

# WASTEWATER DRUG ANALYSIS

Tracking drug distribution and usage rates.

**STERCUS**  
BIOANALYTICS

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## THE PROBLEM

The drug overdose problem in the US continues to be a devastating public health crisis, claiming thousands of lives each year. Factors such as the widespread availability of opioids, the rise of potent synthetic drugs like fentanyl, and the lack of access to comprehensive addiction treatment contribute to the severity of the issue.

# 781%

increase in deaths from preventable drug overdoses since 1999<sup>1</sup>

# #1 CAUSE

Drug overdoses are the leading cause of injury/mortality in the United States<sup>2</sup>

<sup>1</sup>Source: [National Safety Council](#)

<sup>2</sup>Source: [CDC](#)

# BATTLING THE PUBLIC HEALTH CRISIS IN NEVADA

## What is Nevada Doing?

In 2022, the Nevada Department of Health and Human Services (DHHS) has announced that, in coordination with Governor Steve Sisolak and Attorney General Aaron Ford, **a task force will be created to address the increasing rates of fatal and non-fatal overdoses.**<sup>1</sup>

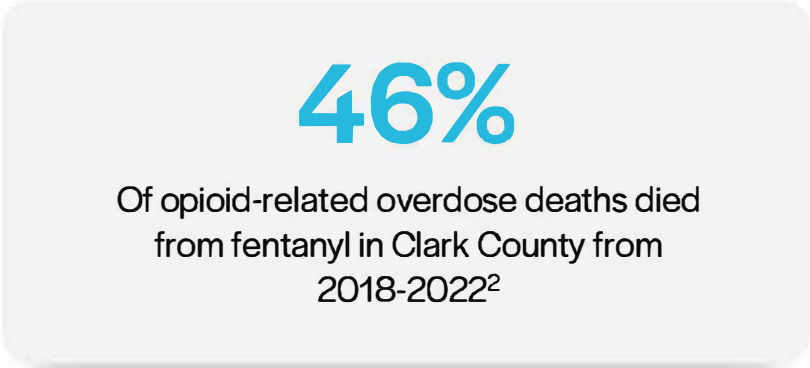
The City of Henderson has created the RiskItAllWithFentanyl website **specifically to reach kids.** This program aims to share stories expose the harmful outcomes of fentanyl.<sup>2</sup>

#RiskItAllWithFentanyl



<sup>1</sup>source: [https://gov.nv.gov/layouts/full\\_page.aspx?id=366996](https://gov.nv.gov/layouts/full_page.aspx?id=366996)

<sup>2</sup>source: <https://www.cityofhenderson.com/our-city/fentanyl-awareness#ad-image-7>



# INCREASING PRESENCE OF XYLAZINE

## The Growing Misuse Of Xylazine

Xylazine ("Tranq" or "Tranq Dope") is becoming **increasingly present in illicit drugs**. Xylazine, intended for veterinary use, has been added to opioids as an adulterant, leading to unintended drug overdoses, some resulting in death.



Xylazine may be accompanied by skin ulcers with wounds that excrete pus, have decaying tissue and bacterial infections.

**“It's vital to be proactive** in educating people about this threat and what can be done in response, in order to save lives”<sup>1</sup>

**- Dr. Fermin Leguen, District Health Officer for SNHD**

<sup>1</sup>source: <https://news3lv.com/newsletter-daily/las-vegas-health-officials-warn-of-animal-tranquilizer-found-in-drugs-xylazine-fentanyl-overdose-deaths-clark-county-southern-nevada-snhd>



## **STERCUS** BIOANALYTICS

### **THE SOLUTION**

Stercus Bioanalytics combines state-of-the-art wastewater analysis with real-time analytics to give health officials a true picture of the state of drug abuse in a targeted area.

# WHAT WE DO



## DISCOVER TRENDS

Trends such as seasonality of drug use and distribution, shipping patterns at distribution points, and impacts of drug relief programs.



## PREDICT OUTCOMES

Statistically predict drug use and related metrics based on historical data points. Predictions become more accurate with more data.



## EMERGING DRUG THREATS

Stercus can track new substances as they gain awareness. Understand the scale of emerging drug threats and where to act.



## AID PUBLIC HEALTH

Identify which areas could benefit most from public health initiatives. See real-time effects from live public health initiatives.

**“Stercus should be in every state in the country”  
- William Barr, former United States Attorney General**

# MACRO LEVEL DATA

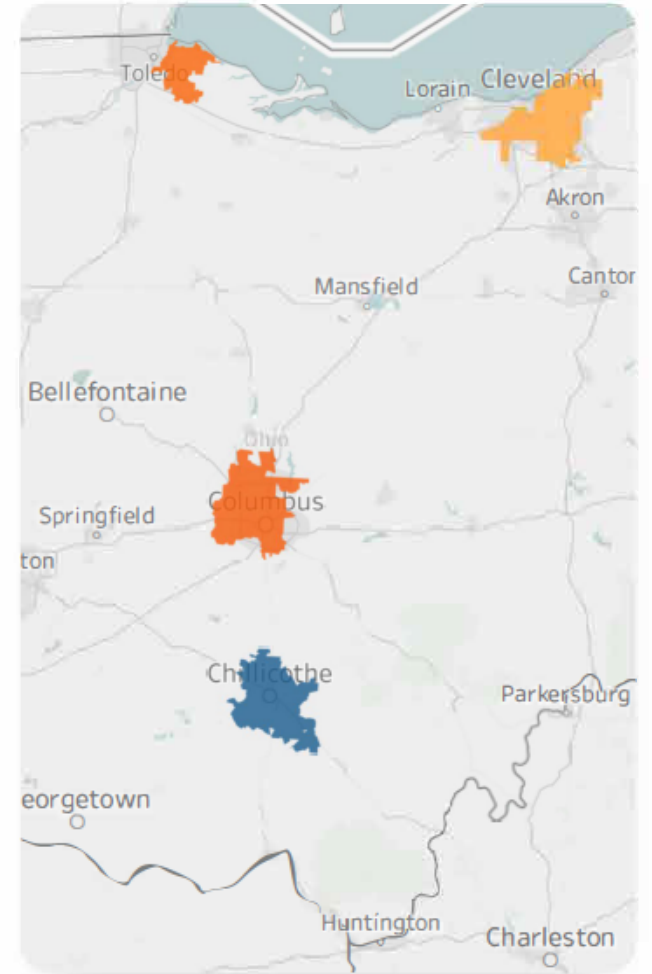
## Anonymous, Widespread Measurement

Testing wastewater treatment sites provides a macro level of drug use data. Each sample contains small traces of substances that anonymously represent the zip codes each treatment facility services. Using our lab's proprietary process, we can **estimate the use per capita of any drug we track.**

## Reveals Patterns and Trends

Taking this data one step further, we developed **key metrics** to make sense of the data. Our metrics reveal patterns and trends that could go unnoticed with conventional methods of drug use monitoring.

- + Estimated average drug use per capita
- + Source percentages
- + Flushed vs consumed
- + Number of naloxone doses given





## DETECT OPIOIDS, RECREATIONAL DRUGS AND METABOLITES

### Tests for:

- + Morphine
- + Oxycodone
- + Fentanyl
- + Methadone
- + Xylazine
- + Cocaine
- + Ketamine
- + **37 More**



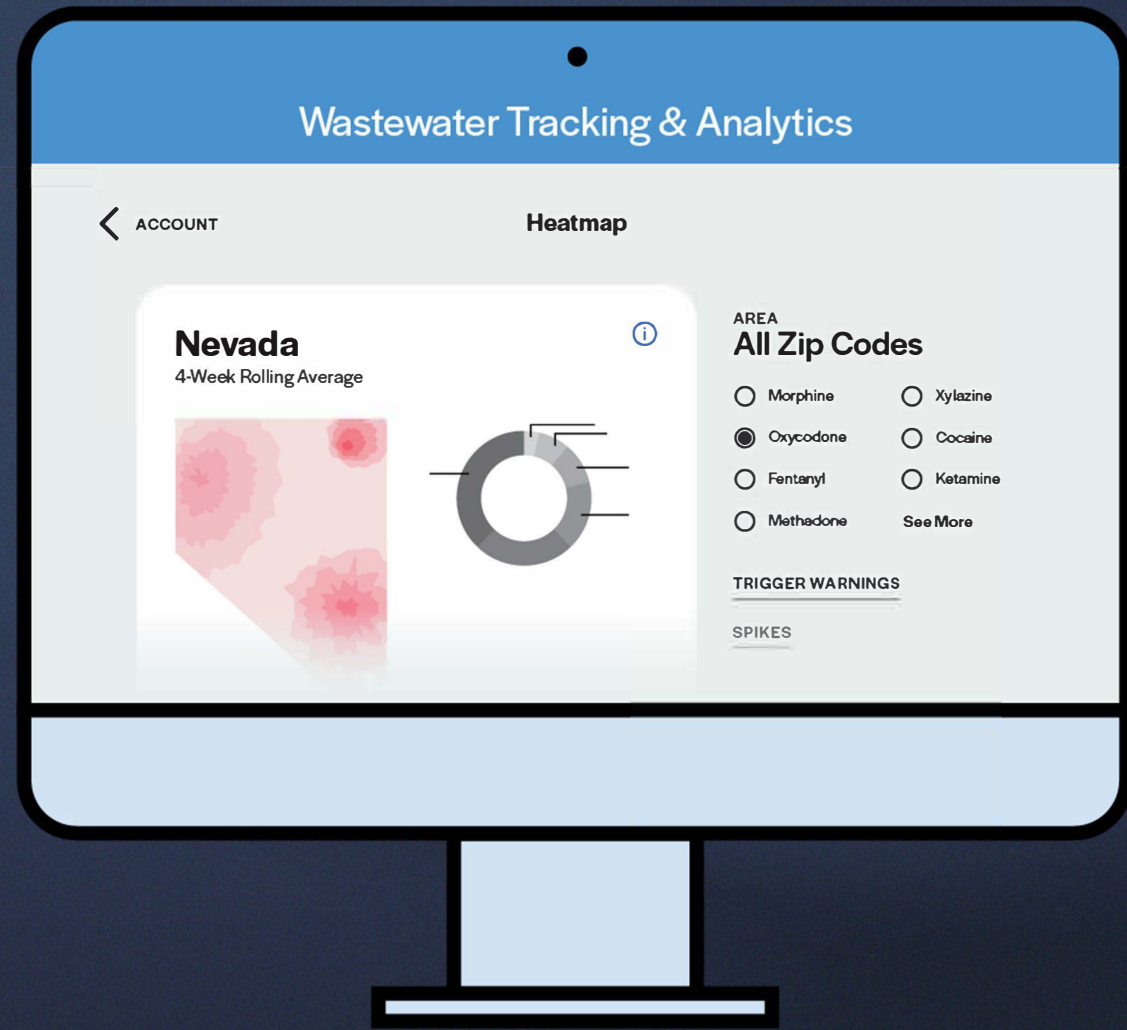




## REAL-TIME ANALYTICS AND REPORTING

### Features include:

- + Drug Filtering
- + Heatmaps
- + Trigger Warnings
- + Spikes
- + Trends
- + Rolling Averages
- + **More**



# THE STERCUS ADVANTAGE



Only need to ship 5mL of wastewater sample (1300 facilities) vs 100mL-1L x 1300/week (conventional analytical strategy; sampling & shipping cost & storages issues).



Our 9 min/sample vs at least 90 min/sample (conventional analytical strategy) for the extraction process.



Our extraction efficiency >98% (no SPE sample preparation involved) vs extraction efficiency 70-90% through the conventional analytical strategy.



Process distinguishes pharmaceutical grade vs street grade fentanyl and likely country origin manufacturing due to impurities found in the sample's molecular structure.



# WHY THIS MATTERS

## KNOWLEDGE IS POWER

Stercus Bioanalytics uses molecular signature tracking to determine where the fentanyl being consumed in the US is manufactured. Fentanyl manufactured in China vs fentanyl manufactured in Mexico will return two very different metabolic signatures.

# EXPANDING THE PROGRAM

## Option 1 \$1M BUDGET

**46** Wastewater  
Treatment Sites  
828 samples  
18 weeks

**6** High Schools  
108 samples  
18 weeks

## Option 2 \$2.5M BUDGET

**68** Wastewater  
Treatment Sites  
2,448 samples  
36 weeks

**10** High Schools  
180 samples  
18 weeks

## Option 3 \$5M BUDGET

**102** Wastewater  
Treatment Sites  
5,304 samples  
52 weeks

**16** High Schools  
288 samples  
18 weeks

## Option 4 \$10M BUDGET

**204** Wastewater  
Treatment Sites  
10,608 samples  
52 weeks

**32** High Schools  
576 samples  
18 weeks

**THANK YOU**

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