Evidence of Improved Airline Safety

First, I looked at the Airline Safety data. I compared the number of incidents, fatal accidents, and fatalities from years 1985 to 1999 and 2000 to 2014. I created bar plots of each to compare the differences between each time period. The number of incidents, fatal accidents, and fatalities all decreased over time. I observed a 42.5% decrease in incidents, a 69.7% decrease in fatal accidents, and a 50.6% decrease in fatalities, as seen in the blue box. Next, I calculated the percentage of incidents that results in fatal accidents and created a bar plot to observe the difference between the two time periods. It is important to note that this data does not provide a comprehensive report of all incidents, fatal accidents, and fatalities, only those associated with the specified airlines.

Airplane versus Vehicle Fatalities

I utilized two additional resources to compare fatalities associated with air and ground transportation. From the first data source, Fatalities and Fatality Rates, I extracted the number of fatalities associated with vehicle accidents, resident population, and fatality rate per 100,000 population for each year from 1994 to 2018. From the second data source, Bureau of Aircraft Accidents Archives, I extracted the number of fatalities associated with aircraft accidents for the same years, 1994 to 2018. I created a dual-axis line plot to show the difference in airplane and vehicle fatalities. To understand the difference, I calculated the average fatality rate per 100,000 population for vehicle and airplane accidents and created a bar plot to compare them. The average fatality rate is based on the US population, as the vehicle data only includes accidents recorded in the US. However, the airplane accident information is not limited to US. Taking this into account, I can expect the actual average fatality rate for airplane accidents to be even lower. Therefore, I can conclude it is safer to travel by airplane than by vehicle.

Design Methodology

I decided to use colors to indicate the two time periods (1985 – 1999 and 2000 – 2014) and airplane versus vehicle, rather than label each bar plot with the repetitive information. I felt the bar plots were the best and most natural way to show the differences between the metrics, and the table was the easiest way to display the change in incidents, fatal accidents, and fatalities over the two time periods. I also felt the dual-axis line chart was the perfect way to observe and compare the number of vehicle and airplane fatalities over the years.

Sources

Airline Safety, Aviation Safety Network
Bureau of Aircraft Accidents Archives, Wikipedia
Fatalities and Fatality Rates, NHTSA