Data Linkage for Local Jurisdictions

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Overview

• CARES Integrated Data System
• Overdose Use Case
• Other PDPH Data Linkage Projects
CARES Integrated Data System
What is CARES?

• Integrated Data System based on government maintained, administrative data sets
  • Identified, client-level data linked across departments
  • Longitudinal service and event data
  • Routine data integration model and external cohort matching feature
  • Capacity to link family members (mother/child strongest)

• Uses:
  • Planning
  • Monitoring
  • Program Evaluation
  • Research
  • Care Coordination
Participant Matching

• Incorporates deterministic matching. Data are scored and matched based on weights which are associated with values of specific attributes:
  • First name, last name, gender, birth date, SSN, phone number, street address, source party identifier
  • “Best Fit” profile of client establishes which data elements collected are the most current and accurate
  • Enterprise Party ID represents all records belonging to the same client

• Services received by individuals and their family members can be identified for each record.

• Match point thresholds can be adjusted to achieve a high degree of accuracy for certain matches, and a lesser degree for others

• Rematching is done when demographic attributes change.
Fully Integrated Data Sources

- Publicly funded substance abuse and mental health services (uninsured, underinsured, and Medicaid)
- Homeless Services (emergency shelter, transitional housing, permanent supportive housing, homelessness prevention, rapid rehousing, street outreach)
- Department of Human Services (child delinquency & dependency data)
- Local incarceration
- Lead Exposure Testing
Externally Matched Cohorts

- Birth Records
- Death Records
- Pre-K Enrollment
- Police (Criminal Justice, Arrests, Pedestrian Stops, Vehicle Stops)
- Early Intervention Services
- Medical Examiner’s Office
Key Attributes

- Client and system generated identifiers
- Demographics
- Address
- Service start and end dates
- Service types
- Service costs
- Service provider
- Diagnoses
- Contextual event data
Data Sharing

• Supported by Memorandum of Understanding and Supporting Data License Agreements
  • CARES Data Request
  • HHS Data Sharing Framework (Does not requires CARES Project Involvement)

• Documented scope and approval from leadership in key data contributing entities

• Research also includes:
  • IRB Approval
  • Execution of City’s Data License Agreement
CARES Data Request

- Project description including purpose, cohort, time period, and data elements needed

- Type of Data:
  - Aggregate - Data/Summary Only
  - Detailed - Identifiable Data *(Requires legal review & must address federal/state approval requirements)*
  - Detailed - Limited Data Set *(Requires legal approval & must meet HIPAA requirements)*
  - Detailed - De-Identified Data

- Information on Data Recipient

- Signatures and Approval of All Contributing Agencies
Security and Compliance

• Technical Infrastructure
  • Secure, encrypted transfer
  • Stored on secure servers
  • User controls with limited accessibility to identified data

• Project documentation and approval process

• Experience and knowledge of federal and state regulations working with protected data across domains
  • HIPAA, FERPA, HMIS, PA Child Protective Services Code, PA Juvenile Justice Code, Medicaid, PA Mental Health Code, PA Drug and Alcohol Code, CHRIA
Onboarding New Data Sources

- Police Department
- Medical Examiner Data
- Medicaid Pharmacy and Physical Health Claims
- Emergency Medical Services
Overdose Use Case

What city services were received in the years prior to death by overdose decedents?
Objective

• To match unintentional fatal overdose information across city data sources to understand which systems overdose decedents may have interacted with prior to death

• Used to Identify 6 Decedents per Quarter to Review for Overdose Fatality Review Program
Creation of a HIPAA Support Unit

• Support Unit:
  • HIPAA covered unit needs to share data with another part of the city to help the covered unit carry out its responsibilities
  • Support unit must keep covered unit’s health information separate from their own information
  • Must guard information from unauthorized uses and disclosures
  • Allows specific people at PDPH to receive HIPAA protected data
<table>
<thead>
<tr>
<th>City Department</th>
<th>Role of Program</th>
<th>Description of Data being Matched</th>
<th>Years Matched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Health Services Initiative</td>
<td>Assesses, refers, and fund treatment for persons uninsured and underinsured with substance abuse problems</td>
<td>Substance abuse treatment services</td>
<td>1993-Present</td>
</tr>
<tr>
<td>Community Behavioral Health</td>
<td>Managed care organization providing mental health and substance abuse services for Philadelphia</td>
<td>Substance abuse and mental health treatment services</td>
<td>1997-Present</td>
</tr>
<tr>
<td>Office of Mental Health</td>
<td>Provides mental health services for adults and children requiring medical, social, and educational services</td>
<td>Mental health services</td>
<td>2002-Present</td>
</tr>
<tr>
<td>Street Outreach</td>
<td>Outreach to persons living on the street</td>
<td>Street Contacts</td>
<td>2002-Present</td>
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</tr>
<tr>
<td>Department of Human Services</td>
<td>Promotes child safety, permanent housing, and well-being for children and youth at risk of abuse neglect or delinquency</td>
<td>Juvenile Justice Services and Children and Youth Services</td>
<td>1985-Present</td>
</tr>
<tr>
<td>Office of Homeless Services</td>
<td>Collaborates with housing and service providers to provide emergency housing and services to people who are homeless or at risk of Homelessness</td>
<td>Shelter stays, Safe Havens, and Journey of Hope</td>
<td>1991-Present</td>
</tr>
<tr>
<td>Department of Prisons</td>
<td>Incarcerates individuals awaiting trial, sentencing, or transfer to state prisons, those serving shorter sentences, and those who violated parole or probation</td>
<td>Incarceration history</td>
<td>1992-Present</td>
</tr>
<tr>
<td>Police Department</td>
<td>Police agency responsible law enforcement and investigations in the City</td>
<td>Arrest and charge history</td>
<td>2006-Present</td>
</tr>
</tbody>
</table>
Results
2017 to 2019 Overdose Decedents
Number of Unintentional Overdose Deaths by Drugs Involved, 2010-2019

*Includes non-resident deaths who died in Philadelphia
Number of Overdose Deaths by Specific Drugs Involved, 2010-2019

*Includes non-resident deaths who died in Philadelphia
### Overdose Death Rates by Age, Sex, and Race/Ethnicity, 2018-2019

<table>
<thead>
<tr>
<th>Age Category</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-25 years</td>
<td>15.8</td>
<td>17.3</td>
</tr>
<tr>
<td>25-34 years</td>
<td>67.0</td>
<td>75.6</td>
</tr>
<tr>
<td>35-44 years</td>
<td>106.3</td>
<td>118.9</td>
</tr>
<tr>
<td>45-54 years</td>
<td>132.2</td>
<td>126.7</td>
</tr>
<tr>
<td>55-64 years</td>
<td>113.9</td>
<td>116.6</td>
</tr>
<tr>
<td>65+ years</td>
<td>21.7</td>
<td>29.1</td>
</tr>
</tbody>
</table>

#### Sex
- Female: 2018 - 31.7, 2019 - 32.0
- Male: 2018 - 90.6, 2019 - 98.7

#### Race/Ethnicity
- Hispanic: 2018 - 64.2, 2019 - 79.8
- White, non-Hispanic: 2018 - 83.6, 2019 - 80.7
City Interactions Prior to Death

Percentage of overdose decedents interacting with the city by years prior to death:

- <1 year: 54%
- 1-5 years: 64%
- >5 years: 69%
- Ever: 81%
Latent Class Analysis

- Decedents are classified into mutually exclusive groups based off their historical interactions with City Services.
- Decedents are grouped based on interactions with particular city services at various times points (<1 year, 1-5 years, and >5 years before death).
- Classes are used to select cases for overdose fatality review program.
- To maximize delineation of classes, we excluded interactions from the latent class analysis where prevalence of the interaction was <15%.
  - Children and Youth Services
  - Juvenile Justice Services
  - Street Outreach
  - Homeless Services
<table>
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<th>Description of Class</th>
<th>Total (%)</th>
</tr>
</thead>
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<tr>
<td>No or Very Low City Interactions Across Lifetime</td>
<td>896 (29.9)</td>
</tr>
<tr>
<td>Behavioral Health Service Use ≥1 Years Prior to Death</td>
<td>624 (20.8)</td>
</tr>
<tr>
<td>City Interactions Across Lifetime</td>
<td>718 (24.0)</td>
</tr>
<tr>
<td>Law Enforcement Interactions ≥1 Year Prior to Death</td>
<td>437 (14.6)</td>
</tr>
<tr>
<td>Behavioral Health Service Use ≤5 Years Prior to Death</td>
<td>320 (10.7)</td>
</tr>
</tbody>
</table>
Other Data Linkage Projects
Other Data Linkage Projects

- Incarceration data matched to fatal overdoses
- EMS non-fatal overdose data matched to fatal overdoses
- Infectious disease data matched to fatal overdoses (HIV, hepatitis B, hepatitis C, and other STIs)
- Medicaid pharmacy claims for medications for opioid use disorder matched to fatal overdoses
- PDMP data will be matched to fatal overdoses
Combating the opioid epidemic
Fighting back against the opioid crisis in Philadelphia.

www.phila.gov/opioids

For more information:

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