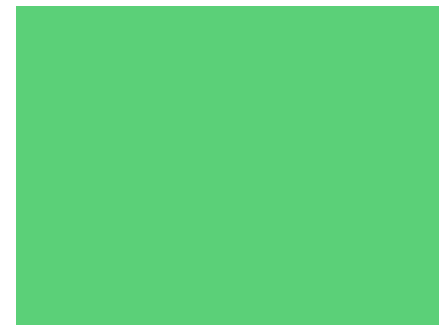
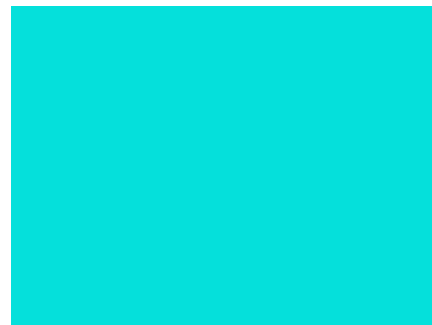




**DATA SCIENCE
SOLUTIONS TO
COMBATTING
OPIOID AND CRIME
PROBLEMS**



**American Society of Criminology Meeting
November 15, 2019
San Francisco, CA**

+ Big Problems & Big Data

- ❑ 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)

3



The screenshot shows the University of Delaware Center for Drug & Health Studies website. The header includes the university logo and navigation links like 'Visit', 'Apply', and 'Give'. Below the header, the center's name is prominently displayed. A navigation bar lists various sections: ABOUT US, PEOPLE, PROJECTS, PUBLICATIONS, RESOURCES, SEOW, and NEWS FROM THE FIELD. The 'PROJECTS' section is active, showing a list of projects including DOMIP. The DOMIP project page is highlighted, featuring a map of Delaware and the project title 'Delaware Opioid Metric Intelligence Project'. The page lists Tammy L. Anderson, PhD, as the Principal Investigator and Daniel O'Connell, PhD, as the Co-Investigator. It also mentions the Center for Drug & Health Studies. The main text describes the project's goal to reduce prescription and illicit drug problems by integrating data on overdose deaths, crime, and population characteristics. It mentions the 'DOMIP Mapping app' which contains six years of integrated data for community surveillance, statistical analysis, and mapping of opiate and crime-related metrics. The text also notes that users can select layers to view overdose deaths and plot treatment resources, and that the information will inform best practices to reduce the negative impact of the opioid problem.

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

NIJ | *National Institute of Justice*
STRENGTHEN SCIENCE. ADVANCE JUSTICE.

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.



DOMIP Project Description

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 #1. Build a six-year (2013-2018) de-identified dataset with critical opiate, heroin, and opioid-based NPS public health and crime metrics.
- 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

5

About DOMIP



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](#)

Overdose Deaths By Census Tract

Center for Drug and Health Studies



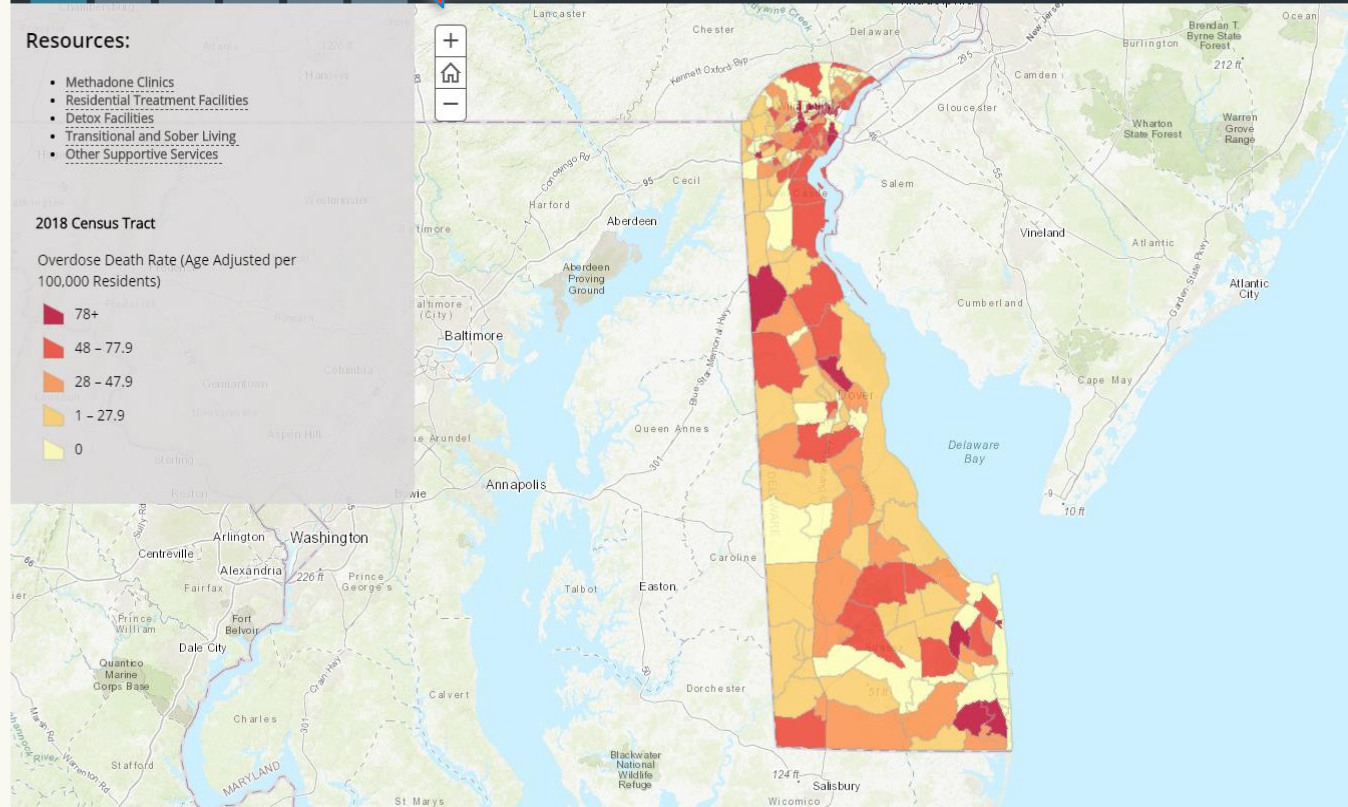
2018 2017 2016 2015 2014 2013

Resources:

- Methadone Clinics
- Residential Treatment Facilities
- Detox Facilities
- Transitional and Sober Living
- Other Supportive Services

2018 Census Tract

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



+ DOMIP Dashboard- Compare Years

6

Overdose Deaths By Census Tract

2018

2017

2016

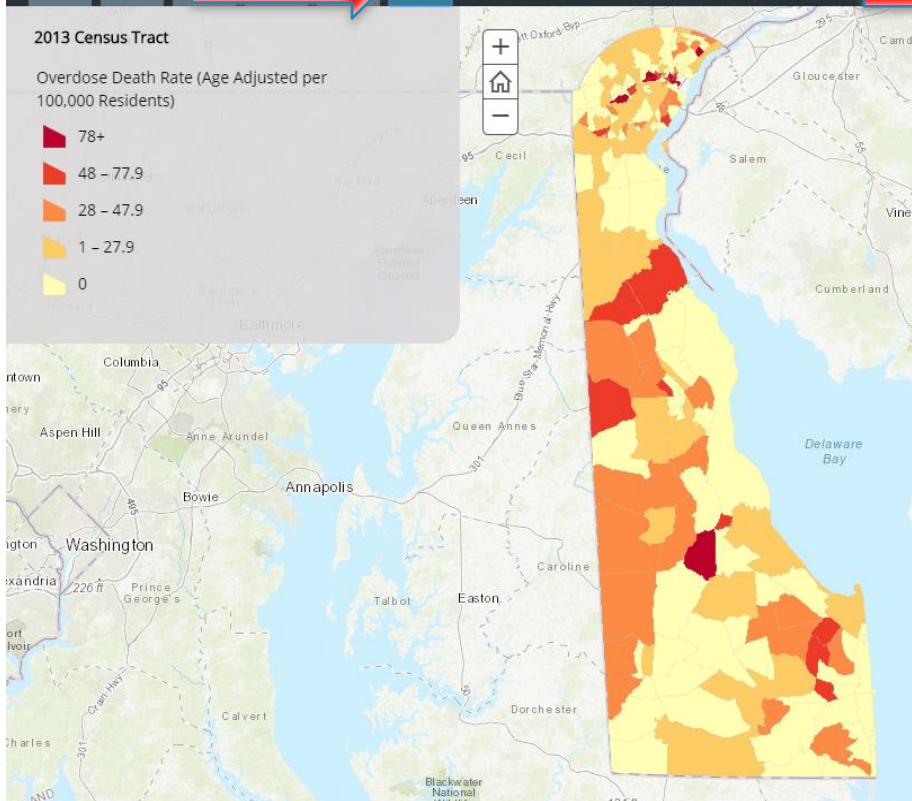
2015

2014

2013

2013 Census Tract

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



Overdose Deaths By Census Tract

2017

2016

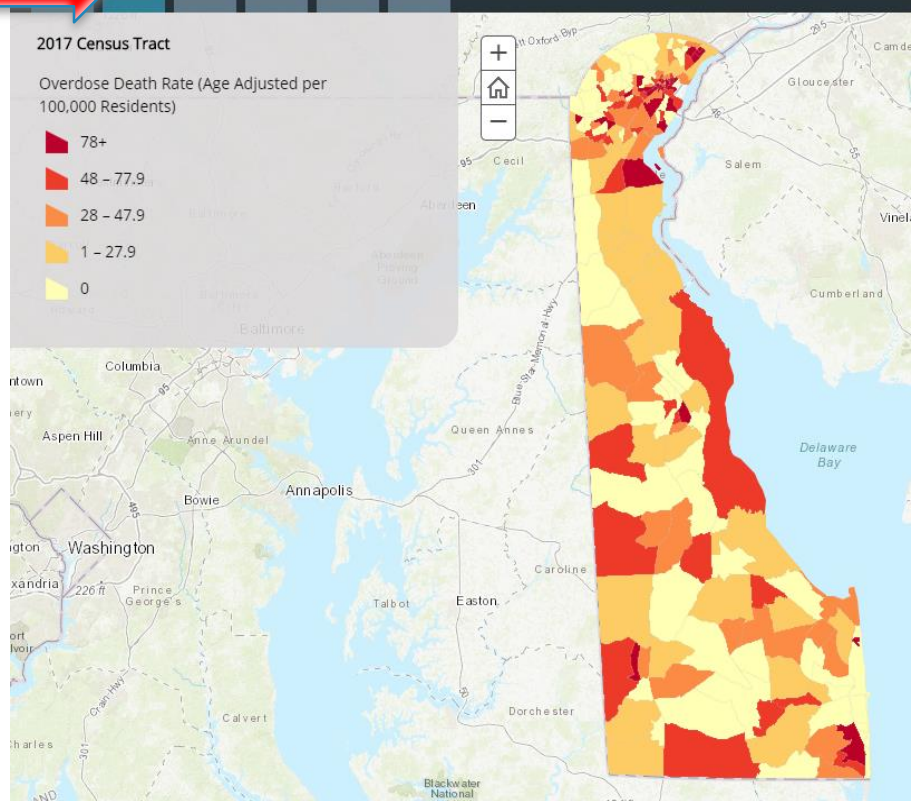
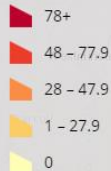
2015

2014

2013

2017 Census Tract

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



+DOMIP Dashboard- Change Units

7

Overdose Deaths by Zip Code

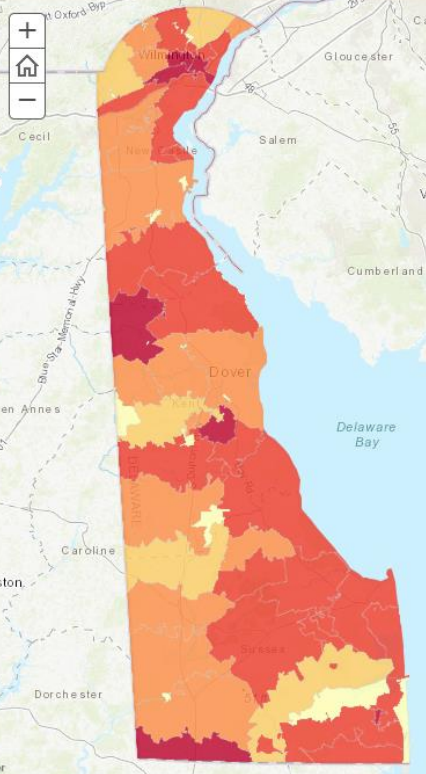
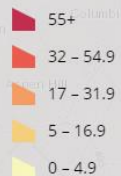
2018 2017 2016 2015 2014 2013

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)



Overdose Deaths by House District

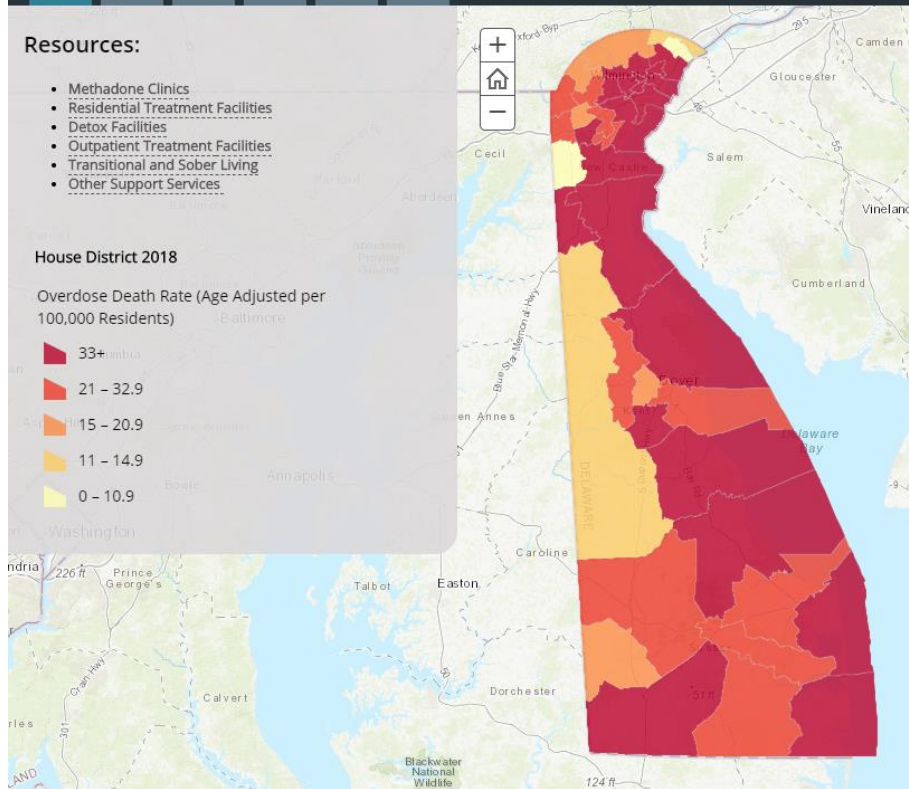
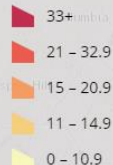
2018 2017 2016 2015 2014 2013

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)



+ DOMIP Dashboard- Print Maps

8

About DOMIP

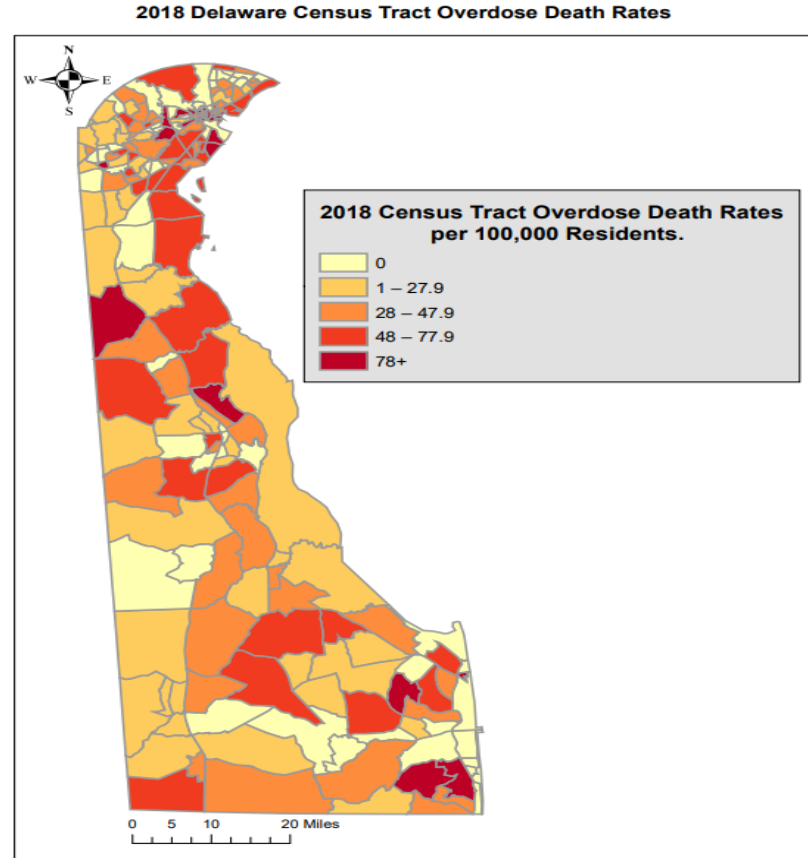
Delaware Opioid Metric Intelligence Project (DOMIP)

Census Tract

- Printed Maps:
 - [2018](#)
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 - [2016](#)
 - [2015](#)
 - [2014](#)
 - [2013](#)

Zip Code

- Printed Maps:
 - [2018](#)
 - [2017](#)
 - [2016](#)
 - [2015](#)
 - [2014](#)
 - [2013](#)



Overdose death data was provided by the Delaware Department of Forensic Science.
2010 data from the US Census Bureau was used for age adjustments.
The Delaware Opioid Metric Intelligence Project (DOMIP) is funded by the NIJ.



DOMIP Scientific Contributions

9

Predicting Opioid Prescriptions

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

Journal of Drug Issues
2019, Vol. 49(2) 405–418
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DOI: 10.1177/0022042618815687
journals.sagepub.com/home/jod



Predicting Overdose Death Rates

[Journal of Community Health](#)

April 2019, Volume 44, [Issue 2](#), pp 272–283 | [Cite as](#)

Understanding Geographic and Neighborhood Variations in Overdose Death Rates

Predicting Opioid Arrest Rates by Race

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

Race and Justice
1–22
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DOI: 10.1177/2153368719877222
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+ DOMIP Scientific Contributions

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Predicting Opioid Prescriptions

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

Community Predictor	Effect on Change in Prescriptions (2010-2013)
Percent White Pop.	0.57 (0.23)*
Percent Veteran Pop.	3.76 (1.02)*
Rate Rx paid by Commercial Insurance	-0.66 (0.12)*
Rate Rx paid by Medicaid/Medicare	0.49 (0.14)*

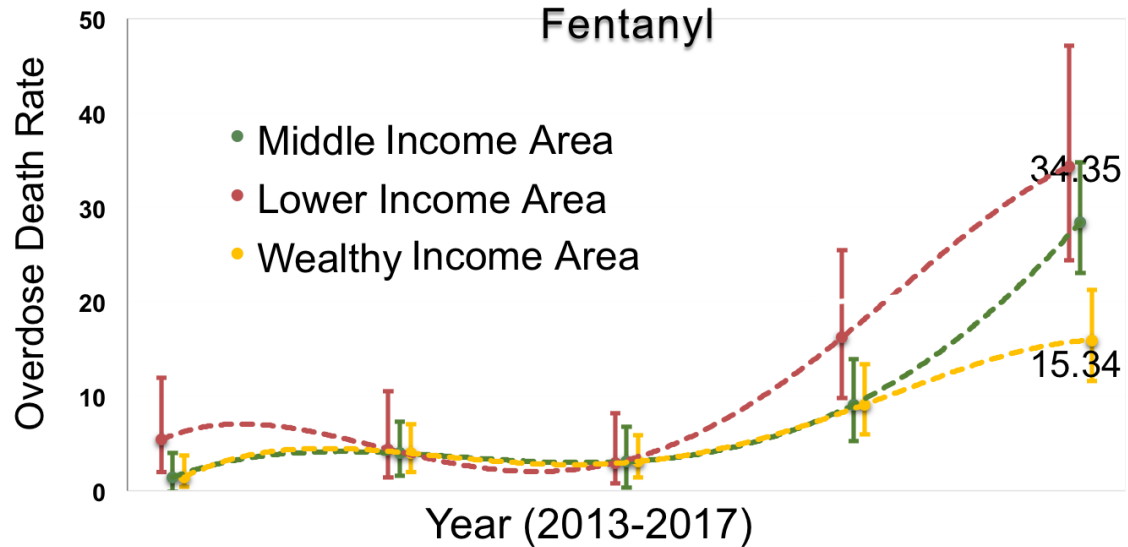
Anderson et al. (2018). *Journal of Drug Issues*.

+ DOMIP Scientific Contributions

11

Predicting Overdose Death Rates

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

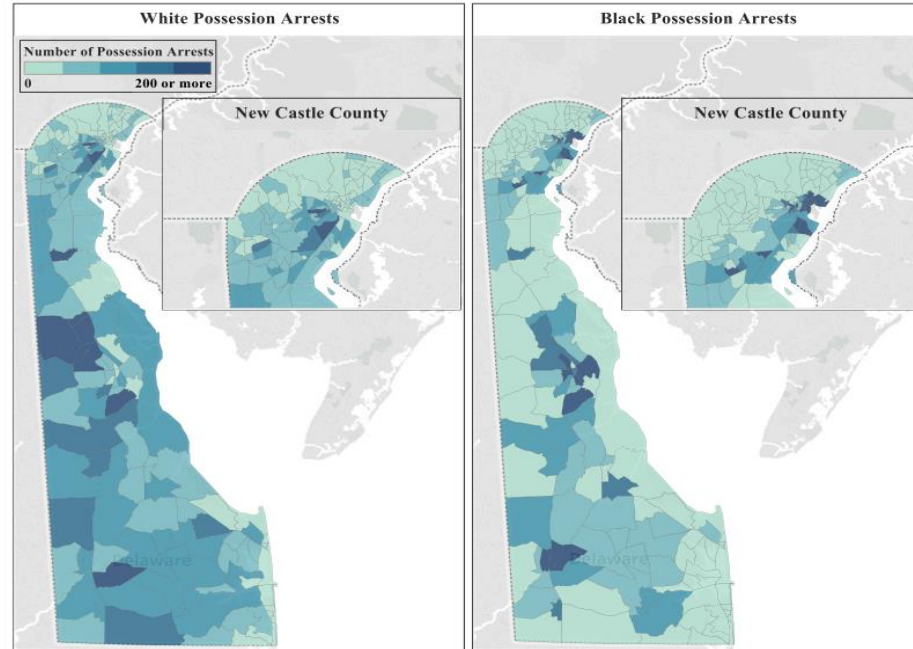


Wagner et al. (2019). *Journal of Community Health*.

+ DOMIP Scientific Contributions

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

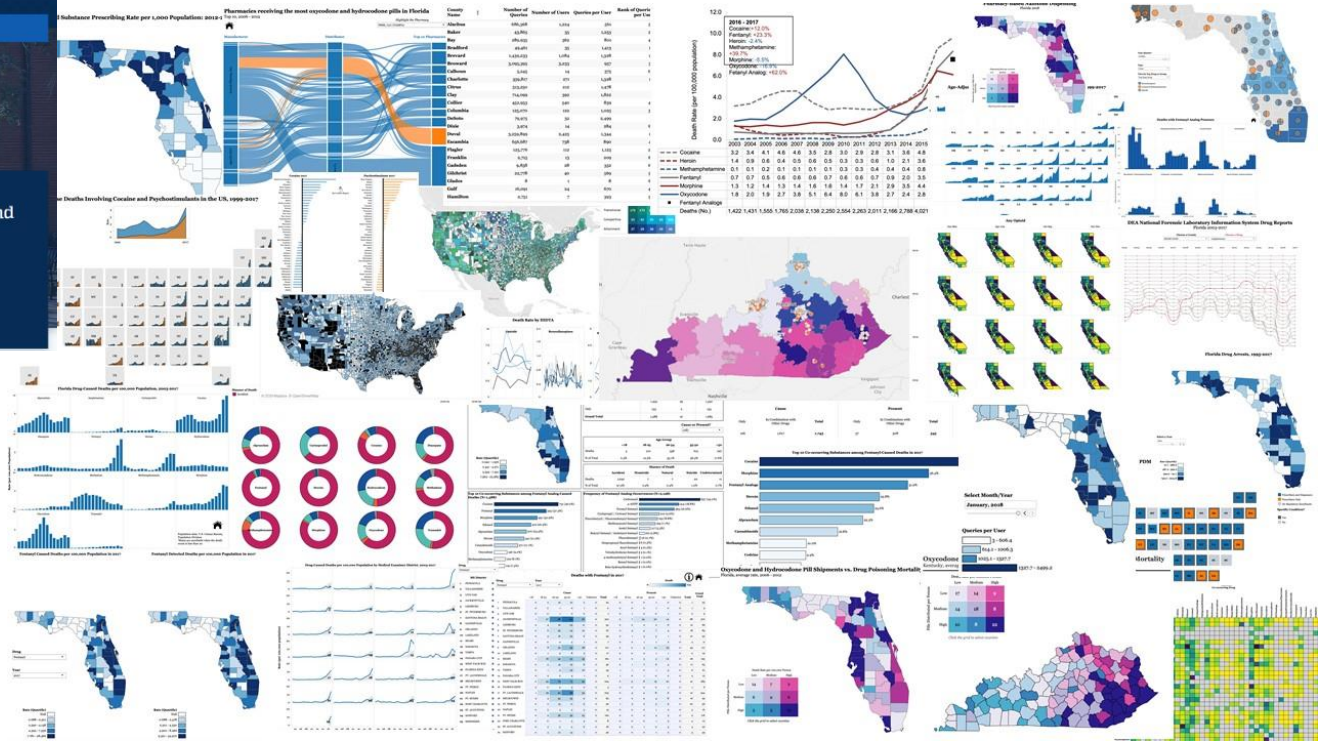
Florida drug-Related Outcomes Surveillance and Tracking System

Florida drug-related outcomes surveillance and tracking system

Welcome to the Florida Drug-Related Outcomes Surveillance and Tracking (FROST) System. FROST is an interactive, publicly available data dissemination tool for researchers, public health professionals and the general public to quickly explore Florida drug-related outcomes.

ACCESS FROST PROGRAM

REQUEST FROST DATA



FL County-level clustering (picture)

Prescribing Rates per 1,000 Population

Drug-Related Death Rates per 100,000 Population

Stimulant

Methamphetamine

Cocaine

2012

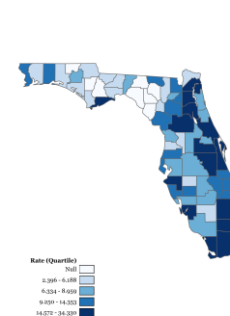
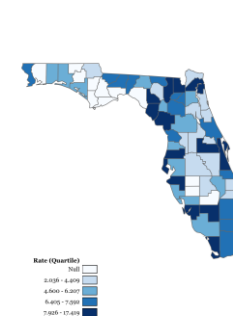
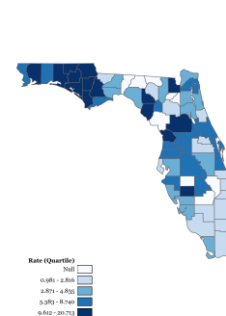
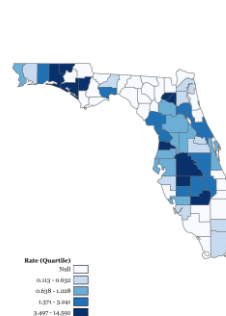
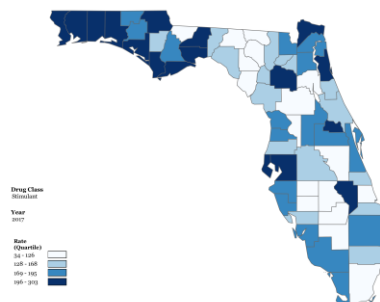
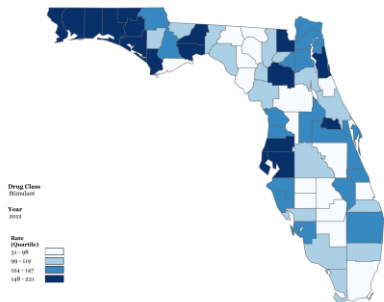
2017

2012

2017

2012

2017





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Publications & Reports

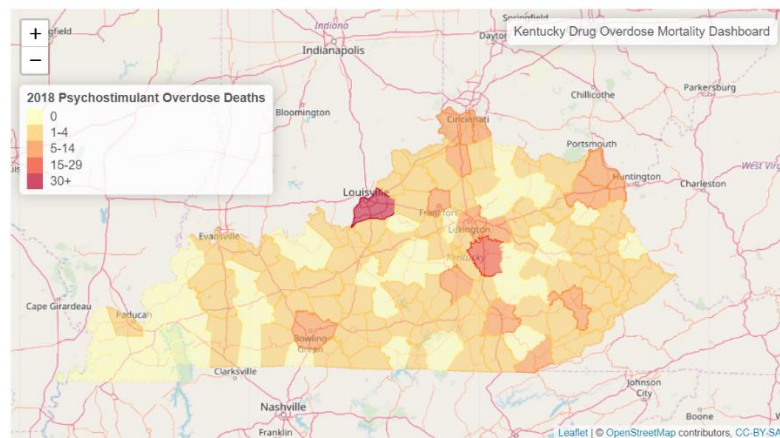
[Reports](#) | [Peer-Reviewed Articles](#) | [Presentations](#)

Kentucky Drug Overdose Mortality Dashboards

Updated 09/25/2019

Kentucky Resident Drug Overdose Deaths by County

[Any substance](#) [Opioids](#) [Heroin](#) [Fentanyl](#) [Psychostimulants with abuse potential](#)



Death Certificate Processing

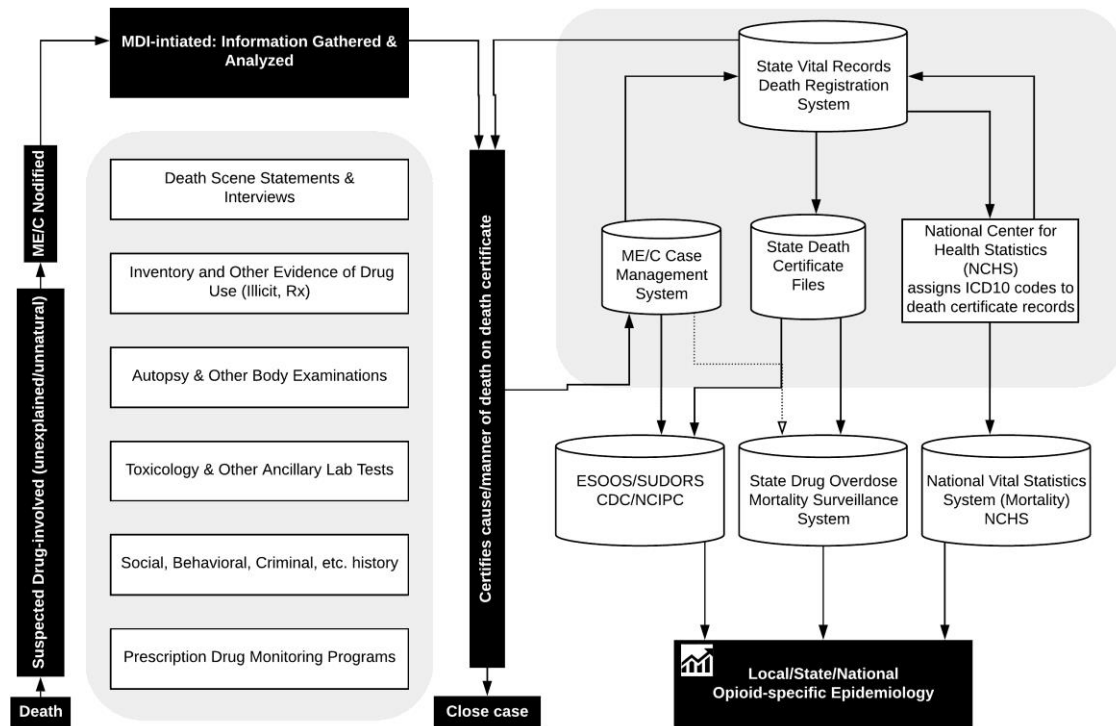
Current Epidemiology Reports (2019) 6:263–274
<https://doi.org/10.1007/s40471-019-00201-9>

INJURY EPIDEMIOLOGY (S MARSHALL, SECTION EDITOR)

Methodological Complexities in Quantifying Rates of Fatal Opioid-Related Overdose

Svetla Slavova^{1,2} • Chris Delcher³ • Jeannine M. Buchanich⁴ • Terry L. Bunn^{2,5} • Bruce A. Goldberger⁶ • Julia F. Costich^{2,7}

Published online: 2 May 2019
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- 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

ODMAP Initiative (Future) and Book



8 STATES SELECTED FOR THE ODMAP STATEWIDE EXPANSION AND RESPONSE GRANT

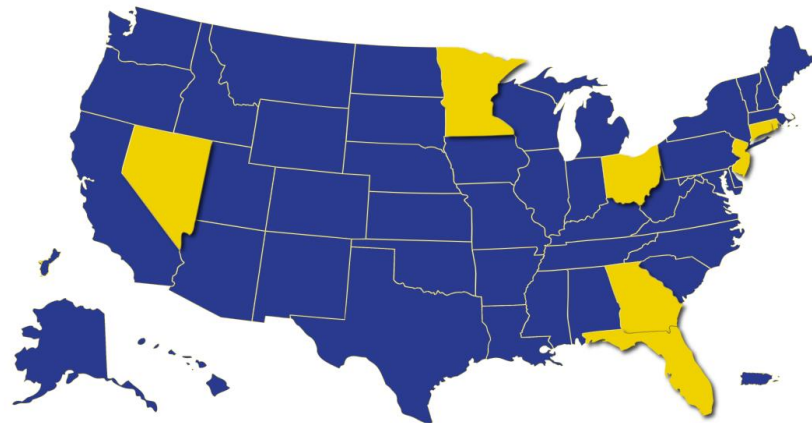
[Click Here to View the ODMAP Statewide Expansion and Response Grant Website](#)

AN EPIDEMIC

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.



The ODMAP demonstration project supports eight states in achieving statewide adoption of ODMAP and supporting communities in implementing a coordinated response. Select a site to view its profile:



+ 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).
- Suggested citation: Wang Y, Goldberger BA, Delcher C. Florida drug-Related Outcomes and Surveillance Tracking System (FROST). University of Florida. 2019.



Email: chris.delcher@uky.edu

Twitter: @chris_delcher

+ 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

