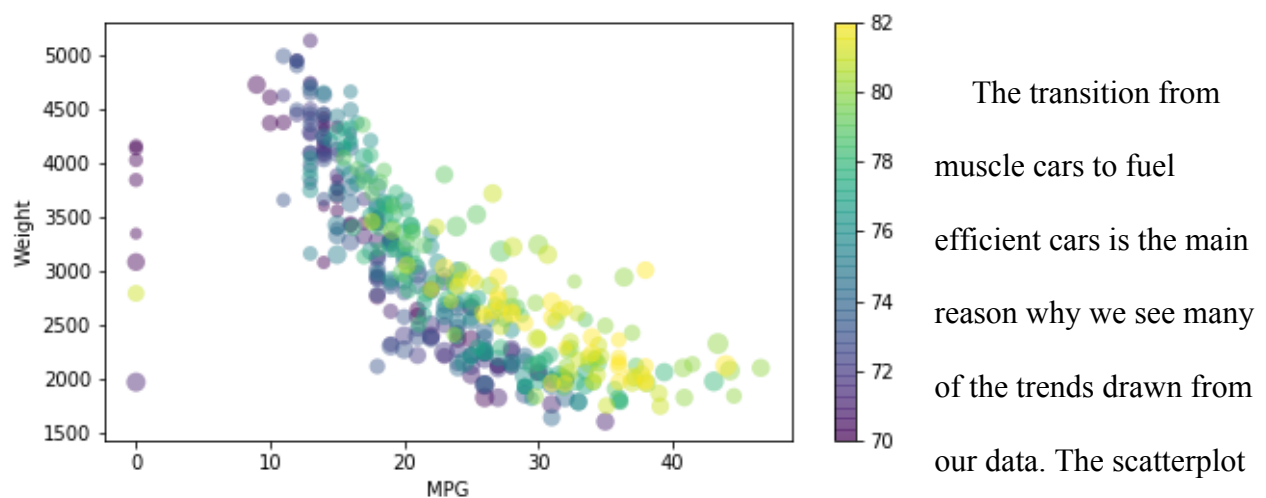


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Exploratory Analysis of MPG Data Set

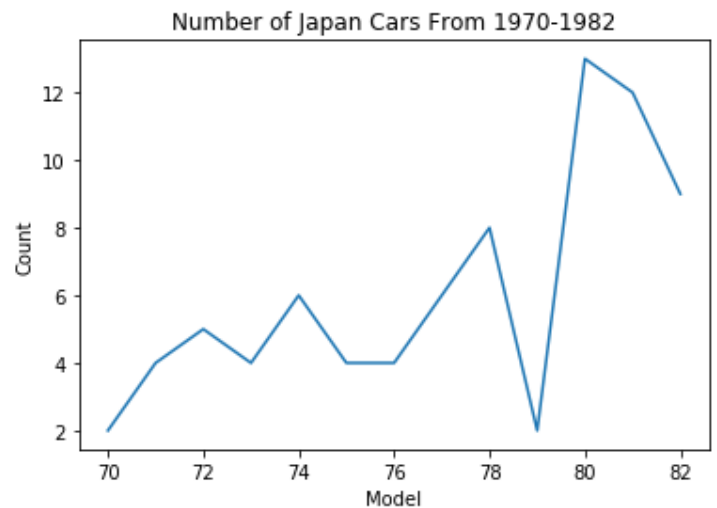
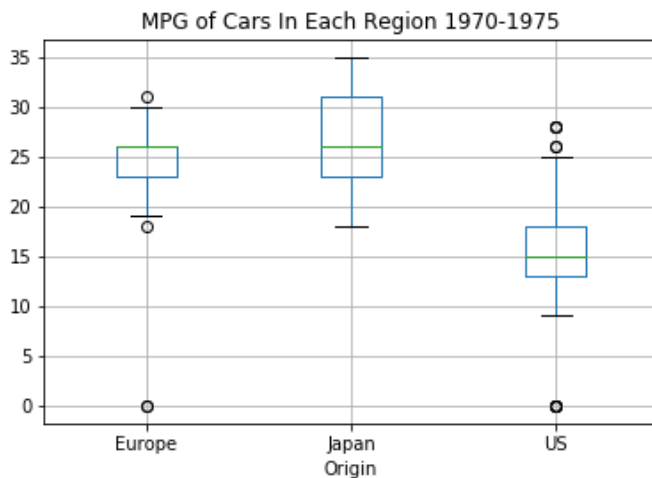
From the many graphs and tables produced in order to learn some insights about the changes in cars from 1970-1984, all the trends we saw can be traced back to the overwhelming shift in the American people's mindset from "muscle" cars to fuel efficient cars. In the 1960's the popularity of muscle cars grew which were just a name given to American cars with powerful engines designed for high-performance driving. While many Americans initially enjoyed these cars, the pollution produced from the cars was so vast that congress enacted the Vehicle Air Pollution and Control Act in 1965 which ordered car companies to follow guidelines in attempt to reduce emissions. Another reason for the shift to fuel-efficient cars was when in 1973 the Middle East declared an embargo against Israel and its allies which included the United States which raised the price of oil from \$3 to \$12. With gasoline prices going up and with the forced nationwide 55 mph speed limit, the American people were tired of constantly having to refuel their cars and demanded for smaller, more efficient cars just like the cars Japan and Europe were producing.



The transition from muscle cars to fuel efficient cars is the main reason why we see many of the trends drawn from our data. The scatterplot

shows the miles per gallon, weight, acceleration, and the year a car was made in. From the graph,

some insights made are that as mpg increased the weight of the car decreased meaning that the two had a negative relationship. In fact, we can clearly see how American car companies were forced to make cars that are fuel efficient with all the 1980's cars having a mpg of 30 to 40 while older cars ranged from 10-20 seen from the transition of the colors from initially being blue for lower mpg and becoming yellow for a higher mpg. While not included in the plot, other trends seen were that the weight, number of cylinders, the displacement, and horsepower all decreased as it got closer to 1980's which makes sense as all of those attributes were features of muscle cars and were features that when they decreased would allow the car to become more fuel-efficient.



Since the American people wanted these smaller fuel-efficient cars, but the American car companies were not producing them, the people look towards foreign cars from Europe and Japan. As seen in the boxplot above the 1st and 3rd quartile for miles per gallon ranged from 23-33 for Japan while for the United states it was only from 13-18 showing in the years of 1970-1975. With American companies still trying to figure out how to make more compact, fuel efficient cars, the number of Japanese cars made and being sold in the US began to increase seen from the scatterplot to the right which shows the number of Japanese cars made each year.

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