Xylazine and Medetomidine

Tracking Harm Reduction Surveillance Data & Supply Trends

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What is Xylazine?

Commonly known as *"tranq"* or *"tranq dope"* (when mixed with fentanyl), xylazine is a non-opioid veterinary sedative and central nervous system depressant not approved for human use.[1]

- It is not a federally controlled substance, but controlled substance in multiple states (including Schedule III in Ohio). [2]
- Often mixed with fentanyl, xylazine can be injected, snorted, or inhaled.
- Xylazine's effects (see list on left) are especially dangerous when combined with opioids, alcohol, or benzodiazepines.
- Some individuals use xylazine intentionally to extend fentanyl's effects; others are unknowingly exposed through contaminated or adulterated drugs. [1]

Effects

- Drowsiness
- Sedation
- Slowed breathing
- Low heart rate
- Slow brain activity
- Relaxation
- Disorientation

1. NIDA Xylazine; 2. Ohio Executive Order.

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What is Medetomidine?

Medetomidine is a non-opioid veterinary sedative and central nervous system depressant not approved for human use. [1]

- It is similar to *xylazine*, but can be up to 200 times more potent and has a longer duration of effects. [2]
- It can be found in both powdered and liquid forms.
- It is most commonly identified in combination with fentanyl (known as "*rhino tranq*") and with xylazine. [3]
- Medetomidine's effects (see right) can be dangerous when combined with opioids, alcohol, or benzodiazepines.

Effects

- Sedation
- Analgesia
- Muscle Relaxation
- Low Heart Rate
- Low Blood Pressure
- High Blood Sugar
- Dizziness
- Nausea
- Hallucinations

1. DEA. 2024, "Medetomidine"; 2. Connell et al., 2022.; 3. CFSRE, May 2024, "Medetomidine Rapid Proliferating Across USA."

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New Health Risks

Xylazine

- Repeated use of xylazine can lead to *severe skin and soft tissue wounds* that are painful, slow to heal, and prone to infection. These wounds can occur even without injection, such as from smoking or snorting the drug, and in some cases may progress to tissue death requiring excision or amputation.

Additional complications: chronic wound care needs, risk of bacterial infections like infective endocarditis, and increased vulnerability to bloodborne viruses such as HIV and hepatitis C, particularly when syringes are shared.

Medetomidine

- Medetomidine used in combination with synthetic opioids such as fentanyl has been found to prolong or increase opioid-related effects, with additional risks associated with low heart rate and sedation, which can diminish an individual's response to life-saving naloxone during an opioid-related overdose.

Additional complications: Severe withdrawal symptoms including severe autonomic hyperactivity, nausea, vomiting, and tremulousness.

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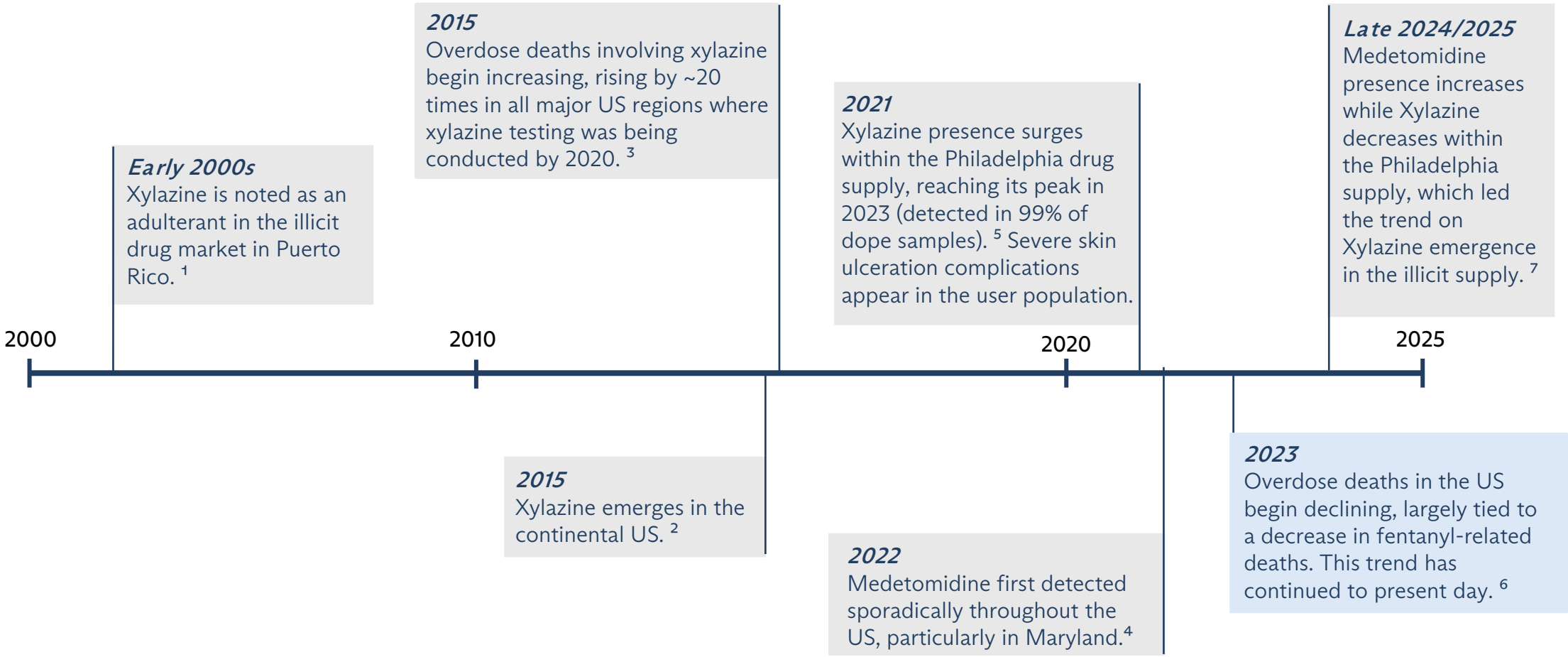
Emergence in the Illicit Drug Supply



1. DOJ and DEA Joint Intelligence Report, October 2022; 2. Johnson et al., 2021.; 3. New York State Department of Health, 2023, "Xylazine: What Clinicians Need to Know."; 4. CFSRE, May 2024, "Public Alert: Medetomidine." ; 5. CFSRE, 2023, "Drug Checking – Quarterly Report: Philadelphia, Pennsylvania." 6. McMaster et al., January 2025, "Understanding Ohio's Decline in Fentanyl-related Deaths: Trends, Interventions, and the Evolving Drug Supply."; 7. Philadelphia Department of Public Health, April 2025, "Changes in Philadelphia's Drug Supply and Substance Use-Related Emergency Department Visits."

Data Limitations for Tracking **Xylazine** and **Medetomidine**

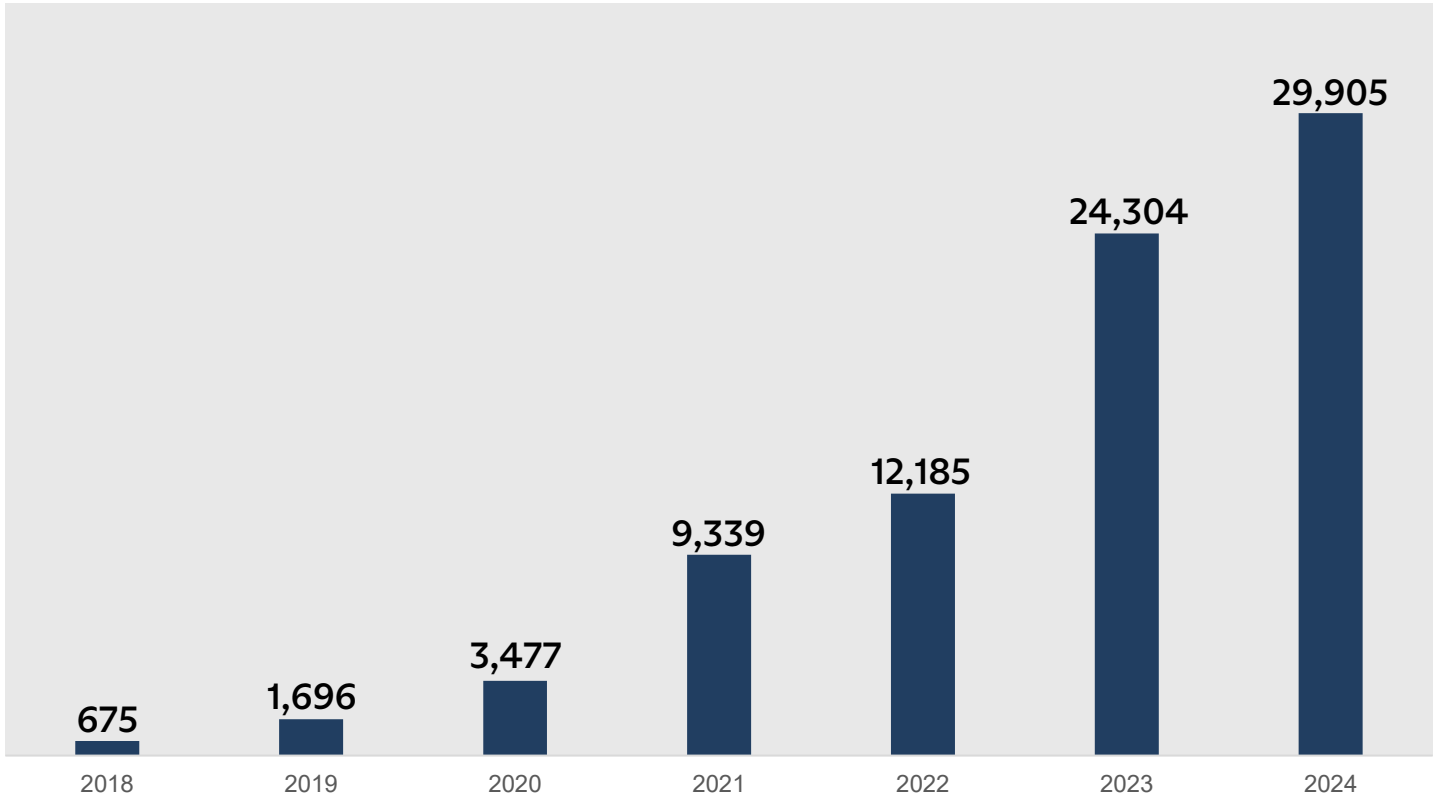
- Xylazine is difficult to trace in terms of its involvement in overdose deaths because there is no standardized classification code within CDC data sets.
- Xylazine (and Medetomidine) data tracking is complicated by largely unstandardized reporting and testing for the substances across counties or states.
- Overdose deaths are a difficult measurement for adulterant prevalence because the presence of the adulterant is often not the direct cause of overdose.

How does this interact with the context of a significant decline in overdoses (specifically fentanyl-related) in the US?

How can we promote improved data collection and surveillance practices involving these substances?

Tracking Trends – Xylazine

National Xylazine-Positive Lab Submissions



DEA's National Forensic Laboratory Information System (NFLIS) collects drug identification results submitted by participating forensic laboratories following law enforcement seizures.

*There are limitations to data due to voluntary reporting system and varying testing and reporting procedures.

Data Source: DEA National Forensic Laboratory Information System, Public Data Query System, September 2025. Analysis by Begun Center.

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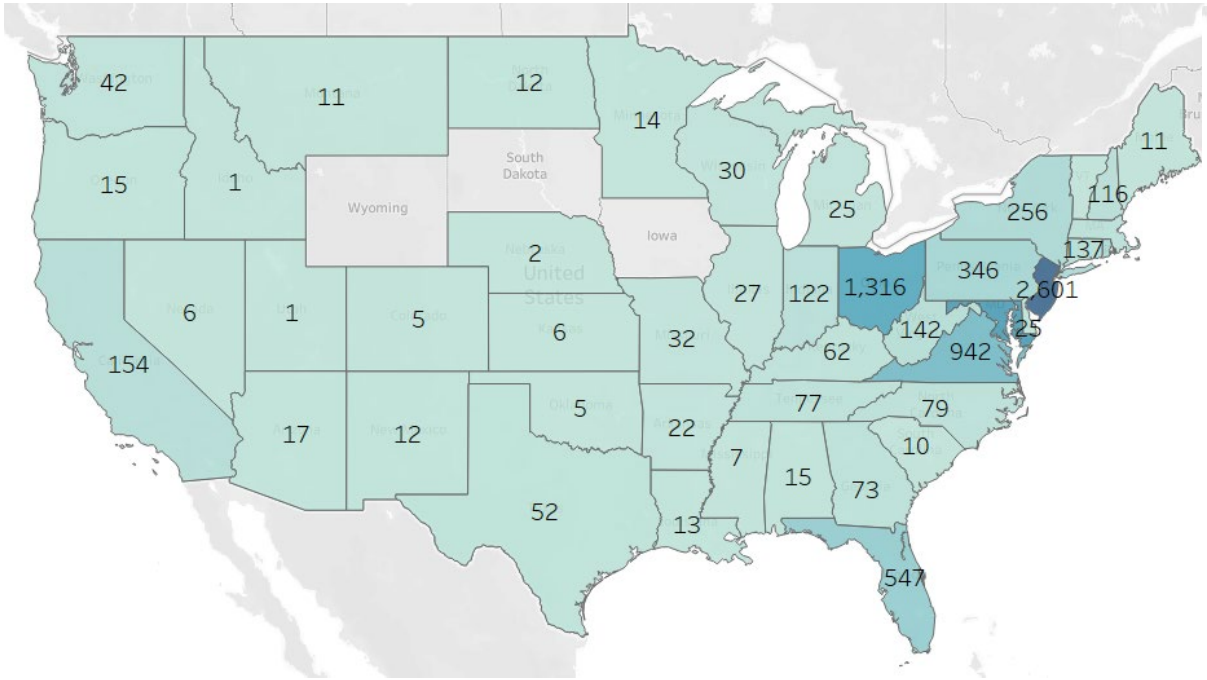
Geographic Distribution of **Xylazine**

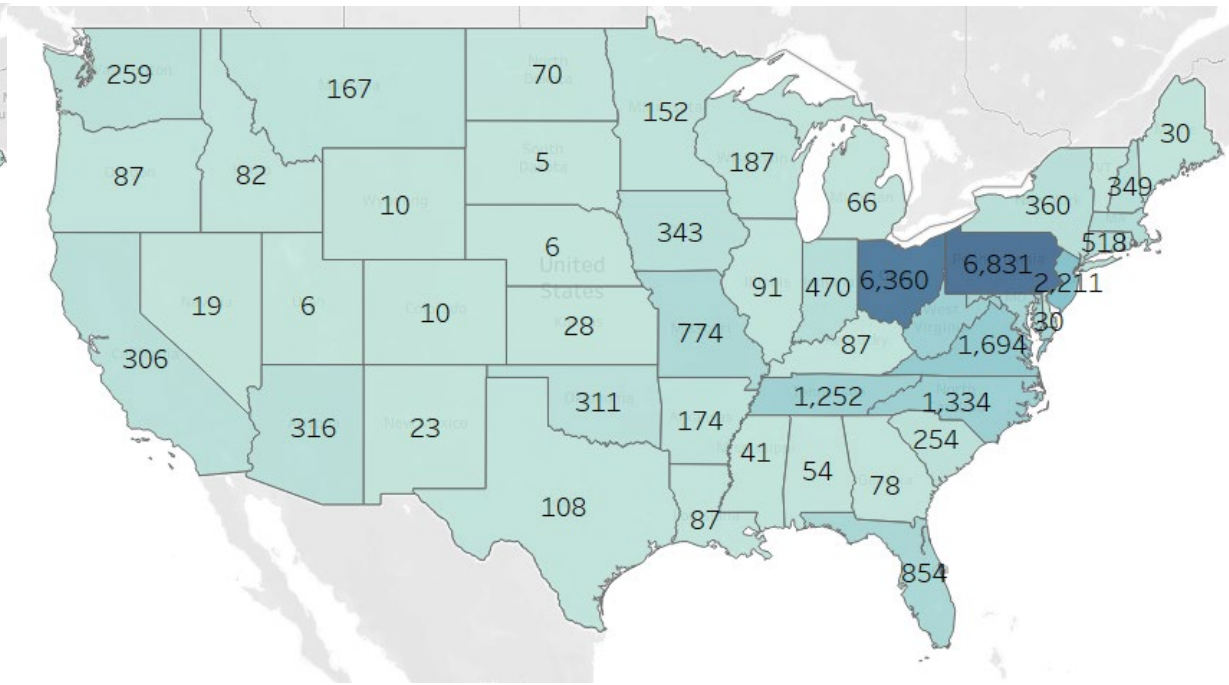


2021; Total Reports: 9,339

Not pictured: AL (6), HI (2), PR (36)

1 — 2,601

Number of Xylazine-Positive Lab Submissions



2024; Total Reports: 29,905

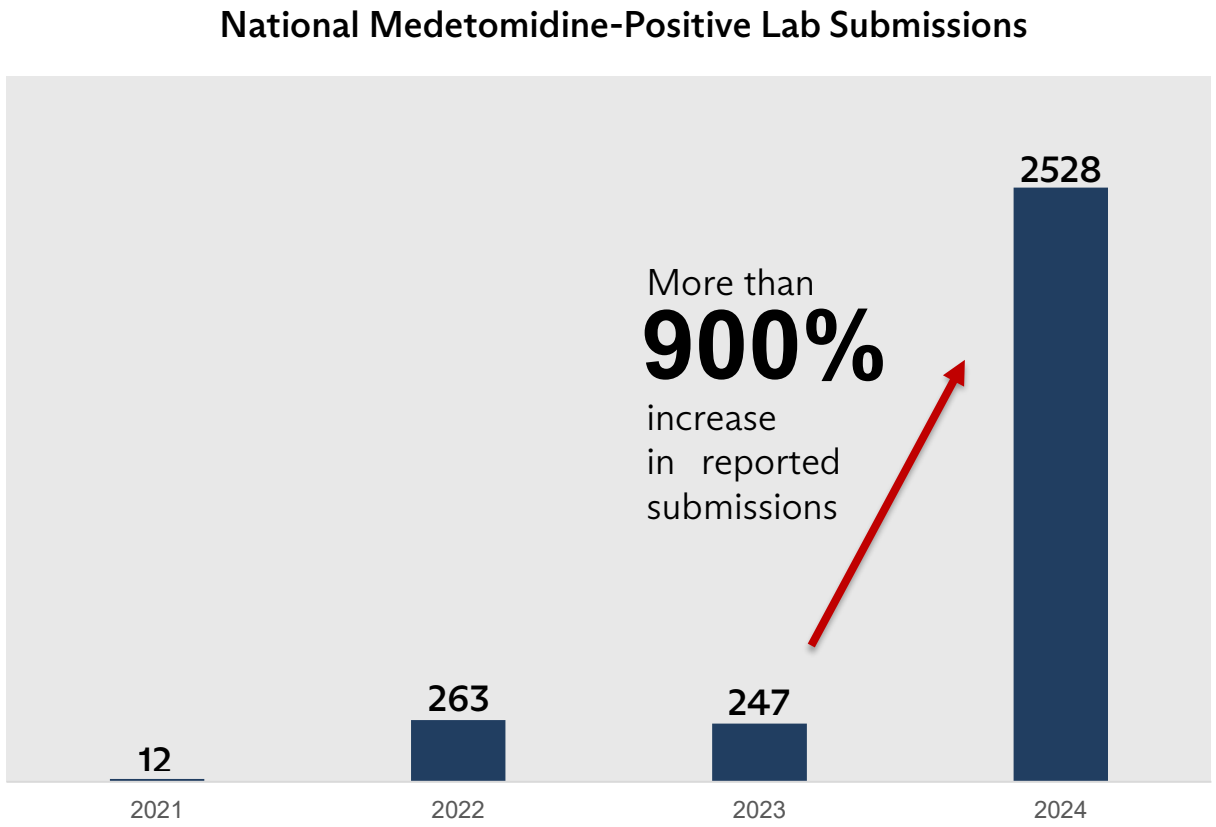
Not pictured: AL (71), HI (1), PR (51)

1 — 6,831

Number of Xylazine-Positive Lab Submissions

Data Source: DEA National Forensic Laboratory Information System, Public Data Query System, September 2025. Analysis by Begun Center.

Tracking Trends – Medetomidine



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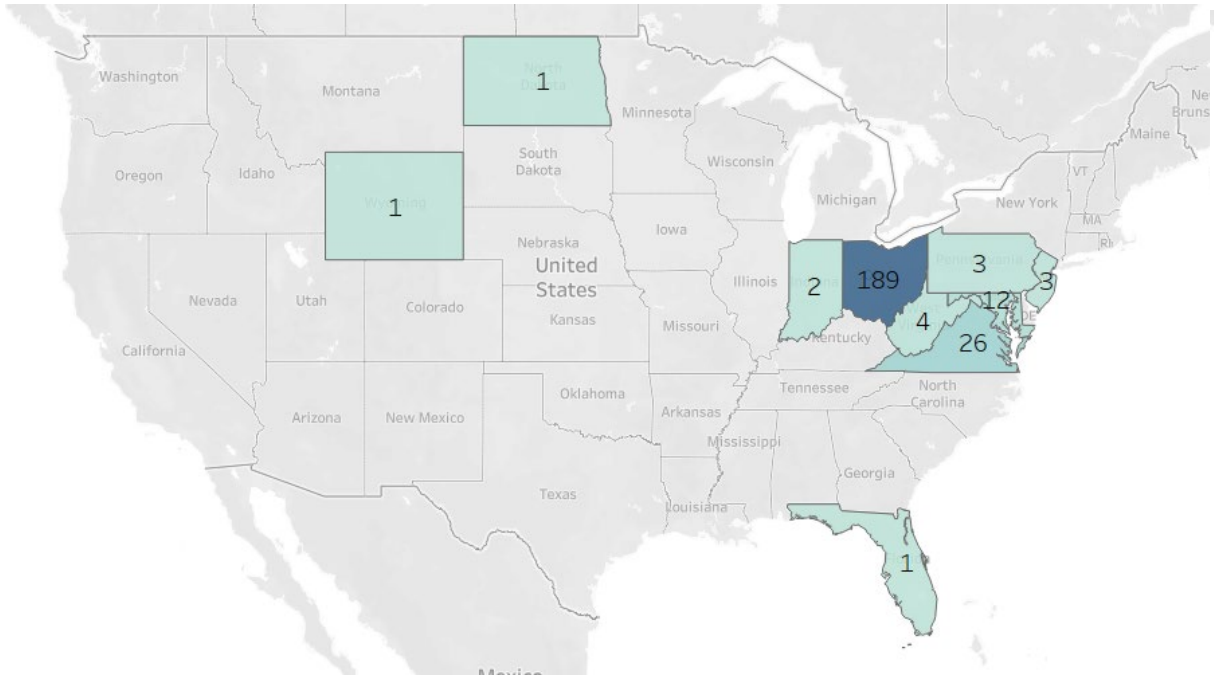
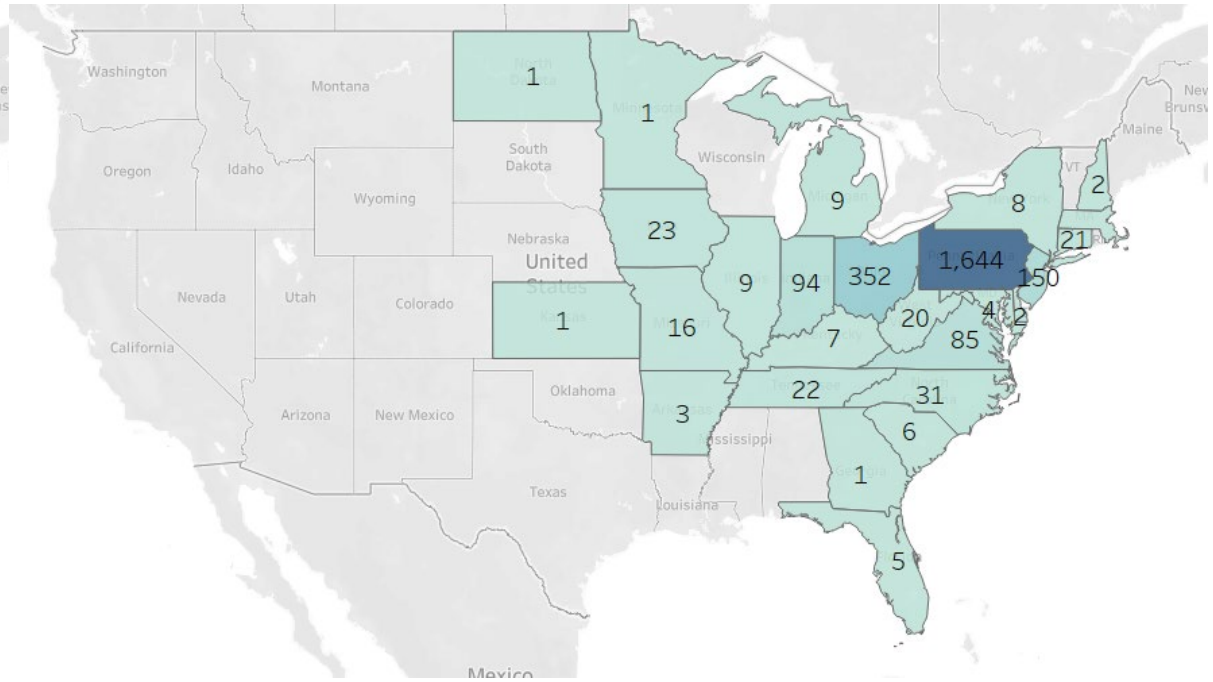
Geographic Distribution of **Medetomidine**



2023; Total Reports: 247

1 — 189

Number of Medetomidine-Positive Lab Submissions



2024; Total Reports: 2,528

1 — 1,644

Number of Medetomidine-Positive Lab Submissions

Data Source: DEA National Forensic Laboratory Information System, Public Data Query System, September 2025. Analysis by Begun Center.

Syringe Testing as Adulterant Surveillance: Evidence from Cuyahoga County, OH

Syringe testing* reveals discrepancies between perceived and actual substances within samples from the illicit market, as well as unexpected cutting agents.

Xylazine (n = 261)

Expected	Actual
10.2%	38.3%

*** 119 of these samples also contained medetomidine.**

Total Number of Syringes Tested (August 2024 – July 2025)

n = 701

Most Common Co-occurring Substances (% of samples):

Illicit Fentanyls	**92%**
Heroin	**50%**
Cocaine	**55%**
Medetomidine	**46%**
Methamphetamine	**21%**

*Syringe Test Results provided by the Cuyahoga County Medical Examiner Office (August 2024- July 2025). A sample may test positive for more than one substance. This program only represents a small subset (<1%) of samples tested, and is not representative of drug use in Cuyahoga County.

This work was supported by the Centers for Disease Control and Prevention (CDC) of the U.S. Department of Health and Human Services (HHS) as part of Overdose Data to Action: LOCAL (CDC-RFACE-23-0003). The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement by, CDC/HHS or the U.S. Government.

Syringe Testing as Adulterant Surveillance: Evidence from Cuyahoga County, OH

Syringe testing* reveals discrepancies between perceived and actual substances within samples from the illicit market, as well as unexpected cutting agents.

Medetomidine (n = 189)

Expected	Actual
0.2%	25.1%

*** 119 of these samples also contained xylazine.**

Total Number of Syringes Tested (August 2024 – July 2025)

n = 701

Most Common Co-occurring Substances (% of samples):

Illicit Fentanyls	**97%**
Heroin	**67%**
Xylazine	**63%**
Cocaine	**58%**
Methamphetamine	**19%**

*Syringe Test Results provided by the Cuyahoga County Medical Examiner Office (August 2024- July 2025). A sample may test positive for more than one substance. This program only represents a small subset (<1%) of samples tested, and is not representative of drug use in Cuyahoga County.

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Is Medetomidine Replacing Xylazine?

- **Xylazine** has a significantly larger presence, but **Medetomidine submissions** are increasing at an extremely high rate.
- Philadelphia, which was the significant early epicenter of the xylazine crisis, reports increased medetomidine and decreased xylazine presence in the illicit drug supply. It's unclear if a similar trend will appear in other areas.[1]
- The adulterants often occur together, so it may not be as simple as "replacement."

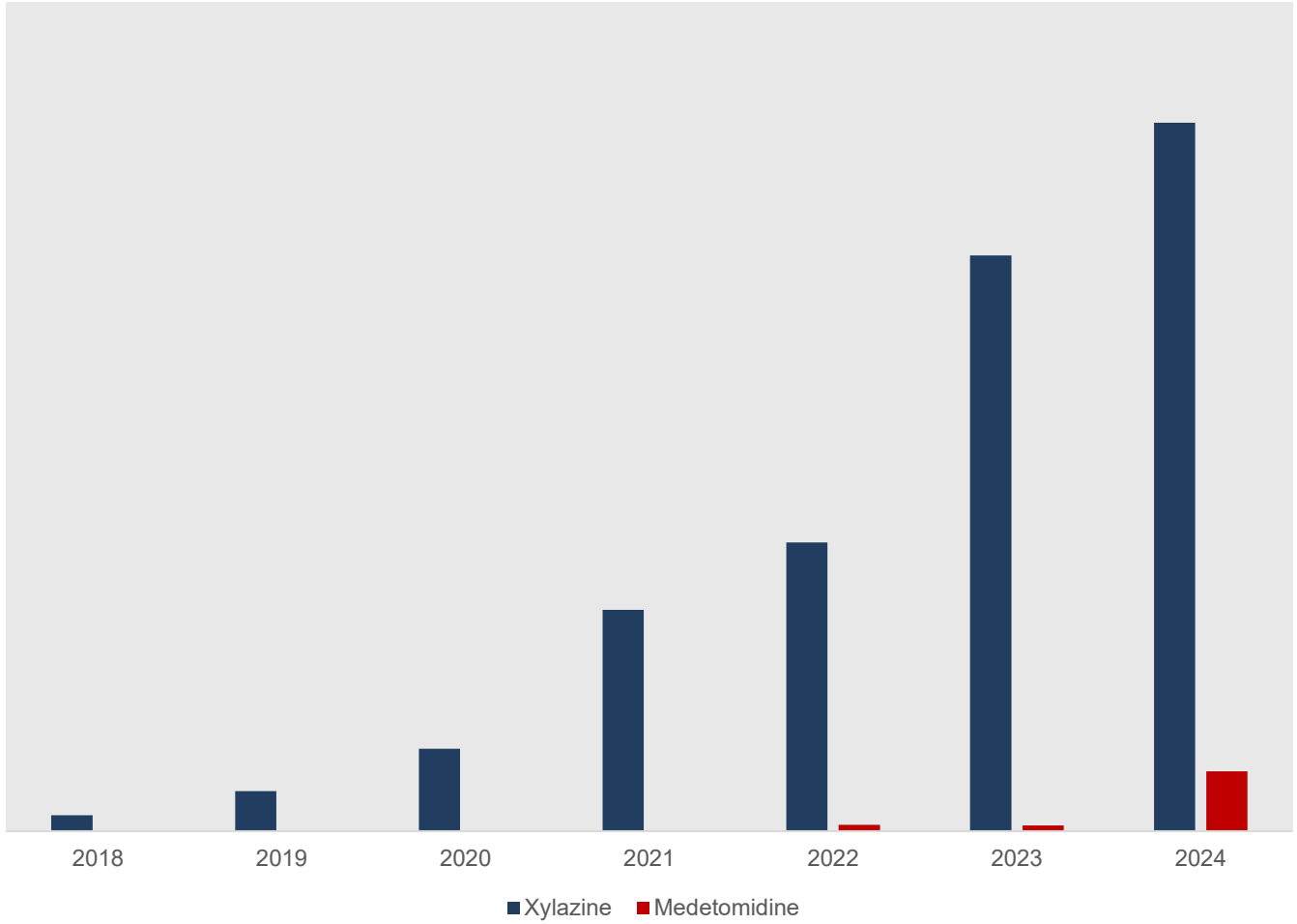

Figure Data Source: DEA National Forensic Laboratory Information System, Public Data Query System, September 2025. Analysis by Begun Center.

1. Philadelphia Department of Public Health, April 2025, "Changes in Philadelphia's Drug Supply and Substance Use-Related Emergency Department Visits."

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Thank you for your time. Please feel free to reach out with any questions!

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