**Car Data Dashboard Report**

**1. Project Objective**

The primary objective of this project is to analyze comprehensive car data to extract meaningful insights that can aid in understanding market trends, vehicle performance, and feature preferences. The goal is to create an interactive and visually appealing dashboard that allows users to explore various aspects of car data, identify key patterns, and support data-driven decision-making for stakeholders in the automotive industry, sales, or manufacturing.

**2. Scope of Work**

The scope of this project includes:

* **Data Acquisition and Loading:** Importing the car dataset into Power BI.
* **Data Transformation and Cleaning:** Performing necessary data cleaning, transformation, and modeling to ensure data quality and usability for analysis. This may include handling missing values, correcting data types, and creating relationships between tables.
* **Dashboard Design and Development:** Creating an interactive dashboard in Power BI, incorporating various visualizations (charts, graphs, tables, and cards) to represent key metrics and insights.
* **Key Performance Indicator (KPI) Definition:** Identifying and implementing relevant KPIs to measure and track performance related to car features, fuel efficiency, and model popularity.
* **Report Generation:** Compiling a detailed report summarizing the project's objectives, methodology, findings, and conclusions.

**3. Expected Outcome**

The expected outcomes of this project are:

* A fully functional and interactive Power BI dashboard providing a clear overview of car data.
* Actionable insights into car features, fuel types, and model performance.
* Improved understanding of customer preferences and market dynamics.
* A comprehensive report documenting the project, its findings, and recommendations.
* A tool that can be used for strategic planning, inventory management, and sales forecasting in the automotive sector.

**4. Tools and Technologies**

* **Primary Tool:** Microsoft Power BI Desktop
* **Data Source:** Likely an Excel file, CSV, or a database containing car specifications.
* **DAX Commands:** For custom KPIs and Measures.

**5. Dataset Used**

The dataset used for this project contains various attributes related to cars, including but not limited to:

* **Make:** Manufacturer of the car (e.g., Audi, BMW, Hyundai).
* **Model:** Specific model of the car (e.g., Ghibli, Cayenne Coupe, Alturas G4, Nexon).
* **Fuel Type:** Type of fuel the car uses (e.g., Diesel, Electric, Hybrid, Petrol).
* **Fuel Tank Capacity:** Capacity of the fuel tank.
* **Mileage:** Fuel efficiency of the car.
* **Power:** Engine power.
* **Preferred Feature Count:** Number of preferred features in a car.
* **Airbags:** Details about airbags (e.g., Driver curtain, Driver frontal, Driver pelvic).
* **Body Type:** Type of car body.

**Link of Data:** https://docs.google.com/spreadsheets/d/1P2mB0Z4Gn9FyUBhj2cI443nRjnSgNx34/edit?usp=drive\_link&ouid=101368825255311313144&rtpof=true&sd=true

**6. Questions (KPIs)**

Based on the provided dashboard screenshot, here are 8-10 key questions (KPIs) that can be answered:

1. What is the average fuel tank capacity across all car models?
2. Which car make has the highest average fuel tank capacity?
3. What is the distribution of preferred feature count by car model and make?
4. How does average mileage vary across different fuel types (Diesel, Electric, Hybrid, Petrol)?
5. Which car makes have the highest sum of preferred features?
6. What is the total number of models offered by each car manufacturer?
7. Which car models have the highest sum of power?
8. How does the sum of power distribute among different car models and makes?
9. What are the details (Body Type, Airbags, Make, Model, Sum of Power) for specific models like Ghibli, Cayenne Coupe, Alturas G4, and Nexon?
10. What is the overall distribution of preferred features across all car makers?

**7. Process**

The project followed these key steps:

1. **Data Import:** The raw car dataset was imported into Power BI Desktop.
2. **Data Transformation:** Using Power Query Editor, the data was cleaned, transformed, and shaped. This involved:
   * Renaming columns for clarity.
   * Changing data types to appropriate formats (e.g., numeric for capacities and power).
   * Handling any inconsistencies or missing values.
3. **Data Modeling:** Relationships between different tables (if applicable) were established to ensure proper data flow and aggregation.
4. **Measure and Column Creation:** DAX (Data Analysis Expressions) formulas were used to create calculated measures (e.g., Average Fuel Tank Capacity, Sum of Power) and calculated columns as needed for specific analyses.
5. **Visualization Development:** Various Power BI visualizations were selected and configured to represent the data effectively:
   * Bar charts for comparing preferred feature counts and total models by maker.
   * Cards for displaying key aggregated values like average fuel tank capacity.
   * Pie/Donut charts for showing proportions of preferred features by maker and sum of power by model.
   * Tables for detailed model information.
   * Scatter plots for visualizing power distribution by model and make.
6. **Dashboard Layout and Interactivity:** The visualizations were arranged logically on the dashboard. Slicers and filters were added to allow users to interact with the data and drill down into specific segments (e.g., filtering by Make).
7. **Review and Refinement:** The dashboard and report were reviewed for accuracy, clarity, and user-friendliness, with iterative adjustments made as necessary.

**8. Dashboard**

The Power BI dashboard, titled "Car Data Visualized," presents a comprehensive view of the car dataset. It includes:

* **Key Performance Indicators (KPIs):** Displaying "Avg. Fuel Tank Capacity" with a gauge, and "Sum of Preferred FeatureCount by Model and Make" as a bar chart.
* **Fuel Efficiency Analysis:** A card visualization showing "Average Mileage by Fuel Type" (Diesel, Electric, Hybrid, Petrol).
* **Feature Preferences:** A pie chart illustrating "Sum of Preferred Feature by Maker," showing the distribution of preferred features across different manufacturers.
* **Model Details:** A detailed table providing "Model Details" including Body Type, Airbags, Make, Model, and Sum of Power.
* **Power Distribution:** A donut chart showing "Sum of Power by Model" and a scatter plot visualizing "Sum of Power by Model" across different makes.
* **Total Models by Maker:** A bar chart displaying "Total ModelsByMaker by Make."

The dashboard is designed to be interactive, allowing users to filter data by 'Make' and other attributes to gain specific insights.

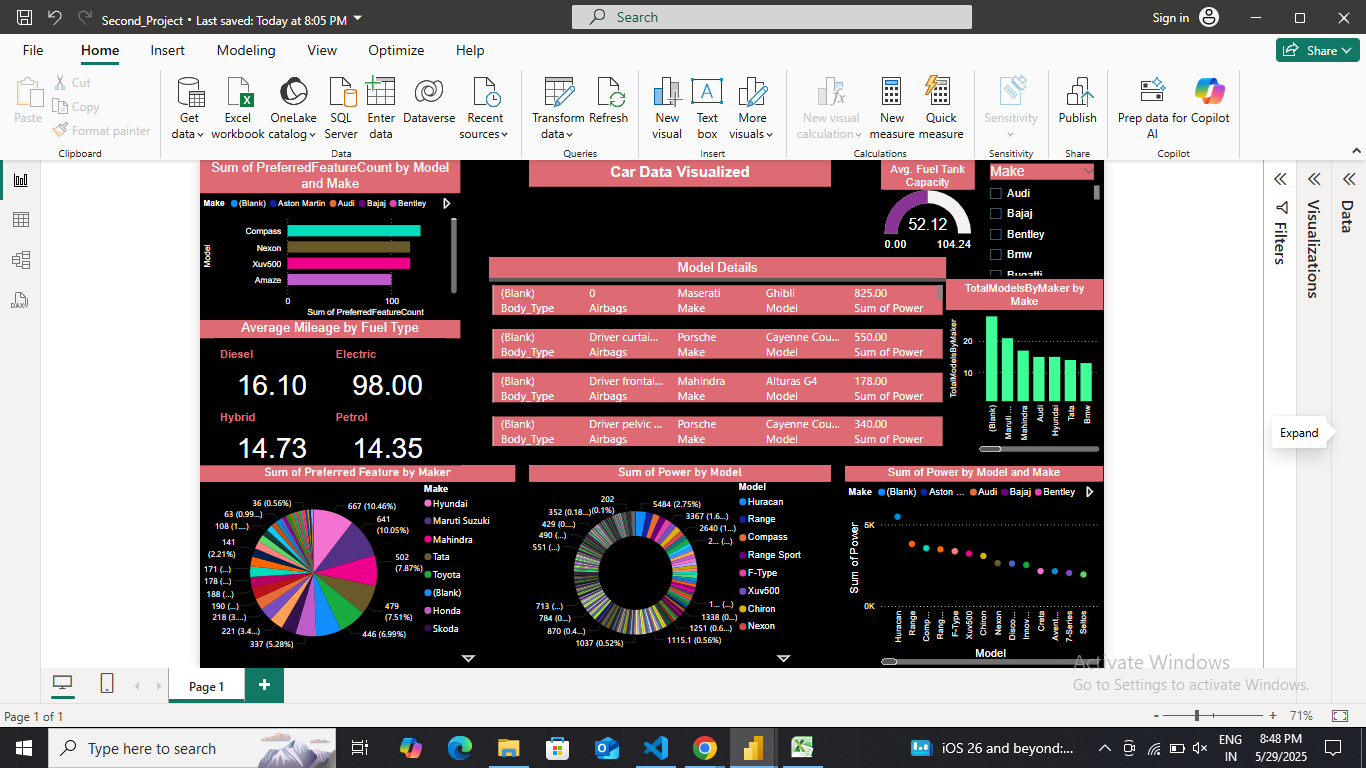
**9. Final Conclusion**

This Power BI dashboard successfully visualizes complex car data, providing valuable insights into various aspects of the automotive market. The analysis reveals trends in preferred features, fuel efficiency across different fuel types, and the power distribution among various car models and manufacturers. The interactive nature of the dashboard empowers stakeholders to explore data dynamically, facilitating informed decisions related to product development, marketing strategies, and sales initiatives. The project demonstrates the effectiveness of Power BI as a tool for transforming raw data into actionable business intelligence.

**Screenshot of DashBoard:**

**Link to Access the Folder:**

**https://drive.google.com/drive/folders/1N2kIZIa-89ryQ4XcemN03o6eeYFGucGI?usp=drive\_link**

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