

GOWTHAM S

DA&DS

FEB-25

REINFORCEMENT PROJECT-4

CAR PRICE PREDICTION – POWER BI

INSIGHTS

# INTRODUCTION

This is an dataset of various car along with their name, brand, engine type and price over the years, which appears to be used for predicting car prices based on various attributes. Here's a quick overview of the dataset's structure:

## AVAILABLE COLUMNS

**Car ID** – A unique identifier for each car.

**Brand** – The manufacturer of the car (e.g., Tesla, BMW, Audi).

**Year** – The year the car was manufactured.

**Engine Size** – The engine capacity in liters.

**Fuel Type** – The type of fuel the car uses (e.g., Petrol, Diesel, Electric).

**Transmission** – Indicates whether the car is Manual or Automatic.

**Mileage** – The number of kilometers the car has traveled.

**Condition** – The overall condition of the car (e.g., New, Used, Like New).

**Price** – The price of the car (target variable for prediction).

**Model** – Specific model name of the car

## ADDED COLUMNS

**Vehicle type** –Categorize the Vehicle type as SUV , Sedan ,...etc

**Brand & model** –Concatenate the Brand and Model Columns

**Engine Category** –Categorize the Engine type Based on Litres

**Luxury Category** – Separate them as luxury and non-luxury category

**Year Order** – Grouped the year as Four-year format

**Year Group** – Named the grouped Four years as 1,2,3,.....6

# DATA PREPARATION

## DAX FUNCTION

By using DAX functions in Power BI,I created various new columns and new measures that helps me to get more insights.

## USED DAX FUNCTIONS

### **1. TOTAL PRICE**

Total Price = SUM (car\_price\_prediction\_[Price])

### **2. AVERAGE PRICE**

Average Price = AVERAGE (car\_price\_prediction\_[Price])

### **3. MAX PRICE**

Max Price = MAX (car\_price\_prediction\_[Price])

### **4. MIN PRICE**

Min Price = MIN(car\_price\_prediction\_[Price])

### **5. TOTAL MILEAGE**

Total Mileage = SUM(car\_price\_prediction\_[Mileage])

### **6. AVERAGE MILEAGE**

Average Mileage = AVERAGE(car\_price\_prediction\_[Mileage])

### **7. CAR COUNT**

Car Count = COUNTROWS(car\_price\_prediction\_)

## **8. DISTINCT BRANDS**

Distinct Brands = DISTINCTCOUNT(car\_price\_prediction\_[Brand])

## **9. USED CAR COUNT**

Used Car Count = CALCULATE(COUNTROWS(car\_price\_prediction\_),  
car\_price\_prediction\_[Condition] = "Used")

## **10. NEW CAR COUNT**

New Car Count = CALCULATE(COUNTROWS(car\_price\_prediction\_),  
car\_price\_prediction\_[Condition] = "New")

# DASHBOARD



## INSIGHTS FROM DASHBOARD

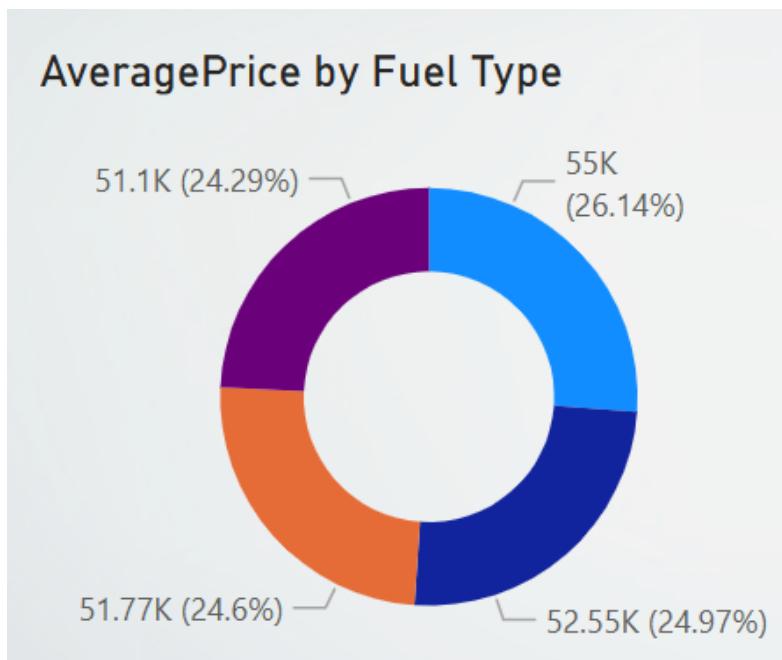
Top KPIs at the Top:

- **AVERAGE PRICE:** \$52.64K – This is the average price of all cars in the dataset.
- **AVERAGE MILEAGE:** 149.75K – Indicates that the vehicles are generally used or high-mileage cars.
- **TOTAL CARS:** 2,500 – Total number of records or vehicles being analyzed.
- **TOTAL PRICE:** \$131.60M – Combined value of all vehicles.



Pie Chart – Average Price by Fuel Type:

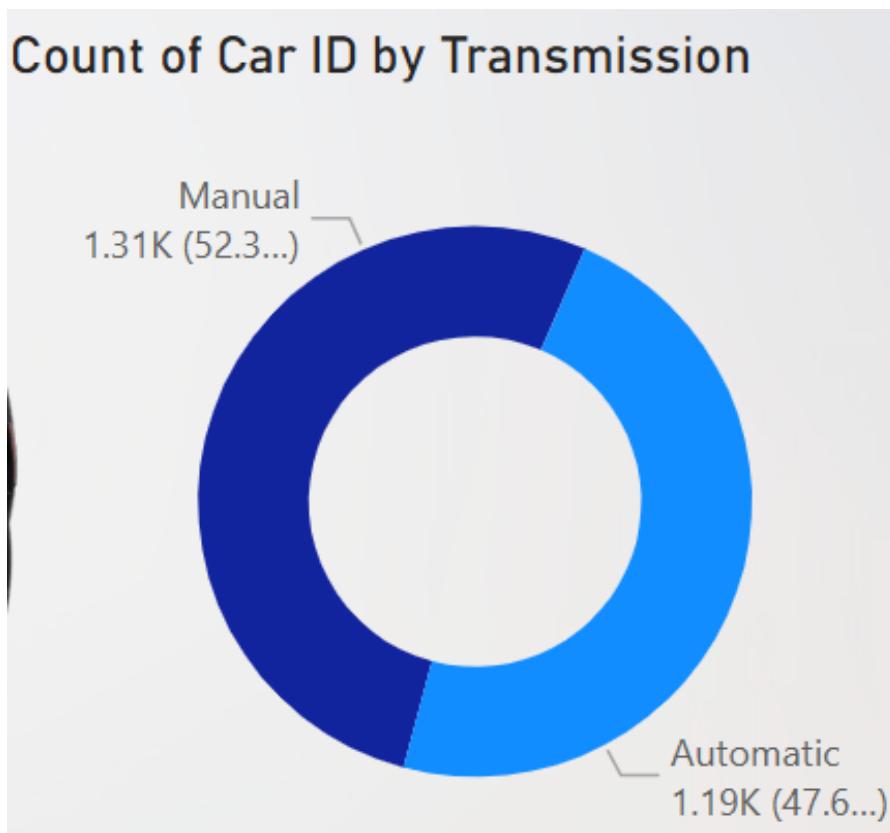
- **Electric:** ~\$55K (26.14%) – Highest average price among fuel types.
- **Diesel:** ~\$52.5K (24.97%)
- **Petrol:** ~\$51.1K (24.29%)
- **Hybrid:** ~\$51.77K (24.6%)



🔍 **Insight:** Electric vehicles have the **highest average price**, indicating their premium market positioning.

📊 Pie Chart – Count of Car ID by Transmission:

- **Manual:** 1,310 cars (52.3%)
- **Automatic:** 1,190 cars (47.6%)

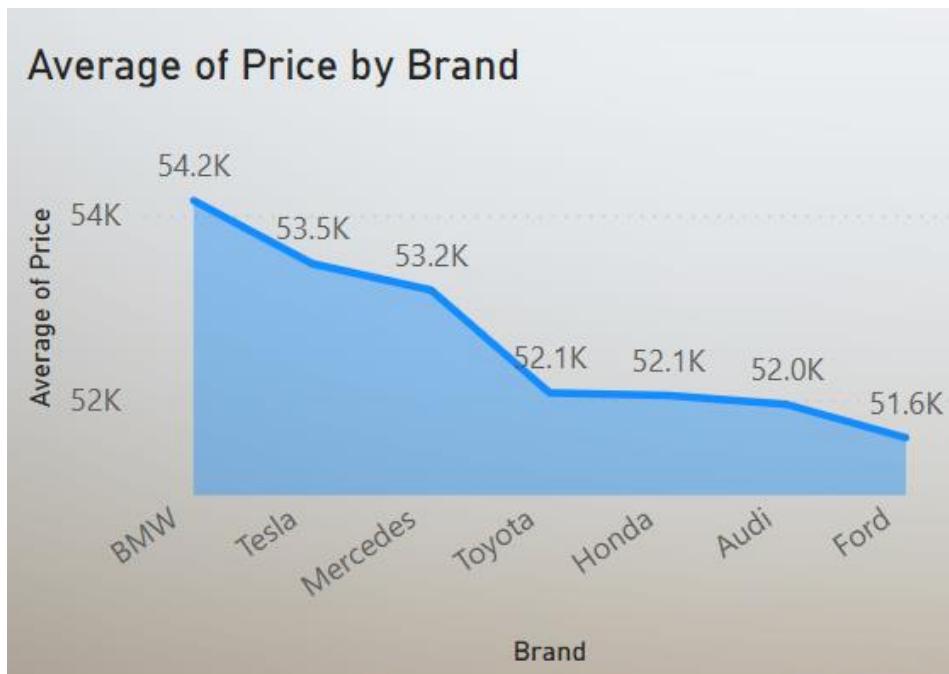


🔍 **Insight:** Manual transmissions are **slightly more common**, though the split is nearly even—suggesting a diverse dataset in terms of driving preferences.



### Bar Chart – Average Price by Brand:

- **BMW**: Highest average price (~\$54.2K)
- **Ford**: Lowest average price (~\$16K)

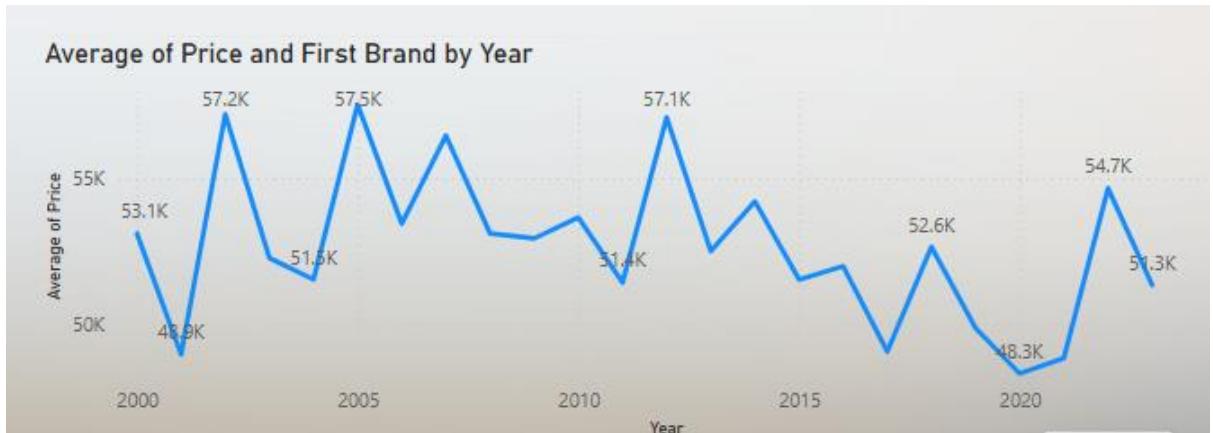


🔍 **Insight:** Luxury brands like BMW and Mercedes tend to have higher average prices, while mass-market brands like Ford are on the lower end.



### Line Chart – Average of Price and First Brand by Year:

- Fluctuating trend in prices over the years.
- Peaks around **2004, 2008, and 2016–2017** (avg. prices > \$55K).
- Dips in years like **2010 and 2013**.



**Insight:** The market has **variable pricing trends** over time. This may reflect fluctuations in car types, brand dominance, or economic factors.

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### Brand Filters (Left Panel):

The logos allow for interactive filtering by brand (e.g., Audi, BMW, Ford, etc.), which personalizes the dashboard for deeper brand-level insights.

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### Overall Dashboard Insight:

This Power BI dashboard effectively gives a **comprehensive overview** of car pricing, mileage, transmission type, and brand performance. It supports both **high-level summaries** and **drill-down analysis** based on filters like brand, fuel type, year, and model.

# CONCLUSION

- **Total Cars Analyzed:** 2,500 vehicles were included, offering a broad dataset for meaningful analysis.
- **Overall Average Price:** The average car price is approximately **\$52.64K**, indicating a mix of standard and premium vehicles.
- **High Mileage Trend:** Average mileage is around **149.75K**, suggesting most cars are **used or pre-owned**.
- **Fuel Type Insight:** Electric cars have the **highest average price**, reflecting their premium and newer market status.
- **Transmission Split:** Manual transmissions are **slightly more common** (52.3%) than automatic (47.6%).
- **Price Variability Over Time:** Car prices have **fluctuated across years**, with noticeable peaks in 2004, 2008, and 2016–17.
- **Fuel Diversity:** The market includes a **balanced distribution** of Petrol, Diesel, Electric, and Hybrid vehicles.
- **User-Friendly Filtering:** Interactive filters for brand, fuel type, year, and model allow for **custom analysis** and decision-making.
- **Data-Driven Decisions:** The dashboard provides **clear, visual insights** for stakeholders to make informed decisions in pricing, inventory, and market focus

## **RECOMMENDATIONS**

- **Focus on Electric Vehicle (EV) Offerings:**

Since EVs have the highest average price, increasing inventory or marketing for electric models could boost revenue.

- **Promote Low-Mileage Vehicles:**

Highlight vehicles with below-average mileage to appeal to buyers looking for less-used, reliable options.

- **Expand Automatic Transmission Options:**

With nearly 48% of cars being automatic, maintaining a balanced inventory will cater to diverse driver preferences.

- **Leverage Brand Performance:**

Promote premium brands like **BMW** and **Mercedes** in higher-income markets, while pushing brands like **Ford** in budget-sensitive segments.

- **Monitor Yearly Price Trends:**

Analyze the causes of price peaks (e.g., in 2008, 2016) to identify what models or external factors influenced price surges.

- **Reassess High-Mileage Stock:**

Consider offering warranties or certifications on high-mileage vehicles to increase buyer confidence.

- **Bundle Features by Fuel Type:**

Create marketing bundles (e.g., free charging kits for EVs or fuel discounts for petrol cars) to increase appeal.

- **Targeted Promotions by Transmission Type:**

Offer promotional discounts on overstocked transmission types to manage inventory efficiently.

- **Improve Data Granularity:**

Include additional fields like vehicle condition grading, location, or resale history for even deeper analysis.

- **Update Dashboard in Real Time:**

Integrate live data sources to keep the dashboard current, aiding in faster and more responsive decision-making.

