Used Car Market Analysis

This project is all about understanding the Indian used car market using a dataset of cars that were sold across different cities in India. I cleaned and analyzed the data to discover useful patterns and insights. One of the most interesting things I found was that used cars generally fall into two major categories — **budget cars** and **luxury cars.** These insights can help businesses make smarter decisions and grow more effectively in this space.

This dataset provides detailed information on used cars, encompassing their Location, Kilometers_Driven, Fuel_Type, Transmission, Owner_Type, Mileage, Engine, Power, Seats, Price, Brand, and Car Age.

Data Cleaning:

- **Filling in Missing Data**: Any missing values in the dataset were handled carefully to avoid incorrect analysis.
- **Standardizing Units**: Mileage values were converted to a common format, so comparisons would be meaningful like kilometers per liter (km/L) to kilometers per kilogram (km/kg)
- **Simplifying Brand Names**: Some car brands had long or inconsistent names, so I shortened and standardized them.
- **Removing Outliers**: I removed extreme or incorrect values to make the data more accurate and reliable.

Exploratory Data Analysis (EDA):

Feature Analysis: I performed an in-depth analysis of individual feature distributions and explored the relationships between variables, particularly their impact on the car price.

Segment Discovery: I found two main groups in the market - **budget cars** and **luxury cars** and studied how they behave differently.

Visualizations: Using different charts like histograms, scatter plots, and heatmaps to spot trends, fix errors, and remove unnecessary details.

Feature		Luxury Cars
City-wise Distribution	Mumbai leads the largest market followed by Hyderabad and Pune; Ahmedabad has the smallest share in market.	Coimbatore leads the largest market followed by Mumbai and Kochi; Jaipur has the smallest share in market
Fuel Type	Petrol and diesel vehicles dominate, while CNG and LPG have smaller share.	Diesel cars dominate, while Petrol cars represent a small fraction of the market.

Transmission Type	Manual transmission vehicles are significantly more prevalent.	Automatic transmission vehicles are significantly more prevalent.
Ownership	Majority are first-owner vehicles.	Majority are first-owner cars.
Seating Capacity	Most cars are 5-seaters, with 7-seaters being the next most configuration.	Most cars are 5-seaters, with 7-seaters being the next most configuration.
Brands Popularity	Maruti leads market, followed by Hyundai and Honda.	Mercedes-Benz leads market, followed by BMW and Toyota.

Key Takeaways:

- The used car market in India is clearly divided into two major segments - budget and luxury cars - and each serve different buyer preferences.
- Cities show different buying trends, so businesses should plan differently depending on the location.
- **Budget cars** are usually manual and multi-fuel. on the other hand, **Luxury cars** are mostly automatic and run on diesel — showing different customer priorities.

Who Can Benefit from This Analysis?

- **Used Car Dealers**: They can use these insights to manage their stock better, set the right prices, and run effective promotions based on what customers in their area want.
- **Online Car Platforms**: They can recommend the right cars to the right users, run better ads, and help sellers with smarter pricing.
- **Banks and Finance Companies**: These organizations can offer car loans that suit different customer needs — whether they're buying a budget car or a luxury one — and better manage the risks involved.

Next Step

Build machine learning model for accurate used car price prediction and demand forecasting across segments and cities.