Making Data Simple:

Dashboards and Visualization

July 18, 2019

Welcome and Introductions
Presenters

• **Eric G. Hulsey, DrPH, MA**  
  Manager of Behavioral Health Analytics  
  Allegheny County Department of Human Services

• **Laura Hendrick**  
  Field Intelligence Manager  
  Philadelphia Field Division  
  Drug Enforcement Administration

---

Analyzing and Visualizing Public Systems Data to Communicate Opportunities to Reduce Overdose Deaths

Eric G. Hulsey, DrPH, MA  
Manager of Behavioral Health Analytics
Overview

• Allegheny County data warehouse
• Analytic steps
• Visualization considerations
• Examples of analytic output and products
• Future efforts

Integrated Data Systems

**Childhood and Education Services**
- Early intervention
- HeadStart
- Home visiting
- Family support centers
- Child welfare
- Family court
- Pittsburgh public schools + ten additional school districts

**Basic Needs**
- Homeless
- Housing supports
- Public benefits
- Public housing
- Employment/unemployment
- Transportation (for medically fragile)
- Aging services and supports

**Physical and Behavioral Health**
- Mental health services (Medicaid and uninsured)
- Substance use services (Medicaid and uninsured)
- Physical health services (Medicaid)
- UPMC Health Plan (commercial)
- Intellectual disabilities

**Juvenile and Criminal Justice**
- Juvenile probation
- Delinquency
- Pittsburgh Bureau of Police
- Criminal court
- Allegheny county jail
- 9-1-1 dispatches

**Vital Records**
- Birth records
- Autopsy records
Traditional Reporting and Data Visualization
Overdose Epidemiology and Opportunities for Intervention

By population: opioid-related overdose death rates by age, sex, and race: 2015–2016 (n=903)
Prior Health and Human Service Involvement 2015–2016

In the year prior to the deaths of these 910 individuals

- 164 (18%) had been released from jail
- 388 (43%) had received a publicly funded behavioral health service
  - 257 (28%) had received a substance use disorder service
  - 313 (34%) had received a mental health service
  - 182 (20%) had received both
- 27 (3%) were listed as parents on open child welfare cases
  - 87 children were potentially affected by a person’s death
  - 68 were <18 at the time of the death
- 45 (5%) had some contact with homeless and housing services

Time (in days) between last public system encounter and fatal overdose: 2015–2016

Top five SUD services (n=97)

<table>
<thead>
<tr>
<th>Range</th>
<th>Jail</th>
<th>MH</th>
<th>SUD</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30</td>
<td>43</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>31-60</td>
<td>17</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>61-90</td>
<td>17</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>164</td>
<td>133</td>
<td>257</td>
</tr>
</tbody>
</table>

Top five MH services (n=140)

<table>
<thead>
<tr>
<th>Service Type</th>
<th># People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient</td>
<td>59</td>
</tr>
<tr>
<td>Targeted Case Management</td>
<td>20</td>
</tr>
<tr>
<td>Mental Health Crisis Intervention</td>
<td>15</td>
</tr>
<tr>
<td>Psychiatric Hospital Inpatient</td>
<td>11</td>
</tr>
<tr>
<td>Transitional and Community Services</td>
<td>14</td>
</tr>
</tbody>
</table>

Top five SUD services (n=97)

<table>
<thead>
<tr>
<th>Service Type</th>
<th># People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient</td>
<td>35</td>
</tr>
<tr>
<td>Methadone Maintenance</td>
<td>25</td>
</tr>
<tr>
<td>Non-Acute Hospital Rehabilitation</td>
<td>25</td>
</tr>
<tr>
<td>(Short- and Long-Term)</td>
<td></td>
</tr>
<tr>
<td>Non-Hospital Detoxification</td>
<td>18</td>
</tr>
<tr>
<td>Intensive Outpatient</td>
<td>11</td>
</tr>
</tbody>
</table>

[Graph showing trends in overdose deaths]

Mapping and Spatial Analysis
By location: heatmap of opioid-related overdose death incidents: 2008–2017

By location: opioid-related overdose deaths by municipality and neighborhood: 2015–2016
Dashboards

Interactive online dashboard for surveillance/monitoring

www.alleghenycountyanalytics.us
Interactive online dashboard about public system encounters prior to overdose death

www.alleghenycountyanalytics.us

Data Into Action
Shaping Policy and Practice

- Dept of Human Services
  - Incentivized mental health providers incorporate overdose prevention and distribute naloxone
  - Dialogue within child welfare about overdose prevention and carrying naloxone
- Health department
  - Distributed naloxone to hard-hit areas/communities
  - Identified communities eligible for minigrants to address the issue
- County jail
  - Naloxone distribution to inmates as they are released from county jail
- Municipalities collaborating (CONNECT)
  - Subcommittee formed to engage in planning and cross-municipal efforts to reduce deaths

Thank you!

Visit: www.alleghenycountyanalytics.us

Email: eric.hulsey@alleghenycounty.us
DATA VISUALIZATION IN LAW ENFORCEMENT

DEA PHILADELPHIA FIELD DIVISION
JUNE 2019

EVERYONE WANTS DATA
DATA VISUALIZATION IN LAW ENFORCEMENT

- The DEA Philadelphia Division has worked continuously over the last five years to collect, analyze, and disseminate information regarding trends in drug availability and abuse in Pennsylvania and Delaware. The analysis of myriad data sets plays a pivotal role in law enforcement’s efforts to identify and combat drug suppliers, and ultimately drug abuse and related overdoses.

- Such data analysis highlights geographic patterns of abuse and identifies at-risk populations, and, when coupled with drug treatment statistics, law enforcement drug seizure data, and public health indicators, allows for multidisciplinary data-driven decisions regarding resource placement and strategic initiatives.

DATA VISUALIZATION IN LAW ENFORCEMENT

- Data visualization project on drug-related overdose deaths in Pennsylvania (statewide) and Philadelphia (city).

- DEA collects drug overdose data (de-identified) for all Pennsylvania counties to assess drug availability through toxicology and to identify emerging trends.
DATA VISUALIZATION IN LAW ENFORCEMENT

Most frequent drug in overdose toxicology by county, Pennsylvania, 2015–2018
DATA VISUALIZATION IN LAW ENFORCEMENT

- Philadelphia overdose death data is analyzed similarly to statewide data—where are drugs available, how far do people travel to purchase/use them, what are the changes over time?
DATA VISUALIZATION IN LAW ENFORCEMENT

- Data visualization project on laboratory analyzed drug seizures reported by federal, state, and local law enforcement
DATA VISUALIZATION IN LAW ENFORCEMENT

- NFLIS data
  - Indicator of drug presence by county/region/state
    - Identify changes over time

Pennsylvania Drugs (Excerpted Groups) Seized and Analyzed by Year:

<table>
<thead>
<tr>
<th>Year</th>
<th>Heroin</th>
<th>Cocaine</th>
<th>Fentanyl</th>
<th>Methamphetamine</th>
<th>Prescription Opiates</th>
<th>FRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>44.75%</td>
<td>32.06%</td>
<td>8.15%</td>
<td>7.33%</td>
<td>7.79%</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>33.84%</td>
<td>30.97%</td>
<td>8.96%</td>
<td>8.65%</td>
<td>3.89%</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>27.50%</td>
<td>31.71%</td>
<td>26.92%</td>
<td>12.85%</td>
<td>7.08%</td>
<td>5.33%</td>
</tr>
</tbody>
</table>
Fentanyl Analyzed Seizures (# of Exhibits) - Showing Number of Exhibits Year to Year

Fentanyl Analyzed Seizures (# of Exhibits) - Showing Percentage Change Year to Year
DATA VISUALIZATION IN LAW ENFORCEMENT

- Visualizing data for action within law enforcement and for sharing with partners allows for timely assessments of drug threats and coordinated action to address drug supply.