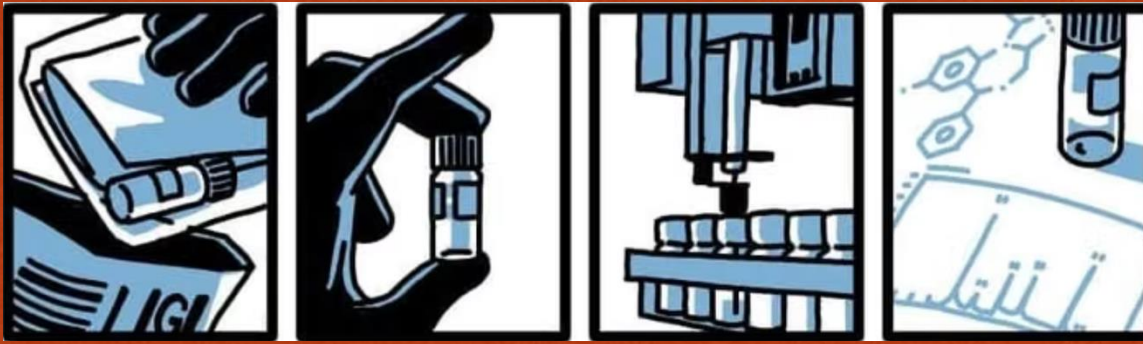
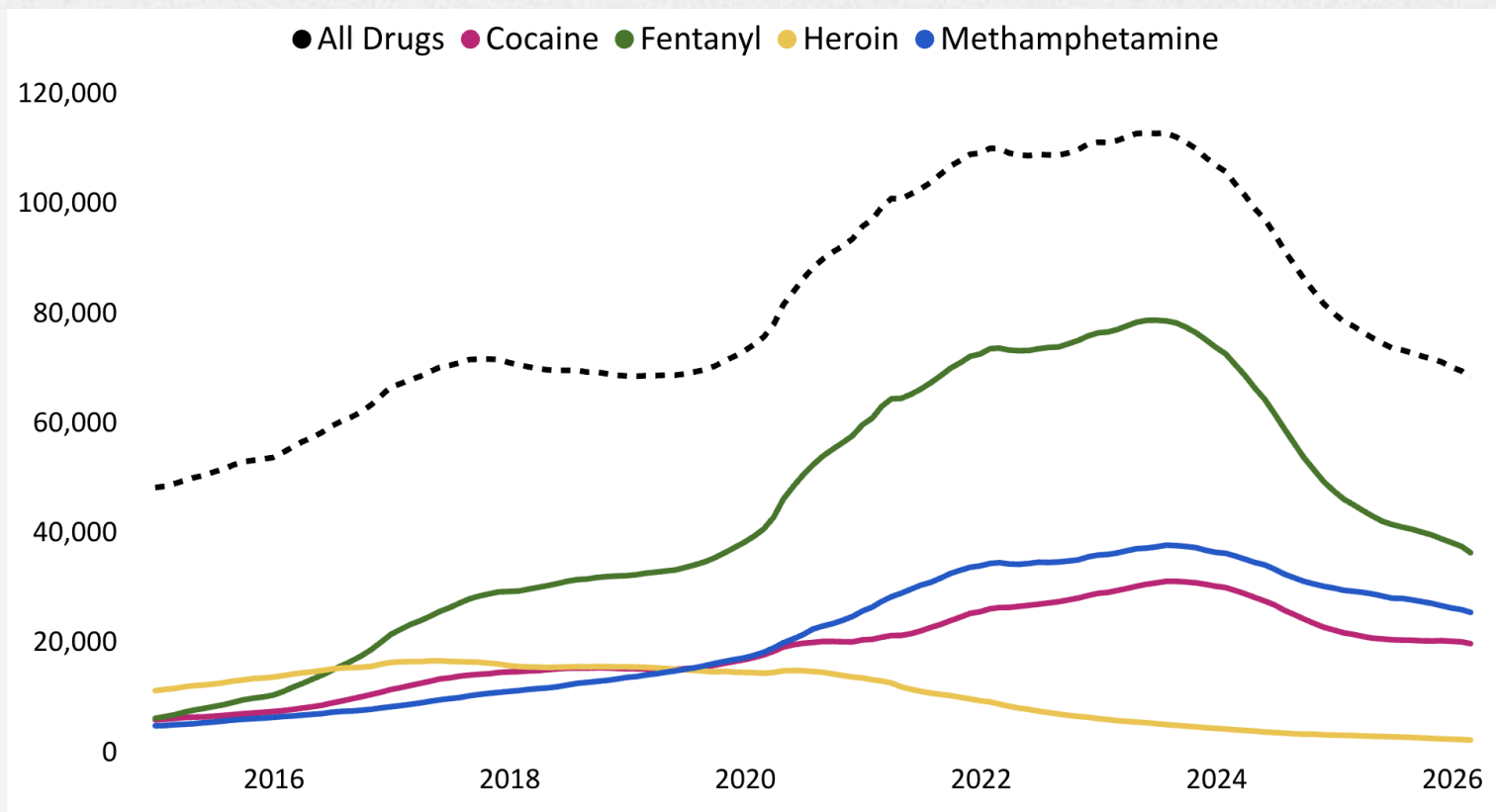


ADAMS SIBLEY, PhD MPH
AUGUST 19, 2026



After the Result: How Drug Checking Data Becomes Early Warning

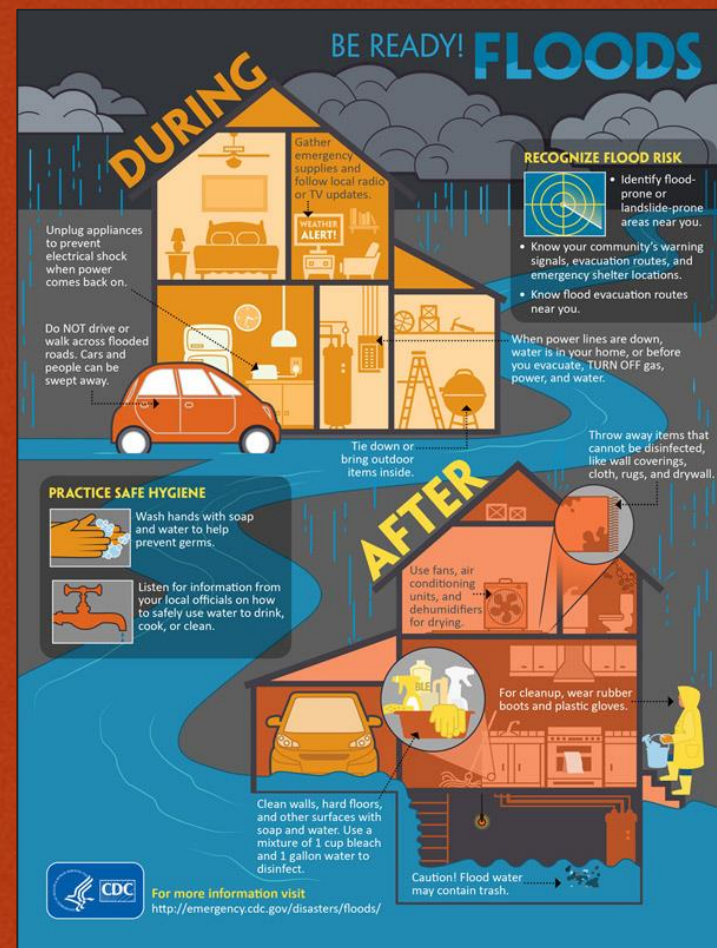
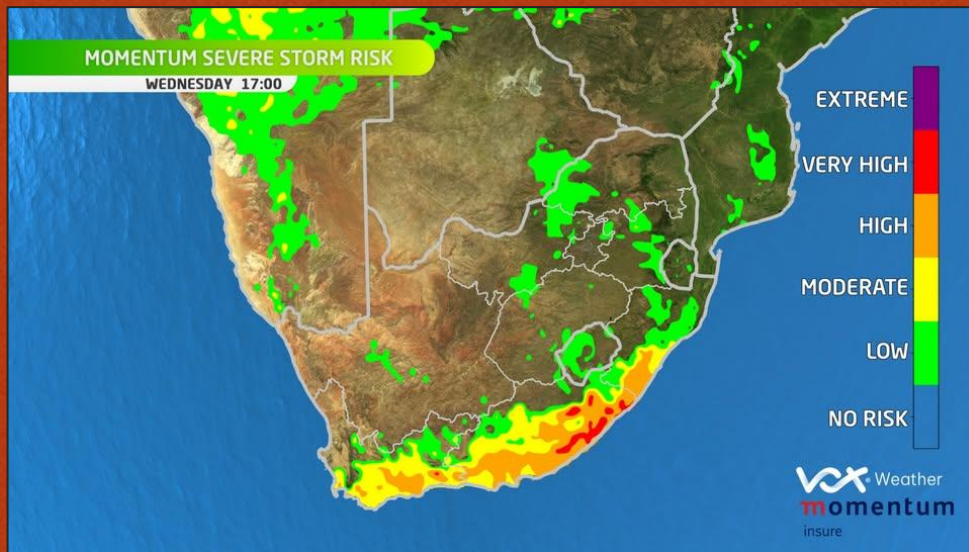
Overdose mortality, United States, 2015-2026

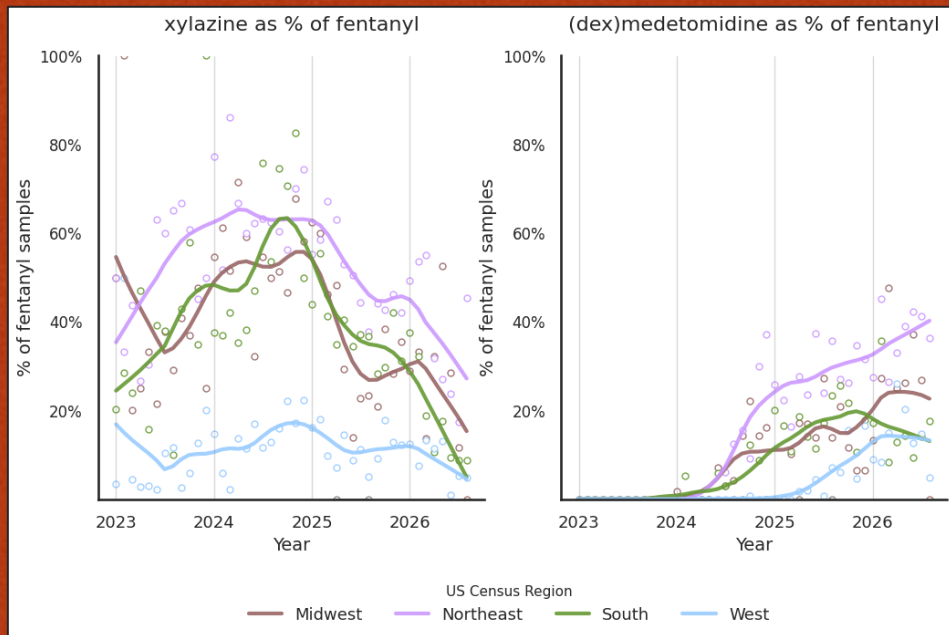


Source: OD Pulse, Northwestern University

THESE ARE *three* DRUG SUPPLY CHALLENGES

- 01 Opioid and stimulant mixing
- 02 Adulteration with veterinary tranquilizers
- 03 New psychoactive substances





Have you heard of MEDETOMIDINE?

Updated January 2026

What is it?

Medetomidine, or "rhino tranq," is a veterinary sedative that is stronger than xylazine.

Where is it?

Medetomidine has been found in most of the dope samples in Philly. The amount of the drug varies across samples.

What does it do?

Medetomidine can cause deep sleep or sleepiness for a long time, low blood pressure, and low heart rate.

What do you need to know?

Medetomidine withdrawal can start quickly and be very serious. Sometimes people need to go to the hospital.

Bring this card to the hospital with you if you think you're experiencing medetomidine withdrawal.

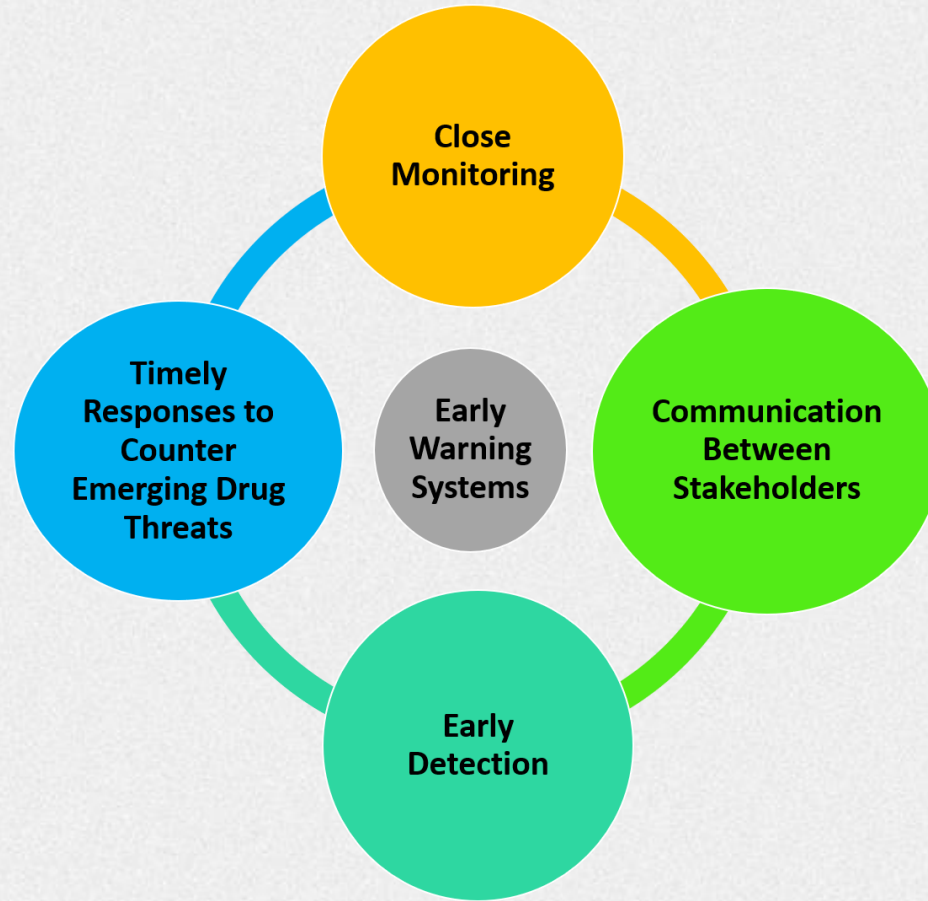
SUPHR
Substance Use Prevention & Harm Reduction

Department of
Public Health
CITY OF PHILADELPHIA

Early warning systems

To ensure that timely, accurate, and sufficiently detailed information on [drugs] reaches the right people, at the right place, at the right time in order to allow them to assess the information, and, where necessary, respond through timely and effective actions to prevent or reduce the risk of harm.

Source: European Monitoring Centre for Drugs and Drug Addiction



Source: EMCDDA

Refresher

Test strips



anywhere

Reagents



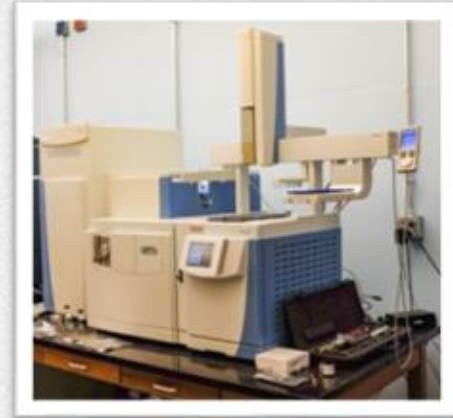
table top

FTIR



program sites

LC/GCMS

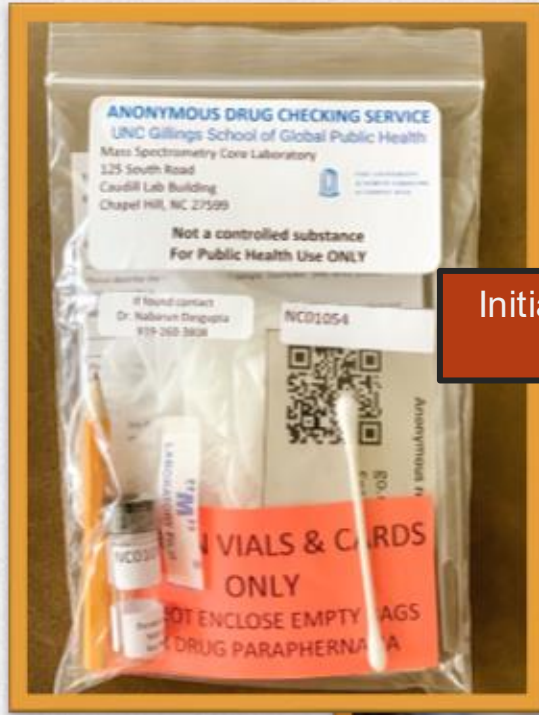


lab

cost, time, complexity



COVID-19 PCR kits



Initial UNC Street Drug Checking kit



Samples can be collected via scoop, residue swab, pill fragment, or used cotton.

Powder
(best results)

2 scoops



or

Baggie



Wet swab
in vial



Run along
inside 3x



Stir into
vial and
discard
swab

or

Pill

Break off
1/4 with
clean knife,
drop in vial



or

Cotton



Drop in
used cotton



Programs share health information
with us...

...to give human context beyond
molecules.

Completely Anonymous

These questions help us figure out how to
analyze the sample in our lab at UNC.

circle

spatula	swab	pill	cotton
↓ residue?			
syringe	pipe	foil	

today's date

month date

circle if involved in overdose

yes no don't know

describe the overdose to warn others:

describe color and markings

city or neighborhood

circle expected drugs

heroin	fentanyl	xylozine
cocaine	crack	meth
ketamine	weed	M30
benzo	other:	
MDMA		
unknown		

circle & describe sensations

normal nice weird
weaker stronger long
more up unpleasant
more down hallucinations
sedating unusual taste

describe:

circle textures

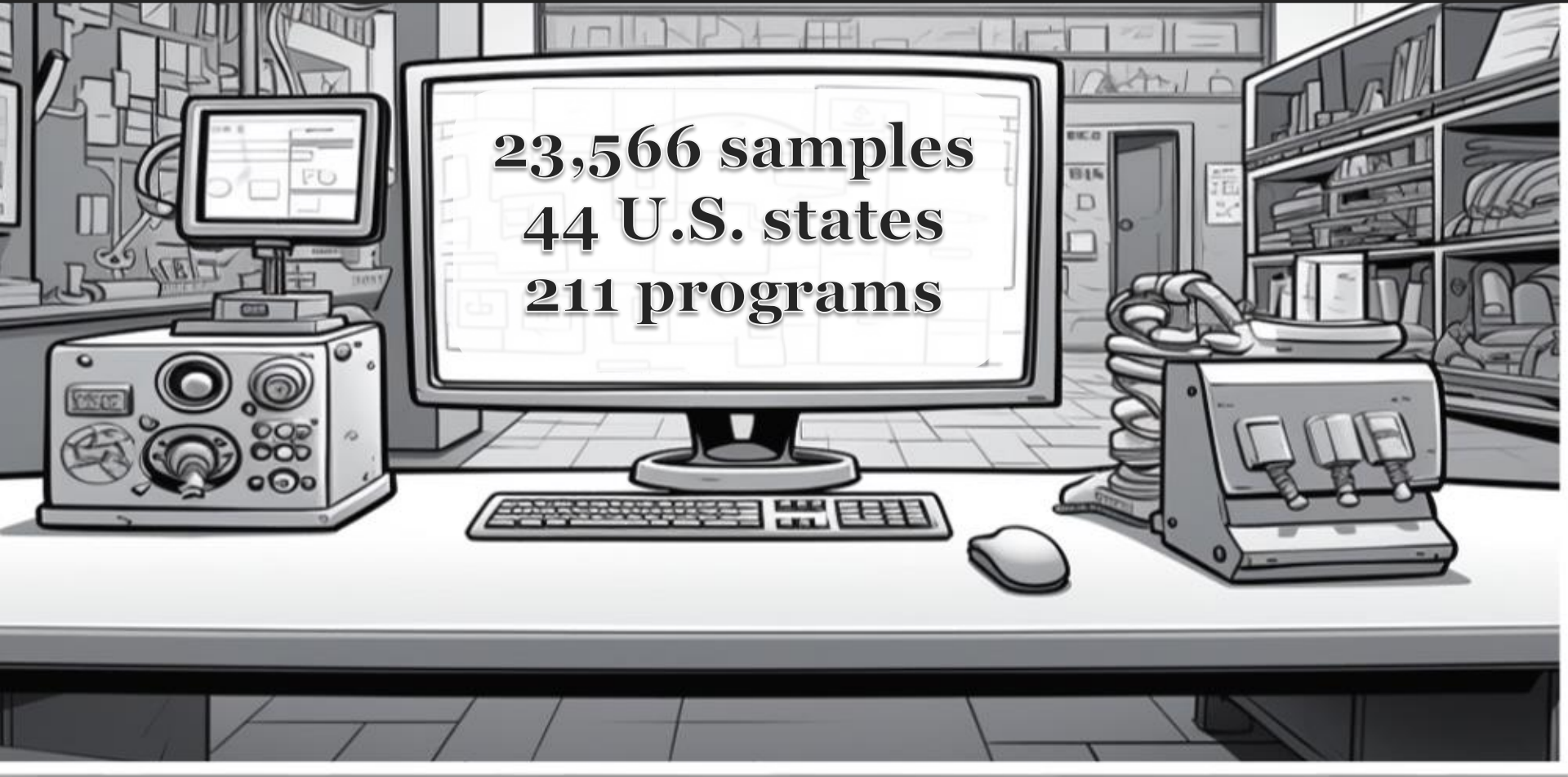
crystals	pill	fake pill
powder	edibles	oil/wax
↓	plant/leaf	tar
chunky	other:	
shiny		
flaky		
dull		

sample number

We've detected a multitude of substances in drug supply.



And analyzed a lot of samples.



23,566 samples
44 U.S. states
211 programs

COMMUNICATING *results*

Sample donors are always the first priority.

1.

Individuals

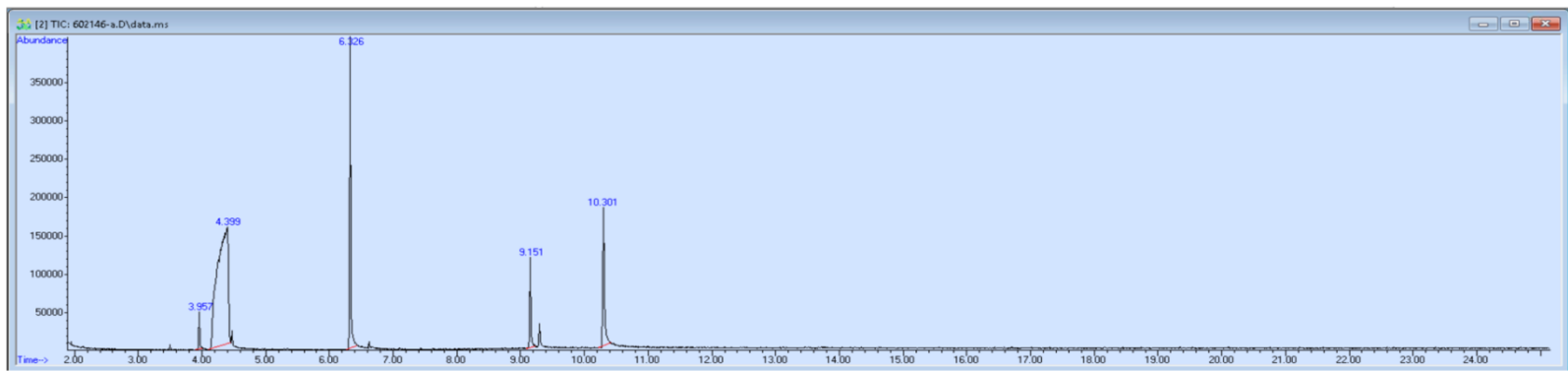
2.

Communities

3.

General Public





602146

From Greenville, North Carolina on July 30, 2026

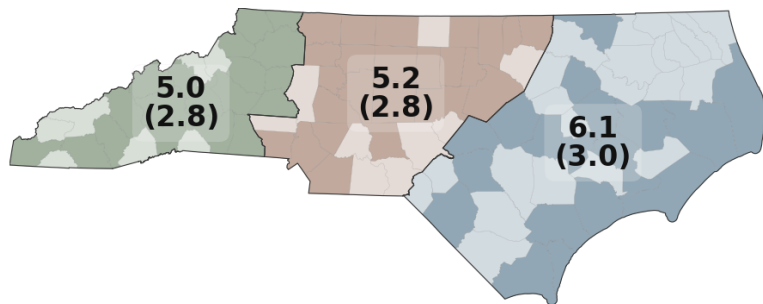
Assumed to be fentanyl

This is a messy brew of 6 major substances:

- **methamphetamine**
- **erythritol**
- **acetaminophen**
- **4-ANPP**
- **ethyl 4-ANPP**
- **fentanyl**

Sample donor expected fentanyl

MEAN NUMBER OF SUBSTANCES, FENTANYL, JULY 2025-JUNE 2026

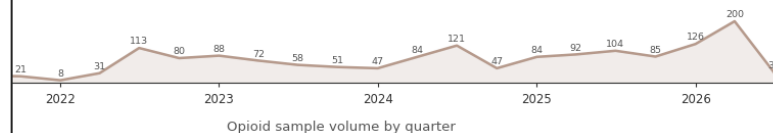


PROPORTION OF OPIOID SAMPLES CONTAINING HEROIN, STATEWIDE

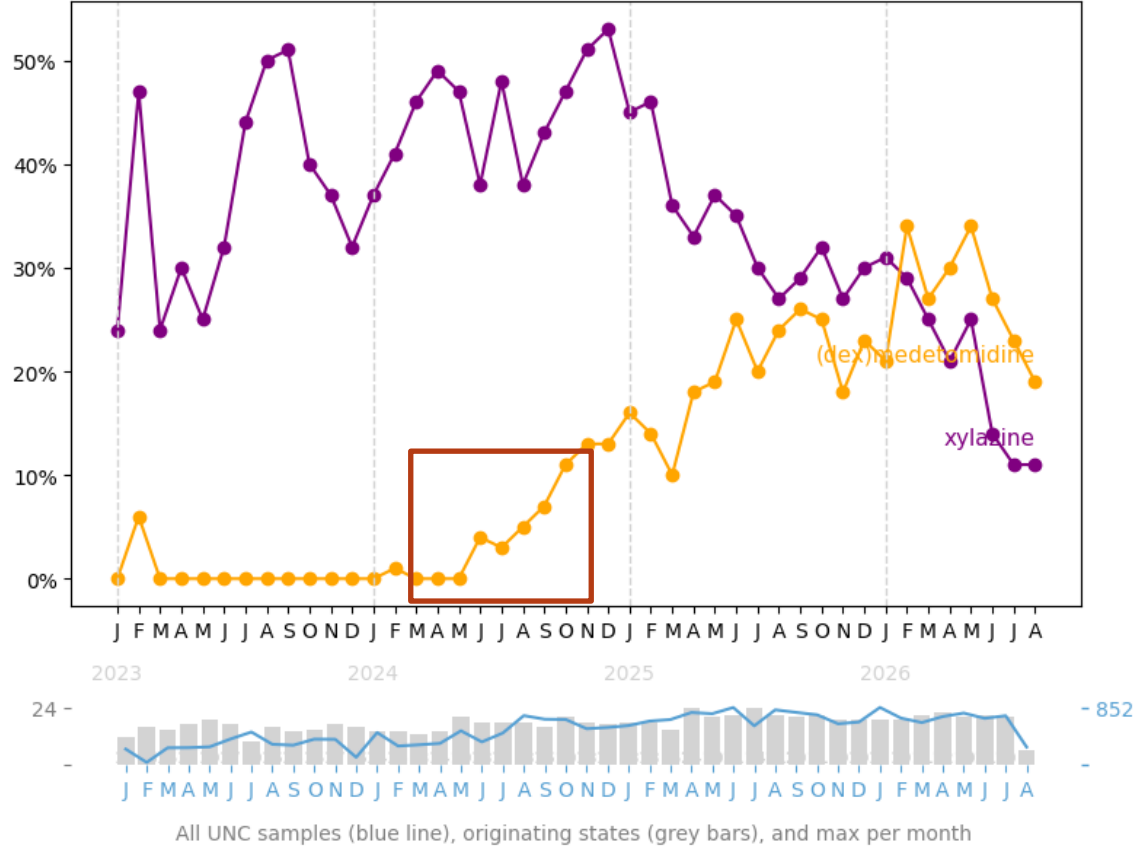


Most common co-occurring substances, fentanyl, July 2025-June 2026

Substance	Description	Role in supply	Count	Proportion
4-ANPP	fentanyl precursor	synthesis impurity	372	0.74
lidocaine	local anesthetic	adulterant	141	0.28
ethyl 4-ANPP	fentanyl byproduct	synthesis impurity	132	0.26
methamphetamine	stimulant	active ingredient	111	0.22
phenethyl 4-ANPP	fentanyl byproduct	synthesis impurity	95	0.19
N-phenylpropanamide	fentanyl byproduct	synthesis impurity	87	0.17
acetaminophen	OTC analgesic	adulterant	76	0.15
medetomidine	veterinary sedative	adulterant	73	0.15
xylazine	veterinary sedative	adulterant	73	0.15
dimethyl sulfone	supplement	diluent	55	0.11
BTMPS	plastics additive	unknown	53	0.11
cocaine	stimulant	active ingredient	52	0.10



% of fentanyl samples containing xylazine or (dex)medetomidine



UNC Watchlist

•• In no particular order, these are the most prominent drug trends in the United States that we are tracking right now. Feel free to use any of the graphs, data, text, images, or whatever from here. It's all for you!

BTMPS

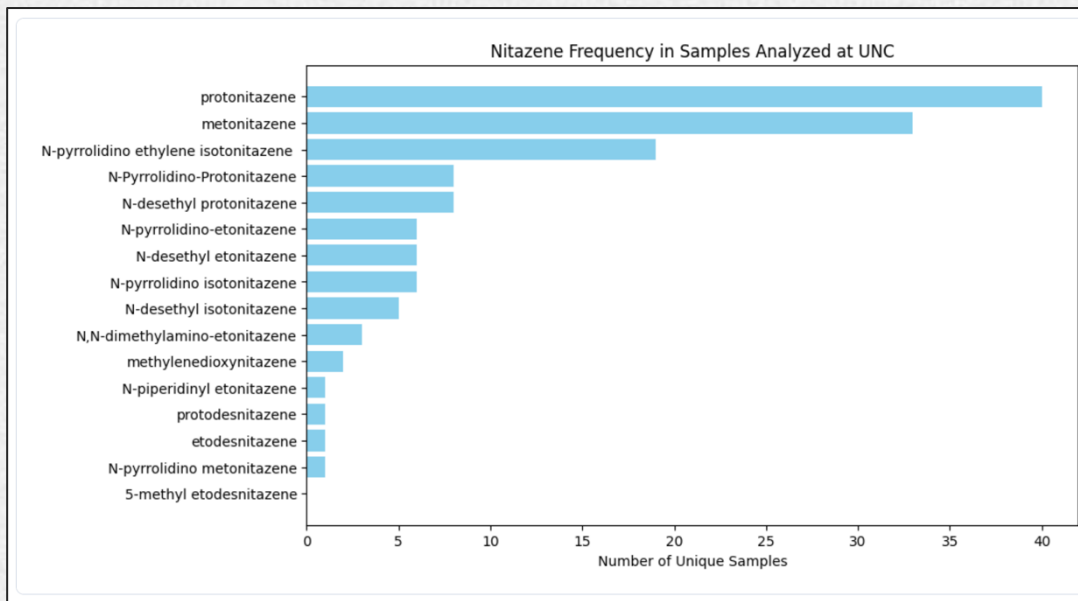
Xylazine & (dex)medetomidine

Carfentanil

Nitazenes

2-fluoro-2-oxo-PCE + fentanyl

Shift to smoking



Who needs to know?

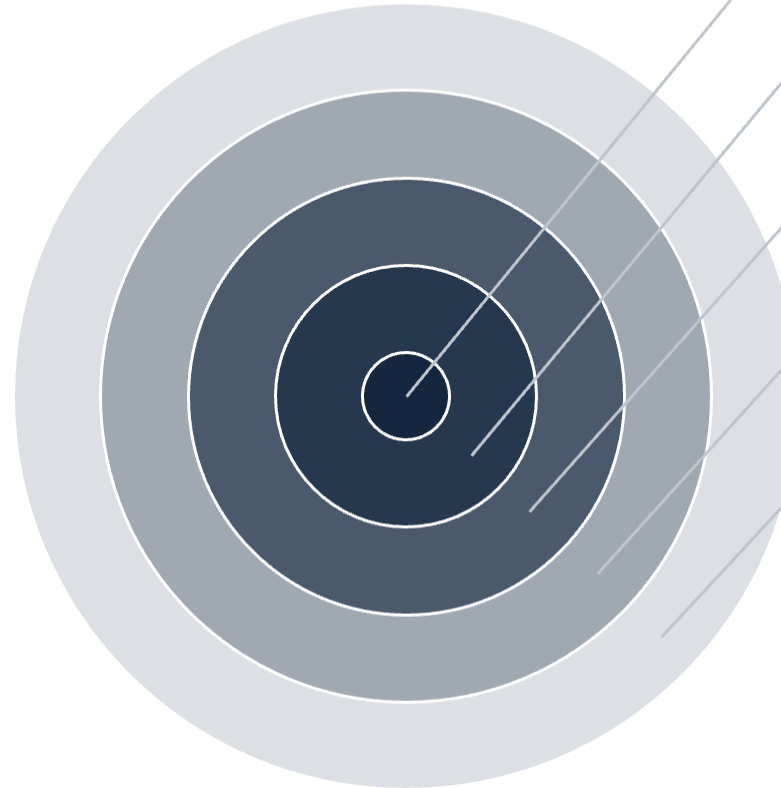
Risk

Actionability

Relevance

Evidence

Added harm



Sample donor

Drug-using
networks

Harm reduction and
clinical partners

Regional response
partners

General public and
news media

01. Individual behavior change

02. Community preparedness

03. Policy change

HOW *is it* USED?

INDIVIDUAL BEHAVIOR CHANGE



“I'm to the point where, in 30 years, I have not been able to quit doing dope. But [now] I have days where I don't do it. And that's never happened. Never happened for 30 years. I've been a hardcore addict for about 30 years. And xylazine scares the [expletive] out of me.”

Kurt, uses fentanyl, Michigan

Source: Sibley et al., Intl J Drug Pol, 2025

COMMUNITY PREPAREDNESS

Medetomidine
samples had **12x** risk
of hallucinations.

Source: Sibley et al., Drug Alcohol Rev, 2025



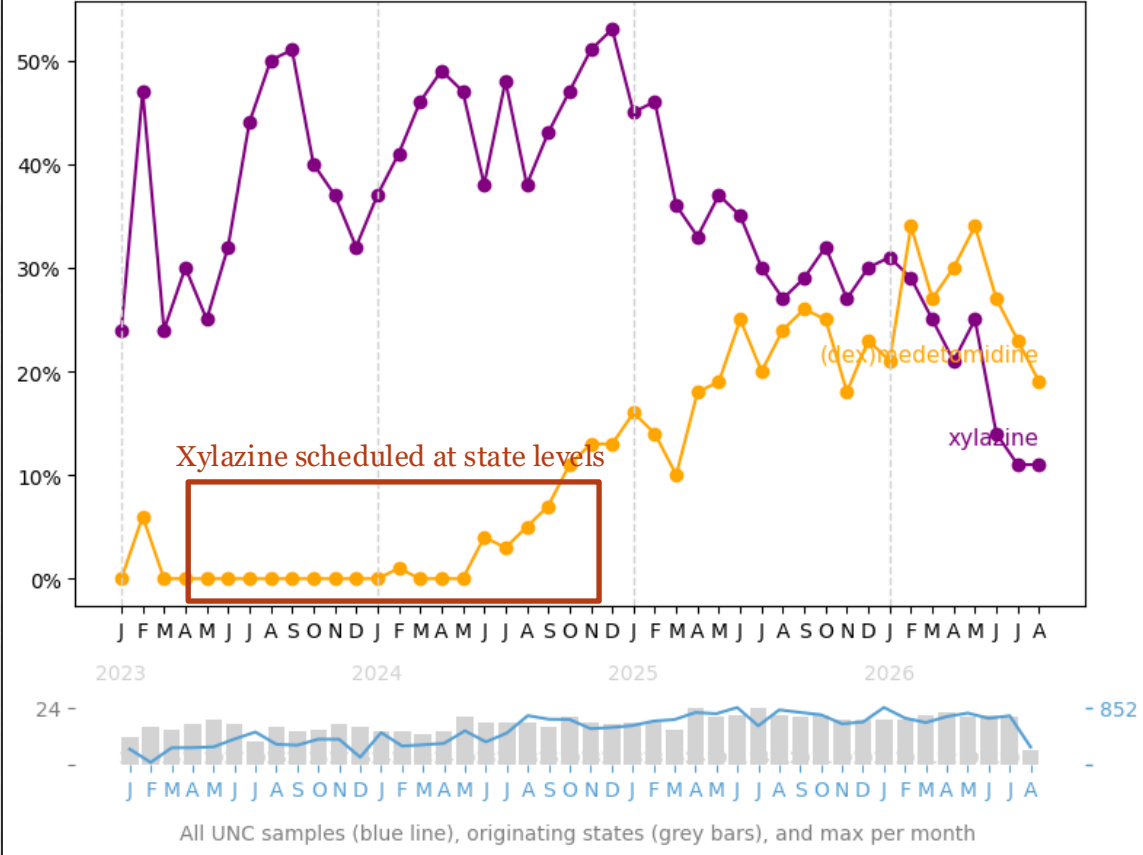
Image credit: stilldetox.com

POLICY CHANGE



Scheduling and enforcement of new substances can destabilize supply and introduce new adulterants.

% of fentanyl samples containing xylazine or (dex)medetomidine



Making sense of it all...

CHEM

✓ Finalized

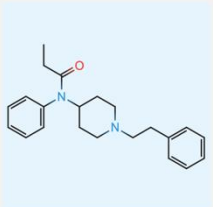
FORMULA C₂₂H₂₈N₂O

CID 3345 

CAS 437-38-7 

DCID yd54 

IDENTIFIERS



ACRONYM

AD-923 EN-3267 IDS-NF-001

N02AB03

STRUCTURAL

phenylpiperidine

ORIGINS

synthetic

SYNONYMS (ALL)

1-phenethyl-4-(N-phenylpropio

1-phenethyl-4-N-propionylanili AD 923 EN

Durogesic d-trans EN

N-(1-phenethyl-4-piperidinyl)-†

N-(1-phenethyl-4-piperidyl)pro

N-(1-phenethyl-piperidin-4-yl)-

N-(1-phenethylpiperidin-4-yl)-† +11 more

BIO

✓ Finalized

PHARMA VERSIONS

human veterinary

CLINICAL USE

Used in the treatment of severe pain and in general anesthesia. May also be used to treat breakthrough pain in cancer patients using opioid therapy.

RECEPTORS

Opioid

RECEPTORS

Opioid

PHARMACOLOGY

μ receptor PRIMARY pKi 9.2

Agonist - Full agonist - Human

δ receptor pKi 6.8

Agonist - Full agonist - Human

κ receptor pKi 7.1

Agonist - Partial agonist - Human

MECHANISM OF ACTION

Fentanyl is a μ opioid receptor agonist, but may have other mechanisms of action- see the DrugBank link for more details.

STREET

Finalize

SUMMARY

Strong synthetic opioid, dominant in supply

PRONUNCIATION

FENT-uh-nuhl, FENT-uh-nil

HARM REDUCTION MESSAGE 10 words Copy from...

Edit message

• Carry naloxone (Narcan)

• For experienced users, go slow.

STREET NAMES

Fetty × China white × Dope ×

Down × Fent × + name

ROUTES OF ADMINISTRATION

intravenous × smoking (indirect heat) ×

snorted × rectal ×

unknowingly mixed with pills × + tag

STREET CONTEXT

downer × adulterant × + tag

TRIP REPORTS

First-person experience reports — Erowid, Bluelight, Reddit, harm-reduction forums.

• Occasional user shares experience with boofing ×

+ trip report

RESOURCES

Harm reduction links — up to 5.

Fentanyl Use and Overdose Prevention Tips (National Harm Reduction Coalition) ×

+ resource

TRENDS

Finalize

Composite By Source

DETECTION BY REGION

Composite UVic UNC CFSRE



TIME TREND



PREVALENCE

+ tag

GEOGRAPHY

+ tag

TREND INDICATOR

+ tag

REFERENCES

Pull Scientific Papers

• Wikipedia: Fentanyl ×

+ reference

- 01.* Unregulated drugs are at their most dangerous when they are unpredictable.
- 02.* Early warning systems prepare communities for response before a new substance becomes common.
- 03.* Building an accurate picture of the supply requires cooperation from harm reduction partners and the people they serve.

TAKEAWAYS
