

Emerging Trend Update: Xylazine in Michigan

2019-2023 Year-to-Date

Highlights

Xylazine is a potent veterinary tranquilizer/sedative never approved for human use but increasingly found in the illicit drug supply and frequently used along with fentanyl.¹⁻³ Xylazine causes sedation, anesthesia, respiratory depression and muscle relaxation and potentiates pain relief; in humans, it also causes significant slowing of the heart rate and low blood pressure,¹ as well as severe necrotic skin ulcerations and complex withdrawal symptoms.⁴

[A September 2021 CDC MMWR report²](#) suggested **xylazine might be underreported in overdose deaths** because routine postmortem toxicology tests may not include it. In April 2022, [another CDC MMWR report³](#) reported an increase in xylazine-related deaths in Cook County, Illinois. Both reports noted fentanyl/fentanyl analogs were found in 99% of xylazine-involved deaths. **Michigan is also seeing an increase in xylazine-involved fatalities.**

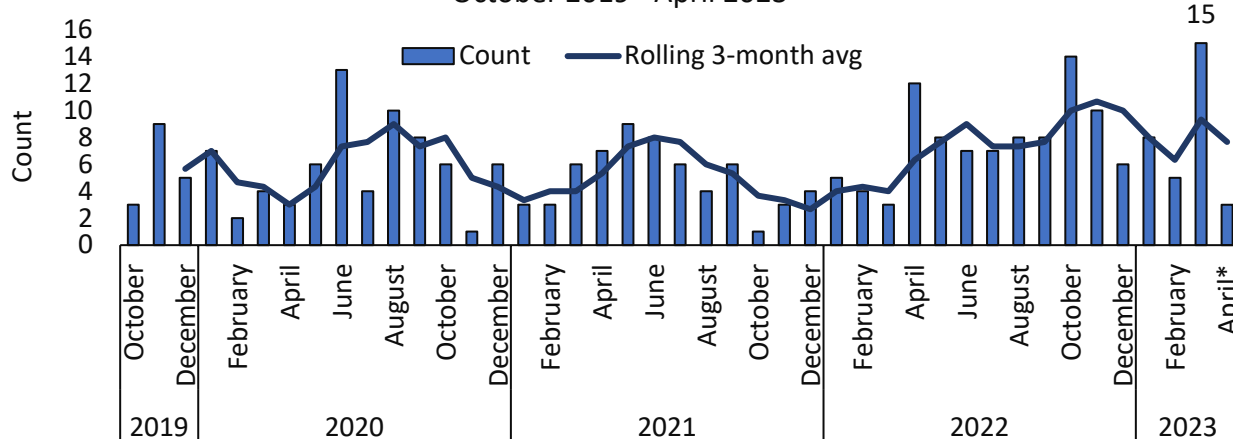
This brief uses data from postmortem toxicology testing conducted by the Swift Toxicology of Overdose-Related Mortalities (STORM) program. STORM began in September 2017 to improve postmortem toxicological testing in Michigan and started testing for xylazine in October 2019. As of April 17, 2023, STORM has detected 270 xylazine-positive decedents, of which **100% also tested positive for fentanyl.**

According to the [Michigan Poison and Drug Information Center \(MiPDC\)⁵](#), “fentanyl detection in deaths related to xylazine is very concerning,” as “both xylazine and fentanyl can place users at increased risk of toxicity and even death due to their combined effects on the respiratory system and central nervous system. **Cardiovascular and respiratory support are recommended in overdoses involving xylazine, as well as naloxone;** although naloxone is not an antidote to xylazine, xylazine is frequently used with opioids, which are reversed with naloxone.”

Detailed Findings

In 2022, STORM detected xylazine presence in 92 decedents, a 53% relative increase from 60 such decedents in 2021. In March 2023, a new monthly high count for xylazine-positive decedents (15) was reached (Figure 1).

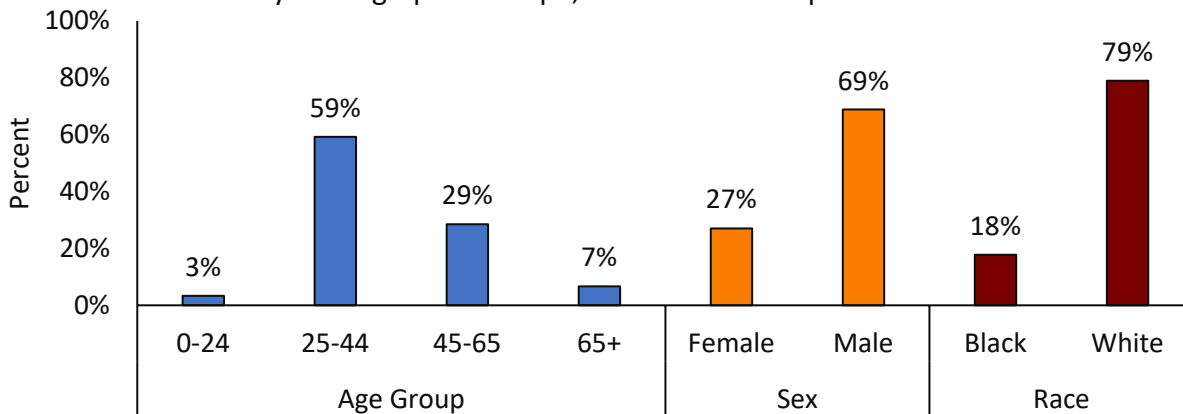
Figure 1. STORM - Monthly Count of Decedents Testing Positive for **Xylazine**, October 2019 - April 2023*



*2019-2023 The Swift Toxicology of Overdose-Related Mortalities (STORM) Program at Western Michigan University Homer Stryker MD School of Medicine (WMed); data for April incomplete, updated with dates of death through April 17, 2023.

By demographic group, most decedents testing positive for xylazine in STORM were between ages 25-44 (59%), male (69%), or white (79%) (Figure 2).

Figure 2. STORM - Percent of Xylazine-Positive Decedents (n=270) by Demographic Group*, October 2019 - April 2023**

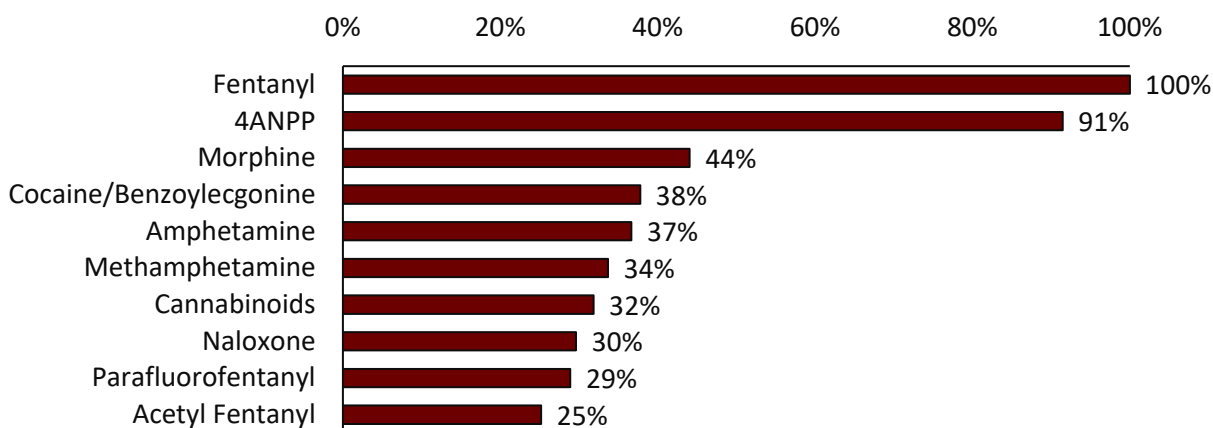


*Unknown and groups with counts <6 not shown on graph

**April 2023 data incomplete; updated with dates of death through April 17, 2023

Common substances present among decedents testing positive for xylazine included fentanyl (100%), morphine (44%), and cocaine/benzoyllecgonine (a cocaine metabolite) (38%) (Figure 3).

Figure 3. STORM - Percent of Xylazine-Positive Decedents (n=270) Testing Positive for Other Substances, October 2019 - April 2023*



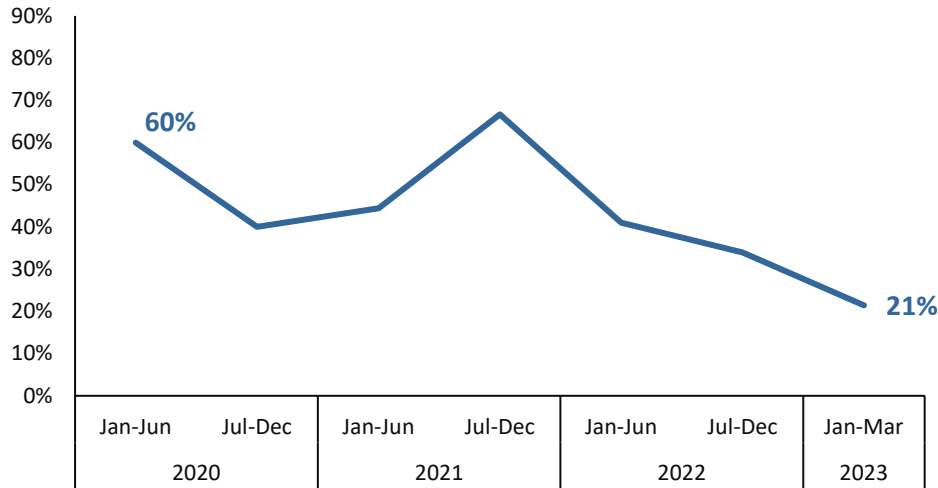
*April 2023 data incomplete; updated with dates of death through April 17, 2023

4ANPP = 4-anilino-N-phenethylpiperidine, 4-aminophenyl-1-phenethylpiperidine

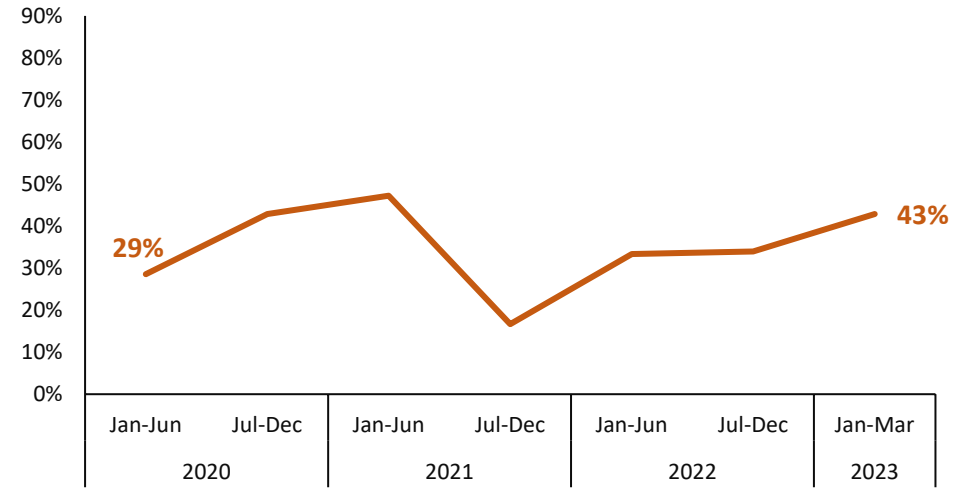
Drug combinations found among decedents testing positive for xylazine have changed over time, with the percent of decedents testing positive for xylazine/morphine decreasing and the percent of decedents testing positive for xylazine/benzoyllecgonine increasing (Figure 4; drug combinations are not exclusive, a decedent testing positive for multiple substances would be represented in multiple lines).

Figure 4. STORM - Percent of Xylazine-Positive Decedents (n=250) Testing Positive for Drug Combinations, January 2020 to March 2023

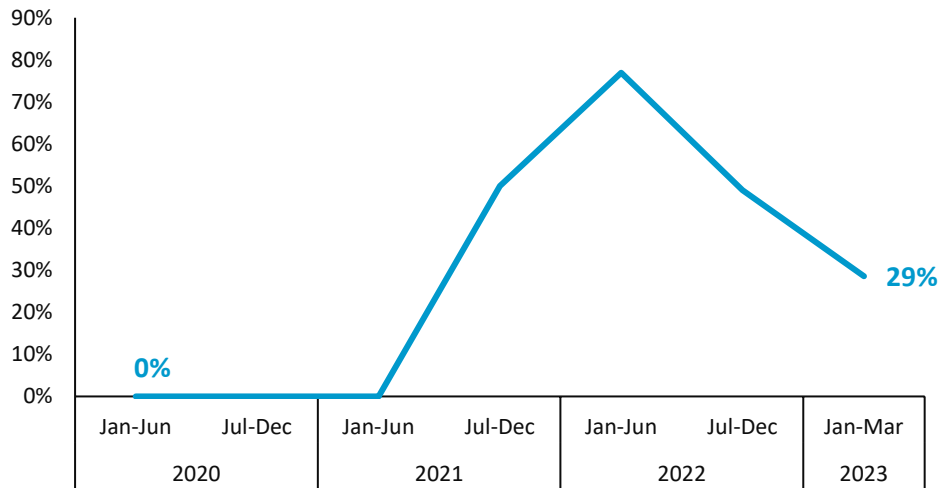
Xylazine + **Morphine**



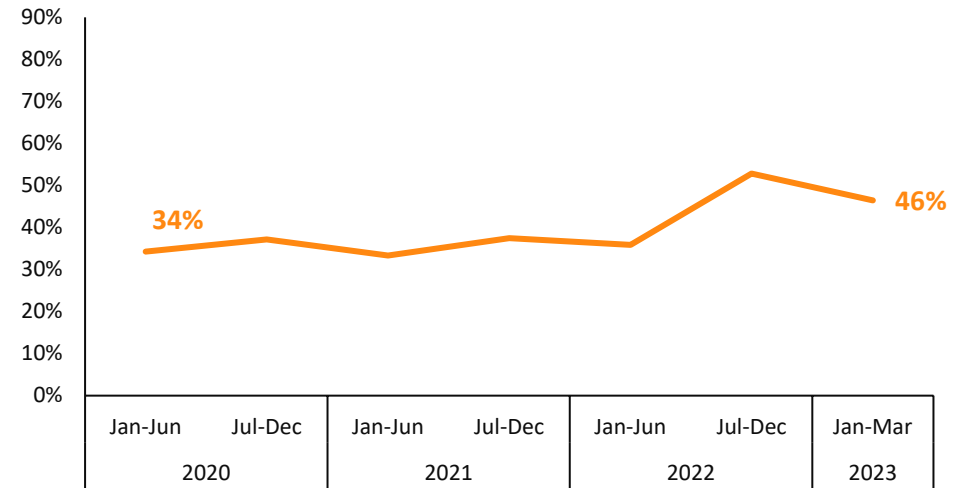
Xylazine + **Methamphetamine**



Xylazine + **Para-fluorofentanyl**



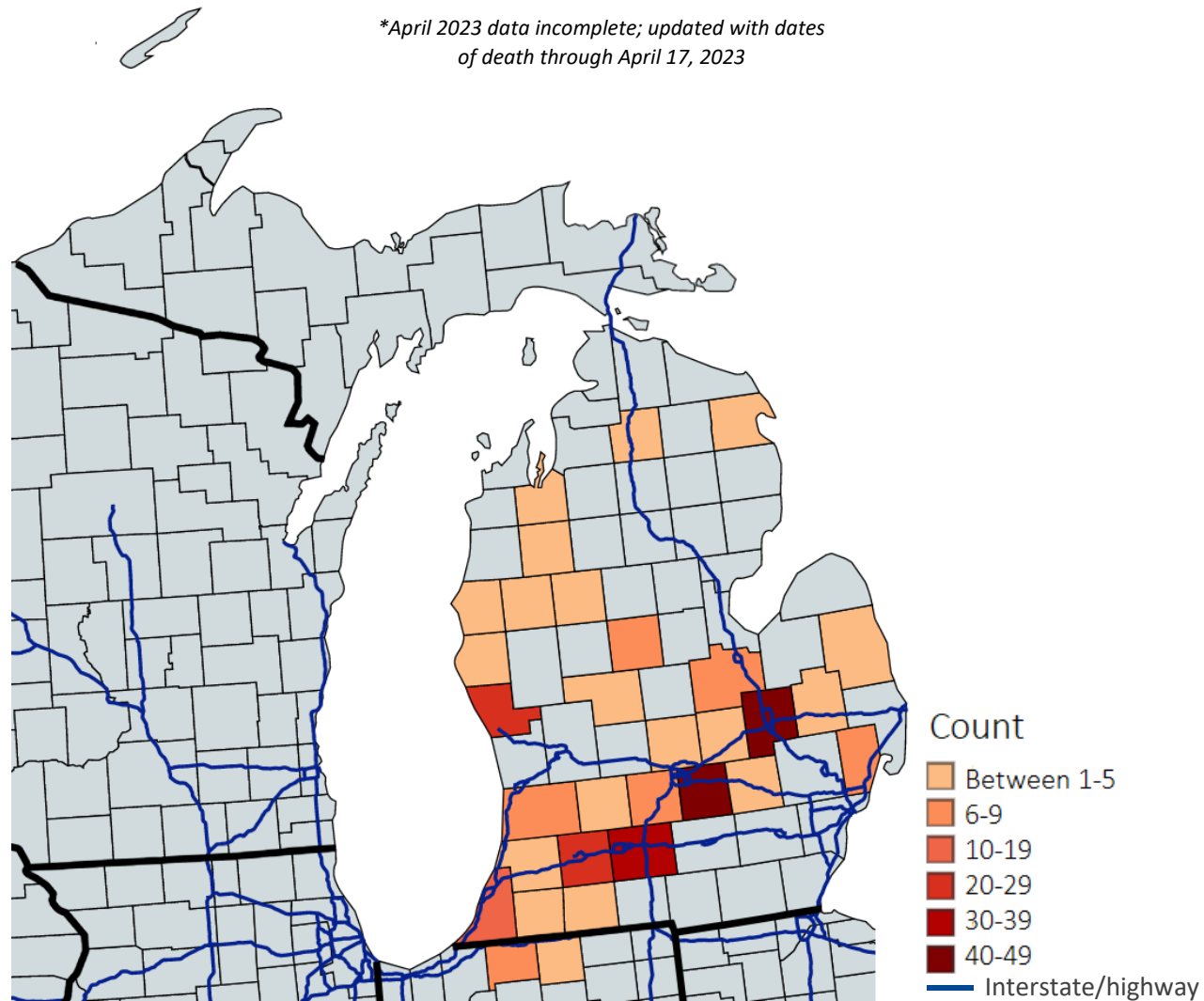
Xylazine + **Cocaine/Benzoyllecgonine**



Sixty-one of 83 Michigan counties have submitted at least one death for STORM analysis since the program began. Since October 2019, xylazine-positive deaths have occurred in 29 Michigan counties with most occurring in: Genesee (45 deaths), Ingham (44), Calhoun (39), Kalamazoo (27), and Muskegon (25), representing 67% of all xylazine deaths (Figure 5). Comparing 2022 with 2021, Berrien County had the largest increase in xylazine-positive decedents, from one in 2021 to nine through December 2022.

Figure 5. STORM - Count of Xylazine-Positive Decedents by County of Death, October 2019 to April 2023*

**April 2023 data incomplete; updated with dates of death through April 17, 2023*



How You Can Act

Get the message out. Xylazine is a non-opioid veterinary tranquilizer/sedative, not approved for human use and increasingly found in the illicit drug supply in Michigan. Using xylazine and opioids, like fentanyl, can cause a fatal overdose. Central nervous system (CNS) stimulants like cocaine and CNS depressants like xylazine and fentanyl, when used together, can be a lethal combination, masking the effect of a single drug and leading to overdose.

Xylazine test strips are available for purchase but are currently prohibitively expensive. Color, texture, taste, or smell do not reliably indicate the presence of xylazine, fentanyl or other adulterants. It is reasonable and safer to assume that all illicit drugs are contaminated with other substances and act accordingly.

Educate about dangers of xylazine, the signs of opioid overdose and how to use naloxone to reverse an opioid overdose. Train bystanders to use naloxone and, in cases where naloxone is not available or is not working yet, to use CPR, **rescue breathing** (see Appendix) and/or chest compressions to sustain life until EMS arrives. Use the recovery position (see Appendix) to keep the airway clear if sedation persists.

“Naloxone administration might not be as effective at fully reversing overdose-related signs and symptoms when xylazine and highly potent opioids such as fentanyl are present, although **naloxone should always be administered**. No pharmaceutical antidote is specific to xylazine, and immediate supportive care, **especially respiratory and cardiovascular support**, is critical in the event of an overdose when the presence of xylazine is suspected” ([MMWR](#)²).

Distribute supplies: naloxone, face shields for rescue breaths, wound care kits. Organizations can [request free naloxone from MDHHS](#) to increase capacity. Connect individuals with more ways to access naloxone: order online at [nextdistro.org/Michigan](#) and have it delivered at no cost; get it at a pharmacy ([Naloxone Standing Order](#), no prescription required). **Contact a [Syringe Service Program](#) for naloxone, fentanyl test strips, sterile needles, testing for HIV and Hepatitis C and other life-saving resources.**

Promote harm reduction messages. “Assume overdose risk no matter what drug you are using, and practice as much harm reduction as possible, as consistently as possible: Go slow. Use less. Test your product. If you are using alone, double down on other strategies. Have someone check on you. Smoke or snort instead of injecting. If you are using in a group, stagger your use so someone is always alert. Know the signs of an overdose. Carry naloxone and know how to use it. Look out for each other!” ([Fentanyl Use and Overdose Prevention Tips - National Harm Reduction Coalition](#)⁶).

Examples of messages specific to xylazine:

National Harm Reduction Coalition
[Xylazine in the Drug Supply](#)⁷

Prevent Overdose Rhode Island
[General xylazine alert, July 2022](#)⁸
[xylaZINE](#)⁹
[Wound care](#)¹⁰

City of Philadelphia Department of Public Health
[Harm reduction information specific to xylazine](#)¹¹
[Informational flyers](#)¹²

Rescue Breathing

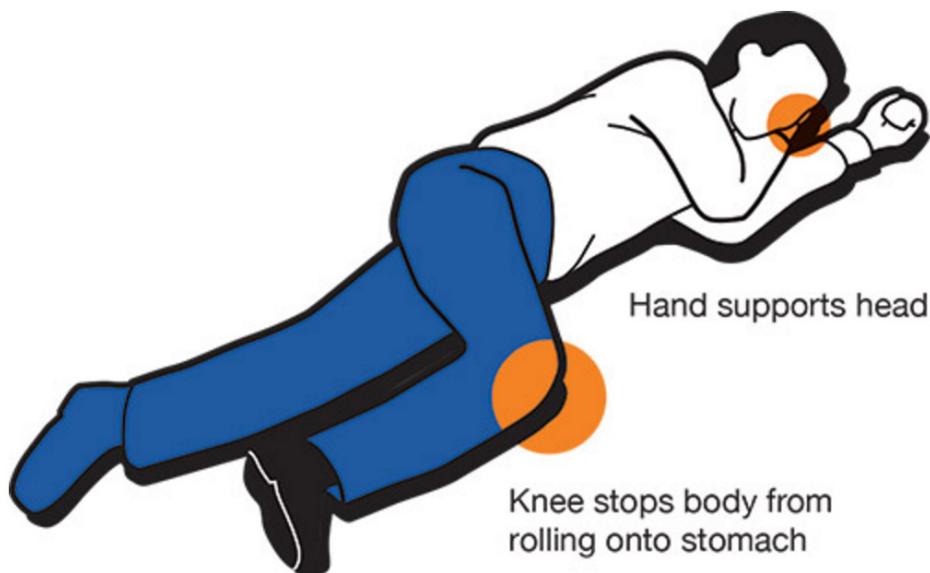


- Head Back
- Lift Chin
- 2 full breaths
- Then one every 5 seconds

from [New Hampshire Harm Reduction Coalition](#)

The Recovery Position

Keep the Airway Clear



Stay with person. If you must leave them alone at any point, or if they are unconscious, put them in this position to keep airway clear and prevent choking.

from *First Aid for Free*, [What is the Recovery Position in First Aid?](#)

Technical Notes

Data Source: STORM Project Dataset (2017-2022), updated by WMed, April 17, 2023.

Limitations: Since the number of counties participating in STORM and the number of substances being tested can change, caution should be exercised when interpreting this data. This data cannot definitively state the burden of any particular substance in Michigan or any specific county. Due to limited death information, it is impossible to determine whether a positive drug result in STORM is indicative of drug toxicity or was a contributing cause of death.

References

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