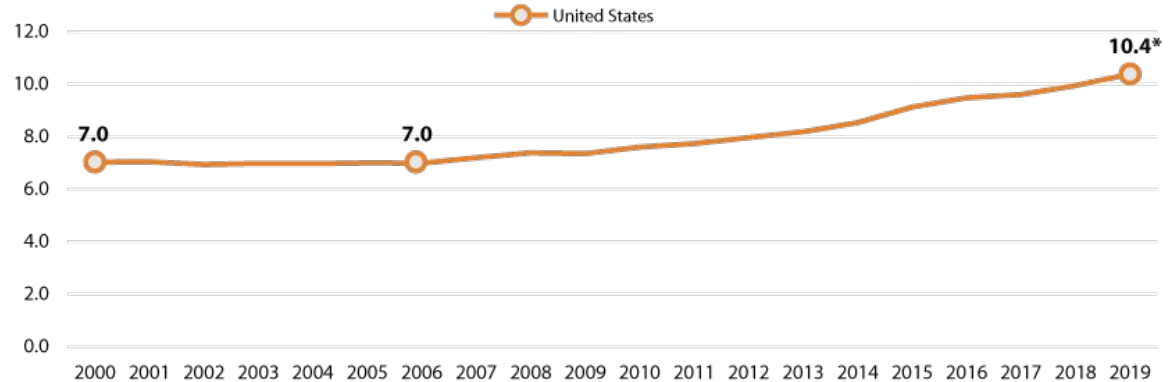


Exploration of Alcohol Mortality

Ansley Cooper & Shannen Espinosa

Problem:

- Despite Public Education Efforts, Alcohol Attributable Mortalities have been Rising
- Why?
 - Wider Definition of Alcohol Attributable
 - Generations living longer?
 - Better Statistical monitoring?
- If we can locate frequent causes of Alcohol Attributable mortalities or high risk populations, we can target safe consumption efforts to subpopulations. Increasing efficacy.



* Statistically significant change in rate at 95% level.
Source: SHADAC analysis of vital statistics data from the CDC WONDER system.

Dataset:

- CDC Data from 2015-2019
- Aggregate Data to protect anonymity
 - Non-Anonymous

ID	State	Sex	Cause of death
#112233	Massachusetts	Female	Pancreatic Cancer

- Anonymous

State	Sex	Sex	Count
Massachusetts	Female	Pancreatic Cancer	123

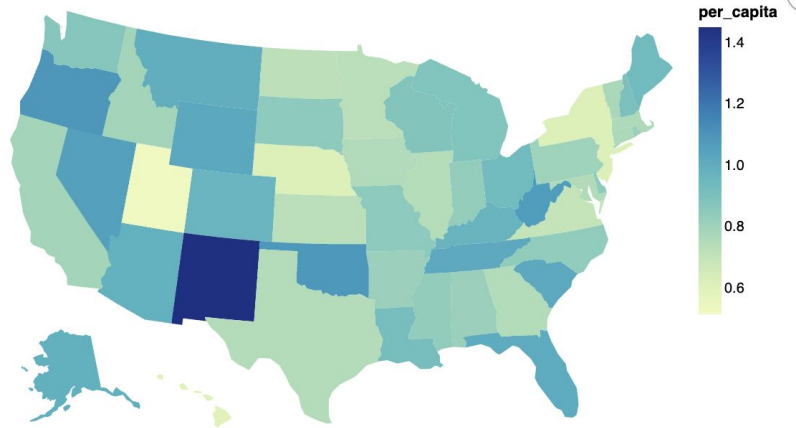
- Merged This data with geo-Pandas Dataset used in class to plot state-by state mortalities, as well as US Census Data for per capita computations.

Columns

- Location
- Condition type:
 - Acute
 - Chronic
- Category
 - Total deaths
 - Cancer
 - Suicide
- Cause of Death
 - Pancreatic cancer
 - Alcoholic
 - Cardiomyopathy
 - Motor Vehicle Collision
- Sex
 - Male
 - Female
- Count
 - Number of deaths that fall into each subcategory for each state and sex

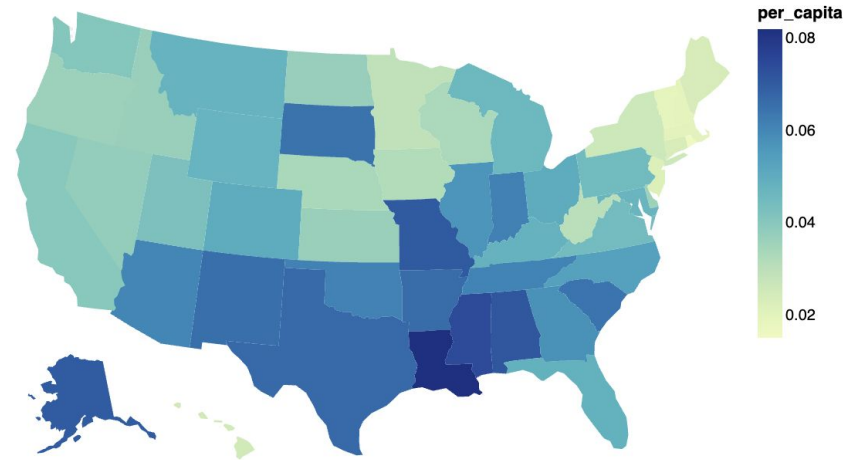
Mortality by Population:

Figure 5. Prevalence of Alcohol-Related Deaths by Age State-by-State



Select_AgeGroup ☒ 50-64 ☐ 20-34 ☐ Overall ☐ 0-19 ☐ 35-49 ☐ 65+

Figure 5. Prevalence of Alcohol-Related Deaths by Age State-by-State



Select_AgeGroup ☐ 50-64 ☐ 20-34 ☐ Overall ☒ 0-19 ☐ 35-49 ☐ 65+

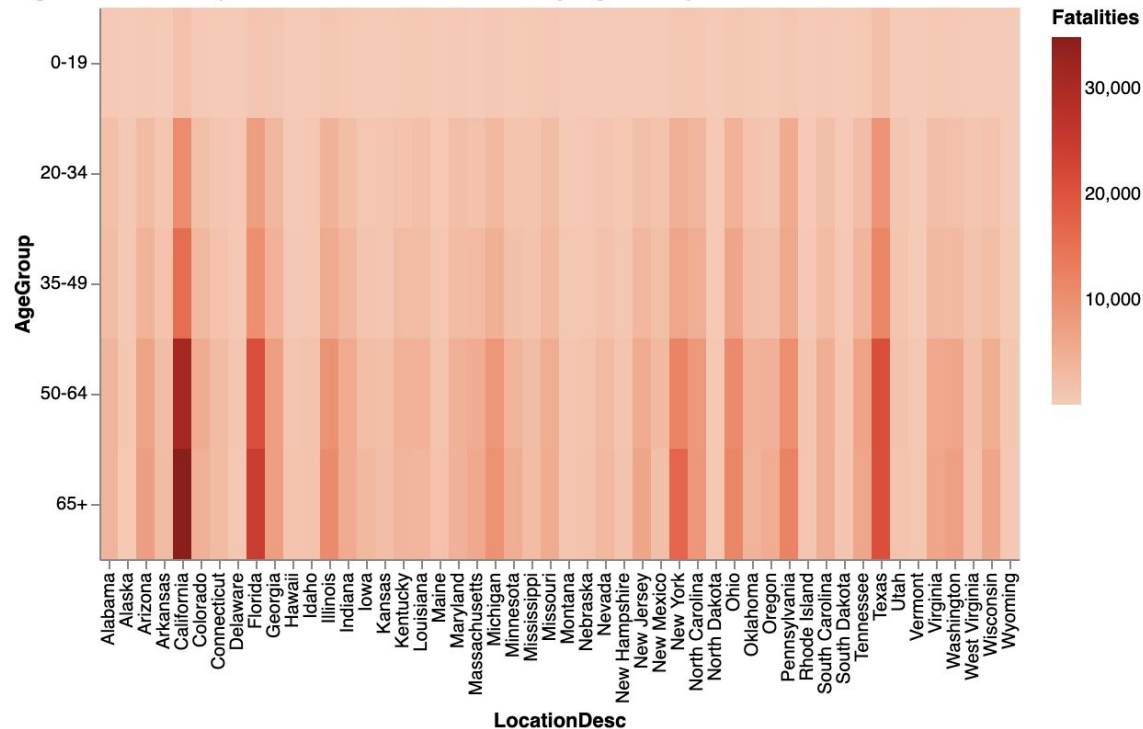
Main Takeaways:

- Mortality in older populations is much more common (higher per capita)
- Mortality in younger populations is most frequent in the south, whereas there is no regiospecificity to mortality in older populations

Mortality by Age

- How do age mortalities break down across all age groups?

Figure 6. Heatmap of Alcohol Related Deaths by Age Group and State



- Data may be **skewed** by population size
 - For further investigations, data will be transformed **per 1,000 residents** or as a **ratio**
- Most common mortalities are in **older** populations
 - Could this be from long term (**chronic**) usage

Mortality by Cause:

Knowing what we know from the age specific map...

Overall:

Figure 3. Total Nationwide Fatality Frequencies of Alcohol-Related Causes of Death

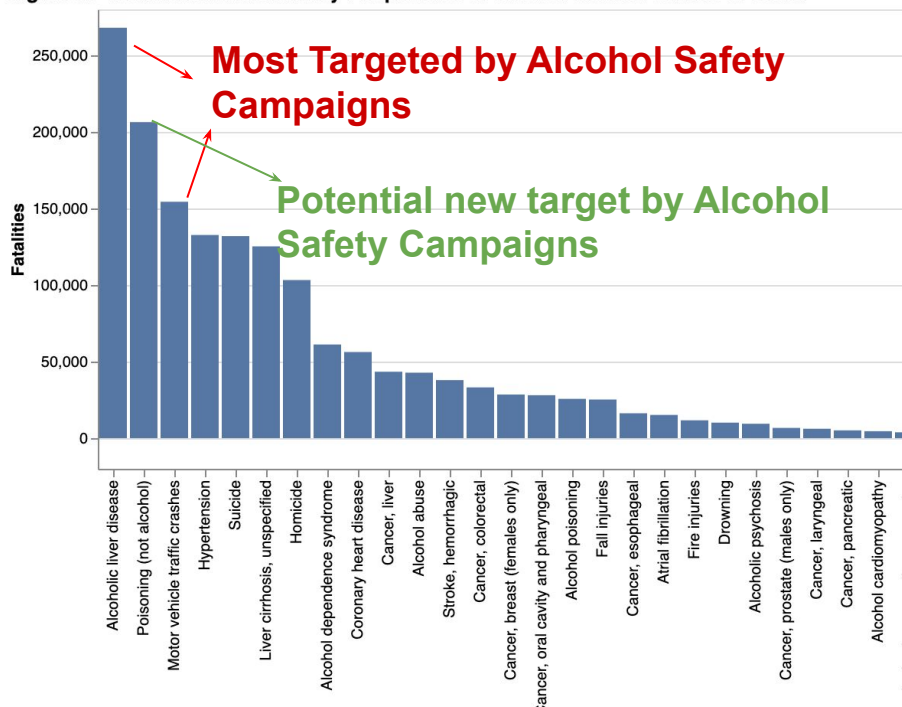
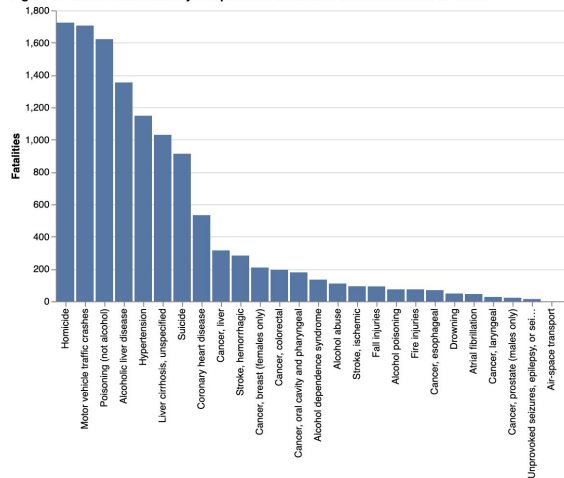


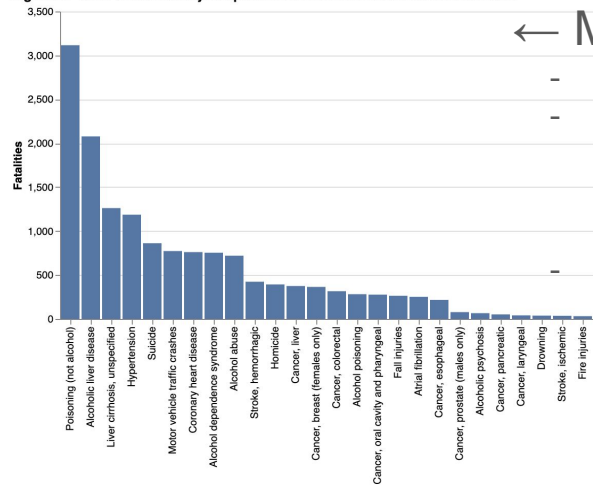
Figure 4. State-based Fatality Frequencies of Alcohol-Related Causes of Death



← Louisiana:

- Fewer deaths overall
- Deaths are more often **acute** causes
 - Homicide
 - Car accidents

Figure 4. State-based Fatality Frequencies of Alcohol-Related Causes of Death

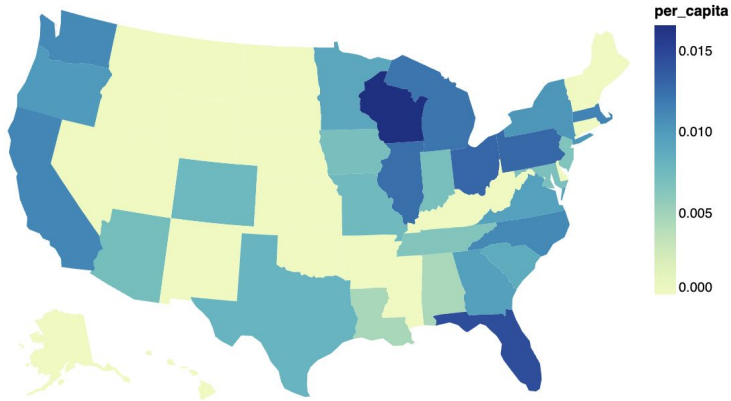


← Massachusetts:

- More deaths overall
- Deaths are more often **Chronic** causes
 - Liver disease
 - Hypertension
- Overall less violent

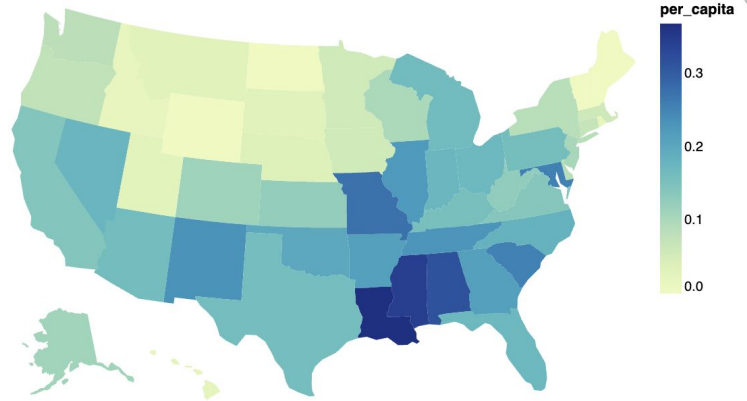
Regiospecificity of Mortality Causes

Figure 7. Prevalence of Different Alcohol-Related Causes of Death State-by-State



Select_Cause_of_Death ☐ Coronary heart disease ☐ Cancer, oral cavity and pharyngeal ☐ Motor vehicle traffic crashes ☐ Stroke, ischemic ☐ Suicide ☐ Hypertension ☒ Cancer, prostate (males only) ☐ Cancer, breast (females only) ☐ Fall injuries ☐ Cancer, colorectal ☐ Liver cirrhosis, unspecified ☐ Cancer, liver ☐ Homicide ☐ Cancer, esophageal ☐ Drowning ☐ Stroke, hemorrhagic ☐ Fire injuries ☐ Total for All Causes ☐ Atrial fibrillation ☐ Alcohol dependence syndrome ☐ Alcoholic liver disease ☐ Alcohol poisoning ☐ Poisoning (not alcohol) ☐ Cancer, laryngeal

Figure 7. Prevalence of Different Alcohol-Related Causes of Death State-by-State

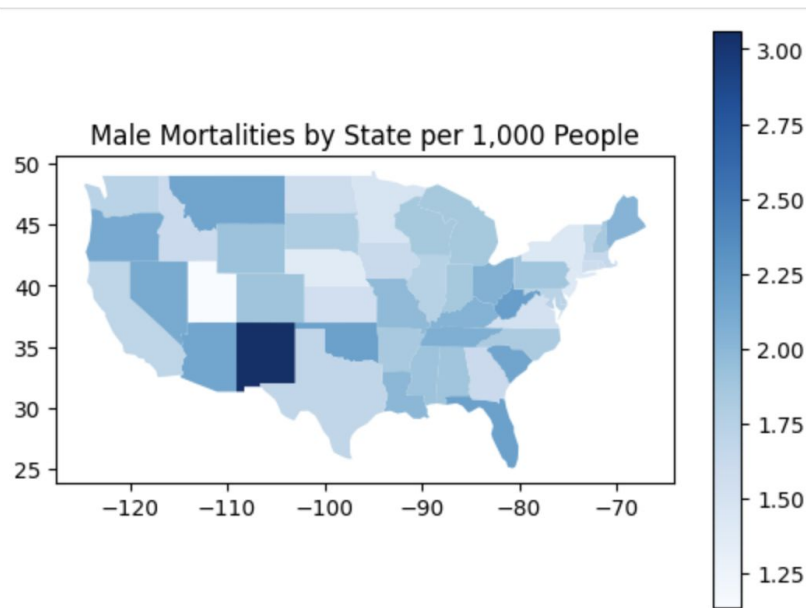
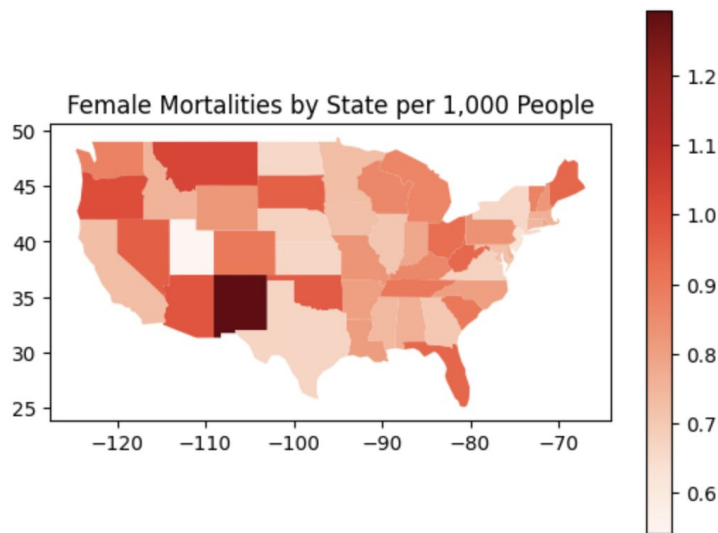


Select_Cause_of_Death ☐ Coronary heart disease ☐ Cancer, oral cavity and pharyngeal ☐ Motor vehicle traffic crashes ☐ Stroke, ischemic ☐ Suicide ☐ Hypertension ☐ Cancer, prostate (males only) ☐ Cancer, breast (females only) ☐ Fall injuries ☐ Cancer, colorectal ☐ Liver cirrhosis, unspecified ☐ Cancer, liver ☒ Homicide ☐ Cancer, esophageal ☐ Drowning ☐ Stroke, hemorrhagic ☐ Fire injuries ☐ Total for All Causes ☐ Atrial fibrillation ☐ Alcohol dependence syndrome ☐ Alcoholic liver disease ☐ Alcohol poisoning ☐ Poisoning (not alcohol) ☐ Cancer, laryngeal

- There is regiospecificity among **causes** of death.
- **Chronic** Conditions such as cancer are more prevalent in midwest and west coast
- **Acute** conditions such as homicide are more prevalent in the southern US

Mortality by Sex

- Mortality By sex is a ~1:3 ratio of Female to male deaths
- No real regiospecificity



Conclusions:

- The highest alcohol deaths in total:
California
- Highest alcohol deaths per 1000 people:
New Mexico
- The south has high mortalities in
 - Mortalities in 0-19 populations
 - Acute causes of death → these are sudden and more preventable via education
 - Also indicates less safe drinking culture among youths
- Northeast and West coast have
 - More mortalities in older populations
 - More chronic causes of mortality
 - Drinking prevention may be more difficult because of temporal distance to impacts
 - Prevention may require shift in culture

- Shortcomings
 - Data is aggregated
 - No specificity on a case by case
 - Some patients are represented in data more than once
 - Data labels are Vague to protect anonymity
 - Ex. Poisoning (not alcohol)
 - Needs comparison with other time series studies to prove/disprove efficacy of alcohol prevention/safety projects

References:

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SAMHSA, Center for Behavioral Health Statistics and Quality. 2022 National Survey on Drug Use and Health. Table 5.9A—Alcohol use disorder in past year: among people aged 12 or older; by age group and demographic characteristics, numbers in thousands, 2021 and 2022. [cited 2023 Dec 8]. Available from: <https://www.samhsa.gov/data/sites/default/files/reports/rpt42728/NSDUHDetailedTabs2022/NSDUHDetailedTabs2022/NSDUHDetTabSect5pe2022.htm#tab5.9a>

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