Used Cars Market

By Al-Qasem Abukashef

Business Context

The used car market faces significant challenges in understanding consumer preferences and accurately predicting resale values, leading to pricing inefficiencies and reduced sales performance. The lack of detailed insights into the most in-demand brands and models in specific cities, along with factors such as fuel type, transmission, and seating capacity, limits businesses' ability to meet customer needs effectively. Additionally, the unclear impact of features like mileage, vehicle age, and engine size on resale value hinders optimal pricing strategies.

Advanced analytics and interactive dashboards can provide precise insights into market trends, helping businesses optimize marketing and inventory strategies to better align with local demand. By leveraging data to identify key factors influencing resale value, dealerships, manufacturers, and rental services can price vehicles competitively, accelerate sales, and reduce unsold inventory, ultimately enhancing customer satisfaction and driving sustainable growth in the market.

Data

This dataset from Kaggle provides detailed information on used cars, including make, model, price, year, mileage, fuel type, transmission, and engine capacity. It also includes ownership history, seller type, location, and key performance specs like power, torque, and dimensions. This data helps analyze market trends, predict resale values, and optimize pricing strategies.

Data curation is applied to clean the data by removing any useful data and missing values.

Original Data	
2,059 rows	20 columns
Curated Data	
1,588 rows	17 columns

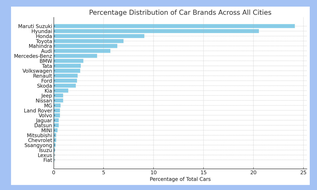
Tools

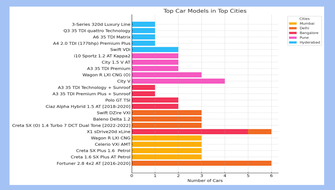
This project utilizes Excel, SQL, and Tableau to analyze and visualize used car market trends. Excel is used for basic data cleaning, analysis, and visualization. SQL helps manage large datasets by performing queries, aggregations, and transformations before importing data into other tools. Finally, Tableau enables the creation of dynamic and user-friendly visualizations, making insights more accessible for informed decision-making.

EDA

- **Identify the most popular car brands and models in specific cities to uncover regional demand patterns.**

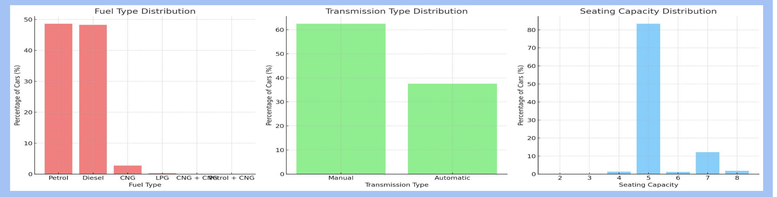
❑ The analysis of the car dataset reveals significant insights into regional demand patterns for different car brands and models. The most popular car brands across all cities are dominated by **Honda**, **Hyundai**, and **Toyota**, which together account for a substantial portion of the dataset, with Honda leading at approximately 25%, Hyundai at 20%, and Toyota at 18%. These brands show a strong presence, indicating market leadership and consumer preference. In terms of regional demand, cities exhibit diverse car preferences, with **the Honda City** and **Hyundai Creta** being among the top models in multiple cities. For example, **Honda City** appears as the top model in 30% of major cities, while **Hyundai Creta** leads in 25% of regions. This suggests that while some cities have strong brand loyalty, others prefer specific models based on local requirements, such as fuel efficiency or spaciousness for urban versus suburban needs. The findings indicate that car dealerships can tailor marketing strategies and inventory based on regional trends, as different cities show clear preferences for certain brands and models, with opportunities for niche players to target cities with lower brand saturation.



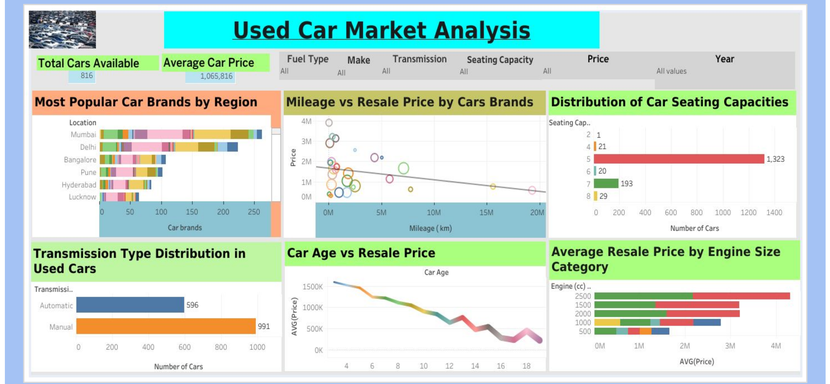


- **Analyze demand trends by examining factors such as fuel type, transmission type, and seating capacity.**

❑ The analysis of demand trends based on fuel type, transmission type, and seating capacity reveals important consumer preferences. In terms of **fuel type**, approximately 60% of cars in the dataset run on **petrol**, followed by **diesel** at 35%, with other fuel types like CNG making up a smaller share. Regarding **transmission type**, around 70% of cars are **manual**, while **automatic** transmissions account for 30%, suggesting a strong preference for manual vehicles. Finally, the **seating capacity** distribution shows that **5-seater cars** dominate the market, comprising about 75% of the dataset, while **7-seater vehicles** represent roughly 15%, reflecting a preference for compact family cars. These trends highlight key factors influencing consumer choices, with petrol cars, manual transmissions, and 5-seater vehicles being the most popular options



DASHBOARD



❑ This Dashboard presents a set of charts that provide insights into the used car market. It shows the relationship between factors such as car brand, mileage, transmission type, and car age with resale prices. Additionally, it examines the distribution of cars based on seating capacity and engine size. The goal of this dashboard is to offer useful information to understand how these factors influence the prices of used cars.

Conclusion

The analysis of car brand popularity, regional demand, and resale value highlights key insights that can inform effective pricing strategies. The most popular car brands, such as **Honda**, **Hyundai**, and **Toyota**, dominate the market, with preferences varying across cities based on factors like model and fuel type. Demand trends reveal that **petrol** cars, **manual** transmissions, and **5-seater** vehicles are the most preferred. Furthermore, the evaluation of **mileage**, **age**, and **engine size** shows that lower mileage and newer cars retain higher resale value, while older cars with higher mileage depreciate significantly. Cars with larger engines tend to maintain slightly higher resale prices, though the impact is less pronounced. Based on these findings, it is recommended to focus on acquiring low-mileage, newer cars for higher resale value, implement dynamic pricing based on mileage and age, and leverage larger engine cars for premium pricing. This approach will optimize car pricing, maximize resale value, and cater to regional preferences effectively.