# ****Power BI Portfolio Project: YTD vs PYTD Sales Analysis****

## ****Project Overview****

This Power BI project analyzes **Year-to-Date (YTD) vs Prior Year-to-Date (PYTD)** performance, providing insights into **Sales, Quantity, and Gross Profit**. The interactive dashboard includes slicers for dynamic filtering, allowing users to view performance across different metrics.

## ****Dataset & Data Model****

The analysis is based on **Plant Data**, structured into the following tables:

* **Fact\_Sales** – Contains transactional sales data.
* **Dim\_Account** – Stores account details.
* **Dim\_Product** – Originally named "Plant Hierarchy," this table holds product-related information.
* **Dim\_Date** – A new **Date Table** created using CALENDAR DAX to support time intelligence functions.
* Slc\_Values – A helper table to enable slicer-based selection.

**Data Model Relationship**

* Fact\_Sales is **linked to** Dim\_Account via Account\_ID.
* Fact\_Sales is **linked to** Dim\_Product via Product\_ID.
* Fact\_Sales is **linked to** Dim\_Date via Date\_Time.

This structure **enables proper YTD calculations** and ensures consistent **time-based comparisons**.

## ****Key Features****

* **Dynamic YTD vs PYTD Analysis** – Ensures partial-year comparisons align correctly with previous years using **DAX date calculations.**
* Year Selection for 2022 and 2023 – The report allows users to toggle between years dynamically
* Custom DAX-Based Slicer for KPI Selection – A special slicer enables switching between Sales, Quantity, and Gross Profit across all visuals.
* **Visualizations**:
  + **Waterfall Chart** – Displays monthly changes in YTD vs PYTD.
  + **Stacked Column & Line Chart** – Shows monthly YTD trends.
  + **Treemap** – Highlights the **Bottom 10 Countries** by performance.
  + **Scatter Plot** – Segments accounts based on **GP% vs Sales**.

## ****DAX Calculations****

### **1. Handling partial year to date measures.**

To compare current year sales with the same period last year, Inpast DAX calculations were applied to **ensure correct date-based filtering. (**Ensures that PYTD includes only the same period as the current YTD.

Inpast = VAR lastsalesdate = MAX(Fact\_Sales[Date\_Time]) VAR lastsalesdatePY = EDATE(lastsalesdate, -12) RETURN Dim\_Date[Date] <= lastsalesdatePY

2. PYTD Sales calculation.

To compute PYTD Sales, I used SAMEPERIODLASTYEAR, but with an additional filter to respect the Inpast measure:

PYTD\_Sales = CALCULATE( [Sales], SAMEPERIODLASTYEAR(Dim\_Date[Date]), Dim\_Date[Inpast] = TRUE() )

3. Dynamic title measure

This measure ensures that when a user selects a metric from the slicer (Sales, Quantity, or Gross Profit), the title of the visualization automatically updates to reflect the chosen KPI, providing a clear and interactive reporting experience.

Column chart title = SELECTEDVALUE(Slc\_values[Values]) & "YTD vs PYTD | Month"

4. Dynamic slicer selection.

Power BI has built-in slicers, but they cannot switch between different measures (e.g., Sales, Quantity, Gross Profit). Instead, we created a disconnected table and used DAX to dynamically select the chosen metric.

This approach ensures that all visuals update correctly when switching between KPIs.

First of all, a slicer table was created. The slicer table contains predefined options:

SlicerTable =

DATATABLE(

"Values", STRING,

{

{"Sales"},

{"Quantity"},

{"Gross Profit"}

}

)

This measure allows to select between different KPIs (Sales, Quantity, Gross Profit) using a slicer. In other words, users can seamlessly switch between different metrics without modifying the report structure

S\_PYTD =

VAR selected\_value = SELECTEDVALUE(Slc\_values[Values])

VAR result = SWITCH(selected\_value,

"Sales", [PYTD\_Sales],

"Quantity", [PYTD\_Quantity],

"Gross Profit", [PYTD\_GrossProfit],

BLANK()

)

RETURN result

## ****Insights & Findings****

* **YTD Performance**: The total YTD sales amount is **$13M**, with a **GP% of 39.62%**.
* **PYTD Comparison**: Sales are **down by $512K** compared to the prior year.
* **Country-Level Analysis**: **China, Sweden, and France** are among the **worst-performing** regions.
* **Product-Type Trends**: **Indoor, Landscape, and Outdoor** categories exhibit distinct performance patterns.

## ****Technical Highlights****

* **Power BI DAX for date-based analysis**.
* **Data Model with Dimensional Tables** to enable better performance and accurate filtering.
* **Multiple data sources integrated** for a comprehensive analysis.
* **Custom DAX-based slicer for KPI switching** to dynamically change between Sales, Quantity, and Gross Profit.
* **Year selection functionality** for toggling between 2022 and 2023 using a standard slicer.