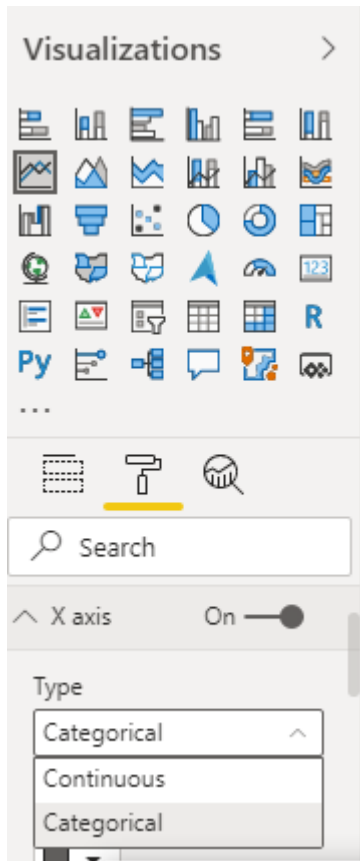


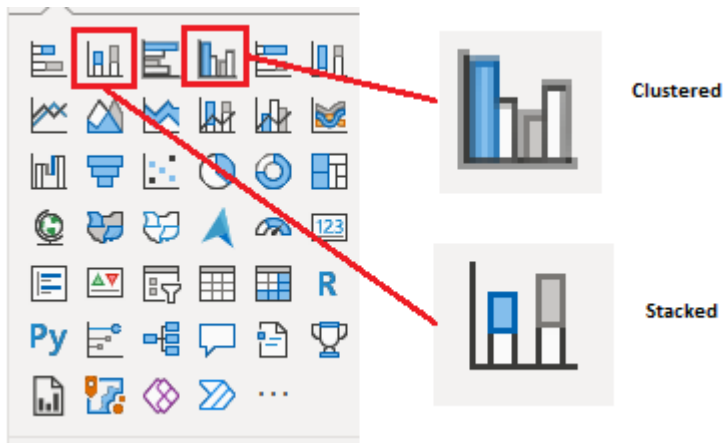
# Power BI Visuals:

Power BI provides a variety of visualization options to help you represent data effectively. Each visual serves specific purposes based on the type of data and analysis required. Here's an exhaustive guide to Power BI visuals:

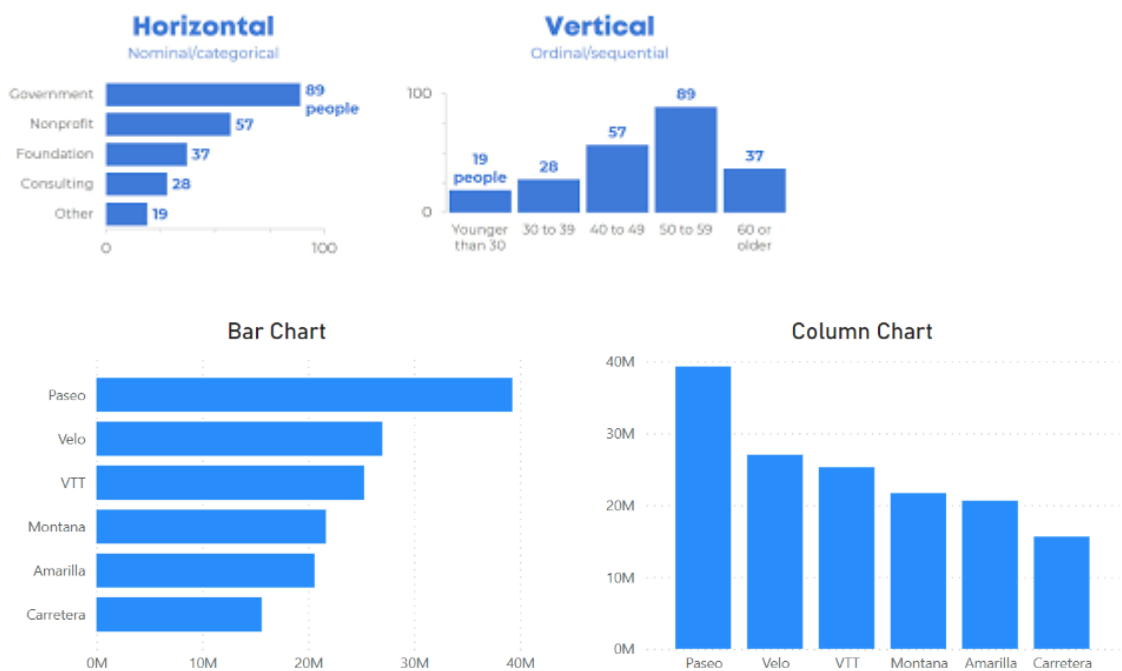


## 1. Bar Chart

- **Description:** Displays data using rectangular bars, where the length of each bar represents the value.
- **Types:**
  - **Clustered Bar Chart:** Compares values across categories side by side.
  - **Stacked Bar Chart:** Displays the contribution of each value to a total across categories.



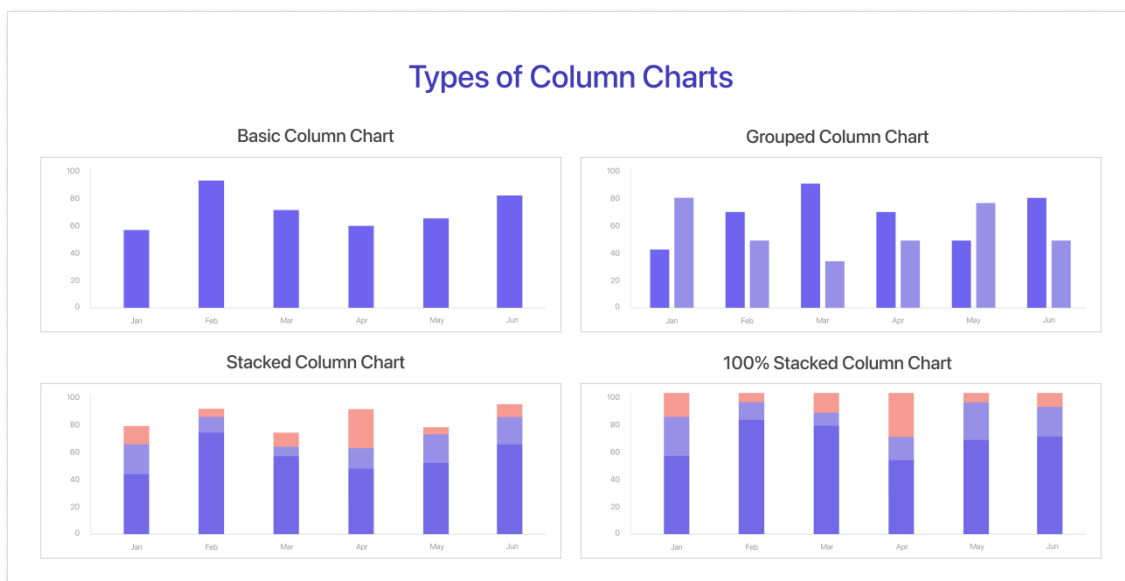
- **When to Use:**
  - To compare categories (e.g., Sales by Region).
  - To show part-to-whole relationships using a stacked variant.
- **Example:**
  - **Data:** Sales data by product category.
  - **Visual:** A clustered bar chart comparing sales of "Electronics," "Furniture," and "Clothing."



## 2. Column Chart

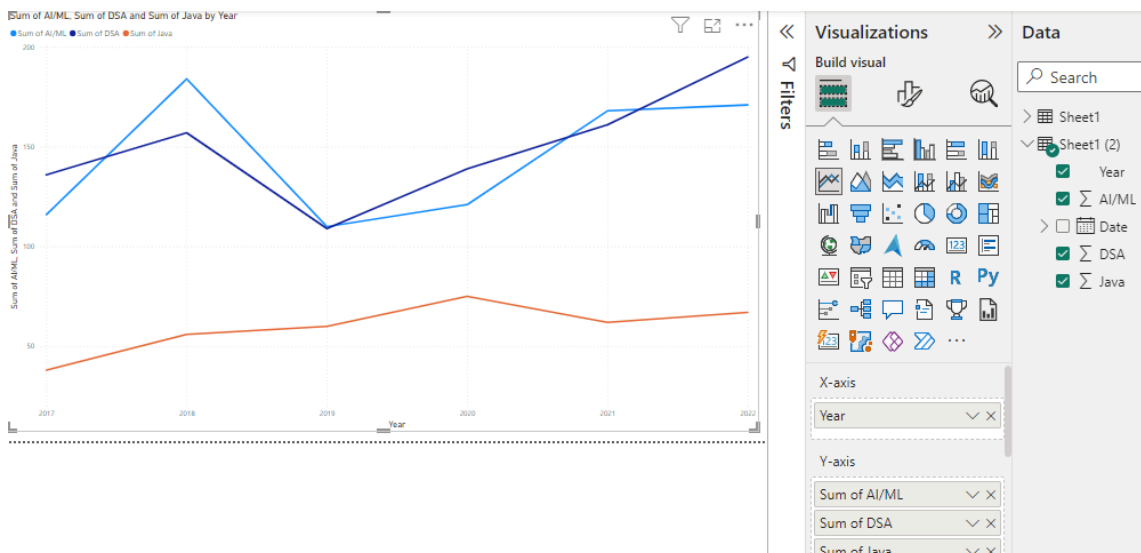
- **Description:** Similar to bar charts but with vertical bars.
- **Types:**
  - **Clustered Column Chart**
  - **Stacked Column Chart**
  - **100% Stacked Column Chart** (displays values as percentages of a total).
- **When to Use:**
  - To compare values over categories or time (e.g., monthly revenue trends).
- **Example:**
  - **Data:** Monthly revenue data for a year.

- **Visual:** A clustered column chart showing revenue from January to December.



### 3. Line Chart

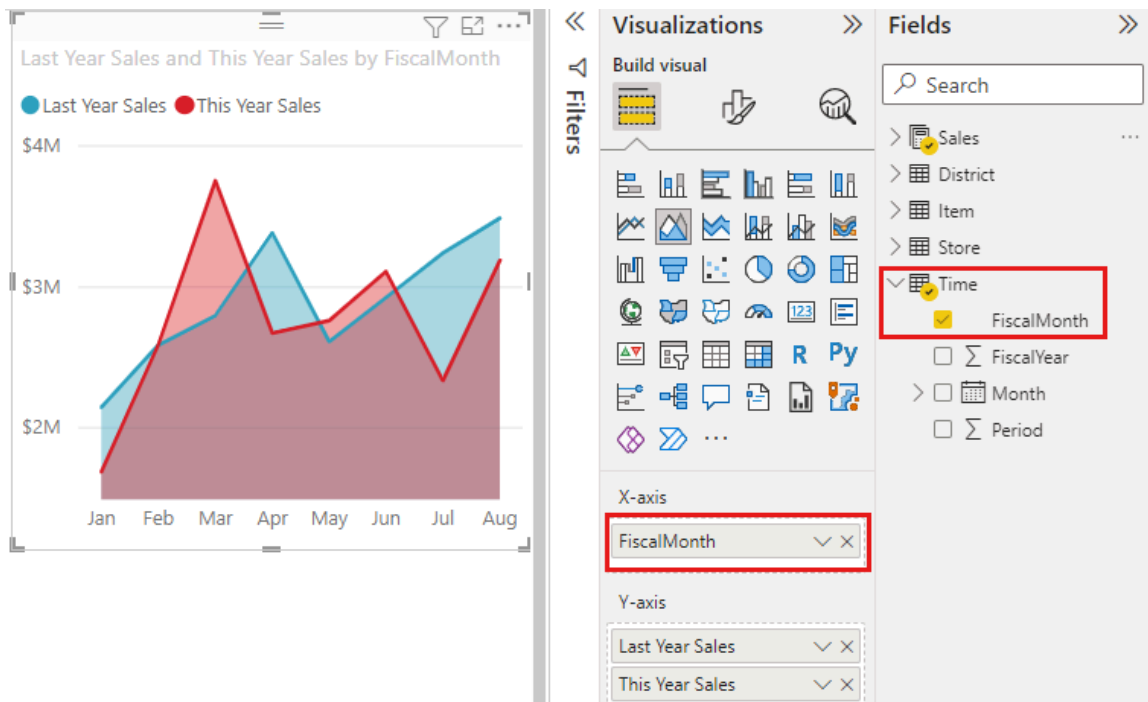
- **Description:** Displays data as a continuous line connecting points, ideal for showing trends over time.
- **When to Use:**
  - To analyze trends or patterns (e.g., sales growth over months).
- **Example:**
  - **Data:** Daily website traffic for a month.
  - **Visual:** A line chart showing a rise in traffic towards weekends.



### 4. Area Chart

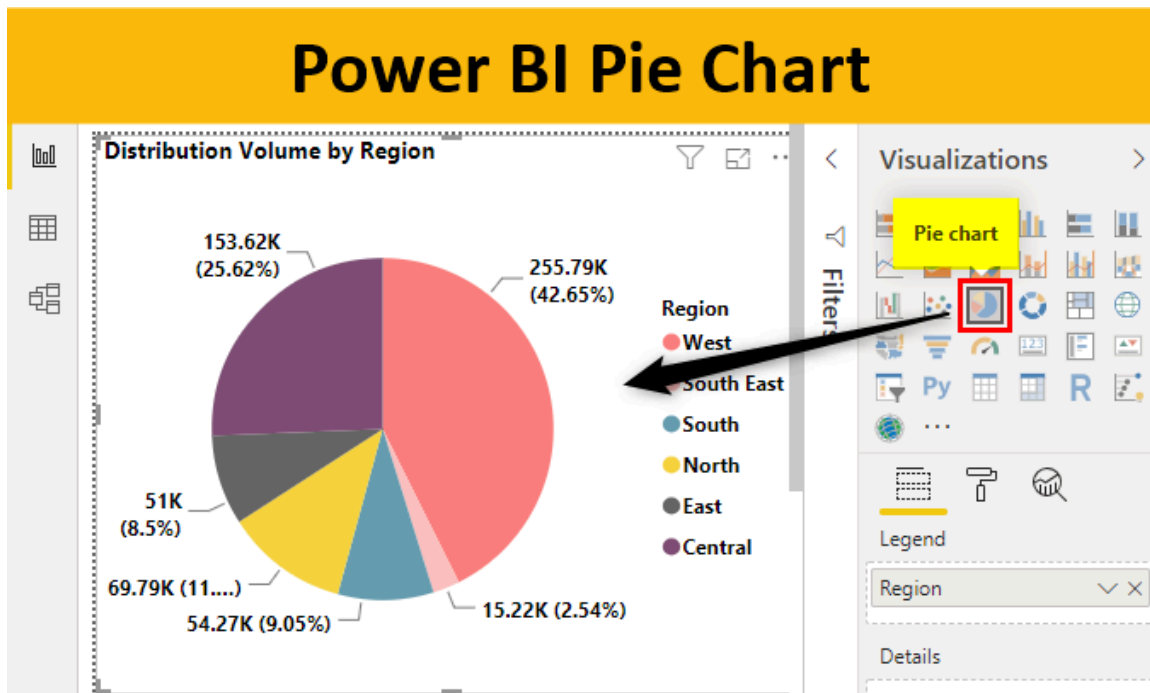
- **Description:** Similar to line charts but with the area under the line filled with color.
- **Types:**
  - **Stacked Area Chart**
  - **100% Stacked Area Chart**
- **When to Use:**

- To visualize trends with an emphasis on magnitude (e.g., market share over time).
- **Example:**
  - **Data:** Market share of different products over years.
  - **Visual:** A stacked area chart showing cumulative market share.



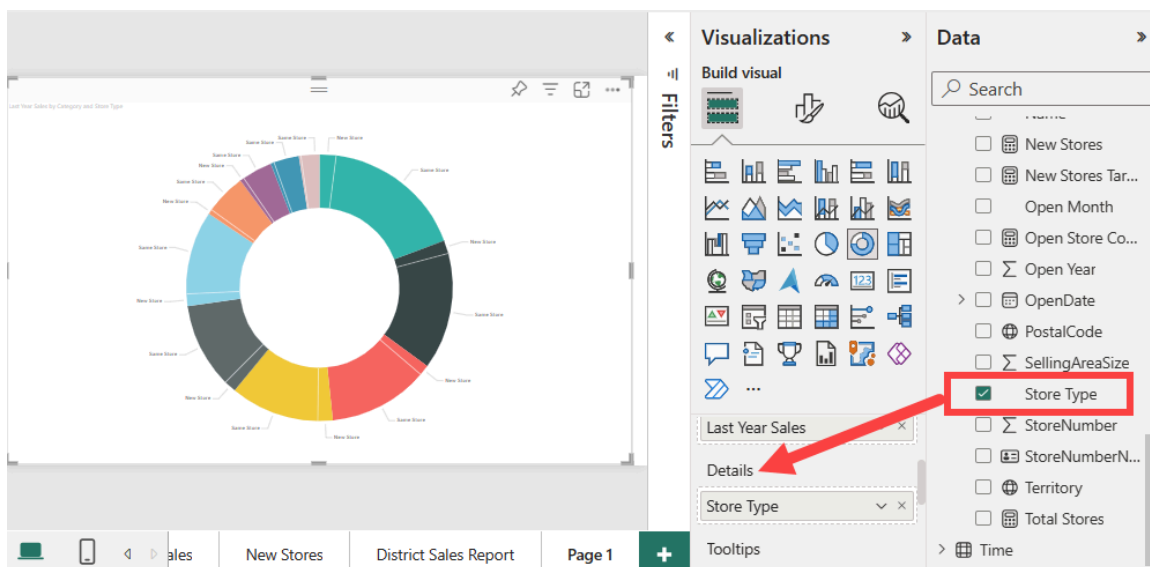
## 5. Pie Chart

- **Description:** Represents data as slices of a circle, showing part-to-whole relationships.
- **When to Use:**
  - To show proportions (e.g., product category contribution to total revenue).
- **Example:**
  - **Data:** Revenue share by product category.
  - **Visual:** A pie chart with slices for "Electronics," "Furniture," and "Clothing."



## 6. Donut Chart

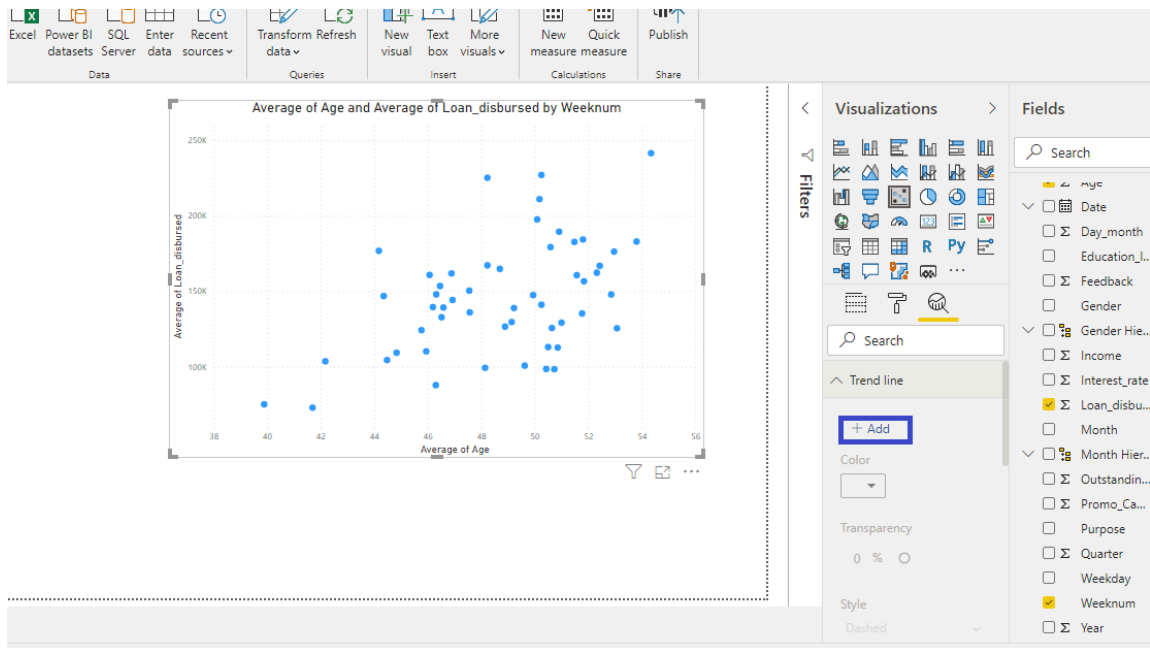
- **Description:** A variation of the pie chart with a hole in the center.
- **When to Use:**
  - Same as pie charts but with an aesthetic twist.
- **Example:**
  - **Data:** Customer segmentation by demographics.
  - **Visual:** A donut chart showing age-group contributions.



## 7. Scatter Chart

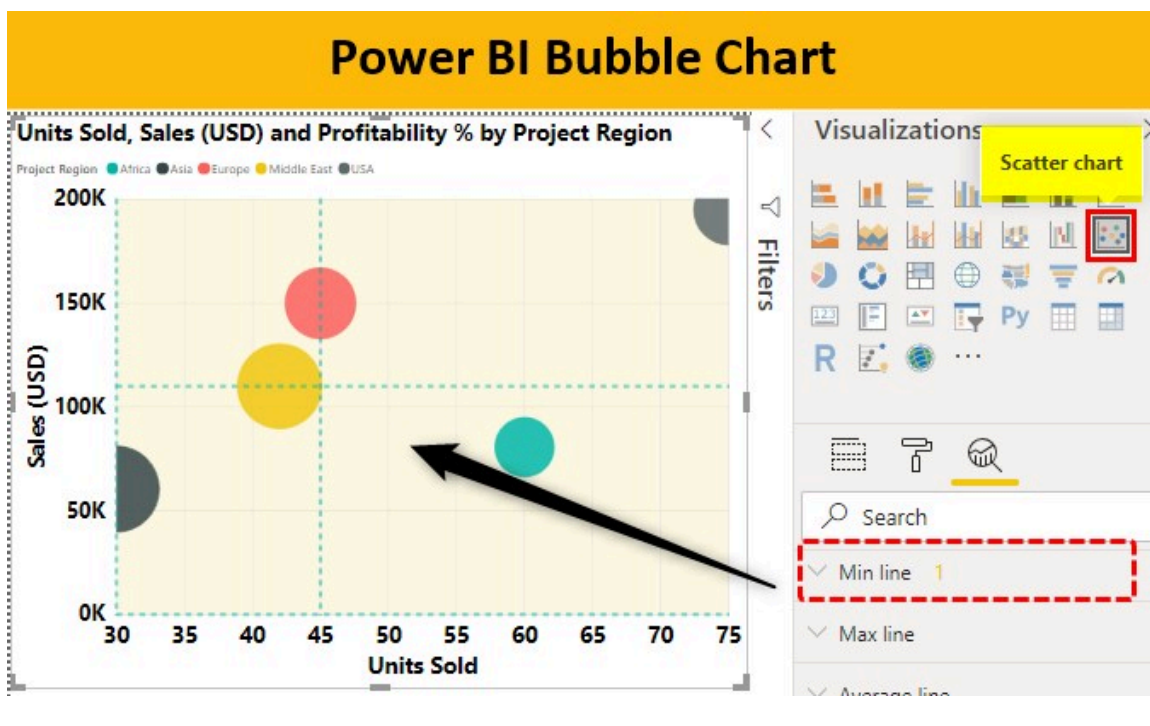
- **Description:** Plots points on a two-dimensional grid, showing relationships between two variables.
- **When to Use:**
  - To identify correlations or clusters (e.g., sales vs. advertising spend).
- **Example:**

- **Data:** Advertising budget vs. revenue.
- **Visual:** A scatter chart showing a positive correlation.



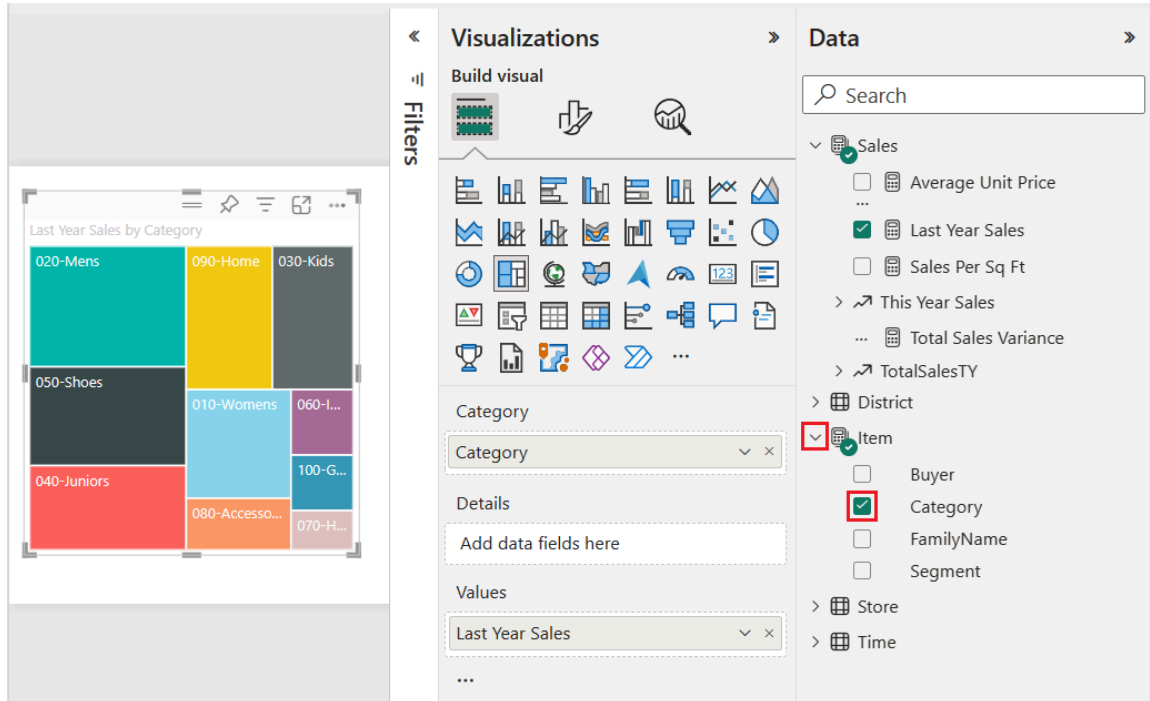
## 8. Bubble Chart

- **Description:** An extension of the scatter chart with an additional variable represented by the bubble size.
- **When to Use:**
  - To show three variables (e.g., sales, profit, and market size).
- **Example:**
  - **Data:** Revenue, profit, and market share by region.
  - **Visual:** A bubble chart showing larger bubbles for higher market share.



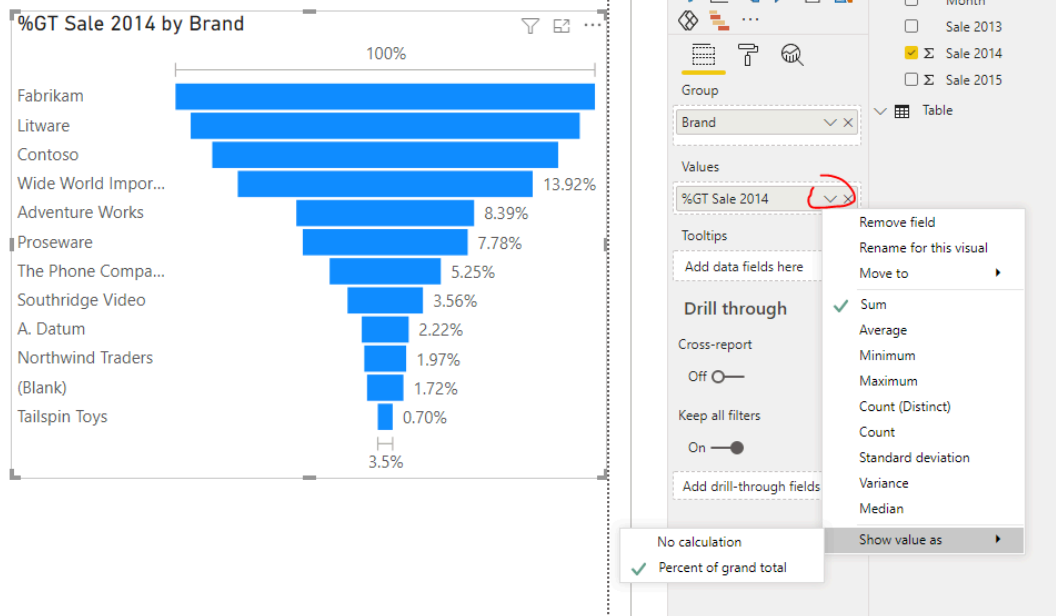
## 9. Tree Map

- **Description:** Displays hierarchical data as nested rectangles.
- **When to Use:**
  - To visualize proportions within a hierarchy (e.g., sales contribution by product and sub-product).
- **Example:**
  - **Data:** Sales data by product categories.
  - **Visual:** A tree map showing the largest category by size.



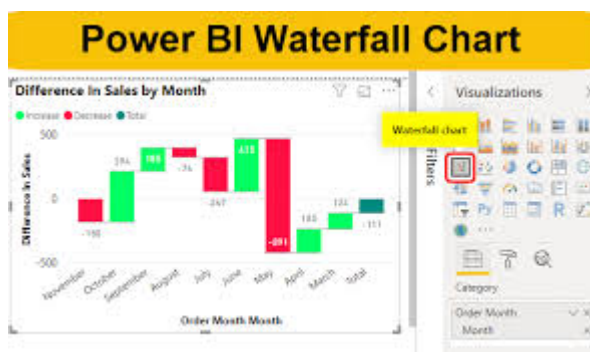
## 10. Funnel Chart

- **Description:** Visualizes a process that involves sequential steps, with each step represented as a portion of the total.
- **When to Use:**
  - To show conversion rates or stages in a process (e.g., sales funnel).
- **Example:**
  - **Data:** Lead generation process (Leads → Opportunities → Sales).
  - **Visual:** A funnel chart showing drop-offs at each stage.



## 11. Waterfall Chart

- **Description:** Shows cumulative effects of sequential positive and negative values.
- **When to Use:**
  - To analyze contribution of individual components to a total (e.g., profit calculation).
- **Example:**
  - **Data:** Profit breakdown by revenue and expenses.
  - **Visual:** A waterfall chart showing how expenses reduce total revenue.



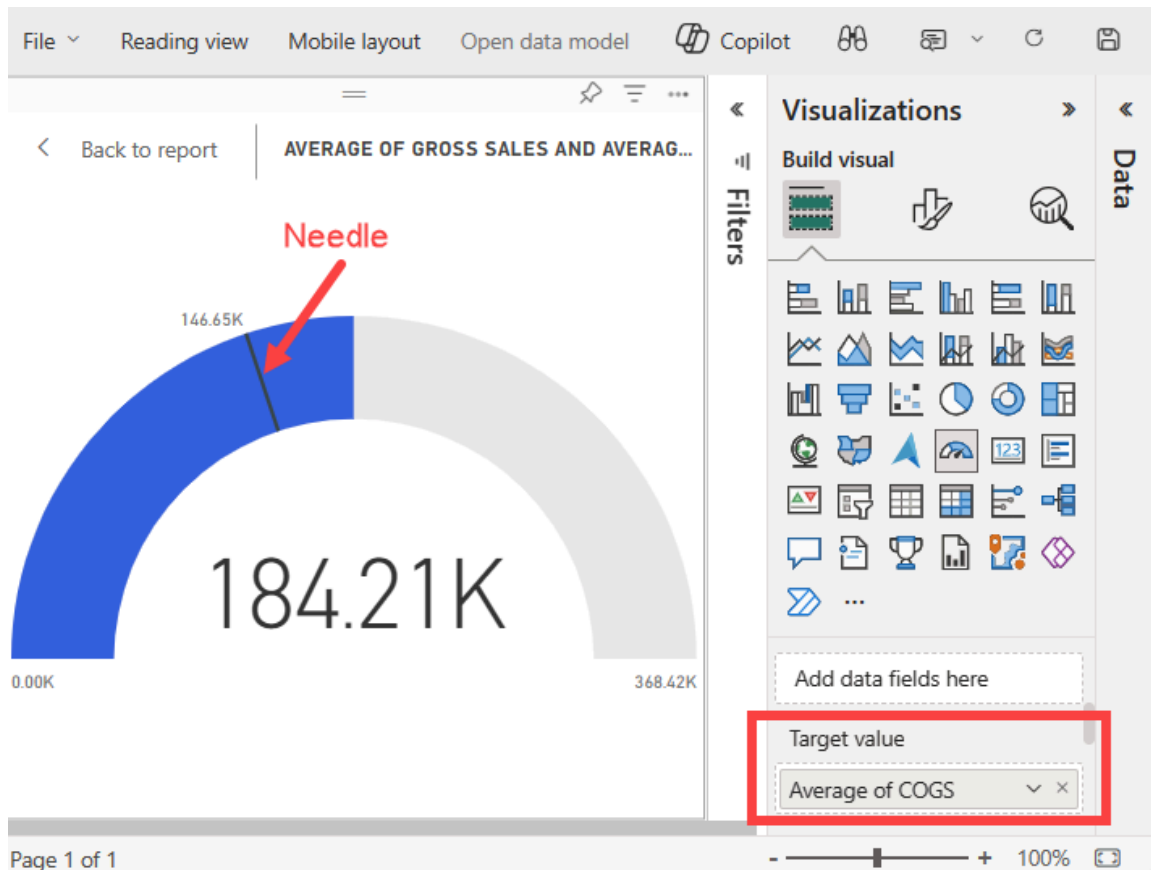
## 12. KPI (Key Performance Indicator)

- **Description:** Displays a single value to track performance against a target.
- **When to Use:**
  - To track goals or key metrics (e.g., sales target vs. actual sales).
- **Example:**
  - **Data:** Monthly sales target and actual sales.
  - **Visual:** A KPI card showing "95% achieved."



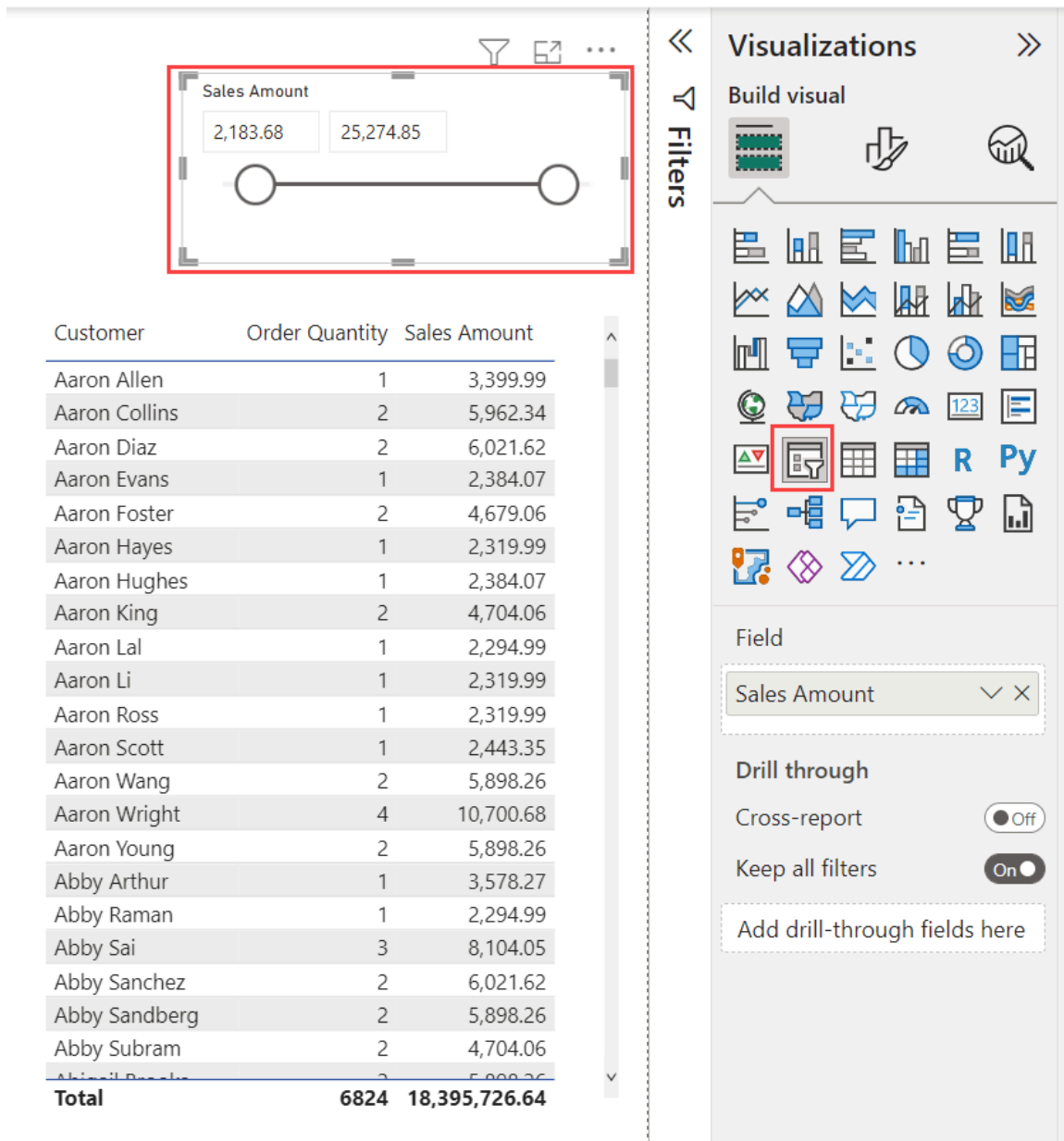
## 13. Gauge Chart

- **Description:** Represents progress towards a goal using a speedometer-like dial.
- **When to Use:**
  - To visualize performance metrics as percentages (e.g., budget utilization).
- **Example:**
  - **Data:** Current sales vs. sales target.
  - **Visual:** A gauge showing "80% of target met."



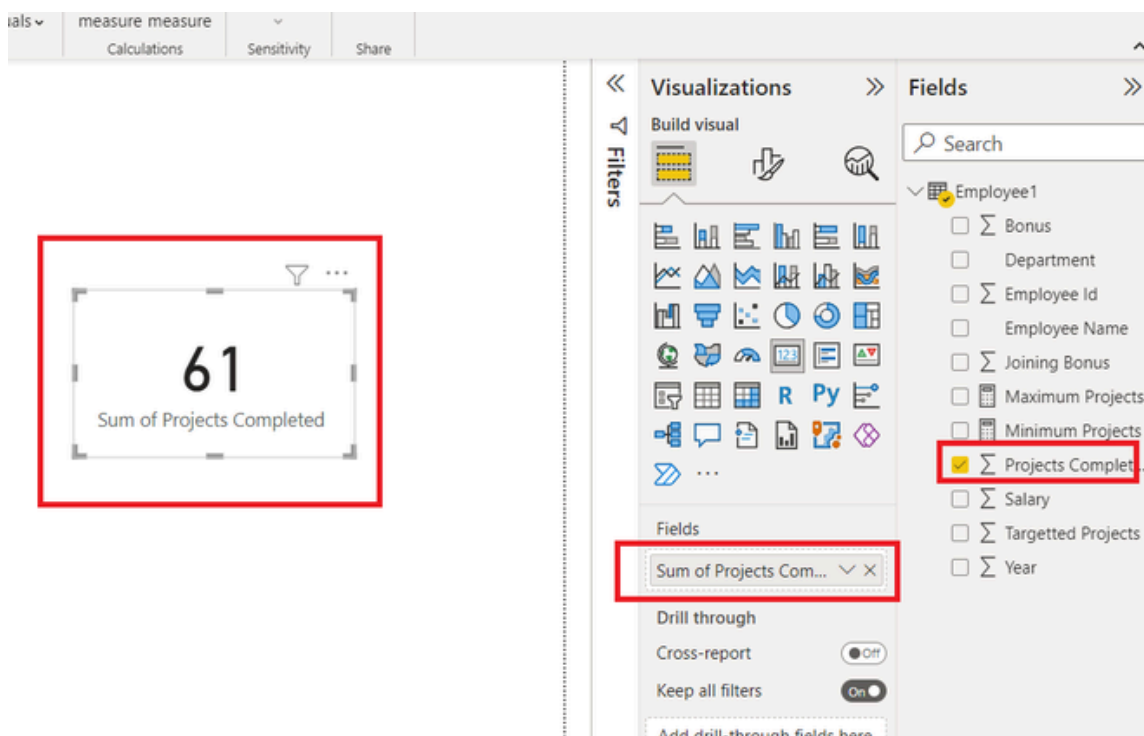
## 14. Slicer

- **Description:** An interactive filter to refine data displayed in other visuals.
- **When to Use:**
  - To allow users to explore data dynamically (e.g., filter by region or product).
- **Example:**
  - **Data:** Regional sales data.
  - **Visual:** A slicer for selecting "North," "South," "East," or "West."



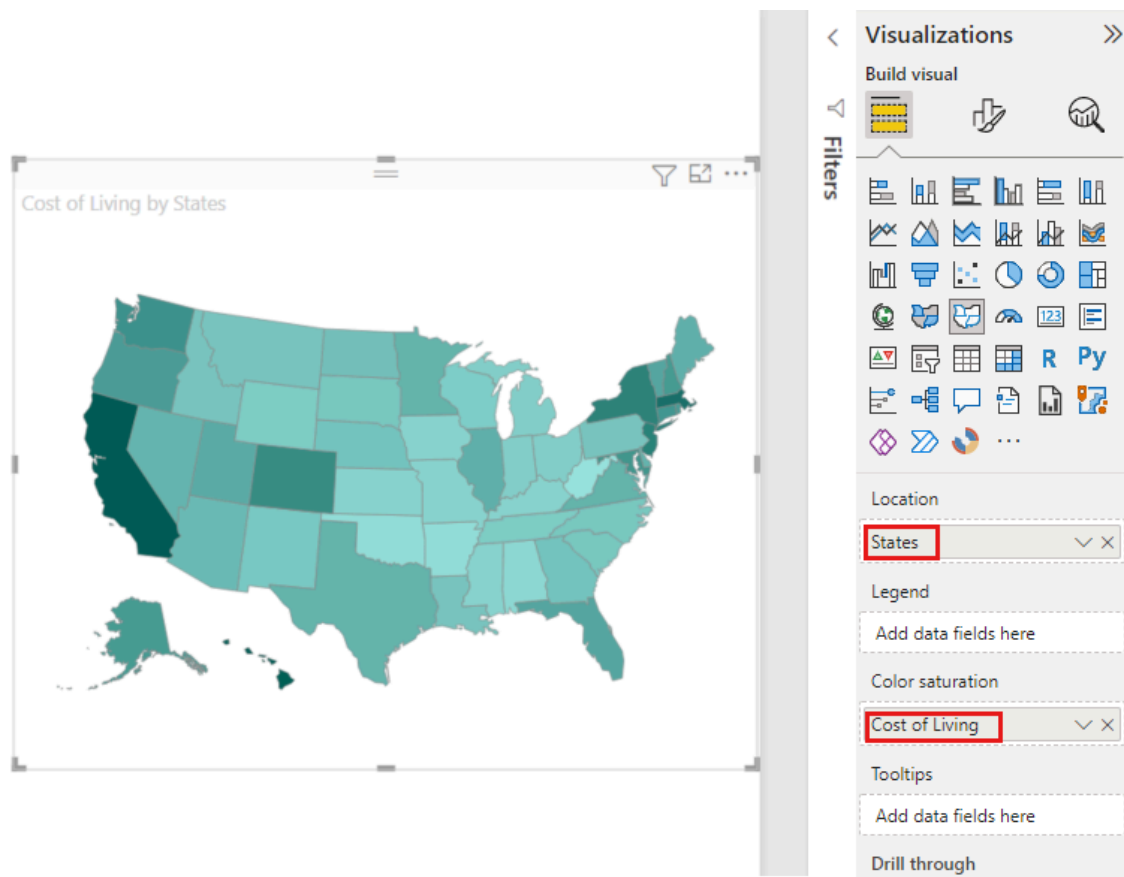
## 15. Card

- **Description:** Displays a single piece of data as a card.
- **Types:** Single-value and Multi-row cards.
- **When to Use:**
  - To highlight key metrics (e.g., total revenue, total customers).
- **Example:**
  - **Data:** Total revenue for a year.
  - **Visual:** A single-value card showing "₹1,000,000."



## 16. Map Visuals

- **Description:** Displays geographical data.
- **Types:**
  - **Basic Map**
  - **Filled Map**
  - **ArcGIS Maps**
- **When to Use:**
  - To visualize data by location (e.g., sales by city).
- **Example:**
  - **Data:** Regional sales data.
  - **Visual:** A map with sales represented by size or color intensity.



## 17. Matrix

- **Description:** A table with hierarchical rows and columns.
- **When to Use:**
  - To show detailed data across multiple dimensions (e.g., sales by region and category).
- **Example:**
  - **Data:** Sales data by region and product.
  - **Visual:** A matrix showing subtotals and grand totals.

**Table Data:**

Category	010-Womens	020-Mens	030-Kids
Territory	TotalSales	TotalSalesLY	TotalSales
DE	35,570.26	\$22,132	132,141.36
TN	79,907.71	\$50,560	298,037.74
Knoxville, TN	5,688.29	\$4,126	37,023.80
Johnson City, TN	17,054.05	\$11,482	61,059.91
Cookeville, TN	18,590.37	\$11,590	59,812.03
Chattanooga, TN	17,854.64	\$10,195	75,182.66
Gallatin, TN	20,720.36	\$13,167	64,959.34
KY	123,424.47	\$77,128	234,240.04
SC	83,072.28	\$49,572	331,560.65
GA	100,081.63	\$60,523	412,585.42
VA	254,661.29	\$152,531	836,563.06
MD	363,121.21	\$214,375	811,013.88
NC	311,086.27	\$185,919	1,299,316.08
WV	774,859.93	\$463,124	1,157,584.42
Total	4,468,620.52	\$2,680,662	8,905,554.10

**Data Pane Fields:**

- Rows:** Territory, City
- Columns:** Category
- Values:** TotalSales, TotalSalesLY
- Filters:** Item, Buyer, Category, FamilyName, Segment, Store, Time

## 18. Table

- **Description:** Displays raw data in a tabular format.
- **When to Use:**
  - To show detailed information (e.g., a list of transactions).
- **Example:**
  - **Data:** Transaction details.
  - **Visual:** A table listing dates, amounts, and merchants.

**Table Data:**

Category
010-Womens
020-Mens
030-Kids
040-Juniors
050-Shoes
060-Intimate
070-Hosiery
080-Accessories
090-Home
100-Groceries
41 - L SPECIAL SIZES
50 - JUNIORS
64 - PROMO
90 - BASICS
95 - CORPORATE BUYS
99 - MISCELLANEOUS

**Visualizations Pane:**

- Build visual:** Table icon selected
- Columns:** Category
- Drill through:** Cross-report (Off), Keep all filters (On)

**Data Pane Fields:**

- Item:** Buyer, Category, FamilyName, Segment
- Store:** Average Selling Area...
- Time:** Count of OpenDate, DistrictID, DM, DM\_Plc, Name

## 19. R and Python Visuals

- **Description:** Custom visuals created using R or Python scripts.
  - **When to Use:**
    - For advanced visualizations not natively supported by Power BI.
  - **Example:**
    - **Data:** Time series data with complex analytics.
    - **Visual:** A custom chart created with Python.
- 

## 20. Custom Visuals (Marketplace)

- **Description:** Power BI supports custom visuals available in the AppSource marketplace.
  - **When to Use:**
    - To meet specialized needs (e.g., heatmaps, bullet charts).
  - **Example:**
    - **Data:** Employee performance.
    - **Visual:** A bullet chart to compare performance against targets.
- 

## Tips for Choosing the Right Visual

- **Bar/Column Charts:** For comparisons.
- **Line/Area Charts:** For trends over time.
- **Pie/Donut Charts:** For proportions.
- **Scatter/Bubble Charts:** For relationships.
- **Maps:** For geographical data.
- **Tables/Matrices:** For detailed data.
- **Waterfall Charts:** For incremental changes.
- **Treemaps/Funnels:** For hierarchy or process data.

## Field inputs like Values, Legend, Axis, Filters, Tooltips, etc.,

In Power BI, each visual has specific fields where you can input data. Here's a breakdown of the common **field inputs** like **Values, Legend, Axis, Filters, Tooltips, etc.**, and what they are used for in various visuals.

---

### 1. Bar/Column Charts

- **Axis:** The category to compare (e.g., Product Names, Months).
- **Values:** Numerical data to visualize (e.g., Sales, Profit).
- **Legend:** For grouping (e.g., Region or Gender).
- **Tooltips:** Additional information displayed on hover (e.g., Profit Margin).
- **Filters:** To filter the data (e.g., Year = 2024).

**Example:**

- **Axis:** Months (Jan, Feb, Mar)
  - **Values:** Sales (₹)
  - **Legend:** Region (North, South, East)
- 

## 2. Line Charts

- **Axis:** Time-based or sequential data (e.g., Months, Years).
- **Values:** The trend data (e.g., Revenue, Visitors).
- **Legend:** For grouping lines by categories (e.g., Regions, Products).
- **Tooltips:** Show related values (e.g., Profit for the same month).

### Example:

- **Axis:** Months (Jan–Dec)
  - **Values:** Website Traffic
  - **Legend:** Device Type (Mobile, Desktop)
- 

## 3. Pie/Donut Charts

- **Values:** The main metric to show proportions (e.g., Total Sales).
- **Legend:** Categories (e.g., Product Types, Regions).
- **Details:** To add layers of grouping or detail.

### Example:

- **Values:** Sales Amount (₹)
  - **Legend:** Product Category (Electronics, Furniture)
- 

## 4. Scatter Charts

- **X-Axis:** The first numerical value (e.g., Advertising Budget).
- **Y-Axis:** The second numerical value (e.g., Sales Revenue).
- **Legend:** To categorize data points (e.g., Region or Product Type).
- **Size (for Bubble Charts):** Determines bubble size (e.g., Market Share).
- **Tooltips:** Additional information for each point (e.g., Profit Percentage).

### Example:

- **X-Axis:** Advertising Spend
  - **Y-Axis:** Revenue
  - **Size:** Market Size
  - **Legend:** Region
- 

## 5. Maps

- **Location:** Geographic data (e.g., City, Country, Latitude/Longitude).
- **Values:** Numerical data to represent (e.g., Sales, Population).

- **Legend:** Categories (e.g., Region).
- **Tooltips:** Related information (e.g., Yearly Growth).

**Example:**

- Location: States (Uttar Pradesh, Delhi)
  - Values: Sales (₹)
  - Legend: Product Type (Electronics, Clothing)
- 

## 6. Tree Map

- **Values:** Numerical data to compare (e.g., Sales, Profit).
- **Group:** The main category (e.g., Product Line).
- **Details:** Subcategories (e.g., Product Type).

**Example:**

- Values: Sales (₹)
  - Group: Product Line (Electronics)
  - Details: Sub-product (TVs, Phones)
- 

## 7. Funnel Chart

- **Values:** Numerical data at different stages (e.g., Leads, Conversions).
- **Details:** The stages of the process (e.g., Lead Stage).

**Example:**

- Values: Customer Count
  - Details: Lead Stages (Leads → Opportunities → Closed Deals)
- 

## 8. Table

- **Values:** Columns of raw data (e.g., Transaction ID, Date, Amount).
- **Filters:** To narrow down the table (e.g., Date Range, Region).

**Example:**

- Values: Product Name, Sales, Profit
- 

## 9. Matrix

- **Rows:** Categories or subcategories (e.g., Region, Product).
- **Columns:** Related categories (e.g., Year).
- **Values:** Metrics to display (e.g., Sales, Profit).

**Example:**



- Rows: Region
  - Columns: Year
  - Values: Sales Amount (₹)
- 

## 10. KPI (Key Performance Indicator)

- **Indicator:** The metric (e.g., Total Sales).
- **Target Goals:** Benchmarks (e.g., Sales Target).
- **Trend Axis:** Time-based trend (optional).

### Example:

- Indicator: Sales ₹10,00,000
  - Target: ₹12,00,000
  - Trend Axis: Monthly Sales
- 

## 11. Card

- **Fields:** The single value to display (e.g., Total Sales, Total Profit).

### Example:

- Fields: Total Revenue: ₹1,00,000
- 

## 12. Waterfall Chart

- **Category (Axis):** Categories (e.g., Expense Type, Month).
- **Values:** Incremental values (e.g., Sales Changes).
- **Tooltips:** Extra details (e.g., Reason for Change).

### Example:

- Category: Expenses (Marketing, Operations)
  - Values: Cost/Revenue
- 

## 13. Gauge Chart

- **Values:** Actual progress value (e.g., Sales Achieved).
- **Target Values:** Goals or benchmarks (e.g., Sales Target).

### Example:

- Values: ₹80,000
  - Target: ₹1,00,000
- 

## Summary Table for Field Usage:

Visual	Fields	Description
Bar/Column	Axis, Values, Legend	Compare categories or trends.
Line/Area	Axis, Values, Legend	Show trends over time.
Pie/Donut	Values, Legend	Display proportions of a whole.
Scatter/Bubble	X, Y, Legend, Size	Relationships or clustering with additional dimensions.
Maps	Location, Values, Legend	Geographical distribution.
Tree Map	Group, Values, Details	Hierarchical data in proportions.
Funnel	Values, Details	Process stages or conversion rates.
Table	Values	Raw data representation.
Matrix	Rows, Columns, Values	Multi-level summary with rows and columns.
KPI	Indicator, Target, Trend	Display performance metrics.
Card	Fields	Highlight a single key value.
Waterfall	Category, Values	Show incremental changes.
Gauge	Values, Target	Show progress toward a goal.

In [ ]: