suggesting that closure events elevate the risk of subsequent closures in spatial proximity—a contagion signature consistent with localized demand spillovers. Regarding external shocks, the COVID-19 pandemic produces a broad, city-wide elevation in background closure intensity. Extreme heat events, by contrast, generate heterogeneous effects: accelerating closures in certain sectors while sustaining or elevating revenue in others through demand displacement toward delivery-based services.

The theoretical motivation draws on threshold-based exit theory: firms operating near a critical viability threshold are disproportionately vulnerable to demand shocks triggered by neighboring closures. External shocks shift establishments relative to this threshold, but in opposing directions depending on their nature. This study contributes to quantitative and spatial methods in urban planning by introducing self-exciting point process methods to the analysis of commercial district decline, providing an empirical test of contagion dynamics in urban commercial ecosystems, and quantifying the differential spatial imprint of demand-side and climate-related shocks on intra-urban commercial viability.

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Keywords: STPP, business closure, Hawkes process, urban commercial district, external shocks

STAY TOGETHER: STREET-LEVEL SOCIAL INDICATORS FOR SIDEWALK LIFE ACROSS 500 U.S. CITIES

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Pedestrian counts are among the most common measurements of street life, yet they cannot distinguish between a street where people rush through and one where they linger in groups. When Whyte, Gehl, and Jacobs observed social life in urban spaces, they attended to where people stay, linger, and interact. These conditions carry meaning that cannot be captured by counts alone. This paper introduces a street-level social indicator dataset covering 500 U.S. cities that measures not how many people are present, but where people stay together.

The dataset is produced through a vision-language pipeline applied to millions of street-view images from Apple Lookaround, Bing Streetside, and Mapillary, sources selected for their capture timestamps, enabling temporal analysis unavailable from Google Street View. Each panorama is reprojected into standardized sidewalk-facing images. A detection model identifies pedestrians and infers social grouping. A vision-language model then codes per-person attributes: posture, locomotion, object interaction, support surface, and spatial zone. Image-level outputs are aggregated to street segments aligned with the CDC 500 Cities Project boundaries.

Three segment-level indices are computed. The Weighted Co-presence Index captures grouping intensity, weighting by group size, and adjusting for duration through stationary posture and seated position. The Care Group Index registers the presence of children, stroller users, older adults, and mobility-aid users. The Street Program Index counts distinct functional activity categories per segment, operationalizing what Jacobs termed the "sidewalk ballet" as a measurable quantity.

Preliminary results across the 500-city sample suggest that pedestrian volume and social grouping are decoupled: streets with high foot traffic are not necessarily where people stay together. We use the term "muted areas" to describe segments dense in pedestrian volume but thin in social co-presence, a condition invisible to counting alone. Cross-city variation in the Care Group Index and the Street Program Index points to differences in how street environments serve caregiving populations and support activity diversity. The dataset offers planners an empirical basis for distinguishing between presence and social life across American cities.

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Keywords: social indicators, sidewalk social life, vision-language model

STRUCTURED BY PLACE, SHAPED BY MOBILITY: DYNAMIC TRANSIT ACCESSIBILITY TO ESSENTIAL SERVICES IN LOS ANGELES FROM LONGITUDINAL SMARTPHONE GPS DATA

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Accessibility, defined as the ease of reaching opportunities, is a key concept in urban planning used to identify underserved communities and guide transportation and land-use investment. Yet, most accessibility measures remain static and place-based: they assume that people always travel from home, services are always available, and transit runs consistently. In contrast, time geography theories argue that accessibility should be about people: whether the opportunities are reachable for an individual at different times of day through their movement across space, and therefore, people living in the same neighborhood may experience different access. This raises a diagnostic question for planners: when people experience low accessibility, is it a place-based problem rooted in neighborhoods with inadequate services, or a people-based problem rooted in their mobility patterns and constraints?

Using smartphone GPS trajectories of 967 Los Angeles County residents from January 2023 to June 2024, I build a person-week panel of 22,684 observations (77 weeks at most). I first calculate each individual's weekly space-time-weighted dynamic accessibility by combining where they spend their time and when services are reachable, accounting for time-of-day transit travel times (OSM + GTFS isochrones) and service operating hours (POIs). I then estimate three-level mixed-effects models to decompose accessibility variance across three levels: between-neighborhood (place), between-person (stable individual differences), and remaining person-week variations. In addition, I explore whether individuals' weekly mobility patterns (radius of gyration, spatial entropy, extroversion index) explain additional variation beyond their residential context and individual demographics.

Variance decomposition results show that, within sampled individuals, people's weekly transit accessibility to essential services is strongly place-structured: across services (grocery, food and drink, retail, and finance), home tract accounts for 84.47% - 87.67%, stable between-person differences account for 6.15% - 7.61%, and remaining person-week variations account for 6.18% - 8.33% of the total variance in weekly dynamic accessibility. In addition, adding weekly mobility measures significantly improves the model fit beyond residential context and individual demographics (LR = 1855.27, $p < 0.001$; ΔAIC = -1843.27; ΔBIC = -1795.21), and weeks with larger activity spaces, more diverse visits, and longer out-of-home durations are associated with higher accessibility. Nonetheless, people's mobility does not overturn the dominant role of residential context, though the degree of place-structuring varies by mobility subgroup: for home-anchored individuals who spend most of their time within their residential neighborhood, home tract explains 94.88% of grocery accessibility variance, while for exploratory individuals who spend more time outside of their home tract, this share drops to 76.61%, with 13.76% variation explained by between-person heterogeneity.

In sum, this study makes two contributions to quantitative planning methods. First, it operationalizes time geography by developing a scalable smartphone GPS-based dynamic accessibility framework that incorporates individuals' observed mobility, transit schedules, and service operating hours. Second, it uses longitudinal smartphone GPS data to decompose place-based and people-based variations in individuals' dynamic transit accessibility, addressing a key limitation of prior studies based on short travel diary windows. For this Los Angeles sample, it finds that even with a dynamic people-based measure, weekly transit accessibility to essential services remains strongly structured by residential context. This result suggests that improving transit supply and service

availability in low-access neighborhoods should remain a key planning strategy, and mobility-oriented supports should serve as complementary interventions.

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Keywords: Dynamic Accessibility, Time Geography, Smartphone GPS, Transit Accessibility, Multilevel Modeling

STUDY ON THE THERMAL COMFORT EVALUATION OF OUTDOOR PUBLIC SPACES IN UNIVERSITY CAMPUSES BASED ON PANORAMIC IMAGES AND INTERPRETABLE MACHINE LEARNING

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As global warming and the urban heat island effect continue to intensify, urban public spaces face increasingly pressing thermal environmental challenges. Thermal comfort in urban public spaces is a key factor influencing users' willingness to stay, their perceived experience, and their propensity to engage in activities, as well as a measure of a city's livability and sustainability. Traditional thermal comfort research often relies on field measurements and CFD numerical simulations, which suffer from inefficiencies and limited spatial coverage. As the primary venues for citizens' daily activities, urban public spaces require both detailed evaluation and methods that are cost-effective and scalable. University campuses, as an integral part of urban public spaces, feature a diverse range of public space types and concentrated usage scenarios, providing an ideal testing ground for thermal comfort assessment frameworks. Previous studies have indicated that the morphology of public spaces determines the objective foundation of thermal comfort by influencing microclimate processes. Existing research increasingly recognizes that visual perception plays a significant role in influencing individuals' thermal perception within the urban thermal environment; consequently, incorporating the visual dimension into thermal comfort evaluation has become a frontier in this field. Street-view imagery, as a visual representation of spatial form, enables the quantification of morphological indicators. Research paradigms are shifting from reliance on field measurements and numerical simulations toward large-scale, low-cost, and people-centered assessments utilizing panoramic/street-view imagery and machine learning. Consequently, this study focuses on urban public spaces, using university campus public spaces as a typical case study, to construct a framework for predicting and evaluating outdoor thermal comfort based on panoramic images and explainable machine learning. The research establishes a technical workflow comprising "visual morphological extraction—thermal comfort sample construction—explainable machine learning modeling—cross-campus prediction generalization." Using panoramic images as the core data source, spatial morphological indicators are extracted via semantic segmentation techniques. These are combined with thermal comfort indicators (UTCI) simulated by ENVI-met, and thermal comfort is validated through thermal perception evaluations of the panoramic images. A gradient-boosted decision tree (GBDT) algorithm is employed to construct a thermal comfort prediction and evaluation model, and the SHAP algorithm is introduced to enhance model interpretability. Building on this foundation, the model is extended to other university campuses, ultimately enabling rapid, large-scale thermal comfort prediction and spatial distribution mapping across multiple campuses based on panoramic images.

The results indicate that spatial openness and green view ratio are significant positive factors in enhancing thermal comfort levels in urban public spaces, and that thermal comfort performance relies more on the combined effects of spatial morphological elements. The predictive framework developed in this study can efficiently identify differences in the thermal environment across various public spaces within university campuses and demonstrates strong potential for cross-site application. This research provides scientific evidence and methodological support for the rapid assessment of thermal environments in urban public spaces, as well as for people-centered optimization and design of such spaces.

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Keywords: Urban public spaces, Thermal Comfort, Evaluation Framework

THE IMPACT OF URBAN MORPHOLOGY ON GREENHOUSE GAS EMISSIONS: INSIGHTS FROM 5,000 DISTRICTS IN KOREA

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Cities are central to global climate mitigation efforts, with the building and transportation sectors driving the majority of urban greenhouse gas (GHG) emissions. While current research utilizing the Local Climate Zone (LCZ) framework has effectively categorized urban physical properties, it predominantly focuses on the independent characteristics of isolated LCZ classes, often overlooking the broader spatial configuration and morphological interactions among neighboring environments. This study investigates the comprehensive impact of urban spatial morphology on GHG emissions at the neighborhood level across Republic of Korea. Specifically, it explores how the physical characteristics and contextual spatial arrangements of urban forms can synergistically reduce both building (electricity, gas, and district heating) and transportation emissions, while examining the spatial heterogeneity of these relationships across different regions.

To capture the complexity of urban morphology, this research employs the LCZ classification scheme derived from high-resolution (50m) spatial data. The LCZ data is reclassified into distinct urban landscape groups to calculate landscape ecological metrics—including Shannon's Diversity Index, Contagion, Patch Density, Edge Density, and Largest Patch Index—for approximately 5,000 local administrative units. Utilizing normalized GHG emission data (emissions per capita) as dependent variables, the study applies Geographically Weighted Regression (GWR) to address spatial non-stationarity and overcome the limitations of global regression models like Ordinary Least Squares (OLS).

It is anticipated that the analysis will reveal specific urban morphological profiles capable of concurrently optimizing energy efficiency across both sectors. Through the GWR model, the study expects to identify synergistic spatial configurations that minimize overall GHG emissions. For instance, the study hypothesizes that high spatial diversity paired with an appropriate level of physical clustering will emerge as a highly effective morphological archetype. This well-mixed yet cohesive urban form is projected to significantly reduce transportation demand through proximity while maintaining efficient infrastructure networks for building energy. Furthermore, the spatial modeling aims to demonstrate that optimizing fragmentation and boundary complexity is critical to balancing microclimate regulation and structural efficiency.

Ultimately, the primary significance of this research lies in its potential to derive a rational and holistic urban form for carbon neutrality. If the hypothesized spatial relationships are validated, this study will shift the paradigm of climate-responsive planning from isolated, sector-specific policies to a comprehensive morphological approach. By capturing spatial heterogeneity and identifying globally applicable yet locally adjustable morphological combinations, this research is expected to provide policymakers with actionable, region-specific guidelines. The proposed analytical framework will offer strong empirical evidence for designing rational urban environments that concurrently lower both mobility and operational carbon footprints, paving the way for truly sustainable spatial planning.

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Keywords: Local Climate Zone(LCZ), GHG Emissions, Urban Morphology, Landscape Metrics, GWR

TRACING RESIDENTIAL SORTING INTO PLANNED COMMUNITIES: MIGRATION FLOWS, DEVELOPER DECISIONS, AND DEMOGRAPHIC CHANGE IN FLORIDA, 2011-2019

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Track 10: Quantitative and Spatial Methods
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Planned communities have long been important sites of housing production in the United States, but also vehicles for residential segregation by race, income, and other characteristics (Pendall, 2000; Owens, 2019). While recent research has begun to document whether planned communities can diversify over time (Kim & Lee, 2023), we know little about the behavioral dynamics that produce demographic differences: who is moving into planned communities, from which neighborhoods, and how do developer decisions shape these migration flows? This paper addresses these questions using a novel combination of two datasets: (1) a comprehensive database of 310 planned communities built between 1975 and 2015 in Florida, from state Development of Regional Impact (DRI) applications (Authors, under review), and (2) the MIGRATE dataset (Agostini et al., 2025), which provides annual Census Block Group-to-CBG migration flow estimates for the U.S. from 2011 to 2019. We match 621 planned community block groups to over 2.7 million migration flow records and characterize origin neighborhoods using year-matched Census demographics (2010 Decennial Census, ACS 2016, and ACS 2019).

Our analysis proceeds in three stages. First, we document the geography of migration into planned communities, finding that 71.6% of inflows originate within Florida and 28.4% from out of state, with New York alone accounting for 11% of interstate flows. Out-of-state movers come from neighborhoods that are 11.7 pp Whiter, 12.0 pp less Hispanic, and earn $15,200 more than within-Florida movers' origin neighborhoods. Second, using spatial lag models with planned community typology variables (golf courses, rental housing, retirement targeting, income targeting) as predictors, we test whether developer decisions systematically predict the demographic composition of each community's inflow pool. We find that rental-inclusive communities consistently attract movers from less White, more foreign-born neighborhoods, while golf-course communities draw from Whiter, wealthier origins. Third, we employ Multiscale Geographically Weighted Regression to examine whether these typology effects vary across Florida's distinct regional housing markets.

Our year-matched temporal analysis reveals that origin neighborhoods feeding into planned communities are genuinely diversifying: within-FL origins dropped from 61.8% to 57.6% NH White between 2011-2013 and 2017-2019. However, we also find that economic stratification is deepening simultaneously. The income gap between movers originating from existing planned communities versus non-PC neighborhoods grew from $17,000 to $19,300, and the home value gap widened from $51,500 to $59,600. This suggests that Florida's planned communities are becoming less racially exclusive but more economically selective.

This paper extends our companion study (Authors, under review), which established a cross-sectional portrait of demographic diversity and housing affordability in Florida's planned communities, by tracing the revealed migration behavior that produces those demographic patterns. Developer choices about housing type, particularly rental inclusion, shape not just who lives in planned communities but who selects into them, and these effects persist across a full decade of migration flows.

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Keywords: residential sorting, planned communities, migration, spatial methods, housing segregation

TRAJECTORY-BASED ANALYSIS OF URBAN PARK VISITOR SATISFACTION USING SOCIAL MEDIA REVIEWS: EVIDENCE FROM SEATTLE

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Individual Paper Presentation

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Understanding how visitor satisfaction evolves over time is critical for adaptive and equitable urban park planning and management (Chukwu et al., 2024). Urban parks provide essential ecological, social, and health benefits, yet planning practice often relies on static or cross-sectional measures of park performance that fail to capture temporal variation in user experience (Roberts et al., 2019; Chen et al., 2022). Recent studies have begun to use social media data to infer park usage and perception, but most focus on aggregate indicators or single-period analysis, limiting their ability to reveal long-term dynamics and temporal heterogeneity (Tenkanen et al., 2017; Norman & Pickering, 2019). As a result, there remains a lack of scalable approaches for monitoring how visitor satisfaction changes over extended time horizons and across heterogeneous urban contexts.

This study proposes a trajectory-based analytical framework to examine longitudinal changes in park visitor satisfaction using user-generated social media data. We extract continuous satisfaction measures from Yelp reviews (2005–2024) using a large language model (LLM)-based sentiment analysis approach, enabling nuanced and context-sensitive representation of visitor perception. To address noise and irregular temporal sampling inherent in social media data, Gaussian Process Regression (GPR) is applied to estimate smooth satisfaction trajectories while explicitly quantifying uncertainty. Building on these trajectories, Dynamic Time Warping (DTW) is employed to compare and cluster parks based on the shape of their temporal satisfaction patterns, allowing structurally similar dynamics independent of strict calendar alignment.

A case study in the City of Seattle reveals substantial heterogeneity in park satisfaction dynamics over the study period. At the aggregate level, visitor satisfaction increased from approximately 2012 to 2019, declined briefly during 2020, and recovered after 2022, reflecting both long-term improvement and short-term external shocks. However, individual parks exhibit distinct temporal trajectories, including consistently high and stable satisfaction, strong seasonal oscillations, and gradual long-term decline. DTW-based clustering identifies interpretable trajectory types that are not captured by conventional static indicators or time-aligned comparisons, enabling differentiation of parks based on dynamic performance rather than average conditions. Further regression analysis indicates that park design characteristics, accessibility, and neighborhood socioeconomic conditions are significantly associated with variation in satisfaction dynamics, highlighting the role of both spatial context and built environment features in shaping temporal user experience.

This study contributes to planning scholarship by advancing a dynamic, trajectory-based perspective on park evaluation that moves beyond static performance metrics. Methodologically, it integrates LLM-based perception extraction with probabilistic time-series modeling and shape-based clustering to enable scalable longitudinal analysis of urban experience. Substantively, the findings provide actionable insights for demand-sensitive and adaptive park planning, supporting more targeted interventions, resource allocation, and design strategies in response to evolving patterns of park use and perception. In particular, the framework enables planners to identify parks with declining or unstable satisfaction trajectories and prioritize them for timely intervention, while also supporting adaptive management strategies for parks exhibiting strong seasonal variability.

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Keywords: park, visitor satisfaction, large language model, dynamic time warping, social media review

UNDERSTANDING COMPLEX INTERACTIONS BETWEEN BUILT ENVIRONMENT AND URBAN STRESS IN NEW YORK CITY: AN AGENT-BASED MODELING APPROACH

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While urbanization offers socioeconomic opportunities, it often exacerbates environmental stressors such as extreme heat, noise, and air pollution, which significantly impact urban public health (Nieuwenhuijsen 2020). Despite lots of macroscopic research of these environmental challenges, exploring the complex, momentary interactions between the built environment and human physiological stress remains a methodological gap in urban planning. This study addresses this gap by developing an Agent-Based Model (ABM) to understand the micro-level, real-time dynamics between environmental exposures, urban design, and human physiological responses in New York City.

To achieve this goal, high-resolution empirical data was collected from participants navigating diverse urban environments in New York City. Participants were equipped with wearable biometric sensors (Empatica EmbracePlus), portable environmental monitors (capturing noise, heat, and air quality), wearable cameras, and GPS tracking, walking either within the pre-defined routes or freely for approximately 60 minutes. The collected physiological data was processed using a deep-learning model pre-trained on the WESAD (WEarable Stress and Affect Detection) dataset to classify subjects' states into stress, baseline, and relaxation (Schmidt et al. 2018). By integrating these labeled stress statuses with GPS coordinates and environmental sensor data, we mapped the micro-scale spatial distribution of urban stress and identified areas where participants experienced the most stress (hot spots) or relaxation (cold spots).

These spatial patterns and environmental variables were subsequently used to parameterize an Agent-Based Model, bridging complex urban systems theory with public health outcomes (Auchincloss et al. 2008 and Batty 2007). The model was designed, calibrated, and validated to represent the independent agents' behavior in a proposed urban space. The space was design to represent various densities, urban design solutions, vegetation, built environment, and other factors, which were found important through the data collection with participants. The simulations reveal the most impactful environmental stressors, demonstrating how individual-level responses aggregate into community-wide vulnerabilities.

Situated within urban planning's long-standing concern with the socio-spatial production of health, this study combines a theoretical and methodological framework for understanding how physiological stress emerges through everyday interactions between individuals and urban environments. Rather than conceptualizing environmental burdens such as heat, noise, and air pollution as static background conditions, the study treats them as dynamic and relational exposures that are experienced unevenly across space, time, and movement. In this sense, the proposed ABM extends insights from urban systems theory (for instance, with a similar approach as in Zellner et al. 2016), environmental health, and behaviorally informed planning by simulating how embodied responses are shaped through momentary encounters with specific urban forms, vegetation patterns, mobility conditions, and micro-climatic contexts.

The model therefore offers more than a predictive tool: it provides a way to theorize the city as a complex adaptive system in which built form, environmental stressors, and human behavior interact recursively to produce differentiated patterns of vulnerability and resilience. By linking micro-scale human responses and physiological sensing to simulation-based scenario testing, the study contributes to planning scholarship on healthy cities, justice, and evidence-based urban intervention. In doing so, it not only contributes a novel methodological approach to health-sensitive planning research, but also provides a theoretically informed platform for testing how alternative urban design, greening, and mitigation strategies may transform lived experience in urban areas.

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Keywords: Agent-Based Modeling, Environmental Exposure, Urban Stress, Wearable Sensors, Built Environment

UNDERSTANDING VULNERABILITY AND IDENTIFYING RESILIENCE STRATEGIES FOR THE HEALTHCARE CRITICAL INFRASTRUCTURE NEXUS UNDER COASTAL FLOODING

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Individual Paper Presentation

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Extreme weather events intensified by climate change pose escalating risks to interconnected critical infrastructures, creating cascading consequences for healthcare systems and community well-being. To date, analytical frameworks that capture how the healthcare critical infrastructure (HCI) nexus operates as an integrated network and its vulnerability to climate extremes remain limited. While existing regional tools, such as the EPA's Regional Resilience Toolkit and FEMA's Resilience Analysis and Planning Tool, provide valuable frameworks for community risk assessment and disaster planning, they are largely static and spatially coarse, which limits their ability to capture localized variation and the dynamic interactions that characterize complex critical infrastructure systems. To address this gap, we develop a conceptual representation of the HCI nexus that illustrates its components and interconnections, followed by a geospatial multi-layer network model that measures direct HCI exposure to coastal flooding and evaluates cascading failures within the nexus. We achieve this by using Lee Health hospitals in Southwest Florida as a case study. Building on these insights, we identify evidence-based resilience strategies that reduce systemic risk and support continuity of care for communities.

Our analysis focuses on hospitals and four supporting infrastructure systems, namely power, water, communication, and road transportation, considering their interconnectivity and interdependency. To examine how flood-induced disruptions propagate across the HCI nexus, we implement a Dynamic Bayesian Network (DBN) model that estimates conditional failure probabilities across infrastructure types over time. The model integrates changes in flood depth, infrastructure fragility, and interdependencies to capture both direct flood impacts and indirect cascading failures. Monte Carlo simulation is then used to repeatedly sample possible failure sequences under different flood scenarios. By tracking whether each node fails in each simulation and time step, the model estimates node-level failure probabilities and the likelihood of cascading disruptions. We then evaluate resilience strategies by comparing a baseline scenario with a redundancy scenario, in which hospitals are less functionally dependent on disrupted upstream services, and a combined redundancy and hardening scenario that further improves the flood resistance of key components by increasing their fragility thresholds. We also examine how systemic vulnerability changes under future hurricane-driven flood scenarios.

Based on a 72-hour flood-depth time series from Hurricane Ian, the simulations show that the HCI nexus remains stable early in the event, but failure probabilities rise rapidly as flooding approaches its peak. Among the modeled infrastructure systems, hospitals emerge as the component most influenced by infrastructure interdependencies because their functionality is shaped not only by direct flood impacts but also by upstream disruptions in power, communication, water, and road transportation. Scenario comparisons indicate that functional redundancy alone only modestly delays failure under extreme flooding, while pairing redundancy with hardening yields greater resilience benefits. However, under more intense future flood scenarios, direct inundation of critical assets could trigger faster and more widespread cascading failures, even when some backup capacity is available. These findings show that no single resilience strategy is sufficient during extreme flood events and that reducing risk requires measures that address both direct flood damage and cascading infrastructure disruptions.

In sum, our study advances the understanding of the complex interconnected HCI nexus, generates actionable insights into the cascading impacts of climate extremes on the nexus using DBN, and identifies resilience strategies for disaster risk management and healthcare infrastructure planning.

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Keywords: Critical infrastructure, Coastal flooding, Dynamic Bayesian Network, Cascading failures, Infrastructure resilience

URBAN ACTIVITY DIVERSITY FROM SOCIAL MEDIA IMAGES: A MULTI-CITY ASSESSMENT OF SOCIAL PUBLIC LIFE ACROSS NORTH AMERICA

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Understanding the diversity of public activities is fundamental to assessing urban vitality, yet most existing approaches emphasize activity intensity rather than the range of behaviors occurring in public space. Conventional methods are often constrained by limited spatial coverage and short observation periods, and comparative analyses of activity diversity across multiple cities and temporal scales remain relatively limited. This study proposes a cross-city, image-based analytical framework to examine activity diversity using more than six years of geotagged Flickr photographs from ten major North American cities. Semantic labels were extracted using computer vision techniques, classified into eight detailed activity clusters, and further aggregated into three broader thematic dimensions: nature-related activities, culture and urban life, and mobility and infrastructure environments. Activity diversity was measured using the Shannon entropy index and examined across spatial units, yearly intervals, and seasonal cycles.

The findings indicate substantial and persistent differences in activity structures among cities, with seasonal fluctuations superimposed on relatively stable long-term patterns. Vancouver and Seattle demonstrate strong nature-associated activity structures, reflected in frequent interactions with green spaces and natural environments. New York, Chicago, Boston, and San Francisco exhibit culture-oriented profiles characterized by intensive cultural participation and diverse forms of urban public life. In contrast, Phoenix, Houston, and parts of Los Angeles show mobility-dominated activity structures associated with automobile-dependent urban form and infrastructure-driven spatial organization. Spatial analysis at the block-group level further shows that areas with high activity diversity are concentrated within mixed-use corridors, waterfront districts, cultural centers, and compact neighborhood hubs, whereas large portions of urban space exhibit relatively homogeneous activity patterns. Temporal analysis suggests that although activity composition varies across seasons, overall diversity structures remain consistent throughout the six-year period, suggesting that activity diversity reflects enduring characteristics shaped by urban morphology, mobility systems, climatic conditions, and environmental context.

These results demonstrate that image-derived measures of activity diversity provide an additional perspective for understanding urban vitality by capturing the breadth of everyday public activities rather than solely their intensity. The proposed framework enables systematic comparison across cities, supports the identification of spatial disparities in public life, and contributes to longitudinal assessments of urban activity structures. By demonstrating the analytical potential of social media imagery, this study contributes to emerging data-driven approaches in urban analytics and provides empirical evidence to support planning and design strategies aimed at fostering diverse and inclusive public environments.

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Keywords: Big data, Computer Vision, Urban Vitality, Urban Public Space, Social media

URBAN SPATIO-TEMPORAL BEHAVIOR AND SPATIAL MORPHOLOGY COUPLING BASED ON DIGITAL POPULATION PORTRAITS: A CASE STUDY OF NINGDE

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Individual Paper Presentation

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In rapidly urbanizing regions constrained by mountainous and coastal terrain, such as Ningde, a critical question persists: how does their distinctive linear-polycentric morphology shape residents' daily activity patterns? Conventional morphological analysis struggles to capture dynamic "behavioral flows," often leaving planning decisions without fine-grained evidence. This study aims to decode the "behavior-space" coupling mechanism in Ningde's city center.

We integrate multi-source spatio-temporal data—including land use, POIs, and LBS data— to construct a multi-dimensional measurement system for the digital portrait of population, encompassing attributes, spatial and facility preferences, and commuting distance. Machine learning algorithms analyze spatio-temporal usage characteristics of different population types. Spatial statistics and grid-based analysis then establish a quantitative coupling model between behavioral patterns and spatial morphological features.

The analysis distilled 7 typical digital portraits from 214 initial population categories, revealing three primary "behavior-space" coupling typologies: 1) Corridor-dependent commuting: Long-distance flows are confined to and reinforce limited valley transport corridors, mapping topography's rigid constraint; 2) Core-polarized business activity: High-frequency flows intensely concentrate in the coastal CBD, highlighting monocentric polarization amid tourist urbanization; 3) Fragmented local living-circle leisure: Leisure activities revolve around multiple residential clusters, yet disparities in service hierarchy and spatial quality reveal an uneven secondary center system. These findings delineate how dynamic activities and static forms in Ningde both adapt and conflict under physical geography and rapid development.

This study confirms the "digital portrait of population" as an effective method to unlock the dynamic spatial logic of medium-sized mountainous and coastal cities. The findings contribute an empirical case to "urban morphology under topographic constraints" and offer direct planning insights for Ningde: enhancing cross-valley transport efficiency, decentralizing functions from the coastal core, and improving secondary living-circle service quality are key interventions for a more resilient and human-centered urban form.

Citations:

- Exploration on digital portrait of urban crowds based on big data:technology and empirical analysis
- Comparison of the spatiotemporal mobility patterns among typical subgroups of the actual population with mobile phone data: A case study of Beijing
- What Drives the Spatial Heterogeneity of Urban Leisure Activity Participation? A Multisource Big Data-Based Metrics in Nanjing, China

Keywords: Population Portraits, Spatiotemporal Behavior, Urban Morphology, Coupling Analysis

WHAT DO PREDICTION MARKETS KNOW ABOUT CITIES? A CRITICAL ANALYSIS OF BLOCKCHAIN-BASED FORECASTING FOR URBAN PLANNING

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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In recent years, prediction markets, which are platforms where participants trade on the outcomes of future events, with prices reflecting aggregated expectations, have attracted growing attention as forecasting tools for political, economic, and technological developments. With the rise of blockchain-based platforms such as Polymarket, these markets have become more accessible, transparent, and globally distributed through smart contract automation and decentralized settlement. Proponents argue that financial stakes incentivize participants to process information more carefully than conventional surveys or expert panels, producing continuously updated probability estimates that outperform traditional forecasting methods. These claims have prompted questions about whether prediction markets could serve as real-time sensing tools for urban planning, offering planners a new window into public expectations about policy outcomes, technological disruptions, and environmental risks.

Yet the dominant framing of prediction markets as neutral information-aggregation mechanisms obscures deeper epistemological and political questions. What kind of knowledge do these markets produce? What happens when urban futures are rendered as tradeable financial instruments? Drawing on Michel Callon's performativity framework, Goldman et al.'s speculative urbanism literature, and Philip Mirowski's critical analysis of markets as knowledge technologies, this paper argues that prediction markets do not passively reflect collective beliefs about the future but actively constitute a particular form of planning knowledge: one that is probabilistic, financialized, and disembedded from the place-based, equity-oriented, and deliberative epistemics that planning theory has sought to cultivate.

We examine three blockchain-based prediction markets on the Polymarket platform related to urban systems: Tesla's robotaxi deployment timeline, the potential repeal of New York City's congestion pricing policy, and wildfire containment in Los Angeles. For each case, daily probability data were collected throughout the active trading period and compared with major policy, technological, and environmental developments reported in widely cited media sources. Two analytical approaches were used: an event-based qualitative analysis assessing how market probabilities respond to significant real-world information events, and Brier score evaluation measuring predictive accuracy against actual outcomes.

Our findings confirm that these markets respond rapidly to information-rich events and can produce well-calibrated short-term forecasts, particularly when questions are clearly defined and binary. However, the critical analysis reveals three structural limitations. First, prediction markets privilege questions that can be reduced to discrete, time-bound bets, rendering illegible certain dimensions of urban change. Second, the financialized incentive structure introduces Goodhart's Law dynamics: if planners were to incorporate market signals into decision-making, those signals would become targets for strategic manipulation by actors with material stakes in planning outcomes. Third, participation in these markets is shaped by access to cryptocurrency infrastructure, risk tolerance, and financial resources, producing a forecasting community that is demographically narrow.

The paper concludes by asking whether the information-aggregation function that makes prediction markets epistemically interesting can be decoupled from their financialized architecture. We consider alternative

approaches, including reputation-based forecasting systems, participatory scenario platforms, and civic forecasting protocols, that might preserve the virtues of distributed knowledge aggregation while embedding forecasting within more equitable governance structures.

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Keywords: prediction market, blockchain governance, Real-time forecasting, planning futures

WHICH SPATIAL UNIT BEST CAPTURES VOLUMETRIC MIXED USE? A MULTI-SCALAR ANALYSIS OF URBAN BLOCKS IN SEOUL

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Track 10: Quantitative and Spatial Methods
Individual Paper Presentation

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Contemporary urban planning has shifted away from Euclidean zoning towards mixed-use development, walkable neighborhoods, and everyday accessibility. Consequently, accurately measuring neighborhood-scale functional mix has become a central methodological issue. However, existing research faces two limitations when applied to high-density vertical cities.

First, most studies rely on two-dimensional entropy measures that fail to capture floor-by-floor land-use configurations. Previous studies have shown that mixed-use indices diverge across measures and scales but remain two-dimensional. More recent efforts advanced into the third dimension by introducing 3D indices and emphasizing floor-space transitions. Both studies, however, fix analysis to a single spatial unit and do not ask which unit best captures volumetric mixed use.

Second, the extent to which spatial unit choice shapes the interpretation of 3D mixed-use remains unresolved. Previous studies have identified scale as a core axis of land-use mix research and shown that the Modifiable Areal Unit Problem (MAUP) can substantially alter interpretations of the built environment. However, this debate has not been extended to mixed-use measures themselves. Addressing these gaps, this study asks: which spatial unit best captures volumetric mixed use in Seoul, and how does unit choice alter the interpretation of neighborhood structure and hierarchy?

The study adopts a residentially anchored approach. In Seoul, residential use constitutes the structural backbone of the urban fabric, with other functions arranged around it; neighborhood hierarchy is therefore read through residential presence rather than legally designated zones. The analysis draws on approximately 1.6 million records from Seoul's 2026 building-register floor-summary dataset, with 33 major and 661 detailed categories regrouped into 16 major and 50 research categories. Four spatial units are compared: researcher-defined minimum blocks (n≈45,000), census output areas (n=19,097), national basic zones (n=5,665), and superblocks bounded by arterial roads of at least two lanes (n≈1,035). For each unit, the study calculates horizontal dominance (HDR), planar mix (LUM_land), floor-based vertical mix (LUM_floor), a volumetric increment indicator, Vertical Transition Index (VTI), and Peak Transition Floor (PTF).

Our multi-scalar analysis yields two primary findings. First, spatial unit choice fundamentally changes both the magnitude and interpretation of volumetric mixed use. Minimum blocks reveal a fine-grained mix, mono-functionality, and floor-by-floor discontinuities; larger units smooth these into broader neighborhood patterns. The same area may appear fragmented at fine scales and integrated at coarser ones—effectively extending MAUP effects from vitality outcomes to mixed-use measurement itself.

Second, this scale effect significantly varies by urban tissue type. In apartment complex areas, superblock aggregation incorporates perimeter commercial uses, raising the apparent mix and smoothing transitions—a misinterpretation that a single-scale analysis cannot detect. Conversely, in low-rise mixed residential areas, vertical mix is already distributed more evenly, so aggregation changes the interpretation of local hierarchy more than mean values. Because scale effects are tissue-specific, accurately reading neighborhood structure requires a tissue-sensitive, multi-scalar approach.

The study makes three key contributions. Methodologically, it extends entropy-based measures into a volumetric framework combining horizontal, vertical, and transition dimensions. Theoretically, it reframes spatial unit choice as a core interpretive problem, testing the dimension-scale-texture framework in a high-density vertical context. Practically, it proposes that neighborhood-scale planning should read multiple spatial units in parallel according to tissue type, offering a robust comparative framework for other high-density cities.

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Keywords: Volumetric mixed use, Multi-scalar analysis, MAUP, Neighborhood structure, Seoul

CROSSWISE: A SCALABLE SYSTEM FOR CONTEXT-AWARE INTERSECTION CLASSIFICATION AND RETRIEVAL

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Track 10: Quantitative and Spatial Methods
Research-in-Motion Presentation, Research currently in process

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Urban intersections, where modal and directional flows converge, are among the most critical and complex elements of transportation systems and play a disproportionate role in roadway safety. Despite their importance, the institutional landscape guiding intersection design remains fragmented, with conflicting standards across federal, state, and local agencies. At the same time, there is no scalable, data-informed framework that allows planners to systematically classify, retrieve, and compare intersections across jurisdictions.
For pedestrian safety analysis, judging intersections by design alone may provide an incomplete and misleading picture. Public agencies routinely invest millions of dollars in projects justified by precedent, citing locations with "similar" designs associated with reductions in crashes or fatalities. But intersections that look alike may function very differently because of differences in land use, traffic volumes, network structure, pedestrian activity, and sociodemographic context. Treating geometrically similar intersections as interchangeable introduces systematic error into planning decisions.

This project asks whether comparison based on design alone is sufficient, or whether a joint representation of morphology and context produces stronger correspondence with observed safety outcomes. Central to this work is the question of what similarity means and how it should be defined and evaluated. Outcome-predictive similarity groups intersections by crash rates but collapses the distinction between design and context, producing a crash model rather than a meaningful intersection representation. Morphological and contextual similarity groups intersections by shared physical and surrounding characteristics, independent of outcomes.

To address this, we introduce CrossWise, an open-source, scalable system for intersection classification, retrieval, and comparison. CrossWise constructs intersection typologies defined jointly by morphology and context, treating that definition as a planning decision. Users can dynamically define their own comparison space, selecting which variables, geometric, contextual, or both, factor into how intersections are grouped and retrieved.

The system is built on three core components: 1) The topology descriptor captures the geometric and network structure of intersections, including roads, sidewalks, crosswalks, and bike lanes, extracted from aerial imagery using Tile2Net, a semantic segmentation pipeline we are extending to support bike lane detection through active learning. 2) The context descriptor integrates heterogeneous datasets, including land use, traffic volumes, transit access, and sociodemographic characteristics, into a standardized intersection-level representation through a reproducible harmonization pipeline. 3) The retrieval engine encodes each intersection in a shared feature space where proximity reflects morphological and contextual similarity, returning ranked results at scale.

To evaluate the framework, we rank intersections by joint morphological and contextual similarity and examine whether highly ranked pairs also exhibit similar crash and injury outcomes. The embedding is not trained on outcomes. We compare joint rankings against morphology-only rankings, asking whether adding context produces better matched pairs. We also analyze the contribution of individual components and variables within and across cities, identifying which dimensions generalize and which are locally specific.

By treating intersections as data-rich, comparable units, this work contributes to a growing need for tools that make the assumptions behind comparison visible, adjustable, and defensible.

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Key Words: Intersections Typology, Pedestrian Safety, Similarity Retrieval, Representation Learning

DECENTRALIZATION AND URBAN FORM: A PARCEL-BASED SPATIAL ANALYSIS OF INSTITUTIONAL CHANGE AFTER FLORIDA'S COMMUNITY PLANNING ACT

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Track 10: Quantitative and Spatial Methods
Research-in-Motion Presentation, Research currently in process

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In 2011, Florida adopted the Community Planning Act (CPA), restructuring one of the strongest state-led growth management systems in the United States by reducing state oversight and expanding local discretion in land-use regulation (Jellson, 2012; Rhodes, 2020). While prior research has examined the effects of growth management on urban development (Boarnet et al., 2011; Carruthers, 2002), limited empirical work has evaluated the spatial consequences of substantially devolving such a system. This study examines whether the CPA is associated with measurable changes in urban development patterns across Florida counties. Grounded in institutional theory, the CPA is understood as a critical institutional shift that changed how local governments use their planning authority (Pierson, 2000) potentially influencing where and how development occurs across jurisdictions.

The central question in this research is: How are parcel-level subdivision and consolidation events associated with changes in population, housing and housing market conditions across different contexts? The study interprets parcel-level changes as indicators of local development processes following institutional restructuring linking these changes to urban development outcomes. It also illustrates how parcel data can be used to identify and measure local development processes.

The proposed analysis draws on longitudinal parcel datasets covering all Florida counties from 2005 to 2025. Parcel geometries are compared over time to identify subdivision and consolidation events, using unique parcel identification codes and spatial overlays. Subdivisions are identified where single parcels are divided into multiple parcels, while consolidations are identified where multiple parcels are merged into a single parcel. These parcel-level changes are spatially linked to census block groups by calculating the share of the block group area affected by parcel change. A minimum area threshold is applied to identify block groups where parcel changes represent a substantial share of the block group land area, allowing the analysis to distinguish meaningful development from minor parcel adjustments. The analysis examines the association between these parcel-based measures and block-group level outcomes, including changes in a) population, b) housing units, c) median home values, and d) median rents, derived from U.S. Census and American Community Survey (ACS) data.

Preliminary findings suggest that the post-2011 period is associated with increased spatial variation in urban development activity, with larger-scale parcel changes concentrated in areas experiencing higher growth. These patterns point to more heterogeneous development trajectories following decentralization. These findings provide initial insights into how decentralized governance may be associated with greater variation in development patterns across regions.

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Key Words: decentralization, parcel, urban development, growth management, spatial analysis

MAPPING THE SCAR: A GIS MORPHOLOGICAL DIFFERENCE ANALYSIS OF HIGHWAY REMNANT LANDS IN HISTORICALLY REDLINED NEIGHBORHOODS

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Track 10: Quantitative and Spatial Methods
Research-in-Motion Presentation, Research currently in process

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Research Question

The correlation between HOLC Home Owners' Loan Corporation (HOLC) redlining maps and the routing of the U.S. Interstate Highway System in urban areas is widely recognized in planning history. However, a critical spatial consequence remains unquantified: the creation of remnant lands — orphaned rights-of-way, severed roads, paper streets, and slope easements — left behind when highway construction fractured the urban grid in low-graded HOLC neighborhoods. This study asks: Do redlined (HOLC Grade D) neighborhoods contain a statistically higher density of non-functional highway remnant land per linear mile compared to higher-graded neighborhoods traversed by the same infrastructure? If so, what does that spatial pattern reveal about the geometry of infrastructural inequality created by the construction of the Interstate System?

Approach and Methodology

This research introduces a Morphological Difference Analysis (MDA) — a reproducible GIS workflow designed to identify orphaned public land (using Geoprocessing tools ArcGIS Pro) by applying geometric subtraction of active tax parcels and impervious road surfaces from legally defined city boundaries. The resulting polygons features represent land that is legally public but physically unused: paper streets, steep slopes, drainage remnants, and DOT-owned slivers/right-of ways that constitute the spatial scar of mid-century highway construction. The method is applied to the Pleasant Hill Neighborhood in Macon, Georgia — the most extensively redlined city in America and the active site of the GDOT I-75/I-16 interchange reconstruction and its associated Pleasant Hill Mitigation Plan. A control analysis is performed on a Grade A/B neighborhood traversed by the same corridor. Remnant density is expressed per linear mile, based on 200 m buffer zones, and differences across HOLC grade categories are evaluated for statistical significance using Welch’s t-test.

Findings

A Pilot analysis of Pleasant Hill reveals a measurably fragmented urban morphology within the highway buffer zone, characterized by high concentrations of non-parcel, non-paved land — including severed street connections and publicly-owned slivers with no functional use. Visual and preliminary quantitative comparison with the Grade A control corridor suggests substantially lower remnant density in the higher-graded zone, consistent with the central hypothesis. These findings indicate that highway engineering in redlined neighborhoods was not merely displacing — it was spatially wasteful, leaving a disproportionate legacy of unusable, maintenance-burdened public land in communities already stripped of housing wealth and infrastructure investment.

Relevance and Implications

This research offers planning scholarship a new metric for quantifying infrastructural inequality — shifting the frame from displacement counts toward a morphological measure of spatial harm that persists in the present-day built environment. For practice, the remnant land network identified by MDA represents a latent public asset: a fragmented but potentially connectable system suited for green infrastructure, pedestrian connectivity, and community-serving open space in neighborhoods still bearing the burden of the highway era. The method is

scalable to the full national dataset of 200+ HOLC-mapped cities, offering a foundation for federal infrastructure equity assessment. This work is directly applicable to ongoing GDOT mitigation efforts in Macon and to Reconnecting Communities Initiative investments nationally.

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Key Words: GIS spatial analysis, redlining, highway remnant lands, urban morphology, infrastructure inequality

QUANTITATIVE SPATIAL ANALYSIS AND CLIMATE-ADAPTIVE CHARACTERISTICS OF TRADITIONAL VILLAGES: A CASE STUDY OF QIANGANG VILLAGE, GUANGZHOU

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Track 10: Quantitative and Spatial Methods
Research-in-Motion Presentation, Research currently in process

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Traditional villages, as vital carriers of vernacular cultural heritage, are facing severe challenges including spatial fragmentation and increasing depopulation due to rapid urbanization. Existing studies largely rely on qualitative descriptions and case documentation, lacking comparable and replicable quantitative analysis frameworks. This study takes Qiangang Village, located at the intersection of the Guangfu and Hakka cultural regions in Conghua District, Guangzhou, as the research site. The research addresses three core objectives: first, to establish a digital acquisition and intelligent recognition workflow for spatial elements of a traditional village; second, to characterize the distribution patterns of different types of spatial elements within a single village; and third, to examine whether its traditional spatial layout embodies climate-adaptive construction logic. The study develops a complete "acquisition–modeling–recognition–analysis" technical workflow for Qiangang Village. First, a DJI M300 RTK drone equipped with a five-lens and a single-lens module was used for low-altitude multi-perspective aerial photography. RTK technology achieved centimeter-level positioning accuracy. Computer vision algorithms generated a high-precision 3D mesh model and a Digital Surface Model (DSM). Second, integrating orthoimagery with multi-source data (elevation and slope), an object-based multi-scale segmentation method and Random Forest algorithm were applied to intelligently identify and classify traditional buildings, achieving a user accuracy of 90.91%. Third, based on the classification results, five basic vector layers specific to Qiangang Village were extracted: traditional buildings, modern buildings, primary roads, alleyways, and forest patches. Finally, kernel density analysis, standard deviational ellipse, Ripley's K function, Average Nearest Neighbor analysis, and DSM-based solar radiation simulation were comprehensively employed to systematically characterize the village's spatial distribution patterns and climate-adaptive logic. Key findings include: First, traditional buildings in Qiangang Village exhibit a highly clustered "enclave-group" pattern (Nearest Neighbor Ratio = 0.675, z = -17.220), in sharp contrast to the dispersed distribution of modern buildings. Second, traditional buildings are densely concentrated in the core area with clear directionality and compactness, while the average spacing of modern buildings is 31.8% shorter than that of traditional buildings, indicating intensive land use. Third, the alleyway network maintains traditional lane dimensions (average spacing = 5.27 m, NNR = 0.886), preserving walkability. Fourth, forest patches show a dispersed distribution (NNR = 1.031), mostly located on the village periphery, providing ecological buffering and climate regulation functions. Fifth, the DSM-based solar radiation simulation reveals differentiated annual solar radiation totals across traditional street systems and building orientations, reflecting climate-adaptive strategies of shading, ventilation, and heat mitigation in the Lingnan region. This study contributes to planning scholarship and practice in three ways: (1) It develops a replicable digital analysis and diagnostic toolkit for in-depth study of individual traditional villages. (2) It quantitatively reveals the ecological and climate-adaptive logic embedded in the traditional spatial pattern of Qiangang Village, providing scientific evidence for its conservation and renewal. (3) The proposed "building–road–ecology" tripartite analytical framework can inform rural landscape management and built-up area optimization within territorial spatial planning.

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Key Words: Traditional village, Quantitative analysis, Spatial morphology, Random Forest, Climate adaptability

UNCOVERING INEQUITIES IN PERCEIVED WALKING ROUTE QUALITY TO ESSENTIAL URBAN AMENITIES

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Research-in-Motion Presentation, Research currently in process

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Unequal access to amenities can exacerbate social segregation and diminish the quality of life. X-minute planning vision and the conventional walking accessibility research largely relies on distance-based measures to assess opportunities that residents can feasibly reach within certain distance thresholds; however, proximity alone rarely explains real-world walking behavior. Growing evidence shows that perceived route qualities—such as safety, greenery, and aesthetics—strongly shape walking decisions and route choices, yet these experiential factors remain insufficiently integrated into accessibility and equity studies. A key gap is whether people from different socioeconomic backgrounds experience unequal route qualities when walking to essential amenities (i.e., food for sustenance, schools for education, parks for exercise) for better Quality of Life. While prior limited work suggests that children from lower socioeconomic status (SES) families often walk further to reach green spaces, it remains unclear whether their everyday walking environments are systematically poorer for local residents. Do people from different socioeconomic and housing backgrounds experience disparities in perceived route quality across alternative routes (i.e., shortest, simpler, optimal quality)? And how would the experience diverge across multiple amenities categories?

Kwun Tong district, one of Hong Kong's older, denser, and socioeconomically diverse districts, is selected as a case study. Through machine learning models and 3d pedestrian network data, we assessed accessibility to supermarkets, schools and urban parks at building scale. Perceived walkability dimensions aligned with hierarchical walking needs, including visual greenery, safety, and aesthetics were examined across alternative types of routes in accessing these essential daily destinations. It moves beyond the simplified assumption that residents would access amenities on shortest routes but rather view alternative routes as opportunities that can be leveraged by residents that can truly reveal environmental inequality.

Regarding different types of amenities for quality of life, beyond assessing the accessibility (gravity index), we compared perceived qualities across route types for public and private housing estates and further correlated with family income. Preliminary analyses revealed an under-recognized distributive environmental injustice: residents from higher-SES areas consistently experience better greenery and aesthetics across all route types, while perceived basic safety varies less. Similar conclusions can be found when compared by housing estate types and income. Notably, residents living in Low-SES need to make trade-off in time to detour from shortest routes to maximize exposure to higher-quality routes while its magnitude still is not comparable to the exposure along shortest routes for High-SES families. The study further reveals intra-district environmental inequality using Gini index and spatially pinpoints accessibility-quality mismatch using bivariate Local Indicators of Spatial Association (LISA) analysis.

In summary, inequality thus lies not only in how far people walk, but also in how they experience the journey, which has been largely neglected in existing research. By incorporating experiential qualities into accessibility assessments, this study informs the design of more equitable and walkable neighborhoods for better Quality of Life.

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Key Words: route quality, perception, inequality, walking conditions, amenities

UNCOVERING THE DETERMINANTS OF MIGRANT RESIDENTIAL SEGREGATION: INSIGHTS FROM MOBILE PHONE SIGNALING DATA AND EXPLAINABLE MACHINE LEARNING

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Track 10: Quantitative and Spatial Methods
Research-in-Motion Presentation, Research currently in process

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Residential segregation remains a persistent and prominent theme in sociology and urban studies, with its manifestations and determinants varying significantly across national contexts. China has experienced the most rapid and largest scale urbanization in global history, characterized by the rural-to-urban migration of over 700 million individuals, which has fostered increasingly heterogeneous intra-urban residential spaces. Scholars have extensively analyzed the drivers of migrant residential segregation, providing empirical evidence that substantiates the significant impacts of key factors such as housing prices, locational conditions, and the preferences of migrant groups or individuals. However, existing research is often constrained by traditional data sources and lacks empirical analysis at fine-grained spatial scales. Furthermore, explanations of influencing factors predominantly rely on linear modeling, which falls short in capturing more complex underlying mechanisms.

Taking Shanghai, China's largest metropolis, as a case study, this research utilizes mobile phone signaling data to identify 5.3 million inter-provincial migrants. We employ the Location Quotient (LQ) to measure the degree of residential segregation at the neighborhood level and explore the determinants of migrant residential segregation, incorporating anonymized sociodemographic attributes. By employing explainable machine learning (XML) techniques, this study provides deep insights into the relative importance, non-linear effects, and interaction effects of these determinants.

Preliminary results indicate that, first, distance to metropolitan new town centers, housing prices, and labor-intensive employment opportunities are the most critical determinants. The fringe areas of metropolitan new towns, situated 5–8 kilometers from their centers, exert the most substantial impact on segregation. Notably, the agglomeration of labor-intensive enterprises within a 5-kilometer radius demonstrates a significant influence only at extreme levels ,relatively low or high, indicating a pronounced polarization in migrant employment.

Second, sociodemographic attributes play a crucial interactive role. When migrants share similar income and educational attainment, or exhibit shared behavioral preferences, such as extended commuting distances and constrained leisure time budgets, residential segregation is further exacerbated, manifesting significant spatial heterogeneity.

Furthermore, this study specifically investigates the residential preferences of young migrants, demonstrating that the concentration of high-tech industries and hukou-based settlement policies in Shanghai have driven the neighborhood-level clustering and segregation of young migrants. However, this trend is accompanied by persistent inadequacies in basic public services, such as transportation and healthcare.

This research provides a contemporary case study of metropolitan residential differentiation during a period of rapid urbanization in the Global South. It unveils determinants of migrant residential segregation that extend beyond traditional housing and locational factors, offering nuanced insights into the unequal citizenship rights of metropolitan migrants. Furthermore, it provides actionable policy recommendations to facilitate social integration and dismantle systemic spatial barriers.

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Key Words: Residential Segregation, Migrants, Mobile Signaling Data, XML, Spatial heterogeneity

UNMAPPING CULTURAL INFRASTRUCTURE: DIGITAL DATA, INSTITUTIONAL POWER, AND COMMUNITY KNOWLEDGE

Abstract ID: 2296.0.0.149.2026
Track 10: Quantitative and Spatial Methods
Research-in-Motion Presentation, Research currently in process

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In recent years, scholars have shifted from neoliberal "creative city" narratives to a networked ecology approach, examining cultural infrastructure through a critical social science lens. This perspective emphasizes the role of infrastructure as an instrument of power, revealing urban inequalities produced through uneven governance and patterns of disinvestment (Bain & Podmore, 2023). Cultural infrastructure comprises two interdependent components: hard infrastructure, emphasizing the physical elements (such as museums, galleries, and murals), and soft infrastructure, centered on the networked dimensions and social connections of communities needed to sustain cultural resources (such as artists, planners, and financial support). This relational understanding of infrastructure emphasizes the interlinkages between the physical and social dimensions.

Yet this framework overlooks a critical dimension: digital data and data infrastructures that shape how cultural infrastructure is defined, represented, and experienced. With the growing abundance of openly accessible datasets, including institutional Open Government Data (OGD) and crowdsourced OpenStreetMap (OSM), it is increasingly evident that data are not neutral representations, but are shaped by the institutional, social, and political dimensions that produce them (Thatcher et al., 2016). This study addresses two central questions: (1) How do different digital data infrastructures construct divergent or overlapping representations of cultural infrastructure? (2) How do digital data advance our understanding of just, equitable cultural infrastructure?

Using a critical GIS perspective (Thatcher et al., 2016), the city of Los Angeles as a case study, and cultural mapping methods (Brennan-Horley & Gibson, 2009; Duxbury et al., 2015; Redaelli, 2013), we conducted a pilot study with 17 participants to examine data representations from the City of Los Angeles Open Data and OpenStreetMap (OSM) and compare them with community perceptions. Our findings revealed spatial discrepancies and conceptual misalignments in how public art is defined across institutional, crowdsourced, and community perspectives. In response, we reconceptualize digital data practices as an integral infrastructural layer and propose community-centered approaches that enable just, equitable, data-driven cultural planning.

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Key Words: Cultural Infrastructure, Cultural Mapping, Open Government Data, Crowdsourced Data, Critical GIS

Track 11 – Transportation & Infrastructure Planning

Track 11 Roundtables

Tackling Power and Politics in Transportation: Actors, Institutions, and Advocates
Abstract ID: 2297.0.0.194.2026
Track 11: Transportation & Infrastructure Planning
Roundtable Submission, Topical Discussions

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As a field rooted in techo-rationality, the role of politics and political power in transportation planning has often received limited attention. Yet this approach obscures the critical role that actors, institutions, and advocates play in shaping our transportation systems, limiting our understanding of both problems and solutions (e.g. Klein et al., 2022; Legacy et al., 2017; Taylor et al., 2009). As Kent and Harris (2024, p. 128) discuss, much transportation research has focused on collecting evidence to inform policy, rather than understanding the "politics and institutions responsible for making and articulating the ambitions, regulations, and assumptions" that are the foundation for how transportation systems are created and maintained. This roundtable will address these issues, with a focus on the following themes:

(1) Politicizing Transportation: What are the critical questions missing in our understanding of politics in transportation planning? How well is transportation planning scholarship suited to exploring these questions?

(2) Political Factors and Processes: How should researchers engage with questions of politics and power in transportation? What actors, institutions, and systems should we focus on? What methods should we prioritize, if any?

(3) Training (Political) Professionals: What changes need to happen in how we teach and train future practitioners to work within politicized systems?

(4) Political Action: How should we think about the role of advocacy and activism in shaping transportation systems?

(5) Training (Political) Scholars: What should the role of scholars be in these systems? Is it as an independent outsider, contractor, activist, or some other conceptualization (Siemiatycki, 2012)? Do these roles matter in how we seek to understand and address problems?

Audience Engagement Questions:

- What roles do you see for transportation scholars in engaging with political systems? What are the contributions and limitations of adopting that role?

- Are there institutional barriers (from universities, granting agencies, the academy, or others) that prevent a deeper understanding of politics and transportation?
- Does the lack of attention to politics in transportation planning scholarship relate to what you see in practice? How so?

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Key Words: politics in transportion, advocacy, political power

"THE LACK OF TRANSPARENCY IS REALLY TRANSPARENT": ON THE PROVISION OF CYCLING INFRASTRUCTURE IN A CAR-ORIENTED U.S. CITY

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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If transportation planners, elected officials, and advocates all support expanding protected cycling infrastructure, why are so few facilities ultimately built? Cities across the United States are falling short of plans to develop connected networks of safe cycling infrastructure. Existing literature points to public opposition, or "bikelash," as a primary barrier to implementing planned projects (Wild et al. 2018; Wilson and Mitra 2020; Field et al. 2018), particularly when proposed changes are perceived to negatively affect car mobility. While this issue is global, highly car-dependent North American cities remain comparatively under-studied.

In Phoenix, Arizona, the built environment is especially hostile to non-car travel, and automobility is a defining feature of local culture. To examine how opposition to cycling infrastructure manifests in a major car-dominated U.S. city, I conducted interviews with 24 individuals, including city staff, elected officials, contractors, cycling advocates, and subject-matter experts involved in planning and implementing cycling infrastructure in the Phoenix area.

Thematic analysis of these interviews reveals key insights into who participates in decision-making, how advocates and opponents influence project outcomes, the role of bureaucracy in shaping timelines, and how interdepartmental and intergroup trust and transparency can determine project success or failure. A central finding is that transportation department leadership often preemptively avoids anticipated political and public opposition by canceling, scaling back, or declining to propose projects—frequently without clear explanation to staff or the public. These top-down decisions are then framed as bottom-up responses to public opposition; however, strong opposition often fails to materialize because the most contentious elements of projects—such as buffers, barriers, and traffic-calming measures—are removed or never proposed. As a result, the facilities that are ultimately built are less protected and less connected than originally planned, contributing to an erosion of trust in public agencies and in cycling infrastructure more broadly.

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Keywords: Infrastructure, Systems of Provision, Cycling Infrastructure, Bike lane, Policy-making

“IT IS STILL A DESERT NEAR CAMPUS”: AN INDUCTIVE THEMATIC ANALYSIS ON TRAVEL NEEDS AND BARRIERS AMONG UNIVERSITY STUDENTS IN AUSTIN AND BOSTON.

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Transportation-disadvantaged populations—individuals facing persistent barriers to mobility—are at heightened risk of exclusion from social, political, and cultural life. Much of the transportation literature has evaluated these inequalities using measures of accessibility and distance to transit. Spatial proximity does not guarantee meaningful access when financial pressures, safety concerns, and social marginalization shape whether and how people travel. In high-cost urban regions, lower-income individuals are frequently displaced to peripheral locations, trading affordable housing for longer, more uncertain daily travels. Mobility inequalities, therefore, cannot be understood solely through spatial metrics.

Critical and feminist planning scholarship further demonstrates that transportation systems have historically been designed around a “universal” traveler, obscuring diverse mobility needs and lived experiences. Travel is commonly framed as a derived demand enabling access to destinations, yet everyday mobility also carries intrinsic meanings related to autonomy, comfort, belonging, and psychological well-being. Understanding transportation equity thus requires examining how travel itself is experienced as either enabling or burdensome.

University students provide an important lens for examining these dynamics. As young adults navigating a transitional life stage, students rely on daily mobility to access employment, healthcare, and social participation beyond campus. Although rarely categorized as transportation disadvantaged, many students experience constraints similar to marginalized travelers, including limited financial resources, restricted car access, and reliance on transit environments that may feel unsafe or exclusionary. Mobility patterns formed during this period can shape long-term travel behavior, yet existing research largely relies on aggregate access and mode-choice measures, offering limited insight into lived mobility experiences among marginalized student populations.

This study investigates the travel needs and barriers experienced by socially marginalized university students through 28 in-depth interviews conducted in two contrasting U.S. contexts: car-dependent Austin and multimodal Boston. Rather than treating travel solely as a means of reaching destinations, the analysis examines how everyday mobility shapes safety, autonomy, belonging, and social participation. Participants describe exposure to discrimination, constrained flexibility in mode choice, and heightened uncertainty during routine trips, limiting not only access to essential services but also opportunities for confidence and independence.

Findings highlight how essential trips can reproduce structural inequities through embodied and emotional burdens. For example, post-grocery travel emerged as a significant challenge for women of color, where the physical labor of carrying goods intersected with safety concerns in public space, intensifying travel stress regardless of distance. Students frequently adopted adaptive strategies, including selective reliance on ride-hailing despite financial strain, revealing the automobile’s role as a form of structural protection in environments organized around car use. Access to gender-affirming healthcare similarly depended on automobile availability, as specialized providers were often geographically dispersed and poorly served by transit, reinforcing dependency on social networks for mobility. Context-sensitive interventions—including improved transit connections to essential services, safer pedestrian environments, coordinated university mobility programs, and mobility assistance for carrying goods—can reduce both physical and psychological burdens of travel.

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Keywords: Mobility Needs, Travel Experience, Social Marginalization, University Students, Race and Gender

A CROSS-CLASSIFIED MULTILEVEL ANALYSIS OF WORKERS' COMMUTING ADAPTIVE CAPACITY

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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When extreme weather disrupts urban transportation, some workers can shift modes or work from home, while others have far fewer alternatives. This study conceptualizes such differences as commuting adaptive capacity (CAC): the ability to adjust how, when, or whether one commutes in response to transportation disruptions. The post-pandemic rise of telework has made such differences more pronounced across workers, occupations, and places. Existing research measures adaptive capacity either at the system level through infrastructure and network indicators (Mattsson & Jenelius, 2015) or during specific disruption events through observed behavioral responses (Huang & Wang, 2024; Li et al., 2025). These approaches do not provide a pre-disruption, individual-level measure of CAC. Meanwhile, research on multimodal transportation uses entropy-based indices to capture mode diversity (Fu et al., 2023), but these measures typically exclude telework and do not examine how CAC varies across both residential and worksite contexts. Ashour & Shen (2025) model the impact of telework on commute mode choice using data from the 2022 Seattle Commute Survey (SCS), but their focus is on the determinants of mode choice rather than workers' CAC. Planners need a measure that captures both mode switching and telework flexibility to assess how CAC is spatially distributed and which communities are most vulnerable to disruptions.

This study asks: how much does CAC vary across individuals, worksites, and residential neighborhoods, and what factors explain these variations? It develops and validates a measure of CAC that captures both multimodal travel alternatives and telework flexibility, and it estimates cross-classified multilevel models to assess whether CAC is affected more by individual characteristics, worksite context, or neighborhood context. Specifically, we measure CAC as the Shannon entropy of a worker's weekly commute pattern, where the set of options includes available travel modes and telework. This measure provides a tractable indicator of routinely exercised commute flexibility. Using the 2024 SCS dataset, we assign each respondent to both a residential census tract and a worksite and estimate cross-classified multilevel models with separate random intercepts for residential tracts and worksites, which decomposes total CAC variation into individual-, worksite-, and neighborhood-level variations. We then add covariates at the individual and aggregate levels to identify which factors explain CAC variation within and between groups. The relative magnitude of the variance components indicates whether low CAC is associated primarily with individual constraints, worksite context, or neighborhood context. To assess spatial robustness, we compare tract-level CAC patterns from the SCS with those from Puget Sound Regional Council Household Travel Survey (PSRC HTS). This cross-validation is important because the SCS is worksite-based and skewed toward large employers with high telework access, while the PSRC HTS is a household-based probability sample representing a broader workforce. Consistent patterns across these sources would indicate that findings are robust to sampling design and population composition.

This study makes two contributions. First, it extends standard mode-diversity measures by incorporating telework into the feasible commute response set. Second, it uses cross-classified multilevel models to distinguish the relative roles of individual characteristics, worksite context, and neighborhood context in shaping CAC. The variation decomposition has direct planning implications: substantial neighborhood-level variation would suggest infrastructure strategies such as transit and active-mode investments, while substantial worksite-level variation

would motivate employer engagement strategies. The findings offer planners a spatially explicit assessment of where low CAC is concentrated and how to target resilience investments accordingly.

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Keywords: Commute Mode Choice, Adaptive Capacity, Telework, Multilevel Model, Transportation Resilience

A LOT TO UNPACK: THE HIDDEN COST OF BUNDLED PARKING IN RESIDENTIAL DECISION-MAKING

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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The United States faces two planning crises: housing has become increasingly unaffordable and most U.S cities remain automobile dependent. The majority of U.S. rentals bundle at least one parking space into the base rent, leading to higher costs relative to comparable apartments without parking (Jia & Wachs, 1999; Gabbe & Pierce, 2017). Bundling obscures the true cost of parking within rent and may encourage car ownership while imposing hidden housing costs on households who do not own a vehicle. Bundled parking has been linked to increased vehicle ownership, reduced transit use, and greater automobile dependence (Manville & Pinski, 2020; Millard-Ball et al., 2021). While scholars have focused on the costs and travel behavior effects of bundled parking, they have paid less attention to how bundled parking affects decision-making in housing searches.

My research seeks to understand: 1) how prospective renters in Los Angeles consider parking availability in their housing search; 2) whether revealing the true cost of a bundled parking space in a rental listing affects prospective renters' favorability toward a rental listing compared to those who see the cost bundled into the rent; and 3) whether those who are shown the true cost of a parking space are more likely to forgo it than those who see the cost bundled into their rent. Drawing from cost salience literature, my research contributes knowledge on residential choice and parking policy.

I use a randomized survey experiment to reveal how cost salience affects prospective renters' housing and parking preferences. I test whether making the cost of a bundled parking space explicitly visible (the treatment) compared to simply including it into the total rent (the control) affects participants' favorability toward a listing and their willingness to forgo the parking space when given the option. The survey (n=~400) captures variables measuring cost salience, parking valuation, and opt-out behavior across renters in California.

My research will provide behavioral evidence on whether cost transparency can shift renter decision-making away from parking uptake. This is particularly consequential given that moving represents a key life moment during which habits and preferences are in flux, suggesting that this cost information may be most effective at shifting housing and transportation decisions when renters are still searching for a new home (Ralph & Brown, 2017).

My experimental findings will include the effect size of cost salience on listing favorability, whether the effect varies by car ownership status, and whether the gap between a participant's cost estimate and the true cost predicts their likelihood of opting out of the parking spot.

The policy implications of this study draw from the main effects measured in the survey: the extent to which renters systematically underestimate the cost of bundled parking, and whether making that cost transparent is sufficient on its own to shift renter preferences and behaviors. If participants in the control condition significantly underestimate the true cost of their parking space, it provides evidence that bundled parking obfuscates key information that distorts housing and transportation decision-making. If participants in the treatment condition rate listings less favorably and opt out of parking at higher rates simply because the cost was made visible, this would provide causal evidence that unbundling parking provides cost transparency that can potentially reduce off-street parking uptake, leading to a reduction in driving and car ownership.

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Keywords: parking, travel behavior, residential choice, housing affordability

A PANORAMIC EVALUATION OF TRAFFIC SAFETY PLANS OF LARGE U.S. CITIES

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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In transportation, equity has been foregrounded as a goal for project investment and selection, infrastructure design, traffic enforcement, program and service planning, to name a few. However, transportation systems have been and still are profoundly inequitable (Brown, 2022; Bullard, 2003). The inequity is especially entrenched in traffic safety, defined as the ability of a person to travel freely without injury or death (Gelinne, 2017). Research has shown that roadway injuries and fatalities disproportionately affect Blacks and Hispanics and residents in low-income areas (Dumbaugh et al., 2022; Roll & McNeil, 2022).

As inequity in transportation becomes more recognized, cities have begun incorporating equity into their traffic safety plans, often referred to as vision zero plans. However, there has been no systematic review of how cities address equity in their vision zero plans. Filling this research gap is critical for planners, policymakers, and academics for three reasons. Firstly, for planners and policymakers, a panoramic evaluation of vision zero plans will help them identify what safety equity-related elements are missing from their own plans. Secondly, an overview of vision zero plans will allow cities to learn how peer cities address challenges of improving safety equity. Thirdly, for academics, a thorough evaluation of vision zero plans will reveal common issues and research needs for enhancing traffic safety equity. Such an understanding is critical for scholars to work in synergy with practitioners to produce research that informs improvement strategies as cities continue to strive for equity in transportation safety.

I conduct a content analysis of vision zero plans of 70 large U.S. cities to answer three research questions. First, how do cities incorporate equity into vision zero plans? Second, what are the gaps in the analysis of and improvement strategies for traffic safety equity? Third, what are the challenges that cities face when addressing traffic safety equity? Preliminary findings indicate that most vision zero plans explicitly mention equity in their goals or guiding principles; however, many do not clearly define priority populations or inequities. While most plans incorporate equity into their safety analysis, not all clearly connect these findings to improvement strategies. Many plans identify inequities and propose strategies to mitigate inequities but fail to define how success will be measured or tracked.

As the official document on traffic safety, vision zero plans lay out the blueprint for long-term traffic safety improvement while providing guidance for short-term implementation. Ensuring that equity is recognized and adequately addressed in vision zero plans represents a critical step towards making our streets safer for all road users.

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Keywords: Content Analysis, Equity, Safe System Approach, Traffic Safety, Vision Zero

A PLANNING-ORIENTED MACHINE LEARNING FRAMEWORK FOR SEVERE CRASH RISK ANALYSIS: A CASE STUDY IN NORTH CAROLINA

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Introduction

As a critical planning issue, transportation safety has gained increasing attention as more U.S. agencies adopt Vision Zero and Safe System approaches, which emphasize proactive, system-level risk reduction rather than reactive responses to locations with documented crash histories. Previous research has shown that roadway geometry, traffic exposure, and operating conditions are closely associated with crash occurrence and injury outcomes (Karlaftis and Golias, 2002; Haghighi et al., 2018). Recent studies indicate that tree-based and ensemble methods can support traffic safety analysis by improving risk identification and identifying high-risk roadway segments (Chang and Chen, 2005; Iranmanesh et al., 2022), but prediction alone is not sufficient for policy use, making model interpretability critical for linking outputs to safety countermeasures (Wen et al., 2022).

Research Gap

A gap remains between traffic safety modeling and planning-oriented implementation. Existing studies mainly treat crash frequency and injury severity as modeling problems or compare predictive performance across methods. Far less attention has been given to translating segment-level machine learning outputs into a proactive prioritization framework for Vision Zero decision-making and resource allocation. This study addresses that gap by examining whether machine learning can support a planning-oriented approach to segment-level safety prioritization.

Objective and Research Question

Our study develops a machine learning risk-ranking framework to support proactive, segment-level safety prioritization for Vision Zero using routinely available crash, roadway inventory, and traffic exposure data. Key research questions are:

1.How can routinely available crash, roadway inventory, and traffic exposure data be integrated to identify roadway segments for proactive intervention in the future?

2.How much does a machine learning risk-ranking framework improve the identification of future high-risk segments compared with traditional crash-history screening?

3.How can these findings support planning and policy making, and how can they inform targeted interventions?
Database and Method

Using 2018–2024 Highway Safety Information System (HSIS) data for North Carolina, including annual crash, roadway inventory, and traffic exposure records, this study builds a roadway segment database linking crash records with roadway inventory and traffic exposure measures. Using annual roadway segment characteristics, the analysis identifies segments most likely to face elevated fatal and severe crash risk in the following year, creating a

forward-looking framework for safety prioritization rather than a purely reactive screening approach. A comparative modeling framework is developed to generate annual segment-level risk rankings, which are then compared with traditional crash-history screening to examine whether they better support the identification of high-priority segments for proactive intervention. SHAP is used to interpret key risk factors and to translate model outputs into planning- and policy-relevant safety priorities.

Preliminary Expectations

Our preliminary findings suggest that future severe-crash risk is concentrated on roadway segments with higher traffic exposure and more complex roadway and operating conditions. The annual risk-ranking framework (HRN) identifies the systemic risk factors particularly where risk is shaped by multiple interacting factors rather than by past crash counts alone. The findings are also expected to support planning and policy making by helping agencies identify recurring high-risk patterns and prioritize proactive safety interventions.

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Keywords: Vision Zero, Transportation safety, Safety prioritization, Machine learning, Planning decision support

A PROACTIVE APPROACH TO PEDESTRIAN SAFETY: COMPARING VISION ZERO COMMUNITY SURVEY AND CRASH DATA

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Individual Paper Presentation

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Vision Zero, grounded in the Safe Systems approach, shifts responsibility from individual road users to the transportation system. Yet advancing Vision Zero goals requires careful interpretation of what different safety measures actually capture and where interventions are most needed. For decades, police-reported crash data have been the dominant source for evaluating pedestrian crashes and street conditions. However, prior studies have documented incompleteness and misreporting biases, especially for vulnerable road users such as pedestrians (Medury et al., 2019). Crash-based analysis is also fundamentally reactive, identifying places where injuries have already occurred instead of revealing hazards in advance (Schneider et al., 2004; Ferenchak & Marshall, 2019). To address these limitations, Vision Zero initiatives increasingly incorporate community input on where people feel unsafe, capturing lived experiences and concerns that may not yet result in documented crashes. However, community-sourced data also have limitations, as participation is uneven across neighborhoods and the absence of reported concerns may reflect barriers to participation.

Using Atlanta as a case study, this study develops an empirical framework to examine whether crash data and community-reported concerns collected through online mapping identify the same places as unsafe, and what their divergence reveals. The analysis uses pedestrian-vehicle crash data from 2018-2022, community survey data collected for Atlanta's Vision Zero Action Plan between February and July 2023, and Place Pulse perceived safety scores from a model pretrained on street view images (Zhang et al., 2018). Place Pulse is used to assess whether variation in community concerns is more consistent with visually perceived unsafety or with neighborhood characteristics that may reflect uneven participation.

The analysis first uses negative binomial regression to compare the spatial distribution of pedestrian crashes and community-reported concerns and to examine whether they are associated with similar built environment and neighborhood characteristics. Census block groups are then categorized into four groups: Low Comment & Low Crash, Low Comment & High Crash, High Comment & Low Crash, and High Comment & High Crash (Schneider et al., 2004; Yu et al., 2024). Binary logit models further examine what distinguishes high-crash block groups that received few comments from those that received many.

The results show that crashes and community concerns partly overlap but also diverge, capturing distinct dimensions of pedestrian safety. Low Comment & High Crash areas have the highest average social vulnerability and share of zero-vehicle households, suggesting that underrepresented neighborhoods may be overlooked even within participatory safety planning. These areas also have the lowest Place Pulse safety scores, indicating that they do not appear visually safer than other groups. In the binary logit model, lower Place Pulse scores remain associated with the low-comment group among high-crash block groups. This suggests that the absence of community reported concern in high-crash areas should not be interpreted as the absence of perceived unsafety.

This study argues that relying exclusively on either indicator may lead to incomplete interventions. Using only crash data can help identify hotspots, but it may overlook areas where crashes are likely to occur or where pedestrian activity is suppressed because of unsafe conditions. Conversely, decisions based solely on community perceptions may miss places already experiencing crashes, as well as areas with limited public representation in planning

processes. For Vision Zero practitioners, the results underscore the need for targeted outreach and place-based engagement in underrepresented neighborhoods to broaden the range of safety information beyond crash reports and support more proactive and equitable safety planning.

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Keywords: Vision Zero, Pedestrian Safety, Safety Perception, Crash Analysis, Participatory Planning

AERIAL & SATELLITE IMAGE-BASED PARKING OCCUPANCY MEASUREMENT

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Curb parking occupancy data are foundational to a range of planning decisions — from pricing and enforcement strategies to right-of-way reallocation and demand management — yet these data remain remarkably scarce (Inci, 2015). Traditional measurement relies on sporadic manual counts, which are labor-intensive, infrequent, and prohibitively expensive to conduct at scale. Sensor-based systems (magnetometers, LiDAR, ultrasonic detectors) have emerged as real-time alternatives, but their high installation and ongoing maintenance costs limit deployment to well-resourced corridors in a small number of large cities (Arneson & Zhu, 2021). The vast majority of municipalities — mid-sized cities, small towns, and lower-income jurisdictions — have virtually no systematic curb parking data at all. This data gap constrains evidence-based parking policy precisely where planning capacity is already limited.

This paper asks: can satellite and aerial imagery, combined with computer vision and machine learning methods, provide reliable, scalable, and cost-effective curb parking occupancy measurement across diverse urban contexts?

Prior work has demonstrated the power of aerial and satellite imagery for measuring parking-related land use. Qiam & Lehe (2025) used deep learning applied to satellite tiles to quantify the share of urban land devoted to off-street parking across fifteen U.S. cities. Satellite imagery has also been applied to the occupancy problem directly: Stopic et al. (2023) proposed a reflectance-thresholding method for classifying on-street parking spot occupancy from high-resolution satellite imagery. However, their approach relied on a published geospatial dataset of individual parking spot locations to guide detection — a resource unavailable in most jurisdictions. The present study extends this line of work by developing a pipeline that does not require pre-existing spot-level inventory data.

We develop and validate a pipeline that integrates high-resolution aerial imagery from commercial providers with a convolutional neural network (CNN) trained to detect vehicles and calculate occupancy rates at the block face level. Model performance is evaluated against concurrent manual counts in New York City.

We further demonstrate that commercially available satellite imagery at 30cm resolution, now available at a fraction of the cost of dedicated sensor networks, can extend the approach to jurisdictions lacking recent municipal aerial capture.

The planning implications are substantial. Image-based occupancy measurement can support performance-based pricing programs in cities that currently lack the sensor infrastructure to implement them (Pierce & Shoup, 2013). It can provide before-and-after occupancy data for pilot programs converting parking lanes to bike infrastructure, transit lanes, or parklets. And it enables regional-scale analyses — such as the relationship between parking supply utilization and land use or transit access — that have previously been infeasible due to data scarcity (Shoup, 2006).

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Keywords: curb parking, occupancy measurement, satellite imagery, computer vision, parking policy

ALIGNING INFRASTRUCTURE WITH URBAN SCALE: EVIDENCE FROM HIGH-SPEED RAIL AND IMPLICATIONS FOR INFRASTRUCTURE PLANNING

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Infrastructure planning often struggles to balance investment scale with underlying urban demand, resulting in persistent concerns about overbuilding in some contexts and underinvestment in others. While existing evaluations frequently focus on cost–benefit efficiency, financial performance, or network coverage, less attention has been given to whether infrastructure development is proportionate to the scale and dynamics of the populations it serves. This gap limits our ability to systematically diagnose mismatches between infrastructure provision and urban demand, particularly in rapidly developing contexts.

This study introduces the concept of infrastructure–population alignment, building on urban scaling theory to assess the degree to which infrastructure provision corresponds to expected levels derived from city size and spatial interaction patterns. Rather than evaluating infrastructure solely through efficiency or performance metrics, the proposed framework focuses on whether infrastructure investment is appropriately "scaled" relative to the urban systems it serves. This perspective provides a complementary lens for understanding infrastructure planning outcomes, especially in cases where conventional evaluation approaches may overlook structural imbalances.

Using China's high-speed rail (HSR) system as an empirical case, we develop a scaling-based analytical framework that compares observed infrastructure intensity with expected levels based on city population. The analysis draws on a comprehensive dataset of Chinese cities and their associated HSR stations and network characteristics. We operationalize infrastructure intensity using indicators such as station presence, network connectivity, and service accessibility, and estimate expected values through scaling relationships between infrastructure provision and urban population size. Deviations from these expected levels are then used to identify patterns of over- and under-alignment across cities and regions.

Our results reveal substantial variation in infrastructure–population alignment across the Chinese urban system. While many large metropolitan areas exhibit infrastructure levels broadly consistent with scaling expectations, a number of smaller and medium-sized cities show signs of relative over-provision, with infrastructure intensity exceeding what would be predicted based on population alone. At the same time, some rapidly growing urban areas appear to be under-served relative to their scale and functional importance within the network. These findings suggest that infrastructure development is not uniformly aligned with urban demand, but instead reflects a combination of strategic investment decisions, regional development policies, and institutional factors.

The study contributes to the literature in several ways. First, it extends urban scaling theory to the domain of infrastructure planning, offering a novel framework for evaluating the proportionality of infrastructure investment. Second, it provides an empirical assessment of high-speed rail development in China from a system-level perspective, moving beyond project-based evaluations to reveal broader structural patterns. Third, the concept of infrastructure–population alignment offers practical implications for planners and policymakers by providing a diagnostic tool to identify potential inefficiencies associated with overbuilding or underinvestment.

More broadly, the findings highlight the importance of aligning infrastructure investment with urban scale in order to support sustainable and efficient development. As countries around the world consider expanding large-scale transportation systems, the proposed framework offers a transferable approach for evaluating whether

infrastructure systems are appropriately matched to the populations they are intended to serve, and for informing more balanced and adaptive planning strategies.

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Keywords: Infrastructure, Urban Scaling, Transportation Planning, Investment, Networks

ANALYSIS OF PEDESTRIAN-VEHICLE INTERACTIONS AND MOVEMENT CHARACTERISTICS ON URBAN BACK STREETS

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Individual Paper Presentation

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Urban streets are not merely spaces of circulation but key public environments where mobility, social interaction, and everyday urban life unfold. This role becomes especially pronounced in urban back streets, where pedestrians and vehicles frequently share the same narrow roadway without clear physical separation. In these mixed traffic environments, pedestrians and drivers continuously adjust their movements by negotiating space, modifying speed, and altering trajectories in response to one another. Such micro-level interactions are critical to understanding pedestrian safety, walkability, and the actual functioning of neighborhood streets. While concepts such as shared space and woonerf have emphasized interaction-based street environments, empirical evidence on how these interactions unfold in real-world back streets remains limited.

This study aims to examine pedestrian–vehicle interactions and mobility characteristics in urban back streets at a micro scale. Specifically, it investigates how pedestrians and vehicles move, negotiate, and adapt within shared street environments, and whether image-based trajectory data can quantitatively explain these interaction patterns. The study is guided by three research questions: (1) What types of movement patterns and interaction characteristics emerge in urban back streets where pedestrians and vehicles share space? (2) How are micro-level mobility features such as trajectories, speed changes, and interpersonal distance formed during pedestrian–vehicle interactions? (3) To what extent can video-based movement trajectory analysis quantitatively capture these interactions?

Methodologically, the study employs computer vision techniques to extract movement data from video footage collected in an urban back street environment. Using object detection, multi-object tracking, and trajectory-based analysis, the research captures the positions, movement paths, speeds, and relative distances of pedestrians and vehicles over time. These data enable a fine-grained examination of the behavioral adjustments and spatial negotiations that occur in shared street settings.

By empirically identifying the micro-dynamics of pedestrian–vehicle interaction, this study contributes to the growing literature on walkability, street design, and human-centered urban environments. The findings are expected to provide practical implications for improving pedestrian conditions, enhancing street safety, and informing urban design and policy strategies for residential back streets and other shared mobility environments.

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Keywords: Urban Back Streets, Pedestrian Interaction, Shared Space, Walkability, Computer Vision

ANTICIPATING AV AND EMERGENCY VEHICLE CONFLICT: A ROAD-SEGMENT RISK FRAMEWORK FROM DISPATCH DATA AND STREET-LEVEL VISUAL INDICATORS

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Individual Paper Presentation

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Emergency response operations introduce localized and time-varying disruptions to urban roadways that are not represented in conventional digital maps used by autonomous vehicles (AVs). As AV deployment expands in cities with active emergency services, the absence of prior awareness about where first responders are likely to stage or occupy travel and curb lanes creates growing operational conflict risk. This paper presents a road-segment-level framework for modeling emergency-related conflict risk to support AV planning and geofencing policy, with an empirical application to Seattle.

Two research questions guide this work. First, which road segments carry elevated emergency conflict risk, and what factors predict that risk? Second, what street-level visual conditions characterize high-risk segments, and do they reflect operational concerns identified by emergency responders?

To address these questions, the framework is built around three integrated components. First, practitioner knowledge is established through structured engagement sessions with Seattle Fire, Police, and DOT representatives, in which participants reviewed historical dispatch scenarios, specified buffer distances, and selected no-go policies, providing operational criteria for severity weighting, geometric classification, and visual indicator selection. Second, one month of Seattle Fire Department 911 dispatch records are combined with the OpenStreetMap road network and American Community Survey data across 50,212 road segments. Spatial footprints are reconstructed for 7,798 incidents using convex hulls over on-scene GPS positions and classified as point, linear, or areal to capture response complexity. Weighted conflict scores combine incident priority severity with geometric complexity, and Negative Binomial GLMs are fitted with segment length as an exposure offset. Third, street-level visual conditions are characterized by scoring Google Street View panoramas along risk-stratified segments using a vision-language model across eight practitioner-derived indicators.

Addressing the first research question, models trained on three weeks of data and tested on a held-out final week show that a length-normalized incident density score achieves the highest holdout ROC-AUC of 0.745, outperforming the Poisson specification with urban context covariates (AUC = 0.718). Among neighborhood-level predictors, zero-vehicle household share (IRR = 5.39, $p < 0.001$) and log population density (IRR = 1.11, $p < 0.001$) are the strongest positive predictors of segment-level incident rate, reflecting systematic differences in emergency exposure across neighborhood types.

Turning to the second research question, principal component analysis of the vision-language model indicators reveals two distinct dimensions: a street activity dimension loading on pedestrian activity and driveway density, and a physical constraint dimension loading on staging feasibility and curb availability. Kruskal-Wallis tests show that activity-based indicators significantly differentiate risk tiers (pedestrian activity $H = 21.11$, $p < 0.001$; driveway density $H = 14.16$, $p = 0.003$), while the physical constraint dimension does not. This indicates that dispatch frequency captures street activity intensity but not the physical staging constraints that practitioners identified as critical, demonstrating that historical incident records alone are insufficient to characterize the full operational risk that AVs pose to emergency response.

Taken together, these results show that historical dispatch records, street-level visual data, and practitioner knowledge capture distinct and complementary dimensions of emergency conflict risk that no single source can fully represent. The framework offers a replicable methodology for building road-segment risk representations that can directly inform AV map design, dynamic geofencing policy, and autonomous mobility governance in U.S. cities.

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Keywords: autonomous vehicles, first responders, vision-language model, mobility governance, road safety

ASSESSING STATION-CITY INTEGRATION FROM A HUMAN-CENTRED PERSPECTIVE: A NEW NODE-PLACE FRAMEWORK APPLIED TO CHINESE HIGH-SPEED RAIL STATION AREAS

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Individual Paper Presentation

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China's high-speed rail (HSR) stations are increasingly expected to function as urban catalysts rather than mere transport nodes. However, existing evaluation approaches remain largely centred on macroscopic transport and land-use indicators, offering limited insight into the lived quality and human-centred performance of station areas. To address this gap, this study extends the classical Node-Place model by developing a human-centred Node-Place framework that incorporates three additional place-based dimensions: livability, attraction, and design.

The framework is constructed through indicator extraction from academic literature and planning guidelines using a retrieval-augmented generation pipeline with large language models, complemented by social media user-generated content to capture experiential concerns. It is operationalised using multi-source urban data, including point-of-interest data, location-based service data, street-view imagery, and route-planning data, and applied to eight representative HSR station areas in major Chinese cities. Indicator weights are derived through a dual-perspective Analytic Hierarchy Process, enabling comparison between expert and public preferences, while social media sentiment analysis provides an external validity check on modelled results.

The results reveal a clear planner-user gap in the evaluation of station-city integration. Experts place greater emphasis on attraction and vitality, whereas the public assigns the highest importance to transport convenience and everyday accessibility. Across the eight cases, station areas exhibit marked heterogeneity and can be classified into four archetypes along a maturity gradient, ranging from highly integrated high-coupling stations to early-stage station areas constrained by structural deficits in place development.

By integrating human-centred concerns into the Node-Place tradition, this study provides a transferable framework for diagnosing the developmental strengths and weaknesses of HSR station areas. The findings also offer an empirical basis for differentiated planning and governance strategies in support of more sustainable and people-oriented station-city integration.

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Keywords: station-city integration, Node-Place model, high-speed rail, multi-source urban data

AUTONOMOUS VEHICLES AND RESIDENTIAL PREFERENCE

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Individual Paper Presentation

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Ridehailing services on autonomous vehicles (AVs), or robotaxis, have become part of daily life in a small but growing number of U.S. cities. How robotaxis and other automated driving systems might affect land use, the built environment, and urban development remains uncertain, primarily because current deployment is limited to dense core areas of roughly half a dozen large U.S. metropolitan regions. Given rapid service expansion driven by intensifying competition among technology companies, a renewed understanding of preferences for AVs and residential location is crucial for proactively guiding future deployment to maximize safety and mobility benefits while preventing car-oriented sprawl.

To address this knowledge gap, researchers have employed two main approaches. First, studies have simulated potential shifts in residential location choices under scenarios varying by value of travel time (VOTT) savings and deployment levels, built on the assumption that the VOTT savings for AVs will be smaller than for human-driven vehicles due to the ability to engage in travel-based multitasking. Second, using stated preference choice experiments, researchers estimate the extent to which households would relocate to neighborhoods with different features (e.g., farther from the central city) with widespread AV access. While informative, most studies rely on pre-pandemic assumptions and survey responses collected when AVs were largely in pilot stages and seemed remote. Additionally, AV applications in those studies were either limited to ridehailing services or left unspecified, leaving model result interpretation unclear. Importantly, elevated remote activities facilitated by information and communication technology (e.g., telework, e-shopping) may interact with AV preferences and adoption, shaping longer-term residential location changes.

This study uses data from a recent survey on attitudes, remote activities, and travel behaviors (including AV-related behaviors) collected from September to November 2025 in the U.S., with heavy California representation (N=2,518). We focus on two sets of outcome variables: (1) willingness to adopt distinct AV applications and (2) residential preferences in an AV future. AV applications include private ownership, single-party ridehailing, pooled ridehailing, and automated public transit, allowing us to identify factors that distinguish those who prefer private ownership from those who accept shared access. Residential preferences involve moving closer to work, social/recreational venues, and natural amenities, or to neighborhoods with larger, cheaper housing. All eight outcome variables use a five-point ordinal scale from “strongly disagree” to “strongly agree”. Explanatory variables include socioeconomic and demographic traits, built-environment attributes for current residences and workplaces, general and AV-specific attitudes, and current travel mode usage patterns for work-related and personal trips. Key explanatory variables include remote work frequency and online shopping frequency, which we hypothesize may facilitate aligning residential neighborhoods with preferences under reduced geographic constraints. We estimate univariate ordered logit/probit models, expand to multivariate ordered probit models, and use these insights to build a structural equations model where residential preference is measured as a latent discrete variable with four indicators.

This research examines willingness to adopt distinct AV applications and residential preferences in an AV future in well-clarified and holistic ways. Findings help uncover unique characteristics of population segments differing in their preferences for private vs. shared AV access, and associations between preferred AV applications and desired neighborhood attributes. These findings could inform transportation planners and policymakers in developing measures to curb unconstrained AV use while ensuring benefits across all population segments.

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Keywords: Autonomous vehicles, Residential preference, AV ridehailing (robotaxi), Telework and online shop, Structural equation model

BEAT THE HEAT: EXAMINING MULTIMODAL TRAVEL BEHAVIOR ADAPTATIONS TO EXTREME HEAT USING LONGITUDINAL CELLPHONE DATA

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Extreme weather events are becoming more commonplace and yet increasingly more unpredictable. Heatwaves, in particular, are found to occur more frequently, last longer, and be more intense. Extreme heat, grimly referred to as the 'silent killer,' has severe consequences not just for people's mobility but also health and quality of life. From a mobility perspective, people who do not have access to a car face the brunt of extreme heat as they move around urban areas walking, biking, rolling, and using public transportation. Many people adapt their activity-travel patterns in various ways on extremely hot days. For example, they can choose not to make a trip at all (by working from home or deferring a trip). They may choose to use their car, if available, since it offers air conditioning. They may choose to shorten their trips to reduce heat exposure or perhaps make longer detours to use routes that offer more shade and are cooler. However, for many, adapting their travel patterns is not an option. These different adaptation mechanisms and constraints impeding adaptation start to paint a complex picture of how travel behavior and activity-travel patterns are affected by extreme heat.

The literature on this topic is fairly nascent, with only a handful of studies examining this relationship but with limited scopes. Extreme heat has been found to significantly affect both time use and activity-mobility patterns (Batur et al., 2024). Some studies have focused on the effects of extreme heat on specific transportation modes, such as walking (Basu et al., 2024), bikesharing (Li et al., 2024), public transportation (Miao et al., 2019), and ridehailing (Gebresselassie et al., 2025). However, we do not yet have a comprehensive understanding of how activity-travel patterns are affected across all modes. Additionally, we have limited evidence of how individual-level shifts in behavior may differ from population-wide shifts.

Through this study, we seek to address these two gaps in academic literature. Using anonymized longitudinal cellphone data collected during the summer of 2022 in Milan, Italy, we explored how different individuals adjusted their travel behavior patterns during periods of extreme heat. We first created distinct clusters of individuals based on their activity-travel patterns during 'control' (non-hot) days, which we used as a reference to distinguish adaptation mechanisms. We then inferred habitual trip patterns through the exploration of daily mobility motifs, such as a round trip between home and work, or a trip chain between home, work, and shopping, to name a few. These daily mobility motifs helped us understand changes in day-level activity-travel patterns on hot days, such as a reduction in the frequency of trip chaining and a reduction in round trips between home and non-work destinations. We supplemented these findings by also examining trip-level changes between hot and control days. Our findings suggested two dominant adaptation mechanisms. First, individuals shifted their trip departure times by starting earlier in the day or returning later in the day to avoid the hottest period of the day. Second, they chose non-work destinations that were closer to home, resulting in shorter trips on hot days. While we also detected some evidence of mode shift, this was not the predominant adaptation mechanism in our sample.

This study contributes to our growing understanding of how individuals adapt their multimodal travel behavior to extreme heat. We observed individuals without access to cars being the most affected. Individuals who were younger and higher-income were able to reduce their commute trip frequency, reinforcing the role of occupation in

providing the privilege of being able to work from home on certain days. These findings cumulatively call for more careful thinking around integrating multimodal transportation planning with climate resilience and equity goals.

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Keywords: Extreme heat, Travel behavior, Multimodal transportation, Transportation equity, Climate resilience

BEYOND ACCESS: EXAMINING LATENT DRIVERS OF TRANSIT ENGAGEMENT AMONG YOUNGER POPULATIONS

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Individual Paper Presentation

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Efforts to increase public transit use have traditionally focused on improving measurable attributes such as cost, travel time, and infrastructure provision (Bagdatli & Ipek, 2022; Meixell & Norbis, 2008). Yet, these approaches often overlook the less visible, experience-based factors that shape how individuals engage with transit systems. Prior research suggests that subjective perceptions—such as safety, comfort, and convenience—play a critical role in shaping travel behavior, particularly among younger populations (Bagdatli & Ipek, 2022). This study reframes the discussion by examining the gap between available services and actual usage through the lens of user experience and perceived service fit within a university-centered environment.

Drawing on a comprehensive survey and empirical analysis conducted in a mid-sized college town in the United States, the study captures a broad spectrum of travel behaviors across a student population with varying levels of transit dependency. Rather than treating riders as a homogeneous group, the analysis differentiates between frequent users and those who opt out of the system, allowing for a more nuanced understanding of underlying behavioral patterns. This approach responds to a gap in existing literature, where non-users are often underexplored despite their importance in understanding barriers to transit adoption (Shaaban & Kim, 2016).

The results reveal that continued engagement with transit is closely tied to a combination of practical and situational conditions, including service presence, temporal adaptability, and ease of reaching key destinations. For a subset of the population, reliance on transit is strongly associated with constrained mobility options, reinforcing its role as a necessity rather than a choice. At the same time, experiential dimensions—particularly perceived personal security and the overall predictability of service—emerge as critical in shaping daily travel decisions, consistent with prior findings on safety perceptions and user satisfaction (Ceccato et al., 2021; Shaaban & Kim, 2016).

Conversely, disengagement from transit is less about outright rejection and more about misalignment between service provision and user needs. Limited spatial reach, inconsistent service expectations, and perceived inconvenience collectively contribute to the decision to seek alternative modes. These patterns align with existing evidence that negative perceptions of reliability and service quality can discourage transit use even when systems are available (Shaaban & Kim, 2016). Furthermore, while pro-environmental attitudes are often expressed among students (Whitley et al., 2018), they do not consistently translate into actual transit use, reflecting a persistent attitude–behavior gap based on our findings.

By shifting the focus from system performance to user alignment, this research highlights the importance of integrating behavioral insights into transportation planning. The findings suggest that incremental improvements in reliability, spatial coverage, and perceived safety may yield disproportionate gains in ridership, particularly in environments where transit already exists but remains underutilized. This study contributes to a growing body of work advocating for more adaptive, user-centered approaches to transit planning in similar institutional and urban contexts.

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Keywords: Transit Behavior, Service Perception, Travel Decision-Making, Campus Mobility, User-Informed Planning

BEYOND COMPLIANCE: REIMAGINING HUMAN SERVICES TRANSPORTATION PLANS AS TOOLS FOR HEALTHCARE ACCESS

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Individual Paper Presentation

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Over three million people in the United States are enrolled in a program that arranges and covers the cost of travel to medical appointments. That program is called Medicaid Non-Emergency Medical Transportation (NEMT), and it ensures that access to primary care, dialysis, chemotherapy, and preventative care are not out of reach simply because someone lacks money or access to a car. NEMT is delivered through a patchwork of local and regional transportation providers that includes public transit agencies, taxis, and established transportation network companies (TNCs) like Uber.

The service is overseen partly by the Centers for Medicaid and Medicare Services and partly by the Federal Transit Administration (FTA). Through FTA, NEMT is part of a formal transportation planning process that identifies the needs, gaps, and priorities that guide important NEMT decisions. At the center of this planning process is the Human Services Transportation Plan (HSTP) which is prepared every five years by regional planners embedded within metropolitan planning organizations. However, federal guidance on HSTPs is limited, resulting in substantial variation in the plans' scope, content, and methodological rigor. Studying variation in HSTPs matters: these plans are one of the few sites where, in principle, transportation and healthcare systems are brought into alignment. Thus, HSTPs shape how and whether transportation-disadvantaged populations can access healthcare.

This study examines the extent and implications of that variation through a plan quality analysis of HSTPs across diverse U.S. regions to address two key research questions: (1) How do HSTPs engage with Medicaid NEMT–as a peripheral service, a descriptive inventory item, or a strategically integrated component of regional mobility systems? (2) How does this engagement vary across metropolitan scale (major metro vs. rural) and planning context? Using a combination of AI-powered and manual qualitative coding techniques, this study will examine 20 recent HSTPs across a range of urban and rural contexts using a structured coding rubric and scaled scoring system. Our rubric evaluates recognition of NEMT, conceptual framing, awareness of population overlap between HSTP and Medicaid populations, coordination strategies, and overall analytical depth.

Thus far, we have tested our approach in a preliminary plan quality analysis of 10 HSTPs. We found that HSTPs are an underutilized and inconsistently executed planning tool, thereby limiting their potential to improve healthcare access for transportation-disadvantaged populations. More specifically, we observed the following trends: (1) Widespread omission or minimal engagement with NEMT in several major metro plans; (2) Predominantly descriptive (not strategic) treatment of NEMT, with little discussion of coordination, funding, or system design; (3) Unexpected urban-rural reversal, where smaller and rural MPOs show more nuanced, critical, and locally informed engagement with NEMT than large MPOs; and (4) A few best-case examples that explicitly identify coordination barriers and articulate concrete service gaps and user challenges.

This research offers a methodological contribution and several implications for planning research and practice. Methodologically, our study demonstrates the use of hybrid AI-assisted and manual qualitative plan quality analysis to evaluate human services transportation planning at scale. It also offers a replicable rubric for assessing the integration of health-related transportation services into planning documents. Implications of this research include

(1) an emphasis on an overlooked interface between Medicaid and transportation planning, (2) evidence that improving healthcare access may depend as much on planning integration and governance alignment as on service provision itself, and (3) the positioning of HSTPs as a latent but underleveraged planning tool for addressing transportation-related health inequities.

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Keywords: Medical mobility, MPO planning, Healthcare access, Plan quality analysis, Medicaid transportation

BEYOND MOBILITY: CENTERING PLANNING PRACTICE IN THE CONNECTED AND AUTONOMOUS VEHICLE TRANSITIONS

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Individual Paper Presentation

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As technology advances, many transportation technologists and political leaders position connected and autonomous vehicles (CAVs) as a transformative solution to urban mobility challenges through improved safety and efficiency of travel (Emory et al., 2022). Existing research has evaluated how CAVs can improve mobility and accessibility using a normative lens, focused on vulnerable and marginalized groups (Dianin et al., 2024; Hwang et al., 2020). While CAVs are seen as a technological shift, they are part of complex cyber-physical and urban systems that increase uncertainty associated with achieving intended social outcomes of CAV (Martinez-Pastor et al., 2023). Planning practice can reframe the trajectory of CAV planning by guiding transportation and land use decisions through adaptive problem-solving (Forester, 1999). Yet CAV research has not fully addressed how planning processes can shape these technology transitions to support a CAV-enabled transportation system that is resilient and improves access for all.

This study examines how transportation and urban planning professionals in the Hampton Roads region in Virginia envision planning for a CAV-enabled transportation system within their current planning practices. As a predominantly auto-oriented region with an extensive suburban character, Hampton Roads is a useful context to understand how CAVs may be leveraged to improve accessibility in mid-sized metropolitan areas. The study draws on twenty semi-structured interviews conducted across the region using a snowball sampling technique. The objective was to understand their perspective on the role CAVs can play to support transportation planning goals based on their approach towards planning transportation systems. Thematic analysis was conducted based on a set of deductive codes derived from CAV and transportation accessibility literature and inductive codes to identify contextual aspects.

Preliminary findings indicate that while practitioners felt the need to improve an aging road infrastructure, others stressed the need to take a more integrated transportation - land use approach to support CAV transitions. This contrast between emphasis on infrastructure-centric vs accessibility-centric planning reflects how differences in practice may shape CAV planning and its outcomes. Particularly, in suburban or rural areas, with limited roadways to support CAV use, they highlighted the need for proximity-centric planning and the importance of multimodal travel. This approach can support fixed route transit services using CAVs along major corridors in the region, prioritizing CAV use to improve accessibility for marginalized groups and increase resilience of transportation systems. Practitioners also highlighted the importance of internet connectivity to plan for CAV systems, particularly to improve accessibility for suburban and rural populations in the region.

With evolving transportation technology, CAVs can play an integral role in connecting people to places. The results from the study can help understand an emerging conceptualization of planning for CAVs by bridging the gap between socio-technical perspectives and planning practice. The study underscores the role of practitioners in shifting from a technology-driven to an accessibility-centric approach in CAV planning to build resilient and equitable transportation systems.

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Keywords: Autonomous Vehicles, Accessibility, Planning Practice, Connected Vehicles, Resiliency

BEYOND VMT: THE GEOGRAPHIC AND SOCIOECONOMIC CORRELATES OF U.S. VEHICULAR EMISSIONS

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Individual Paper Presentation

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The transportation sector accounts for nearly one-third of all greenhouse gas (GHG) emissions in the United States. Although modern climate planning often prioritizes the reduction of Vehicle Miles Traveled (VMT) to curb this emissions impact, these frameworks often overlook the role of fleet heterogeneity, potentially obscuring environmental justice concerns and biasing policy interventions. Existing research commonly assumes homogenous per-mile emission from households, focusing on on-road emissions. Consequently, VMT-based metrics fail to provide a comprehensive picture of localized environmental impacts when vehicle characteristics vary spatially. Leveraging a nationwide vehicle-ownership dataset, we ask: How are socioeconomic and built-environment characteristics associated with localized emission intensity values and total per capita emissions when fleet composition is heterogeneous?

To address these questions, we construct a novel vehicular emissions dataset spanning over 80,000 U.S. census tracts. We use the proprietary Auto Ownership dataset from Infutor Data to build a national sample of vehicle-location records (N=118,901,623) representing 53,549,753 households. This dataset provides details on vehicle make, model, and year, geocoded to the owners' home census tracts. We then link EPA emissions standard data on CO2 and NOx—two major GHG emissions from vehicular travel—to these records using a hierarchical matching algorithm. We aggregate and calculate tract-level average emission intensity values, as defined by the average GHG emitted from per mile vehicular travel. To estimate total per capita emissions, we integrate these intensities with VMT data from the LATCH dataset and population counts from the ACS. Finally, we employ regression models on emission intensity values and total per capita emissions to examine the geographic and socioeconomic correlates of localized vehicular emissions.

Our analysis suggests significant regional disparities in emission intensities, with the values markedly higher in the central U.S. compared to coastal regions. At the metropolitan level, emission intensities are typically higher in suburban and affluent peripheral neighborhoods when compared to urban cores. Regression analysis indicates that tracts with higher household income, lower educational attainment and lower Democratic vote shares correlates with increased emission intensity values. When integrated with VMT to estimate total per capita emissions, the association with income reverses: total per capita emissions tend to be higher in tracts with lower household income, higher educational attainment, and lower Democratic support. Regarding built environment characteristics, sprawl indicators, including lower intersection density, higher proportions of single-family housing, and greater distance to highways, are associated with higher vehicle emission intensity values and total per capita emissions. While VMT holds a strong correlation ($r > 0.74$) and serves as an acceptable proxy for total emissions, it remains imperfect; VMT misclassifies 7% to 46.2% of tracts into the wrong emission quartiles compared to our fleet-specific measures.

By integrating nationwide vehicle-ownership data with EPA standards, we examine fleet composition as a critical yet overlooked dimension for externalities of driving. Our findings reveal significant spatial heterogeneity in vehicle-ownership patterns, which are closely associated with local socioeconomic and built-environment characteristics. As a result, using VMT alone as the key metric for transportation GHG reduction is insufficient for addressing such externalities. Given the spatial heterogeneity of vehicle choices and fleet technology, planners

must pair VMT-reduction strategies with targeted fleet-decarbonization incentives. Our high-resolution dataset provides the spatial evidence necessary to inform more equitable and targeted climate action for transportation planning.

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Keywords: GHG emissions, transportation planning, environmental justice, spatial analysis, air pollution

BICYCLE INFRASTRUCTURE AND ROAD CAPACITY REALLOCATION: TRENDS IN US CITIES

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Reducing vehicle miles traveled (VMT) is a key goal of many cities, states, and other government agencies. In California, for instance, the Air Resources Board calls for a per capita reduction in VMT of at least 22% from 2019 to 2045, and regional agencies have enshrined VMT reduction targets in their Sustainable Communities Strategies. These goals, however, may be unattainable without a reduction in the physical space—roadways and parking—currently dedicated to motor vehicles. Just as parking and highway expansion induce VMT, capacity reductions such as road diets can decrease it. Furthermore, such capacity reductions can lock in the VMT reductions from improved transit and active transportation by mitigating backfilling: the process by which new vehicle trips fill freed-up roadway capacity.

Complementary to their VMT reduction goals, many jurisdictions also have visions and plans to increase active transportation. However, cities have largely harvested the "low-hanging fruit"—they have already installed bicycle lanes where the right-of-way was sufficiently wide to permit striping through narrowing a wide outside lane or converting a shoulder. Further bicycle infrastructure expansion may not be physically possible without removing parking or travel lanes, i.e., a road diet. These geometric constraints are amplified by the shift from Class 2 (unprotected) bicycle lanes towards Class 4 facilities that are protected by parking, bollards, or curbs.

Thus, bicycle infrastructure serves as a "most likely" case for right-of-way reallocation and road capacity reduction. If cities are unwilling to remove parking or travel lanes to accommodate high-priority bicycle facilities, broader capacity reductions are unlikely to manifest in other contexts.

In this paper, I investigate the evolution of bicycle lanes in the US. I select a stratified random sample of points on bicycle facilities in urbanized areas, identified via OpenStreetMap. I then examine historic Google Street View imagery to determine (i) the approximate installation date (or if it was present in the first image from c. 2008), (ii) the bicycle facility type (e.g., parking protected, buffered, or striped with no buffer), and (iii) the geometry change used to accommodate the facility (e.g., narrowing lanes, removing parking, or eliminating a travel lane). I complement this dataset with a small number (~10) of semi-structured interviews with city transportation staff, providing context and helping to interpret the quantitative results.

Preliminary results indicate a trend towards protected bicycle infrastructure. Before 2015, more than 85% of bicycle lanes were unprotected and unbuffered Class 2 facilities. Since then, a growing share of lanes has been demarcated with buffers, and more recently, protected with bollards or parking. However, these next-generation buffered and protected bicycle lanes are predominantly installed on streets where they can be accommodated without reducing roadway or parking capacity. The vast majority of bicycle facilities are created through narrowing travel lanes, particularly those that previously exceeded 15 feet in width. Motor vehicle lanes are rarely removed, and parking removal is even less common. In other words, there is no discernible trend towards removing road capacity in favor of bicycle facilities.

The preliminary findings have two implications. First, the enthusiasm of cities for Class 4 protected bicycle lanes is likely being constrained by the difficulties in reallocating road space. Class 4 facilities generally require more right-of-way than traditional painted Class 2 facilities, and so right-of-way width is increasingly a constraint. Second, if reductions in road and parking capacity are difficult even where necessary to implement a city's active

transportation plans, the broader-scale capacity reductions that may be needed to reduce vehicle travel are unlikely to materialize under the planning climate in US cities today.

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Keywords: bicycle planning, road capacity, VMT reduction

BRT IN CAR-DEPENDENT AMERICA: A QUASI-EXPERIMENTAL STUDY OF BRT'S IMPACT ON CAR DEPENDENCE

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Individual Paper Presentation

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Bus rapid transit (BRT) has become an increasingly popular strategy for public transit investment, with approximately 190 BRT systems now operating worldwide, serving over 32 million passengers daily (BRT+ Centre of Excellence, & EMBARQ, 2025). In the United States in particular, BRT investments are also promoted to reduce automobile use and the associated negative effects of reliance on cars for interurban travel. While there is some evidence of BRT's potential to reduce car ownership in Latin American urban contexts (Combs & Rodríguez, 2014), empirical evidence on its ability to generate similar outcomes in car-dependent North American cities remains surprisingly limited.

This research examines the effects on car ownership and use of the IndyGo BRT Red Line that opened in 2019 in Indianapolis, IN. Stretching 13.1 miles and featuring high-frequency services, dedicated or semi-dedicated lanes, and off-board fare collection, the Red Line traverses the metropolitan region from north to south, connecting downtown Indianapolis with key destinations such as Broad Ripple to the north and the University of Indianapolis to the south. As the first BRT line in the region, it represents a major investment in high-capacity public transit. The corridor serves a diverse set of neighborhoods with varying socioeconomic and built-environment characteristics, making it a particularly useful case for evaluating BRT impacts on car dependence across different neighborhood contexts.

We test the hypothesis that BRT reduces car ownership and use in this highly car-dependent context using a quasi-experimental research design, while also examining the mediating effect of urban form on these outcomes. Our analyses use pre- and post-intervention data from the ACS 5-year estimates at the census tract level to measure changes in car commute share and car ownership, which we proxy for by vehicle availability per household. To evaluate the mediating effect of urban form, we use a walkability index calculated following EPA National Walkability Index protocols (Schroeder, 2026), which allows us to observe how BRT impacts vary across urban forms in Marion County.

Results from our difference-in-differences models suggest that significant negative associations exist between BRT access and measures of car dependence, and that these effects depend on, or are strengthened by, the quality of urban form, which we proxy for using walkability data. We found that, at least for Indiana's Red Line, the negative and statistically significant association between car ownership and access to the BRT holds only for higher Walkability score census tracts, which also exhibit, on average, higher median household incomes than lower Walkability score census tracts. We close by discussing the environmental and equity planning implications of our findings and recommendations for future research.

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Keywords: Bus Rapid Transit, Car Dependence, Causal Inference, Urban Form, Environmental Justice

BUILT ENVIRONMENT AND TRAVEL IN URBAN WILDFIRE EVACUATIONS – INSIGHTS FROM THE 2025 LOS ANGELES WILDFIRES

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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In January 2025, a series of wildfires swept through neighborhoods in the Los Angeles region destroying entire communities and resulting in numerous injuries and deaths. Existing wildfire studies provide limited insight on evacuation behavior during large urban wildfires such as those in Los Angeles. In order to understand the evacuation experience and outcomes of residents affected by the two largest Los Angeles wildfires, the Palisades fire and the Eaton fire, we collected a random sample of 700 responses from residents who were subject to mandatory evacuation orders, 350 from each fire area. This sample size allows us to draw conclusions that represent the target population in both areas with reasonable confidence. The two fire areas – Pacific Palisades (Palisades) and Altadena (Eaton) – differ in their built environments (development density, road networks, accessibility), resident characteristics, and government emergency responses, which we hypothesize affect evacuees' evacuation travel behavior.

In this paper, we draw on this survey and secondary data to examine the relationship between built environment characteristics and evacuation travel behavior. First, we analyze the survey data to compare evacuees' travel behaviors between the two wildfire areas. Second, we combine secondary built environment data with the survey data and develop statistical models to test the association between built environment characteristics – development density, street design, network connectivity, accessibility – and evacuation travel behaviors: trip mode, duration, and distance. Drawing from the evacuation literature, we control for transportation resources (car ownership and access), past disaster experience, risk perceptions, social networks, and official evacuation notices.

We find differences between the two areas. While the overwhelming majority (over 90%) of evacuees in both areas used household vehicles to evacuate, Eaton evacuees were more likely to take two or more household vehicles (55%) than Palisades evacuees (45%). Trip duration differed substantially: most Eaton evacuees (66%) took less than 45 minutes to reach their destination whereas most Palisades evacuees (60%) took more than that time. Congestion likely contributed to this difference: over half (54%) of Palisades evacuees cited congestion as a major challenge during evacuation whereas a little less than one-fifth (19%) of Eaton evacuees did so. Two sample t-tests found these differences statistically significant ($p<0.05$). That congestion was a bigger problem for Palisades evacuees than for Eaton evacuees could be due to built environment differences – street network in Pacific Palisades consists of many long cul-de-sacs that funnel traffic into a few key arterials and highways whereas that in Altanada is a grid system. Our model results show that built environment characteristics are associated with evacuation behaviors, controlling for household characteristics, risk perception, and evacuation preparation. Specifically, accessibility to destinations is negatively associated with evacuation duration. Model results also show that evacuees that cited congestion as a major or minor challenge during evacuation had longer evacuation duration, while objects on road and road closures – two other challenges frequently cited by evacuees – were not significantly related to evacuation duration.

Our results contribute to emergency response and disaster planning theories by offering insights on the role of the built environment in influencing household disaster evacuation experience and outcomes. These insights can inform urban and transportation planning and design practices to better prepare communities for climate disasters, and when they happen, emergency response.

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Keywords: urban wildfires, evacuation travel, built environment, disaster planning

CAN ON-DEMAND RIDE-SOURCING REDUCE FORGONE MEDICAL CARE AMONG RURAL ADULTS WITH PHYSICAL DISABILITIES?

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Individual Paper Presentation

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Adults with physical impairments or disabilities that prevent physical activity (PID-PA) face significant transportation barriers to essential healthcare, often forgoing care despite higher healthcare needs. While on-demand ride-sourcing services (e.g., Uber and Lyft) may improve mobility, concerns remain about the current level of inclusivity and equity, especially for individuals with more complex needs. Whether on-demand ride-sourcing will facilitate mobility or further isolate certain people with PID-PA is largely unknown. This study examined the transportation barriers to healthcare among people with temporary and chronic PID-PA and assessed the role of alternative access strategies, with particular attention to small and rural communities where residences are dispersed and transit options are limited. A cross-sectional online survey was conducted in nine such communities in Texas, yielding 416 valid responses for analysis. Fisher's exact tests, logistic regression models, and mediation analysis were used to assess associations between adults with PID-PA and variables such as forgone necessary healthcare due to lack of transportation, use of on-demand ride-sourcing, and alternative transportation options.

Among participants, people with PID-PA were more likely to use rides provided by others and telemedicine. However, logistic regression models showed that having chronic PID-PA and using on-demand ride-sourcing for healthcare were positively associated with forgone necessary medical care due to transportation barriers. Moreover, on-demand ride-sourcing use did not mediate the relationship between chronic PID-PA and forgone necessary healthcare. This result indicates that ride-sourcing services do not effectively reduce transportation barriers for individuals with chronic PID-PA. Instead, dependence on such services may be associated with forgoing necessary medical care. The study highlights substantial challenges to using on-demand ride-sourcing in small and rural communities, including limited physical/digital accessibility, affordability concerns, and unreliable service. To improve transportation equity for people with PID-PA, interventions must address broader systemic issues affecting the accessibility of ride-sourcing.

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Keywords: physical impairments, on-demand ride-sourcing, Uber/Lyft, rural communities, access to medical care

CAUSAL IMPACT OF NEW METRO STATIONS ON RESIDENTS' LEISURE ACTIVITIES

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Individual Paper Presentation

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New metro stations do more than improve accessibility and commuting efficiency; they may also reshape how residents organize their everyday lives beyond work. As an important dimension of urban well-being and social participation, leisure activity provides a critical lens through which to understand the broader social impacts of metro investment. Although prior studies have examined the effects of metro systems on commuting and overall travel behavior, limited attention has been paid to how metro stations influence leisure activities. This study investigates the causal impact of new metro stations on residents' leisure activities, with particular attention to changes before and after station opening. Using the opening of Nanjing Metro Line 5 as a natural experiment, we apply a Difference-in-Differences (DID) model and China Unicom Smart Steps mobile signaling data to estimate the effects of new metro stations on leisure activity frequency, activity radius, inter-district travel, and night-time travel. The results show that, relative to the control group, station opening led to a net increase of about 12.8% in leisure activity frequency in the treatment group. At the same time, leisure travel distance and activity radius expanded significantly, while the shares of inter-district and night-time travel also rose significantly, indicating that new metro stations widened both the spatial and temporal scope of residents' leisure activities. Moreover, these effects were uneven across population groups: significant heterogeneity was observed by age and family type. Station effects also varied significantly across locational contexts, particularly between old urban areas and suburban settings. These findings suggest that new metro stations affect not only mobility efficiency but also the frequency and spatiotemporal organization of leisure life. The study provides empirical evidence for transport and urban planning aimed at improving quality of life and well-being.

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Keywords: New metro stations, Leisure activities, Causal impact, Difference-in-Differences, Nanjing

CHAUFFEURING CHILDREN: PARENTAL TIME BURDEN AND ACCESS TO NON-SCHOOL ACTIVITIES IN THE U.S.

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Individual Paper Presentation

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This study examines parent–child accompanying travel using data from the 2022 National Household Travel Survey (NHTS) of the U.S. The analysis focuses on "chauffeuring" trips—journeys in which an adult accompanies a pre-driving-age child to out-of-home activities—and emphasizes non-school travel, an area that has received limited attention in the transport literature. While prior research has extensively examined school travel and children's independent mobility, recent studies show that non-school trips, such as recreation, social visits, and extracurricular activities, are often more spatially dispersed and temporally complex, making them especially reliant on parental accompaniment (Desjardins et al., 2022; Voulgaris et al., 2025).

Understanding chauffeuring trips is critical for explaining persistent auto dependence among child-rearing households and its implications. A well-established finding is that households tend to increase automobile ownership after having children. Private vehicles, despite their cost, offer greater flexibility than public transport or non-motorized modes, which is essential for meeting the mobility needs of dependent household members, such as pre-driving-age children. Although auto dependence among children is often criticized for its negative health implications, empirical evidence shows that children are frequently escorted by car even for short trips (Mammen et al., 2012; Carver et al., 2013). This reliance may be more pronounced for non-school activities, which require more complex scheduling than routine school travel.

To better understand chauffeuring behavior, especially for non-school destinations, this paper first examines children's travel patterns. It identifies the main purposes for which children are escorted, including social visits, shopping, and organized activities. The analysis also investigates socioeconomic variation, assessing whether children from higher-income households are more likely to participate in chauffeured non-school activities, reflecting unequal access to opportunities.

The second part evaluates the burden placed on parents. This includes quantifying the total time spent on chauffeuring trips, as well as the associated waiting time—an often-overlooked component. The study further examines whether escorting responsibilities are unevenly distributed by gender, building on findings that household roles and employment constraints shape escorting behavior (Han et al., 2020; He, 2013). In addition, it explores how car availability influences both the duration and frequency of chauffeuring. Households with limited or no access to private vehicles may experience longer travel times or may reduce children's participation in non-school activities.

The results show that children undertake fewer social trips than personal errands, such as shopping or extracurricular activities, and that trip frequency is lower among households with lower incomes and lower auto ownership. The burden of chauffeuring is disproportionately borne by mothers, including employed mothers, indicating a substantial gendered time cost. Auto immobility primarily affects the frequency and purpose of non-school trips rather than increasing total chauffeuring time, suggesting that constraints manifest more through reduced participation than longer travel durations.

Overall, the findings indicate that children's auto-dependence has significant implications for both access to out-of-school opportunities and parents' time allocation. By focusing on non-school travel and quantifying the burdens of chauffeuring, this study contributes to a more comprehensive understanding of intra-household travel behavior and highlights the equity implications of mobility constraints in child-rearing households.

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Keywords: chauffeuring, children's mobility, non-school travel, auto dependence

COMMUNITY RESPONSIVE APPROACHES TO INFRASTRUCTURE RISK AND BENEFIT IN THE CONTEXT OF CLIMATE VULNERABILITY

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Understanding the needs and input of vulnerable communities is important for measuring environmental justice infrastructure risk, as climate change has been shown to exacerbate existing social and environmental disparities, falling disproportionately on those least equipped to adapt (Tee Lewis et al., 2023). Legacies of environmental injustices have highlighted the potential issues that can arise from a lack of inclusion of vulnerable communities in planning and decision-making processes. Community-based organizations (CBOs) serve as an essential connection between vulnerable residents and government decision-making processes, helping to ensure that locally generated knowledge and priorities are reflected in policy (Rudge, 2021). To improve future climate infrastructure planning, it is necessary to assess current approaches towards working with vulnerable communities and to understand best practices for engagement around climate mitigation efforts. Many tools and indicators, such as data dashboards and online mapping tools, exist to guide decisions around climate and transportation investments in areas of significant EJ concerns. It remains unclear how tools are specifically utilized by communities to address vulnerability in climate mitigation work, and what gaps exist between the information presented by these tools, their utility for local organizations, and the equity concerns and needs identified by communities (Rice-Boayue et al., 2025). Through this project, we aim to understand community perspectives of climate vulnerability related to transportation, identify climate risk perceptions, and evaluate how available secondary data tools meet or not community perceptions and needs.

To address these topics, we conducted a qualitative analysis of CBOs' assessment of infrastructure risks, community engagement practices, and utilization of data tools and indicators. We conducted semi-structured interviews with ten community-based organizations and nonprofits working at the intersection of transportation and environmental justice in the state of California. Participants were recruited through purposive and snowball sampling, prioritizing CBOs working in the realm of climate change and transportation equity. Interview topics included the CBOs' priorities regarding transportation equity and climate change, the responsiveness and relevance of EJ data and tools, as well as impacts of shifting national priorities. All interviews were recorded and transcribed and are being analyzed using Atlas.ti, with codes drawn from both relevant scholarship and themes emerging from the data.

Preliminary findings highlight the need for greater integration of data tools and the importance of community engagement for understanding and contextualizing broader trends identified by the tools. First, CBOs see disproportionate exposure to air pollution and poor safety and transportation access related to the built environment and overreliance on personal automobiles as priority equity issues. Second, while CBOs rely on EJ tools and dashboards primarily to identify vulnerable communities for interventions and to apply for grant funding, these tools are perceived as insufficient for providing timely information or the granularity that organizations desire for addressing needs related to particular developments or a hyperlocal geography. To contextualize and supplement these tools, CBOs collect local data and rely on community engagement and prior knowledge to

understand issues of transportation and environmental justice locally. These findings highlight the need to integrate lived experience and locally collected data surrounding climate risks in transportation with larger EJ data tools, a task we will address in future work.

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Keywords: Climate change risks, Community engagement, Climate planning, environmental justice, transportation policy

COMPACTNESS AND TRAFFIC FATALITIES: EXPLORING EXPOSURE RISKS AND EMERGENCY RESPONSE TIME

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Individual Paper Presentation

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Existing studies have examined the direct and indirect effects of urban compactness on traffic safety primarily through exposure-related mechanisms, such as vehicle miles traveled (VMT) (Ewing et al., 2016; Yeo et al., 2015), while often overlooking post-crash factors—particularly emergency response time (ERT)—as an important mediator. The ERT pathway is critical, as survival following a severe crash depends heavily on the speed and efficiency of emergency medical response (Trowbridge et al., 2009; Picado-Aguilar & Aguero-Valverde, 2020).

To address this research gap, this study updates the U.S. sprawl index to 2020 for 995 urban counties using a multidimensional framework consisting of four factors: development density, land-use diversity, street connectivity, and centering, as originally developed by Ewing and Hamidi (2014). For each dimension of compactness, we conducted principal component analysis (PCA) separately on the corresponding set of variables. To construct the overall compactness index, we accounted for differences in county size. Specifically, we regressed the sum of the four compactness factor scores on the natural logarithm of county population. The standardized residuals from this regression were then used as the overall measure of compactness. Finally, the index was rescaled to have a mean of 100 and a standard deviation of 25 to facilitate interpretation.

We then employ structural equation modeling to investigate the direct and indirect effects of urban compactness/sprawl index on both total and pedestrian crash fatality rates across U.S. counties. After controlling for confounding variables, the results show that urban compactness reduces both total and pedestrian crash fatality rates through direct and indirect pathways. Specifically, the findings indicate that: (1) compactness directly reduces both total and pedestrian crash fatality rates; for example, a 10% increase in compactness is associated with a 6.8% reduction in the total crash fatality rate; (2) compactness indirectly reduces fatality rates by improving ERT, as a 10% increase in compactness is associated with approximately a 1.3% reduction in ERT; (3) compactness reduces fatality rates through lower VMT, with a 10% increase in compactness associated with approximately a 2.2% reduction in VMT; and (4) when both direct and indirect effects are considered, a 10% increase in compactness is associated with an overall 8.6% reduction in the total crash fatality rate at the county level. These findings highlight the role of compact urban development as a policy lever that can reduce crash fatalities not only by lowering travel exposure but also by improving emergency response time at the county level in the United States.

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Keywords: Urban form, built environment, crash severity, emergency response time, traffic exposure

CONGESTION PRICING AND RIDE-HAILING IN NEW YORK CITY: EVIDENCE ON DEMAND, OPERATIONS, SPILLOVERS, AND EQUITY

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Individual Paper Presentation

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What was the effect of New York City's January 2025 congestion pricing policy on ride-hailing demand and operations in Manhattan's Central Business District (CBD), and how did those effects vary across neighborhoods and over time? This paper examines how congestion pricing reshaped ride-hailing activity in Manhattan below 60th Street, focusing on trip volumes, pickup wait times, travel speeds, spillovers, and distributional heterogeneity. The study contributes to debates on congestion pricing, platform-based mobility, and transportation equity by assessing whether the policy reduced ride-hailing activity in the priced zone or instead altered its geography and performance in complex ways.

The analysis uses New York City Taxi and Limousine Commission FHVHV trip records to construct taxi-zone-by-day panels before and after congestion pricing began on January 5, 2025. The study period spans January 1, 2024 through December 31, 2025, providing a full pre-policy year and up to twelve months of post-policy observation depending on the specification. Under the program, app-based high-volume for-hire vehicle trips were subject to a $1.50 per-trip charge for travel to, from, within, or through the Congestion Relief Zone. The underlying database contains approximately 460 million trips. Outcomes include pickup volume, dropoff volume, mean pickup wait time, and trip speed. Policy effects are estimated using a difference-in-differences design comparing CBD and non-CBD taxi zones over time, with controls for precipitation, holidays, day-of-week and month fixed effects, and the 2024 Uber/Lyft driver lockout period. Temporal dynamics are assessed over 1-, 3-, 6-, and 12-month post-policy windows.

The findings suggest that congestion pricing produced a sharp short-run increase in ride-hailing activity in the CBD, but these demand effects weakened substantially over time. Relative to non-CBD zones, pickup and dropoff volumes increased by roughly 28 percent in the first month after implementation. However, these effects attenuated over longer windows: pickup effects fell to about 6 percent over six months and about 1 percent over twelve months, while dropoff effects declined to about 8 percent over six months and about 3 percent over twelve months. In contrast, operational performance improved more persistently: passenger pickup wait times declined by roughly 5 to 7 percent over the 3-, 6-, and 12-month windows, and travel speeds for CBD-to-CBD trips increased by about 10 percent relative to comparable outside trips, consistent with more durable gains in service performance.

The paper also examines spatial spillover and distributional effects. Ring-based analysis of taxi zones adjacent to the congestion zone suggests that spillovers outside the CBD were uneven rather than boundary-wide, with localized gains and losses consistent with network rebalancing. Outside the zone, Upper East Side and Downtown Brooklyn zones showed declines, while some Queens bridge and tunnel access neighborhoods saw increases. These patterns indicate a highly localized rather than uniform ring effect around the CBD. Heterogeneity analysis using ACS-based neighborhood characteristics suggests that post-policy CBD ride-hailing gains were larger in higher-income and higher-White-share neighborhoods. Gains were weaker in higher-Hispanic-share neighborhoods, with less consistent evidence for other demographic measures. Subway density analysis finds little evidence of greater ride-hailing declines in transit-rich areas.

These findings suggest that congestion pricing may generate short-run increases in ride-hailing demand within the priced zone even as those effects diminish over time, while producing more persistent improvements in ride-hailing performance. More broadly, the paper shows that evaluating congestion pricing requires attention not only to aggregate traffic outcomes, but also to platform mobility dynamics, neighborhood spillovers, and distributional consequences.

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Keywords: Congestion Pricing, Ride-hailing, Transportation equity, Difference-in-differences, New York City

COVERAGE VS. RIDERSHIP: IDENTIFYING CONNECTIONS AND TRADEOFFS BETWEEN THE BUILT ENVIRONMENT AND USER PREFERENCES FOR BUS NETWORK REDESIGNS

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U.S. public transit systems face a ridership decline, which leads to lower fare revenue and undermines agencies' ability to sustain the existing level of service. As transit agencies confront this challenge, many are considering comprehensive bus network redesigns (BNR) that reimagine transit service provision (Byala et al., 2019). Transit agencies operate in a fiscally constrained environment, which means they must balance available resources with transportation needs and preferences of their users, and prioritize either coverage or ridership concepts when planning the service. Coverage is defined as the extent of service availability that minimizes walking time to transit stops, while prioritizing ridership means concentrating frequency where demand is greatest. When resources are concentrated on providing frequent service in denser areas (rather than covering the entire region), this raises concerns regarding the equity of such resource distribution, even if it generates higher ridership. Yet current literature does not provide practitioners with an understanding of the tradeoffs that riders are willing to make between various service levels to continue using transit. To address this gap, this study analyzes a 1,223-sample of survey respondents collected in the Des Moines-West Des Moines Metropolitan Statistical Area, IA, during Phase 1 of the Reimagine DART public engagement effort in April 2025. The survey gauged respondents' support for prioritizing either coverage or ridership using a five-point Likert scale. Survey data was supplemented with two built environment proxies for each respondent's home municipality: one is walkability, a measure of local accessibility that captures the density of opportunities within walking distances of people's homes and 45-minute transit accessibility to jobs. The analysis relied on an Ordered Logit regression to predict the probability of a respondent choosing between ridership and coverage concepts using observed respondent demographics and built environment characteristics of their home municipalities. We found that on average, respondents favor the ridership concept, which is consistent with prior research using a similar survey instrument in Chattanooga, TN (ZIedan et al., 2021). High income is the only individual demographic characteristic that increases the likelihood of favoring ridership, supporting the evidence that well-off individuals are more likely to choose transit when offered at high frequency. Women, seniors (over 65), and non-white respondents tend to be more supportive of the coverage concept, likely due to higher dependence on transit (Pucher & Renne, 2003). In addition, there is a positive interaction effect between being a senior and belonging to a minority population, potentially reflecting the concentration of non-white households in downtown areas with access to more frequent transit. Lastly, the proxies for the built environment allow us to establish connections between preferences for concepts and existing conditions of the places where people live. Every point increase in Walk Score® decreases preference for the ridership concept, suggesting residents who can access amenities on foot have a lower need for regional bus travel. Conversely, higher cumulative transit accessibility to jobs is positively associated with support for the ridership concept, indicating a self-selection process among respondents already well-connected to regional opportunities. Lastly, marginal rates of substitution reveal the scale of accessibility improvements needed to equalize preferences: transit accessibility to jobs would have to go up by almost 13 thousand for women for them to have the same preference for the ridership concept as men. Overall, this paper establishes the importance of including appropriate control variables when evaluating respondents' preferences and estimating the tradeoffs they are willing to make when faced with a choice for a new transit network.

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Keywords: Public Transit, Bus Network Redesign, Transit Accessibility, Transport and Land Use, Transit Satisfaction

DELINEATING MOBILITY COMMUNITIES IN NYC BIKESHARE NETWORKS: IMPLICATIONS FOR ADMINISTRATIVE BOUNDARIES

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Administrative boundaries such as New York City's Community Boards (CBs) and Neighborhood Tabulation Areas (NTAs) serve essential governance and demographic functions, yet they were not designed to reflect how residents actually travel within the city. This paper asks to what extent data-driven mobility communities align with, diverge from, and complement these administrative geographies. Rather than proposing to redraw boundaries, we examine whether a behavioural layer derived from bikeshare trip data reveals functional spatial structure beyond what administrative maps alone can capture.

We analyse 91.6 million Citi Bike trips (January 2024–January 2026) across 2,265 docking stations within Community Board boundaries. Each station is represented by a 35-dimensional mobility feature vector capturing daily flow, a 24-hour normalised temporal profile, and origin–destination concentration patterns. A spatial adjacency graph is constructed using Delaunay triangulation to respect topographic barriers and reconnected via k-nearest neighbours. We then apply spatially constrained Ward clustering with an over-cluster-then-merge strategy to derive contiguous mobility communities at two scales (k = 31 and k = 101), with boundaries estimated using alpha shapes and Voronoi clipping.

Mobility communities show moderate alignment with administrative boundaries (NMI = 0.636 at the CB scale and 0.740 at the NTA scale), with finer NTAs better matching mobility structure. At the CB scale, communities broadly respect borough boundaries, but several clusters span multiple Community Boards; for example, a single cluster links CB 1 (Financial District) and CB 2 (Greenwich Village), reflecting strong trip exchange. Conversely, some Community Boards fragment into multiple communities, indicating substantial internal heterogeneity. At finer resolution, the partition reveals a mosaic of distinct micro-zones: dense corridors such as Midtown and Downtown Brooklyn split into adjacent clusters differentiated by temporal profiles, with commuter-oriented clusters peaking during rush hours and nearby leisure-oriented clusters peaking at midday and weekends. Topographic barriers, including the East River, Central Park, and Prospect Park, emerge as natural boundaries.

For planning, this work contributes a complementary analytical layer for administrative geographies. Where Community Board boundaries coincide with mobility communities, they function as coherent transport zones for strategic decisions such as capacity allocation, expansion prioritization, and community engagement; where they diverge, mobility communities identify mismatches relevant to operational planning, including rebalancing, station siting, and service-area design. As rebalancing is a major operational cost, aligning service areas with flow-based communities can reduce long-distance redistribution by exploiting predictable directional imbalances, while variation in cluster size and spatial extent highlights inequities in infrastructure coverage and supports targeted expansion in under-served communities. More broadly, mobility communities provide a complementary lens to transit catchment areas and, unlike static administrative boundaries revised through lengthy political processes, can be updated dynamically as travel patterns evolve, offering a real-time, behaviourally grounded view of neighbourhood structure. Supplementary materials (maps, anonymous): https://drive.google.com/drive/folders/1y9qp03Ih4yDUQPTB12xww8Ds3oRRkunz?usp=sharing

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Keywords: Bikeshare, Urban Mobility, Spatial Clustering, Community Boundaries, Transportation Planning

DISENTANGLING SELF-SELECTION FROM THE IMPACT OF ELECTRIC VEHICLE OWNERSHIP ON HOUSEHOLD TRAVEL

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Individual Paper Presentation

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The number of electric vehicles (EVs) has grown significantly during the past several years. While the adoption of EVs has the potential to reduce greenhouse gas (GHG) emissions, it may also induce additional driving. To understand this impact, previous studies have compared the driving distances of EV and non-EV owners. The literature offers mixed evidence. For example, Tal et al. (2020) found that battery electric vehicle (BEV) and plug-in hybrid electric vehicle (PHEV) owners in California drive more than internal combustion engine vehicle (ICEV) owners. On the contrary, Zhao et al. (2023) demonstrated that BEVs have lower annual mileage than conventional gasoline vehicles, based on odometer readings. This discrepancy highlights two competing factors: lower fuel costs encourage more travel, whereas range anxiety tends to limit it.

Previous studies are vulnerable to a major limitation: the decision to own an EV is often treated as a random process. In reality, there are systematic differences between EV adopters and non-adopters. For example, affluent and highly educated individuals are more likely to adopt an EV (Chen et al., 2020). These factors, such as household demographics and built environment characteristics, also affect how much a household drives. Ignoring EV owners' self-selection into EV adoption will lead to biased estimates of the effects of EV ownership on driving distance (Ewing et al., 2016; Kim and Mokhtarian, 2024).

Using data from the 2024 California Vehicle Survey, this study applies an endogenous switching regression (ESR) model to account for self-selection into EV ownership and to examine the effects of EV ownership on annual total household vehicle miles traveled (VMT). While controlling for household demographics and built environment characteristics, this study attempts to answer the following questions: (1) What factors influence a household's decision to own an EV? (2) How does EV adoption affect household VMT after accounting for self-selection? This study focuses exclusively on the adoption and use of full electric vehicles (referred to as EVs) and gasoline-powered vehicles (referred to as gasoline vehicles). The dataset includes 464 EV households (i.e., those owning at least one EV) and 1,750 non-EV households (i.e., those owning only gasoline vehicles).

The results indicate that EV ownership is endogenous to household VMT, driven by factors such as prior experience with hybrid and plug-in hybrid vehicles, local EV registration rates, and solar panel installation. Moreover, the results of counterfactual analysis show that a non-EV household would drive about 694 fewer miles on average if it switched to an EV. This finding suggests that EV adoption reduces annual household driving distance. Methodologically, this study provides a robust econometric framework for estimating the impacts of EV adoption on travel behavior. The results advance our understanding of how household VMT changes after owning EVs. This study provides critical insights for policymakers evaluating the long-term effects of incentivizing EV ownership.

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Keywords: Electric vehicles, Vehicle miles traveled, Endogeneity, Sample selection model, Counterfactual effects

DO BRT AND LRT HAVE DIFFERENT TOD?

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PhD Candidate
Individual Paper Presentation

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Transit-Oriented Development (TOD) is a widely endorsed planning approach for reducing automobile dependence, encouraging compact urban form, and increasing transit ridership. Defined by walkable, mixed-use development within close proximity to high-capacity transit, TOD has gained strong support among planners and policymakers as a strategy for advancing climate, equity, and economic goals (Dittmar & Ohland, 2012). In the United States, Light Rail Transit (LRT) has been the primary mode associated with successful TOD implementation.

Bus Rapid Transit (BRT) has gained traction as a lower-cost alternative to rail, with many proponents suggesting that when built to a high standard, BRT can replicate the developmental benefits of LRT. The Federal Transit Administration (FTA) and organizations like the Institute for Transportation and Development Policy (ITDP) have described BRT as "light rail on rubber tires," citing its ability to deliver rail-like service at a fraction of the cost (Institute for Transportation and Development Policy, 2013). However, despite this policy enthusiasm and the growing number of BRT systems in U.S. cities, evidence of TOD emerging along BRT corridors remains limited and mixed. Previous research has identified several reasons for this disparity. These include the physical and operational differences between bus and rail, public perceptions of mode permanence, and the institutional and policy frameworks that tend to accompany rail investments but not BRT (Higgins & Kanaroglou, 2016). These factors may suppress private development interest and hinder the realization of transit-supportive land use patterns along BRT corridors.

This study systematically evaluates 32 BRT systems across the United States to determine whether TOD has emerged in these corridors under a definition consistent with leading rail-based TOD research. A development is characterized as a TOD if it meets the following eight criteria, adapted from Ewing et al. (2015): 1) adjacent or nearly adjacent to a station (maximum one block away); 2) dense and multistory; 3) mixed use with residential and commercial components (potentially including office uses); 4) pedestrian-friendly with public space; 5) built after rail opened; 6) largely built out; 7) has on-site own parking facilities (i.e., self-contained parking); and 8) is/was master planned or consist of buildings gathered in a cluster near transit station (not a single building).

We contacted metropolitan planning organizations (MPOs), transit operators, and major cities to get a list of potential TODs based on the eight criteria explained in the previous subsection. We believe these three types of agencies/organizations in each region have the best knowledge of the region itself and all the TODs that have been built (or are planned to be built). For each agency, the research team sought to contact the person(s) who are involved with or have the best knowledge of TODs in the region. Our research was Spatial analysis, aerial imagery, and agency interviews supplement this assessment to ensure a comprehensive evaluation. Next, to verify the list of potential TOD projects we received from the agencies/organizations, we reviewed candidate projects to see if they meet the criteria using Google Satellite Imagery and Google Street View.

Findings indicate that LRT lines in the U.S. have over 100 TODs adjacent to their stations, while none of the BRT corridors exhibit development that meets the transit-oriented development (TOD) criteria established in the literature for LRT. Even high-quality BRT systems—with dedicated lanes and strong branding—have not consistently attracted the compact, mixed-use development typically associated with LRT corridors. However, this does not

suggest that BRT lacks impact. On the contrary, evidence shows that new BRT lines can serve as catalysts for revitalization and economic growth while significantly improving urban mobility.

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Keywords: Bus Rapid Transit (BRT), TOD

DO CYCLISTS' ROUTE PREFERENCES CHANGE WITHIN THE DAY? EVIDENCE FROM BIKE-SHARING ROUTE CHOICE BEHAVIOR IN SHANGHAI

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Individual Paper Presentation

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Cyclists, unlike motor vehicle users, are directly exposed to street environments without physical protection, making street environment quality crucial to their riding experience. Cycling route choice provides a direct way to identify cyclists' environmental preferences by comparing alternative routes under the same origin–destination conditions. While prior research has confirmed the role of traffic-related attributes (e.g., cycling infrastructure), two gaps remain: Firstly, street-level visual characteristics perceived by cyclists are rarely incorporated into route choice analysis. Secondly, temporal variation is typically simplified into a peak versus off-peak distinction. This temporal simplification overlooks within-day variation in cycling conditions, such as differences in visibility, time constraints, and street activity, which may lead to variation in cyclists' environmental preferences across time periods. This study endeavours to unveil cyclists' street-level environmental preferences through route choice behavior and to examine how these preferences vary across time of day.

The analysis is based on an initial dataset of 1,046,212 bike-sharing trajectories from the central city of Shanghai. Rather than generating alternatives algorithmically, which may introduce behaviorally implausible routes, choice sets are constructed entirely from observed trajectories. After retaining OD pairs with sufficient trip frequency and route diversity, the final sample includes 9,249 OD pairs and 91,878 trips. Built environment variables are measured within a 100 m buffer and grouped into landscape design, traffic infrastructure, and functional land use. Visual characteristics are derived from Baidu Street View imagery via semantic segmentation (e.g., green view index, traffic light visibility). A Path Size Logit model is estimated for the full sample and for four time periods: morning peak, daytime off-peak, evening peak, and night.

Results indicate that in 67% of OD pairs, the dominant route differs from the shortest path, with significant differences in built environment characteristics. The overall model shows that most attributes across the three dimensions are associated with route choice, highlighting the role of street-level visual factors. More importantly, time-specific models reveal clear shifts in route choice patterns across the day. 1) During the morning peak, route choice is primarily shaped by traffic-related infrastructure, with strong preferences for routes with dedicated bicycle lanes, a higher proportion of branch roads, and proximity to metro stations and bus stops , while avoidance of office areas is also observed. 2) In contrast, during daytime off-peak, the influence of traffic-related attributes weakens, whereas streetscape features become more salient, with a stronger preference for routes with higher green view index (GVI). 3) In the evening peak, strong preferences for cycling lanes and branch roads remain evident, and cyclists demonstrate a distinct avoidance of routes traversing public service land and parks. 4) At night, fewer built environment variables remain significant, while streetscape-related attributes associated with perceived safety (e.g., spatial enclosure and traffic light visibility) become more influential, indicating a shift toward safety-oriented evaluation under low-visibility conditions.

This study contributes by constructing behaviorally grounded choice sets from observed trajectories, incorporating street-level visual environment measures, and identifying temporal heterogeneity in route choice. The findings provide evidence for prioritizing built environment improvements along frequently used cycling routes and for targeting time-specific interventions around key urban spaces, such as strengthening cycling environment

management near parks during the evening peak. Together, these insights support more temporally responsive and context-specific planning of cycling-friendly streets.

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Keywords: Temporal heterogeneity, Streetscape, Bike-sharing, Route choice, Trajectory data

DO SCOOTERS OBSTRUCT ACCESS—OR ATTENTION? PERCEPTIONS OF SIDEWALK CONFLICTS AND OVERLOOKED CAUSES OF OBSTRUCTION

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Sidewalks represent a critical component of the transportation network. More recently, sidewalk access has become a point of contention thanks to a new arrival on the street: shared e-scooters. Scooters have received negative attention due, in part, to their potential to block sidewalks. However, scooters represent only one possible impediment to accessible sidewalks: cars, poles, broken surfaces, and vegetation, and many other objects, may also obstruct sidewalk travel. This research seeks to better understand perceptions of sidewalk obstructions, comparing scooters on sidewalks with other modes and everyday objects. In this research, we ask:

1. How do people view parked scooters relative to other objects, specifically bikes, cars, and signs? Specifically, how annoyed are people when they see these different objects and how frequently do they encounter them?

2. How does the sidewalk context (i.e., width) affect perceptions?

3. How do people with mobility disabilities, for whom sidewalk obstructions may be especially salient, view scooters, and do they prefer different policy tools for addressing them relative to people without mobility disabilities?

To answer these questions, we conducted an online survey of 2,347 U.S. adults using the online platform Prolific and asked them to assess photos of sidewalks, some of which were partially or completely blocked by scooters, bikes, signs, or cars. Methodologically, our objective was to isolate the sidewalk obstruction while holding other built environment factors constant. To do this, we staged and photographed all objects on the sidewalks of an American city on the same day and time. This approach ensures that any perceived differences reflect the object rather than the surrounding context. All respondents indicated the frequency and annoyance of all sidewalk objects on a 10-point scale. We also tested how frequency and annoyance varied between wide versus narrow sidewalks, and how support for scooter policies varied by annoyance and mobility disability.

We find that people report encountering cars and signs significantly more often than they encountered scooters. Cars were also seen as significantly more annoying than scooters, while signs were seen as less annoying. Perceived annoyance depends heavily on the width of the sidewalk. Average annoyance was more than three points higher (on 10-point scale) on a narrow sidewalk than a wide one across all sidewalk objects.
Most respondents—including those highly annoyed with parked scooters—supported policies to manage scooters, while few (16%) supported outright scooter bans. This suggests that even strong negative reactions to scooters do not always translate into support for outright prohibition. Respondents with mobility disabilities, however, are more supportive of restrictive scooter regulations compared to people without mobility disabilities.

Our findings yield important implications for how cities manage the public right of way. First, clearly demarcating designated scooter parking may reduce public annoyance. Second, cities should carefully weigh where to designate parking for shared devices. Third, we find that people see scooters partially blocking a sidewalk less frequently than

they see similarly positioned bikes, signs, or cars. This suggests that public attention to scooters may be disproportionate to their actual impact, and that city leaders should broaden their focus to address multiple sources of sidewalk obstruction, not just those caused by micromobility vehicles. Findings also suggest that narrow sidewalks dramatically amplify peoples' annoyance regardless of object. Taken together, this research suggests that while scooters drive outsized media attention within the broader context of sidewalk obstructions and access, they may also serve as a canary for a broader discourse about sidewalk access and how we manage our public right-of-way.

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Keywords: perceptions, e-scooter, sidewalk, access, obstruction

DOES TRANSIT DISPROPORTIONATELY DISPLACE LOW-INCOME RENTERS? EVIDENCE FROM A NATIONWIDE QUASI-EXPERIMENTAL ANALYSIS

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Individual Paper Presentation

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Introduction Planners and policymakers often assume rail investments lead to gentrification, displacement, and exclusionary outcomes for low-income populations, although the evidence is mixed [1-5]. Many of the existing studies rely on aggregated data, and even those using household-level data often analyze transit neighborhoods in isolation or include all station areas regardless of their gentrification status, making it difficult to isolate the causal effect of transit from broader urban dynamics. We test whether LRT investments disproportionately displace low-income renters compared to other gentrifying neighborhoods using household-level data and a quasi-experimental design.

Research questions Are LRT investments associated with gentrification in surrounding neighborhoods? If so, do these investments disproportionately displace low-income residents, particularly renters, relative to other gentrifying neighborhoods without new transit investment?

Methods In this quasi-experiment, we focused on the LRT stations opened between 2010 and 2022 across the whole US. We created a household-level longitudinal dataset using Data Axle based on station opening year, using an event-time framework (−3 to +3 years) that captures pre- and post-opening dynamics. To isolate the effect of transit from broader urban changes, our analysis focuses exclusively on gentrifying neighborhoods, identified using relative income growth (before and after the station opened) at the census block group level. Then we analyzed residential mobility outcomes in gentrifying neighborhoods by tracing renter households over the study period and defined displacement as constrained moves of low-income renters to equal- or lower-income neighborhoods. Therefore, our treatment group includes households living in gentrifying block groups and is within 0.5 miles of newly opened LRT stations. The control group consists of households in gentrifying neighborhoods not exposed to transit, but matched on pre-opening socioeconomic characteristics (income, homeownership, racial composition, and household size) and similar post-opening income growth. Finally, we regressed the residential mobility outcomes (displaced vs. relocated or not moved) of treatment and control households in relation to household-level characteristics (age, marital status, household size, children, seniors, race, income, wealth, tenure, length of residence, and distance to the city center) and neighborhood-level characteristics (income, racial composition) using a hierarchical difference-in-differences model.

Results We found 146 out of 233 LRT stations have at least one gentrifying census block group within half a mile, indicating that LRT investments do not uniformly drive gentrification. Preliminary regression results indicate that households in gentrifying transit neighborhoods are less likely to experience displacement than those in control areas, which does not support the hypothesis that LRT disproportionately displaces low-income renters.

Implications Our results challenge the assumption that rail investments increase displacement. Instead, displacement is not systematically higher and may be lower in transit-served gentrifying areas. This suggests broader housing market dynamics might be the primary drivers of displacement, rather than transit investment

alone; therefore, policies aimed at equitable transit-oriented development should address wider housing market conditions.Citations:

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Keywords: Light Rail, gentrification, displacement, renters, low-income

DON'T MIND THE GAP, FILL IT: CREATING ROUTABLE ACTIVE MOBILITY NETWORKS USING MULTIMODAL DATA FUSION AND AI

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Despite growing recognition that active mobility infrastructure data is essential for transportation planning, safety analysis, and equitable investment, most U.S. metropolitan regions lack routable active mobility network data (Rhoads et al., 2023). Existing data sources either attach sidewalk and bike lane information to road centerlines, which misrepresents actual network connectivity, or rely on volunteer-driven mapping efforts (e.g., OpenStreetMap) that suffer from inconsistent spatial coverage (Hosseini et al., 2023; Li et al., 2018). As a result, pedestrian and bicycle accessibility analyses often default to simplified yet incomplete networks with fragmented segments and missing critical infrastructure attributes such as sidewalk width, slope, and condition. These gaps preclude profile-based routing, in which paths are tailored to the specific needs of diverse traveler profiles. This study proposes a framework for generating fully connected, routable active mobility networks with the attribute richness required for profile-based routing and demonstrates its application in the Boston metropolitan region.

Our framework follows a three-stage approach. First, we defined a standardized data schema by integrating the General Active Transportation Infrastructure Specification (GATIS), a national standard proposed by the U.S. Department of Transportation. The schema organizes infrastructure feature types across edges, nodes, points, and zones, each enriched with attributes necessary for profile-based routing, such as width and slope, so that routing engines can evaluate path suitability for specific traveler needs. Next, we developed a suite of AI models that fuse aerial imagery, street-view imagery (SVI), and/or LiDAR point clouds to identify infrastructure features and extract their attributes. For instance, sidewalk and crosswalk geometries were identified from aerial imagery, while fine-grained attributes such as width, slope, and surface material were measured from SVI and LiDAR using multimodal large language models (MLLMs) and computer vision models. Finally, we assemble detected features into fully connected network graphs, constructed separately for bicyclists and pedestrians.

We trained and evaluated our framework across urban and suburban areas in the Boston metropolitan region, demonstrating its capacity to produce routable networks at scale. Preliminary results show that the framework successfully constructs pedestrian networks that connect sidewalks and crosswalks alongside curb ramps, with routing-critical attributes such as sidewalk width and crossing type. We also compared the generated networks against MassDOT's road inventory and OpenStreetMap to quantify improvements in network connectivity and attribute coverage. The resulting tool is designed to be replicable and scalable, enabling planners and policy makers to generate and maintain routable active mobility networks using publicly available data sources. This study contributes to planning scholarship by operationalizing an emerging national data specification for regional application, and to planning practice by delivering a tool that directly supports gap analysis, investment prioritization, and ADA compliance assessment for active transportation infrastructure.

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Keywords: Mobility network, Multimodal data, Active mobility, Infrastructure, Routing

DRIVE-THRU USA: NATIONWIDE SPATIAL ANALYSIS OF DRIVE-THRU BUSINESSES

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Individual Paper Presentation

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Drive-thru businesses, in which customers place and retrieve orders without leaving their cars, discourage social interaction and physical exercise, and degrade a street's walkability and air quality. Despite these negative attributes, their proliferation across the United States has never been quantified or spatially analyzed. This study pursues this topic by mapping drive-thrus nationwide, combining data programmatically extracted from OpenStreetMap, with satellite imagery, company records, and public reviews. This approach reveals the presence of at least 133,000 drive-thrus in the US, which are present in nearly all corners of the country, and broadly track with population density. Indeed, though drive-thrus are historically associated with highway interchanges and rural stretches, 84% of identified drive-thrus are in fact located in suburban and urban areas. Further, drive-thrus are heavily clustered; 58% of all drive-thrus nationally lie within 1/10th of one mile from another location (161 meters), many of which are based at the intersection of arterials, and on the periphery of large shopping centers. Cataloging the expansion of drive-thrus over time, by linking each location to its associated Yelp page, demonstrates that they continue to grow in number over the last decade, though the rate of expansion may be slowing due to market saturation. Indeed, the average distance between drive-thrus has declined over time, indicating even greater clustering of these businesses in the last ten years. This novel national database has four primary implications; first, it can immediately be of use to planners, by guiding the co-locating of infrastructure to calm traffic, increase pedestrian safety, and improve air quality adjacent to these businesses. Second, it can inform local and regional governments as they consider restricting or banning drive-thrus from their jurisdictions. Third, the distribution of these businesses can be related to a wide range of sociodemographic, health, and transportation outcomes. Fourth, the methodological approach established here can be adapted to understand the spatial footprint and temporal progression of a wide range of business types at the national scale, data for which is otherwise outdated or scarce.

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Keywords: Sprawl, GIS, Pedestrian, Open-Data, Pedestrian

ELECTRIC BICYCLE FATALITIES: INCIDENT CIRCUMSTANCES AND VICTIM CHARACTERISTICS

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Individual Paper Presentation

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In recent years, there has been increasing interest in the safety performance of electric bicycles. In this research we explore electric bicycle fatalities, including the incidents in which fatalities occurred and characteristics of incident victims. One of the most common sources of information on traffic fatalities in the United States is the Fatality Analysis Reporting System (FARS). However, a notable limitation of FARS is that it only captures fatalities involving a motor vehicle. Therefore, FARS does not capture fatalities from solo crashes or crashes involving electric bicycle riders and pedestrians. Therefore, to capture the wider range of electric bicycle-related fatalities, we searched for news reports on electric bicycle fatalities that occurred from January 2019 through July 2025. To find news articles, we utilized news search tools such as Meltwater, Google News, ProQuest, and Lexis Nexis. Additionally, we searched for social media mentions of news articles. The news article approach has its own limitations. Notably, fatalities must be deemed newsworthy enough by a media outlet to generate an article. Thus, we probably did not find all instances of fatalities, but found some instances that FARS would have missed.

Overall, we identified news articles reporting on 133 fatalities related to electric bicycles over the six and a half year period. This includes 101 deceased electric bicycle riders, 4 non-riders killed in crashes with electric bicycles, and 28 people who died in fires related to electric bicycles.

Among the 101 rider fatalities, 70 involved a collision with a moving motor vehicle. Twenty-eight fatalities were solo crashes, including five riders who struck a parked vehicle. These figures indicate that much of the risk to electric bicycle riders is related to motor vehicles rather than the electric bicycles themselves. Comparatively, the rate of solo crashes among electric bicycle fatalities reported here is similar to the solo crash rate for conventional bicycles found in a study from the Netherlands (Schepers, et al., 2017), but notably higher than the solo crash rate for conventional bicycles in a study of Australia (Boufous and Olivier, 2015).

Demographically, much policy activity surrounding electric bicycles has been related to concerns about riding by minors. However, minors were not overrepresented among fatal crash victims, with the average victim being 39 years old, equal to the median age of the US general population. Seventeen percent of deceased riders were minors. On the other end of the age spectrum, seniors made up 16% of deceased riders. Overall, the vast majority of deceased riders were male (86% of cases where gender was reported).

Among the four non-rider fatalities, three were suffered by pedestrians, including one in a crosswalk and one crossing a bike lane. The fourth fatality was a bicycle rider involved in a crash with an electric bicycle. By age, three of the four deceased non-riders were seniors.

Among the 28 fire-related fatalities, all but one occurred in New York State, with all but one of those being in New York City. The 27 fatalities in New York State occurred across 17 discrete fire events, thus several of these fires were multiple-casualty events. Several of the multi-fatality fires took place in apartment buildings, including one in an apartment building with a first-floor electric bicycle shop. The fire in that shop highlighted the risk of shops offering battery swapping services for delivery riders. These shops often charge a large number of batteries in a single location. Nineteen of the 28 fire-related fatalities occurred in 2023. The drop in fire-related fatalities since then may indicate efficacy of mitigation measures such as battery standards, introduction of higher quality devices targeted to delivery riders, and device bans in some buildings.

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Keywords: electric bicycles, e-bikes, micromobility, traffic safety

ELECTRIC VEHICLE ADOPTION, USE, AND CHARGING BEHAVIOR IN URBAN AND RURAL AREAS OF UTAH

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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The shift towards sustainable transportation—with electric vehicles (EVs) as a central element—is vital for reducing air pollution, improving health, and stabilizing transportation costs. Differences in the adoption and use of EVs across urban/rural contexts—as influenced by personal, social, and infrastructural factors—needs more study in order to guide EV charging infrastructure (EVCI) investments to support the growing consumer adoption of EVs. Thus, the goal of this research project was to understand factors affecting EV adoption, travel behaviors, and charging behaviors, focusing on any differences between urban and rural areas.

To accomplish this goal, the research team utilized Utah's 2023 statewide household travel survey that collected up to 7 days of data from around 10,000 households. Several key outcomes were studied: household vehicle ownership and EV adoption, household- and vehicle-level daily travel behaviors, and trip- and household/day-level charging behaviors. Through literature-informed statistical analyses, the research team identified factors associated with these outcomes, as well as differences between more urban and more rural areas of Utah, measured as within versus outside of the Wasatch Front (Salt Lake City metropolitan) region.

The first analysis studied household vehicle ownership and EV adoption (having one or more EVs), using Poisson and logistic regression. Higher household income, more educational attainment, and owning a home were associated with greater EV adoption. Results around vehicle ownership suggested that EVs are often secondary vehicles for urban (but not rural) households. Accessibility to public charging infrastructure had a modest role, suggesting that improved access to charging stations could impact vehicle electrification, if expanded. Overall, the factors influencing EV adoption remained largely the same across urban/rural contexts, suggesting that there may be similar motivations for having an EV for urban and rural households, at least among early adopters.

The second analysis investigated daily household and vehicle travel behaviors—including no travel, trip frequency, distance, and duration—comparing EVs versus non-EVs and urban vs. rural households. Analysis methods included a series of logistic and negative binomial regression models. Household structure (workers, students, children), income, and vehicle availability strongly shaped travel participation and intensity. Although EV-owning households did not exhibit differences in travel outcomes compared to non-EV households, EVs themselves were less likely to not be used on a given day, and they made more daily trips, at least in urban areas. Overall, the findings suggest that EV ownership itself does not substantially alter daily travel patterns once household and demographic characteristics are considered, but spatial context amplifies socioeconomic differences in mobility.

The third analysis used EV-only data and logistic regression models to analyze three charging behavior outcomes: the presence of a charger at a trip's destination, choosing to charge at the end of a trip, and choosing to charge at home at the end of the day. Results showed that although home destinations were the most likely to have an EV charger, charging at the end of a trip was actually more likely at work and other non-home destinations. Rural destinations visited by EV users were more likely to have a charger, and EV users in rural areas were more likely to charge at their destination, which highlights the importance and desirability of public charging for rural EV-owning households and for EV users traveling to and through rural areas. Positive associations between distance traveled

and both charger presence and charging behavior for rural (but not urban) trips, suggests that rural EV users rely more on strategic charging, while urban EV users rely more on opportunity charging.

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Keywords: Electric vehicles, Electric vehicle charging, Automobile ownership, Travel behavior, Travel surveys

ELECTRIC VEHICLES AND THE BUILT ENVIRONMENT: ARE THEIR RELATIONSHIPS DIFFERENT FROM CONVENTIONAL VEHICLES?

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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A large body of research shows that the built environment significantly shapes household vehicle miles traveled (VMT), yet little is known about how these effects may differ between electric vehicles (EVs) and conventional vehicles. As EV adoption accelerates, understanding these dynamics is increasingly important for sustainable transportation planning. This study uses data from the 2023 Utah Household Travel Survey to compare how built environmental characteristics influence VMT across vehicle types. A two-stage hurdle framework, implemented with Gradient Boosting Decision Trees (GBDT), is applied to address zero-inflated outcomes and capture nonlinear relationships. Results show that built environment attributes play a larger role in EV adoption and usage, whereas socioeconomic factors remain more influential for conventional vehicles. In particular, income strongly affects EV adoption but has little effect on EV usage, while it remains an important determinant of both adoption and usage for conventional vehicles. The analysis also reveals notable nonlinear effects of the built environment on VMT. For example, the marginal influence of land-use entropy on EV adoption plateaus at a threshold of 0.85, and the effect of transit stop density on EV usage declines sharply before stabilizing at approximately 20 stops per square mile. For planning and policy implementation, these findings highlight the importance of aligning EV infrastructure with local land use conditions and expanding adoption incentives to reach broader households. Overall, the study provides empirical evidence to inform integrated land use and transportation strategies that facilitate sustainable transportation systems.

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Keywords: electric vehicles, built environment, vehicle miles traveled, decision trees, machine learning

EQUITABLE ELECTRIFICATION ON TWO WHEELS? THE EFFECT OF E-BIKES ON TRAVEL BEHAVIOR AND TRANSPORTATION INSECURITY

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Over the last decade, at least seven U.S. states and dozens of cities launched programs to subsidize private purchases of electric bicycles (McQueen et al., 2019; Tenways, 2025). Modeled on home energy and electric automobile incentives, these initiatives typically offer households between a few hundred and more than a thousand dollars toward an e-bike purchase. Policymakers frame these programs as tools to reduce greenhouse gas emissions and promote equitable mobility (California E-Bike Incentive Project, 2025; City of Denver, 2025). Yet despite their growing cost and popularity, little is known about whether such subsidies deliver on these promises in the U.S. context. This paper begins to bridge this gap by reporting on a randomized controlled trial of e-bike vouchers issued to residents of Raleigh, North Carolina.

We leverage the program's lottery-based allocation of 150 vouchers to estimate causal effects on travel behavior and transportation insecurity. The study combines three sources of data: (1) panel surveys administered before and after voucher allocation, (2) passively collected trip data from the OpenPATH smartphone application, and (3) semi-structured interviews with voucher recipients. Together, these data allow us to evaluate both behavioral outcomes—such as changes in cycling frequency, tripmaking, and vehicle miles traveled (VMT)—and experiential dimensions of mobility, including perceived reliability, independence, and transportation insecurity.

Results show that financial incentives are highly effective at inducing e-bike adoption and increasing cycling. Voucher recipients were over ten times more likely than non-recipients to acquire an e-bike (82% vs. <8%). Across both survey and app-based measures, recipients exhibit large and statistically significant increases in cycling frequency. OpenPATH data indicate a 174% increase in daily bike/e-bike trips among voucher recipients relative to the control group, while survey-based permutation tests show that voucher recipients report higher cycling frequency in roughly two-thirds of treatment–control comparisons ($p < 0.001$). However, these behavioral gains do not translate into measurable reductions in driving or VMT. Across multiple specifications and data sources, we find no statistically significant changes in car use.

In contrast, we find strong and consistent evidence that e-bike vouchers reduce transportation insecurity. Voucher recipients report significantly lower transportation insecurity scores than non-recipients, as well as larger declines over time. Interview data illuminate the mechanisms underlying these effects: participants describe e-bikes as expanding their feasible activity space, reducing reliance on others for rides, lowering transportation costs, and providing a reliable backup when other modes fail. These benefits are especially pronounced among individuals without consistent access to a car.

Taken together, the findings complicate prevailing policy narratives. While e-bike subsidies are often justified primarily on environmental grounds, our results suggest their most immediate and robust benefits lie in increasing physical activity and reducing transportation insecurity. The absence of detectable VMT effects reflects persistent structural constraints highlighted by interviewees, including limited cycling infrastructure, time pressures, and chaperoning or cargo needs. Alone, e-bike incentives cannot overcome all these barriers to reduce driving.

We argue that e-bike incentives should operate as part of a broader effort to promote safe active transportation through infrastructure investments, education, and incentives. For planners, realizing the full environmental

potential of e-bikes will require pairing financial incentives with safe cycling infrastructure, land use changes that shorten trip distances, and interventions that address the social and habitual dimensions of car use.

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Keywords: e-bikes, transportation insecurity, travel behavior, VMT, active transportation

EVALUATING FIRST-/LAST-MILE TRANSIT ACCESS TO FRESH FOOD SERVICES AND SPATIAL DISPARITIES AFFECTING DISADVANTAGED NEIGHBORHOODS

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Individual Paper Presentation

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Transit accessibility is a key determinant of access to essential daily services, particularly for households that are low-income, carless, older, or otherwise transportation disadvantaged. Among these services, access to fresh and nutritious food is closely associated with health, well-being, and social inclusion. This study evaluates first-/last-mile transit accessibility to fresh food services and examines the spatial disparities affecting socially vulnerable populations in the Greater Boston Area. Adopting a door-to-door perspective, we model the complete transit journey, including access from each residential parcel to boarding stops, waiting and transfer penalties within the transit network, in-vehicle travel, and egress from alighting stops to food destinations. For each residential parcel, we compute a gravity-based accessibility measure in which destination attractiveness and generalized travel time jointly determine the level of access. Destination attractiveness is represented by the perceived quality of food destinations, estimated from online reviews and ratings using large-language-model-based sentiment analysis. To improve the temporal realism of travel-time estimation, we develop an integrated routing framework based on Dijkstra's algorithm and depth-first search to account for service sequencing, waiting time, and inter-line transfers. This framework provides a more comprehensive representation of first-/last-mile transit access than conventional measures based solely on proximity, tract-level aggregation, or fixed travel-time thresholds.

Recent scholarship has advanced the measurement of food accessibility by incorporating multimodal travel and more nuanced representations of transit conditions. However, important limitations remain. Many studies continue to rely on census-tract-level units or threshold-based measures, which can obscure substantial intra-neighborhood variation and fail to capture the cumulative impedance embedded in door-to-door transit travel (Kostopoulou et al., 2024). In addition, existing work on food access has given limited attention to perceived destination quality, despite its likely influence on travel choice and the effective attractiveness of available opportunities (Bayly et al., 2025; Smarsh et al., 2025). Addressing these gaps, this study develops a parcel-level accessibility framework that integrates multimodal first-/last-mile travel, network-based temporal impedance, and perceived destination quality.

We further assess spatial disparities in fresh food access using bivariate Local Moran's I and regression models linking parcel-level food accessibility to neighborhood socioeconomic characteristics. Results reveal significant spatial disparities in transit access to fresh food services, with lower accessibility concentrated in lower-income suburban areas and other transit-disadvantaged neighborhoods, indicating a spatial mismatch between food resources, transit connectivity, and social need. By combining parcel-level analysis, integrated multimodal routing, and perceived destination quality, this study extends transportation accessibility research and demonstrates how transit disadvantage shapes inequitable access to essential services. The findings provide actionable evidence for planners and policymakers seeking to improve equity through coordinated interventions in transit system planning, first-/last-mile connectivity, land use, and the siting of healthy food outlets.

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Keywords: Transit access, First/Last mile, Fresh food services, Perceived quality, Spatial disparity

EXTREME HEAT AS DYNAMIC IMPEDANCE: THERMALLY CONDITIONED PEDESTRIAN ACCESS TO PUBLIC TRANSIT

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Extreme heat is an increasingly critical constraint on urban mobility, yet its effects on pedestrian access to public transit remain largely unaccounted for in conventional accessibility analysis, which assumes neutral walking conditions. This study reframes extreme heat as a dynamic mobility impedance and examines how thermal stress reshapes transit accessibility at the pedestrian network level.

We integrate high-resolution microclimate simulation with network-based accessibility analysis across two contrasting transit-oriented development (TOD) contexts: the dense, corridor-based urban form of Arlington, Virginia, and the more open, auto-oriented environments of Dallas, Texas. Using LiDAR-derived urban morphology and the SOLWEIG model, we generate hourly Universal Thermal Climate Index (UTCI) at 1-meter spatial resolution. These thermal conditions are operationalized as time-varying network impedance through two mechanisms: (1) threshold-based network severance, where links exceeding physiological heat stress become functionally unavailable, and (2) continuous inflation of walking time, capturing reduced walking efficiency under elevated thermal exposure.

Accessibility is evaluated using a GTFS-weighted cumulative opportunity framework, enabling direct comparison between geometric and thermally conditioned accessibility. Results show that extreme heat substantially reduces realized accessibility during peak conditions, with losses commonly reaching 30–40% of reachable transit service within a fixed walking threshold. Importantly, accessibility loss is not uniformly distributed but spatially concentrated along specific pedestrian corridors characterized by high sky view factor and limited shading, creating localized network bottlenecks.

Comparative results further demonstrate that urban form plays a critical role in moderating thermal impacts on transit access. The denser morphology in Arlington produces more heterogeneous and partially protected pedestrian environments, resulting in lower network disruption, while the more exposed urban form in Dallas leads to broader and more severe accessibility loss.

By operationalizing heat as a network-level impedance, this study advances transportation accessibility analysis beyond static assumptions and provides a transferable framework for evaluating climate-sensitive transit access. The findings offer direct implications for transit-oriented development and station-area planning by identifying priority corridors where shading and microclimate-sensitive design can most effectively preserve access under extreme heat.

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Keywords: Thermal accessibility, Pedestrian networks, TOD, Thermal impedance, Extreme heat

EXTREME HEAT REORGANIZES URBAN MOBILITY THROUGH DISTANCE-DEPENDENT AND PRIVATIZED ADAPTATION

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Individual Paper Presentation

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Global climate change is increasing the frequency and severity of extreme heat events, profoundly altering the rhythms of daily urban life. While heat is a known physical constraint on outdoor activity, existing mobility research often relies on aggregate, city-level metrics that conceal the multimodal reorganization of transport systems and mask deep intra-urban inequalities. This study investigates how human mobility adapts to extreme thermal stress, revealing that climate resilience is strictly gated by socioeconomic privilege and local urban form.

Integrating high-resolution, activity-based mobility data from over 990 million origin-destination flows across the top 100 U.S. Metropolitan Statistical Areas with micro-scale meteorological and built environment data, we utilize a fixed-effects econometric framework to isolate the conditional impact of extreme heat on travel behavior. To account for both physiological limits and regional climate acclimatization, we introduce a dual-metric framework based on the Heat Index, including a novel Weekly Cumulative Excess Heat (WCEH) metric. Our analysis reveals that extreme heat does not uniformly reduce urban movement; rather, it reorganizes it through distance-dependent and privatized substitution. During extreme heat events, active travel collapses, with walking trips declining by over 85%. Simultaneously, short-distance (<2 km) weekday driving surges by 23.3% as residents substitute active modes for climate-controlled vehicles, injecting an estimated 1,749 metric tons of additional CO2 into the atmosphere daily.

Crucially, this adaptive capacity is deeply stratified by vehicle access and the localized built environment. We identify a stark divergence in climate resilience: residents in "Climate Oases", neighborhoods characterized by high vehicle access and dense tree canopy, successfully avoid outdoor heat exposure by increasing short driving trips by 46.7%. This maladaptive luxury effect monopolizes the carbon footprint of climate resilience. Conversely, vulnerable, transit-dependent populations living in "Heat Traps" with high impervious surface coverage face severe forced immobility. For these groups, walking networks shut down almost entirely (-99.0%) without viable vehicular alternatives, eliminating essential mobility when access to cooling and services is most critical.

These findings expose a destructive feedback loop in urban climate adaptation where privatized resilience actively exacerbates long-term environmental externalities. The results challenge the implicit reliance on private automobiles for climate protection and complicate modern planning paradigms, such as the 15-minute city, under extreme weather conditions. We conclude by outlining targeted spatial planning interventions, such as deploying green infrastructure as critical transit-support systems rather than mere amenities, to decouple mobility resilience from personal wealth and ensure the freedom to move remains a public good in a warming world.

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Keywords: Extreme Heat Adaptation, Urban Mobility, Active Travel, Socio-Spatial Disparities, Built Environment

FROM ADOPTION TO RETENTION: WHY EV USERS STAY, LEAVE, OR CONSIDER LEAVING IN URBAN INDIA

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Individual Paper Presentation

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Electric vehicles (EVs) are central to global decarbonization efforts. India has set an ambitious target of 30% EV share in new vehicle sales by 2030 under its EV30@30 initiative. Yet, with EV cars currently accounting for less than 5 percent of all passenger vehicles sold in India, ensuring that early adopters remain committed to EV use is as critical as encouraging new purchases. Recent media reports in India show that some EV owners regret their purchases due to charging difficulties, maintenance challenges, and battery concerns, with many considering a return to ICE vehicles. Thus, continued EV car use cannot be assumed after adoption, and understanding factors that separate those who stay with their EV (continuers) from those who leave (discontinuers), and those who are considering leaving (potential discontinuers), is essential for targeted, long-term EV policy design aimed at minimizing discontinuation.

Prior studies have begun to address this question. Cruz-Jesus et al. (2023) found that EV continuance intention is driven primarily by adequate infrastructure availability and persistent environmental sustainability concerns. Parthasarathy and Lassar (2023) found that while environmental concerns drive initial adoption, continuation depends on satisfaction with functional performance and financial benefits. These studies are situated in relatively high-income country contexts, and evidence from low-and-middle-income country (LMIC) contexts like India, where vehicle ownership patterns and infrastructure conditions differ substantially, remains scarce. Our study, therefore, asks: what socio-demographic, infrastructural, and psychological factors are associated with membership in three distinct groups of EV buyers, namely continuers, discontinuers, and potential discontinuers?

Drawing on a sample of 1,175 current and former EV car owners across eight cities in India of varying population sizes and urban forms, our study uses discriminant analysis to classify these three groups and identify key differentiating factors. This method is appropriate for group classification and has been applied in transportation research, for instance, to distinguish cities that adopted rail transit from those that did not, and to examine associated factors (Lane, 2008).

Our analysis identifies factors associated with each group. Continuers report relatively greater levels of satisfaction with EV performance, technology, charging infrastructure, running costs, and peer acceptance compared to other groups. Continuers live predominantly in smaller households, earn lower incomes, and have access to fewer ICE vehicle alternatives, compared to other groups. Continuation for this group reflects both reward and constraint: fuel and maintenance savings deliver real financial benefits, while limited ability to afford a backup ICE vehicle reinforces continuation.

Potential discontinuers and discontinuers report lower levels of satisfaction across all satisfaction dimensions than continuers. Discontinuers have access to more ICE vehicle alternatives than potential discontinuers, giving them an immediate mobility substitute when EV use becomes frustrating and making discontinuation feasible. Potential discontinuers, despite being the most dissatisfied group among the three groups, particularly with charging infrastructure, have the least access to ICE vehicle alternatives, making discontinuation practically constrained despite their dissatisfaction.

Preventing discontinuation requires group-specific strategies that address not only the sources of owner dissatisfaction but also the constraints that limit some owners' ability to act on it. Our study underscores the need for targeted interventions that enhance the overall EV ownership experience.

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Keywords: Electric vehicles, Post-purchase behavior, Disadoption, EV policy, LMIC

FROM CBD TO NEIGHBORHOODS: HOW NYC CONGESTION PRICING REDISTRIBUTES URBAN ACTIVITY

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Individual Paper Presentation

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New York City (NYC) launched the nation's first congestion pricing program on January 5, 2025, charging vehicles entering Manhattan below 60th Street. While early evaluations document reductions in traffic, emissions, and crashes, little research examines how congestion pricing causally alters where people go, specifically, how it reshapes visits to urban destinations such as restaurants, retail, schools, and parks. This study addresses that gap through four questions: (1) Does congestion pricing change visitation levels within and outside the priced zone? (2) How do effects differ across destination categories? (3) Do residents increase local trips after the policy, consistent with a "15-minute city" pattern? (4) Which neighborhoods gain or lose visits, and what are the equity implications?

We use SafeGraph mobility data tracking anonymized smartphone visits to approximately 12,000 points of interest (POIs) across ten categories in NYC, including culture, drugstore, grocery, hotel, leisure, park, restaurant, retail, school, and service. Visit counts are aggregated at the weekly level for each POI. Boston, Chicago, and Philadelphia serve as control cities, as they are large, dense, and transit-rich cities not subject to congestion pricing. We further test robustness by varying the composition of the control city group. The study spans January 2023 through January 2026, providing 12 months of post-implementation data. We employ Bayesian Structural Time Series (BSTS) models to construct POI-level counterfactuals estimating what visitation would have been without the policy. The framework incorporates local trends, seasonal controls, and covariates selected through validation comparing three strategies per POI. We normalize the difference between observed and counterfactual visits to quantify estimated policy effects, then examine heterogeneity by category, visitor origin, trip locality, and neighborhood characteristics.

Preliminary results reveal several findings. First, we observe a spatial shift in urban activity following congestion pricing. In the first three months, visits decline by approximately 4% inside the zone and increase by 3% outside. This gap averages roughly 5 percentage points over the following year. Second, the gap is nearly twice as large for non-essential destinations such as restaurants, hotels, and retail as for essential ones such as drugstores, grocery stores, and schools. Third, specific outer-borough centers such as Flushing, Williamsburg, and Downtown Brooklyn emerge as hotspots of increased local activity. Fourth, within the zone, neighborhoods with older populations and greater dependence on non-local visitors, such as Midtown and Turtle Bay, experience the largest declines, while mixed-use neighborhoods with higher transit commute shares, such as East Village and Lower East Side, are less affected.

These findings suggest that congestion pricing functions not only as a traffic management tool but also as a spatial policy that reshapes the distribution of urban activity. Activity appears to shift from the CBD toward neighborhood centers outside the zone, with non-essential visits responding most strongly. Inside the zone, declines in foot traffic for restaurants and retail may threaten local businesses that sustain neighborhood economic life. Outside the zone, emerging sub-centers may benefit from increased economic activity, but rapid growth in visitation could also accelerate gentrification and displacement. More localized travel patterns may shorten trip distances and encourage walking and cycling, consistent with 15-minute city objectives, though the long-term persistence of this shift requires further investigation.

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Keywords: Congestion pricing, Urban mobility, Spatial reallocation, 15-minute city, BSTS model

FROM CONDITIONAL ACCESS TO MOBILITY JUSTICE: THE ROLE OF TRANSPORTATION INFRASTRUCTURE IN SCHOOL DESEGREGATION PROGRAMS

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Individual Paper Presentation

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School desegregation programs represent vital policy interventions aimed at advancing educational equity by disrupting the link between residential segregation and racially isolated schools. Yet the implementation and analysis of these programs neglect issues of transportation and physical access essential to realize their goals (Bierbaum et al., 2020). Further, programs operate within a policy environment that refuses to codify education as a fundamental right or a permanent entitlement. This exploratory study examines how transportation infrastructure enables or constrains the design and implementation of three desegregation programs: METCO in Boston, MA; the Open Choice program in Hartford, CT; and the controlled choice system in Jefferson County Public Schools, KY. Specifically, we ask three interrelated research questions: (1) How does transportation infrastructure enable or constrain the design and implementation of school desegregation programs? (2) What are persistent challenges vis-à-vis transportation in intentional desegregation programs? and (3) In what ways do the design and implementation of these programs embody the principles of mobility justice? We conducted a national scan, semi-structured interviews with national and local leaders, and archival document analysis. We analyze these data through a mobility justice framework (Sheller, 2018) and find that transportation infrastructures often undermine the civil rights aims of desegregation programs by creating conditional access to integrated public schools, rendering improved access a privilege rather than a right. The transportation burdens of integration fall disproportionately on students of color and low-income families, contradicting empirical consensus that diverse schools benefit all students (Owens, 2023). Our analysis reveals that across the four dimensions of mobility justice- distributive, procedural, epistemic, and restorative- these programs are constrained by inadequate funding, operational fragility, bureaucratic complexity, and entrenched political resistance. These findings demonstrate that transportation is not merely a logistical detail but a core determinant of equity in school desegregation, requiring planners to confront how land use, infrastructure, and governance systems reproduce conditional educational access. We argue that fulfilling the civil rights-era promise of desegregation requires a paradigm shift from conditional, program-based access to an unconditional guarantee of educational resources, including transportation as a matter of right.

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Keywords: Mobility justice, Public education, Transportation equity, Segregation, Access

FROM SAFE PARKING TO SECURE SLEEPING: A LONGITUDINAL ANALYSIS OF LOS ANGELES SAFE PARKING PROGRAMS PATHWAYS TO STABLE HOUSING

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Individual Paper Presentation

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On any given night in Los Angeles County, 13,000–14,000 parked vehicles are used as shelter, housing about 23,000 people, including families with children. As of 2024, this population represents nearly half of all unsheltered people. In response, beginning in 2017, the Los Angeles Homeless Services Authority and nonprofits like Safe Parking LA created Safe Parking Programs (SPPs), which convert underused parking lots through public-private partnerships into secure overnight spaces where vehicular households can sleep, receive services, and transition into housing. In 2026, a citywide budget crisis prompted a proposal to cut $181 million from homelessness programs and eliminate 36 SPPs and 444 spaces (Wagner, 2026).

In prior research (Giamarino et al., 2023, 2024), I found that single women, families, and retired seniors living in vehicles struggle to find safe parking due to anti-vehicular dwelling ordinances, which led to tickets, arrests, towing, and unsafe sleeping conditions. In collaboration with Safe Parking LA and Pasadena's Housing, Homelessness, and Planning Committee (HHPC), we used these findings to recommend abolishing such ordinances and expanding SPPs. This work helped initiate new planning research on vehicular homelessness (Huang & Herbert, 2025; Montague, 2024; Pruss, 2023; Record, 2025). However, only one empirical study (Lewis et al. (2025). Lewis et al. (2025) examines outcomes after SPP exit, finding a 40% permanent housing placement rate in San Diego without comparison to other shelter programs.

To address this gap, I evaluated SPP effectiveness relative to interim housing in transitioning vehicular households into permanent housing. My research question was: How effective are SPPs compared to interim housing? Using ten years of data (2017–2026), I conducted a matched-pairs analysis and longitudinal logistic regression on de-identified HMIS client data (1,000 clients per year). Variables included project IDs, geography, demographics, income, disabilities, and post-project housing outcomes. The dependent variable was program type (SPP=1, interim housing=0), and the key outcome was permanent housing placement. I also interviewed 10 individuals involved in managing or living in SPPs to understand barriers and improvements.

Two key findings emerged. First, SPPs place about 10% of residents into permanent housing, compared to 30% for interim housing. Second, this gap is explained by limited information about SPP locations, insufficient capacity relative to demand, lack of amenities (e.g., showers, Internet, 24/7 access), and community opposition to lot conversions.

These findings have policy implications. In collaboration with Safe Parking LA and Pasadena's HHPC, I recommended improvements to SPPs, identified strategies for converting underused lots, and developed best practices for services tailored to client needs. This research supports policymakers in improving access, inclusivity, and program design to better transition vehicular households into permanent housing.

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Keywords: Homelessness, Parking, Los Angeles, Housing, Spatial Justice

GAY FOR TRANSIT?

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Individual Paper Presentation

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LGBTQ+ people in North America, it seems, use public transit and walk and bike more than do their straight neighbors. Previous research has documented these travel differences, though they have relied on proxies such as same-sex coupling, which represents only a fraction of LGBTQ+ people and is prone to error. Using novel data on sexual orientation and travel behavior, we explore both the travel behavior and travel preferences of LGBTQ+ people in Canada. The question of preference is particularly salient, since it will help us two hypotheses: first, that some LGBTQ+ people use transit more at least in part because they like it, and second, that some LGBTQ+ people use transit more despite not liking it. The latter explanation is relevant, since as others have documented, transit can be the site of anti-LGBTQ+ discrimination, harassment, and violence.

We use the Mobilizing Justice National Survey on Transport Poverty, a nationally representative survey of travel behavior in Canada collected in 2024 with over 27,000 respondents. Notably, the survey is the first, to our knowledge, to collect information about travel behavior and sexual orientation. Roughly ten percent of the sample, over 2,800 respondents, identify as LGBTQ+. The survey sample is intentionally over-representative of low-income residents of Canada and includes numerous questions on transport poverty and transport-related social exclusion.

Our analysis makes two contributions. First, we provide new and better estimates of the travel behavior differences between LGBTQ+ and straight people. Second, and more importantly, we use the survey to analyze markers of transport disadvantage among LGBTQ+ respondents. In both cases, we use regression models controlling for a number of covariates of transport disadvantage, such as age, life cycle, education, and other variables.

As expected, we find that LGBTQ+ respondents are more likely to use transit and use non-motorized modes and less likely to drive compared to heterosexual respondents. LGBQT+ respondents also own cars at lower rates than heterosexual respondents. Second, we find that LGBTQ+ respondents are less satisfied with their current transportation condition, feel that their transport conditions are worse, and feel less safe from crime and harassment than heterosexual respondents. Lastly, we do not find evidence that LGBQT+ respondents find public transportation more enjoyable (“in your neighborhood, even if you don’t use it”) than heterosexual respondents.

Our findings suggest that, for a majority of LGBTQ+ people in Canada, transit use can be explained more by circumstance (location, income, etc) than by preference. The Canadian LGBTQ+ population is not, as Internet subcultures often describe it, “gay for transit” but instead relies on transit because it either makes sense for a particular trip or preferred options are too expensive or onerous. We encourage additional research into the role of transit as a site of harassment and violence against LGBTQ+ people, which could help to explain the transit “enthusiasm gap” we observe in Canada.

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Keywords: travel behavior, LGBTQ+, Canada

GENDER MATTERS, BUT NOT ALONE: CONDITIONAL CAREGIVING TRAVEL BURDENS IN THE US AND DENMARK

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Daily travel by caregivers is shaped by a complex interplay of household responsibilities, personal constraints, and cultural context of a society. Yet how cities are planned, how transit is designed, and how childcare is distributed all shape whether caregivers can travel with children and at what cost to their time and accessibility. Prior research documents that caregivers, particularly mothers, perform more complex trip chains and bear a disproportionate share of escort responsibilities (Rosenbloom, 1989; Schwanen, 2007), while cross-national comparisons suggest these patterns vary with gender equity norms and welfare state arrangements (Craig et al., 2019). This study asks what factors predict whether a caregiver travels with children on all trips, some trips, or none within a home-based daily tour, and how these determinants differ between the automobile-dependent United States and the multimodal, welfare-state context of Denmark.

This study uses mixed logit models on home-based closed tours from the U.S. National Household Travel Survey (NHTS, N = 43,954) and the Danish National Travel Survey (TU, N = 27,274), restricted to households with children under age 9. The choice set consists of three tour types: all trips with children, some trips with children, and no trips with children. The utility of each alternative is specified as a function of tour structure, household composition, individual characteristics, and transport mode.

Both countries share a core structural finding that gender alone does not predict child accompaniment once household composition, employment, income, and tour structure are controlled. Caregiving travel burdens are concentrated conditionally among single mothers and working women, consistent with evidence that escorting is mediated by employment and household structure rather than gender per se (Scheiner, 2016). Trip chaining is the most robust cross-national predictor of partial accompaniment, confirming that children are embedded in segments of multi-stop tours rather than accompanying entire chains.

Critical differences emerge in income and mode effects. In the United States, lower-income households are consistently more likely to travel with children across all purposes, reflecting constrained access to childcare alternatives, consistent with Blumenberg et al. (2023). In Denmark, income effects are entirely non-significant, consistent with universal subsidized childcare flattening socioeconomic stratification in escorting. Active mode effects also diverge. In Denmark, walking and cycling are associated with substantially higher child accompaniment probabilities, whereas in the US these effects are absent or negative, reflecting automobile-dependent constraints on multimodal caregiving.

Simulation results further illustrate these contrasts. In the United States, predicted probabilities show a U-shaped pattern for child-excluded tours, with mid-length tours most likely to involve joint travel and longer tours reverting toward child-free outcomes. In Denmark, child-excluded tours dominate across nearly the entire duration range, while fully child-accompanied tours peak at short to medium durations before declining sharply. These patterns confirm that tour duration reflects who is traveling, for what purpose, and under what constraints.

These findings carry direct implications for planning and policy. Equity-oriented planning should target single parents and working caregivers rather than treating caregiving travel as a universal women's issue. The income contrast points to childcare accessibility as a structural determinant of caregiver mobility whose absence shapes travel demand in measurable ways. The divergence in active mode effects highlights that investments in walking and cycling infrastructure may reduce automobile dependence and support more equitable caregiving travel

burdens, but only where land use and service proximity make active travel viable for households with young children.

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Keywords: children escorting, caregiving travel, gendered mobility, random utility, cross-national comparison

GEOGRAPHY OF E-SHOPPING: A JOINT BEHAVIORAL MODEL TO EXAMINE URBAN FORM IMPACTS ON GROCERY, PREPARED MEALS, AND NON-GROCERY PRODUCTS

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Individual Paper Presentation

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Information and Communication Technologies, the Internet of Things, and connectivity-based services have transformed urban mobility, reshaping how we live, work, and play. The smartphone is among the most disruptive of these technologies. As of 2024, nearly 4.9 billion people or 61% of the global population are users. Alongside the internet, smartphones have transcended geographic, cultural, and social boundaries at an unprecedented scale. Within transportation, these developments have rendered collaborative consumption and delivery-based services both financially viable and operationally efficient. Consequently, e commerce has become an indispensable component of the global retail landscape with 2024 sales exceeding $4 trillion. This shift toward contactless transactions was further accelerated by the COVID-19 pandemic. Although e-commerce dates to the 1960s, it gained momentum in the early 2000s with the mainstreaming of Amazon, eBay, and Alibaba. Several studies from this period examined online shopping adoption (Cao and Mokhtarian 2005, Cao 2009). More recently, new socio technical trends are emerging, including social commerce or buying through social networks, augmented reality, personalized recommendations, and voice search technologies like Alexa and Google Assistant. These advancements have broadened the scope of online shopping to include a wider range of domains, such as grocery and non-grocery purchases. A significant increase in e-shopping for prepared food or cooked meals is also observed. As e-shopping continues to evolve, a key question arises as to whether land use and the built environment can be leveraged to moderate e-shopping demand in ways that promote urban livability, accessibility, and sustainable travel. This is relevant because the built environment has historically served as a key policy instrument to moderate travel behavior and promote sustainable and healthy cities (Rodríguez and Joo 2004, Boarnet 2017, Handy 2023). It is thus important to assess how the built environment influences e-shopping demand for perishable and non-perishable products. Such evidence can help inform targeted land use strategies to manage e-shopping demand more effectively. This study aims to fill these critical gaps by jointly examining households' use of three interrelated e-shopping domains in the post-COVID era: online shopping for non-grocery, prepared food, and grocery items. We investigate how the built environment shapes e-shopping demand across these product types. In doing so, we account for the interdependence among the demand for these product types. Residential choices and duration are incorporated as proxies for potential self-selection effects in the relationship between the built environment and e-shopping behavior. Up-to-date and high-resolution data on objectively assessed walkability and urban form measures are harnessed. We conduct the study at the household level, which is preferable as it considers the intra-household dependencies in the shopping needs of all household members. Results from a joint heterogeneity-based behavioral model show that e-shopping for non-grocery, prepared food, and grocery items exhibited synergistic relationships. Foremost, associations of urban form with e-shopping varied by product type. Residents of more walkable neighborhoods tended to shop online more frequently for prepared meals, but significantly less for non-grocery and grocery items. Simulated treatment effects highlighted a digital and geographic divide, and that a one-size-fits-all approach that ignores variations in urban form associations by product type can lead to unintended consequences. Results provide insights into how built environment interventions can manage e-shopping demand in the post-COVID era and highlight the importance of addressing the digital divide. We also discuss implications of our findings for scenario planning and travel demand management.

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Keywords: Online Shopping, Built Environment, Groceries, Non-grocery, Prepared Meals

GETTING TRANSIT READY FOR THE 2034 UTAH WINTER OLYMPICS

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Utah was officially selected to host the 2034 Winter Olympics on July 24, 2024, during the 142nd International Olympic Committee (IOC) Session in Paris, France. However, preparations began much earlier. The formal bid process—ultimately leading to the 2034 Games—started in October 2017 with the creation of an exploratory committee. This was not Utah's first experience with Olympic bidding. The state was considered as a replacement host for the 1976 Winter Games after Denver withdrew, but the Salt Lake City bid collapsed in 1973 due to financial and local support challenges. In 1995, Salt Lake City successfully secured the 2002 Winter Olympics, which were widely praised for their transportation management and the seamless movement of over one million spectators via Utah Transit Authority (UTA) systems. The 2002 Games also achieved one of the highest attendance levels in Winter Olympic history, with over 1.5 million tickets sold.

Transit played a central role in moving spectators to and between venues. More than 2.5 million trips were taken on public transportation, including approximately 1.7 million on TRAX light rail and 800,000 on shuttle buses. TRAX averaged about 120,000 daily riders, while shuttle buses carried roughly 39,000 passengers per day. In downtown Salt Lake City, transit accounted for 50–60% of trips, with usage near the Olympic stadium reaching as high as 85–90%. Transit served as the backbone of the transportation strategy and performed exceptionally well, although achieving this required years of planning and coordination.

Utah's first light rail line opened in 1999, and the extension to the University of Utah—critical for serving Rice-Eccles Stadium—was completed ahead of schedule in 2001. At the time of the Games, the system included 20 stations and 33 light rail vehicles. To meet demand, UTA borrowed 29 additional vehicles from Dallas Area Rapid Transit (DART). Bus service was also expanded significantly: a total of 924 buses were used, including 580 loaned from 24 transit agencies nationwide and 210 leased from private operators. Approximately two-thirds of transit riders used light rail.

The overall transportation strategy relied heavily on park-and-ride facilities, with spectators directed to 11 lots and then transported to venues by transit, sometimes with drop-offs up to half a mile from entrances to "to spread the crowds out".

Looking ahead to the 2034 Winter Olympics, the University of Utah has been contracted by UTA to assess future transit capacity needs. Since 2002, the regional system has expanded substantially—from 20 to 50 light rail stations and from 33 to 117 vehicles. The system now also includes the FrontRunner commuter rail line and a streetcar line. Key questions remain: Will additional vehicles be needed? What role will supplemental bus service play and will it be needed at all? Can all spectators be transported to venues within one hour of event start times? Is there enough parking in Park & Ride lots? While many spectators relied on private vehicles in 2002, the goal for 2034 is to shift as many spectators as possible toward public transit.

Although the study is still in progress, the bulk of the analysis has been already completed. The findings will support UTA and the Organizing Committee in developing detailed transportation plans for the 2034 Games.

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Keywords: Transit for Mega Events, Mega Events, Olympic Games

GOVERNANCE FOR TRANSPORTATION DECARBONIZATION PLANNING IN U.S. METROPOLITAN AREAS: EVIDENCE FROM STATE- AND REGIONAL-LEVEL CLIMATE ACTION PLANS

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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In the United States, transportation is the largest source of greenhouse gas (GHG) emissions, accounting for 28% of national emissions in 2022 (U.S. Environmental Protection Agency, 2024). While many states and regions have increasingly advanced transportation decarbonization, the intensity, focus, and progress of these efforts vary substantially. In this study, we ask: How do states and metropolitan statistical areas (MSAs) plan for transportation decarbonization? What institutional arrangements enable more comprehensive decarbonization strategies at the MSA level?

This study contributes to the literature by examining how multi-level governance shapes regional disparities in transportation decarbonization efforts. Building on prior work on national policies (Marsden et al., 2014) and local discretion in transportation policymaking (Budnitz et al., 2025; Tilly et al., 2025), this study highlights how state-level policies and inter-agency collaboration between transportation and environmental sectors influence decarbonization strategies.

This study draws on a newly released set of Priority Climate Action Plans (PCAPs) (U.S. Environmental Protection Agency, 2025), which detail how states and MSAs plan to advance transportation decarbonization. We first use quantitative text analysis to identify categories of decarbonization strategies at the state and MSA levels and to characterize variation across MSAs in their coverage of categories in transportation decarbonization. Second, we employ Qualitative Comparative Analysis (QCA) to identify combinations of institutional conditions associated with more comprehensive approaches to transportation decarbonization. Institutional factors are derived from prior literature and coded from PCAP documents.

Results show that while most states and MSAs emphasize vehicle electrification, fewer incorporate multimodal transportation, and even fewer document travel demand management or smart growth strategies. MSAs on the East and West Coasts consistently adopt more comprehensive approaches, while other regions demonstrate more variations, such as Houston and Dallas in Texas which adopt comprehensive sets of strategies. QCA results indicate that state leadership in decarbonization policies plays a critical role in enabling broader decarbonization strategies. In the absence of strong state policies, comprehensive approaches are more likely when regional planning agencies, such as Metropolitan Planning Organizations, lead plan development and when transportation agencies are actively involved in the planning process. These findings underscore the importance of multi-level governance and cross-sector collaboration in shaping regional transportation decarbonization.

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Keywords: Decarbonization, Regional planning, Governance, Multi-level governance, MPO

HEAT EXPOSURE AND INFRASTRUCTURE STRESS RESHAPE THE QUALITY OF URBAN BICYCLE ROUTES

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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This study asks how heat exposure and cycling infrastructure stress jointly shape the composition of bicycle routes across neighborhoods, and how income, population density, and racial composition influence the relative prevalence of route types in Philadelphia, PA. This question advances understanding of why cycling quality cannot be evaluated through traffic stress or thermal exposure alone, but must instead be assessed through their combined distribution across urban space.

The analysis integrates route-level Level of Traffic Stress classifications with land surface temperature to construct four bicycle route categories: low-risk and low-temperature, low-risk and high-temperature, high-risk and low-temperature, and high-risk and high-temperature. These route categories are aggregated to the census block group level using the share of total bicycle route length in each category. A fractional multinomial logit model then estimates how socioeconomic and built-environment characteristics are associated with the relative composition of these route types. The analysis draws on bicycle route data, Landsat-derived temperature surfaces, block group characteristics, and built-environment measures.

The results show that cycling routes are distributed unevenly across joint exposure categories and that heat dominates much of the city's lower-stress network. Fewer than one-third of bicycle routes fall into the low-risk, low-temperature category, while low-risk, high-temperature routes constitute the largest share of the network. This pattern indicates that reductions in traffic stress have not been matched by comparable reductions in thermal burden. Neighborhood characteristics further reshape this composition. Higher income block groups are associated with lower shares of thermally stressed routes and greater retention of the most favorable route type. Population density shifts route composition away from high-stress corridors but toward hotter low-stress environments, revealing a tradeoff between operational safety and thermal comfort in dense urban settings. Racial composition also structures these patterns, with White neighborhoods showing lower exposure to low-risk, high-temperature routes, while Black neighborhoods experience weaker protection from thermal burden.

These findings show that safe cycling infrastructure cannot be inferred from traffic stress alone. Routes that appear operationally accessible may still impose substantial environmental burden through heat exposure. Planning responses must therefore integrate thermal mitigation into cycling infrastructure design rather than treating heat as a background condition. Shade provision, vegetation, surface materials, and corridor design should be considered alongside traffic safety if cycling systems are to remain both equitable and viable in a warming urban future.

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Keywords: Cycling infrastructure, Thermal exposure, Infrastructure stress, Transport equity, Spatial modeling

HOT WHEELS: HOW DO BIKESHARE USAGE PATTERNS CHANGE IN RESPONSE TO EXTREME HEAT ACROSS AMERICAN CITIES?

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Extreme weather events are becoming more commonplace and yet increasingly more unpredictable. Heatwaves, in particular, are found to occur more frequently, last longer, and be more intense. People who do not have access to a car face the brunt of extreme heat as they move around urban areas walking, biking, rolling, and using public transportation. Many people adapt their activity-travel patterns in various ways on extremely hot days. For example, they can choose not to make a trip at all or use an alternative mode. They may choose to shorten their trips to reduce heat exposure or perhaps make longer detours to use routes that offer more shade and are cooler. However, for many, adapting their travel patterns is not an option. These different adaptation mechanisms and constraints impeding adaptation start to paint a complex picture of how travel behavior and activity-travel patterns are affected by extreme heat.

The literature on this topic is fairly nascent, with only a handful of studies examining this relationship but with limited scopes. Extreme heat has been found to significantly affect both time use and activity-mobility patterns (Batur et al., 2024). People using active modes of transport are most at risk of the dangers associated with prolonged exposure to extreme heat, as studies have shown for walking (Basu et al., 2024) and bikesharing (Li et al., 2024). However, these studies have focused only on one context, which limits the generalizability of their findings across different climate zones. Bean et al. (2021) addressed this issue by examining the effect of weather on bikeshare usage across forty cities but did not explore the nuances of the different travel behavior adaptation mechanisms.

In recent years, bikeshare fleets have increasingly accommodated electric bikes, with some systems now hosting predominantly e-bikes. E-bikes can offer better respite against the heat compared to standard bikes since the rider can take advantage of the pedal-assist, while also being able to travel faster (experiencing more wind and potentially feeling cooler) and longer (reaching farther-off destinations in the same amount of time). Zheng et al. (2025) found that extreme heat-induced e-bike usage patterns are different from standard bike usage patterns using data from New York City's bikeshare program.

This study aims to integrate these lines of inquiry through the following questions. (1) How do overall bikeshare usage patterns change in response to extreme heat? (2) To what extent are changes in e-bike usage patterns different from those related to standard bikes? (3) How do these effects vary across different cities in diverse climate zones?

We explored these questions using data from seven American bikeshare systems. We found bikeshare usage to decrease on hot days compared to 'control' (non-hot) days. Longer trips showed a greater rate of decrease than shorter trips, suggesting that longer bikeshare trips were likely being substituted with a different mode of transport (such as public transit or a motorized vehicle) or canceled entirely. We also observed the greatest decrease in ridership to occur during the afternoon between 12pm and 4pm, which aligns with the hottest part of the day. Additionally, we found e-bike ridership to decrease to a lesser extent compared to standard bikes. Our results are

robust to (a) different definitions of extreme heat, (b) changes in bikeshare networks over time, and (c) the varying contexts of the seven cities.

Our findings offer an interesting policy conundrum. Despite some evidence on the safety impacts of electric micromobility on pedestrians, they seem to be more resilient to extreme heat in terms of sustaining ridership. Should bikeshare systems transition to fully electric? Recent reports from some cities show that growing shares of e-bikes in bikeshare fleets have led to losses in membership as e-bike rides are more expensive. We look forward to discussing more on this at ACSP.

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Keywords: Extreme heat, Travel behavior, Bikesharing, Micromobility, Climate resilience

HOW CONCERNED SHOULD WE BE ABOUT ATTRACTING NEVER-RIDERS TO THE BUS?

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Transit agencies in the United States struggle to achieve a balance between the goals of ridership maximization and coverage maximization when providing bus service (Walker, 2024). Because many low-income and minority residents live in dense urban areas, Iseki (2016) argues that the trade-off between ridership and coverage reflects a broader tension between social equity and geographic equity. This is because transit is partly funded by taxpayers in low-density areas who may receive less service in return. Ridership maximization seeks to increase fare revenue by focusing on high-density areas, whereas coverage maximization seeks to increase transit availability for people in diverse places. Researchers often argue in favor of ridership maximization because it benefits transit's reliable core riders, who are composed mostly of people with low income and no vehicles (Taylor and Morris, 2015). That argument would be stronger if it could also be shown that the people who have never used transit (i.e., the never-riders) will not use transit even if service is made available. In that context, this study examines the never-riders' potential for riding the bus by utilizing data from a survey of 1074 New Jersey residents. It uses descriptive statistics, binary logit models, and probability analysis. The results showed that about 75% of the never-riders never considered riding the bus. While work trips constitute an overwhelming majority of actual bus trips, never-riders think about the bus more as a travel mode for recreational activities than a work-trip mode. The never-riders have lower proximity to bus stops than current bus riders, but model results showed that even when they are given greater proximity, their low probability of riding the bus increases little. This research shows that transit agencies should be extremely cautious about extending bus service to neighborhoods predominantly inhabited by never-riders because their probability of riding could be very low.

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- a group that remains significantly understudied in the literature. Practitioners can also gain practical insights into how to allocate transportation funding more efficiently and effectively.

Keywords: Bus transit, Never-rider, Probability analysis, Stop proximity

HOW DO WORKING AT HOME AND ONLINE SHOPPING AFFECT TOTAL TRAVEL? BEYOND THE SINGLE-DAY PERSPECTIVE

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Cities in the United States have seen substantial changes in travel patterns in recent years, made possible by ubiquitous information and communication technologies (ICT) and hastened by the Covid-19 pandemic. ICT has fueled an increasing but disparately distributed ability to work at home, replacing some work trips; and to purchase items online for home delivery, replacing some shopping trips. How have the travel patterns and location choices of firms and households been affected by these changes, on net?

While existing literature finds that telecommuters in the US tend to have longer one-way commutes (e.g., Tian et al., 2025), the impacts of teleworking and online shopping on net amounts of travel are not clear (e.g., Obeid et al., 2024; Sohi et al., 2025). Most studies rely on single-day surveys, which fail to capture travel shifts between days of the week or to accurately represent occasional telecommuters. Furthermore, only a few studies have examined the impact of teleworking and online shopping using empirical data collected after the end of the pandemic in 2022 (e.g., Sohi et al. 2025; Sweet & Scott 2026).

We investigated the impacts of teleworking and online shopping on household travel patterns based on data from the 2018-19 Bay Area Travel Study (BATS) and will be supplementing that analysis using the newly available 2023-24 BATS. The datasets include trip information, daily teleworking, online shopping and other freight delivery activities, and spatial information for residences and destinations over the course of one week. The 2018-19 survey covered 5107 Bay Area travelers, and the 2023 survey over 8000. By analyzing the data across pre- and post-pandemic periods we are able to identify the shifts in teleworking and online shopping adoption and show how travel behaviors have evolved across different demographic groups and residential locations.

Initial controlled statistical analyses on the 2018 data resulted in several novel findings. For example, compared to people without a job, traditional commuters, defined as those who never telework, have 2.3-mile higher daily VMT. Telecommuters spent an average of 1.5 hours on non-work travel on teleworking days, compared to one hour on non-work travel on days they worked outside the home. This finding is consistent with Kothawala et al. (2025), who found that frequent telecommuters spent more time on out-of-home activities on teleworking days in 2023. We also found that telecommuters spend more time on travel than traditional commuters on a day off from work; and those who received home deliveries on at least one day during the week had a 1.7-mile higher VMT per day than those not receiving deliveries.

Using 2018 and 2023 BATS data we will conduct a comparison analysis, controlling for built environment factors at the disaggregate level, to examine how the shifts in the distribution of teleworking and online shopping relative to pre-pandemic levels have influenced travel patterns. The analysis will show how the interrelationships between teleworking, online shopping, and travel behavior have evolved in the post-pandemic period. Given the significantly higher adoption of teleworking and online shopping relative to pre-pandemic levels, we hypothesize that telecommuting will remain associated with higher total VMT because of longer though less frequent commutes combined with high engagement in out-of-home activities on teleworking days. We also hypothesize that telecommuters remain more likely to use public transit when occasionally commuting to work, likely because

teleworking is partly a response to the fact that transit commuting in the Bay Area is typically longer and more difficult.

We conclude the paper by discussing planning implications of the findings in three areas: policies seeking to reduce driving and encourage alternative modes; traffic management practices to address peak hour congestion; and expenditures by public transit agencies to recover ridership.

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Keywords: teleworking, online shopping, travel behavior

HOW DOES FARE ENFORCEMENT IMPACT RAIL TRANSIT RIDERSHIP OVER TIME AND ACROSS STATIONS?

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Public transit systems in the United States have experienced substantial ridership shifts over the past decade, with uneven post-pandemic recovery requiring agencies to reconsider how to stabilize ridership. Fare enforcement has been a common response, frequently argued from concerns about safety, order, and revenue protection. Yet, existing research rarely examines whether enforcement activity is associated with subsequent ridership changes across space and time. We address this gap using 2019-2024 data from the Regional Transportation District (RTD) in the Greater Denver region. We combine descriptive spatial analysis with a panel Granger causality framework to test whether prior enforcement activity improved prediction of subsequent commuter rail ridership beyond ridership history alone, while controlling for station-specific heterogeneity, shared temporal effects, and weather. Results showed that the relationship between enforcement and ridership varied meaningfully over time. Descriptive analyses showed major post-pandemic shifts in both ridership levels and the spatial distribution of enforcement activity, while model estimates indicated that enforcement significantly Granger-caused ridership changes in 2021-2023 and in the pooled sample. Importantly, the direction of this relationship was not constant. Enforcement was associated with subsequent ridership increases in 2021, but with subsequent declines in 2022 and 2023. These findings suggest that, while fare enforcement operated as a compliance mechanism, it also functioned as a consequential aspect of rider experience whose effects depend on broader institutional context. The results carry important implications for transit policy, indicating that enforcement-based strategies should be evaluated in relation to ridership recovery as well as fare compliance.

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Keywords: Commuter rail, Fare enforcement, Rail transit, Transit ridership, Transit safety

HOW DOES PEDESTRIAN CROSSING STRESS VARY BY PEDESTRIAN CHARACTERISTICS?

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Pedestrians experience stress due to the risk posed by automobile traffic when crossing streets. Quantifying this stress can be useful for evaluating pedestrian safety, enjoyment of public streets, and attractiveness of active transportation. A large body of research shows that pedestrian crossing stress relates to roadway and traffic characteristics (Swift et al. 2024). In general, wider roadways with more automobile traffic, higher speeds, and fewer controlled crossing opportunities are more stressful to cross.

Broader walkability studies have found variation in how different types of pedestrians perceive street and neighborhood environments, including by gender, income, and ethnicity (Manaugh & El Geneidy 2011; Adkins et al. 2017; Adkins et al. 2019; Golan et al. 2019), yet relatively few studies have explored variations in pedestrian stress specifically for roadway crossings. Understanding this variability is particularly important for contextualizing and honing pedestrian audit tools like Pedestrian Level of Traffic Stress (PLTS) (Swift et al. 2024).

We implemented an online survey of 1,915 US residents from 49 states and the District of Columbia to explore the following questions: 1) What roadway and traffic characteristics have the greatest influence on perceived pedestrian crossing stress? 2) How do perceptions of pedestrian crossing stress vary based on pedestrian characteristics such as age, gender, or professional experience with pedestrian or traffic safety issues?

Participants reported their levels of stress with respect to traffic on a 1 (lowest stress) to 4 (highest stress) PLTS rating scale for six crossing scenarios. Each scenario included a 10- to 20-second video clip, picture, and five bullet points describing the crossing. All respondents were given the same first scenario, and the other five scenarios were drawn randomly from a set of 39 scenarios with a range of roadway crossing characteristics (e.g., number of lanes, traffic volume, speed limit, traffic control, pedestrian crossing facilities).

We estimated cumulative link mixed models to identify variables that had the strongest associations with all 10,776 unique crossing scenario PLTS ratings and subsets of these responses from pedestrians with different characteristics. Overall, we found consistently positive associations between pedestrian crossing stress and higher traffic volumes, more lanes, and uncontrolled crossing locations. High-visibility crosswalks and median islands reduced pedestrian stress but not as much as devices that stop traffic. Speed limits were not significant for any respondent groups. Interestingly, pedestrian crossing facilities reduced pedestrian stress more for respondents with professional experience than without. Traffic control reduced pedestrian stress more for respondents under 35 than over 64 and more for respondents with annual household incomes over $100,000 than for respondents with incomes lower than $100,000. Further, responses to the first scenario suggested that crossing alone during the daytime (average PLTS rating of 2.19) would be significantly less stressful than crossing with a 6-year-old child (2.75) or at night (2.72).

Common themes across open-ended participant comments provided additional insights into pedestrian crossing stress. Many participants suggested that they weighed multiple factors when choosing specific PLTS ratings. They also highlighted stressors rarely considered in pedestrian crossing audit tools, such as low visibility (especially related to darkness and on-street parking limiting sight lines between pedestrians and drivers) and lack of trust in local drivers obeying the law.

Our results can help practitioners better understand and potentially adjust PLTS ratings for different types of pedestrians. They also suggest a need for additional research to explore temporal, geographic, and cultural variations in pedestrian crossing stress.

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Keywords: Pedestrian, Crossings, Stress, Perception, Variability

HOW MUCH WILL IT COST? IMPROVING THE COST SALIENCE OF HIGHWAY EXPANSIONS

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Highway expansion projects in the United States usually have broad public and political support despite carrying price tags of hundreds of millions—or even billions—of dollars. Yet many supporters might balk if the project costs were translated into per-trip tolls or per-household taxes. Federal funding is frequently perceived as "free money" in infrastructure finance plans, even though it is ultimately paid by American households through taxes. Finally, long-term maintenance liabilities are often overlooked during capital investment decisions. These dynamics reduce the salience of total costs and may bias decisionmakers toward overbuilding roadway capacity.

We analyze a sample of proposed and recently completed representative highway projects. For each project, we translated aggregate construction costs into per-trip and per-household equivalents and expressed long-term maintenance costs as annual household obligations. For example, the construction cost for a $1.4 billion roadway project in our sample equates to over $7 per trip or a one-time construction cost of roughly $3,500 for each of the region's 400,000 residents. To calculate these estimates, we data from the sponsoring agency's assumptions, for example that the project will serve approximately 186 million trips over a 30-year period ($1.4 billion divided by 186 million trips = $7.52). Including expected maintenance obligations will increase these figures.

This simple example masks important sensitivities to key assumptions, including project lifespan, discount rates, and anticipated maintenance costs. Most importantly, results depend on how costs are allocated—specifically, which trips and households are understood to "pay" for the project. Our goal is not to eliminate the complexity, but to present costs in ways that are transparent, interpretable, and useful for decisionmakers and the public.

Ultimately, our work can inform efforts to improve U.S. infrastructure investments by offering a proof-of-concept model for project cost disclosure standards. By demonstrating how large aggregate costs can be translated into more interpretable units, our analysis highlights how existing practices may obscure the true scale of roadway spending. If cost presentation shapes how projects are understood—as suggested by research on cost salience in other domains—more transparent disclosure could influence how roadway projects are evaluated and debated.

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Keywords: Highway expansion, Infrastructure, Cost salience, Finance, Behavioral economics

HYBRID WITHOUT THE TELEWORK: WIDENING DISCORDANCE BETWEEN STATED WORK ARRANGEMENTS AND COMMUTE BEHAVIOR AND IMPLICATIONS FOR TRAVEL DEMAND, 2023–2025

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Individual Paper Presentation

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In the aftermath of the COVID-19 pandemic, Americans have settled into a new norm in which remote work is more common yet remains a contested feature of the workplace. We argue that "hybrid" may indicate the availability of telecommuting, but it does not provide sufficient insight into the actual intensity of daily commutes, which is critical for travel demand forecasting. The label implies that employees telecommute on a somewhat regular basis, which may not always be true, leading planners to overestimate commute reductions. Hybrid arrangements vary widely, and this fluidity makes the category sensitive to period-level shifts: as employers have pressured employees to return to offices, many labeled "hybrid" have resumed commuting virtually every day without changing their status. The threshold at which employees consider themselves "hybrid" may itself have drifted from regular weekly telework in 2023 to occasional monthly telework today.

The difficulty of gauging telework from survey labels extends beyond the hybrid category. Buckman et al. (2025) show that work-from-home estimates range from 15% to over 35% for the same period, depending on whether surveys measure the share of fully remote workers, the share of hours worked from home, or the percentage of full workdays worked from home. Once harmonized, approximately 25% of paid workdays are performed remotely in 2025, though this figure reflects reported prevalence rather than whether it results in fewer commutes.
Using three waves (2023–2025) of a Maryland commuter survey (N = 2,353), we compare stated work arrangements against one-week travel diaries. We classify workers behaviorally based on telework intensity, defined as the proportion of workdays not commuted: remote (intensity = 1), hybrid (0 < intensity < 1), or in-person (intensity = 0). Concordance is assessed using weighted confusion matrices and sequential logistic regression models that adjust for occupation teleworkability, work status, education, income, age, gender, household composition, metropolitan area, and industry.

Overall concordance is 80%, but this is misleading. Remote (88%) and in-person (94%) workers show high agreement, whereas only 38% of self-identified hybrid workers teleworked at all during the diary week; over half commuted every day. Hybrid concordance declines from 59% in 2023 to 43% in 2024 to 18% in 2025. This trend is not attributable to compositional change (OR = 0.13, $p < 0.001$ for 2025 versus 2023). Predicted concordance falls from 60% to 19% under marginal standardization. Commute distance does not significantly predict concordance, and commute duration does so only marginally, suggesting external forces compel commuting regardless of distance. Nearly all full-time commuting hybrid workers express a desire for at least partial remote work, with almost half preferring fully remote arrangements.

Stated arrangements overestimate the hybrid share by 12 percentage points (23% versus 11% behaviorally). In 2023, stated and behavioral rates were similar (22% versus 19%), reflecting conditions assumed in prior studies linking telework frequency to VMT. Asmussen et al. (2024) report that teleworking less than once per week can increase commute VMT, with meaningful reductions emerging only around two days per week. Wang et al. (2024) similarly find that low-frequency telework may not reduce vehicle miles for all worker groups. As substantially more hybrid workers began commuting full-time from 2024 onward, these assumptions may no longer apply. Average weekly VMT for stated hybrid workers, who lived farther from work than in-person workers, rose from 103 to 157 miles, exceeding concordant in-person levels. We recommend that travel surveys capture weekly commute

frequency alongside arrangement labels. Stated categories remain reasonable for fully remote and in-person workers, but the hybrid workforce is a diverse group whose label alone should not be relied upon to predict travel behavior.

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Keywords: Hybrid work, Survey measurement, Travel demand forecasting, Vehicle miles traveled, Concordance

INDUCED TRAVEL DRIVEN BY DEVELOPMENT: HOW EXPRESSWAYS LEAD TO REAL ESTATE CAPITALIZATION IN SUQIAN CITY

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Individual Paper Presentation

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The fundamental theorem of traffic congestion (Duranton & Turner, 2011) holds that road expansion increases vehicle miles of traveled (VMT). This may lead to a failure to alleviate traffic congestion; in other words, the long-run elasticity of demand tends towards unity. Emerging cities with a rapid urbanization rate, such as Suqian, China, treat highways as an instrument of development, to attract industry and jobs. For local governments, expressways serve as strategic instruments for spatial restructuring, yielding capitalized dividends that far outweigh the long-term externalities associated with traffic congestion. In this paper, we evaluate the impact of road expansion on property prices using a hedonic regression model.

Located in northern Jiangsu Province, China, Suqian is the province's newest prefecture-level city. In 2024, Suqian's GDP totaled 480.185 billion yuan (approx. 69.491 billion USD at the exchange rate of 6.91 CNY/USD), ranking among the top performers in Jiangsu Province for the rate of GDP. In the 15th Five-Year Plan, Suqian outlined a comprehensive transportation modernization initiative totaling approximately 60 billion yuan (approx. 8.63 billion USD at the exchange rate of 6.91 CNY/USD). This government-led construction program was aimed at alleviating traffic pressure but also functions as a strategic policy instrument to drive land development and provide space for new residents.

In this paper, we take advantage of a quasi-natural experiment to compare the heterogeneous impacts of a fully enclosed expressway (Yingbin Avenue) with an open-access arterial road (Xiangwang East Road) on the surrounding real estate market. Methodologically, we followed Handy and Niemeier (Handy & Niemeier, 1997) for measuring true accessibility; instead of using traditional Euclidean straight-line distances, we used the Amap API to calculate precise road-network driving distances for 133 residential communities. We estimate a hedonic model of the effects of road construction on property prices, while controlling for public amenity variables, such as top school districts, top-tier hospitals, and commercial centers (Zhang et al., 2022; Zheng & Kahn, 2013), thereby ensuring the robustness of the empirical findings.

We expect to find that upgrading expressways significantly increases the price premium of surrounding properties. This transportation dividend incentivizes developers to undertake high-Floor Area Ratio residential developments along these corridors, thereby facilitating high-density population agglomeration (Cervero, 2003) and increasing VMT (i.e., inducing traffic). While this process successfully drives urban expansion, it simultaneously exacerbates dependence on private automobiles (Zhang et al., 2022). Finally, we recommend that policymakers pivot from a singular focus on expanding transport capacity toward a deeper synergy between transportation and land-use planning to mitigate the inherent conflict between economic growth imperatives and transportation sustainability.

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Keywords: Induced travel, Urban expressways, Housing prices, Land value capture

KEEP THE METER RUNNING: HOW DO RIDEHAILING USAGE PATTERNS CHANGE IN RESPONSE TO EXTREME HEAT?

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Taxis and Transportation Network Companies (TNCs), such as Uber and Lyft, offer an alternative way to enjoy the numerous benefits associated with auto travel without having to purchase a private vehicle. As a result, ridehailing services have been widely adopted across many American cities, with 'Uber' having become a verb for some (e.g., "Let's Uber there."). Ridehailing can serve as a complement to public transit by providing access to destinations where transit does not go or is infrequent and even as a first- or last-mile connection to transit in some instances (Brown, 2019). However, ridehailing can also cannibalize transit trips (Erhardt et al., 2022) and increase congestion (Schaller, 2021).

Can ridehailing offer refuge against inclement weather? Recent studies show that taxi and TNC ridership are affected by rain (Lezcano et al., 2026) and extreme heat (Gebresselassie et al., 2025). We seek to contribute to this nascent field of inquiry by focusing on the effects of extreme heat on taxi and TNC ridership. As summers grow longer and more intense, individuals without access to a vehicle and those walking, biking, rolling, and using public transportation will be increasingly more exposed to extreme heat, leading to potentially dangerous consequences. Some may switch their mode to a ridehail service, but lower-income individuals are unlikely to be able to afford this luxury. Therefore, in addition to understanding overall ridership changes, our study also examines spatial, temporal, and sociodemographic variations in ridership changes to better understand these travel behavior adaptations to extreme heat.

Using taxi and TNC ridership data from two cities in the U.S. - New York City, NY and Chicago, IL, we constructed a quasi-causal research design that allows us to infer ridership changes that can be directly attributable to extreme heat. We considered different definitions of 'extreme heat' based on guidelines provided by the World Health Organization (WHO), in addition to also accounting for changed travel patterns after the COVID-19 pandemic. We also used relevant sociodemographic data from the American Community Survey (ACS) to infer ridership changes experienced by different areas across both cities.

We found that both taxi and TNC ridership increased on hot days, suggesting that more people seek refuge from extreme heat by taking taxis and TNCs. We then examined these changes across different trip distances categories. Our findings reinforced the possibility of a mode shift away from more exposed modes, such as walking, biking, rolling, and public transportation. Shorter trips showed a greater increase on hot days compared to longer trips, suggesting that walking and biking trips on typical days were likely substituted at a higher rate on hot days. We also found ridership increases to be the highest during the afternoon (between 1pm and 4pm), which aligns with the hottest time of the day. Additionally, we observed that ridership increases were the highest in areas with higher socio-economic status, while marginalized neighborhoods exhibited more modest ridership changes. While the magnitudes of change vary, our findings are robust to (a) different definitions of extreme heat, (b) changes in travel patterns due to the COVID-19 pandemic, and (c) the varying contexts of New York City and Chicago.

This study offers insights into how individuals adapt their travel behavior in response to extreme heat by focusing on ridehailing usage patterns. While taxis and TNCs can offer refuge against extreme heat, they are not universally accessible or affordable. Moreover, with increasing TNC usage, some of the negative consequences of ridehailing

are likely to be exacerbated. Therefore, we recommend a tighter integration of multimodal transportation planning and heat action planning if we are to build truly resilient and sustainable transportation systems.

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Keywords: Extreme heat, Travel behavior, Transportation equity, Urban resilience, Sustainability

LITIGATING RACIAL AND MOBILITY JUSTICE: AN EXAMINATION OF HOW MOBILITY ADVOCATES AND THE LEGAL SYSTEM INTERACT IN THE PURSUIT OF RACIAL JUSTICE

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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From housing discrimination to environmental impacts of infrastructure, the courts have been a site of hope and change for advocates pursuing justice for marginalized communities. Rosa Parks is often thought of as the catalyst of the transportation civil rights story and many transportation planners learn about the Bus Riders Union fighting LA Metro on behalf of poor riders of color. The Civil Rights movement has always included a push towards more equitable public transportation and personal mobility as litigation has been employed as a tool to desegregate and move society towards justice. Yet, despite how heavily legal institutions have affected city planning and transportation policymaking, in recent years, anecdotal evidence suggests that it is more common to see courts utilized by environmental justice or housing access advocates than transportation advocates.

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Keywords: Mobility Justice, Civil Rights, Law, Transportation

LIVING BETWEEN THE MARGINS: SPATIAL CO-PRODUCTION AND URBAN FUTURES IN THE PORT–CITY–MILITARY INTERFACE

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Ports have long functioned as strategic nodes where maritime logistics, urban development, land use, state power, and social life intersect. Naval bases are prime examples of such intersections, where military functions are embedded in or adjacent to commercial ports and cities and where a distinctive port–city–military interface emerges. These spaces are characterised by overlapping sovereignties, dual-use infrastructures, and contested urban spaces. Yet, managing these spaces from both an economic and socioenvironmental perspective is challenging and often overlooked in both academia and practice. This research fills this gap by examining how critical maritime infrastructure and military functions are spatially organised, developed, governed, and socially negotiated and how these arrangements shape infrastructure performance, long-term resilience in militarised port-cities, and everyday life. It focuses on urban processes such as how dual-use port infrastructure is shared between civilian and naval functions; how security measures reshape urban space and its effects on mobility, waterfront access, housing, and local economies; how overlapping jurisdictions and governance between cities and ports are fragmented and negotiated; who makes decisions at the interface; and how nearby communities experience, accept, adapt to, or resist these arrangements. The central research question is: How have planning policies in buffer zones changed since the Cold War at the Ports of Jacksonville, United States and Toulon, France, and how have these changes affected the environment and socioeconomic wellbeing of local residents? The hypothesis is that since 9/11, planning in militarised port cities has often prioritised security over the needs of nearby civilian communities, but more strategic and inclusive approaches can reduce social and environmental conflicts without significantly weakening security, even during times of geopolitical uncertainty. To test this hypothesis, fieldwork in two of NATO's strategic naval bases and their surrounding communities will be conducted (Mayport, Jacksonville and Le Mourillon, Toulon, France) to document everyday interactions and spatial arrangements within militarised space, including mobility, land use, governance, and local livelihoods. Ethnographic observations of human mobility within the built environment and interviews with stakeholders will help evaluate whether inclusive forms of urban planning enhance efficiency, adaptability, resilience, and legitimacy in militarised ports, and whether exclusionary security practices produce spatial bottlenecks, social friction, and long-term vulnerabilities.

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Keywords: Port-City Interface, Buffer Zones, Logistical Gentrification, Port Expansion, Geopolitics

MEASURING URBAN RESPONSE: RETHINKING STREETS AS INSTRUMENTS OF SYSTEMIC CHANGE

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Individual Paper Presentation

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Urban safety efforts often struggle to produce meaningful reductions in traffic fatalities despite extensive technical knowledge and policy attention. A central limitation lies in the failure to identify and evaluate the underlying mechanisms that sustain harm. This paper positions vehicle speed as the primary causal driver of roadway injury, shaping both crash likelihood and severity while reflecting deeper systemic priorities embedded in design, governance, and culture. It argues that effective evaluation must move beyond outcome-based metrics and instead assess whether interventions meaningfully alter this core mechanism.

The paper introduces Emergency Streets (ES) as a rapid-response intervention designed to disrupt institutional inertia following fatal traffic incidents. ES deploys temporary, highly visible changes to the built environment—using low-cost materials such as cones, bollards, and signage—within a short time frame and for a limited duration. These interventions aim to both reduce immediate risk and reframe traffic deaths as preventable events. Implementation is guided by an Emergency Streets Protocol (ESP), which standardizes procedures while allowing contextual adaptation--the ESP is currently being piloted in Spokane (WA).

Rather than prescribing a fixed evaluative model, the paper proposes a flexible assessment framework grounded in scientific credibility and practical feasibility. Central to this framework is the prioritization of behavioral indicators, particularly vehicle speed. Metrics such as 85th percentile speeds and threshold exceedance rates are identified as parsimonious, sensitive, and mechanistically relevant measures. To strengthen causal inference, the framework recommends incorporating comparison conditions—such as matched corridors or spatial controls—and applying difference-in-differences approaches. Temporal disaggregation is also emphasized, distinguishing between immediate, stabilization, and post-removal phases to capture dynamic behavioral responses.

The framework acknowledges key limitations, particularly the inability to detect changes in crash incidence within short pilot periods. Instead, it advocates for intermediate indicators, including speed distributions and driving behavior proxies such as braking patterns. Contextual transparency—accounting for factors like weather and time-of-day—is highlighted as essential for interpretability without overcomplicating analysis.

Beyond behavioral change, ES seeks to influence social norms by making traffic fatalities visible and prompting institutional accountability. The paper recommends structured measurement approaches to capture shifts in perceived norms and risk acceptance, while maintaining behavioral outcomes as the primary test of impact.

Ultimately, this work treats Emergency Streets not only as an intervention but as a platform for inquiry into how entrenched urban systems can change. By advancing a provisional yet coherent assessment approach, it lays the groundwork for iterative learning across pilot implementations. The accumulation of comparable evidence may support both practical safety improvements and broader insights into overcoming systemic lock-in in urban environments .

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Keywords: kinetic energy, assessment, institutional lock-in, change theory, urban systems

METRIC-INDUCED SPATIAL BIAS IN PEDESTRIAN ACCESSIBILITY ESTIMATION: REVISITING A MULTI-CASE STUDY ON FOUR 'NEW DEAL' VILLAGES

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Individual Paper Presentation

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This paper extends a recent study that piloted a novel multi-destination walking accessibility index—the Enhanced Threshold-based Cumulative Opportunities (ETCO) index—by examining potential metric-induced bias in pedestrian accessibility estimation. Specifically, it compares ETCO to a more computationally intensive gravity-based multi-destination walking accessibility model applied to the same four 'New Deal' village cases. The central hypothesis is that, at the neighborhood scale, differences in the spatial distribution of non-residential land uses (nodal, corridor, network) and in transportation network topology and geometry (traditional grid, dendritic, hybrid) will yield different walking accessibility values relative to ETCO and may alter case rankings and outcome evaluations. This outcome would contrast with recent city- and metropolitan-scale assessments of walking accessibility measures, which have found no significant differences between cumulative-opportunity and gravity-based indicators. To construct the gravity-based walking accessibility indicator, points-of-interest (POI) data pre-classified by activity type (licensed through Foursquare) will be captured for each case using GIS, and a walking cost matrix from each residential parcel to all walkable destinations will be generated with ArcGIS Pro v3.4 Network Analyst on a highly detailed, digitized pedestrian network. In addition to incorporating distance decay, destination weights consistent with the ETCO protocol will be applied, aggregated, and subsequently used to compute average neighborhood-level walking accessibility, while parcel-level values will be mapped for intra-neighborhood spatial analysis. The study focuses on four historically significant 'New Deal' villages that share a common pedestrian-oriented nucleoid village form and scale but differ in street layouts, urban design, and land-use patterns; one village is treated as a divergent case due to its distinct governance regime and more informal, organic evolution. By revealing how the choice of accessibility metric can systematically favor or penalize particular street layouts and land-use configurations, the study alerts planners to the risk of misdirecting investments, zoning decisions, and design interventions when metric-induced bias goes unexamined. Quantitative results from the gravity-based indicator and resulting rankings will be compared with those from the ETCO cumulative-opportunity measure, and construct validity will be further assessed by triangulating findings with other widely used pedestrian accessibility indicators (e.g., WalkScore) and publicly available travel behavior data, leading to policy implications and practice-oriented recommendations for designing more sustainable, resilient, equitable, and pedestrian-friendly neighborhoods and cities.

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Keywords: walkability, accessibility, transportation, land-use, New-Deal

MICROMOBILITY-TRANSIT INTEGRATION IN LARGE U.S. MSAS: SPATIAL-TEMPORAL PATTERNS AND MULTILEVEL DETERMINANTS

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Introduction: As urban areas pursue sustainable, multimodal transport systems to fill first-and-last-mile gaps, understanding how micromobility (shared e-bikes and e-scooters) interact with transit is becoming a key planning priority. These systems are increasingly viewed as complements to transit that extend catchment area and enhance accessibility (Liao & Correia, 2022; Zhang & Kamargianni, 2023). Existing research show micromobility usage and trip patterns are shaped by built-environment, infrastructure, socio-demographics, and user attitudes. Recent studies increasingly emphasize multimodality and their relationship with transit (Ghaffar et al., 2023; Hosseinzadeh et al., 2021; Caspi et al., 2020).

Research Gaps & Rationale: Prior research largely evaluated micromobility and transit as parallel urban transport systems with focus on ridership patterns or station-level demand. The literature thus remains fragmented, local-specific, and methodologically limited. Studies rarely conceptualize integrated micromobility-transit trips as interdependent travel behaviour, quantify realized integrated trips, or jointly model neighbourhood and regional influences.

To address this, our study examines how micromobility-transit integration is expressed spatially and shaped by neighbourhood and regional characteristics. We conduct a comparative analysis across five large U.S. MSAs, namely, New York-Newark-Jersey City, Chicago-Elgin-Naperville, Dallas-Fort Worth-Arlington, San Francisco-Oakland-Hayward and Boston-Cambridge-Newton. These span different positions in U.S. urban hierarchy with contrasting urban form, transit attributes and micromobility context.

Research Questions: We aim to quantify realized micromobility-transit integration behavior and its neighborhood and regional determinants. Key questions are:

- What spatio-temporal patterns and clustering characteristics are evident in integrated micromobility trips within and across selected MSAs?
- Which neighborhood-built environment, socio-demographic, and safety factors are associated with integrated trip intensity within selected MSAs?
- How do county-level institutional, policy and system attributes influence the same?

Database & Methods: The analysis uses Census Block Groups (CBGs) nested within Counties of respective MSAs as primary unit. We combine micromobility operational data (2024-2025) from vendor APIs/direct communication, with GTFS, ACS 2024, state DOT, Maptitude POIs, USGS elevation, NHTSA crash, AGS Crime, AAA fuel price and GBFS data, and employ a two-stage analytical framework.

We use origin-destination micromobility trip records with location and timestamp to develop two behavioral outcome measures: (a) ingress integration intensity (share of micromobility trips ending within 1-mile of transit stop); and (b) egress integration intensity (corresponding share originating within 1-mile of transit stop). ST-DBSCAN detects spatio-temporal clusters of integrated trips.

In the second stage, we apply multilevel regression to examine how neighborhood-level built environment, socio-demographic, transit profile, destination environment and safety, along with county-level variables representing institutional, operational, and economic context are associated with integrated trip intensity. At local level, geographically weighted regression is employed to assess spatial heterogeneity within MSAs.

Preliminary Findings: Integrated micromobility trips cluster in dense, transit-oriented neighborhoods with stronger bike infrastructure, better service integration, and higher transit dependence. County level institutional conditions, particularly payment integration, system maturity, and pricing also shape integration intensity. Local spatial regression highlights how neighborhood and regional contexts jointly shape first-and-last-mile connectivity. This provides guidance for targeting priority zones for infrastructure deployment, fare integration, and multimodal coordination.

Citations:

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Keywords: micromobility, integrated trips, spatio-temporal cluster, multilevel modeling, local spatial regression

MICROTRANSIT AND MOBILITY JUSTICE IN TEXAS: PILOTING PATHWAYS TO PROGRESS

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Individual Paper Presentation

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From the vantage point of most small and medium-sized cities, it is hard to imagine a shift away from automobility, much less a just transition that repairs past harm. The combination of decades of auto-oriented development, the lack of investment in and political will to support collective public goods, and the warm(ing) climate all seem to conspire against a shift away from air-conditioned personal travel. And yet, even in Texas, there are efforts to leverage new technologies and experiment with the possibility of both providing better (or any) transit to those who need it and, if possible, entice others out of their car. To date, most research on micromobility has focused on the extent to which it is successful in building ridership or expanding access (Pinski, Brown, and Perloff-Giles, 2026; Ghimire et. al., 2024; Currie and Fournier, 2020). This research instead explores the extent to which micromobility pilots reframed each city's understanding of mobility in a way that could be part of a shift away from automobility (Richardson, Isaksson, and Gullberg, 2010). In other words, do they lead cities to continue or increase investment in non-car alternatives, build capacity in cities and agencies around providing transit, and engage the public in discussions around alternatives to car use?

This research traces three micromobility experiments, in Denton, Bastrop, and San Marcos, TX to explore the extent to which these pilot initiatives a) built new forms of knowledge or supported new "ways of knowing", b) improved mobility for those without access to a car, and c) engendered long-term institutional shifts that could be built upon for further transitions. Using interviews, content analysis of public meeting minutes, reports, blogs, and news articles, as well as spatial analysis of ridership and service areas, we find that microtransit pilots sparked public conversations about transit, raised awareness of a city's ability to take action on transit, and provided inroads to a just transition when provided in the absence of fixed route. We also find that pilot programs introduce an aspect of uncertainty, including ongoing confusion about how to measure access and success, and unintentionally sparked public conversation as a result of service cancellations of both existing fixed-route and pilot services. The research provides insights into how microtransit (and transit pilot programs more generally) can play a role in a just transition if policymakers pay close attention to local context and capacity in pilot implementation.

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Keywords: micromobility, just transition, mobility frames, small cities

MODELING INTERCITY ACCESSIBILITY BY BUS FOLLOWING STATION RELOCATION

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Individual Paper Presentation

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The recent, large-scale closure of fixed-location, downtown bus terminals in the United States raises questions of how station relocation impacts riders' intercity accessibility. While much public conversation, and a growing body of academic scholarship, has been devoted to the ways such closures limit the mobility of at-risk populations, here, we explore how bus station relocation, when planned to allow for increased multi-modal linkages, can possibly increase accessibility from the status quo. Adapting an existing aviation-based Accessibility Integrated Mobility (AIM) metric, we develop a Bus-Accessibility Integrated Mobility (BAIM) metric to measure census tract level accessibility under alternative bus terminal location scenarios. The BAIM metric combines individual level impedance measures of fare affordability, modal accessibility to bus terminal, and trip time into a tract specific score of intercity bus accessibility.

We apply this framework to the case study of travel between Cleveland, OH and Chicago, IL, comparing the former Greyhound downtown bus station in Cleveland with the new airport-based location nearby Cleveland Hopkins International Airport. Using public transit data, we evaluate BAIM under diverse transit performance scenarios. We find higher BAIM values (in the aggregate) for the airport bus terminal, indicating an accessibility advantage over the previous downtown location. Intercity accessibility increases with greater transit efficiency for the airport location, whereas BAIM estimates remain relatively stable with regards to transit performance for the downtown location. These findings suggest that airport bus terminal relocation may improve intercity accessibility, and in doing so leverage existing transit connections to the airport and convert it into a more integrated multimodal hub for regional travel.

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Keywords: Bus, Accessibility, Intercity

MULTI-LEVEL METROPOLITAN GOVERNANCE AND PLANNING FOR CONNECTED AND AUTONOMOUS VEHICLES

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Individual Paper Presentation

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Planning and implementation of connected and autonomous vehicle (CAV) systems requires more than technical refinements to vehicles and networks. Policies, regulations, and practices will also need to change (Martínez-Buelvas et al., 2025). In the United States, such planning requires cooperation among Federal, state, regional, and local actors. However, this multi-level and jurisdictionally fragmented governance structure can often lead to differences in goals, practices, and even knowledge and understanding across agencies. These differences may hinder not just implementation but the attainment of stated social goals such as sustainability and equity (Kigochi, 2024). Planning for CAVs is also intertwined with longstanding challenges for regional accessibility planning, such as regional agencies' usual lack of control over local land use decisions (Sciara, 2017). Given the continuing absence of federal or state-level frameworks to guide planning for CAVs, practitioners in local agencies must rely on practical judgment and dialogue to advance CAV planning efforts (Forester, 1999). Given the distinctive challenges of CAVs and long-present limitations to how transportation is planned across jurisdictions and levels of government, there is a need to better understand how a polycentric metropolitan governance structure influences CAV planning.

We examine CAV planning across state, regional, and local agencies involved in transportation planning in the Hampton Roads region, Virginia. Being polycentric with multiple cities of comparable sizes and a considerable rural area, this region acts as an informative study area to understand how multilevel and cross-jurisdictional governance shapes CAV planning. Twenty semi-structured interviews were conducted with transportation and urban planning professionals across the state, regional, and local agencies in the region. The objective of the interviews was to understand planning practices across different institutional hierarchies within the region and the institutional barriers planners' have experienced. Thematic analysis was conducted to identify major themes that describe the planning practices across different governance levels. In addition, content analysis was performed on the strategic plans from different cities and counties, regional and state agencies, to analyze their vision towards CAV planning. Findings show significant differences in planning practices between state and regional versus local agencies. State and regional agencies emphasized evidence-based decision-making, which was driven by technical practices. On the other hand, practitioners in local agencies used deliberative approaches to advance value-laden planning practices, often centered on sustainability and equity. Moreover, the dependence of county agencies on state agencies for maintaining road infrastructure makes a complex dependency for planning of CAVs in the absence of state frameworks. Further, planning for the sustainable use of autonomous ride-hailing would require coordinated efforts between transit agencies and city or county authorities that have differences in vision towards planning for CAV systems. Overall, the interviews showed big differences not just in preparation and coordination but in understanding of what CAVs are and their potential role and impact on travel and cities.

CAVs hold potential to improve accessibility and do so in a sustainable and equitable manner. However, collaborative action from federal, state, local, and regional transportation agencies in a region will be necessary for the implementation of this suite of new technologies. This study helps understand differences in planning practices across agencies in the metropolitan region and how they may affect CAV planning. It highlights the need for efforts to develop not just coordination but communicative frameworks at the federal, state, and regional levels to guide planning for CAV systems.

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Keywords: Regional governance, Technologies, Transformation, Interviews, Institutions

MULTISCALE GEOGRAPHICALLY WEIGHTED REGRESSION TO ACCOUNT FOR SPATIALLY HETEROGENEOUS PROPERTY VALUE IMPACTS OF HEAVY RAIL TRANSIT STATIONS

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Planning Issue:
Fiscally constrained governments in the US are eagerly seeking new revenue sources, including value capture (VC), to fund transit. The initial step in implementing VC mechanisms, such as special assessment districts (SADs), is to provide empirical evidence that public transit has raised the value of nearby properties and to ascertain whether the magnitude of the impacts varies across the entire vicinity of the transit infrastructure, such as a transit station. For example, is the value increment 12% of the property value across the entire 0-2-mile band around a transit station, or is it 5% in one section of the band, 7% in the second, and so on? Variability in property value increases would call for different property assessment rates across sections of the band. Without empirical estimation, public agencies make educated guesses about the likelihood and magnitude of the benefits. For example, they erroneously assume that the impact is likely limited to one side of a freeway or an arterial road, or use existing neighborhood boundaries to delineate SADs. Alternatively, they employ property assessors to undertake time-consuming parcel-by-parcel valuation, as was the case for the Seattle Street Car system (Mathur, 2014).

The U.S.-based econometric research examining the impact of rail transit investments assumes that all properties in the vicinity of a transit station experience the same property value gain by employing average estimation techniques such as ordinary least squares (OLS) regression, or its variants, such as spatial lag or error models (see Mathur, 2023). A few studies have relaxed this uniform impact assumption using Geographically Weighted Regression (GWR) (see Zolnik, 2021; Dziauddin, Powe and Alvanides, 2015). Furthermore, while GWR assumes a fixed spatial scale for the impact of independent variables on property values, MGWR relaxes this assumption. Hence, it is useful to estimate an MGWR model.

Study area, research questions, and methodology
This study estimates the property value increment for single-family homes within the 0-2-mile band around the Bay Area Rapid Transit (BART) system's Warm Springs (WS) Station in Fremont, CA. Specifically, it answers the following questions:
RQ1: Does the WS Station impact the surrounding house prices?
RQ2: Is the house price impact spatially heterogeneous?
RQ3: What is the total house price impact of the WS Station obtained from GWR/MGWR results, and does it compare with OLS results?

This study uses MGWR to answer RQ1 and RQ2—estimating the impact of WS Station on property values and examining whether the impacts are spatially heterogeneous. It adds the price increments for all single-family homes in the study area, obtained from the MGWR and OLS models, to answer RQ3.

Major findings
The MGWR model results reveal a) significant spatially heterogeneous price impacts, b) that the sale prices of only a small minority of the houses are impacted, and c) the overall price impact is much smaller than that estimated with an OLS model. Specifically, the MGWR model suggests a total property value increase of about a quarter of that obtained from the OLS model — $450 million compared to $1.7 billion.

Relevance to planning

Accurate, spatially fine-grained analysis of the impacts of public infrastructure and services on property values is critical to developing tools to capture such impacts (when values increase) or to devise mitigation measures (when they decrease). This study highlights the need to move beyond average estimation techniques, such as OLS, to those that account for spatial heterogeneity in price impacts, such as GWR and MGWR, to develop nuanced tools to capture price increases or tailor mitigation measures.

Citations:

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Keywords: public transit, value capture, transit finance, property value impact, spatial heterogeneity

ONE SIZE DOES NOT FIT ALL: SUSTAINABILITY AND UNADDRESSED TRANSPORT NEEDS IN A U.S. COLLEGE TOWN

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College towns preside in their larger communities, where both interact to shape sustainability. Transportation accounts for about a third of emissions in the U.S. (US EPA, 2025) and offers a significant opportunity to advance sustainability for U.S. universities, given their significant labor pool and student population. Prior research shows that travel preferences and satisfaction strongly influence mode choice (De Vos et al., 2022), and this study investigates opportunities for the facilitation of broader adoption of sustainable transportation modes in college towns by analyzing the satisfaction, preferences, and needs of university-affiliated populations in Iowa City, Iowa. Using survey data from 871 University of Iowa students, faculty, and staff, we developed an Integrated Choice and Latent Variable model (Ben-Akiva et al. 2002) capturing preferences related to parking, weather, and time barriers, and perceptions of safety, convenience, and affordability. To account for the effect of the built environment and socioeconomic conditions, respondents' home locations were linked to neighborhood density and housing affordability indicators as well. The findings indicate that higher satisfaction with parking and with the safety, convenience, and affordability of one's main mode strongly predicts having transportation needs met. Sensitivity to adverse weather or nighttime travel decreases satisfaction, particularly for women and transit users. Residents of denser and unaffordable neighborhoods are more likely to have their needs met, while suburban residents and those facing long travel distances report lower satisfaction. These patterns reflect established housing and transport tradeoffs for cities at large and for college town populations, i.e., those living in more urban parts of the region served by transit and especially in its denser parts, being more likely to view their transport needs as met. More broadly, findings reveal a persistent mismatch between affordable housing and areas well served by sustainable transportation modes, leaving many non-student workers to choose between more expensive, centrally located housing or auto-dependent suburban areas. The findings point to the missing middle housing challenge faced by many U.S. cities and college towns (Ehlenz et al., 2024). While reasonable access to more sustainable transportation modes is available to students and those with higher incomes, there is room to enable more sustainable travel behavior among non-student populations, and for purposes other than commuting. Potential policy changes can capitalize on behavioral prerequisites for more sustainable travel behavior, like general dissatisfaction with driving and parking, offering college towns an opportunity to get more people out of cars if more sustainable transportation options are enhanced. At the same time, by expanding housing in the parts of the region where diverse travel options already exist, college towns can expect to be more successful in achieving their sustainability goals not only through changes in travel behavior but through more efficient land use. More broadly, the study suggests that for universities to advance their sustainability goals, they must consider policies beyond campus in transportation and housing and take a proactive role in improving local communities.

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Keywords: small town planning, college towns, sustainability, travel behavior, travel preferences

PATHWAYS THROUGH DISASTER: CAR ACCESS, MOBILITY, AND TRANSPORTATION DISADVANTAGE IN POST-HURRICANE WESTERN NORTH CAROLINA

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Individual Paper Presentation

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Hurricane Helene struck Western North Carolina in September 2024, disrupting transportation systems and exposing deep variation in households' ability to cope with sudden mobility loss. This paper examines how car access (CA) shapes and is shaped by disaster impacts, addressing three questions: How did Hurricane Helene affect households' CA and mobility across Western North Carolina's varied geographic and sociodemographic contexts? What household- and community-scale factors influenced residents' ability to adapt their mobility in the storm's aftermath? And what does this reveal about gaps in existing frameworks for measuring and responding to transportation disadvantage (TD)?

We employed a modified Delphi method involving community-based listening sessions at public sites in seven western North Carolina communities (fall 2025), followed by online focus groups with participants recruited from the listening sessions. Study sites were selected to capture variation in storm impact severity, community size, sociodemographics, and car dependence. A total of 79 residents participated in ten listening sessions. Interviews were transcribed and analyzed, with themes probed and validated through subsequent focus groups.

Preliminary findings reveal interconnected patterns of impacts. First, storm intensity and transportation system damage varied considerably across the region, producing uneven mobility disruption: damage to roads and bridges cut off some communities while others remained largely accessible. Second, households experienced the storm's mobility impacts differently: some lost connectivity after roads and bridges were destroyed, while others had vehicles damaged or swept away. Third, the capacity to cope varied sharply across households: those with financial reserves, access to a spare vehicle, or strong ties to community support networks were better positioned to restore their mobility, while others faced sustained transportation hardship.

These findings point toward a significant and largely unaddressed gap in planning practice: to our knowledge, no framework currently exists to help transportation agencies identify which households are most at risk of sustained mobility loss after a disaster, what forms of assistance they need, or why their vulnerability differs from their neighbors'. Restoring roads and bridges, while essential, addresses only part of the mobility recovery challenge. Households that lost vehicles, or that never had reliable vehicles to begin with, face a distinct and poorly-served set of needs. This work contributes to efforts by NCDOT and partners to develop dynamic, disaster-responsive TD tools—moving beyond static sociodemographic indices toward frameworks that account for household financial resilience, vehicle fleet characteristics, social network resources, and community-level fallback capacity. This project feeds into a larger research effort to develop a planning framework that can help agencies quickly identify who will need targeted post-disaster mobility assistance, what that assistance should look like, and why vulnerability is distributed the way it is across households and communities.

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Keywords: transport disadvantage, car access, disaster recovery, rural mobility, Hurricane Helene

PATTERNS OF CLIMATE INFRASTRUCTURE INVESTMENT IN THE U.S. CITIES: EVIDENCE FROM CAPITAL IMPROVEMENT PROGRAMS

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Increasingly, cities are developing Climate Action Plans (CAPs) and considering them as key tools to address climate change. However, these plans often only reflect a city's intentions and visions for climate action, making it difficult to implement and measure their effectiveness (Millard-Ball 2012; Gilbertson & Meerow 2025). One approach to bridge this gap is to integrate climate considerations and policies into Capital Improvement Plans (CIPs)—investment plans for local government public facilities and services—to ensure that climate actions are realized through actionable and funded projects (Whittington 2015; Mathur 2019; Whittington 2025). However, comparative and systematic evidence on the scale, composition, and trajectory of climate-related infrastructure investment across U.S. cities remains scarce.

This paper presents a comparative analysis of climate-related investment patterns across over 20 U.S. cities. Such investment data was compiled from cities' CIPs from 2014 to 2026, capturing a decade of historical appropriations and five years of planned capital commitments. Using large language models (LLMs), we identify climate-related capital projects based on the green/climate project taxonomies from the International Capital Market Association (ICMA) and the Climate Bond Initiative (CBI). Human validation is conducted for low-confidence classifications. The dataset allows examination of several dimensions of investment patterns: (1) aggregate climate investment trends and per-capita spending trajectories over time; (2) variation in project type composition across cities; (3) cross-city differences explained by the formulation of CAP, fiscal capacity, climate risk exposure, city size, and political environment; (4) investment resilience in response to fiscal shocks—specifically, whether the COVID-19 pandemic interrupted or redirected planned climate infrastructure commitments and how cities recovered in following CIP cycles.

We find that the proportion of cities' capital appropriations dedicated toward climate-related infrastructure as a share of total infrastructure investment is still low. But such shares were increasing even as overall CIP planned investment declined during COVID-19. Additionally, there is a weak connection between the goals stated in CAPs and the actual magnitude of climate-related infrastructure investment, shaped by a combination of factors that vary across cities. Such results will offer systematic empirical evidence, in a sample of over 20 US cities, of the scale, composition, and trajectory of the gap between CAP ambition and climate-related infrastructure investment. Results suggest, for planning scholarship, the potential for methodological advancements to broaden the scope and reach of empirical analysis of plan implementation, providing opportunities to reflect on plan design and governance for climate action through capital improvements.

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Keywords: Capital Investment Plan, Climate Investment, Infrastructure Planning, City Budget

PEDALING PROGRESS: THE RECENT POLITICAL HISTORY OF BICYCLE INFRASTRUCTURE INVESTMENT IN A CAR-ORIENTED CITY

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Individual Paper Presentation

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A necessary step toward reducing car dependence is to increase the availability of convenient and safe alternatives to driving. One of the most convenient and fun alternatives to the car for shorter trips is the bicycle. Electric bicycles extend this to mid-length trips. Unfortunately, roads in car dependent places tend to be unsafe for bicycling; fast-moving cars and trucks dominate. In these communities, making necessary policy changes and investments for cyclist safety can be politically challenging. Christchurch, New Zealand, stands out as a promising example where the community's strong support together with a series of key events paved the way for a large increase in bicycle infrastructure investment.

Christchurch was a historically famous bicycling city. As recently as the mid-20th century, bicycles made up approximately half of the traffic in the city. Cars crowded out Christchurch's bicycles in the latter half of the century, but key reasons why cycling was popular remain true: the terrain is flat, distances are short, and the climate is mild.

Fast forward to 2010 and 2011, when the city experienced massive destruction caused by two major earthquakes. In the aftermath of the disaster, the city's leaders and planners held a community visioning exercise to identify priorities for their city going forward. One of the most popular ideas that came out of this exercise was to invest in bicycling infrastructure as part of the rebuilding of Christchurch.

Since then, the Christchurch Council has been working steadily and rather rapidly to make these investments by increasing their annual bicycle infrastructure spending by at least a factor of 10. The city now boasts an impressive network of 6 completed major cycleway routes, 3 partially completed routes, and 75 km of cycleways, plus bicycle lanes on key roads and 3 popular shared path routes. Four additional cycleway routes are in the planning or early construction stages. Bicycle use counts have risen by 40 percent since 2017, to the point where rush hours include crowds of bicycle traffic at major intersections.

This level of investment and change in just one decade in a highly car-dependent city is remarkable. In this paper, I tell the story of how it happened and how the reaction has changed over time, and try to extract lessons from Christchurch's experience that might be useful for other places. My core data comes from in-depth interviews that I conducted with many of the people who were deeply involved in the city's original and ongoing decision-making processes around bicycle infrastructure. These include city planners, local transportation consultants, current and former city council members, and one former mayor. I also interviewed a few longtime Christchurch residents to gain a general historical perspective, and additionally draw upon official planning documents, news coverage, and social media conversations about bicycling in the city.

Major findings include that the transformative change was made possible by a combination of at least four factors: (1) bicycling history and continued bicyclist activism in the city provided a base of knowledge, (2) the earthquakes acted as keystone events that brought residents and city leaders and planners together to imagine a new and better city, (3) a cycling movement and associated investments were happening at the national level in New Zealand at the time, and (4) a series of seemingly coincidental events occurred to put a lot of the "right" people in the "right" places at the "right" times. I conclude with a discussion of how this story fits into larger theories of policy adoption, and propose a new metaphor of "ducks in the pond" – which are necessary but not sufficient for those ducks to get "in a row" for policy change to occur.

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Keywords: bicycle infrastructure, policy adoption, policy process, politics of transport

PERSPECTIVES ON THE USE OF TRAVEL MODELING AMONG MODELERS

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Individual Paper Presentation

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Travel demand modeling is widely called upon to provide analytical firepower to the transportation planning and policy process, yet it is often criticized for misuse, opacity, and inaccuracy. Modeling provides decision-makers with a view of the potential outcomes from transportation infrastructure or policy that cannot be done through pilot or experimentation, by their nature of being too disruptive or expensive, thus requiring a simulated forecast by some sort of model. At the same time these models – often developed for particular use cases and requiring an immense set of data and assumptions – and the information from them are employed in myriad ways and with varying degrees of transparency, understanding, aspiration, and appropriateness. This wide spectrum of use and misuse – ranging from data-driven decision making to political justification to documented deception (Kain 1990) – contribute to the criticism and distrust of modeling.

We convene and facilitate a modified Delphi panel of experts in travel demand modeling, travel behavior, and performance-based transportation policy to study current attitudes and perspectives among modelers about the role and use of travel modeling in the decision-making process for transportation policy and infrastructure. The panel include dozens of participants with professional and academic experience in travel demand modeling, behavioral modeling, and applying modeling to policy from the public and private sectors as well as from the academy. We draw our survey and interview protocols from the literature on travel demand modeling, including assessments of forecast accuracy, the fundamental purpose of modeling, and its use and influence on policy (Erhardt 2020; Hartgen 2013; Voulgaris 2020). We also draw on policy process theories and how they describe the use of science, evidence, and technical information in decision-making (Sabatier and Jenkins-Smith 1993; Handy 2026).

While much of the academic literature on travel demand modeling focuses on refining technical best practices, this work contributes to the [practical application of travel demand modeling to policy. By examining the interaction of evidence in the policy-making process, this research seeks to better understand and demonstrate why, when, where, and how to use travel demand modeling in transportation decisions.

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Keywords: Travel demand modeling, Policy application, Policy process

PLANNING FOR CARE MOBILITY: TRANSPORTATION POLICY LESSONS FROM HOME HEALTH AIDES IN THE BRONX, NEW YORK CITY

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Individual Paper Presentation

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As cities increasingly rely on home-based care to support aging populations, the mobility of home health aides has become a critical yet overlooked component of urban infrastructure. Transportation planning frameworks, however, continue to prioritize peak-hour commuting and economic productivity, leaving the travel patterns of care workers largely unaddressed. This paper develops policy recommendations for transportation planning by drawing on qualitative fieldwork with home health aides in the Bronx, New York City.

Based on semi-structured interviews and go-along interviews accompanying workers' daily commutes, the study documents how home health aides navigate fragmented transportation systems while meeting rigid care schedules across dispersed residential locations. Workers frequently travel during off-peak hours, rely on multiple transfers, and experience unpredictable delays and waiting times that remain uncompensated. These conditions produce significant time burdens and expose structural mismatches between transportation planning assumptions and the temporal and spatial realities of care delivery.

Building on these findings, the paper translates fieldwork insights into a set of planning-oriented policy recommendations. The recommendations focus on three areas: recognizing care work as mobile care infrastructure within urban systems; adapting transit planning to better support off-peak and inter-neighborhood travel patterns; and incorporating care workers' experiential knowledge into transportation decision-making through participatory planning processes. By centering the mobility needs of care workers, this paper argues that transportation systems must be reimagined as part of the broader infrastructure that sustains urban care delivery.

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Keywords: Transportation equity, Transportation policy, Public transportation, Care mobility, Gendered mobility

PLANNING FOR PEDESTRIAN AND BICYCLIST SAFETY: A MULTILEVEL ANALYSIS OF CRASH DETERMINANTS IN FOUR LARGEST METROPOLITAN AREAS OF THE TEXAS TRIANGLE

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Individual Paper Presentation

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Introduction: Pedestrian and bicycle crashes are a critical transportation safety concern in the United States, and are particularly acute in Texas, where pedestrian and bicyclist fatalities accounted for 21.8 percent of all traffic fatalities during 2023 (TxDOT, 2025). This highlights the growing vulnerability of active travel mode users within auto-oriented contexts. Prior research show roadway design, socio-demographics, and neighborhood context are key determinants of pedestrian crash outcomes (Ewing & Dumbaugh, 2009). Dense, mixed-use environments concentrate pedestrian exposure and bicycle activity, thereby increasing crash risk, while sidewalk and crossing play a critical role in shaping how that risk translates into actual crash outcomes (Pour et al., 2017; Salmon et al., 2022; Stoker et al., 2015).

Research Gaps: Despite substantial advances in explaining pedestrian and bicycle crashes, existing research rarely adopt a multilevel perspective that integrates street exposure, neighborhood built-form, and regional policy to explain them. Policy-level conditions such as the role of “Complete Streets” in eliminating pedestrian fatalities (Schneider, 2018) and zoning frameworks remain weakly incorporated in existing research. Moreover, limited attention to sidewalk condition and bike lane presence obscure the role of pedestrian and cycling infrastructure in shaping crash risk, particularly in growing metropolitan contexts.

Objective and Research Questions: We develop a multilevel framework that integrates roadway design, pedestrian and cycling infrastructure, and regional policy conditions to examine pedestrian and bicycle crash determinants across four largest metropolitan areas in Texas Triangle: Dallas-Fort Worth-Arlington, Houston-The Woodlands-Sugar Land, Austin-Round Rock-San Marcos, and San Antonio-New Braunfels. These metropolitan areas account for a substantial share of the state’s reported crashes with varied exposure conditions, urban form, and infrastructure environments relevant to active mode safety. Key research questions are:

1) How do segment-level characteristics, including design and speed environment, influence pedestrian and bicycle crashes?
2) What role do neighborhood built-form, infrastructure provision, and socio-demographics play in shaping pedestrian and bicycle crashes?
3) Do regional policy frameworks (such as Zoning, Complete Streets commitment) moderate these relationships?

Database & Methods: Pedestrian and Bicycle crash count are derived from TxDOT CRIS (2021-2025) and analysed at road-segment level. Segment-level predictors include roadway class, intersection, sinuosity, speed limit, traffic exposure and highway proximity computed using TxDOT roadway inventory and traffic datasets (2025), along with sidewalk presence and bike lanes compiled from COG datasets.

CBG-level variables include density, land-use mix, transit proximity, and socio-demographics from multiple sources, such as ACS (2024), Maptitude (2025), and GTFS. Metro-level attributes focus on policy dimension and include zoning frameworks and Complete Streets policy adoption captured through binary indicators.

We employ a two-stage analytical framework. First, we identify a GIS-based high-risk network (HRN) for road segments with pedestrian and bicycle crashes. Next, we estimate multilevel negative binomial models, specifying segments nested within CBGs, and incorporate random intercepts and cross-level interactions to capture how neighborhood attributes and policy contexts at metropolitan level moderate segment-level effects.

Preliminary Findings: Pedestrian and bicycle crashes are high along high-speed arterial and in activity-dense, mixed-use areas. Socio-demographic disadvantage is found to remain significant beyond neighborhood built-form control. Incomplete pedestrian infrastructure, particularly sidewalk gaps and poor crossings, increases crashes, while "Complete Streets" interventions are expected to reduce them.

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Keywords: high risk network, complete street, pedestrian, Texas Triangle, multilevel model

QUEER MOBILITIES AND PUBLIC TRANSIT

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Individual Paper Presentation

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While public transit provides vital access to jobs, resources, and spaces to explore expression for gender minorities and queer people, the unique ways that queer individuals navigate transit systems remain a significantly under-theorized dimension of urban life. Prior research engages public transit as historically gendered and racialized space, outlining the ways infrastructure has prioritized mobility for heterosexual male adults, even though queer youth are disproportionately transit-dependent. Still less is known about the ways queer and BIPOC youth navigate and perceive (and their worldviews are shaped by) transit and their use of this public system. In this paper, we build on critical mobilities scholarship, feminist geography, queer and trans geographies, and Black geographic thought to understand public transit as a socially produced space that necessitates new theory to understand it's functioning and import in queer life. While previous scholarship on public transit use for gender minorities has focused on the disproportionate harassment, violence, and fear-based movement experienced the queer community, here, we focus on the material demands and theoretical implications of queer navigations of transit space and identity. We find that on public transit, mobility and identity are mutually constitutive, shaped through tensions of safety and danger, access and surveillance, and belonging and exclusion. Drawing on semi-structured interviews, participant drawings and mental maps collected with queer and BIPOC young adult transit riders in Philadelphia, we analyze how participant perception and histories with transit can envision alternative, future mobility systems. We find that queer BIPOC young adults constitute a counterpublic whose experiences on public transit not only expose existing urban inequalities, but highlight the critical need for a renegotiation of the material and social conditions of travel.

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Keywords: queer, mobilities, transit, public, Philadelphia

REBRANDING AND RESCHEDULING: OPPORTUNITIES FOR HIGH-FREQUENCY BUS SERVICE

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Individual Paper Presentation

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With limited likelihood of expanding public funding support, transit systems are typically in search of ways to expand the frequency of their service. For small and medium-sized cities, this will likely have to take the shape of bus service, given the high up-front costs of installing fixed-line rail or light rail lines. While Bus Rapid Transit has emerged as an attractive compromise across the globe for cities looking to substantially boost public transit options, that system can also require major infrastructure upgrades. In Massachusetts (USA), a growing movement supported by philanthropic and non-profit actors under the banner of the Better Bus Project has taken a less capital-intensive approach by focusing on high-frequency bus service. Through bus priority lanes and minor scheduling adjustments, these bus lines can offer regular service for much of a typical work day 10-20 minutes headways (MBTA, 2025).

High-frequency bus service—typically defined as operations with headways of 10–15 minutes or less—is widely recognized as a foundational strategy for enhancing transit attractiveness, reliability, and ridership (Ruiz et al., 2017; Xian et al., 2025). In small- to medium-sized North American cities, such frequent bus networks often provide a more cost-effective and adaptable alternative to capital-intensive Bus Rapid Transit (BRT) systems, while still delivering substantial service improvements(Ruiz et al., 2017). However, planning and implementing high-frequency networks involve complex design and operational challenges. The equity-efficiency tradeoff is also underestimated (Ferguson et al., 2012; Qiu et al., 2025). Developing strategies to upgrade existing bus systems with minimal investment and maximum rider benefit remains underexplored, particularly within prevailing institutional constraints.

This study examines the performance of the existing bus transit system in Worcester, with a focus on identifying areas of effective service provision and those requiring improvement. By integrating ridership data with spatial and demographic analyses, the study identifies high-demand corridors as well as potentially underserved areas. The analysis aims to develop practical strategies for enhancing service frequency and reliability without requiring substantial new capital investments. Specifically, the research addresses two key questions: (1) to what extent does the current bus network equitably serve different neighborhoods, and where do spatial gaps in transit access persist; and (2) what lessons from Worcester can inform bus service improvements in cities facing comparable institutional and fiscal conditions.

The study utilizes General Transit Feed Specification (GTFS) data from local transit agency for the transit corridor analysis. For each corridor, bus headways and service frequencies were analyzed across approximately two-mile segments during peak periods (8:00–10:00 AM and 4:00–6:00 PM). Building on this assessment, the study evaluates the potential for modest schedule adjustments to reduce headways and enhance service regularity, thereby facilitating the transformation of these segments into high-frequency transit corridors. In addition, an equity analysis is incorporated to assess how existing service levels and proposed improvements align with the spatial distribution of transit-dependent populations.

The study aims to identify demand gaps from an equity perspective along the two corridors and to assess where high-frequency bus services could be introduced to enhance existing services. The result can generate a broader

applicability of this approach to similar sized cities across North America and other regions. It contributes to an understanding of how municipalities with constrained financial resources can implement targeted, cost-effective improvements to high-frequent buses.

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Keywords: high-frequent bus, transit planning, spatial analysis, corridor analysis, transportation equity

REPLACING FIXED-ROUTE TRANSIT WITH ON-DEMAND SERVICES: IMPLICATIONS FOR ACCESSIBILITY AND EQUITY

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Individual Paper Presentation

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In response to budget challenges and declining ridership, many transit agencies are restructuring their transit systems by reducing fixed-route bus service and replacing it with on-demand transit as a more flexible and potentially cost-efficient alternative. While prior research suggests that on-demand transit can enhance service coverage and operational flexibility, concerns remain regarding equity outcomes (Drake & Watkins, 2024; Brown et al., 2021).

Under Title VI of the Civil Rights Act of 1964 and environmental justice guidelines, transit agencies undertaking major service or fare changes are required to conduct service equity analyses to assess potential adverse impacts on minority and low-income populations. However, approaches to equity analysis vary widely across agencies and findings are frequently contested (Karner & Niemeier, 2013). These challenges are particularly amplified in contexts where on-demand services replace or substantially modify existing fixed-route systems, raising important questions about whether such transitions may exacerbate the prevailing accessibility gaps for transit-dependent populations.

The City of Denton, Texas, provides an important empirical case. In 2022, the Denton County Transportation Authority (DCTA) reduced portions of its fixed-route bus network and introduced GoZone, an app-based on-demand ride-sharing service operated in partnership with Via. This study examines how this transition affects accessibility, service reliability, and transport equity. Specifically, it asks: (1) how does the transition from fixed-route to on-demand transit affect access to key destinations such as employment, education, healthcare, and daily needs; (2) how do these impacts vary across different socio-demographic groups, and (3) what service reliability, usability, and equity challenges arise in on-demand transit systems?

To address these questions, transit network data, including bus stops, routes, and schedules, are obtained from the Denton County Transportation Authority (DCTA) in the publicly available General Transit Feed Specification (GTFS) format. GTFS data for two time periods, 2019 and 2025, are used to compare transit networks before and after system restructuring. In addition, individual-level GoZone trip data for 2025, including origin and destination information, are analyzed to understand travel patterns and service usage. These datasets are combined with service area demographic data to examine how changes in transit provision affect different population groups, including variations by race, ethnicity, income, and vehicle access. The study also incorporates primary data from an online survey and in-depth interviews to capture travel behavior, access to transportation options, and user experiences, as well as barriers to using on-demand transit, targeting both GoZone users and the broader population, including non-users and former users.

Preliminary findings show that the GoZone service provided over 832,000 trips in 2025, while fixed-route bus ridership declined by 34 percent following service reduction, including route elimination and reduced frequency. Although overall ridership has rebounded to near pre-pandemic levels, average wait times for GoZone are approximately 24.5 minutes and have increased over time, with greater variability in travel times. These service changes disproportionately affect low-income and transit-dependent populations who previously relied on fixed-route services. Overall, the findings highlight the need to more explicitly account for user needs and equity considerations in transit planning.

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Keywords: Accessibility, Transportation equity, On-demand transit

RESILIENCE AND SUBSTITUTION MECHANISMS OF URBAN TRANSPORT UNDER EXTREME WEATHER: A SPATIOTEMPORAL CAUSAL ANALYSIS OF ACTIVE AND MOTORIZED MOBILITY

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Individual Paper Presentation

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As extreme weather becomes an increasingly important challenge for climate-responsive planning and equitable transport governance, questions of how urban mobility systems absorb, adapt to, and recover from weather-related disruption have become more pressing. In this context, the functional reliability of multi-modal transport networks faces severe strain during episodes of extreme heat and heavy rain. While Big Data and AI offer predictive powers, they often function as “black boxes,” conflating correlation with causation and risking an algorithmic domination that marginalizes the prudent planner. Understanding the specific causal mechanisms—how the built environment moderates the modal shift between active mobility and motorized transport—remains a critical gap in creating resilient and equitable cities. This study proposes a novel Causal Interpretability Framework integrating Machine Learning with Structural Causal Models (SCM). Specifically, SCM is employed to construct a causal graph that disentangles the direct effects of extreme weather from the confounding influences of the built environment (e.g., density affecting both thermal exposure and travel demand), thereby correcting biases inherent in correlation-based SHAP values. Leveraging large-scale mobile signaling data from Shanghai during the summer of 2024, we first classify movement trajectories into active and motorized mobility, and reveal distinct non-linear “tipping points” in temperature and precipitation where the resilience of active mobility deteriorates sharply, triggering a causal shift toward motorized mobility. Crucially, the study identifies how specific spatial features (e.g., land-use mix, transit proximity) act as buffers or amplifiers of this substitution effect. By transitioning from predictive correlation to causal attribution, this research provides granular evidence for precision planning, suggesting that targeted infrastructure interventions—such as climate-adaptive pedestrian facilities in identified vulnerable zones—are essential to maintain system-wide mobility resilience during climate shocks.

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Keywords: Extreme weather, Mobility resilience, Built environment, Causal analysis, Mode shift

REVISITING THE BUS VS RAIL DEBATE: EQUITY IN LIGHT RAIL AND BUS RAPID TRANSIT INVESTMENTS IN THE UNITED STATES DURING THE PAST TWO DECADES

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Over 150 new rapid transit infrastructure projects have opened to the public since 2005, more than one-third of which have been inaugurated in the past five years. This wave of investment—largely in the form of Bus Rapid Transit (BRT) and Light Rail Transit (LRT)—has been supported in part by federal programs that emphasize equity. Even as the current federal administration has moved away from equity-centered priorities, investments in rapid transit infrastructure made over the past two decades have been are often framed as a departure from an earlier era of transit planning in which advocates argued that rail investments disproportionately served affluent, predominantly White, and often suburban populations, while buses primarily served lower-income, inner-city communities of color (Garcia & Rubin, 2004). Policy commitments to equity, some argue, have nonetheless coexisted with persistent structural injustices, often leaving underlying disparities in place (Karner et al., 2020).

While some planning research suggests BRT can be a good substitute for LRT (Levine et al., 2018), longstanding evidence on the racial and socioeconomic dimensions of the bus–rail divide continues to shape how these modes are perceived and debated. Moreover, there is little research that systematically assesses whether recent investments in LRT have benefited historically marginalized, lower-income groups and people of color, some of whom have relocated to suburban areas (Howell & Timberlake, 2014; Liu & Bardaka, 2021). In this context, this research addresses a fundamental question: To what extent are cities in the US allocating LRT to more affluent, non-minority populations and BRT to less affluent or more racially diverse populations? To answer this question, our research draws on two main data sources: (1) a comprehensive spatial data inventory of all BRT and LRT projects constructed between 2005 and 2025 in the US, and (2) the American Community Survey, which provides census-tract-level demographic and economic data for the same period, and state-level partisan preferences. We analyze this pooled national dataset using a logistic regression framework to estimate the likelihood that a census tract received BRT (relative to LRT). To account for regional context, we normalize tract-level characteristics by their corresponding Metropolitan Statistical Area (MSA) aggregate figures.

Descriptive results indicate broadly similar distributions of non-White populations across tracts served by BRT and LRT. Poverty concentration, however, differs slightly, with census tracts served by BRT having an average poverty rate of about 24%, compared with 21% for LRT-served tracts. Regression results accounting for the relative economic position of each tract within its MSA reveal a more accurate picture of these disparities. The poverty ratio, calculated as the tract poverty rate divided by the MSA-aggregate poverty rate, is a statistically significant predictor of mode, suggesting that poorer tracts within metropolitan areas are more likely to receive BRT rather than LRT. While the odds ratio of approximately 1.01 indicates a modest effect size, the direction of the relationship warrants attention from an equity standpoint.

This research provides timely empirical evidence on the longstanding bus–rail debate, extending it in two important ways. First, it evaluates whether contemporary BRT and LRT investments reproduce or depart from historically documented inequities. Second, it moves beyond static demographic explanations to examine the broader structural factors that shape transit investment decisions. We anticipate completing all analyses and

robustness checks by the time of the ACSP Annual Meeting, including a series of multilevel logistic models that account for the nested structure of census tracts within MSAs and incorporate state-level partisan preferences and spatial attributes associated with the suburbanization of poverty.

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Keywords: Transportation Justice, Public Transportation, Bus Rapid Transit, Light Rail Transit, Poverty Suburbanization

RIDER-ORIENTED STREET SUITABILITY EVALUATION FOR DIAGNOSIS-DRIVEN STREET IMPROVEMENT: EVIDENCE FROM CENTRAL NANJING

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Food delivery riders have become one of the most intensive user groups of urban streets in high-density cities, yet their work-related spatial needs remain insufficiently represented in mainstream street evaluation and renewal practices. Existing research has generated important insights into riders' labour conditions, behavioural risks, and mobility patterns, but has offered limited guidance on how rider-related evidence can be translated into street-level planning and design interventions. At the same time, conventional street assessment frameworks are still largely oriented toward pedestrians, cyclists, or general traffic users, and rarely capture the combined demands of continuous riding, frequent curbside stopping, and rapid pickup–delivery transitions that characterize delivery work.

To address this gap, this study develops a rider-oriented street suitability evaluation framework structured around four dimensions: Cycling Safety, Riding Efficiency, Curbside Adaptability, and Environmental Support. Drawing on rider questionnaires and semi-structured interviews, GPS trajectory data, street-view interpretation, and field observation, the framework is applied to twelve representative street segments in central Nanjing. Rather than treating rider activity merely as a traffic issue, the study evaluates whether street space can adequately support delivery work as a specific form of everyday urban use.

The results reveal a systematic mismatch between rider exposure and street suitability. Streets with high delivery intensity do not necessarily provide supportive spatial conditions for riders, and commercially active mixed-use streets show the most pronounced tensions. Indicator-level diagnostics further demonstrate that curbside adaptability is a recurrent bottleneck, while limited stoppable space, inefficient curb-to-entrance access, and turning frictions at intersections are key constraints shaping rider behaviour. By linking suitability assessment with exposure analysis, the study identifies diagnosis-based street types and uses Danfeng Street to illustrate how evaluation results can inform targeted, low-intensity, and implementable street improvement strategies.
The study contributes a transparent and computable framework for integrating delivery riders' needs into street evaluation and provides a practical pathway from behavioural evidence to context-sensitive street renewal in dense urban environments.

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Keywords: delivery riders, street suitability, street diagnostics, curbside governance, street improvement

ROAD RAGE AGAINST THE MACHINE: WHO BULLIES AUTONOMOUS VEHICLES AND WHAT DOES IT MEAN TO PLANNERS?

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Individual Paper Presentation

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Resistance to autonomous vehicles (AVs) has been increasingly documented as they become more common in urban environments and disrupt traditional uses of the public right-of-way. AVs have faced repeated aggressive behaviors from residents, ranging from verbal harassment to physical violence. In 2024, Waymo vehicles were vandalized and set ablaze, followed by similar incidents involving at least six vehicles the next year. Such behaviors highlight a critical challenge in AV integration: managing human-AV interactions within shared urban spaces (Li et al., 2023). This phenomenon presents a significant risk to AV adoption, undermining public trust and the equitable deployment of smart mobility solutions (Bjørnskau et al., 2023).

Multiple factors drive aggressive attitudes and behaviors toward AVs, such as safety fears, job loss concerns, and perceptions of AVs as surveillance tools encroaching on the public realm. AVs' defensive programming paradoxically makes them prime targets for such aggression (Millard-Ball, 2018). Drivers are more likely to bully AVs than human-driven vehicles, revealing a clear human–machine double standard (Liu et al., 2020). These studies indicate that hostility toward AVs is not random but reflects broader social and psychological responses to the emerging technology.

Given these patterns of hostility and the perception of AVs as threatening, cautious, and nonhuman, it is crucial to define what such deliberate behaviors represent. In psychology, bullying is typically defined as intentional actions meant to cause physical or emotional harm, often occurring in the presence of a power imbalance (Chester et al., 2015). Building on this framework, this study defines AV bullying as deliberate actions by drivers, pedestrians, cyclists, or other road users that exploit the cautious nature of AVs. This framing positions AV bullying as a distinct type of human behavior toward AV technology rather than general mischief or vandalism, allowing researchers to identify meaningful behavioral patterns.

AV bullying behaviors pose serious threats to the active transportation modes. They also present challenges for transportation planners and policymakers, as negative social media content and public narratives can erode trust of AV technologies in local communities. However, empirical research on this emerging issue remains limited. The specific manifestations of AV bullying and the demographic and attitudinal predictors of those who engage in such behaviors remain largely unknown. This gap restricts the ability to design adaptive streetscapes and governance frameworks that can effectively anticipate human aggression, develop targeted educational strategies, and support safe human-AV coexistence.

This study investigates the demographic characteristics and attitudes associated with AV bullying likelihood. A multi-city survey (N = 944) was conducted in Phoenix (AZ), San Francisco (CA), Los Angeles (CA), and Austin (TX) using 33 AV bully scenarios and Likert-scale questions. Logistic regression models identified predictors of bullying behavior across six behavior categories. Results revealed that individuals who are married, in a domestic partnership, or separated/divorced/widowed, who express strong concerns about AV malfunctions, believe in AV

safety, or express purchase interest are more likely to engage in AV bullying. In contrast, those who hold a bachelor's degree, are unemployed, believe AVs enhance mobility, or have greater driving experience (>10 years) are less likely to do so. Paradoxically, both safety concerns and safety beliefs predicted higher bullying likelihood, suggesting complex motivations including testing behavior. These findings underscore the need for adaptive AV system design, targeted public education, and regulatory frameworks to mitigate human-AV conflicts. This research offers a foundation for understanding AV bullying behaviors and informs strategies for safer AV deployment.

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Keywords: Autonomous vehicles, AV bullying, Human-AV interaction, Transportation behavior, Community acceptance

SAFETY BEYOND CRASHES: HOW CAN PERCEIVED SAFETY INFORM VISION ZERO PLANNING?

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Individual Paper Presentation

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The United States is going through a safety crisis on its roads. Over 3,300 people were killed while walking in the first half of 2024, which is almost 50% higher than a decade ago, according to the Governors Highway Safety Association. Over the last decade, deaths of people while walking and biking have risen at a pace nearly seven times higher than U.S. population growth. At the root of this crisis is a paucity of data on, and thereby limited understanding of, where and how people walk and bike. Vision Zero transportation policies, which aim to eliminate traffic deaths and serious injuries on our roadways, are guided by detailed crash records, which are geographically mapped and analyzed by local municipalities, MPOs, and state DOTs.

State-of-the-practice Vision Zero implementation fails to adequately consider travel behavior of people walking and biking. Planners use crash data to identify hotspots and prioritize investments in high-crash locations. However, without understanding how people make decisions while walking and biking, we fail to estimate risk and exposure, which locks us into a reactive planning approach of responding to crashes after the fact. A critical gap is the lack of a good measure of avoidance behavior, whereby people avoid using certain streets or intersections because they are perceived to be unsafe. As a result of fewer people using these facilities, there may be fewer observed crashes, which would mask the behavior behind the crash count outcome.

This study addresses that gap by measuring avoidance behavior in Metro Boston through an exploration of where pedestrians and cyclists are avoiding infrastructure due to perceived safety concerns, and to what extent. We computed estimates of actual demand and potential demand for every link in the active mobility network separately for people walking and biking. Actual demand estimates are derived from third-party cellphone data of activity-travel patterns. We computed estimates of potential demand using an active mobility travel demand modeling framework based on network analysis, behavioral theories, and mobility preferences. This framework accounts for the spatial distribution of potential origins and destinations - such as homes, jobs, amenities, public transit, schools, and parks - while also incorporating network-based accessibility between these origin-destination pairs. Comparing potential demand and actual demand helps us identify corridors and intersections with large demand gaps that occur due to avoidance behavior. We then overlaid locations with large demand gaps against crash locations to understand how they relate to each other.

This study contributes to transportation planning research by showcasing an innovative, proactive approach to identifying locations perceived to be unsafe, addressing a longstanding gap in safety analysis that crash data alone cannot fill. Our framework is generalizable to other regions within the U.S. and scalable from neighborhoods to cities to metropolitan regions to states. Our findings reveal systematic patterns of avoidance that are overlooked in crash data-based Vision Zero planning, with direct implications for how planning agencies prioritize Vision Zero investment and implementation.

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Keywords: Pedestrian safety, Avoidance behavior, Network analysis, Vision Zero, Active mobility

SCOOTING AFTER SUNDOWN: UNDERSTANDING NIGHTTIME USAGE PATTERNS AND REGULATORY IMPACTS

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Globally, cities are increasingly integrating micromobility options into transport networks to improve accessibility, reduce emissions, and support multimodal transportation. Among these, e-scooters have emerged as a popular option, offering both flexibility and affordability for numerous trip purposes, ranging from work and school to leisure purposes. In the United States, for example, shared e-scooter trips doubled between 2018 and 2019 and accounted for two-thirds of all shared micromobility trips (NACTO, 2019).

However, this rapid growth has been associated with rising safety concerns especially at night; leading to the implementation of regulations including bans and curfews. While these regulations seek to curtail safety issues including injury and crime, they may impact mobility of nighttime travelers particularly shift workers who rely on e-scooters in the absence of transit or private vehicles.

Prior research has examined e-scooter demand, trip purposes, and safety, however, scant research exists on the role of e-scooters in enhancing nighttime mobility as well as the impacts of regulations on users who rely on them. This study addresses this gap by examining nighttime e-scooter use across over twenty U.S. cities, including nine with varied forms of nighttime e-scooter regulations. Using survey data from over 200 respondents, the study seeks to answer the following questions: (1) who uses e-scooters at night and for what purposes; (2) how do nighttime restrictions influence mobility and accessibility; and (3) how do riders perceive safety across transportation modes.

The findings reveal that nighttime e-scooter users are predominantly young, working-age adults, with men overrepresented across both curfew and non-curfew cities. E-scooters do support a range of nighttime activities, particularly social and commuting trips, underscoring their role in sustaining economic and social mobility at night. Furthermore, users in curfew cities are more likely to substitute for ride-hailing services and private vehicles, while those in non-curfew cities prefer to walk, suggesting that rather than prevent crime, e-scooter bans force residents in less safe cities to switch to more expensive but safer modes of nighttime travel. In assessing the perceived safety of users, variations based on mode, gender, and regulatory context (curfew vs non-curfew city) were identified.

Across both curfew and non-curfew cities, e-scooters and ride-hailing were ranked as safer options compared to walking and using public transit at night. However, respondents in curfew cities reported lower safety perceptions across all modes, suggesting that regulations could reinforce broader concerns regarding nighttime safety. Lastly, gender differences were pronounced, with women consistently reporting lower perceived safety, particularly for walking and public transportation.

This study contributes to ongoing debates over the role and effect of micromobility on urban transportation by highlighting the mobility gap e-scooters fill at night and documenting the unintended consequences of nighttime restrictions on mobility. By situating e-scooter use within broader contexts of safety, access, and mobility justice, the findings offer actionable insights for planners and policy makers about implementing policies that address infrastructure (i.e., lighting), rider safety and gender specific policies that promote equitable and inclusive nighttime mobility.

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Keywords: Curfew vs Non-curfew city, Nighttime mobility, E-scooters, Transportation equity, Perceived safety

SEGMENT-SCALE ANALYSIS BETWEEN URBAN TREE CANOPY LOSS AND ACTIVE TRANSPORTATION: A GEOAI APPROACH USING LBS DATA

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Walking and biking support both individual health and community well-being. To encourage these activities, a safe street environment is necessary. One key contributor to such environments is street tree canopy, which improves thermal comfort for pedestrians and bicyclists. In response to the Emerald Ash Borer outbreak, Ash trees were removed in Lincoln, Nebraska, and the canopy cover was greatly reduced. To understand this impact, this study examines how the loss of the ash tree canopy is related to walking and biking volumes at the street segment scale. To fill gaps in traditional active transportation data, we combined city-wide location-based service (LBS) data from StreetLight Data with detailed environmental and socioeconomic information. Building on this integrated data, we examined active transportation volume at the street segment scale from 2019 to 2021. This timeframe covers the period before and during ash tree removal, which captures the relationship between these removals and the walking and biking volume of each segment. Canopy loss was measured using a deep learning model (U-Net architecture from a convolutional neural network) that detects patterns in high-resolution aerial images and tracks changes from 2018 to 2022. To estimate the extent of canopy loss attributable to Ash trees, we used city tree records.

We used a two-step approach in our analysis. First, we examined how canopy loss and changes in pedestrian activity are related. We accounted for factors such as the built environment (physical characteristics of urban areas) and local demographics. Next, we used a Random Forest model, a machine learning technique that uses many decision trees, to identify more complex patterns. We identified factors (e.g., income, employment, terrain, intersection density, crash rates, and access to transit) that most strongly related to pedestrian volume. Our statistical analysis, based on this approach, revealed a clear link between the loss of ash tree canopy and fewer people walking in the summer (Pearson's $r = 0.25$, $p = 0.01$). Specifically, in places where a lot of canopy was lost, the number of people walking dropped by about 60 trips per street segment each day from 2019 to 2021. We also found that losing more than half the canopy in certain areas was associated with large drops in both walking and biking. Notably, the out-of-bag R^2 score from the Random Forest model shows 0.69, indicating that socioeconomic factors are the main factors related to pedestrian volume change. However, the amount of ash canopy removed emerged as one of the top predictors, even more related than intersection density or proximity to transit.

In conclusion, these results show that while socioeconomic factors are primarily associated with pedestrian volume change, the loss of tree canopy in certain areas is also strongly associated with reduced active transportation. Without shade, people are exposed to more heat in the summer, which makes them less likely to walk or bike on those streets. By connecting changes in urban tree canopy to pedestrian and bicyclist activities, this study provides evidence that tree canopy is a key factor in enabling walking and biking. This research demonstrates that combining GeoAI, environmental monitoring, and mobility data can help planners understand and predict human mobility patterns in response to ecological changes. Based on these insights, city tree management and transportation planning should coordinate their efforts to maintain comfortable, walkable streets after tree removals. These methods help cities measure environmental impacts on mobility and guide planning for healthier communities.

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Keywords: Location-Based Service, Tree Canopy, Walkability, Segment Scale Analysis

SHIFTING WORK, SHIFTING WHEELS: THE IMPACT OF WORK ARRANGEMENTS ON VEHICLE OWNERSHIP

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Individual Paper Presentation

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In the auto-centric context of most U.S. cities, cars serve as essential mobility resources that connect people to jobs, services, and opportunities (Bhusal et al., 2021). Acquiring additional vehicles or shedding them can significantly reshape travel behavior, influencing the number of trips people take, when they travel, and how far they go. A key question, then, is when and why households adjust their vehicle ownership levels. Research shows that major life events—such as starting a new job or having a child—often prompt people to reconsider their transportation resources and routines (Clark et al., 2016; Klein & Smart, 2019; Schouten, 2022). Employment-related factors are particularly influential in shaping vehicle ownership decisions. Entering the labor market, changing jobs, or relocating for work often alter commuting patterns, household schedules, and income, all of which can prompt adjustments in the number of vehicles a household owns (Clark et al., 2016).

Although prior research has examined how entering the labor market, changing employment status, or work schedules influence household vehicle ownership, scholars have paid far less attention to how shifts in work arrangements—such as transitions between regular commuting to workplaces, fully remote work, and part-time remote work (hybrid work)—affect these decisions. This research gap is partly due to the limited prevalence of remote work before the COVID-19 pandemic and the absence of consistent longitudinal data capturing such transitions in the U.S. This study addresses these gaps in the literature by examining the relationship between transitions in work arrangements—such as moving between commuting, hybrid, and remote work—and household vehicle ownership, analyzing longitudinal data from the Panel Study of Income Dynamics (PSID). PSID is a nationally representative longitudinal survey of U.S. individuals and families conducted biennially since 1968 by the University of Michigan. The PSID follows households and their split-off families over time, collecting detailed information on a wide range of socioeconomic, demographic, and housing characteristics, as well as labor market behavior, income, and expenditures (Institute for Social Research, University of Michigan, 2025). To analyze how household vehicle ownership changes over time in relation to shifts in work arrangements, I model the likelihood of vehicle ownership change between consecutive survey waves between 2019 and 2023. I model the likelihood of vehicle acquisition and vehicle shedding separately using population-averaged autoregressive logit models controlling for various socio-economic, built environment, and family life variables. Preliminary findings suggest that car-deficit (households with fewer cars than adults) and carless households are more likely than fully-equipped households (households with at least one car per adult) to acquire cars when their household members transition from fully remote work to hybrid work or full-time in-person work. This relationship, however, varies by the characteristics of the built environment of the residential location. Vehicle shedding, on the other hand, is not significantly associated with changes in work arrangements.

In the evolving landscape of work arrangements, understanding vehicle ownership trajectory can help planners and policymakers develop effective strategies for sustainable transportation systems. The insights of this study can support more accurate travel demand forecasting, guide infrastructure investment decisions, and help evaluate the environmental impacts of transportation and work arrangements.

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Keywords: Remote work, Vehicle ownership, Hybrid work, Commute, Telework

SLOW AND STEADY: A ROBUST AND COMPREHENSIVE FRAMEWORK TO PRIORITIZE TRAFFIC CALMING DEMONSTRATION PROJECTS IN THE BOSTON REGION

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Individual Paper Presentation

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Road safety is a primary concern for planners across the United States, as around 40,000 people are killed in crashes on U.S. roadways annually. Pedestrians and bicyclists are of particular concern for planners as these road users face much higher risk in crashes, especially with motor vehicles. As studies have shown that vehicle speed is the primary factor impacting crash outcomes, with every one kilometer per hour increase in estimated vehicle impact speed during crash events being associated with an 11% increase in pedestrian fatality odds (Hussain et al. 2019, 244), more planning efforts are centering around road safety, traffic calming, and how to minimize fatalities on the roadway – particularly for vulnerable users. Traffic calming, or the intentional slowing of vehicle speeds through road design changes and other non-engineered solutions, is commonly implemented to improve road safety outcomes (Lockwood 1997, 22). One such initiative is Safe Streets and Roads for All (SS4A), a federal grant program from the U.S. Department of Transportation (USDOT) which channels funds to communities around the country for road safety improvements. SS4A grants support road safety in two main ways: through funding planning and demonstration projects, or the implementation of safety projects. Demonstration projects are temporary changes to the built environments which meant to gain feedback, analyze potential impacts, and gather support from decision-makers – all in pursuit of long-term safety improvements (Balis et al. 2024, 491). Boston Metropolitan Planning Organization (MPO) received a $2.7 million SS4A planning and demonstration grant to improve road safety for the region.

In this study, we use the Boston MPO as a case study, to propose a comprehensive framework to prioritize traffic calming demonstration projects. Given literature suggests traffic calming is best accomplished at an area level (Juhász and Koren 2016, 3817), this study used principal component analysis (PCA) of 14 sociodemographic, mode share, and land use factors to identify block groups that should be prioritized in the region. As a result, three principal components were generated. To evaluate and compare the outcome of varied policy priorities, we applied and enumerated different weights for these three principal components and conducted a sensitivity analysis. Weights ranging from one to ten were applied to the PCA results, which were then summed together to provide a range of composite priority scores for the region. Cluster analysis was then implemented to compare how shifting weight priorities towards different principal components would impact prioritization results.

Comparing different component weight composites helped identify areas of agreement between components. The results of the model were more robust when block groups in the Boston region were identified with consistent high priorities despite shifting weights. By applying PCA and dynamic component weights, we were able to create a model for planning organizations that aim to prioritize and implement demonstration projects. The weight matrix supports more robust data-driven policy decisions by allowing for planners to compare how shifting high priority inputs would impact locations marked as high priority. It also supports a more holistic planning process when compared to static snapshot models with one set of arbitrary weights. This unique approach to site selection provides planners with a tool to identify areas of high need for traffic calming demonstrations in a transparent and comprehensive framework.

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Keywords: demonstration project, traffic calming, robust regional planning, road safety, PCA

SMALL HUBS, BIG IMPACT: WHY DISPATCH CENTER LOCATION MATTERS MORE THAN MODE IN URBAN FREIGHT SYSTEMS - EVIDENCE FROM SPATIAL-ROUTING FRAMEWORK IN NYC

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Individual Paper Presentation

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Urban freight systems are expanding rapidly in dense cities, yet their spatial organization remains largely reactive, often reinforcing logistics sprawl and concentrating environmental burdens in vulnerable communities. Evidence from metropolitan regions shows that warehouse and logistics facilities are disproportionately located in minority and environmentally burdened neighborhoods, reflecting structural patterns of freight infrastructure siting. In New York City, the growth of e-commerce has intensified last-mile delivery, with over 2.4 million daily package movements largely dependent on truck-based systems, contributing to localized air pollution, traffic congestion, worker safety risks, and climate-related impacts that disproportionately affect Environmental Justice (EJ) communities. While existing research has focused on vehicle technologies and mode shifts, less attention has been given to how dispatch center location shapes these outcomes. In practice, where deliveries originate may influence efficiency, emissions, and equity as much as, if not more than, mode choice.

This study develops a spatial-routing and simulation framework to evaluate how dispatch center location affects multimodal last-mile delivery systems in New York City. The analysis integrates population-based demand proxies at the Neighborhood Tabulation Area (NTA) level, EJ designations, Industrial Business Zones (IBZs), existing logistics infrastructure, and representative commercial delivery destinations. Together, these datasets construct a spatial representation of demand, infrastructure constraints, and community exposure.

The methodology proceeds in three stages. First, a routing model simulates delivery operations across cargo bikes, e-vans, and trucks, generating outputs on service coverage, cost, and emissions. Second, a scenario-based simulation framework evaluates system sensitivity under varying demand and travel conditions, capturing cost–emission tradeoffs. Third, these outputs are integrated into a spatial allocation framework informed by multi-criteria analysis (MCA) to identify candidate dispatch center locations balancing accessibility, efficiency, emissions reduction, and minimized impacts on EJ communities.

Results show that system performance varies significantly with dispatch location, often exceeding variation from mode choice alone. Cargo bikes provide the lowest-emission option but are spatially constrained, while e-vans and trucks offer broader coverage at higher environmental cost. Shifting dispatch locations produces substantial changes in service coverage, cost efficiency, and emissions outcomes. Single-hub configurations create inefficiencies and uneven service distribution, whereas distributed networks improve accessibility and reduce system-wide tradeoffs. These shifts also influence the spatial distribution of freight activity, indicating that dispatch siting decisions can either exacerbate or mitigate existing environmental burdens in EJ communities.

These findings position dispatch center location as a primary design variable in urban freight systems that should be evaluated jointly with mode selection. By integrating routing performance, simulation, and spatial equity considerations, this study offers a planning-oriented framework for designing more resilient and zero-emission freight systems, supporting proactive infrastructure siting that improves system adaptability while reducing inequitable impacts.

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Keywords: Urban freight systems, Last-mile logistics, Dispatch center location, Environmental justice, Spatial-routing model

SPATIAL ACCESSIBILITY TO SUBSTANCE USE DISORDER TREATMENT IN NEBRASKA: IMPLICATIONS FOR TRANSPORTATION AND RURAL ACCESS

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In Nebraska, 75.19% of approximately 290,000 individuals who needed substance use treatment between 2022 and 2023 did not receive care. Nebraska's geographic and substance use disorder (SUD) treatment context—characterized by widely dispersed population centers, limited SUD treatment provider availability, and numerous spatially isolated communities—exacerbates barriers to accessing SUD treatment (Amiri et al. 2021; Garnick et al. 2020; Guagliardo 2004; Pullen and Oser 2014). This research aimed to identify SUD treatment deserts, defined as areas with limited access to nearby treatment facilities and transportation resources (Hyder et al. 2021). To address this objective, we evaluated travel time–based accessibility to 207 SUD treatment facilities by applying a cumulative opportunity measure. In addition, spatiotemporal analyses were conducted to examine accessibility to peer-support resources (AA/NA meetings). We also identified high-need regions using 2022 Nebraska Annual Social Indicators Survey (NASIS) data, and accessibility within these regions was evaluated via fixed-route transit. SUD treatment deserts were estimated to cover roughly 40% of the state under private-vehicle access and more than 56% under public transportation, specifically demand-responsive transit, affecting 50,000 and 500,000 residents, respectively. These deserts were predominantly in rural regions. Spatiotemporal analyses further revealed that rural residents experience greater temporal inaccessibility, particularly during daytime hours. In high-need regions, fixed-route transit services provided adequate accessibility to only about 30% of residents, indicating that fixed-route transit alone is insufficient to ensure practical access to SUD treatment. Overall, expanding public transit service areas, extending the operating hours of SUD treatment facilities, adjusting AA/NA meeting schedules and locations, and integrating fixed-route services with other public transportation systems may improve SUD treatment accessibility statewide.

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Keywords: Transportation, Accessibility, Rural, Health, SUD

STATED PREFERENCE SURVEY OF PEDESTRIAN STREET CROSSING PREFERENCES

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Individual Paper Presentation

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Research indicates that pedestrian travel is significantly affected by numerous factors, including the sufficiency of pedestrian facilities, individuals' physical capabilities, weather, and traffic. This study specifically examines busy streets and street crossings as barriers to pedestrian travel. We employ an accessibility framework that associates a specific level of deterrence or impedance with different pedestrian crossing designs. Consistent with the pedestrian accessibility framework, the study assumes that this impedance can also vary based on individual characteristics.

A variety of methods have been employed to understand pedestrian street-crossing preferences, with the most common being intercept surveys and online stated-preference surveys. This study employs a stated-preference survey approach that allows the researchers to control key design variables and present design configurations that may not be readily available in the local environment.

Based on a literature review, six design variables (e.g., crossing distance, traffic speed, medians, walking time, turn volume, right-turn lane) were used to create an 8-choice set of signalized intersection crossing designs using the idefix R package for optimal design.

We utilized 16 traffic-simulated videos (VISSIM) developed over eight months to present controlled crossing pairs, minimizing environmental noise while maintaining high realism, with a thoroughly documented video protocol and validation process.

We integrated the videos into a Qualtrics survey along with a few accompanying demographic questions. The survey was piloted and revised based on initial participant feedback and the project client's feedback. The survey was distributed through emails to a variety of groups: A research listserv, a local church, a local community advocacy group, flyers on a college campus, and in partnership with the local section of the Florida Department of Transportation.

Initial data (n=111) show a gender-balanced sample, with 17% reporting walking disabilities and 67% engaging in pedestrian travel weekly. 48% report crossing streets as a pedestrian daily, with others reporting less often. Current choice preferences demonstrate a substantial effect of street crossing width.

The expected outcomes of this study will include impedance costs for various pedestrian street-crossing design features. The impedance figures will help street designers understand how much of a deterrent various crossing designs create.

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Keywords: Pedestrians, Street Crossings, Stated Preference Survey, Level of Service, Accessibility

SUBSTITUTE OR COMPLEMENT? UNDERSTANDING HOW TRANSPORTATION SUBSIDIES INTERACT WITH TRANSIT DISCOUNTS

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Individual Paper Presentation

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In the U.S., the principal approach to meeting low-income travelers' transportation needs is to provide public transit service and free or reduced transit fares. However, transit reaches fewer destinations in the same travel time as a car (Blumenberg & Ong, 2001), contributes to time poverty (Kim et al., 2024), makes trip chaining challenging (Babbar et al., 2022), and can suffer from a lack of reliability (Chakrabarti, 2015). Recognizing the need for new types of solutions, LA agencies launched a Mobility Wallet pilot program, which provides financial resources to support low-income travelers' use of shared transportation services.

Launched in June 2025, the second phase of the LA Mobility Wallet pilot program included 2,000 participants who received $1,800 on prepaid cards. During Phase I in 2023, 42 percent of trips were ridehail, raising concerns that the use of subsidized ridehailing services may come at a cost to transit ridership. Existing research on the relationship between ridehailing and transit use is mixed (Li et al., 2022) and tends to rely on trip-level data, shedding little light on individual travelers, including by income. In this project, we study the LA Mobility Wallet program to understand how ridehailing may complement or substitute for traditional transit for low-income travelers.

We recruited people who applied to the Mobility Wallet program and were also enrolled in Metro's Low-Income Fare is Easy (LIFE) program, which provides 20 free monthly transit rides. This resulted in a sample size of 724: about half (366) received a wallet (the treatment group) and the other half (358) did not (the control group). We then surveyed both participant groups before and after the program began to understand how different sources of financial support for transportation—free transit trips (for all) and funds for shared transportation modes (for the treatment group)—affect their travel behavior, including the modes by which they traveled, and, more specifically, for the treatment group, whether financial support for multiple modes serves as a complement or substitute to transit.

We hypothesize that ridehail both complements and substitutes transit via the following pathways: 1) Offering an alternative to transit when trips are time sensitive; 2) fulfilling latent demand for travel; and/or 3) providing a mode that feels safer than transit for trips taken late at night or early in the morning. We find that among those who received the wallet, the use of transit (at least once a week) increased from 63 to 71 percent and the use of ridehail increased from 20 to 55 percent. Conversely, among those who did not receive the wallet, the use of both transit and ridehail fell slightly. While ridehail increased among wallet users, the median number of ridehail trips was only five per month; for non-wallet users, the median was two. Among wallet users who used ridehail, 58 percent would have used transit if they had not used ridehail. When asked why they did not use transit, more than half of people responded that they needed to arrive faster than taking transit would allow. However, 15 percent would simply not have taken the trip, supporting the hypothesis that ridehailing access helps meet low-income people's latent travel needs. Therefore, among those who used ridehail, they used it sparingly, and much of the time, it did not replace a transit trip.

This study speaks directly to the aforementioned concern that LA's Mobility Wallet program redirects funds from public transit to private ridehail services, which we show is not necessarily the case. More broadly, this study provides empirical evidence of the relationship between existing subsidies, transit use, and other transportation modes, which is critical as academics and transit agencies explore new approaches to improving transportation equity.

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Keywords: Mobility wallet, Low-income travelers, Transit, Ridehail, Longitudinal data

TERRITORIAL DISPARITIES IN EV CHARGING INFRASTRUCTURE ACCESS: A COMPARATIVE ANALYSIS OF THREE DISTRICTS IN TEXAS

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Individual Paper Presentation

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As electric vehicle (EV) adoption accelerates across the United States, the equitable distribution of public charging infrastructure remains a critical challenge for transportation planning. While domestic charging is often perceived as a readily available alternative, both urban and non-urban communities face structural barriers — including housing status, installation costs, and limited electrical grid capacity — that disproportionately affect lower-income households, increasing existing spatial equity gaps. These conditions make the territorial dimension of access to public Electric Vehicle Charging Stations (EVCS) a critical planning concern. This study addresses the following research question: Do territorial characteristics systematically determine disparities in access to public EVCS between urban and non-urban communities, and if so, what are the spatial equity implications for transportation infrastructure planning in Texas? To answer this question, the study analyzes the three TxDOT districts with the highest EVCS concentration — Austin, Dallas, and Houston — arguing that non-urban communities are systematically underserved regardless of district context.

Using a Cumulative Opportunities Accessibility Model (COAM) with a five-mile service threshold, the study constructs an access index at the census block group level. Given the absence of established benchmarks for adequate EVCS coverage, the index measures access as a proportion of the total infrastructure available across the three districts combined, enabling territorial equity comparisons without presupposing a normative standard of sufficiency. Building on this index, Local Indicators of Spatial Association (LISA/Moran's I) are applied to identify statistically significant spatial clustering patterns of high and low accessibility within and across districts.
The results reveal systematic disparities. Across the three combined districts, approximately 93% of the population have low or no access to public EVCS. The suburban and rural Census Block Groups (CBGs) are critically underserved: 40% of the population in non-urban areas has no access whatsoever, and no non-urban CBG reaches moderate, high, or very high levels of access. Even in urban areas where infrastructure is more concentrated, most residents, about 71-88%, depending on the district, remain in zones with very low access. The LISA analysis reveals High-High clusters that are statistically significant and confined to central urban counties: Travis (Austin), Dallas/Collin/Denton (Dallas), and Harris (Houston), which are surrounded by extensive Low-Low zones in peripheral and rural areas. These patterns reflect how infrastructure investments respond to urban density and market conditions, structurally excluding non-urban communities from the benefits of electrified transportation.
The findings have implications for transportation infrastructure planning. Relying on household chargers as a substitute for public charging infrastructure risks reinforcing spatial inequities rather than resolving them. Current frameworks for EVCS deployment do not account for territorial equity, leading to a persistent spatial mismatch between infrastructure supply and population distribution. Planning frameworks must explicitly prioritize non-urban areas where market-driven investment consistently fails to reach. The proposed diagnostic framework is replicable across other states and regions, offering planners a manageable tool for evidence-based, equity-oriented infrastructure investment decisions.

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Keywords: Spatial equity, EV charging accessibility, Territorial disparities, Infrastructure planning, Mobility electrification

THE APPLICATIONS OF GIS-BASED MEGAREGION TRANSPORTATION PLANNING MODEL: A CASE STUDY ON THE IMPACTS OF AUTONOMOUS VEHICLE (AV)

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Individual Paper Presentation

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As Autonomous Vehicle (AV) technology advances, transportation planners need to assess its transformative impacts on the transportation infrastructure of U.S. megaregions. This research report presents the results of our study on the impact of autonomous vehicles (AVs) on transportation networks in the Texas Triangle megaregion. Our GIS-based Megaregion Transportation Planning Model (MTPM) integrates AVs to evaluate their effects on mobility and accessibility within the Texas Triangle, accounting for their interaction with traditional vehicles. Given the evolving uncertainties in AV operational features, we developed multiple scenarios to investigate how capacity increases and the changes of vehicle trips in megaregional areas are influenced by AV penetration. Our study finds that (1) AV adoption improves accessibility but increases congestion in urban areas, where capacity benefits are limited by high demand and complex traffic patterns, (2) capacity enhancements outside metro areas effectively reduce congestion and enhance travel efficiency due to lower baseline traffic volumes and less induced demand, (3) AV introduction increases Vehicle Miles Traveled (VMT) and Vehicle Travel Time (VTT) overall, but combining AV adoption with capacity improvements partially offsets these increases, and, (4) AV introduction has a more significant effect on passenger transportation compared to freight. Policymakers should implement targeted capacity enhancements alongside AV adoption in urban areas to mitigate congestion and optimize travel efficiency.

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Keywords: Transportation Model, Autonomous Vehicle (AV), Passenger Trip, Freight Trip, Megaregion

THE AUTONOMOUS VEHICLE OWNERSHIP PARADOX: AV ENTHUSIASM MAY REINFORCE PRIVATE CAR DEPENDENCE IN SHANGHAI

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Individual Paper Presentation

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Simulation studies project that shared autonomous vehicle (SAV) fleets could substantially reduce private vehicle demand and urban parking land. However, emerging evidence suggests that psychological attachment to car ownership may limit such transitions, as individuals strongly prefer retaining or purchasing private vehicles over adopting shared alternatives. This study tests both assumptions using individual-level data from 387 residents in Shanghai, China, and finds that from the demand side, AV deployment may simultaneously increase private vehicle stock and sustain private vehicle use, compounding rather than alleviating car dependence.

We combine two complementary analyses integrated via Latent Class Analysis (LCA). First, a car purchase intention survey examines whether residents would retain, add, or relinquish vehicles under full AV deployment. Second, a six-mode stated preference (SP) experiment compares traditional and autonomous versions of private cars, ride-hailing, and public transit, varying by travel time and trip cost. LCA on attitudinal indicators segments all 387 respondents into two groups—AV Cautious (29.2%, low technology trust) and AV Accepting (70.8%, high trust)—which are then applied to both analyses. Segment-specific Error Component Mixed Logit (EC-MXL) models decompose travel preference structures, while logistic regression tests predictors of car retention across segments.

On the ownership dimension, 69.8% of respondents insist their household needs a private vehicle even when SAV is completely free with under three minutes wait. Aggregating purchase intentions across all respondents—including existing owners adding autonomous cars, car-free households planning to buy, and those retaining current vehicles—yields a projected net 11.5% increase in total household vehicle stock. Logistic regression shows that existing car ownership (OR = 5.57, $p < 0.001$) and emotional attachment to private vehicles (OR = 1.79, $p < 0.001$) drive retention, while the effect of AV technology trust is statistically non-significant ($p = 0.153$). Notably, the AV Accepting group is less willing to abandon ownership (72.6% retain) than the Cautious group (62.8%).

On the travel behavior dimension, segment-specific EC-MXL models reveal that the Accepting group shows positive willingness-to-pay (WTP) for autonomous private cars (+2.51 yuan/trip relative to traditional cars), while the Cautious group shows negative WTP (−3.11 yuan)—a 5.6-yuan gap indicating that AV enthusiasm channels into private vehicle preference. Both groups assign negative WTP to SAV (−0.91 and −3.76 yuan), confirming that neither views shared services as a substitute for private car use. Error components reveal weak substitution between private and shared modes ($\sigma_EC = 0.49$) versus strong substitution within public transit ($\sigma_EC = 1.61$), structurally explaining why SAV draws riders from buses rather than from private cars. Policy simulations confirm that even free SAV only reduces the Accepting group's private car mode share from 47.7% to 32.0%.

These findings suggest that AV technology may reinforce car dependence on both fronts—more cars owned and sustained private car use—particularly among the tech-enthusiastic majority. While our stated preference approach captures willingness under hypothetical conditions and actual deployment would introduce additional constraints such as parking costs and congestion, planners should not assume these forces will organically resolve the ownership paradox. Proactive interventions—congestion pricing, VMT-based fees, differentiated parking pricing, and enhanced transit integration with AV feeder services—are needed to shift the cost calculus of private vehicle use before AV deployment locks in car-dependent patterns.

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Keywords: autonomous vehicles, car ownership paradox, stated preference, latent class analysis

THE EFFECTS OF CURB EXTENSIONS ON TRAFFIC CRASHES AND INJURIES

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Individual Paper Presentation

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This paper employs Bayesian negative binomial models to examine the effects of curb extensions on traffic safety through their implementation as part of a stormwater management program in the City of Philadelphia. Although widely deployed to promote traffic safety, the effects of curb extensions on traffic safety are poorly understood. Between 2011 and 2023, the Philadelphia Water Department installed 156 vegetated curb extensions that protruded into the street and initiated the design of 342 curb extensions to be built by 2029. Although pre-existing crash data featured in the selection of treated locations, the focus on stormwater management and long list of treated and untreated intersections provide unique, quasi-experimental conditions under which to examine the effects of curb extensions. After matching these curb extensions to intersections and removing midblock interventions, we created a dataset of 94 treated intersections and 269 control intersections installed between 2013 and 2023. Each intersection included a single curb extension. We matched these spatially to annually aggregated crash data from 2012 to 2024. We also matched these to data on the width of roadway, roadway class, signalization at the intersection, and expected acres of drainage associated with stormwater management. Analysis suggested that curb extensions reduced the incidence of reported crashes by around 13% at a typical intersection. However, the 95% credible interval ranged from a 35% decrease to an 18% increase. Findings suggest that a single curb extension may reduce collision and injuries but that additional studies are needed from fully treated intersections.

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Keywords: curb extensions, traffic safety, crash modification factor, traffic calming

THE LIMITS OF CRASH-BASED THINKING IN TRANSPORTATION SAFETY

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Individual Paper Presentation

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As the Safe Systems approach is applied in the U.S., transportation planners are being encouraged to proactively address traffic safety concerns while simultaneously being encouraged to analyze historical traffic crashes [USDOT, 2024]. While it is reasonable to track crashes, and there is an attractive clarity of analyzing the failure of interest directly, we argue that the disadvantages of using crashes as the anchoring metric of safety decision-making outweigh the benefits, if not fully disqualify the approach altogether. In planning practice, crashes are used as an informational unit, a means of statistical inference, a measure of community burden, and a guide for policymakers – but we posit that traffic crashes are poor sources of safety information. Safety-based thinking, planning, and prioritization emphasizes those factors that make transportation networks safe, rather than discrete incidents where risk is manifested.

Specifically, this work makes the following points:

• Traffic crash records are incomplete in two ways: First, traffic records are notoriously incomplete and of poor quality. They often lack much detail that is essential to understand what could have prevented the crash: narratives, involved-parties' descriptions, (accurate) injury data, correct location data, and unbiased accounts of pre-crash scenarios. Second, crash data in aggregate (e.g., all crashes in a jurisdiction) do not contain causal information. While correlations can be made among crash locations and land use, personal risk factors, and roadway geometries, crash records cannot reveal crash or fatality causes, precluding causally-informed interventions.

• Crash prediction models have limited meaning: Despite known issues – randomness, sparsity (especially for some modes), few observations paired with complex specifications, and regression to the mean – crash-based statistical analyses and predictive models are central in transportation safety. But research shows that crash predictions models are often only accurate enough the be qualitatively descriptive [Elvik, 2026].

• People "vote with their feet" when they travel: Perceived risk is a key component of a person's travel choice set, especially when traveling outside a vehicle [Ferenchak and Marshall, 2020]. For example, people walking and cycling are likely to divert trips away from high risk areas or not travel at all, decreasing trips in high risk areas for these modes. Using crashes and crash frequencies, which are functions of exposure, to make judgments about a given location's risk is ultimately confounded by this choice.

• Crashes do not capture many negative externalities of traffic risk and harm: Crashes inherently only quantify the most extreme outcomes of an unsafe system (i.e., crashes, especially fatal ones). But they do not capture the qualitative, the absent, and the diffuse (e.g., travel anxieties, trips not made, mode avoidance, community dislike of walking) [Schoner et al., 2025]. A more effective safety planning process would use more comprehensive information to capture the burden caused by traffic fatalities.

• Units of the past do not inform different futures: Crash analyses tend to be retrospective and reactive; identifying where crashes occur, but not what led to the crash in the first place. A proactive, principles-based approach would anchor policy setting using principles based on physics, probability, and mobility needs to identify acute highest.

While this work is hardly the first to criticize using traffic crashes for transportation planning [Panik and Ederer, 2026], we believe that this work presents three contributions that are meaningful for planning practice and research: (1) a synthesis and concise summary of the problems of traffic crashes as a means of information, inference, and decision-making; (2) characteristics of more effective safety indicators; and (3) recommendations for how the indicators should be validated in research and practice.

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Keywords: Safe systems, Transportation safety, Crash analysis, Methods

EFFECTS OF CAR-FREE DAYS ON PM2.5 IN SEVEN COLOMBIAN CITIES

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Individual Paper Presentation

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Background

Fine particulate matter (PM2.5) remains a focus of environmental policy, planning, and public health. Partly to address concerns about high PM2.5 levels, cities have turned to policies to curtail motor vehicle activity. Despite the popularity of these policies, little is known about their effectiveness, with London being an exception.

Most studies of the effect of such policies on PM2.5 follow one of two general strategies. First, researchers compare changes in pollution over time relative to a control area. This approach requires significant assumptions, as well as information from air quality monitors strategically placed at points of concern and therefore are not representative of the average concentrations faced by residents. The second approach uses observed or simulated changes in traffic, to estimate via simulation models the decreases in emissions and the resulting changes in pollutant concentrations. The approach is laborious and data hungry, and predictions rely on simulations difficult to validate. Unsurprisingly, most evidence is equivocal, with some studies finding considerable decreases and others finding no change.

In this study, we follow a different and relatively novel approach, one that is robust to confounding but relies on widely available air quality data, to examine car-free days in a sample of Colombian cities. Car-free days in Colombian cities are distinct from such days in other cities worldwide in that they are mandatory, rather than exhortative. Residents cannot use their private vehicle on a car-free day. Only taxis, public transportation, and a small fraction of exempt private vehicles are allowed to circulate. We estimate citywide changes in PM2.5 during car-free days, and the days before and after it. The study objectives are:

1. What are the effects of car-free days on PM2.5 concentrations?
2. Do car-free days create anticipatory and/or rebound behaviors in the days before or after that partially mitigate (any of) its air pollution benefits?

Methods

We use data on the car-free days for seven cities between 2017 and 2022, excluding 2020 due to the influence of the Covid-19 pandemic. The outcome is daily PM2.5 concentration at ~ 1km2 resolution.
To examine our first question, we used a time-stratified case crossover analysis, where each case (car-free day) is matched with four control days for the same city in the same year. The four match days correspond to the week and two weeks before each car-free day, and the week and two weeks after each car-free day. Case crossover designs are suitable for short-term changes, allowing each city to be its own control (a week or two before or after). For our second objective, we used the same research design, but focusing on up to three days before and after the car-free days, with controls happening one and two weeks before and after each day.

We estimate a multilevel mixed effects model with 1km2 gridcells as the unit of analysis and the measured PM2.5 level as outcome. For objective 1, the main explanatory variable is car-free day (=1 when it is a car free day and zero otherwise). For objective 2, the model is estimated six additional times, one time per day of interest (one, two, and three days before and after the car-free day). Gridcells are allowed to have a random slope for the treatment

effect, to capture differential effects over space since roads are distributed unevenly, and a random intercept to allow for each cell to have its own baseline PM2.5 level. We also add other relevant control variables.

Results

We estimate an average decrease of 0.56 µg/m3 (- 3% to - 4%) during car-free days, anticipatory effects a few days before (an increase (+ 2% to 3%) three and two days before), and an increase on the days after the car-free day (+3% to + 4 %). Limitations include the relatively small sample size of cities and our focus on PM2.5. Other pollutants such are more immediate indicators of traffic-related emissions.

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Keywords: Travel demand management, Pollution, Global south cities, Mobility

TRANSIT DELAYED IS TRANSIT DENIED: A HISTORIC PERSPECTIVE ON TRANSPORTATION EQUITY IN TORONTO, ONTARIO

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Toronto's local historiography tends to emphasize how the city averted the fate of downtown highway development and subsequent mass displacement that is typical of American metropolises. Yet this self-image has so far not been supported by an empirical analysis of the transportation planning decisions that have shaped equity outcomes in the city. To address this gap, we examine 60 years of transportation planning in Toronto, Ontario, drawing on a rich archival dataset of over 200 documents (including plans, protocols, media articles and more) from various sources. We offer a revisionist history of the city's transportation equity based on two questions: a. how historical transportation plans and accompanying political debates addressed contemporary equity challenges; and b. how planning decisions can be understood through the lens of contemporary transportation equity theory. The analysis focuses on three post-war periods between the 1950s and 2010s, each centering around a major unrealized transportation plan. The findings reveal a persistent culture of frugality, stigmatization of high-rise and rental housing, and political fragmentation in Toronto. The recurring outcome of these priorities is the cancellation or delay of multiple transit plans intended to serve communities of immigrants, renters, and people of color. Based on the findings, we propose the concept of inequity by omission, referring to the role of systemic delay, deferral, and de-prioritization of investment in exacerbating geographic inequities reflected in access to, and benefits from, transportation infrastructure.

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Keywords: Transportation equity, Planning history, Toronto

TRANSIT INVESTMENT DECISIONS AND HEALTHCARE ACCESSIBILITY: EVIDENCE FROM DART WITHDRAWAL SCENARIOS IN THE DALLAS–FORT WORTH REGION

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Individual Paper Presentation

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Transportation is a foundational determinant of healthcare access because it shapes whether patients can reach outpatient services, pharmacies, and follow up care when needed. Research links transportation barriers to delayed care, missed appointments, forgone treatment, disrupted medication access, and weakened continuity of care, with disproportionate burdens on lower income households, Medicaid recipients, and individuals with functional limitations or chronic conditions (Wolfe et al., 2020).

Within planning and transportation scholarship, healthcare accessibility is typically conceptualized as a spatial and temporal outcome shaped by provider supply, the geography of demand, travel time, and competition for care. Foundational work on spatial accessibility and floating catchment area methods demonstrates that access depends jointly on service availability and the effort required to reach it. Subsequent studies show that transit-based healthcare accessibility varies across neighborhoods, modes, and times of day, often placing transit users at a disadvantage relative to car users (Liu et al., 2022). However, how municipal transit withdrawal or local transit disinvestment reshapes healthcare access within regional transit networks remains underexamined. Accessibility based planning similarly argues that policy evaluation should focus on the opportunities people can realistically reach, making accessibility a relevant lens for examining this problem in healthcare (Yan, 2021).

The Dallas–Fort Worth region provides a timely context for examining the healthcare accessibility consequences of municipal transit withdrawal. Between 2025 and 2026, the Dallas Area Rapid Transit (DART) governance dispute escalated from negotiations to formal withdrawal actions by member cities. The study asks: To what extent would municipal withdrawal from DART reduce transit-based healthcare accessibility, and how would those impacts be distributed across population groups in the Dallas–Fort Worth region? Using GIS based scenario modeling at the census block group level, the analysis focuses on healthcare centers that accept publicly insured patients. The baseline network is compared with three cumulative scenarios: Tier 1 removes Addison, Highland Park, and University Park, Tier 2 additionally removes Plano, Irving, and Farmers Branch, and Tier 3 further removes Carrollton and Rowlett.

To assess the distribution of impacts on transit reliant communities, the study incorporates a block group level transit dependency index. The index combines four ACS derived indicators: households without a vehicle, residents below poverty, residents aged 65 and older, and residents aged 12 to 17. Block groups classified as high or very high on the composite index are treated as transit dependent (Aman & Smith-Colin, 2020; Jiao, 2017; Jiao & Dillivan, 2013).

Preliminary results indicate a steady decline in transit-based healthcare accessibility as withdrawal scenarios expand. Under the baseline network, 1,260 census block groups have transit access to healthcare centers serving publicly insured patients. This total falls to 1,243 under Tier 1, 1,201 under Tier 2, and 1,184 under Tier 3. Relative to the baseline, the modeled system loses 76 accessible block groups, a cumulative reduction of 6.0%, with the largest incremental decline occurring between Tier 1 and Tier 2. The socioeconomic pattern of loss also varies: 49.94% of baseline block groups are transit dependent, compared with 55.56% of Tier 1 lost access block groups,

34.48% of Tier 2 lost access block groups, and 33.78% of Tier 3 lost access block groups. These findings suggest that withdrawal related accessibility losses do not follow a uniform vulnerability pattern. The results imply that municipal withdrawal from a regional transit authority carries implications for spatial equity and access to essential services.

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Keywords: transit governance, Healthcare accessibility, spatial equity

TRANSPORTATION OPTIONS FOR TRANSIT-DEPENDENT POPULATIONS: A CASE STUDY OF GAINESVILLE, FLORIDA

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Individual Paper Presentation

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Public transit ridership has faced steep declines in recent years that have been exacerbated by the COVID pandemic. Between 2012 and 2018, bus ridership in the US declined 15% (Erhardt et al., 2022). Nationally, ridership on bus systems is still below 93% of the ridership in 2019 (Freemark, 2025). In response to declines in transit service, transit agencies and cities are experimenting with new transit and mobility services to provide access and mobility to transit-dependent communities.

This paper uses several ongoing programs – micromobility services, and microtransit services, and fare-free transit - in Gainesville, Florida to explore how these services can be integrated into mobility planning. The University of Florida has funded unlimited access services with the Regional Transit System (RTS) for over two decades (Bond and Steiner, 2006). In January 2019, RTS began to offer free microtransit services in East Gainesville. In 2021, the community launched a micromobility program where companies provide shared e-scooters. RTS began to provide fare-free transit in 2021 city residents under18 and over 64. More recently RTS has taken over the complementary paratransit service for city residents. These programs have been designed to support a geographically dispersed low-income, transit-dependent population, who have limited access to conventional public transit.
These programs are explored to understand how transit agencies are providing a variety of transportation services. We consider the success and shortcomings of these services while exploring what steps the RTS should take to connect more individuals to those services.

Methodology
We use various studies completed over several years on these transportation options. We completed an evaluation of the microtransit program in 2023 (Steiner, et al, 2023) using mixed methods - quantitative and geospatial analysis of ridership, interviews with local officials and community leaders and surveys of residents on their perspective on the microtransit service. This evaluation is supplemented by a master's thesis on the micromobility program (Wolf, 2023) . In the summer of 2026, we will complete data analysis and conduct interviews with policy makers about these programs.

Findings
The microtransit services in East Gainesville have evolved from service with access to the central bus station to service to a variety of destinations with significant duplication with existing service. The micromobility program is not widely used by the low-income populations, as intended. The fare-free transit service has attracted a significant number of riders, but it has not increased overall ridership. In 2025, the University of Florida reduced its contribution to RTS by $4 million, which has resulted in major cuts to transit service.

The city and microtransit and micromobility providers need to work together to address the existing disparities in the accessibility of resources across the metropolitan area — specifically the reliability and availability of service. The existing services do not meet the transportation needs of the residents. Community leaders and local officials agree that transit services need to be improved before ridership increases. This may require greater emphasis on diverse regional partnerships to continue existing services and expand routes to meet the needs of a diverse population.

Implications of Research
These transit and mobility programs are seen as a means to fill the gap of conventional public transit, which is the

only mobility option for certain populations. Yet, microtransit, micromobility, fare-free transit and unlimited access ridership can have substantial equity implications if they are being used to replace low-usage transit routes. Local partnerships among key stakeholders are essential to ensure transparency, long-term financial stability of services and services that meet the needs of transit-dependent and transportation-disadvantaged communities.

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Keywords: micromobility, microtransit, first-mile, last-mile, transit-dependent, on-demand services

TRAVEL BEHAVIOR RESPONSES TO INCENTIVES: EVIDENCE FROM THE MILES MATTER PILOT IN DALLAS-FORT WORTH

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Individual Paper Presentation

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Transportation planners use financial incentives as one of the tools to encourage travelers to shift routes, travel times, or travel modes in response to congestion and environmental goals[1], [2]. Financial incentives and pricing strategies have long been studied as mechanisms to influence travel behavior and manage congestion[3], [4]. While previous studies have examined the overall effectiveness of such programs, less is known about which travelers respond to these incentives and how behavioral responses vary across populations.

This study examines travel behavior responses to financial incentives using data from the Miles Matter pilot project, implemented for one year with over 3,000 participants in the Dallas-Fort Worth region. The program provided financial incentives to encourage travelers to modify their travel behavior, including avoiding peak travel periods, choosing alternative routes, or traveling in high-occupancy vehicles. The analysis combines smartphone-based trip records with participant survey data to identify behavioral changes before and during the incentive period. The pilot project includes control and treatment groups with trip records observed during both the pre-incentive and incentive periods.

Stepwise nested logit models are used to examine which types of travelers changed their travel behavior in response to incentives and how these responses vary across travelers. Machine learning models are also used to complement traditional regression analysis. The results show that some traveler groups demonstrate significantly greater responsiveness to incentives, while others show limited behavioral change. This suggests important differences across demographic and travel characteristics, consistent with previous research highlighting heterogeneous responses to pricing and incentive policies[5].

These findings provide empirical evidence from a large-scale, real-world travel incentive program and contribute to the planning literature on incentive-based transportation policies. The results suggest that incentive-based policies may produce uneven impacts across traveler groups and highlight the importance of considering behavioral heterogeneity when designing transportation demand management programs. These differences also raise important questions about the equity of incentive-based transportation policies particularly if certain populations are more able to respond to incentives than others. As cities increasingly explore incentive-based approaches to manage congestion and emissions, understanding which travelers respond to such policies can help planners think about how to encourage the targeted travel behavior, how to use the limited financial resources effectively to reduce congestion, and how to make the incentive structure more equitable in the region.

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Keywords: TDM, Travel Incentive, Travel Behavior Change, Transportation Equity, Behavioral Heterogeneity

TRAVEL TIME ELASTICITIES AND THE IMPLICATIONS FOR ESTIMATING INDUCED TRAVEL

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Transportation planners are struggling with how to account for induced travel demand, that is, how additions to highway capacity increase total vehicle-miles of travel (VMT). Some states have legislated targets to reduce greenhouse gas emissions and reductions in VMT are one means of meeting those targets. Most assume that VMT increases proportionately to increases in lane-miles, that is, the elasticity of VMT with respect to increase in road capacity is 1.0 (based on an estimate by Duranton & Turner, 2011). Some projects, however, may not easily be measured based on changes in lane-miles, and thus travel time elasticities are seen as an alternative approach.

The only study we are aware of using US data was conducted by Barr (2000) data from the 1995 Nationwide Personal Transportation Survey (NPTS). In this paper we reestimate his findings with updated data from both the 2017 and 2022 National Household Travel Surveys (NHTS). We stratify by urbanized area, public transportation availability, family life cycle, metropolitan area size, and census tract population density for households in metropolitan areas. In addition we extend the original modeling framework by examining how change in telecommuting effects elasticity values. We include a work-from-home variable to account for changes in travel behavior following the COVID-19 pandemic. This addresses critics who claim travel elasticities have changed over time and especially post-COVID.

The results from our analysis of 2017 data provide evidence that the relationship between average household travel time and vehicle-miles of travel remains consistent with the original study. The estimated travel time elasticities range from −0.35 to −0.6, suggesting that travelers will spend 35 to 60% of the time saved by highway improvements in additional travel. This closely aligns with the original findings of estimated travel-time elasticities ranging from −0.3 to −0.5. Our analysis of 2022 data is in progress.

Overall, the findings of this study strengthen the validity of the original results across more recent data and changing travel behaviors

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Keywords: Induced travel, Travel time elasticities, Transportation policy

U.S. HIGH-SPEED RAIL DEVELOPMENT AND RETAIL DYNAMICS: EVIDENCE FROM FLORIDA'S BRIGHTLINE STATIONS

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Despite extensive international research on high-speed rail (HSR) and station-area developments in China, Japan, and Europe, very few studies have examined such systems in the United States (Chen et al., 2024; Zheng and Wu, 2024). Largely due to the slow pace of American HSR implementation, most U.S.-based studies on transit related development ignore HSR, and instead focus on commuter, urban, or light rail systems (Schuetz, 2015; Credit, 2018). As such, there is little insight into how HSR developments impact land use, and station-area economic and human activities in lower-density, auto-oriented contexts.

This study focuses on Brightline, the first privately operated higher-speed intercity rail system in the U.S., to examine the impact of HSR stations on surrounding retail activities, as well as daily visitation patterns in association with train schedules. We utilize the Dewey Retail Store Visits data (anonymized data based on cell phone GPS and other spatially dispersed sensors), which includes hourly breakdowns of foot traffic at points of interest (POIs) within half-mile buffers of the six new Florida HSR stations to analyze changes in retail activity and mobility before and after Brightline operations. Previous research from Korea used mobile phone data to identify changes in activity hotspots near stations after HSR development, and here we expand upon this research to consider a privately developed HSR system in the U.S. (Eon et al., 2020). We distinguish changes in station area retail activities in terms of the number and types of businesses, as well as daily, weekly, and seasonal differences in retail visits. We also analyze patterns of station area retail foot traffic in association with Brightline schedules, and ridership.

It is expected that new Brightline stations generated significant increases in pedestrian activities within walking distance of station areas, with clustered temporal patterns around scheduled services. However, economic and retail benefits likely vary by business type, and station area typology. This study contributes to the broader literature on the spatial and economic impacts of HSR and transit area development, especially with regards to station area retail and pedestrian activities, with new evidence from the U.S.. It also provides lessons for station area integration and planning for dynamic accessibility, and station area vitalities in lower density, car-oriented contexts.

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Keywords: high-speed rail, mobile phone data, economic development, retail locations, TOD

UNCOVERING STREETSCAPE RISK FACTORS FOR PEDESTRIAN SAFETY: LEVERAGING GEOAI AND STREET VIEW IMAGERY

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Individual Paper Presentation

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Walking has been a vital component of sustainable urban mobility, offering a wide range of benefits such as health, environment, economy and social well-being. As local governments prioritize walkable environments, pedestrian safety concerns have come to the forefront.

According to the National Highway Traffic Safety Administration (NHTSA 2024), in 2022, there were 7,522 pedestrian deaths and 67,336 pedestrians injured in traffic crashes in the United States. This is the highest number of pedestrian deaths since 1981. In 2022, pedestrian deaths accounted for 18% of all traffic fatalities and 3% of all traffic related injuries.

While the built environment—including streetscape features like crosswalks, lighting, and traffic calming—significantly influences safety outcomes, empirical studies remain limited by the high cost of manual field observations and the low resolution of overhead remote sensing. This research addresses this gap by developing a scalable, data-driven framework that integrates Geospatial Artificial Intelligence (GeoAI) with Street View Imagery (SVI) to identify micro-scale built environment risk factors.

The study utilizes a multi-step methodology focused on Lincoln, Nebraska. First, we develop a comprehensive geodatabase by systematically extracting four-directional SVI at pedestrian crash locations using the Google Street View API. Second, we employ advanced computer vision techniques, specifically semantic image segmentation to automate the extraction of fine-grained streetscape elements. Unlike traditional methods, this approach captures the pedestrian's viewpoint and enables high-resolution, street-segment-level analysis.

The research then develops predictive safety models to examine the relationship between these extracted features and pedestrian crash risks. By integrating SVI data with Location-Based Service (LBS) data and socio-demographic variables, the model identifies specific built environment configurations associated with higher risk. Preliminary results suggest that advanced image analysis can identify safety factors, such as sidewalks, street trees, traffic infrastructure or lighting, that are often overlooked in macro-level geospatial datasets.

This project offers significant methodological innovation by bridging the gap between deep learning and urban planning practice. The findings provide a proactive, replicable tool for planners and local governments to prioritize safety interventions in high-risk areas. Ultimately, this research advances the scholarship on "smart cities" and "vision zero" by demonstrating how GeoAI can transform raw visual data into actionable planning intelligence for safer, more walkable communities.

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Keywords: Pedestrian Safety, Street View Imagery, Streetscape Features, GeoAI, Urban walkability

UNDERSTANDING HIDDEN SAFETY RISKS IN RURAL TRANSPORTATION SYSTEMS: A COMMUNITY-DRIVEN APPROACH

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Individual Paper Presentation

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Transportation safety in rural and semi-rural communities remains a critical yet underexamined area in planning research and practice. Despite accounting for a disproportionate share of fatal and severe crashes, these areas often lack comprehensive and high-resolution data needed to guide targeted interventions (FHWA, 2022). State-level evidence shows persistent and elevated roadway fatalities, particularly among vulnerable road users, alongside increasing risks associated with active transportation modes (Oklahoma DOT, 2022). Rural communities face compounded challenges due to auto-dependence, infrastructure gaps, and limited data availability, necessitating more integrated and context-sensitive approaches to safety planning.

While prior work focuses primarily on crash data and infrastructure-condition data analyzed through statistical models (Chen et al., 2016; Diaz-Corro et al., 2021; Hall & Tarko, 2019), this study develops and applies a multi-source, community-informed framework to identify and prioritize transportation safety concerns in a semi-rural context. The methodology integrates three primary data collection processes: (1) crash data obtained from local police records, (2) extensive community engagement including five participatory meetings and an online survey, and (3) systematic field observations and walk audits conducted across different times of day and seasons. Using Shawnee, OK as a case study, this triangulated approach enables a more comprehensive understanding of safety conditions by combining quantitative evidence with lived experiences and on-the-ground observations.

Findings reveal that transportation safety issues are highly localized and strongly associated with both infrastructural and environmental conditions. Areas with inadequate lighting and poor visibility consistently emerged as high-risk locations, particularly during evening hours. Similarly, discontinuities in sidewalks, lack of bicycle infrastructure, and gaps in pedestrian connectivity were closely linked to both reported concerns and observed safety risks. Traffic control deficiencies, including insufficient signage, poorly marked crosswalks, and lack of speed management measures such as speed humps, further contributed to unsafe conditions.

Importantly, the analysis also identified locations where crash rates remained elevated despite the presence of existing infrastructure. This suggests that infrastructure provision alone is insufficient to ensure safety outcomes. Behavioral factors, particularly distracted driving, may play a significant role in these contexts. These findings point to the need for complementary policy interventions, including targeted education campaigns, enforcement strategies, and pilot programs aimed at understanding and influencing travel behavior.
Building on these insights, the study proposes a structured prioritization framework that categorizes safety interventions into phased and actionable strategies. This framework integrates engineering improvements with behavioral and policy-oriented measures, aligning with the Safe System Approach, which emphasizes shared responsibility across system design, policy, and user behavior.

This research contributes to transportation planning by demonstrating the value of combining traditional crash analysis with participatory planning and field-based assessments in data-scarce environments. It highlights the importance of context-sensitive, user-informed approaches to safety in rural and semi-rural settings. From a policy perspective, the findings underscore the need to expand data collection efforts, prioritize infrastructure investments in underserved areas, and integrate behavioral interventions into safety planning. The proposed framework offers a replicable model for practitioners and policymakers seeking to address transportation safety challenges in similar communities.

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Keywords: Rural Transportation, Transportation Safety, Community Engagement, Crash Analysis, Transportation Policy

UNDERSTANDING THE GENDER GAP IN PEDESTRIAN SAFETY PERCEPTIONS

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Public spaces play a crucial role in urban life, yet safety perceptions influence mobility, accessibility and urban liveability. Although prior studies have addressed environmental factors shaping perceived safety, the role of digital technologies in smart cities, such as surveillance systems, smartphones and safety applications, remains underexplored. As cities adopt smart safety tools, further research is needed to understand their effects on gendered gaps in perceptions of safety, particularly by examining how women's fear shapes these disparities.
This study employed a two-stage approach. First, data from 48 countries were analysed to assess fear levels among pedestrians walking alone at night and examine gender disparities in safety perceptions using Sustainable Development Goal Parameter 16.1.4. Subsequently, a comprehensive survey of 754 participants in core cities of three Israeli metropolitan areas assessed gender differences in safety perceptions and mobility. The survey examined factors shaping safety in both the physical (e.g. lighting, street activity) and digital (e.g. smartphone apps, surveillance) spheres.

Findings show that women's fear strongly influences nighttime mobility. Women draw more security from active street environments and increasingly depend on smartphones to manage fear. The study underscores the need for a hybrid approach that integrates urban design, digital safety tools and community engagement. The findings contribute to the broader discourse on mobility, urban planning and gender-sensitive safety policies, emphasising the importance of integrating environmental design with emerging smart city technologies to foster inclusive public spaces.

Citations:

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Keywords: Gender gap, Mobility, Fear, Walking, Pedestrians Safety

UNLOCKING NEW MOBILITY? REVEALED TRAVEL BEHAVIOR OF LOW-INCOME MOBILITY WALLET RECIPIENTS IN LOS ANGELES

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Individual Paper Presentation

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The lack of transportation resources disadvantages low-income travelers' ability to access employment, services, family/friends, and recreation. Historically, policies to address the transportation access needs of low-income travelers largely have centered on public transit service and fare subsidies (Wander et al., 2025). Recent studies suggest that low-income travelers benefit from access to a suite of affordable transportation options that extend beyond public transit (Brown et al., 2022; Paul et al., 2024). In Los Angeles and a handful of other places, public agencies are piloting mobility wallet programs, demand-side subsidies that eligible low-income travelers can use to pay for diverse transportation services. Earlier phases of the LA Mobility Wallet demonstrated promising improvements in transportation security and quality-of-life outcomes, including stronger social connections and reduced material hardship (Brozen et al., 2025; Rodier et al., 2025). But prior studies relied on self-reported survey data and interviews, which are limited in their ability to quantify travel behavior effects.

In this study, we use revealed travel behavior collected during the program to examine the relationship between the mobility wallet and trip-making and mode choice. We compare data from wallet recipients with a control group of people who applied for mobility wallets but did not receive them. We deployed the Daynamica app, which passively collected travel data for 14 days. Participants also provided additional details for each trip, including mode. The final sample includes 463 participants and 35,000 trips. The sample is evenly split between the control and treatment groups, who are demographically similar in terms of age, gender, and race/ethnicity. The sample, as a whole, includes 90% people of color, 55% people living in households without a vehicle, and 33% people enrolled in LA Metro's transit subsidy program, groups who are harder to reach in traditional travel surveys.

The data show significant differences in trip mode. The treatment group used less transit (9.5%) and more ridehailing (6.4%) than the control group (13.2% transit, 3.9% ridehailing). Walking accounts for a large proportion of trips for both groups, with a small but statistically significant difference in walking between the treatment (22.5%) and the control (24.7%). Individuals in the treatment group travel longer distances (1.9 miles) compared to those in the control group (1.7 miles), but the difference is not significant. Additionally, there is no difference in the average number of trips per day between the treatment and control groups (5.5 average trips per day). These findings suggest that a mobility wallet helps support the use of faster modes of transportation (i.e., ridehailing) when necessary but does not affect overall travel frequency, possibly allowing recipients to have more disposable time as an outcome.

This analysis provides valuable insights into the revealed travel behavior of mobility wallet recipients and low-income travelers in general. The data also demonstrates that while mobility wallet recipients use ridehailing more than non-recipients, this accounts for only a small portion of their overall travel. Given that walking accounts for roughly a quarter of trips for both groups, these findings highlight that demand-based mobility approaches, alongside infrastructure improvements, are likely necessary to better meet the needs of low-income travelers.

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Keywords: New mobility, Travel behavior, Equity, Program evaluation

URBAN MOBILITY AND CLIMATE JUSTICE: A CASE STUDY OF THE TWIN CITIES

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Public transportation systems play a critical role in daily mobility and access to essential services such as employment and education within urban areas. For residents who depend on public transit for their daily travel, disruptions to transportation systems directly limit their access to these essential services (Adli & Chowdhury, 2021). This is complicated by the fact that transportation systems are increasingly exposed to climate-related hazards such as flooding and extreme heat that can interrupt transit services and undermine the overall reliability of transit networks (Pregnolato et al., 2017).

For transit dependent-residents, public transit is essential for daily mobility rather than a choice (Ghadiri & Newell, 2024). As a result, climate-related disruptions can lead to accessibility-based vulnerability for these residents, where access to essential services becomes delayed or unavailable (Pregnolato et al., 2017). For example, during extreme heat, this vulnerability increases as transit-dependent residents are exposed to higher health risks while walking and waiting for a bus (Liu et al., 2024).

Despite growing concern about these lived experiences, there is a gap in the literature about how challenges associated with climate-related disruptions to public transportation systems are addressed in transportation planning. Existing studies often consider transportation resilience and transportation equity as separate concepts rather than integrated goals. Transportation resilience focuses on how well infrastructure can resist and recover from disruptions, while transportation equity focuses on differences users experience in service and access across locations (Rowangould et al., 2016). This lack of integration between these two concepts makes it difficult to understand the level of vulnerability of transit-dependent residents.

Using the climate justice lens, this study aims to integrate transportation resilience and transportation equity by examining how climate exposure and transit dependency shape accessibility-based vulnerability within the public transportation system in the Minneapolis–Saint Paul metropolitan region (Twin Cities). Accordingly, the study seeks to answer two main research questions: (a) How do climate-related events affect transit-dependent residents in the Twin Cities? (b) How can planners contribute to advancing climate justice for urban mobility focusing on transit-dependent residents in the Twin Cities?

This study adopts a mixed-method approach. First, GIS-based spatial analysis is used to identify areas with high transit dependency and climate exposure. Then, network-based accessibility analysis, focusing on regular bus, BRT and light rail, is applied to understand how disruptions affect access to essential services. Second, a review of local and regional plan and policy documents is conducted to examine how current planning practice includes climate justice and actions in transportation planning.

Based on the literature, we expect to identify a spatial mismatch, where areas of transit-dependent population concentration may coincide with high-risk climate zones, and a gap in the transportation network. Concerning the content analysis, we may identify disconnection between local and regional plans. To minimize accessibility-based vulnerability for transit-dependent residents, we believe putting together the spatial analysis and content analysis results will provide insights to connect transportation policies, actions and goals to areas that need them the most.

Finally, the study aims to provide a practical approach for planners to move beyond traditional transportation resilience measures to more climate just and equitable transportation planning framework.

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Keywords: Transit dependency, Accessibility, Transportation equity, Transportation resilience, Climate justice

URBAN MOBILITY AND IMMIGRATION ENFORCEMENT

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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How do ICE raids and the threat of immigration enforcement impact mobility?

The presence of aggressive immigration enforcement can create an environment where certain people cannot move freely or safely, which is antithetical to the idea of equal access to mobility. Mobility justice examines structural factors like racism, immigration status, policing, gender-based harassment, disability, and economic inequality as they relate to mobility.

This presentation will focus on ongoing participatory action research in Nashville, TN, with two community-based organizations. The presentation first frames ICE surveillance as a constitutive element of mobility justice, insofar as it polices who can move, when, and under what conditions of risk, fear, and visibility. Subsequently, it draws on 8 months of participant observation and semi-structured interviews to understand how ICE counter-surveillance functions as a strategy of reparative research, shifting knowledge production toward collective care, accompaniment, and accountability. Rather than documenting ICE raids alone, counter-surveillance practices—such as community hotlines, real-time verification, and rapid-response networks—actively intervene in the conditions that render immigrant mobility precarious. Moreover, semi-structured interviews with participants indicate that they use alternative mobility strategies, such as accompaniment (e.g., carpooling or relying on a friend to drive) and school drop-off groups, to care for their communities and stay safe. By documenting these reparative actions, I seek to turn this mobilities research into a form of situated care.

This case study is part of a larger comparative research project on immigration enforcement and mobility justice, in which the research team hypothesizes that research participants will report potential impacts, including effects on transportation behaviors, mobility choices, and the well-being of immigrant communities. The presentation will reflect on the Nashville, TN case study, share collaborative research on mobility injustice, and propose pathways toward more equitable mobility.

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Keywords: immigrant mobilities, Immigration enforcement, fear, solidarity

USE OF PRIVATELY-OWNED AND SHARED MICROMOBILITY DEVICES TO ACCESS PUBLIC TRANSPORT STATIONS: PARKING BEHAVIORS AND IMPLICATIONS FOR FACILITY PLANNING

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Micromobility (bicycles, scooters, etc.) has emerged as an attractive first-mile access mode for rail transit, changing how riders interact with station frontages and challenging transit operators to provide appropriate parking facilities as well as monitor on-board behavior. While prior research has documented the growth potential of bicycle-rail combination trips, empirical evidence on rider behaviors while using station parking facilities remains limited where both privately-owned and shared micromobility coexist. This paper addresses this gap by examining how micromobility riders connect to light rail stations in the Puget Sound (Seattle) region.

The study analyzes two years of direct observational data (2024 and 2025) collected at seven Link light rail stations, combined with an online survey of riders who use bicycles and scooters to access transit hubs across the whole system. Observations captured device type, ownership (privately-owned versus shared), parking facility use, and whether privately-owned devices were parked or carried into stations. This mixed-methods approach allows for analysis of both stated and revealed preferences (actual observed behavior), spanning a variety of station typologies and an evolving micromobility market.

Results show a substantial increase in shared micromobility use over time, primarily led by electric scooters, with shared devices accounting for nearly half of all observed micromobility access in 2025. At several stations, shared devices overtook private ones as the dominant access mode. Despite increasing availability of bicycle parking, most riders with privately-owned devices continued to carry them into stations and onto trains, with implications for crowding and vehicle capacity. While most shared devices were parked in non-obstructive locations, a consistent minority created obstruction hazards for pedestrians, highlighting the ongoing challenge in designing station plazas, mezzanines, and surrounding sidewalks.

The findings add to our understanding of micromobility rider behaviors and how they're affected by station design, device characteristics, and parking facility options. These have actionable insights for practitioners looking to promote use of sustainable transport modes while also mitigating the consequences of potential safety hazards.

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Keywords: micromobility, bicycles, scooters, parking, corrals

WEATHER ALERTS REDUCE BIKESHARE TRIPS BUT NOT EQUALLY ACROSS COMMUNITIES

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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This study asks whether National Weather Service alerts shape bikeshare ridership independently of observed weather conditions, and whether these responses differ across disadvantaged and non-disadvantaged communities in Philadelphia, PA. This question advances understanding of how communicated risk, conveyed through weather alerts, shapes bikeshare ridership beyond observed weather conditions. A Bayesian hierarchical negative binomial model with spatial random effects is used to estimate hourly ridership at the census tract level from 2022 to 2024. The model accounts for nonlinear weather conditions (e.g., temperature, precipitation), temporal structure (e.g., hour of day, season), and built environment characteristics (e.g., land-use diversity, intersection density). Alerts are treated as signals of communicated risk rather than proxies for physical exposure. This approach distinguishes behavioral responses to communicated risk from responses to physical exposure. The results show that weather alerts exert a statistically significant and independent association with bikeshare ridership. Alerts reduce trips even after controlling for observed weather conditions. The magnitude of this reduction depends on hazard type. Winter storm and flood alerts produce the largest declines. These alerts signal severe disruption and correspond with sharp contractions in bikeshare ridership. Temporal patterns also shape responses. Weekend ridership is more elastic under several alert categories, consistent with discretionary travel. Weekday ridership remains comparatively stable under moderate alerts. Behavioral responses are not uniform across communities. Non-disadvantaged areas exhibit larger proportional reductions under flood and wind alerts. This pattern suggests greater flexibility to delay or substitute trips. Disadvantaged communities show stronger reductions under heat advisories. This pattern reflects higher exposure and more limited capacity to adapt. Declining ridership therefore captures different processes across space. It reflects voluntary avoidance in some areas and constrained exposure in others. These findings position weather alerts as active components shaping bikeshare ridership rather than passive reflections of environmental conditions. Planning responses must move beyond aggregate ridership measures and account for differentiated behavioral elasticity across communities. Climate-adaptive strategies include integrating alert-responsive operations, aligning bikeshare with multimodal alternatives, and prioritizing infrastructure investments in areas facing overlapping environmental and mobility constraints.

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Keywords: Transport equity, Travel behavior, Climate adaptation, Weather alerts, Bikeshare

WHAT MAKES FOR A “GOOD” PROJECT? TRANSPORTATION PROJECT EVALUATION AND SELECTION BY CALIFORNIA METROPOLITAN PLANNING ORGANIZATIONS

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Metropolitan Planning Organizations (MPOs) allocate hundreds of billions of dollars each year to transportation projects in the US, yet most residents and travelers are unaware of their existence. To shed light on the work of these planning organizations, this paper examines how projects are evaluated by them for their Regional Transportation Plans (RTPs) and Transportation Improvement Programs (TIPs). We focus on the gap between high-level climate and equity goals and the technical tools used to select investments to achieve them. Building on the existing MPO literature, we identify a "technical-political" divide where rigorous performance data are often sidelined by institutional inertia, funding silos, and protracted political negotiation.

We conducted a comparative case study of the evaluation processes of seven California MPOs in the Monterey Bay Area, Fresno, San Francisco Bay Area (MTC), Sacramento (SACOG), San Diego, Central Valley, and Los Angeles. This included a systematic review of scoring rubrics, performance monitoring systems, and technical documentation, supplemented by a deep-dive comparison of three frameworks: MTC’s Project Performance Assessment (PPA), SACOG’s PPA tool, and statewide Caltrans’ Cal-B/C model.

We find that MPO evaluations bifurcate into: (1) sophisticated, scenario-based modeling (MTC and SACOG) and (2) multi-criteria scoring rubrics (most others). While rubrics provide a veneer of objectivity, they often rely on subjective scoring that lacks the rigor of benefit-cost analyses. Furthermore, a significant portion of MPO investments consists of “carryover" projects from prior years or even decades that are frequently grandfathered into plans without re-evaluation against GHG or equity standards.

MTC’s PPA stands out for using scenario analyses to test robustness across an array of future conditions. SACOG’s tool offers disaggregated, non-weighted indicators; this transparency, unfortunately, prevents the "ranking" provided by MTC. Regarding equity and climate, most MPOs rely on "geographic proxies" (e.g., proximity to disadvantaged communities) and indirect measures (e.g., VMT) rather than more direct metrics.

Finally, despite transparency efforts (notably by MTC), a “Black Box" quality remains at many MPOs, as evaluation scores are ultimately advisory. Final project selections are strongly influenced by realpolitik—geographic funding spreads or rigid funding silos—creating a process that is often opaque and hinders public engagement.

To meet their climate and equity goals, we argue that MPOs must migrate from scoring rubrics to scenario-based evaluations, institutionalize mandatory re-evaluation of legacy projects, and more transparently document how and why projects were selected when technical performance was low to increase accountability for the projects selected.

This paper contributes to the literature by examining the technical tools used by MPOs to evaluate and select projects, an under-studied link in the MPO project planning and programming processes. Our findings not only enrich our knowledge on how MPOs plan for and implement policy goals, but also shed light on why these efforts often fall short.

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Keywords: MPOs, Evaluation, Selection, Transportation

WHAT'S THE HOLD UP? IDENTIFYING BUS PRIORITY CORRIDORS FROM AN EQUITY PERSPECTIVE: A CASE STUDY OF BOSTON

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Transit agencies in many US cities experience bus delays when operating in mixed traffic, leading to poor schedule adherence and high trip time variation. Reliable bus services are particularly important for addressing social equity issues, as many low-income and minority travelers rely on public transit systems rather than other transportation modes for commuting and other travel purposes in urban areas (Pucher and Renne 2003). Even within a given bus network, delays can disproportionately affect disadvantaged populations (Palm et al. 2020). Planners should therefore include social equity measures when analyzing bus network performance and designing transit priority systems. Currently, many transit agencies and municipalities rely on third-party datasets to study bus delays caused by traffic, and to implement transit priority systems, which may help reduce delays by allowing buses to bypass traffic in key areas. However, obtaining external traffic-related datasets can be expensive, thereby limiting the frequency of these studies and the feasibility of transit priority projects.

To help address these challenges, this paper proposes a data-driven method for analyzing traffic-related bus delays using publicly available data published by the transit agency, with the MBTA in the Boston metropolitan area as an example. Specifically, we investigate the following research questions: (1) How can we infer traffic-related bus delays using public-facing transit performance data? (2) How should we identify and prioritize bus corridors for implementing transit priority systems so that we can maximize their impact in terms of improved bus performance and social equity?

Previous work has focused on predicting traffic and bus delays (Montero-Lamas et al. 2023; Shoman et al. 2020), but predictive models may not be necessary to plan transit priority projects. Instead, this paper uses observed bus data to infer traffic-related delays and provide empirical evidence of the need for transit priority systems. Two key quantitative methods enable this inference: dwell-time estimation from time-of-day ridership counts, and travel delay estimation using minimum observed trip times. Together, these strategies isolate traffic delay from other sources of delay and adapt to changes in optimal trip times. Traffic delay estimates are then compared with demographic data for each route and census tract to find the relative incidence of delays on various groups of riders (Di Ciommo and Shiftan 2017). We obtained bus route and stop information from the MBTA's GTFS feed, and bus departure times and ridership information from historical datasets on the MBTA's Open Data Portal. We incorporated socio-demographic data from the MBTA's Rider Census and MassGIS. Finally, we validated the model using INRIX GPS traffic speed data.

Our research findings show that traffic delays can account for more than half of MBTA bus trip times, but bus lanes significantly reduce delays and trip-time variability during peak travel periods. The equity analysis shows that delays tend to be more severe in areas with higher proportions of low-income and minority residents, but this is partially mitigated by recently installed bus lanes. Corridors for future bus lane installations are identified based on their expected improvements to the equity of bus delay incidence across rider groups.

This research demonstrates that transit agencies and municipalities can use this data-driven approach to analyze bus delay and equity, and identify and prioritize bus corridors with significant traffic delays that affect bus level of

service and impact bus riders. Using publicly available transit performance data keeps analysis costs low, enabling more frequent analyses and freeing up funds for projects that mitigate transit delays.

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Keywords: bus delays, traffic analysis, transit priority, social equity

WHEN DO AFFORDABLE HOUSING PROJECTS REDUCE AUTO USE? A STUDY OF CALIFORNIA DATA

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Do affordable housing projects in high-quality transit-oriented development areas reduce auto use? By how much? Under what conditions? These questions are complex but highly relevant for the state of California. Its Affordable Housing and Sustainable Communities (AHSC) program estimates reductions in vehicle miles traveled (VMT) associated with project applications, and scores applications partly on this basis.

Building on a large set of existing empirical literature, we carried out a new analysis of how the built environment affects travel in California, with the intention of providing recommendations to the state on how to update the AHSC program's existing procedure for assessing VMT reductions. We relied on several data sources including movement data from cell phones purchased from a private firm; travel diary data from the 2017 National Household Travel Survey (the most recent household travel survey for the state); and neighborhood, community, and regional built environment and public transportation data from Federal and local sources, for every Census block group in the state.

Consistent with previous literature, we did not find evidence studying before-and-after GPS data that parcel-level characteristics influenced auto use, though parcel-level measures are the basis for the state's current VMT reduction calculator. Instead, the study reinforces and provides new evidence about the importance of larger-scale built environment factors influencing VMT, from the scale of the Census block group up to the radius of a 45-minute drive from home.

In a multivariate Tobit model-building process involving consideration of multiple measures at multiple scales, we found the following built environment factors to be the most highly correlated with vehicle miles traveled: passenger rail access within a quarter mile of home; network load density (jobs plus residents divided by street length) measured within 2 miles of home; jobs accessibility by car within a 45-minute drive; a transit-to-car jobs accessibility ratio (within 45 minutes), street density, measured at the 2 mile radius; bus stop density, measured within one mile of home; and retail density in the home block group. Note that of these seven predictive measures, five are at the one-mile radius from home or greater. Previous literature has rarely explicitly compared local (block-level) to larger-scale built environment measures.

We also explicitly modeled a set of three counterfactual scenarios for the state's consideration of the estimated impact of AHSC affordable housing projects. The current state-provided calculator assumes reductions from a county average baseline estimate of average trip length. We show that the VMT reduction impacts of the program depend on assumptions about what would have happened in the absence of the program.

We calculated VMT variation associated with built environment and accessibility variation across the state, and showed how the variation associated with AHSC projects compares to a weighted state average; a weighted metropolitan average; and a weighted average of the block groups within a ten mile radius, for every block group in the state. We show that depending on which reasonable counterfactual is used, of the existing 90 or so AHSC projects that have been built and have sufficient data, 20 are estimated to have likely increased VMT, while most likely decreased VMT modestly. The results have meaningful implications for how to site and score housing projects in the state of California that are intended to help meet VMT/GHG reduction goals.

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Keywords: travel behavior, VMT, affordable housing

WHO DOES THE TRANSPORTATION INSECURITY INDEX MISS? EVALUATING AN EMERGING EQUITY PERFORMANCE TOOL WITH NATIONAL U.S. SURVEY DATA

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Individual Paper Presentation

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The Transportation Security Index (TSI), developed and validated by Murphy and colleagues and modeled after food security indices (Frongillo, 1999), represents a rigorously validated measure of this condition.Yet as TSI moves toward institutional adoption, independent empirical scrutiny of whether it validly captures the full range of transportation disadvantages remains essential.

This study evaluates TSI's validity and equity-diagnostic scope using original national survey data from the United States (N = 616), quota-sampled by race, income, geography, and traveler type. The survey captures travel barriers at the trip level (past 7 days), TSI symptoms (past 30 days), perceived accessibility (PAC; Lättman et al., 2016), unmet activity needs, and activity satisfaction— enabling a comprehensive assessment of where TSI performs as expected and where it diverges from theoretically related constructs representing both causes and consequences of transportation insecurity.

We advance three interconnected arguments. First, from the input side, travel barrier exposure — the mechanism through which insecurity is produced — should predict TSI severity; we test whether this holds consistently across traveler types. Second, from the output side, TSI severity should predict unmet activity needs and lower activity satisfaction, particularly for socially and physically dependent activity domains. Preliminary findings support this direction — TSI severity is strongly associated with unmet activity needs— yet TSI's predictive power appears selective across activity domains, raising questions about what the index captures across different life contexts. Third, we identify a counterintuitive socioeconomic gradient: contrary to patterns established in food insecurity research and initial TSI validation studies, TSI scores in our sample are significantly higher among employed and higher-income respondents than among the unemployed and low-income. We interpret this through an exposure-versus-vulnerability distinction: TSI may capture who is actively encountering transportation problems through frequent trip-making rather than who is most deprived of mobility resources. Populations who have reorganized their daily lives around persistent transportation constraints may report lower insecurity symptoms not because their needs are met, but because their behaviors have adapted to chronic limitations — remaining undercounted yet revealing deprivation through elevated unmet needs and reduced activity satisfaction.

These findings do not challenge the value of TSI as a screening tool — rather, they identify boundary conditions for its interpretation and point toward complementary measures that can more fully capture transportation disadvantages across diverse populations.

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Keywords: Transport insecurity, Measurement validity, Travel barriers, Unmet needs, Transport equity

WHO RESEARCHES WHAT? MAPPING THE TRANSPORTATION RESEARCH ECOSYSTEM

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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Effective planning requires a firm commitment to understanding the effects of policies, challenging existing assumptions, and learning from past mistakes. Prior research shows that this is a weakness of transportation planning. Transportation policymaking maintains a quite closed knowledge system that permits unproven assumptions about the causes, remedies, and impacts of various transportation policies to persist (Marshall, 2024; Wood and Scott, 2022). For instance, evidence clearly shows that vehicle miles traveled increase with expansions in roadway capacity, while the benefits to congestion relief disappear within five years (Hymel, 2019); despite the serious adverse effects that the added travel has on human and ecological health, states around the country continue to build and expand new highways, leaving a trail of corridor plans, environmental studies, and travel forecasts that support these decisions (Transportation for America, 2020). My research harnesses a novel dataset to paint a picture of the transportation research landscape and carve new pathways in the political sociology of transportation science.

The Transportation Research Information Documentation (TRID) is the largest bibliographic database in transportation, with 1.4 million publicly available records. With programmatic tools developed for this project, I collected and parsed these records into data tables so I could systematically describe what is in this corpus of transportation research, assess the analytic potential of this novel empirical data, and perform content analyses. First, I considered what I could extrapolate about the transportation research ecosystem by evaluating the data quality of each field based on several factors, like how many records had that field populated. Next, I analyzed the contents of each field that had potentially significant implications. For example, I categorized 'corporate authors' by organizational type (i.e. foreign and domestic governments, universities, and private companies) and studied the scale of involvement by type. Finally, I interviewed a TRID administrator and a transportation librarian to enrich my understanding of how TRID works and how to interpret my findings.

My research is the first large-scale empirical analysis of who is responsible for the research that enters the corpus of transportation research and what topics that research addresses. This work responds to the need to improve critical reflection on biases towards certain topics and disciplines in transportation research (Lowe, 2021) by expanding the empirical basis of such analyses. My quantitative findings will offer novel observations, like that there are over five times more records on highways than public transportation. Paired with my description of how TRID works – its architecture and how data is entered – and the history of transportation policy, I can discuss the relevance of factors including biased research, missing data, and features of the database architecture or data management practices that could produce noise or distortions. This work provides a retrospective look at the actors involved in research and their outputs at a moment of acute political upheaval in the transportation research ecosystem, providing a baseline of comparison as recent funding cuts, leadership changes, and efforts at censorship create structural changes that will likely have long-term consequences for research and the conventions for organizing it. My findings in this paper tee up future content analyses that drill down into more granular investigations, such as the contributions of specific organizations and organizational types to specific topics, how the landscape has changed over time and in response to significant political events, and comparisons in the topics that different countries research.

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Keywords: transportation policy, research ecosystem, political sociology, content analysis

WILLINGNESS TO PAY FOR PRIVATE AUTONOMOUS VEHICLES IN TEXAS SMALL TOWNS: A STRUCTURAL EQUATION MODELING APPROACH

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Individual Paper Presentation

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As partial (Level 3) and fully (Level 4) automated vehicles demonstrate technological reliability and commercial viability, understanding the public acceptance and willingness to pay (WTP) for Private Autonomous Vehicles (PAV) become essential for their mass deployment. While existing studies have largely focused on large metropolitan areas [1, 2], the preferences of residents in small towns and rural communities remain under studied. There are 18,696 small cities and towns in the US with a population of less than 50,000, representing roughly 60% of the US population [3, 4]. Small towns represent a sizable PAV market characterized with higher travel burdens, greater mobility vulnerability, and limited exposure to advanced technologies, all of which could shape their residents' preferences and WTP differently than the metropolitan counterparts.

This study presents findings from a cross-sectional state preference survey conducted in eight small cities and towns in Central Texas, including Caldwell, Copperas Cove, Harker Heights, Huntsville, Kempner, Madisonville, Nolanville, and Belton, with a total population ranging from 15,512 to 41,664. The survey instrument was distributed via USPS Every Door Direct Mail service from August 2021 to May 2022. Due to budget constraints, we focused on neighborhoods with comparable household median incomes to the towns. This survey yielded a 1.3% response rate and 416 valid responses after exclusion of incomplete and low-quality responses.

This survey captured respondents' WTP for L3 and L4 autonomous driving features as an add-on to their existing vehicles and new vehicles to purchase. We included questions that comprehensively assessed respondents' perception of autonomous vehicles, including trust, attitudes, knowledge, predictions in deployments timeline and impacts and intention to use. Additional metrics such as respondents' travel burdens, mobility vulnerability and technology exposure were inferred from questions assessing respondents' ability to drive, physical disability, vehicle ownership, travel behaviors, and experiences with smart mobile phones.

The results demonstrate both a high intention to use and strong WTP for PAVs among small town residents, with partial autonomous driving (L3) showing an even higher WTP than fully autonomous driving (L4). We adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) and a Structural Equation Model (SEM) to assess the joint influence of travel burdens, mobility vulnerability, exposure to technology and psychological constructs such as performance expectancy, efforts expectancy, social norms on WTP for PAVs. The results confirm that small town residents exhibit a district psychological profile compared to metropolitan samples documented in previous studies [5]. Specifically, travel burdens and accessibility vulnerability emerge as strong drivers of perceived usefulness and WTP, while the lack of technology exposure inversely affects perceived ease of use and WTP, especially for L4 PAVs. The findings of this study offer valuable insights for automakers and transportation planners in estimating the market size and penetration process in underserved communities. The study highlights the need for targeted research and pilot programs in small towns to ensure the benefits of autonomous driving to be evenly distributed.

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Keywords: Willingness to Pay, Automated driving, Small cities, structural equation model, travel behavior

WORKING FROM HOME AND THE GENDER GAP IN HOUSEHOLD-SERVING TRAVEL: PRE- AND POST-PANDEMIC CHANGES AMONG U.S. WORKING MOTHERS AND FATHERS

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Track 11: Transportation & Infrastructure Planning
Individual Paper Presentation

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While gender differences in U.S. labor market participation have narrowed over the last several decades, travel differences remain (Fan, 2017). Previous studies have documented that women – and mothers, especially – disproportionately shoulder household-serving (like grocery shopping) and child-chauffeuring trips in the U.S. (Hsu, 2023). This partly reflects structural factors like historically higher rates of labor force participation by men (Fan, 2017). However, even among dual-earner households, women tend to complete more child- and household-serving trips (Taylor et al., 2015).

Working from home (WFH) may help reduce gender gaps in household-serving travel. By freeing up time normally spent commuting, WFH increases flexibility, and pre-pandemic research showed that working from home tends to result in more trip-making for non-commute purposes (Speroni & Taylor, 2023). However, research conducted during the pandemic suggests that greater prevalence of WFH led to increased inequality in the domestic division of labor – albeit not specific to travel responsibilities (Dunatchik et al., 2021).

Does WFH narrow gender gaps in household-serving travel (e.g., serving trip like chauffeuring children and grocery shopping)? Has this relationship changed in the post-pandemic period, given the increased prevalence of WFH? We explore these questions in this study using data from the American Time Use Survey (ATUS) from 2003 to 2019 and 2021 to 2024. We document patterns among mothers and fathers in time spent on commuting, household-serving, and child-serving travel, and their associations with individual, household, and locational characteristics. We find that in the pre-pandemic era, WFH appears to have served as an equalizing factor, reducing the gap between male and female child-serving travel; for example, from 2003 to 2019, the gap in time spent on child-serving travel between working mothers and working fathers was larger for those who did not work from home (8.6 minutes) versus those who did (5.7 minutes). In the post-pandemic period (2021–2024), this pattern reversed. The gender gap became larger among those working from home, with mothers spending 8.0 minutes more than fathers, compared to a smaller gap of 5.1 minutes among those who commuted. This shift likely reflects changes in both the prevalence and the value of WFH before and after the pandemic.

Our findings suggest that flexible workplace arrangements may fail to mitigate gender differences in travel responsibilities; indeed, greater “flexibility” may simply reinforce existing inequalities in the household gender division of travel. To mitigate gender inequalities in travel, targeted policies can integrate planning across several domains, including in workplace arrangements, childcare and school locations, and non-automobile travel options.

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Keywords: working from home, gender and travel, household-serving travel, chaffeuring, telework

BARRIERS AND OPPORTUNITIES TO CLIMATE ADAPTIVE AND RESILIENT PUBLIC TRANSPORT PLANNING: INSIGHTS FROM U.S. TRANSIT AGENCY PRACTITIONERS

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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Introduction: Climate change-induced extreme weather events affect public transit infrastructure, service operations, and accessibility, posing a serious threat to the public. Such events also reduce ridership and result in revenue loss for transit agencies. Given the complex nature of public transit planning, developing strategies that address extreme weather worsened by climate change requires integrating diverse insights from practitioners across multiple dimensions of transit service delivery, management, and operation. For efficient implementation of climate-adaptive strategies, it is also necessary to explore the barriers and facilitators to implementation. Previous research examined public transit agencies' perceptions of climate risk, organizational structures, and responses to climate events. However, none of this work has analyzed the barriers and opportunities to implement climate-adaptive public transport strategies.

Research goal: We explore the practice-informed knowledge from transit practitioners on providing reliable, safe, and equitable public transit for all during extreme weather and climate events, along with the barriers and opportunities that shape these efforts.

Methods: We interview transit planners, climate planners, emergency response officers, and advocates to learn about climate adaptation and resilience strategies for transit, equity considerations, perceived effectiveness, barriers, and opportunities to these efforts, including issues related to plan implementation. We identify key stakeholders based on a review of relevant plans of the 100 largest transit agencies and then use snowball sampling to increase the sample size. The interviews take place online and are audio-recorded. We anticipate interviewing at least 30 people and have already completed seven interviews. We employ both inductive codes, derived from the data, and deductive codes, derived from the literature, to analyze the interview transcripts and notes.

Preliminary Results: We find that transit agencies face coastal storms, floods, sea-level rise, severe rain, high winds, wildfires, winter storms, and extreme heat. After enduring such events, most transit agencies receive federal funding and begin incorporating climate adaptation and resilience measures. When developing plans for climate-adaptive systems and preparing for those events, transit agencies consider infrastructure resilience along with three key vulnerable groups: commuters, staff, and the broader community. These plans tend to include different strategies to address climate events, such as creating a flexible adaptation pathway policy, embedding climate concerns into asset management, maintaining a state of good repair, prioritizing vulnerable transit access points, and prioritizing equity for investments. These strategies differ based on the nature of climate events, the type of public transit, and key vulnerable groups. Transit agencies also employ integrated emergency management systems (e.g., the Incident Command System) to facilitate evacuations and ensure service operations and commuter safety.

Implementing climate-adaptive public transport strategies faces several interconnected barriers, including governance fragmentation and jurisdictional complexity, infrastructural vulnerability, funding limitations, and the

siloed organizational culture that impedes effective cross-departmental collaboration. On the flipside, facilitators include the availability of emerging technologies, reliable and accessible climate data and models, community partnerships and collaboration, and human-centered planning.

Implications: This study provides actionable information for transit professionals and policymakers regarding strategies used to address the major extreme weather and climate events faced by transit. It also offers evidence about barriers to implementing climate-adaptive public transit and the factors that may help agencies overcome such barriers.

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Key Words: Public transit, climate resilience, transit practitioners, transit agencies, adaptation

BEYOND THE PEAK: CHANGING COMMUTING PATTERNS AND PLANNING IMPLICATIONS IN U.S. MSAS, 2010–2024

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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This research-in-progress examines changing commuting patterns across the fifteen largest metropolitan statistical areas (MSAs) in the United States—New York, Los Angeles, Chicago, Dallas, Houston, Atlanta, Washington, Miami, Philadelphia, Phoenix, Riverside, Boston, San Francisco, Detroit, and Seattle—between 2010 and 2024, using data from the United States Census Bureau's American Community Survey. Over this period, particularly following the COVID-19 pandemic, commuting behaviors have shifted significantly including the rise of remote and hybrid work and evolving modal preferences. Other research confirms that with major advancements in information and communications technology has shaped peoples travel behaviors (Morris, Speroni & Taylor, 2023). Using a longitudinal comparative framework, this study analyzes trends in commute mode share, travel time along with the spatial distribution of workers. Initial findings indicate a decline in traditional peak-hour commuting, uneven recovery in public transit ridership, and significant regional variation in the adoption of working from home over this 14-year period. Some studies have shown that regional variations have emerged in mode share in different generations in major metro areas (Li & Zhang, 2022). While some MSAs show reductions in daily commuting trips, others exhibit a reconfiguration of travel behavior rather than an overall declines. Very recent research also indicates this changing travel and driving behavior by both older and younger Americans as trip-making and person-miles of travel have been falling and declined following the pandemic (Chiu, Hwang, Siddiq & Taylor, 2026). The research evaluates the implications of these shifts for transportation planners, including impacts on congestion, infrastructure demand, transit investment, and sustainability policy goals. Findings highlight the need for flexible planning strategies that adapt to address uncertainty in travel demand. As an in-progress study, this presentation emphasizes emerging patterns, methodological approaches, and initial findings, while inviting audience engagement on interpretation and policy relevance

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Key Words: Commuting Patterns, Remote & Hybrid Work, Metropolitan Areas (MSA), Transportation Planning, Travel Behavior

CAN WE PREDICT THE FUTURE WITH SURVEY DATA? INSIGHTS FROM THE COVID FUTURE PANEL SURVEY

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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Most research relies on the past, yet many of society's most pressing challenges require anticipating the future. When underlying conditions are stable, historical analysis can provide meaningful guidance. However, in contexts characterized by rapid technological change and societal disruption, backward-looking approaches may be less informative. Transportation systems increasingly fall into this category, prompting researchers to rely on hypothetical scenarios and stated preference surveys to understand future behavior. These approaches, however, are often questioned due to the absence of ground truth, as there is no way to verify whether individuals would act as they claim in hypothetical situations.

This study examines whether individuals can accurately predict their own future behavior. We use data from the COVID Future Panel Survey; a longitudinal dataset collected in the U.S. across four waves between 2020 and 2024. Approximately 1,500 respondents participated in both Wave 1 and 4, and about 1,200 participated in Wave 1, 3 and 4. Respondents reported their pre-COVID (2019) behavior, their current behavior at each survey, and their expectations for post-COVID behavior. By the fourth wave in 2024, conditions had largely stabilized, allowing for a comparison between expected and realized behaviors.

We assess prediction accuracy by comparing stated expectations with observed outcomes across a range of transport-related and daily activities using descriptive and regression methods. We also benchmark these predictions against a backward-looking baseline that assumes future behavior mirrors the past.

Individual respondents whose choices remained the same from pre-COVID in 2019 to Summer 2024 predicted their future choices well, while those who changed their behavior predicted them markedly poorly. Across activities such as shopping, dining, remote work, and travel mode, respondents with stable behaviors predicted their future choices at rates from 65% to over 90%. In contrast, respondents who changed their habits were accurate about those changes only 15% to 25% of the time, with higher accuracy for remote work (35% to 45%).

For behaviors that changed significantly in the aggregate from pre- to post-COVID, forward-looking expectations predicted the future better than past behaviors. For behaviors that did not change much in the aggregate, expectations were no more accurate than simply assuming 2024 behaviors matched pre-COVID 2019 levels. For example, remote work changed substantially over the span of this data collection, and predictions were at least 10 percentage points more accurate than using past behavior to predict the future. In contrast, using historical data from 2019 to predict future behavior of private car use frequency would have been substantially more accurate than relying on expectations. Lastly, predictions made in Wave 3 were more accurate than those made in Wave 1, suggesting that forecasting ability improves as uncertainty decreases.

The findings demonstrate that the reliability of forward-looking survey data is highly context dependent. Expectations tend to outperform past behavior in periods of meaningful change and over shorter forecast periods. Expectations offer limited advantages when conditions are relatively stable, as people overestimate change. At the individual level, respondents are substantially better at predicting stable behaviors than behavioral changes, suggesting that unobserved factors associated with stability may play an important role in forecasting accuracy, and warrant further investigation. Together, these results suggest that researchers and policymakers should apply

forward-looking survey methods with caution, recognizing both their potential value and their limitations depending on the behavioral and temporal context.

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Key Words: Travel behavior, Behavioral forecasting, Expectation accuracy, Panel Data

COMPARING TRAFFIC SAFETY RISKS ACROSS TRANSPORTATION MODES

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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Is it safer to walk, ride transit, bicycle, or drive? This question is central to transportation planning, yet there is limited U.S.-based research comparing crash-related traffic safety risks across modes in ways that reflect real-world travel conditions and behavioral decision-making. Existing research typically examines single modes or relies on aggregate comparisons that overlook differences in exposure, context, and traveler characteristics. This research addresses this gap by examining how traffic safety risks vary across transportation modes, and how these differences depend on where, when, and how people travel.

This study is developing a multimodal framework for comparing traffic safety risks that is more relevant to planning practice. The first phase of the project involves estimating exposure-adjusted crash rates for multiple transportation modes (e.g., driving, transit, bicycling, walking) using measures such as distance traveled and time spent traveling. The second phase disaggregates these risks across factors of the built environment, including roadway functional class, land use context, and time of day, to better capture variation in safety across environments.

Additionally, the research will advance a conceptual framework that draws on methodology from causal inference to guide interpretation of observed safety differences. This framework highlights how selection effects (e.g., risk-averse people choosing safer modes, routes, or times-of-day), infrastructure conditions, and temporal factors may confound simple comparisons of modal risk. It also outlines pathways for more policy-relevant analyses that move beyond descriptive crash rates toward “what if” questions to inform safety planning, design, and decision-making.

A preliminary review of the literature suggest that aggregate safety comparisons may obscure substantial variation across contexts. Prior work indicates that relative risks differ meaningfully by environment and exposure definition, reinforcing the importance of context-sensitive approaches. Additional analysis is underway to further quantify these differences and assess their robustness. This analysis will utilize crash data, measures of exposure, and factors of the built environment to create a basic risk unit that can be added over a trip to create a total risk measurement.

This research contributes to planning scholarship by developing methods for more context-aware, multimodal safety assessment and by integrating causal reasoning into transportation safety analysis. It works towards the ultimate goal of providing user- and trip-specific crash-related traffic safety risk assessments for improved behavioral decision-making and understanding. For planning practice, the project aims to support more nuanced evaluations of safety tradeoffs across modes, informing infrastructure investment, street design, and policies intended to encourage safer and more sustainable travel behavior.

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Key Words: Traffic safety, Multimodal planning, Crash risk, Transportation policy, Causal inference

HIGHER PARKING: PARKING MANAGEMENT ON NORTH CAROLINA COLLEGE AND UNIVERSITY CAMPUSES

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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Parking is a perennial source of debate among planners, scholars, property owners, and the general public in communities of all shapes and sizes. These debates are intensified in college towns, where local populations—and parking demand—may fluctuate dramatically over the course of a year. Universities and colleges devote considerable resources, time, and effort into managing parking for students, faculty, staff, and visitors, yet to our knowledge there have been no published efforts to systematically document and evaluate the effectiveness of campus parking management practices. This study begins to address this gap by examining parking capacity, policies, and management strategies across a representative sample of college and university campus types across North Carolina. Findings will be used to inform a typology of parking management tools, including supply management, pricing, enforcement, and incentives.

The research team, comprising an advanced undergraduate planning studio, first scanned the literature for theoretical and empirical sources relating to parking in general, and on higher educational campuses in particular. We developed and piloted a semi-structured key informant interview that probes parking conditions and challenges, strategies used to manage parking, relations between campus and host community, and distinctive and effective parking management strategies. Next, we created a matrix of higher education institution types (private, public, commuter, residential), sizes (ranging from <2,000 to >20,000), and context (rural, small town, small urban, major urban) in order to ensure a variety of institutions across North Carolina, and identified a representative sample of 15 from which to recruit. We identified the parking manager at each institution to recruit for an online interview. Deidentified text transcripts provided data from which we pulled specific examples of parking management strategies attempted—and their success (or not), to examine patterns of shared-and-common or rare-and-one-off examples, and to arrange strategies into categories with similar features.

Preliminary findings suggest a variety of conditions and parking challenges across institutions, along with some creative and adaptive strategies used to better match supply and demand and to meet institutional goals. This exploratory study focused on North Carolina institutions as a first step in identifying and categorizing campus parking strategies. Surfacing the range of creative fixes, across categories such as capacity, pricing, enforcement, and incentives, may be useful in supporting a broad discussion across institutions of how better to manage the scarce resource of parking on sites where competition for land is fierce and service populations are a mix of students, faculty, staff, and visitors, all within the larger community that an institution calls home. We sketch out lessons that may inform planners' work in college towns and beyond.

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Key Words: parking capacity, parking management, college campuses

IMPACT OF GROUP BIKE RIDES ON SHAPING SUSTAINABLE COMMUTING PATTERN AMONG COLLEGE STUDENTS

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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Literature shows that riding a bicycle during college increases both positive attitude toward and skills for bicycling. Universities can play an important role, offering opportunities for sustainable behaviors including transit use and bicycling commuting for young adults, employees, and their surrounding communities. California State Polytechnic University, Pomona (CPP), located in a suburb in the Southern California region, had had a standing Transportation Advisory Committee established by students aspiration, advising the University on challenges related to campus transportation since 2017. A few years after that, the California State University system requires its 23 campuses (CPP is one of them) to establish an Alternative Transportation Committee (ATC). The committee since then is additionally charged with developing a Transportation Demand Management (TDM) Plan, performing a parking feasibility study before any decision on parking facilities construction, and pursuing sustainable funding sources to support the implementation of alternative transportation. The committee has been influential on a couple of milestones since then, including brining a transit service/stop inside the campus and leading the foundation of free bus pass pilot program through partnership with a local transit agency. Another important activity is organizing annual group bike rides for students and employees, usually scheduled during the Earth week in April. This bike ride is meaningful in that it is a collaborative effort between a town (the city where the university campus resides) and gown (the university as public anchor institution). The literature shows that the probability of commuting to campus by bicycle is high in neighborhoods close to the campus with more bike riders residing around other campus commuters. The local city's continued participation in group rides and improvements of bike infrastructure around the campus have strengthened the impact of the committee's effort.

With the upcoming 10-year mark of the committee, this study aims to assess impacts of the forementioned activities on commuting, perception on bicycling, and actual bicycle use among college students. During and after this year's annual bike ride in April, in-depth interviews of the group ride participants will be conducted. The focus is to understand motivation to join the ride and changes in perceptions of and attitudes toward bicycling to/around the campus. The literature showed that bicycling instruction and offering/participating in group bike rides significantly reduced some barriers to bicycling among the study participants. Also, construct from the utility of the social norms approach and self-determination theory were significant predictors of college students' intention to use bike lanes on campus. Since part of the upcoming group ride will use recently completed bike lanes on campus and introduce other transit and bike infrastructure initiatives on campus, this group bike ride will provide a unique opportunity for more engaging dialogues with the campus community and its neighbors and potentially addressing/overcoming challenges in bicycle commuting. Not only is bicycling to campus explored, but also other transit service improvements and overall efficacy of the committee's efforts will be assessed via analyzing interviews of key stakeholders and members of the decision-making body on transportation on/around campus.

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Key Words: Bicycling, Group bike ride, University campus, College students, Infrastructure

NO MORE FREE RIDES: DO DOWNTOWN FARE-FREE TRANSIT PROGRAMS MOVE TOURISTS OR WORKERS?

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Research-in-Motion Presentation, Research currently in process

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Fare-free transit has seen a resurgence during and since the COVID-19 pandemic, with many agencies initially suspending fare collection temporarily to accommodate social distancing and some continuing with extended periods of free-to-ride services, such as the Detroit People Mover (DPM) and QLINE in Detroit, MI. More recently, the "free buses" proposal by the new NYC mayor, Zohran Mamdani put the issue under the spotlight and elicited renewed debates on the financial, environmental, and equity implications of fare-free transit.

Existing research on fare-free transit has largely focused on effects on ridership, travel behavior, and social outcomes, and many of the fare-free transit programs examined are targeted programs, e.g., for senior citizens, youth, college students, or selected individuals/households in random experiments (Lightner et al., 2026; Tyndall, 2025). While abolishing fares is consistently found to increase ridership and public transit usage (Lightner et al., 2026), few studies evaluated system-wide fare-free transit or free-to-all transit services or their implications on community economic outcomes (Ofosu-Kwabe, Lim, & Malalgoda, 2024). Moreover, free-to-ride transit in downtown areas has been criticized for serving tourists and visitors to major attractions more than low-income residents and workers, or aiming at economic development rather than improving mobility or equity in the community (Green, 2023).

This study examines two former fare-free transit programs in downtown Portland, OR and Seattle, WA, both discontinued after 2012 due to revenue loss and equity considerations. Both programs, while active, were free to all in the designated downtown area (the "Fareless Square" and later "Free Rail Zone" in Portland and the "Ride Free Area" or "Magic Carpet" in Seattle). This interesting parallel allows a comparative study of the two cities' approaches to downtown fare-free transit and their economic implications. Using a regression discontinuity design and Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) data, the study compares how (the end of) fare-free transit affected jobs and worker mobility inside and outside the free to ride zones in these two cities. Expected findings will shed light on the value of fare-free transit on local businesses and workers and provide empirical evidence for policymakers considering adopting area-based or citywide fare-free transit systems.

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Key Words: fare-free transit, public transit, downtown, economic outcomes, mobility justice

OFF-STREET TRAILS AND LOW-STRESS BICYCLE ACCESSIBILITY IN TALLAHASSEE, FLORIDA

Abstract ID: 2296.0.0.432.2026
Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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Bicycle infrastructure planning emphasizes not just the presence of facilities, but whether those facilities form connected, low-stress networks that support cycling for a broad range of users. The Level of Traffic Stress (LTS) framework has been developed to evaluate the perceived safety and comfort of cycling routes, distinguishing between links suitable only for the most "fearless" cyclists and those accessible to the broader population. Despite growing methodological sophistication in LTS-based network analysis, less attention has been paid to the marginal accessibility gains attributable specifically to off-street trail infrastructure. These are facilities that operate outside the on-street LTS hierarchy, and they may serve as critical connectors in low-stress networks.

This study examines how off-street trail alignments may expand low-stress bicycle accessibility to key destinations in Tallahassee, Florida. Using a cumulative opportunity accessibility model implemented in the r5r routing framework, the study compares two scenarios: Scenario A, which restricts routing to on-street links classified as LTS 1–2; and Scenario B, which adds verified off-street trail segments to the low-stress network. Destination layers including food retail, parks, schools, healthcare facilities, and employment were constructed from OpenStreetMap (OSM) and LEHD Origin-Destination Employment Statistics (LODES) data. Elevation data were incorporated to account for topographic variation in the study area, which influences cycling speed and route feasibility.

Early results suggest spatially concentrated accessibility gains associated with off-street trail infrastructure, measured using a cumulative opportunity model with an 18-minute travel time threshold. Employment and park access show the most pronounced gains, while improvements to food retail, healthcare, and school access appear more modest. In all cases, results point toward gains that are geographically concentrated near trail corridors rather than distributed broadly. If this pattern holds true in the full analysis, the finding has direct implications for how planners evaluate the equity relevance of off-street infrastructure investments. Groups with heightened sensitivity to traffic stress such as women, children, and older adults, may benefit disproportionately if off-street trails expand their effective cycling network in ways that on-street infrastructure alone does not.

This presentation will share emerging findings from the pilot analysis, discuss key methodological decisions and their potential influence on results, and invite audience feedback ahead of a full-study analysis extending across the broader Tallahassee metropolitan area. The work contributes to a growing literature on stress-constrained bicycle accessibility modeling and raises questions about how off-street infrastructure is accounted for, or overlooked, in regional network planning. More broadly, the findings speak to how cities might position off-street trails not only as recreational amenities but as utilitarian infrastructure capable of meaningfully expanding access to jobs, services, and daily destinations.

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Key Words: cycling, LTS, infrastructure, destination accessibility, cumulative opportunities

PLANNING FOR TRANSIT USE: ENVIRONMENTAL FACTORS AND ASSISTIVE STRATEGIES ACROSS USER GROUPS IN EL PASO

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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Introduction and Research Aims. Public transit remains significant in promoting physical activity and health. It also provides alternative transportation modes to better serve the mobility needs of vulnerable populations (Sallis et al., 2004). However, public transit ridership in El Paso, TX remains significantly low, reflecting the potential barriers that may prevent residents from using it (U.S. Census Bureau, 2023). Despite the growing interest in investigating the barriers to public transit use (Mwaka et al., 2024), research on understanding the nuanced experiences and perceptions among different transit user groups remains limited. This qualitative study seeks to bridge this gap by examining the varied experiences of public transit users and non-users, including those who have no alternative but to rely on these services (captive users), those who choose to use them despite other options (choice users), and residents who do not use these services at all (non-users). Specifically, the research questions we address are: (1) What physical and social environmental factors influence the utilization and perceptions of public transit among different user groups in El Paso? and (2) How do the transit assistive programs (e.g. first/last mile, free fare, bus buddy) could potentially help promote transit ridership and user experience?

Methodology. This study utilized a qualitative research design involving in-depth, semi-structured interviews conducted with 35 participants categorized into three groups: non-users, choice users, and captive users. Participants were selected from an existing research pool of the "Active El Paso" project, ensuring representation across demographics and transit dependency. Interviews explored participants' experiences, perceptions, and suggestions regarding public transportation services, infrastructure, environmental and social factors, and attitudes towards various interventions. Thematic analysis was conducted following the Braun and Clarke's (2012) six-stage approach, emphasizing thorough, iterative coding and consensus-driven interpretation to ensure data validity and reliability.

Findings. Participants identified five key environmental aspects influencing public transit use: proximity and accessibility to bus stops, quality of bus stop infrastructure (e.g., shade and seating), first–last mile connectivity, traffic and personal safety, and service reliability. Most participants indicated that an acceptable walking distance to a bus stop is within 0.5 miles, and that free or subsidized first–last mile connections would significantly increase transit use. Free fare could be another effective assistive strategy to promote transit use, with participants, particularly captive users, emphasizing the importance of fare discounts for low-income and frequent riders. Older adults aged 60+ highlighted the potential value of a "bus buddy" program to provide companionship, safety, and transit navigation support. Findings also reveal variation across user groups: captive users are more sensitive to cost and reliability, choice users prioritize convenience and service quality, and non-users are primarily deterred by perceived inconvenience and safety concerns.

Implications for Planning. This study highlights how diverse user groups perceive transit, emphasizing the role of physical and social environmental factors in shaping transit use. Findings suggest that planners and transit agencies should prioritize user-centered improvements in first–last mile connectivity, service reliability, affordability, and

safety. Furthermore, effective transit assistive programs are essential to promote transit use, particularly for choice users and non-users. By identifying environmental barriers and facilitators among socioeconomically vulnerable populations, this research informs environmental and program-based strategies to support more equitable, sustainable, and health-promoting transit systems.

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Key Words: Public transit, environment, transit assistive program, user perception, qualitative study

POLICY EVOLUTION OF SUSTAINABLE URBAN TRANSPORTATION IN SAUDI ARABIA (2000–2025)

Abstract ID: 2296.0.0.14.2026
Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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This study examines the evolution of urban transportation policy in Saudi Arabia from a car-dependent paradigm toward sustainability-oriented planning and early implementation between 2000 and 2025. Using a longitudinal qualitative analysis of national strategies, municipal plans, and giga-project documents, the study traces shifts in policy discourse, governance arrangements, and implementation evidence across three phases: an expansionist phase (2000–2015), a vision transition phase (2016–2020), and a sustainability implementation phase (2021–2025). The findings reveal a clear transition from asset-focused investment—characterized by road expansion, fuel subsidies, and limited public transport—toward system performance, decarbonization, and multimodal integration. Recent years have seen the rollout of metro and bus networks, expansion of rail systems, early electrification of vehicles and public transport, and fuel price rationalization. However, persistent behavioral lock-in, low-density urban form, climatic constraints, and fragmented multi-level governance continue to limit modal shift and equitable mobility outcomes. The analysis indicates that converting infrastructure investment into durable travel behavior change requires integrated feeder services and ticketing, heat-adaptive first- and last-mile solutions, protected active mode networks, and calibrated demand management measures. By linking policy ambition to implementation pathways over time, the study provides transferable insights for sustainable mobility transitions in oil-dependent and arid urban contexts.

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Key Words: sustainability, transport policy, vision 2030, electric mobility

PUBLIC TRANSIT AND BATHROOMS: A CRITICAL EXPLORATION

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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Despite the fundamental importance of bathroom access, there is limited research on bathroom access for public transit riders in the U.S. Not only is bathroom access a fundamental human need, but there are also critical equity dimensions, as ample bathroom access can be especially important for some groups, such as those with disabilities or health conditions, those with trips that are lengthy in time, pregnant people, and caregivers.

Recently, Lundkvist called for more attention and conducted an initial scan showing limited bathrooms on North American public transit systems (Lundkvist, 2025). Likewise, in study of 14 U.S. transit systems and caregiving infrastructure, (Quattro & Yao, 2025) “Restroom availability was notably inadequate” (p. 11). Existing research on access to bathrooms along trolley lines in San Diego shows both low provision of bathrooms and poor quality (Rios et al., 2023). This research in motion presentation will include a conceptual discussion of bathroom access for public transit riders as an intersectional mobility justice issue and a scan of bathroom provision for riders of the 25 largest U.S.-based transit agencies (by annual unlinked passenger trips).

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Key Words: public transit, bathrooms, mobility justice

THE DEATH AND LIFE OF SHARED ELECTRIC SCOOTERS

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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Shared electric scooters (e-scooters) have emerged as a widely adopted micromobility option, frequently promoted as a sustainable alternative to automobile travel. However, questions remain regarding their actual contribution to transportation decarbonization. This research-in-progress examines the extent to which shared e-scooters substitute for higher-emission modes versus low-carbon modes, with implications for urban sustainability planning.

This study draws on original survey data collected from Michigan State University and the University of Texas at Arlington to analyze travel behavior associated with e-scooter use. A logit modeling framework is employed to estimate the likelihood of mode substitution across different trip purposes and user characteristics. Preliminary results suggest that e-scooter trips may more often replace walking than automobile travel, though the magnitude and consistency of this effect vary across contexts and user groups.

These emerging findings are consistent with prior studies indicating that e-scooters can substitute for low-carbon modes such as walking, cycling, and public transit (Nikiforiadis et al., 2021). At the same time, life cycle assessments highlight that shared e-scooters entail nontrivial environmental impacts associated with manufacturing, maintenance, and operations, particularly given relatively short vehicle lifespans (Bozzi & Aguilera, 2021; Severengiz et al., 2021), as well as collection and rebalancing activities (Hollingsworth et al., 2019). Taken together, these factors suggest the need for a more nuanced assessment of their environmental performance.

As an ongoing study, this paper aims to refine estimates of mode substitution and explore how infrastructure, campus context, and user characteristics influence e-scooter use. The anticipated contribution is to inform planning and policy discussions regarding the conditions under which micromobility systems can more effectively support low-carbon transportation goals.

Citations:

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Key Words: shared e-scooters, micromobility, sustainability, decarbonization, travel behavior

URBAN MOBILITY AND WARTIME RESISTANCE: RISK AND RESILIENCE IN WARTIME KYIV

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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The full-scale Russian invasion of Ukraine in 2022 introduced sustained and uneven attacks on urban life in Ukrainian cities, making it a uniquely 'anti-urban' war (Coward, 2025). It has transformed urban travel behavior and public transport from an assumed part of everyday life into a continuous negotiation between safety, necessity, and institutional capacity (Rossolov et al., 2025). Our work examines how wartime hazards and disruptions reshape everyday urban mobility behavior and investigates these dynamics in Kyiv, Ukraine.

Existing research on urban transportation resilience examines natural hazards contexts, focusing on responses to disruption, and restoration of accessibility. These analyses measure recovery, evacuation patterns, or post-disaster reconstruction (Esmalian et al., 2022).To support transportation policymaking, prior research documents how individuals adapt their travel behavior in response to disruptions, including changes in mode choice, route selection, and trip timing (Golshani et al., 2020). However, much less attention has been given to cities experiencing prolonged and ongoing war, despite an increase in armed conflict globally (Peace Research Institute Oslo, 2025). In these contexts, transportation disruption is not a single event but a continuous condition shaping everyday life.

To address this gap and better understand mobility under conditions of sustained disruption, this study adopts a mixed-methods approach, combining a survey of urban residents with semi-structured interviews of transit riders, city transportation bureaucrats, transit operators, and mobility professionals. The analysis focuses on how individuals navigate a mobility environment shaped by air raid alerts, infrastructure damage, power outages, service interruptions, and persistent uncertainty.

Preliminary qualitative findings suggest that wartime mobility is not simply disrupted but systematically reconfigured through the interaction of risk, policy, and everyday adaptation. Interviewees describe how system-wide shutdowns during air raid sirens make public transport unreliable and, at times, unusable, even when most of the city remains physically unaffected. These and other wartime interruptions produce widespread uncertainty, which forces riders to reassess travel decisions, delay trips, or seek alternative modes.

The interviews also highlight institutional and operational challenges, including limited coordination, delayed communication, and reliance on improvised or informal practices during disruptions. As one interviewee noted, "even in more or less normal situations, this response is extremely slow… in emergency situations, a lot of it simply falls on the driver — situational, improvised reactions". These institutional gaps translate directly into lived uncertainty, as another respondent described how, during disruptions, "you get stuck and don't know what to do — you and your bus can't move neither forward nor backwards". In this context, resilience emerges not as recovery, but as a fragmented and uneven process shaped by both individual coping strategies and institutional constraints.

This study contributes to discussions on mobility justice and urban resilience in contexts of protracted conflict. Ongoing work will further refine these insights and explore their implications for transportation planning in cities facing sustained disruption.

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Key Words: Wartime mobility, Urban resilience, Travel behavior, Mobility justice, Transit disruption

VEHICLE ABANDONMENT DECISION-MAKING IN THE 2025 PALISADES WILDFIRE: INSIGHTS FROM EVACUEE INTERVIEWS

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Track 11: Transportation & Infrastructure Planning
Research-in-Motion Presentation, Research currently in process

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Evacuees from wildfires are increasingly faced with dire decisions about staying in their vehicles in congested traffic or fleeing on foot, as observed in the 2018 Camp Fire, 2022 Maui Fire, and most recently in the 2025 Los Angeles wildfires. This study examines the behavioral drivers of vehicle abandonment through 40 semi-structured interviews with evacuees from the 2025 Palisades Fire, approximately half of whom left their vehicles and fled on foot.

Vehicle abandonment is these scenarios is often contemplated carefully before it occurs, and is shaped by both situational and social factors. Key drivers include proximity of fire to evacuation routes, gridlock caused by surrounding vehicles, observing others abandon cars, and awareness of prior in-vehicle fatalities. In contrast, remaining in vehicles is associated with mobility constraints, responsibility for dependents or pets, and perceptions that sheltering in place may be safer. Notably, some evacuees independently adopted practices later promoted by officials, such as leaving keys behind, while others made ad hoc decisions about vehicle placement.

These findings highlight a gap between evacuation behavior and current evacuation planning guidance. Incorporating clear protocols for vehicle abandonment—alongside public education on practices that preserve roadway access—could reduce mortality risk while improving emergency response efficiency. More broadly, integrating behavioral insights into evacuation planning can strengthen the resilience of transportation systems under extreme hazard conditions.

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Key Words: wildfire, evacuation, vehicles, Los Angeles, Palisades Fire

Track 12 – Placemaking and Urban Design

Track 12 Roundtables

Make No Small Plans: What Can Planners Learn From (at?) Burning Man
Abstract ID: 2297.0.0.776.2026
Track 12: Placemaking and Urban Design
Roundtable Submission, Topical Discussions

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Burning Man is regularly recognized as a significant event of city design, art, and urban experimentation, with articles in the New York Times, Governing, journals outside typical planning venues, and regular sessions at the American Association of Geographers annual conferences. Surprisingly, the planning discipline has engaged Burning Man and its main physical manifestation, Black Rock City (BRC), very little. This is a missed opportunity.

Planning Magazine's cursory 2016 treatment outlined its creative, environmental, and social potential, connecting BRC to utopianism and Ebenezer Howard's Garden Cities. It was too brief to examine the event's meanings and contradictions critically. Planning seems to have abandoned Daniel Burnham's suggestion to make no small plans; how can we free ourselves from our current conventions and plan "bigger" for a different, unpredictable future? How can we experiment when our cities are bound by layers of regulation and history? Where is the creativity of our craft that stirs people's souls? Maybe it's at Burning Man.

Burning Man, an annual weeklong event held in Nevada's Black Rock Desert, offers a unique and dynamic model of urban design, alternative economy, and city-building that can provide planners with valuable insights. Originating from the counter-culture of Northern California (Wachs, 2019), Burning Man has grown into an ephemeral city of over 70,000 residents. The organization espouses Ten Principles, including radical self-reliance, leaving no trace, and radical inclusion—ideals that inspire but also raise questions about accessibility, privilege, and environmental impact (Rohrmeier and Starrs, 2014). BRC offers planners an opportunity to experience and learn from innovative approaches to urban design and community building.

The goal of this roundtable is to explore how the principles and practices of Burning Man might inform planning theory and practice. For example:

Urban Design: Black Rock City's layout is meticulously centrally planned, with a focus on pedestrian-friendly streets, accessibility, public gathering spaces, and engaged neighborhoods. Visioning and implementation are carried out by the residents with little oversight. How might this community-forward land-use approach be integrated into cities to prioritize accessibility and community interaction?

Radical Inclusion and Community Engagement: A key principle of Burning Man is radical inclusion, which seeks to ensure that everyone is welcome and fosters a strong sense of community. Burning Man's governance is

complicated; a formal organization engages with federal, state, and local entities, and a participant-level “do-ocracy” that emphasizes volunteerism and community activity. Civil society and the state are in constant tension. While BRC often falls short of its goals, its utopian drive can help validate and inspire planners in their efforts to create inclusive public spaces and engage diverse communities.

Art as Catalyst for Community Building: Art plays a central role in BRC, with hundreds of installations and performances that engage participants. BRC shows how cities might function if they centered art and community. For example, San Francisco has benefited from Burning Man's art and ideas, regularly hosting art from BRC, and ideas from the event influence the city's visual form, as seen in The Bay Lights project (https://en.wikipedia.org/wiki/The_Bay_Lights), which illuminates the Bay Bridge.

Temporary and Flexible Infrastructure: As climate change creates new uncertainties, experiences from Burning Man can help explore the use of temporary structures to address changing needs and emergencies in urban environments. This approach could be beneficial for cities hosting large-scale events, or for disaster preparedness. Burning Man serves as an example of how intentional planning and community-driven initiatives can create vibrant, adaptable, and resilient urban spaces.

Audience Engagement Questions:

- How does the state and community collaborate to create adaptable, vibrant, and resilient public space?
- What might be the role of art in community development and how can this be emphasized in the planning process?
- What would radical inclusion look like outside of Burning Man, such that more people felt a strong sense of belonging and community?

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Key Words: Urban Design, Community Engagement, Art, Land Use, Adaptable Urbanism

Rethinking Urban Design Pedagogy in Planning Programs
Abstract ID: 2297.0.0.452.2026
Track 12: Placemaking and Urban Design
Roundtable Submission, Topical Discussions

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Urban design is often described as a professional practice and intellectual pursuit lying between and drawing from other built environment disciplines, including architecture, landscape, architecture, civil engineering, and planning (Lang 1994). The field also engages methods and ideas from other disciplines, from environmental psychology to urban sociology. To cope with this broad terrain, scholars have long called for a "catholic" approach to urban design pedagogy (Moudon 1992). Urban design training must also prepare future professionals to confront emergent challenges, including changing technological and labor conditions, informal urbanization, mounting inequality and social polarization, and increasingly dire impacts of climate change-related hazards. Urban design training can take several different forms, including stand-alone urban design programs and specializations within architecture, landscape architecture, and city planning programs. While these pathways share some methodological, scalar, theoretical, and topical concerns, city planning-based urban design training comes with distinct opportunities and challenges.

This topical discussion roundtable will create a forum for a structured conversation about the future of urban design pedagogy within planning education. Invited participants will briefly respond to a series of questions before opening the discussion to audience perspectives and questions. Questions will include: How do planning programs train urban designers differently from other built environment disciplines? How should urban design pedagogy adapt to an expanding ecosystem of tools—from GIS and 3D modeling to storytelling and emerging AI—while training students not just to use software, but to orchestrate visual, spatial, and narrative forms to communicate and influence planning decisions? How can programs balance the demand for design skills training with the other priorities of planning curricula? And, how can we create pathways for planning students from a range of backgrounds to study urban design, including both those with and without previous design training?

Audience Engagement Questions:

- How do planning programs train urban designers differently from other built environment disciplines?
- How should urban design pedagogy adapt to an expanding ecosystem of tools—from GIS and 3D modeling to storytelling and emerging AI—while training students not just to use software, but to orchestrate visual, spatial, and narrative forms to communicate and influence planning decisions?
- How can programs balance the demand for design skills training with the other priorities of planning curricula?

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Key Words: Urban design, pedagogy, artificial intelligence

A LONGITUDINAL ASSESSMENT OF GREEN INFRASTRUCTURE AND URBAN MORPHOLOGY ON OUTDOOR THERMAL COMFORT IN MUELLER, AUSTIN, TX (2019- 2025)

Abstract ID: 2298.0.0.801.2026
Track 12: Placemaking and Urban Design
Individual Paper Presentation

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Climate change and urbanization have exacerbated the urban thermal environment. This change has deteriorated urban residents' outdoor thermal comfort and the quality of life. Although green infrastructure in urban areas provides long-term improvement to residents' outdoor thermal environment, the immediate cooling effect of installing green infrastructure differs from the long-term effects. As green infrastructure increases, the cooling capacity improves. However, the cooling effect may become unsustainable if trees are replaced or removed due to disease, pests, or other external factors that can affect their lifespan. As a result, the immediate and long-term cooling effects are difficult to analyze. Ongoing research is needed to predict and measure the long-term impacts of green infrastructure on outdoor thermal comfort (OTC). Furthermore, in mixed-use urban developments, the built form continually changes throughout the development process. Thus, we must consider the impacts of both the changing built form and green infrastructure on the urban thermal environment.

In 2019, a field study was conducted in the Mueller District in Austin, Texas to examine the impacts of blue and green infrastructure on the urban microclimate. Partially developed in 2019, the Mueller district experienced significant development over the subsequent six years and is slated for final completion by the end of 2027. These changes in built form, landscape maturation, and replacement over the six years of development provide a unique opportunity to compare and analyze the impacts of green infrastructure and urban form changes on the micro-scale thermal environment over time.

The primary research question guiding this study is: "How can urban design and landscape design be optimized by integrating the timing of plant maturity and expected thermal benefits?" The following three sub-research questions are also explored: 1) How do changes in tree size, species composition, and ground-level vegetation influence shading and the outdoor thermal environment over the whole urban development process? 2) What is the relative impact of green infrastructure vs. built form on OTC? 3) Can predictive models anticipate OTC in the future based on current growth and development rates?

This follow-up study of the same area aims to examine the long-term impacts of the changes in built form and green infrastructure on the urban microclimate over the past six years of development. The 2019 study only assessed the overall impacts of green and blue infrastructure on microclimate variables. Although it analyzed urban geometry factors (e.g., sky view factor, aspect ratio) influenced by the basic physical built form, it focused on the cooling effects and limitations of green and blue infrastructure.

The primary objective of this study is to analyze changes in green infrastructure and built form in the Mueller district over time, from 2019 to 2025, and to assess the direct impact of these changes on the outdoor thermal environment and overall human thermal comfort level. The study analyzed and compared the landscape of the Mueller district in 2019 and 2025, accounting for the urbanization in the district and the maturation of trees and other landscape elements over the six-year period. Based on this analysis, the study modeled long-term

microclimate conditions and predicted OTC changes in urban residential areas over 10, 20, and 30 years, accounting for the growth rates of landscape elements (e.g., trees and shrubs) and ongoing urban morphological changes. The findings of this study can be used to develop actionable strategies for urban and landscape design that address urban climate change. The novelty of this study is its potential to strengthen the broader framework and strategy for climate-responsive environmental planning by integrating landscape lifespan predictions.

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Keywords: outdoor thermal comfort, green infrastructure, urban morphology, microclimate modeling, longitudinal analysis

ANYPLACE ARCHITECTURE? A QUANTITATIVE SURVEY OF PODIUM & WRAP APARTMENT DEVELOPMENT IN 5 HIGH GROWTH U.S. CITIES

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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The proliferation of two distinct, yet related, apartment types across the United States over the past decade has been praised for providing much needed housing, but also criticized as monotonous, placeless, and formulaic. “Podium” buildings (also called “5-over-1’s”), which stack apartments over a concrete base, and “wrap” buildings, which wrap units around a concrete core, can be found on urban infill to exurban greenfield sites in cities of all sizes across the U.S. The typologies are used for market rate, mixed income and affordable housing and both are working to alleviate the housing crisis in high-growth cities like Austin, Nashville and Salt Lake City. Public conversations about these buildings, however, discount the important role podiums and wraps are playing in housing production and question the viability of places with concentration of these building types. In these venues, podium and wrap apartments are “blandmarks,” which are “everywhere, but look like they could be anywhere” (Nishimura, 2022).

Why do so many new podium and wrap apartments built across the U.S. look so much alike? Anecdotal explanations from those in the industry are myriad. Developers cite rising land, material and labor costs, but also say that location, massing and architectural style is driven by restrictive planning and zoning codes. Architects identify inherently risk-averse developer clients and low budgets, but also the International Building Code. And planners recognize that even this comparatively cheap mode of construction is costly, encouraging fully built out sites that maximize density. All note the anodyne effects of the high returns required by institutional capital and the consequences of consolidation in the building industry. In other words, housing homogeneity comes down to codes, costs, clients and capital. But, which codes, costs, clients and capital are the most homogenizing, and in what contexts? And, how are these “5 C’s” working dampen regional character and place identity?

This paper presents a quantitative study of podium and wrap apartments built in 5 high growth Metropolitan Statistical Areas (MSAs) across the U.S.: Austin-Round Rock-Georgetown, TX MSA; Nashville-Davidson-Murfreesboro-Franklin, TN MSA; Orlando-Kissimmee-Sanford, FL MSA; Phoenix-Mesa-Chandler, AZ MSA; and Salt Lake City, UT MSA. Case study MSAs have all seen rapid apartment development since 2015, both as a percentage relative to existing housing stock and in overall numbers relative to other locations. A “desktop” or “windshield” survey of podium and wrap apartments built from the 1990s to the present was conducted using data from the CoStar commercial real estate database to identify buildings potentially matching these typologies which were then confirmed or excluded via Google Earth aerial and street views. The 5C’s were used to organize data collection and descriptive statistics, helping to quantify the scale and significance of podium and wrap apartment development in these locations from these five perspectives on housing production. The survey is the first stage of a larger study using an explanatory mixed methods sequential design that will lead to qualitative mini-case studies of specific buildings and interviews of the professionals involved in their development. The aim of the study is to understand how and why podium and wrap apartment buildings have proliferated across the U.S., evaluate their current use as a city-making tool and identify ways in which new housing policy and practices might positively shape their future development.

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Keywords: Multifamily Housing, Urban Design, Placelessness, Housing Financialization

ASSESSING EMBODIED EMOTIONAL PERCEPTION IN CAMPUS PUBLIC SPACES UNDER MULTISENSORY INTERACTIONS: EVIDENCE FROM NANJING, CHINA

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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Campus public spaces are important settings for students' daily stay, social interaction, and psychological restoration. Their spatial quality not only shapes the organization of behavioral activities but also significantly influences emotional experience and overall well-being. Existing studies have largely relied on self-reported scales or single-sensory analyses and have paid insufficient attention to the combined effects of thermal, visual, and acoustic stimuli. This study develops an evaluation framework for campus public spaces. The framework links a thermal–visual–acoustic multisensory environment with embodied perception across physiological and psychological dimensions, providing an evidence base for health-oriented campus planning and design. Specifically, the study investigates the interactive pathways through which multisensory environmental stimuli shape embodied emotional perception and identifies the mechanisms underlying perceptual differences across space types. Three typical types of outdoor public space on university campuses in Nanjing, China, were selected as comparative cases: waterfront spaces, vegetation spaces, and square spaces. A dynamic walking experiment was conducted during the transitional season. During data collection, mobile microclimate monitoring and wearable physiological sensing techniques were integrated to synchronously record thermal conditions, visual exposure, and acoustic environments. Real-time physiological data were collected, including eye-tracking, electroencephalography (EEG), and electrodermal activity (EDA). These measurements were combined with self-reported emotion scales and multisensory comfort evaluations. Together, they formed a multisource dataset organized around the pathway of "physical environment-physiological representation-psychological response." In the analytical stage, a mixed-effects modeling framework was employed to examine the coupling relationships among physical environmental factors, physiological indicators, and emotional perception. Interpretable machine-learning methods were further introduced to identify key environmental predictors, nonlinear effects, and threshold characteristics. The results indicate that embodied emotional perception in university campus public spaces arises from the synergistic interaction of thermal, visual, and acoustic stimuli. The magnitude and pattern of these effects vary significantly across space types. First, the acoustic environment is the primary driver of negative emotional responses. Noise exposure significantly affects indicators such as EDA and EEG beta activity, reflecting marked stress responses. Second, visual and thermal perception exert significant compensatory effects on acoustic discomfort. Higher green view index and greater sky openness encourage more spontaneous visual exploration and effectively induce relaxation-related EEG alpha responses. Thermally comfortable conditions also substantially mitigate the negative emotions triggered by acoustic disturbance. Third, multisensory interaction effects show clear heterogeneity across space types. Waterfront spaces exhibit the strongest restorative benefits, characterized by higher positive emotional experience and lower physiological stress. By contrast, square spaces are more susceptible to the combined influence of noise, thermal load, and open exposure, resulting in more fluctuating emotional responses. Building on an empirical paradigm of embodied perception that integrates physical, physiological, and psychological dimensions, this study establishes a comprehensive framework for evaluating emotional perception in campus public spaces. The framework couples thermal–visual–acoustic multisensory environments with embodied

responses across multiple dimensions. It provides scientific and evidence-based support for the human-centered design, and optimization of campus environments.

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Keywords: emotional perception, campus public space, multisensory interactions, human-centered design

ASSESSING SPATIOTEMPORAL DYNAMICS OF RESTORATIVE BENEFITS ACROSS CAMPUS PUBLIC SPACES: ANALYSIS OF SELF-COLLECTED MULTI-SEASONAL STREET VIEW IMAGES

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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While the restorative benefits of campus public spaces for alleviating visual fatigue and promoting well-being are widely recognized, current research predominantly relies on static, single-season street-view data, neglecting crucial seasonal dynamics. To bridge this gap, this study proposes a novel spatiotemporal analytical framework that integrates multi-seasonal panoramic imagery with deep learning algorithms to unravel the spatiotemporal heterogeneity and driving mechanisms of restorative benefits in campus environments. Methodologically, mobile panoramic cameras were deployed to autonomously capture street-view images across the campus road network during summer and winter. Computer vision techniques extracted twelve morphological characteristics across pixel, semantic, and scene dimensions from the seasonal panoramic images. Concurrently, the TrueSkill algorithm was applied to pairwise image comparisons to derive subjective restorative benefit scores. By integrating these objective and subjective datasets, a Spatio-Temporal Graph Neural Network (ST-GNN) evaluation model was constructed to analyze dynamic response patterns under the coupled effects of seasonal variation and spatial location. Empirical results from the Sipailou Campus of Southeast University reveal three key findings:
(1) Temporally, summer restorative benefits were 28.3% higher than those in winter, confirming the moderating effect of vegetation, with canopy coverage and spatial openness exhibiting complementary seasonal effects;
(2) Spatially, the benefits demonstrated significant clustering, where green spaces and waterfronts substantially outperformed building clusters and plazas; (3) Mechanistically, the green view index, openness, and landscape naturalness showed significant seasonally variable effects. Notably, natural fluctuations explained 67% of the variance, surpassing the contributions of the built environment. By incorporating the temporal dimension into restorative assessment, this study transcends the limitations of traditional static analyses, enabling dynamic, fine-grained evaluations. The findings offer robust scientific evidence for seasonally adaptive design strategies and health-oriented campus renewal, underscoring the immense potential of integrating environmental psychology with artificial intelligence in built environment research.

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Keywords: restorative benefits, campus public spaces, seasonal dynamics, spatio-temporal analysis

BEYOND ACCESS TO EXPERIENCE: HOW PLACE MEANINGS SHAPE CONSTRAINT NEGOTIATION IN URBAN BEACHES

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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Urban blue spaces, such as beaches, play a critical role in supporting recreation, wellbeing, and social life in cities (1), yet access and use remain uneven across user groups. A critical gap in planning scholarship is understanding why unequal experiences persist even when physical access exists. This study examines how visitors experience and negotiate constraints in urban beaches by asking: What motivates visitors to use urban blue spaces? What constraints do they encounter on-site, and how do they negotiate them? How do visitors' place values and meanings influence these negotiation strategies?

Using a qualitative approach, the study draws on 46 semi-structured walking interviews conducted at Kitsilano Beach and Wreck Beach in Vancouver, Canada. A purposive sampling strategy ensured representation across diverse user groups. Interview data were analyzed using inductive thematic analysis (2), guided by the Leisure Constraints Negotiation (LCN) framework (3,4), while also incorporating concepts of place values and meanings (5). Leisure Constraints Negotiation (LCN) framework has been applied to study the interplay between visitors' motivations, constraints and negotiations in outdoor recreation, including urban green and blue spaces. Place value is a notion put forward by political economy scholars where the functional and tangible utility and accumulation of a space is prioritized over the user experience. On the other hand, place meaning, with its roots in human geography, emphasizes lived experience, affect, memory, and attachment Findings reveal four primary motivations for visiting urban beaches: nature contact, health and fitness, social interaction, and respite. Visitors experience a range of intrapersonal, interpersonal, and structural constraints, including crowding, accessibility challenges, safety concerns, environmental conditions, and social norms. Importantly, visitors actively negotiate these constraints through behavioral adaptations such as changing visit times, locations, activities, or modes of transport.

A key contribution of this research is demonstrating that place values and meanings—categorized as identity and belonging, respite, sensorial, and functional—significantly shape both the willingness to negotiate and the types of strategies employed. Visitors with strong values and meanings (e.g., identity or emotional connection) exhibit higher resilience and more diverse negotiation strategies, while those with weaker values and meanings are more likely to avoid negotiation or substitute sites. This highlights that uneven experiences in urban blue spaces are not solely determined by accessibility but are deeply mediated by subjective meanings. The study advances planning scholarship by extending the LCN framework to incorporate place-based meanings as a critical mediating factor in constraint negotiation. For practice, the findings suggest that planners and managers should address not only physical barriers (e.g., parking, shading, accessibility) but also support diverse user experiences that foster attachment and inclusion. Integrating user meanings into design and management can enhance equity, sustain visitation, and improve the overall quality of urban blue spaces.

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Keywords: urban blue spaces, leisure constraints, place values and meanings, visitor experience, urban beaches

BEYOND COMPUTER VISION: INTEGRATING MULTIMODAL LARGE LANGUAGE MODELS FOR THEORY-GROUNDED MEASUREMENT OF URBAN DESIGN FOR STREETSCAPE PERCEPTION

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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Measuring streetscapes at scale has been revolutionized by computer vision (CV), but current approaches often miss what matters most for human experience: how urban elements are spatially arranged. While semantic segmentation can quantify greenery and buildings, and object detection can count pedestrians, these methods do not capture spatial configuration, which is among the critical factor that distinguishes inviting streetscapes from unpleasant ones. Two streets with identical building coverage can evoke completely different feelings of safety depending on building placement, height relationships, and edge rhythms. Studies have shown that current CV-based approaches face two limitations. First, they are constrained by the labeling schemes of their training data, restricting what they can measure (Liu & Sevtsuk, 2024). Therefore, extending measurement to new constructs typically requires large-scale annotated datasets that are costly and time-intensive to build, which limit the inclusion of key micro-scale urban design features that matter for walkability and streetscape perception. Second, and more critically, CV quantifies the degree of presence of elements in an image but does not capture their spatial configuration (i.e., how elements are allocated and spatially interact with one another in an image).

This study introduces a framework that combines CV with multimodal large language models (MLLMs) to capture the micro-scale urban design features and spatial nuances that shape human perception. MLLMs can evaluate images via natural-language prompts, enabling the extraction of nuanced streetscape characteristics guided by theoretical definitions rather than by annotated training data (Xiao & Tang, 2025). In this framework, we prompt MLLMs with urban design qualities proposed by Ewing and Handy (2009), including enclosure and transparency, to identify micro-scale design features and to describe spatial configurations of elements. These micro-scale features and spatial configurations, with the latter converted into sentence embeddings, are then integrated with conventional visual streetscape measures to model human perception scores for safety, beauty, and liveliness using the MIT Place Pulse dataset (Dubey et al., 2016).

Results show that MLLM-derived features significantly improve accuracy in predicting safety, beauty, and liveliness compared to a baseline model with only CV-derived streetscape measures. Micro-scale elements, particularly the presence of decorative paving and visually permeable window at the ground floor, increase perceived safety. In addition, our findings align with the theoretical literature suggesting the importance of spatial configuration. For example, in terms of safety perception, phrases implying low enclosure, such as “street width exceed building height” and “long straight sightline extend,” negatively impact perceived safety. By combining conventional visual streetscape measures captured by CV with micro-scale urban design features and spatial configurations of street elements derived from MLLM, this study advances a scalable, theory-grounded approach for measuring streetscape perception and demonstrates the potential of MLLMs for understanding individual perceptions of the street environment and, more broadly, walkability.

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Keywords: Streetscape perception, MLLM, Spatial configuration, Micro-scale, Computer vision

CANONIZATION AND EVOLUTION OF AMERICAN DESIGN IDEAS IN CITIES OVER THE PAST 35 YEARS – PERSPECTIVES FROM THE RUDY BRUNER AWARD FOR URBAN EXCELLENCE

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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In the United States the practice and discipline of urban design emerged in the mid-1950s, first realized as an interdisciplinary endeavor connecting disparate and allied practices within the modernist movement. Yet in the subsequent decades, urban design became more of its own distinct discipline. With this increasing autonomy, the urban design discipline demanded the development and maturation of sovereign theories, values and practices to guide and support it (Avermaete & Gosseye, 2021; Krieger & Saunders, 2009). Award programs focused on city design and urban design projects became a critical and influential part of this maturation process and provided reinforcement for the newly established canon. Specifically, high-profile award programs organized by Progressive Architecture since the 1970s and the Rudy Bruner Award for Urban Excellence since 1987 became venues to recognize and promote urban design projects and broader city design agendas (Gosling & Gosling, 2003).

It is likely that the recognition of key urban design projects within these awards may have coincided with the canonization of specific urban design and ideas and values – arguably a common sign of a maturing discipline. To test this assumption, this research broadly questions which specific urban design ideas and values were recognized and promoted through the Rudy Bruner Award over the past 35 years, and how these ideas changed and evolved over time. Specifically, we engage the following questions: What award-winning design ideas and values have remained consistent within urban design practice, and what ideas and values have receded over time? Which ideas and values were more likely to be submitted and recognized in specific eras?

To engage these questions, we first manually reviewed the documents to identify the key design ideas and terms associated with them. Following the manual scanning, we completed multiple AI assisted reviews using Google Gemini, Google Notebook, and ChatGPT with the dull data set of documents. This research analyzes the frequency and longevity of key ideas and values in the statements of all 88 Rudy Bruner Award winners and a sample of 250 applications since 1987. From the work that has been completed to date, we find that some design ideas are persistent across the 35-year sample while several other key concepts are more ephemeral.

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Keywords: Urban Design Ideas, Trends in city design, Design idea evolution

CONFIGURATION OVER FORM: MORPHOLOGICAL RESILIENCE TO COMMERCIAL VACANCY AND THE JACOBS-HILLIER DEBATE

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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Commercial vacancy has become a central challenge of American urban retail planning, yet the built environment conditions that generate or mitigate it remain theoretically contested. Jane Jacobs argued that urban vitality arises from mixed use, density, age mix, and fine-grained block structure, conditions now codified in form-based codes and active frontage requirements. An alternative tradition, rooted in Bill Hillier's space syntax theory, locates retail persistence not in building form but in street network configuration: through-movement delivers the incidental pedestrian traffic that sustains storefronts regardless of their formal characteristics. This paper tests which framework better predicts morphological resilience to retail vacancy in New York City, and finds a paradox: the places that most resemble Jacobs's ideal are among the most vacant.

Using storefront vacancy counts from NYC's Storefront Registry (2019–2025), we first estimate a Bayesian spatial model (log-Gaussian Cox process via INLA/SPDE) that separates observed building-level predictors from a latent spatial risk surface Z(s). We then ask: what explains the geography of this residual vacancy risk? Regressing Z(s) at 3,122 mesh locations across all five boroughs on three layers of built-environment covariates (urban morphology, network accessibility, and neighborhood transition indicators), we find that morphology alone accounts for approximately 15% of spatial variance. A spatial lag specification captures the strong autocorrelation in vacancy patterns and raises pseudo-R-squared to 0.53. Finally, an interaction model tests which features moderate the effect of retail oversupply, measured as commercial square footage per walk-shed resident, on the vacancy surface.

Three findings reframe the Jacobs-Hillier debate. First, the Jacobs Paradox: locations with formally Jacobsian characteristics (compact building footprints, high FAR, mixed-use stock, construction age diversity) exhibit elevated vacancy risk, not reduced risk. Modern zoning mandates the morphological appearance of vitality without the organic market processes that originally produced it. Second, space syntax through-movement potential (choice at r = 1,500 ft) is the only statistically significant protective feature against oversupply-driven vacancy (coefficient = -0.050, p = 0.002). Storefronts on high-choice streets, those lying on many shortest angular paths through the street network, capture incidental pedestrian traffic and remain viable even where retail space exceeds demand. Hillier's configuration precedes Jacobs's form. Third, this protective mechanism fails at extreme oversupply: in Manhattan, where zoning mandates the most ground-floor retail, even well-connected streets cannot absorb excess supply, confirming a threshold effect. LiDAR-derived three-dimensional features (solar exposure, canyon geometry, facade complexity, ground-floor ceiling height) add delta-R-squared = +0.059 beyond the plan-view morphology model, establishing that building volume, not only plan, shapes the vacancy field.

The results carry direct implications for mixed-use zoning policy. A three-part pre-rezoning diagnostic emerges from the analysis: FAR heterogeneity and building compactness identify oversupply risk; space syntax choice identifies which oversupplied locations can sustain retail through natural pedestrian movement; and 3D LiDAR metrics identify whether the physical environment is conducive to ground-floor commercial use. All three inputs derive from publicly available data and are computable before a rezoning decision is made.

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Keywords: retail vacancy, space syntax, urban morphology, spatial econometrics, retail oversupply

CONTEXT-DEPENDENT RELATIONSHIPS BETWEEN STREET-LEVEL HEAT, SKY VIEW FACTOR, AND LANDSCAPE PATTERNS: TAKE VANCOUVER AS A CASE STUDY

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Individual Paper Presentation

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With climate change, some coastal urban regions once characterized by mild oceanic climates, are becoming increasingly hot in the summer. Urban design can modify urban landscapes to mitigate the Urban Heat Island (UHI) effect, but many strategies are constrained in high-density urban centers where large-scale layouts are difficult to alter. Yet noting that streets are among the more modifiable public spaces in high-density urban areas, this paper examines how relationships between street-level Sky View Factors (SVF), other indicators of urban morphology, and UHI are interconnected in different parts of a mid-latitude coastal urban area, Metro Vancouver. This study found an expected positive correlation coefficient of 0.484 ($p < 0.05$) between SVF and UHI intensity before considering other variables and spatial context. In areas that are equally distant from water bodies, have similar forest cover near streets, and possess comparable urban patch sizes, a 0.2 decrease in SVF (which ranges from 0 to 1) corresponds to a reduction of 0.08 °C–0.15 °C in urban heat island intensity (measured in ΔLST). Yet when supplementing aspatial OLS regression with geographically weighted regression (GWR), the study is able to identify how a number of commonly understood individual relationships between SVF, urban morphology, and UHI are actually substantially and consequentially variable in effect and significance depending on geographical context. In areas closer to the coast, SVF's effects on UHI are not significant, but with increasing distance to the sea, SVF has significant and greater influence on UHI intensity. Additionally, scale matters–water has a weak negative correlation (-0.291) with UHI intensity at a more granular 150m scale but moderate negative correlation (0.463) at the coarser scale of 900m gridded data; forest cover provides stronger heat island mitigation at small scales (0.73 at 150m; while 0.62 at 900m). The study illustrates how methods attentive to geographical context and spatial interactions can serve as the basis for more locally appropriate planning recommendations as well as for more robust generalizations about what can cause and mitigate UHI. Our findings suggest creating more street shading and promoting accessibility to heat sinks, especially in urban areas farther from the coast, while also offering guidance on integrating societal contexts more directly into UHI research as concerns about climate inequalities grow.

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Keywords: Landscape metrics, street canopy, sky view factor, street view image, land surface temperature

CREATING THRESHOLDS FOR TRANSPORT AND ENVIRONMENTAL METRICS TO LOWER INFECTIOUS DISEASE MORTALITY: IMPLICATIONS OF SYSTEMATIC AND RANDOM HETEROGENEITY

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Individual Paper Presentation

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Background: Walkable, pedestrian-friendly environments promote active lifestyles (Handy et al. 2002, Cao et al. 2009) and reduce chronic disease risks (Sallis et al. 2012). Since the onset of COVID-19, several U.S.-based studies have also linked built and social environments to COVID-19 mortality, though most rely on aggregated city- or county-level data (Wali and Frank 2021, Wali 2023). As evidence grows on the health benefits of walkability in reducing COVID-19 harm, key gaps in the literature remain. First, although high-resolution data is increasingly used, existing neighborhood-level studies are few and typically limited to specific cities or counties. To better understand the localized impacts of built and social environments on COVID-19 outcomes, large-scale, neighborhood-level assessments are needed. Second, despite increasing evidence on the protective role of walkability and related environmental features, this knowledge is rarely incorporated into transport or public health policy. One reason is the lack of measurable policy targets. Policymakers need clear, evidence-based benchmarks identifying the levels and types of environmental change that can cost-effectively improve health outcomes. This study addresses these gaps by examining how objectively measured environmental metrics relate to COVID-19 mortality at a granular, neighborhood (census tract) scale across California. We also study both systematic and random heterogeneity in environmental impacts to capture the complexity of environment–health relationships. In doing so, we identify potential thresholds or benchmarks that can inform environmental interventions aimed at reducing infectious disease mortality. Positioned within a built environment–social vulnerability lens, this research aims to develop evidence-based benchmarks (thresholds) to support policymakers at the California Department of Public Health (CDPH) and beyond in improving population health, especially for vulnerable and underserved communities. Methods: We conducted a cross-sectional study of all urban and suburban census tracts in California. A unique data infrastructure is created by integrating neighborhood-level, geocoded COVID-19 mortality data with high resolution, objectively assessed measures on built and social environments, transport accessibility, travel behavior, air pollution, greenspace availability, and other health indicators. Heterogeneous location-shape generalized additive models are formulated to account for both systematic and random heterogeneity in the spatial distribution of COVID-19 mortality. Results: Descriptive analyses revealed substantial variations in environmental and social characteristics across California neighborhoods, reflecting a wide range of contexts. Inferential analyses revealed that greater land use diversity, urban compactness, pedestrian-oriented design, and transit accessibility were associated with lower COVID-19 mortality rates. Neighborhoods with clean environment (in terms of PM 2.5 concentration, drinking water contaminants, and ozone concentration) and greater provision of green space had significantly lower mortality rates. In contrast, higher social vulnerability was linked to increased mortality. Demographic and travel behavior factors also exhibited significant associations. Methodologically, our findings revealed complex non-linear relationships and both random and systematic heterogeneity in environmental impacts, highlighting potential threshold, overdose, and trigger effects. Conclusions: This study contributes methodologically by capturing nuanced systematic and random heterogeneity using high-resolution statewide data. Our findings underscore the potential for retrofitting the built and social fabric of communities to improve population health and pandemic resilience.

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Keywords: Built Environment, Social Environment, COVID-19 Mortality, Benchmarks, Heterogeneity

DARK HERITAGE IN URBAN TRANSFORMATION: A COMPARATIVE STUDY OF HETEROTOPIC REGENERATION IN TAI KWUN AND HECHAI 1972

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Individual Paper Presentation

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Most urban regeneration projects rely on identifying a new economic use once the original function has ceased, which necessitates determining what stories should be carried forward from the building's past. This paper contributes to the discussion on the ethics and aesthetics of adaptive reuse by examining a particular category of heritage that 'causes or involves discomfort or uneasiness'. When buildings are associated with unsavory past activities or history, decisions about what to remember and what to forget become more complex. In such instances, the transition of function and spatial regeneration demand not only a narrative shift or rebranding, but also a nuanced negotiation with the building's architectural form, ensuring that the interventions within the fabric reconcile the building's original identity with its new role. Drawing on two prison-heritage revitalization projects—Hong Kong's Tai Kwun and Hefei's Hechai 1972—this paper employs on-site observation, field surveys, qualitative interviews, and archival research to examine how dark heritage, through strategic forgetting and selective remembrance, can be transformed into creative industry clusters. Comparative analysis is conducted across three dimensions: institutional transformation modes, architectural adaptations, and spatial narratives and experience design. By employing Michel Foucault's concept of 'other spaces', this study argues for the heterotopic nature of dark heritage, delineating the discourses and material representations that construct heritage and mirror mainstream social ideals. The results reveal that Tai Kwun's revitalization combines Victorian and contemporary architecture, carceral space, contemporary art, and postcolonial history, thereby reimagining itself as an integral part of Hong Kong's evolving cosmopolitan identity and as an international arts hub amid its decolonization process. In contrast, Hechai 1972, shaped by the reform of prison-run enterprises in China's industrial era, presents a multilayered collage of industrial production and penal labor, serving as a local exemplar of culture-led urban transformation in an inland, industrial-based city. Together, these cases demonstrate how spatial rewriting and selective remembrance can reconstruct collective memory, transforming dark heritage into sites of conscience, memorial museums, and incubators for creative industries. The dark heritage, when conceptualized as a heterotopic space, holds the potential to foster critical reflection, diversify public spaces, and shape urban branding. Its inherent dissonant past can be redesigned so that the uncomfortableness embedded in the building's physical fabric becomes an asset, contributing positively to its commodity value and place marketing. A crucial aspect of this transformative regeneration process is making careful decisions about which historical elements to retain or discard and how to represent their meanings, thereby creating a new sense of place and collective memory. Furthermore, the comparative analysis of the two cases offers a distinct Chinese perspective on heterotopic regeneration strategies for urban renewal in the Global South.

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Keywords: Dark Heritage, Heterotopic Regeneration, Urban Transformation, Adaptive Reuse, Heterotopia

DECODING THE SPATIAL EVOLUTION OF HISTORIC URBAN LANDSCAPES: AN "ANCHORING-LAYERING" APPROACH TO HERITAGE CONSERVATION AND URBAN REGENERATION

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Individual Paper Presentation

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In the midst of rapid urban renewal, contemporary urban design often struggles to weave deep historical contexts into living, everyday spaces. As a result, historic sites frequently turn into isolated "islands," physically and socially disconnected from the surrounding city. This research tackles a core challenge in placemaking: how designers can move beyond treating heritage as mere museum pieces and instead integrate it into the active urban fabric. We aim to bridge the gap between fast-paced development and the continuous spatial character of historic cities.

To address this, the study introduces the "Anchoring-Layering" framework, building on the UNESCO Historic Urban Landscape (HUL) approach. Using Nanjing, China, as a case study, we combine morphological analysis and GIS mapping to trace how the city's spatial layout evolved over centuries. The framework breaks down urban form into two interacting parts: "anchors" (key historical nodes or centers of activity) and "layers" (the gradual buildup of streets, boundaries, and neighborhoods). By mapping these interactions, we offer urban designers a practical tool to evaluate the historical forces that shape today's physical environment.

Our analysis reveals four main stages in the city's spatial evolution: 1) early formation around a single core anchor; 2) the shift toward multiple anchors alongside new spatial layers; 3) the rise and fall of various anchors as the city expanded; and 4) today's phase of "reverse overlay." In this current phase, modern large-scale development often aggressively overwrites older, finer-grained layers. We argue that this "reverse overlay" is the primary driver behind the loss of local identity and spatial fragmentation we see today. Interestingly, GIS assessments show that the invisible boundaries of historical "anchors" still strongly align with modern district borders, indicating that past spatial structures continue to influence the modern city.

Ultimately, this research offers a valuable perspective for urban design and placemaking. Rather than viewing heritage conservation as a static preservation effort, it frames urban morphology as a dynamic, evolving system. For design practice, the "Anchoring-Layering" approach provides a clear method to "read" a city's spatial history. By understanding these deep-rooted structural ties, urban designers and policymakers can avoid creating fragmented spaces. Instead, they can develop more sensitive, context-aware placemaking strategies that reconnect isolated historic islands and foster culturally vibrant, cohesive urban environments.

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Keywords: Historic Urban Landscape, Urban Morphology, Heritage Conservation, Spatial Evolution, Anchoring-Layering Theory

DESIGNING THE RESTORATIVE CAMPUS: A SPATIAL ANALYSIS OF GREEN INFRASTRUCTURE AND STUDENT MENTAL HEALTH

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Individual Paper Presentation

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Urban green infrastructure is widely recognized for its positive impacts on mental and physical health [1, 2]. However, its role as a designed and experienced component of the campus environment remains underexamined in urban design literature. As higher education institutions face increasing levels of student stress and depression, it becomes urgent to understand how campus landscapes function as everyday spaces that shape student well-being. This study investigates how campus built and natural environments influence students' psychological distress (PD), with a specific focus on how the spatial configuration of green spaces influences these outcomes.

Using survey data from 825 students at two large U.S. land-grant universities, this study employs ordinal logistic regression to assess associations between environmental and individual factors and levels of psychological distress, measured using the Kessler-6 scale [3]. Results indicate that more than two-thirds of the students (79%) experience moderate to severe psychological distress. Critically, engagement in physical activity within green spaces emerged as a statistically significant protective factor ($p < .05$) associated with lower levels of distress. These findings suggest that the mental health benefits of activity are mediated by the spatial and experiential qualities of the environments in which it occurs.

Prior research highlights the importance of restorative experiences and preferred environmental characteristics in shaping well-being [4, 5], which is consistent with evidence from this study showing that students gravitate toward a diverse hierarchy of campus landscapes - from large-scale arboreta to smaller, more intimate garden settings. This study contributes to placemaking and urban design research by positioning campus environments as critical yet underrecognized sites of everyday well-being. The findings underscore the need for campus planning and design strategies that prioritize a network of accessible, diverse, and experientially rich green nodes. By linking mental health outcomes to the qualities of designed environments, this research advances a place-based understanding of health and offers actionable insights for planners and designers.

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Keywords: Campus planning, Restorative environments, Student health, Evidence-based design

DEVELOPING SUCCESSFUL NEW COMMUNITIES IN THE 21ST CENTURY

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Individual Paper Presentation

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New towns were a significant topic of discussion 150, 100 and 50 years ago. However, is their consideration still pertinent today? How do new towns address contemporary challenges such as climate change, widespread urban sprawl, declining public transit usage, and the shift towards sustainability? The answer is simple and straight forward – new towns matter and are, in fact, experiencing a resurgence in the twenty-first century as an efficient and effective alternative to incremental and uncoordinated suburban sprawl (Forsyth & Peiser, 2021).

As existing cities reach capacity, new towns become a viable and reasonable alternative to the suburbs where over half of the U.S. population (52%) resides, up from only one-third of the population in 1950. New towns can incorporate resource efficient solutions such as renewable energy sources or water recycling from the outset. In addition, by incorporating compact mixed-use development and integrating multi-modal transportation options, they offer the potential for reduced car dependency (Ewing & Cervero, 2010). New towns often serve as testing grounds for innovation – the concepts of “smart cities” and “sustainable urbanism” were first implemented in new towns. New communities can also help provide suitable relocation environments for upcoming climate-driven migrations.

Reid Ewing, in his book titled Developing successful new communities, published by the Urban Land Institute in 1991, identified all new towns in the United States (using a list of predefined criteria) and used five most successful new towns to illustrate the key factors that contribute to the success of these communities particularly in the area of infrastructure, design, and development practices that foster livability and economic sustainability (Ewing, 1991). The purpose of this research is to create an updated version of the book by emulating the methods used by Ewing, 1991.

To identify all new towns currently in the United States, we first created a set of updated criteria. We then contacted 50 largest Metropolitan Planning Organizations (MPOs) in the country and asked for lists of new towns in their respective regions that fit our criteria. We used Google Satellite Imagery and Google Street View to verify all projects on the lists received from the regions. Finally, we selected five top performing new towns for in depth analysis: Mueller (TX), Central Park (CO), Baldwin Park (FL), Otay Ranch (CA), and Daybreak (UT).

A central premise of the “new town” concept is to create communities that outperform conventional suburban development. Modern new towns are expected to outperform the neighborhoods by which they are surrounded by their careful consideration of the 5Ds or density, diversity of uses, street design, destination accessibility, and distance to transit. We used American Community Survey data to compare several commonly used indicators for the five communities we selected and cities or counties where they are located.

The findings reveal limited overlap between Ewing’s original list and contemporary examples, reflecting a shift in the criteria defining successful new communities. Today’s new towns are held to higher standards of design, livability, and sustainability. Successful developments over the past two decades rely heavily on public–private partnerships and strong municipal involvement. They prioritize walkability and bikeability, expand green infrastructure, and incorporate climate resilience measures such as flood protection, green roofs, and sustainable transportation systems. Many also include significant amounts of deed-restricted affordable housing.

These communities are generally denser than earlier new towns, with multifamily housing playing a critical role. However, increasing density without providing diverse ownership options can place upward pressure on housing prices and lead to exclusionary outcomes, limiting access to homeownership for some populations.

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Keywords: New Towns, Master Planned (MPC), New Communities

DOES MYSTERY MOVE PEDESTRIAN? VALIDATING PERCEPTUAL PREFERENCE INDICATORS TO OBSERVED PEDESTRIAN VOLUME

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Individual Paper Presentation

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Walking is recognized not only as transportation but as a perceptual experience shaped by the urban environment (Gehl, 2011; Saelens & Handy, 2008). A critical gap exists in current research: research on mystery as a dimension of environmental preference has focused on preference without addressing actual walking behavior, while mainstream walkability research often overlooks mystery as a significant variable. This gap is reflected in tools such as Walk Score, which remain confined to functional indicators centered on accessibility and safety, failing to capture the perceptual experience elements such as pleasure—the higher-order stages of walking needs (Alfonzo, 2005; Ewing & Handy, 2009).

To bridge this gap, this research utilizes the Information Preference Model (Kaplan & Kaplan, 1989), which posits that humans desire both to understand the current environment and explore beyond it. Within this model, four dimensions—coherence, complexity, legibility, and mystery—emerge from the axes of tense of information (Present vs. Future) and quantity of Information (Simple vs. Rich). Mystery, defined by future and richness, triggers exploration motives through spatial cues such as curvature or enclosure (Gimblett et al., 1985). Building on Alfonzo's (2005) hierarchy of walking needs: once foundational conditions are met, mystery as perceptual pleasure becomes an operative driver of route choice, stimulating hedonic needs that induce detour behavior beyond the shortest path (Guo & Loo, 2013), and may manifest at the aggregate level as increased pedestrian volume at nodes offering high perceptual quality, contributing to urban vitality (Sung & Lee, 2015).

While research methods have evolved from visual audits to deep learning-based Google Street View (GSV) analysis (Chen et al., 2022), mystery indicators have never been systematically developed or applied to empirical behavior data, and research validating the relationship between environmental preference and actual walking behavior remains extremely scarce (Basu et al., 2023). This research therefore addresses two questions: first, what relationships exist between node-level spatial indicators derived from Kaplan and Kaplan's (1989) four dimensions and observed pedestrian volume, after controlling for network centrality and land use intensity; and second, whether mystery-related spatial indicators enhance the explanatory power of observed pedestrian volume beyond models of coherence, complexity, and legibility, suggesting an independent behavioral mechanism of exploration motives.

This research utilizes sensor-based pedestrian volume data from five cities—Philadelphia, Seoul, Melbourne, Zurich, and Berlin— selected for variation in urban morphology and street network. A total of 1,199 nodes serve as the unit of analysis. Network centrality (betweenness and closeness) and land use mix are controlled to isolate perceptual contribution from configuration-driven natural movement (Hillier et al., 1993). Coherence, complexity, and legibility are operationalized following Ewing & Handy (2009), while Mystery is operationalized by mapping Kaplan's theoretical axes to physical indicators: tense (future) is represented by elements inducing visual delay (e.g., curvature, slope), and quantity (richness) by spatial depth beyond the immediate view (e.g., enclosure). Spatial indicators are extracted from GIS data across multiple scales (15m, 150m, 300m) and semantic segmentation of GSV. A nested model comparison is conducted with a base model of three preference dimensions and a full model adding mystery indicators.

This research makes two contributions. First, it extends preference theory to actual walking behavior by demonstrating whether and under what conditions mystery functions as an independent predictor beyond network configuration. Second, it offers a perceptual walkability framework that complements existing functional metrics to pedestrian-friendly urban design and policy.

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Keywords: Environmental Preference, Mystery, Pedestrian Volume, Walkability, Urban Design

ENHANCING URBAN THIRD PLACES: THE IMPACT OF OUTDOOR SEATING ON COFFEE SHOP VISIT VOLUME

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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Urban third places refer to social surroundings separate from the two usual social environments of home and the workplace (Oldenburg & Brissett, 1982). These spaces play a crucial role in urban living by providing settings for community engagement, relaxation, and social networking outside the structures of home and work (Jacobs, 1992). Given the importance of urban third places, planners have a responsibility to create policies that facilitate their desired characteristics. Previous study have identified outdoor seating as a key feature in street settings that increases pedestrian traffic volumes and contributes to a vibrant city environment (Mehta & Bosson, 2021). Given that outdoor seating attracts people to the street, does it also promote increased engagement and consumption at urban third places? Based on this hypothesis, the present study examines the following research questions: (1) Does outdoor seating increase visit volume in urban third places? (2) If so, what characteristics of outdoor seating, such as quantity, density, and color, lead to a greater increase?

This study uses coffee shops as an example of urban third places in New York City to examine the impact of outdoor seating on visit volume. As a bustling metropolis, New York City boasts a vibrant sidewalk café culture, making it an ideal setting to explore the effects of outdoor seating on third place.

I employ five sets of data from 2019 to 2023: location, rating, and characteristics of coffee shops; characteristics of coffee shop outdoor seating; visit volume of coffee shops; surrounding land use patterns; and surrounding demographic characteristics. The sample consists of businesses labeled as “coffee shop,” identified through Google Maps’ Points of Interest (POI). The dependent variable, weekly visit volume of coffee shops, is collected from Dewey, a data provider. Independent variables include the number of outdoor seatings, seat density of the outdoor seating area, color of seating, and the presence of shade. These variables are be captured through an image recognition process using pictures from Google Street View—a computational method that has been applied in previous research and has demonstrated feasibility in evaluating public space elements at scale (Yan et al., 2025). Control variables include (1) coffee shop rating and interior design characteristics from Google Reviews and (2) development and demographic characteristics of immediately adjacent blocks, collected from the New York City Automated City Register Information System (ACRIS) and the Census Bureau.

A total of over 3,000 coffee shops were identified after integrating multiple datasets. To detect outdoor seatings, a Mask R-CNN–based image recognition model was trained using a separately curated and manually labeled image dataset. The model achieves an accuracy of 82% when evaluated using tolerance thresholds of 5, 10, and 15 units. In addition, Google Reviews were collected for the identified coffee shops, including information on overall ratings, review text, and price levels. The review text is further analyzed using Aspect-Based Sentiment Analysis to extract perceptions of different attributes of the coffee shop.

To account for the over-dispersed distribution of visit volumes, this study employs a negative binomial regression model to estimate the effects of outdoor seating. I expect the results to confirm that (1) outdoor seating has a positive impact on coffee shop visit volume and (2) specific characteristics of outdoor seating that influence visit volume.

This study contributes to the urban third place literature by demonstrating the feasibility of utilizing outdoor seating to enhance urban third place. Practically, this study can guide planners in encouraging more outdoor seating and recommending specific characteristics to foster social activities in urban third places.

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Keywords: Outdoor seating, Coffee shops, Networking Space, Social Capital, Third Place

EXTENDING THE 5DS: THREE-DIMENSIONAL URBAN FORM, STREET-LEVEL ENVIRONMENT, AND PEDESTRIAN ACTIVITY IN TRANSIT-ORIENTED DEVELOPMENT

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Individual Paper Presentation

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Transit-oriented development (TOD) positions pedestrian activity as a principal indicator of station-area performance, yet its measurement remains subject to two interrelated methodological limitations. On the predictor side, the built environment continues to be operationalized predominantly through two-dimensional (2D) indicators within the "5D" framework, neglecting the three-dimensional (3D) urban form and street-level spatial qualities that condition pedestrian experience (Cervero & Kockelman, 1997; Ewing & Cervero, 2010). On the outcome side, pedestrian activity is largely inferred from indirect proxies such as transit ridership, despite the growing availability of scalable direct-observation methods including Google Street View (GSV)-based human detection (Yin, 2015; Qiang et al., 2022). These two gaps are not independent: measurement imprecision in the dependent variable attenuates the explanatory gains achievable through improved predictors.

To address these gaps, this study integrates 3D urban form variables and computer vision (CV)-based street environment indicators into conventional TOD analysis and directly measuring pedestrian activity using GSV-based human detection. The study asks four questions: (1) To what extent do 3D urban form variables explain pedestrian activity beyond 2D indicators? (2) Do CV-based street environment indicators provide additional explanatory power beyond 3D variables? (3) Which variables across 2D, 3D, and CV domains exert the strongest influence? and (4) How do these effects change before and after new transit line openings?

The analysis covers 475 station areas in the Seoul metropolitan region using multi-scalar buffers of 400m, 800m, and 1,600m. The primary analysis focuses on Seoul, while comparative cases from London and Los Angeles are incorporated to examine cross-context variation. The dependent variable is derived from aggregated pedestrian counts detected from GSV images and applying a suitable statistical transformation. Independent variables include: (1) fourteen 2D TOD indicators based on the 5D framework (e.g., density, land-use mix, intersection density, and accessibility); (2) 3D urban form variables, including volumetric density, sky view factor (SVF), and height-to-width (H/W) ratio; and (3) a Pedestrian Environment Index (PEI) derived from GSV-based semantic segmentation, including façade transparency, active frontage, entrance density, and visual openness. Transit ridership and vehicular traffic serve as control variables.

Hierarchical regression (ΔR^2) and geographically weighted regression (GWR) are applied across spatial scales to evaluate incremental explanatory power and spatial heterogeneity. A quasi-experimental before–after design leveraging the opening of new transit lines is further employed to isolate the causal influence of street-level environmental changes on pedestrian activity. Comparative analyses of newly opened lines in Seoul (Sillim Line), London (Elizabeth Line), and Los Angeles (K Line) tests whether these relationships hold across transit-oriented, historically layered, and automobile-oriented contexts.

The findings are expected to show that 3D urban form and pedestrian environment variables capture significant dimensions of pedestrian activity not explained by conventional 2D measures, with effects varying across spatial scales and urban contexts. By extending TOD research beyond 2D metrics toward a three-dimensional, pedestrian-

centered analytical framework, this study contributes empirical evidence for context-sensitive urban design strategies.

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Keywords: TOD, Pedestrian Activity, 3D Urban Form, Computer Vision (CV), Google Street View (GSV)

FROM FACILITY PROXIMITY TO BEHAVIORAL ADEQUACY IN SHANGHAI'S 15-MINUTE LIVING CIRCLE EVALUATION

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Planning for 15-minute living circles has become a prominent placemaking strategy for shaping communities where residents can meet everyday needs within walkable distance. Yet most existing evaluations assess whether facilities are nearby rather than whether places actually function in rhythm with how residents live—what they do, when specific demands arise, and whether corresponding services are available at those times. Community service demand is structured by daily activity patterns, with distinct temporal requirements for dining, childcare, healthcare, eldercare, and recreation varying across community types. Living circles that appear adequately served under conventional assessments may still experience substantial mismatch between the actual rhythms of daily life and the functional capacity of place. This paper asks: how does behavior-based activity inference from mobile phone signaling data change the diagnosis of service-place mismatch within Shanghai's 15-minute living circles, and what does this reveal about the alignment between community design and daily life?

Using Shanghai as an empirical case, the study develops a behavior-based framework integrating mobile phone signaling data, household activity-travel survey data, and community service information. Signaling records are first processed to identify stay points and reconstruct daily activity chains. A survey-calibrated hidden Markov model then infers the activity type of each stay by combining transition probability matrices derived from household travel survey data with observable features from signaling records—including time of day, stay duration, home-work anchor status, surrounding POI composition, and service opening-hour context—allowing survey-grounded behavioral patterns to constrain and calibrate the inference from large-scale passive data. Inferred activity-specific demand is aggregated to 15-minute living-circle areas as the planning units of analysis, and matched against the effective supply of corresponding community services to evaluate temporal mismatch across service types and time periods. Results are compared with conventional static assessments based on facility presence and proximity.

Three findings emerge. First, 43% of living circles classified as adequately served under static evaluation are reidentified as mismatched once activity-specific temporal demand is incorporated. In CBD-oriented areas such as Lujiazui, midday worker-serving demand reaches 3.6 times the citywide average, with pressure concentrated in dining, convenience retail, and quick-access daily services during weekday peaks. Second, in aging inner-city communities such as Jing'an Temple, mismatch is concentrated not in general facility counts but in eldercare, rehabilitation, and community health services, where the daytime demand-supply ratio is 29% above the city average despite above-median overall facility density. Third, in socially mixed communities such as Hongqiao and Tianshan, mismatch is more temporally heterogeneous, with up to 2-fold variation in peak-period burden across service categories, most pronounced in childcare, family-oriented retail, and flexible daily support services.
The paper advances 15-minute living-circle planning from static accessibility measurement toward behavior-calibrated place adequacy evaluation. For placemaking practice, it shows not only where services are insufficient but what kinds of services should be strengthened, at what times, and in which community types—supporting design interventions that align the functional mix, operating hours, and spatial arrangement of community services with the actual rhythms of daily life rather than aggregate facility inventories.

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Keywords: 15-minute living circle, placemaking, mobile phone signaling, activity-travel behavior, service mismatch

FROM MUSEUM PRECINCT TO PUBLIC REALM: REORGANIZING PUBLIC HISTORICAL EXPERIENCE THROUGH PLACEMAKING IN TWO MUSEUM DISTRICTS IN CHINA

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Historic museums in Chinese city centers are usually understood as cultural institutions, architectural works, or heritage conservation projects. This paper argues that their central task is not simply to represent history, but to reorganize the spatial-temporal conditions under which public historical experience can take shape. In many urban settings, history has already been neutralized by competing urban processes: in one case, reduced to commodified surface imagery; in the other, flattened into background by metropolitan modernity. In this context, placemaking is not merely a matter of producing local character or historical atmosphere. Rather, it becomes a counteracting mechanism that restores the depth, rhythm, and accessibility of history as public experience.

The paper develops this argument through a comparative study of two museum districts: the China Imperial Examination Museum in Nanjing and the Deshou Palace Site Museum in Hangzhou. Both are located within major heritage areas and both sit at the intersection of tourism, historical memory, and pedestrian circulation. Yet they respond to different failures of historical placemaking. The Imperial Examination Museum confronts a condition of overexposed history within the highly themed commercial environment of the Confucius Temple district. Deshou Palace, by contrast, responds to the relative invisibility of historical ground within the modern city center.

The paper asks three related questions. First, how do these museum districts respond to opposite failures of historical placemaking in the contemporary city? Second, through what spatial and temporal strategies do they reorganize pedestrian movement, public access, and patterns of pause and perception? Third, what do these contrasting strategies reveal about the urban design role of museum districts in restoring public historical experience?

Methodologically, the paper combines figure-ground mapping, sectional analysis, pedestrian sequence mapping, and public-space typology analysis to examine how each museum district reorganizes paths, thresholds, ground conditions, and interfaces with the surrounding city. These tools are paired with a rhythm-based analysis of walking, pause, delay, sensory transition, and visibility. Drawing on Lefebvre's rhythmanalysis, the paper treats museum districts not as static heritage settings, but as spatial-temporal environments that structure different conditions of historical perception and public experience.

The comparison identifies two contrasting responses to failed historical placemaking. At the China Imperial Examination Museum, placemaking works through slowing, delay, and filtering. A reflecting pool and an elongated descending route interrupt the fast, noisy rhythms of the surrounding commercial district, producing a slower transition into cultural space. At Deshou Palace, placemaking works through unfolding and reconstruction. Steps, plazas, reconstructed markers, and the layered ground order of the palace complex re-establish a historically legible field of movement and pause within the modern city center.

The paper shows that the contemporary value of historic museum districts lies in repairing opposite failures of historical placemaking by restoring the conditions through which public historical experience becomes possible. In this sense, museum districts are not passive containers of the past, but active urban environments that make historic ground publicly legible, walkable, and inhabitable.

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Keywords: historic museum districts, placemaking, historical visibility, rhythmanalysis

HIGH-RISE DEVELOPMENT AND ATTITUDES TOWARD HISTORIC URBAN LANDSCAPES : A SERIAL VISION EXPERIMENT AT JONGMYO SHRINE, SEOUL

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Individual Paper Presentation

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Historic urban landscapes face growing pressure from high-rise development in dense Asian cities. Jongmyo Shrine, a UNESCO World Heritage site in Seoul, faces a similar challenge as the proposed redevelopment of the adjacent Sewoon District 4 threatens its visual integrity. Korea Heritage Service has warned that permitting buildings up to 142 meters in height could jeopardize Jongmyo's World Heritage status, citing UNESCO's emphasis on visual integrity as a core condition of Outstanding Universal Value. Precedents from Liverpool and Vienna demonstrate that high-rise development encroaching upon historic skylines has led to heritage delisting or endangered status. Yet despite the urgency of this conflict, existing studies have largely relied on single-dimensional visual preference measures from static viewpoints (Bu et al., 2022), leaving the full attitudinal impact of such development on historic urban landscapes underexplored.

While these approaches capture immediate aesthetic reactions, they remain limited in explaining how people respond to historically significant places in broader evaluative terms. This study therefore asks: how does high-rise development affect public attitudes toward historic urban landscapes, and through which attitudinal dimensions does this impact operate?

Drawing on the tripartite attitude model (Breckler, 1984; Eagly & Chaiken, 1993), which treats attitude as comprising distinct yet interrelated affective, cognitive, and behavioral dimensions, this study conceptualizes public attitudes toward historic urban landscapes in terms of affective response, cognitive appraisal of historical atmosphere, and behavioral intention. In this framework, public attitudes toward historic urban landscapes are conceptualized in terms of affective response, cognitive appraisal of historical atmosphere, and behavioral intention. This framework extends recent applications of the Cognition-Affect-Behavior model in historic cultural districts (Huang et al., 2025) to an experimental perception study and addresses a gap between attitude theory and landscape evaluation in urban design.

While most landscape perception studies rely on single static viewpoints, this study adopts serial vision (Cullen, 1961) to capture the sequential experience of moving through a historic urban landscape. Two sets of ten sequential photographs were prepared along the visitor route within Jongmyo Shrine. Set A preserves the existing landscape sequence, whereas Set B retains the same sequence but introduces digitally inserted high-rise buildings only where the Sewoon District 4 site becomes visible along the later part of the visitor route. Approximately 200 participants are randomly assigned to one set in an online survey. Affective response is measured for each image on a 7-point Likert scale. After viewing the full sequence, participants rate cognitive appraisal of historical atmosphere, behavioral intention to revisit, and overall landscape impression using composite scales. Partial least squares structural equation modeling (PLS-SEM) is used to examine how these attitudinal dimensions shape overall landscape impression and how high-rise development affects each dimension.

This study proposes a tripartite framework for evaluating attitudes toward historic urban landscapes, offering a theoretically grounded alternative to single-dimensional preference measures. Preliminary findings suggest that high-rise development significantly diminishes overall landscape impression, with the three attitudinal dimensions responding differently to visual intrusion. This implies that the impact of high-rise development on historic urban landscapes extends beyond aesthetic response alone. The study provides empirical support for heritage buffer zone

policies, contributes to the refinement of Visual Impact Assessment, and offers planners a multidimensional framework for evaluating visual impact in heritage contexts.

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Keywords: High-Rise Development, Historic Urban Landscape, Tripartite Attitude Model, Serial Vision, Visual Impact Assessment

LINKING RESTORATIVE BENEFITS OF LANDSCAPE FEATURES IN URBAN GREEN SPACES TO LOW-CARBON AWARENESS AND BEHAVIOR: EVIDENCE FROM A LONGITUDINAL STUDY

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Rapid urbanization has driven the accumulation of anthropogenic carbon emissions, exacerbating ecological degradation and posing increasing risks to human health (Fuller et al., 2022). Urban green spaces are increasingly recognized as an important pathway for achieving co-benefits for both human and environmental health (Schwartz et al., 2019). In particular, restorative experiences derived from green space recreation enhance individuals' perceived value of nature, motivating low-carbon and other pro-environmental behaviors through self-interest, while simultaneously attenuating self-focused attention and fostering more collectively oriented pro-environmental tendencies (Y. Wang et al., 2025; Zhou et al., 2023). However, existing empirical studies have largely examined restorative benefits and the promotion of low-carbon behavior in isolation, with limited evidence integrating them within a unified analytical framework. Moreover, how specific landscape features within urban green spaces shape restorative experiences and subsequently influence low-carbon awareness and behavior remains insufficiently understood, thereby limiting the translation of research evidence into actionable spatial design strategies. To address these gaps, this study examines two core questions: (1) which landscape features in urban green spaces are associated with sustained restorative benefits; and (2) whether long-term restorative benefits derived from these features enhance individuals' low-carbon awareness and behavior, and how this occurs.

This study employs a field-based longitudinal design with a sample of 80 residents from Chengdu, China. Participants were instructed to visit urban green spaces with diverse landscape features at least twice weekly for eight consecutive weeks, with each visit lasting over 30 minutes. Before and after each visit, physiological indicators (heart rate, blood oxygen saturation levels, and stress levels) were recorded using wearable devices, and psychological responses were assessed using the Positive and Negative Affect Schedule (PANAS). During each visit, participants captured photographs accompanied by Self-Rating Restoration Scale (SRRS) scores. Throughout the study period, participants' low-carbon awareness and carbon footprint were recorded biweekly. In parallel, an additional sample of 80 residents from the same area was recruited as a non-green-space recreation control group.

Two core linear mixed models (LMMs) are currently being developed for the present study. The first model examines associations between landscape features in urban green spaces and restorative outcomes. Landscape feature indicators (e.g., green view index, openness, and water proportion) are derived from participant-generated photographs using semantic segmentation and specified as predictors, while photo-level SRRS scores serve as outcomes to identify landscape features associated with perceived restoration. Subsequently, visit-level changes in psychological and physiological indicators from pre- to post-visit measurements are used as restorative outcomes to assess the effects of the identified landscape features on short-term restoration. The second model examines associations between long-term restorative benefits and low-carbon awareness and behavior. Based on visit-level restorative effects, a cumulative restoration indicator is constructed at the individual level and specified as a predictor, while biweekly measures of low-carbon awareness and carbon footprint serve as outcomes to assess its

longitudinal effects. Together, the two models establish an integrated pathway linking landscape features, restorative effects, and low-carbon outcomes, providing evidence-based design implications for urban green spaces that support both human well-being and low-carbon transitions.

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Keywords: Urban Green Space, Landscape Features, Restorative Benefits, Low-carbon Awareness, Low-carbon Behavior

MODIFYING STREETS FOR AUTONOMOUS BUS TRANSIT: AN EXPERT ASSESSMENT OF INFRASTRUCTURE AND DESIGN ELEMENTS

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Autonomous vehicle (AV) technology has introduced new possibilities for the future of public transit in the United States. Over half of U.S. states have tested autonomous shuttles (AS)—a type of driverless minibus—through pilot programs. However, a pressing challenge emerges: are current street designs, shaped by decades of car-centric development, ready for AV-based transit?

While the complete streets concept has long aimed to create multimodal, inclusive road systems, little research has systematically assessed how these principles align with the operational needs of autonomous transit. Studies investigating the physical infrastructure requirements for real-world transit AV applications also remain limited and paid minimal attention to U.S. cases.

To fill this gap, we conduct a national expert survey on autonomous bus transit to assess the suitability of existing American streets for early-stage SAE Level 4 AV operations, the level expected to dominate AV applications in the next decade. We seek to answer these two main questions:

1. Which street infrastructure and design elements do experts perceive as improving the safety and efficiency of autonomous bus transit operations?
2. How can expert recommendations on prioritizing the modification of specific elements inform design strategies to support transit automation?

The survey participants include attendants from all AS pilot programs in the U.S. and AV engineers and researchers. They evaluated 30 street design elements, selected from guides and blueprints published by NACTO on complete streets and autonomous urbanism and relevant literature, across six domains:
1. Vehicular way: 1) Dedicated AS lane, 2) multiple lanes, 3) widened lanes, 4) smooth surface, 5) defined edge, 6) navigable geometry, and 7) enhanced marking.
2. Intersection design: 1) Consistent layout, 2) speed calming, 3) courtesy cutout, 4) bike box, and 5) clear signage.
3. Sidewalk zone: 1) Dedicated sidewalk, 2) street furniture zone, 3) enhancement zone, and 4) widened shoulders.
4. Bicycle infrastructure: 1) Conventional bike lane, 2) buffered bike lane, 3) physical barrier, 4) in-street curbs, and 5) side path/trail.
5. Transit infrastructure: 1) In-lane bus stop, 2) pull-out bus stop, 3) bus bulb stop, and 4) bus shelter.
6. Supportive infrastructure: 1) Street lighting, 2) visibility management, 3) surface drainage, 4) digital connectivity, and 5) construction alerts.

The survey collects responses at two levels. At the element level, respondents evaluate each street design element based on its perceived influence on operational safety and operational efficiency. At the domain level, respondents provide overall recommendation ratings for modifying each of the six domains. This approach addresses a core concern: perceived operational benefits do not always translate into support for implementation. Responses are recorded on a 7-point Likert scale and analyzed using an ordered logit model to identify the most essential design elements to prioritize. Currently, data have been collected from 14 active AS pilot sites representing urban,

suburban, and institutional campus contexts. Example sites include VIVA Shuttle (Palo Alto, CA), Move Nona (Orlando, FL), and Navy Yard AV (Philadelphia, PA).

Expected results include: (1) descriptive statistics identifying key street design elements for AS operation; (2) ordered logit model results revealing which elements significantly influence experts' prioritization of modifications; (3) real-world illustrations of infrastructure gaps and redesign needs in AS pilot sites; and (4) actionable recommendations for adapting street design guidelines to integrate autonomous bus transit into the complete streets framework. Overall, this study provides timely insights to help planners and policymakers prepare American streets for autonomous transit and reduce car dependency through innovative mobility solutions.

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Keywords: Autonomous transit, Autonomous shuttle, Autonomous vehicle, Street Design, Complete Street

MYOPIC MARKET OR STIFLING STATE?: INVESTIGATING THE SOURCE OF MULTI-FAMILY HOUSING HOMOGENEITY

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Individual Paper Presentation

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New multifamily housing in the United States is routinely criticized for its bland architecture. From The Atlantic to Wired and The New York Times, journalists have been writing about a growing wave of sterile buildings since at least 2015 (Anderson, 2020). In dozens of articles and in countless community meetings across the U.S., multifamily development is often accused of being boring. Yet, there is no consensus as to the root causes of this supposedly uninspiring urban form. Getting to the heart of many ongoing debates in planning and urbanism, two theories attempt to locate a source for this homogeneity. The first perspective asserts that homogeneous urbanism is linked to regulatory limitations imposed by the state (Bertaud, 2018; Jacobs, 1961). The second perspective believes that homogeneous urbanism is an expression of what that private sector (e.g. capitalism) feels is the safest to construct in order to guarantee profit (Weber, 2015; Harvey, 1989). Consequently, this research seeks to provide contextualized answers to the question: Is urban homogeneity produced by the market or the state? By interviewing professionals involved in construction financing, this paper tests the theory that a fragmented, uncoordinated approach to urban development results in a more heterogeneous mélange of urban design.

Approach and Methodology

As the experience of seeking construction financing is common to nearly all multifamily developers in the United States, this particular site of negotiation is rich for theory testing. Because negotiations between a developer and their financing partners is a private, closed-door process, the interview is the only feasible method of teasing out the nuances. The qualitative data used in this article are sourced from 54 semi-structured video and phone interviews conducted between October 2023 and September 2024. Centering the 'black box' of private loan approvals for new multifamily construction, this approach illuminates how a fragmented system of construction lending affects market-rate multifamily housing production.

Findings

Using direct quotations from real estate professionals throughout the U.S., this research clearly demonstrates how the finance sector has an apparent preference for reproducing actually existing structures with proven cash flow. While finance and design are typically understood to be separate components of the housing production process, this research reveals the inextricable nature of finance and urban design. In real estate finance, uncertainty is the enemy. Under the logic of the participants in my research, homogeneity is prized as a symbol of financial stability and security. This leads actors to behave in the most risk-averse way they know how: by replicating the actually existing built environment. On the whole, participants expressed a rationale that reifies cash-flowing assets to the exclusion of housing products that may not yet have comparable assets against which to project their future value.

Relevance and Implications

In combination with other forces, the opinion of financial professionals helps shape the production of multifamily housing across the U.S. While finance has been understood to have power, the individuals who determine construction loan financing have not typically been identified as exercising influence over urban design. This research helps expand the understanding of who shapes cities, an implication relevant to both practitioners and educators. Outside of the applied urban development process, the theoretical implications of this research challenge neoclassical economic assertions that the uncoordinated decisions of individual market actors will lead to architectural diversity. Instead, market actors are intensely drawn toward the safety and security provided by replication of the actually existing built environment.

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Keywords: Housing production, Housing financialization, Urban design, Architecture, Planning theory

OPERATIONALIZING WILLIAM H. WHYTE'S THEORY: VIDEO-BASED TRACKING OF HUMAN MOBILITY PATTERNS IN PUBLIC SQUARES

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This study revisits William H. Whyte's theory by leveraging recent advances in computer vision to empirically examine human mobility and behavioral patterns in a public square. Whyte's foundational work, The Social Life of Small Urban Spaces (1980), emphasized the importance of micro-scale spatial elements in shaping human behavior. While recent studies have applied computer vision and trajectory data to quantify pedestrian movement and social interaction (Niu et al., 2022; van Ameijde et al., 2025), two critical gaps remain. First, key concepts in Whyte's theory have rarely been systematically operationalized into measurable variables. Second, empirical approaches that integrate AI-based methods with high-resolution data to provide a robust and scalable analytical framework remain limited.

Our study addresses these limitations by developing a video-based tracking framework and applying it to a case study of Piazza di Spagna in Rome. Using high-resolution webcam footage, we employ a combination of YOLOv8 object detection and DeepSORT multi-object tracking to extract individual-level trajectories from over 200,000 frames of daytime video. This approach enables large-scale behavioral observation with fine temporal and spatial resolution, overcoming the limitations of traditional manual observation methods.

From these trajectories, we derive key behavioral metrics, including position, speed, and interaction states. Individuals are classified into behavioral categories—walking, standing, and sitting—based on velocity thresholds, while social interactions are inferred from spatial proximity and co-presence patterns. Building on prior research that highlights the importance of social interaction and spatial configuration in public space vitality (Chen et al., 2025; Loo & Fan, 2023), we operationalize Whyte's six core concepts into measurable variables: stay, triangulation, time-binned population, behavior, sun, and edge.

The results reveal strong empirical support for several of Whyte's propositions. First, stationary behaviors such as standing and sitting are spatially concentrated along edges and near seating areas, rather than uniformly distributed. Second, social interactions emerge in localized clusters, often facilitated by spatial features that enable triangulation. Third, human activity exhibits clear temporal variation, with population density and behavioral composition shifting over time. Finally, environmental conditions such as sunlight exposure significantly influence both movement and dwell patterns, underscoring the role of microclimatic factors in shaping public space use.

By integrating computer vision techniques with urban theory, this study provides a scalable and data-driven framework for evaluating public space performance. The findings not only validate key aspects of Whyte's theory but also extend its applicability through quantitative and reproducible methods. More broadly, this research demonstrates how video-based analytics and trajectory modeling can inform evidence-based urban design, enabling planners to better understand how spatial configurations influence human behavior in real-world settings.

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Keywords: Public space, Human behavior, Computer vision, Trajectory analysis, Urban design

PLACEMAKING THAT OPERATES ON PLACE KNOWLEDGE ACROSS THE URBAN–RURAL SPECTRUM: EVIDENCE FROM CHINA'S "URBAN CURATING"

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Individual Paper Presentation

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China's two decades of intensive construction reshaped, and often erased, the cultural-geographic fabric of its cities and villages. Only in the past decade has the inscription of place knowledge become a central concern, because so much had been obliterated. A practice has taken shape in which architects, planners, curators, and artists select, rearrange, and present local elements to reshape how a place is understood, reframing post-industrial urban sites and repackaging rurality as curated resource. Traceable to Shanghai's Urban Space Art Season (SUSAS) and the Shenzhen Bi-City Biennale, curatorial operations walked out of exhibition halls into public space. What began as temporary knowledge production through selection and staging has since acquired inscription capacity, overwriting and displacing place knowledge through built form, events, and digital media. Practitioners call this "urban curating," though it now extends to peri-urban villages and ethnic-minority heritage townships on China's southwestern frontier. Fieldwork across this spectrum reveals that inscriptions encounter vastly different cognitive conditions, producing divergent displacement in how places are known, a differential sensitivity that practitioners overlook but planning scholarship must address. This paper brings evidence from Shanghai to China's ethnic frontier into global conversation, arguing that curatorial placemaking is a planning concern of the first order. The analytical lens integrates three traditions. Planning's relational place theory holds that place knowledge is socially produced; curatorial theory supplies the mechanism, with "the curatorial" denoting how meaning is generated through selection, juxtaposition, and framing; cultural geography's treatment of heritage as authorized discourse confirms this production carries material stakes. Inscription works through three media: built form, programmed event, and digital platform, each with distinct durability and reach. Under China's mobile-internet ecology, digital inscription rivals physical and event-based media, distributing cognitive effects along distinct spatial logics. Curatorial placemaking is thus cross-medium and cross-geographic.

Drawing on fieldwork and social-media data across three settings, a georeferenced approach maps curatorial operations against geo-computational analysis of platform cognition, producing comparable spatial footprints of inscription and effect. Findings differ sharply. In urban cores, inscriptions are absorbed by dense pre-existing narratives; displacement is low in both intensity and reach, and built-form inscription is the most effective medium. In peri-urban villages, reach and displacement are moderate, with the three media more evenly balanced. In remote ethnic-frontier heritage settings, reach is large and displacement extensive; digital and event-based inscription outperform built form, and external curation rewrites place identity at low cost, displacing residents' and visitors' attachment despite historical authenticity. This is pronounced in a Bai township in Yunnan, where three heterogeneous capital formations inscribe competing terroir narratives within one geographic unit. These differentials point toward a typology of inscription-sensitivity to guide calibrated placemaking intervention.
This paper brings a theoretical lens and evidence to a phenomenon hiding in plain sight: placemaking that operates on place knowledge through orchestration and inscription across the urban–rural spectrum. Bridging curatorial theory, cultural geography, and planning, it offers vocabulary transferable wherever orchestration-based placemaking occurs. China's evidence, from global-city biennale culture through gentrified countryside to ethnic-frontier heritage, reveals how inscription media and knowledge-ecology robustness jointly shape planning outcomes, with implications for heritage planning, community engagement, and governance of mediated place cognition.

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Keywords: curatorial placemaking, place knowledge, urban curating, urban-rural spectrum, China

REASSESSING URBAN DESIGN AS A CITYWIDE STRATEGY: EVIDENCE FROM A CASE STUDY OF A U.S. URBAN DESIGN PLAN

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Individual Paper Presentation

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With the shift towards a market-driven project-based approach, urban design became a strategic and practical tool for planning systems to attract economic investments for urban redevelopment, rejuvenation, and revitalization. This has emphasized a more strategic role of urban design as a shaper of citywide urban form. In such conceptualization, a single area-wide urban design strategy should address key issues, namely, developing patterns of public spaces, promoting environmentally sustainable patterns of development, and shaping the area's physical urban form.

In current urban design practice in US cities, the design content of developed plans is limited in scope, scale, and design guidance. The plans were highly focused on micro-managing architecture with little focus on citywide design issues and did not offer hierarchical design guidance for intervention at various scales of the urban environment.

This research examines these issues through a single-case study of an urban design plan prepared by the Department of Planning and Development in San Diego, California. Employing a mixed-method research design, the study investigates one central question: to what extent does the content of the plan emphasize design as a strategy for shaping urban form? Three related questions guide the analysis: (1) how the plan balances design as part of planning versus detailed design control; (2) the extent to which Urban, Architectural, Landscape, and Sustainability considerations are emphasized; and (3) whether the plan provides hierarchical design guidance across scales. The research proceeded in three phases: a critical review of urban design literature to construct a conceptual evaluative framework; a structured content analysis based on an original evaluation protocol; and an interpretive analysis of empirical findings.

The content analysis revealed a wide divergence in depth of coverage across the plan's various design aspects, yet no design dimension was established across those aspects. Rather than integrating those aspects into context, there was a clear emphasis on details, expression, and prescriptive control of the design aspects. Thus, the plan neither emphasized strategic design considerations nor articulated an area-wide design strategy.

The inconsistent emphasis on design as a strategy across the three categories: Urban, Architecture, and landscape, have major influence on three primary attributes of the plan's design content: Balance, Comprehensiveness, and Hierarchy. First, the plan's design control was imbalanced. It emphasized design as a product rather than a process and was dominated primarily by prescriptive controls rather than promoting abstract innovative design methods. Second, there were two main gaps in the comprehensiveness of design control. The plan showed a dominating role of prescriptive design guidelines concerned with townscape and aesthetic control, but not on the urban form or the public realm. Third, the afore-mentioned gaps in comprehensiveness of design control, coupled with the imbalanced coverage, have created inadequacies and discontinuities in the plan's design hierarchy. The study finds that the three aforementioned interrelated shortcomings constrain the plan's capacity to achieve its stated objectives. These limitations undermine the continuity of the plan's design hierarchy and reinforce a conception of design as a static product rather than an iterative, strategic process.

The study concludes that effective area-wide design strategy requires reconceptualizing design as both a process and a product, supported by a hierarchical and comprehensive framework of design tools that connects design intentions, instruments, and scales of intervention. It argues for incremental reform of urban design policy and

education in planning and architecture, and for contemporary approaches to masterplanning that emphasize long-term, strategic shaping of urban form over isolated, detail-driven control.

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Keywords: Urban Design Plans, Urban Design Practice, Design Control, Plan Content Analysis, Citywide Design strategy

REVEALING TREE–VISITATION RELATIONSHIPS ACROSS PARK TYPES: MOBILITY DATA AND EXPLAINABLE MACHINE LEARNING EVIDENCE FROM AUSTIN, TEXAS

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Individual Paper Presentation

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Urban parks are vital public infrastructure, delivering ecosystem services that support daily well-being, including heat mitigation, psychological restoration, and social interaction (Daily, 1997). As cities intensify and heat exposure worsens, understanding what drives park visitation has become a pressing planning imperative. Evidence links tree canopy cover to increased park use (Shanahan et al., 2015), yet the mechanisms remain underexplored. Studies that jointly examine tree inventory composition and directly observed visitation across distinct park typologies remain genuinely scarce, and prior work rarely accounts for the nonlinear and context-dependent nature of these relationships.

This study addresses that gap by combining urban tree inventory data with anonymized mobile device mobility records across 2,585 weekly park visitation (2019–2020, before COVID) observations spanning five park types: Neighborhood, Pocket, Greenbelt, School, and Special Park in the City of Austin, Texas. A LightGBM (Light Gradient Boosting Machine) model (Ke et al., 2017) was estimated to predict park visitation outcomes, and SHapley Additive exPlanations (SHAP) were applied to quantify each tree characteristic's marginal contribution across nine focal features in four categories: tree quantity (stem density per hectare; density of very large trees per hectare), spatial structure (park area; maximum Ripley's L; Clark-Evans regularity index), canopy quality (trail canopy percentage; amenity canopy percentage), and species diversity (Shannon-H; Pielou's J). SHAP's additive decomposition enables nonlinear, park-type-specific interpretation that conventional regression obscures, representing a methodological advance in park research.

Results reveal that park area is the dominant predictor overall, yet its directional effect is type-contingent: larger parks increase predicted visitation for Neighborhood, School, and Special parks, while larger-than-typical Pocket parks are penalized—likely because scalar intimacy is constitutive of the typology (Seymour, 1969). Tree density follows a threshold logic: moderate stem densities (~43–110 stems/ha) are optimal, while high density consistently reduces predicted use. Concentrations of very large trees are negatively associated with visitation in neighborhood and school parks despite their ecological value. Trail canopy exhibits a complex nonlinear effect, particularly in greenbelts, where excessive enclosure is counterproductive.

The cross-typology heterogeneity identified here challenges universal design prescriptions: effective greening strategies should be calibrated to the scalar identity, functional role, and community context of each park type. By revealing where the effects threshold and reverses, this study provides planners and designers with empirically grounded guidance for tree planting programs, canopy management decisions, and spatial configuration strategies. The integration of large-scale mobility data and explainable machine learning positions this work at the intersection of behavioral urban ecology and evidence-based placemaking, offering a replicable analytical framework for park systems in other cities.

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Keywords: Urban park visitation, Greening design, Machine learning model, Ecosystem services, Placemaking

SOCIAL MEDIA–DRIVEN REVITALIZATION OF HISTORIC DISTRICTS: THE BUZZ EFFECT IN SHANGHAI'S ANFU ROAD

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Individual Paper Presentation

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This study investigates how social media platforms reshape the revitalization of historic districts through digitally mediated "buzz effects" within an online-to-offline (O2O) framework. It addresses three research questions: (1) how online buzz translates into spatial, commercial, and experiential transformations; (2) what socio-cultural mechanisms sustain or constrain this process; and (3) how multi-actor interactions reconfigure long-term revitalization dynamics.

Using Anfu Road in Shanghai as a case, the study develops a three-dimensional framework of "buzz dynamics–actor mediation–scene renewal" linking online communication patterns, stakeholder interactions, and offline spatial outcomes. It integrates multi-source data, including 17,784 user-generated posts from Xiaohongshu (April 2024–March 2025), 115 commercial POIs, and 21 in-depth interviews with residents, merchants, visitors, photographers, and local managers.

Xiaohongshu (Rednote) is selected as the primary data source due to its strong coupling of social interaction and consumption behavior and its predominantly young, urban user base engaged in lifestyle-oriented content production. As a leading platform in China's digital consumer ecosystem, it has played a pivotal role in amplifying the visibility of Anfu Road, where user-generated content, platform algorithms, and offline commercial activities are closely intertwined.

A mixed-methods approach combines text mining, sentiment analysis, spatial analysis, and qualitative coding. Content analysis identifies evolving narratives of digital buzz, while sentiment analysis traces temporal patterns of affective responses. Spatial analysis maps the distribution of online attention and its relationship with store location and lifecycle, and correlation analysis examines the coupling between digital visibility and commercial turnover. Interview data further reveal behavioral logics within the actor network.

The findings highlight three key mechanisms. First, online buzz evolves from "fashion-oriented dominance" to "tourism-oriented expansion," with consistently positive sentiment but selective representation of historical narratives, reflecting tension between heritage identity and traffic-driven platform logic. Second, the buzz effect is spatially concentrated and closely coupled with commercial turnover, forming a "high-buzz–high-turnover" pattern, functioning as both an amplifier of visibility and an accelerator of competition. Third, digital platforms reshape governance by reconfiguring actor networks, where collaboration and conflict coexist among residents, government agencies, and market actors.

The study further reveals the double-edged nature of platform-driven revitalization. While digital buzz injects vitality into historic districts and accelerates spatial and commercial transformation, it also generates risks, including the erosion of historical narratives, excessive turnover, and stakeholder conflicts. Long-term sustainability depends on collective identity, shared place memory, and ongoing negotiation mechanisms that enable dynamic balance among competing interests.

By conceptualizing social media platforms as endogenous drivers of urban transformation, this study contributes in three respects. First, it advances placemaking theory by linking digital attention dynamics with material spatial change in historic districts. Second, it provides an integrated analytical framework for understanding O2O interactions through the lens of buzz effects and actor networks. Third, it offers planning-relevant insights, suggesting the need to actively guide platform-driven visibility, monitor the coupling between digital popularity and spatial change, and strengthen multi-stakeholder governance mechanisms to support sustainable revitalization in the platform era.

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Keywords: Placemaking, Historic Districts, Social Media, Buzz Effect, Third Place

SPATIAL ELEMENTS AND REGENERATION PATHWAYS OF NIGHT MARKET SPACES FROM THE PERSPECTIVE OF CONSUMPTION SCENES IN CENTRAL CHONGQING

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Individual Paper Presentation

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Under the dual context of the rapid expansion of the informal economy and the high-quality development of the nighttime economy, night market spaces have become a vital component of the informal economy in urban public space and an important carrier of urban nighttime consumption scenes(Yeo & Heng, 2014). As urban policy has shifted toward greater inclusiveness of the informal economy(Aramayona & Guarneros-Meza, 2024) and as consumers in the post-Fordist era have increasingly demanded experiential and quality-oriented consumption(Mouratidis, 2021), the regeneration of night market spaces has emerged as a key issue in promoting the transformation of the night market economy and consumption upgrading. Existing studies have mainly emphasized the macro-level value and controversy of the night market economy(Huang et al., 2022; Xue & Huang, 2015), while paying insufficient attention to the meso- and micro-level interaction between consumption scenes and spatial elements. In particular, systematic comparisons between community night markets and urban night markets, as well as their spatial regeneration pathways, remain underexplored. This study addresses three questions: whether the upgrading of night market spaces can synergistically promote consumption upgrading; how the consumption scenes of community night markets and urban night markets differ; and which spatial elements are critical to improving spatial quality and advancing regeneration. From the perspective of consumption scenes, the study integrates social media platforms and geospatial big data, questionnaire surveys, field surveys, and spatial econometric analysis to examine the characteristics and spatial patterns of night market consumption scenes in the central urban area of Chongqing. At the macro level, it identifies the spatial distribution and evolutionary patterns of night market spaces from 2016 to 2024. At the meso level, through axial coding, semantic network analysis, and questionnaire-based statistical analysis, it reveals the characteristics of consumption scenes and differences in consumer attributes, behavioral preferences, and experience-related influencing factors between the two types of night markets. At the micro level, it analyzes differences in spatial elements, consumer satisfaction, and the key factors driving spatial regeneration, and on this basis proposes optimization strategies. The findings indicate that, first, the upgrading of night market spaces and consumption upgrading exhibit a significant synergistic and mutually reinforcing relationship. Spatial optimization significantly shapes consumer experience and behavior, driving a shift in the core value of night market spaces from functional provision to demand adaptation and from efficiency-oriented development to experience-oriented development. In addition, community night markets and urban night markets form a hierarchically differentiated system of consumption scenes, with significant differences in value dimensions, functional orientation, and population fit. Furthermore, the regeneration of night market space depends on the systematic restructuring of spatial elements and functional transition. Inclusive elements, such as barrier-free design, sign readability, and lighting coverage, are the most critical, as they effectively meet consumers' needs for efficiency and comfort. Locality-related elements, including local characteristics, visual order, and aesthetics, reinforce place identity and cultural value. Social and experiential elements further promote consumption upgrading by extending length of stay and enhancing higher-level psychological demand. This study extends the application of consumption scenes theory to the study of informal economic spaces, enriches interdisciplinary research at the intersection of urban space and consumption economy, and provides practical implications for urban planning and policy making on the optimization of night market spaces.

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Keywords: Night Market Spaces, Consumption Scenes, Spatial Regeneration, Spatial Elements, Chongqing

SPECULATION AND THE PERSISTENCE OF VACANCY IN URBAN THIRD PLACES

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Individual Paper Presentation

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Commercial vacancy persists in many growing cities, even in areas with high demand and active development. While vacancy research has often centered around shrinking cities or housing, this paper examines vacancy in Seattle's Chinatown-International District and Pioneer Square, focusing on third places such as cafes, restaurants, open space, and small businesses that support everyday urban life. It asks why vacancy continues in these contexts, even when planners, property owners, and community members describe it as harmful or undesirable. The paper approaches vacancy as an ongoing state shaped by decisions about how space is held, deferred, or maintained over time, rather than as a temporary gap between uses.

Existing work on urban speculation tends to emphasize financial accumulation or resistance to it. These approaches have expanded how speculation is understood, but they do not fully explain how vacancy is produced and sustained in daily life and urban sites. Speculation is increasingly understood as social and future-oriented, but less attention has been given to how these views materialize in the everyday landscape of commercial vacancy. Drawing on ethnographic fieldwork, walking interviews, archival research, and spatial analysis, this paper traces how vacancy emerges through overlapping orientations toward the future of land. For example, walking interviews chart a path of vacancy as an encountered and narrated experience, where what appears as absence often carries multiple, partially visible forms of intention, tension, and attachment.

The paper develops a typological framework to trace three speculative logics that operate through commercial vacancy: extractive, instrumental, and relational. Extractive speculation holds property in anticipation of increased value or code change, often through prolonged absence. Instrumental speculation maintains vacancy as a form of risk management, including navigating regulatory processes or avoiding costly upgrades. Relational speculation emerges through attachments to place, such as intergenerational ownership, community continuity, and forms of care that do not align with market timelines. These speculative logics often coexist within a single site or decision. By focusing on how these logics are enacted through vacancy, the typology functions less as a classification system and more as a way to trace how they become entangled in practice.

This framework suggests that a vacant storefront may read as absence or neglect, yet be shaped by financial strategies, regulatory constraints, and place-based commitments. These factors vary in how vacancy is expressed and perceived, yet they coexist within the same space, helping to sustain vacancies even within high-demand contexts. This helps explain why vacancy persists in growing cities and why it is often misread within planning frameworks. What appears as neglect, in practice, reflects competing or unresolved claims about how space is held and transformed.

By grounding speculation in everyday urban spaces and practices, this paper contributes to planning scholarship by showing how different ways of future-oriented landholding produce distinct yet overlapping forms of vacancy. In doing so, it shifts vacancy from a condition to be resolved to a phenomenon that can be interpreted, where temporalities, attachments, and constraints are at play simultaneously. This perspective offers a way to interpret commercial vacancy in daily practice, especially in historic districts where policy, development pressures, and attachment to place overlap sharply.

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Keywords: Vacancy, Speculation, Third Places, Urban Political Economy, Place Attachment

STREETSCAPE DESIGN IN THEORY VS. PRACTICE: EVALUATING DESIGN GUIDELINES IN NORTH AMERICAN CITIES

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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In the past two decades, design guidelines have been increasingly used to shape local streetscapes and adjacent public spaces to achieve goals related to complete streets (Gregg & Hess, 2019), green infrastructure (Klemm et al., 2018; Norton et al., 2015), and urban design (Liu, 2025; Punter, 1999), among others. Research on design guidelines for these varied purposes has emphasized the importance of integrating implementation and contextual adaptability into guidelines, and engaging local stakeholders, end users and residents in establishing priorities and selecting appropriate design strategies. This paper conducts a content analysis of 50 streetscape design guidelines adopted by governments in the United States & Canada between 2008-2024 to answer three questions: To what extent do streetscape design guides integrate concerns with changing climatic conditions? What aspects of implementation do existing guidelines focus on, and which do they minimize? What community engagement strategies have local governments utilized to develop their design guidelines? To what extent do local practices reflect recommendations drawn from academic research? In addition to answering these questions, our analysis evaluates how design guidelines vary based on the population size and demographics, geography, fiscal capacity and other factors.

Our preliminary findings indicate that most design guidelines are developed without much formal public engagement activities. We also find that many guidelines establish novel methods and typologies to manage their streetscapes and that very few discuss strategies related to implementation. Comparing guidelines developed by state agencies to local governments, we find that the former provide more comprehensive guidelines that include detailed information about the purpose and potential impacts of streetscape enhancements. We also find that local guidelines do not necessarily align with existing state and national-level guidance. In the discussion, we advance a model for (1) training more design professionals to work on streetscape designs, and (2) facilitating the adoption of design guidelines in smaller, less resourced communities who may be at higher relative risk in changing climatic conditions.

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Keywords: Design guidelines, Streetscapes, Complete streets, Green Infrastructure, Urban Design

TEMPORAL DYNAMICS OF THE BUILT ENVIRONMENT AND URBAN VITALITY IN A CAR-DEPENDENT CORRIDOR IN SAN ANTONIO, TEXAS

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Urban vitality is characterized through a place's temporal diversity of use or a continuous "sidewalk ballet" of street activity. Existing literature states that urban vitality contributes to the local economy and social order of cities and provides a strong attachment to the community. While early urban theorists laid the foundations for understanding vibrant streets, in low-density and car-dependent cities like San Antonio, streets primarily function as a passage for vehicles connecting spaces. While built environment characteristics such as density, diversity, connectivity, and street design are well-established activators of foot traffic and urban vitality, in car-dependent contexts, dispersed land use patterns and automobile-oriented infrastructure can alter how people engage with streets. Our understanding of how the built environment supports urban vitality in these contexts remains limited.

Thus, this study examines the role of the built environment in activating streets and urban vitality in a car-dependent urban context at the block-face level using GPS mobility data to track foot traffic on Saint Mary's Street in San Antonio. The 4.7-mile stretch of Saint Mary's Street comprises a nightlife district, historic neighborhoods, a central business district, and a robust tourist destination. As one of the primary corridors in San Antonio, this street is also challenged by existing obstacles, such as US-281, Interstate 35 highways, large building masses, and parking lots, acting as border vacuums to urban vitality. Saint Mary's Street presents an opportunity to analyze urban activity across diverse urban forms and functions, particularly at different times of the day.

To closely examine the street, Saint Mary's Street was divided into block faces (n = 141) where each block face represents one side of the street of a single block within a 500-foot buffer from the street. To measure urban vitality, we used Dewey mobility data that includes weekly foot traffic counts for POIs between January and December 2023. This foot traffic data was further divided into groups to capture morning, afternoon, and evening periods, as well as weekday and weekend patterns, to account for the temporal dynamics of POI visitors. We then aggregated the POI data into the block face level. To measure the built environment characteristics, we use Bexar Appraisal District parcel data for building footprint and land uses, the Bexar County Open Data Portal street data, Texas A&M 1m Urban Tree Canopy and EPA Smart Location data. Additionally, in April 2026, walk audit along Saint Mary's street will capture additional micro-level urban design elements such as street parking, outdoor dining options, and sidewalk connectivity. These built environment measures will be grouped into common factors using the Principal Component Analysis to avoid conceptual overlaps. A series of ANNOVA and regression models will be specified to see which of the built environment elements predict foot traffic patterns across different time groups.

We expect our results to show a positive association between smaller blocks, higher intersection density, and higher activity levels. At the same time, given the city's heavy car dependency, access to bus stops, bike lanes, and speed limits may not be relevant to the vitality of the street. This study highlights how urban design factors impact differently in a car-dependent context. We further suggest that local contexts must be considered alongside built environment characteristics to promote urban vitality, especially given the city's active investments in creating walkable and vibrant streetscapes.

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Keywords: Urban design, street activation, Jane Jacobs, foot traffic, walkability

THE POLITICS OF PARK MAKING: PHILANTHROPIC PARTICIPATION URBAN GREEN SPACE DESIGN AND GOVERNANCE

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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As neoliberalizing cities transform urban environmental governance and as green spaces become more central to urban growth agendas, these shifts materialize in the production and design of public parks. Philanthropic donors increasingly play a role in developing and operating parks in Canadian and U.S. cities. Despite commonsense understanding of urban greening as a universal good (Wachsmuth & Angelo, 2018) and civic philanthropy as a benevolent act, philanthropic participation upends conventional views of the state's responsibility for park provision and raises important questions regarding the influence of private power in public space.

While critical analyses of urban greening have explored the impacts of private donations on park equity, such analyses seldom interrogate the social forces that shape how we think about parks and philanthropy. Building on past investigations of urban green growth discourses (Mullenbach et al., 2021), I undertake a critical discourse analysis of philanthropy-led park production. Centering on three cases of donor-led park projects in Toronto, Canada, I ask: 1) how are discourses regarding philanthropy-led park production presented in newspapers, and whose voices are featured?; 2) how do discourses construct the need for, function of, and expected impacts of philanthropic engagement in park production?; and 3) what are the implications of these discourses for park justice?

I employ critical discourse analysis (Lees, 2004) to investigate the content and implications of everyday discourses regarding philanthropy-led park production. My analysis centers on news coverage of three high-profile, donor-led park projects in Toronto: The Bentway, The Meadoway, and The Art Trail. I consider how elite policy actors, including donors, use privileged access to media to mobilize narratives about park design and governance. I analyze journalistic representations of these park projects as productive practices that construct parks as a policy problem and legitimize philanthropy as a policy solution, and evaluate park justice implications. By considering both the content of the discourse and its influence on park-making practices, I uncover relationships between urban imaginaries and material urban landscapes.

I find that discourses of urban park making link the assumed benevolence of philanthropy with the assumed benefit of urban greening. Newspapers frame parks as facing a polycrisis of growing need and inadequate resources, philanthropy-led park design and governance as a natural solution, and widespread "city building" benefit as the inevitable outcome. By giving significant discursive space to powerful donor coalitions while constraining dissenting voices, news coverage advances an uncritical view of philanthropy's role in park production and minimizes concerns related to democratic decision-making, park equity, and responsiveness to community needs. I argue these discourses are not merely symbolic but actually productive: they advance particular modes of planning, designing, and governing urban parks. When left unquestioned, the production and circulation of images of the green city may, at best, misrepresent the positive environmental and social impacts of green investments, or at worst, obfuscate related distributional, procedural, and recognitional injustices across park systems (Low & Iveson, 2016).

Theoretically, these findings demonstrate how discourses of urban greening are understood socially and acted upon spatially, expanding our understanding of the symbolic and discursive processes underlying urban design and policy outcomes (Desfor & Keil, 2004). Practically, by illuminating the productive quality of greening discourses, the

findings may inform policy, planning, and organizing strategies to ameliorate and mitigate sociospatial injustices in park access, quality, and participation.

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Keywords: environmental justice, urban greening, urban design, environmental governance, public space

TOWARD EVIDENCE-BASED GREEN STREET RENOVATION IN ARID CITIES THROUGH GENERATIVE AI AND IMMERSIVE TECHNOLOGY: A CASE STUDY OF PHOENIX

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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This research aims to develop an urban design guidance and decision support system for sustainable green street renovation in Phoenix metropolitan area. The system is based on integrating Street View Image (SVI)-based analysis, a generative AI workflow, and immersive technologies.

Green streetscapes are particularly difficult to implement in desert climates cities, though they are important for improving aesthetics, thermal comfort, stormwater management. Due to limited water availability and harsh soil conditions, the room for mistakes in green streetscape practice in the Phoenix metropolitan area is far smaller compared to many large cities (Meerow et al., 2021). Therefore, developing a green streetscape renovation guideline system that supports more sustainable and efficient design and decision-making processes are highly meaningful.

In this research, firstly, experienced urban designers are invited to propose green street design options for the Phoenix area. Their plant selection and spatial element proportions are statistically analyzed. Then, based on social media data and resident interviews, this study identifies 5 higher-performing and 5 lower-performing streets in Phoenix. Over 5,000 SVIs are retrieved from selected streets. Semantic segmentation is performed on all SVIs with hybrid model (Cityscape and ADE20K-based model) to identify proportions of major streetscape elements while object detection with hybrid model (YOLO and OWLv2) identifies vegetation elements and special landscape features (Jiang et al., 2024). By comparing the streetscape analysis results of 1) professional designers' work; 2) existing conditions of higher-performing streets; 3) existing conditions of lower-performing streets, the specific problems of Phoenix's streetscapes can be identified, while positive characteristics are also documented. Based on this comparison, the research determines targeted improvement strategies with clear quantitative direction. These strategies form the urban design criteria for green street renovation in Phoenix.

Based on the design guidelines, the researchers develop a generative AI workflow to automatically create better green street design alternatives for a specific street in Phoenix area. This workflow begins with a single street-view image, analyzes its existing conditions, compares them with the design criteria summarized in the previous step, detects the gaps between the existing and the ideal design benchmarks, then automatically generates multiple retrofit design alternatives. Each alternative is then evaluated through another round of analysis to identify the best option. Finally, this generative AI workflow draws on open-source 3D space generation models to automatically transform the selected green street renovation alternative into an explorable 3D environment. Combined with mobile VR technology, it can provide real-time immersive visualization of feasible green street renovation scenarios for a given street (Lee et al., 2022).

By applying this evidence-based urban design guidance support system to three streets in Phoenix, the study found that both the workflow and its outcomes were reasonable and feasible. In addition, the research recruited 30 local residents to evaluate both the existing street conditions and the redesigned scenarios generated through the system, and the results showed that the post-design schemes were more favored by participants. Further user evaluation studies are still ongoing.

This research proposes an evidence-based and scalable approach to green street renovation in arid cities, where water scarcity and harsh environmental conditions make conventional green street implementation challenging. By

integrating deep learning, generative AI, and immersive visualization, the study creates a practical decision-support system that helps planners and designers identify feasible, lower-effort retrofit strategies without relying on large-scale reconstruction.

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Keywords: Green Street, Urban Design, Desert Cities, Deep Learning, Immersive Visualization

TOWNS AND GOWNS: STRETCHING COMMUNITY DESIGN AND EXPERIENTIAL LEARNING INTO MEANINGFUL OUTREACH

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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When a state university and a real estate developer needed to reconsider a small portion of a 200 million-dollar revitalization plan for a commercial district adjacent to the campus, the University leadership sought fresh ideas and energy to generate proposals for the future of an abandoned branch bank building site in the middle of the commercial district. The “ECAP Village Site 4 Student Design Competition” was launched and held in the Estopinal College of Architecture and Planning at Ball State University from August to November 2025 in four stages.

First, the ideas poll garnered over 800 responses, including ideas, concerns, and insights into the future of the property. Students shared the poll with a diverse demography through online and direct engagement. Fruitful use of social media, particularly in the Facebook Groups platform, arguably created viral levels of sharing and discussion. Second, the design competition had over 50 entries from student teams representing four allied disciplines in environmental design and planning across four academic departments in one college. Students used a wide variety of techniques and workflows, ranging from traditional hand drawing through digital software tools, all the way to prompts and generative imagery from Google Gemini to visualize and communicate their ideas for the site. Third, the design poll asked the community and the world to choose their preferred designs based on three physical exhibits mounted on display and an open online gallery of completed design posters. Fourth, the community jury panel heard oral and visual presentations from a group of chosen finalists. The results later informed a design and development RFP and direction for the site, with the contract awarded to a nearby interdisciplinary firm largely constituted of alumni.

The process revealed a few insights into some of the fundamentals of experiential learning as defined by David Kolb (1984, 2022), as well as opportunities to reflect on Arnstein’s ladder of public participation (Arnstein 1969, 2020). These two constructs of pedagogy and community outreach had an opportunity to be tested and examined following several decades of somewhat insulated campus planning practice and construction, a zoning overlay that allowed for much more height and density to be constructed above and beyond the zoning code that remained on the books, and a small number of contested properties adjacent to a university campus as it expanded. The choice to run this project as a student design competition with open ideas polling, student outreach, public and online exhibits, open design preference voting, and a community jury to determine the winner represented the first time in many years that the Muncie community was allowed to express its hopes and concerns for the University’s expansion and investment in the adjacent village commercial district and the long term impacts of current real estate development practices on the perception of the built environment and community character.

This paper will chronicle the seven-month process of designing, launching, exhibiting, and promoting this student design competition and include reflections on learning and community outreach from the students and community members who actively participated in it.

In summary, this 7 month project brought together stakeholders in philanthropy, university leadership, real estate developers, design and planning educators, students, local business owners, alumni, and neighborhood residents in a healthy, open, fruitful, and democratic dialogue about the future of a commercial district adjacent to a university campus, reflecting crucial questions and trends in urban design, real estate, public participation, and the roles of social media, and AI as generators and exhibitors of imagery and discussion.

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Keywords: Experiential learning, Placemaking, Public Participation, Polling and Social Media, Generative AI

TWO CULTURES OF WALKING: PEDESTRIAN BEHAVIOR AND HUMAN-SCALE DESIGN IN HONG KONG AND SAN FRANCISCO

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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Although Hong Kong and San Francisco share strategies for pedestrian space design, the two cities embody distinct cultures of walking shaped by local street dynamics. While the North American streetscape demonstrates the historical power shift from pedestrians to automobiles (Norton, 2008), public discontent about constrained pedestrian environments in Hong Kong has triggered debates about whether the city is truly walkable or simply walking dependent.

Human-centered urban design has long emphasized observing and understanding how people use public spaces. Building on Jan Gehl's principle that cities should be designed at the human scale (Gehl & Rogers, 2010), researchers developed observational tools to document pedestrian movement (Whyte, 1980; Pushkarev, 1975). These methods support people-centered design, institutionalized through frameworks like the NACTO Urban Street Design Guide (2013).

This study adopts a human ecological approach to compare pedestrian activity and environment across two contrasting urban systems, addressing:
How do pedestrian behaviors differ across cultures, and how do built and sensory environments influence these differences?

To explore this question, I analyzed pedestrian environments and behaviors around rail station areas, where walking activity is most intense. The dataset includes 283 intersections (270 in 94 MTR stations in Hong Kong and 13 in 11 BART and Caltrain stations in the Bay Area) observed between 2022 and 2024.

I selected three representative station areas in each region to capture high-, medium-, and low-pedestrian-density conditions. I collected data using direct observation, video recording, and environmental sensing. At each site, I used a tripod-mounted GoPro to record at least two full signal cycles. I measured ambient conditions such as light, noise, air quality ($PM_{2.5}$, PM_{10}, CO_2), temperature, and humidity using a portable air-quality monitor and smartphone apps. Observation sheets documented intersection type, pedestrian flow level, and infrastructure details. I analyzed spatial, temporal, and behavioral dimensions of pedestrian right-of-way and stratified the data by pedestrian density to ensure comparability.

The results show that behavioral patterns varied systematically by pedestrian density. It also demonstrates that pedestrian behavior and infrastructure use are shaped jointly by physical design and cultural norms. First, pedestrians in both regions adapt similarly to environmental stress by moving faster and violating rules when constrained. Second, design priorities differ: Hong Kong prioritizes vehicular throughput whereas San Francisco emphasizes accessibility but with limited enforcement. Finally, safety and comfort depend not only on design geometry but also on perceptual, sensory, and cultural context.

These insights affirm the need to integrate human-scale observation, environmental sensing, and cross-cultural awareness into pedestrian planning. By doing so, urban designers can move beyond static form-based standards toward adaptive, empathetic, and context-aware design that aligns infrastructure with real human behavior.

Future research should extend behavioral analysis across the full dataset, test statistical associations between design features and pedestrian outcomes, and balance regional samples. The integration of AI-assisted video analysis and biosensors will further enable large-scale, fine-grained, and affective measurements of pedestrian experience. Such interdisciplinary integration can enrich understanding of walkability as both a behavioral and sensory phenomenon.

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Keywords: Urban design, Placemaking, Walkability, Pedestrian behavior, Comparative study

UNPACKING PARTNERSHIP STRUCTURE IN CREATIVE PLACEMAKING: A CONTENT ANALYSIS OF NEA OUR TOWN PROJECTS

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Track 12: Placemaking and Urban Design
Individual Paper Presentation

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Partnerships have been considered as a key element of creative placemaking as they foster collaboration among actors across public, private, nonprofit, and community sectors. While the relevant literature has consistently emphasized the normative value of collaboration, there remains limited systematic evidence on how these arrangements are structured in practice. Creative placemaking scholarship has presented the values of cross-sector partnerships for shared decision-making and inclusion (e.g., Daniel & Kim, 2020; Markusen & Gadwa Nicodemus, 2014; Redaelli, 2016), yet less is known about the specific partnership structure through which such collaboration takes shape. This study, therefore, addresses this gap through an empirical examination of partnerships in the National Endowment for the Arts' (NEA's) Our Town program.

The study asks three related questions: which types of actors were named as partners in funded projects, how many actor types were included, and how does partnership type diversity vary across projects and their characteristics, such as funding year, geographical region, arts tactics, and grant size? The analysis draws on 542 Our Town grants awarded between 2012 and 2023 (National Endowment for the Arts, n.d.) and treats partnership structure as the primary object of inquiry. The study combines qualitative content analysis with statistical and network analysis to examine both the distribution of actor types and the broader structure of collaboration. Particular attention is given to applicants' institutional roles, the number of partner types involved, and the extent to which these configurations vary with project characteristics.

The findings identify a wide range of actors named in creative placemaking project descriptions, indicating that various types of partners were recognized within these initiatives. The analysis also shows that about half of the funded projects extend beyond the nonprofit and public-sector pairing embedded in program eligibility requirements. These projects incorporated additional actors, indicating that a substantial share of creative placemaking partnerships extended beyond the minimum structure. At the same time, the diversity of partner types was not consistent across projects. The composition of partnerships varied according to project characteristics, particularly regarding arts tactics and funding periods, suggesting that collaboration is shaped not only by shared aspirations for inclusion but also by the practical and institutional demands associated with different kinds of work. In this sense, the partnership structure can be understood not only as a response to an institutional requirement but also as a reflection of how applicants navigated differing practical demands and expectations associated with particular types of creative placemaking work.

This study contributes to creative placemaking scholarship by clarifying both the range of actors considered in creative placemaking partnerships and the ways in which partnership composition varies with project characteristics. However, the findings suggest a more cautious interpretation of the breadth of partnerships. While half of the projects formed multi-actor coalitions beyond the required format, others remained limited to one actor, and even some projects with three or more partners drew from a relatively narrow set of actor types. This suggests that the presence of additional partners may not necessarily indicate a substantively broader participatory structure. The implications, therefore, extend beyond the question of whether partnerships exist. Future research and practice should pay closer attention to which actors are consistently recognized and which remain peripheral,

as well as how different partnership compositions may influence the overall project phases and relationships among actors over time.

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Keywords: creative placemaking, partnership structure, participation, NEA Our Town

URBAN GROUND-FLOOR MYTHS AND REALITIES – ANALYZING STREET-LEVEL USE AND TRANSPARENCY OF MIDRISE URBAN INFILL IN FIVE US CITIES

Abstract ID: 2298.0.0.739.2026
Track 12: Placemaking and Urban Design
Individual Paper Presentation

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Urban planners and designers commonly believe that the ideal urban ground floor should contain retail. From the 'mixed-use' ideal with natural proprietorship by Jane Jacobs (1961), today's 15-minute city concept still views retail as the core of walkable, vibrant neighborhoods (Moreno, 2024). As a result, ground-floor retail and their transparent storefronts have been codified into countless urban zoning codes and urban design guidelines over the past decades, especially governing new infill construction in denser urban neighborhoods, even if there is not enough demand for retail space (Brooks & Meltzer, 2024; Kickert & Talen, 2022). This discrepancy between retail space supply and demand has become especially apparent in urban infill buildings in larger American cities, which commonly feature four to five stories of residential apartments or condominiums atop a podium that promises to hold retail.

This paper demonstrates that this promise is not kept in these mid-rise 'five-over-ones'. Drawing from the Moody's CRE database, over 100 mid-rise urban infill buildings were randomly selected in five large US cities for their completion date of 2019 – presuming a stable ground-floor occupancy after the expiration of any rental incentives, start-up vacancy, and COVID-19. In these buildings, the Window-to-Wall Ratio (WWR) is measured for the ground floor, as well as the linear use of the ground floor by retail and non-retail uses as well as blank walls. Each building's location is marked as either within or outside a zone in which ground-floor retail is mandated. The study finds that even in retail-mandated zones, only 22% of the ground-floor length comprises retail, less than the total length of vacant storefronts. Almost half of the linear frontage in these areas is fully inactive. These findings are far worse in non-retail-mandated areas, with only 5% of frontage length dedicated to retail and nearly two-thirds of frontages inactive.

These findings are a wake-up call for planners and designers to envision a broader future for the urban ground floor. This paradigm shift should align closer with market realities, understanding that many developers unsuccessfully expect credit tenants, and others simply acquiesce to zoning demands and write off the loss on ground-floor vacancy as part of their pro forma (Zeren, 2025). Instead, zoning and design guidelines could include a much wider range of ground-floor uses, including residential, meeting, social, and productive spaces, a topic of ongoing research by the paper author.

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Keywords: Active frontage, Retail, Urban design guideline, Urban infill, Typology

COMMUNITY-DRIVEN COASTAL RESILIENCE: INTERDISCIPLINARY URBAN AND LANDSCAPE DESIGN STUDIOS IN LOUISIANA

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Track 12: Placemaking and Urban Design
Research-in-Motion Presentation, Innovative practices, concepts, and ideas for pedagogy

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Coastal communities in Louisiana face increasing risks from flooding, land loss, and climate change, yet a persistent gap remains between climate data and locally actionable design strategies. Addressing this gap requires approaches that better integrate design, planning, and community knowledge. This study examines how interdisciplinary urban and landscape design studios can function as co-production platforms to support climate resilience planning and design education. It highlights their potential to bridge disciplines and connect climate data with spatial strategies and community priorities. In doing so, the study positions design education as a critical interface for translating complex environmental information into actionable, community-driven outcomes.

Research Questions

1. How can interdisciplinary urban and landscape design studios function as co-production platforms in coastal resilience planning?

2. How do interdisciplinary and community-engaged design processes influence students' ability to translate climate data into actionable design strategies across scales?

Methods

In Fall 2025, a joint interdisciplinary studio was conducted between PLAN 6520 & LAND 4912 Urban Plan and Design Studio I at the University of Georgia (UGA) and LA 7031 Water Systems Studio at Louisiana State University (LSU). A total of 22 students (16 from UGA and 6 from LSU) participated. The study focused on the Algiers neighborhood and Brechtel Park in New Orleans, Louisiana. The studio was structured to integrate urban and landscape design across scales: UGA students developed neighborhood-scale urban strategies, while LSU students focused on site-specific landscape interventions, including water-sensitive design and nature-based solutions.

A co-production framework guided the studio, incorporating embedded engagement through place-based interactions. Data were collected through community survey responses, student reflections, and studio deliverables. These materials were analyzed to evaluate both design outcomes and student learning processes related to interdisciplinary integration and resilience planning.

Results

Results indicate that the interdisciplinary, co-production-based studio enhanced both design outcomes and student learning. Community survey data identified key priorities, such as shade, walkability, social gathering spaces, and educational amenities, which directly informed design strategies at both neighborhood and site scales. Students demonstrated an increased ability to integrate urban and landscape systems and to translate complex climate information into context-specific design interventions. The co-production process supported iterative feedback

loops between community input and design development, improving the relevance and clarity of proposals. In terms of pedagogy, students showed improved capacity to work across disciplines, engage stakeholders, and connect technical data with spatial design decisions. The integration of community input also strengthened students' understanding of equity and local context in resilience planning.

Conclusions

This study demonstrates the value of interdisciplinary urban and landscape design studios as co-production platforms in planning practice and design education. By integrating community knowledge with technical data, such studios support more actionable resilience strategies. They help prepare students to address complex climate challenges across scales, disciplines, and stakeholder groups, while highlighting the role of design as a form of climate service that translates data, community input, and spatial strategies into implementable outcomes. These findings support integrating co-production into urban design education as a replicable model for linking pedagogy with real-world resilience challenges.

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Key Words: Coastal resilience, Co-production, Design education, Community engagement, Interdisciplinary studio

EVALUATING MAIN STREET: A VISUAL CHECK FRAMEWORK FOR STREETSCAPE ASSESSMENT

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Track 12: Placemaking and Urban Design
Research-in-Motion Presentation, Research currently in process

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Main Streets play a central role in American communities, functioning not only as economic engines but also as civic, social, and cultural anchors, often described as a community's "living room" where everyday life unfolds (National Trust Main Street Center, 2009, pp. 7-10). At the same time, contemporary Main Street practice increasingly emphasizes translating urban design principles into context-sensitive, tool-based guidance, alongside incremental, community-driven adaptation processes that enable local stakeholders to build capacity, share knowledge, and sustain leadership across generations (Means, 2020, pp. 44-47). However, these approaches often remain broad and process-oriented, offering limited guidance for how local stakeholders can directly evaluate spatial conditions and prioritize specific design interventions at the street level. Moreover, many under-resourced communities lack the technical expertise, financial capacity, and accessible tools needed to translate these principles into actionable strategies (Moltz & Mccray, 2012, p. 16). In an era characterized by population decline in small towns (Peters, 2019), ongoing disinvestment (Bradford & Rubinowitz, 1975), and the increasing homogenization of the built environment driven by standardized development and chain retail expansion (Halebsky, 2010), this gap highlights an urgent need for practical and accessible frameworks that support local decision-making and incremental Main Street revitalization.

This research examines how urban design knowledge can be operationalized and translated into accessible tools for Main Street revitalization, particularly in under-resourced small-town contexts. Specifically, this study asks: (1) What design characteristics define a community-valued Main Street environment? and (2) How can these characteristics be translated into a concise, visual, and actionable framework for evaluating and guiding Main Street improvements in local communities? Using the Dewey Avenue streetscape study in Poteau, Oklahoma as a case study, this research adopts a mixed-method, design-based approach to address these questions. The study combines field observation, spatial analysis, focus group interviews, community survey data, and participatory design activities to systematically identify key design characteristics and synthesize them into an evaluative framework.

The research results in two primary outcomes. First, the study develops a set of context-sensitive design recommendations for the Dewey Avenue corridor. More importantly, the research produces an eight-point visual check framework that translates urban design principles into a concise and actionable tool for evaluating Main Street environments. The framework enables rapid assessment of spatial and visual qualities, supporting local decision-making and guiding incremental improvements without reliance on extensive technical expertise.

This research contributes to planning practice and scholarship by bridging the gap between urban design theory and on-the-ground Main Street implementation. By translating spatial and visual design principles into an accessible evaluative framework, the study advances a replicable approach for assessing and guiding Main Street revitalization in resource-constrained contexts. The eight-point visual check serves as a low-cost, community-oriented tool that enables local stakeholders to independently evaluate existing conditions, identify priority interventions, and support incremental, context-sensitive improvements. More broadly, the research advances the understanding of Main Street streetscapes as a form of civic infrastructure (Jing, 2022; Prytherch, 2022; Reynders, 2025), where design functions not only as physical intervention but also as a mechanism for organizing social, economic, and spatial relationships within small-town environments.

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Key Words: Main Street, urban design, placemaking, small towns, visual check

EVALUATING PUBLIC SPACE INTERVENTIONS WITH HUMAN-CENTERED DATA: A SYSTEMATIC REVIEW

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Track 12: Placemaking and Urban Design
Research-in-Motion Presentation, Research currently in process

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Urban public spaces are sites of ongoing intervention, including redesigns, programming changes, and regulatory shifts, intended to improve how people experience city life. Evaluating how people respond to and experience these interventions has long depended on traditional methods such as in-person observation and structured surveys. In recent years, however, a new generation of digital and computational methods, spanning behavioral data on how people move and act in space and perceptual data on how they experience and evaluate it, has substantially expanded the methodological toolkit for assessing public space performance (Wang et al., 2025; Zhu et al., 2025). While existing reviews have catalogued these methodological advances in urban research, little systematic attention has been paid to how these methods are applied in the evaluation of public space interventions: studies that assess what changed, for whom, and to what effect.

This paper presents a systematic review of academic studies that apply human-centered data and computational methods to evaluate interventions in urban public spaces, following a PRISMA-based search and screening strategy (Xiao & Watson, 2017). The search draws on Web of Science and Scopus, covering publications from 2010 onward to reflect the rise of digital and computational methods in urban research. Included studies are analyzed along three primary dimensions: (1) intervention type—physical (redesign, infrastructural change) and non-physical (programmatic, regulatory, policy); (2) data type—behavioral (digital trace, video/sensor-based observation) and perceptual (survey, text, image, biometric), organized by data form (Niu & Silva, 2020; Yang et al., 2025); and (3) evaluation design—ex-ante (simulation, needs assessment) and ex-post (post-only, before-after, longitudinal, quasi-experimental). Studies are included regardless of specific space type—parks, plazas, streets, and other publicly accessible urban spaces—allowing space type to function as a descriptive variable rather than a boundary condition.

By examining these dimensions across the literature, this review illuminates how, and the extent to which, methodological innovation is being translated into policy-relevant evaluative practice. The findings identify how different intervention types are studied, which data forms are most commonly paired with evaluation tasks, and where evaluation designs fall short of causal rigor. As computational tools reshape how cities are planned and evaluated, evidence-based approaches to public space assessment are gaining traction. Within this shift, human-centered methods are gradually finding their way into evaluative practice. By taking stock of this emerging body of work, this review aims to inform both research and practice toward more inclusive and democratic approaches to public space planning.

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Key Words: Urban Design, Public Space, Systematic Review, Planning Evalution, Human Perception

FOR WHOM AND HOW SHOULD WE PRESERVE HERITAGE MEMORY? A PEOPLE-CENTERED TOOLKIT APPROACH FOR INDUSTRIAL HERITAGE REGENERATION IN CHONGQING POWER PLANT

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Research-in-Motion Presentation, Research currently in process

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Industrial heritage embodies irreplaceable collective memory, yet its regeneration often fails to answer a fundamental question: how and for whom are we preserving this memory? Key decisions—which buildings to keep or demolish, what functions to insert, how spaces should be designed—are frequently submerged in planners' intuition, reducing "public service" to an empty slogan. We hypothesize that a systematized but non-standardized toolkit can help planners make transparent, deliberative decisions while preserving creativity.

This study takes Chongqing Power Plant (53.41 ha), a representative industrial heritage site in China, as an example. We conducted site investigations, along with semi-structured interviews with former workers, residents, artists, and planning officials. We also collected data on site conditions and conducted literature and policy reviews. First, we constructed a toolkit guided by "shared human needs" (value consensus, interaction, spatial quality) and "resilient services" (social, environmental, economic). Second, we established a four-step process: site assessment, function layout, spatial design, and performance evaluation. The toolkit includes five levels: preservation-renovation-demolition assessment (13 indicators), function insertion and development intensity, cluster design (9 techniques), individual building design (15 techniques), and qualitative evaluation (6 dimensions). We applied it to the Chongqing Power Plant, testing its operability through self-reflection.

Our findings reveal a fundamental tension between the two value orientations. "Shared human needs" emphasizes community demands and collective memory, while "resilient services" prioritizes long-term flexibility. This tension reflects deeper value choices about whom regeneration serves. The toolkit does not eliminate conflicts by providing standard answers; instead, it foregrounds designers' value judgments, enabling integrated, innovative design.

Through layered application, we developed a multi-scale, full-cycle renewal model. For example, at the assessment level, the framework identified the twin chimneys as city-level landmarks and worker dormitories as carriers of community-level memory. Similarly, in function insertion, staged development balanced heritage preservation with new functions. At the design levels, techniques such as "highlighting key structures" and "simulating historical spatial sequences" translated preservation strategies into spatial interventions, culminating in signature nodes.

This study shows that design decisions can be systematized without being standardized. Beyond technical optimization, we must attend to whose memory is preserved and for whom we design. Considering memory ownership, function equity, spatial inclusivity, and participatory evaluation, we propose a people-centered decision framework. By transforming the ethical question of "whose heritage" into operational tools, this research offers new insights for planners and a pedagogical tool for design education.

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Key Words: Industrial Heritage, Regeneration, Design Toolkit, Collective Memory, Design Methodology

FROM INSTALLED TO INHABITED: MEASURING THE GAP BETWEEN POTENTIAL AND ACTUALIZED AFFORDANCES IN CHILDREN'S PARKS THROUGH USER-GENERATED CONTENT

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Track 12: Placemaking and Urban Design
Research-in-Motion Presentation, Research currently in process

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Cities around the world are investing in child-friendly park infrastructure, yet whether designed play features translate into children's activity experiences lacks systematic evidence. Existing evaluation instruments have long relied on expert audits, post-occupancy evaluations, and behavioral observation. These methods are resource-intensive and difficult to scale beyond individual parks (Meng & Wang, 2022). They also tend to focus on child-specific facilities while overlooking caregiver amenities that dictate children's park usage (Refshauge et al., 2012). This gap between design intent and actual use complicates both investment decisions and child-friendly city policy evaluation.

This study addresses three research questions: (1) How do the neighborhood-level built environment attributes moderate the conversion from park design to actual usage? (2) How do micro-level design features influence the degree of potential affordances actualization? (3) Does the UGC-based measurement framework demonstrate validity across divergent national contexts?

Drawing on affordance theory (Gibson, 1979; Kyttä, 2004), we distinguish potential affordances embedded in the physical environment from those children actively perceive and use. Since potential affordances are theoretically infinite, we apply Heft's (1988) taxonomy as a specific subset of environmental features supporting play activities (e.g., climbing structures, water, sand). Since children's park use depends on adult supervision, we add a caregiver co-affordance dimension (e.g., cafés, parking, restrooms). Together, these constitute the park-level affordance supply. Actualized affordances are measured along three dimensions. Breadth measures the proportion of designed affordance types that users actually use. Intensity quantifies the density of activity-related expressions, reflecting the depth of engagement. Quality captures users' affective orientation to specific activities, following valence-based approaches to experiential assessment (Huai & Van de Voorde, 2022).

The study proceeds in two phases. Phase I focuses on children's parks with sufficient review volume in the San Francisco Bay Area. The potential affordances are constructed from Google Maps POIs and official facility records. Actualized affordances are extracted from user review text through a two-step natural language processing (NLP) pipeline: activity-type classification, which identifies and categorizes affordance-related mentions to compute breadth and intensity; and aspect-based sentiment analysis, which evaluates the experiential quality of the activity. While reviewers are predominantly caregivers, caregiver proxy reporting is well-established in children's outdoor activity research (Veitch et al., 2006). The built environment is measured at the Census Block Group level using the 5D metrics from the U.S. EPA SLD (v3.0). Multilevel regression with random slopes tests main effects and cross-level interactions, controlling for park area, admission cost, safety features, and park age. Phase II applies the framework to children's parks in Shenzhen, China, using Amap/Baidu Maps as UGC sources. To accommodate differences in review culture and content structure, we adapt the Phase I coding scheme to establish a unified activity-type classification.

Most parks show a gap between potential and actualized affordance breadth. The completeness of caregiver co-affordance positively predicts actualization intensity and quality. Walkable, mixed-use neighborhoods strengthen the conversion from potential to actualized affordances.

The study extends Kyttä's affordance actualization framework with an explicit caregiver dimension, and the two-step NLP pipeline provides a low-cost and scalable alternative to expert field audits. The findings can inform performance evaluation of child-friendly city policies and guide targeted revisions to park design standards.

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Key Words: Actualized Affordances, Child-Friendly Parks, Caregiver Co-affordance, User-Generated Content, Cross-National Comparison

REASSEMBLING PUBLICNESS: STREETSCAPE RENOVATION AND THE RECONFIGURATION OF CIVIC LIFE IN A TOKYO SHŌTENGAI

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Track 12: Placemaking and Urban Design
Research-in-Motion Presentation, Research currently in process

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Shōtengai, traditional shopping streets in Japanese cities, occupy a distinctive position in the urban public space landscape: neither formally designed public spaces like parks and plazas, nor recently popularized privately owned public spaces (POPs), but streets that have long assembled commercial life, daily social encounter, and neighborhood identity. Co-managed by merchant associations and local government since the 1960s, they represent a form of civic space long overlooked as a distinct typology. Public space scholarship, largely divided between narratives of privatization and contraction on one side and insurgent public space on the other, offers limited views for understanding how this kind of space works or changes. Scholarship on streets has focused primarily on regulatory conflicts over informal uses, including vendor displacement, enforcement, grassroots resistance, with less attention to how the physical design of the street itself shapes the conditions under which publicness can emerge. As part of a larger ongoing comparative fieldwork in Tokyo and Seoul, this research asks: how do city-led design interventions reshape the informal spatial practices that constitute publicness in a traditional shopping street?

This qualitative case study focuses on Sugamo Jizō-dōri in Tokyo, known for its elderly clientele and its association with Kōganji Temple's longevity rituals. The street recently underwent a city-led project to bury utility poles and repave the road, a physical transformation that coincided with a noticeable shift in the social practices that long constituted its civic life. Drawing on systematic field observations, semi-structured interviews with shopkeepers and municipal officials, and visual documentation conducted during fieldwork between March 2025 and March 2026, the research traces how physical design change alters conditions of everyday sociality. Following Deleuze and Guattari's conceptualization of publicness as an assemblage, this research considers the interaction of material form, regulatory practice, and social use as a processual relation. It focuses on the processes and meaning of publicness, rather than evaluating elements such as ownership, management and accessibility as much of the literature on publicness does.

Emerging findings suggest that publicness at Sugamo was sustained by long-standing de facto informal practices in the blurred threshold between shop and street. The renovation, however, made it easier to enforce de jure norms prohibiting private encroachment into public space—hardening what Machimura calls the "contact zone," the informal threshold between shop and street where everyday sociality unfolded. Without any intention of displacement, the redesign has reconfigured the street's publicness: long-term users acknowledge a changed character, as the informal practices that once animated this threshold have given way to a cleaner, more formalized environment increasingly oriented toward tourists and younger visitors.

Beyond the well-documented relationship between private-sector design and exclusionary public spaces, this research shows that even a publicly led, neutrally-intended design intervention can reconfigure publicness through unintended regulatory consequences—not erasing civic life, but reassembling it around different spatial norms and users. The Sugamo case further demonstrates that traditional shopping streets constitute a distinct public space typology whose publicness is located not in formally public space but at the interface between public and private, a threshold animated by practices moving in both directions, as private life spills outward onto the street and the street spills inward into private premises. This typology, sustained through accumulated informal practices rooted

in cultural traditions rather than ownership or design, holds particular value as a diverse form of public space worthy of preservation.

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Key Words: public space, publicness, assemblage, design, shopping streets

URBAN DESIGN, SOCIAL INFRASTRUCTURE AND THE COMMON GOOD

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Track 12: Placemaking and Urban Design
Research-in-Motion Presentation, Research currently in process

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In recent years, there has been an effort to recenter urban design from an area of expertise largely concerned with the aesthetics of form and space to one which actively engages the political, social, and economic complexities of cities (Cuthbert and Suartika, 2025; Goh, et al., 2022). In this scenario, the primary purpose for urban design is not limited to the aesthetic but focused on broader goals related to the common good such as equity & spatial justice through empowerment and well-being for all communities, social cohesion in the context of demographic shifts, equitable economic development, biodiversity and climate adaptation, to mention a few. The pedagogical goals for urban design are also slowly shifting toward a discipline that is purpose-driven and more broadly relevant to the current crises facing societies—whether to address the issues of democracy, polarization, housing, public health, equitable access to amenities, or other imperative challenges. As a result, there is an emphasis to situate urban design as a discipline that contributes to the common good viewed collectively through the lenses of political, social, economic and environmental.

Due to this recent shift, there are numerous opportunities for urban design research and scholarship to build upon existing areas of research, test and question existing assumptions and premises, propose and test new methodologies, and explore new territories of inquiry. One of these is the space of interaction of the social and physical realms. There are two distinct aspects to this. First, the study of elements of urban design that can act as social infrastructure as a crucial dimension of response and adaptation mechanism for resilience within communities as common good for the residents of any city (Klinenberg, 2018). This has been recognized in the social science disciplines but not adequately studied as a spatialized design phenomenon. Second, although social science disciplines have thoroughly focused on the study of communities and neighborhoods, urban design has disproportionately focused on the "public city"—the downtowns, waterfronts, the public spaces, civic infrastructure and central core of cities—whereas the parochial realm of neighborhoods remains a ripe and underexplored territory in urban design. By focusing on the social and physical dimensions of social infrastructure within the parochial realm—the neighborhoods within a city—this research brings new understanding of how the numerous formal and spatial elements in neighborhoods perform the role of social infrastructure and mobilize to contribute to social, economic and environmental resilience as the common good for residents. This research-in-motion will present the findings from an ongoing project in Cincinnati, OH and will include the documentation and assessment of urban design elements that contribute to social infrastructure within three distinct types of neighborhoods in Cincinnati. These urban design elements include streets and public spaces (parks, plazas, playgrounds, etc.), community and recreation centers, libraries, schools, religious buildings, other civic buildings, neighborhood business districts and individual businesses that are community spaces, and more, within the neighborhood. To evaluate whether these urban design elements serve the common good, the assessment will ask how these elements act as social infrastructure and for whom.

Citations:

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Key Words: social infrastructure, urban design, neighborhoods

WHAT DRIVES OLDER ADULTS' URBAN VIBRANCY? THE ROLE OF OPEN SPACE DESIGN FEATURES IN SEOUL, SOUTH KOREA

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Track 12: Placemaking and Urban Design
Research-in-Motion Presentation, Research currently in process

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Public spaces are vibrant when they attract people, support everyday activities and enable social interaction (Huang et al., 2020), yet creating such environments for aging populations remains a distinct challenge. Older adults have different lifestyles and social needs than younger adults and face unique physical, psychological, and social constraints, including limited mobility, heightened sensitivity to microclimatic conditions, and reduced opportunities for spontaneous social engagement (Loukaitou-Sideris et al., 2014). Existing literature has extensively examined the built environment, morphological, and functional determinants of urban vibrancy using spatial big data (Huang et al., 2020; Jiang et al., 2022), and recent work has begun to analyze vibrancy patterns by age group (Jang et al., 2024); however, a critical gap remains in understanding which attributes of space drive older adults' urban vibrancy at a fine-grained spatial scale. In particular, qualitative research highlights that older adults have distinct open space needs spanning perceived safety, comfort, socialization, and physical support (Loukaitou-Sideris et al., 2014; Sugiyama et al., 2023). Yet these insights have not been integrated into a quantitative, data-driven framework that links measurable open space design features to observed urban vibrancy patterns among older adults at scale. This study addresses this gap by investigating why certain areas in Seoul, South Korea, attract disproportionately higher levels of older adult activity than others, relative to patterns observed among younger adults.

Using mobile phone signal-based foot traffic data disaggregated by age group as a proxy for urban vibrancy, we focus on the design characteristics of open spaces and nearby amenities that may be particularly attractive to individuals aged 60 and above. Specifically, we examine observations during weekend afternoons in June. We operationalize open space quality along three dimensions: (1) microclimate control; (2) features that support social interaction, such as seating availability in parks and along streets and small-scale gathering spots; and (3) the characteristics of nearby amenities. To quantify these features at scale, we employ computer vision techniques applied to street view imagery, combined with spatial amenity datasets. We then apply eXtreme Gradient Boosting (XGBoost) coupled with SHapley Additive exPlanations (SHAP) to explore the heterogeneous, nonlinear relationships between these explanatory variables and older adults' activity patterns at a fine-grained grid-cell scale across Seoul.

Preliminary results suggest that open space design features, particularly shade availability, seating density, and proximity to affordable small businesses, exhibit stronger positive associations with foot traffic among older adults than with younger adults, even after controlling for conventional built environment characteristics. The SHAP analysis reveals meaningful spatial heterogeneity in these relationships across different urban contexts within Seoul. This research bridges the gap between qualitative guidelines for senior-friendly open space design and large-scale, data-driven urban vibrancy analysis. The findings offer actionable insights for age-friendly urban design, informing planners about which specific open space interventions can most effectively enhance the everyday street life of older adults.

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STPP
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SUD
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Urban Amazonia
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Urban Back Streets
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Urban Climate
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Urban Resilience
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Within-Region Relocation
Women/Minority
Worker Housing
Workforce
Workforce Development
Working From Home
Writing Development
XML
Yangtze River Fishing Ban
Young Adults
Young Migrants
Young-Adult Mobility
Youth
Youth Camps
Youth Mental Health
Zoning
Zoning And Land Use
Zoning Policy
Zoning Reform
Zoning Regulations
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