Analyzing the Impact of Car Features on Price and Profitability

By Vishalini Devarajan

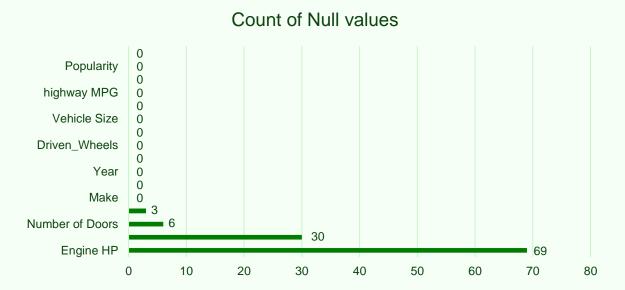
Project Description

- The automotive industry has changed a lot in recent years, with a focus on fuel efficiency, sustainability, and technology. As competition grows and consumer preferences shift, understanding what drives car demand is crucial.
- Electric and hybrid vehicles are becoming more popular, but gasoline cars still dominate the market. It's important to know how different car features impact price and profitability.
- The dataset includes information on car make, model, year, fuel type, engine power, transmission, wheels, doors, market category, size, style, MPG, popularity, and MSRP.



Cleaning the Data

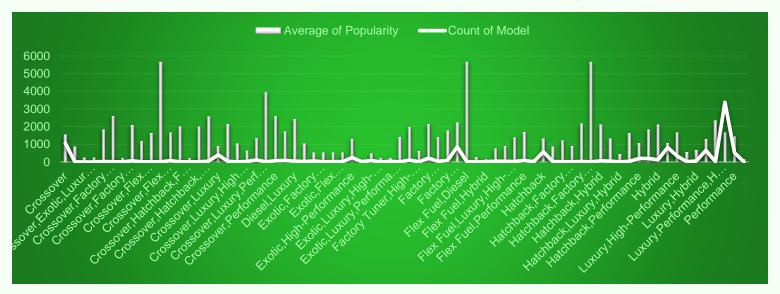
- First I will use =COUNTBLANK(A2:A11915) to count null values in each column.
- Then we will remove duplicate rows and use Median/Mode to remove null values.



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.



Insight: Popular market categories include Flex Fuel, Diesel, Hatchback, Crossover, and Performance.

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

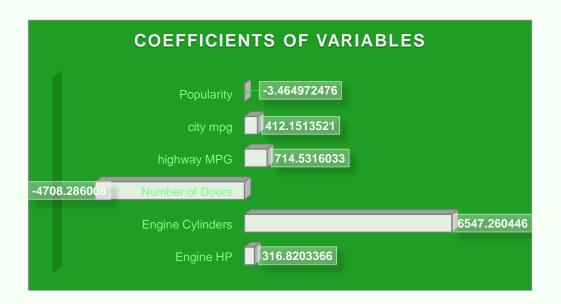
• Task 2: Create a scatter chart that plots engine power on the x-axis and price on the y-axis. Add a trendline to the chart to visualize the relationship between these variables.



Insight: Higher engine power leads to higher prices, showing a positive relationship.

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

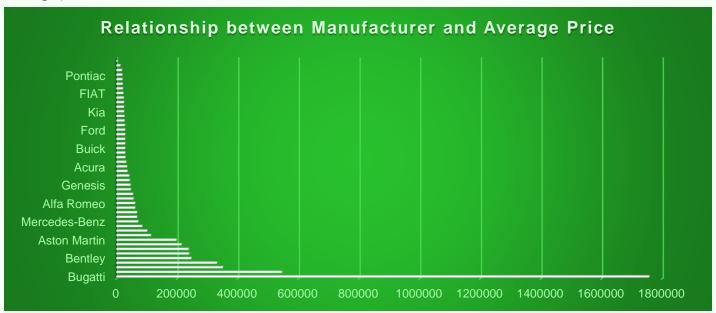
• Task 3: Use regression analysis to identify the variables that have the strongest relationship with a car's price. Then create a bar chart that shows the coefficient values for each variable to visualize their relative importance.



Insight: Engine cylinders significantly affect car prices.

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

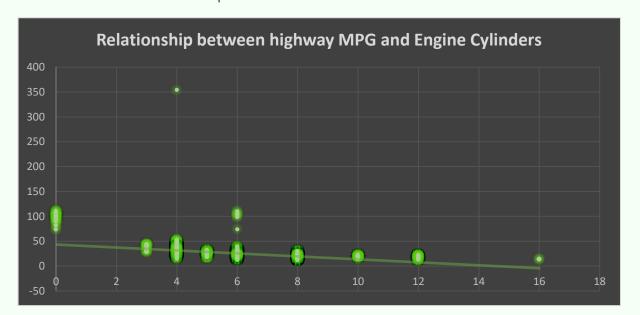
- Task 4.A: Create a pivot table that shows the average price of cars for each manufacturer.
- Task 4.B: Create a bar chart or a horizontal stacked bar chart that visualizes the relationship between manufacturer and average price.



Insight: Bugatti has the highest average price, while Plymouth has the lowest

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.

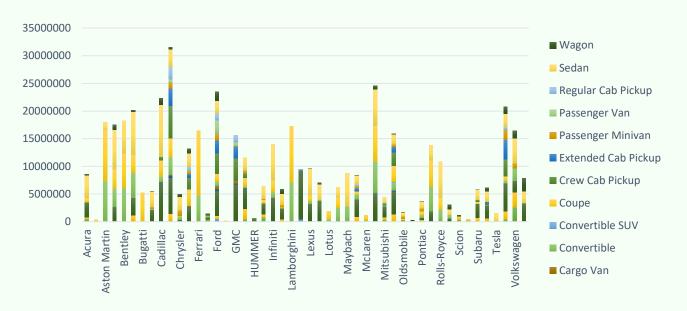


Correlation Coefficients -0.596246019

Insight: More cylinders lead to lower highway MPG, showing a negative relationship (Correlation Coefficient: -0.596).

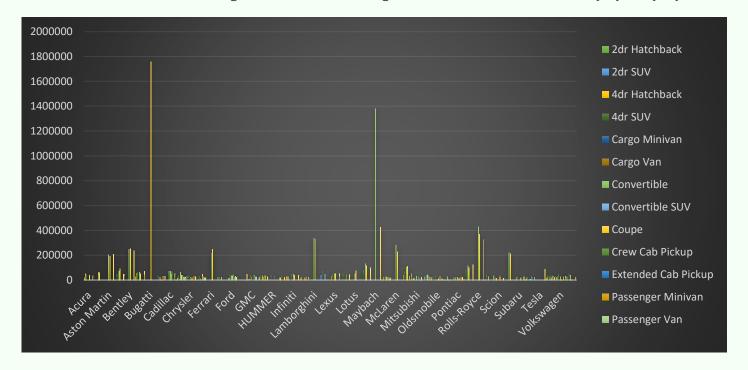
Building the Dashboard

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



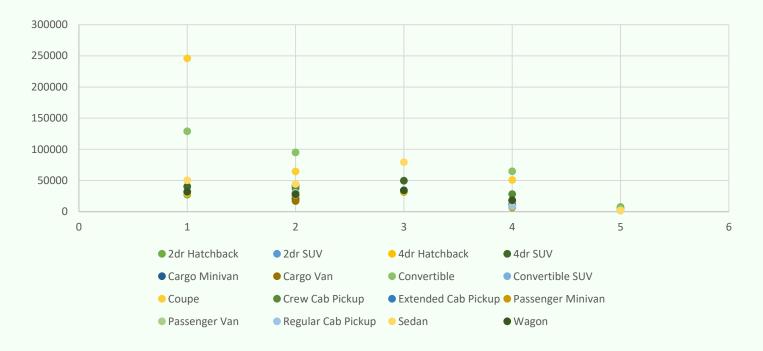
Insight: Chevrolet has the highest price distribution by body style.

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



Insight: Bugatti has the highest average MSRP, while Plymouth has the lowest.

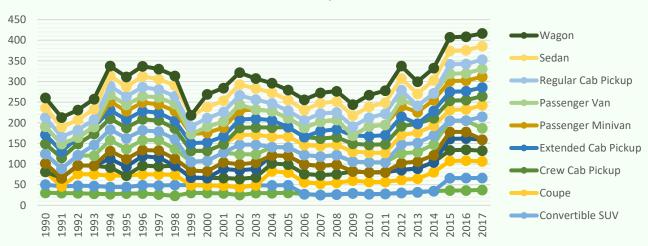
Task 3: How do the different feature such as transmission type affect the MSRP, and how does this vary by body style?



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

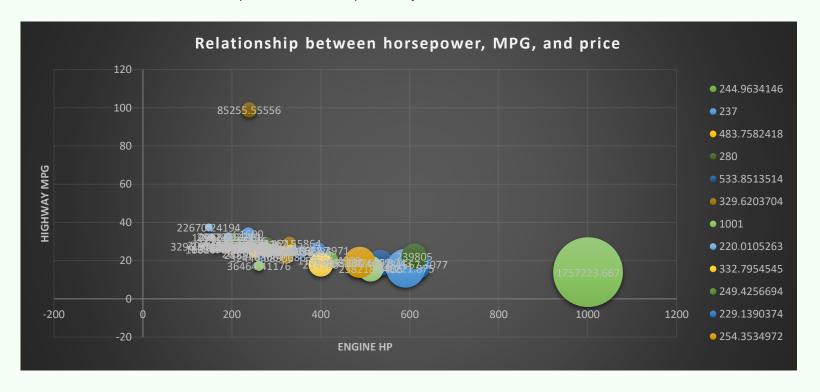
Task 4: How does the fuel efficiency of cars vary across different body styles and model years?

Fuel efficiency (MPG) over time for each body style



Insight: Fuel efficiency has increased over the years across different body styles. In 2017, Wagon body style had the highest fuel efficiency.

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



Insight: Higher engine horsepower leads to lower highway MPG but higher prices.