OBJECTIVE

To analyze and understand the key factors influencing the pricing of used cars in the Indian market by exploring a dataset of over 5,800 car listings.

The goal is to provide actionable insights on how attributes like car age, fuel type, transmission, mileage, and brand affect car prices, helping buyers, sellers, and dealerships make informed decisions.

Additionally, the project aims to demonstrate the use of data cleaning, exploratory data analysis, and predictive modeling techniques to solve real-world business problems.

ANALYZING THE USED CAR MARKET IN INDIA

ANALYZING USED CAR MARKET IN INDIA

Sample features:
- Location
- Kilometers_Driven
- Fuel_Type
- Transmission
- Owner_Type
- Mileage
- Engine
- Power
- Seats
- Price
- Brand
- Car_Age

- 5844 rows, 12 columns
- Real-world data scraped from car listings

DATASET OVERVIEW

DATA CLEANING & PREPROCESSING

Handled missing values and corrected inconsistent data types.

Extracted car brand information from the Name column and created a new Brand column.

Calculated car age based on the current year and the Year column, then created a new Car_Age column.

Dropped unnecessary columns such as Name, Year, Sr.No, and New_Price after feature extraction.
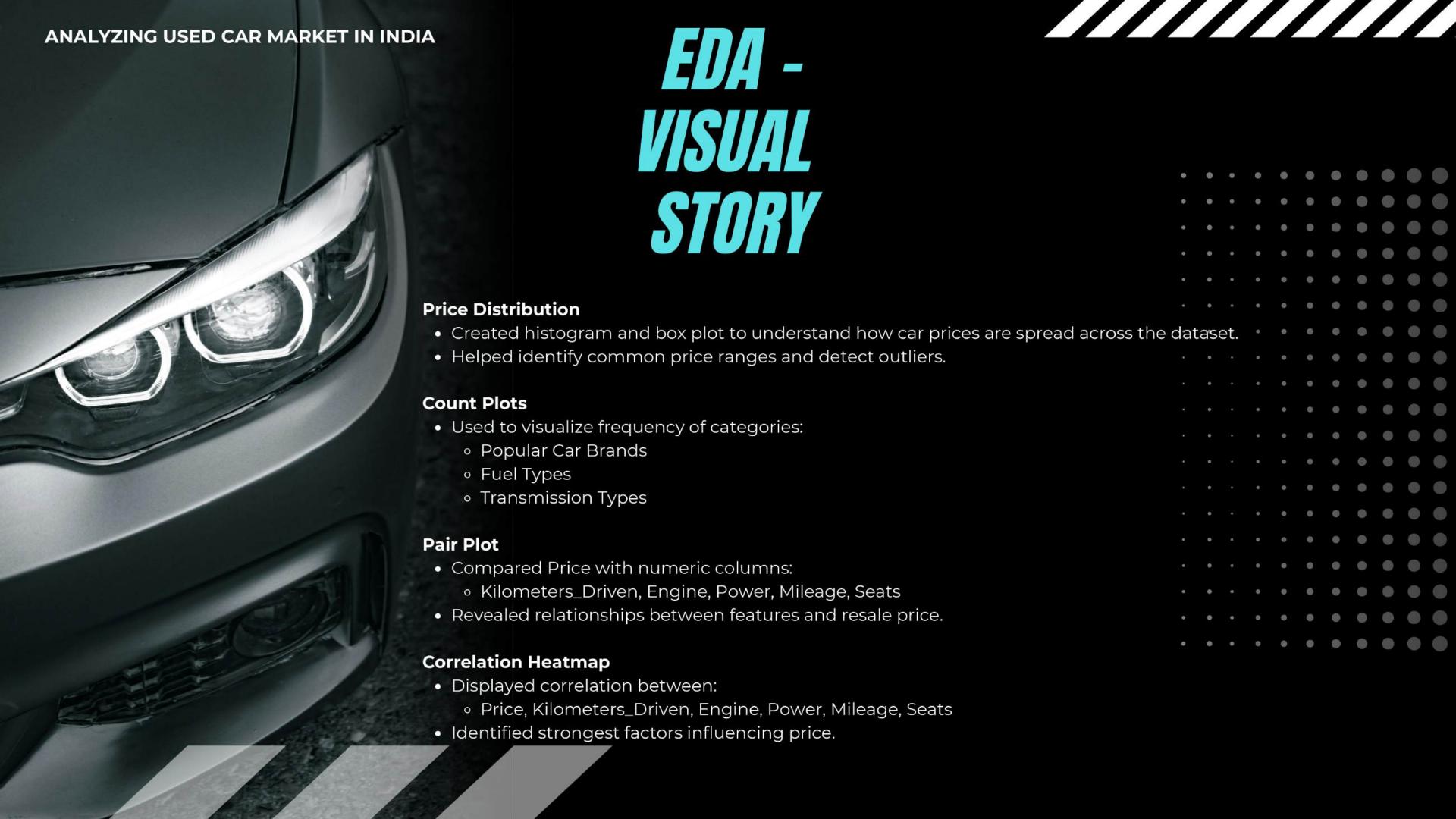
Descriptive Statistics: Summarized key features such as price distribution, mileage, engine size, and power.

Correlation Analysis: Examined relationships between price and numerical variables like kilometers driven, mileage, engine capacity, and power.

Trend Analysis: Analyzed how car prices vary based on factors such as brand, location, fuel type, transmission, owner type, and seats.

Visualization: Created graphs and heatmaps to visualize distributions, correlations, and trends for easy interpretation.

EDA - VISUAL STORY

Price Distribution
- Created histogram and box plot to understand how car prices are spread across the dataset.
- Helped identify common price ranges and detect outliers.

Count Plots
- Used to visualize frequency of categories:
  - Popular Car Brands
  - Fuel Types
  - Transmission Types

Pair Plot
- Compared Price with numeric columns:
  - Kilometers_Driven, Engine, Power, Mileage, Seats
- Revealed relationships between features and resale price.

Correlation Heatmap
- Displayed correlation between:
  - Price, Kilometers_Driven, Engine, Power, Mileage, Seats
- Identified strongest factors influencing price.

KEY INSIGHTS

Key Insights
- Market: Mumbai > Hyderabad > Pune; Ahmedabad is smaller.
- Fuel: Petrol & Diesel dominate; CNG/LPG are rare.
- Transmission: Manual cars ≈ 2× more than automatic.
- Owner Type: Most are 1st-owner cars.
- Seats: 5-seaters are most common.
- Brand: Maruti > Hyundai > Honda.

Price-Related Insights
- Kilometers Driven: More km = slightly lower price.
- Mileage: Slight positive link with price.
- Engine Size: Larger engine = higher price.
- Power: Strong impact — more power = more price.
- Car Age: Older cars = much lower price.

BUSINESS APPLICATIONS

For Used Car Dealerships
- Set more accurate pricing based on engine size, power, age, and kilometers driven.
- Prioritize sourcing 5-seater, first-owner, manual petrol/diesel cars — as they are in high demand.
- Use brand insights to stock more Maruti, Hyundai, and Honda cars.

For Online Platforms (e.g., OLX, Cars24)
- Improve price recommendation algorithms using key variables like mileage, power, and car age.
- Enhance search filters and personalized suggestions based on fuel type, location, and seats.
- Detect underpriced or overpriced listings using historical pricing trends.

For Buyers
- Get better deals by comparing price vs. car age and kilometers driven.
- Make informed decisions about engine power vs. price trade-offs.

For Sellers
- Set competitive prices using data-driven insights.
- Highlight strong selling points like low usage, high mileage, or first ownership to attract buyers.

TOOLS & TECHNOLOGIES USED

- Python
- Pandas
- NumPy
- Matplotlib
- Seaborn
- Jupyter Notebook
- GitHub
- Canva

THANK YOU

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