

Mindful Data Visualizations for Public Health Surveillance and Action

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Presenter Information

Charlotte Cherry

Role: Epidemiologist, lead of data visualization in the Advanced Analytics and Visualization Unit of the Office of Informatics and Analytics at the Tennessee Department of Health (TDH)

I'm passionate about: Getting data and information into the hands of the stakeholders and partners, leadership, and the public working to put data to action!

Today's Topic

Mission: Show examples of data visualizations from our working group dashboards

- Focus on visualizations for partners and stakeholders

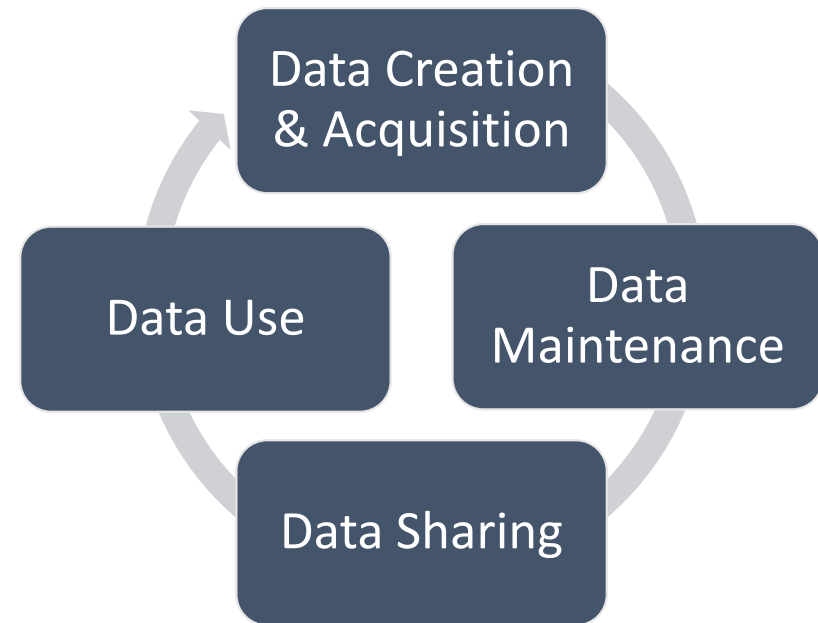
Highlight: How partners and stakeholders use the data and information

Office of Informatics and Analytics

- Data Governance
- Core Informatics
- Advanced Analytics and Visualization

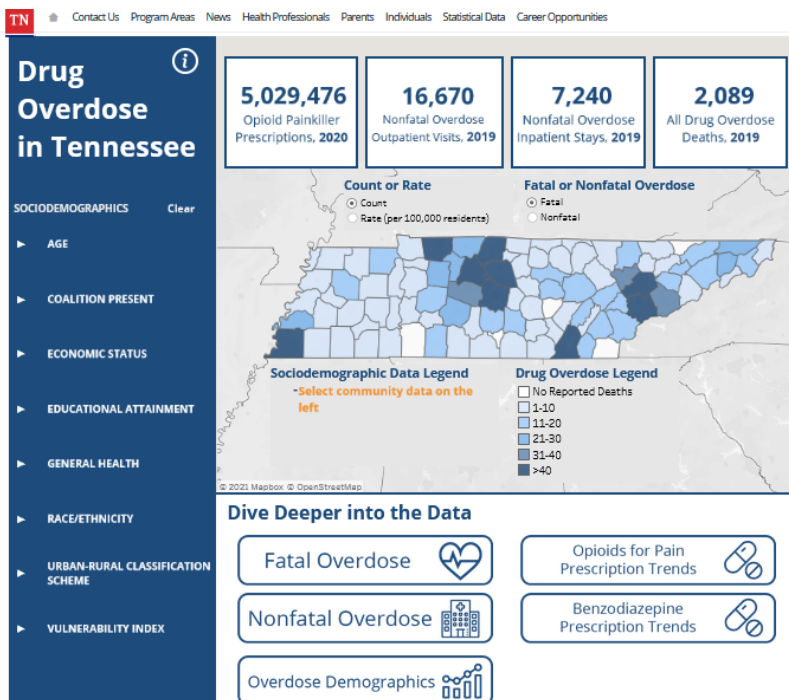
Mission: To develop, use, and promote best practices of informatics, data governance, and analytics that drive insightful public health decision-making for the Tennessee Department of Health and its partners.

Vision: To be a trusted leader in providing data-driven solutions for public health practice in Tennessee.

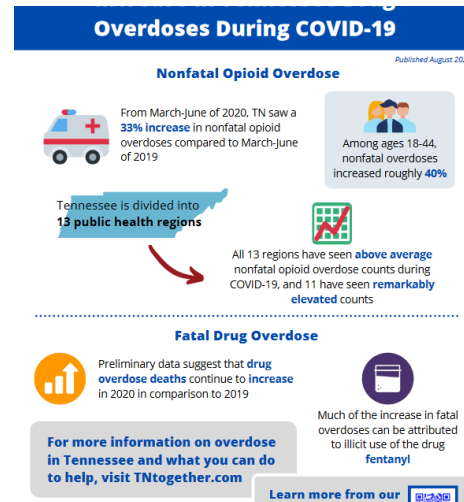


Analytics and Visualization

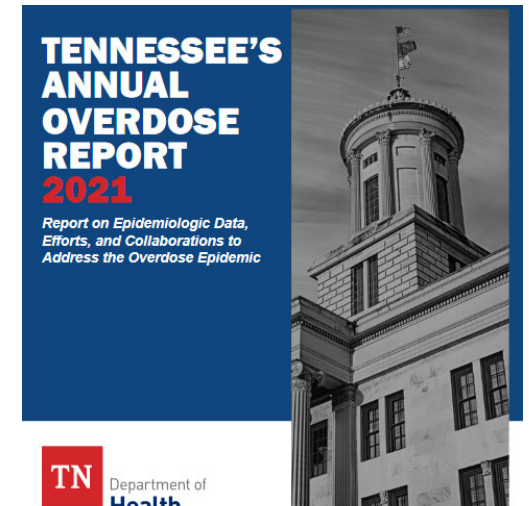
Drug Overdose Data Dashboard



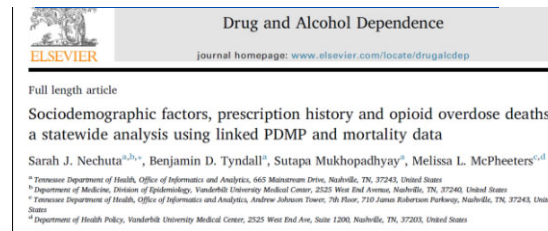
Infographics



Annual Overdose Report



Peer-Reviewed Publications



Produced by
The Office of Informatics & Analytics

Conference on Data



DATAPALOOZA
Bringing Data 2 Action



Comprehensive
Opioid, Stimulant,
and Substance Abuse
Program

More information about OIA Data Products: <https://www.tn.gov/health/health-program-areas/pdo.html>

Integrated Data System-Data to Visualizations

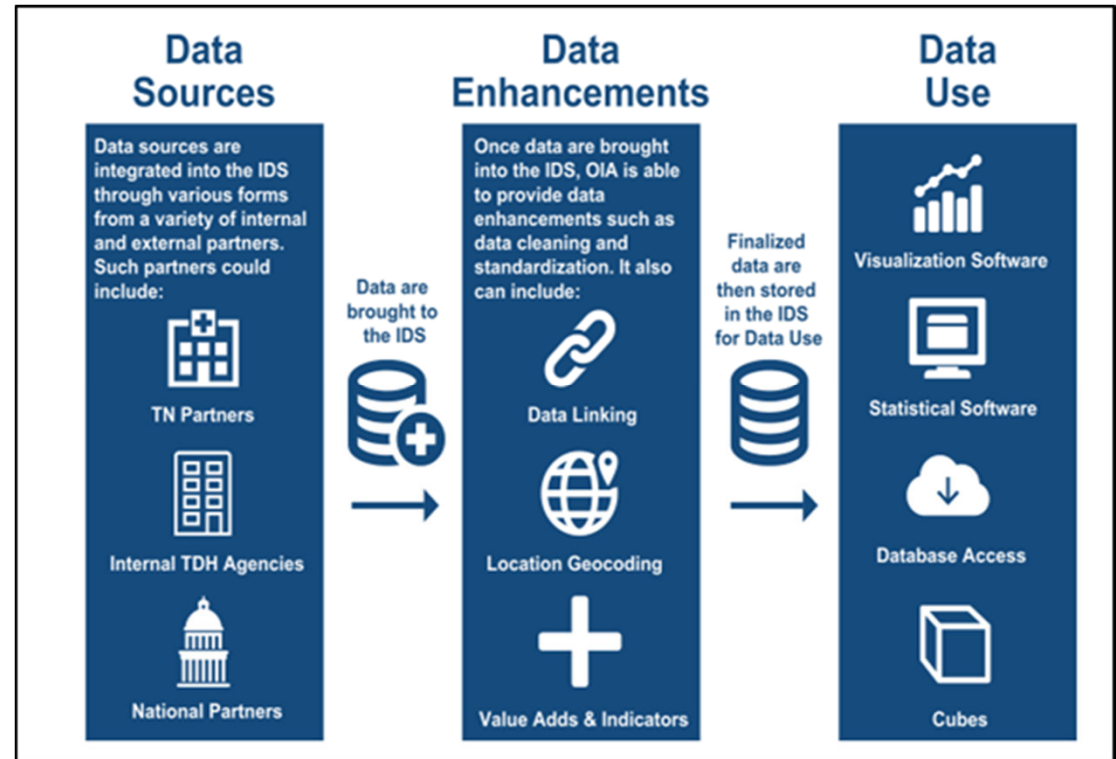


Public Health Surveillance-Drug Overdose

- Death certificates
- Hospital discharge billing records
- Controlled Substance Monitoring Database (CSMD)
- Emergency Medical Service (EMS) runs
- Drug shipment data
- Healthcare associated infections
- Viral hepatitis
- Neonatal abstinence syndrome
- And many more sources at other state agencies

Integrated Data System (IDS)

- In 2016, OIA established the **IDS** to provide support for cross departmental analysis and visualization
- Comprised of two environments (test and production) with three components in each environment: (a) discovery, (b) repository for all source data and, (c) data warehouse specifically architected to support efficient and intuitive usability
- Use case driven, initial use cases include support for controlled substance monitoring and overdose surveillance
- Established IDS processes to onboard and bring new data into the IDS, to request access, to request data, and to request enhancements have all been added to improve the functionality of the system



Data Visualization for Partners and Stakeholders

Partners and Stakeholders

- Harold Rogers Data Driven Working Group
 - DOJ-BJA Grant Funded
 - Objective
 - Build collaborative relationships with agencies and departments
 - Identify opportunities to share data and information
 - Utilize data and information to drive joint activities and programmatic planning



Partners and Stakeholders

- **Internal**

- Overdose Response Coordinating Office (ORCO)
- Communicable and Environmental Disease and Emergency Preparedness
 - Viral Hepatitis Program
 - HIV Prevention and Surveillance
- Controlled Substance Monitoring Database Program
- Office of State Chief Medical Examiner
- Emergency Medical Services
- “End the Syndemic” Working Group—jointly address HIV, STIs, VH, and substance use disorder (SUD) in TN

- **External**

- Tennessee Bureau of Investigation—Dangerous Drugs Task Force
- Tennessee Department of Mental Health and Substance Abuse Services—Office of Prevention
- Tennessee Department of Children’s Services—Office of Child Protective Services Investigations

March: 792
2021 YTD: 2,176
2020 YTD: 1,923

Nonfatal Opioid Overdoses as Reported to the Tennessee Department of Health: March 2021

Figure 1. Hospital Reported ICD-10-CM Coded Opioid Overdoses by Month

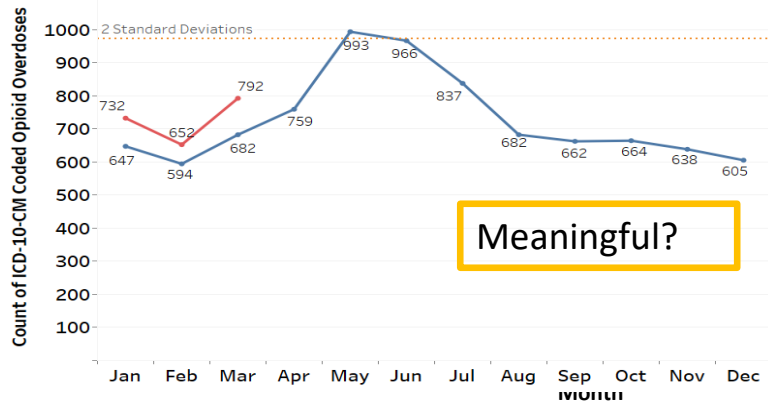
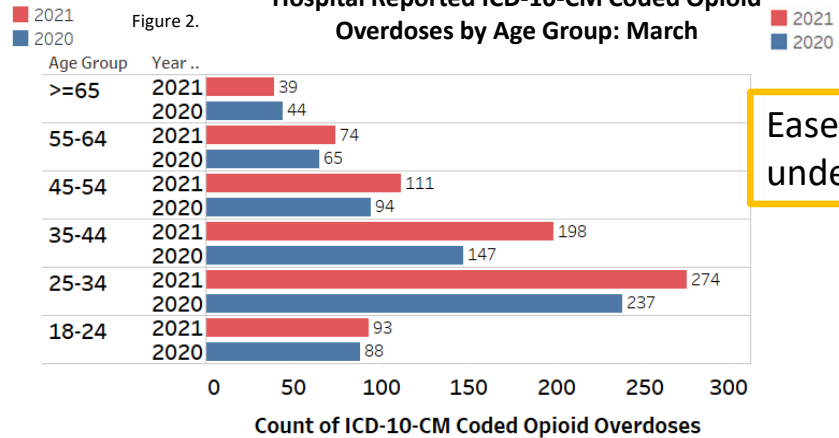
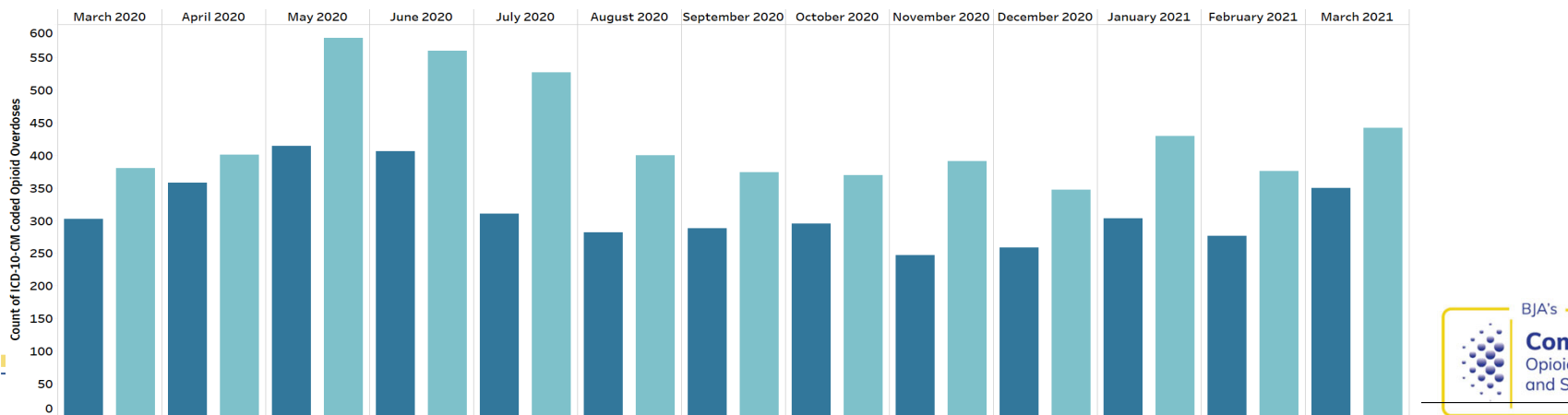


Figure 2. Hospital Reported ICD-10-CM Coded Opioid Overdoses by Age Group: March



Ease of understanding?

Figure 3. Hospital Reported ICD-10-CM Coded Opioid Overdoses by Opioid Class

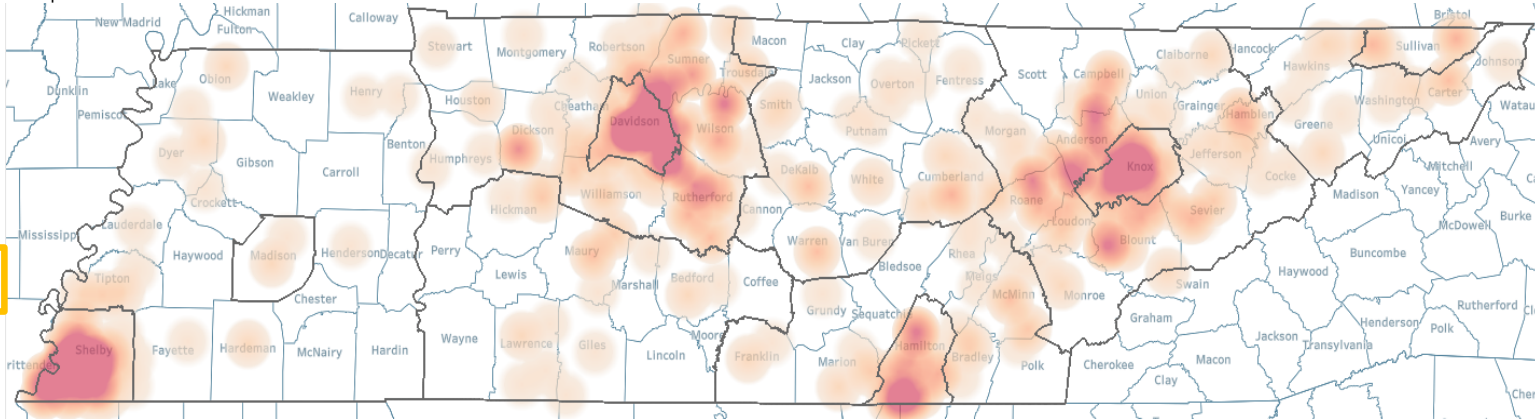


Source: Tennessee Department of Health, Office of Informatics and Analytics, Drug Overdose Reporting system.



Heat map of hospital reported ICD-10-CM coded opioid overdoses: March 2021

Map 1.

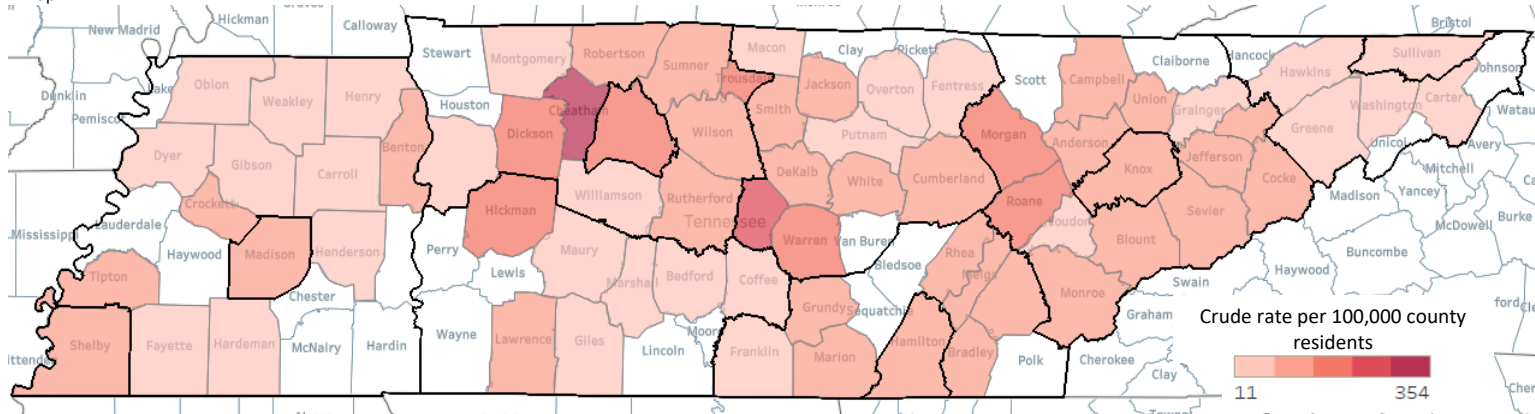


Counts are based on patient residence zip code as reported by the hospital facility to the Tennessee Department of Health Drug Overdose Reporting System.

Actionable?

Crude rate (per 100,000 county residents) of hospital reported ICD-10-CM coded opioid overdoses: April 2020-March 2021

Map 2.



Counties with a count of overdose fewer than 10 are not available. When the number of overdoses used to compute a rate is very small, the value is considered unstable. No reported counts in Lewis and Pickett Counties.

Counts are based on patient residence zip code as reported by the hospital facility to the Tennessee Department of Health Drug Overdose Reporting System.

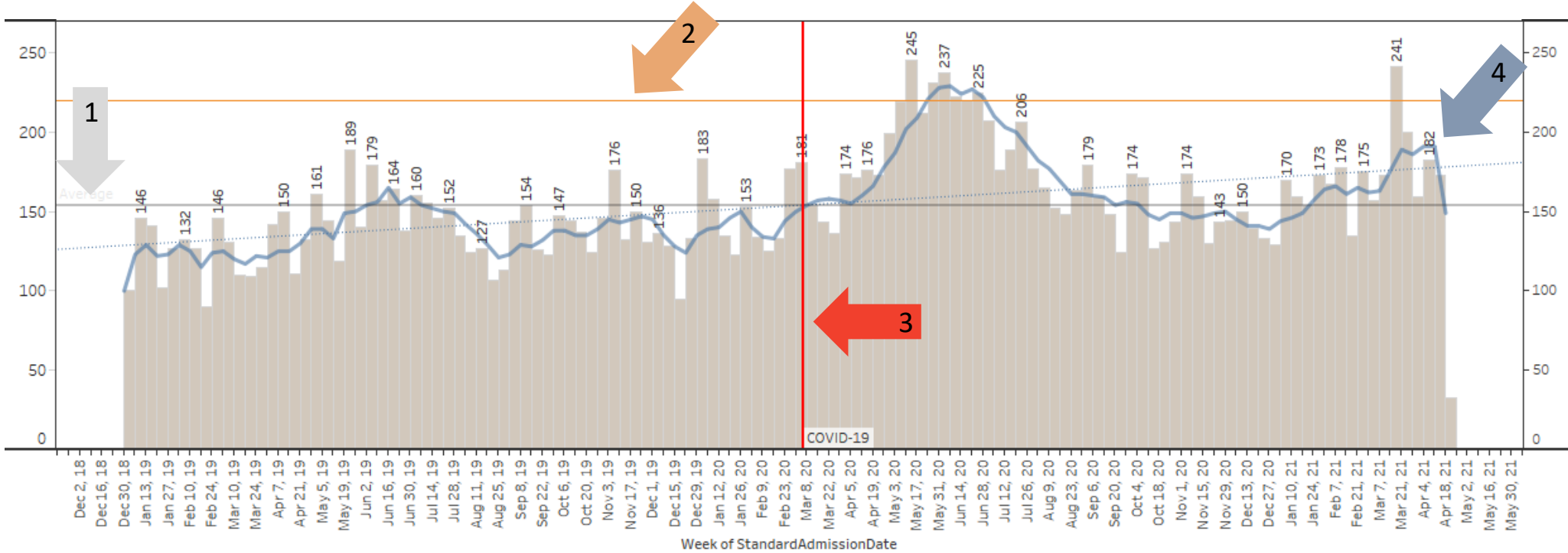
Source: Tennessee Department of Health, Office of Informatics and Analytics, Drug Overdose Reporting system.

Partners and Stakeholders

- Bi-Weekly Meeting Tableau Dashboard
 - Ease of understanding?
 - Meaningful?
 - Actionable?

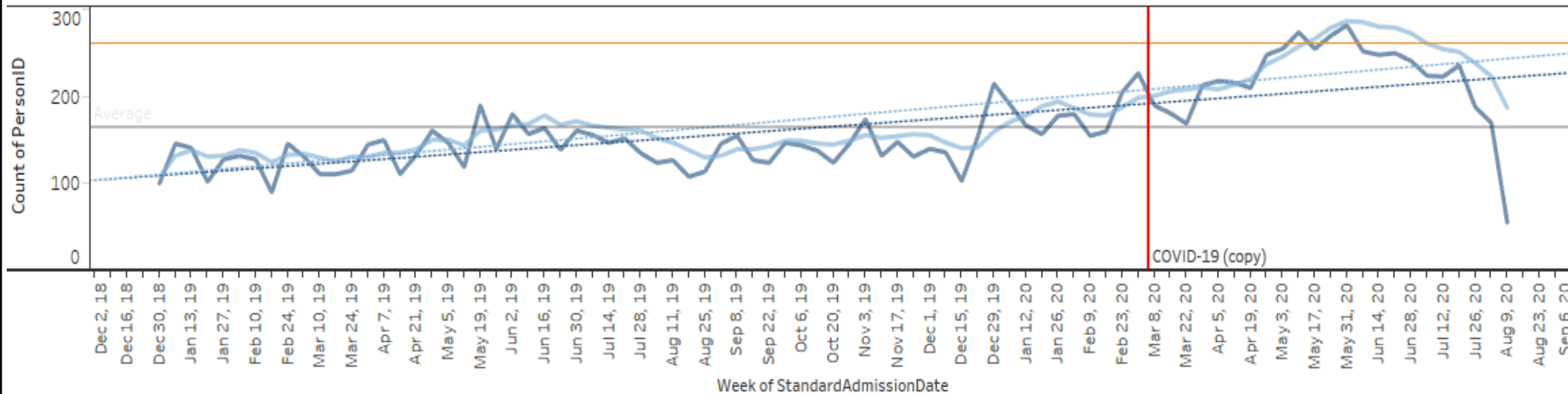
Mode of Dissemination: Review within the working group

Weekly Timeseries—Tennessee Statewide Hospital Reported Nonfatal Opioid Overdoses

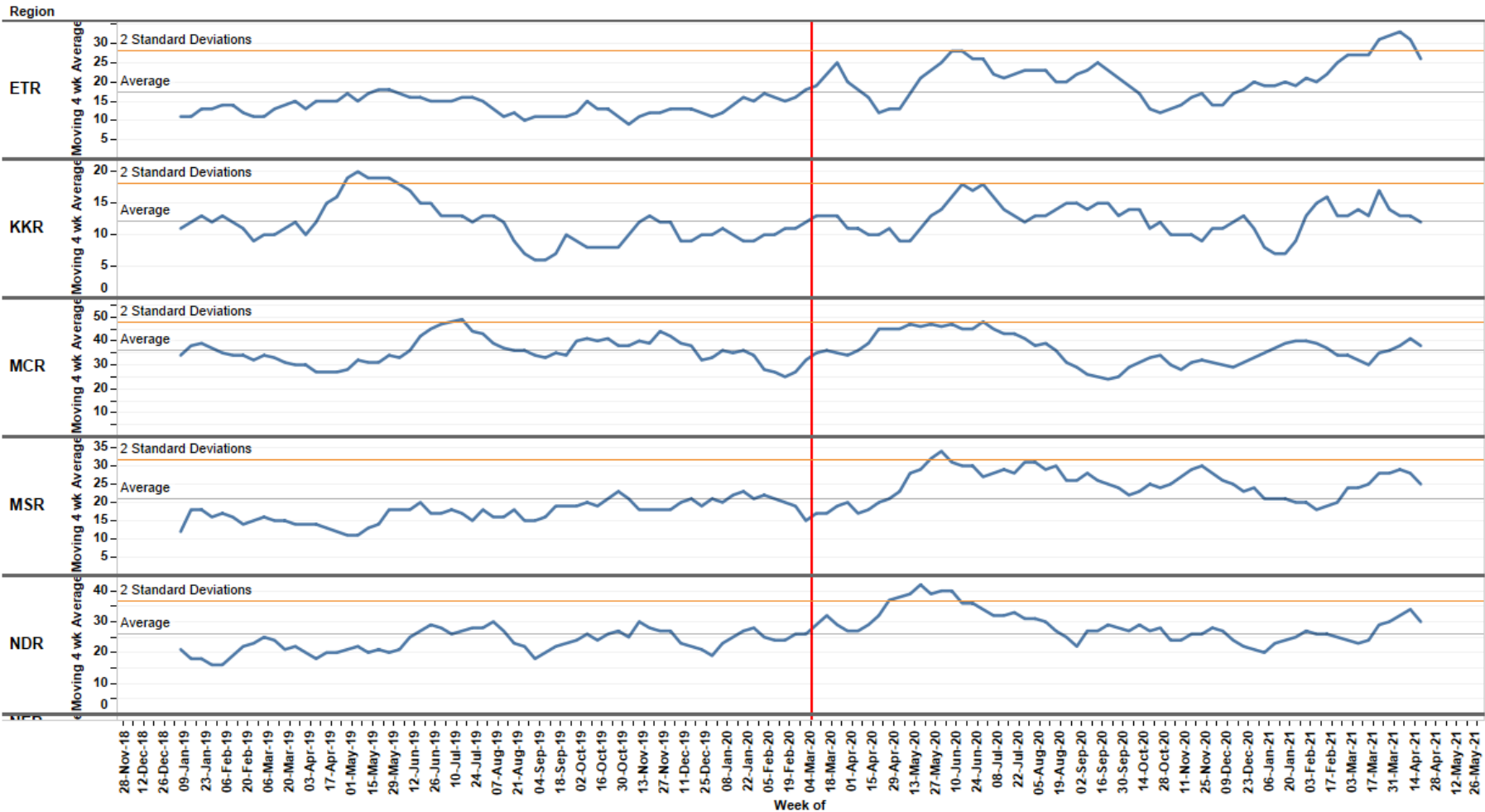


Weekly Timeseries—Tennessee Statewide Hospital Reported Nonfatal Opioid Overdoses

- Less is more!



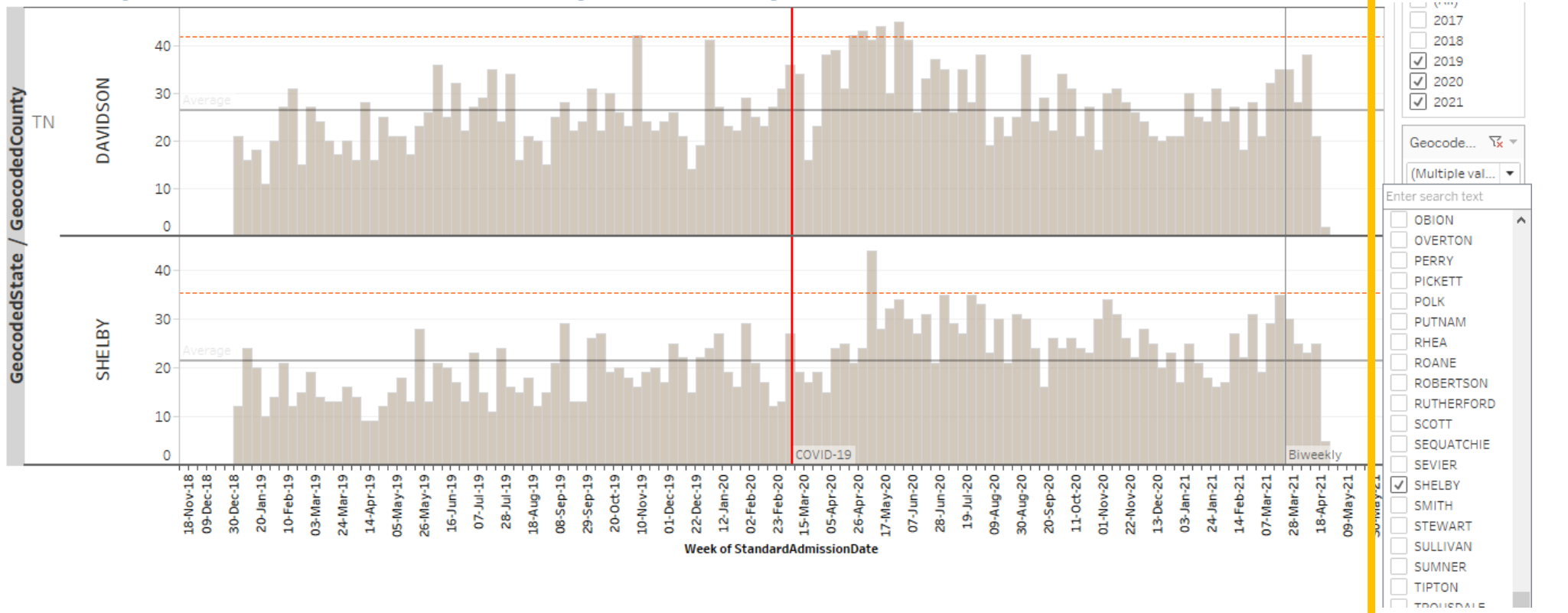
4-Week Rolling Average—TDH Public Health Region, Hospital Reported Nonfatal Opioid Overdoses



31-Dec-01-May-
 2018
 2019
 2020
 2021

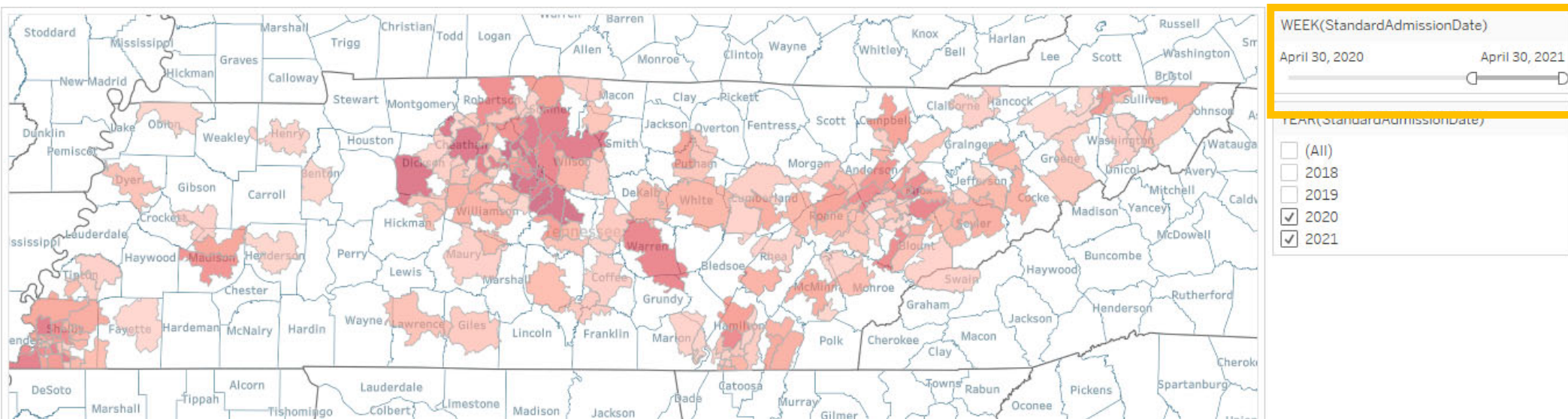
Region
 (Multiple v... ▾)

Weekly Timeseries—Hospital Reported Nonfatal Opioid Overdoses by County



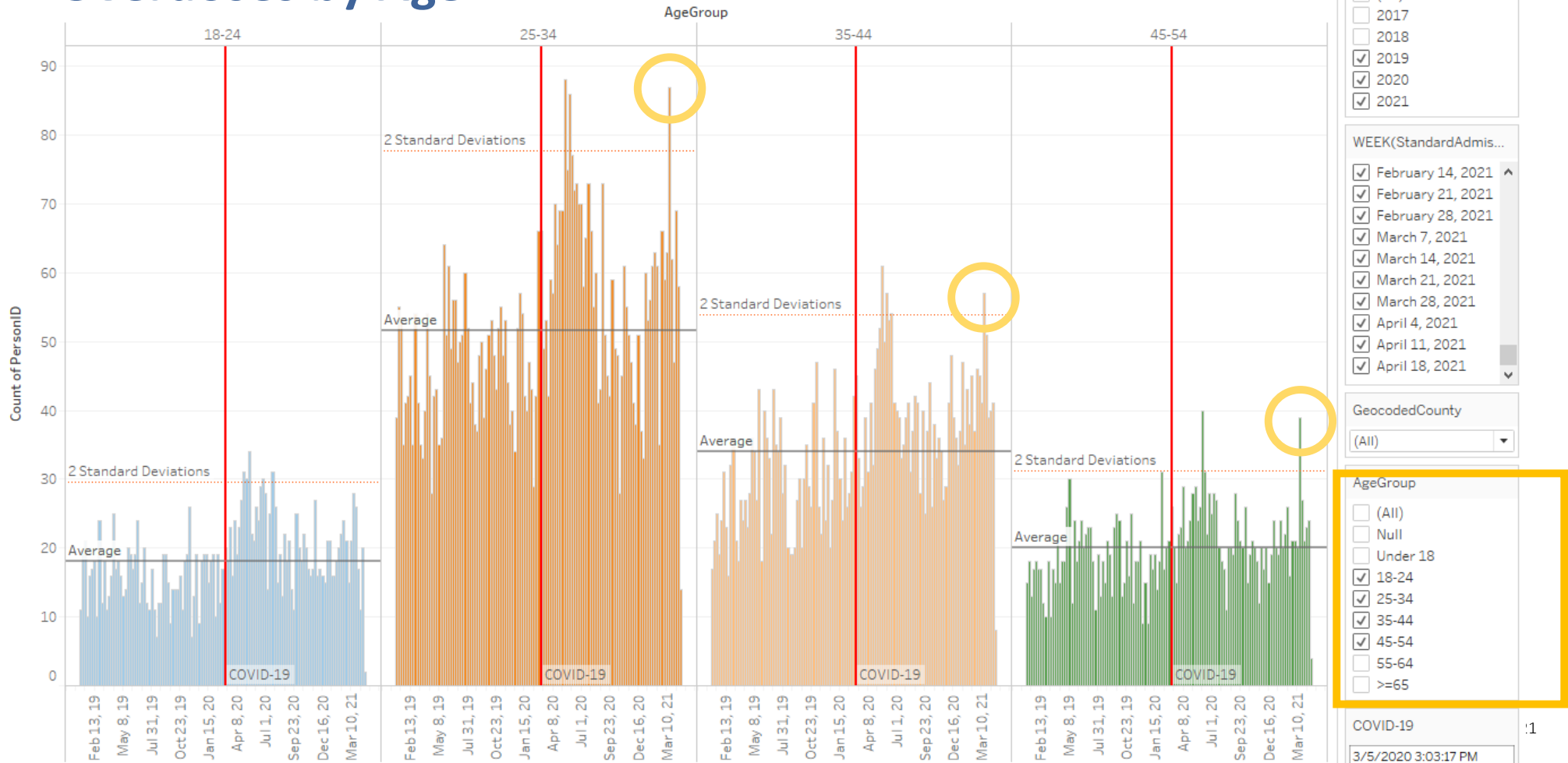
BJA's **Comprehensive** Opioid, Stimulant, and Substance Abuse Program

Hospital Reported Nonfatal Opioid Overdoses by Zip Code



*Zip codes with ≤ 10 counts are not shown

Tennessee Statewide—Hospital Reported Nonfatal Opioid Overdoses by Age



- 2017
- 2018
- 2019
- 2020
- 2021

- WEEK(StandardAdmis...
- February 14, 2021
 - February 21, 2021
 - February 28, 2021
 - March 7, 2021
 - March 14, 2021
 - March 21, 2021
 - March 28, 2021
 - April 4, 2021
 - April 11, 2021
 - April 18, 2021

GeocodedCounty
 (All)

- AgeGroup
- (All)
 - Null
 - Under 18
 - 18-24
 - 25-34
 - 35-44
 - 45-54
 - 55-64
 - >=65

Using Data and Information for Action

Target Outreach and Prevention

- Examples:
 - Tennessee Department of Mental Health and Substance Abuse Services (MHSAS)
 - Regional Overdose Prevention Specialists (ROPS)
 - Distribute additional naloxone
 - “Pop up” events setting up a tent in parking lots and talking to people who stop by
 - Outreach at food banks
 - Alert community agencies of increased activity so they can inform their program participants
 - Coordinate with law enforcement and provide them with additional materials to leave at sites of overdoses (e.g. resource cards/guides, ROPS information for naloxone training)

Focus on Areas with Higher Overdose

- Examples:
 - Tennessee Department of Children's Services has established Specialized Drug Teams in all six of their regions of Tennessee
 - Scaling up of teams in certain areas based on overdose data trends
 - TDH Syringe Service Programs
 - Using overdose data to better target where to scale SSPs and how to better reach more rural areas

Data Trainings

- Examples:
 - TDH-OIA
 - Met with community substance abuse prevention coalitions to share information about overdose trends in their county
 - This enabled the coalitions to receive one on one assistance and ask questions about local trends
 - Held a small data training for librarians in Montgomery County, Tennessee so they could better understand overdose trends in their community
 - Librarians are incredible resources
 - Touch points to help point individuals to services

Tips and Lessons Learned

- Always an iterative process
- Bite size content is effective
- Partners have varying levels of data literacy
- Balance between “more is more” and “less is more”
- Dynamic, always with an eye towards the future

Public Facing Data Vizzes

2019 Tennessee Drug Overdose Deaths Annual Report

Key Findings:

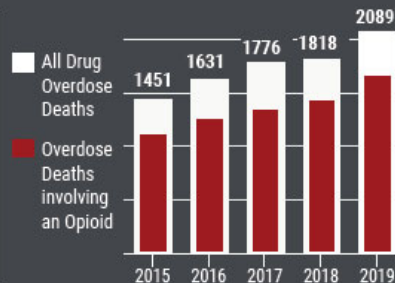
- ▶ In 2019, 2,089 Tennesseans died of a drug overdose. This represents a 15% increase in drug overdoses from 2018.
- ▶ There were large increases in the number of men and number of Black Tennesseans who died of drug overdose in 2019.
- ▶ Deaths involving illicit drugs such as fentanyl and methamphetamine have increased drastically since 2018.



Drug overdose deaths in Tennessee are at an all time high.

2,089

Tennesseans were lost to drug overdose in 2019

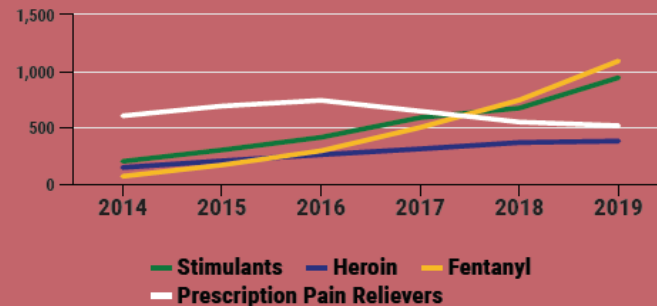


All drug overdose deaths and deaths involving an opioid continued to increase in 2019.

Opioids include:

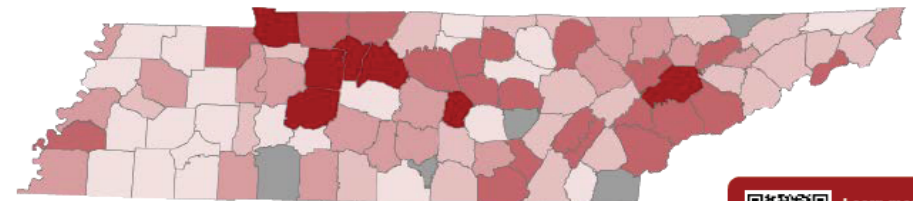


Deaths involving illicit drugs, mainly fentanyl and stimulants, are on the rise.



- ◀ Stimulant deaths primarily involved methamphetamine and cocaine.
- ◀ Deaths involving prescription pain relievers have decreased over the last three years (from 2017-2019).

2019 Drug Overdose Death Rates across Tennessee



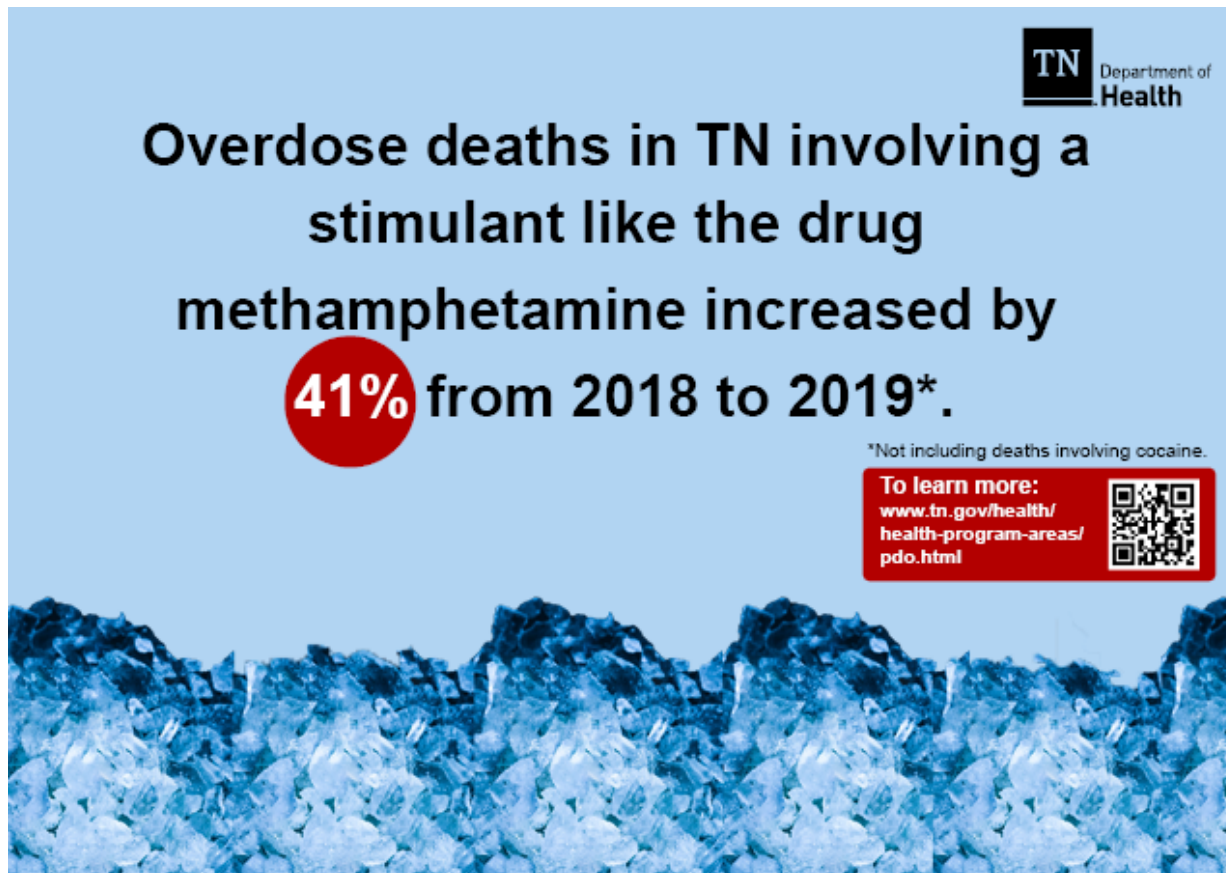
Number of Deaths per 100,000 Tennesseans



Learn more by reading the full report!



Public Facing Data Vizzes



Health Equity

Collect, analyze and share data to develop and contribute to an expanding understanding of health that links social determinants of health and health inequities and health outcomes.

1. Does our organization **collect and analyze data** to develop an understanding of the relationships between social and economic conditions and health outcomes?
2. Does our organization **produce or contribute to reports** that illustrate the relationships among the social determinants of health and health outcomes?
3. Has our organization conducted any analyses using tools such as a health impact assessment or research studies to examine and demonstrate impact on health inequities across policy sectors?
4. Does our organization routinely include the broader context of health determinants and **health and racial inequities in its reports**?



Health Equity

From 2018 to 2019,
there was a **66%**
increase in
the number of
Black Tennesseans
who died of a drug
overdose.

To learn more:
[www.tn.gov/health/
health-program-areas/
pdo.html](http://www.tn.gov/health/health-program-areas/pdo.html)



Drug overdose deaths continue to rise among White Tennesseans and **drug overdose deaths among Black Tennesseans have risen sharply since 2018.**

Data Source: Tennessee Death Statistical File
Analysis: Tennessee Department of Health, Office of Informatics and Analytics



Contact Information

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Questions?

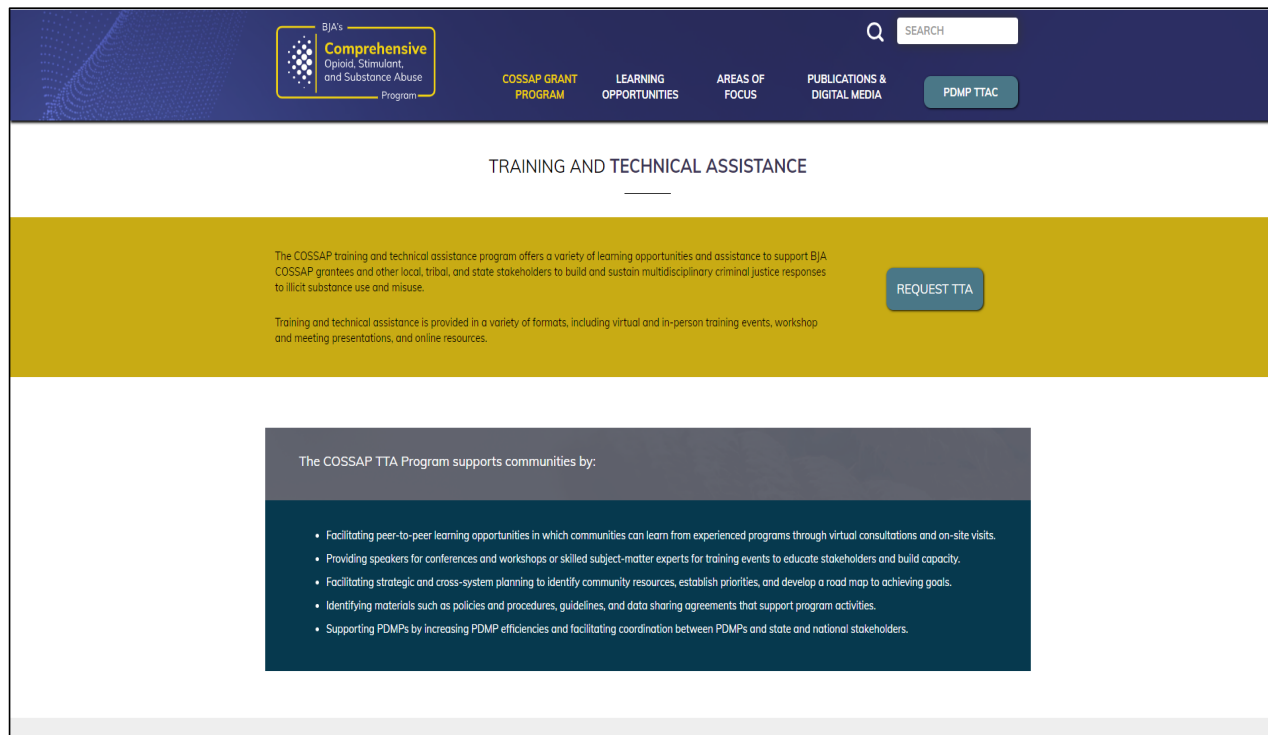
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Phone: (615) 507-6239



<https://cossapresources.org/Program/TTA>



The screenshot shows the website's navigation bar with the following items: BJA's Comprehensive Opioid, Stimulant, and Substance Abuse Program logo; COSSAP GRANT PROGRAM; LEARNING OPPORTUNITIES; AREAS OF FOCUS; PUBLICATIONS & DIGITAL MEDIA; and a PDMP TTAC button. A search bar is also present. The main heading is "TRAINING AND TECHNICAL ASSISTANCE". Below this, a yellow banner contains the text: "The COSSAP training and technical assistance program offers a variety of learning opportunities and assistance to support BJA COSSAP grantees and other local, tribal, and state stakeholders to build and sustain multidisciplinary criminal justice responses to illicit substance use and misuse." and a "REQUEST TTA" button. A second paragraph states: "Training and technical assistance is provided in a variety of formats, including virtual and in-person training events, workshop and meeting presentations, and online resources." Below this, a dark blue box titled "The COSSAP TTA Program supports communities by:" contains a bulleted list of services.

BJA's
Comprehensive
Opioid, Stimulant,
and Substance Abuse
Program

COSSAP GRANT PROGRAM LEARNING OPPORTUNITIES AREAS OF FOCUS PUBLICATIONS & DIGITAL MEDIA PDMP TTAC

TRAINING AND TECHNICAL ASSISTANCE

The COSSAP training and technical assistance program offers a variety of learning opportunities and assistance to support BJA COSSAP grantees and other local, tribal, and state stakeholders to build and sustain multidisciplinary criminal justice responses to illicit substance use and misuse.

REQUEST TTA

Training and technical assistance is provided in a variety of formats, including virtual and in-person training events, workshop and meeting presentations, and online resources.

The COSSAP TTA Program supports communities by:

- Facilitating peer-to-peer learning opportunities in which communities can learn from experienced programs through virtual consultations and on-site visits.
- Providing speakers for conferences and workshops or skilled subject-matter experts for training events to educate stakeholders and build capacity.
- Facilitating strategic and cross-system planning to identify community resources, establish priorities, and develop a road map to achieving goals.
- Identifying materials such as policies and procedures, guidelines, and data sharing agreements that support program activities.
- Supporting PDMPs by increasing PDMP efficiencies and facilitating coordination between PDMPs and state and national stakeholders.

BJA's



Comprehensive

Opioid, Stimulant,
and Substance Abuse

Program