Let's start by loading the provided dataset and extracting necessary data points to create the required DAX formulas for the KPIs and charts. I'll provide you with the DAX formulas for the metrics and then describe how to use them in Power BI.

### Loading the Data

```csv

Car\_id,Date,Customer Name,Gender,Annual Income,Dealer\_Name,Company,Model,Engine,Transmission,Color,Price ($),Dealer\_No,Body Style,Phone,Dealer\_Region

C\_CND\_000001,1/2/2022,Geraldine,Male,13500,Buddy Storbeck's Diesel Service Inc,Ford,Expedition,Double Overhead Camshaft,Auto,Black,26000,06457-3834,SUV,8264678,Middletown

C\_CND\_000002,1/2/2022,Gia,Male,1480000,C & M Motors Inc,Dodge,Durango,Double Overhead Camshaft,Auto,Black,19000,60504-7114,SUV,6848189,Aurora

C\_CND\_000003,1/2/2022,Gianna,Male,1035000,Capitol KIA,Cadillac,Eldorado,Overhead Camshaft,Manual,Red,31500,38701-8047,Passenger,7298798,Greenville

C\_CND\_000004,1/2/2022,Giselle,Male,13500,Chrysler of Tri-Cities,Toyota,Celica,Overhead Camshaft,Manual,Pale White,14000,99301-3882,SUV,6257557,Pasco

C\_CND\_000005,1/2/2022,Grace,Male,1465000,Chrysler Plymouth,Acura,TL,Double Overhead Camshaft,Auto,Red,24500,53546-9427,Hatchback,7081483,Janesville

```

### Creating the KPIs

#### Sales Overview

1. \*\*Year-to-Date (YTD) Total Sales\*\*

```dax

YTD Total Sales =

CALCULATE(

SUM('Sales'[Price ($)]),

DATESYTD('Sales'[Date])

)

```

\*\*Explanation\*\*: This formula calculates the total sales amount for the year-to-date using the `DATESYTD` function to get all dates from the start of the year to the current date.

2. \*\*Month-to-Date (MTD) Total Sales\*\*

```dax

MTD Total Sales =

CALCULATE(

SUM('Sales'[Price ($)]),

DATESMTD('Sales'[Date])

)

```

\*\*Explanation\*\*: Similar to the YTD calculation, this formula uses `DATESMTD` to sum the sales for the current month-to-date.

3. \*\*Year-over-Year (YOY) Growth in Total Sales\*\*

```dax

YOY Total Sales Growth =

DIVIDE(

[YTD Total Sales] - CALCULATE([YTD Total Sales], SAMEPERIODLASTYEAR('Sales'[Date])),

CALCULATE([YTD Total Sales], SAMEPERIODLASTYEAR('Sales'[Date]))

)

```

\*\*Explanation\*\*: This formula calculates the year-over-year growth by comparing the YTD sales of the current year to the YTD sales of the previous year.

4. \*\*Difference between YTD Sales and Previous Year-to-Date (PTYD) Sales\*\*

```dax

YTD vs PTYD Sales Difference =

[YTD Total Sales] - CALCULATE([YTD Total Sales], SAMEPERIODLASTYEAR('Sales'[Date]))

```

\*\*Explanation\*\*: This formula computes the difference between the current year's YTD sales and the previous year's YTD sales.

#### Average Price Analysis

1. \*\*YTD Average Price\*\*

```dax

YTD Average Price =

CALCULATE(

AVERAGE('Sales'[Price ($)]),

DATESYTD('Sales'[Date])

)

```

\*\*Explanation\*\*: This formula calculates the average price of sales for the year-to-date.

2. \*\*Month-to-Date (MTD) Average Price\*\*

```dax

MTD Average Price =

CALCULATE(

AVERAGE('Sales'[Price ($)]),

DATESMTD('Sales'[Date])

)

```

\*\*Explanation\*\*: This formula calculates the average price of sales for the month-to-date.

3. \*\*YOY Growth in Average Price\*\*

```dax

YOY Average Price Growth =

DIVIDE(

[YTD Average Price] - CALCULATE([YTD Average Price], SAMEPERIODLASTYEAR('Sales'[Date])),

CALCULATE([YTD Average Price], SAMEPERIODLASTYEAR('Sales'[Date]))

)

```

\*\*Explanation\*\*: This formula calculates the year-over-year growth in the average price by comparing the current year's YTD average price to the previous year's YTD average price.

4. \*\*Difference between YTD Average Price and PTYD Average Price\*\*

```dax

YTD vs PTYD Average Price Difference =

[YTD Average Price] - CALCULATE([YTD Average Price], SAMEPERIODLASTYEAR('Sales'[Date]))

```

\*\*Explanation\*\*: This formula computes the difference between the current year's YTD average price and the previous year's YTD average price.

#### Cars Sold Metrics

1. \*\*YTD Cars Sold\*\*

```dax

YTD Cars Sold =

CALCULATE(

COUNT('Sales'[Car\_id]),

DATESYTD('Sales'[Date])

)

```

\*\*Explanation\*\*: This formula counts the number of cars sold for the year-to-date.

2. \*\*Month-to-Date (MTD) Cars Sold\*\*

```dax

MTD Cars Sold =

CALCULATE(

COUNT('Sales'[Car\_id]),

DATESMTD('Sales'[Date])

)

```

\*\*Explanation\*\*: This formula counts the number of cars sold for the month-to-date.

3. \*\*YOY Growth in Cars Sold\*\*

```dax

YOY Cars Sold Growth =

DIVIDE(

[YTD Cars Sold] - CALCULATE([YTD Cars Sold], SAMEPERIODLASTYEAR('Sales'[Date])),

CALCULATE([YTD Cars Sold], SAMEPERIODLASTYEAR('Sales'[Date]))

)

```

\*\*Explanation\*\*: This formula calculates the year-over-year growth in cars sold by comparing the current year's YTD cars sold to the previous year's YTD cars sold.

4. \*\*Difference between YTD Cars Sold and PTYD Cars Sold\*\*

```dax

YTD vs PTYD Cars Sold Difference =

[YTD Cars Sold] - CALCULATE([YTD Cars Sold], SAMEPERIODLASTYEAR('Sales'[Date]))

```

\*\*Explanation\*\*: This formula computes the difference between the current year's YTD cars sold and the previous year's YTD cars sold.

### Creating the Charts

1. \*\*YTD Sales Weekly Trend\*\*

```dax

YTD Weekly Sales =

CALCULATE(

SUM('Sales'[Price ($)]),

DATESYTD('Sales'[Date])

)

```

\*\*Explanation\*\*: Create a line chart with the `Date` field on the X-axis (formatted by week) and the `YTD Weekly Sales` measure on the Y-axis.

2. \*\*YTD Total Sales by Body Style\*\*

```dax

YTD Sales by Body Style =

CALCULATE(

SUM('Sales'[Price ($)]),

DATESYTD('Sales'[Date])

)

```

\*\*Explanation\*\*: Create a pie chart with the `Body Style` field and the `YTD Sales by Body Style` measure.

3. \*\*YTD Total Sales by Color\*\*

```dax

YTD Sales by Color =

CALCULATE(

SUM('Sales'[Price ($)]),

DATESYTD('Sales'[Date])

)

```

\*\*Explanation\*\*: Create a pie chart with the `Color` field and the `YTD Sales by Color` measure.

4. \*\*YTD Cars Sold by Dealer Region\*\*

```dax

YTD Cars Sold by Dealer Region =

CALCULATE(

COUNT('Sales'[Car\_id]),

DATESYTD('Sales'[Date])

)

```

\*\*Explanation\*\*: Create a map chart with the `Dealer Region` field and the `YTD Cars Sold by Dealer Region` measure.

5. \*\*Company-Wise Sales Trend in Grid Form\*\*

Create a table visual with `Company` and `YTD Total Sales` measure.

6. \*\*Details Grid Showing All Car Sales Information\*\*

Create a table visual with all the relevant fields from the dataset.

### Dataset and DAX Example

Let's take a specific example with a simplified dataset:

```csv

Car\_id,Date,Price ($)

C\_CND\_000001,2023-01-01,26000

C\_CND\_000002,2023-01-15,19000

C\_CND\_000003,2023-02-01,31500

C\_CND\_000004,2023-03-01,14000

C\_CND\_000005,2023-04-01,24500

```

\*\*Example DAX Formula for YTD Sales\*\*

```dax

YTD Sales Example =

CALCULATE(

SUM('Sales'[Price ($)]),

DATESYTD('Sales'[Date])

)

```

\*\*Explanation\*\*: This will sum up the `Price ($)` for all dates in the current year up to today.

### Steps in Power BI

1. \*\*Load Data\*\*: Load your dataset into Power BI.

2. \*\*Create Measures\*\*: Use the DAX formulas provided to create measures for each KPI.

3. \*\*Build Visuals\*\*: Create the necessary charts and tables using the measures.

By following these steps, you

can create a comprehensive dashboard that provides real-time insights into your sales data.