BMW SALES DATA

BY

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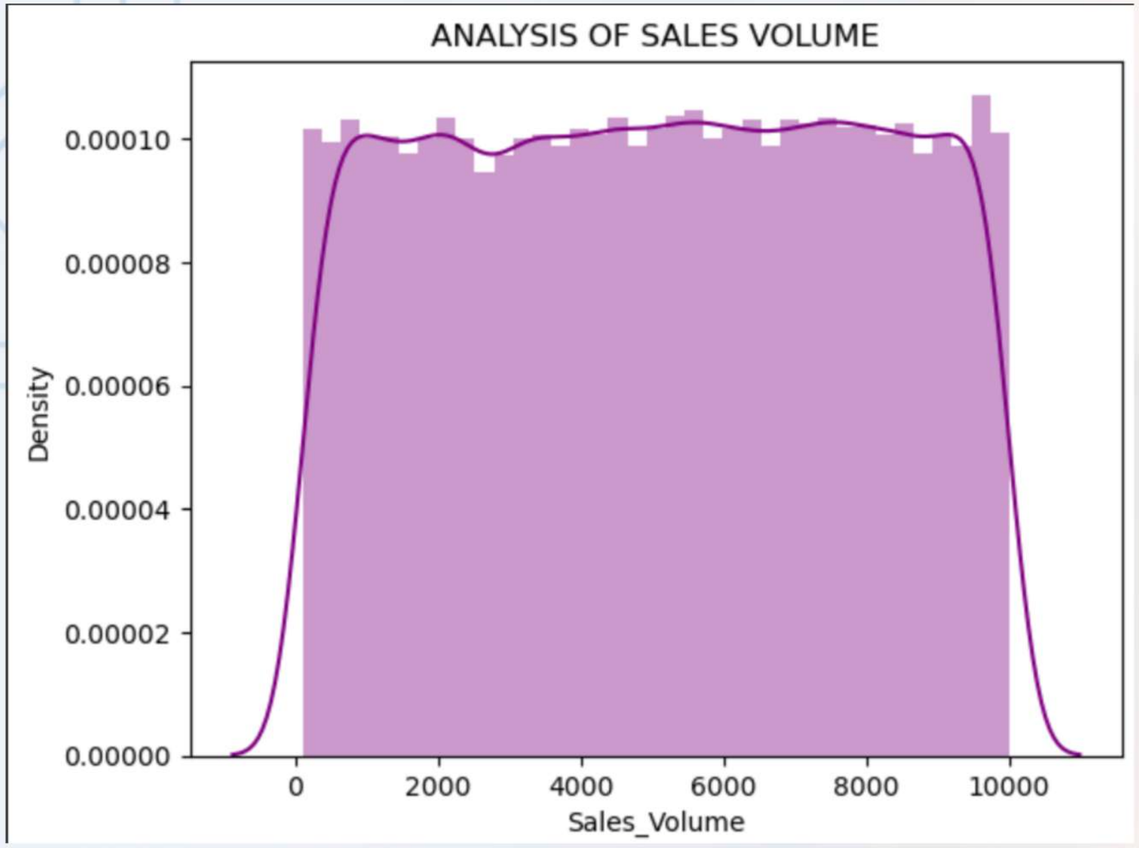
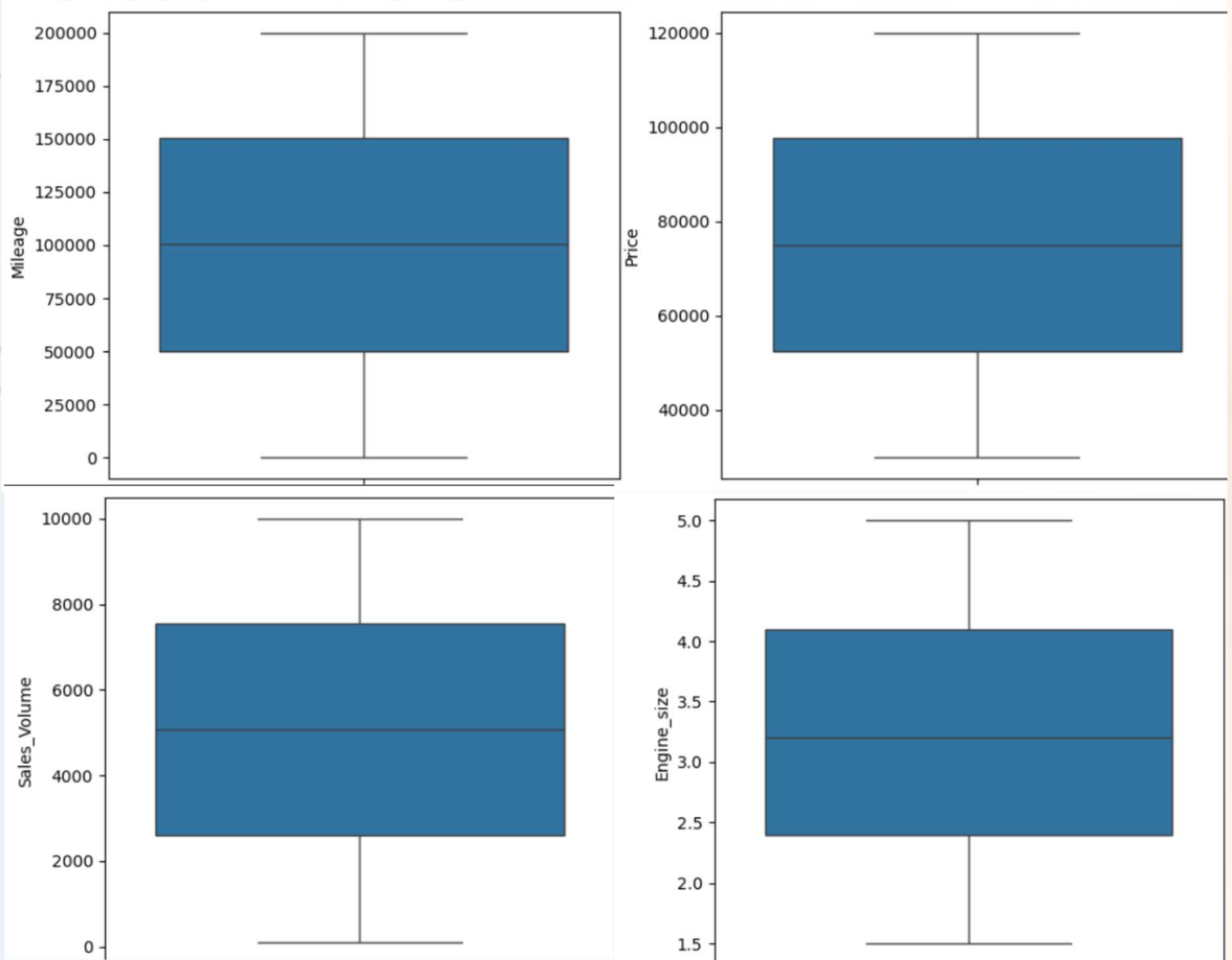
Distribution Of Sales Volume



- Sales volumes are evenly spread across the range
- There is no central tendency because all the values within the range occur with equal likelihood
- There is a uniform distribution since there is no peeks and clusters

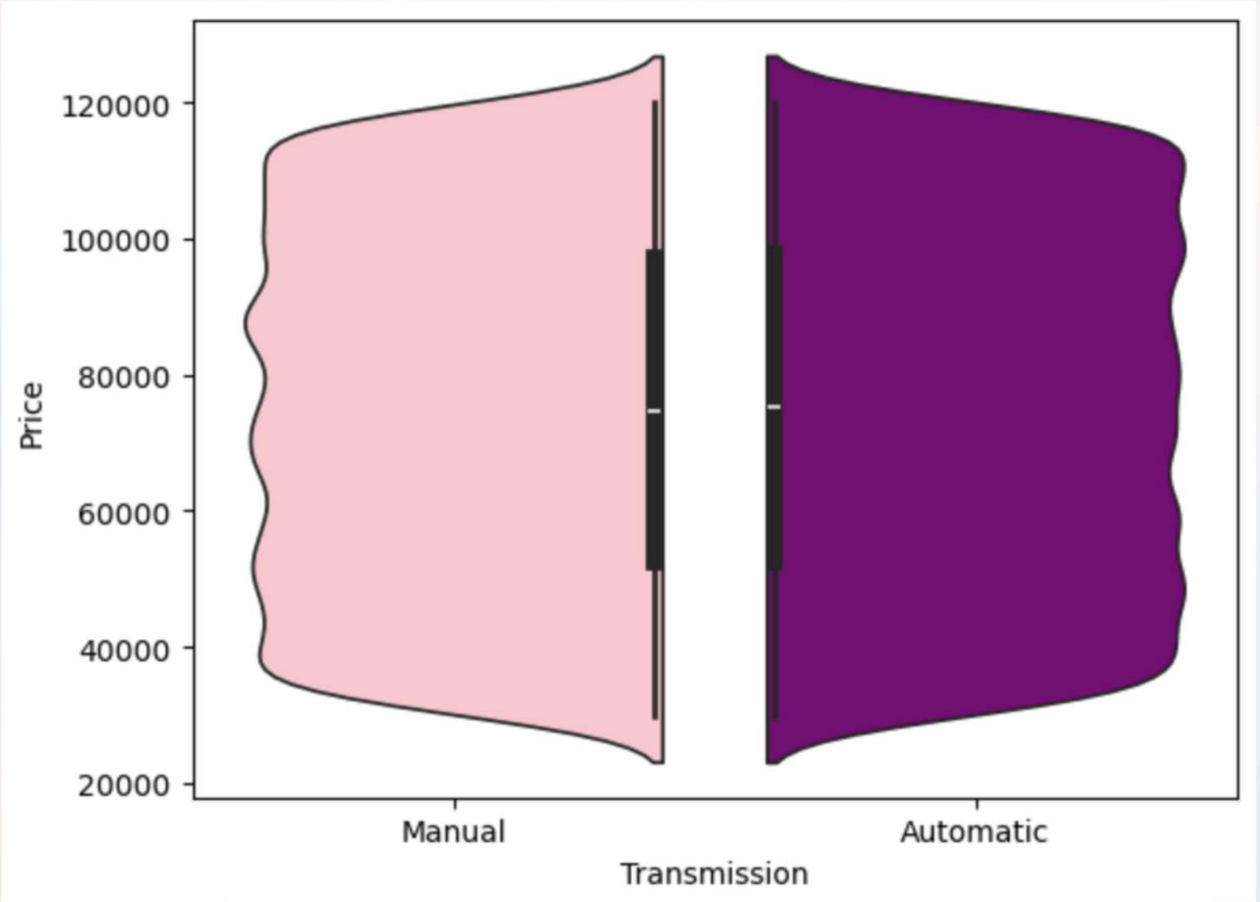
ANALYSIS OF KPI



- There is no outliers
- Most vehicles fall between 50,000 and 150,000 miles. Median mileage is around 100,000, indicating typical usage.
- Prices mostly range from ₹40,000 to ₹120,000. Median price is about ₹80,000, showing the central pricing trend.
- Sale volumes typically lie between 4,000 and 8,000 units. Median is around 6,000, showing average performance.
- Most vehicles have engine sizes between 2.5 and 4.0 liters. - The central engine size is around 3.2 liters

Analysis of Transmission

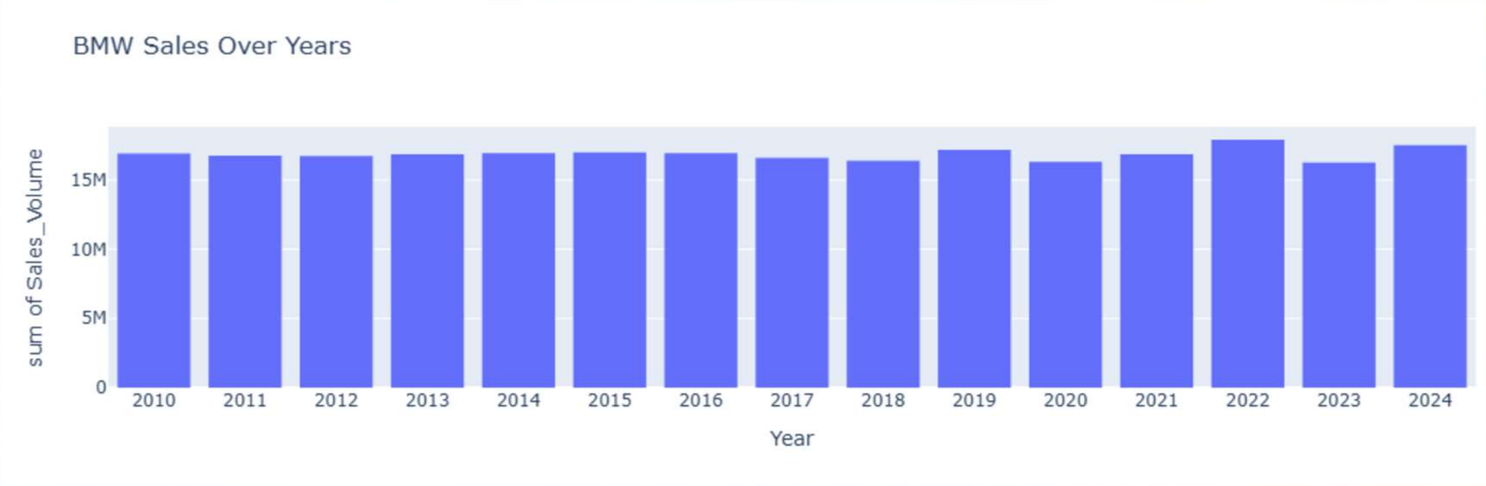
- Manual and Automatic cars have almost the same price distribution.
- Most cars, regardless of transmission, are priced around 70,000–90,000.
- Manual cars show slightly more variation in prices, while Automatic cars are more evenly distributed.



Analysis of price and mileage

- The points are spread evenly forming rectangular block
- Price values are consistently spread over the mileage levels
- There is no specific pattern or trend neither positive nor negative
- There is no clear relationship between Price and Mileage
- This shows that price is independent and mileage is independent

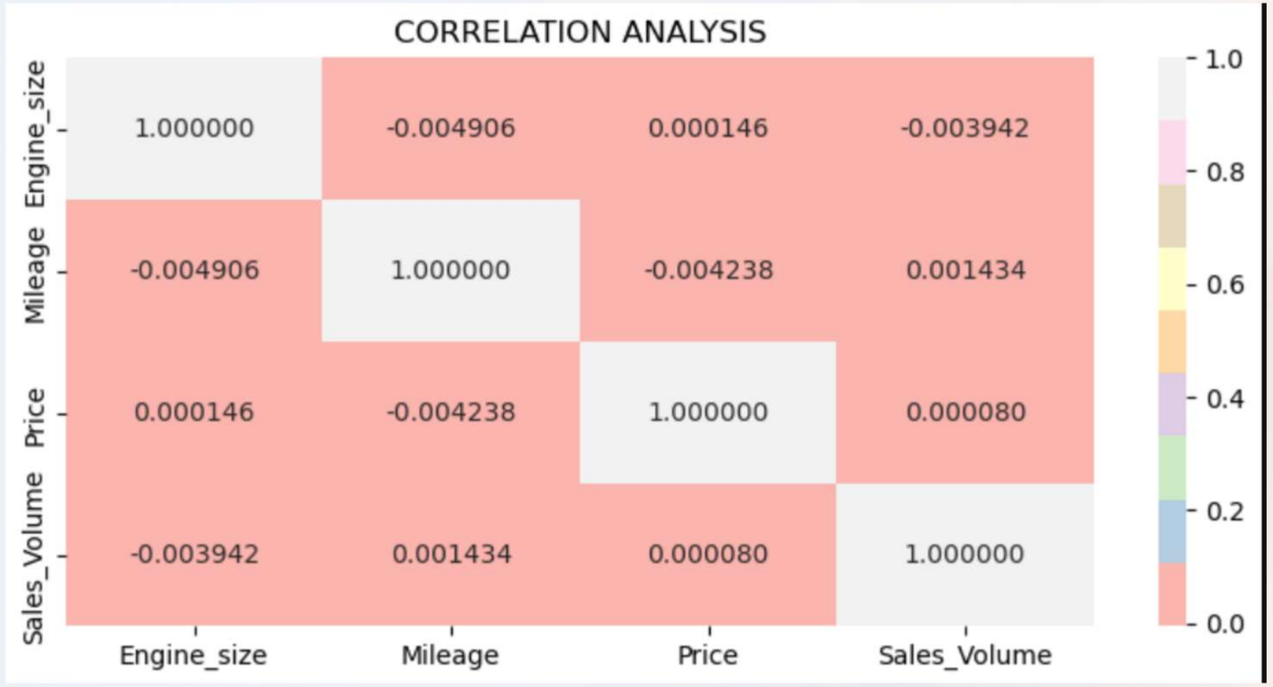
SALES OVER YEARS



From 2010 to 2024, the values mostly stayed between 16.7–17.9 million.

- The numbers were stable around 16.9–17.0 million from 2010 to 2015.
- A steady increase was seen from 2016 to 2019, reaching 17.19 million.
- In 2020, there was a sharp drop to 16.31 million, followed by recovery in 2021.
- The peak occurred in 2022 at 17.92 million.
- After that, the values declined in 2023 but rose again slightly in 2024 (17.52 million).
- Overall, the trend shows long-term growth with short-term ups and downs, especially a dip in 2020 and a peak in 2022.

CORRELATION ANALYSIS

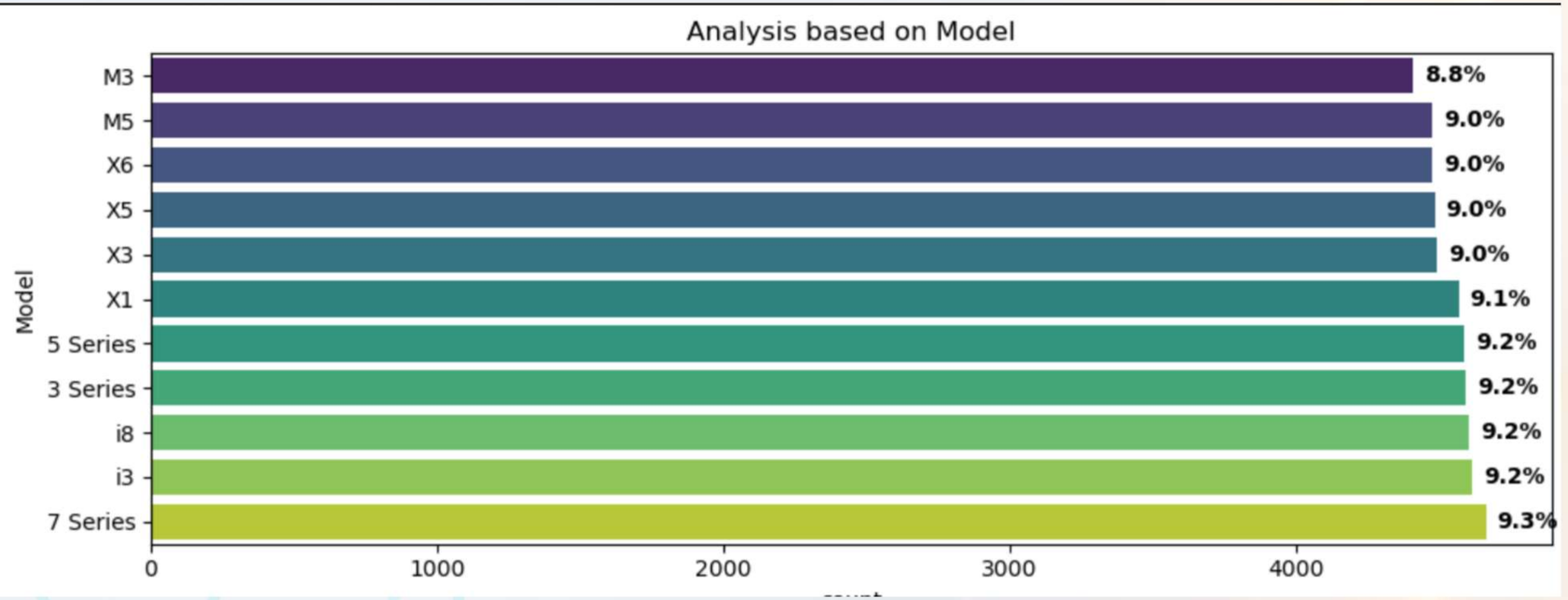


- Eventhough sales volume and mileage have slight negative correlation of -0.003 and -0.004 it is lesser than 0.5%. So it is inferred that there is no correlation between sales volume, mileage and engine size.
- There is no correlation between engine size and price
- The chances of slight positive correlation between mileage and sales volume is less than 0.1% (nearest to 0). It is inferred that there is no correlation between mileage and sales volume
- he chances of slight negative correlation between mileage and price is less than -0.1% (nearest to 0). It is inferred that there is no correlation between mileage and price
- There is no correlation between price and sales volume
- It is concluded that there is no correlation between engine size, mileage, price and sales volume. since the values are uniformly distributed

KPI

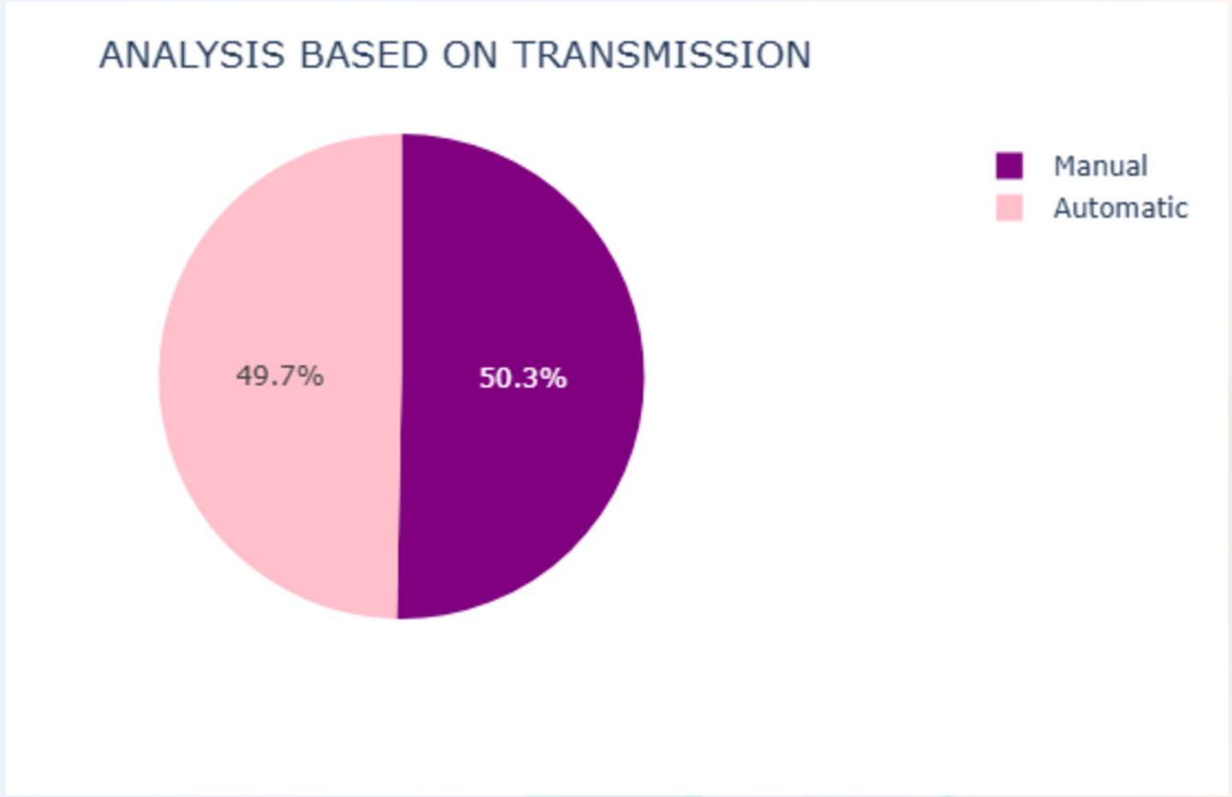
- The average price of BMW cars is approximately ₹75K. They are mid-range premium vehicles because the pricing seems consistent and balanced
- The average sales volume is around 5,070 units. This indicates steady sales performance across models.
- The average mileage is approximately 100K km. It reflects durability and performance longevity of BMW cars over time.
- The average engine size is about 3.25 liters. It focus on engine performance and driving dynamics rather than compact efficiency.

SALES BY MODEL



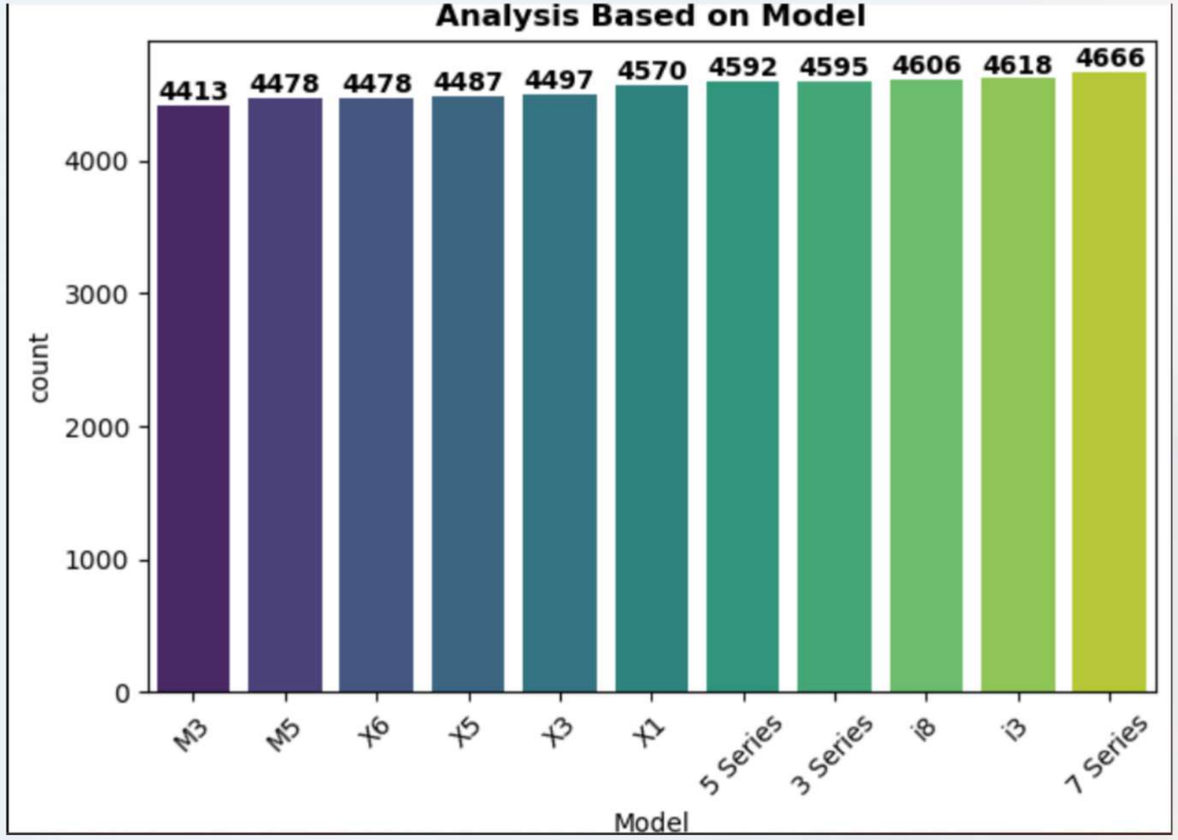
- Balanced representation of car models, with each contributing approximately 9% to the total count.
- No single model dominates the dataset, which implies that the data was likely collected evenly across different car types—ideal for unbiased analysis.
- The 7 series model at 9.3% is the highest compared to other models
- The 5 Series, X5, X6, 7 Series, and X2 are slightly more frequent (9.2%), suggesting they may be more popular or more available in the sample.
- The X7 model, at 8.8%, is the least compared to other models

manual vs automatic



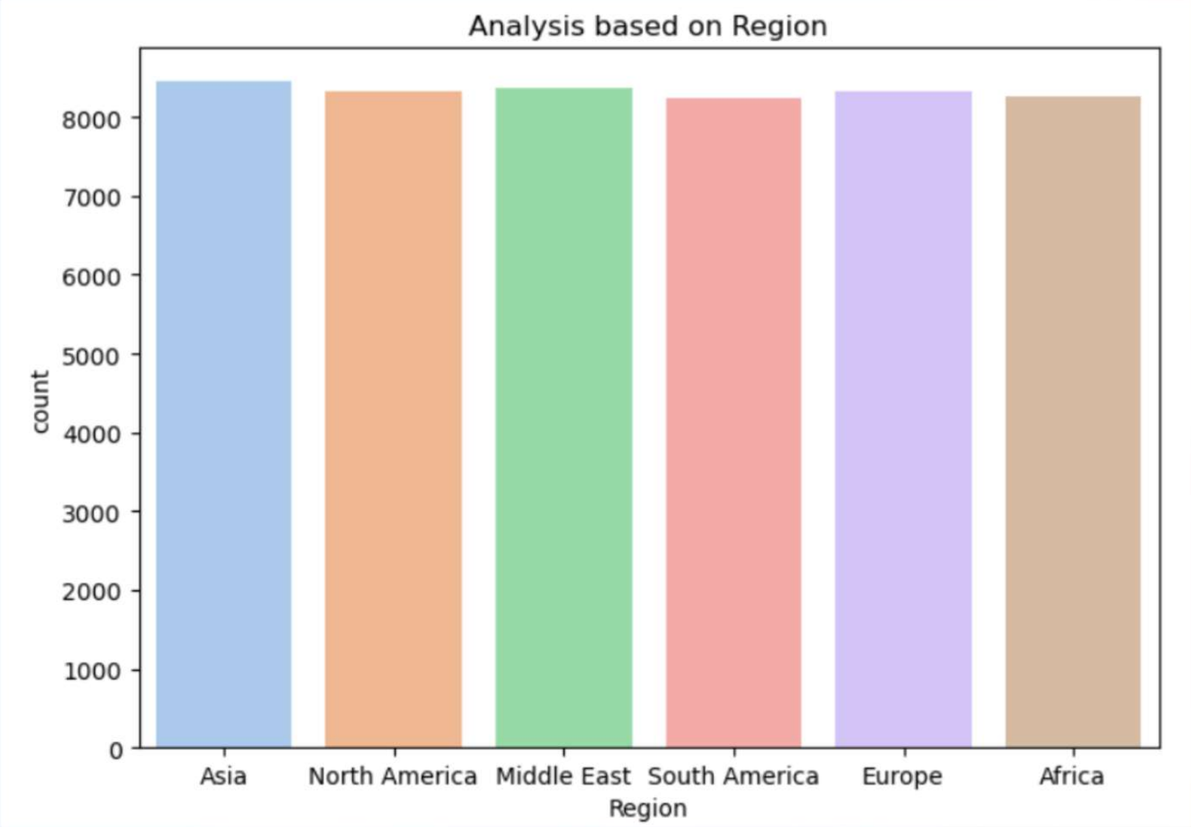
- There is slight high sales of manual cars compared to automatic cars
- This interpretates that most of the people prefer automatic cars

highest selling model



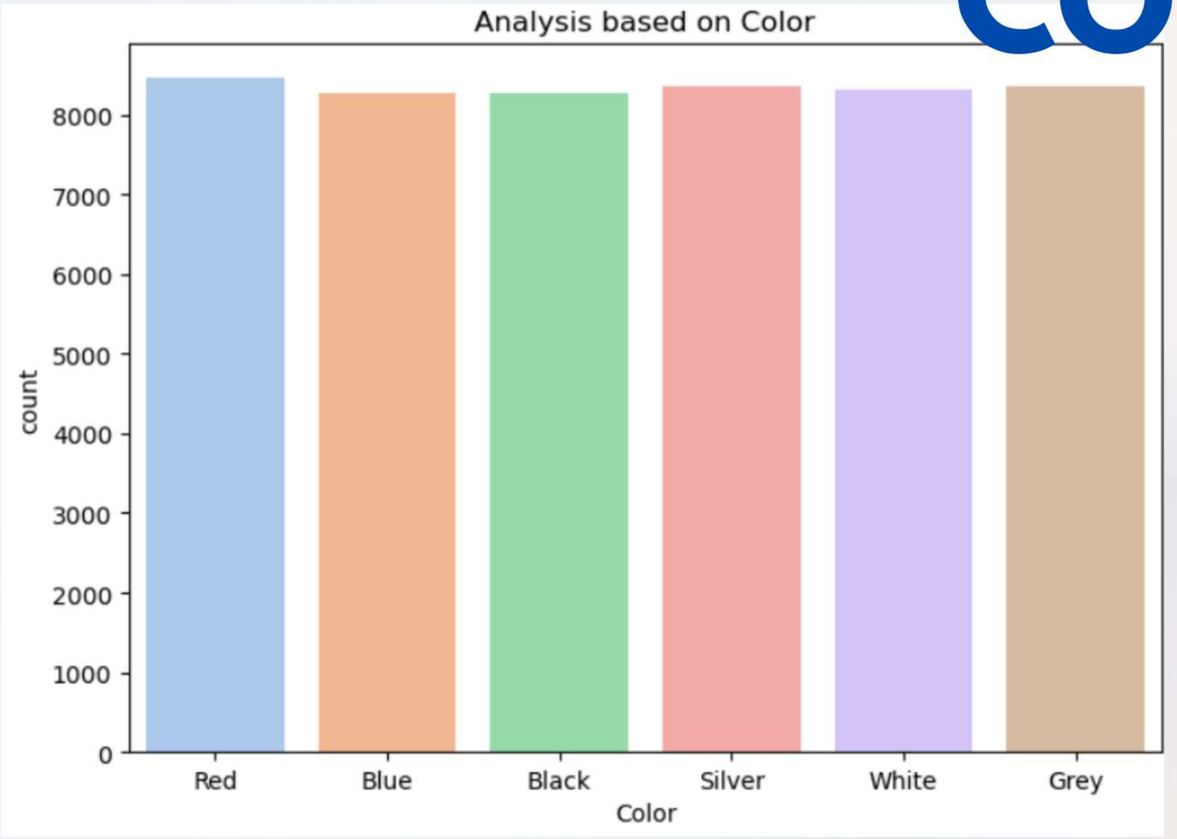
- The 7 Series, with a count of 4666, has the highest representation among all models.
- The i3, i8, and 3 Series also show relatively higher counts, reflecting their strong presence in the dataset.
- The M3, with a count of 4413, has the lowest representation, though still close to the others—showing overall uniformity in the data.

Analysis OF Region



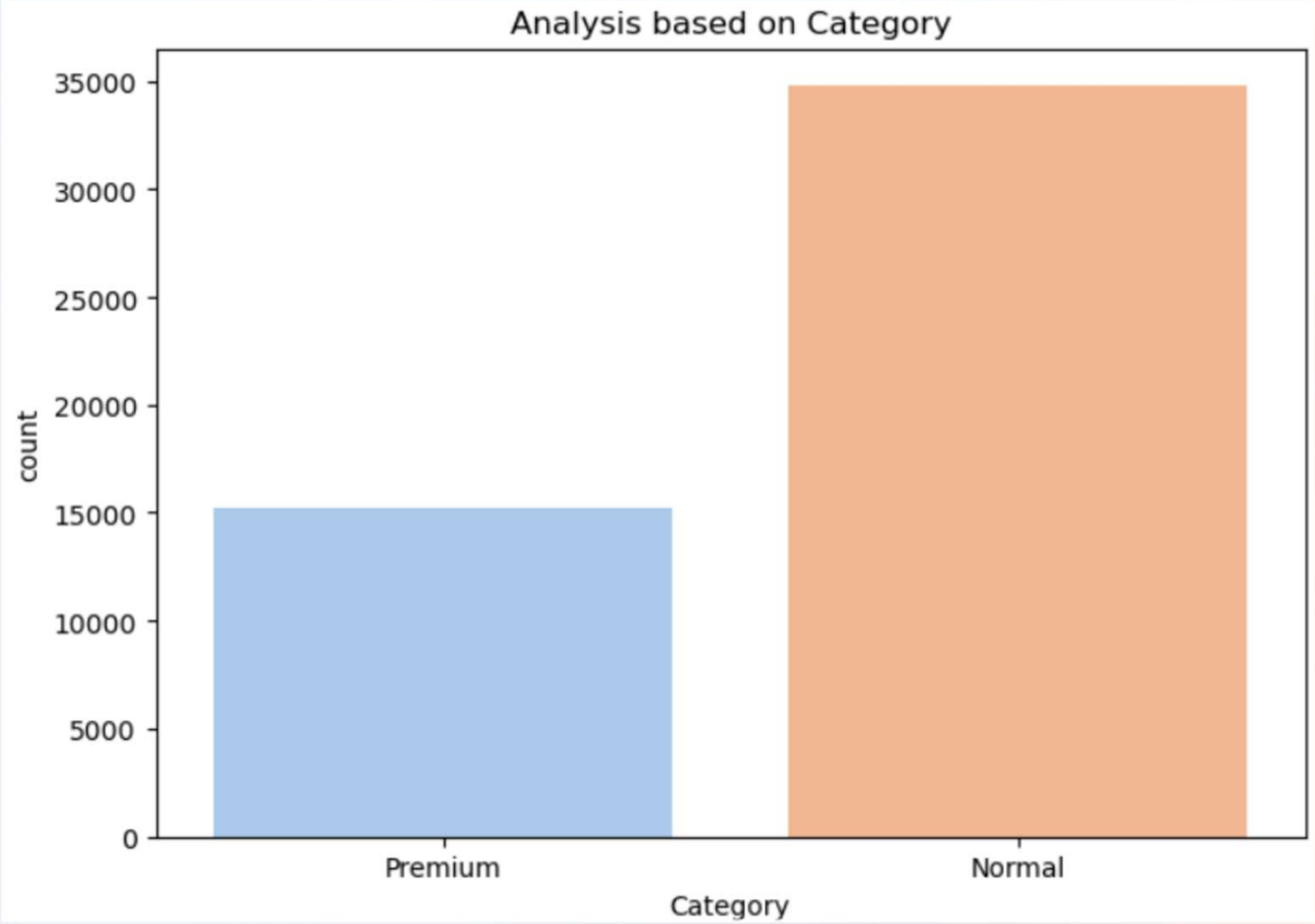
- There is a highest volume of sales in Asia
- Middle East and Europe has the second highest sales volume followed by North America and Africa
- South America has the lower sales volume compared to others

ANALYSIS BASED ON COLOR



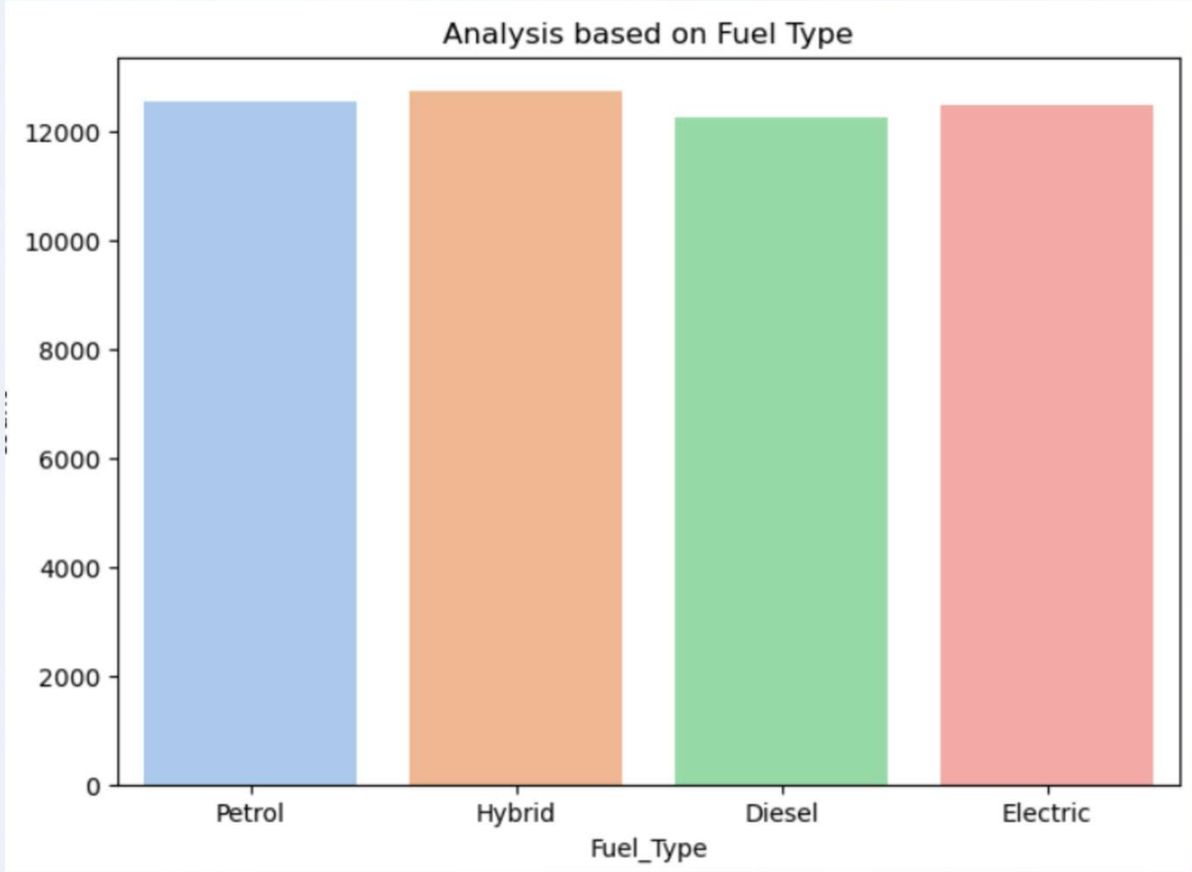
- There is a high demand for Red color cars
- There is a demand for silver and grey color cars followed by white but comparitively lesser than red color cars.
- Sales volume of blue and black color cars comparitively less

premium v/s normal



- There is a high demand for normal cars than premium cars
- Normal category cars sold more than Premium category cars

ANALYSIS BASED ON FUEL TYPE



- Most of the customers prefer Hybrid cars followed by petrol and electric cars
- The demand for Diesel cars are low

Year and sales volume

```
Spearman correlation: 0.002
P-value: 0.7060
Fail to reject H₀: No significant monotonic relationship.
```

- Changes in Year do not consistently correspond to increases or decreases in `Sales_Volume
- There is no statistically significant monotonic relationship between the year of the car and its sales volume .
- This implies that sales volume does not systematically increase or decrease with the manufacturing year.

PRICE DIFFERENCE OF CARS

```
T-statistic: 1.169
P-value: 0.1211
Fail to reject H₀ → No significant price difference detected.
```

- There is no significant difference in average prices between Automatic and Manual transmission BMW models
- Although the mean price of Automatic cars may be slightly higher, the difference is not strong enough to be considered statistically meaningful.
- Transmission type alone may not be a key driver of price variation.
- Other factors such as model type, features, or market demand might play a more influential role in pricing.

TRANSMISSION AND MODEL

```
Chi-square statistic: 6.203
P-value: 0.7979
Fail to reject H₀ → No significant association detected.
```

- The test result suggests that car model does not influence transmission type, and vice versa.
- There is no evidence of a relationship between car model and transmission

PRICING OF PREMIUM CARS

```
T-statistic: -2952.631
P-value: 0.0000
Reject H₀ → Premium car prices differ significantly from ₹7 lakhs
```

- The test shows strong evidence that the average price of Premium cars is not ₹7 lakhs.
- The negative t-statistic suggests the actual mean is much lower than ₹7 lakhs.

AVERAGE PRICE OF BMW CARS MODEL

```
F-statistic: 1.12, p-value: 0.3402
Fail to reject H₀: No significant difference in average prices across models
```

- Average prices vary meaningfully across different BMW models.
- The differences in model pricing are likely due to random variation, not a consistent pattern.
- Model type does not significantly influence price
- There is no statistically significant difference in average prices across BMW models
- BMW maintains consistent pricing across its model range

SUMMARY OF FINDINGS

- Mid-range luxury pricing (~₹75K–₹80K); consistent across models.
- Engine sizes support performance; average sales ~5,000 units.
- South America shows growth potential; other regions perform well.
- No single variant dominates.
- Hybrid cars preferred; diesel least favored.
- Red is the most popular color; followed by silver, grey, white.
- No strong link between price, mileage, engine size, or sales.
- Manual cars slightly more sold, but automatics are preferred.
- Standard models outsell premium—buyers lean toward value.

SUGGESTIONS

- Prioritize red, silver, grey, and white color options in inventory planning. Reduce production of blue and black variants due to lower demand.
- Offer both manual and automatic options, but highlight automatic features in campaigns.
- Invest more in hybrid models—customers prefer them over diesel. Continue offering petrol and electric options to meet growing interest
- Strengthen presence in South America with localized campaigns and dealership growth. Continue investing in high-performing regions like Asia, Middle East, and Europe.
- Highlight performance features like engine size to attract driving-focused customers.

Thank You!