

A decorative background featuring a network diagram with nodes and connecting lines. The nodes are represented by circles of varying sizes and colors, including blue, grey, and white. Some nodes are highlighted with a blue outline. The lines are thin and grey, creating a complex web-like structure. The overall aesthetic is clean and modern, suggesting a focus on data and technology.

# **Recreational Drugs and Police Data**

A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines, with some nodes highlighted in blue.

# Team Name:

## **No Free Lunch**

## Team Members



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# Research Questions

- ❖ How does non-medical drug usage correlate with police density by state for different drugs?
  - Ex: non-medical drug usage of different drugs vary with police density.
- ❖ What policing variables predict drug use (police density, drug arrests made) of different drugs?
  - Ex: Are certain drug usages more sensitive to police density, others more sensitive to arrests made.



# Methods

Clean Data & normalize data by mean, find external policing data, calculate per capita of arrests and police density, and combine selected variables

1

Create scatter plots with regression models for visualization and run summary stats to find significant and nonsignificant p-values

3

Create scatter plots for lowess models to visualize any nonlinearity and to check different smoothing fractions

5

Ran Regression on all drug variables against police per capita and against drug arrests per capita

2

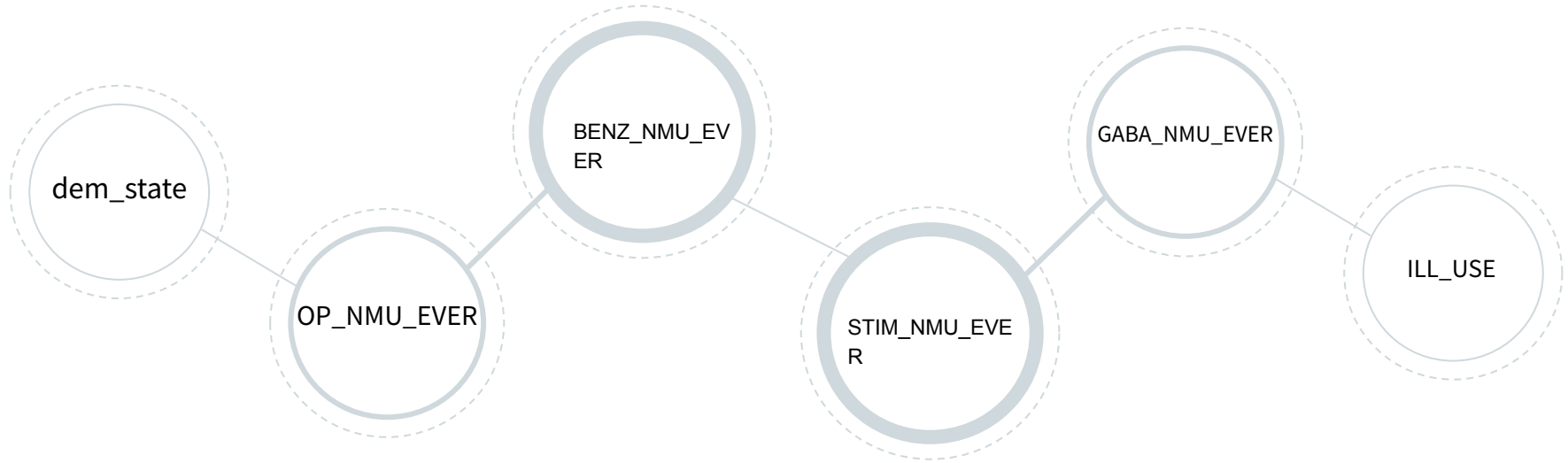
Run Lowess Smoothing to check for nonlinearity on all drug variables against police per capita and against drug arrests per capita

4

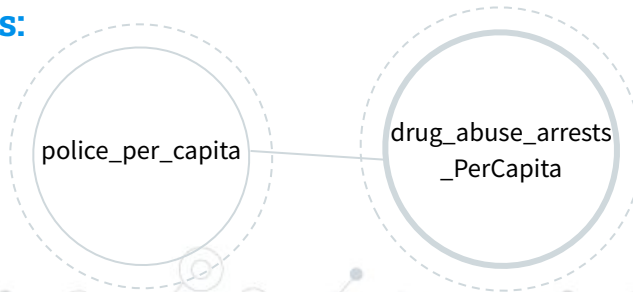
Create Choropleth Maps to visualize all drug variables, police per capita, and drug arrests per capita by states

6

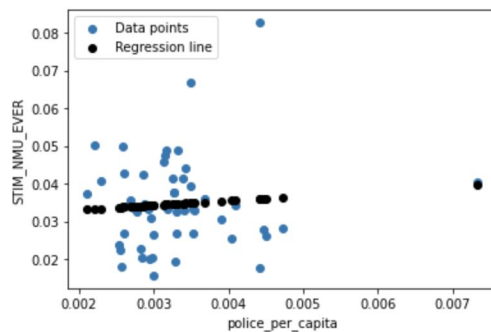
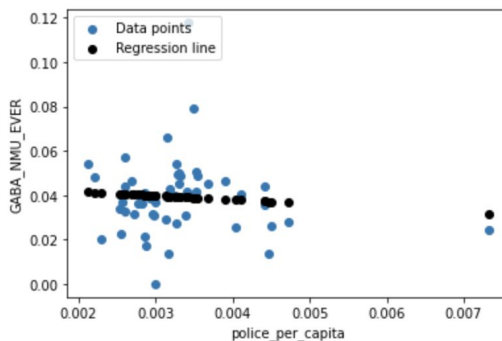
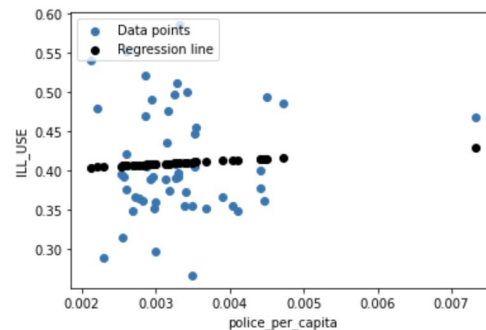
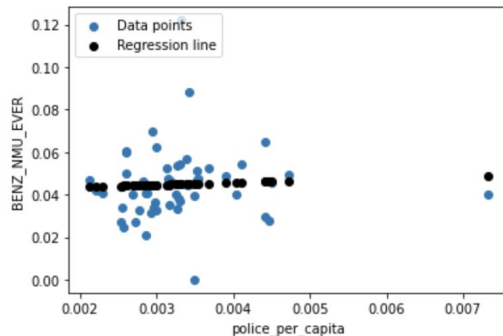
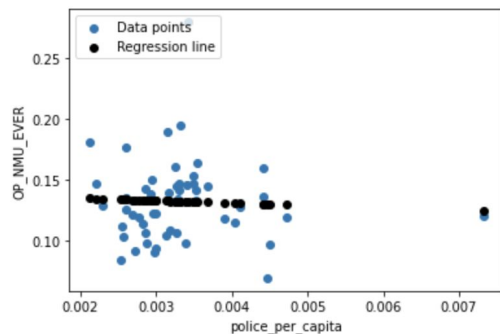
# Final Variables Analyzed



## External Variables:

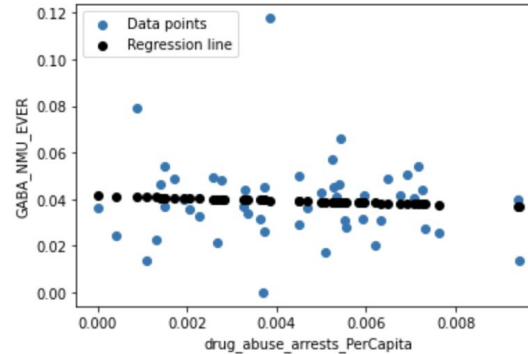
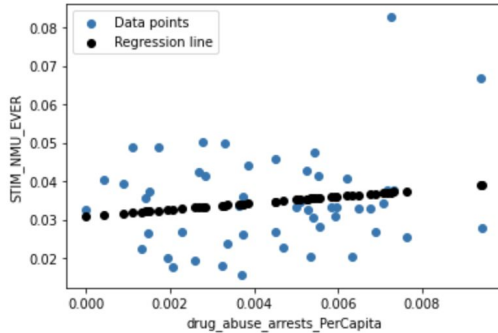
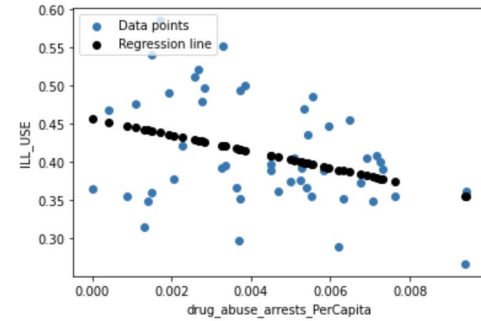
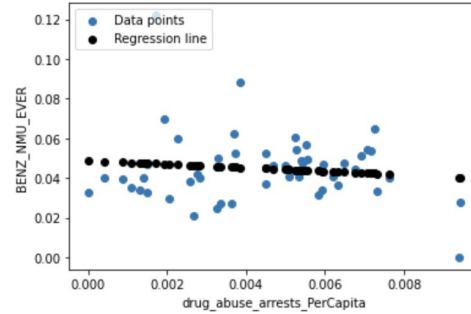
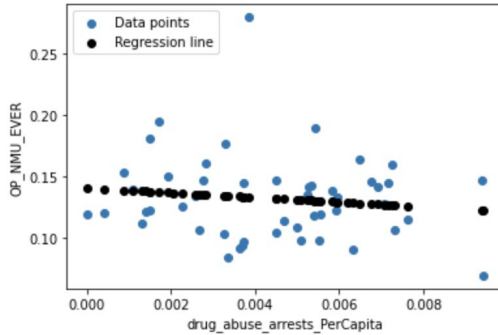


# Regression Models for Police Per Capita VS Drugs



❖ No significant p-values at alpha level 0.05

# Regression Models for Drug Arrests VS Drugs

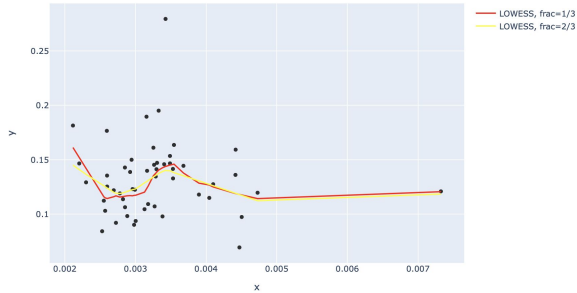


- ❖ No significant p-values at alpha level 0.05
  - Except for `ILL_USE` ( $p < 0.011$ )

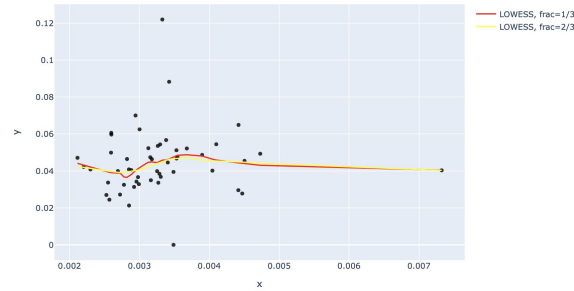


# Lowess Smoothing Scatter Plots Police Per Capita

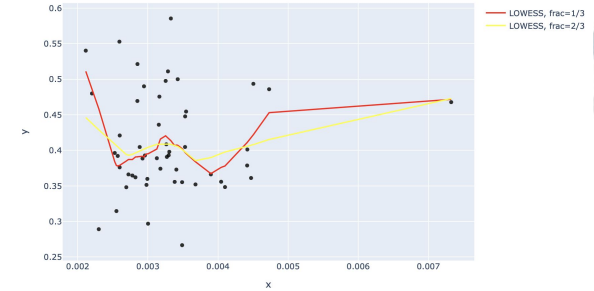
Police Per Capita vs OP\_NMU\_EVER



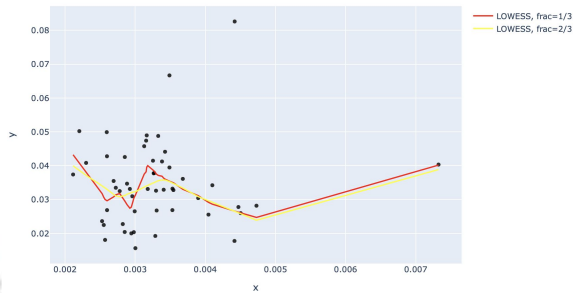
Police Per Capita vs BENZ\_NMU\_EVER



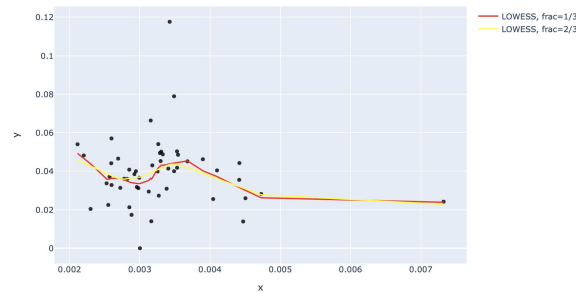
Police Per Capita vs ILL\_USE



Police Per Capita vs STIM\_NMU\_EVER



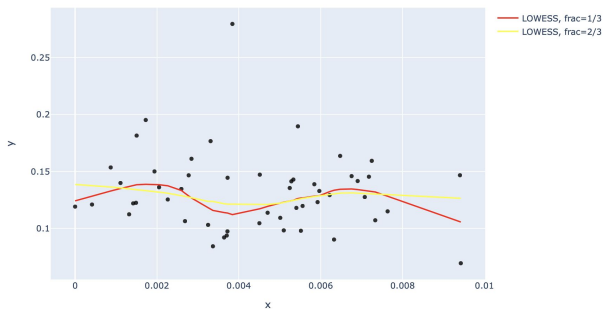
Police Per Capita vs GABA\_NMU\_EVER



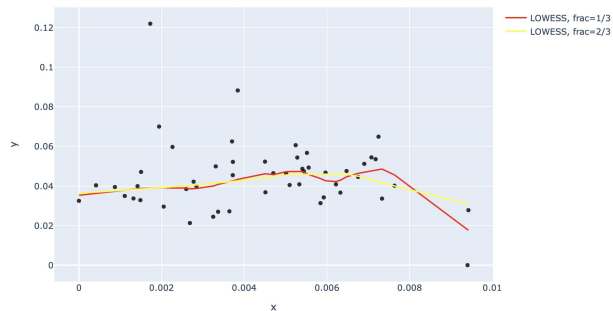
❖ Insignificant nonlinearity

# Lowess Smoothing Scatter Plots Arrests Per Capita

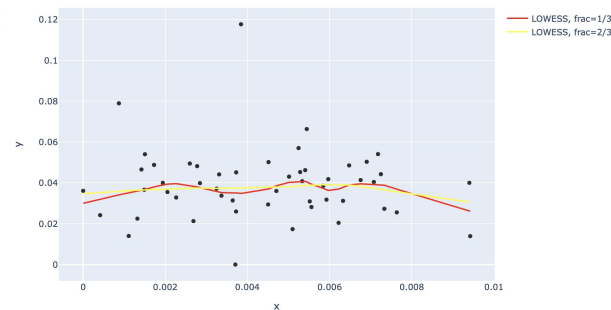
Drug Abuse Arrests Per Capita vs OP\_NMU\_EVER



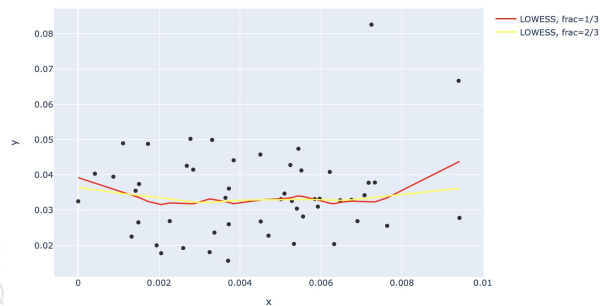
Drug Abuse Arrests Per Capita vs BENZ\_NMU\_EVER



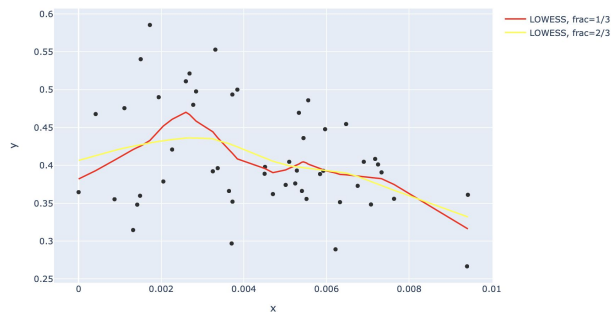
Drug Abuse Arrests Per Capita vs GABA\_NMU\_EVER



Drug Abuse Arrests Per Capita vs STIM\_NMU\_EVER



Drug Abuse Arrests Per Capita vs ILL\_USE



❖ Insignificant nonlinearity

# Finding #1

Policing and arrests have no impact on recreational drug use



## Police Density by State



### Top 3 States

1. **Delaware**
2. **New Hampshire**
3. **New Mexico**

## Density of Recreational Drug Use by State



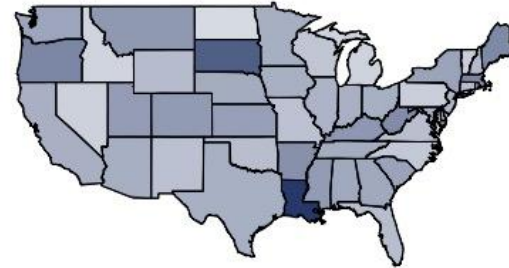
Opioids



Benzodiazepine

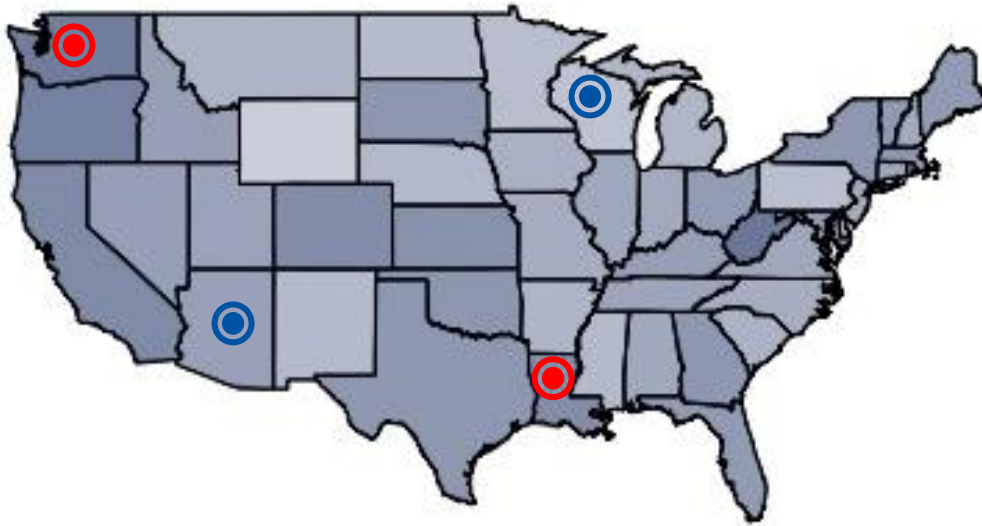


GABA-analogue



Stimulants

## Density of Recreational Drug Use (Opioids) by State



### States with Highest Opioid Use

#### **Louisiana**

Ranks #5 in Police Density

#### **Washington**

Ranks #50 in Police Density

### States with Lowest Opioid Use

#### **New Mexico**

Ranks #3 in Police Density

#### **Wisconsin**

Ranks #46 in Police Density

# Finding #2

Higher policing is associated  
with reduced illegal drug use



## Map of Drug Abuse Arrests

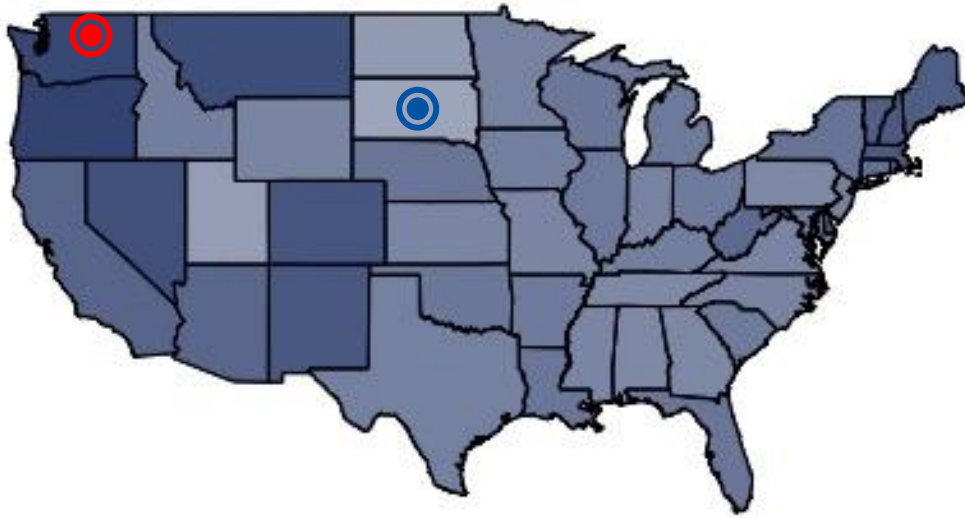


### Top 3 States

1. **Wyoming**
2. **South Dakota**
3. **Missouri**



## Density of Illicit Drug Use by State



### States with Highest Illicit Drug Use

#### **Washington**

Ranks #3 in Illicit Drug Use

Ranks # 42 in Drug Abuse Arrests

### States with Lowest Illicit Drug Use

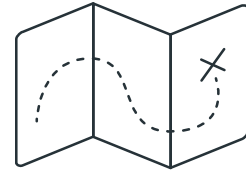
#### **South Dakota**

Ranks #50 in Illicit Drug Use

Ranks #2 in Drug Abuse Arrests

# Overall Finding

Recreational drug use has no correlation with police density





# Works Cited

“Table 69.” *FBI*, FBI, 12 Sept. 2019,

[ucr.fbi.gov/crime-in-the-u.s/2018/crime-in-the-u.s.-2018/tables/table-69](https://ucr.fbi.gov/crime-in-the-u.s/2018/crime-in-the-u.s.-2018/tables/table-69).

“Table 77.” *FBI*, FBI, 7 Aug. 2019,

[ucr.fbi.gov/crime-in-the-u.s/2018/crime-in-the-u.s.-2018/tables/table-77](https://ucr.fbi.gov/crime-in-the-u.s/2018/crime-in-the-u.s.-2018/tables/table-77).