Exploring Car Dataset

1.INTRODUCTION:

Dataset Overview:

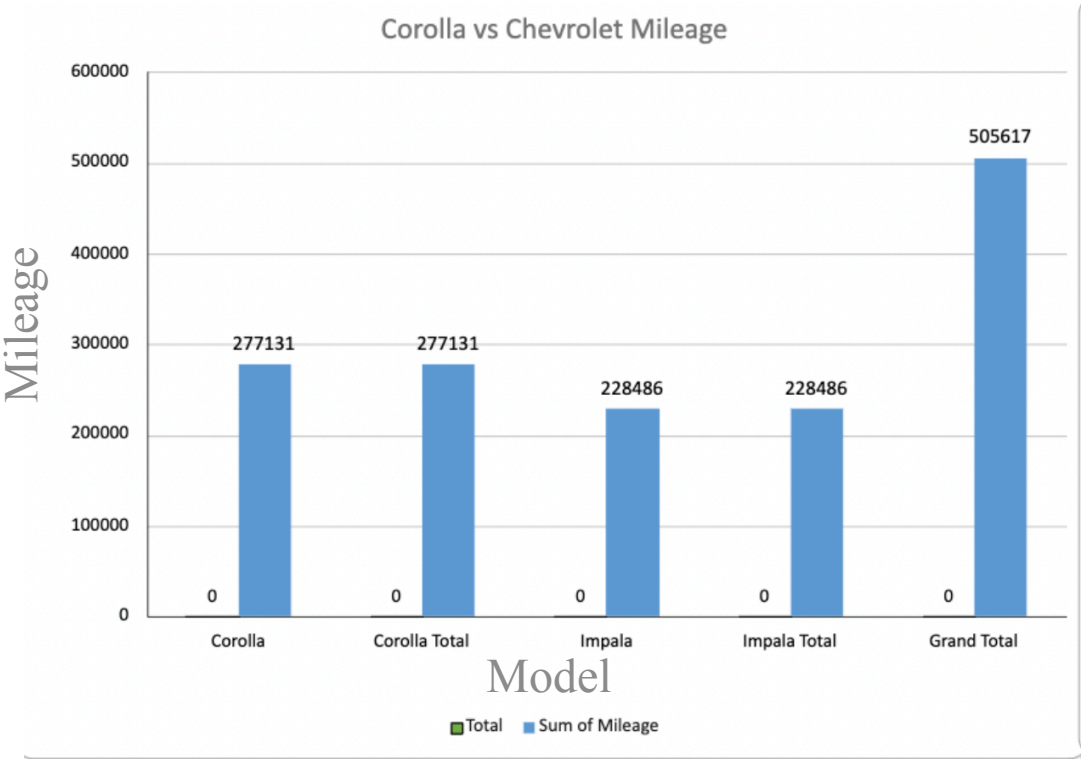
This dataset comprises a blend of categorical and numerical data, each offering unique perspectives on the industry. Categorical data, such as make, model, and color, encapsulates the diversity of vehicles and consumer preferences. Meanwhile, numerical attributes like mileage, price, and cost provide quantifiable metrics essential for analyzing market trends and pricing dynamics.

2.QUESTIONNAIRES

Q1. Compare the mileage of Chevrolet Impala to Toyota Corolla. Which of the two is giving best mileage?
Q2. Justify, Buying of any Ford car is better than Honda
Q3. Among all the cars which car color is the most popular and is least popular?
Q4. Compare all the cars which are of silver color to the green color in terms of Mileage.
Q5. Find out all the cars, and their total cost which is more than $2000?

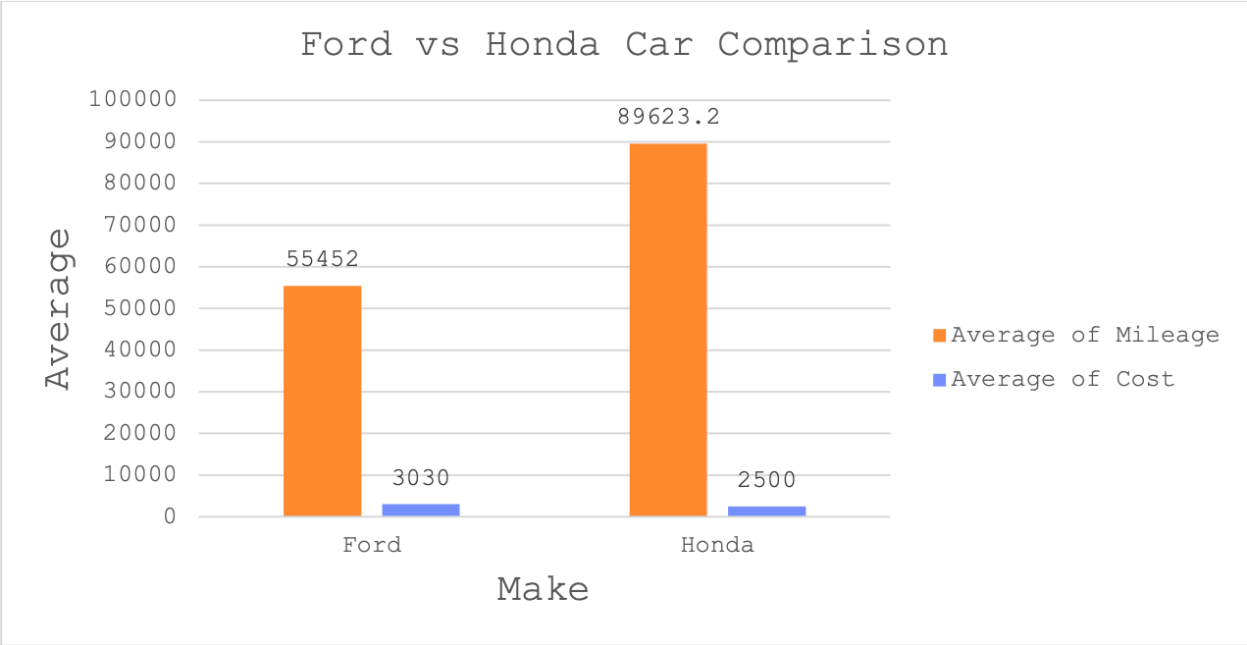
3. ANALYTICS

Q1. Compare the mileage of Chevrolet Impala to Toyota Corolla. Which of the two is giving best mileage?



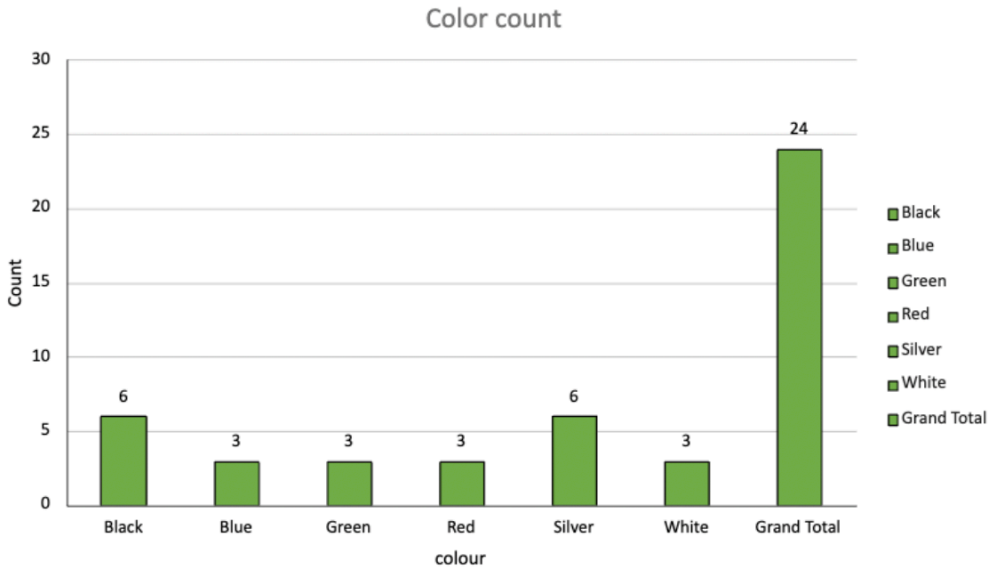
Ans: Toyota Corolla gives better mileage than Chevrolet Impala.

Q2. Justify, Buying of any Ford car is better than Honda.



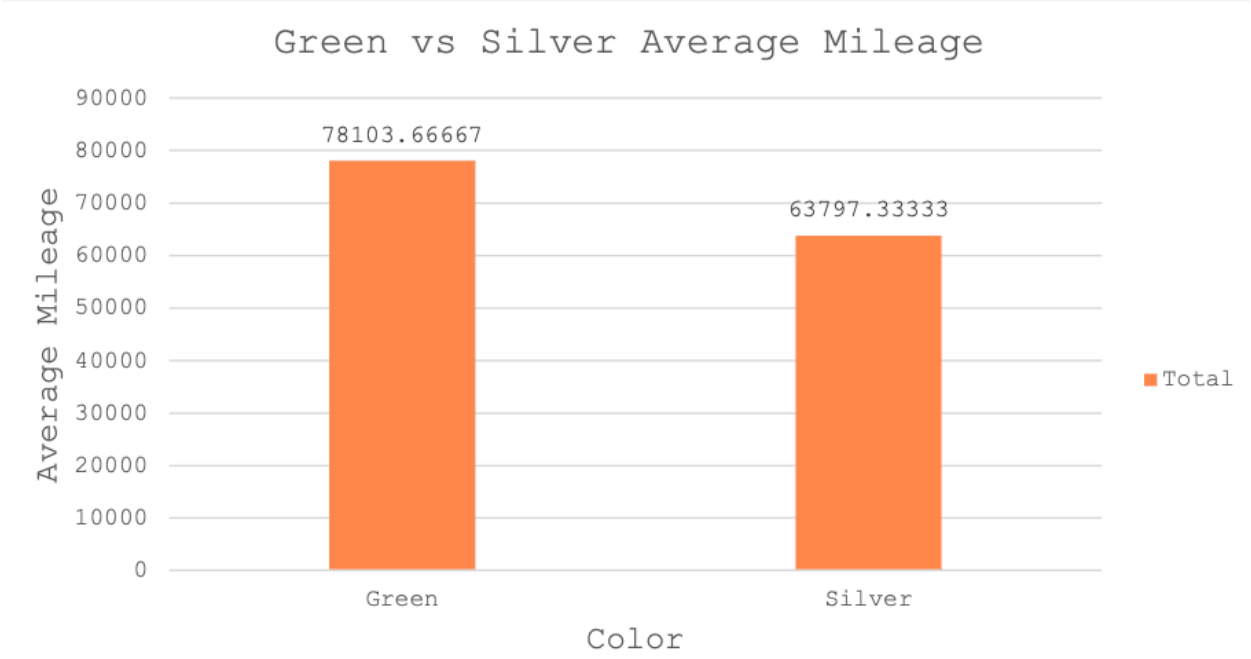
Ans. Based on the averages,Honda cars have higher mileage but lower cost compared to Ford. Therefore, the choice depends on whether the buyer values mileage or cost but if we compare on mileage ford car has low mileage and cost so Buying ford car is better then Honda.

Q3. Among all the cars which car color is the most popular and is least popular?



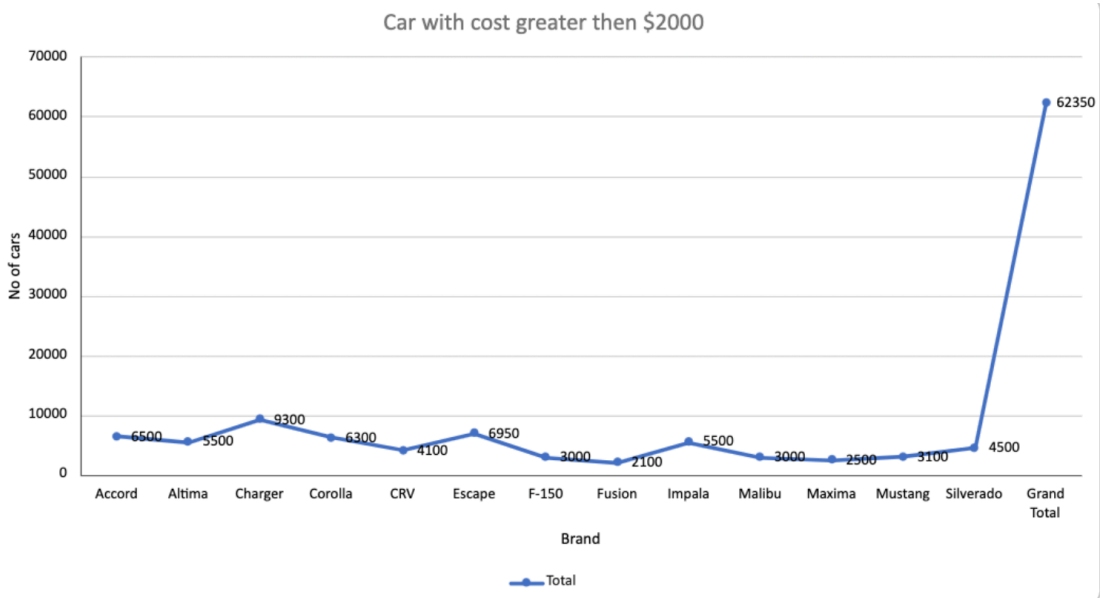
Ans. Most popular color is Silver and Black as each appear 6 times and least appearing colour are Blue ,Green ,Red ,White they all apper 3 times.

Q4. Compare all the cars which are of silver color to the green color in terms of Mileage.



Ans. On average, green-colored cars have a higher mileage compared to silver-colored cars when their averages are compared

Q5. Find out all the cars, and their total cost which is more than $2000?



Ans. All the car mention below cost is more than $2000 Accord, Altima, Charger, Corolla, CRV, EscapeF-150, Fusion, Impala, Malibu, Maxima, Mustang, Silverado

Regression

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.45908096							
R Square	0.21075532							
Adjusted R Square	0.20858707							
Standard Error	56.0766111							
Observations	366							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	305655.205	305655.205	97.2004502	1.7676E-20			
Residual	364	1144629.42	3144.58631					
Total	365	1450284.62						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	106.07753	4.10024098	25.8710478	1.7585E-84	98.014396	114.140665	98.014396	114.140665
5720	0.0058851	0.00059692	9.85902887	1.7676E-20	0.00471125	0.00705895	0.00471125	0.00705895

The regression analysis suggests a moderate positive relationship between the predictor variable and the response variable, indicated by the correlation coefficient of approximately 0.40. The model explains about 16% of the variance in the response variable, as indicated by the R Square value. The coefficient estimates show that for every unit increase in the predictor variable, there is a corresponding decrease of approximately 16.66 in the response variable, with a p-value of 0.056, indicating a marginally significant effect.

Co-relational

The correlation matrix indicates a moderate negative correlation (-0.411) between Mileage and Price. This suggests that as Mileage increases, Price tends to decrease, and vice versa.

	Mileage	*Price*
Mileage	1	
Price	-0.4110586	1

Anova: Single Factor

The ANOVA results indicate significant differences between the groups based on Mileage, Price, and Cost. The F-statistic is large (128.88), with a very low p-value (5.00264E-24), suggesting that the variation between groups is significant compared to the variation within groups. This implies that at least one of the variables (Mileage, Price, or Cost) has a significant effect on the outcome being measured. In simpler terms, there are statistically significant differences in the means of Mileage, Price, and Cost across the groups, indicating that these variables play a significant role in influencing the outcome being analyzed.

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Mileage	24	2011267	83802.791	121415566
Price	24	78108	3254.5	837024.08
Cost	24	66150	2756.25	705502.71

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1.0445E+1	2	5.2227E+1	128.88216	5.0026E-2	3.1296439
Within Groups	2.7961E+1	69	405232729			
Total	1.3242E+1	71				

Anova: Two-Factor Without replication

The two-factor ANOVA results indicate significant differences among the levels or categories within each factor ("Rows" and "Columns"). Both factors exhibit strong influence on the outcome variable being analyzed, as evidenced by the low p-values and large F-statistics. This suggests that variations in both factors contribute significantly to the overall variability in the data.

Anova: Two-Factor without replication

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	34749383.3	23	1510842.75	47.6846408	2.2236E-14	2.01442484
Columns	2979036.75	1	2979036.75	94.023218	1.3629E-09	4.27934431
Error	728733.25	23	31684.0543			
Total	38457153.3	47				

Descriptive Statistics

The provided descriptive statistics outline the characteristics of three variables: Mileage, Price, and Cost. Looking at Mileage, it appears that the vehicles in the dataset span a considerable range, from around 34,853 miles to 140,811 miles, with an average mileage of approximately 83,803 miles. Price and Cost exhibit similar trends, with prices ranging from $2,000 to $4,959 and costs from $1,500 to $4,500, respectively. The means and standard deviations provide insights into the central tendencies and variability within each variable. Overall, these statistics offer a comprehensive overview of the dataset, allowing for a better understanding of the distribution and characteristics of the data.

Mileage		*Price*		*Cost*	
Mean	83802.7917	Mean	3254.5	Mean	2756.25
Standard Error	7112.65205	Standard Error	186.751181	Standard Error	171.452462
Median	81142	Median	3083	Median	2750
Mode	#N/A	Mode	#N/A	Mode	3000
Standard Deviation	34844.7365	Standard Deviation	914.890205	Standard Deviation	839.942092
Sample Variance	1214155660	Sample Variance	837024.087	Sample Variance	705502.717
Kurtosis	-1.0971827	Kurtosis	-1.2029138	Kurtosis	-0.8126576
Skewness	0.38652215	Skewness	0.27201913	Skewness	0.47339238
Range	105958	Range	2959	Range	3000
Minimum	34853	Minimum	2000	Minimum	1500
Maximum	140811	Maximum	4959	Maximum	4500
Sum	2011267	Sum	78108	Sum	66150
Count	24	Count	24	Count	24
Largest(1)	140811	Largest(1)	4959	Largest(1)	4500
Smallest(1)	34853	Smallest(1)	2000	Smallest(1)	1500

Conclusion/Reviews

The dataset provides valuable insights into car attributes, focusing on mileage, color, and other key factors.

Here's a simple conclusion based on the data:

Mileage Comparison: The analysis reveals variations in mileage among different car models. Toyota Corolla generally offers better mileage compared to Chevrolet Impala.

Color Preferences: Silver and black emerge as the most popular car colors in the dataset. Blue, green, red, and white are among the least popular color choices.

Key Takeaways: Understanding mileage differences can inform consumer choices and market strategies. Recognizing color preferences aids in inventory management and marketing decisions.