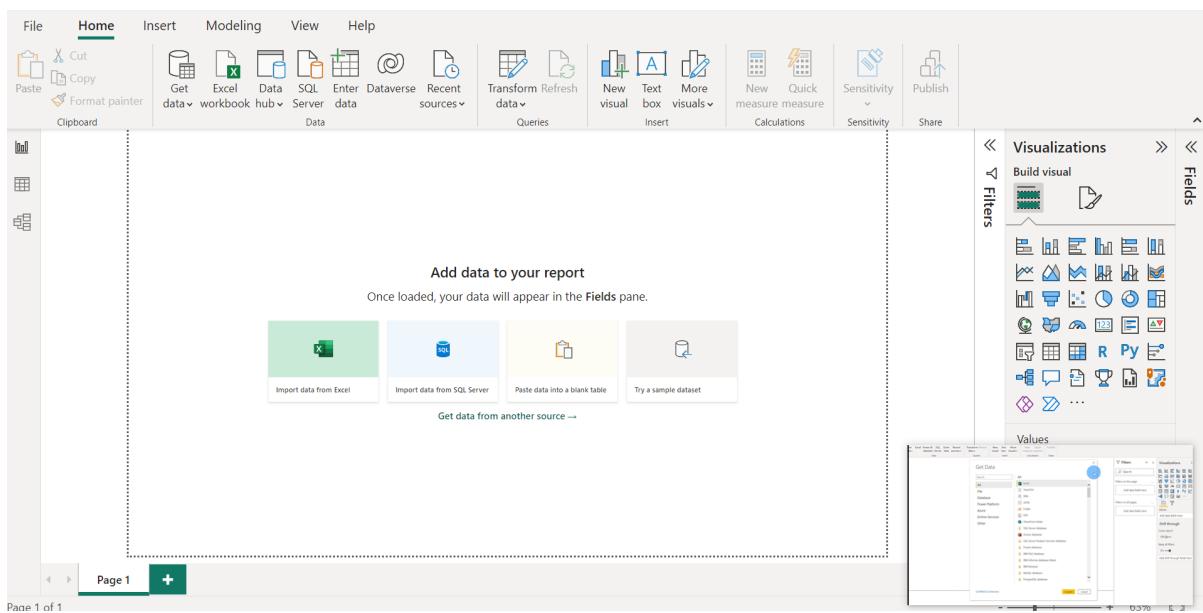


How to use Microsoft Power BI

(Basics)

The view of power BI dashboard after successfully installs the Power BI



Load data

1. First click on the **Get data** in menu bar.
2. Then select the file type which required to upload. (Here it uses the Excel sheet.)
3. Then select the required Excel file using the file picker.

Link for the data set.

https://ugvle.ucsc.cmb.ac.lk/pluginfile.php/17968/mod_assign/intro/Kevin%20Cookie%20Company%20Financials.xlsx

The screenshot shows the Power BI desktop application. In the top left, the ribbon has 'Home' selected. The 'Navigator' pane on the left lists 'Kevin Cookie Company Financials.xlsx [2]' with 'financials' and 'Cookie Sales' selected. The main area displays a table titled 'Cookie Sales' with columns: Country, Product, Units Sold, Revenue per cookie, and Cost per cookie. The data shows sales for Chocolate Chip cookies across various countries like Canada, Mexico, Germany, and the United States. On the right, there's a 'Visualizations' pane with various chart and report icons, and a 'Fields' pane showing the structure of the 'Cookie Sales' table.

Transform Data

1. Here we can transform (clear/preprocessing) the data as we required before it loaded to the Power BI dashboard by clicking on the **Transform Data**. If we are sure all set to work, we can directly click on the **Load** button to load data set to the dashboard.
2. The data transform happens in the **Power BI Query Editor**. It will automatically open when it clicks on the **Transform Data**.

The screenshot shows the Power BI Query Editor window. The ribbon has 'Home' selected. The main area displays the 'Cookie Sales' query with 12 columns and 700 rows. The 'Transform' tab is active in the ribbon. The 'Applied Steps' pane on the right shows a step named 'Changed Type' under the 'Source' step. The status bar at the bottom indicates 'PREVIEW DOWNLOADED AT 9:37 PM'.

a. Remove unwanted data

It can easily do by clicking on the **Header Name** and deselecting the data what does not want o analysis.

The screenshot shows the Power Query Editor interface. A context menu is open over the 'Cookie Sales' column header, listing options like 'Sort Ascending', 'Sort Descending', 'Clear Sort', 'Clear Filter', 'Remove Empty', and 'Text Filters'. A sub-menu under 'Text Filters' shows a list of cookie types: '(Select All)', 'Chocolate Chip', 'Fortune Cookie', 'Oatmeal Raisin', 'Snickerdoodle', and 'Sugar'. The 'Chocolate Chip' option is checked. To the right of the menu is a preview pane showing a list of values for the 'Units Sold' column, ranging from 292 to 1817. The 'APPLIED STEPS' pane on the right shows a step named 'Changed Type'.

b. Convert to whole numbers

In incident where it wants to convert the decimal numbers to the whole numbers. It can easily accomplish by right clicking the Header of required column and selecting the **Change type - > Whole Numbers**.

The screenshot shows the Power Query Editor interface. A context menu is open over the 'Cost per cookie' column header, with the 'Change Type' option selected. A submenu under 'Change Type' shows options: 'Decimal Number', 'Fixed decimal number', and 'Whole Number'. The 'Whole Number' option is checked. To the right of the menu is a preview pane showing a list of values for the 'Cost per cookie' column. The 'APPLIED STEPS' pane on the right shows steps for 'Source', 'Navigation', 'Promoted Headers', 'Changed Type', and 'Filtered Rows'.

c. Change the Header name

This can be easily done by clicking on the header name. Simply like rename a folder in desktop environment.

d. Undo the performed Transformation

If it's required to undo the perform transformation action, it can easily be done by moving the **Applied Steps** panel in the window. By clicking the performed action, it displays the action that we had done in step wise. We can remove it simply clicking on the removing button.

Click on **Filter Rows**

The screenshot shows the Microsoft Power Query Editor interface. The main area displays a table titled "Cookie Sales" with columns: Date, Month Number, Month, and Year. The "Month" column contains values such as September, October, November, December, January, February, May, and April. The "Year" column contains values from 2018 to 2019. The "Applied Steps" pane on the right lists the following steps in sequence: Source, Navigation, Promoted Headers, Changed Type, and Filtered Rows. The "Filtered Rows" step is highlighted with a red box. The status bar at the bottom indicates "PREVIEW DOWNLOADED AT 9:37 PM".

Pop window showing the summery of action performed.

Click on the remove button

e. Import new data set from web

First click on the **New Source** and select the **Web**. Then it loaded the pop window to load the data set from the from the web. After providing the link, Click on the **ok** button.

The screenshot shows the Power Query Editor interface. In the center, a 'From Web' dialog box is open, prompting for a URL. The URL entered is https://en.wikipedia.org/wiki/List_of_countries_and_dependencies_by_population. The 'Basic' radio button is selected. On the right side of the dialog, there's a preview of the data, which appears to be a table of country names and their population counts. Below the dialog, the main Power Query Editor window shows a 'Cookie Sales' query with 12 columns and 607 rows. The status bar at the bottom indicates 'PREVIEW DOWNLOADED AT 9:37 PM'.

Then it loaded the data set. This is very attractive feature in Power BI, where it can load the data sets in the websites.

The screenshot shows the Power BI desktop application. The left side features the Navigator pane, which lists various data sources like 'HTML Tables [2]', 'Suggested Tables [7]', and 'Text [2]'. The 'Cookie Sales' query is also listed here. The main area is the 'Table View' pane, which displays a table titled 'Sovereign states and dependencies by population[edit]'. The table has columns: Rank, Country / Dependency, Population, Population_1, and Date. The data includes the top 18 countries by population, such as China, India, United States, Indonesia, Pakistan, Nigeria, Brazil, Bangladesh, Russia, Mexico, Japan, Philippines, Ethiopia, Egypt, Vietnam, DR Congo, Iran, and Turkey. The status bar at the bottom indicates 'DOWNLOADED AT 9:37 PM'.

After selectin the required data set from the website the simply click on **Ok** button and load the data into the Query Editor.

Here for the demonstration, we loaded the population amount of the country from the Wikipedia.

https://en.wikipedia.org/wiki/List_of_countries_and_dependencies_by_population

Here loaded data set consists with several unwanted the data. We can remove them by selecting them separately. To remove a column, only needs to right click on the heading of the column. Then select the remove option.

Remove Rank column

The screenshot shows the Power Query Editor interface with the 'Home' tab selected. A context menu is open over the 'Rank' column header, with the 'Remove' option highlighted. The 'APPLIED STEPS' pane on the right shows a step labeled 'Changed Type'.

	A _{bc} Rank	A _{bc} Country / Dependency	A _{bc} Population	A _{bc} Population_1
1	null	null	Numbers	% of the world
2	World	8,002,685,000	100%	
3	China	1,412,600,000	17.7%	
4	India	1,375,586,000	17.2%	
5	United States	334,233,854	4.18%	
6	Indonesia	275,773,800	3.45%	
7	Pakistan	235,825,000	2.95%	
8	Nigeria	218,541,000	2.73%	
9	Brazil	215,594,089	2.69%	
10	Bangladesh	165,158,616	2.06%	
11	Russia	145,100,000	1.81%	
12	Mexico	128,533,664	1.61%	
13	Japan	124,840,000	1.56%	
14	Philippines	112,900,350	1.41%	
15	Ethiopia	105,163,988	1.31%	
16	Egypt	104,271,900	1.30%	
17	Vietnam	99,460,000	1.28%	

Remove the population by percentage column

The screenshot shows the Power Query Editor interface with the 'Home' tab selected. A context menu is open over the 'Population' column header, with the 'Remove' option highlighted. The 'APPLIED STEPS' pane on the right shows a step labeled 'Changed Type'.

	A _{bc} Population	A _{bc} Population_1
1	null	Numbers
2	8,002,685,000	100%
3	1,412,600,000	17.7%
4	1,375,586,000	17.2%
5	334,233,854	4.18%
6	275,773,800	3.45%
7	235,825,000	2.95%
8	218,541,000	2.73%
9	215,594,089	2.69%
10	165,158,616	2.06%
11	145,100,000	1.81%
12	128,533,664	1.61%
13	124,840,000	1.56%
14	112,900,350	1.41%
15	105,163,988	1.31%
16	104,271,900	1.30%
17	99,460,000	1.28%

Remove Data column

The screenshot shows the Microsoft Power Query Editor interface. A context menu is open over a column named "Country population". The menu path is "Table.TransformColumnTypes(#"Promoted Headers", {"Rank", type text}, United Nations) null". The "Remove" option is highlighted. The "APPLIED STEPS" pane shows a step labeled "Changed Type". The table preview shows 7 columns and 243 rows.

Remove source column

The screenshot shows the Microsoft Power Query Editor interface. A context menu is open over a column named "Source of information". The menu path is "Table.RemoveColumns(#"Changed Type", {"Country population", "Source of information", "Notes"}, null)". The "Remove" option is highlighted. The "APPLIED STEPS" pane shows a step labeled "Removed Columns". The table preview shows 5 columns and 243 rows.

Likewise, it can remove all the other unwanted columns by keeping the **Country** and the **Population** column.

The final cleaned table view is like belows.

The screenshot shows the Power Query Editor interface. The main area displays a table titled "Apc Country / Dependency" with two columns: "Country / Dependency" and "Population". The table contains 17 rows of data, including "World", "China", "India", "United States", "Indonesia", "Pakistan", "Nigeria", "Brazil", "Bangladesh", "Russia", "Mexico", "Japan", "Philippines", "Ethiopia", "Egypt", and "Vietnam". The "Population" column contains numerical values such as 8,002,685,000 for China and 99,460,000 for Vietnam. The bottom left of the editor shows "2 COLUMNS, 243 ROWS" and "Column profiling based on top 1000 rows". The bottom right shows "PREVIEW DOWNLOADED AT 9:58 PM". On the right side, there is a "Query Settings" pane with sections for "PROPERTIES" (Name: "Country population") and "APPLIED STEPS" (listing "Source", "Extracted Table From Html", "Promoted Headers", "Changed Type", and "Removed Columns").

Now it's required to select the countries that we required to analyze out of all countries which is loaded from the Wikipedia.

This can be simply accomplished by clicking the filter option on the heading in each column and selecting or deselecting the countries that we required. For the example we are going to select 5 countries.

The reason to filter up only up to the 5 countries is, we have only **Germany, France, United States, Mexico, Canada** as the countries in our Kevin Cookie Company Financials data set. Our target is to attach a population column to the Kevin Cookie Company Financials data set which is downloaded from the Wikipedia.

Filleter and select the countries.

The screenshot shows the Power Query Editor interface. In the center, there is a table titled 'Country / Dependency' with two columns: 'Country' and 'Population'. The 'Population' column contains numerical values. On the left, the 'Cookie Sales' query is visible with a filter applied to the 'Country' column, showing results for the United States and other US territories. On the right, the 'APPLIED STEPS' pane shows the 'Removed Columns' step, which has removed the 'Country' and 'Dependency' columns from the original table. The preview at the bottom shows the filtered data.

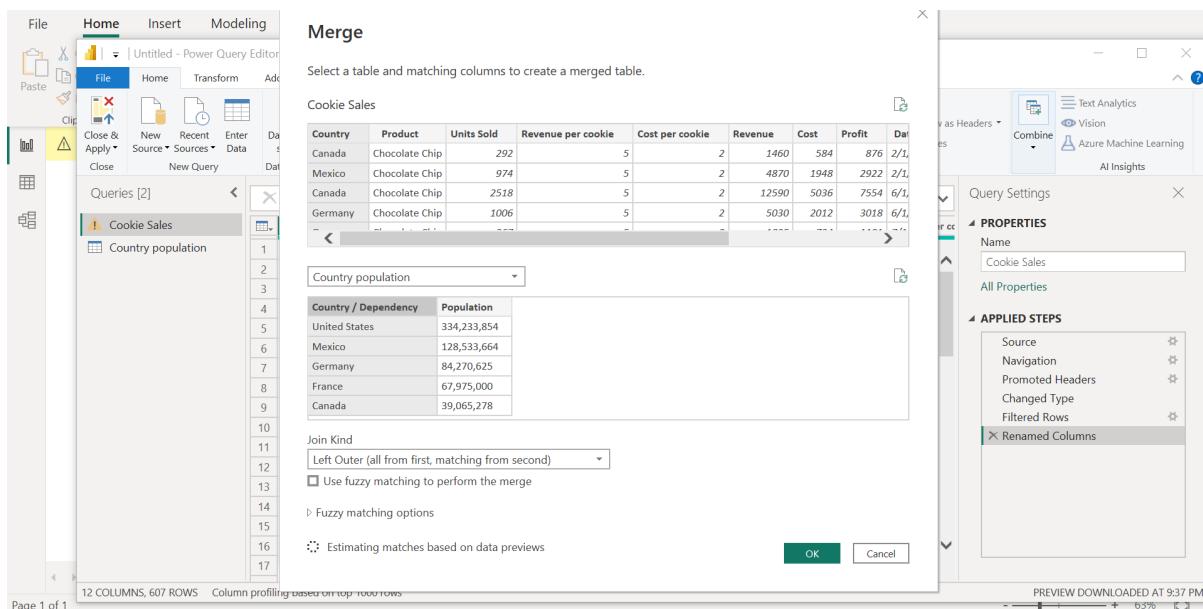
Final selected country list with the population.

The screenshot shows the Power Query Editor interface after filtering. The 'Country population' query now contains only five rows: United States, Mexico, Germany, France, and Canada, each with its corresponding population value. The 'APPLIED STEPS' pane shows the 'Filtered Rows' step, indicating that only these specific rows were retained. The preview at the bottom shows the final selected list.

f. Connect tow data sets.

Merge the 2 data sets (Connect the country & population table to the Kevin Cookie Company Financials data set)

First click on the **Combine** tab and then on the **Merge Queries**. It brings the below window.



Then it needs to select the requires column from each table. Here we select the **Country** from the Kevin Cookie Company Financials tables and **country** from the Kevin Cookie Company Financials table.

After selecting the required columns, it needs to click on the **ok** button.

Then will bring the below privacy window. Simply click on the **ignore** checkbox.

Then it merges the two data set and displays as below. Then it needs to select the **population** from the filter option to displays the merge table correctly.

Final merged dataset displays as bellows. Then it needs to click on the **Close & Apply** option in the menu bar to apply load this date set from power BI query editor to the dashboard.

Click on the **close & apply**

The screenshot shows the Power Query Editor interface. The ribbon at the top has tabs for File, Home, Insert, Modeling, View, and Help. The Home tab is selected. The main area displays two queries: 'Cookie Sales' and 'Country population'. A preview pane shows a table with columns: Month Number, Month, Year, and Country population.Population. The preview indicates 13 columns and 607 rows. The bottom status bar shows 'PREVIEW DOWNLOADED AT 9:37 PM'. On the right side, there is a 'Query Settings' pane with sections for Properties (Name: Cookie Sales) and Applied Steps (listing Source, Navigation, Promoted Headers, etc., with 'Expanded Country population' highlighted).

Loading window (This shows the success status of loading data set to the dashboard.)

The screenshot shows the Power BI desktop interface. The ribbon at the top has tabs for File, Home, Insert, Modeling, View, and Help. The Home tab is selected. A 'Load' dialog box is open, showing two items: 'Cookie Sales' and 'Country population', both listed as 'Evaluating...'. Below the dialog, there is a preview pane with an Excel icon. The right side of the screen features the 'Visualizations' and 'Fields' panes, which contain various visualization and field-related options.

Below shows a way to check whether the set connection have activated on the data sets. To get the view it needs to click on the **Model** tab in the left-hand side.

The screenshot shows the Power BI Data view interface. On the left, there's a tree view of tables: 'Cookie Sales' (selected) and 'Country population'. The 'Cookie Sales' table has fields like Cost, Cost per cookie, Country, and Profit. It has a many-to-one relationship with the 'Country population' table, which has fields like Country / Dependency and Population. The 'Properties' pane on the right shows settings for the 'Cookie Sales' table, including options to show the database in the header, pin related fields, and show related fields when collapsed. The 'Fields' pane lists the fields from both tables.

Now all set to go. We have successfully merged and loaded the required data sets.

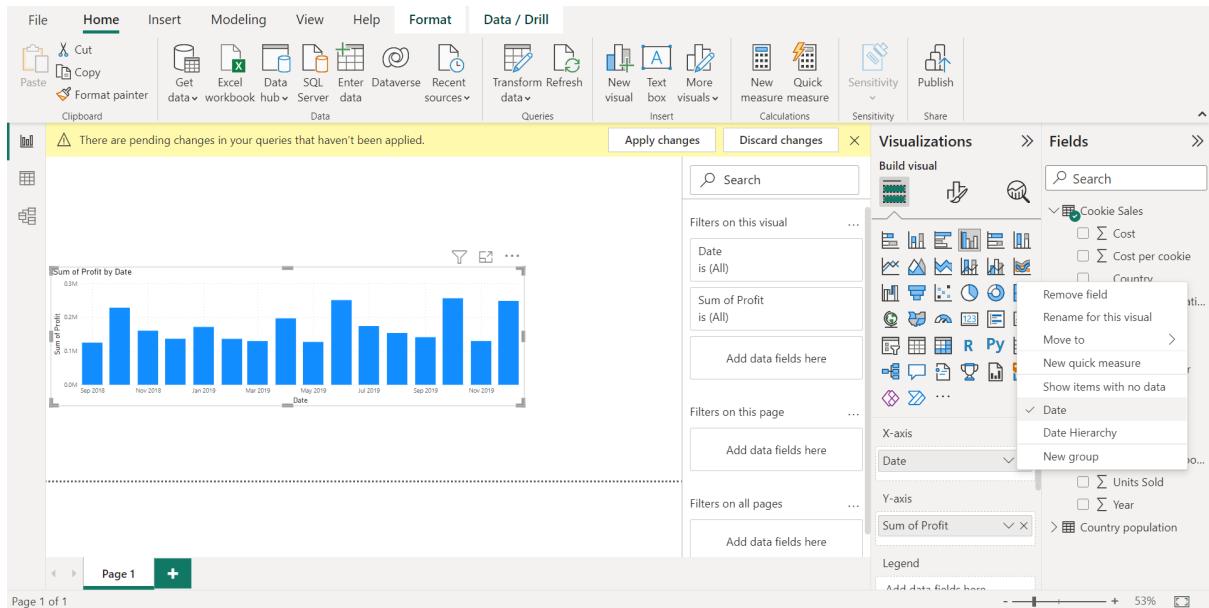
Create dashboard on required analysis.

1. Get profit by day

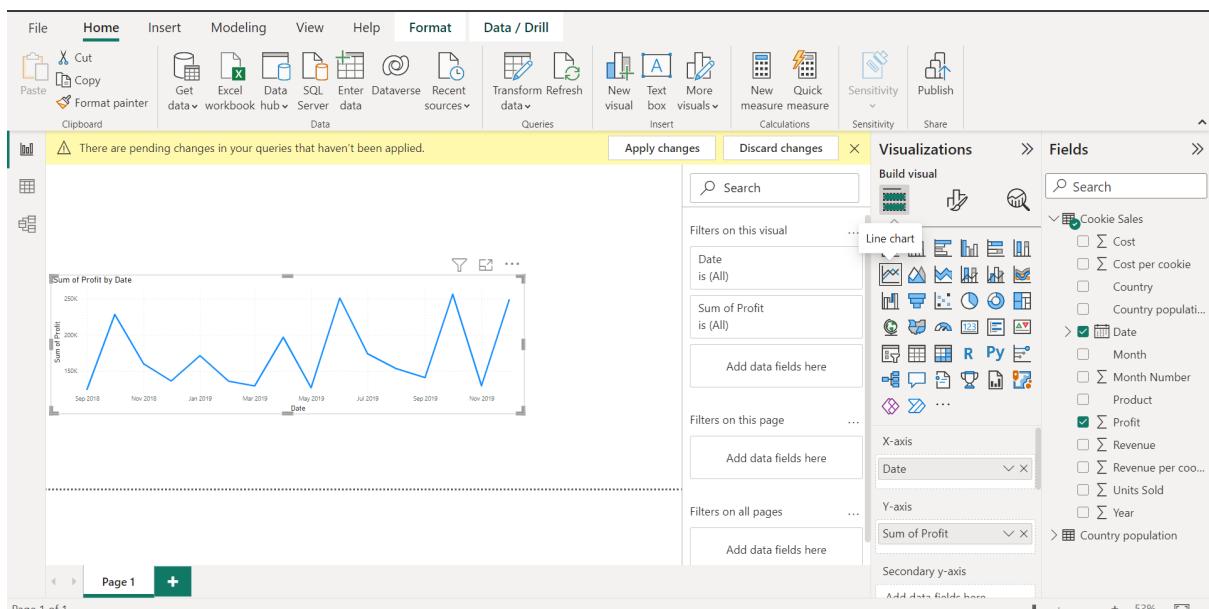
Click on the **Profit** on the fields section then on the **Date** on the fields. Then it will generate below screen.

The screenshot shows the Power BI visualizations pane. A bar chart titled 'Sum of Profit by Year, Quarter, Month and Day' is displayed. The Y-axis is labeled 'Sum of Profit' and ranges from 0.0M to 2.0M. The X-axis shows dates from September 2018 to December 2019, grouped by month and day. To the right of the chart, the 'Visualizations' pane shows various chart types. The 'Fields' pane on the far right lists fields from the 'Cookie Sales' table, including Date, Profit, and Revenue, with 'Profit' checked. The 'X-axis' and 'Y-axis' sections show the date hierarchy and profit measure respectively.

To create the view into to the date and profit format it can select the **Date** from the **X-axis**.

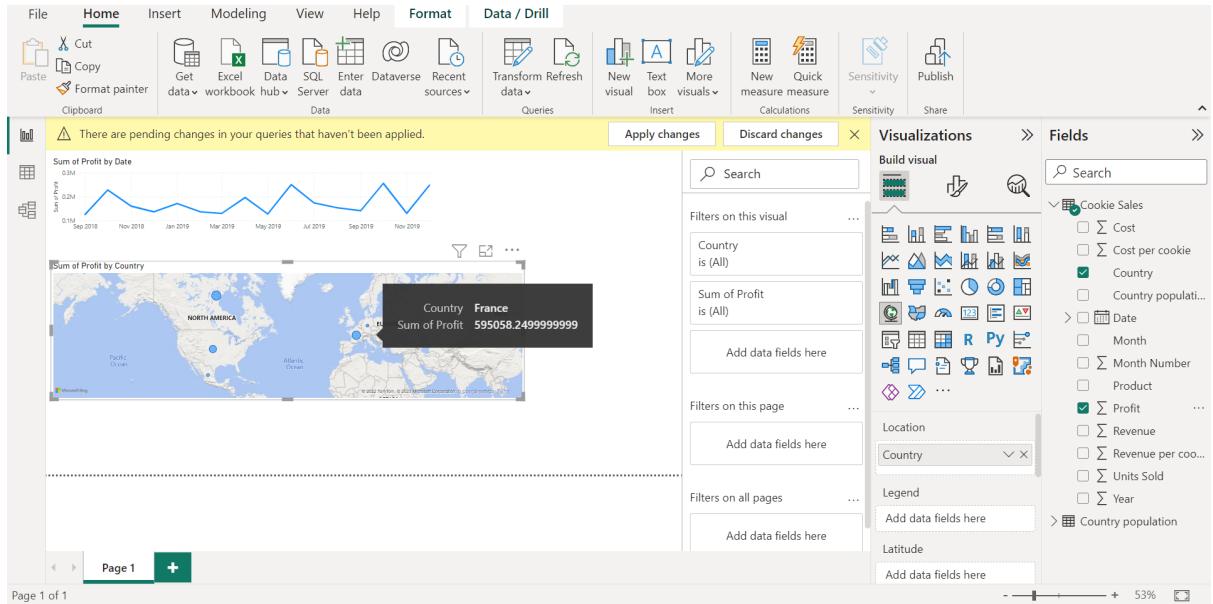


2. Change the bar chart to line chart.

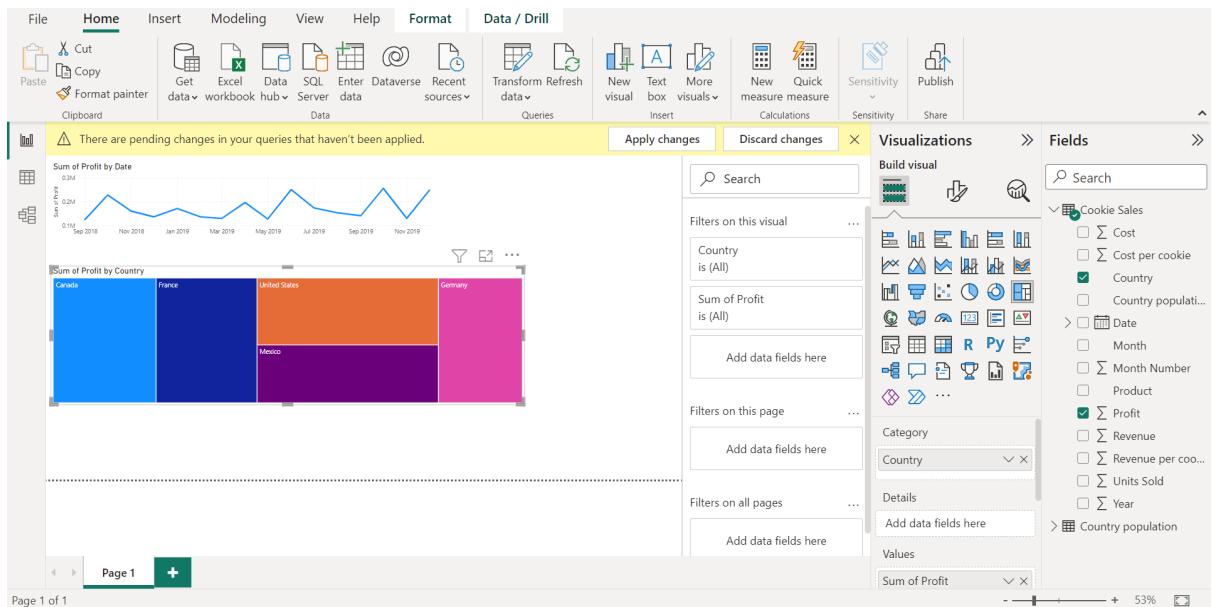


3. Profit by the Geography

Select the **country** and **profit** from the fields section then click on the **map** icon on the **visualization**.



4. Change the map into Tree map



5. Create table on **population** by the **country** and the **unit sold**

The screenshot shows the Power BI Home page with a report titled "Kevin's Cookie company Performance Report". The report contains two visualizations: a line chart titled "Sum of Profit by Date" and a stacked bar chart titled "Sum of Profit by Country". The stacked bar chart shows profit distribution across Canada, United States, Germany, France, and Mexico. A context menu is open over the stacked bar chart, with the "Add data fields here" option highlighted.

Country	Country population	Population	Sum of Units Sold
Mexico	128,533,664	0.11M	203325
United States	354,233,854	0.3M	232620
Canada	39,065,278	0.01M	247427
France	67,975,000	0.01M	240932
Total			1125406

6. Create profit by product wise

The screenshot shows the Power BI Home page with the same report as the previous screenshot. It includes three visualizations: a line chart, a stacked bar chart, and a horizontal bar chart titled "Sum of Profit by Product". The horizontal bar chart shows profit for various products: GM, Chocolate Chip, White Chocolate M., Oatmeal Raisin, Snickerdoodle, Sugar, and Fortune Cookie. A context menu is open over the horizontal bar chart, with the "Add data fields here" option highlighted.

Country	Country population	Population	Sum of Units Sold
Mexico	128,533,664	0.11M	203325
United States	354,233,854	0.3M	232620
Canada	39,065,278	0.01M	247427
France	67,975,000	0.01M	240932
Total			1125406

7. Adding slicer

Slicer can use to filter the plots using the required data. Here It is going to filter the plots using the country. It can be done easily by selecting the country on the slicer.

The screenshot shows the Power BI desktop interface. On the left, there are three visualizations: a line chart titled 'Sum of Profit by Date', a map titled 'Sum of Profit by Country' (with Germany selected), and a bar chart titled 'Sum of Profit by Product' (with Chocolate Chip selected). The ribbon at the top is set to 'Home'. A context menu is open over the bar chart, specifically the 'Fields' pane. In this pane, under the 'Country' section, 'Germany' is checked. Other options like Canada, France, Mexico, and United States are also listed but unchecked.

8. Change the look and feel.

It can change the look and feel, it can easily be done by the navigating to the **view** option in the menu bar.

This screenshot shows the same Power BI desktop setup as the previous one, but with a different theme applied. The ribbon is now set to 'View'. The 'Themes' icon in the ribbon is highlighted. The context menu over the bar chart's 'Fields' pane has been updated. The 'Country' section now includes a checked checkbox next to 'Country', indicating it is selected. The other country options (Canada, France, Mexico, United States) remain unchecked.