Meghna Jayakar

Data Storytelling Project

Dataset selected was Impaired Driving Death (IDD) Rates. University students and adults often consume alcohol, either as a coping mechanism or as a result of peer pressure.

Understanding the effects of these collisions (vehicular accidents) and the Blood Alcohol Content (BAC) levels involved could influence the laws around driving while intoxicated.

Before leaving bars or other places where people congregate to drink, people should be breathalysed with a BAC-meter to ensure their safety and the safety of others. Persons with **blood alcohol concentrations (BAC) above 0.08** should be cautious and may not be in the correct frame of mind to operate a vehicle. Dehydration and alcohol poisoning can be risks for them.

ETL Process

After downloading the dataset, the data was cleaned and sorted. It was noticed that there were a few blank rows and suppressed data in the columns.

- Used a Pivot Table to get an overview of the total number of states in this dataset.
- Removed two rows from the dataset (District of Columbia and United States).
- Removed the Location Column that had State and its geographical coordinates.
- Removed the rows with no data or a single value under any age group (Vermont and Alaska).
- Separated the data into different sheets on the basis of age group:
    - All Ages
    - 0-20 Years
    - 21-34 Years
    - 35+ Years
- Separated the data into different sheets on the basis of gender:
    - Males
    - Females
- States with only one value in either 2012 or 2014 for any of the above sheets were removed in order to make visualizing the data easier.

Visualisations and Insights

Using visualisations that help in comparison as well as one that helps show the trend by state with respect to the BAC level in 2014 and 2012.

Clustered Bar Chart – Comparison between reported BAC in 2014 and reported BAC in 2012 for All Ages.

This type of visualisation allowed a direct comparison between the Blood Alcohol Content in the years 2014 and 2012 with respect to each state.

In 2014, **Wyoming** reported the **highest BAC level of 8.2**, the individual driving the vehicle was almost (8.12) over the safe BAC level for driving a vehicle.

In 2012, **North Dakota** had the highest BAC level of **11.3**. This would have been extremely dangerous for the individuals themselves and the people around them.

Horizontal Bar Chart – State-wise BAC reports of Underage Individual

Used two horizontal bar charts to make an interactive visual, Plotted the BAC values on the X-Axis and the States on the Y-Axis for both 2014 and 2012 respectively.

In 2014, Mississippi ranked number 1 in the States with a BAC level of 8.20 while in 2012 it ranked number 4 with a BAC level of 2.60.

Georgia had a lower BAC in both the years. It was higher than the safe level BAC of 0.08 in 2014 and 2012. While this is the case, there was a reduction in the BAC level for Georgia in 2014.

Symbol Map – Reported BAC of Legal Age Individuals

Geographical location and the BAC level can be seen together, allowing one to see the variation in the terrain and its relationship with the BAC level. **Deaths caused due to very high a BAC in individuals above 21 years of age are seen in Montana and North Dakota**.

Line Chart – Reported BAC by State for Males and Females

Best for showing trends over the years,

Males with a higher BAC in 2014, seen in Wyoming, North Dakota, Montana and Mississippi.

Females with a higher BAC in 2014, seen in Montana, South Carolina, Mississippi and New Mexico.

For both Males and Females, the least BAC level was seen in New York.

Tree Map – Reported BAC for 35+ Year Old Individuals in 2012 and 2014 by State

For individuals over the age of 35, BAC levels for were higher than 5.0 in North Dakota, Montana, South Carolina and Mississippi.

New Jersey and New York had the lowest BAC levels, below 1.80.

Scatter Plot – Impact of reported BAC in 2012 on reported BAC in 2014

There was a correlation between the BAC level in 2012 and 2014. Low BAC levels in 2012 may be related to the low BAC level in 2014 and similarly a high BAC level in 2012 to a high BAC level in 2014.

Pie Chart – Percentage of Males and Females with BAC >= 0.08

Almost **41%** of impaired driving deaths are caused by **Women** while **59%** of these deaths are caused by **Men**.

Conclusion

The states with high BAC levels could possibly be due to extreme temperatures in those regions. Alcohol raises the body temperature and provides a sense of warmth which could be a reason for these high BAC levels in areas closer to the Northern region of the United States as well as regions with mountains.

The deaths in the following states were due to higher BAC levels:

- Montana, Mississippi, North Dakota, South Carolina

States with low BAC level related deaths were in areas where public transport is better developed and easily accessible. Some of these states have a high cost of living.

The following states had some of the lowest BAC levels which resulted in accidents/death:

- New York and New Jersey

Increased Awareness in States where the IDD Rates are higher as well as stricter laws that deter and/or penalize driving under the influence (DUI) of alcohol. With the help of these suggestions, we need to compare the reported BAC levels for the recent years so as to analyse the impact of deaths due to driving under the influence of alcohol.