**Comprehensive Report: Car Sales**

**Dashboard Project**

1. **Introduction :**

The Car Sales Dashboard was developed in Power BI to provide a comprehensive overview of sales performance for a car dealership. This dynamic and interactive dashboard enables stakeholders to track key performance indicators (KPIs), identify trends, and make data-driven decisions. The project was structured into various phases, including data import, modeling, DAX formula creation, visualization, and optimization.

1. **Implementation Details Data Modeling:**

* Created a relationship between the **Date Table** and **Calendar Date Table** to enable accurate date filtering and time-based calculations.
* **Used calendar functions:**
* **TOTALYTD:** Aggregates values for the year-to-date period.
* **TOTALMTD:** Aggregates values for the month-to-date period.
* **SAMEPERIODLASTYEAR:** Returns a table with the same period in the previous year.

**Filters**

**Filters added for user interactivity:**

* + **Body Style**
  + **Dealer Region**
  + **Transmission**
  + **Engine**

**Additional DAX Functions :**

* **ALLSELECTED:**
* Returns all values in the specified column or table that are visible, considering the current filters.
* **Example:** Used to find the maximum value in a filtered range for highlighting peaks in a chart.
* **FORMAT:**
  + Converts a value into a specified format, such as currency or percentages, for better readability.
  + **Example:** Used to display KPIs like MTD Sales as "$0.00M."
* **MAXX:**
* Evaluates an expression for each row in a table and returns the largest value.
* **Example:** Used in the formula for identifying the highest weekly sales point in the line chart.

1. **DAX Formulas and Their Role :**

**Sales Overview:**

* **YTD Total Sale:**

**[YTD Total Sales] = TOTALYTD(SUM(car\_data[Price ($)]),'Calender Table'[Date])**

* Aggregates total sales from the start of the year to the current date.
* Helps track cumulative sales performance year-to-date.
* **PYTD Total Sales:**

**[PYTD Total Sales] = CALCULATE(SUM(car\_data[Price ($)]),SAMEPERIODLASTYEAR('Calender Table'[Date]))**

* Calculates sales for the same period in the previous year.
* Used for year-over-year comparison.
* **Sales Difference:**

**[Sales Difference] = [YTD Total Sales]-[PYTD Total Sales]**

Provides the absolute difference in sales between the current and previous year-to-date.

* **YoY Sales Growth**:

**[YOY Sales growth] = [Sales Difference] / [PYTD Total Sales]**

Calculates year-over-year sales growth as a percentage.

* **MTD Total Sales**:

**[MTD Total Sales] = TOTALMTD(SUM(car\_data[Price ($)]), 'Calender Table'[Date])**

Aggregates sales for the current month.

* **MTD KPI**:

**[MTD KPI] = CONCATENATE("MTD Total Sales :",[MTD Total Sales])**

Formats the MTD sales into a user-friendly KPI card.

* **MTD KPI 1:**

**[MTD KPI 1] = CONCATENATE("MTD Total Sales : ",FORMAT([MTD Total Sales] / 1000000, "$0.00M" ))**

KPI representation of **MTD total sales in millions.**

**Average Price Analysis** :

* **YTD Avg Price**:

**[YTD Avg Price] = TOTALYTD([Avg price], 'Calender Table'[Date])**

Tracks average car price year-to-date.

* **Avg Price**:

**[Avg price] = SUM(car\_data[Price ($)]) / COUNT(car\_data[Car\_id])**

Calculates the average price of cars sold.

* **Avg Price Diff**:

**[Avg Price Diff] = [YTD Avg Price] - [PYTD Avg Price]**

Shows the change in average price year-over-year.

* **PYTD Avg Price**:

**[PYTD Avg Price] = CALCULATE([Avg price], SAMEPERIODLASTYEAR('Calender Table'[Date]))**

Computes the average price for the same period last year.

* **YoY Avg Price Growth**:

**[YOY Avg Price Growth] = [Avg Price Diff] / [PYTD Avg Price]**

Indicates the year-over-year growth in average price.

**Cars Sold Metrics**:

* **YTD Cars Sold**:

**[YTD Cars Sold] = TOTALYTD(COUNT(car\_data[Car\_id]), 'Calender Table'[Date])**

Counts the number of cars sold year-to-date.

* **Car Sold Diff:**

**[Cars Sold Diff] = [YTD Cars Sold] - [PYTD Cars Sold]**

Shows the difference in cars sold between the current and previous year-to-date.

* **MTD Cars Sold**:

**[MTD Cars Sold ]= TOTALMTD(COUNT(car\_data[Car\_id]), 'Calender Table'[Date])**

Counts the cars sold month-to-date.

* **MTD Cars Sold KPI:**

**[MTD Cars Sold KPI ]= CONCATENATE("MTD Cars Sold : ", FORMAT([MTD Cars Sold] / 1000, "$0.00K"))**

KPI representation of **MTD cars sold** in thousands.

**4.Charts Requirement** :

1. **YTD Sales Weekly Trend :**
   1. **Visualization**: Line chart.
   2. **DAX Formula for Highlighting Max Point on area Chart**:

**[Max Point on Area Chart] = IF(MAXX(ALLSELECTED('Calender Table'[Week]),[Total Sales])=[Total Sales],MAXX(ALLSELECTED('Calender Table'[Week]),[Total Sales]),BLANK())**

1. **YTD Total Sales by Body Style :**
   1. **Visualization**: Pie chart.
   2. Displays the distribution of sales across car body styles.
2. **YTD Total Sales by Color :**
3. **Visualization**: Pie chart.
4. Represents the contribution of different car colours to total sales.
5. **YTD Cars Sold by Dealer Region :**
   1. **Visualization**: Map chart.
   2. Geographically illustrates sales distribution by dealer regions.
6. **Company-Wise Sales Trend:**

**Added columns for:**

* + - Company name.
    - YTD cars sold, YTD average price, YTD total sales.
    - % Growth in YTD total sales.
    - Embedded bar charts in columns for visual cues.

1. **Detailed Grid Showing All Car Sales Information:** 
   1. **Visualization**: Tabular grid.
   2. Includes comprehensive columns: car model, body style, color, sales amount, dealer region, date, and more.

**5.Navigation and Interactivity:**

Implemented page navigation to separate dashboard pages for better user experience.

**6.Conclusion:**

The Car Sales Dashboard effectively meets the outlined objectives by leveraging advanced DAX calculations, meaningful visualizations, and interactive features. This tool empowers stakeholders with actionable insights, facilitating data-driven decision-making and enhancing sales performance tracking.