**Project-Phase III: Dashboard Implementation**

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IFT 598 Topic: Data Visualization & Reporting for IT

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**Section I: Dashboards**

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The above dashboards help users to sort and filter the desired used cars based on price, mileage, Front and Rear Headroom and Legroom, Brand and Horsepower. This lets the users check the car condition and its history and helps user deciding their desired car.

**Section 2: Dataset Description**

The dataset describes the used cars market. This dataset gives us information about the used cars market which consists of car brands, their specifications, price, and their condition. So, from this dataset we have created a few problem statements and by using that we can create visualizations to describe them.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| COLUMN | DATATYPE | DOMAIN | ATTRIBUTE\_TYPE | DESCRIPTION |
| 1. CAR\_ID | Number (Whole) | It can have any number. | Categorical | A unique identifier for each car. |
| 1. BRAND | String | This can have car brand for each car\_id. | Nominal | The manufacturer of the car. |
| 1. MODEL | String | This can have car model for each car\_id. | Nominal | The specific model’s name of the car. |
| 1. YEAR | Number (Whole) | It can have a range of values. | Interval | The year that the car was manufactured. |
| 1. MILES | Number (Whole) | It can have a range of values from a limited set. | Continuous Numerical | The total number of miles that the car has been driven. |
| 1. CITY\_MILEAGE | Number (Whole) | It can have a range of values from a limited set. | Ratio | The estimated miles per gallon that the car gets in city driving conditions |
| 1. HIGHWAY\_MILEAGE | Number (Whole) | It can have a range of values from a limited set. | Ratio | The estimated miles per gallon that the car gets in highway driving conditions |
| 1. HORSEPOWER | Number  (Whole) | It can have a range of values. | Ratio | The amount of power that the car's engine produces, typically measured in horsepower (hp) |
| 1. TORQUE | Number  (Whole) | It can have a range of values. | Categorial | The twisting force produced by the engine, typically measured in pound-feet (lb-ft) |
| 1. ENGINE\_CAPACITY\_LITRE | Number  (Decimal) | It can have a range of values from a limited set based on car type. | Ratio | The size of the engine, typically measured in litres (L). |
| 1. FUEL\_CAPACITY | Number  (Decimal) | It can have a range of values based on car type. | Ratio | The maximum amount of fuel that the car's gas tank can hold, typically measured in gallons (gal). |
| 1. NUM\_OWNERS | Number  (Whole) | It varies with each car\_id. | Nominal | The number of previous owners that the car has had |
| 1. PRICE | Number  (Whole) | This has set of values based on car\_id, type and service records. | Ratio | The asking price for the car |
| 1. ENGINE\_TYPE | String | This has set of values based on car type. | Categorical | The type of engine, such as gasoline, diesel, hybrid, or electric |
| 1. SPEED\_LEVELS | Number  (Whole) | This has set of values based on horsepower and torque. | Ratio | The number of gears or speed levels in the car's transmission |
| 1. FRONT\_HEADROOM | Number  (Decimal) | This has set of values based on car type | Ratio | The amount of vertical space in the front of the car for the driver and passenger's heads |
| 1. FRONT\_LEGROOM | Number  (Decimal) | This has set of values based on car type | Ratio | The amount of horizontal space in the front of the car for the driver and passenger's legs |
| 1. REAR\_HEADROOM | Number  (Decimal) | This has set of values based on car type | Ratio | The amount of vertical space in the back of the car for passengers' heads |
| 1. REAR\_LEGROOM | Number  (Decimal) | This has set of values based on car type | Ratio | The amount of horizontal space in the back of the car for passengers' legs |
| 1. SERVICE\_RECORDS | Number  (Whole) | This has set of values. | Ratio | Information about the car's maintenance history |

**Section 3: Prospective Dashboard Users**

**Dealerships:** The used car business is mostly handled by dealerships. The dealers can able to able to arrange their cars in their the store according to the market trend and the consumer requirements.

**Individual Consumer:** Individual consumers are the main part of this market. And the main visualization is based on their needs. A consumer can decide the correct car for him based on his requirements.

**Car rental agencies**: Car rental agencies can use a dashboard to track the condition, availability, and usage of their used car fleet, manage maintenance schedules, and monitor revenue and profitability.

**Government agencies:** Government agencies responsible for regulating or overseeing the used car market, such as departments of motor vehicles or consumer protection agencies, can use a dashboard to monitor market trends, track compliance with regulations, and identify potential issues related to safety or consumer protection.

**Section 4: Potential Questions**

1. Select car brand names that have the highest milage percent of total used cars by price.

2. Select car manufacture year by engine type and which has the highway mileage and miles traveled between 20k to 90k.

3. Which model cars have front headroom and front legroom display their brand names sorted by alphabetical order.

4. Select the brand names of the car which has the highest torque and engine types with speed levels sorted by size which brands and engine has highest torque and speed level

5. Show which brand of cars with their unique ID has several owners by car price and how many miles traveled.

6. Create how many used cars with repeated models were for sale in that year.

7. What percent of the total service records for every model car are sorted by miles?

8. Create using a brand of the cars and total used cars sorted by rear headroom with size and rear legroom with text.

9. Select the year of car manufacture based on the fuel tank capacity and model. Display single or multiple models while searching.

10. Display Which model car has the highest speed level, max torque, and check for single or multiple models.

11. What is the average price of the car with brand and model that can be affordable within the desired price and available cars with the selected model?

12. How many cars and their types have the max front legroom and rear legroom, and which has the average city milage and display their brand and model?

# Section 5: Plots

1. Bar chart representing car brand names that have the highest milage percent of total used cars. The Pre-attentive attributes used here are length and color.

Chart, waterfall chart

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2. Line chart plotting car manufacture year by engine type and which has the highway mileage and miles traveled between 20k to 90k. Pre-attentive attributes are 2D position and color.

Chart, line chart

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3. Side-by-side bars represent car models that have front headroom and legroom to display their brand names sorted by alphabetical order. PAA – Length, Color

Chart, bar chart

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4. Side-by-side bars showing the brand names of the car which has the highest torque and engine types with speed levels sorted by size which brands, and engine has highest torque and speed level. PAA – Length and color hue.

Chart

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5. Side-by-side circles represent the brand of cars with their unique ID has several owners by car price and how many miles traveled. PAA – shape, 2D position.

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6. Area charts showing how many used cars with repeated models were for sale in that year. PAA – Color, Length

Chart

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7. Pie chart displaying the percentage of total service records for every model car are sorted by miles. PAA – color, size

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8. Side-by-side bars for brand of the cars and total used cars sorted by rear headroom with size and rear legroom with text. PAA – Length, color

Chart, application, Excel, bar chart

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9. Line chart to select the year of car manufacture based on the fuel tank capacity and model and displaying single or multiple models while searching. PAA – Length, color.

Chart, line chart

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10. Dual combination to display which model car has the highest speed level and check for single or multiple models. PAA – Length, color.

Chart, line chart

Description automatically generated

11. Stacked bar chart to represent the average price of the car with brand and model that can be affordable within the desired price and available cars with the selected model. PAA – length, color.

Chart, bar chart, waterfall chart

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12. Bar chart to show how many cars and their types have the max front legroom and rear legroom, and which has the average city milage and displaying their brand and mode. PAA – Color and length.

Chart

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# Section 6: Interactivity

1. User can interact using the slider to filter the chart based on horsepower (Question 4)

2. User can interact using the slider to filter the chart based on brand (Question 8)

3. User can interact using the sliders to filter the chart based on Measure Names (Question 10)

4. Users can interact using the slider to filter the chart based on Model (Question 11)

5. Users can interact using the sliders to filter the chart based on Price (Question 12)

6. User can interact using the slider to filter the visualization by Price (Question 1)

**References**

Mural Link:

<https://app.mural.co/invitation/mural/dvproject8877/1680675307759?sender=u76046c07aa4d32556bd29877&key=2aebb45f-5f03-4433-9c3e-c471f1473814>

Tableau Link:

<https://public.tableau.com/app/profile/rohith.manikanta.repala/viz/Used_Cars/Dashboard5>