Fall 2023: Data Visualization 1
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For our project, we looked at the 2020-2021 rates of binge drinking, heavy drinking, and total alcohol consumption per capita in different states and compared it to the rate of liver disease mortality in those states. To see if there was any correlation between the groups, we created a bar graph to visualize **liver disease mortality rates** in all 50 states, color coding the top 10 states in a gradient red, the lowest 10 states in gradient blue, and the middle 30 states in a gradient purple. These individual colors were assigned to each state to serve as a visual guide throughout the various graphs (e.g. Wyoming had the highest rates of liver disease mortality and is colored darkest red, while DC had the lowest rates of liver disease mortality and is colored darkest blue).

We created a variety of graphs to visualize 5 categories (total alcohol consumption, heavy drinking prevalence, and binge drinking prevalence, frequency, and intensity in adults (18+)) in order to identify which category has the greatest correlation to liver disease mortality rates. For each sub-graph, we included the 5 states with the highest and the 5 states with the lowest liver disease mortality rates, as well as the 5 states with the highest and lowest rates of the given category. Some overlap existed.

We created a box plot to visualize **total alcohol consumption**, which is the total gallons of pure ethanol consumed per year (one alcoholic beverage contains approximately 0.6 fluid ounces). There seemed to be an inverse correlation, with the 3 highest alcohol consuming states (NH, DE, DC) being blue states (lowest liver disease mortality); 3 red states followed shortly behind, and the middle 50% range was a mixed bag. We created a bar graph (with singular bubbles at the apex instead of bars) to visualize **binge drinking prevalence**, which is the percentage of the population of adults (18+) that participate in binge drinking (4+ drinks consumed on one occasion for women, 5+ drinks for men). This category seemed to have the greatest correlation with liver disease mortality rates (with red states generally ranking highest). We created highlight tables for **binge drinking frequency** (of the population of binge drinkers, the number of binge drinking episodes per month); **binge drinking intensity** (how many drinks consumed per binge drinking episode). Both of these had moderate correlation, with higher liver disease mortality states having more frequent and intense binge drinkers. Finally, we created a bar graph to visualize **heavy drinking prevalence** (8+ drinks per week for women, 15+ drinks per week for men). This did not seem to have a significant correlation with liver disease mortality, which was interesting because based on research papers, heavy drinking is a large factor of liver disease rates. However, articles also state that binge drinking may be a greater cause of liver disease, as the rapid and intense consumption of alcohol overworks the liver and causes great damage

(Zakhari & Li). It is important to note that nearly all adults who drink heavily also binge-drink (CDC). The data visualization dashboard is available for viewing at this link: https://public.tableau.com/views/Fall2023DV1/Dashboard1?:language=en-US&:display_count=n&:origin=viz_share_link

Denise's experience: It was overwhelming at first as I did not know how to use tableau and the videos recommended by tableau to watch were too many. I therefore went to YouTube and watched a 30-min video which gave me all the pointers I needed for the project. Sorting through the data was a little more challenging than I expected as the data was not clean as some values were not making sense and it had a lot of different options to choose from as in how to approach the question.
I learned that I actually enjoy anayzing data and that to learn something new if one angle looks too hard, you can try switching angles and that mght make it easier and give you more motivation to do the task. I think I am a better communicator after doing this and a better teammate. I enjoyed sorting through the data and I am excited to see how I can fit data visualization into my future.

Michaela's experience: I have had previous experiences playing around with tableau, but this was the first time I was able to really dive deep and create something that brought Denise and my brainstorming to life. It was largely a process of trial-and-error, and our game plan had to change numerous times along the way, but working through this project helped me develop my critical thinking skills and ability to adapt. I loved creating different graphs and playing around with colors to help aid in visualizing the data. Sometimes it could be a challenge to figure out why something was not visualizing the way I intended, but it was satisfying figuring out how to make things work. There is so much you can do with tableau and this project helped me just scratch the surface. I learned many new things about data sorting and visualization, but there is still so much to explore and I definitely plan to work on more elaborate projects in the future!

Resources

Centers for Disease Control and Prevention. (2023, November 13). Data on excessive drinking. Centers for Disease Control and Prevention. https://www.cdc.gov/alcohol/data-stats.htm

Centers for Disease Control and Prevention. (n.d.). U.S. chronic disease indicators: Alcohol. Centers for Disease Control and Prevention. https://data.cdc.gov/Chronic-Disease-Indicators/U-S-Chronic-Disease-Indicators-Alcohol/5hba-acwf/about_data

Ventura-Cots, M., Watts, A. E., & Bataller, R. (2017, September 1). Binge drinking as a risk factor for advanced alcoholic liver disease. Liver international : official journal of the International Association for the Study of the Liver. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5656398/#:~:text=While%20it%20is%20generally%20accepted,11)%20(Table%201)

Zakhari, S. and Li, T.-K. (2007, December). Determinants of alcohol use and abuse: Impact of quantity... : Hepatology. LWW. https://journals.lww.com/hep/abstract/2007/12000/determinants_of_alcohol_use_and_abuse__impact_of.42.aspx