Chapter 2: Customizing Power BI

Objective:

After completing this chapter, you will be able to know

- Getting familiar with the interface
- Understanding type of Visualisation
- Loading data from multiple sources
- Data type and the type of default chart on drag drop.
- Geo location Map integration

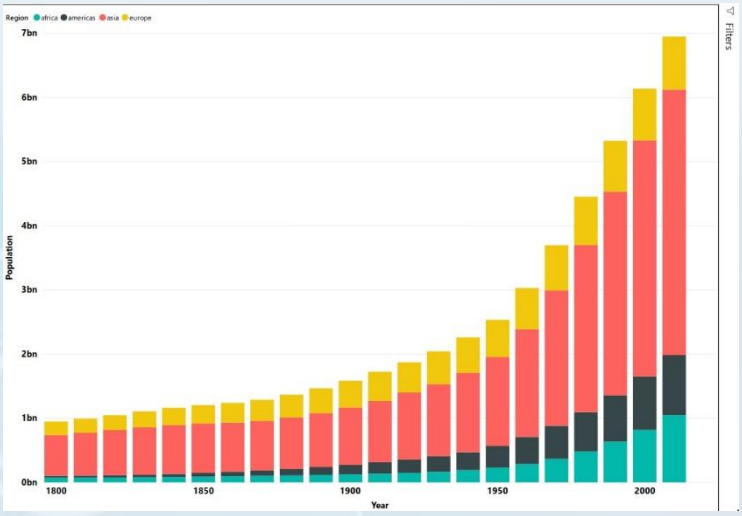
Building blocks of Power BI

The basic building blocks in Power BI are:

- Visualizations
- Datasets
- Reports
- Dashboards
- Tiles

Visualizations

A visualization is a representation of data in a visual format. It could be a line chart, a bar graph, a colour coded map or any visual way to present the data.

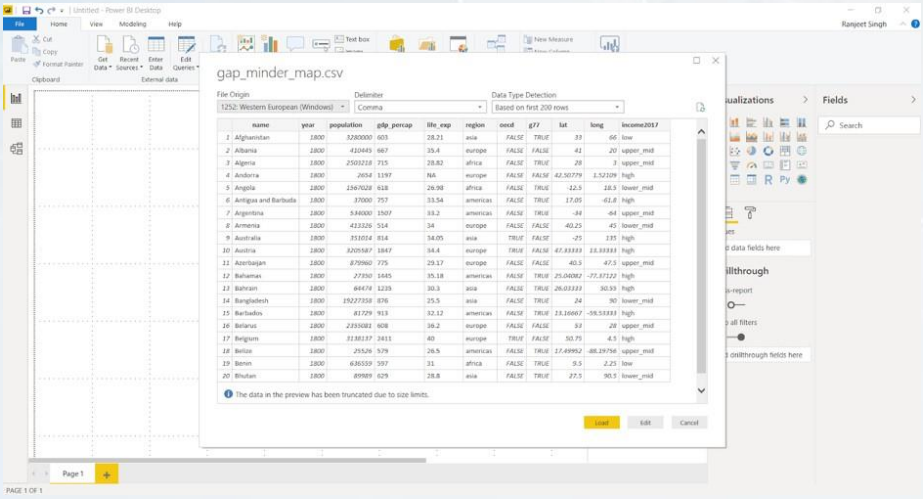


Visualizations can be a simple number representing a significant calculation or it could be more complex like multiple charts showing the proportion of users participating in a survey. The main idea of visualisation is to show the data in a way that tells the story that is lying underneath it. Like the saying goes: a picture says a thousand words.

Datasets

A Dataset is a collection of data that Power BI uses to create its visualizations.

You can have a simple dataset that's based on a single table from a Microsoft Excel workbook, similar to what's shown in the following image.



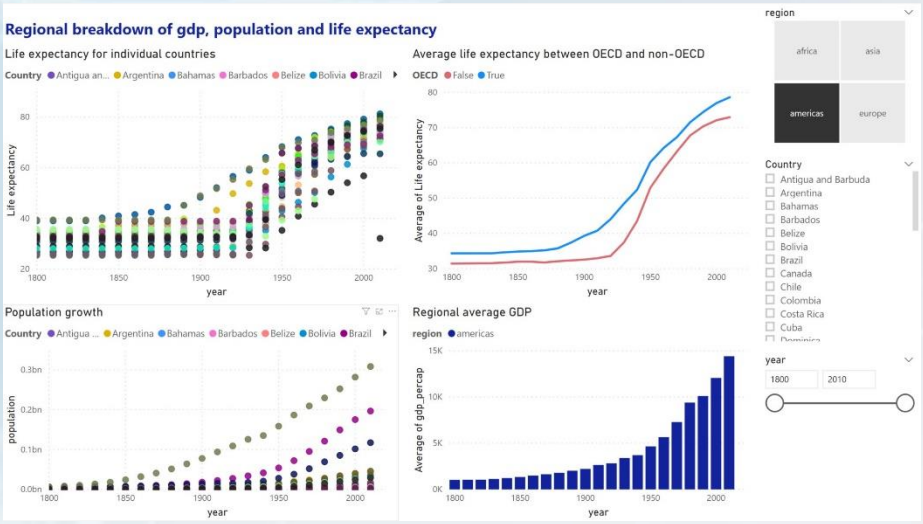
Dataset can also be a combination of many different sources, which can be filtered using Power BI and combined into one to use.

For example: One data source contains countries and locations in the form of latitude and longitude. Another data source contains demographics of these countries like population and GDP. Power BI can combine these two data sources into one dataset which can be used for visualizations.

An important feature of Power BI is the ability to connect to various data sources using its connectors. Whether the data you want is in Excel or a Microsoft SQL Server database, in Azure or Oracle, or in a service like Facebook, Salesforce, or Mail Chimp, Power BI has built-in data connectors that let you easily connect to that data, filter it if necessary, and bring it into your dataset.

After you have a dataset, you can begin creating visualizations that show different portions of it in different ways, and gain insights based on what you see. That is where reports come in Reports.

In Power BI, a Report is a collection of visualizations that appear together on one or more pages. A report in Power BI is a collection of items that are related to each other. We will be working with the gap minder data to create the report below that looks at the GDP, population, and life expectancy by global regions.



Reports let us create and structure visualizations on pages based on the way the we want to tell the story.

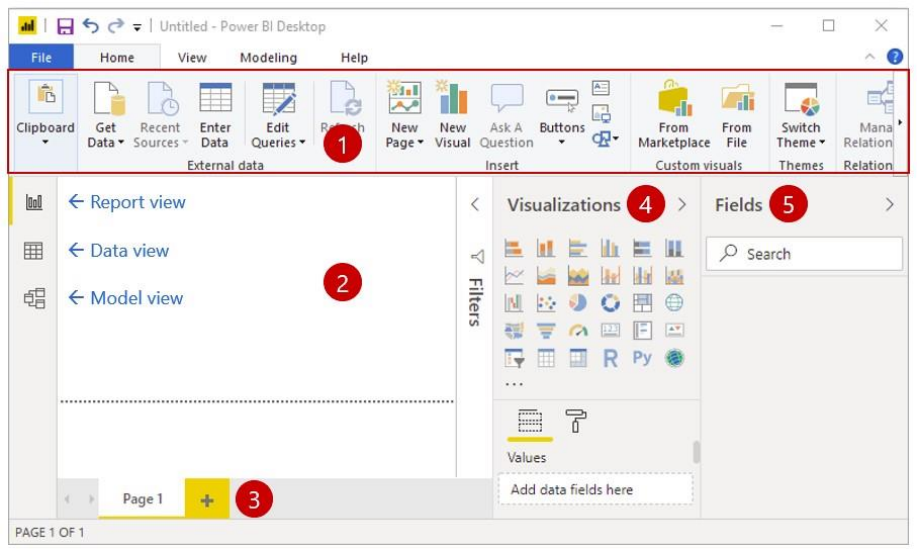
Dashboards

A Power BI dashboard is a collection of visuals from a single page that you can share with others. Often it is a selected group of visuals that provide quick insight into the data or story you are trying to present.

A dashboard must fit on a single page, often called a canvas (the canvas is the blank backdrop in Power BI Desktop or the service, where you put visualizations). Think of it like the canvas that an artist or painter uses — a workspace where you create, combine, and rework interesting and compelling visuals. You can share dashboards with other users or groups, who can then interact with your dashboards when they're in the Power BI service or on their mobile device.

Overview of Power BI Desktop

Power BI Desktop is a free application for PCs that lets you gather, transform, and visualize your data. In this module, you'll learn how to find and collect data from different sources and how to clean or transform it. You'll also learn tricks to make data-gathering easier. Power BI Desktop and the Power BI Service work together. You can create your reports and dashboards in Power BI Desktop, and then publish them to the Power BI Service for others to consume.



1.**Ribbon** - Displays common tasks that are associated with reports and visualizations.
2.**Report view, or canvas** - Where visualizations are created and arranged. You can switch between Report, Data and Model views by selecting the icons in the left column.
3.**Page Tab** - Located along the bottom of the page, this area is where you would select or add a report page.
4.**Visualization Pane** - Where you can change visualizations, customize colours or axes, apply filters, drag fields, and more.

5.**Field Pane** - Where query elements and filters can be dragged onto the Report view or dragged to the Filters area of the Visualizations pane.

Types Of Data Sources

Power BI supports a wide variety of data sources and visualization types, allowing users to connect to and visualize their data in meaningful ways. Here are some examples of data sources available in Power BI:

1. Excel spreadsheets
2. SQL Server databases
3. Oracle databases
4. MySQL databases
5. PostgreSQL databases
6. Salesforces
7. Share Point Lists
8. Dynamic 365
9. Google Analytics
10. CSV Files

Loading data from multiple sources

- Import data from multiple sources: Power BI Desktop allows you to import data from various sources such as Excel, CSV, SQL Server, Azure, SharePoint, and many more. You can simply go to the "Home" tab, click on "Get Data" and select the data source you want to import.
- Combine data from multiple sources: You can use Power BI Desktop to combine data from multiple sources using various techniques. One way to do this is by using the "Merge Queries" feature, which allows you to join two or more queries based on a common field. Another way to combine data is by using the "Append Queries" feature, which allows you to stack multiple queries on top of each other.
- DirectQuery: If you have data stored in different databases, you can use DirectQuery to connect to these databases and retrieve data in real-time. With DirectQuery, you can create relationships between tables across different databases and build reports that show data from all sources.

- Power Query: Power Query is a data transformation and cleansing tool that allows you to combine, shape, and transform data from multiple sources. With Power Query, you can clean and prepare data before importing it into Power BI. You can also use Power Query to create custom columns, filter data, and pivot data.
- APIs: Power BI also provides APIs that allow you to connect to various sources, including web services, cloud-based applications, and other data sources. You can use the APIs to retrieve data from these sources and integrate it into your Power BI reports.
- By using these techniques, you can easily load data from multiple sources in Power BI and create comprehensive reports that provide insights into your business data.

Data type and the type of default chart on drag drop.

When you drag and drop a field onto the report canvas in Power BI, the default chart type that is displayed depends on the data type of the field. Here are the default chart types for each data type:

1. Numeric data type (e.g. decimal, integer): The default chart type is a column chart.
2. Date/Time data type: The default chart type is a line chart.
3. Text data type (e.g. string): The default chart type is a table.
4. Boolean data type: The default chart type is a clustered column chart.
5. Geographic data type (e.g., address, city): The default chart type is a map.

Note that these are the default chart types and you can always change the chart type to suit your needs by selecting a different chart type from the Visualizations pane in Power BI.

The default chart type that is created when you drag and drop a field onto the report canvas in Power BI depends on the type of data in that field. Here are the general rules:

1. If the field contains numerical data, such as sales figures or quantities, Power BI will default to creating a column chart.
2. If the field contains categorical data, such as product categories or regions, Power BI will default to creating a bar chart.
3. If the field contains date or time data, such as order dates or appointment times, Power BI will default to creating a line chart.
4. If the field contains geographical data, such as country or state names, Power BI will default to creating a map visualization.

Keep in mind that these are just general rules and Power BI's behaviour can be customized based on your specific needs. You can always change the chart type later if the default chart is not suitable for your data.

Geo location Map integration

- Geo location map integration in Power BI refers to the ability to display geographical data on a map visual within a Power BI report. This feature allows users to create visually compelling and informative reports by integrating geographical data with other data sources.
- Power BI provides built-in support for geo location map integration, allowing users to easily create maps that display data based on geographic locations, such as customer locations or sales by region. Users can drag and drop location data fields onto the map visualization, and Power BI automatically displays the locations on the map.
- Users can also customize the map by changing the map type, zoom level, and map theme, as well as adding additional layers to the map, such as boundary lines or point data. This feature allows users to create highly customized and interactive maps within their reports, providing a more engaging and informative experience for viewers.

Power BI has built-in support for integrating geo location maps into reports. You can use these maps to display geographical data, such as sales by region or customer locations.

To integrate a geo location map into a Power BI report, follow these steps:

1. Click on the "Map" visualization icon in the Visualizations pane.
2. Drag and drop the geographical data fields onto the "Location" field well in the "Fields" pane. The location fields can include address, city, state, postal code, country, and latitude/longitude coordinates.
3. Drag and drop any other data fields you want to display onto the "Values" field well in the "Fields" pane. For example, if you want to display sales data by region, drag and drop the sales field onto the "Values" field well.
4. The map will automatically display the locations based on the data you have provided. You can customize the map by changing the map type, zoom level, and map theme using the options in the "Format" pane.
5. You can also add additional layers to the map, such as boundary lines, point data, or custom images, by using the "Layers" option in the "Visualizations" pane.
6. With these steps, you can easily integrate geo location maps into your Power BI reports to provide a visual representation of your geographical data.