**Power BI Project: Auto Dataset Analysis**

**Overview**

This Power BI project provides interactive dashboards to analyze various aspects of an automobile dataset. The analysis covers key areas such as vehicle overview, fuel efficiency, horsepower and acceleration, vehicle attributes, and year-on-year trends. This project aims to provide insights into vehicle characteristics and their performance.

**Project Structure**

The Power BI project is organized into the following dashboards:

1. Overview: Provides a high-level summary of the dataset.
2. Fuel Efficiency: Analyzes fuel consumption patterns.
3. Horsepower & Acceleration: Explores the relationship between engine power and vehicle acceleration.
4. Vehicle Attributes: Examines various vehicle attributes.
5. Year-on-Year Trends: Visualizes how vehicle characteristics have evolved over the years.

**Dataset**

The dataset used for this analysis contains information about various automobiles, including their specifications, performance metrics, and attributes. The dataset includes fields such as:

* Make
* Model
* Year
* Fuel Type
* Engine
* Horsepower
* MPG (Miles Per Gallon)
* Acceleration
* Vehicle Type
* Origin

**Dashboards**

**1. Overview**

This dashboard provides a general understanding of the dataset. Key metrics and visualizations include:

* Total number of vehicles.
* Distribution of vehicles by make.
* Average MPG.
* Average Horsepower.
* Summary statistics for key numerical variables.
* Visualizations showing the distribution of key categorical and numerical variables.

**2. Fuel Efficiency**

This dashboard focuses on analyzing fuel consumption patterns. Key metrics and visualizations include:

* Average MPG by vehicle type.
* MPG distribution.
* Relationship between MPG and other variables (e.g., engine size, horsepower).
* Filters for make, vehicle type, and year to explore specific segments.

**3. Horsepower & Acceleration**

This dashboard explores the relationship between engine power and vehicle acceleration. Key metrics and visualizations include:

* Scatter plot of horsepower vs. acceleration.
* Average acceleration by horsepower range.
* Impact of other variables (e.g., weight, engine) on this relationship.
* Filters to analyze specific vehicle segments.

**4. Vehicle Attributes**

This dashboard examines various vehicle attributes and their relationships. Key metrics and visualizations include:

* Distribution of vehicles by origin.
* Analysis of engine characteristics.
* Visualizations showing relationships between different vehicle attributes (e.g., weight, engine size, number of cylinders).
* Filters for make, vehicle type and year.

**5. Year-on-Year Trends**

This dashboard visualizes how vehicle characteristics have evolved over the years. Key metrics and visualizations include:

* Trend of average MPG over the years.
* Trend of average horsepower over the years.
* Changes in vehicle attributes (e.g., weight, engine size) over time.
* Filters to focus on specific makes or vehicle types.

**Contents**

This repository typically includes the following files:

\* `.pbix` file(s): The main Power BI project file(s) containing the data model, visualizations, and reports.

\* `README.md`: This file, providing an overview and instructions for the project.

\* `/Data/` (Optional): A directory that might contain sample data files (e.g., CSV, Excel) used in the project. Note: DUMMY data is being used for education purposes.

**Getting Started**

To explore and utilize this Power BI project:

1 *Prerequisites*: Ensure you have Microsoft Power BI Desktop installed on your machine. You can download it for free from the official Microsoft website.

2. *Download the Repository*: Clone or download the contents of this repository to your local machine.

3. *Open the .pbix File*: Launch Power BI Desktop and open the `.pbix` file(s) located in the repository.

4. *Review the Data Model*: Familiarize yourself with the data sources, tables, and relationships defined in the Power BI model.

5. *Explore the Reports*: Navigate through the different report pages (Sector Analysis, Trend Over Time, etc.) to understand the visualizations and insights presented.

6. *Connect to Your Data (If Necessary)*: If the `.pbix` file is configured to connect to external data sources, you might need to update the data source settings within Power BI Desktop to point to your company's actual data. This usually involves providing server names, database names, and authentication credentials.

**Key Features and Insights**

*Interactive Visualizations*: The dashboards utilize interactive charts, graphs, and tables to allow users to drill down into the data and explore specific areas of interest.

*Dynamic Filtering*: Users can apply filters based on various dimensions (e.g., time period, sector, city) to analyze specific subsets of the data.

*Key Performance Indicator (KPI) Tracking*: Important KPIs are highlighted and tracked over time, providing a clear view of progress towards goals.

*Actionable Insights*: The dashboards are designed to provide actionable insights that can inform strategic decision-making.

***Potential Improvements and Future Enhancements***

*Real-time Data Integration*: Implementing real-time data connections for up-to-the-minute performance monitoring.

*Advanced Analytics*: Incorporating more advanced analytical techniques, such as forecasting or anomaly detection.

*Customizable Alerts*: Setting up alerts to notify stakeholders of significant changes or deviations in key metrics.

*User Personalization*: Allowing users to customize their views and focus on the metrics most relevant to them.

*Mobile Optimization*: Designing the reports for optimal viewing on mobile devices.

**Contributing**

Contributions to this project are welcome. If you have suggestions for improvements, bug fixes, or new features, please feel free to:

1. Fork the repository.

2. Create a new branch for your changes.

3. Make your modifications.

4. Submit a pull request with a clear description of your changes.

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***Thank you for exploring this Power BI Company Data Analysis project!***