Call for Papers: Health Analytics and IS Theorizing

Special Issue Guest Editors:

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Extended Abstract (5-page) Submission Deadline: February 1, 2023

To be considered for this special issue, an extended abstract must be submitted via the JAIS Manuscript Central submission system by **February 1, 2023** (please specify "Health Analytics and IS Theorizing" special issue in the cover letter when submitting). The abstract must be 5-pages maximum, single-spaced (12-point font), and will include an overview of the problem, data, method, and anticipated contribution(s). References are not included in the 5-page limit. We will be evaluating the abstract on fit and potential, not completed analyses. Selected extended abstract submissions will be invited to submit a full paper (see projected timeline and submission type specifics below). We encourage new and interesting work in health analytics and theory.

Objective:

The objective of this special issue is to showcase how health analytics can be used to enhance theorizing in the field of IS. In addition to its contribution to deep analysis, the power of health analytics research lies in theory development that leverages the unique context of health care. Specifically, the special issue aims to foster research that addresses the question: *How can the application and design of analytics methods identify insights from health data and extend IS theory?*

This special issue places analytics at the forefront of IS research so that health care researchers can make a theoretical contribution to IS research. Through this special issue, we hope to provide an opportunity for emerging and innovative health analytics research to be published that will showcase how new forms and combinations of theoretical reasoning, methods, and data can contribute to theory building.

Anticipated Contributions:

Our hope is that this special issue will contribute to deeper descriptions, explanations, and predictions of emerging health phenomena relevant to IS scholars as well as demonstrate to clinicians and patients opportunities that will enrich health care management and delivery. We welcome research at the intersection of traditional and emerging approaches, exploratory research, phenomenon-based research, novel methods, and data from any relevant source (with IRB approval, as needed). While we are open to discoveries of all kinds, we expect application of rigorous methods, presentation of persuasive reasoning, and inclusion of strong evidence. Accepted papers will likely contribute in one or more of the following areas, within the context of health analytics:

- Identification of new patterns or insights that challenge or refine existing assumptions.
- New (or new to IS) ways of blending the traditional and innovative (e.g.., causal ML).
- More nuanced understanding of how investments in or use of health analytics can solve societal or organizational resource allocation challenges.
- Innovative use of disparate data sources, either directly from industry, from publicly available sources, or combinations thereof.

We are especially interested in innovative combinations of emerging phenomena, use of AI/ML methods, and insightful data sources. Preference will be given to submissions that showcase emerging and creative approaches to theoretical reasoning, research designs, methods, and/or data. For instance, we are especially interested in application of econometric + machine learning (e.g., EconML) methods to emerging data sources, toward the goal of providing more fine-grained theoretical insights.

Topics of Interest:

The special issue is open to any relevant topic at the intersection of health care and analytics that expands IS-related theory. Some examples are:

1. Heterogenous treatment effects in areas such as health care performance, social determinants of health, use of patient generated health data, and offering or pricing of health care, pharmaceutical, medical device, or insurance products.
2. AI/ML based tools that can reduce information asymmetry, improve decision-making, or optimize information flows.
3. Unstructured data analysis, such as of digital trace data, images, or user-generated content, that yields insights about topical or trend dynamics.
4. Impact of, or disparities in, health analytic capabilities or investments by hospitals, clinics, or less frequently considered entities such as laboratories, pharmacies, medical device manufacturers, public health agencies, or charitable organizations.

5. Integration of personal device data to analyze trends, identify public health issues, and efficacy of treatments.
6. Any interesting or creative area we have yet to research in-depth in IS, such as topics in genomics, signal processing/telemetry, clinical trials, or epidemiology.

Background and Significance:

Health analytics can be generally described as generating insights from health data through analysis. Significant and impactful work in health analytics is emerging in the IS literature (e.g., Bardhan et al., 2015; Bygstad et al., 2020; Fang et al., 2021; Kankanhalli et al., 2016; Lin et al., 2017; Son et al., 2020), but there are also significant opportunities to leverage health analytics research to contribute to theorizing in IS. For instance, while interesting findings within IS have been presented in the context of health analytics use in hospitals (Bardhan et al., 2015; Bygstad et al., 2020) and clinical diagnostics or care (Fang et al., 2021; Son et al., 2020), many health analytics research contexts have yet to be exploited in IS research. In medical, health informatics, and data science literatures, the consideration of health analytics has been much more diverse. Studies have been conducted, for example, on how to apply ML toward a deeper understanding of substance abuse treatment disparities (Nasir et al., 2021), identifying latent topics associated with COVID-19 vaccine discussions on Twitter (Lyu et al., 2021), making connections between research disciplines during viral outbreaks (Powers-Fletcher et al., 2021), and optimal use of visualizations to reduce cognitive load and increase efficacy of health analytics output use by clinicians (Caban & Gotz, 2015). The diversity of data and contexts within which to conduct health analytics research is substantial and such diversity is currently underrepresented in IS journals.

We propose that health analytics research can advance beyond presentation of context specific models and methods. For instance, we now know a lot more about how to effectively manage AI resources (Berente et al., 2021), how chronic disease information can be leveraged to improve outcomes (Bardhan et al., 2020), and how machine learning (Leavitt et al., 2021; Padmanabhan et al., 2022; Tremblay et al., 2021) and computational approaches (Berente et al., 2019; Miranda et al., 2022; Shrestha et al., 2021) can be leveraged for theory building. However, application of these innovative approaches to theory building with health analytics research is at a nascent stage. We see considerable promise in applying such innovative approaches to the enhancement of IS theory, particularly in explaining IS-enabled mechanisms, through research conducted in the health analytics context.

Submission Criteria:

Submissions to this special issue can be:

- Research Articles (14,000 words or less; see JAIS Instructions for Authors for full requirements), which must include theorizing and an empirical component.
- Research Briefs (7,000 words or less) which must include an empirical component. The theorizing may be more limited, or more inductive or abductive, if this is a new phenomenon or approach. For this submission type, we suggest being guided by

"phenomenon-based theorizing" (Gregory & Henfridsson, 2021; Von Krogh, 2018) or a related approach that supports early theory development.

- Research Perspectives (8,000 words or less), which do not require an empirical component but should "provoke exciting discussion" at the intersection of IS theory and health analytics. For this submission type, please focus on an interesting area of debate or tension. We encourage perspectives such as: free market vs. drug pricing controls, data privacy vs. public good, mandatory vs. voluntary use of predictive (or prescriptive) models in areas such as clinical decision making, risk adjustment, utility vs. cost functions applied to patient behavior nudges, standard vs. heterogenous treatment effects, inferential vs. ML approaches.

Please submit through the JAIS Scholar One submission system and please *be sure to state that you are submitting to the "Health Analytics and IS Theorizing Special Issue" in the cover letter.* Please also be sure to *specify whether you are submitting a Research Article, Research Brief, or a Research Perspective*. There is no need to recommend a senior editor or editorial board member, as the guest editors of this special issue will handle all submissions. However, in your cover letter, please do list conflicts of interest with any of the special issue editorial board members.

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Projected Timelines and Process:

This special issue is organized to support a developmental process meant to help early-stage ideas progress. The projected timeline is as follows:

- **Extended abstract due by: Feb 1, 2023**
    - Extended abstract decision: March 2023
- **1st round submission due by:** Aug 1, 2023
    - 1st round full paper decision: Oct 2023
- **2nd round submission due by:** Jan 15, 2024
    - 2nd round full paper decision: March 2024

References:

Bardhan, I., Chen, H., & Karahanna, E. (2020). Connecting systems, data, and people: A multidisciplinary research roadmap for chronic disease management. *MIS Quarterly, 44*(1), 185-200.

Bardhan, I., Oh, J.-h., Zheng, Z., & Kirksey, K. (2015). Predictive analytics for readmission of patients with congestive heart failure. *Information Systems Research, 26*(1), 19-39.

Berente, N., Gu, B., Recker, J., & Santhanam, R. (2021). Managing artificial intelligence. *MIS Quarterly, 45*(3), 1433-1450.

Berente, N., Seidel, S., & Safadi, H. (2019). Research commentary—data-driven computationally intensive theory development. *Information Systems Research, 30*(1), 50-64.

Bygstad, B., Øvrelid, E., Lie, T., & Bergquist, M. (2020). Developing and organizing an analytics capability for patient flow in a general hospital. *Information Systems Frontiers, 22*(2), 353-364.

Fang, X., Gao, Y., & Jen-Hwa Hu, P. (2021). A Prescriptive Analytics Method for Cost Reduction in Clinical Decision Making. *MIS Quarterly, 45*(1), 83-115.

Gregory, R. W., & Henfridsson, O. (2021). Bridging Art and Science: Phenomenon-Driven Theorizing. *Journal of the Association for Information Systems, 22*(6), 1509-1523.

Kankanhalli, A., Hahn, J., Tan, S., & Gao, G. (2016). Big data and analytics in healthcare: Introduction to the special section. *Information Systems Frontiers, 18*(2), 233-235.

Leavitt, K., Schabram, K., Hariharan, P., & Barnes, C. M. (2021). Ghost in the machine: On organizational theory in the age of machine learning. *Academy of Management Review, 46*(4), 750-777.

Lin, Y.-K., Chen, H., Brown, R. A., Li, S.-H., & Yang, H.-J. (2017). Healthcare predictive analytics for risk profiling in chronic care: A Bayesian multitask learning approach. *MIS Quarterly, 41*(2), 473-495.

Lyu, J. C., Le Han, E., & Luli, G. K. (2021). COVID-19 vaccine–related discussion on Twitter: topic modeling and sentiment analysis. *Journal of Medical Internet Research, 23*(6), e24435.

Miranda, S., Berente, N., Seidel, S., Safadi, H., & Burton-Jones, A. (2022). Editor's Comments: Computationally Intensive Theory Construction: A Primer for Authors and Reviewers. *MIS Quarterly, 46*(2), iii-xviii.

Nasir, M., Summerfield, N. S., Oztekin, A., Knight, M., Ackerson, L. K., & Carreiro, S. (2021). Machine learning–based outcome prediction and novel hypotheses generation for substance use disorder treatment. *Journal of the American Medical Informatics Association, 28*(6), 1216-1224.

Padmanabhan, B., Sahoo, N., & Burton-Jones, A. (2022). Machine Learning in Information Systems Research. *MIS Quarterly, 46*(1), iii-xix.

Powers-Fletcher, M. V., McCabe, E. E., Luken, S., Wu, D., Hagedorn, P. A., Edgerton, E., Koshoffer, A., Washington, D., Kannayyagari, S., & Lee, J. (2021). Convergence in Viral Outbreak Research: Using Natural Language Processing to Define Network Bridges in the Bench-Bedside-Population Paradigm. *Harvard Data Science Revie*w, 3(1).

Shrestha, Y. R., He, V. F., Puranam, P., & von Krogh, G. (2021). Algorithm Supported Induction for Building Theory: How Can We Use Prediction Models to Theorize? *Organization Science, 32*(3), 856-880.

Son, J., Flatley Brennan, P., & Zhou, S. (2020). A Data Analytics Framework for Smart Asthma Management Based on Remote Health Information Systems with Bluetooth-Enabled Personal Inhalers. *MIS Quarterly, 44*(1), 285-203.

Tremblay, M. C., Kohli, R., & Forsgren, N. (2021). Theories in Flux: Reimagining Theory Building in the Age of Machine Learning. *MIS Quarterly, 45*(1), 455-459.

Von Krogh, G. (2018). Artificial intelligence in organizations: New opportunities for phenomenon-based theorizing. *Academy of Management Discoveries*, 4(4), 404-409.