



Sedation and Stimulation: The Crossover Chronicles of Xylazine and Cocaine

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Overview

We used mixed methods with a triangulation design to explore how xylazine’s introduction to the unregulated drug supply impacted use of other substances, with a specific interest in cocaine, among people who use drugs in Connecticut.

Our findings suggest that **those who are using fentanyl with xylazine are also likely using cocaine to combat the sedative effects of xylazine**. Harm reductionists and medical providers should be prepared to serve for those who are experiencing impacts from opioids, sedatives, and stimulants simultaneously.

Background

Xylazine is a **veterinary tranquilizer** that is not approved for use in humans. It is an alpha-2 adrenergic receptor agonist that causes severe sedation and respiratory depression. In the USA, xylazine is almost exclusively found in fentanyl.

Exposure to xylazine in one’s fentanyl supply can lead to a host of complications including **overdose, withdrawal, extreme sedation, and necrotic wounds**. Due to these complications, people who use drugs and harm reductionists alike are searching for mean to reduce the harms associated with xylazine exposure.

Methods

We obtained data on all fentanyl-involved overdose fatalities from the Office of the Chief Medical Examiner. We sorted these fatalities into those with or without xylazine in the postmortem toxicological screenings.

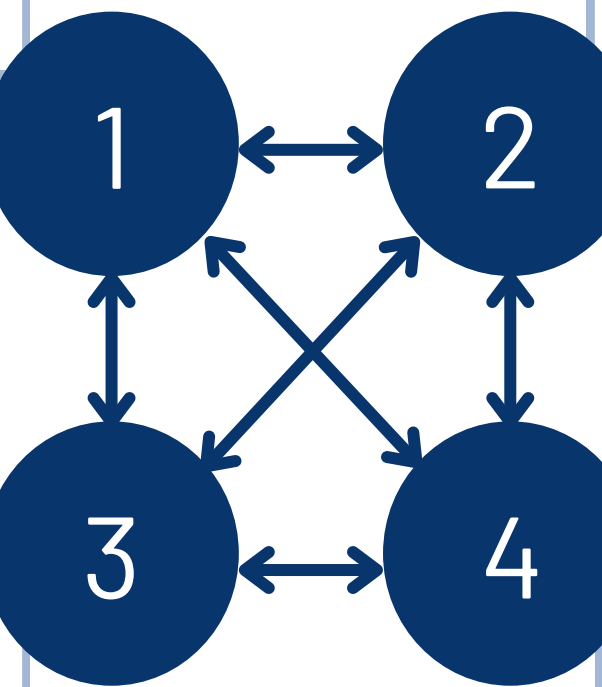
Overdose Fatality Postmortem Toxicology Data (2019-2023)

We utilized drug checking data from a local harm reduction organization who analyzed drug trash samples via test strips, Fourier Transform Infrared Spectroscopy (FTIR), and gas chromatography-mass spectrometry (GCMS).

Community-Based Drug Checking Data (2022-2024)

Cross-Sectional Survey Data (2024)

In collaboration with seven harm reduction organizations, we surveyed n=114 people who used drugs about their their substance use history, service use and access, and xylazine knowledge and experiences.



We interviewed n= 31 survey participants to explore their experiences with xylazine more closely. The interview guide covered awareness of xylazine and the impact of xylazine on drug use.

Results

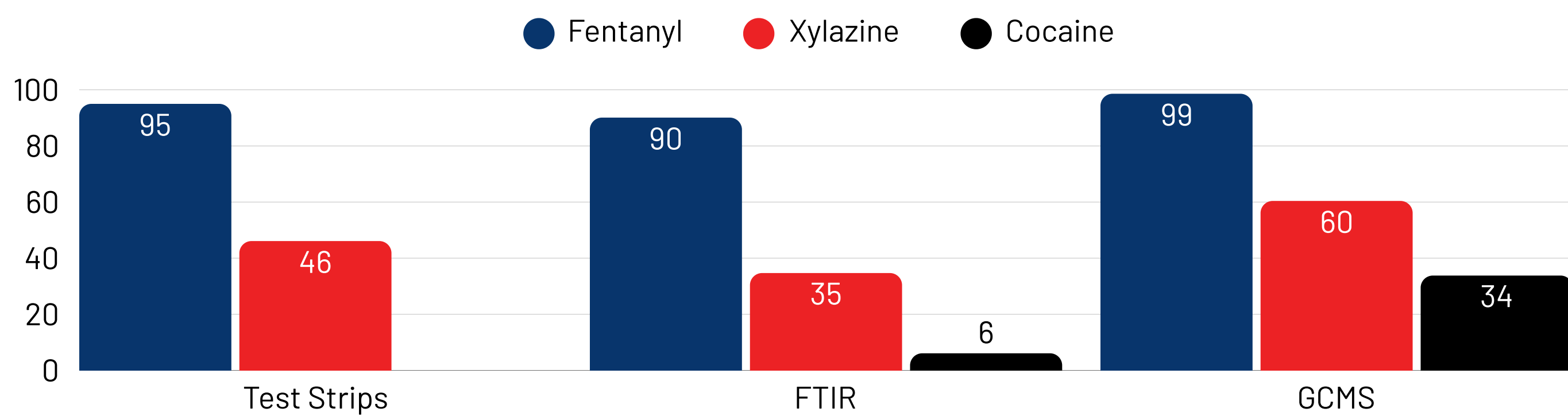
1 Postmortem Toxicology Data

Postmortem Toxicology Among Fatal Fentanyl Overdoses in Connecticut, Stratified by Xylazine Detection (2019 - 2023)

	All Fentanyl-Involved Overdoses (N = 5,849)		Fentanyl-Involved Overdoses with Xylazine Detected (n = 1,125)		Fentanyl-Involved Overdoses without Xylazine Detected (n = 4,724)		
Toxicology Screen	N	%	n	%	n	%	p-value
Cocaine+	3000	51.65	607	53.96	2393	51.10	0.085

Those with fentanyl and xylazine in their systems (n=1,125) were **more likely to have cocaine in their postmortem toxicology screens** than those with just fentanyl in their systems (n=4,724). While this finding was not statistically significant, this might be clinically relevant.

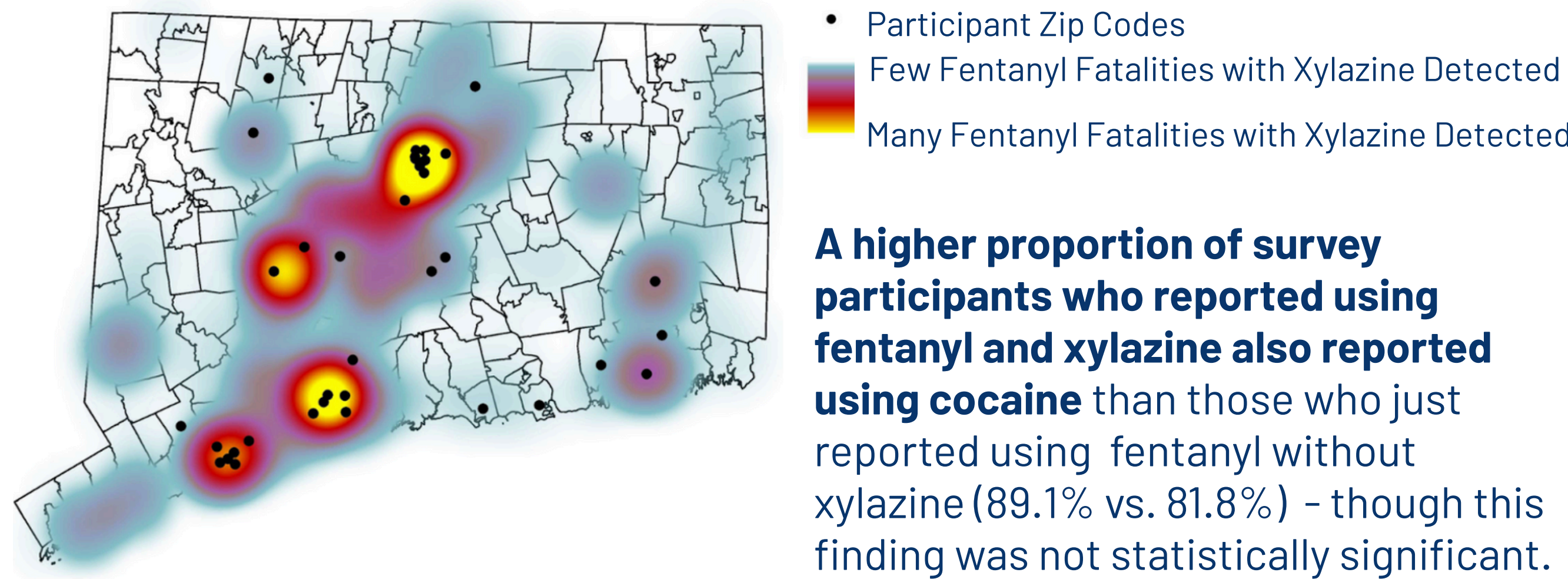
2 Drug Checking Data



From 2022-2024, n=458 drug trash samples were donated to the New Haven Syringe Services Program that were sold to people as fentanyl, heroin, and/or dope. Across the three methods used, **approximately half of all samples tested positive for xylazine**.

3 Cross-Sectional Surveys

Distribution of Cross-Sectional Survey Participant Zip Codes Overlaid with Heatmap of Xylazine Detection in Postmortem Toxicology Among Fatal Fentanyl Overdoses in Connecticut (2019 - 2023)



	Those Reporting Fentanyl Use with Xylazine (n=55)		Those Reporting Fentanyl Use without Xylazine (n=33)		
Reported Use	n	%	n	%	p-value
Cocaine+	49	89.1	27	81.8	0.336

4 In-Depth Interviews

Those who are exposed to xylazine in their fentanyl may increase their crack/cocaine use in order to manage the sedative properties of xylazine. They do this to **ensure they are able to engage in daily activities**:



*“The way I do [xylazine], I won’t be able to sit here and converse or talk or walk if I don’t do the crack. If I just do the xylazine, maybe shoot it, I’m antisocial! I can’t function. I’m out somewhere. Done. That’s why I make sure I get crack. And when I smoke a crack, I can walk around, I can talk, I’m functional! **But without the crack? I’m not functional.**”*

Another reason those who are exposed to xylazine in their fentanyl may increase their crack/cocaine use in order to manage the sedative properties of xylazine is to **engage in a street-based mechanism to avoid falling out or even overdosing**:



*“[Xylazine’s] making a lot of people do cocaine, because you’re getting knocked out, everybody’s like, ‘I need to wake up...’ And you got a couple of minutes, maybe even 10, depending on your body before you could go out. I don’t. **I’ve never even OD’ed... smoke or do a line so you don’t go out.**”*

*“**You keep smoking crack to wake up and come back.** It’s worked on me. And you are with somebody that made you smoke crack. They’re like, ‘Here, take a hit, take a hit!’ They kept making me take hits.”*

Conclusions

This data tentatively supports that **xylazine’s introduction to the drug supply in Connecticut has impacted people’s use of cocaine**, but more research is needed to figure out to what degree this is happening. The overdose fatality and survey-based data suggest that people with xylazine exposure also have increased exposure to cocaine. Our drug checking data also suggest that cocaine is not overwhelmingly in the fentanyl supply, meaning that cocaine positivity in postmortem toxicology is likely through use of cocaine by choice - not from contamination in people’s fentanyl. Interview data **confirms that people who use drugs use both fentanyl and xylazine with cocaine, and often enjoy doing so**.

Ultimately, all sources of data presented above have their own inherent biases and some lack statistical power. Teasing apart such biases alongside the complicated relationships between time, space, and personal factors is challenging. There are many factors that feed into drug supply availability, access, and choices around polyuse. However, we are confident that triangulating how xylazine plays into this using mixed methods is crucial.

For more information or questions, please contact Katherine (Katie) Hill at k.hill@yale.edu.

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