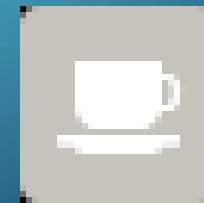
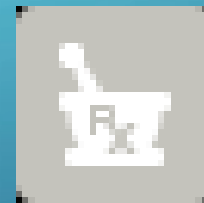
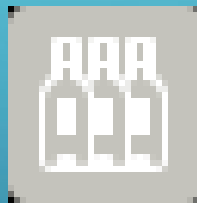
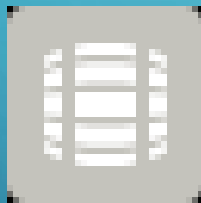


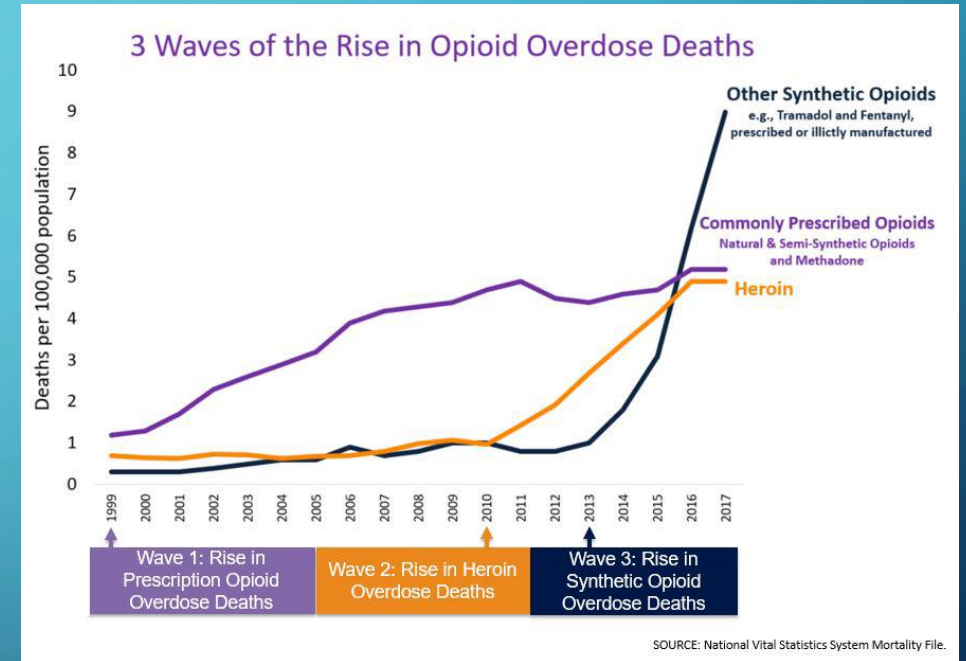
# ADDICTION RISK MAPPING

- **Does caffeine, alcohol, and prescription drug use indicate risk for illicit drug use?: Addiction Risk Mapping of bars, breweries, liquor stores, pharmacies and coffee shops in Billings and Missoula, Montana.**



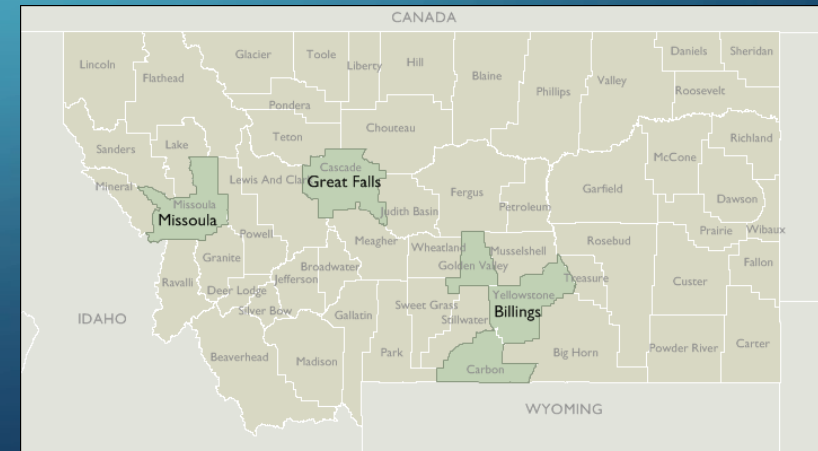
# THE PROBLEM

- In 2017, 70,237 drug overdose deaths occurred in the United States.<sup>1</sup>
- Opioids were involved in about two-thirds of those deaths.
- Addiction is a brain disease that allows the epidemic to continue.
- Understanding where addiction occurs will help prevent future addiction.



<sup>1</sup><https://www.cdc.gov/drugoverdose/epidemic/index.html>

# WHERE IS ADDICTION OCCURRING?





# BILLINGS FOURSQUARE VENDOR LOCATIONS

Billings Coffee Shops



Billings Bars



Billings Liquor Stores

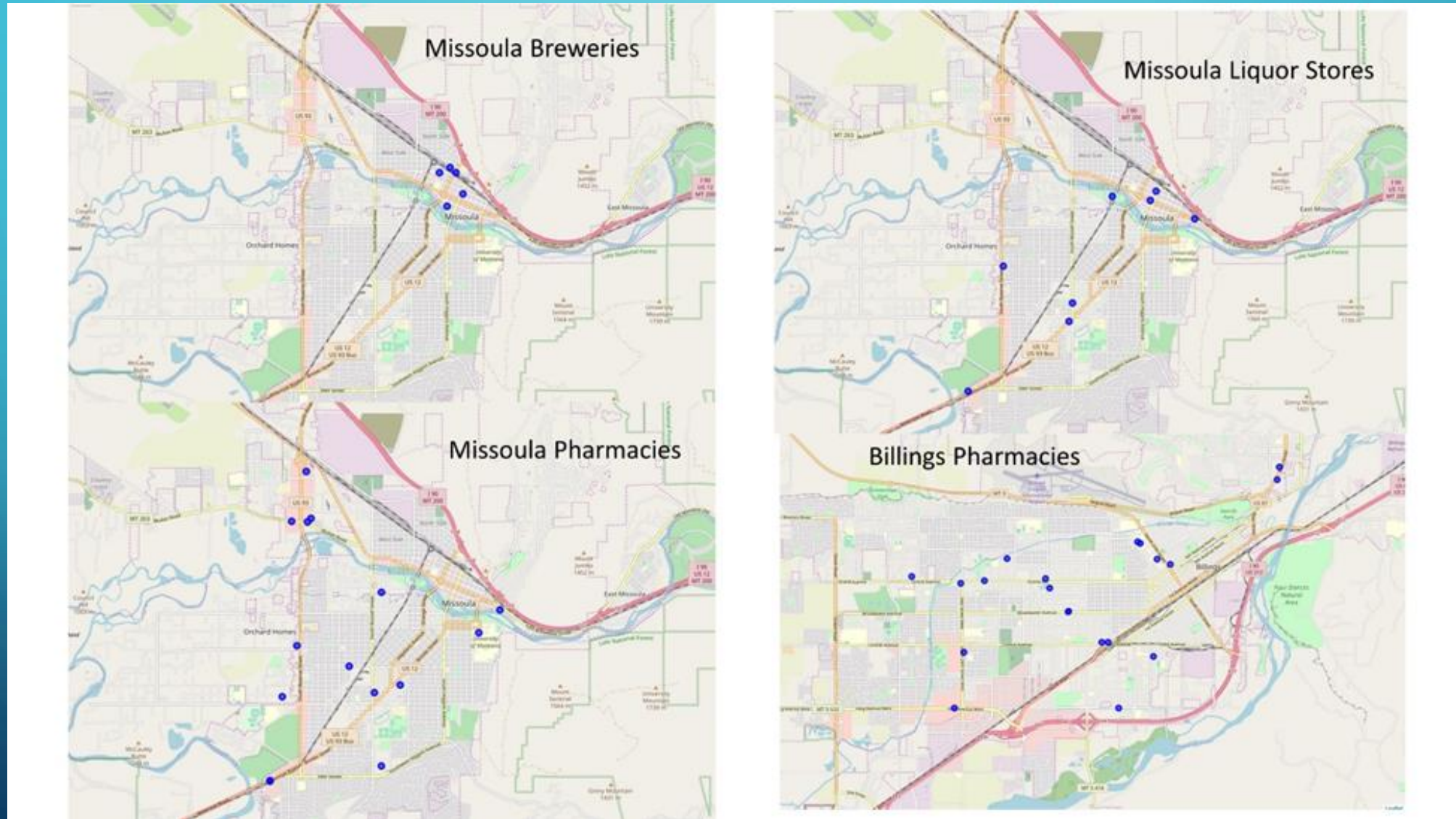


Billings Breweries





# MISSOULA/BILLINGS FOURSQUARE VENDOR LOCATIONS

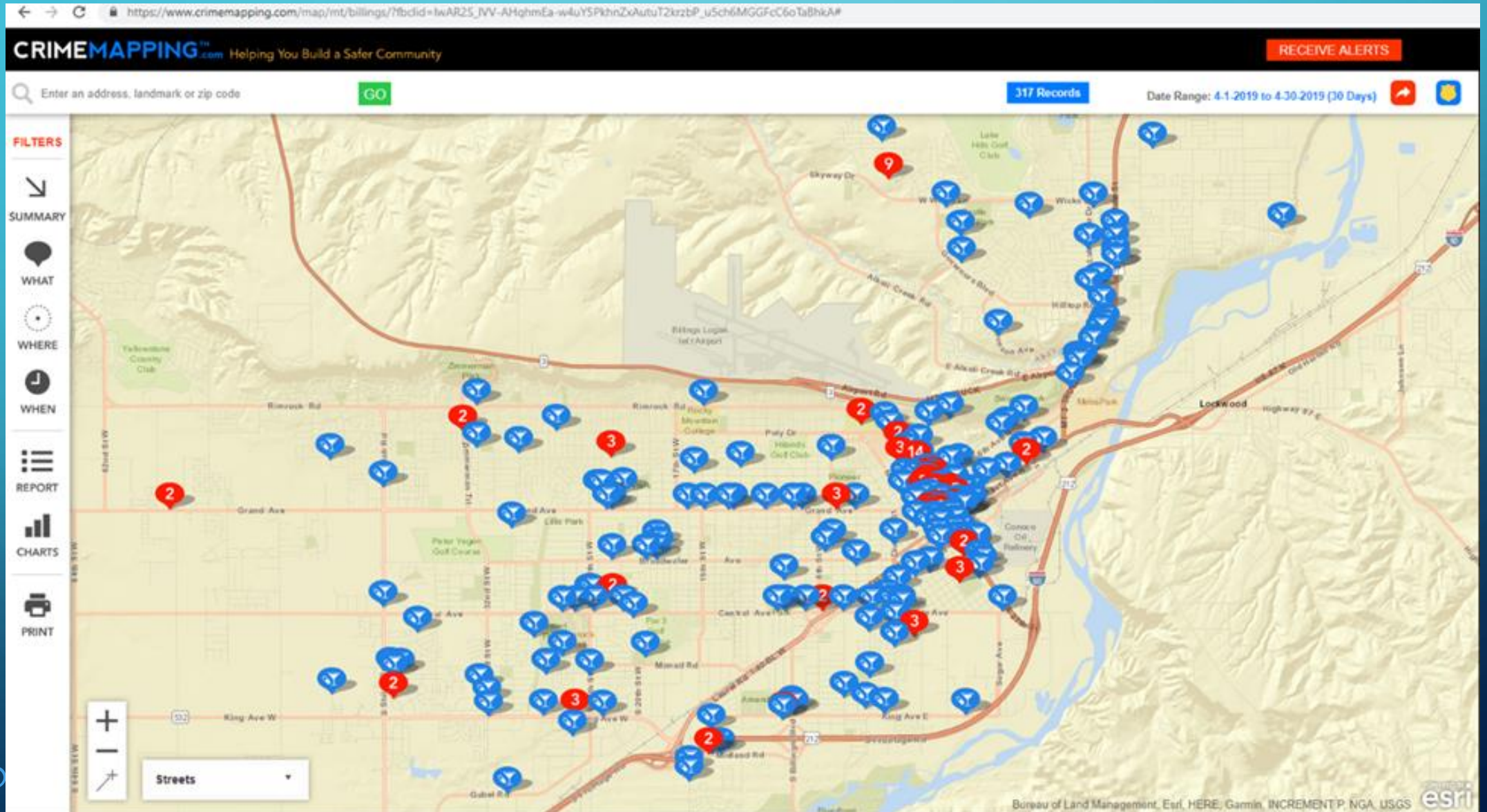


# TESTING THE MODEL - BILLINGS

- Crime data from CrimeMapping.com has locations of drug/alcohol violations
- Study period: April, 2019
- 319 crimes with spatial occurrence:
  - Drunk – 120
  - Drug investigation – 110
  - Motivated Addictions Alternative Program – 54
  - Tobacco/liquor law violations – 35

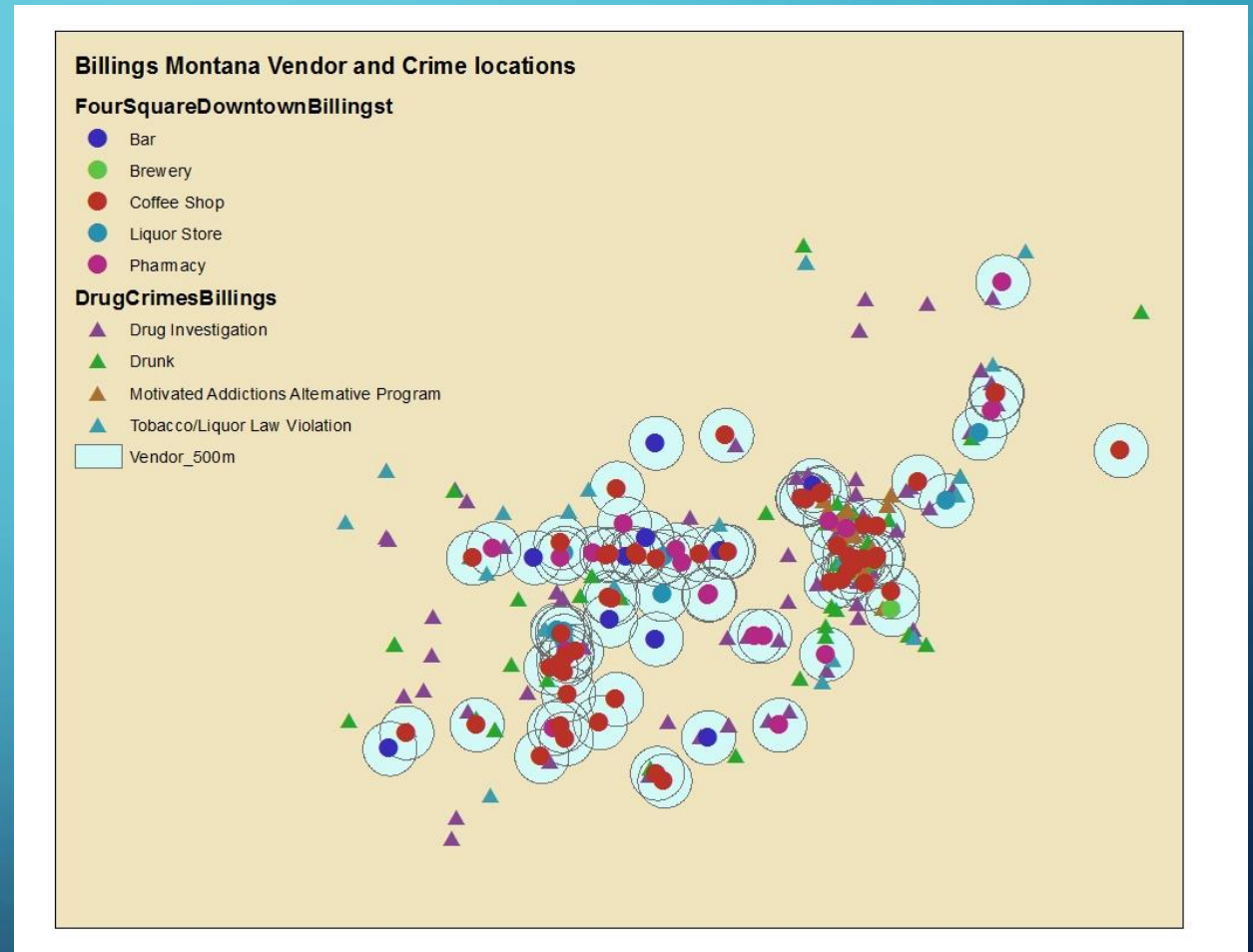


# DRUG/ALCOHOL VIOLATIONS: BILLINGS, APRIL, 2019



# CRIMES WITHIN 500 METERS OF VENDOR

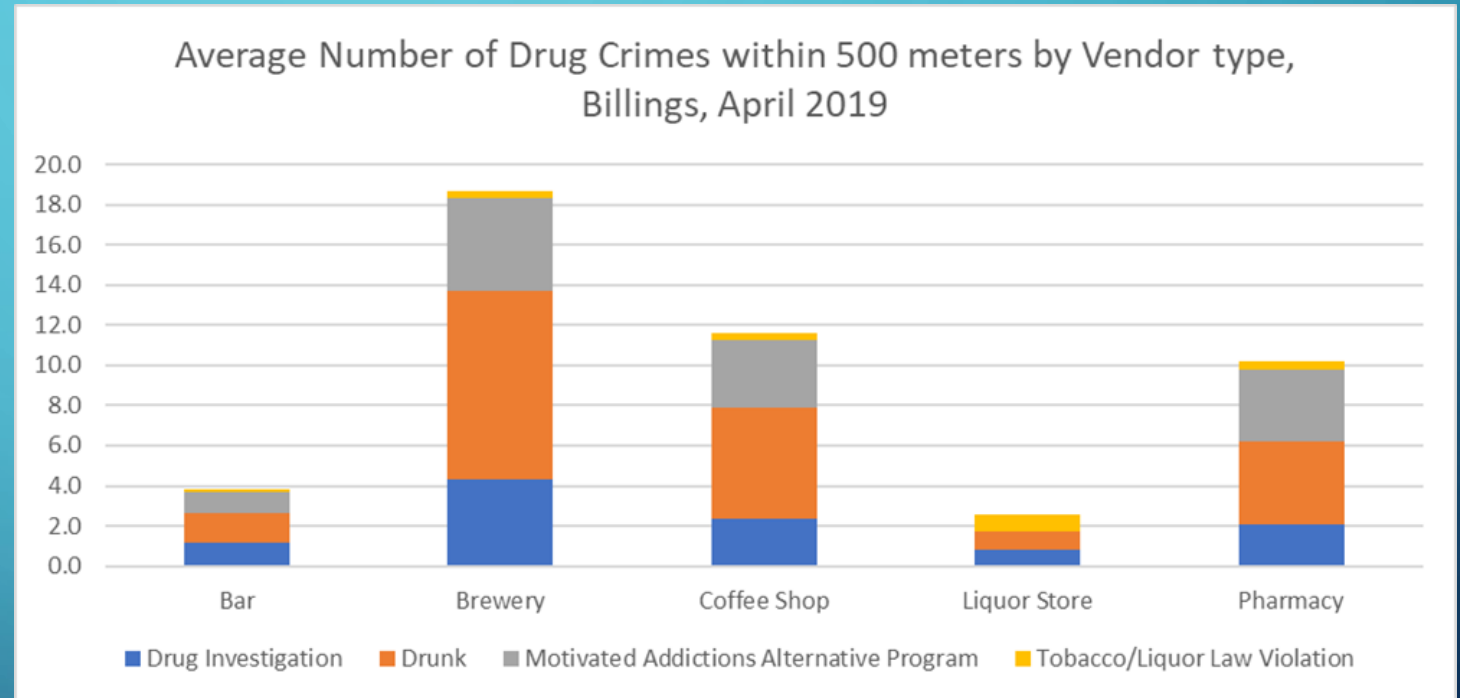
- Spatial analysis done in GIS.
- 500 meter buffer of vendors.
- Crimes that occurred within buffers counted.
- Union of vendor buffers with crimes.





# RESULTS

- Breweries had the highest number of crimes
- Coffee shops and pharmacies next
- Bars and Liquor stores had lowest levels



# DISCUSSION/CONCLUSION

- Surprising pattern of breweries and then coffee shops having higher average drug crimes within 500 meters than bars or liquor stores.
- Addiction risk mapping technique explored.
- Potential to predict the spatial properties of drug use.
- Understanding addiction is an important step to solving the opioid crisis and using data on other forms of addiction from the public's behavior is a novel approach.
- Demonstrated Data science has the potential to address important problems in society