



BJA's Comprehensive

**Opioid Abuse**  
Program

# Making Data Simple:

Dashboards and Visualization

July 18, 2019

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# Welcome and Introductions



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**Opioid Abuse**  
Program

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## 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



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Allegheny County  
Department of  
Human Services

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

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



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# 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



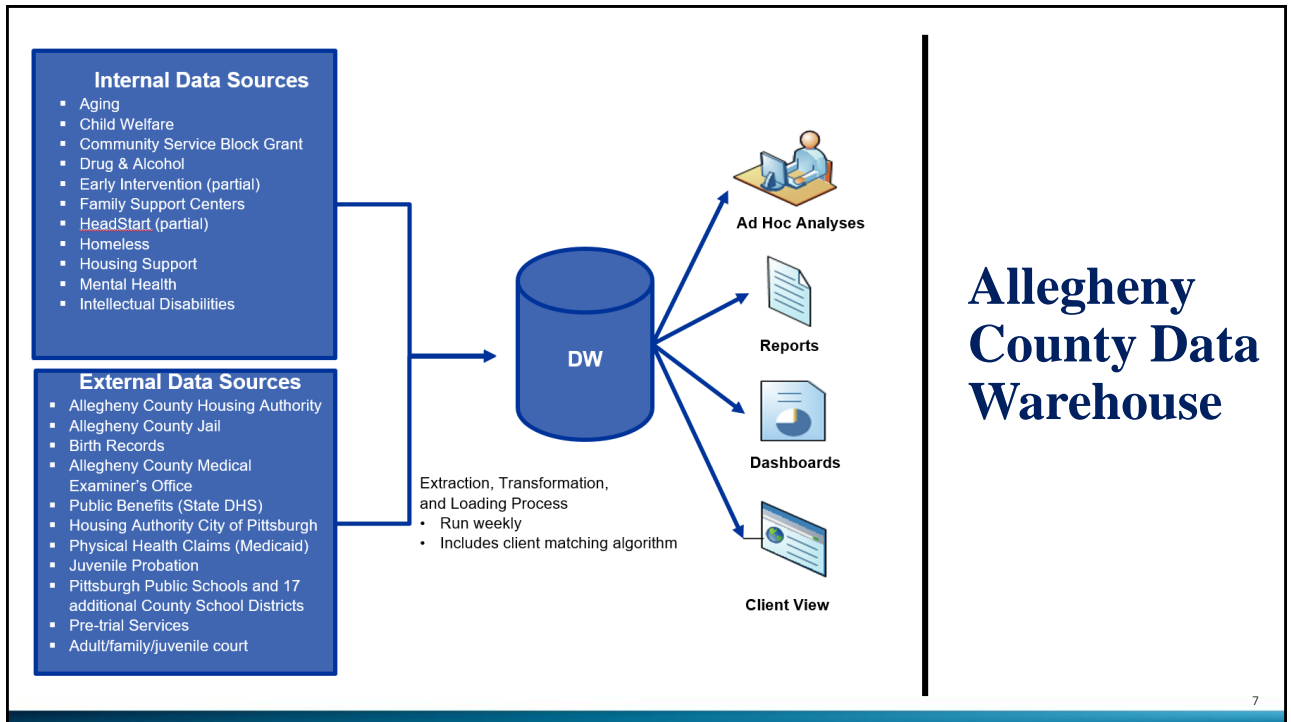
## Juvenile and Criminal Justice

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



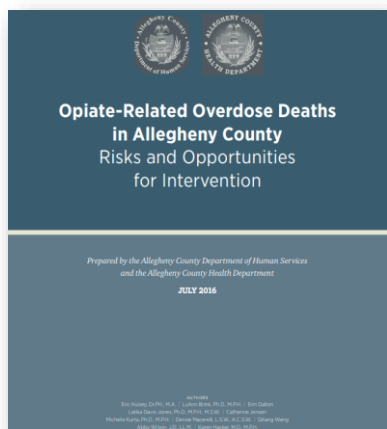
## Vital Records

- Birth records
- Autopsy records

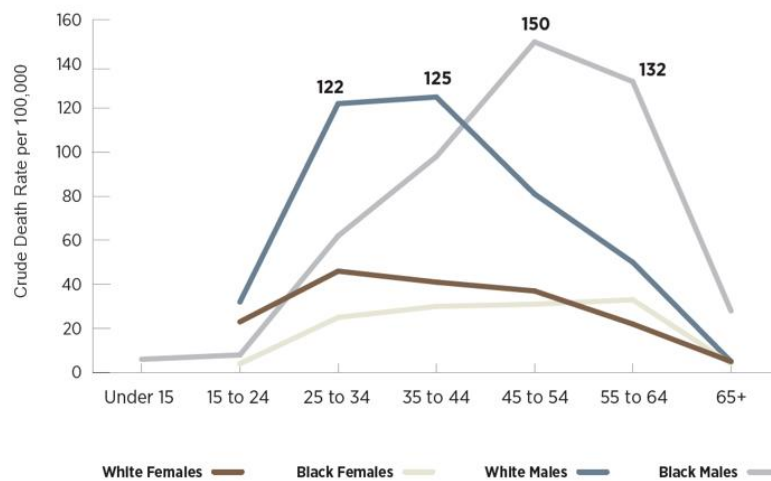


# Traditional Reporting and Data Visualization

# Overdose Epidemiology and Opportunities for Intervention



## By population: opioid-related overdose death rates by age, sex, and race: 2015–2016 (n=903)

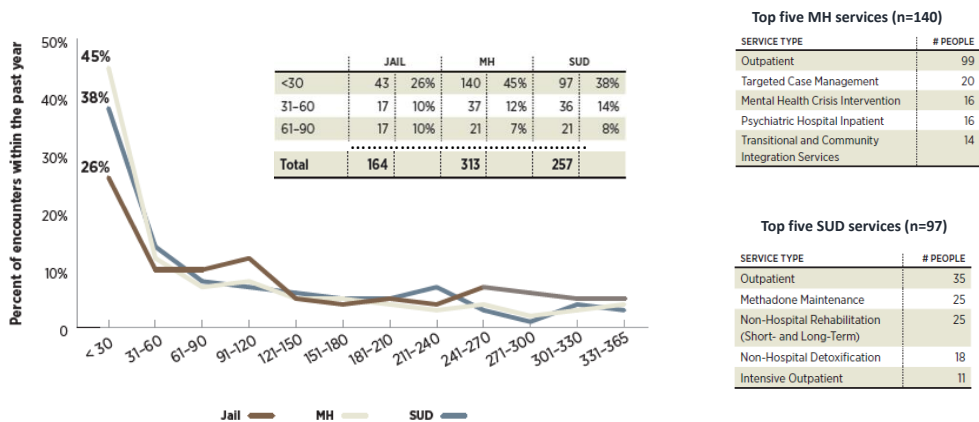


# Prior Health and Human Service Involvement 2015–2016

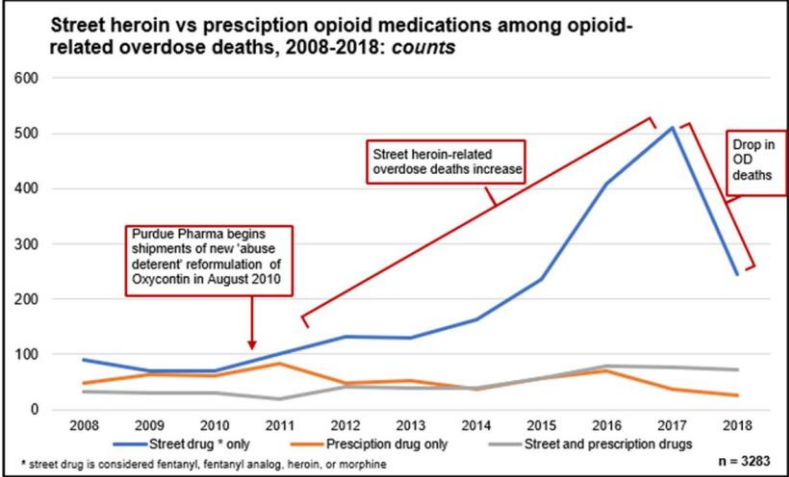
In the year prior to the deaths of these 910 individuals

- 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

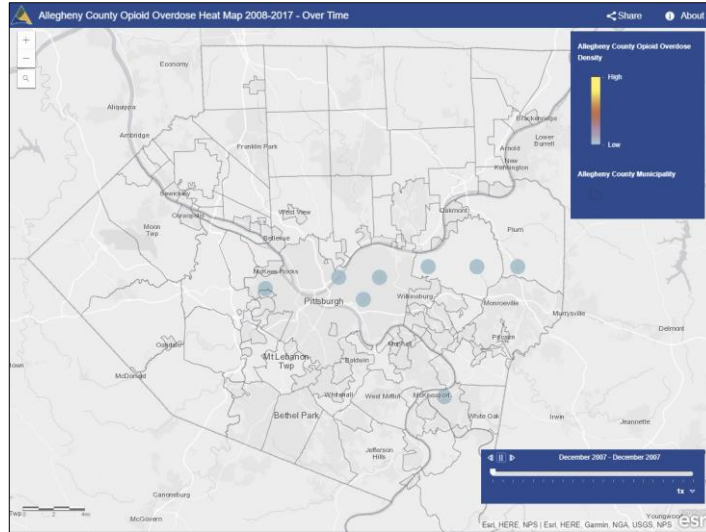


# By substance: street heroin versus prescription opioid medications among opioid-related overdose deaths (2008–2018)



# Mapping and Spatial Analysis

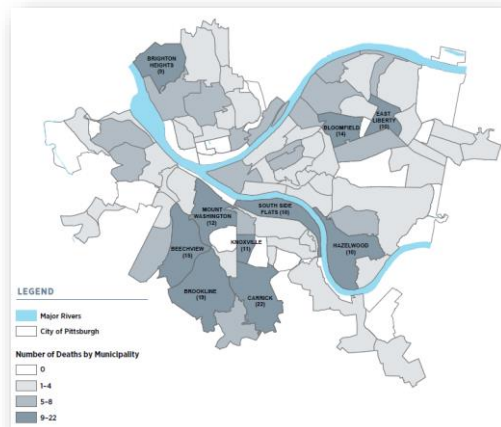
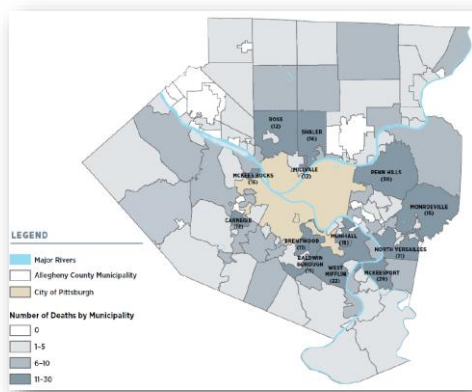
# By location: heatmap of opioid-related overdose death incidents: 2008–2017



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



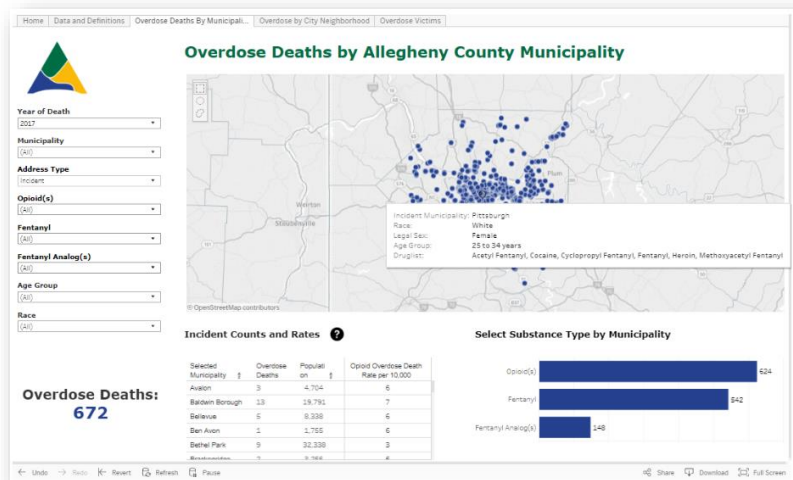
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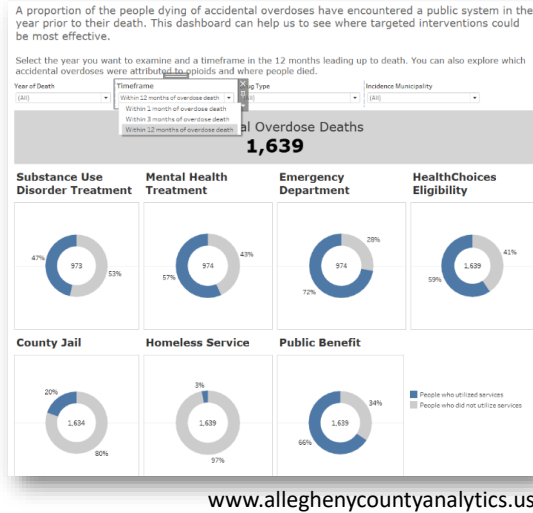
# Dashboards

## Interactive online dashboard for surveillance/monitoring



[www.alleghenycountyanalytics.us](http://www.alleghenycountyanalytics.us)

# Interactive online dashboard about public system encounters prior to overdose death



# 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

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## Thank you!

Visit: [www.alleghenycountyanalytics.us](http://www.alleghenycountyanalytics.us)

Email: [eric.hulsey@alleghenycounty.us](mailto:eric.hulsey@alleghenycounty.us)

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# DATA VISUALIZATION IN LAW ENFORCEMENT

DEA PHILADELPHIA FIELD DIVISION  
JUNE 2019

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## DATA VISUALIZATION IN LAW ENFORCEMENT

# EVERYONE WANTS DATA

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## 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

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## DATA VISUALIZATION IN LAW ENFORCEMENT

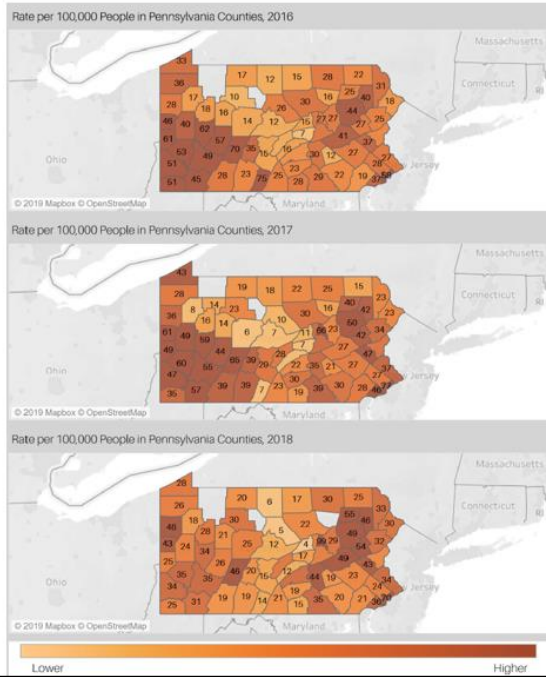
- Data visualization project on drug-related overdose deaths in Pennsylvania (statewide) and Philadelphia (city)
- DEA collects drug overdose data (de-identified) for all Pennsylvania counties to assess drug availability through toxicology and to identify emerging trends

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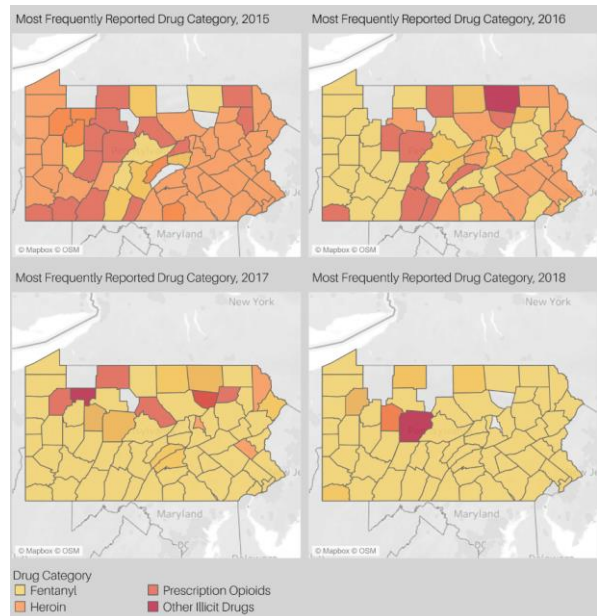
## Pennsylvania Overdose Death Rate per 100,000 by County, 2016-2018



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## DATA VISUALIZATION IN LAW ENFORCEMENT

Most frequent drug in overdose toxicology by county, Pennsylvania, 2015–2018



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### Emergence of Fentanyl-Related Substances in Overdose Toxicology, Pennsylvania, 2015-2018

Drug Name	Drug Presence In Toxicology Reports, 2015-2018 by Quarter															
	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
Acetyl Fentanyl																
Butyryl Fentanyl																
3-Methyl Fentanyl																
Furanyl Fentanyl																
U-47700																
Sufentanil																
4-Methoxybutyryl Fentanyl																
Para-Fluoro-Isobutyryl-Fentanyl/FIBF																
Fluoro-butyrylfentanyl/Fluorofentanyl																
Carfentanil																
Acryl Fentanyl																
Para-Fluorobutyryl Fentanyl/FBF																
Isobutyryl Fentanyl																
Cyclopropyl Fentanyl																
Para-Fluorofentanyl																
Methoxyacetyl Fentanyl																
Benzyl Fentanyl																
4-Fluorobutyryl Fentanyl																
m-Fluoro-Isobutyryl Fentanyl																
Fluoro-Isobutyryl Fentanyl																
4-Fluoro-Isobutyryl Fentanyl																
Valeryl Fentanyl																

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## DATA VISUALIZATION IN LAW ENFORCEMENT

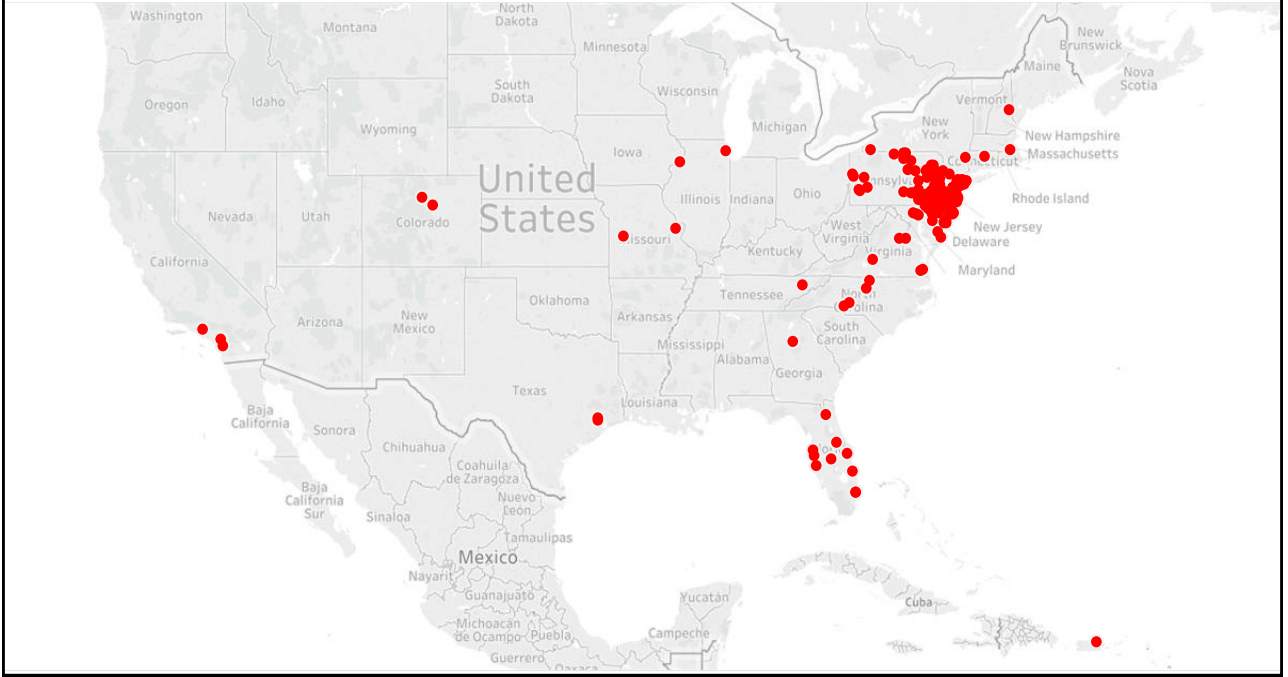
- Philadelphia overdose death data is analyzed similarly to statewide data—where are drugs available, how far do people travel to purchase/use them, what are the changes over time?

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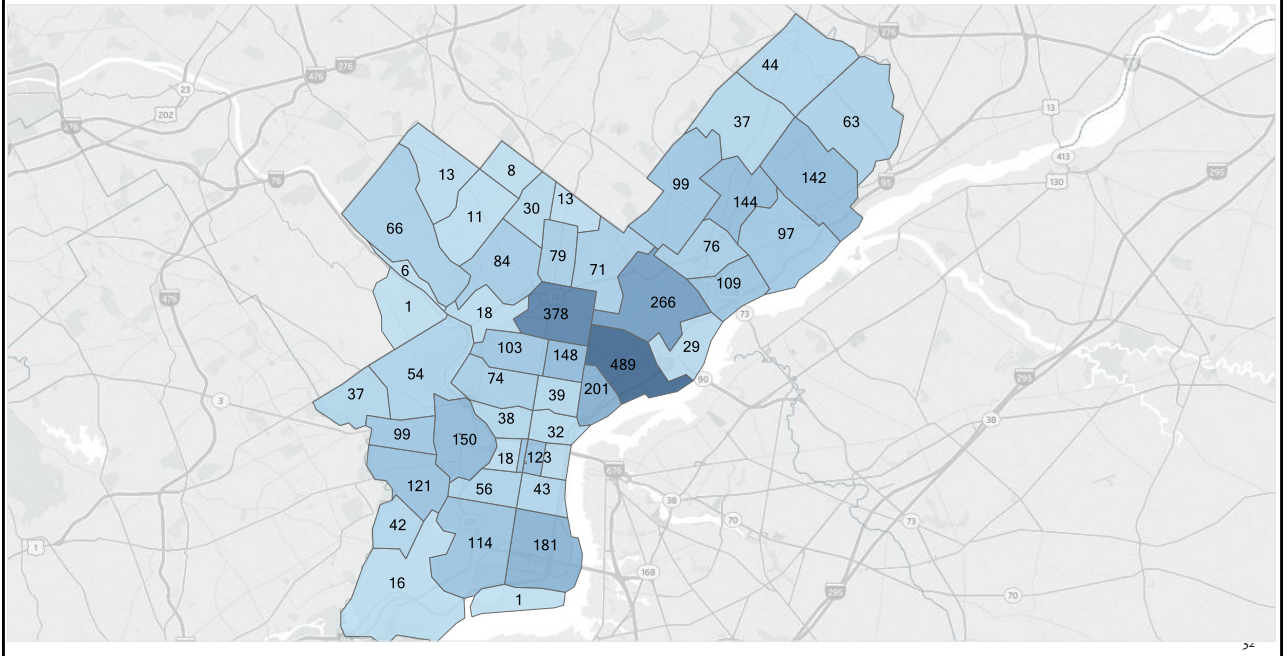
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Zip Code of Residence of Philadelphia Overdose Decedents, 2015-2019



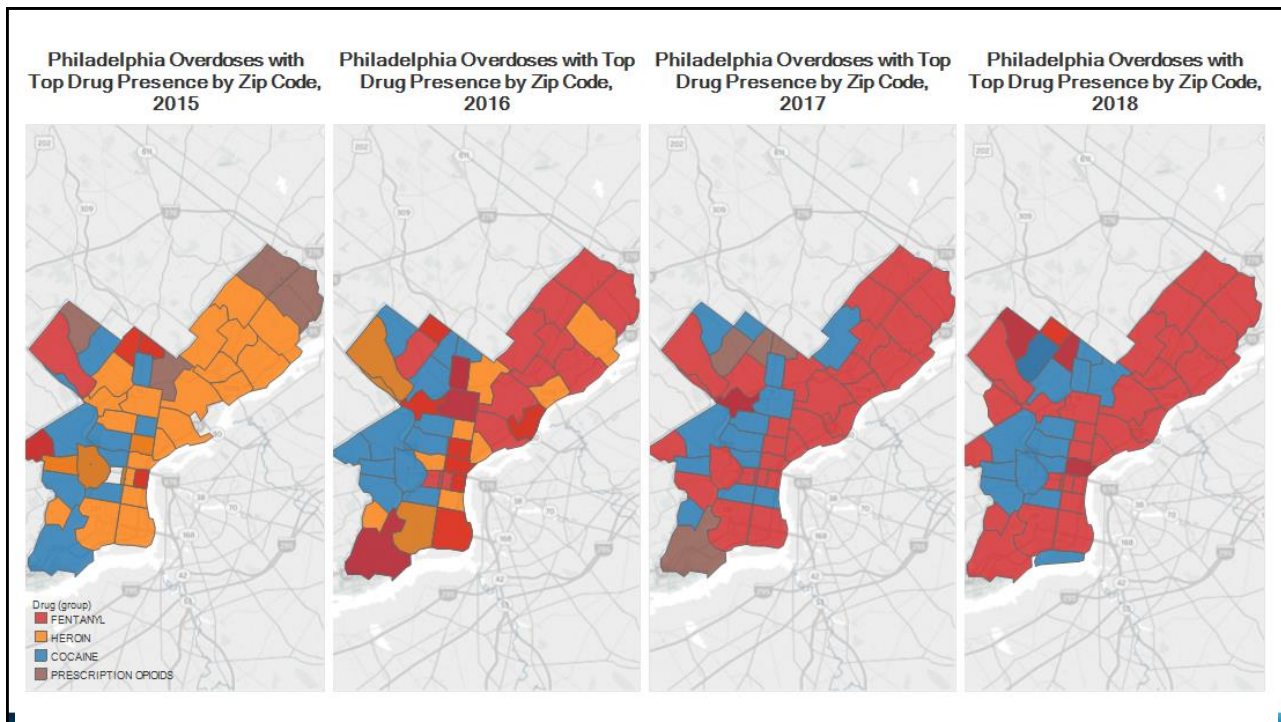
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Zip Code of Death for Philadelphia Overdose Decedents, 2015-2019



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## DATA VISUALIZATION IN LAW ENFORCEMENT

- Data visualization project on laboratory analyzed drug seizures reported by federal, state, and local law enforcement

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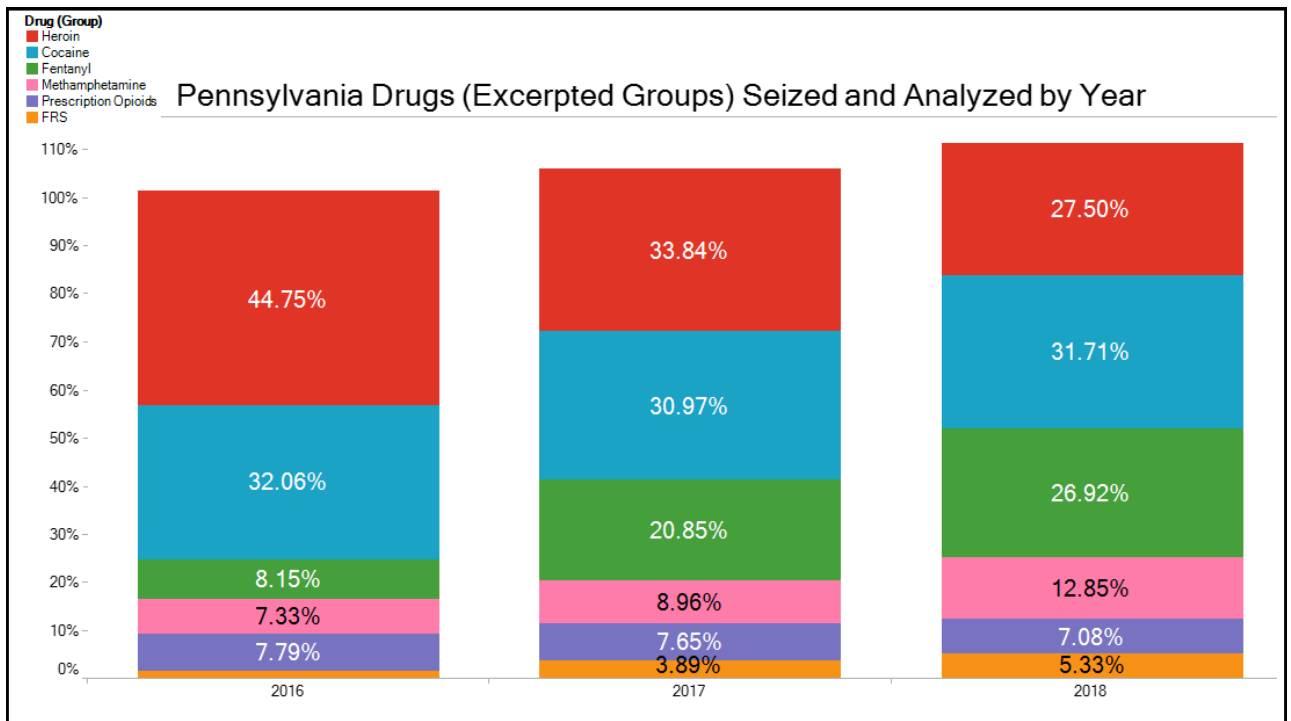
# DATA VISUALIZATION IN LAW ENFORCEMENT

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

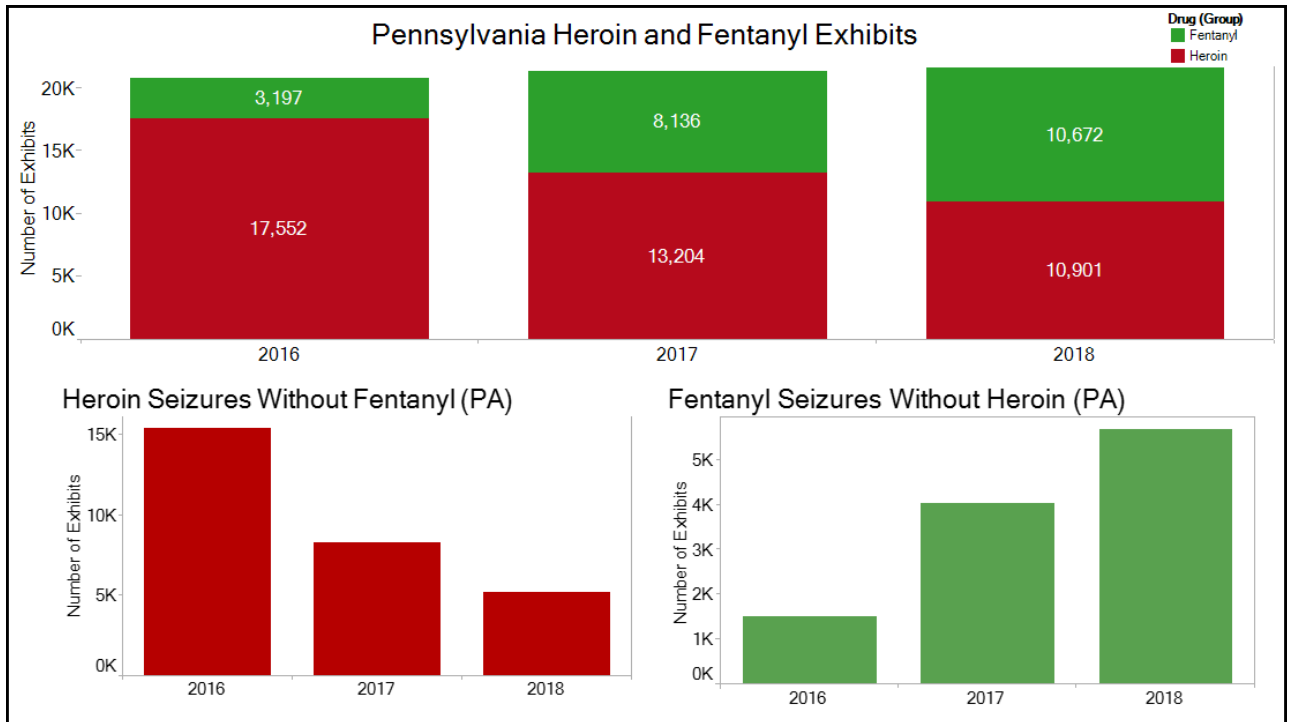
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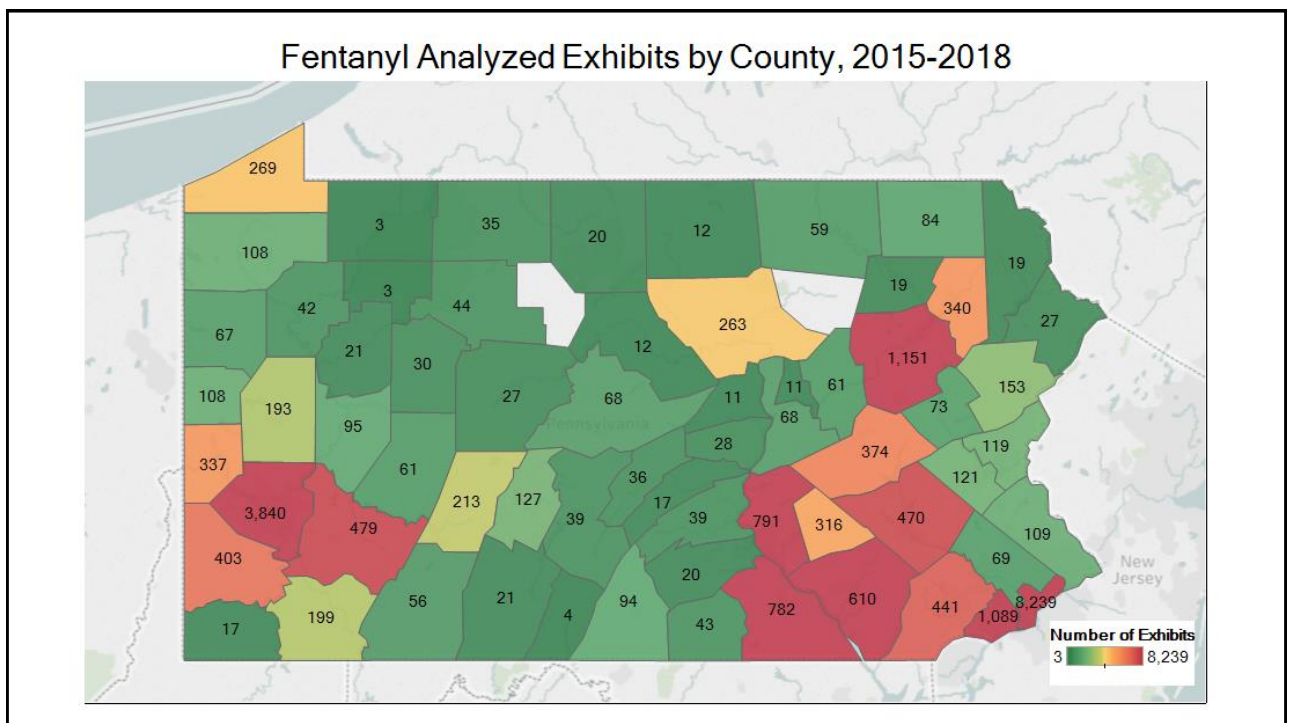
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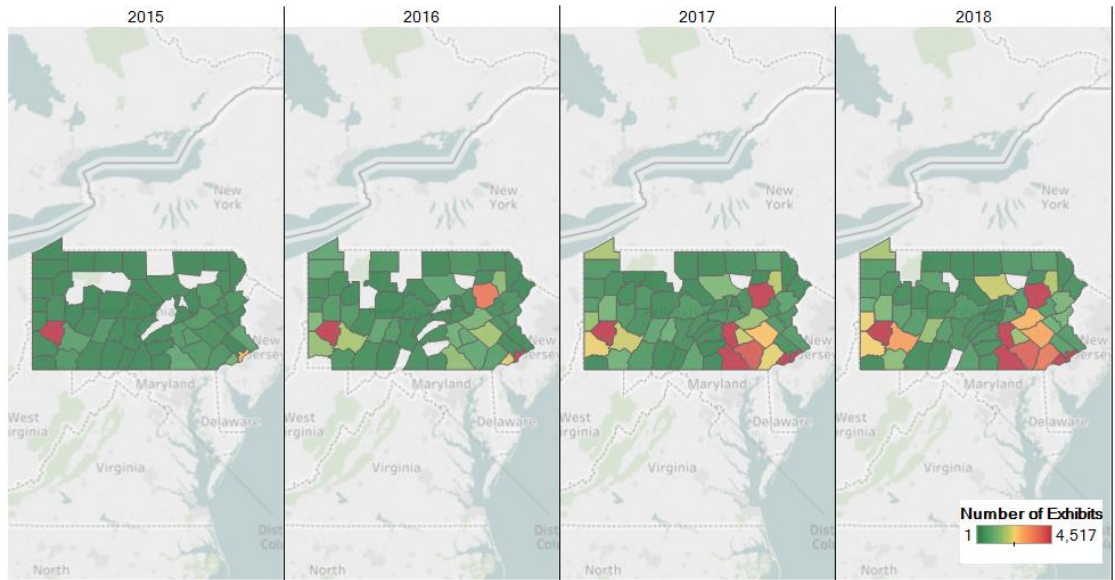


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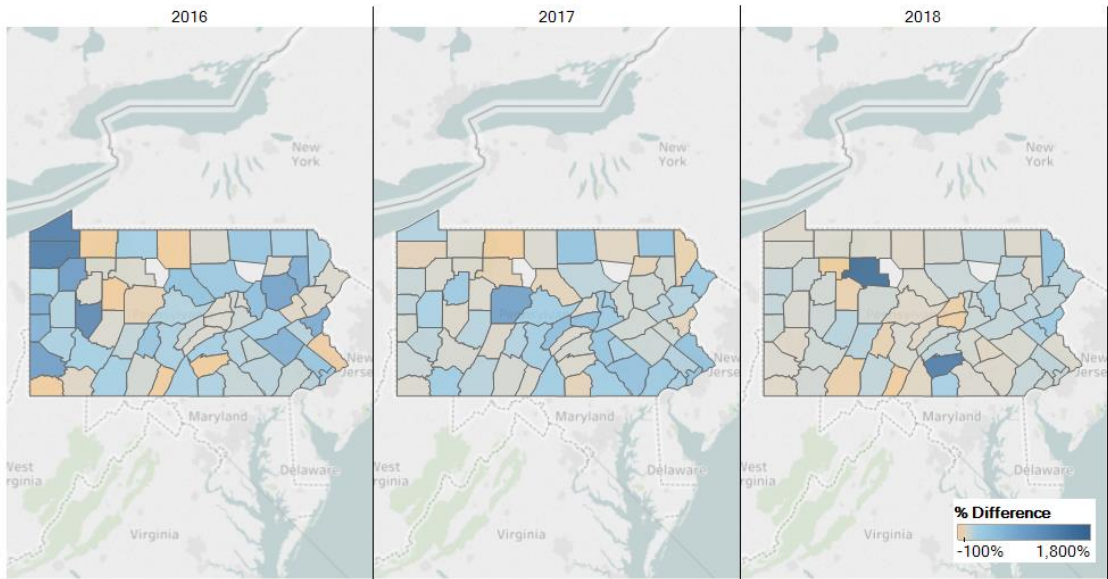
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### Fentanyl Analyzed Seizures (# of Exhibits) - Showing Number of Exhibits Year to Year

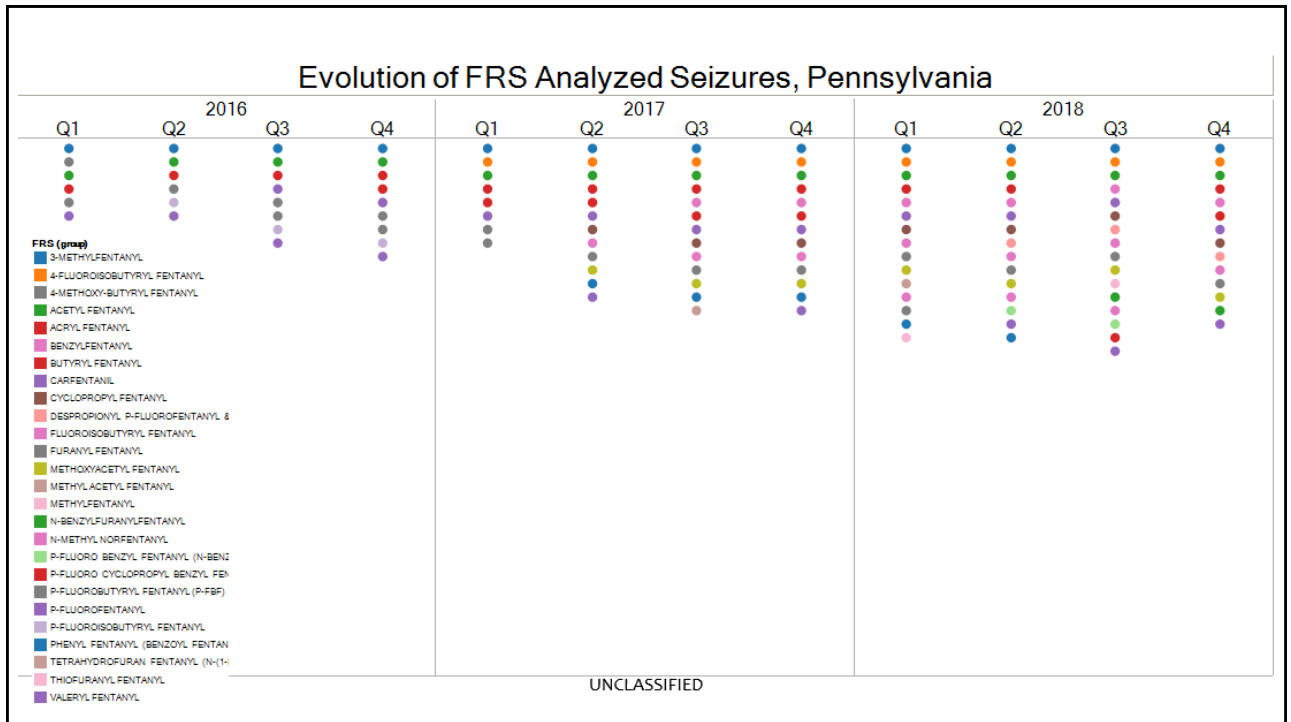


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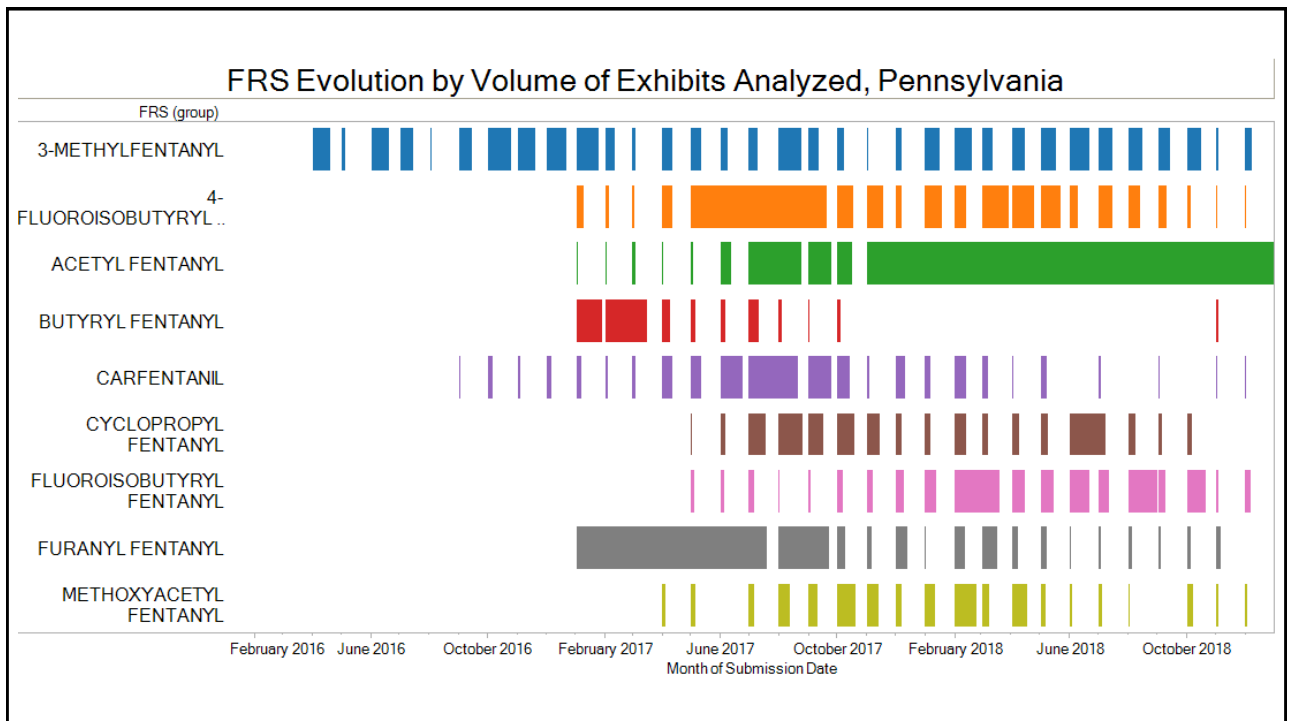
### Fentanyl Analyzed Seizures (# of Exhibits) - Showing Percentage Change Year to Year



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## 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

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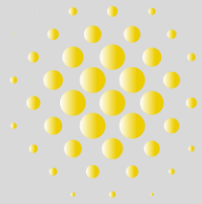
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## Questions

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# Opioid Abuse

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