Name – Pratham Barot

Project 7 -Impact of Car Features

Project Description

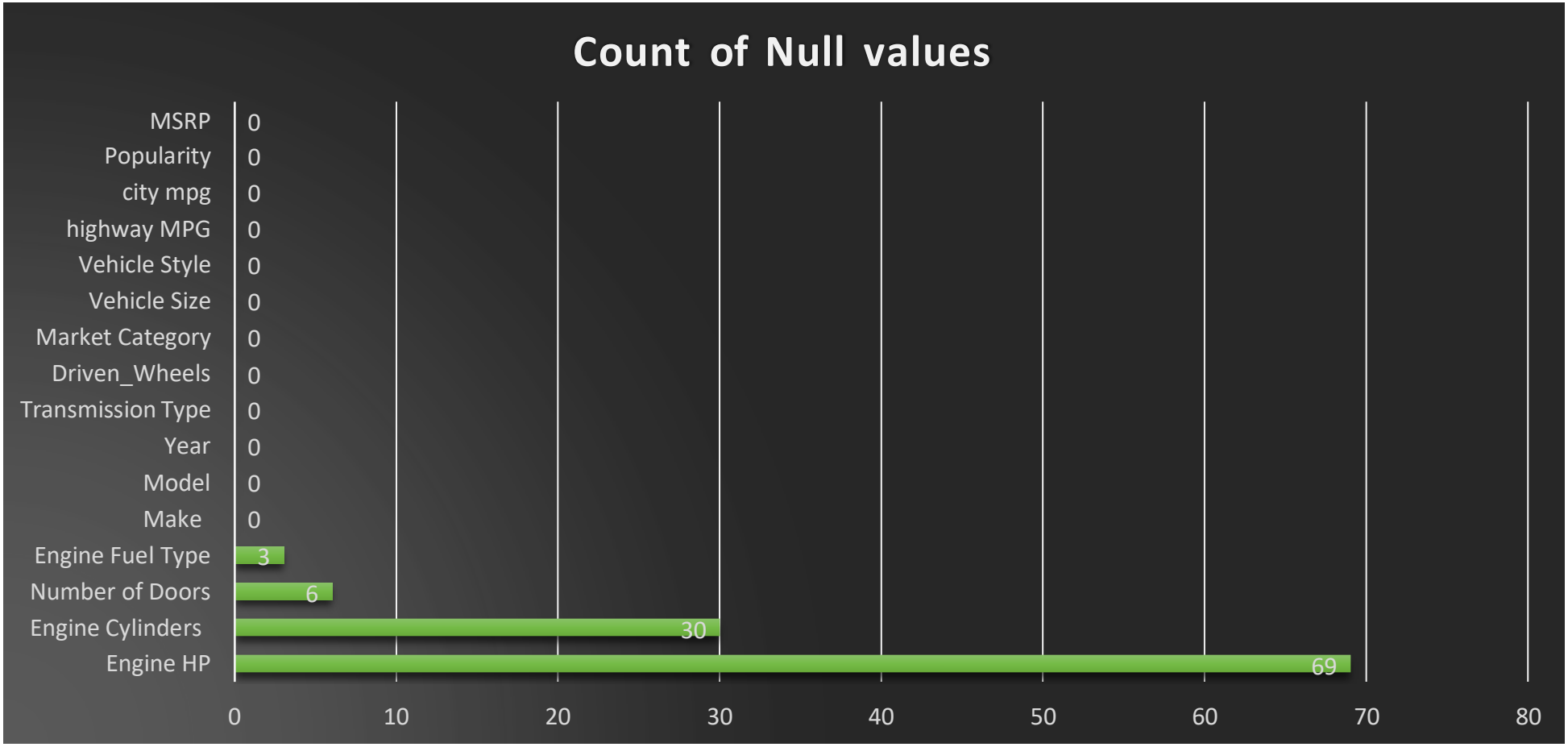
- The automotive industry has been rapidly evolving over the past few decades, with a growing focus on fuel efficiency, environmental sustainability, and technological innovation. With increasing competition among manufacturers and a changing consumer landscape, it has become more important than ever to understand the factors that drive consumer demand for cars.
- In recent years, there has been a growing trend towards electric and hybrid vehicles and increased interest in alternative fuel sources such as hydrogen and natural gas. At the same time, traditional gasoline-powered cars remain dominant in the market, with varying fuel types and grades available to consumers.
- It is important to know impact of car features on price and profitability in the automotive industry.
- This dataset includes variables such as car's make, model, year, fuel type, engine power, transmission, wheels, number of doors, market category, size, style, estimated miles per gallon, popularity, and manufacturer's suggested retail price (MSRP).

To address these problems, I will do various data analysis techniques in this dataset. This analysis will help manufacturer to choose car feature which will give more profitability.

Software used: -
Microsoft Excel 2408

Cleaning the Data

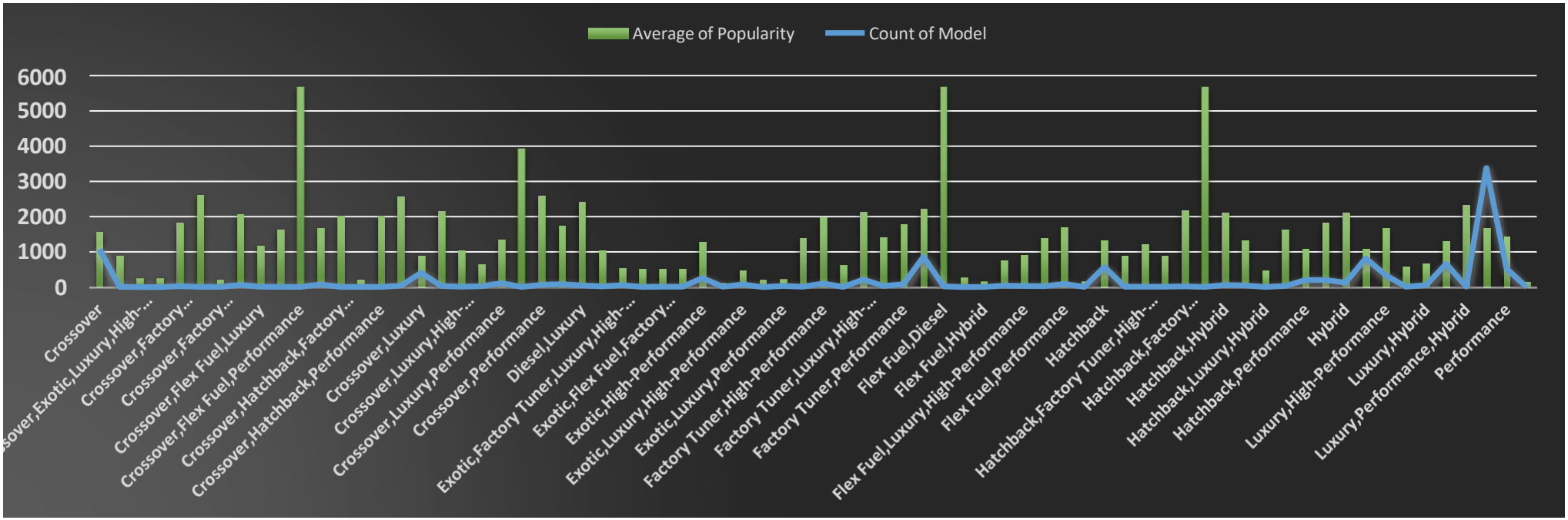
- First I will use =COUNTBLANK(A2:A11915) to count null values in each column.
- Then we will remove duplicate rows and use Median/Mode to remove null values.



Analysis

Insight Required: How does the popularity of a car model vary across different market categories?

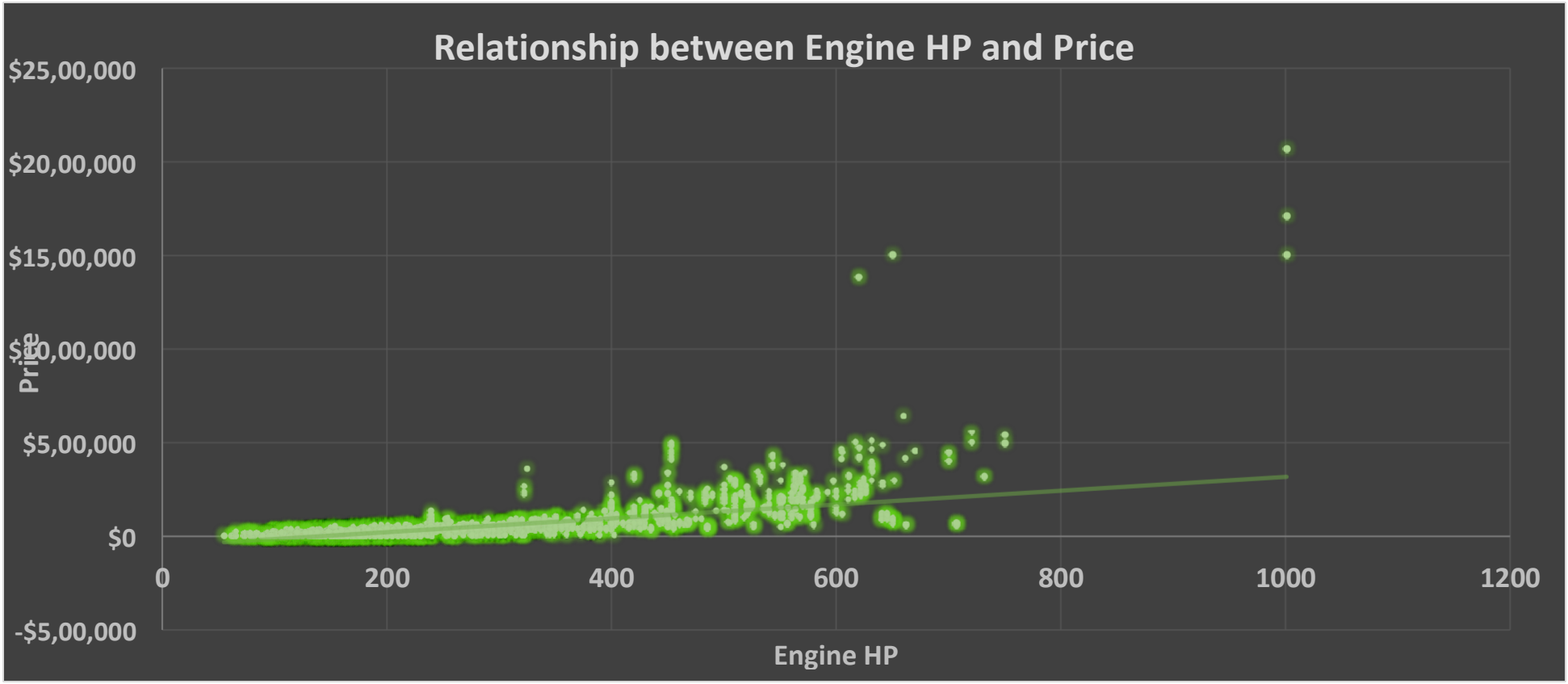
- **Task 1.A:** Create a pivot table that shows the number of car models in each market category and their corresponding popularity scores.
- **Task 1.B:** Create a combo chart that visualizes the relationship between market category and popularity.



Insights:- Flex Fuel, Diesel, Hatchback, Crossover, Performance are the most popular market category for car models.

Insight Required: What is the relationship between a car's engine power and its price?

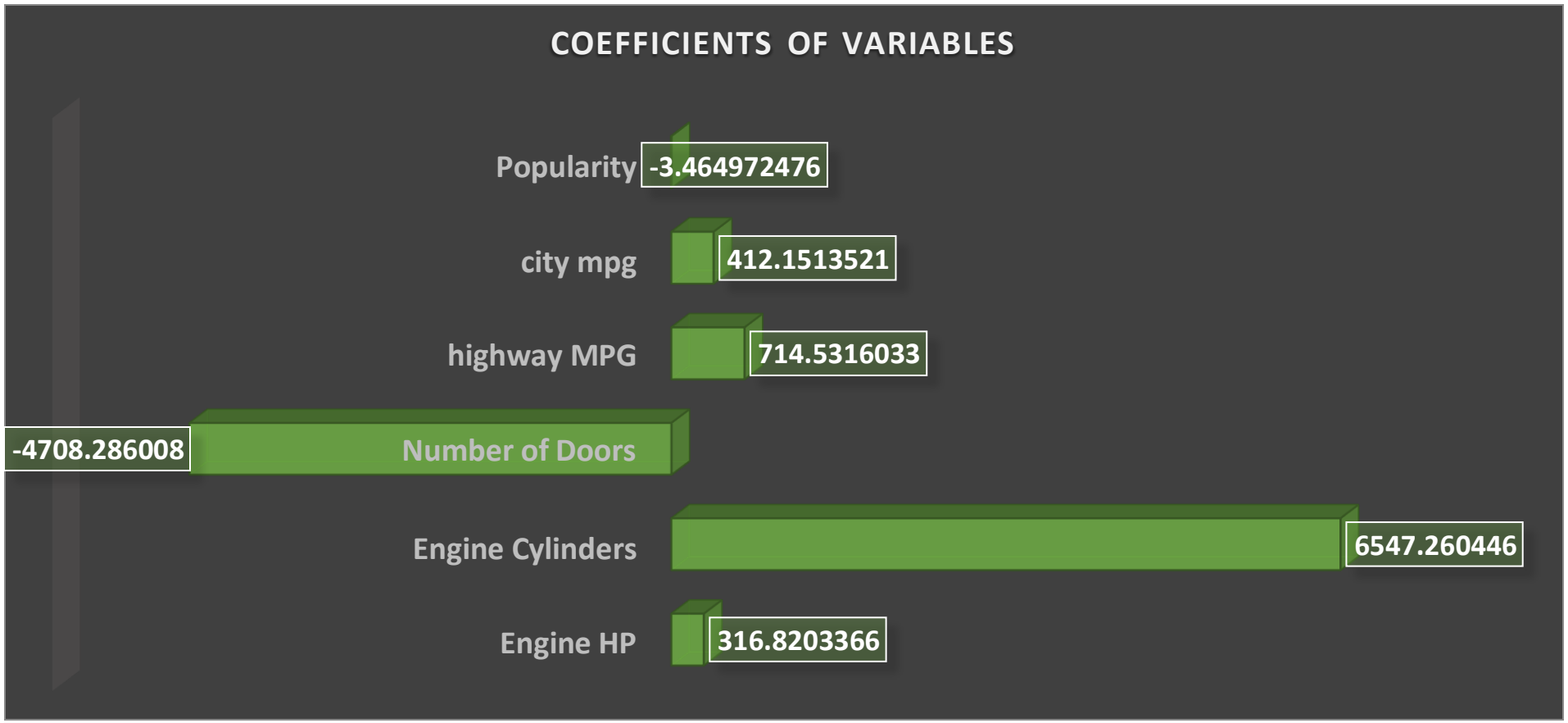
- **Task 2:** Create a scatter chart that plots engine power on the x-axis and price on the y-axis. Add a trendline to the chart to visualize the relationship between these variables.



Insights: - If Engine power increases Price will also increase. So, it's positive relationship between both of them.

Insight Required: Which car features are most important in determining a car's price?

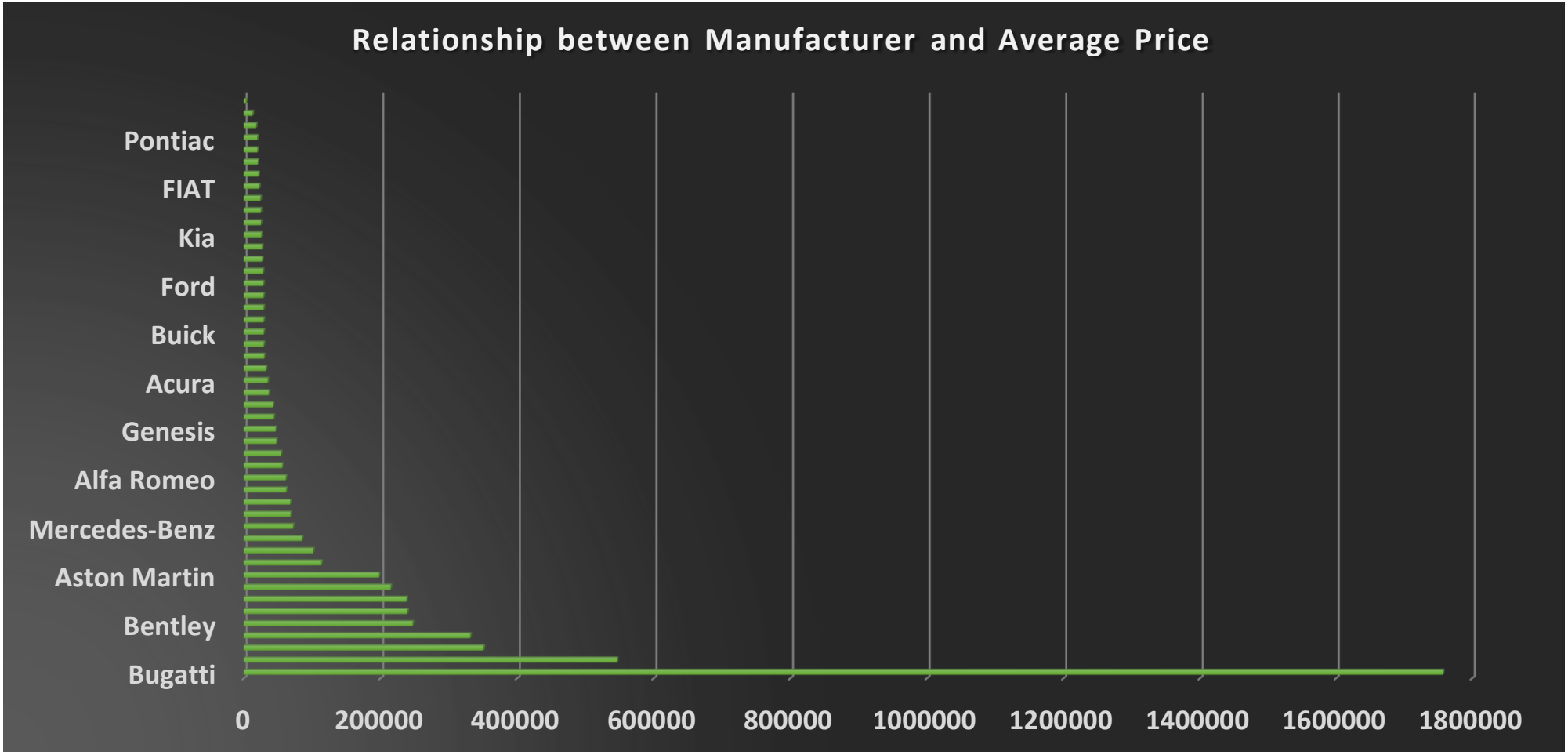
- **Task 3:** Use regression analysis to identify the variables that have the strongest relationship with a car's price. Then create a bar chart that shows the coefficient values for each variable to visualize their relative importance.



Insights: - Engine Cylinders are the most important features in determining a car's price.

Insight Required: How does the average price of a car vary across different manufacturers?

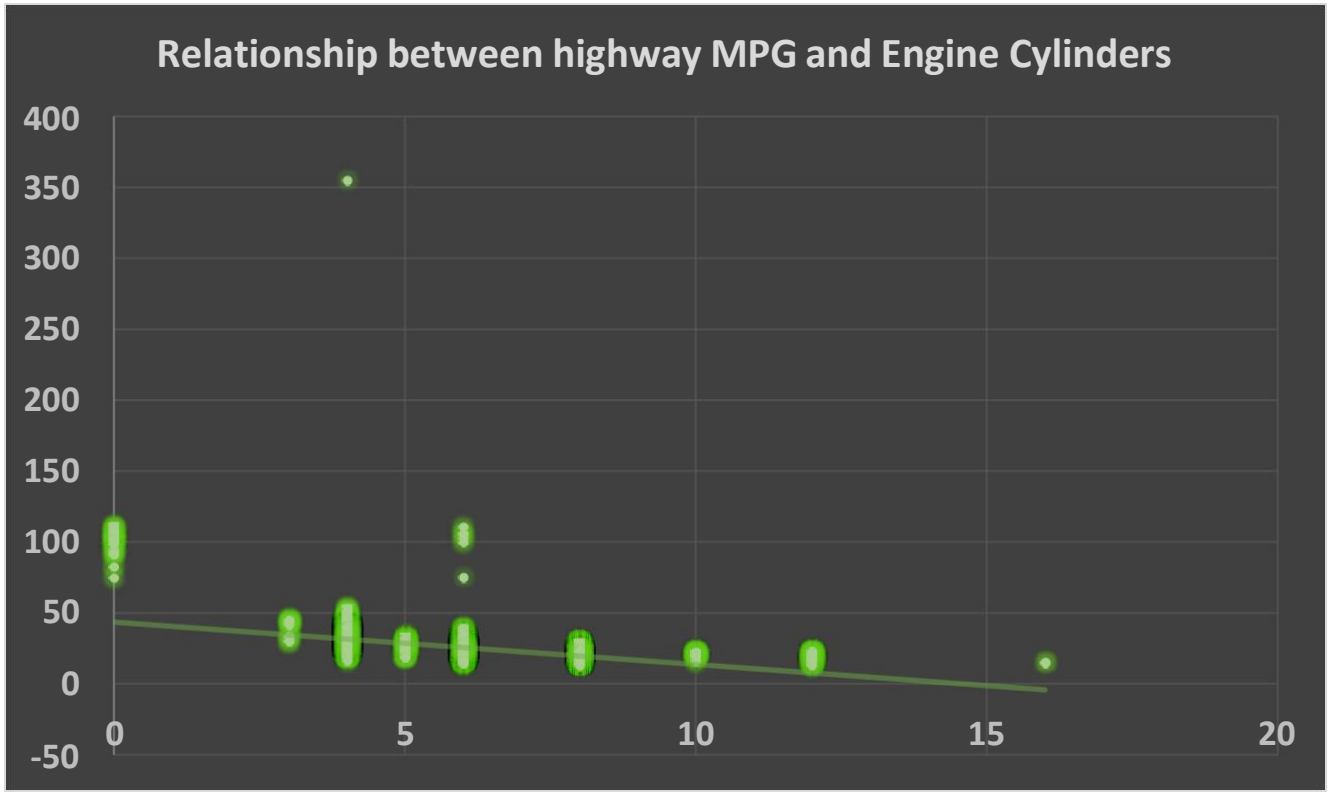
- **Task 4.A:** Create a pivot table that shows the average price of cars for each manufacturer.
- **Task 4.B:** Create a bar chart or a horizontal stacked bar chart that visualizes the relationship between manufacturer and average price.



Insights: - Bugatti has the highest Average price and Plymouth has the lowest average price.

Insight Required: What is the relationship between fuel efficiency and the number of cylinders in a car's engine?

- **Task 5.A:** Create a scatter plot with the number of cylinders on the x-axis and highway MPG on the y-axis. Then create a trendline on the scatter plot to visually estimate the slope of the relationship and assess its significance.
- **Task 5.B:** Calculate the correlation coefficient between the number of cylinders and highway MPG to quantify the strength and direction of the relationship.

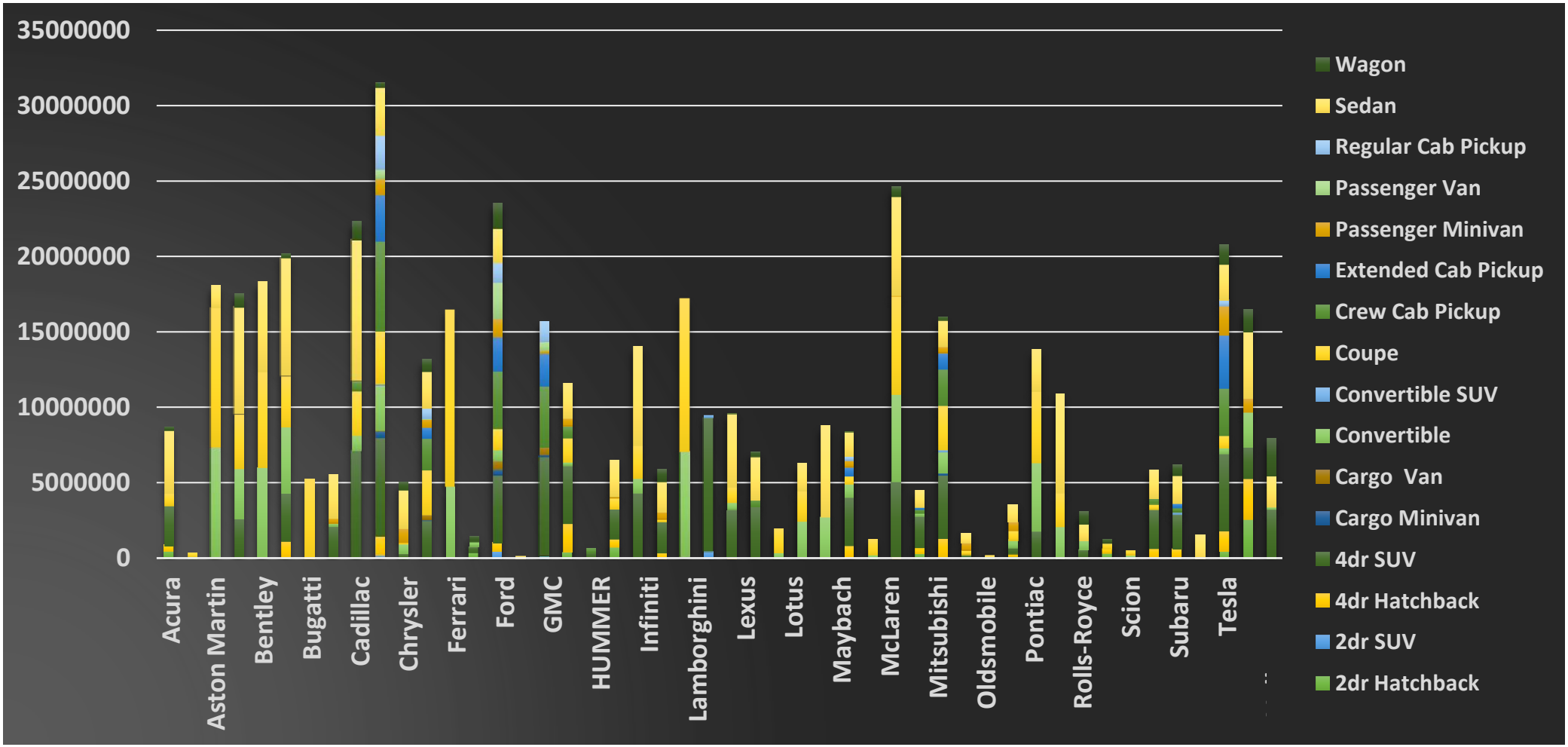


Correlation Coeffic

Insights: - Number of Cylinders will increase then highway MPG will decrease. It's negative relationship between both of them.

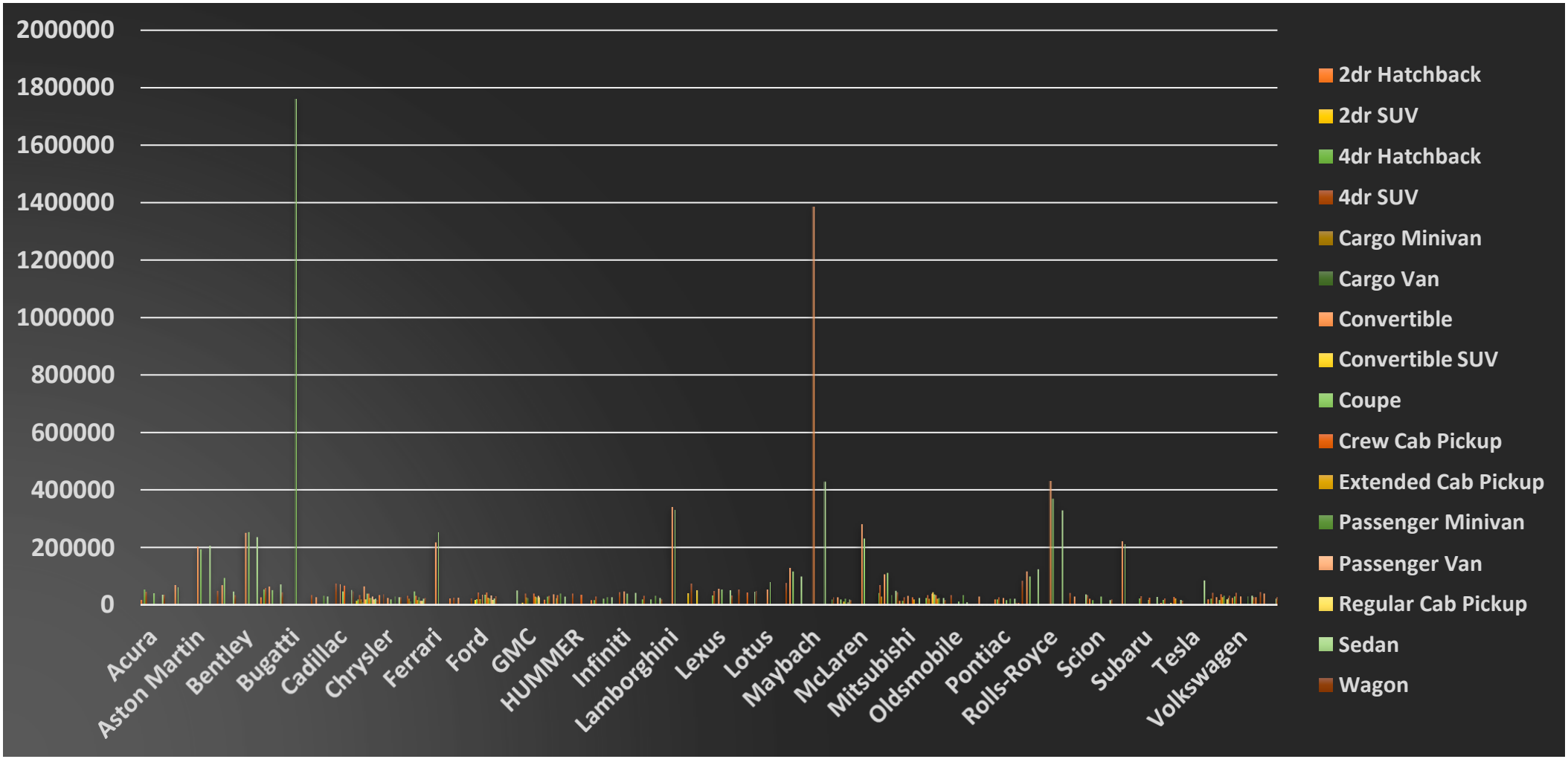
Building the Dashboard

Task 1: How does the distribution of car prices vary by brand and body style?



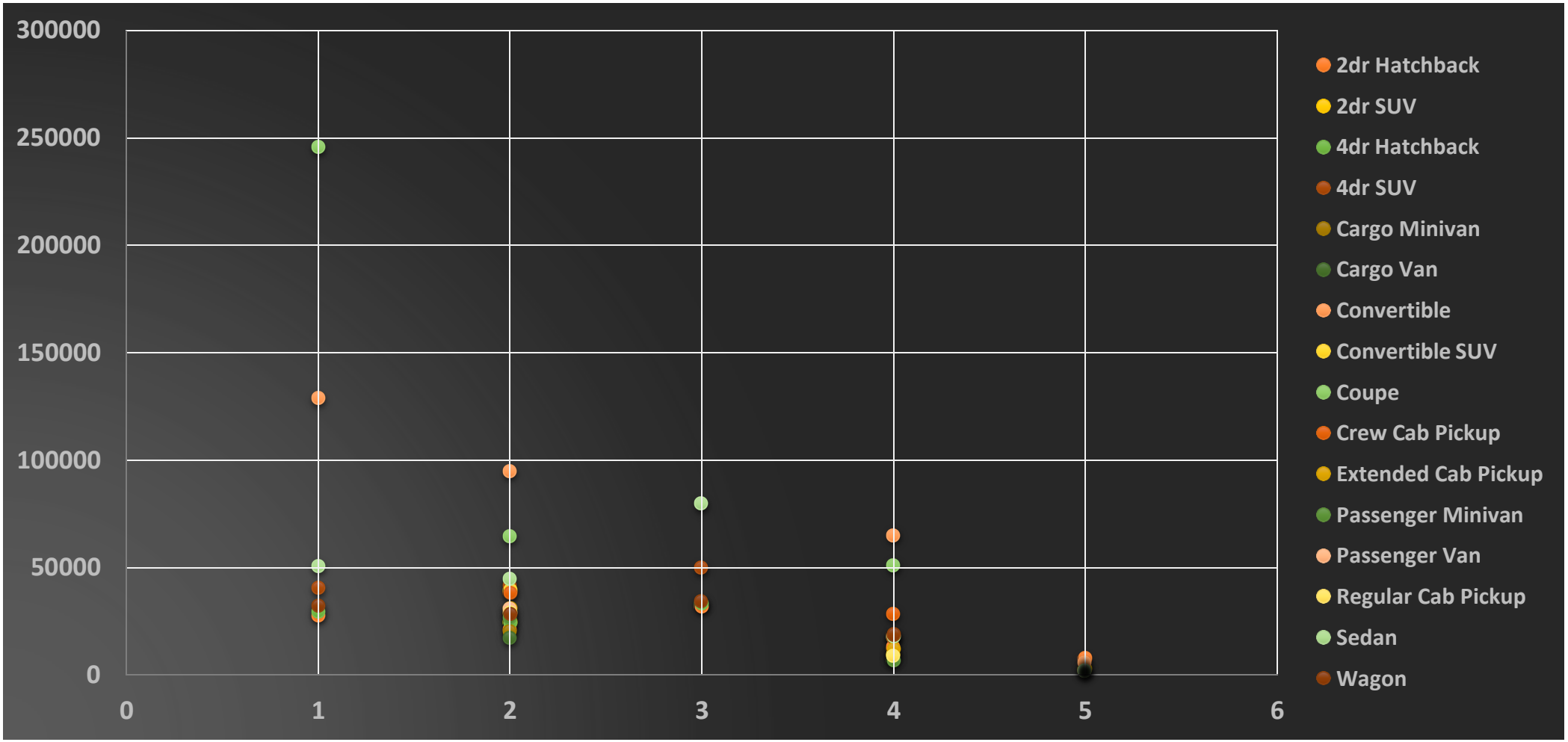
Insights: - Chevrolet has the highest price distribution by body style.

Task 2: Which car brands have the highest and lowest average MSRPs, and how does this vary by body style?



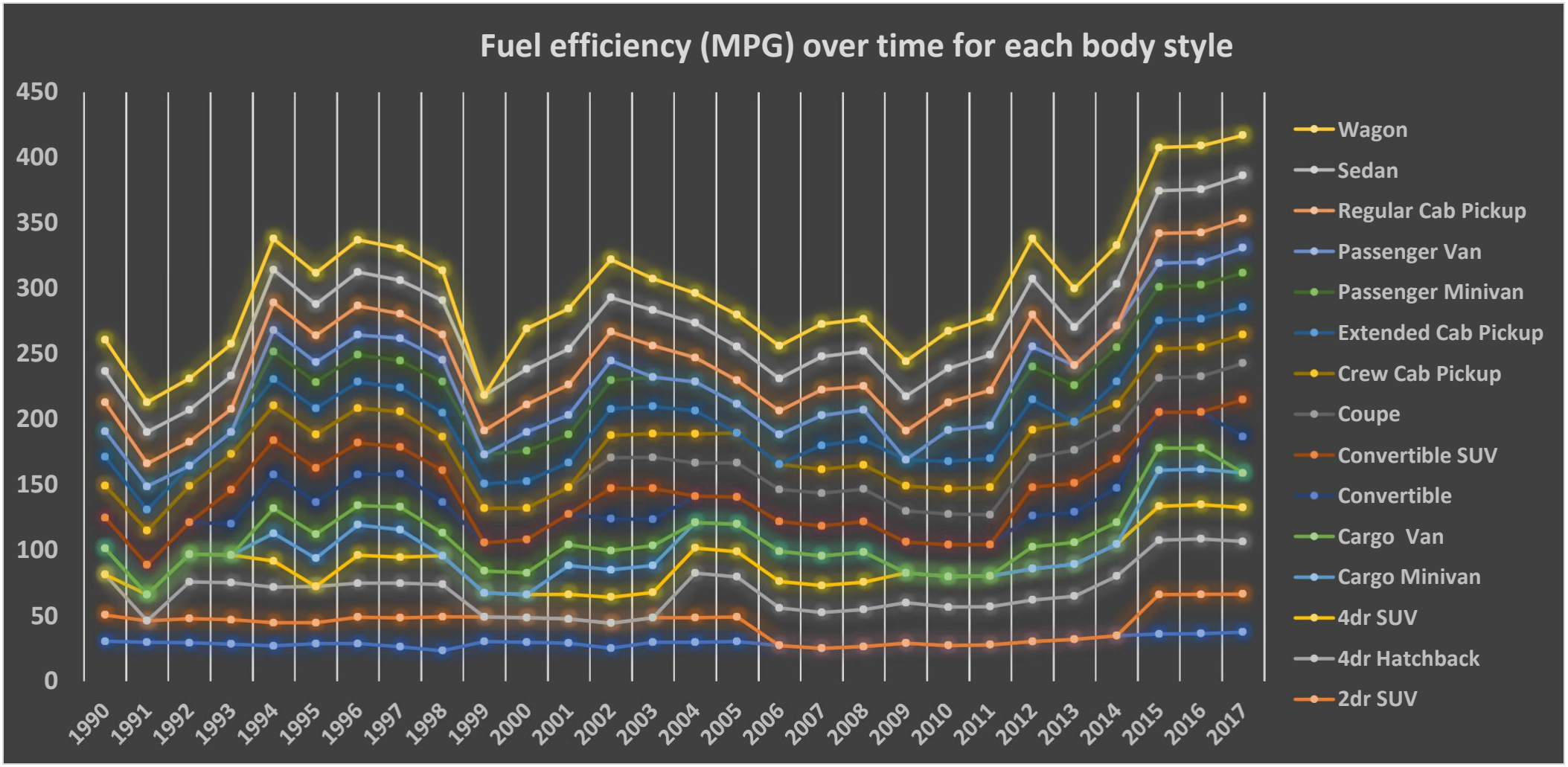
Insights: - Bugatti has the highest average MSRPs and Plymouth has the lowest average MSRPs by body style.

Task 3: How do the different feature such as transmission type affect the MSRP, and how does this vary by body style?



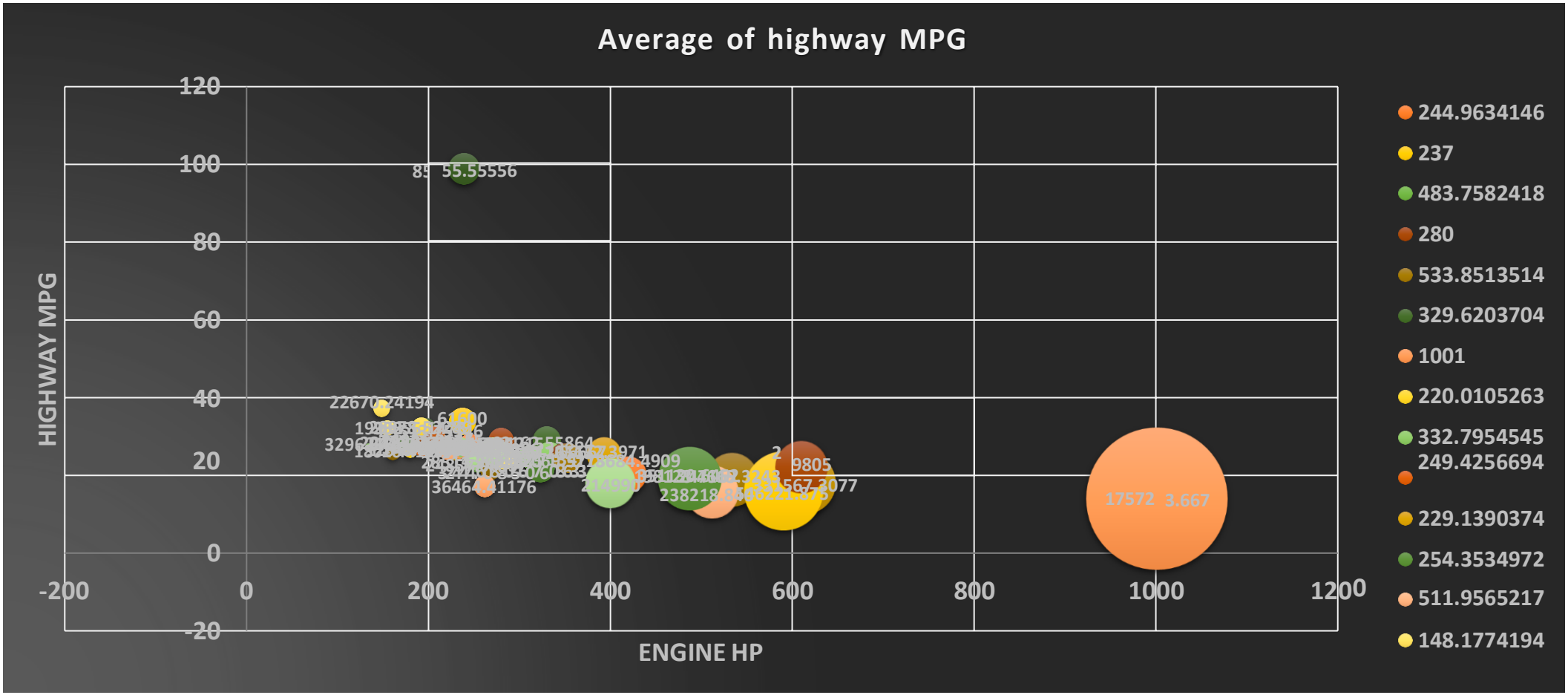
Insights: - AUTOMATED_MANUAL with Coupe body style is the most expensive transmission.

Task 4: How does the fuel efficiency of cars vary across different body styles and model years?



Insights: - Fuel efficiency of cars increased across different body styles and model years. Wagon body style has the highest fuel efficiency in 2017.

Task 5: How does the car's horsepower, MPG, and price vary across different Brands?



Insights: - If Engine HP goes up, Highway MPG goes down but price increases.

Please download google sheet in Excel file because few of the pivot tables and charts are not supported by Google sheet.

Link to the google sheet – GOOGLE SHEET


Jackson county, Missouri
Cases per 100,000: 155.20
Confirmed cases: 1,074
Deaths: 23
Thank you.