

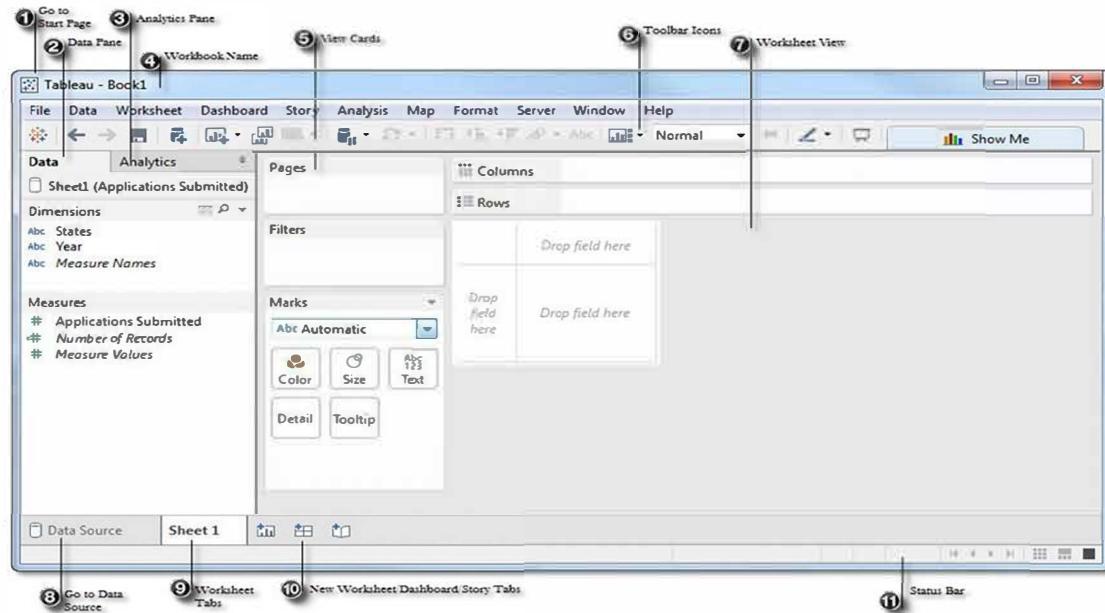
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8	<p>Analysis of revenue in sales dataset:</p> <ul style="list-style-type: none"> i) Create a choropleth map (fill the map) to spot the special trends to show the state which has the highest revenue. ii) Create a line chart to show the revenue based on the month of the year. iii) Create a bin of size 10 for the age measure to create a new dimension to show the revenue. iv) Create a donut chart view to show the percentage of revenue per region by creating zero access in the calculated field. v) Create a butterfly chart by reversing the bar chart to compare female & male revenue based on product category. vi) Create a calculated field to show the average revenue per state & display profitable & non-profitable state. <p>Build a dashboard.</p>	44-51
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10	<p>Analysis of HR Dataset:</p> <ul style="list-style-type: none"> i) Create KPI to show employee count, attrition count, attrition rate, attrition count, active employees, and average age. ii) Create a Lollipop Chart to show the attrition rate based on gender category. 	56-61

	<p>iii) Create a pie chart to show the attrition percentage based on Department Category- Drag department into colours and change automatic to pie. Entire view, Drag attrition count to angle. Label attrition count, change to percent, add total also, edit label.</p> <p>iv) Create a bar chart to display the number of employees by Age group,</p> <p>v) Create a highlight table to show the Job Satisfaction Rating for each job role based on employee count.</p> <p>vi) Create a horizontal bar chart to show the attrition count for each Education field Education field wiseattrition – drag education field to rows, sum attrition count to col,</p> <p>Create multiple donut chart to show the Attrition Rate by Gender for different Age group.</p>	
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Program 1: Getting Started - Tableau Workspace, Tableau terminologies, Basic functionalities.

Working with Tableau that focuses on understanding the Tableau Workspace, Tableau terminologies, and basic functionalities.

Dataset used: vgsales.csv



1. Go to Start Page: Toggle between the active sheet and the Desktop Start Page.
2. Data Pane: Includes dimensions and measures, populated from your selected data source. May also include calculated fields, parameters, or sets.
3. Analytics Pane: Includes options you can use to apply reference lines, forecasts, trend lines, to add totals to crosstabs, and to build boxplots.
4. Workbook Name: The file name of our workbook.
5. View Cards: Used for modifying the worksheet.
6. Toolbar Icons: Icons are available for quick access to popular features.
7. Worksheet/View: Workspace for building your visualizations.
8. Go to Data Source: Returns you to the data source specification page.
9. Worksheet Tabs: Click to view a specific worksheet, dashboard, or story
10. New Worksheet, Dashboard, and Story Tabs: Click to create a new Worksheet, Dashboard, or Story.
11. Status Bar: Displays data about the fields and marks included in the view.

Steps:

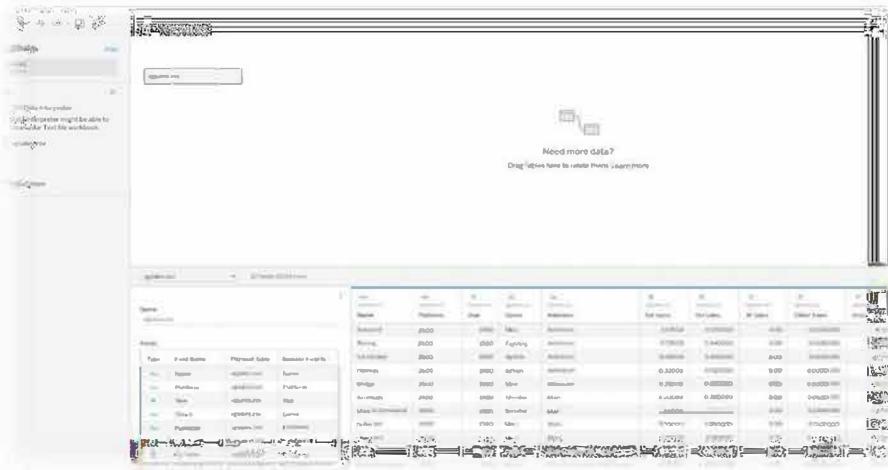
1. Tableau Workspace Setup:

- **Connect to Data:**

- Open Tableau, and on the "Start Page," select Connect -> To a File -> Text File.
- Browse to the location of vgsales.csv and open it.

- **Data Preview:**

- After loading, Tableau will show a preview of the data. You can rename columns if necessary.
- Click on the "Sheet 1" tab at the bottom to go to your first worksheet.



2. Tableau Terminologies:

- **Dimensions:** These are qualitative fields. In vgsales.csv, examples include Platform, Genre, and Publisher.
- **Measures:** These are quantitative fields used for calculations. Examples are Global_Sales, NA_Sales, and Year.
- **Rows and Columns Shelf:** Drag dimensions and measures to the Rows or Columns shelves to build the structure of your visualization.
- **Marks:** Controls the appearance of the data. You can set marks to be circles, bars, or other shapes and control size, color, and label.
- **Filters:** Used to limit the data displayed in the view.
- **Pages Shelf:** Used for creating animations or segmenting your view by categories.

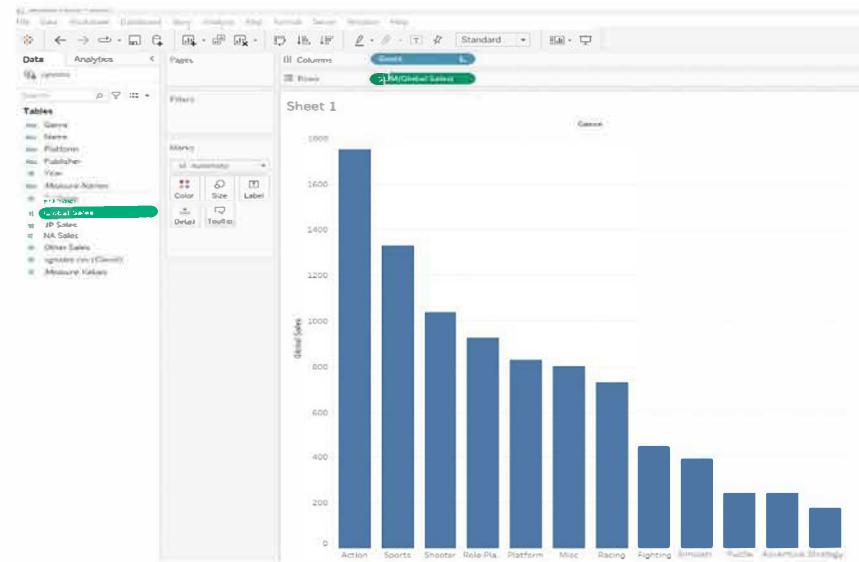
3. Basic Functionalities:

a. Basic Visualization (Bar Chart of Global Sales by Genre):

- In your worksheet, drag Genre to the Columns shelf.
- Drag Global_Sales to the Rows shelf.
- You should see a bar chart. If the data isn't aggregating correctly, check if the aggregation is set to SUM by right-clicking Global_Sales -> Measure -> Sum.

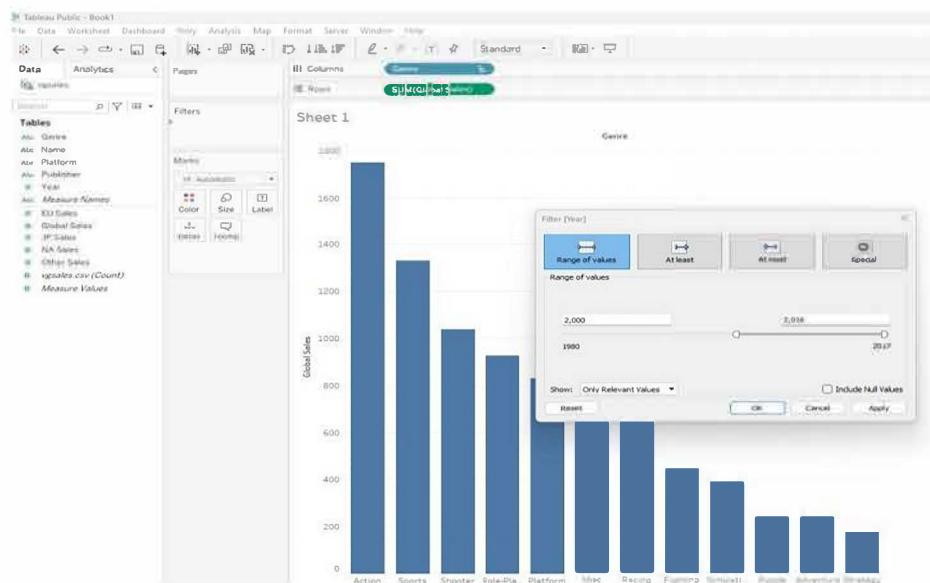
b. Sorting:

- Click on the Global_Sales axis and sort descending to show the genres with the most sales first.



c. Filtering:

- Drag Year to the Filters shelf.
- Choose the range of years you want to display (e.g., 2000-2016).
- Add Year to the Pages shelf to create a dynamic view of how sales changed over time.

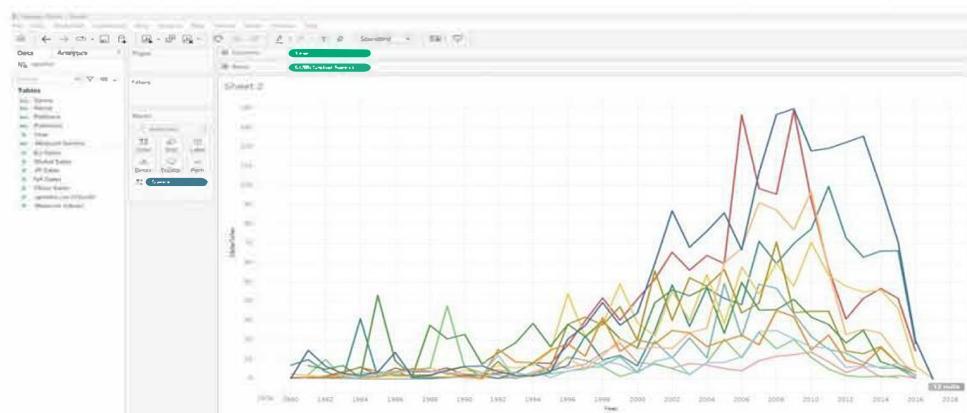


4. Additional Functionalities:

Dashboards: Combine different sheets to create a comprehensive dashboard. Go to the Dashboard tab, drag your created sheets to the layout, and arrange them accordingly.

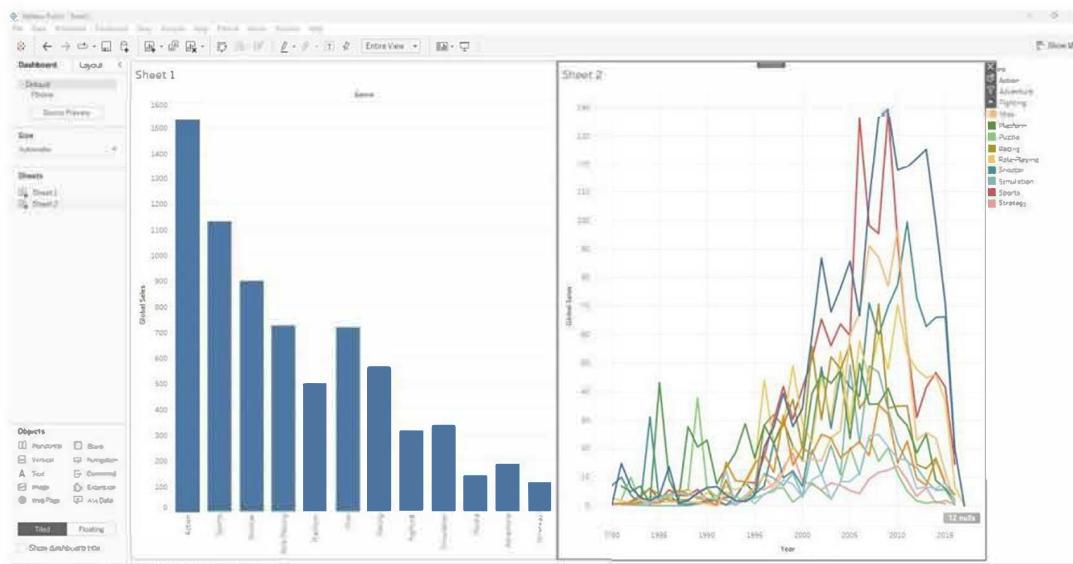
a. Add one more worksheet - Global Sales Trend by Year

- Drag Year to the Columns.
- Drag Global_Sales to the Rows.
- Create a line chart to show how global sales have trended over time.
- Add Genere to the Marks
- Apply color to Genere



b. Go to the Dashboard tab in Tableau.

- c. Add multiple visualizations to a single dashboard. (To increase dashboard size - select size-Automatic)**
d. Arrange charts (e.g., a line chart for yearly sales, a bar chart for top genres, etc.).



Reference Video Link - https://www.youtube.com/watch?v=6xv1KvCMF1Q&list=PLUaB-1hjhk8GwbqoVmo_5zuhOa0Tcl3xC&index=3

Program 2 : Connecting to Data Source – Connecting to Database, Different types of Tableau Joins.

Dataset used: Tableau Joins File: Contains 3 sheets : Demographics, Salary, Job Title

1. Connecting to Excel Files in Tableau:

- Open Tableau and click on **Connect** in the left pane.
- Under **To a File**, choose **Microsoft Excel**.
- Browse and select your Excel file (Tableau Joins File.xlsx).
- Tableau will display the sheets from the Excel file in the Data Source tab.
- Drag the relevant sheets to the workspace.

2. Tableau Joins File.xlsx Dataset: has three Excel sheets

- **Demographics:**

- EmployeeID
- NameofEmployee
- EmployeeAge
- EmployeeGender

- **Salary:**

- EmployeeID
- EmployeeSalary

These sheets have a relationship based on the EmployeeID, and you can join them using this field.

Drag and drop Demographics table- Right click-select open- that allows you to do following types of joins.

Now Drag and drop Salary table - That allows you to do join of your choice.

3. Types of Joins in Tableau:

Once both tables are in the Data Source tab, Tableau automatically suggests an inner join, but you can modify the type of join depending on the scenario.

a. Inner Join:

- **Description:** Returns only records where there is a match in both tables.

- **How to Create in Tableau:**

- Drag Demographics and Salary sheets into the canvas.
- Tableau automatically detects the common field (EmployeeID). If not, manually select it.
- Choose **Inner Join** in the **Join Type** options.

- Result: You will see only employees whose employee id matches in both Demographics and Salary table.

The screenshot shows the Tableau Data Interpreter interface. At the top, it says "Demographics+ (Tableau Joins File)". Below that, a tooltip indicates "Demographics is made of 2 tables." A join configuration window is open, showing a "Left" join from the "Demographics" table (EmployeeID) to the "Salary" table (EmployeeID). The main pane displays a preview of the joined data, which includes fields from both tables: EmployeeID, Name of Employee, Employee Age, Employee Gender, EmployeeID (Salary), and Employee Salary. The preview shows 7 rows of data for employees 1001 through 1007.

EmployeeID	Name of Employee	Employee Age	Employee Gender	EmployeeID (Salary)	Employee Salary
1001	Jen Helper	30	Male	1001	40,000
1002	Pam Beasley	30	Female	1002	20,000
1003	Dwight Schrute	37	Male	1003	45,000
1004	Toby Flenderson	36	Male	1004	38,000
1005	Angela Martin	34	Female	1005	42,000
1006	Maurice Scott	40	Male	1006	30,000
1007	Meredith Palmer	41	Female	1007	40,000

- b. Left Join:**

- Description:** Returns all records from the left table (Demographics), and matched records from the right table (salary). If there's no match, NULL values are returned for fields from the right table.
- How to Create in Tableau:**
 - In the join settings, select **Left Join**.
 - Result: All employees will be returned, even if data missing in Salary. Salary information will be NULL for those without a match.

This screenshot shows the same Tableau Data Interpreter interface as the previous one, but with more data rows. The preview pane now displays 11 rows of data for employees 1001 through 1011. The data structure remains the same, with fields from both the Demographics and Salary tables. The additional rows show that the join still returns all records from the left table, even if they don't have a matching record in the right table.

EmployeeID	Name of Employee	Employee Age	Employee Gender	EmployeeID (Salary)	Employee Salary
1001	Jen Helper	30	Male	1001	40,000
1002	Pam Beasley	30	Female	1002	20,000
1003	Dwight Schrute	37	Male	1003	45,000
1004	Toby Flenderson	36	Male	1004	38,000
1005	Angela Martin	34	Female	1005	42,000
1006	Maurice Scott	40	Male	1006	30,000
1007	Meredith Palmer	41	Female	1007	40,000
1008	Phyllis Lapin	32	Female	1008	35,000
1009	Kevin Malone	33	Male	1009	33,000
1010	Ernest G. Chappell	31	Male	1010	30,000
1011	Stanley Hudson	42	Male	1011	30,000

c. Right Join:

- **Description:** Returns all records from the right table (Salary), and matched records from the left table (Demographics). If there's no match, NULL values are returned for fields from the left table
- **How to Create in Tableau:**
 - Select **Right Join**.
- Result: You will see all salary, even if they don't have employee id. Employee information will be NULL for those salary with no matching employee id.

The screenshot shows the Tableau Data Source setup for a 'Demographics+ (Tableau Joins File)' connection. In the 'Join Type' section, the 'Right' option is selected. The 'Demographics' table is set as the 'Left' table and the 'Salary' table as the 'Right' table. Both tables share the common key 'Employee ID'. The resulting preview table displays all employees from the Demographics table, including their names, ages, and genders, along with their corresponding salary information from the Salary table. Employees without a matching salary record show NULL values for salary-related fields.

Employee ID	Name	Demographic	Demographic	Demographic	Employee ID	Employee ID	Employee ID
1001	John Hancock	Male	30	Manager	3001	40,000	
1002	Ryan Bedard	Male	25	Analyst	3002	35,000	
1003	Chad Schulte	Male	27	Analyst	3003	35,000	
1004	Tony Treadman	Male	29	Analyst	3004	35,000	
1005	Angela Martin	Female	34	Analyst	3005	40,000	
1006	Michael Scott	Male	40	Analyst	3006	50,000	
1007	Meredith Palmer	Female	40	Analyst	3007	40,000	
1008	None	None	None	None	3008	25,000	

d. Full Outer Join:

- **Description:** Returns all records when there is a match in either the left (Demographics) or right (Job Title) table. If there's no match, NULL values are returned for the missing side.
- **How to Create in Tableau:**
 - Select **Full Outer Join**.
- Result: You will see all employees and all salary, even if they don't have a match in the other table. NULL values will appear where there's no corresponding record.

The screenshot shows the Tableau Data Source setup for a 'Demographics+ (Tableau Joins File)' connection. In the 'Join Type' section, the 'Full Outer' option is selected. The 'Demographics' table is set as the 'Left' table and the 'Salary' table as the 'Right' table. Both tables share the common key 'Employee ID'. The resulting preview table displays all employees from the Demographics table, including their names, ages, and genders, along with their corresponding salary information from the Salary table. Employees without a matching salary record show NULL values for salary-related fields.

Employee ID	Name	Demographic	Demographic	Demographic	Employee ID	Employee ID	Employee ID
1001	John Hancock	Male	30	Manager	3001	40,000	
1002	Ryan Bedard	Male	25	Analyst	3002	35,000	
1003	Chad Schulte	Male	27	Analyst	3003	35,000	
1004	Tony Treadman	Male	29	Analyst	3004	35,000	
1005	Angela Martin	Female	34	Analyst	3005	40,000	
1006	Michael Scott	Male	40	Analyst	3006	50,000	
1007	Meredith Palmer	Female	40	Analyst	3007	40,000	
1008	None	None	None	None	3008	25,000	

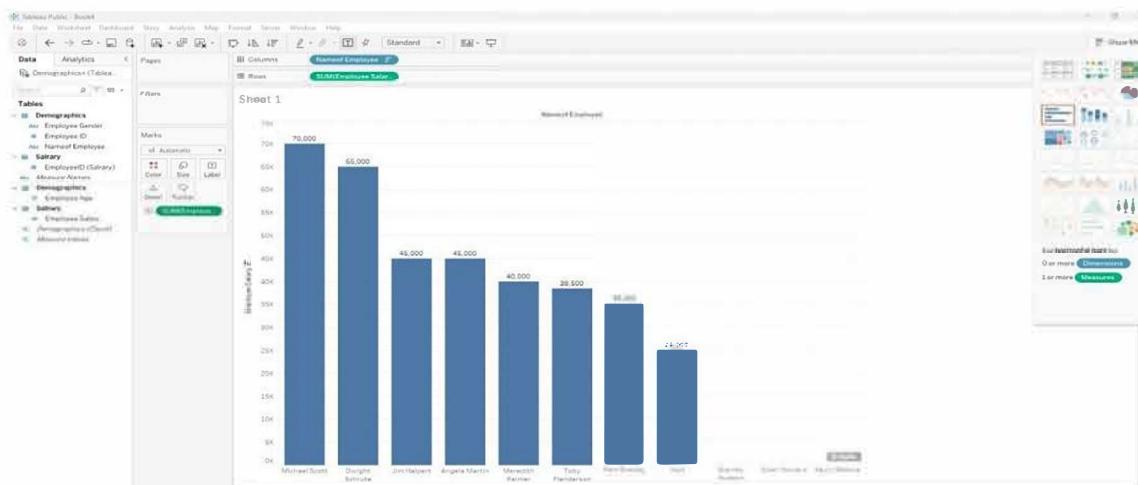
4. Creating a Visualization Based on Joins:

After performing the joins, you can build different visualizations.

Press on Sheet 1:

For example:

- **Bar Chart:** Number of employees and their salary.
- Drag NameofEmployee to **Columns**.
- Drag EmployeeSalary to **Rows**.
- This chart will display the number of employees and their salary based on the type of join.
- Sort it in descending
- Drag EmployeeSalary to Marks - Select color Color, Label



Reference Video Link -

https://www.youtube.com/watch?v=A4SVUF-fTwc&list=PLUaB-1hjhk8GwbqoVmo_5zuhQa0Tcl3xC&index=4

This same procedure we can do by connecting to any database server

We should initially connect to driver by installing it for example if you are planning for mysql

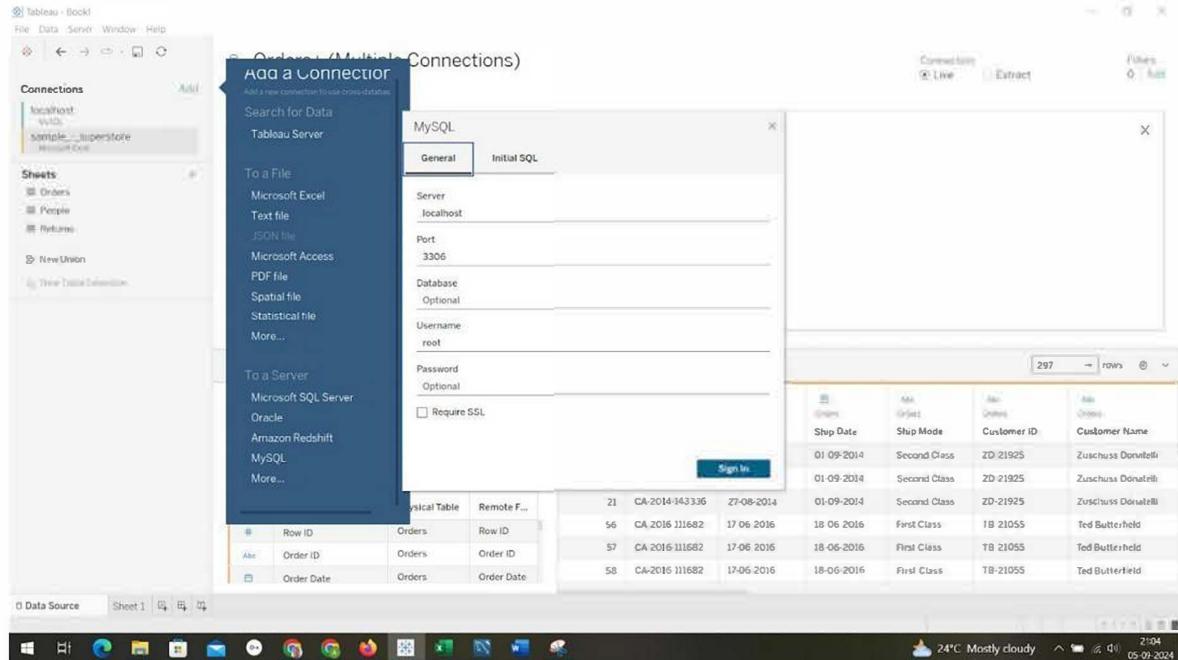
- Install mysql driver connector as in link below:
- <https://dev.mysql.com/downloads/connector/odbc/>

It is available in Drive Link also

https://drive.google.com/drive/folders/1kG25wextZcEOsfjXdr5VcrwW3Dp53jBf?usp=drive_link

After installing it

We have to connect to Mysql



For More Info : Refer Tableau Handouts and Tableau Tutorial

Program 3. Creating a View - formatting charts, adding filters, creating calculated fields and defining parameters

Step 1: Connect to Data

1. Open Tableau Desktop.

2. Connect to Your Data Source:

a) Click on Connect on the left sidebar.

b) Choose your data source by selecting text file and load your vgsales dataset into Tableau.

Step 2: Create a Basic Visualization

- Create a New Worksheet:**

a) Click on the Sheet tab at the bottom of the screen

- Drag Fields to Shelves**

a) Drag Year to the Columns shelf

b) Drag Global Sales to the Rows shelf.

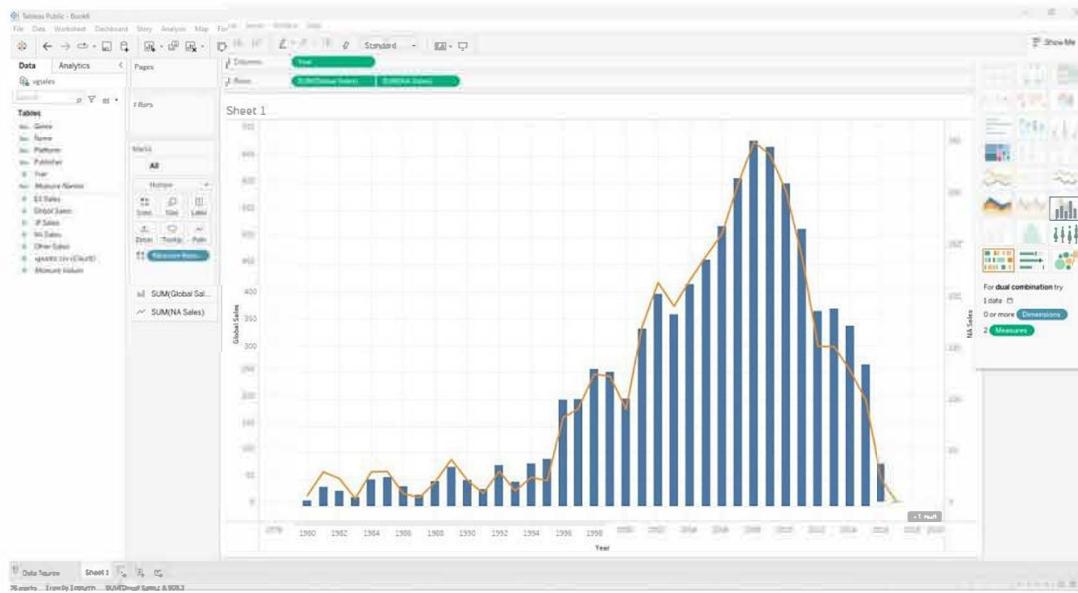
c) Drag EU Sales to the Rows shelf.

That gives the line graph visualization.



- Change Visualization Type:**

In the Show Me panel on the right, select a bar chart or any other type that suits your needs.



Step 3: Format the Chart

- **Format Axes:**

- a) Right-click on the Global Sales axis and select Format.
- b) In the Format pane, adjust the font style & size as needed.

- **Add Titles and Annotations:**

- a) Click on the chart title area and enter a descriptive title - Global Sales by Year.
- b) Add annotations if needed to highlight specific data points – Right click the on the chart which you want to highlight - Select Annotate - Select Mark - Press Ok

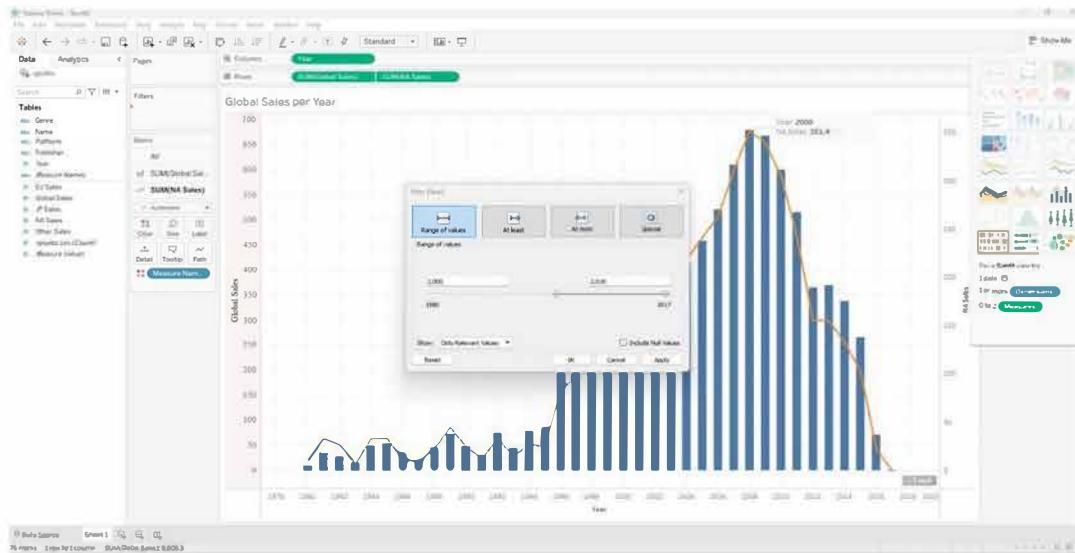


Step 4: Add Filters

Add a Filter for Year:

Drag Year to the Filters shelf.

Choose the range of years you want to display (e.g., 2000-2016).



Step 5: Create Calculated Fields

- Create a Calculated Field for Sales Category:

- Right-click on Global Sales - Select Create - Calculated Field.
- Give name to your calculations as Global Sales - EU Sales
- Do calculations as per your need - [Global Sales] - [EU Sales]
- Press Ok

Add Calculated Fields to Visualization:

- Drag Global Sales-EU Sales to the Rows shelf to show Global Sales over Year with Global Sales-EU Sales over Year.



Step 6: Create a Parameter:

Name: "Select Genre"

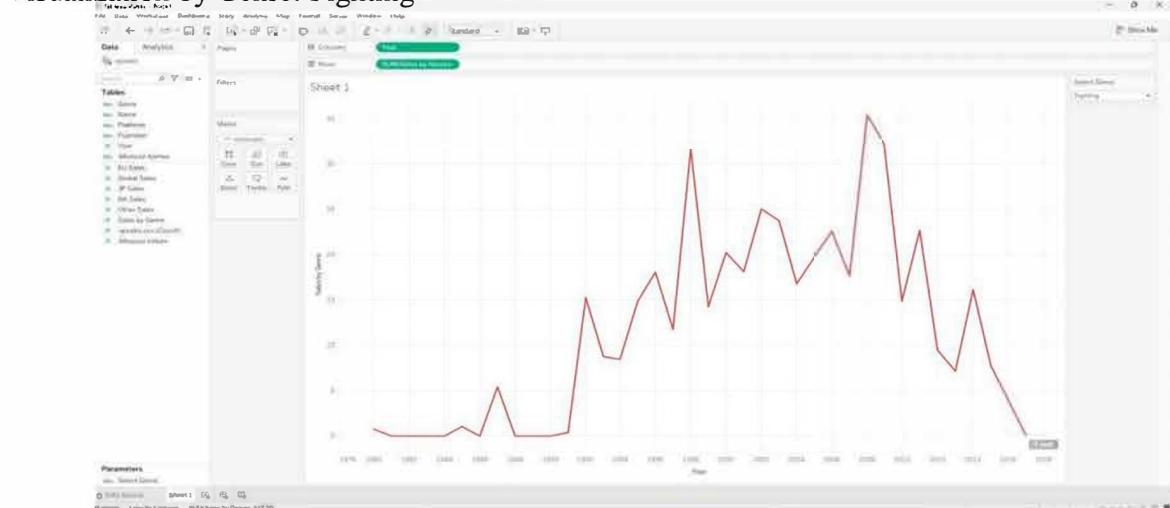
- **Data Type:** String
- **Values:** List (e.g., "Action", "Adventure", "Shooter") or Add values from Genre.

Create a Calculated Field:

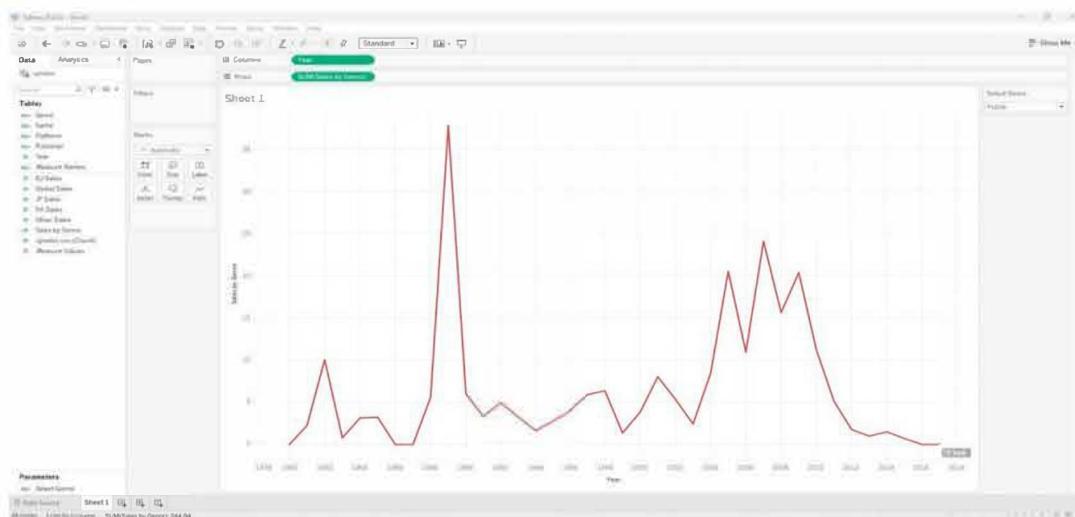
- Name: "Sales by Genre"
- Formula:
- IF [Genre] = [Select Genre] THEN [Global Sales] ELSE 0 END

Build the Visualization:

- **Columns:** Drag "Year".
- **Rows:** Drag "Sales by Genre".
- At the right side of your sheet you can select required Genre and can see different Visualization



Visualization by Genre: Fighting



Reference Video Link - https://www.youtube.com/watch?v=_n5saTnxeoE

Program 4

Question : Introducing Power BI –Components and the flow of work. Power BI Desktop Interface-The Report has five main areas.

Solution :

Power BI includes the following components –

- **Power BI Desktop** – This is used to create reports and data visualizations on the dataset.
- **Power BI Gateway** – You can use Power BI on-premises gateway to keep your data fresh by connecting to your on-premises data sources without the need to move the data. It allows you to query large datasets and benefit from the existing investments.
- **Power BI Mobile Apps** – Using Power BI mobile apps, you can stay connected to their data from anywhere. Power BI apps are available for Windows, iOS, and Android platform.
- **Power BI Service** – This is a cloud service and is used to publish Power BI reports and data visualizations

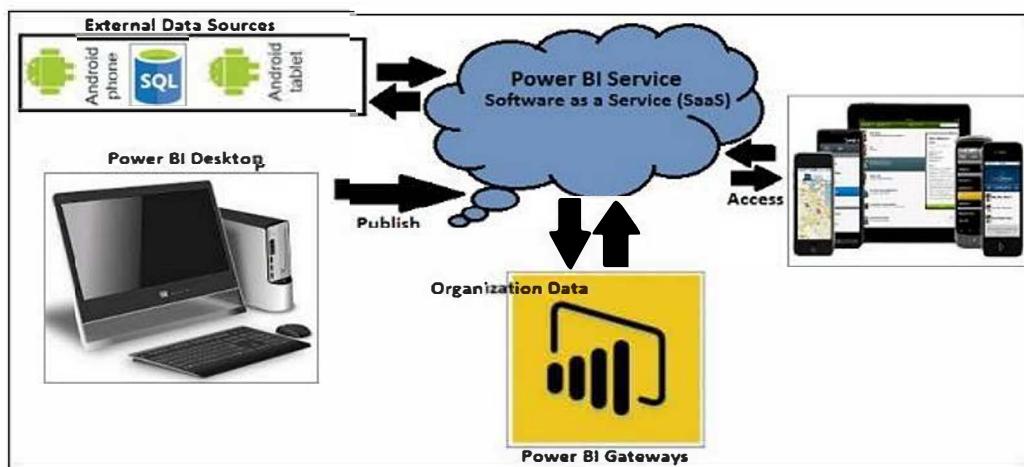


Fig 1 : The Components of Power BI

Flow of work

- A typical Power BI workflow involves more than one type of content.
- A Power BI designer (yellow in the diagram) collects data from semantic models, brings it into Power BI Desktop for analysis, and creates reports full of visualizations that highlight interesting facts and insights.
- The designer pins visualizations from reports to dashboards, and shares the reports and dashboards with business users like you (black in the diagram).



Fig 2: Flow of work

- A visualization (or visual), is a type of chart built by Power BI designers. The visuals display the data from reports and semantic models. Because they're highly interactive, you can slice, filter, highlight, change, and even drill into visualizations.
- A semantic model is a container of data. For example, it might be an Excel file from the World Health Organization. It might also be a company-owned database of customers, or it might be a Salesforce file. And it might be all three if the designer combines them into a single model. Designers manage semantic models. The data contained in semantic models is used to build reports, dashboards, and apps that designers share with you.
- A dashboard is a single screen with tiles of interactive visuals, text, and graphics. A dashboard collects your most important metrics, or a focused set of metrics, on one screen, to tell a story or answer a question. The dashboard content comes from one or more reports and one or more semantic models.
- A report is one or more pages of interactive visuals, text, and graphics that together make up a single report. Power BI bases a report on a single semantic model. Often, the designer organizes report pages to each address a central area of interest or answer a single question.
- An app is a way for designers to bundle and share related dashboards, reports, and semantic models together. Business users receive some apps automatically but can go search for other apps created by colleagues or by the community. For example, out-of-the-box apps are available for external services you may already use, like Google Analytics and Microsoft Dynamics CRM.

Power BI Desktop Interface-The Report has five main areas.

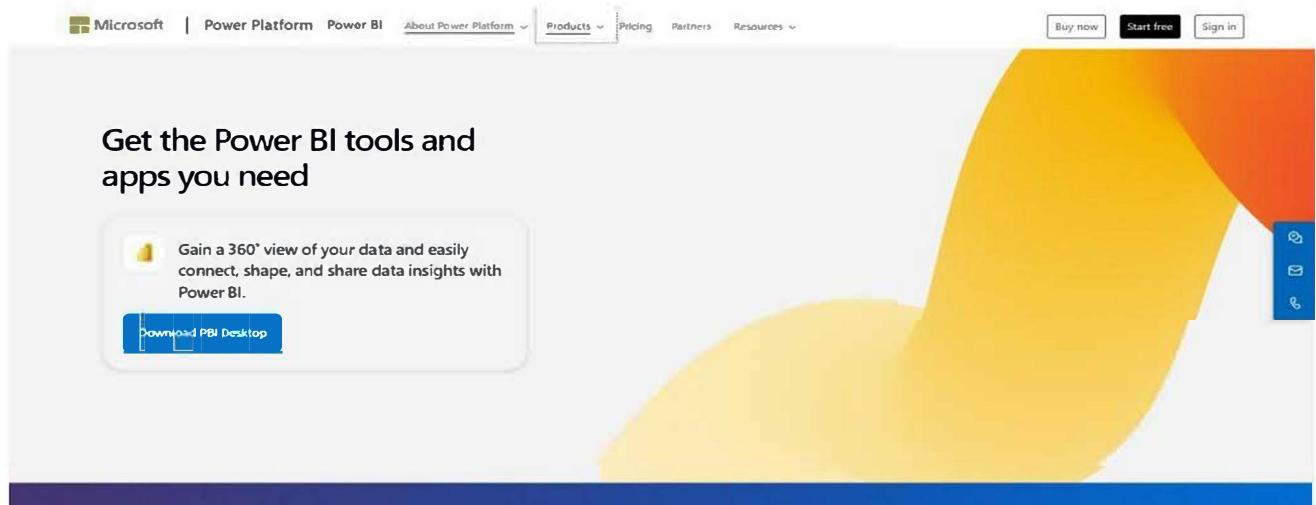
Downloading and Installing Power BI Desktop

Power BI Desktop is available in both 32-bit and 64-bit versions. To download the latest version, you can use the following link –

The Steps to be followed

1. Download from the link

<https://www.microsoft.com/en-us/power-platform/products/power-bi/downloads>



2. Click on Products→Power BI--→Desktop



3. Click on Advanced Download option

The screenshot shows the Microsoft Power BI Desktop download page. At the top, it says "Maximize the everyday with Microsoft 365" and "Get online protection, secure cloud storage, and innovative apps designed to fit your needs—all in one plan." Below this, there are two options: "For 1 person" (selected) and "For up to 6 people". To the right is a photo of a person working on a laptop. The main heading is "Microsoft Power BI Desktop". A descriptive text below states: "Microsoft Power BI Desktop is built for the analyst. It combines state-of-the-art interactive visualizations, with industry-leading data query and modeling built-in. Create and publish your reports to Power BI. Power BI Desktop helps you empower others with timely critical insights, anytime, anywhere." A note at the bottom of the page says: "Important! Selecting a language below will dynamically change the complete page content to that language." There is a "Select language" dropdown set to "English" and a "Download" button.

4. Select the Language as English and Click on download , choose PBIDESktopSetup_x64.exe

The screenshot shows a "Choose the download you want" dialog. It lists two options: "PBIDesktopSetup.exe" (481.4 MB) and "PBIDesktopSetup_x64.exe" (523.9 MB). The second option is selected, indicated by a checked checkbox. At the bottom, there is a "Download" button and a note stating "Total size: 523.9 MB".

5. Download Begins and you will get exe file which will be downloaded in yourdownloads folder

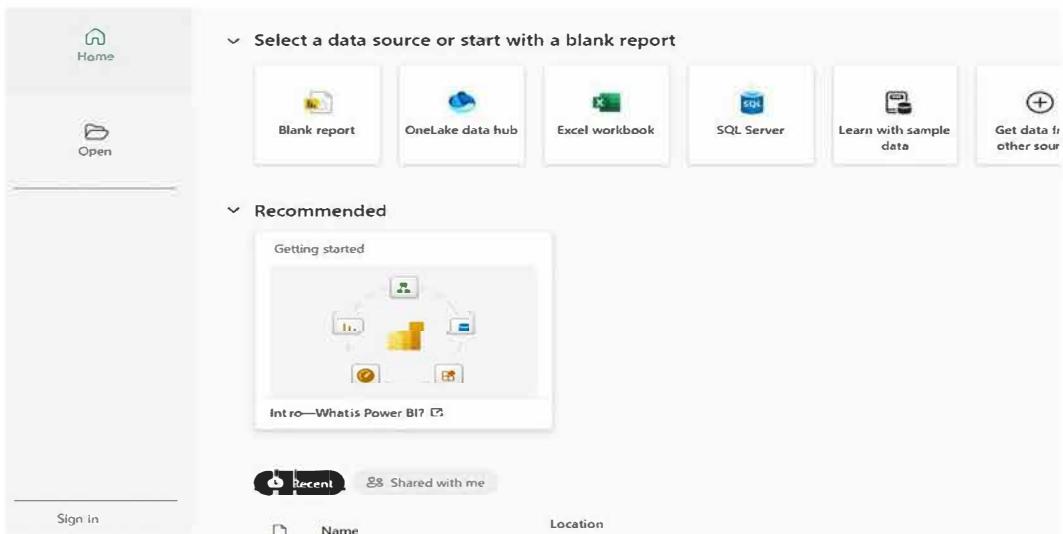


6. Double click on the .exe file ,to get the installation wizard



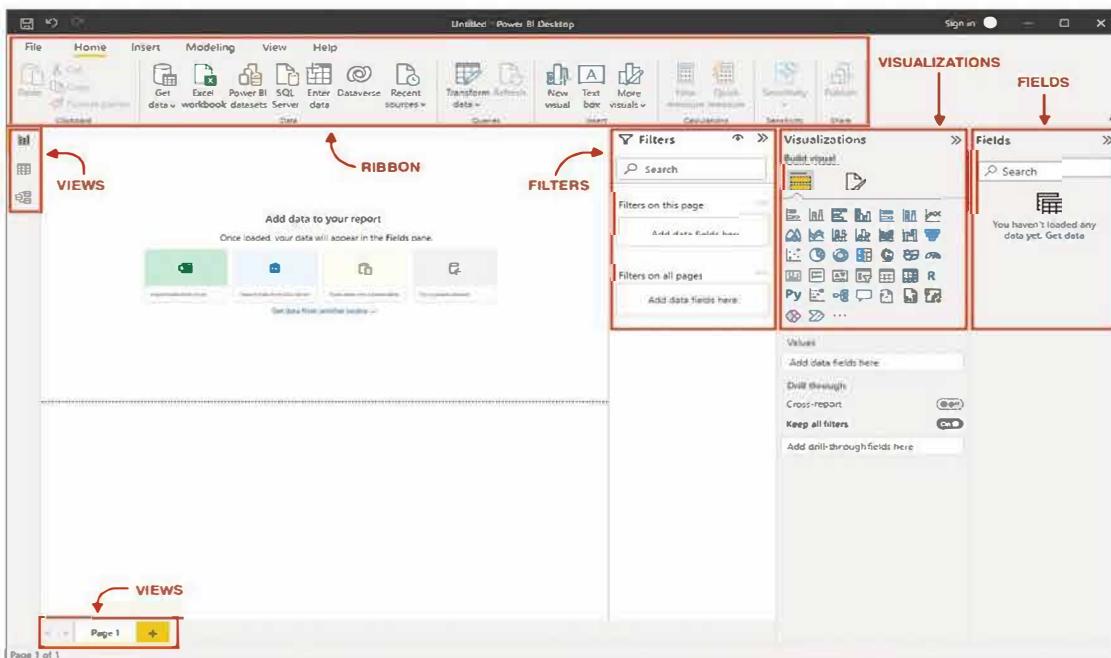
7. Click on Next button until you get Finish button and finally installation will be done.
8. Once the Installation is done ,double click on Power BI App.

The screen appears as below



9. When you launch the application, Power BI Desktop will start with a blank report. Let's go over the components of the Power BI Desktop Interface

- **Ribbon** - the top ribbon contains most of the controls and options needed for building the report.
- **Views** - this is made up of the report view, the data view, and the model view.
- **Canvas** - this is the main design area where visualizations and other elements are added.
- **Page selector** - for navigation to other pages in the report.
- **Filters** - fields can be added here to filter the data.
- **Visualizations** - this contains the list of available visualizations.
- **Fields** - this section contains the tables and fields that are available in the data model.



The Major Components of Power BI Desktop Interface are

Power Query Editor

It is the process of cleansing and transforming data and permits users to access datasets connecting from multiple sources. It is included on the Power BI desktop. Business users may view the data from distinct databases like MySQL, SQL servers, DB2, and many more.

Power View

It is a data visualization tool that assists users in developing stunning charts, and colourful maps, that turn data into a story.

Power Map

It is a 3D map visualization tool to identify geospatial data on Map visuals. It helps organizations to examine the maximum sales production geographically, visualizing the demographic populations of specific regions.

Power Pivot

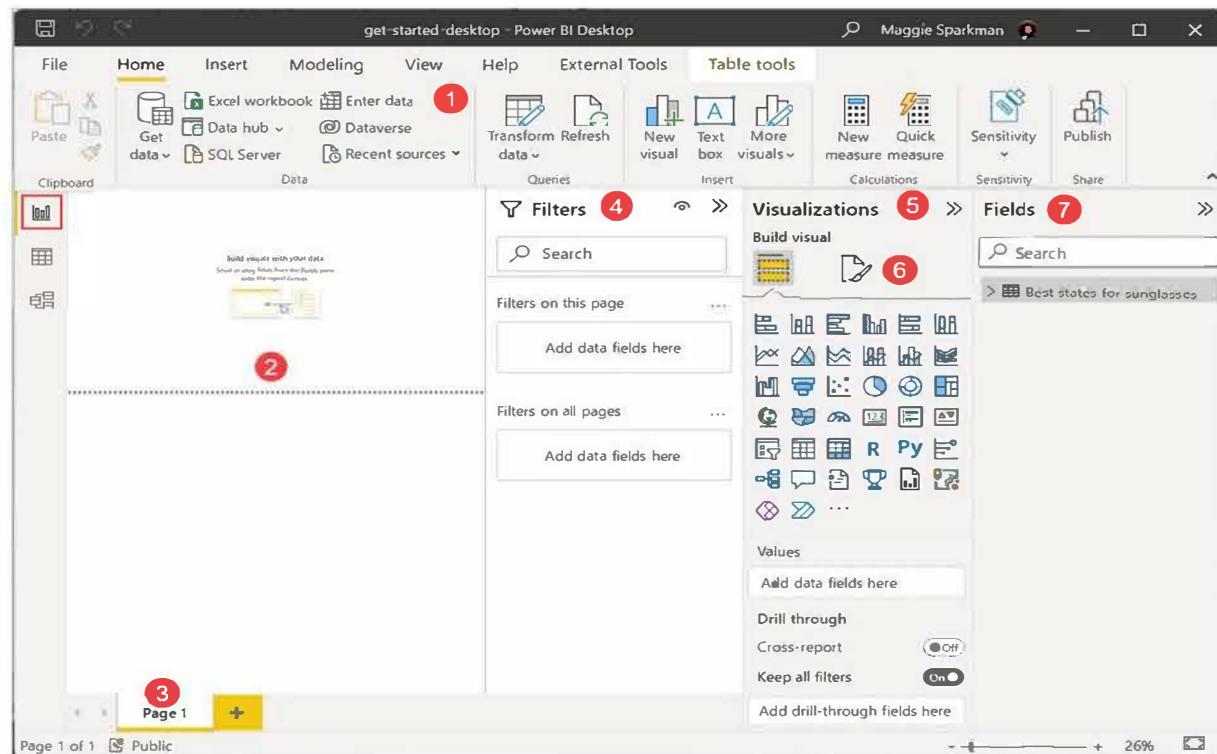
It is a Data Modelling technique that is used to create relationships between datasets. It performs complex computations by utilizing DAX functions.

Power Q & A

When dealing with giant datasets, it becomes crucial to get to know the in-depth details of the data. Luckily, it is done through natural language where users may ask questions and obtain the answer through Power Q & A.

Build reports :

In Power BI Desktop Report view, you can build visualizations and reports. The Report view has six main areas:

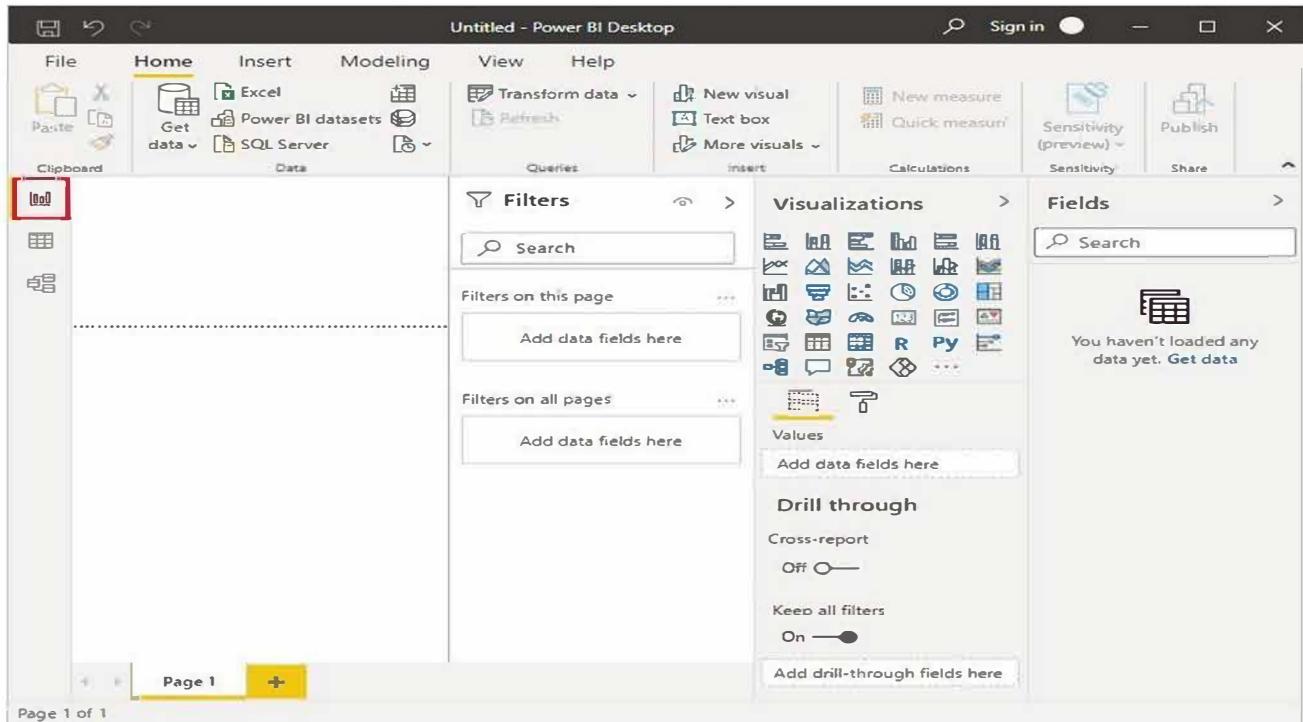


1. The ribbon at the top, which displays common tasks associated with reports and visualizations.
2. The canvas area in the middle, where you create and arrange visualizations.
3. The pages tab area at the bottom, which lets you select or add report pages.
4. The Filters pane, where you can filter data visualizations.
5. The Visualizations pane, where you can add, change, or customize visualizations, and apply drill through.
6. The Format pane, where you design the report and visualizations.
7. The Fields pane, which shows the available fields in your queries. You can drag these fields onto the canvas, the Filters pane, or the Visualizations pane to create or modify visualizations.

PROGRAM 5 : Querying Data from CSV - Query Editor, Connecting the data from the Excel Source, Clean, Transform the data.

Solution :

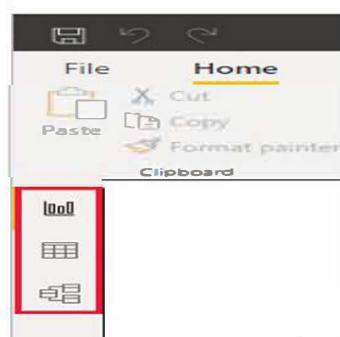
Power BI Desktop also includes the Power Query Editor, which opens in a separate window. In Power Query Editor, you can build queries and transform data, then load the refined data model into Power BI Desktop to create reports.



Along the left side of Power BI Desktop are icons for the three Power BI Desktop views:

Report, Data, and Model, from top to bottom. The current view is indicated by the yellow bar along the left, and you can change views by selecting any of the icons.

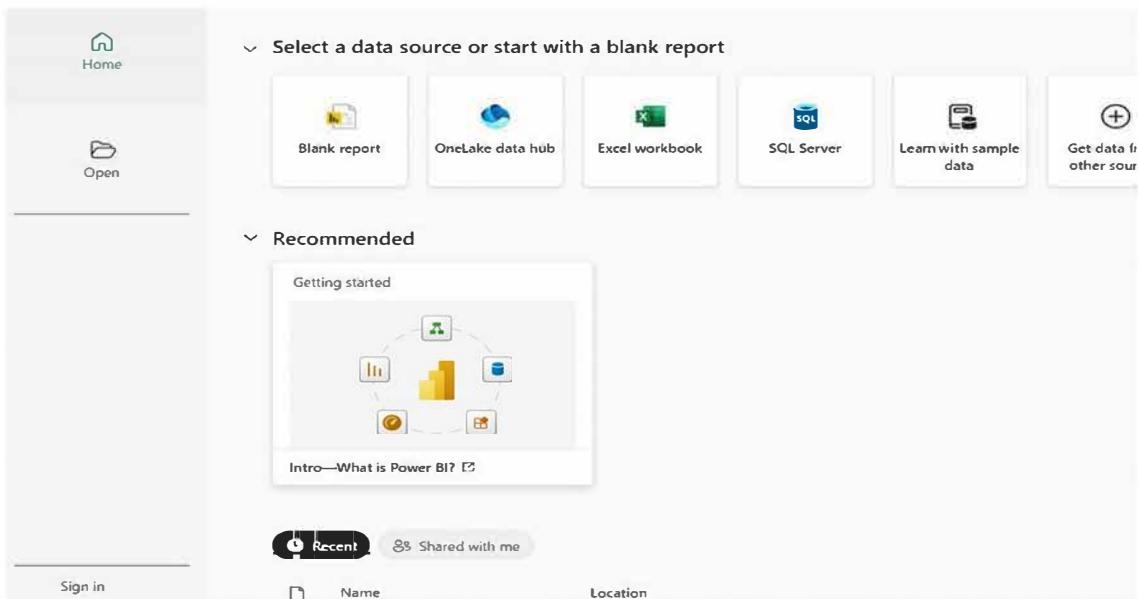
Report view is the default view.



Connect to data(Get Data from different Sources)

With Power BI Desktop installed, we can connect to the world of data. To see the many types of data sources available,

Once Power BI screen is seen click on blank Report

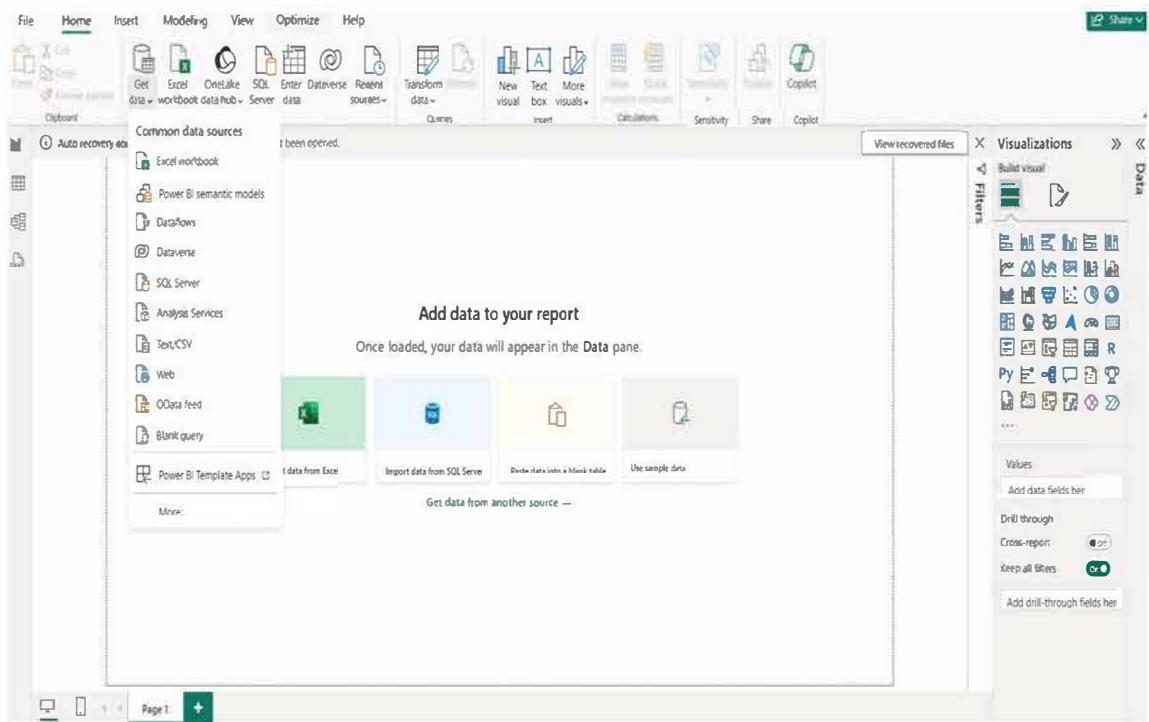


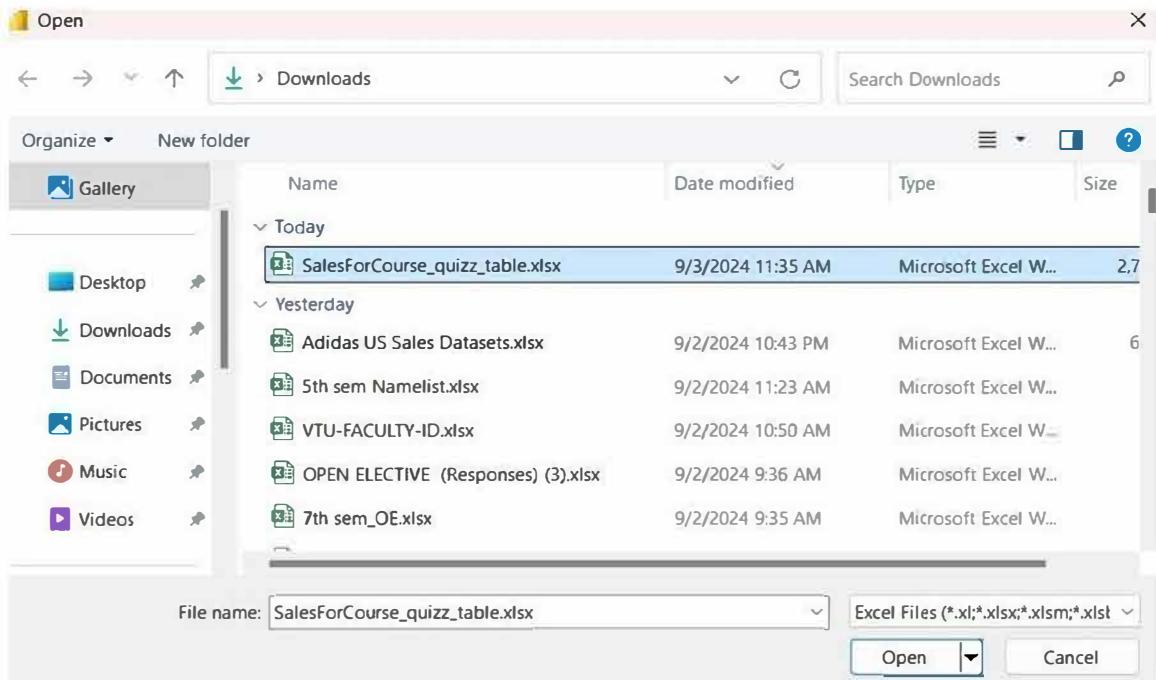
After clicking on blank Report the below screen appears .

NOW TO GET DATA FROM DIFFERENT SOURCES ----- The steps

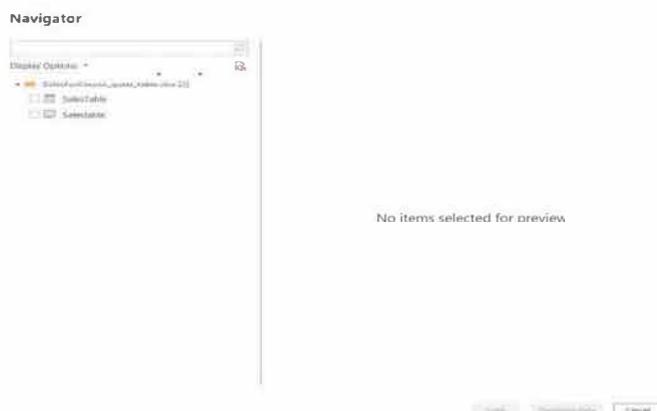
Step 1 : Select **Get Data** in the Power BI Desktop Home tab, and in the Get Data window, scroll through the list of All data sources.(like Excel,CSV,Oracle....)

On the Power BI Desktop Home tab, select Get Data > Excel workbook





2. Click on the file you need and open the file ,once you open the file below window with navigator appears ,select the file (2nd option to see the contents of the file)



3. At this point you can select Load to load the table, or Transform data to make changes in the table before you load it.

4. When you select Transform data, Power Query Editor launches, with a representative view of the table. The Query Settings pane is on the right, or you can always show it by selecting Query Settings on the View tab of Power Query Editor.

The screenshot shows the Power Query Editor interface with a table of data. The table has columns: State, Overall rank, Affordability, Crime, and Culture. The 'Applied Steps' section in the Query Settings pane is highlighted with a red box, showing 'Changed Type' as the last step applied.

Transforming the data

Once connected to a data source, you can adjust the data to meet your needs.

To transform the data, you provide Power Query Editor with step-by-step instructions for adjusting the data while loading and presenting it. Transforming doesn't affect the original data source, only this particular view of the data.

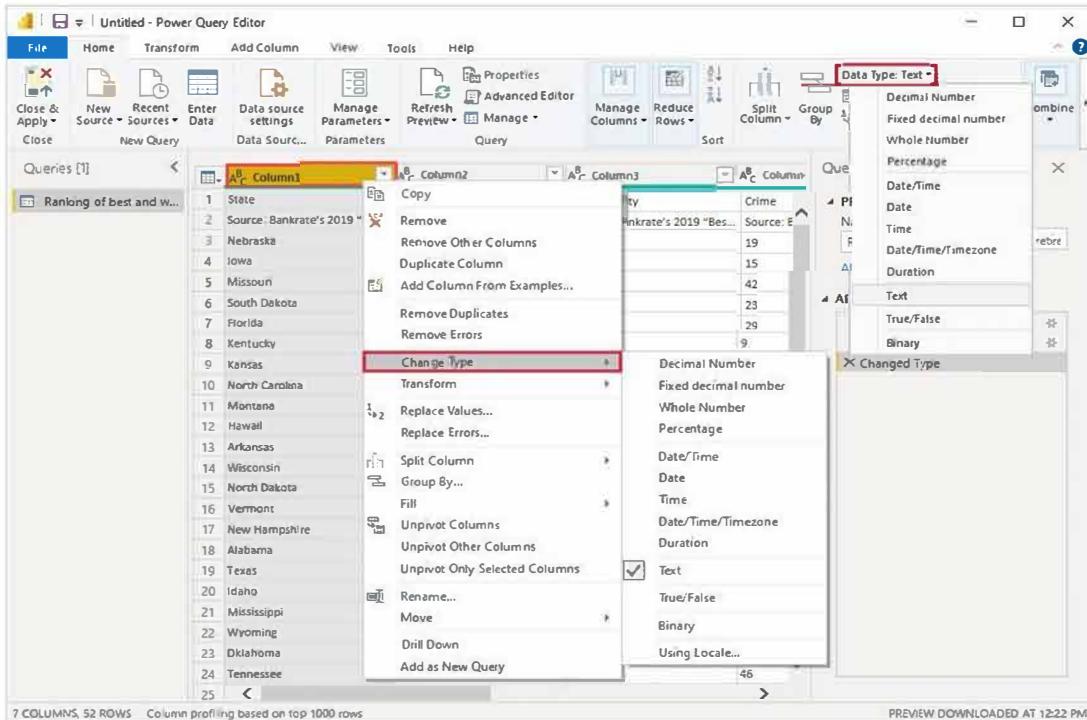
Transforming the data, includes **renaming columns or tables, removing rows or columns, or changing data types**.

Power Query Editor captures these steps sequentially under Applied Steps in the Query Settings pane.

Notice that the Applied Steps in Query Settings already contain a few steps. You can select each step to see its effect in the Power Query Editor

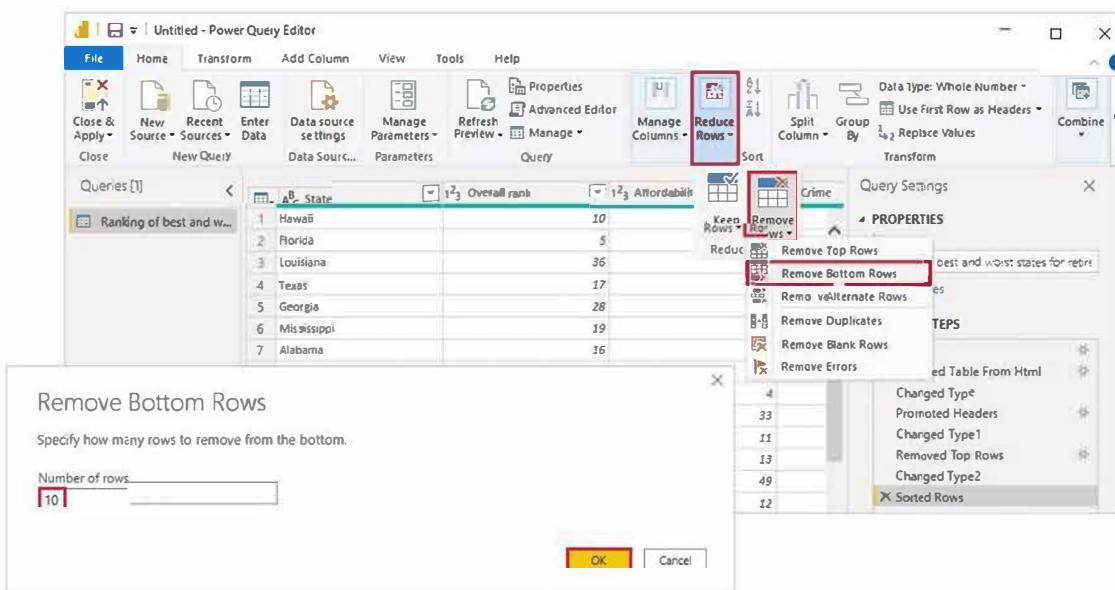
To Change a data type

- Select the column or columns to change.
- Hold down the Shift key to select several adjacent columns, or Ctrl to select non-adjacent columns.
- Either right-click a column header, select Change Type,
- choose a new data type from the menu, or drop down the list next to Data Type in the Transform group of the Home tab,
- select a new data type.



To Reduce/Delete the Rows

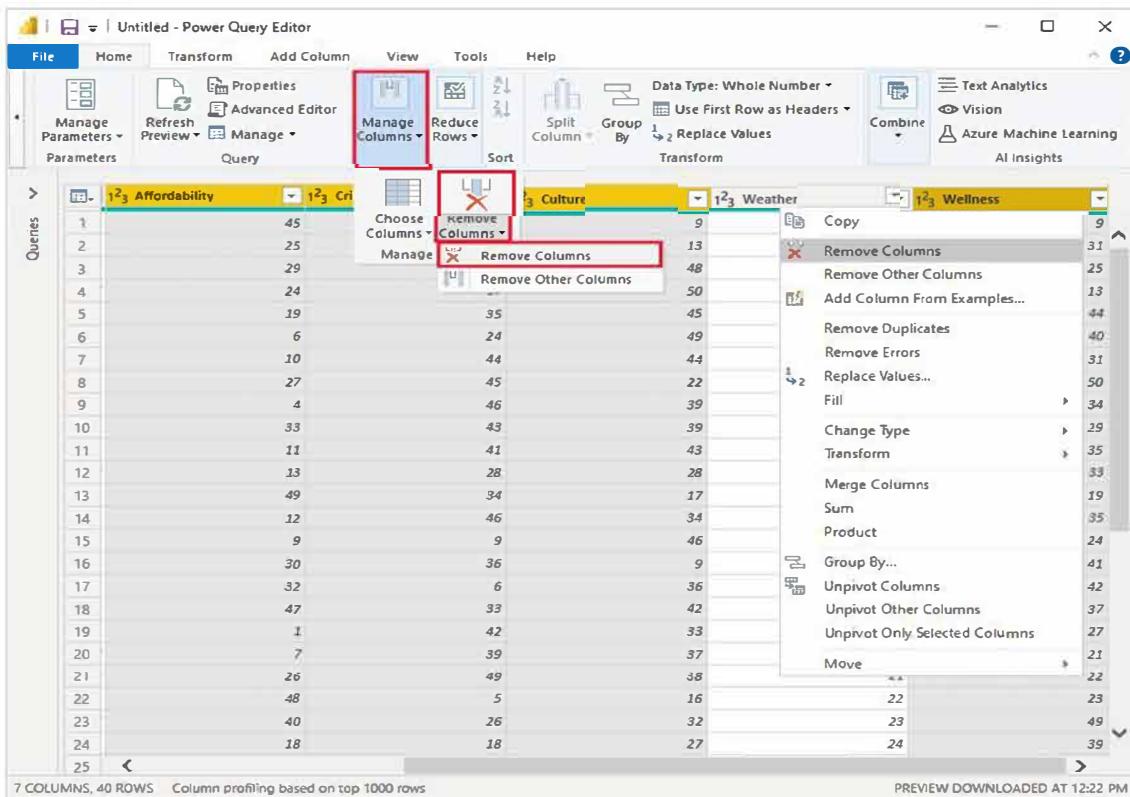
- From the Home tab select
- Reduce Rows > Remove Rows > Remove Bottom Rows.
- In the Remove Bottom Rows dialog box, enter 10, and then select OK.



The bottom 10 worst rows are removed from the table, and the step Removed Bottom Rows appears in Applied Steps.

To Remove columns

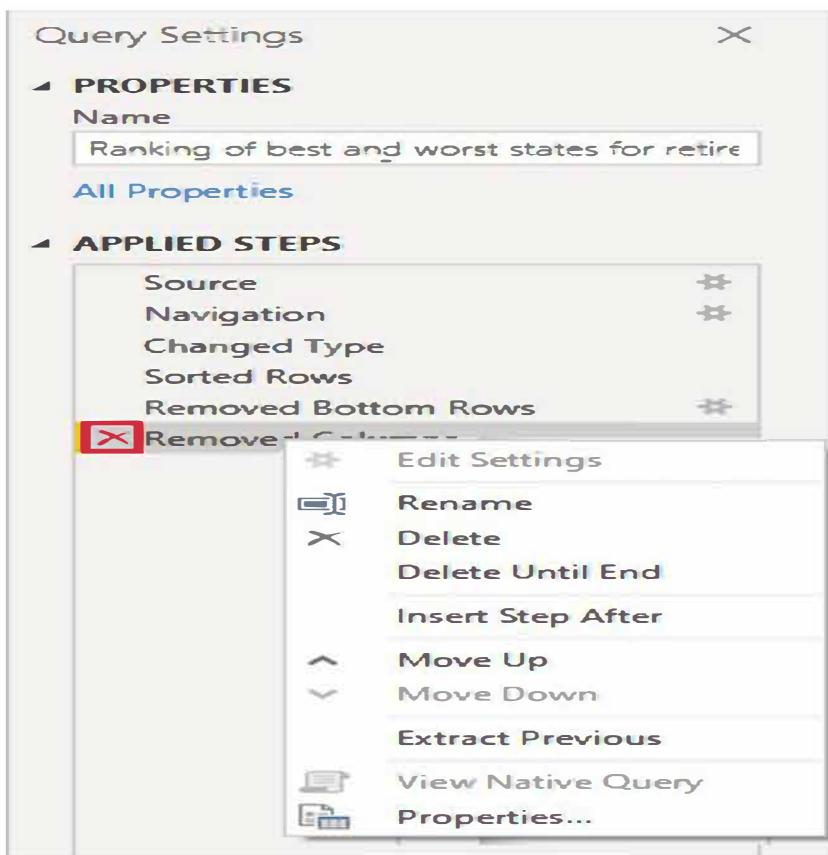
- From Home Tab Select Manage Columns group → select Remove Columns.
- You can also right-click one of the selected column headers and select Remove Columns from the menu.
- The selected columns are removed, and the step Removed Columns appears in Applied Steps.



Applied steps in the Query setting pane

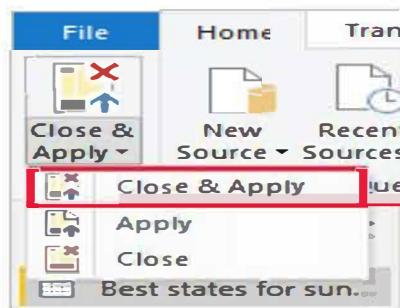
Right-click any step in the Applied Steps pane and choose to delete it, rename it, move it up or down in the sequence, or add or delete steps after it.

For intermediate steps, Power BI Desktop will warn you if the change could affect later steps and break your query.



Once all the required transformations are done the report should be created in the Power BI Desktop

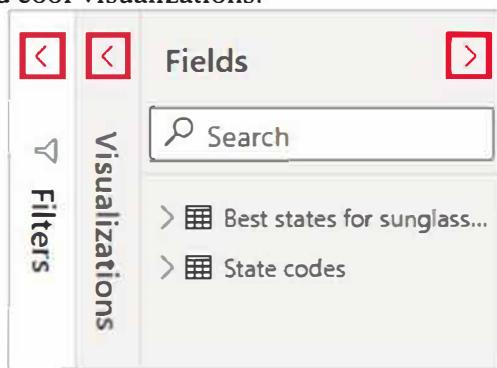
- Apply the changes in Power Query Editor and load them into Power BI Desktop
- Selecting **Close & Apply** from the Home tab of the ribbon.
- You can also select just **Apply** to keep the query open in Power Query Editor while you work in Power BI Desktop.



To reopen Power Query Editor from Power BI Desktop

Select **Transform Data** on the **Home** tab of the Power BI Desktop ribbon.

You can expand and collapse the **Filters**, **Visualizations**, and **Fields** panes by selecting the arrows at the tops of the panes. Collapsing the panes provides more space on the canvas to build cool visualizations.

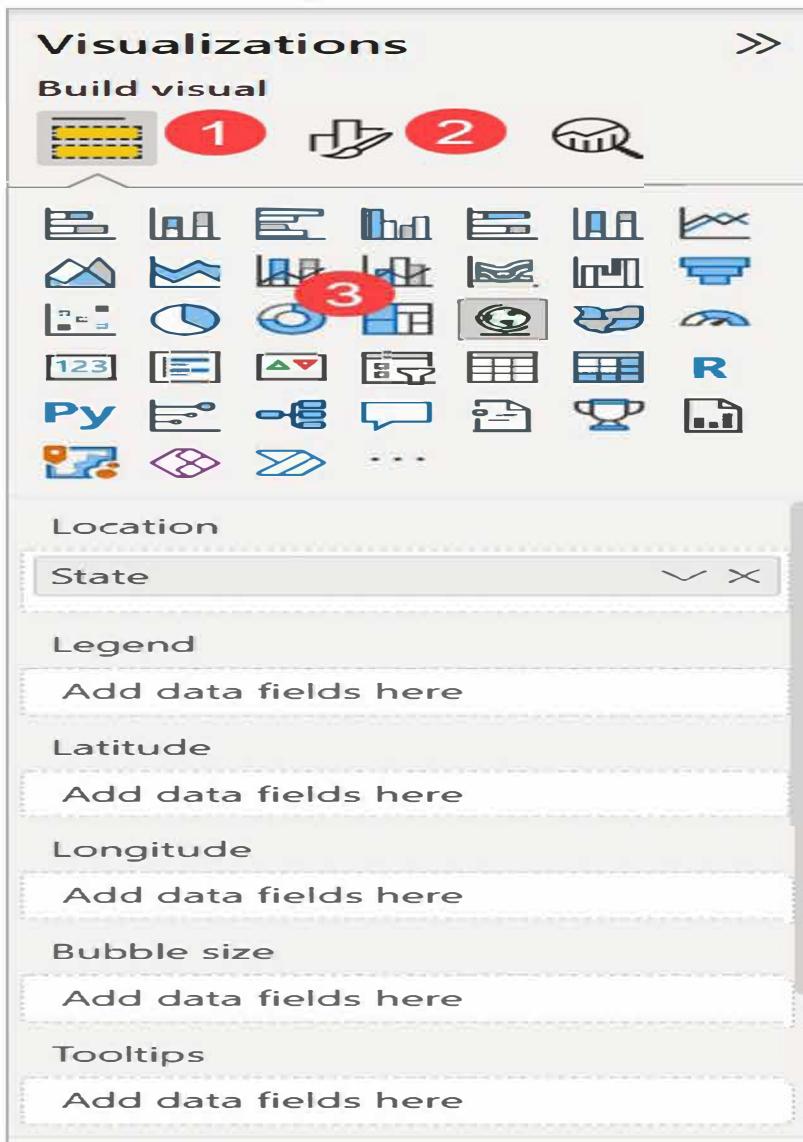


The Visualizations pane shows information about the visualization and lets you modify it.

1. The Fields option in the Visualization pane lets you drag data fields to Legend and other field wells in the pane.
2. The Format option lets you apply formatting and other controls to visualizations.
3. The icons show the type of visualization created. You can change the type of a selected visualization by selecting a different icon, or create a new visualization by selecting an icon with no existing visualization selected
4. The options available in the Fields and Format areas depend on the type of visualization and data you have.
5. You want your map visualization to show only the top 10 weather states.

To show only the top 10 states, in the Filters pane, hover over State is (All) and expand the arrow that appears. Under Filter type, drop down and select Top N. Under Show

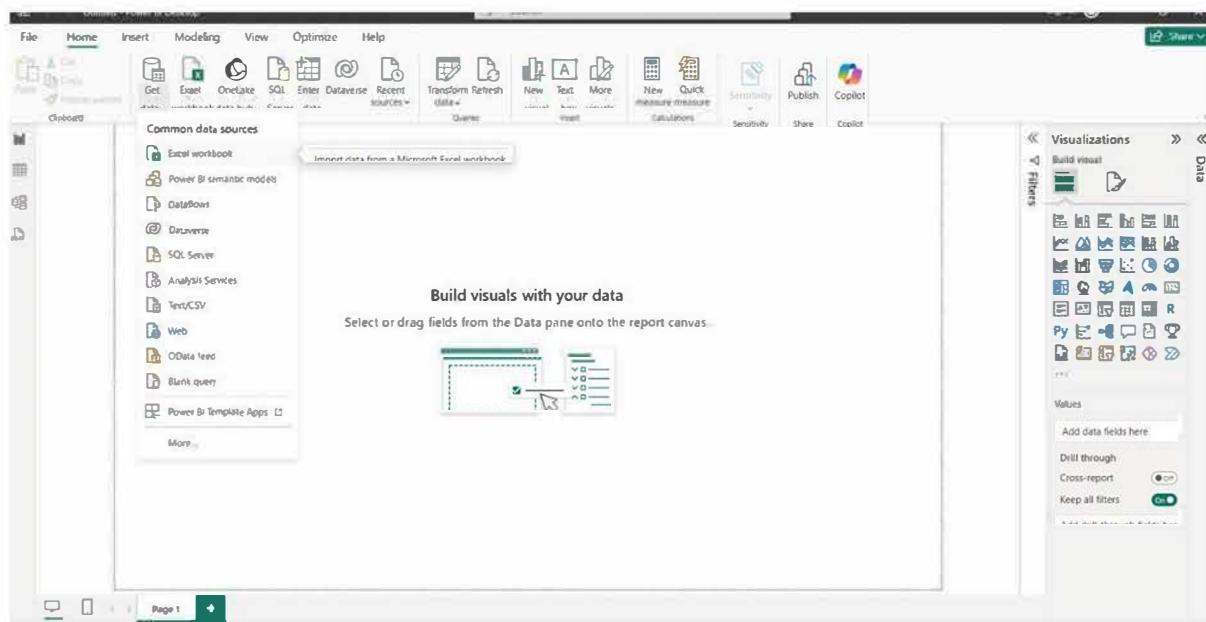
items, select Bottom, because you want to show the items with the lowest numerical ranks, and enter 10 in the next field.



Program 6 : Creating Reports & Visualizations - Different types of charts, Formatting charts with Title, Colors

17 Most Common Charts available in Power BI:

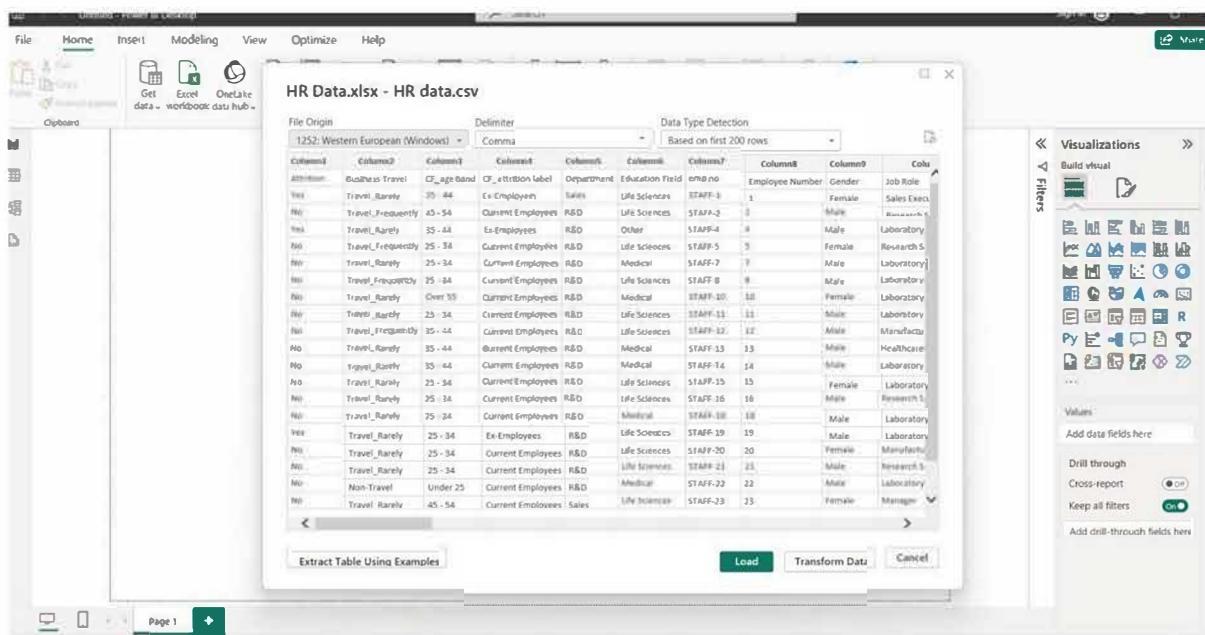
- Bar Chart
- Line Chart
- Scatterplot
- Sparkline
- Pie Chart
- Gauge
- Waterfall Chart
- Funnel Chart
- Heat Map / Matrix
- Histogram
- Box Plot
- Maps
- Tables
- Indicators
- Area Chart
- Radar or Spider Chart
- Tree Map
- **Open Power BI Desktop**
- Click on **Get data** in ribbon pane
- Click on **Excel worksheet** option



- Choose specific dataset and open it. Example: HR Data.csv

Data Visualization Laboratory

- Click on Transform Data button



- Power Query Editor window will open.

- We have to perform some transformation on this table
- Select row 1 and click on Use first row as header

Data Visualization Laboratory

The screenshot shows the Power Query Editor interface with a table named 'HR Data.xlsx - HR data'. The table has columns: Attrition, Business_Travel, CF_age_band, CF_attrition_label, Department, Education_Field, emp_no, and Life_Sciences. A context menu is open over the 'Attrition' column, specifically highlighting the 'Promote first row as Headers' option under the 'Transform' tab.

- Then, we have to create new column for **attrition count**. For this, select attrition column → click on **Add Column** → new window will open then add details as follows. Once you are done with this, attrition count column will be added as a last row of the table
- Change the datatype of this column to **whole number**

The screenshot shows the Power Query Editor interface with a table named 'HR Data.xlsx - HR data'. The table has columns: Attrition, Business_Travel, CF_age_band, CF_attrition_label, Department, Education_Field, and emp_no. A 'Conditional Column' dialog box is open, showing a rule: if Attrition equals Yes then 1 else 0. The 'OK' button is visible at the bottom right of the dialog.

- Click on **Close & Apply**.

Data Visualization Laboratory

Click on
“Close &
Apply”

The screenshot shows the Power Query Editor window. In the top-left corner of the ribbon, there is a red circle around the 'Close & Apply' button. The main area displays a table with several columns: Attrition, BusinessTravel, Overtime, Department, DistanceFromHome, Education, and Age. The table contains numerous rows of data. On the right side of the screen, there is a 'Query Settings' pane with sections for 'PROPERTIES' (Name: HR Analytics Data) and 'APPLIED STEPS' (Promoted Headers, Changed Type).

- You will be back on canvas area with table loaded in **Data Pane** (in right side).

The screenshot shows the Power BI canvas area. On the right side, there is a 'Data' pane with a tree view of data fields. Fields listed include Age, Attrition, EmployeeID, and others. The 'Data' pane is highlighted with a red box. The central area shows a 'Build visuals with your data' section where users can select fields from the Data pane to create visualizations.

- We will start with **KPI Chart**
- A Key Performance Indicator (KPI) is a visual cue that communicates the amount of progress made toward a measurable goal

Data Visualization Laboratory

The screenshot shows the Power BI desktop interface. A KPI visual is displayed on the canvas with the value '1470' and the text 'Sum of Employee Count'. The title of the visual is 'FORMATTING THE CHARTS'. The ribbon menu is visible at the top. On the right side, the 'Visualizations' pane is open, showing various chart types like Bar, Line, and Map. A red circle highlights the 'Text box' icon in the list of visual types. The 'Data' pane is also visible on the far right.

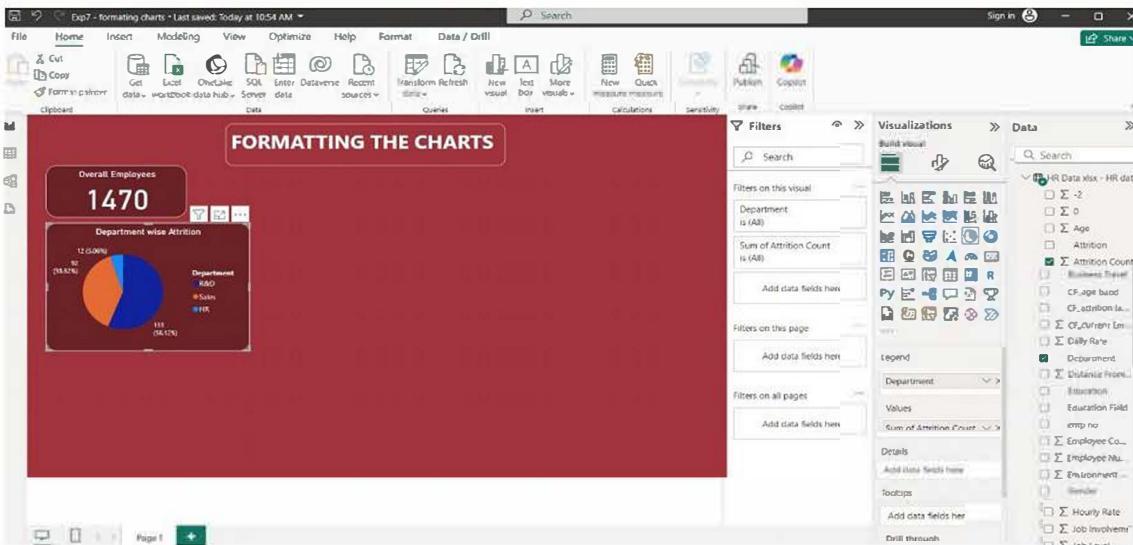
Now format this particular visual with title, size, colour.

1. Click on “Format your visual” in **Visualization Pane**
2. Go to General tab
 - a. click on Title → type “Overall Employees” in Text box, Horizontal alignment and colour of your choice
 - b. expand effects → OFF the background of KPI chart
 - c. Effects → ON visual border → change the color and 20 rounded corners
3. Now, go to Visual tab → OFF the category label
4. In visual tab, callout value → change the font color

The screenshot shows the Power BI desktop interface with the same KPI visual. The title 'Overall Employees' has been added to the visual. The 'Effects' section in the 'General' tab of the 'Format visual' pane is expanded, showing that the 'Background' effect is turned off. The 'Data' pane is visible on the right.

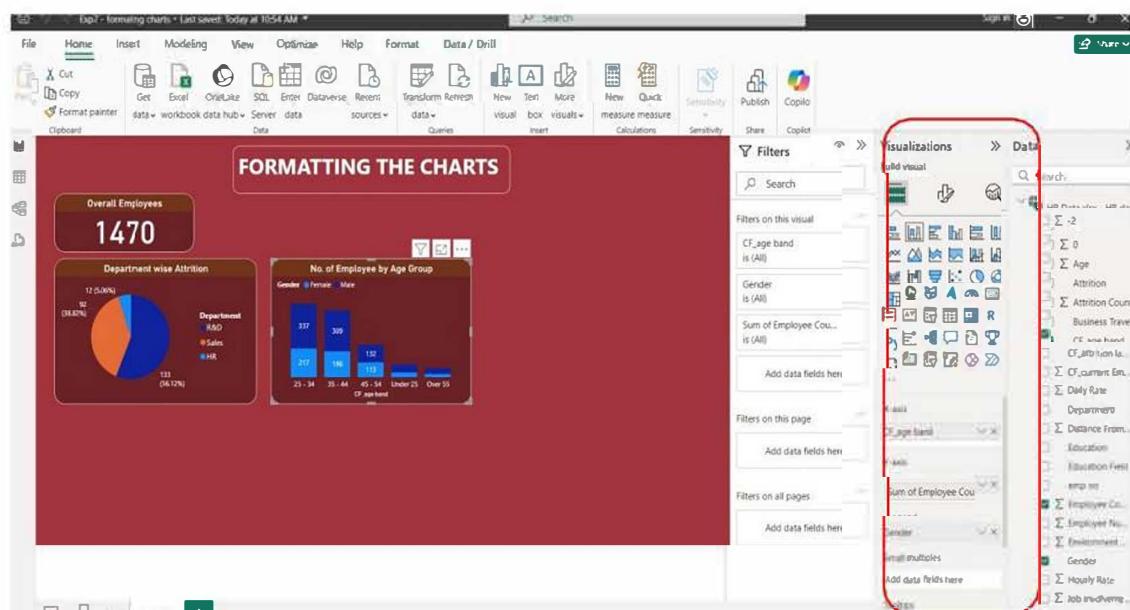
Kindly Note: If you want same format for all visuals, complete the formatting with one of the visual, click on format painter and click on the visual for which you want the formatting. Little bit formatting will be required as properties for each visual will be different

Select Pie Chart.



- Now apply same steps for creating **STACKED COLUMN CHART**.

A column chart, commonly referred to as a vertical bar graph, is a visual tool utilized to display and compare numerical data across different categories. Each column within the chart corresponds to a specific category, with the height of the column proportionally representing the associated value.

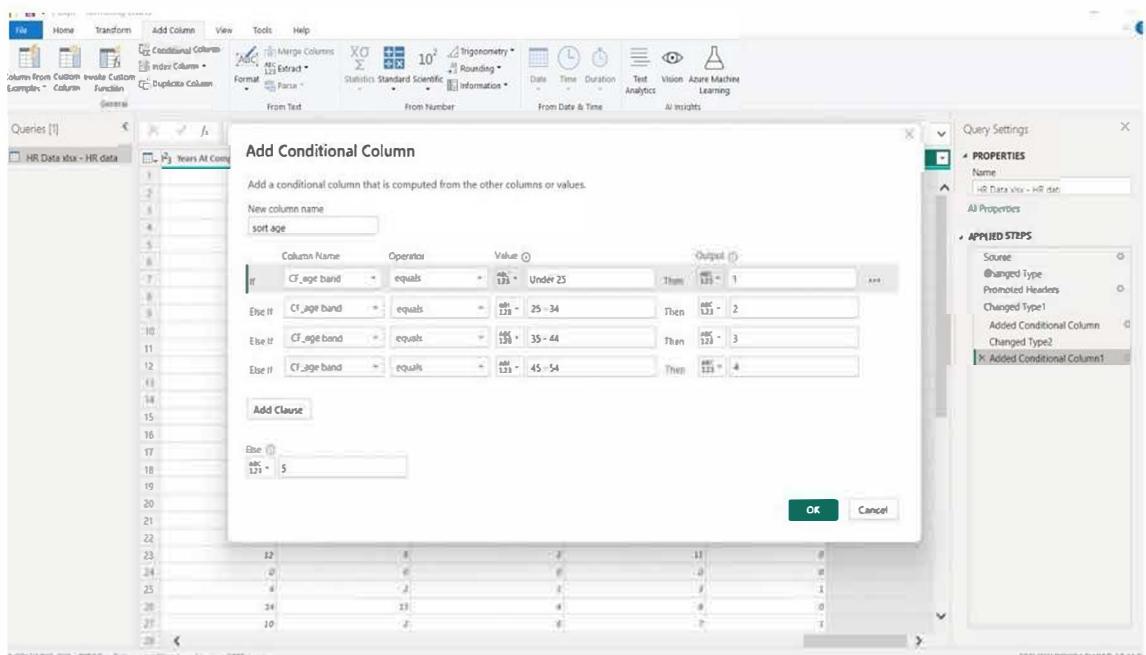


Optional: As you can see, age is not sorted correctly, so we have to create additional column.

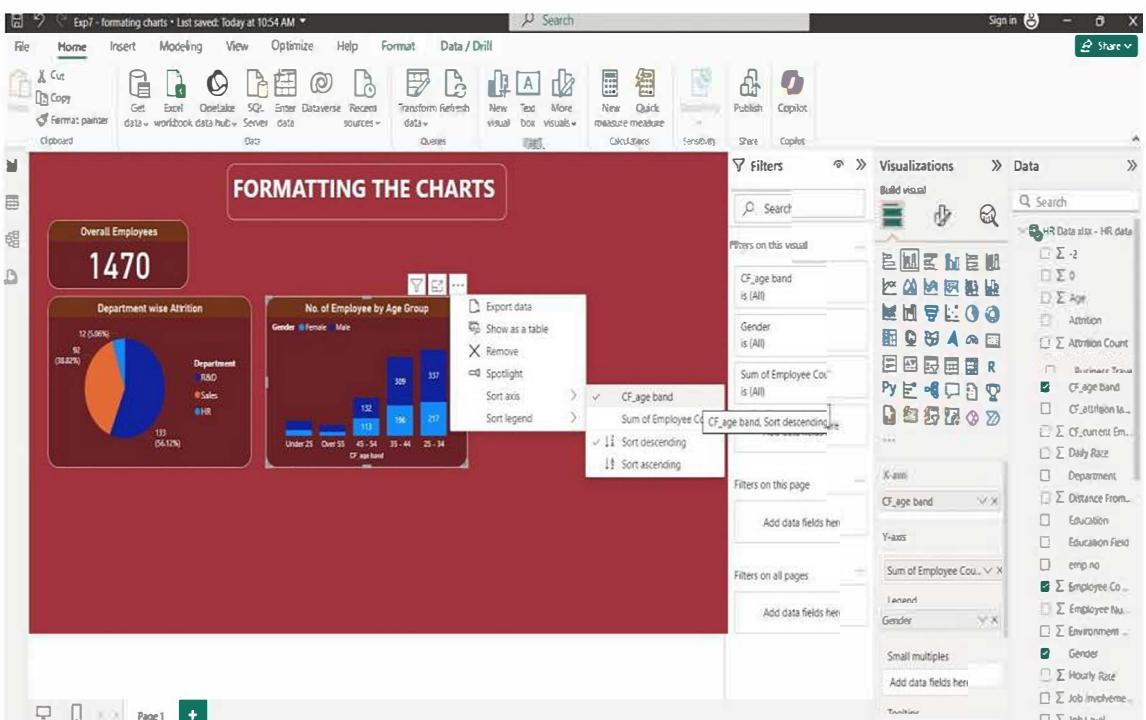
Once sort age column is created change the datatype of column if its not in whole number.

Data Visualization Laboratory

Click on “Close & Apply”



Now, on canvas, in data pane → select CP_age_band → click on sort by column → select newly created column sort age and now click on visual and follow the steps, Finally, output will be as follows:



Finally, output will be as follows

- Now apply same steps for creating MATRIX.

The matrix visual is a type of table visual that supports a stepped layout. A table supports two dimensions, but a matrix makes it easier to display data meaningfully across multiple dimensions. Often, report designers include matrixes in reports and dashboards to allow users to select one or more element (rows, columns, cells) in the matrix to cross-highlight other visuals on a report page.

Format the row header & column header → text color & background color

Also, format the Row grand total & column grand total

	Healthcare Representative	Human Resources	Laboratory Technician	Manager	Manufacturing Director	Research Director	Research Scientist	Total
Healthcare Representative	26	41	47	47	26	15	53	289
Human Resources	18	12	13	12	18	16	27	80
Laboratory Technician	29	48	75	80	29	21	27	302
Manager	21	21	27	22	21	16	27	145
Manufacturing Director	26	32	49	38	26	15	27	140
Research Director	15	16	27	22	15	16	27	80
Research Scientist	54	53	60	65	54	53	60	242
Total	289	280	442	459	1470			

Now apply same steps for creating Stacked Bar Chart.

Data Visualization Laboratory

The screenshot shows a Microsoft Power BI dashboard titled "FORMATTING THE CHARTS". The dashboard contains several visualizations: a large pie chart for "Overall Employees" (1470), a bar chart for "Department wise Attrition" (R&D: 12%, Sales: 13%, HR: 11%), a stacked bar chart for "No. of Employee by Age Group", a table for "Job Satisfaction Rating", a bar chart for "Education Field wise Attrition" (Bachelor's Degree: 95, Master's Degree: 58, Associate's Degree: 44, High School: 31, Doctoral Degree: 5), and a donut chart for "Sum of Attrition Count by Gender" (Male: 150, Female: 97). The "Data" pane on the right lists data fields like Overall Employees, Department wise Attrition, No. of Employee by Age Group, Job Satisfaction Rating, Education Field wise Attrition, and Sum of Attrition Count by Gender. A red box highlights the "Data" pane.

Now apply same steps for creating Donut.

A doughnut chart is similar to a pie chart in that it shows the relationship of parts to a whole. The only difference is that the center is blank and allows space for a label or icon.

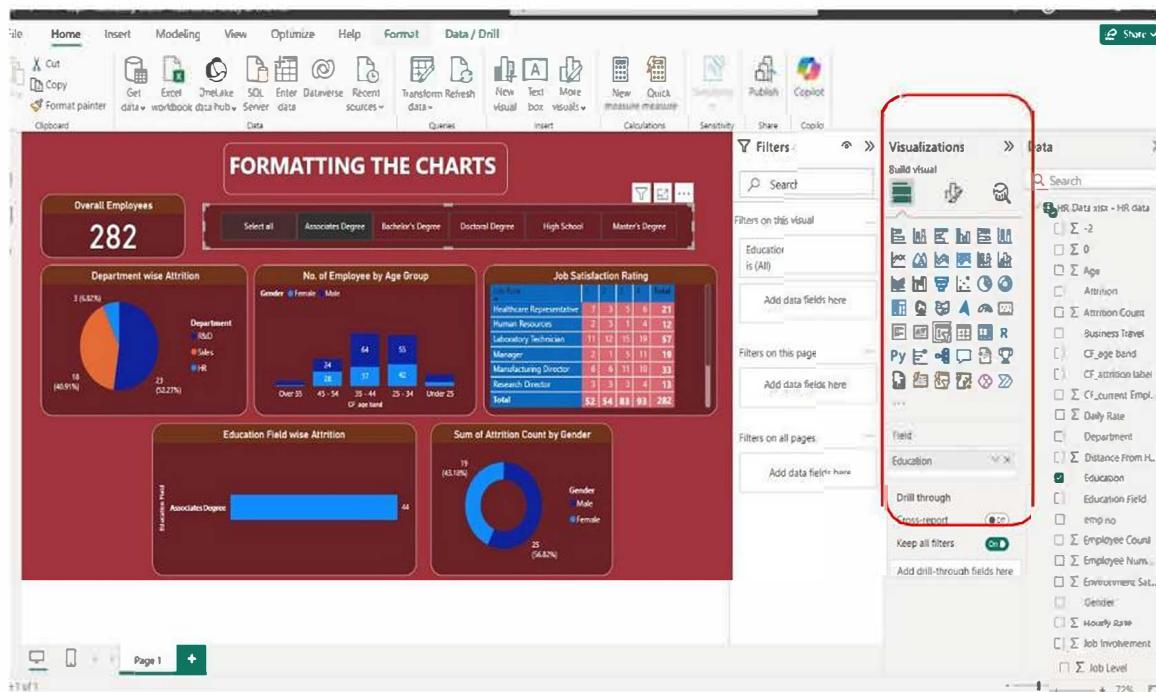
Doughnut charts work best when you use them to compare a particular section to the whole, rather than comparing individual sections with each other.

The screenshot shows the same Microsoft Power BI dashboard as the previous one, but with an additional donut chart titled "Sum of Attrition Count by Gender" added to the bottom left. This chart shows the distribution of attrition counts between males (150) and females (97). The "Data" pane on the right is highlighted with a red box, showing a list of data fields including "Gender" and "Values".

Slicers: A slicer is a standalone chart that can be used to filter the other visuals on the page. Slicers come in many different formats (category, range, date, etc.) and can be formatted to allow selection of only one, many, or all of the available values.

Slicers are a great choice to:

- Display commonly used or important filters on the report canvas for easier access.
- Make it easier to see the current filtered state without having to open a drop-down list.
- Filter by columns that are unneeded and hidden in the data tables.
- Create more focused reports by putting slicers next to important visuals.



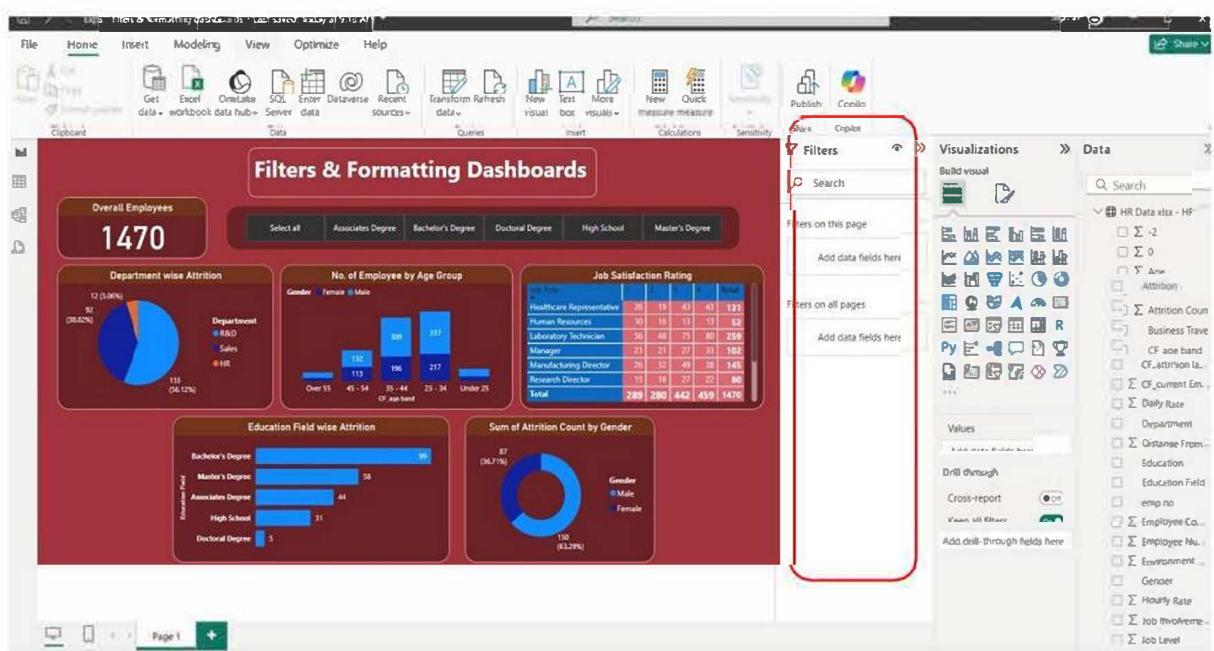
Experiment No. 7: Dashboards - Filters in Power BI, Formatting dashboards

Filters remove all but the data you want to focus on.

Filter Pane: You can apply filters in the Filters pane, or make selections in slicers directly on the report page itself. The Filters pane shows the fields in individual visuals and any other filters the report designer adds.

There are four standard types of filters that you create in the Filters pane.

- **Visual filter** applies to a single visual on a report page. You see visual-level filters when you select a visual on the report canvas. Even if you can't edit a report, you can select a visual and filter it.
- **Page filter** applies to all the visuals on the report page.
- **Report filter** applies to all pages in the report.
- **Drill through filter** With drill through in the Power BI service and Power BI Desktop, you create a *destination* report page that focuses on a specific entity, such as a supplier. From the other report pages, users can right-click a data point for that entity and drill through to the focused page.



We will be using HR dataset (same used for Exp 7).

Extending same dashboard with using filters & let's format the final dashboard.

Let's apply filter for department (Particular visual).

1. Drag Department from Data Pane to Filters → Filters on this page textbox. → Basic Filtering
2. Now, you can see, HR dept. is selected and now in below picture, you can see that only HR data is visible, whereas, R&D and Sales data will not be shown.

Data Visualization Laboratory

The screenshot shows a Power BI desktop interface with a dashboard titled "Filters & Formatting Dashboards". The dashboard contains several visualizations: a card for "Overall Employees" (63), a donut chart for "Department wise Attrition" (HR 12, R&D 13), a bar chart for "No. of Employee by Age Group", a table for "Job Satisfaction Rating", a bar chart for "Education Field wise Attrition", and a donut chart for "Sum of Attrition Count by Gender". The "Filters" pane on the right shows a filter for "Department" set to "HR" (with "R&D" also selected). A red circle highlights the "HR" filter selection.

Now, HR and R&D departments are selected.

The screenshot shows the same Power BI desktop interface after applying filters. The "Overall Employees" card now shows 1024. The "Department wise Attrition" donut chart now shows HR 13 (12%) and R&D 13 (12%). The "Job Satisfaction Rating" table now includes additional rows for Manufacturing Director and Research Director. The "Sum of Attrition Count by Gender" donut chart now shows Male 49 (31.79%) and Female 116 (68.21%). The "Filters" pane on the right shows a filter for "Department" set to "HR or R&D" (with "HR" and "R&D" selected). A red circle highlights the "HR or R&D" filter selection.

3. Now, let's try for advanced filter

Let's find out results for **salary greater than equal to 10000**.

Drag and drop **Monthly Income** in filter

Filter type: advanced filtering

Show items when the value: is greater than or equal to

Value: 10000

Data Visualization Laboratory

The screenshot shows a Microsoft Power BI desktop application. On the left is a dashboard titled "Filters & Formatting Dashboards" featuring several data visualizations: a pie chart for "Department wise Attrition" (Sales: 11%, R&D: 13%, HR: 11%), a bar chart for "No. of Employee by Age Group" (Over 55: 20, 45-54: 50, 35-44: 40, 25-34: 25), and a table for "Job Satisfaction Rating". The table lists job roles like Healthcare Representative, Human Resources, Manager, Manufacturing Director, Research Director, Sales Executive, and Total, along with their satisfaction scores. A red box highlights the "Filters" pane on the right, which contains a search bar and a section for "Filters on this page". It shows a filter for "Monthly Income" set to "is greater than or equal to 10000" with an "And" condition. Other sections include "Values", "Drill through", "Cross-report", and "Data". A large list of available filters is on the far right.

- Now, try for Top N filtering. Try to display top 4 Job roles having highest job satisfaction.
 - Select “Job satisfaction rating” visual → In Filters Pane, Filters on this visual → Job Role→
 - Filter type: Top N
 - Show item: Top : 4
 - By value: Sum of Job Satisfaction

This screenshot shows the same Power BI dashboard after applying the specified filters. The "Job Satisfaction Rating" table now only displays the top 4 job roles based on job satisfaction: Laboratory Technician, Manufacturing Director, Research Scientist, and Sales Executive. The other rows have been hidden. A red box highlights the "Filters" pane on the right, which now shows a "Top N" filter applied to the "Job Role" column with a value of 4. The "Values" pane also reflects this change, showing "Sum of Job Satisfaction" for the top 4 roles. The rest of the interface remains consistent with the first screenshot.

Program 8 : BUILDING DASH BOARD

Analysis of revenue in sales dataset:

- i) Create a choropleth map (fill the map) to spot the special trends to show the state which has the highest revenue.
- ii) Create a line chart to show the revenue based on the month of the year.
- iii) Create a bin of size 10 for the age measure to create a new dimension to show the revenue.
- iv) Create a donut chart view to show the percentage of revenue per region by creating zero access in the calculated field.
- v) Create a butterfly chart by reversing the bar chart to compare female & male revenue based on product category.
- vi) Create a calculated field to show the average revenue per state & display profitable & non-profitable state.
- vii) Build a dashboard.

Solution:

Step1: Upload the revenue dataset

Step2: In the power query editor as part of transformation remove the unnecessary columns (Remove the last null column)

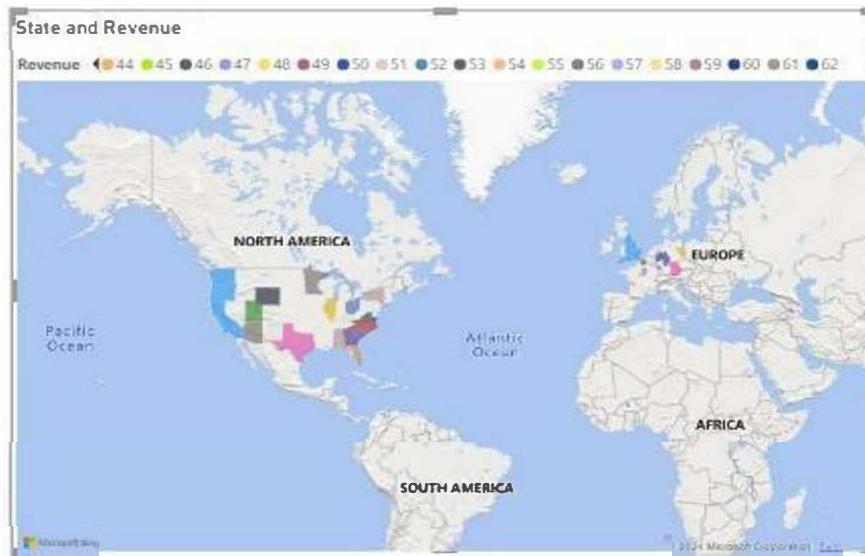
Question 1: Create a choropleth map (fill the map) to spot the special trends to show the state which has the highest revenue.

Step1: Select the "Map" visualization from the Visualizations pane.(filled map)

Step2: Set Up the Map:

- Drag the state field to the "Location" field well.
- Drag the revenue field to the "Size" or "Values" field well.

Step3: Customize: In the "Format" pane, adjust settings such as color, size, and tooltips to enhance readability. You can use color gradients to indicate different revenue levels, helping to spot trends.



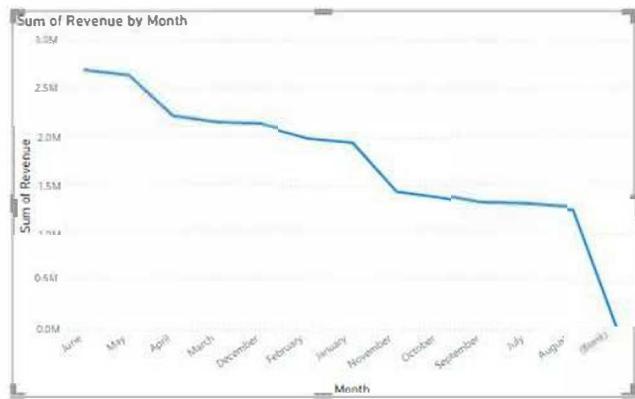
Question 2: Create a line chart to show the revenue based on the month of the year.

Step1: Add a Line Chart: Select the "Line chart" visualization from the Visualizations pane.

Step2: Configure the Chart:

- Drag the month field to the "Axis" field well.
- Drag the revenue field to the "Values" field well.

Step3: Format: In the "Format" pane, you can customize the line color, axis titles, and other aspects to clearly present the revenue trend throughout the year



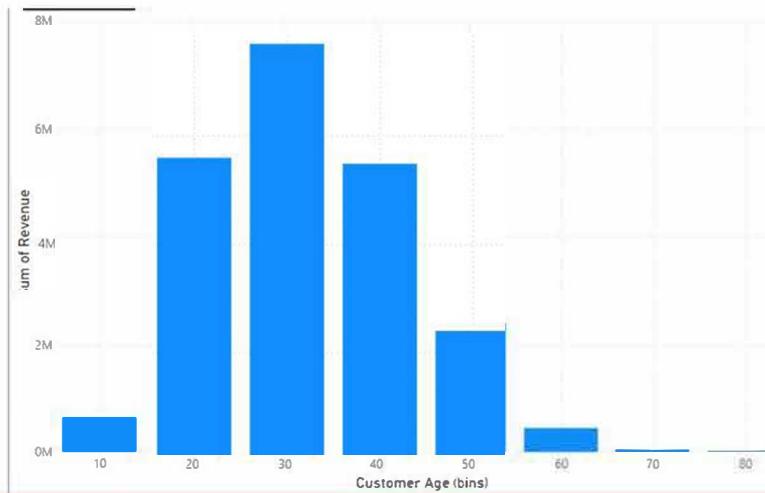
Question 3: Create a bin of size 10 for the age measure to create a new dimension to show the revenue.

Step1: Create Bins for age

- Go to the "Data" view and select the age field.
- Right-click on the age field and choose "New group".
- In the "Group" window, select "Bin" and set the bin size to 10.

Step2: Add to Visualization:

- Create a new visualization (e.g., bar chart or column chart). Here we used Stacked column chart.
- Drag the new age bins field to the "X Axis" and the revenue field to the "Y axis".

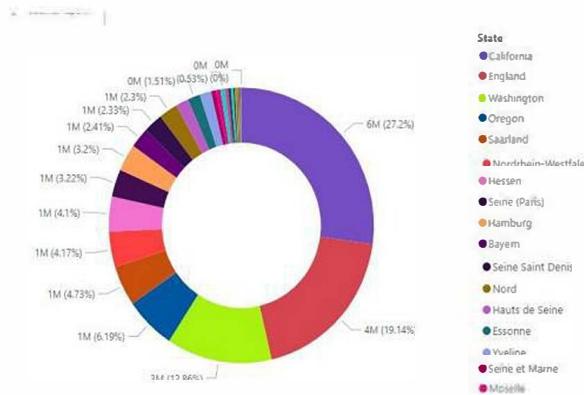


Question 4: Create a donut chart view to show the percentage of revenue per region by creating zero access in the calculated field.

Step1: Add a Donut Chart: Select the "Donut chart" visualization from the Visualizations pane.

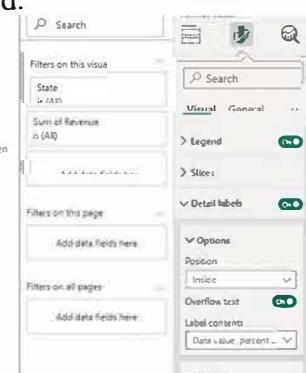
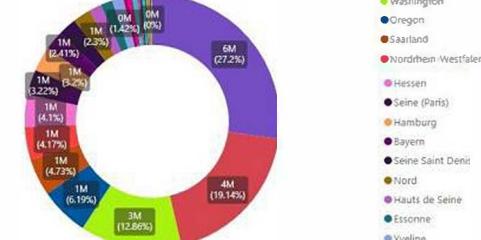
Step2: Set Up the Chart:

- Drag the region field to the "Legend" field well.
- Drag the revenue field to the "Values" field well.



Step3: Create Zero Access:

- Go to the "Format" pane, select "Detail labels", and set the "Label position" to "Inside" to create a zero access effect.
- Adjust the "Detail" and "Percentage" settings as needed.



Note: The "zero access effect" is a visual design technique often used in data visualizations to emphasize or clearly show zero values or the absence of certain data. This effect is particularly useful in charts where you want to highlight how values are distributed relative to zero, or where zero plays a significant role in the interpretation of the data.

Donut Charts:

In a donut chart, the zero access effect can be used to enhance readability by placing labels or markers at the center of the chart or using a specific design to show where there is no data.

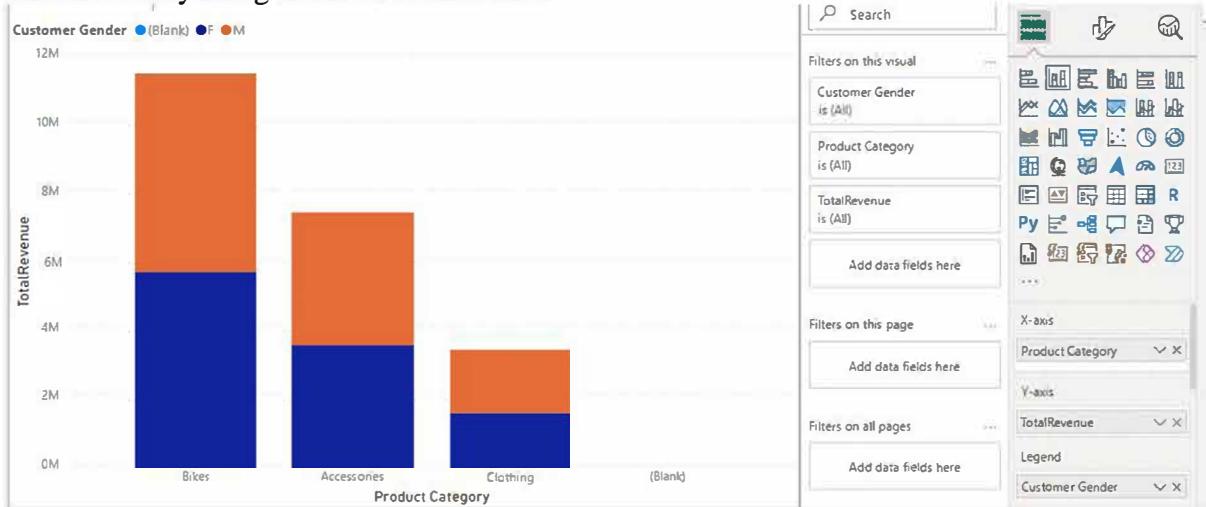
For example, if one segment of a donut chart represents zero revenue, you might design the chart so that this segment is clearly visible or highlighted to indicate no revenue.

Question 5: Create a butterfly chart by reversing the bar chart to compare female & male revenue based on product category.

Step1: Create a New Measure

TotalRevenue = `sum(SalesTable[Revenue])`

Method-1: By using stacked column chart



Method 2:

Step 1:

Add Two Bar Charts:

- Create two separate bar charts from the "Visualizations" pane.

Step 2:

Configure the First Bar Chart (e.g., Female Revenue):

Drag ProductCategory to the "Axis" field.

Drag TotalRevenue to the "Values" field.

Apply a Filter:

- In the "Filters" pane, add a filter to show only Female revenue. You can drag Gender to the "Filters" pane and set the filter to include only Female.

Step 3:

Configure the Second Bar Chart (e.g., Male Revenue):

Drag ProductCategory to the "Axis" field.

Drag TotalRevenue to the "Values" field.

Apply a Filter:

- In the "Filters" pane, add a filter to show only Male revenue. You can drag Gender to the "Filters" pane and set the filter to include only Male.

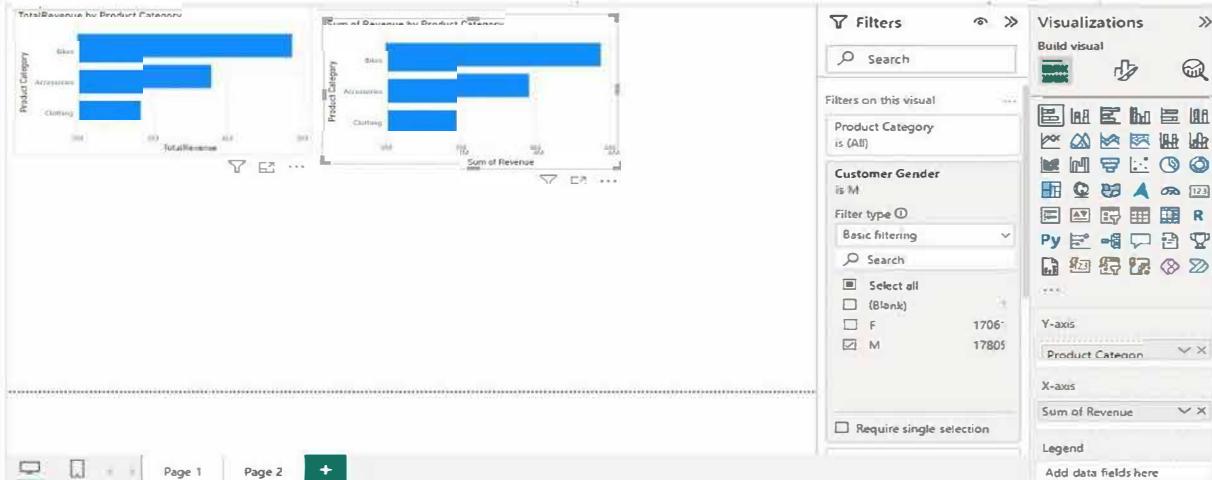
Step 4:

Reversing the Bars:

- To create the butterfly effect, you need to reverse one of the bar charts. This involves adjusting the direction of the bars so that they face opposite directions from the center.
 - Reverse the Bars:**
 - For one of the charts (e.g., Male revenue), you will need to use a calculated column or measure to make the bars extend in the opposite direction. In Power BI, this can be achieved by adjusting the data in the chart's settings or using custom visualizations if necessary.

Add Titles and Labels:

- Add clear titles and labels to each chart to indicate what data they represent (e.g., "Female Revenue" and "Male Revenue").
- Customize the chart's appearance to enhance readability.



Question 6: Create a calculated field to show the average revenue per state & display profitable & non-profitable state.

Step1: Create a New Measure

- Go to the Modeling tab and select "New Measure".
- Create the Average Revenue Measure:
- Enter the following DAX formula to calculate the average revenue per state:

AverageRevenuePerState =
AVERAGEX(

```

VALUES(SalesTable[State]),
CALCULATE(SUM(SalesTable[Revenue]))
)

```

Step2: Create a Calculated Column to Categorize States

Next, create a calculated column to classify states as profitable or non-profitable based on the average revenue.

1. Go to the Modeling tab and select "New Column".
2. *Create the Profitability Column:*

Enter the following DAX formula to create a column that categorizes states as profitable or non-profitable:

```

ProfitabilityStatus =
IF(SalesTable[AverageRevenuePerState] > 1000,
    "Profitable",
    "Non-Profitable"
)

```

Step 3: Display the Results

1. *Add a Table and select state, AverageRevenueState and ProfitabilityStatus.*

State	AverageRevenuePerState	ProfitabilityStatus
Alabama	642.00	Non-Profitable
Alabama	59.00	Non-Profitable
Arizona	1,155.00	Profitable
Arizona	71.00	Non-Profitable
Arizona	1,949.00	Profitable
Bayern	1,63,271.00	Non-Profitable
Bayern	3,74,137.00	Profitable
Brandenburg	20,497.00	Non-Profitable
Brandenburg	67,941.00	Profitable
California	24,92,858.00	Non-Profitable
California	35,84,058.00	Profitable
Charente-Maritime	16,993.00	Non-Profitable
Charente-Maritime	20,874.00	Profitable
England	14,97,497.00	Non-Profitable
England	27,78,723.00	Profitable
Essonne	1,06,052.00	Non-Profitable
Essonne	2,31,515.00	Profitable
Florida	1,653.00	Non-Profitable
Florida	1,908.00	Profitable
Garonne (Haute)	21,192.00	Non-Profitable
Garonne (Haute)	48,495.00	Profitable
Total	4,85,765.61	

Extra : To get the Total value or single value

In Power BI, a **Card** visualization is used to display a single, important piece of data, such as a key metric or a number. It is commonly used to show aggregate values like:

- **Total Sales**
- **Average Profit**
- **Total Units Sold**
- **Number of Customers**

The Card provides a clean and simple way to highlight critical metrics that are important for decision-making. It's ideal for dashboard views where quick insights are needed.

To show the total revenue

Steps : 1. Select the card in the visualization pane.

2. Drag the Revenue field into the field well



To Add filter or Slicer

Filter Data: Slicers filter data across multiple charts and visuals in a report. For example, selecting a specific region or product category in a slicer can update all connected visuals to reflect data only for that selection.

Steps : 1. Select slicer from the Visual pane

2. Drag the Country field into the field well



Question 7: Build a dashboard.



Program 9 : Analysis of GDP dataset:

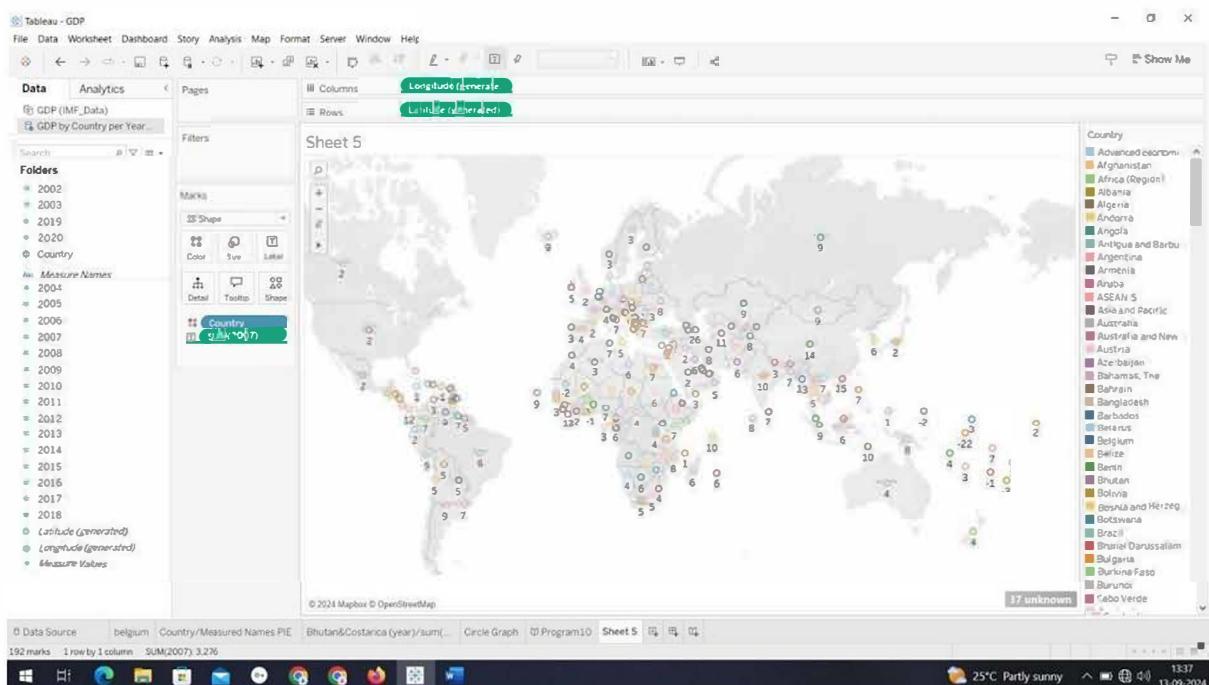
i) Visualize the countries data given in the dataset with respect to latitude and longitude along with country name using symbol maps

Step1: Bring Latitude in Row

Bring Longitude in Column

Step2: Bring Country in Color Marks Pane

Bring any Year Measured Value to Label after that You be able to see screen as in below



ii) Create a bar graph to compare GDP of Belgium between 2006 – 2026.

Step1:

Get Measured Names to Filter Pane then select as in years mentioned

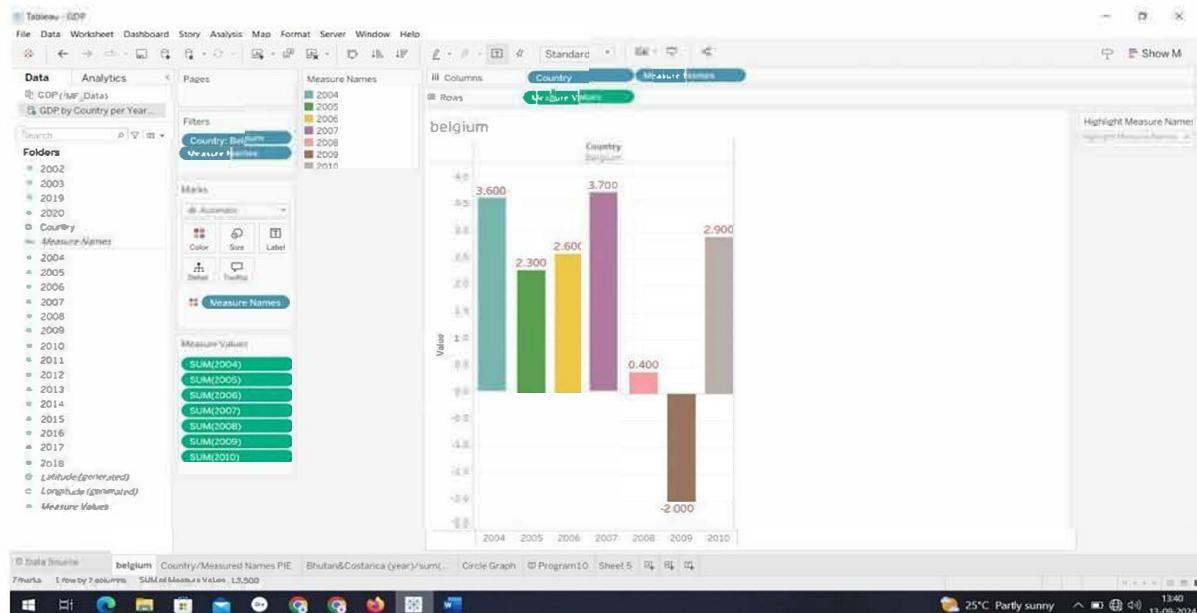
2006 – 2026. Get Country to Filter and Select Belgium

Step2:

Drag Measured Name and Country into Column

Step3:

Drag Measured Value to Row You see outputs



iii) Using pie chart, visualize the GDP of India, Nepal, Romania, South Asia, Singapore by the year 2010.

Step1:

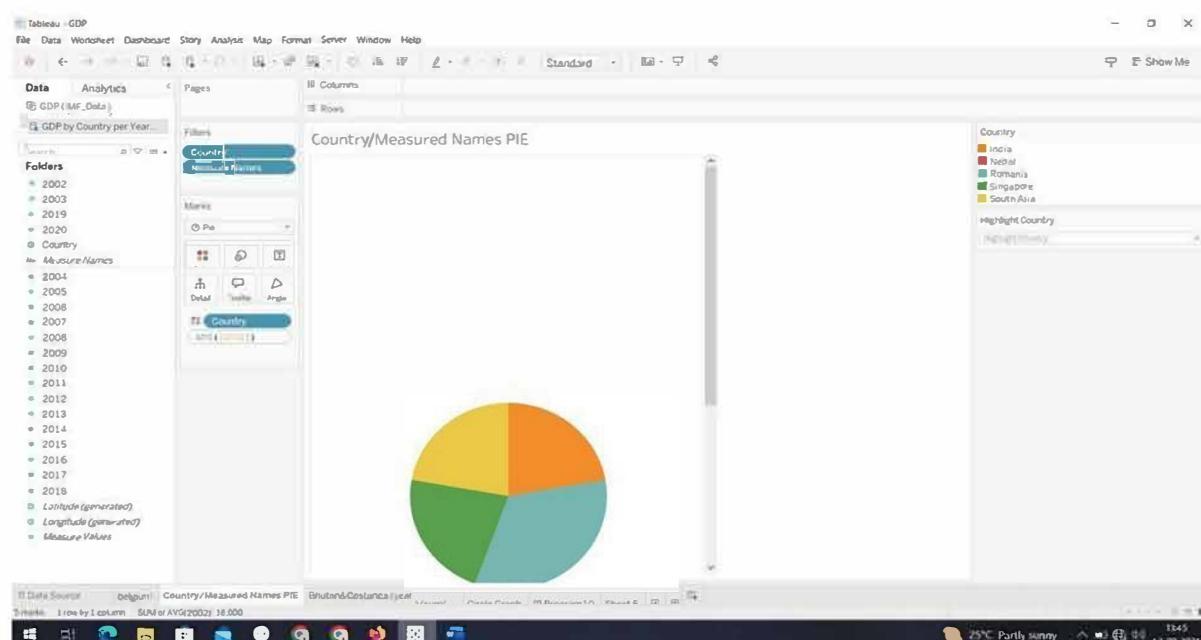
Get Country to Filter pane and select India, Nepal, Romania, South Asia, Singapore
Get Measure Name to Filter and select 2010

Step2: Important Step

Select option of chart as Pie(instead of automatic in Marks Pane) and Drag Country in Color frame

Finaly Sum or avg or anything of your choice to angle Frame (For sum its $\text{SUM}[(2010)]$, For average its $\text{AVG}[(2010)]$) from measure value

The output result is as in below

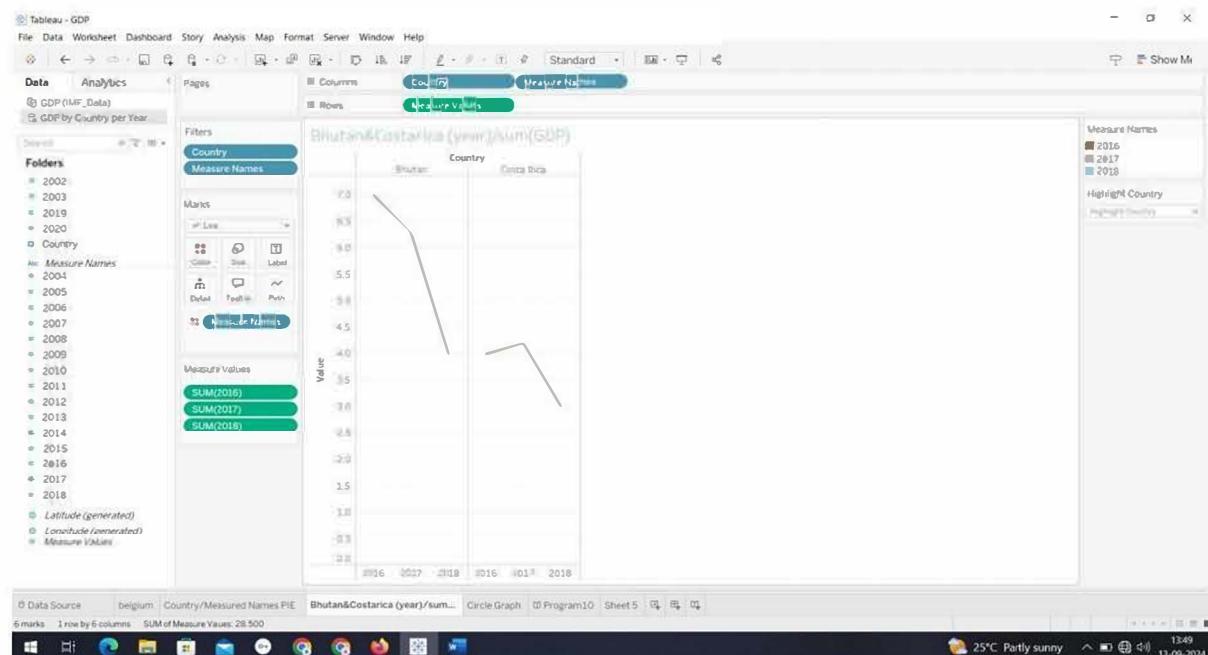


iv) Visualize the countries Bhutan & Costa Rica competing in terms of GDP.

Step1: Filter Country and Measure name like Bhutan,Costarics and 2016,2017,2018 as year(Measure name)

Step2: Add Country and Measure Names in column, Measure Values in Row

Step3: For better view add Measure Names to Color frame in Marks pane



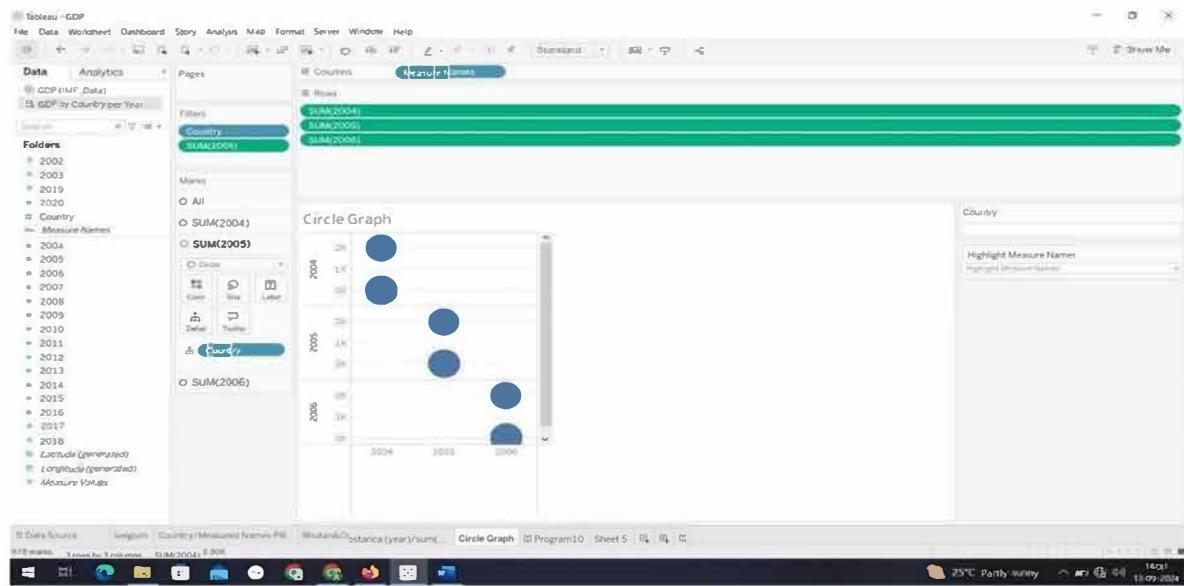
v) Create a scatter plot or circle views of GDP of Mexico, Algeria, Fiji, Estonia from 2004 to 2006.

Step1: Add Country in filter as per requirement

Add measure names in filter and select as per requirement

Step2: Add Measured Name in Column and an add any measured values of year 2004,2005,2006Finally opt for Circle as option

Data Visualization Laboratory



Program 10. Analysis of HR Dataset:

- i) Create KPI to show employee count, attrition count, attrition rate, attrition count, active employees, and average age.
- ii) Create a Lollipop Chart to show the attrition rate based on gender category.
- iii) Create a pie chart to show the attrition percentage based on Department Category- Drag department into colours and change automatic to pie. Entire view, Drag attrition count to angle. Label attrition count, change to percent, add total also, edit label.
- iv) Create a bar chart to display the number of employees by Age group,
- v) Create a highlight table to show the Job Satisfaction Rating for each job role based on employee count.
- vi) Create a horizontal bar chart to show the attrition count for each Education field Education field wise attrition – drag education field to rows, sum attrition count to col,
- vii) Create multiple donut chart to show the Attrition Rate by Gender for different Age group.

Solution :

- i) **Create KPI to show employee count, attrition count, attrition rate, attrition count, active employees, and average age.**

Step1: Create a New measure

Employee Count = COUNT('HR'[EmployeeNumber])

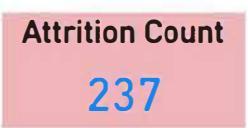
Step2: Choose KPI card in the visualization and drag and drop the Employee Count. Format your visuals of your style.



Step3: Create a New Measure

Attrition Count = COUNTROWS(FILTER('HR', 'HR'[Attrition] = "Yes"))

Step4: Choose KPI card in the visualization and drag and drop the Attrition Count. Format your visuals of your style.



Step5: Create a New Measure

Attrition Rate = DIVIDE([Attrition Count], [Employee Count], 0) * 100

Step6: Choose KPI card in the visualization and drag and drop the Attrition Rate. Format your visuals of your style.



Step7: To find active employees create a new measure

Active Employees = [Employee Count] - [Attrition Count]

Step8: Choose KPI card in the visualization and drag and drop the Active Employees. Format your visuals of your style.



Step9: To calculate average age create a new measure

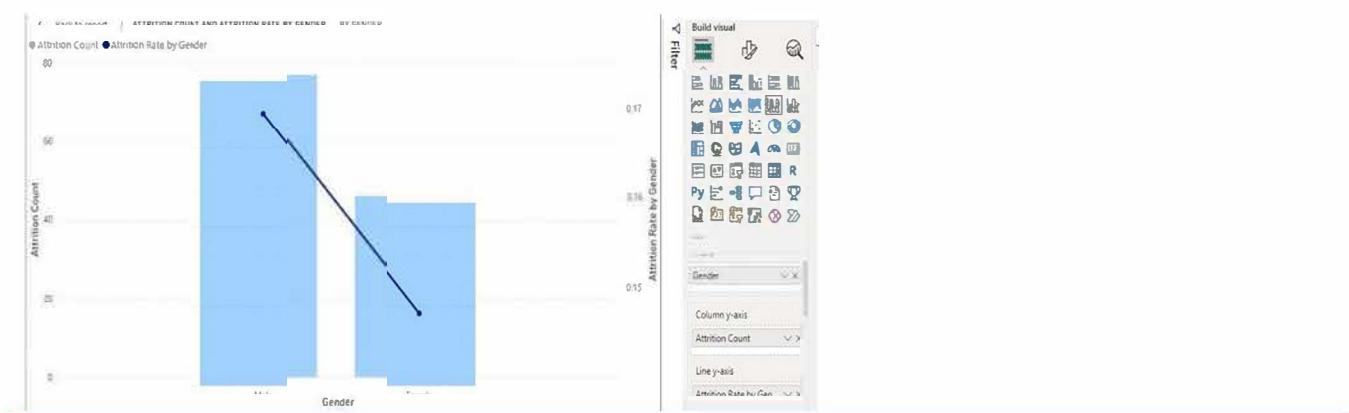
Average Age = AVERAGE(HR[Age])

Step10: Choose KPI card in the visualization and drag and drop the Average Age. Format your visuals of your style.



ii) Create a Lollipop Chart to show the attrition rate based on gender category.

Power BI does not have a native Lollipop Chart, so you will simulate it using (any chart) a **Line and Stacked column Chart**



iii) Create a pie chart to show the attrition percentage based on Department Category-

Drag department into colours and change automatic to pie. Entire view, Drag attrition count to angle. Label attrition count, change to percent, add total also, edit label.

- From the **Visualizations** pane on the right, select the **Pie Chart** visual icon. This will add a blank pie chart to your report canvas.

Set Up the Pie Chart:

- **Drag the Department Field** to the **Legend** area.
- **Drag the Attrition Count Measure** to the **Values** area.

Configure Data Labels and Formatting:

- Click on the **Pie Chart** to select it.
- Open the **Format Pane** (paint roller icon).

Change Data Label Settings:

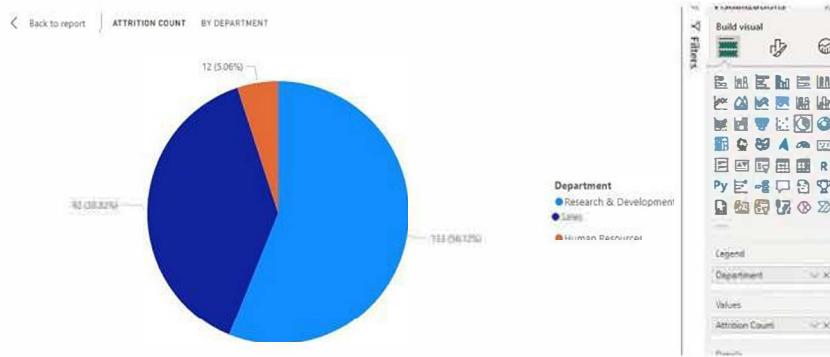
- Go to the **Data Labels** section in the Format pane.
- Toggle **Data Labels** to **On**.
- In the **Data Label settings**, change **Label Style** to **Percent**. This will show the percentage of each department's attrition relative to the total.
- To show the **Total** alongside the percentages:
 - Ensure that **Data Labels** are visible and set to **Show**.
 - You can add a **Total Label** in the **Title** or **Tooltips** sections if needed for additional context.

Format the Pie Chart:

- **Adjust Colors:**
 - Go to the **Data Colors** section in the Format pane.
 - You can customize colors for each department by clicking on the color next to the department name and choosing the color you prefer.
- **Edit Labels:**
 - If you want to customize the text in the labels, you can use the **Data Label** formatting options to adjust font size, color, and display units.

Finalize Your Visualization:

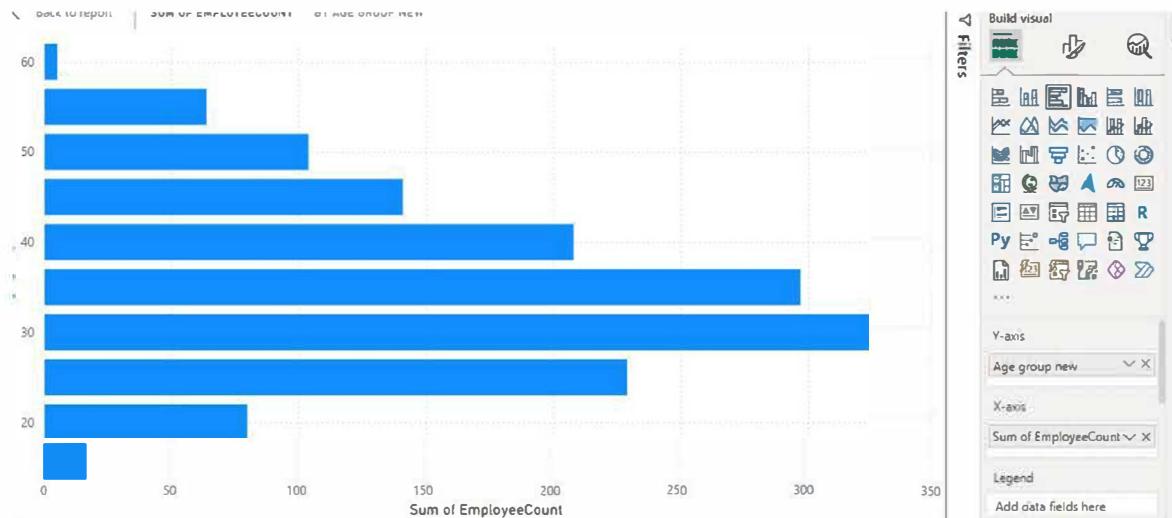
- Ensure your pie chart looks as expected with percentages representing the attrition rate for each department.



iv) Create a bar chart to display the number of employees by Age group,

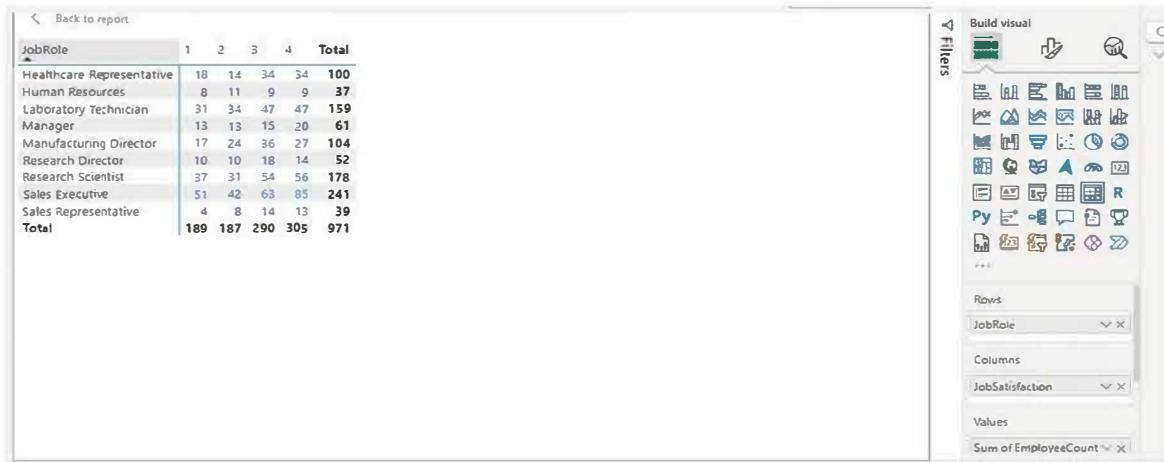
Step1: right click Age and choose new group and set bin size as 5.

Step2: Choose any bar chart drag and drop new age bin and employee count.



v) Create a highlight table to show the Job Satisfaction Rating for each job role based on employeecount.

- Create a **Matrix** visual from the Visualizations pane.
- Drag the Job Role field to **Rows**.
- Drag the Job Satisfaction Rating field to **Columns**.
- Drag the Employee Count measure to **Values**.

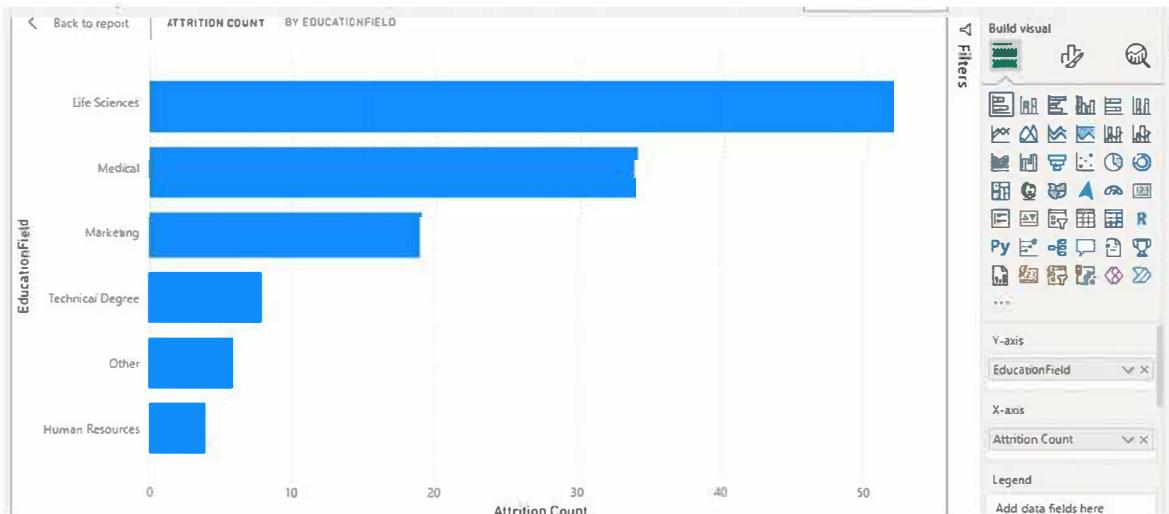


VI) Create a horizontal bar chart to show the attrition count for each Education field Educationfield wise

Attrition – drag education field to rows, sum attrition count to col,

Step1: Horizontal bar chart It's called the **Clustered Bar Chart** or **Stacked Bar Chart** in the visualization pane

Choose stacked bar chart and set y axis is education filed and x axis is attrition count.



vii) Create multiple donut chart to show the Attrition Rate by Gender for different Age group. Choose donut chart and drag and drop legend as gender and value as attrition rate.

1. Select the **Donut Chart** from the Visualizations pane.
2. Create separate **Donut Charts** for different age groups.
 - For each chart, filter the dataset based on age group (using the Age Group field created earlier).

3. Drag the Gender field to **Legend**.
4. Drag the Attrition Rate measure to **Values**.
5. Repeat for each age group, ensuring each donut chart represents a different age group with gender breakdown.

Note:

- Use **Filters** to dynamically adjust visuals where necessary (e.g., filter by Age Group or Education Field).

