

Validation of Rapid Fentanyl and Xylazine Test Strips and FT-IR Spectroscopy for Use in Community Based Settings

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Background

- ▶ Drug overdose deaths in the United States continue to increase, claiming over 100,000 lives in 2022¹
- ▶ Lack of regulations and supply chain disruptions lead to an unreliable illicit drug supply
- ▶ People who use drugs (PWUD) cannot be certain of the substance or the quality of what they receive
- ▶ Drug checking informs PWUD about what may be in their substance
- ▶ Informed decisions can reduce harms associated with drug use including overdose fatalities and other morbidities
- ▶ Little research has been done to validate community-based drug checking programs and methods

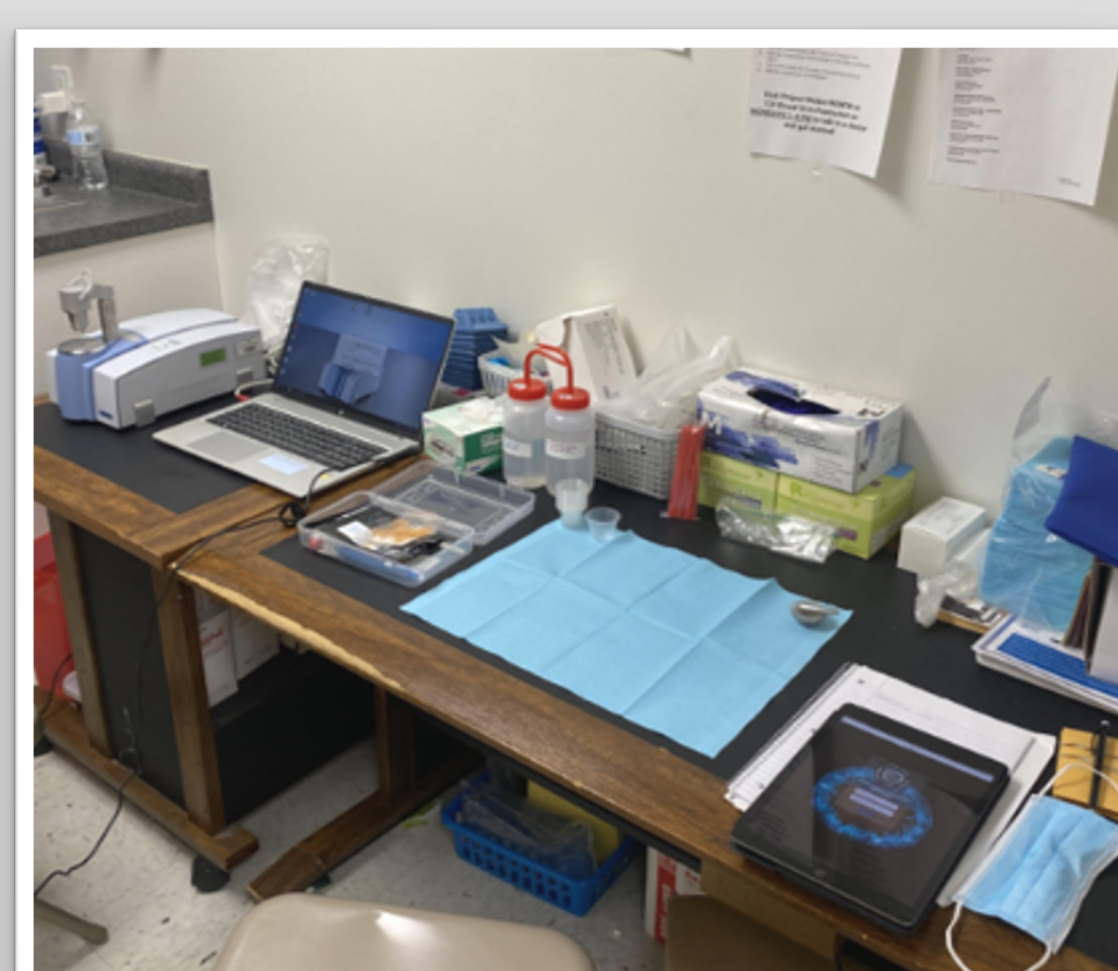
Objective

- ▶ To assess whether Fourier Transform Infrared (FT-IR) Spectroscopy, fentanyl test strips (FTS), and xylazine test strips could be implemented in community-based drug checking programs while maintaining a level of accuracy comparable to that of a lab-based setting

Program Setup

Checking Your Drug Cannot Guarantee That a Drug is Safe

Drug Checking May Occasionally Miss Fentanyl or Other Dangerous Substances



SAMPLE_00_0000 (Complete)

Location: Rhode Island Suspected as: Fentanyl

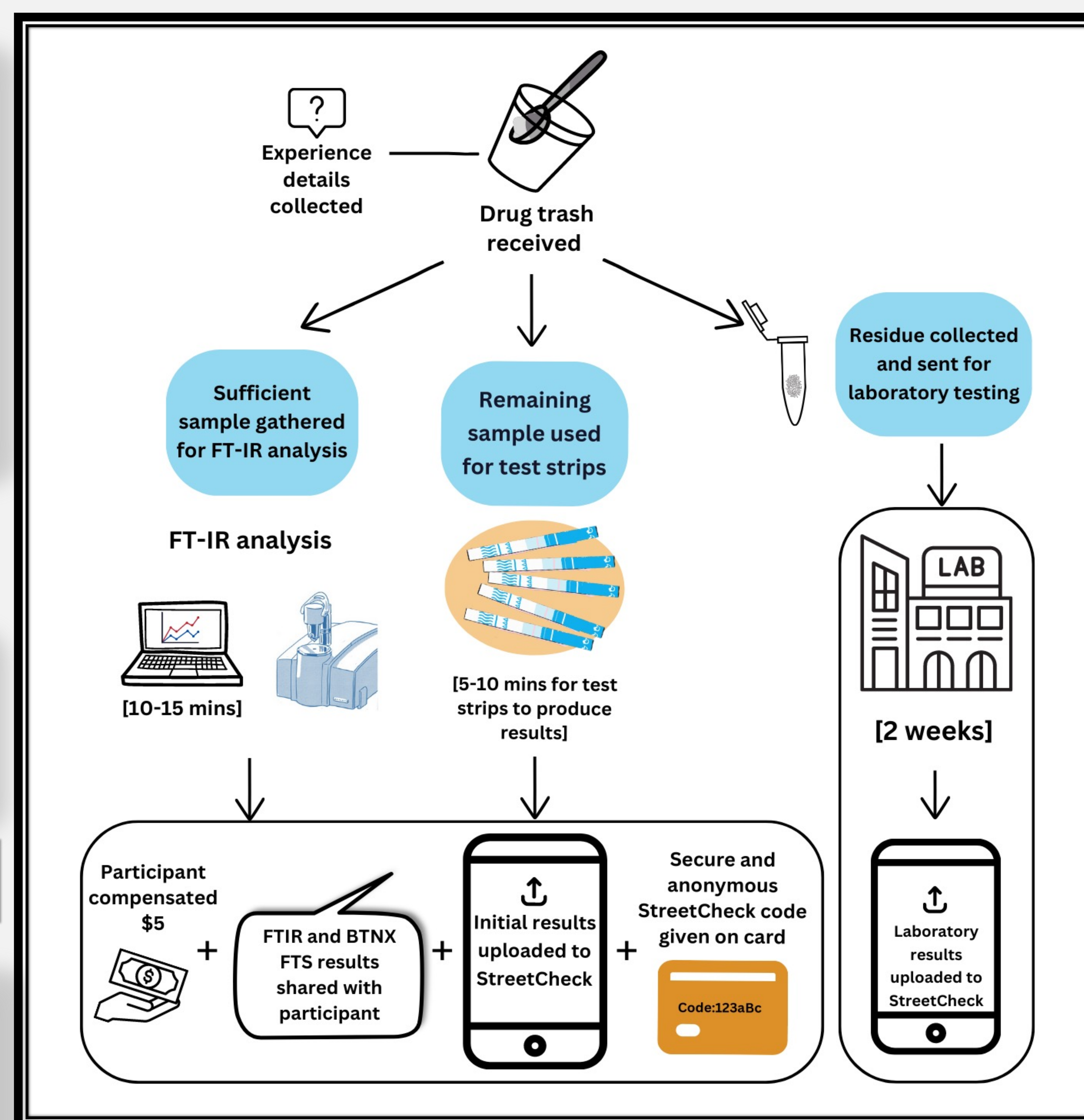
This sample was confirmed by the laboratory to contain Fentanyl (Major), 4-ANPP (Major), Phenethyl 4-ANPP (Minor), Acetyl Fentanyl (Minor), Methamphetamine (Trace), Xylazine (Trace)

Acknowledgments

We would like to express our deepest appreciation to everyone who made this research possible. We thank:

- ▶ **Cole Jarczyk of Brandeis University** for sharing his FT-IR expertise
- ▶ **The Alliance for Collaborative Drug Checking** for providing a space to discuss best practices and share insights
- ▶ **Research Participants** for being open to this new program and willing to donate residue for testing
- ▶ **The Community Based Host Organization** for allowing us to conduct research on their premises

Methods



Testing Modalities

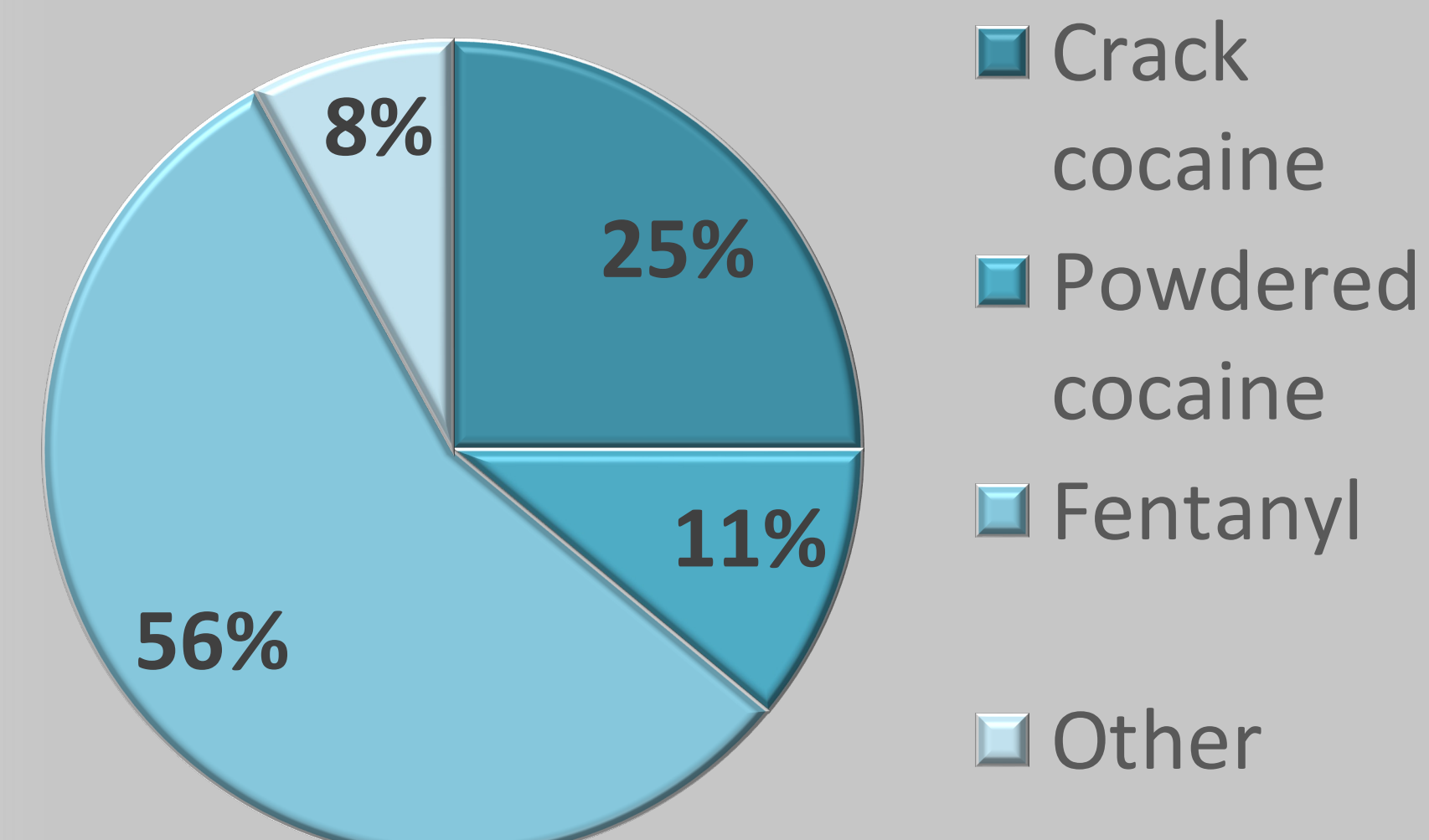


Conclusions

- ▶ Community drug checking is feasible and desired by the public
- ▶ Partnership with an experienced drug checking technician, supplemental testing, and knowledge of the local drug supply trends is imperative due to drug supply complexity
- ▶ Result analysis should be completed in conjunction with donor reported data
- ▶ Trust building with the community is vital
- ▶ Each testing modality carries its own set of limitations, therefore they must be used in combination

Results

Samples by Expected Substance (N=101)



Comparison to QTOF-Mass Spectrometry (N=101 Total)

	Detection Cut Off	Sample Size (n)	False Negative Rate (%)	False Positive Rate (%)
Self-reported fentanyl	N/A	59	8.5	7.1
FT-IR Spectroscopy - fentanyl	5% Concentration ²	59	8.5	0
BTNX fentanyl test strip	0.2 (µg/mL)*	59	6.8	0
Dancesafe fentanyl test strip	0.2-0.5 (µg/mL)*	59	6.8	4.8
BTNX/DTM xylazine test strip	0.3-1 (µg/mL)**	28	73	0

*Cut off rates for test strips taken from package inserts

**Cutoffs determined in urine screening; no drug checking cut offs have been reported

References

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3. Nadelmann, E., & LaSalle, L. (2017). Two steps forward, one step back: Current harm reduction policy and politics in the United States. Harm Reduction Journal, 14(1). <https://doi.org/10.1186/s12954-017-0157-y>