Researchers across disciplines are developing innovative ways to understand and address the current opioid epidemic using “Big Data”

Today’s panel highlights two such projects:

- The Delaware Opioid Metric Intelligence project (DOMIP – funded by the National Institute of Justice) and

- The Florida Drug-Related Outcomes and Tracking System (FROST- funded by the Bureau of Justice Assistance)
Presentation Format

- Two presentations & Open Dialogue
  1. Delaware DOMIP
  2. Florida FROST
  3. Question set posed to each project group by moderator
  4. Open discussion with audience
  5. Adjourn @ 3:20
Delaware Opioid Metric Intelligence Project (DOMIP)

https://www.cdhs.udel.edu/projects/domip

Support is provided by Award No. NIJ Grant 2017-IJ-CX-0016, of the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice.
The Delaware Opioid Metric Intelligence Project (DOMIP) – seeks to improve drug intelligence and community surveillance to help reduce Delaware’s Rx opiate, heroin, opioid and related problems.

- Goal #2. Perform trend analyses to investigate over time changes.
- Goal #3. Perform pre & post-test analysis of new Rx opiate, heroin and opioid-based NPS policies to assess the impact on public health and crime metrics.
- Goal #4. Conduct hot spots mapping for place-based interventions.
- Goal #5. Statistically model theories of negative opioid and crime outcomes.
DOMIP Dashboard

Delaware Opioid Metric Intelligence Project (DOMIP)

**Census Tract**
- Printed Maps:
  - 2018
  - 2017
  - 2016
  - 2015
  - 2014
  - 2013

**Zip Code**
- Printed Maps:
  - 2018
  - 2017
  - 2016
  - 2015
  - 2014
  - 2013
DOMIP Dashboard - Compare Years

Overdose Deaths By Census Tract

2013 Census Tract
Overdose Death Rate (Age Adjusted per 100,000 Residents)

- 78+
- 48 - 77.9
- 28 - 47.9
- 1 - 27.9
- 0

2017 Census Tract
Overdose Death Rate (Age Adjusted per 100,000 Residents)

- 78+
- 48 - 77.9
- 28 - 47.9
- 1 - 27.9
- 0
DOMIP Dashboard - Change Units

Overdose Deaths by Zip Code

Resources:
- Methadone Clinics
- Residential Treatment Facilities
- Detox Facilities
- Outpatient Treatment Facilities
- Transitional and Sober Living
- Other Support Services

Zip Code 2018
Overdose Death Rate (Age Adjusted per 100,000 Residents)
- 55+
- 32 – 54.9
- 17 – 31.9
- 5 – 16.9
- 0 – 4.9

Overdose Deaths by House District

Resources:
- Methadone Clinics
- Residential Treatment Facilities
- Detox Facilities
- Outpatient Treatment Facilities
- Transitional and Sober Living
- Other Support Services

House District 2018
Overdose Death Rate (Age Adjusted per 100,000 Residents)
- 33+
- 21 – 32.9
- 15 – 20.9
- 11 – 14.9
- 0 – 10.9
DOMIP Dashboard - Print Maps

Delaware Opioid Metric Intelligence Project (DOMIP)

Census Tract

- Printed Maps:
  - 2018
  - 2017
  - 2016
  - 2015
  - 2014
  - 2013

Zip Code

- Printed Maps:
  - 2018
  - 2017
  - 2016
  - 2015
  - 2014
  - 2013
DOMIP Scientific Contributions

Predicting Opioid Prescriptions

Predicting Overdose Death Rates

Predicting Opioid Arrest Rates by Race

Understanding Differences in Types of Opioid Prescriptions Across Time and Space: A Community-Level Analysis

Understanding Geographic and Neighborhood Variations in Overdose Death Rates

Revisiting Neighborhood Context and Racial Disparities in Drug Arrests Under the Opioid Epidemic
### Predicting Opioid Prescriptions

- **Population characteristics linked to prescribing rates**
- **PDMP payment also affects prescriptions**

<table>
<thead>
<tr>
<th>Community Predictor</th>
<th>Effect on Change in Prescriptions (2010-2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent White Pop.</td>
<td>0.57 (0.23)*</td>
</tr>
<tr>
<td>Percent Veteran Pop.</td>
<td>3.76 (1.02)*</td>
</tr>
<tr>
<td>Rate Rx paid by Commercial Insurance</td>
<td>−0.66 (0.12)*</td>
</tr>
<tr>
<td>Rate Rx paid by Medicaid/Medicare</td>
<td>0.49 (0.14)*</td>
</tr>
</tbody>
</table>

Predicting Overdose Death Rates

- Overdose death rates vary up to 13 fold by community type
- Death rates growing & often similar across SES

Wagner et al. (2019). *Journal of Community Health.*
Predicting Opioid Arrest Rates by Race

- Most opioid arrests among Whites
- Overdose calls predict White arrest rates
- Disadvantage & racial diversity predict Black arrest rates

Donnelly et al. (In Press). *Race and Justice.*
DOMIP Funding Information

This project was supported by Award No. NIJ Grant 2017-IJ-CX-0016, awarded by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this publication/program/exhibition are those of the author(s) and do not necessarily reflect those of the Department of Justice.
Data Science and Opioids

Chris Delcher, PhD
Associate Director, Institute for Pharmaceutical Outcomes & Policy
College of Pharmacy
University of Kentucky
11/15/2019
Florida drug-Related Outcomes Surveillance and Tracking System
FL County-level clustering (picture)

**Prescribing Rates per 1,000 Population**

**Drug-Related Death Rates per 100,000 Population**

### Stimulant

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2017</th>
</tr>
</thead>
</table>

### Methamphetamine

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2017</th>
</tr>
</thead>
</table>

### Cocaine

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2017</th>
</tr>
</thead>
</table>

Kentucky Drug Overdose Mortality Dashboards
Updated 09/25/2019

Kentucky Resident Drug Overdose Deaths by County
Methodological Complexities in Quantifying Rates of Fatal Opioid-Related Overdose

Svetla Slavova, Chris Delcher, Jeannine M. Buchanich, Terry L. Bunn, Bruce A. Goldberger, Julia F. Costich.

• Increases in opioid prescribing associated with increases in child removals

• High-dose opioid prescribing associated with increases in child removals

• Increases in medication assisted therapy opioids, decreases in child removals.

• High-risk prescribing still occurs despite risks
Nationally, in 2017, there were over 72,000 drug overdose deaths with the largest increase in deaths related to fentanyl and synthetic opioids. Provisional data released from the Centers for Disease Control and Prevention (CDC) shows a decrease in fatal overdoses from 2017 to 2018, however, there is an absent methodology nationally to track non-fatal overdoses. ODMAP offers the ability to collect both suspected fatal and non-fatal overdoses, in real time, across jurisdictions, to mobilize a cohesive and collaborative response.
Funding Sources & Citation

- Bureau of Justice Assistance, Office of Justice Programs, U.S. Department of Justice (2016-PM-BX-K005; 2017-PM-BX-K038; PIs: Delcher & Goldberger); 2) the Office of National Drug Control Policy (ONDCP) through the South Florida High Intensity Drug Trafficking Area (SFLHIDTA).

Moderator dialogue: Data Science Challenges

1. Reconciling “academic” interests with “real world realities”
   - Data Use Agreements, MOUs, IRBs
   - Data Quality and Integration

2. Communication w/State Agencies - (Email, Phone, etc. slow!)

3. Data Clearance/Security
   - Security policies
   - Onboarding staff

4. Data Costs

5. Granularity of Data
Audience Questions