

# Pre-Session Notes: Visualizations on Power BI Desktop

## Session-3&4: Visualizations on Power BI Desktop

### Introduction

Power BI Desktop offers a variety of default visualizations to help you effectively present your data. These visualizations include charts, maps, and tables, among others, each suited to different types of data and analysis. Understanding the default visualizations available in Power BI Desktop is essential for creating insightful and impactful reports.

### 1. Bar Chart

#### Description

A bar chart displays data using rectangular bars. The length of each bar represents the value of the data point. Bar charts are ideal for comparing quantities across different categories.

#### Type of Fields Required

- **Axis:** Category field
- **Values:** Numeric field

#### Real-World Examples

1. **Sales by Product:** Comparing sales revenue for different products.
2. **Employee Performance:** Measuring performance scores across various employees.
3. **Expense Categories:** Visualizing company expenses by different categories.
4. **Website Traffic:** Comparing the number of visits from different sources.

### 2. Column Chart

#### Description

A column chart is similar to a bar chart but displays data vertically. It is used to show the same types of comparisons as bar charts.

#### Type of Fields Required

- **Axis:** Category field
- **Values:** Numeric field

#### Real-World Examples

1. **Monthly Sales:** Showing sales figures for each month.
2. **Product Inventory:** Comparing the number of items in stock across different products.
3. **Survey Results:** Displaying responses to survey questions.
4. **Budget Analysis:** Comparing budgeted versus actual expenditures.

### 3. Line Chart

## Description

A line chart connects individual data points with lines. It is primarily used to display trends over time.

## Type of Fields Required

- **Axis:** Time or category field
- **Values:** Numeric field

## Real-World Examples

1. **Stock Prices:** Showing changes in stock prices over time.
2. **Website Visitors:** Tracking the number of visitors to a website over a period.
3. **Temperature Trends:** Visualizing temperature changes throughout the year.
4. **Sales Trends:** Displaying sales trends over several months or years.

# 4. Pie Chart

## Description

A pie chart divides data into slices to show the relative proportions of different categories.

## Type of Fields Required

- **Legend:** Category field
- **Values:** Numeric field

## Real-World Examples

1. **Market Share:** Showing the market share of different companies.
2. **Expense Distribution:** Visualizing the distribution of expenses.
3. **Customer Demographics:** Displaying the proportions of different customer segments.
4. **Resource Allocation:** Showing how resources are allocated across departments.

# 5. Donut Chart

## Description

A donut chart is similar to a pie chart but with a hole in the center. It is used for the same purposes as a pie chart.

## Type of Fields Required

- **Legend:** Category field
- **Values:** Numeric field

## Real-World Examples

1. **Revenue Distribution:** Showing revenue distribution across different regions.
2. **Task Completion:** Visualizing the proportion of completed tasks.
3. **Budget Allocation:** Displaying budget allocation for different projects.

4. **User Preferences:** Showing user preferences for different features.

## 6. Area Chart

### Description

An area chart is similar to a line chart but fills the area below the lines with color, emphasizing the volume of data.

### Type of Fields Required

- **Axis:** Time or category field
- **Values:** Numeric field

### Real-World Examples

1. **Cumulative Sales:** Showing cumulative sales over time.
2. **Website Engagement:** Visualizing user engagement metrics.
3. **Energy Consumption:** Displaying energy consumption trends.
4. **Market Growth:** Showing market growth over a period.

## 7. Scatter Chart

### Description

A scatter chart displays individual data points plotted on a two-dimensional plane, showing the relationship between two variables.

### Type of Fields Required

- **X Axis:** Numeric or category field
- **Y Axis:** Numeric field
- **Details:** Category field (optional)

### Real-World Examples

1. **Sales vs. Profit:** Showing the relationship between sales and profit.
2. **Height vs. Weight:** Visualizing the correlation between height and weight.
3. **Advertising Spend vs. Revenue:** Analyzing the impact of advertising spend on revenue.
4. **Age vs. Salary:** Showing the relationship between age and salary.

## 8. Treemap

### Description

A treemap displays hierarchical data as a set of nested rectangles. The size and color of each rectangle represent different values.

### Type of Fields Required

- **Group:** Hierarchical category field

- **Values:** Numeric field

### Real-World Examples

1. **Product Categories:** Visualizing sales by product categories.
2. **Website Structure:** Showing the structure of a website.
3. **Organizational Hierarchy:** Displaying the hierarchy of an organization.
4. **Expense Breakdown:** Visualizing expense breakdown by department.

## 9. Map

### Description

A map visualization plots data on a geographical map, showing spatial relationships.

### Type of Fields Required

- **Location:** Geographic field (e.g., city, country)
- **Values:** Numeric field (optional)
- **Legend:** Category field (optional)

### Real-World Examples

1. **Sales by Region:** Showing sales figures by geographical region.
2. **Customer Locations:** Visualizing customer locations.
3. **Store Locations:** Displaying store locations on a map.
4. **Delivery Routes:** Visualizing delivery routes and their efficiencies.

## 10. Table

### Description

A table displays data in rows and columns, similar to a spreadsheet.

### Type of Fields Required

- **Values:** Multiple fields (both category and numeric)

### Real-World Examples

1. **Sales Report:** Displaying detailed sales data.
2. **Inventory List:** Showing a list of items in inventory.
3. **Employee Directory:** Visualizing employee information.
4. **Transaction History:** Displaying a history of transactions.

## 11. Matrix

### Description

A matrix is similar to a table but allows you to pivot and aggregate data, showing data in a hierarchical format.

## Type of Fields Required

- **Rows:** Category fields
- **Columns:** Category fields
- **Values:** Numeric fields

## Real-World Examples

1. **Sales by Region and Product:** Showing sales data pivoted by region and product.
2. **Financial Statements:** Visualizing financial data in a hierarchical format.
3. **Performance Metrics:** Displaying performance metrics by department and period.
4. **Survey Results:** Analyzing survey responses by demographic categories.

## 12. Card

### Description

A card displays a single number or KPI prominently, making it easy to highlight key metrics.

### Type of Fields Required

- **Values:** Numeric field

### Real-World Examples

1. **Total Sales:** Displaying the total sales figure.
2. **Number of Customers:** Showing the total number of customers.
3. **Revenue:** Highlighting the total revenue.
4. **Conversion Rate:** Displaying the conversion rate.

## 13. Gauge

### Description

A gauge visual displays a single value within a range, similar to a speedometer, to show progress towards a goal.

### Type of Fields Required

- **Values:** Numeric field
- **Target Value:** Numeric field (optional)

### Real-World Examples

1. **Sales Target:** Showing progress towards a sales target.
2. **Customer Satisfaction Score:** Displaying the current satisfaction score.
3. **Production Output:** Visualizing current production levels against targets.
4. **Budget Utilization:** Showing the percentage of budget utilized.