



# Analyzing the Impact of Car Features on Price and Profitability

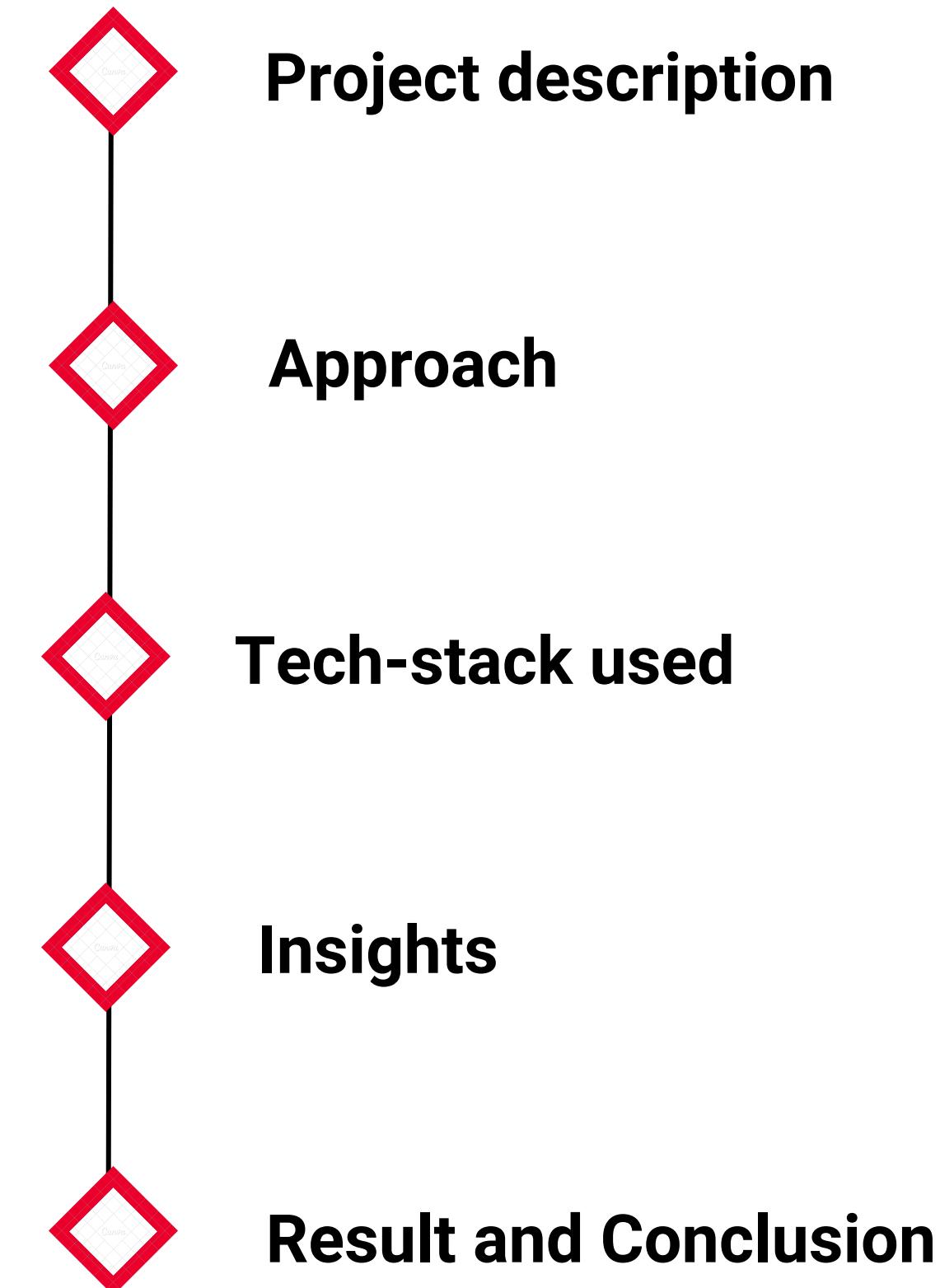
Final Project - 3

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# Agenda



# Project Description

- The automotive industry has been rapidly evolving over the past few decades, with a growing focus on fuel efficiency and technological innovation etc.
- It has become more important than ever to understand the factors that drive consumer demand for cars to increase competitiveness.
- Based on our Client's car features dataset, as a Data Analyst, I am going to analyze how car features can impact price and profitability.

**The main objectives will be:**

1. Analyzing the relationship between a car's features, market category, and pricing.
2. To identifying which features and categories are most popular among consumers and most profitable.



# Approach

## 1. Data Cleaning

- Removed the duplicate rows from the Car data set which was the first step to prepare the dataset for analysis.
- Removed blank values found in Egnine fuel type, Engine HP, Highway MPG so that it can influence our results.
- Changed the data type of columns to Text, Number, Currency for better analysis

## 2. Data Analysis and Statistical tests

- Used Pivot tables mostly to summarize the data according to clients queries.
- Used regression analysis and correlation test to find relationship between variables.
- Used Excel Data Analysis tool, CORREL(), SUMIF(), AVGERAGEIF() functions to find required results.

## 3. Data Visualization and Dashboarding

- Used Scatter plots and trendlines to visualize relationships among variables.
- Used bar charts, column charts to visualize distribution of data according client's questions.



# Tech-Stack Used



## MS Excel

Used MS Excel in this project for data cleaning, data analysis, and visualizations.



## Canva

Used Canva to prepare the project report and presentation.

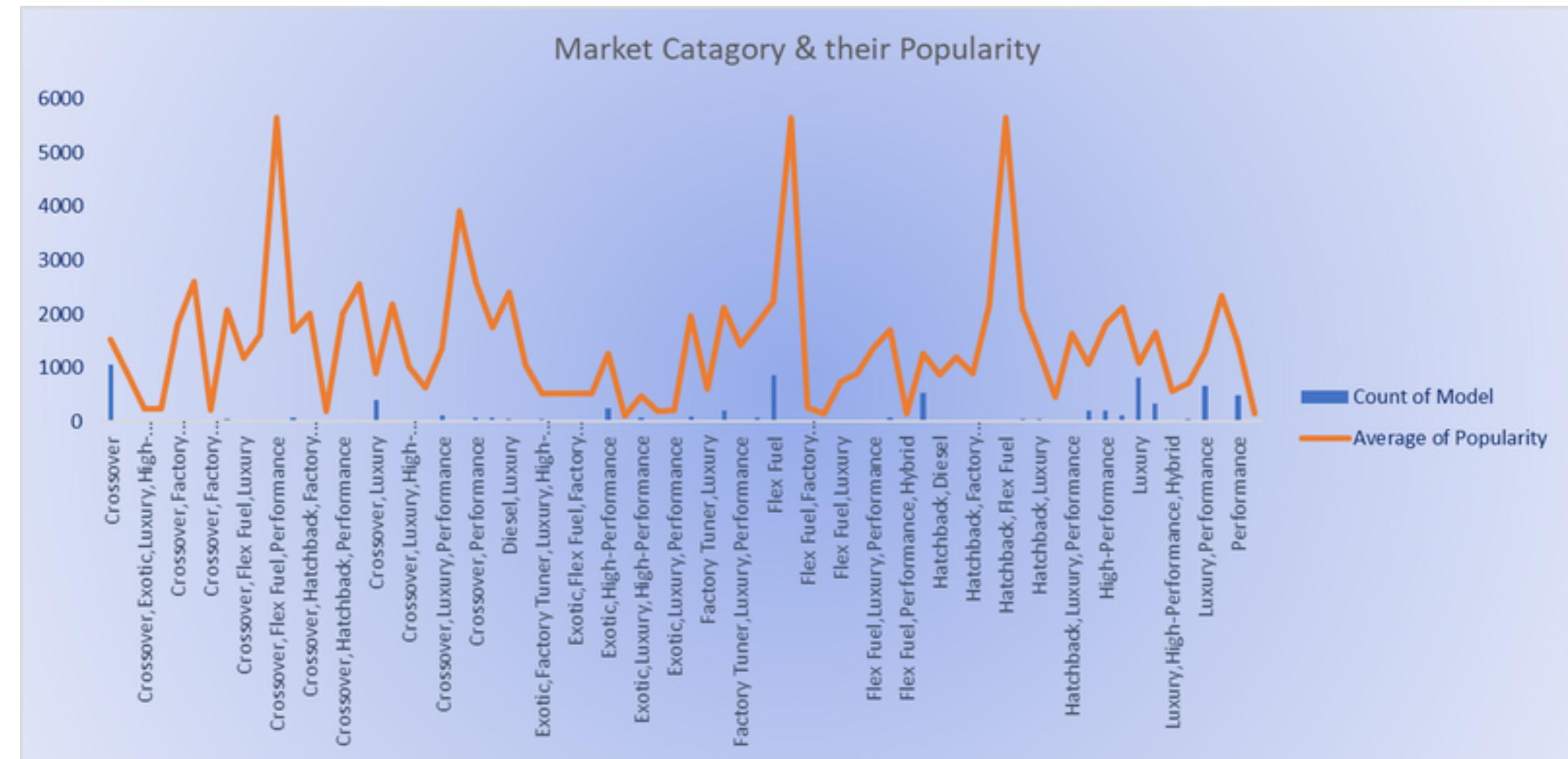


Used Capcut video editor to create the video presentation.

# Insights

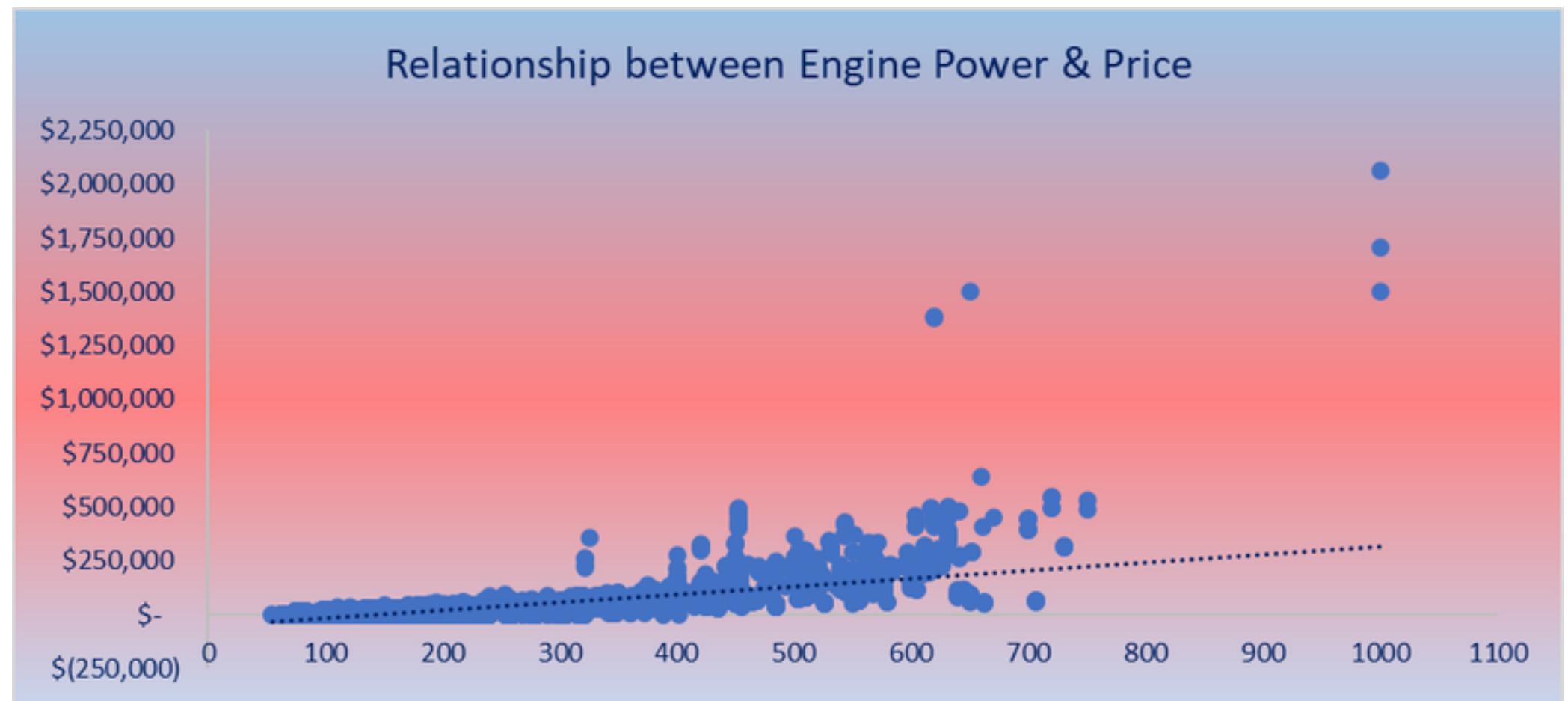
How does the popularity of a car model vary across different market categories?

- The top 3 most popular market category are: "**Crossover, Flex Fuel, Performance**", "**Flex Fuel Diesel**" and "**Hackback Flex Fuel**"
- Also we can see that, Crossover, Flex Fuel and Luxury catagory have most number of car models

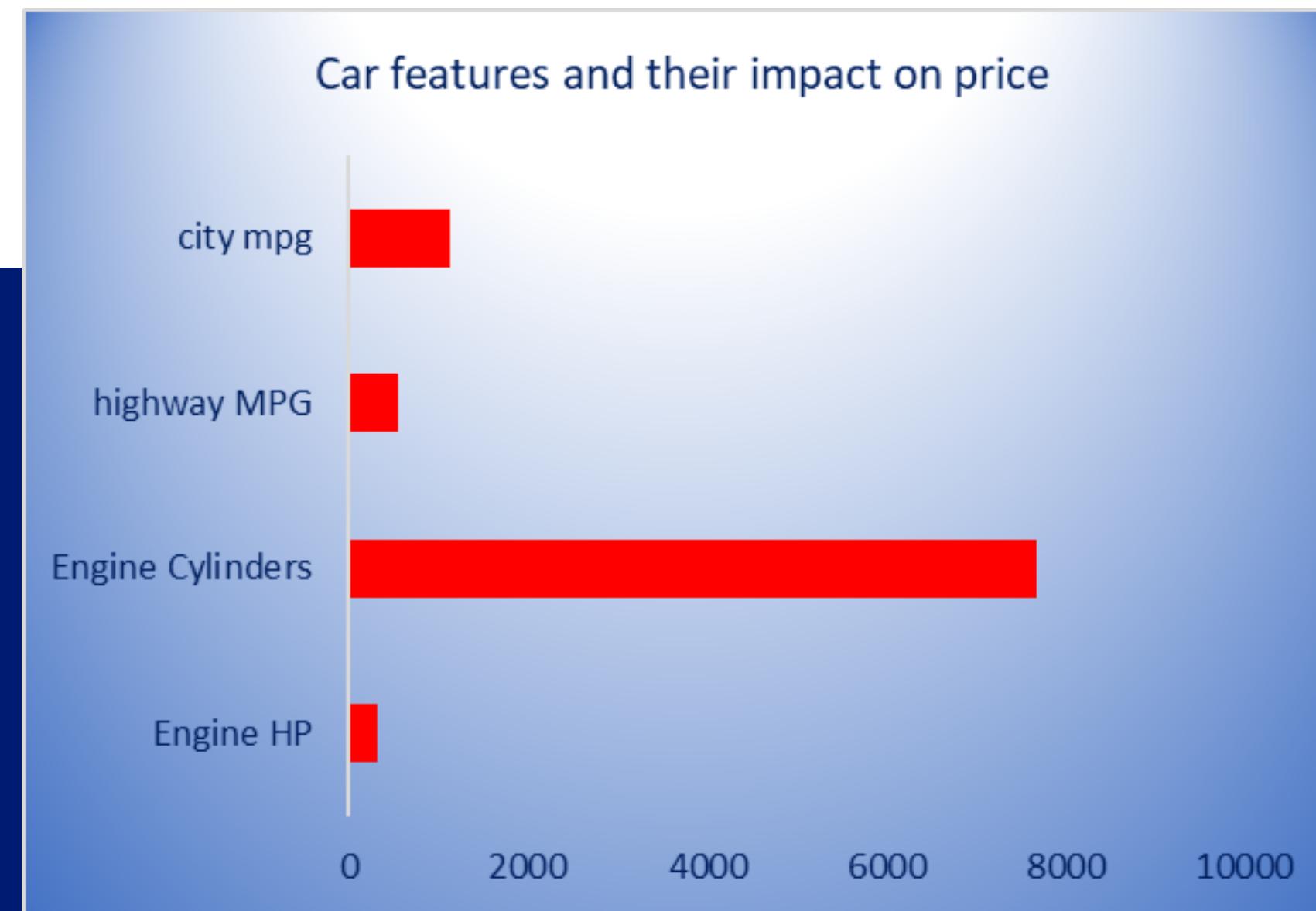


# Relationship between a car's engine power and its price?

- Positive relationship found between **car's engine power and its price**.
- Therefore, price can increase according to the increase of Engine Power (Horse Power)



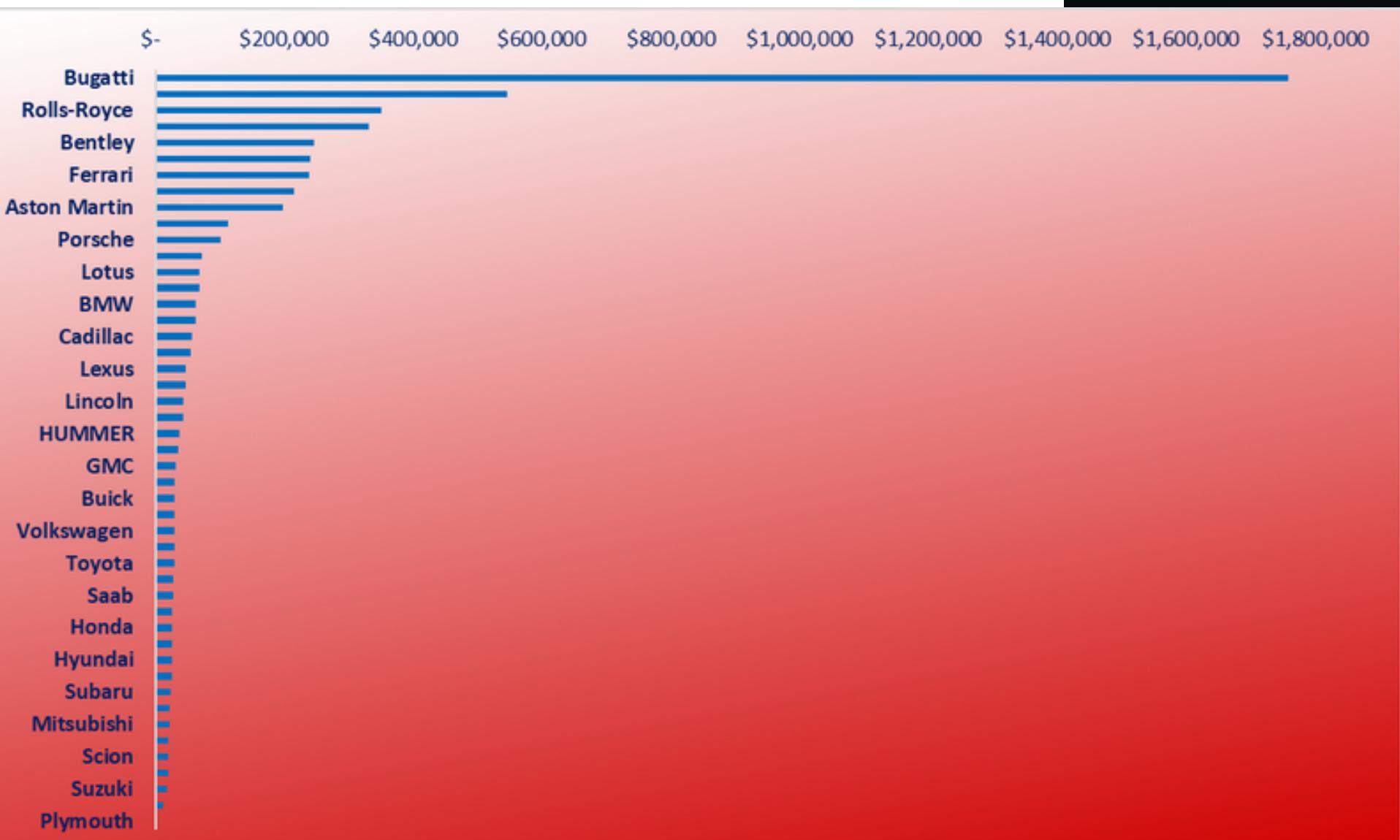
# Which car features are most important in determining a car's price?



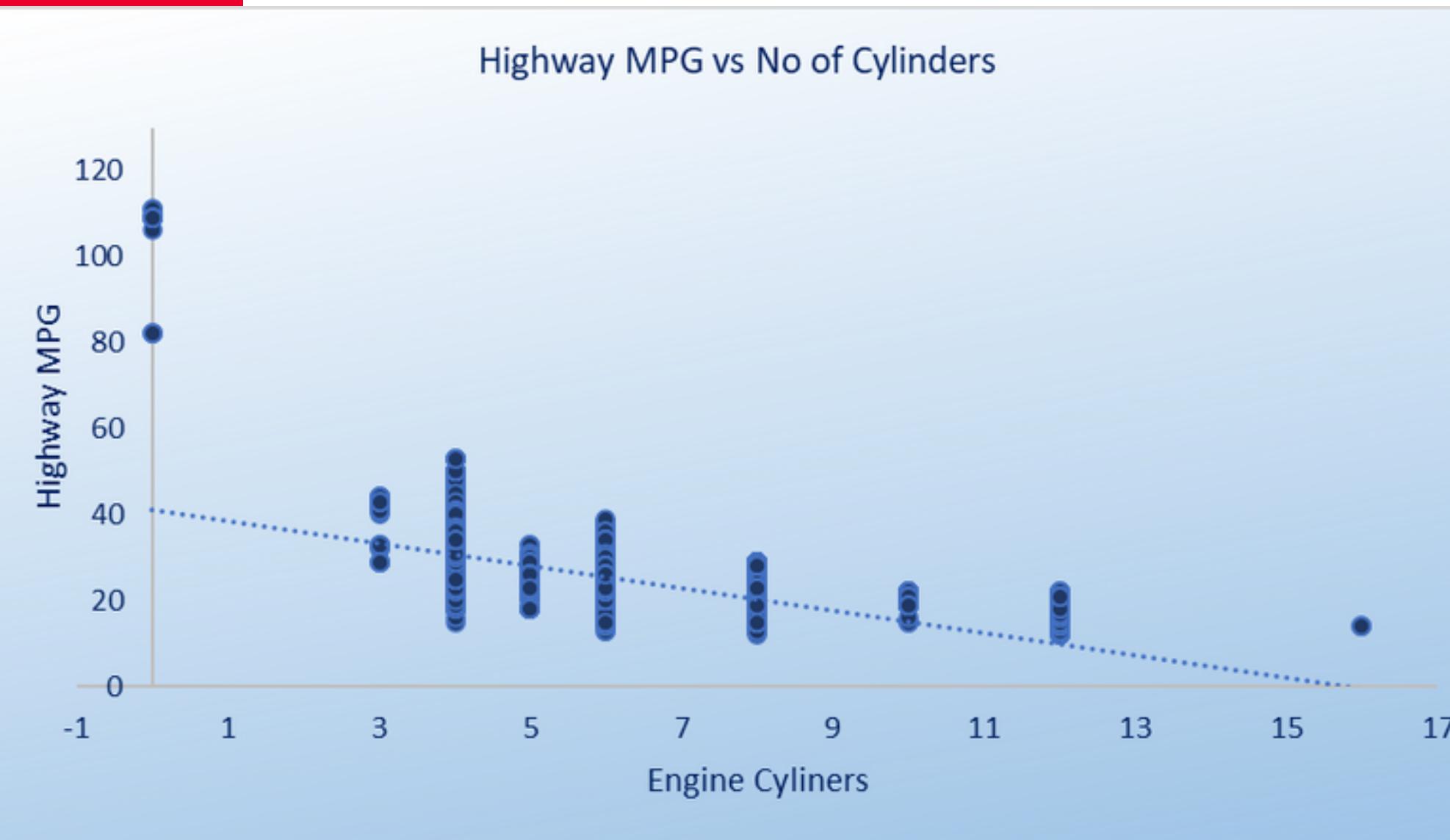
- The bar chart shows the distribution of the coefficients resulted from regression analysis.
- Four independent variables including - Engine HP, Engine Cylinders, highway MPG and city mpg are analyzed to find influence on car's price
- All the four variable influence car's price positively
- **Number of Engine cylinders** have the most impact on price.

# How does the average price of a car vary across different manufacturers?

- Bugatti is a top manufacture in terms of average price.
- Plymouth, Suzuci, Scion are some brands with low pricing in our dataset.

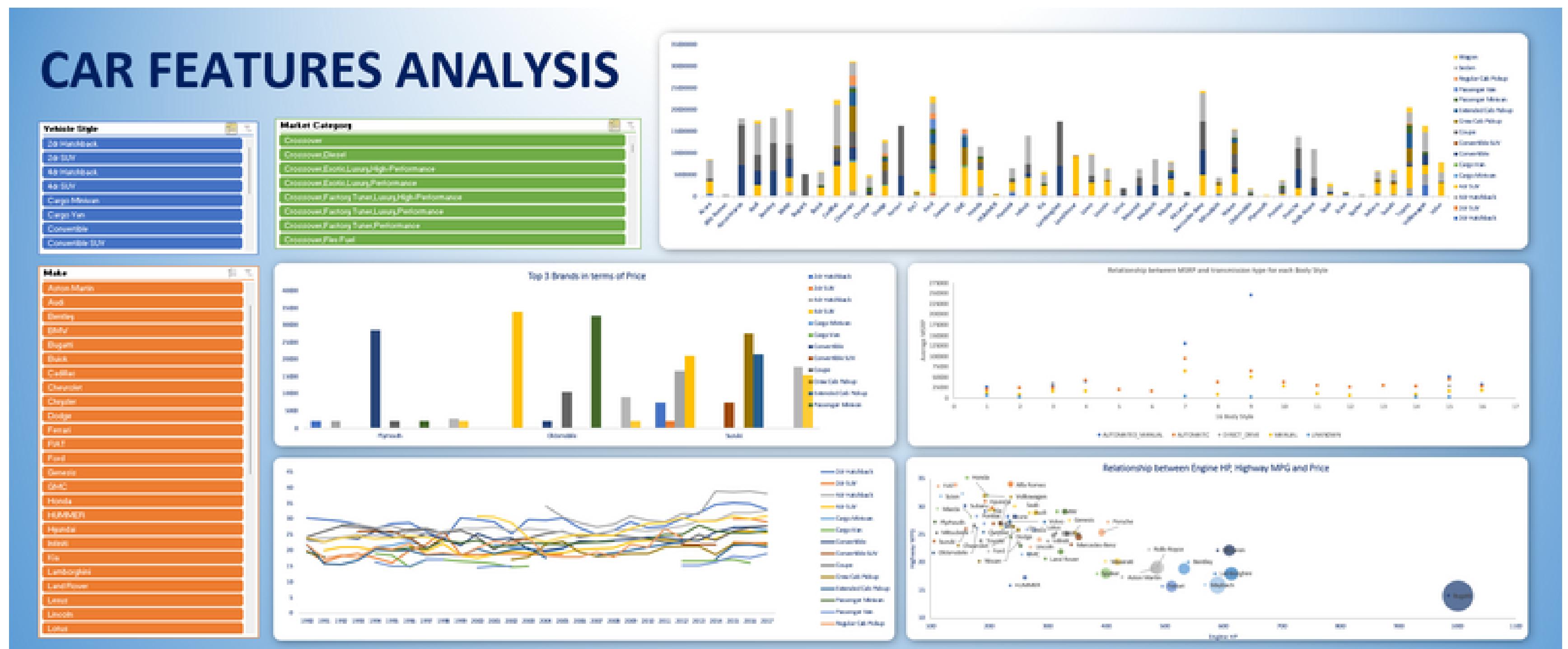


# Relationship between fuel efficiency and the number of cylinders in a car's engine



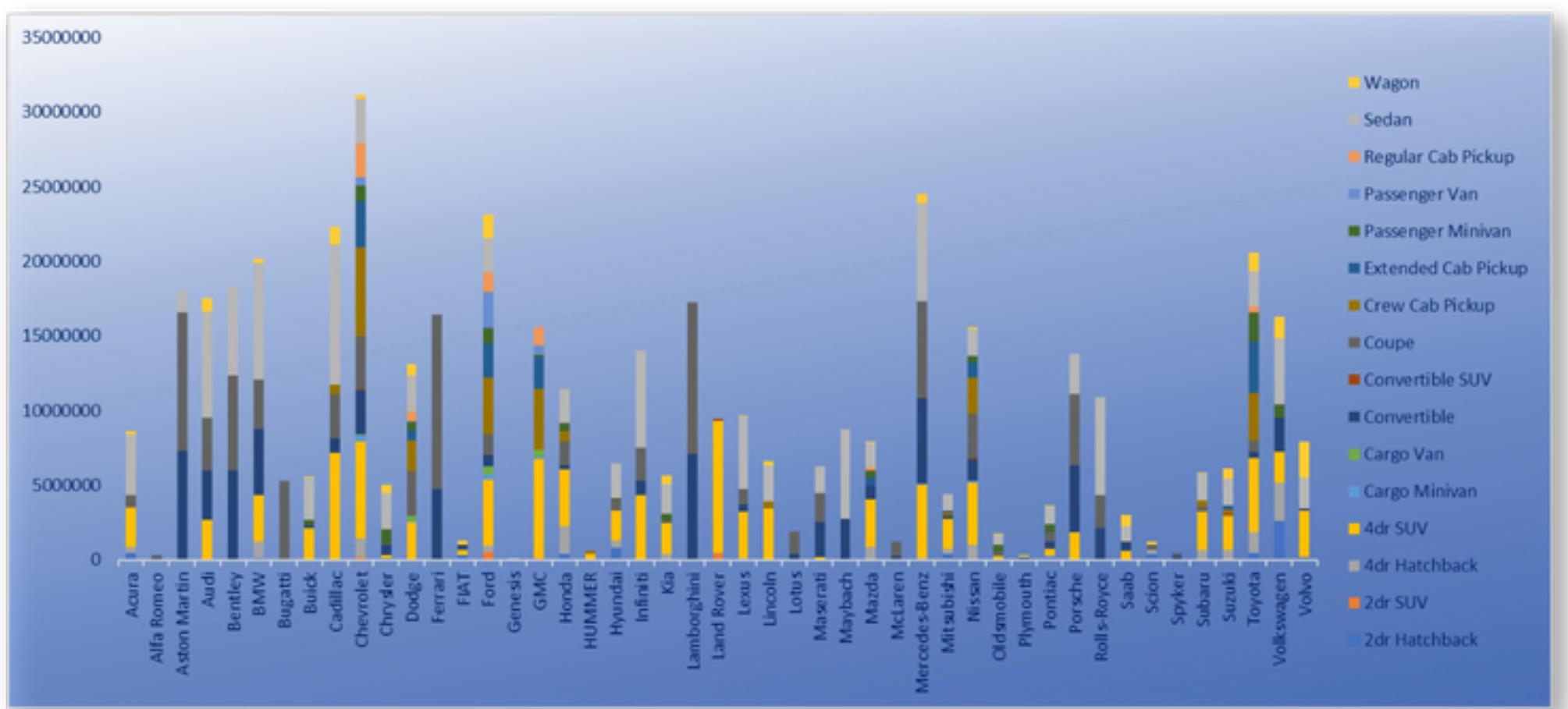
- According to Correlation test, the value of  $r$  (correlation coefficient) is found as  $-0.6147$ .
- As it is between  $(-0.5 \text{ to } -0.8)$  range, it's indicating a **Moderate Negative Correlation** between the variables.
- That means when Engine Cylinder number increases, Highway Mileage decreases moderately

# Dashboard

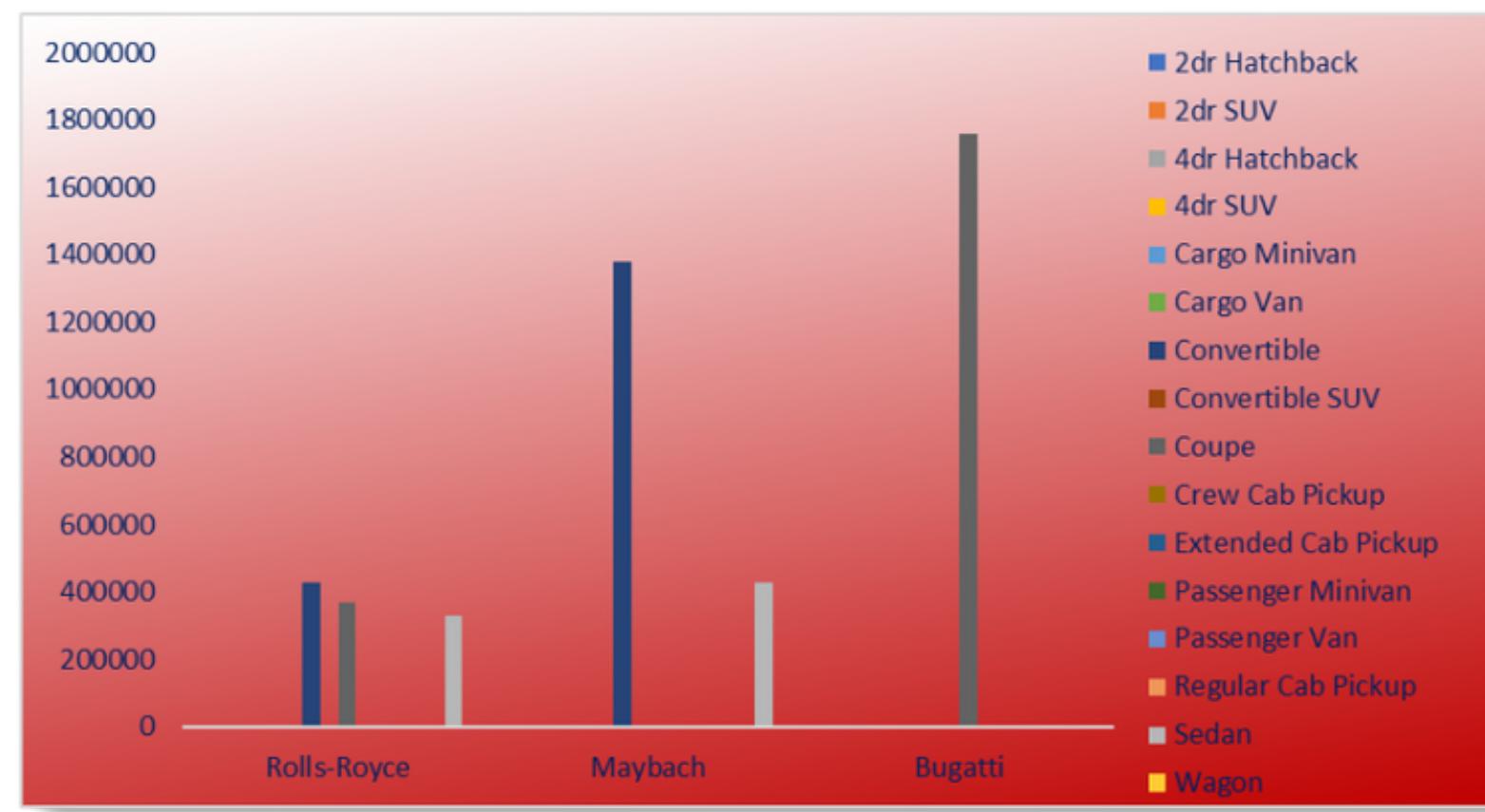


# How does the distribution of car prices vary by brand and body style?

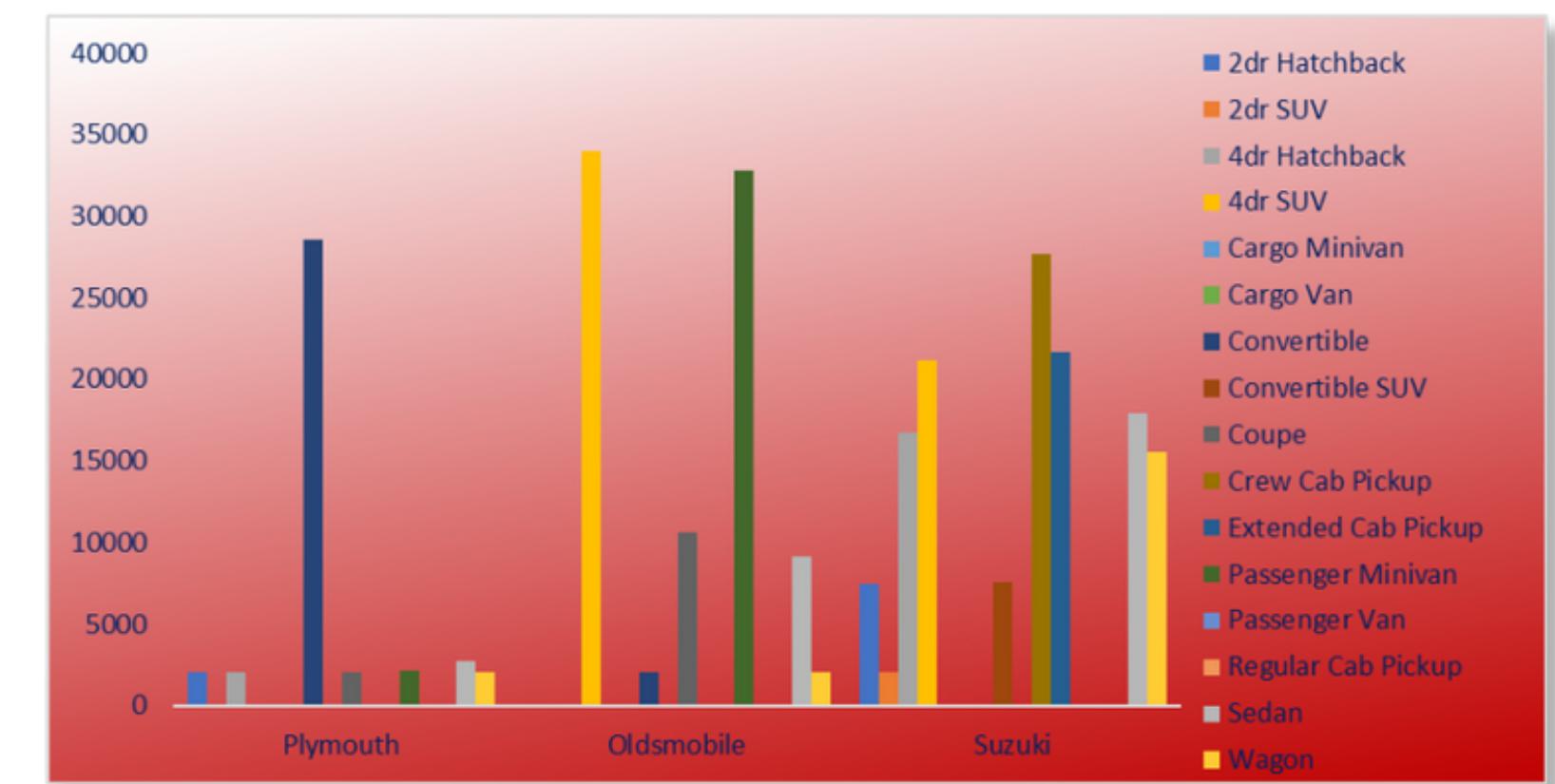
- **Chevrolet** is a top brand in-terms of total prices with variety of body styles.
- It manufactures a wide range of body style like - 4dr hatchback, 4dr SUV, Convertible, Cargo Van, Coupe and Regular Cab pickup and so on.



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

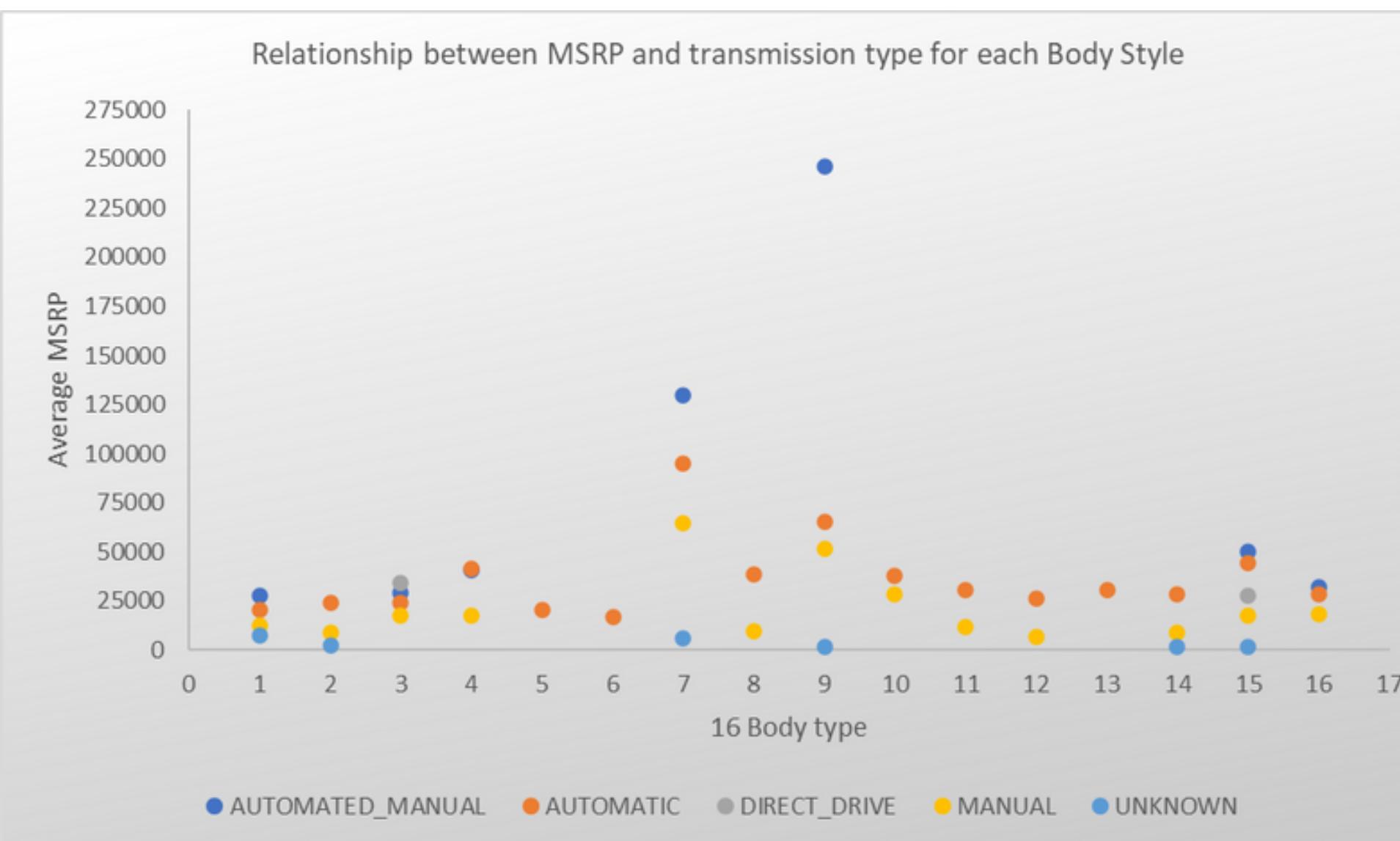


- Bugatti, Maybach, Rolls-Royce have highest MSRPs.
- Also we are seeing that **Convertible body style** is having higher manufacturing prices.



- Plymouth, Oldsmobile and Suzuki have lowest pricing.
- We can also interpret from these column charts that brands in lower price segment offers more number of body styles.

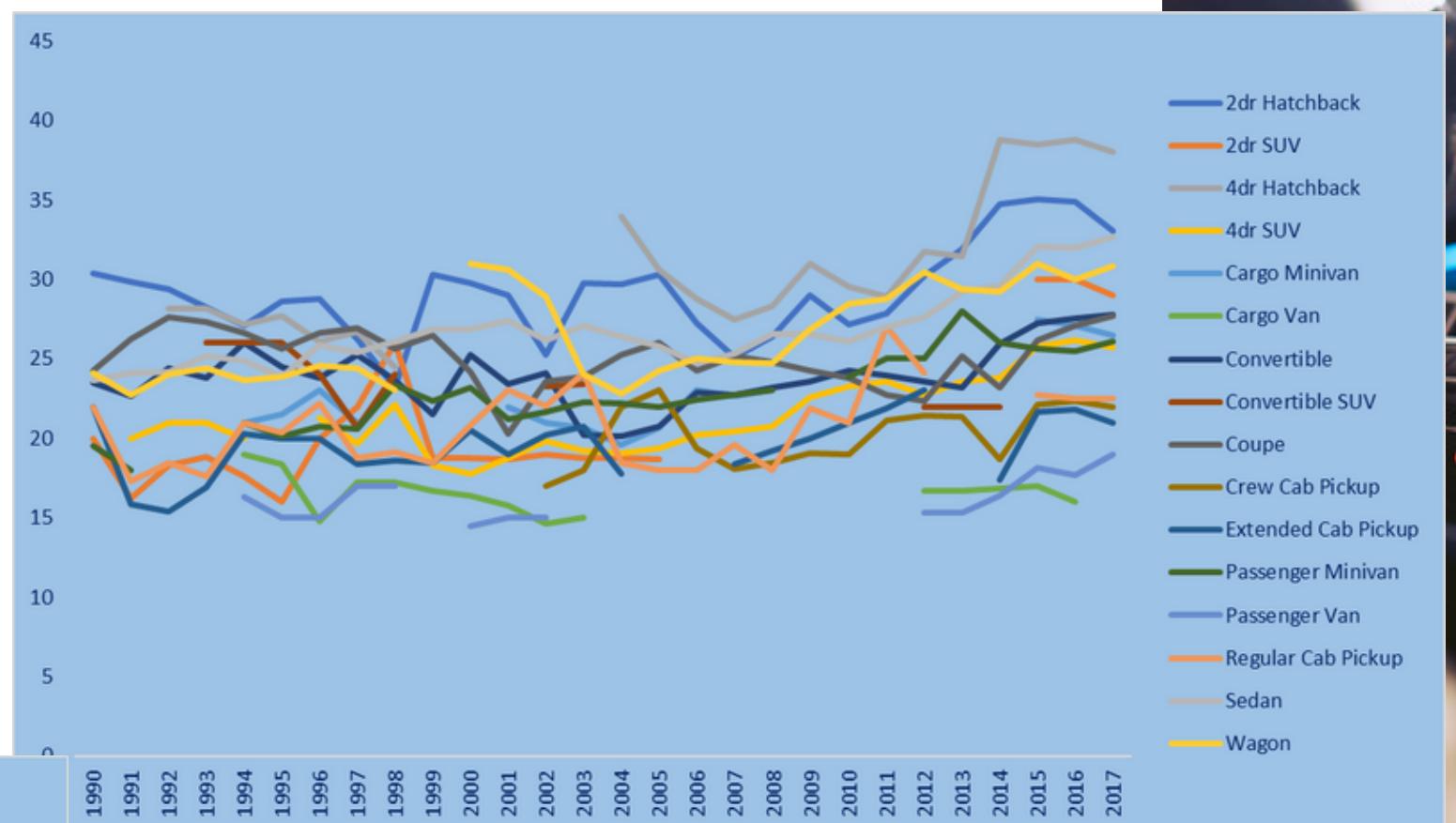
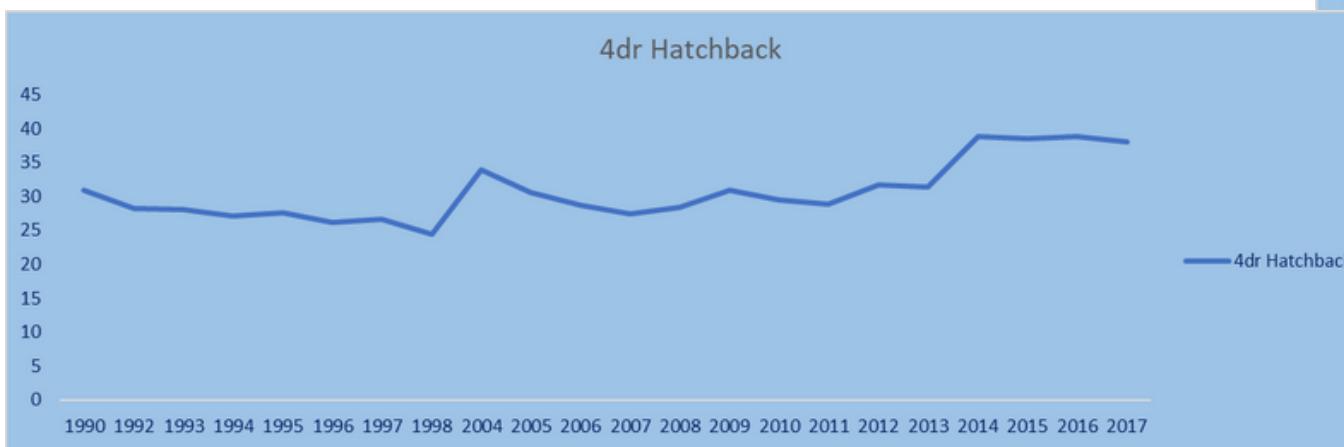
# How do the different features such as transmission type affect the MSRP, and how does this vary by body style?



- There is a positive relationship between transmission type and average price for each body style.
- **Automated transmission** type generally comes with higher MSRP compared to the others.
- **Manual type** comes with lower prices .

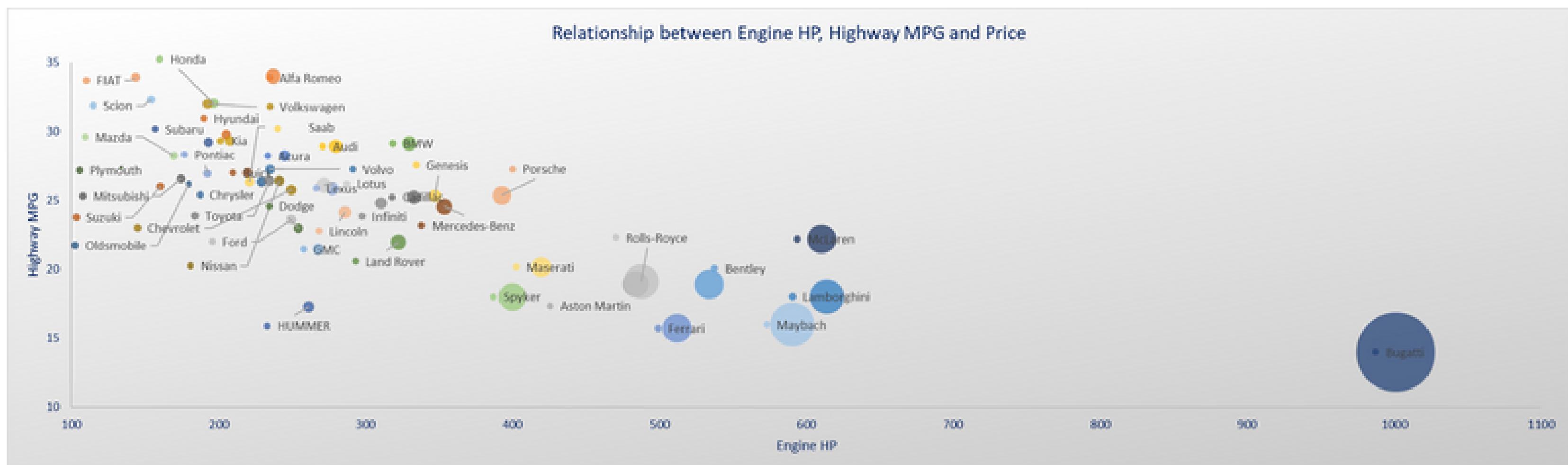
# How does the fuel efficiency of cars vary across different body styles and model years?

- Considering Highway MPG, fuel efficiency has increased over the years for all body styles
- 4dr Hatchback is the most consistent brand in terms of Highway MPG



# Relationship between Engine HP, Highway MPG and Price

- Price is increasing according to Engine Horse Power
- On the other hand, Brands in lower price segment is providing higher Highway MPG



# Results and Conclusion

- Engine HP, Number of Cylinders and Transmission type are some top Car features that impact on price.
- Fuel efficiency has increased over the years.
- Number of Cylinders can impact on fuel efficiency negatively.
- Also Cars with higher price segment provides less fuel efficiency.
- The project has helped me to get a good understanding of the Automotive industry and what are the top features which can impact car prices.
- Strengthened my data analysis skills by applying statistical knowledge such as conducting regression analysis, correlation test etc.
- Improved my excel data analysis skills.

**THANK  
YOU**

