

<https://docs.microsoft.com/en-us/dax/>

Different parts of Power BI:

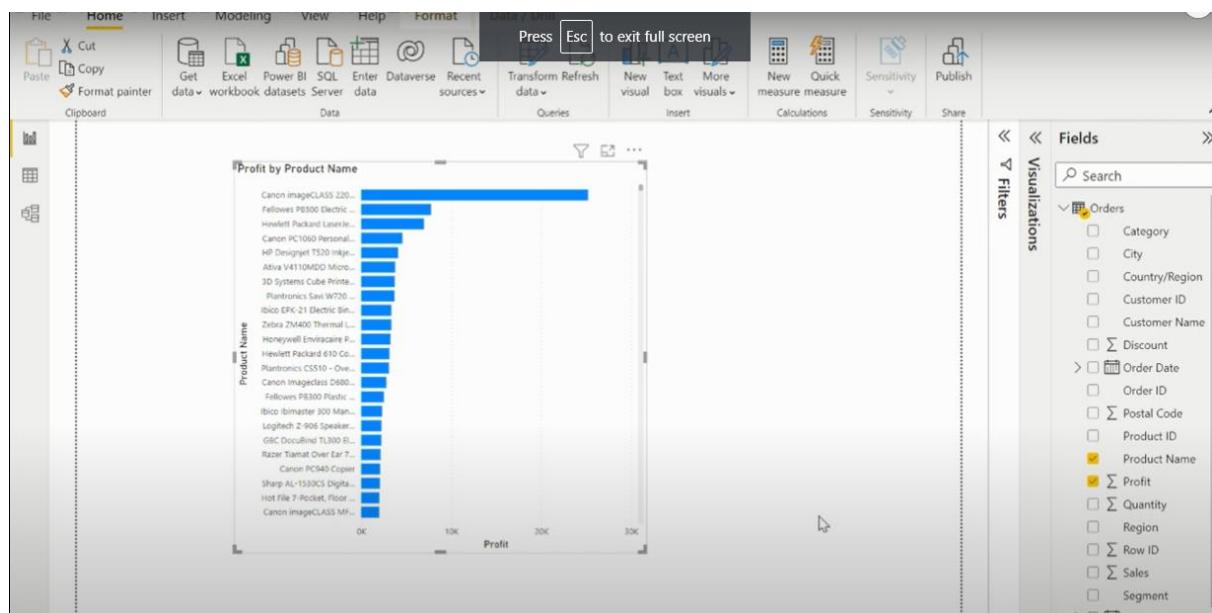
- 1) Power Query - Change Datatype, Renaming the column, deleting the column, new calculated column (M Language)
- 2) Power Pivot - To model the data, define relationship between multiple tables (DAX Language)
- 3) Power View - To build the visualization, where you can see the data visually

Power Query Editor - Inbuild ETL (Extract, Transform, Load) Tool, used for data transformations

Data Transformations in Power BI:

Interpret the missing value

Get Data -> Search & open the file -> Transform data



Navigator

Display Options ▾

Sample - Superstore.xlsx [6]

- Orders
- Orders2
- People**
- People2** (selected)
- Returns
- Returns2

People

Preview downloaded on 23 March 2022

Column1	Column2
Regional Manager	Region
Sadie Pawthorne	West
Chuck Magee	East
Roxanne Rodriguez	Central
Fred Suzuki	South

Load Transform Data Cancel

Transformations Options Available:

Choose columns/rows

remove columns/rows

split column

groupby operation

use first row as headers

Close & Apply • New Recent Enter Data Data source settings Manage Parameters Refresh Preview Advanced Editor Choose Columns Remove Columns Manage Columns Keep Rows Remove Rows Sort Split Column Group By Replace Values Data Type: Text Merge Queries Append Queries Combine Files Azure Machine Learning AI Insights

Queries [3]

Orders

Returns2

People2

This preview may be up to 108 days old.

```
= Table.TransformColumnTypes( People1, {{"column1", type text}, {"column2", type text}})
```

Column1	Column2
1. Regional Manager	Region
2. Sadie Pawthorne	West
3. Chuck Magee	East
4. Roxanne Rodriguez	Central
5. Fred Suzuki	South

Properties

Name: People2

All Properties

Applied Steps

- Source
- Navigation
- Changed Type

Query Settings

Table Names can be changed

Also shows applied steps till now, non relevant steps can be removed, removing steps may undo the work

Merge Queries – same as SQL merge (to join the multiple tables)

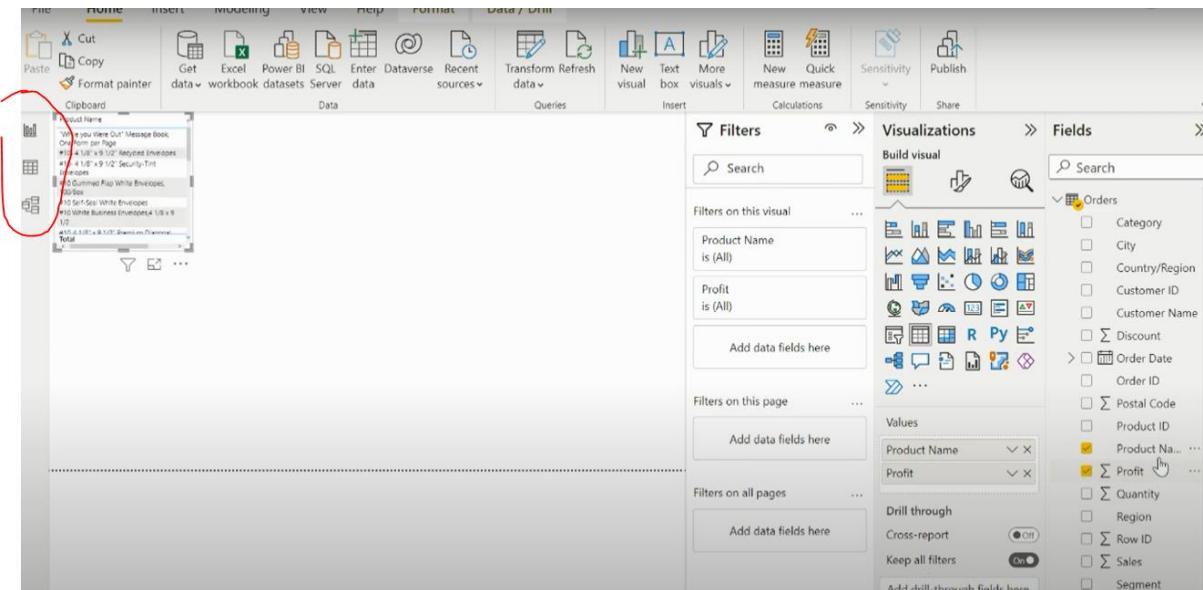
Append Queries – same as union in SQL (to append similar tables together)

Power BI Basic Building Blocks

Report Section – shows the visualizations

Data Section – shows the data in form of rows & columns

Model Section – allows to define relationships between multiple tables



Bookmarks in Power BI?

Bookmark reset the data in the form it is created

View -> Bookmarks -> Add -> Rename

Bookmarks

- Add
- View
- Blur Map
- Pink Map
- Blue States
- Pink States
- Daily State
- Cumulative State
- Daily County
- Cumulative County
- Cumulative Cnty2
- Daily Cnty2
- County cases
- County deaths
- State selection
- 2021
- 2020

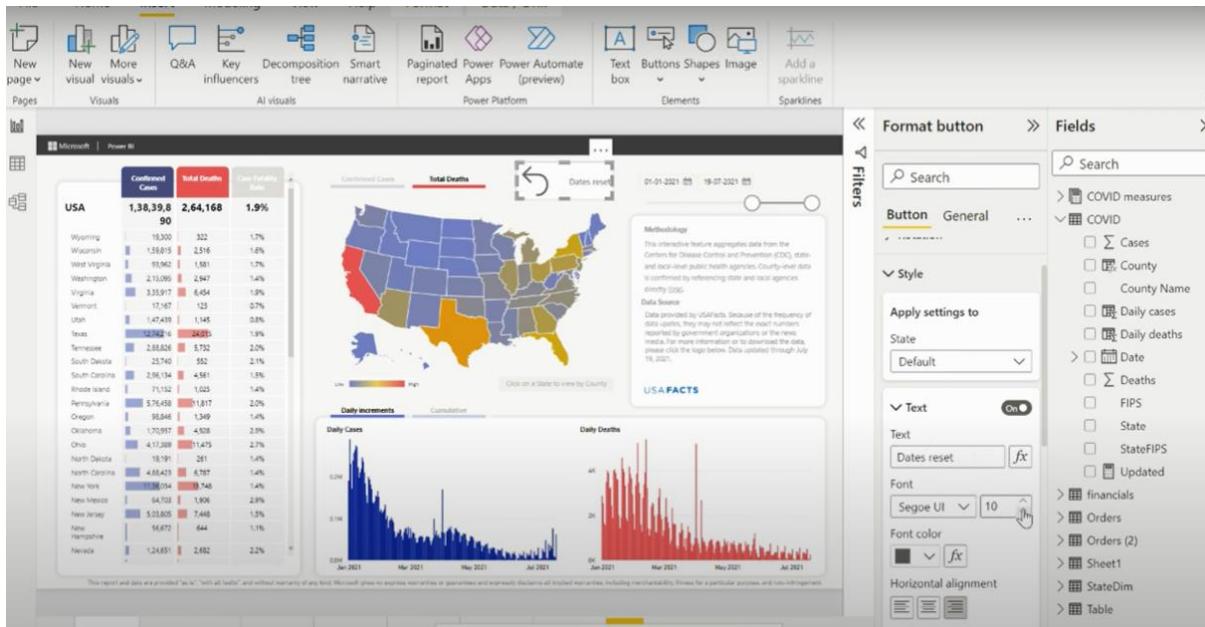
Fields

- > COVID measures
- > COVID
 - Σ Cases
 - County
 - County Name
 - Daily cases
 - Daily deaths
- > Date
 - Σ Deaths
 - FIPS
 - State
 - StateFIPS
 - Updated
- > financials
- > Orders
- > Orders (2)
- > Sheet1
- > StateDim
- > Table

Insert -> Button -> Reset -> place it on the report view -> format button -> style -> text on -> rename text

Buttons

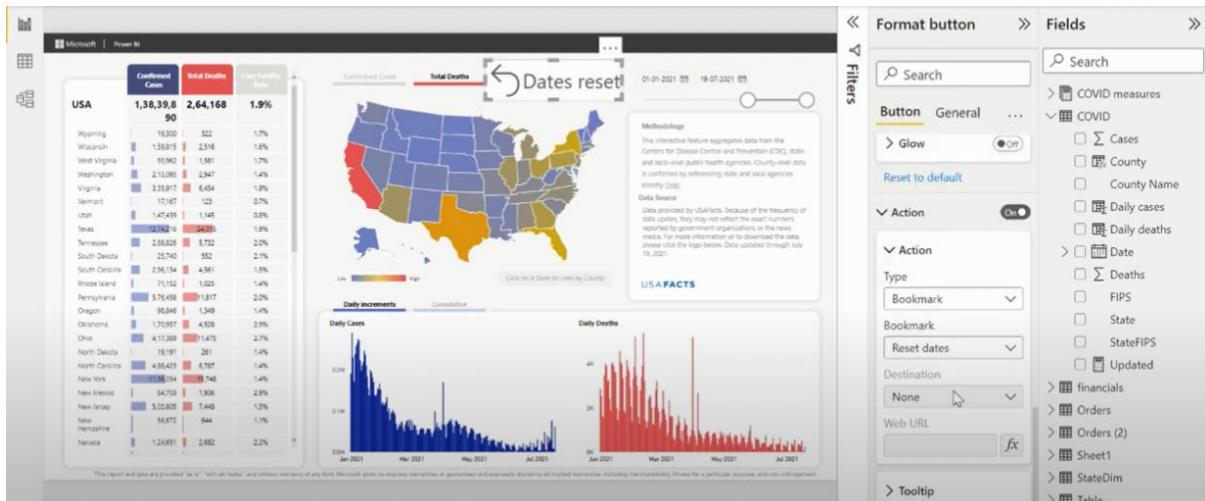
- Left arrow
- Right arrow
- Reset
- Back
- Information
- Help
- Q&A
- Bookmark
- Blank
- Navigator



To link the button with the bookmark created

Click on created button -> Action -> enable it -> type (bookmark) -> bookmark (bookmark name)

Ctrl + click : Bookmark will be activated

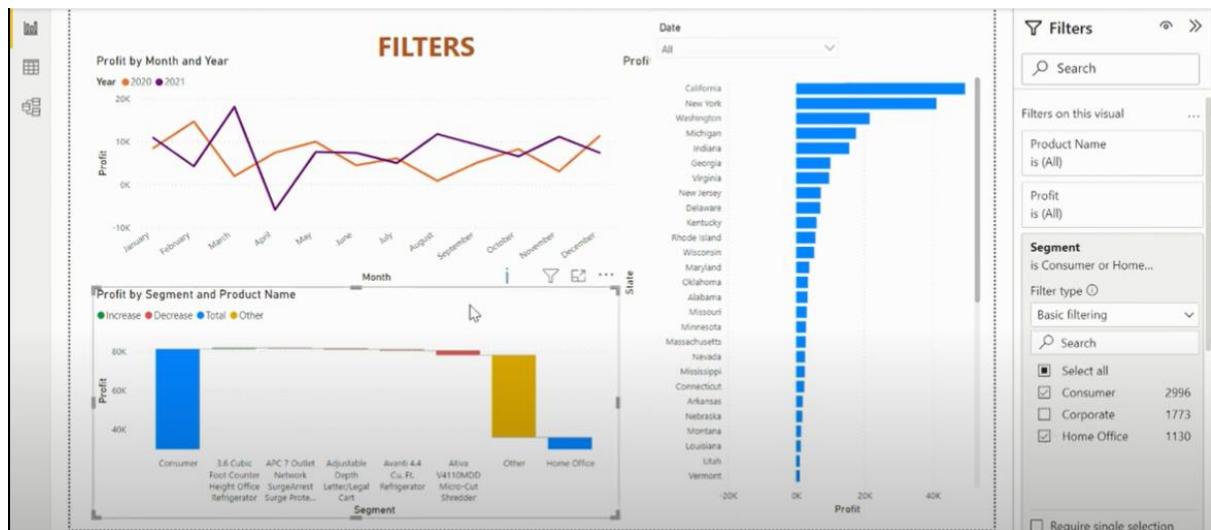


Filters and Slicers :

Both are used to filter the data

Filter :

Filter on Visualization : to be applied on the visualization in report view



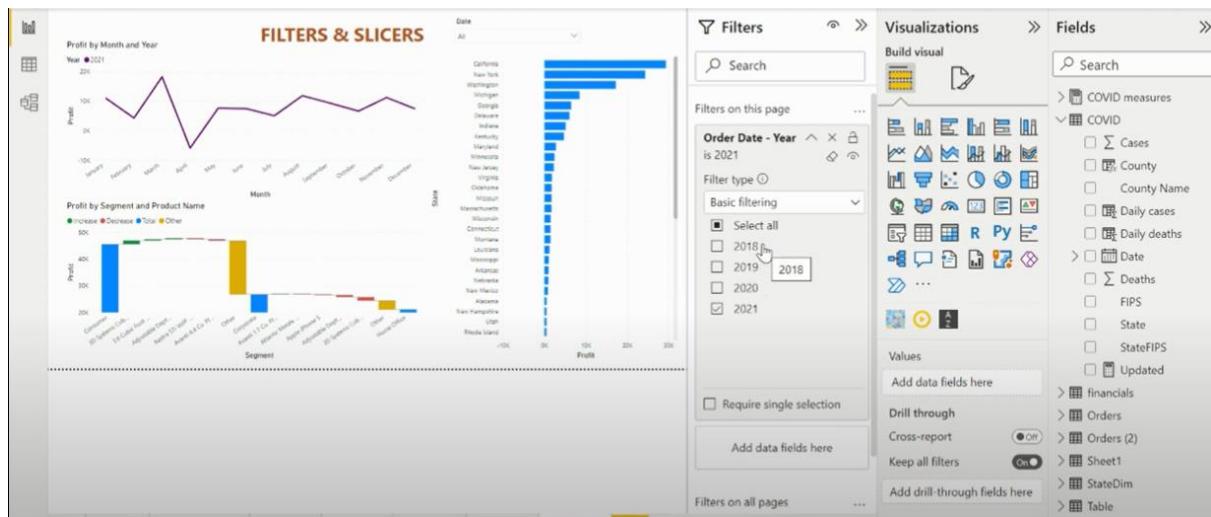
Filter on this page: will filter the current page only

Filter on all pages : all pages will be filtered in one go

Drag & drop the field on required filter type

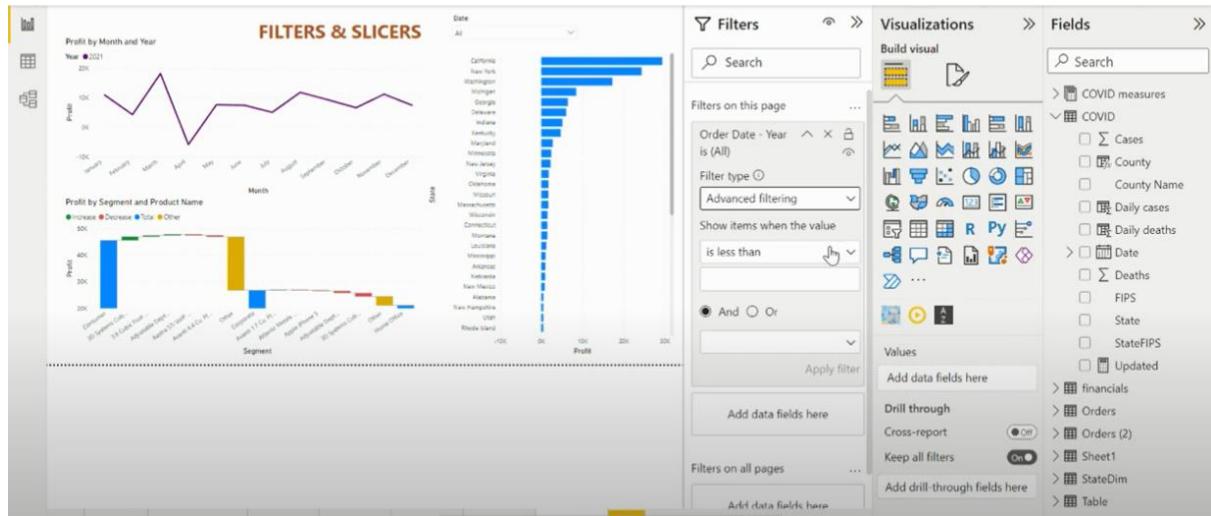


Basic filtering:



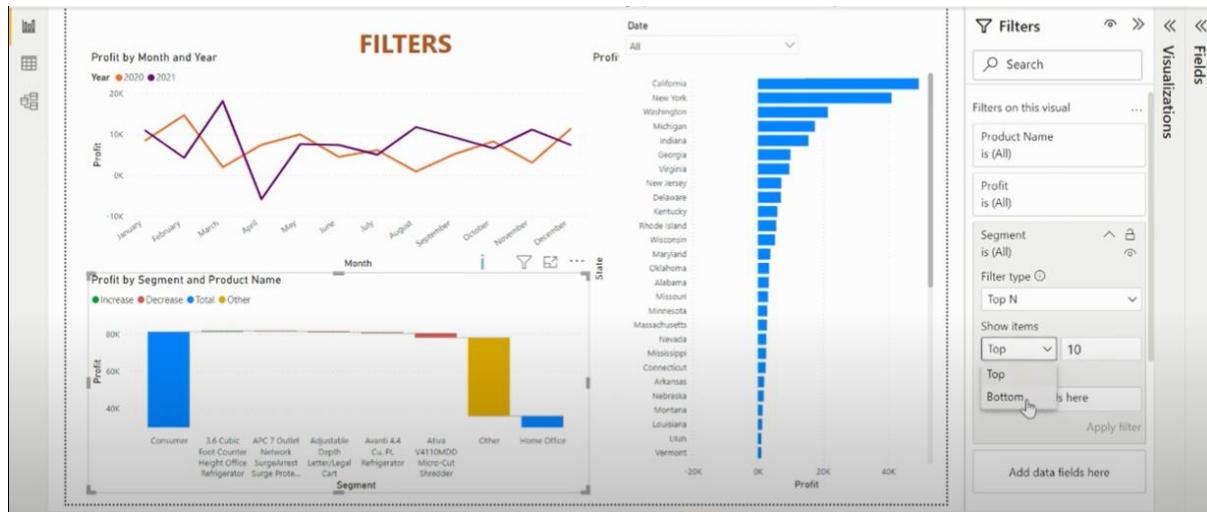
Advanced filtering:

Filtering based on conditions (same as excel)



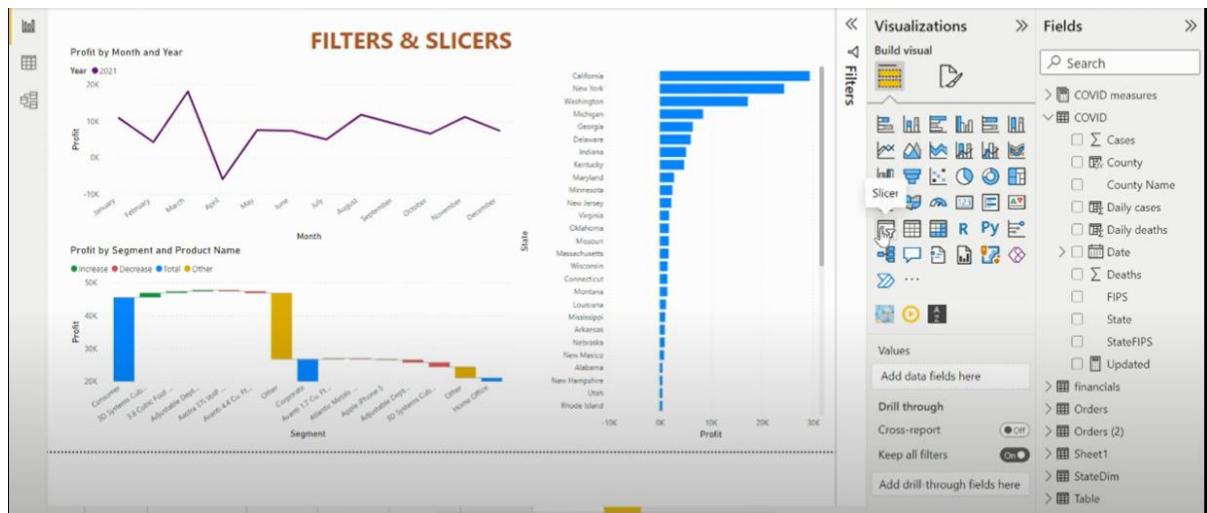
TOP N filtering:

To filter top/bottom contributors



Slicer:

Slicer is a Visual



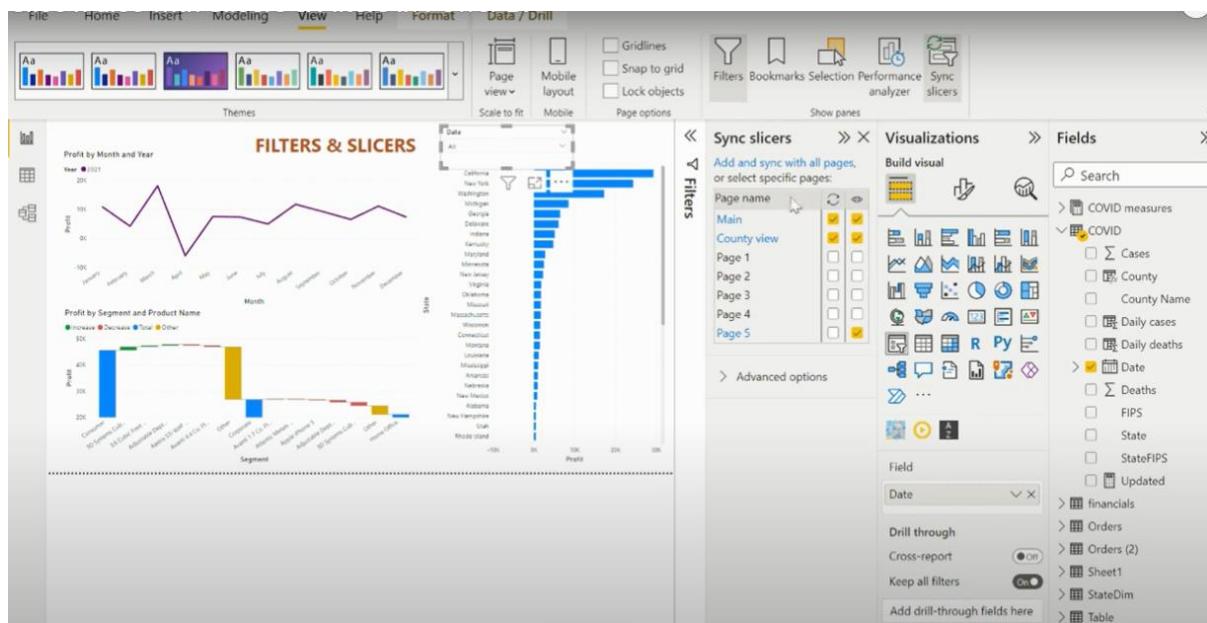
Click on slicer -> place it on report view -> add field -> right top corner (select the type)

Slicer can be applied on all the pages / selected pages

View -> sync slicers

Sync option : data will be filtered on all the selected pages

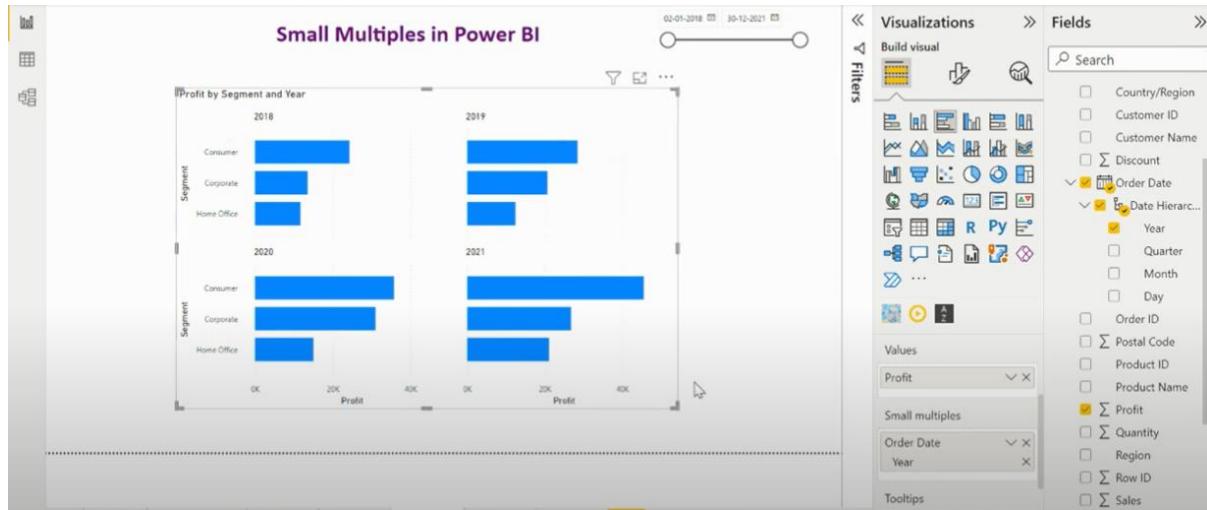
Display option : slicer will be displayed on selected pages



Slicer vs filter : Slicer can be applied on selected pages while filtering can be done on either current or all pages

Small Multiples in Power BI:

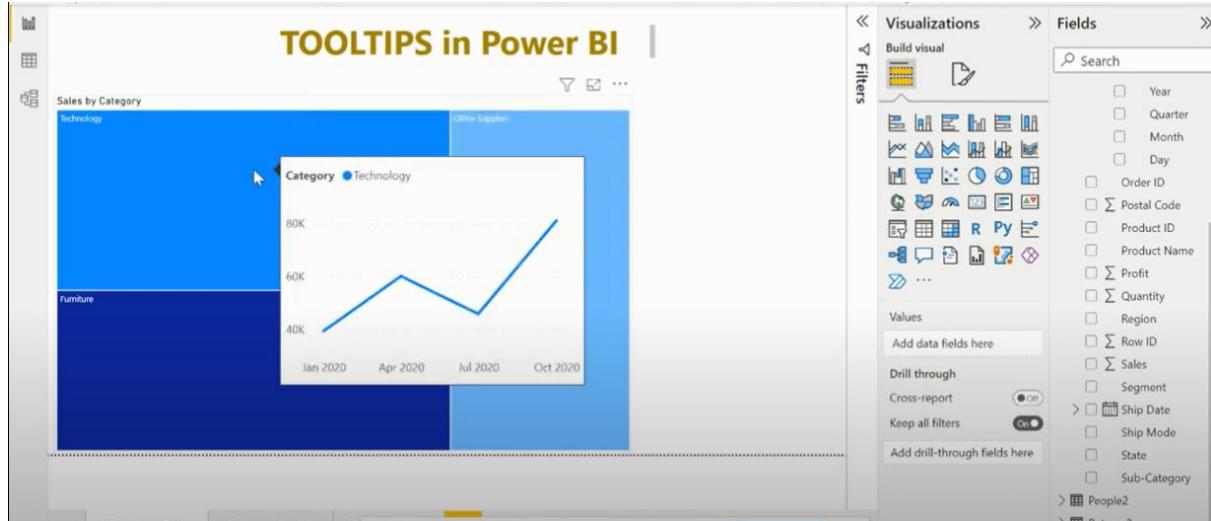
Drag & drop field in small multiples



Customized Tooltips in Power BI:

Helps to display the detailed information inside the visual

Customized Tooltip



Basic Tooltip



How to create the customized tooltip?

Create primary visualization -> Add new page -> format page -> page information -> allow use as tooltip on -> name it -> canvas settings -> type (tooltip) -> vertical alignment (middle) -> canvas background -> transparency (0%) -> go to primary visualization page -> format visual -> general -> tooltips -> page (select created tooltip name)

Change of visualization in tooltip will change the same in primary visualization as well.



Visualizations

Format page

Fields

Search

Favorites

Region tooltip

Allow use as tooltip

Allow Q&A

Reset to default

Canvas settings

Canvas background

Wallpaper

Filter pane

Filter cards

Region tooltip

Type: Tooltip

Height: 240 px

Width: 200 px

Vertical alignment: Middle

Reset to default

Visualizations

Format page

Fields

Search

Favorites

Region tooltip

Type: Tooltip

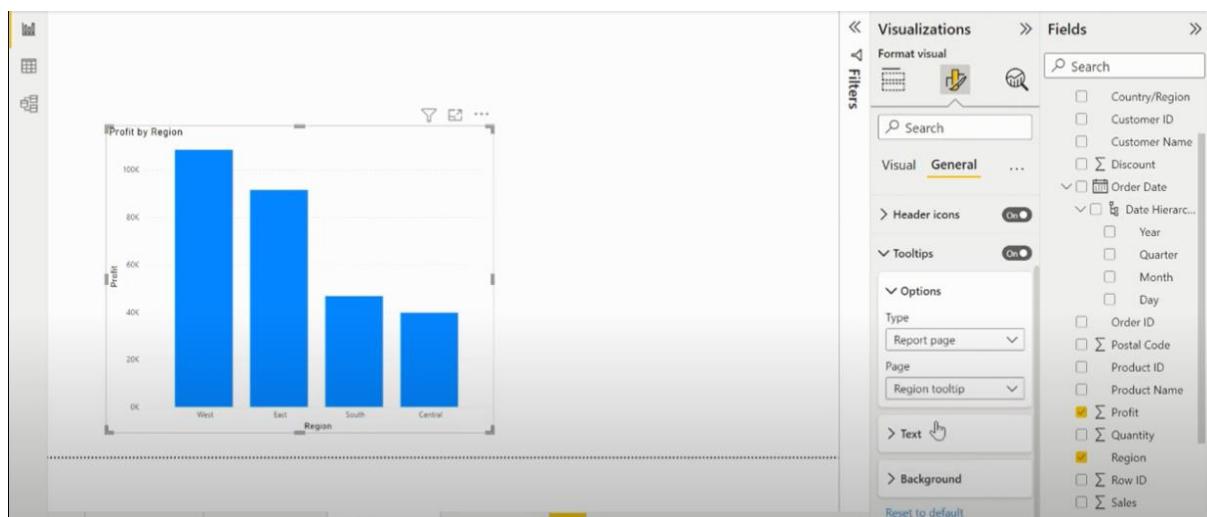
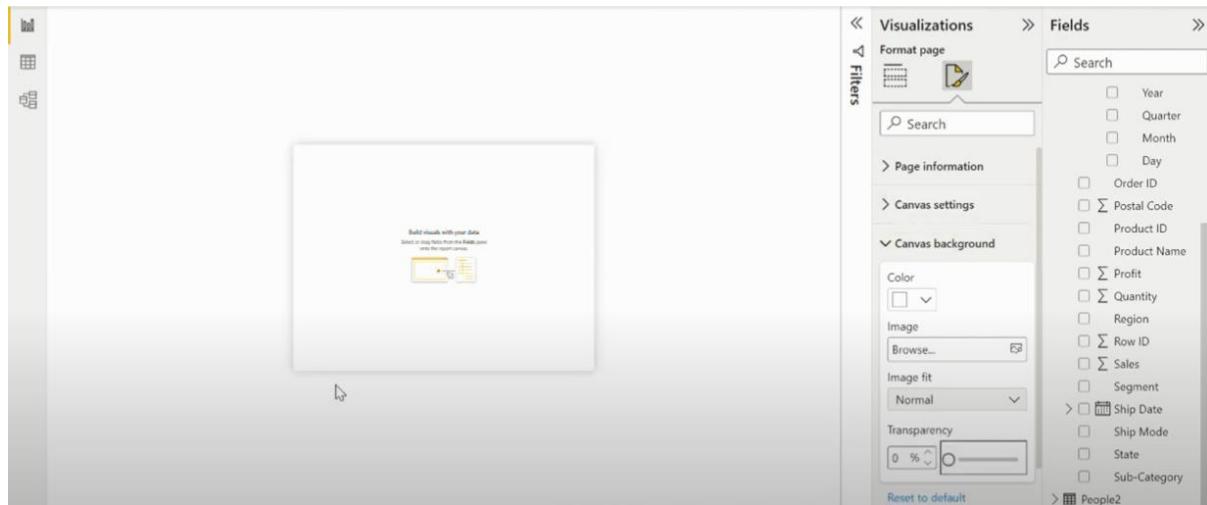
Height: 240 px

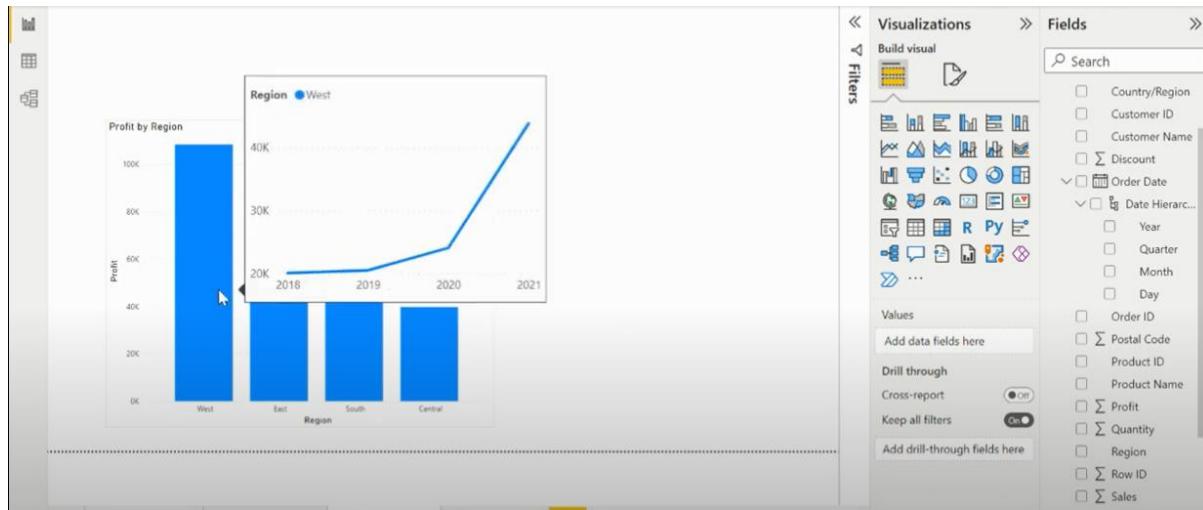
Width: 200 px

Vertical alignment: Middle

Reset to default

Canvas background



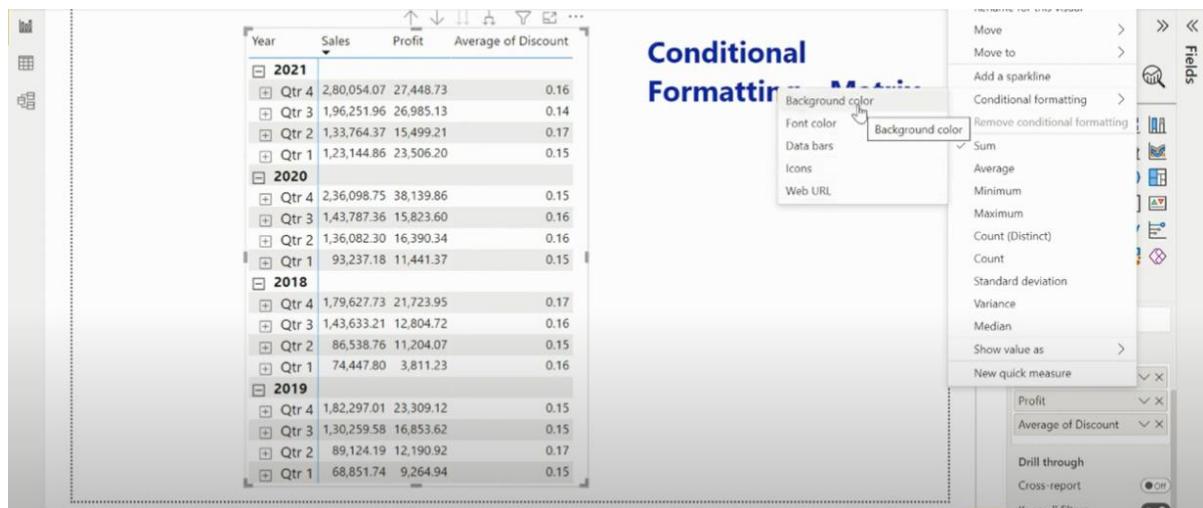


Conditional Formatting

Conditional Formatting – Matrix

Select the matrix visualization -> visualization tab -> select dropdown for any of the values ->

Conditional formatting -> select the type of conditional formatting (background colour, font colour, data bars, icons, web url)



Background Colour – cells will be distinguished from each other based on background colour

Font Colour – cells will be distinguished from each other based on font colour

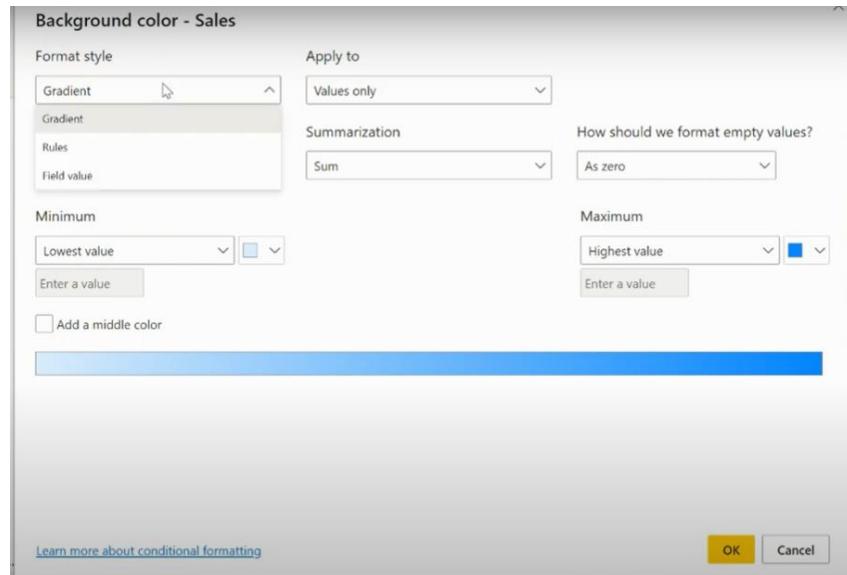
Data Bars –

Icons – cells will be distinguished from each other based on the selected icons from the options,

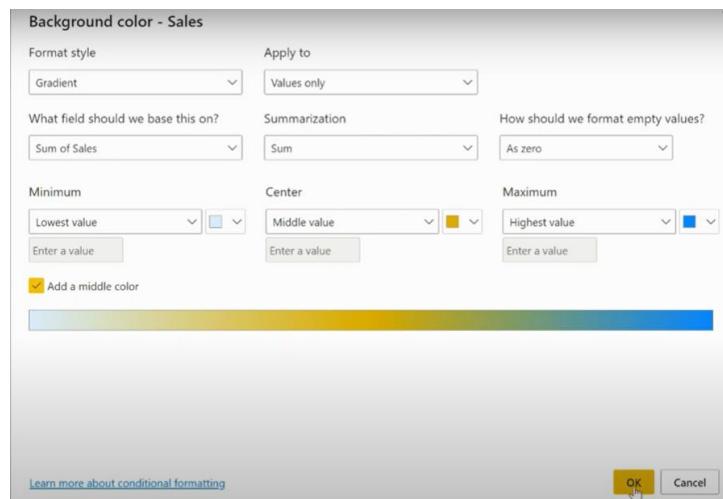
Icons will be displayed alongside the cell values

Format Style – Gradient

Cells will be distinguished by shades of two chosen colours

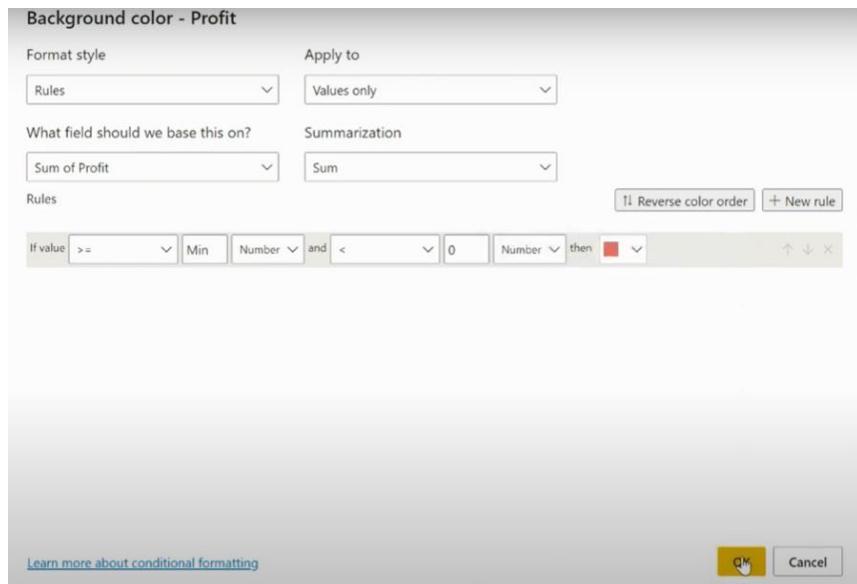
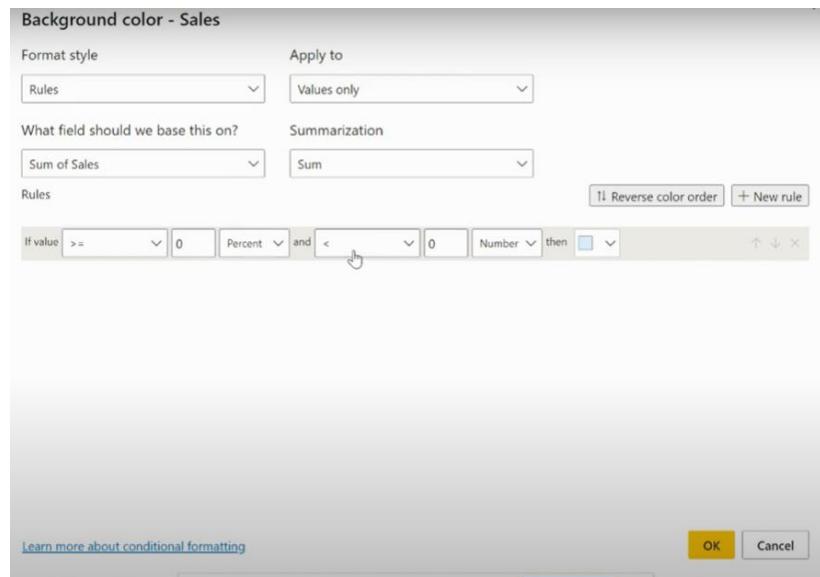


Cells will be distinguished by shades of three chosen colours by selecting the option to add middle colour



The screenshot shows a Power BI report interface. On the left, there is a matrix visual with columns 'Year', 'Sales', 'Profit', and 'Average of Discount'. The data is grouped by year (2021, 2020, 2018, 2019) and further by quarter (Qtr 1, Qtr 2, Qtr 3, Qtr 4). The cells are colored according to a three-color gradient based on their value. The report title is 'Conditional Formatting - Matrix'. On the right, the 'Visualizations' pane is open, showing various chart and table options. The 'Values' section includes fields 'Sales', 'Profit', and 'Average of Discount'. The 'Drill through' section includes 'Cross-report' and 'Keep all Filters' options.

Format Style – Rules



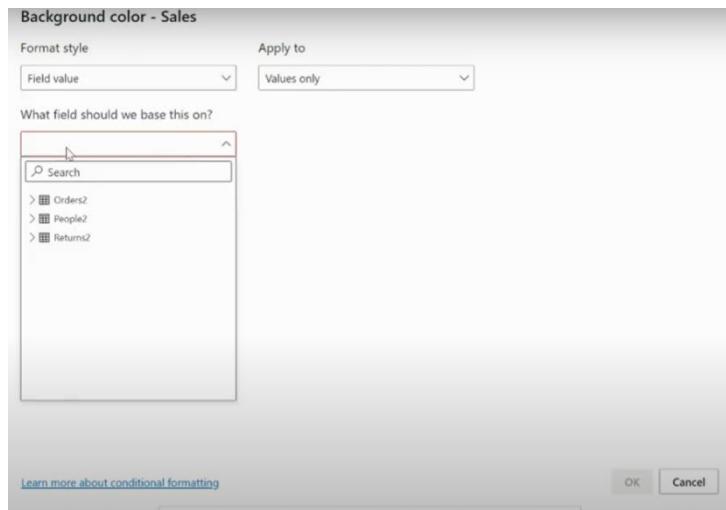
Conditional Formatting - Matrix

Visualizations: Build visual, Filters, Fields

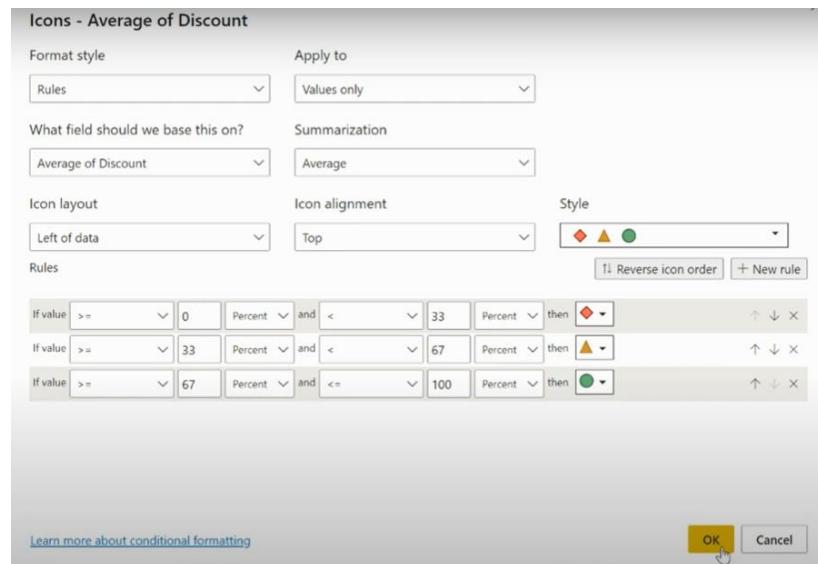
Filters: Add data fields here, Values (Sales, Profit, Average of Discount), Drill through (Cross-report Off, Keep all filters On)

Year	Sales	Profit	Average of Disc%
Qtr 2	1,33,764.37	15,499.21	
Qtr 1	1,23,144.86	23,506.20	
2020			
Qtr 4	2,36,098.75	38,139.86	
Qtr 3	1,43,787.36	15,823.60	
Qtr 2	1,36,082.30	16,390.34	
Qtr 1	93,237.18	11,441.37	
2018			
Qtr 4	1,79,627.73	21,723.95	
Qtr 3	1,43,633.21	12,804.72	
Qtr 2	86,538.76	11,204.07	
Qtr 1	74,447.80	3,811.23	
2019			
Qtr 4	1,82,297.01	23,309.12	
Qtr 3	1,30,259.58	16,853.62	
Qtr 2	89,124.19	12,190.92	
Qtr 1	March 38,726.25	9,732.10	
	January 18,174.08	-3,281.01	
	February 11,951.41	2,813.35	
			2,813.85

Format Style – Fields



Conditional formatting based on icons



**Additional
Formatting - Matrix**

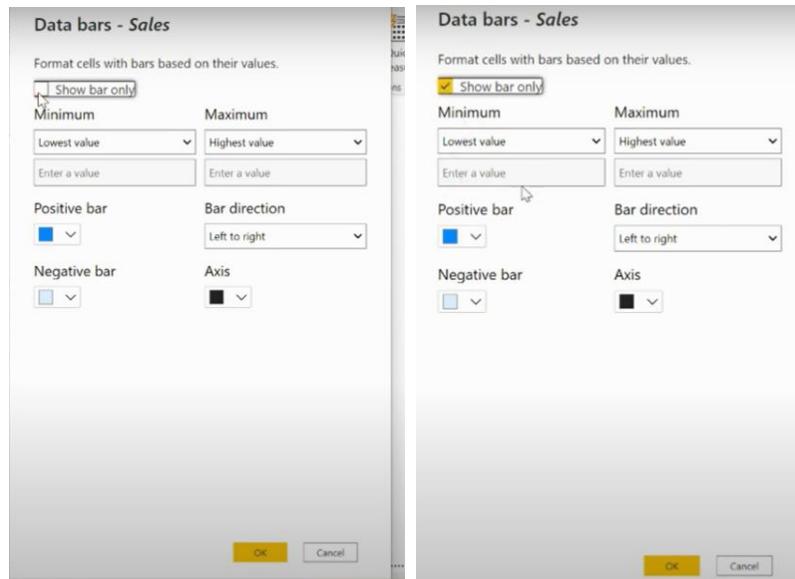
Year	Sales	Profit	Average of Discount
Qtr 2	1,33,764.37	15,499.21	0.17
Qtr 1	1,23,144.86	23,506.20	0.15
2020			
Qtr 4	2,36,098.75	38,139.86	0.15
Qtr 3	1,43,787.36	15,823.60	0.16
Qtr 2	1,36,082.30	16,390.34	0.16
Qtr 1	93,237.18	11,441.37	0.15
2018			
Qtr 4	1,79,627.73	21,723.95	0.17
Qtr 3	1,43,633.21	12,804.72	0.16
Qtr 2	86,538.76	11,204.07	0.15
Qtr 1	74,447.80	3,811.23	0.16
2019			
Qtr 4	1,82,297.01	23,309.12	0.15
Qtr 3	1,30,259.58	16,853.62	0.15
Qtr 2	89,124.19	12,190.92	0.17
Qtr 1	March	38,726.25	9,732.10
	January	18,174.08	3,281.01
	February	11,951.41	2,813.85

The screenshot shows a Power BI report with a matrix visual. The matrix has 'Year' as the column header and months as the row headers. The first three rows show data for 2020, the next three for 2018, and the last three for 2019. Each cell in the matrix contains three numerical values: Sales, Profit, and Average of Discount. The 'Average of Discount' column is formatted with conditional icons: red diamonds for values below 33%, yellow triangles for values between 33% and 67%, and green circles for values above 67%. The report also includes a 'Visualizations' pane on the right showing other available charts and a 'Filters' pane.

Conditional Formatting – Table

In table based data, conditional formatting can be applied on categorical data as well whereas in matrix based data conditional formatting can only be applied on measures.

Conditional formatting based on data bars



Conditional Formatting - Table

A screenshot of a Power BI report titled 'Conditional Formatting - Table'. It displays a table with columns: Order Date, Profit, Sales, Quantity, and Discount. The 'Sales' column uses data bars where higher values are represented by yellow bars and lower values by blue bars. The table includes a header row and a total row. The Power BI interface on the left shows the table visual, and the Fields pane on the right lists Order Date, Profit, Sales, Quantity, and Discount.

Conditional Formatting - Table

A screenshot of a Power BI report titled 'Conditional Formatting - Table'. It displays a table with columns: Order Date, Profit, Sales, Quantity, and Discount. The 'Sales' column uses data bars. A cursor is hovering over the 'Profit' column header. The Power BI interface on the left shows the table visual, and the Fields pane on the right lists Order Date, Profit, Sales, Quantity, and Discount. At the bottom of the screen, there are navigation buttons and a status bar indicating 'Vimeo Record - Screen & Webcam Recorder is sharing your screen.'

Different Types of Conditional Formatting

Profit – Based on Background Colour

Sales– Based on Data bars

Quantity – Based on icons

Avg. Discount – Based on font colour

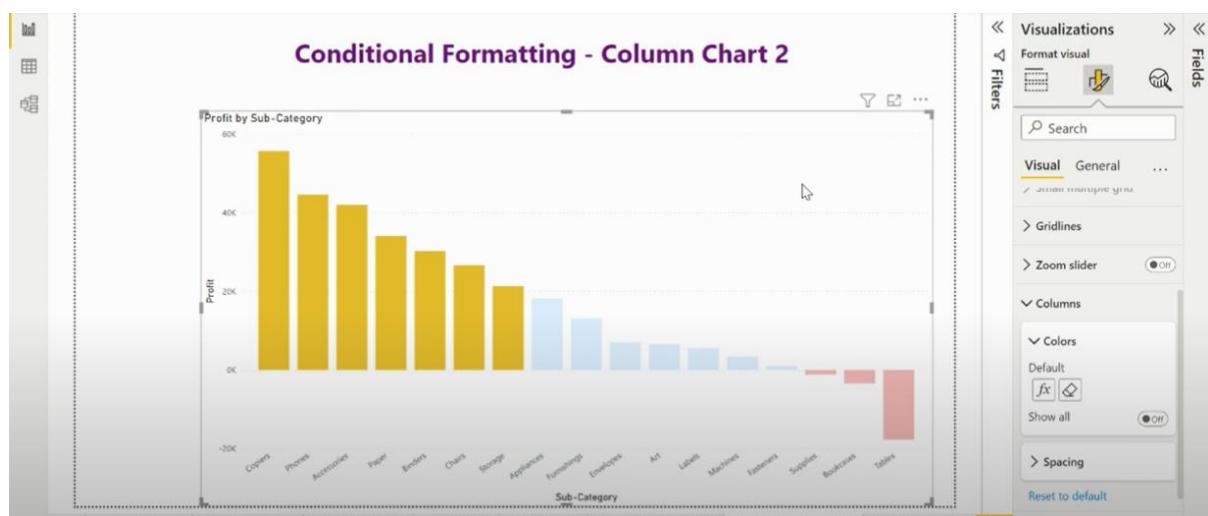
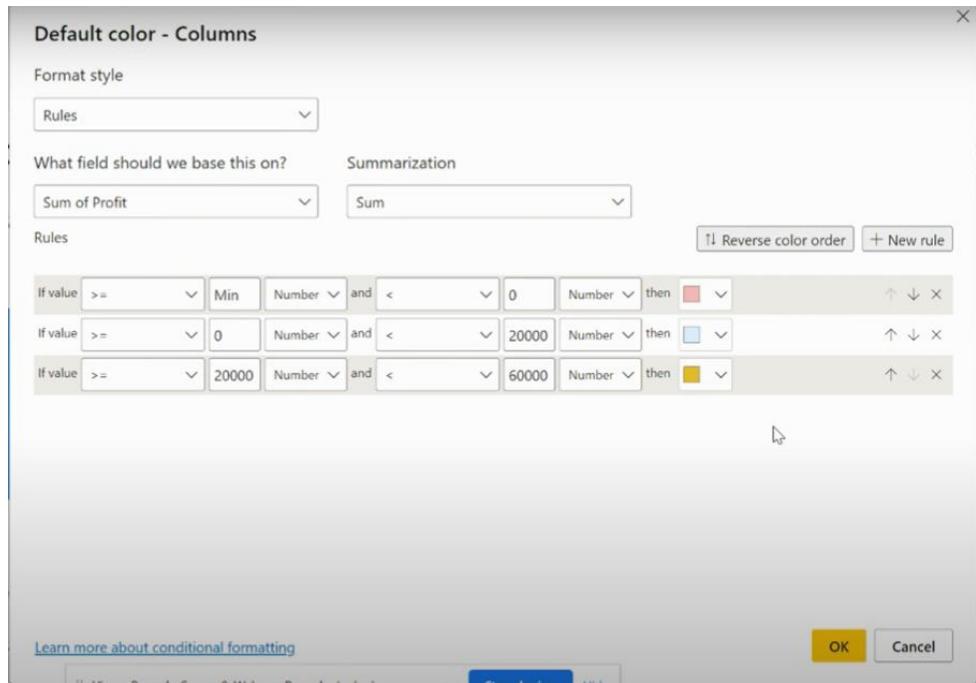
The screenshot shows a Power BI interface with a table visualization titled "Conditional Formatting - Table". The table has columns: Order Date, Profit, Sales, Quantity, and Average of Discount. The rows show data from December 2021, with the last row being the Total. The background color of the table cells changes based on the value in the "Sales" column, creating a heatmap effect. The "Visualizations" pane on the right shows other available visualizations like charts and maps. The "Fields" pane lists the fields used in the table: Order Date, Profit, Sales, Quantity, and Average of Discount.

Order Date	Profit	Sales	Quantity	Average of Discount
22 December 2021	957.12	7,442.00	100	0.16
24 December 2021	568.24	6,231.15	54	0.11
29 December 2021	644.43	9,155.53	41	0.03
25 December 2021	359.20	6,989.93	87	0.24
23 December 2021	284.10	1,926.78	63	0.17
28 December 2021	253.12	1,657.35	64	0.22
26 December 2021	61.12	814.59	12	0.23
30 December 2021	101.54	713.79	23	0.14
27 December 2021	-31.97	177.64	6	0.30
Total	4,196.90	24,579.68	450	0.17

Conditional Formatting – Column Chart

Select visualization -> format visual -> columns -> colours -> conditional formatting (fx) -> rest same

The screenshot shows a Power BI interface with a column chart titled "Conditional Formatting - Column Chart 1". The chart displays "Sales by Sub-Category" on the Y-axis and "Sub-Category" on the X-axis. The bars are blue. A tooltip on one of the bars provides information about conditional formatting, stating: "Conditional formatting Make this property change under different conditions that you define." The "Visualizations" pane on the right shows other available visualizations. The "Format visual" pane is open, with the "Columns" section expanded, showing the "Colors" tab where the conditional formatting icon (fx) is highlighted with a red circle. Other tabs in the Format visual pane include General, Zoom slider, Spacing, Data labels, and Total labels.



Conditional Formatting – based on Calculated Column

Go to data section -> create calculated column using DAX expression (switch is dax expression)

Select visualization -> format visual -> bars -> colours -> conditional formatting (fx) ->

format style (field value) -> first category (select calculated column)

Screenshot of the Power BI Column Tools ribbon showing the formula editor for a calculated column named "CF Color". The formula is:

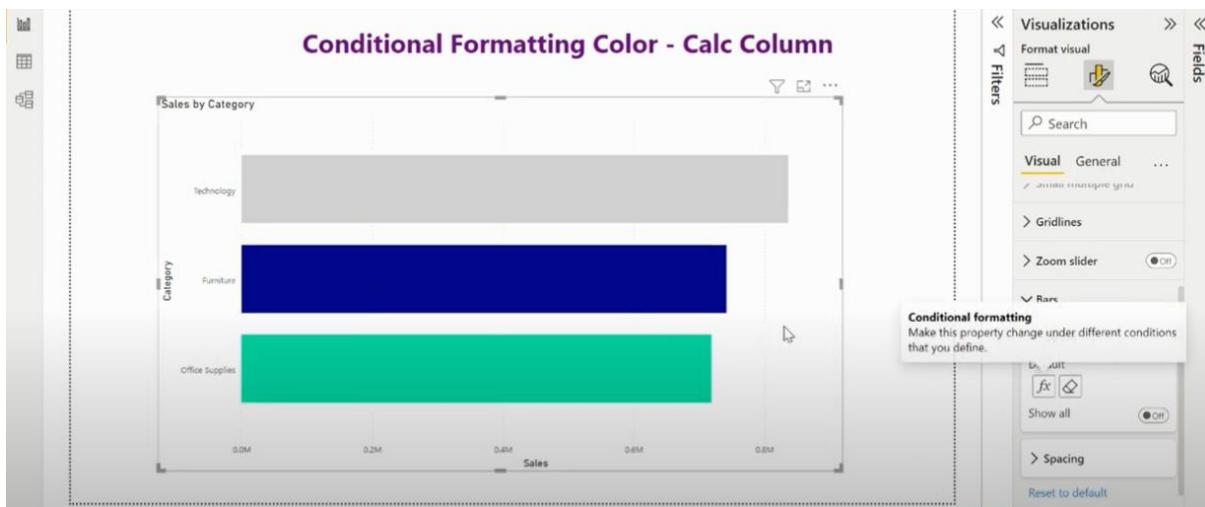
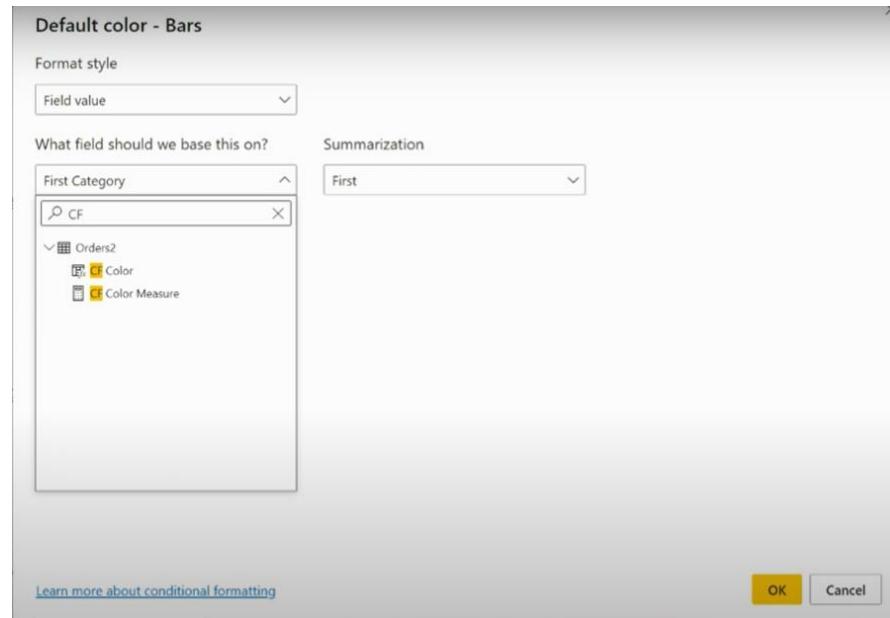
```

1 CF Color =
2 SWITCH(
    Orders[Category],
    "furniture", "darkblue",
    "office supplies", "#00EDA4",
    "lightgrey"
)

```

The formula is circled in red.

Below the ribbon is a table with columns: Product ID, Region, Product Line, Category, Sub-Category, Product Name, Sales, Quantity, Discount, Profit, and CF Color. The data shows various office supplies and furniture items across different regions and categories.



Conditional Formatting – based on Measure

Go to data section -> create calculated column using DAX expression (switch is dax expression) (maxx aggregation function is used on top of switch bcz. Measures are aggregated values so we need to aggregation function)

Select visualization -> format visual -> bars -> colours -> conditional formatting (fx) ->

format style (field value) -> first category (select calculated column)

The screenshot shows the Power BI Data View. On the left, there's a code editor window containing the following DAX formula:

```
1 CF Color Measure =  
2 MAXX(Orders2,  
3 SWITCH(  
4     Orders2[Category],  
5     "Furniture", "darkblue",  
6     "Office Supplies", "#00EDA4",  
7     "lightgrey")  
8 )
```

To the right of the code editor is a table with columns: Sales, Quantity, Discount, Profit, and CF Color. The CF Color column contains color codes corresponding to the categories in the Category column. Below the table is a Fields pane listing various columns and their types.

Implicit Measure v/s Explicit Measure

Implicit Measure

Whenever we load any dataset into power Bi, it identifies the numerical columns automatically and it allows us to do summarization on that column by default and it is indicated by the summarization icon(Σ) next to it. It means power bi has identified them as measure. We can change the measure as per our need. This is called as implicit measure.

Implicit measure vs. Explicit measure

The screenshot shows the Power BI interface with the Fields pane open. The pane lists various fields and measures from the 'Orders2' table. Several measures are highlighted with red circles: $\sum \text{Discount}$, $\sum \text{Postal Code}$, $\sum \text{Profit}$, $\sum \text{Quantity}$, $\sum \text{Sales}$, and $\sum \text{Region}$.

Implicit measure vs. Explicit measure

The screenshot shows the Power BI interface with the Column Tools ribbon selected. The 'Summation' dropdown is set to 'Sum'. The Fields pane on the right shows the same list of fields and measures as the previous screenshot.

Explicit Measure

Explicit measure can be created by writing the formula. We specify the aggregation to be used explicitly.

Implicit measure are not reusable whereas we can reuse the explicit measure inside other calculations.

Implicit measure vs. Explicit measure

The screenshot illustrates the creation of a new measure in Power BI. In the 'Fields' pane (right), the 'Visuals' section is highlighted with a red circle, and the 'New measure' option is selected. The 'Measure Tools' ribbon shows a measure named 'Total Avg Sales' with the formula `AVERAGE(Orders2[Sales])`. The 'Visualizations' pane (right) displays the newly created measure.

Variables in Power BI

Use of variable makes it easier to read

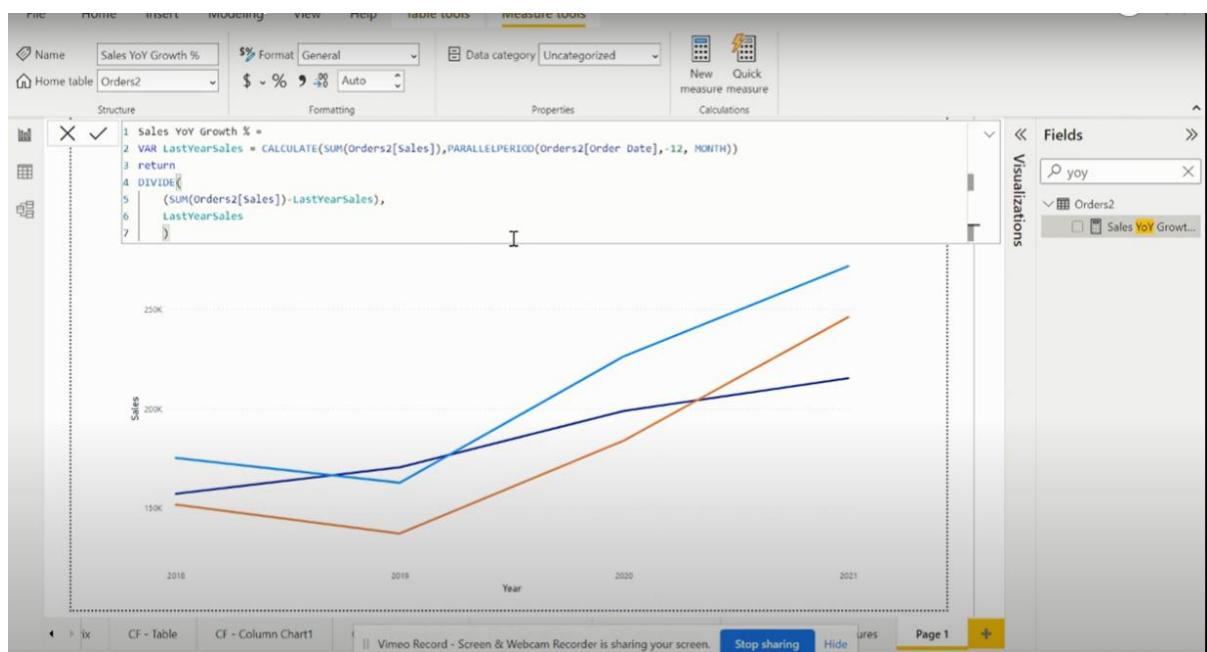
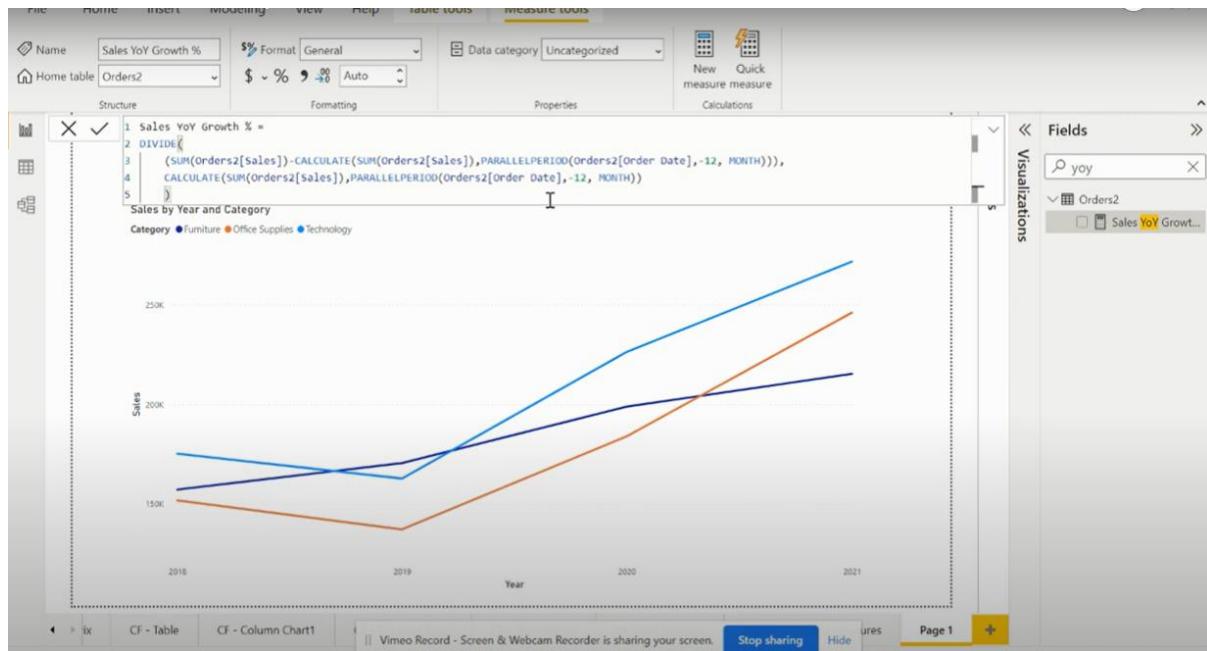
Makes it simpler to debug in case of error

Reduces the complexity of calculation

Improvised the overall performance

“VAR” function is used to define the variable

“Parallelperiod” function is used to calculate sales for previous 12 months



DAX (Data Analysis Expression) in Power BI?

It is used in power bi analysis services and power pivot

It is collection of functions, operators and constants that can be used in formulas/expression in order to calculate or return one or more values.

RankX function in Power BI

Can be created using a new measure

The screenshot shows the Power BI desktop interface. In the top ribbon, the 'Measure tools' tab is selected. A new measure named 'Measure' is being created, with the formula `RANKX(Orders2, [Total Sales],,DESC)`. The formula bar also shows `state ranks = RANKX(Orders2, [Total Sales],,desc)`. The 'Fields' pane on the right lists various fields from the 'Orders2' table, including State, Sales, and other dimensions like Category and Product ID. The 'Values' section under the 'Fields' pane shows 'State' and 'Sales' selected. The main canvas displays a table with columns 'State' and 'Sales', showing data for various US states.

Adding newly created **RankX** dax to values. But this is not the result we wanted. Here ranks are calculated at each row (data is filtered at each row)

This screenshot shows the same Power BI environment after applying the 'State ranks' measure to the 'Sales' column. The formula bar now shows `State ranks = RANKX(Orders2, [Total Sales],,DESC)`. The 'Values' section in the 'Fields' pane now includes 'State', 'Sales', and 'State ranks'. The table on the canvas now has an additional column 'State ranks' containing the value '1' for every row, indicating that the rank is calculated at the individual row level rather than across the entire table.

We will use ALL function inside RankX function to solve this issue.

The screenshot shows the Power BI desktop interface. On the left, there's a table visualization with columns: State, Sales, and State ranks. The table contains data for various US states. The 'State ranks' column is highlighted. In the top ribbon, under 'Measure tools', there's a 'New quick measure' button. The 'Fields' pane on the right shows several fields listed under 'Values', including 'State', 'Sales', and 'State ranks'. The 'State ranks' field is selected. The formula bar at the top shows the measure definition: `State ranks = RANKX(ALL(Orders2[State]),[total Sales])`.

State	Sales	State ranks
North Dakota	919.91	49
West Virginia	1,209.82	48
Maine	1,270.53	47
South Dakota	1,315.56	46
Wyoming	1,603.14	45
District of Columbia	2,665.02	44
Kansas	2,914.31	43
Idaho	4,382.49	42
Iowa	4,579.76	41
New Mexico	4,783.52	40
Montana	5,589.35	39
New Hampshire	7,292.52	38
Nebraska	7,464.93	37
South Carolina	8,481.71	36
Vermont	8,829.37	35
Louisiana	9,217.03	34
Mississippi	10,771.34	33
Utah	11,220.06	32
Arkansas	11,678.13	31
Connecticut	13,384.36	30
Nevada	16,729.10	29
Total	22,97,200.86	1

Adding another column inside the visualization. Again filtering is done at row level.

This screenshot shows a similar setup to the previous one, but with more columns in the table visualization. The columns are State, City, Sales, and State ranks. The table includes data for cities within states like Alabama, Arizona, and Arkansas. The 'State ranks' column is again highlighted. The 'Fields' pane on the right shows fields under 'Values' such as 'State', 'City', 'Sales', and 'State ranks'. The 'State ranks' field is selected. The formula bar at the top shows the measure definition: `State ranks = RANKX(ALL(Orders2[State]),[total Sales])`. Additionally, the 'Filters' pane on the right shows a hierarchical filter for 'Orders2' with 'City' selected, indicating that the filtering is done at the row level.

State	City	Sales	State ranks
Alabama	Auburn	1,765.83	1
Alabama	Decatur	3,374.82	1
Alabama	Hoover	525.85	1
Alabama	Mobile	5,462.99	1
Alabama	Montgomery	3,722.73	1
Alabama	Tuscaloosa	175.70	1
Arizona	Avondale	946.81	1
Arizona	Bullhead City	22.29	1
Arizona	Chandler	1,076.75	1
Arizona	Gilbert	4,172.38	1
Arizona	Glendale	2,917.87	1
Arizona	Mesa	4,037.74	1
Arizona	Peoria	1,341.35	1
Arizona	Phoenix	11,000.26	1
Arizona	Scottsdale	1,466.31	1
Arizona	Sierra Vista	76.07	1
Arizona	Tempe	1,070.30	1
Arizona	Tucson	6,313.02	1
Arizona	Yuma	840.87	1
Arkansas	Conway	301.96	1
Arkansas	Fayetteville	3,742.81	1
Total		22,97,200.86	1

Inserting 2 ALL functions inside RankX is not an option.

The screenshot shows the Power BI Model view. In the 'Measure tools' ribbon, a measure named 'State ranks' is being defined:

```
state ranks = RANKX(ALL(Orders2[State]),ALL(Orders2[City]),[Total Sales])
```

An error message 'Can't display the visual. See details.' is displayed below the formula bar. The Fields pane on the right lists various fields from the 'Orders2' table, including State, City, Sales, and Order Date.

2 ALL functions needs to be defined inside crossjoin function.

The screenshot shows the Power BI Model view. In the 'Measure tools' ribbon, a measure named 'State ranks' is being defined using the 'crossjoin' function:

```
state ranks = RANKX(crossjoin(
    ALL(Orders2[State]),
    ALL(Orders2[City])),
    [Total Sales]))
```

An error message 'Can't display the visual. See details.' is displayed below the formula bar. The Fields pane on the right lists various fields from the 'Orders2' table, including State, City, Sales, and Order Date.

The screenshot shows the Power BI Home view. A table titled 'RANKX Function in DAX' is displayed, showing state-level sales data with a calculated column 'State ranks' using the RANKX function:

State	City	Sales	State ranks
New York	New York City	2,56,368.16	1
California	Los Angeles	1,75,851.34	2
Washington	Seattle	1,19,540.74	3
California	San Francisco	1,12,669.09	4
Pennsylvania	Philadelphia	1,09,077.01	5
Texas	Houston	64,504.76	6
Illinois	Chicago	48,539.54	7
California	San Diego	47,521.03	8
Michigan	Detroit	42,446.94	9
Florida	Jacksonville	39,133.33	10
Texas	San Antonio	21,843.53	11
Delaware	Newark	20,448.05	12
Texas	Dallas	20,131.93	13
Indiana	Lafayette	19,630.45	14
Georgia	Atlanta	17,197.84	15
Minnesota	Minneapolis	16,870.54	16
Virginia	Springfield	16,628.53	17
Rhode Island	Providence	15,980.65	18
Ohio	Columbus	15,900.79	19
Kentucky	Henderson	15,661.01	20
Michigan	Jackson	15,420.04	21
Total		22,97,200.86	1

The Fields pane on the right lists various fields from the 'Orders2' table, including State, City, Sales, and Order Date.

TOPN function in Power BI

Used to get top and bottom N values from the data.

Can be created using a new table (**data section -> new table**)

Desc – will give top n values

Asc – will give bottom n values

The screenshot shows the Power BI Data Editor interface. At the top, the ribbon has 'File', 'Home', 'Help', and 'Table Tools'. The 'Table Tools' tab is selected, showing a toolbar with icons for Name, Structure, Column, Row, and Cell. The 'Name' field is set to 'Table'. The 'Structure' pane shows a single row with the formula: `1 Top5States = TOPN(5, Orders2, [Total Sales], DESC)`. The 'Fields' pane on the right lists various columns from the 'Orders2' table, including Category, CF Color, CF Color Measure, City, Country/Region, Customer ID, Customer Name, Discount, Order Date, Order ID, Postal Code, Product ID, Product Name, Profit, Quantity, Rankx for State, Region, and Row ID. Below the ribbon, the 'Table Tools' tab is also visible with its own set of icons and a 'Name' field set to 'Top5States'. The main area displays a table with 5 rows of data:

Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Country/Region	City	State	Postal Code
4191	CA-2021-166709	17-11-2021 00:00:00	22-11-2021 00:00:00	Standard Class	HL-15040	Hunter Lopez	Consumer	United States	Newark	Delaware	21
8154	CA-2021-140151	23-03-2021 00:00:00	25-03-2021 00:00:00	First Class	RB-19360	Raymond Buch	Consumer	United States	Seattle	Washington	91
2624	CA-2021-127180	22-10-2021 00:00:00	24-10-2021 00:00:00	First Class	TA-21385	Tom Ashbrook	Home Office	United States	New York City	New York	24
2698	CA-2018-145317	18-03-2018 00:00:00	23-03-2018 00:00:00	Standard Class	SM-20320	Sean Miller	Home Office	United States	Jacksonville	Florida	32
6827	CA-2020-118689	02-10-2020 00:00:00	09-10-2020 00:00:00	Standard Class	TC-20980	Tamara Chand	Corporate	United States	Lafayette	Indiana	41

ALL function in Power BI

ALL function is used to ignore any filter being applied on the data

The screenshot shows a Power BI interface with the title "ALL Function in DAX". On the left, there is a "Ship Mode" slicer with options: First Class, Same Day, Second Class, Standard Class. Below it is a "Category" slicer with options: Furniture, Office Supplies, Technology. The main area displays a table titled "Region Sales" with the following data:

Region	Sales
Central	5,01,239.89
East	6,78,781.24
South	3,91,721.91
West	7,25,457.82
Total	22,97,200.86

The Fields pane on the right shows the "Orders2" table with various columns like Category, CF Color, City, etc. The "Filters" section is expanded, showing the "Category" filter is selected.

After applying filter (from category slicer) sales values are getting updated. But I want to see all sales value for each region alongside filtered value.

The screenshot shows a Power BI interface with the title "ALL Function in DAX". The "Category" slicer on the left has "Furniture" selected. The main area displays a table titled "Region Sales" with the following data:

Region	Sales
Central	1,63,797.16
East	2,08,291.20
South	1,17,298.68
West	2,52,612.74
Total	7,41,999.80

The Fields pane on the right shows the "Orders2" table with various columns like Category, CF Color, City, etc. The "Filters" section is expanded, showing the "Category" filter is selected.

Lets create new dax function with **ALL** function (on region column).

Sales (ALL) = CALCULATE([Total Sales], ALL(Orders2[Region]))

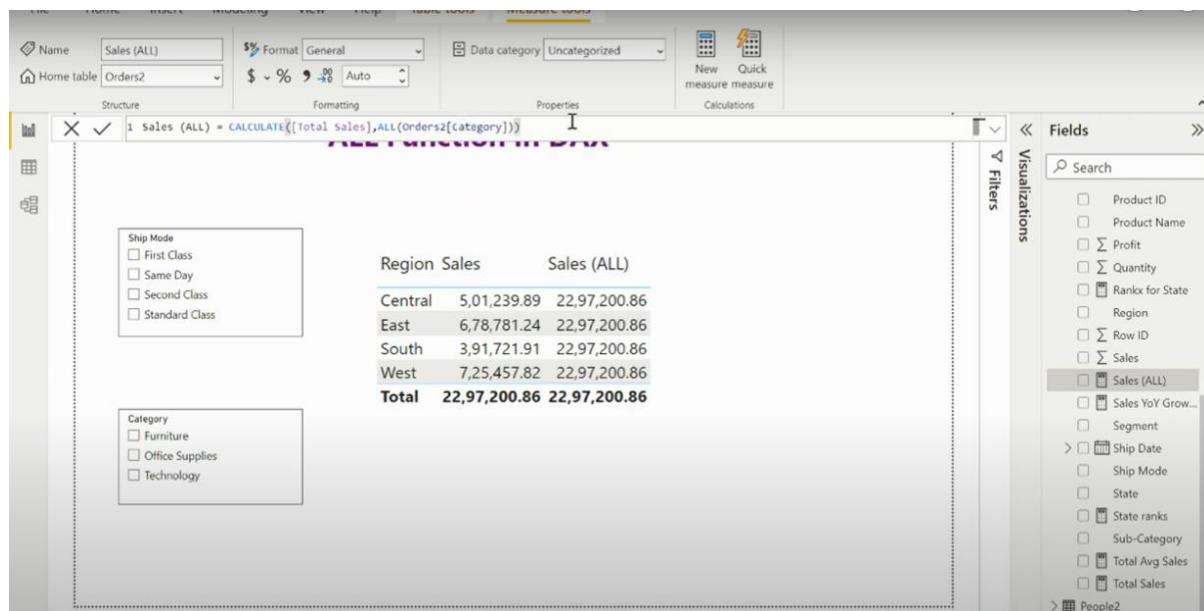
Region	Sales
Central	5,01,239.89
East	6,78,781.24
South	3,91,721.91
West	7,25,457.82
Total	22,97,200.86

But it is giving total sales value for each region.

ALL Function in DAX

Region	Sales
Central	5,01,239.89
East	6,78,781.24
South	3,91,721.91
West	7,25,457.82
Total	22,97,200.86

Lets use **ALL** function (on category column).

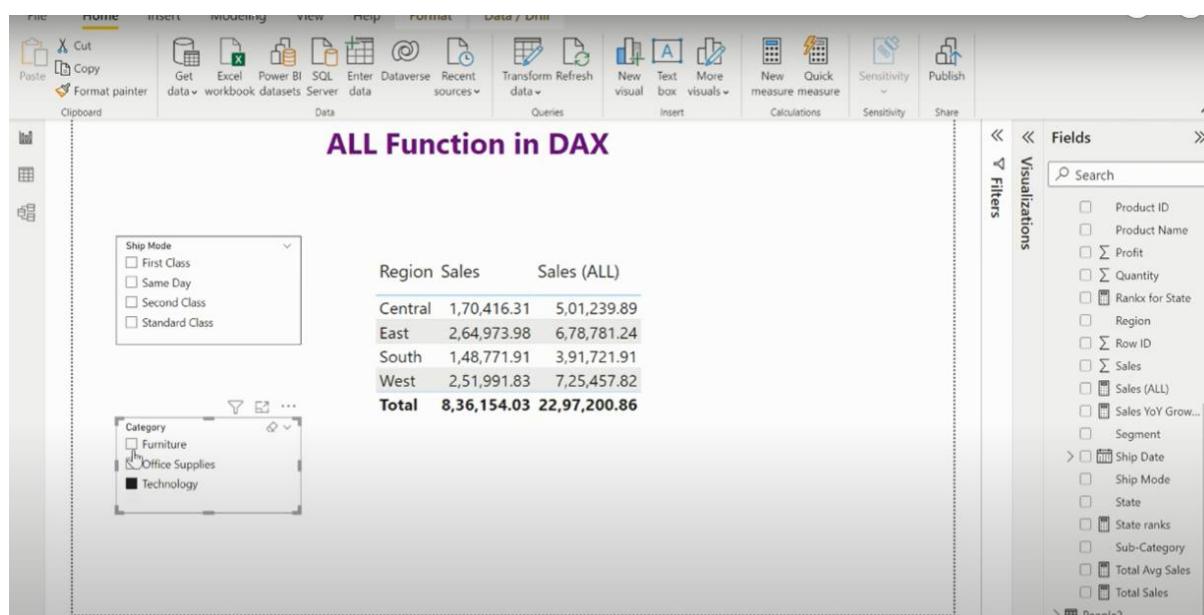


The screenshot shows the Power BI Measure Editor. The formula bar at the top contains the measure definition: `Sales (ALL) = CALCULATE([Total Sales], ALL(Orders2[Category]))`. The main area displays a table with three columns: Region, Sales, and Sales (ALL). The data is as follows:

Region	Sales	Sales (ALL)
Central	5,01,239.89	22,97,200.86
East	6,78,781.24	22,97,200.86
South	3,91,721.91	22,97,200.86
West	7,25,457.82	22,97,200.86
Total	22,97,200.86	22,97,200.86

On the left side, there are two filter panes: "Ship Mode" and "Category". The "Ship Mode" pane includes options for First Class, Same Day, Second Class, and Standard Class. The "Category" pane includes Furniture, Office Supplies, and Technology. On the right side, the "Fields" pane is open, showing a list of fields including Product ID, Product Name, Profit, Quantity, Rank for State, Region, Row ID, Sales, Sales (ALL), Sales YoY Growth, Segment, Ship Date, Ship Mode, State, State ranks, Sub-Category, Total Avg Sales, and Total Sales. The "Sales (ALL)" field is highlighted.

This is the way...



The screenshot shows a Power BI visualization titled "ALL Function in DAX". It displays a table with three columns: Region, Sales, and Sales (ALL). The data is identical to the one in the previous screenshot:

Region	Sales	Sales (ALL)
Central	5,01,239.89	22,97,200.86
East	6,78,781.24	22,97,200.86
South	3,91,721.91	22,97,200.86
West	7,25,457.82	22,97,200.86
Total	8,36,154.03	22,97,200.86

On the left side, there are two filter panes: "Ship Mode" and "Category". The "Ship Mode" pane includes options for First Class, Same Day, Second Class, and Standard Class. The "Category" pane includes Furniture, Office Supplies, and Technology. On the right side, the "Fields" pane is open, showing the same list of fields as the previous screenshot, with "Sales (ALL)" highlighted.

Relationships in Power BI

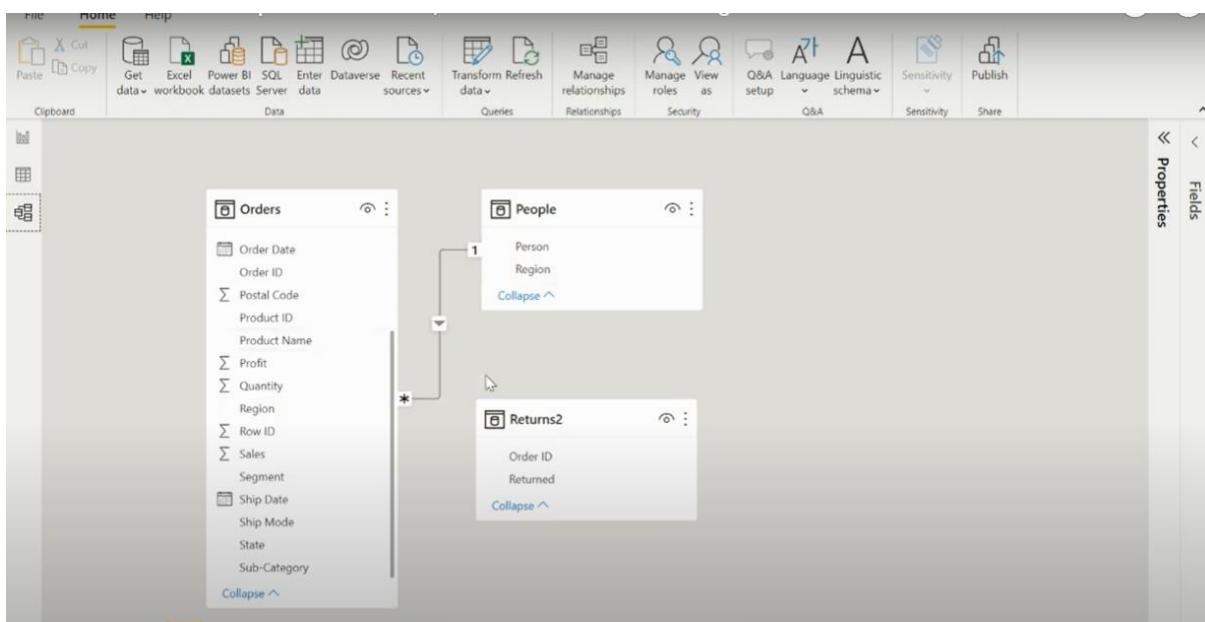
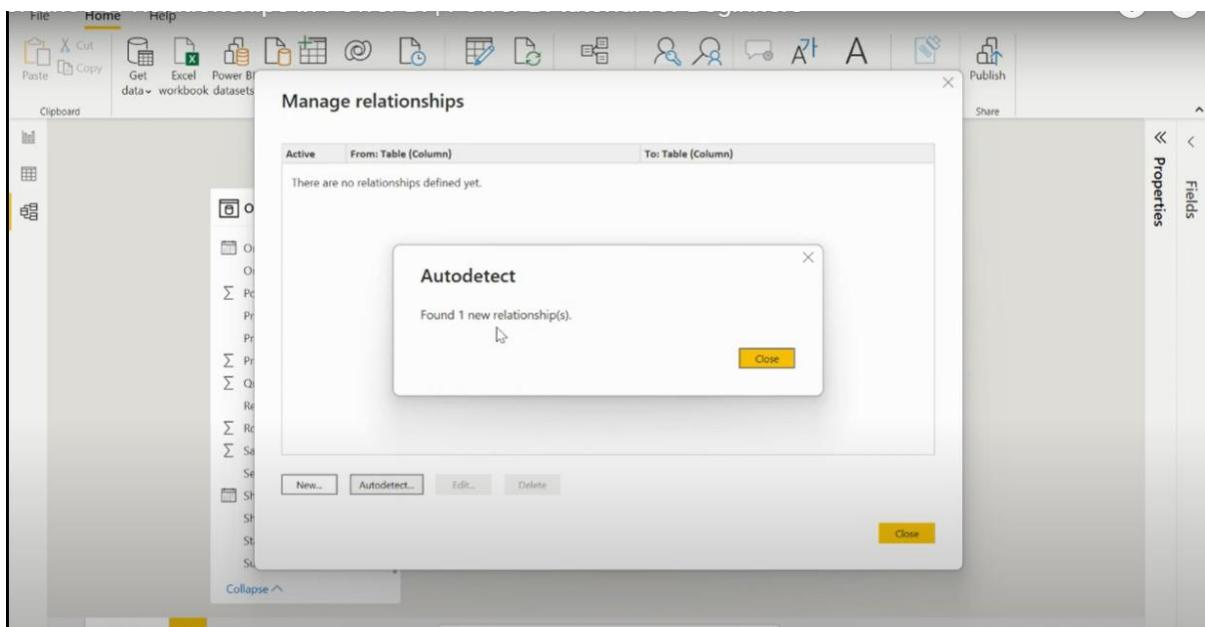
Importance of Relationships in Power BI

- 1.Why is it relevant to create relationships?**
 - It helps to accurately calculate results and display the correct information in our PBI reports.
 - We can work with data in both tables as if they were a single table
- 2.Ways to create relationships in Power BI?**
 - Manual
 - Auto detect
- 3.How to edit a relationship?**
- 4.Configure additional options**
- 4.1Cardinality**
 - Many to one (*:1)
 - One to one (1:1)
 - One to many (1:*)
 - Many to many (*:*)

How to create relationship?

Add, edit, or remove relationships between tables.

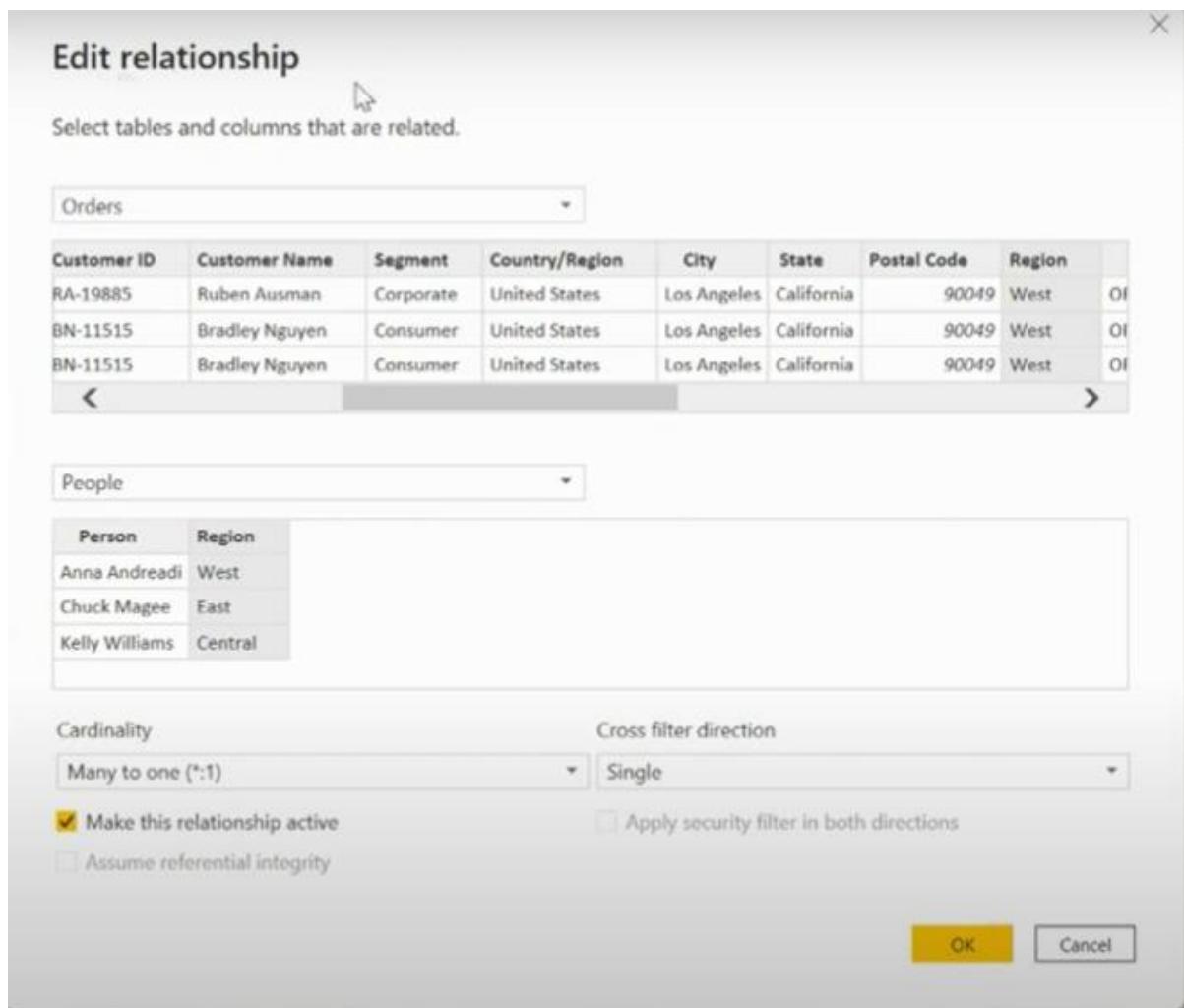
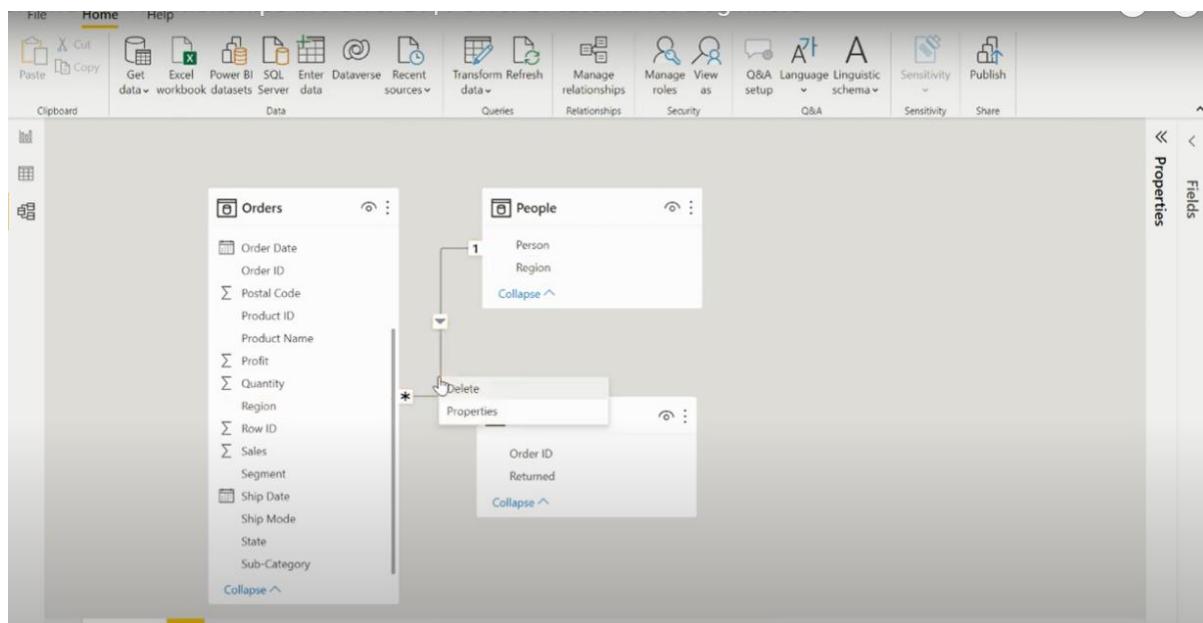
Orders	People	Returns2
Order Date	Person	Order ID
Order ID	Region	Returned
Postal Code	Collapse ^	
Product Name		
Profit		
Quantity		
Region		
Row ID		
Sales		
Segment		
Ship Date		
Ship Mode		
State		
Sub-Category		



To define relationship manually, just drag and drop the field from one table to another table and that will create the relationship between two tables.

How to edit relationship?

Select relationship line -> it will turn yellow upon selecting -> right click -> properties



Cardinality

Cardinality and One-to-many relationship in Power BI

· Cardinality is a mathematical term. It translates into the number of elements in a set.
· Cardinality refers to the relationships between the data in two database tables. Cardinality defines how many instances of one entity are related to instances of another entity.

The diagram illustrates a one-to-many relationship between the Doctor and Patient tables. The Doctor table has columns DoctorID (PK) and DoctorName. The Patient table has columns PatientID (PK), PatientName, and Doctor_DoctorID (FK). A line connects DoctorID to Doctor_DoctorID, indicating that many patients can be associated with one doctor.

One to many: Doctor can have many patients on a given day

One to one: A patient can have one doctor

Person (from peoples table) and sales (from orders table) – same

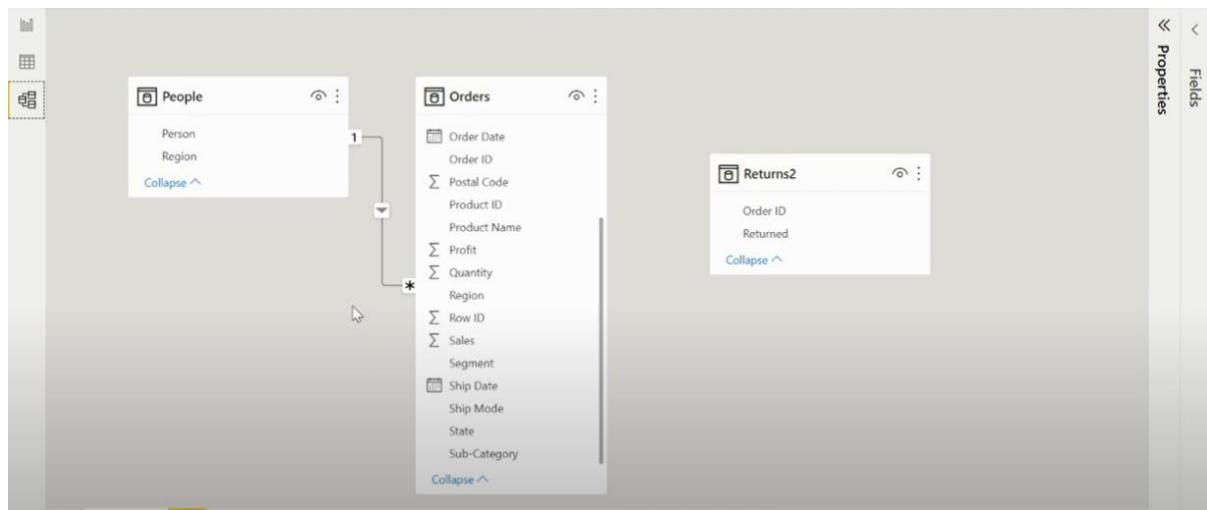
Cardinality and One-to-many relationship in Power BI

· Cardinality is a mathematical term. It translates into the number of elements in a set.
· Cardinality refers to the relationships between the data in two database tables. Cardinality defines how many instances of one entity are related to instances of another entity.

The diagram illustrates a one-to-many relationship between the Doctor and Patient tables, and a fact table Sales. The Doctor table has columns DoctorID (PK) and DoctorName. The Patient table has columns PatientID (PK), PatientName, and Doctor_DoctorID (FK). The Sales table has columns Person and Sales, listing individual sales records. A line connects DoctorID to Doctor_DoctorID, indicating that many patients can be associated with one doctor. The Sales table is shown below the Doctor and Patient tables.

Person	Sales
Anna Andreadi	22,97,200.86
Cassandra Bran	22,97,200.86
Chuck Magee	22,97,200.86
Kelly Williams	22,97,200.86
Total	22,97,200.86

Lets define the relationship between this two tables

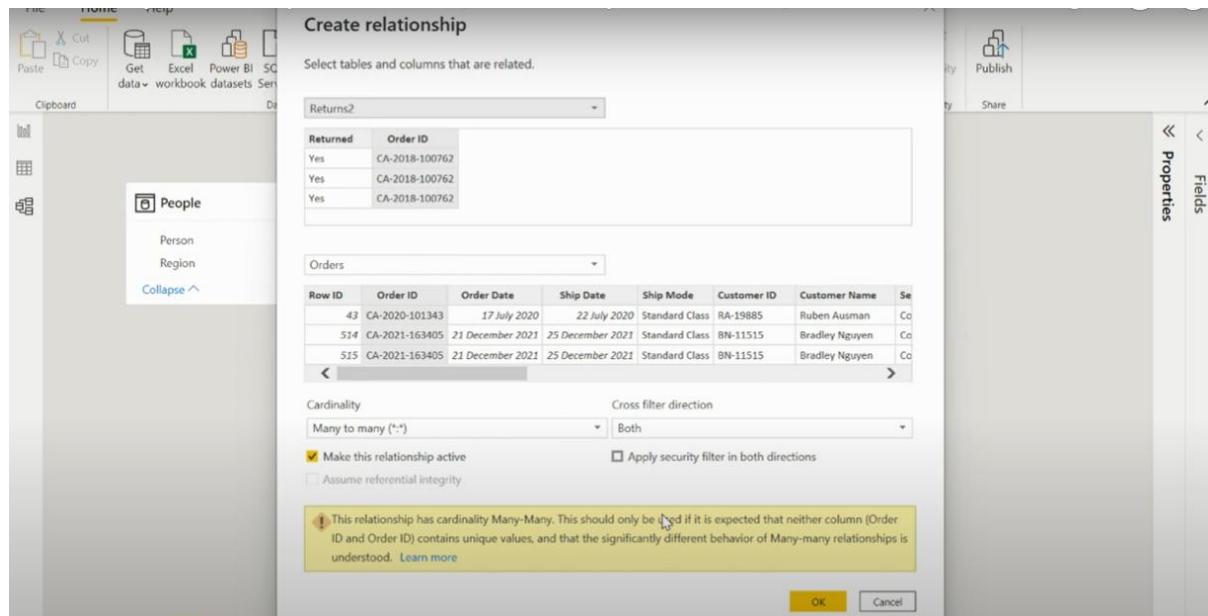


After defining the relationship the sales values are updated

The screenshot shows a Power BI report. At the top, there is a section titled 'Cardinality and One-to-many relationship in Power BI' with the following text:
· Cardinality is a mathematical term. It translates into the number of elements in a set.
· Cardinality refers to the relationships between the data in two database tables. Cardinality defines how many instances of one entity are related to instances of another entity.
Below this, there is a diagram showing a 'Doctor' table and a 'Patient' table connected by a one-to-many relationship. The 'Doctor' table has fields: DoctorID (int, PK) and DoctorName (varchar(40)). The 'Patient' table has fields: PatientID (int, PK), PatientName (varchar(40)), and Doctor_DoctorID (int, FK).
At the bottom, there is a visual representation of a table titled 'Sales' with columns 'Person' and 'Sales'. The data is as follows:

Person	Sales
Anna Andreadi	7,25,457.82
Cassandra Brandow	3,91,721.91
Chuck Magee	6,78,781.24
Kelly Williams	5,01,239.89
Total	22,97,430.86

Lets define relationship between orders table and returns table. The relationship is having many to many cardinality. So, we cannot create the relationship between this two tables. This is because these two tables are having duplicate order ids in them.



How to overcome this?

Model view -> home -> Transform data -> transform data -> it will take to power query editor -> append queries -> append queries as new -> select two tables option -> first table (orders) -> second table (returns) -> right click on order id column -> remove other columns -> right click on order id column -> remove duplicates -> rename the table -> close & apply -> close & apply

Row ID	AFc Order ID	Order Date	Ship Date	AFc Ship Mode
1	CA-2020-152156	08-11-2020	11-11-2020	Second Class
2	CA-2020-152156	08-11-2020	11-11-2020	Second Class
3	CA-2020-138688	12-06-2020	16-06-2020	Second Class
4	US-2019-108966	11-10-2019	18-10-2019	Standard Class
5	US-2019-108966	11-10-2019	18-10-2019	Standard Class
6	CA-2018-115812	09-06-2018	14-06-2018	Standard Class
7	CA-2018-115812	09-06-2018	14-06-2018	Standard Class
8	CA-2018-115812	09-06-2018	14-06-2018	Standard Class
9	CA-2018-115812	09-06-2018	14-06-2018	Standard Class
10	CA-2018-115812	09-06-2018	14-06-2018	Standard Class
11	CA-2018-115812	09-06-2018	14-06-2018	Standard Class
12	CA-2018-115812	09-06-2018	14-06-2018	Standard Class
13	CA-2021-114412	15-04-2021	20-04-2021	Standard Class
14	CA-2020-161389	05-12-2020	10-12-2020	Standard Class
15	US-2019-118983	22-11-2019	26-11-2019	Standard Class
16	US-2019-118983	22-11-2019	26-11-2019	Standard Class
17	CA-2018-105893	11-11-2018	18-11-2018	Standard Class
18	CA-2018-167164	13-05-2018	15-05-2018	Second Class
19	CA-2018-143336	27-08-2018	01-09-2018	Second Class
20	CA-2018-143336	27-08-2018	01-09-2018	Second Class
21	CA-2018-143336	27-08-2018	01-09-2018	Second Class
22	CA-2020-137330	09-12-2020	13-12-2020	Standard Class

Append

Concatenate rows from two tables into a single table.

Two tables Three or more tables

First table: Orders

Second table: Returns2

OK Cancel

Row ID	Order ID	Order Date	Ship Date	Ship Mode
1	1	2020-01-01	2020-01-02	Standard Class
2	2	2020-01-01	2020-01-02	Standard Class
3	3	2020-01-01	2020-01-02	Standard Class
4	4	2020-01-01	2020-01-02	Standard Class
5	5	2020-01-01	2020-01-02	Standard Class
6	6	2020-01-01	2020-01-02	Standard Class
7	7	2020-01-01	2020-01-02	Standard Class
8	8	2020-01-01	2020-01-02	Standard Class
9	9	2020-01-01	2020-01-02	Standard Class
10	10	2020-01-01	2020-01-02	Standard Class
11	11	2020-01-01	2020-01-02	Standard Class
12	12	2020-01-01	2020-01-02	Standard Class
13	13	2020-01-01	2020-01-02	Standard Class
14	14	2020-01-01	2020-01-02	Standard Class
15	15	2020-01-01	2020-01-02	Standard Class
16	16	2020-01-01	2020-01-02	Standard Class
17	17	2020-01-01	2020-01-02	Standard Class
18	18	2020-01-01	2020-01-02	Standard Class
19	19	2020-01-01	2020-01-02	Standard Class
20	20	2020-01-01	2020-01-02	Standard Class
21	21	2020-01-01	2020-01-02	Standard Class
22	22	2020-01-01	2020-01-02	Standard Class
23	23	2020-01-01	2020-01-02	Standard Class

Append1

Combine rows from multiple tables into a single table.

Source: Orders

Applied Steps: Removed Other Columns

Row ID	Order ID	Ship Date	Ship Mode
1	1	2020-01-02	Second Class
2	2	2020-01-02	Second Class
3	3	2020-01-02	Second Class
4	4	2020-01-02	Second Class
5	5	2020-01-02	Second Class
6	6	2020-01-02	Second Class
7	7	2020-01-02	Second Class
8	8	2020-01-02	Second Class
9	9	2020-01-02	Second Class
10	10	2020-01-02	Second Class
11	11	2020-01-02	Second Class
12	12	2020-01-02	Second Class
13	13	2020-01-02	Second Class
14	14	2020-01-02	Second Class
15	15	2020-01-02	Second Class
16	16	2020-01-02	Second Class
17	17	2020-01-02	Second Class
18	18	2020-01-02	Second Class
19	19	2020-01-02	Second Class
20	20	2020-01-02	Second Class
21	21	2020-01-02	Second Class
22	22	2020-01-02	Second Class
23	23	2020-01-02	Second Class

Append1

Select specific columns from a source table.

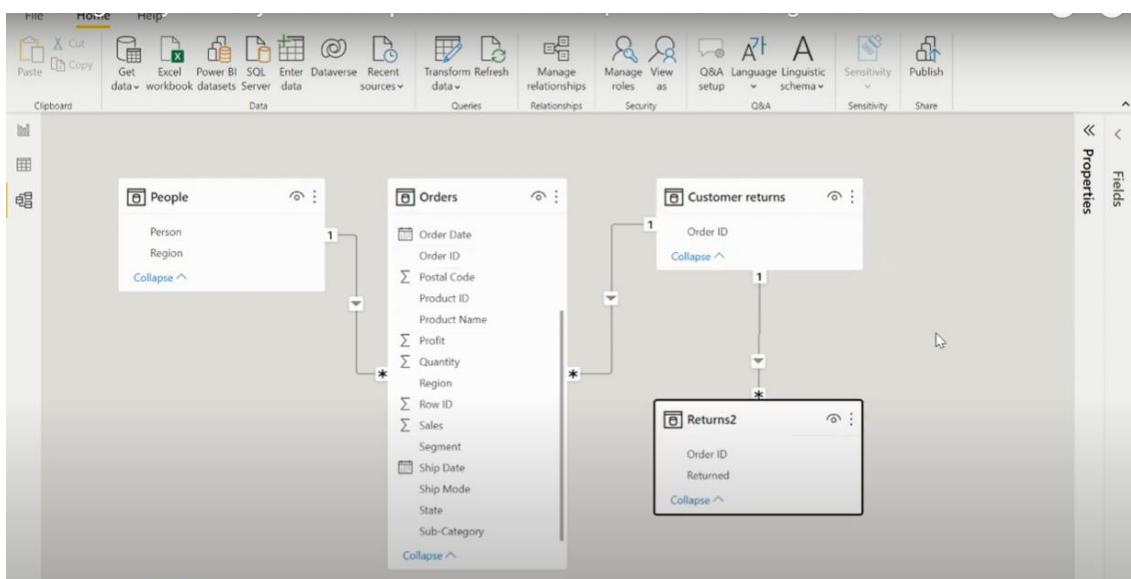
Source: Orders

Applied Steps: Removed Other Columns

Order ID
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

The screenshot shows the Power BI Query Editor interface. A red circle highlights the 'Properties' section on the right, which displays the name 'Customer returns'. Below it, the 'Applied Steps' section lists the steps taken: 'Source', 'Removed Other Columns', and 'Removed Duplicates'. The main area shows a table with 25 rows of data under the heading 'Order ID'.

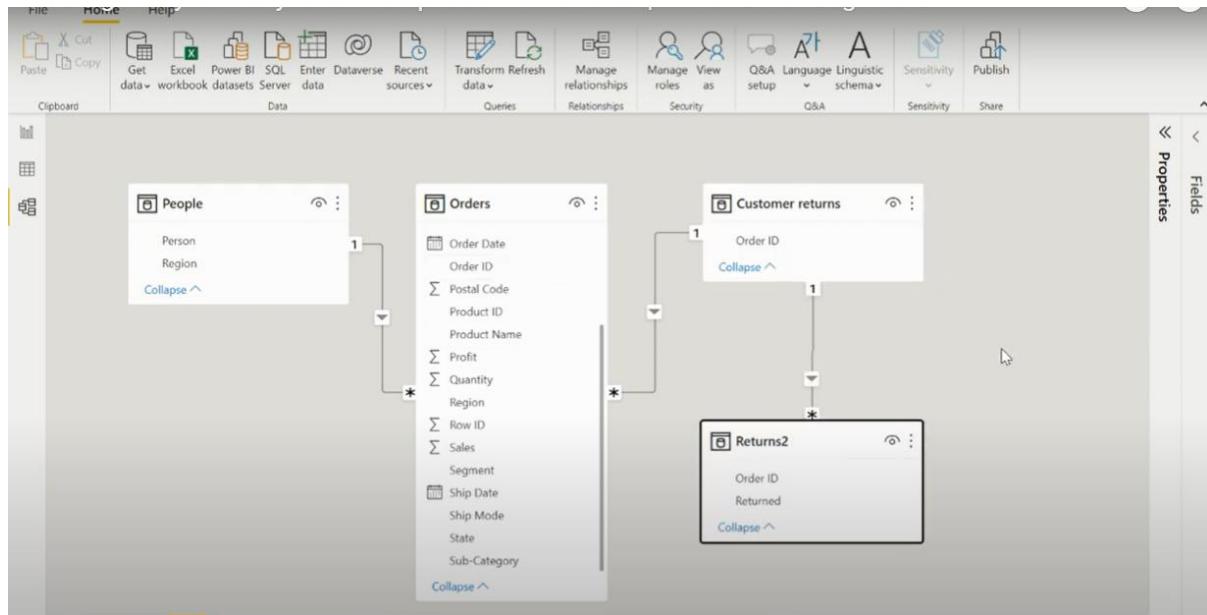
Order ID
CA-2020-152156
CA-2020-138688
US-2019-108966
CA-2018-158182
CA-2021-114412
CA-2020-161389
US-2019-118983
CA-2018-105893
CA-2018-167164
CA-2018-143336
CA-2020-137330
US-2021-156909
CA-2019-106320
CA-2020-121755
US-2019-150630
CA-2021-107727
CA-2020-117590
CA-2019-117415
CA-2021-120999
CA-2020-101343
CA-2021-139619
CA-2020-118255
CA-2018-146703
CA-2020-169194
CA-2019-115742



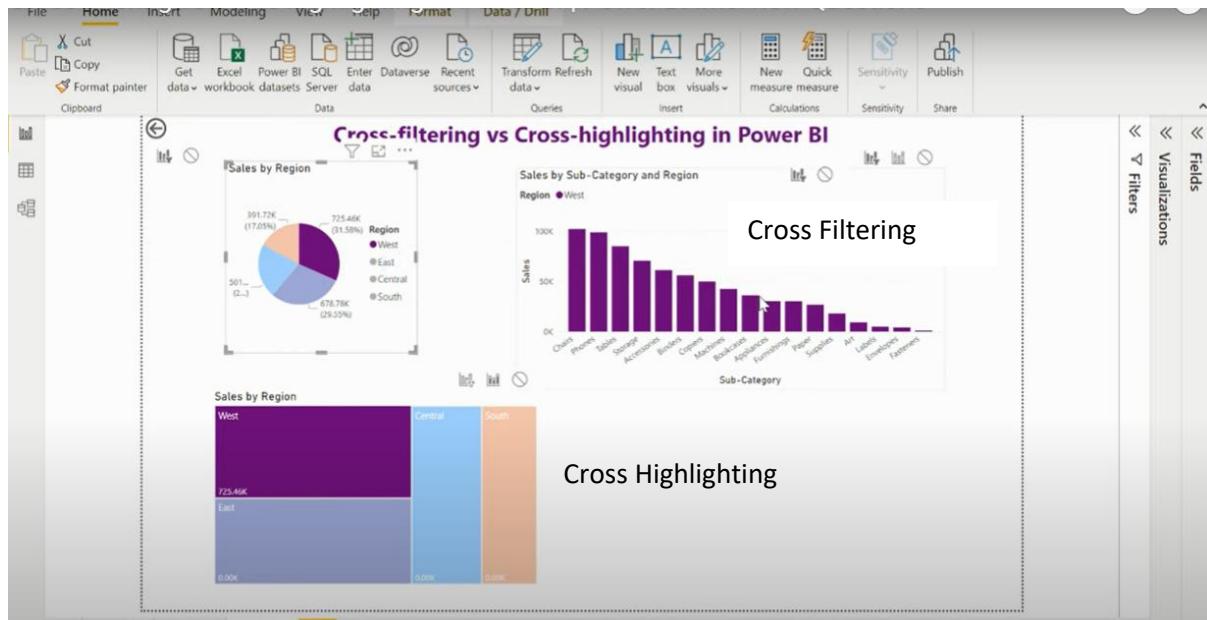
The screenshot shows the Power BI Query Editor interface. A red circle highlights the 'Properties' section on the right, which displays the name 'Customer returns'. Below it, the 'Applied Steps' section lists the steps taken: 'Source', 'Removed Other Columns', and 'Removed Duplicates'. The main area shows a table with 25 rows of data under the heading 'Order ID'.

Order ID
CA-2020-152156
CA-2020-138688
US-2019-108966
CA-2018-158182
CA-2021-114412
CA-2020-161389
US-2019-118983
CA-2018-105893
CA-2018-167164
CA-2018-143336
CA-2020-137330
US-2021-156909
CA-2019-106320
CA-2020-121755
US-2019-150630
CA-2021-107727
CA-2020-117590
CA-2019-117415
CA-2021-120999
CA-2020-101343
CA-2021-139619
CA-2020-118255
CA-2018-146703
CA-2020-169194
CA-2019-115742

Now the relationship is created between newly created customer returns table & orders table as one to many and also customer returns table & returns table as one to many.

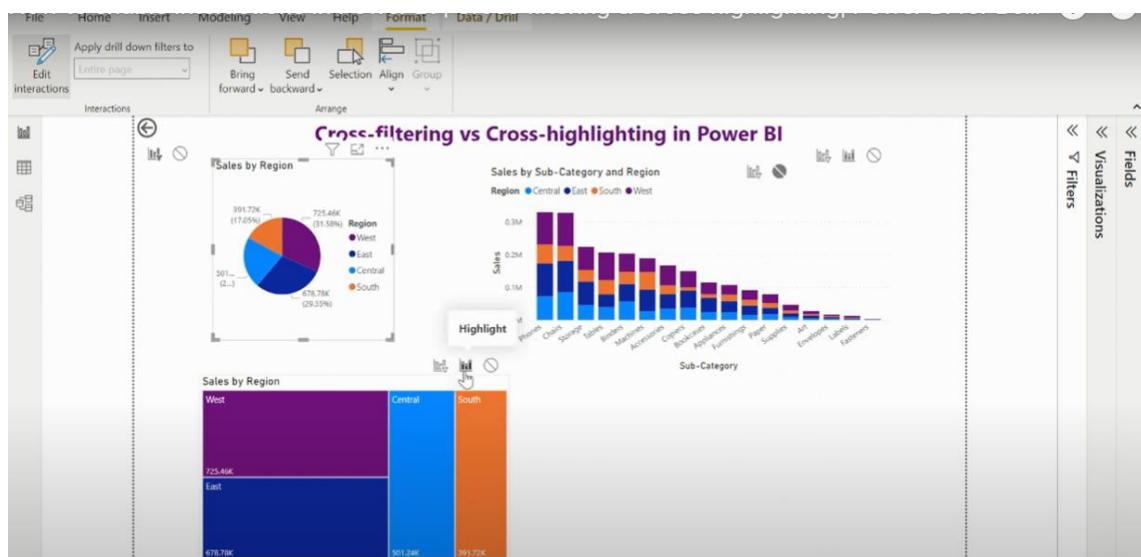
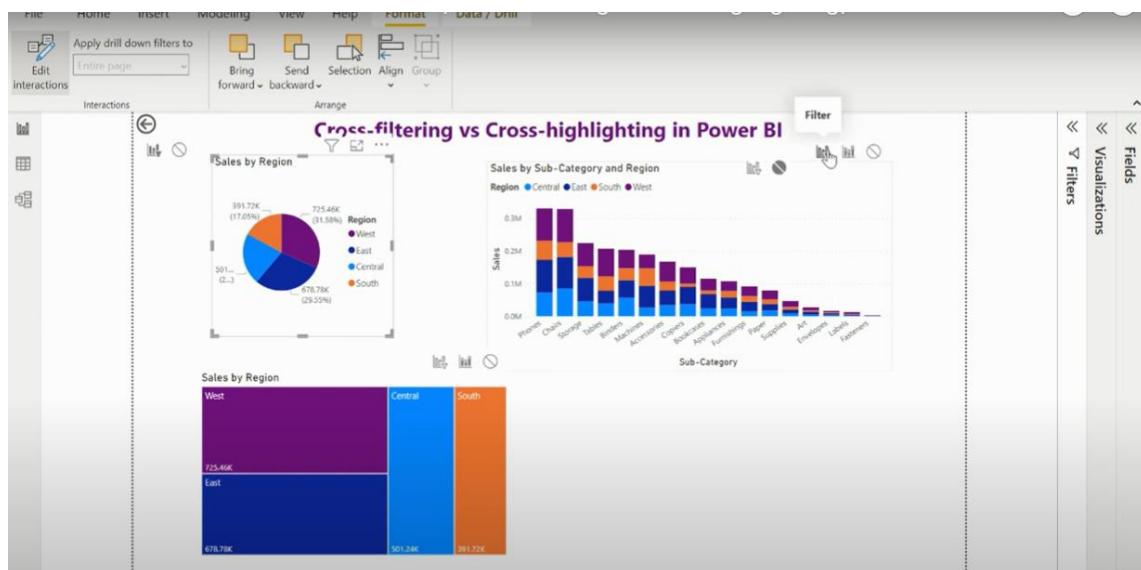
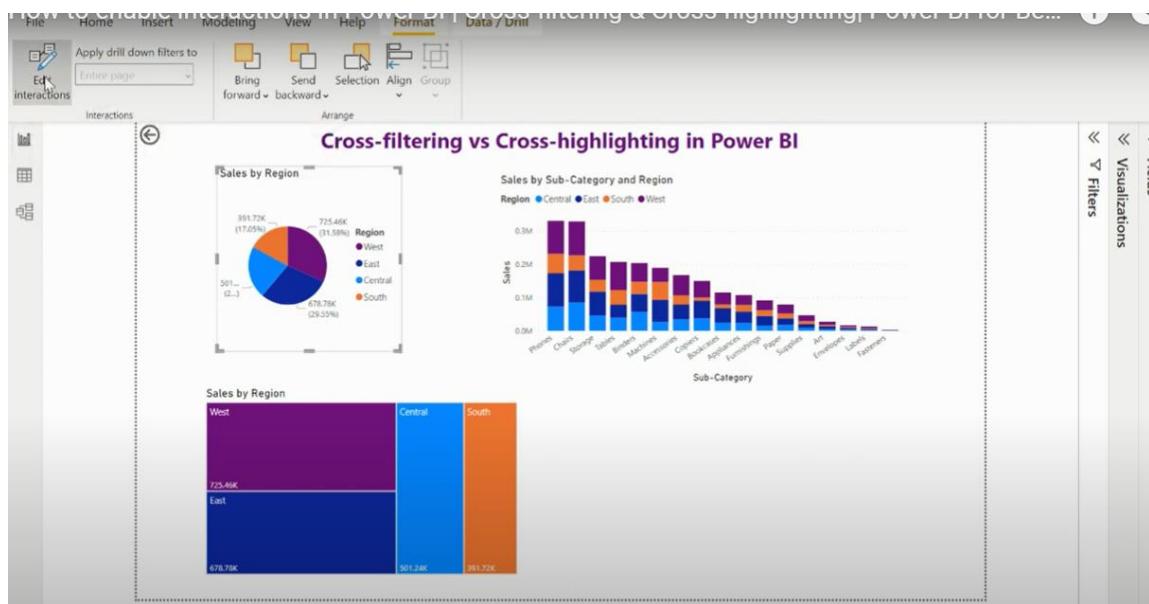


Cross filtering v/s cross highlighting



How to enable interactions (Cross filtering & cross highlighting) in Power BI ?

Select the visualization -> go to format -> edit interactions -> select filter/highlight option



How to calculate YTD, QTD and MTD in Power BI?

YTD – Start of current year to today's date

QTD – Start of current quarter to today's date

MTD – Start of current month to today's date

Create a new measure

The screenshot shows the Power BI Model view. In the top ribbon, 'Measure tools' is selected. A new measure is being created with the name 'Measure'. The formula is set to `TOTALYTD(SUM(Orders[Sales]),Orders[Order Date])`. The formula bar also includes a note: 'Evaluates the specified expression over the interval which begins on the first day of the year and ends with the last date in the specified date column after applying specified filters.' On the right side, the 'Fields' pane is open, showing various tables like 'Customer returns', 'Orders', and 'Measure'. The 'Orders' table is expanded, showing fields such as Category, City, Country/Region, Order ID, Product ID, Product Name, Profit, Quantity, Region, and Sales.

Add Card visualization -> select newly created measure

The screenshot shows the Power BI Model view again. The newly created measure 'Total Year to date Sales' is selected in the visualizations pane. The visualization type chosen is a 'Card'. The card displays the value '470.53K' and the text 'Total YTD Sales'. On the right side, the 'Fields' pane is open, showing the same list of fields as before. A red circle highlights the 'Card' icon in the visualizations pane.

If we want to see values for the previous years we can select the slicer accordingly.

The screenshot shows a Power BI report titled "YTD | QTD | MTD in Power BI". It displays two cards: "Total YTD Sales" with a value of "609.21K" and "Total Year to date Sales" with a value of "609.21K". Below each card is a small description: "Total YTD Sales" and "Total Year to date Sales". To the right of the cards is a "Year" slicer with options for 2018, 2019, 2020, and 2021. The "2020" option is selected. On the far right is the "Fields" pane, which lists various data fields such as Order ID, Postal Code, Product ID, Product Name, Profit, Quantity, Region, Row ID, Sales, Segment, Ship Date, Ship Mode, State, Sub-Category, Total QTD Sales, Total Year to da..., Total YTD days, and Total YTD Sales. The "Year" field is also listed here.

This screenshot is identical to the one above, showing the same report title, cards, and data. The only difference is that the "Year" slicer has been modified: the "2018" option is now selected, while the other years are deselected. The "Fields" pane remains the same.

Similarly, QTD and MTD measures can be created.

Calculate days in YTD (Calculating no of days elapsed between start of year and current date)

Create a new measure

The screenshot shows the Power BI Model view. A new measure is being created with the name 'days_in_ytd'. The formula bar contains the DATEDIFF function: `DATEDIFF(Date1, Date2, Interval)`. The dropdown menu for 'Interval' is open, showing options like 'Year', 'Quarter', 'Month', etc. Below the formula bar, the message 'Too few arguments were passed to the DATEDIFF function. The minimum argument is DAY.' is displayed. The Fields pane on the right lists various fields including 'days_in_ytd'.

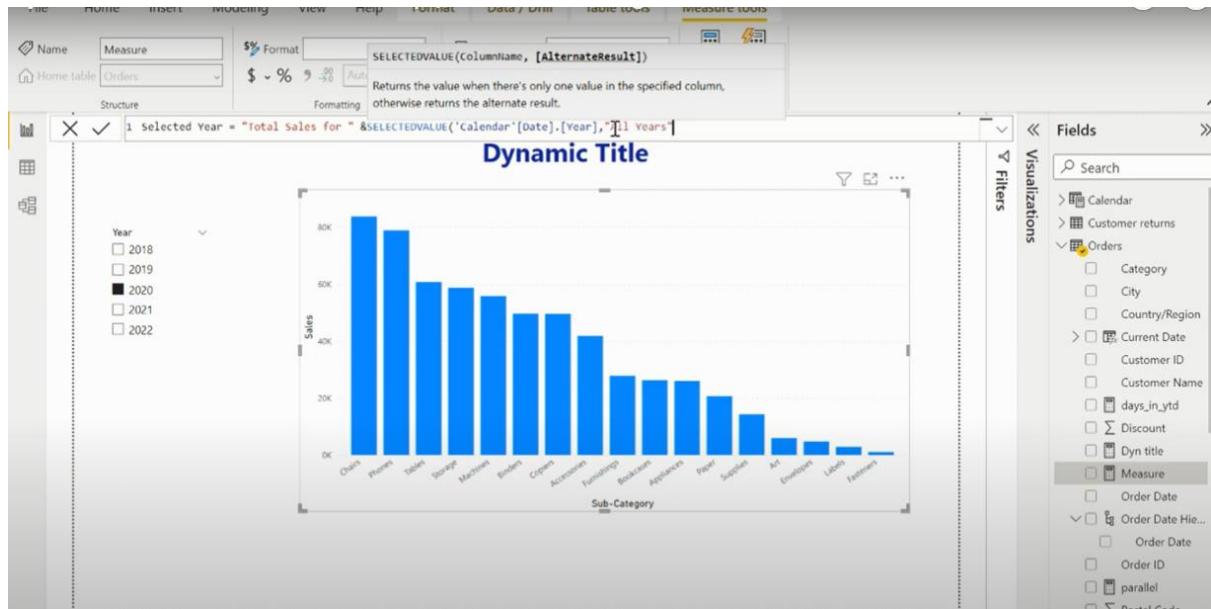
Add Card visualization -> select newly created measure

The screenshot shows the Power BI Home view. A Card visualization displays the value '210' with the label 'days_in_ytd'. The Fields pane on the right shows that 'days_in_ytd' is selected. The visualization pane shows the formula used to calculate the days in YTD.

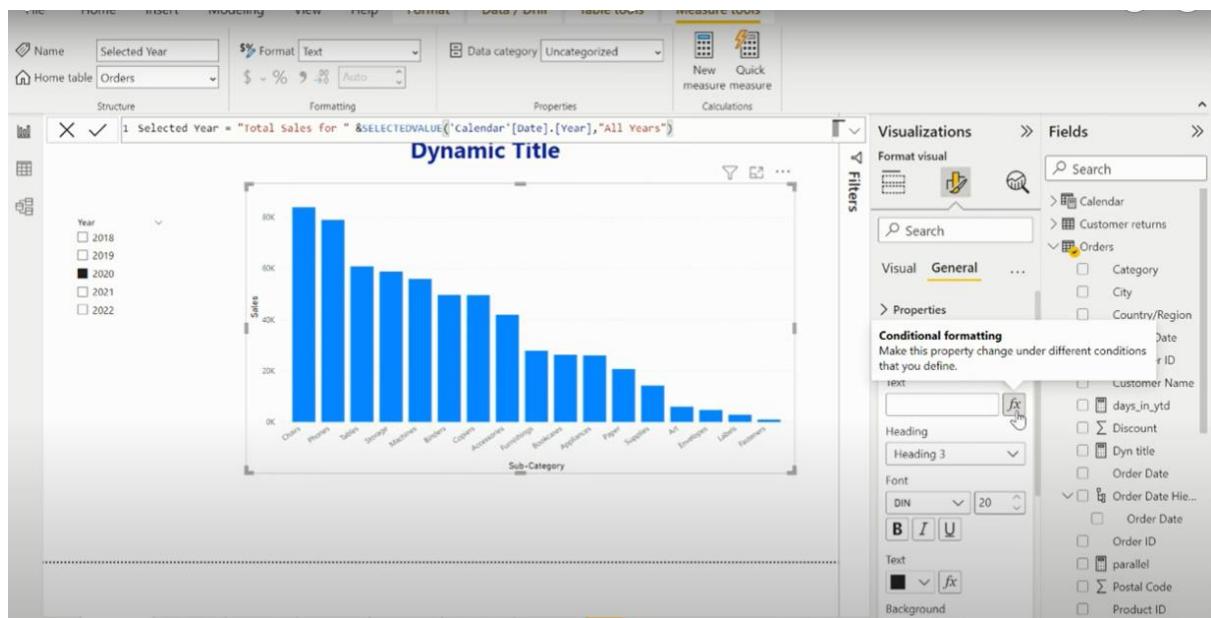
Dynamic Titles in Power BI?

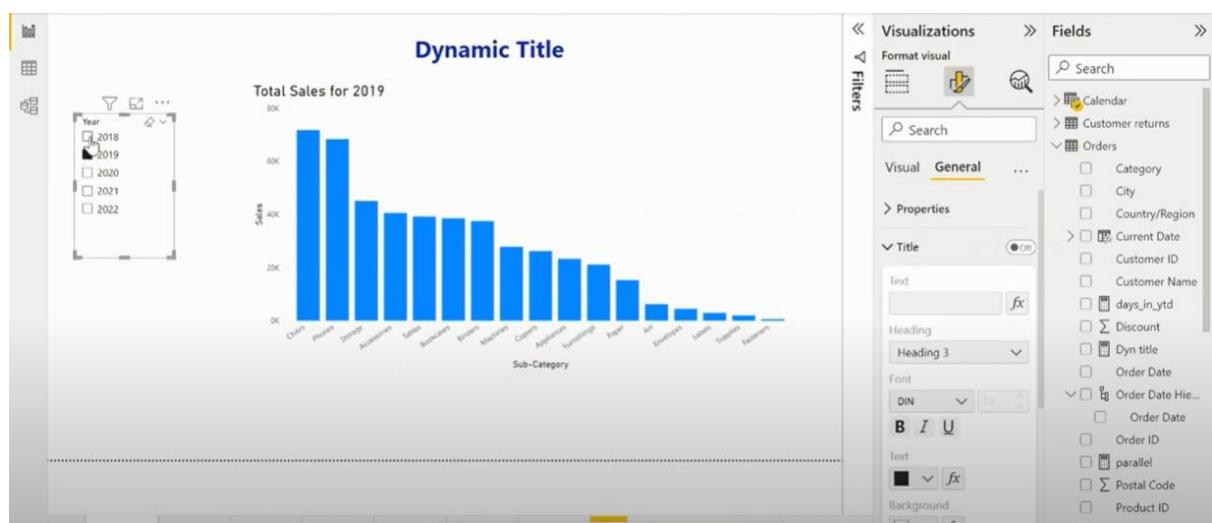
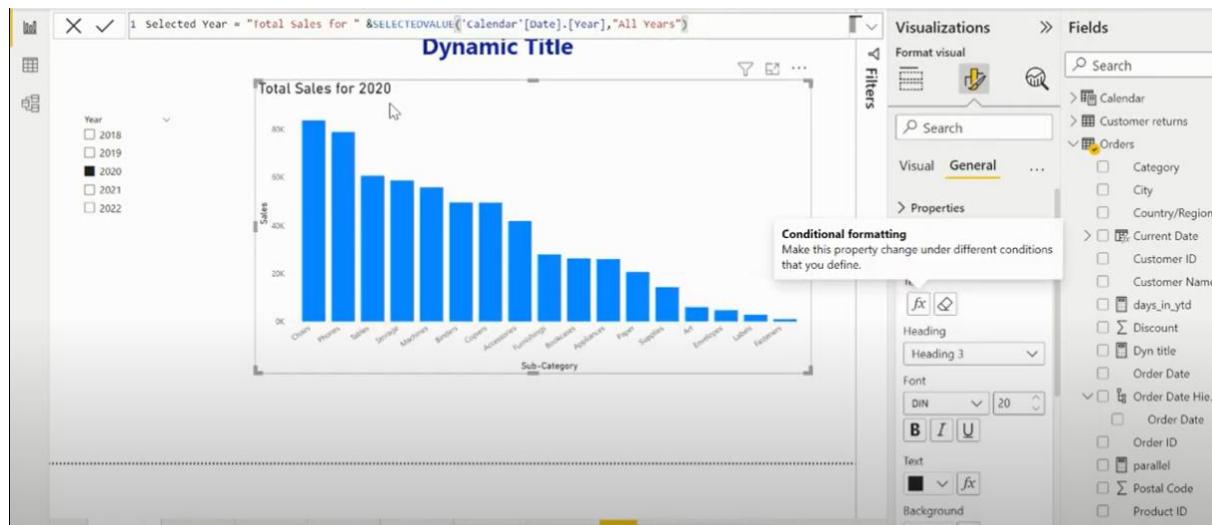
We want to update the visualization table, according to the slicer year selection.

Create a new measure



Go To Report Section ->format visual -> general -> title -> text -> conditional formatting -> format style (field value) ->sub-category (newly created measure)





Sum v/s SumX in Power BI

Sum : same as sum function in excel

SumX : same as sumproduct function in excel

SumX Syntax : (Table Name, value1 * value2)

The screenshot shows a Power BI desktop interface with a visual area containing two large numerical values and a table, and a Fields pane on the right.

Visual Area:

- Top Left:** A large value **97.26M** labeled **Total Product Cost**.
- Top Right:** A large value **110.34M** labeled **TotalSaleAmount**.
- Table:** A table with columns **Date**, **Prod**, **Qty**, and **Unit Price**. The data is as follows:

Date	Prod	Qty	Unit Price
05-01-2022	A	1	1.5
06-01-2022	C	2	2
05-01-2022	A	4	2.25
04-02-2022	B	2	3.5

Bottom Row:

Total Products	sum(qty)	9
Total Sale Amount	sumx(qty*unitprice)	21.5

Fields Pane:

- Category:** Accessories, Bikes, Clothing, Components.
- Visualizations:** Sales
- Fields:** A list of fields from the Sales table, including CustomerKey, DueDateKey, Extended Amo..., Order Quantity, OrderDateKey, Product Stand..., ProductKey, ResellerKey, Sales Amount, SalesOrderLine..., SalesTerritoryKey, ShipDateKey, Total Product C..., Unit Price, and Unit Price Disc...
The field **TotalSaleAmount** is highlighted with a yellow selection bar.

Parallelperiod DAX function in Power BI:

Create a new measure

The screenshot shows the Power BI 'Measure tools' ribbon. In the formula bar, the expression `1 Parallel Period Last Month = CALCULATE(SUM(Orders[sales]),parallel)` is being typed. A tooltip for the `parallel` argument is displayed, listing various DAX functions related to time periods. The Fields pane on the right shows the 'Orders' table with its columns: Category, City, Country/Region, Current Date, Customer ID, Customer Name, days_in_ytd, Discount, Dyn title, Measure, Order Date, Order Date Hie..., Order ID, parallel, and Postal Code.

Month	Sales	parallel
January	43,971.37	96,999.04
February	20,301.13	43,971.37
March	58,872.35	20,301.13
April	36,521.54	58,872.35
May	44,261.11	36,521.54
June	52,981.73	44,261.11
July	45,264.42	52,981.73
August	63,120.89	45,264.42
September	87,866.65	63,120.89
October	77,776.92	87,866.65
November	1,18,447.83	77,776.92
December	83,829.32	1,18,447.83
Total	7,33,215.26	7,46,384.98

,-1, month will compare current month sales with last month sales.

For e.g. it will compare aug'22 sales with jul'22 sales

The screenshot shows the Power BI 'Measure tools' ribbon. In the formula bar, the expression `1 Parallel Period Last Month = CALCULATE(SUM(Orders[sales]),PARALLELPERIOD('Calendar'[Date],-1,month))` is being typed. A tooltip for the `interval` argument is displayed, stating 'Returns a parallel period of dates by the given set of dates and a specified interval.' The Fields pane on the right shows the same structure as the previous screenshot, including the 'Measure' column under the 'Orders' table.

Month	Sales	parallel
January	43,971.37	96,999.04
February	20,301.13	43,971.37
March	58,872.35	20,301.13
April	36,521.54	58,872.35
May	44,261.11	36,521.54
June	52,981.73	44,261.11
July	45,264.42	52,981.73
August	63,120.89	45,264.42
September	87,866.65	63,120.89
October	77,776.92	87,866.65
November	1,18,447.83	77,776.92
December	83,829.32	1,18,447.83
Total	7,33,215.26	7,46,384.98

Sameperiod DAX function in Power BI:

Create a new measure

File Home Insert Modeling View Help Table tools Measure tools

Name: Measure
Home table: Orders
Structure: 1 Same period LY = CALCULATE(SUM(Orders[sales]), SAMEPERIODLASTYEAR([Filter1], ...))
Evaluates an expression in a context modified by filters.

Fields

- Search: Search term
- > Calendar
- > Customer returns
- > Orders
 - Category
 - City
 - Country/Region
- > Current Date
 - Customer ID
 - Customer Name
 - days_in_ytd
 - Σ Discount
 - Dyn title
- > Measure
 - Order Date
 - Order ID
 - Order ID Hie...
 - parallel
 - Parallel Period ...
 - Parallel Period...

sameperiod will compare current month sales with same month last year sales.

For e.g. it will compare aug'22 sales with aug'21 sales

File Home Insert Modeling View Help Table tools Measure tools

Name: Measure
Home table: Orders
Structure: 1 Same period LY = CALCULATE(SUM(Orders[sales]), SAMEPERIODLASTYEAR('Calendar'[date]))
Formatting: Returns a set of dates in the current selection from the previous year.

Fields

- Search: Search term
- > Calendar
- > Customer returns
- > Orders
 - Category
 - City
 - Country/Region
- > Current Date
 - Customer ID
 - Customer Name
 - days_in_ytd
 - Σ Discount
 - Dyn title
- > Measure
 - Order Date
 - Order ID
 - Order ID Hie...
 - parallel
 - Parallel Period ...
 - Parallel Period...

Parallelperiod (-12,month) will also give same result as same period but sameperiod is more reliable function in case of data for some months are missing

Calculate frequency of a word in a column in Power BI

Name	Nick name	Products	Qty Sold
Aaron Miller	Aaron,Miller,Aaro	Product 1	2
Adam Jenkins	Adam,Jenkins,Andy	Product 2	4
Andrew Adams	Andrew,Adams,Andy	Product 1	1
Andrew Graham	Andrew,Graham,Andy	Product 3	3
Bobby Murray	Bobby,Murray,Bob	Product 4	5
Benjamin Murray	Benjamin,Murray	Product 3	2

.Frequency of "Andy" in Nickname column
.% of total for frequency of Andy

3
Frequency of Nick name

50%
% Frequency of Nick name

Create a measure

File Home Insert Modeling View Help Table tools Measure tools

Name Measure Data category Uncategorized

CALCULATE(Expression, [Filter], ...)

Evaluates an expression in a context modified by filters.

New Quick measure measure Calculations

Calculate frequency o

Fields

Visualizations

Filters

Measure

1 Count of Andy = CALCULATE(COUNT(Sheet1[Nick name]),

2

Calculate frequency o

Name	Nick name	Products
Aaron Miller	Aaron,Miller,Aaro	Product 1
Adam Jenkins	Adam,Jenkins,Andy	Product 2
Andrew Adams	Andrew,Adams,Andy	Product 1
Andrew Graham	Andrew,Graham,Andy	Product 3
Bobby Murray	Bobby,Murray,Bob	Product 4
Benjamin Murray	Benjamin,Murray	Product 3
		5
		2

50%

% Frequency of Nick name

.Frequency of "Andy" in Nickname column
.% of total for frequency of Andy

File Home Insert Modeling View Help Table tools Measure tools

Name Measure Data category Uncategorized

SEARCH(FindText, WithinText, [StartPosition], [NotFoundValue])

Returns the starting position of one text string within another text string.
SEARCH is not case-sensitive.

Calculate frequency of a word in a column

Fields

Visualizations

Filters

Measure

1 Count of Andy = CALCULATE(COUNT(Sheet1[Nick name]),SEARCH("Andy",Sheet1[Nick name],1,0))

2

Calculate frequency of a word in a column

Name	Nick name	Products	Qty Sold
Aaron Miller	Aaron,Miller,Aaro	Product 1	2
Adam Jenkins	Adam,Jenkins,Andy	Product 2	4
Andrew Adams	Andrew,Adams,Andy	Product 1	1
Andrew Graham	Andrew,Graham,Andy	Product 3	3
Bobby Murray	Bobby,Murray,Bob	Product 4	5
Benjamin Murray	Benjamin,Murray	Product 3	2

3

Frequency of Nick name

50%

% Frequency of Nick name

.Frequency of "Andy" in Nickname column
.% of total for frequency of Andy

File Home Insert Modeling View Help Table tools Measure tools

Name Measure Data category Uncategorized

DIVIDE(numerator, denominator, [AlternateResult])

Safe Divide function with ability to handle divide by zero case.

Calculate frequency of a word in a column

Fields

Visualizations

Filters

Measure

1 % of Andy = DIVIDE((Count of Andy),COUNTROWS(Sheet1))

2

Calculate frequency of a word in a column

Name	Nick name	Products	Qty Sold
Aaron Miller	Aaron,Miller,Aaro	Product 1	2
Adam Jenkins	Adam,Jenkins,Andy	Product 2	4
Andrew Adams	Andrew,Adams,Andy	Product 1	1
Andrew Graham	Andrew,Graham,Andy	Product 3	3
Bobby Murray	Bobby,Murray,Bob	Product 4	5
Benjamin Murray	Benjamin,Murray	Product 3	2

3

Frequency of Nick name

50%

% Frequency of Nick name

.Frequency of "Andy" in Nickname column
.% of total for frequency of Andy

3

Count of Andy

Power BI Scenario-based interview question - Calculate frequency of a word in a column

Name **Nick name** **Products** **Qty Sold**

Aaron Miller	Aaron,Miller,Aaro	Product 1	2
Adam Jenkins	Adam,Jenkins,Andy	Product 2	4
Andrew Adams	Andrew,Adams,Andy	Product 1	1
Andrew Graham	Andrew,Graham,Andy	Product 3	3
Bobby Murray	Bobby,Murray,Bob	Product 4	5
Benjamin Murray	Benjamin,Murray	Product 3	2

Frequency of "Andy" in Nickname column
. % of total for frequency of Andy

3
Count of Andy

50%
% Frequency of Nick name

Fields

- Cumulative Measures
- Key Measures
- Time Comparison
- Customers
- Dates
- Locations
- Products
- Sales
- Salespeople
- Sheet1
- % Frequency of ...
- % of Andy
- Count of Andy
- Frequency of Nic...
- Name
- Nick name
- Products
- \sum Qty Sold

Choose the right data connectivity mode in Power BI

Import option creates a copy of the data (pbix file)

Direct Query option creates a connection to the data source

Import vs Direct query

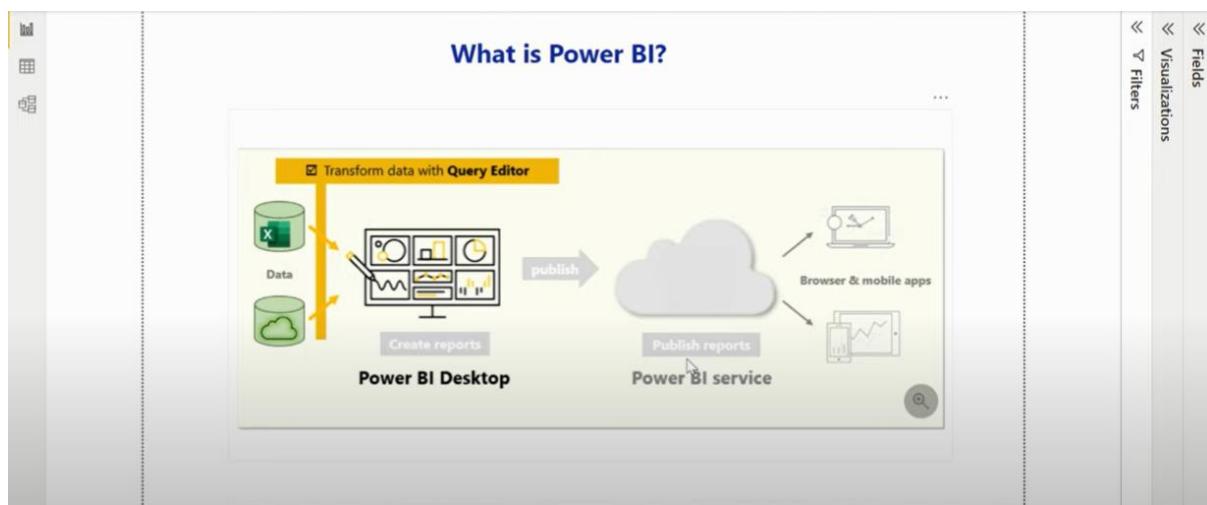
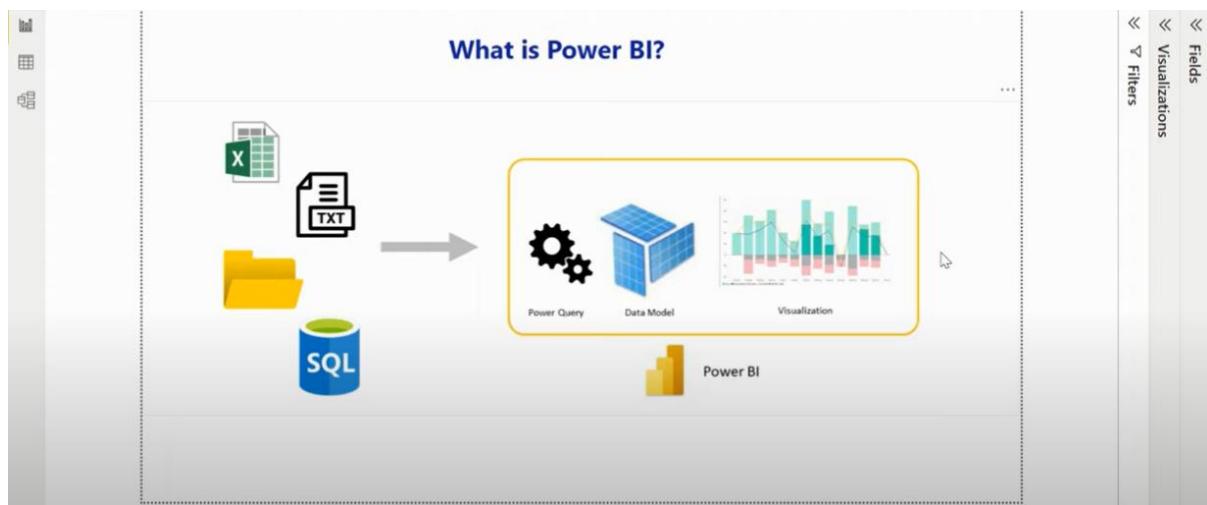
Import

- .Faster
- .Without premium account, max data is 1GB
- .With premium, max 10GB data
- .With premium, >10 Gb cannot handle
- .Provides all functionalities of PBI
- .Can connect to multiple data sources in the same report.

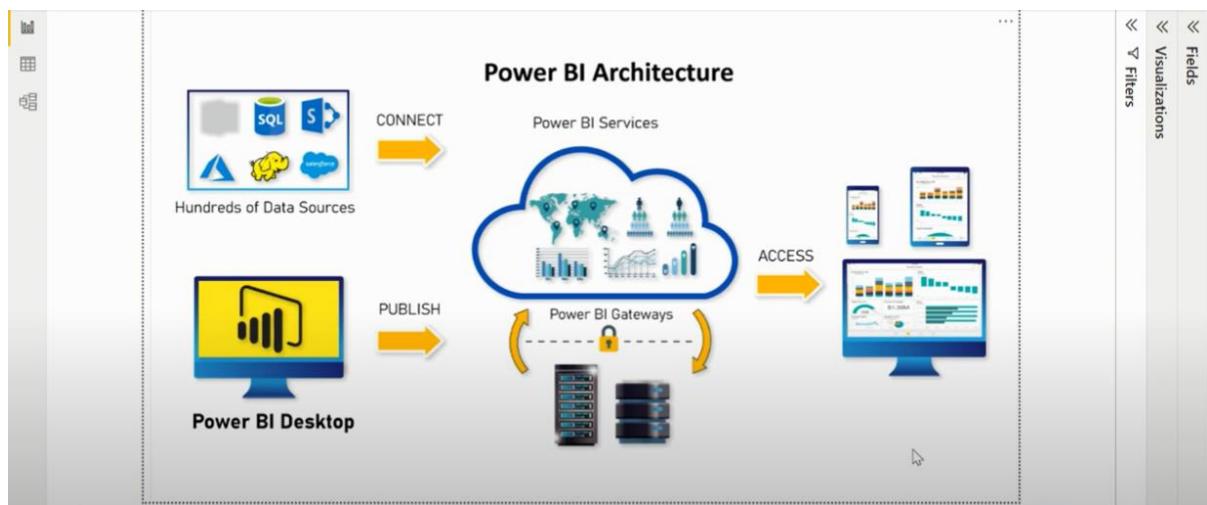
Direct Query:

- .Slow
- .Every dataset in the report cannot exceed 1 million rows
- .Limited features are available
- .Cannot connect to multiple data sources within same report

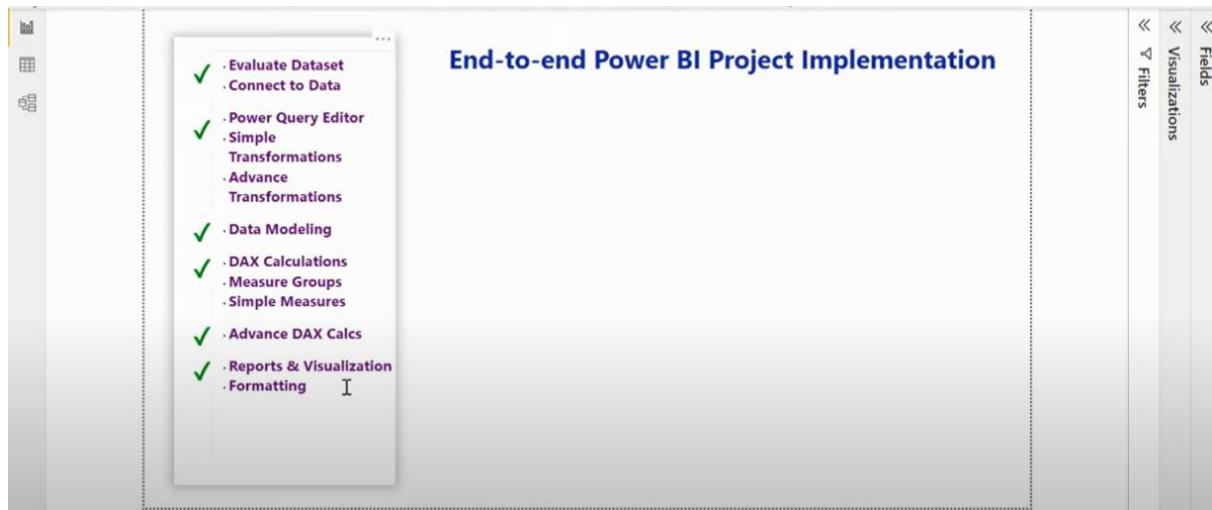
What is Power BI?



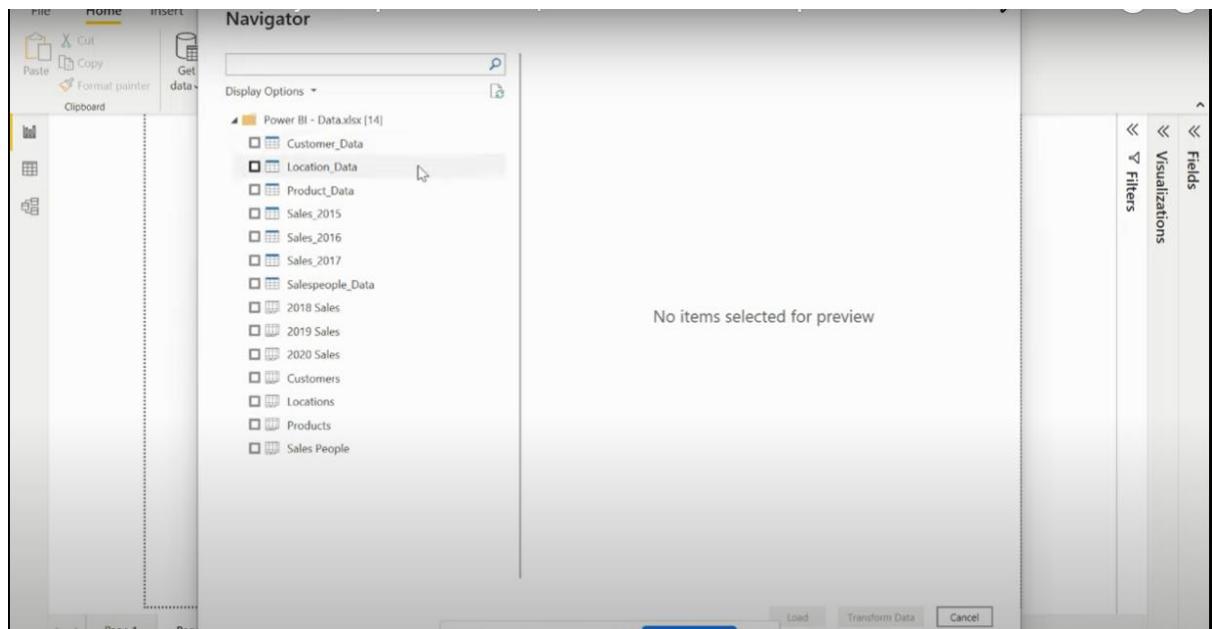
Power BI Architecture



End to End Power BI Project Implementation



Get Data -> Excel Workbook -> go to location -> select all the tables to load -> transform data



Salespeople_Data

Salesperson ID	Salesperson Name
EMP1000	Fred Robertson
EMP1001	Kevin Butler
EMP1002	Andrew Bowman
EMP1003	Christopher Tucker
EMP1004	Kenneth Bradley
EMP1005	Ryan Welch
EMP1006	Sean Miller
EMP1007	Jeremy Mendoza
EMP1008	Carl Elliott
EMP1009	Kenneth Fields
EMP1010	Joshua Cook
EMP1011	Larry Marshall
EMP1012	John Reyes
EMP1013	Charles Harper
EMP1014	Ronald Reed
EMP1015	Justin Lynch
EMP1016	Henry Nelson
EMP1017	Brian Hansen
EMP1018	Jimmy Young
EMP1019	Roger Robertson
EMP1020	Ryan Butler
EMP1021	Clarence Fox
EMP1022	Walter Cook
EMP1023	Brian Davis

Rename table names if required

Properties

Name: Sales_2017

Applied Steps

Source: Navigation

Changed Type

Queries [7]

Sales_2017

Order ID	Product ID	Location ID	Sales Person ID	Customer ID
AX1004	ENX2029	A142	EMP1019	C1078
AX1004	ENX2079	A152	EMP1041	C1073
AX10027	ENX2062	A126	EMP1001	C1256
AX10032	ENX2083	A156	EMP1025	C1342
AX10042	ENX2100	A147	EMP1019	C1267
AX10061	ENX2041	A101	EMP1041	C1168
AX10070	ENX2046	A159	EMP1040	C1147
AX10071	ENX2091	A121	EMP1016	C1755
AX10074	ENX2038	A121	EMP1042	C1732
AX10086	ENX2054	A130	EMP1023	C1526
AX10096	ENX2005	A133	EMP1037	C1791
AX10098	ENX2098	A119	EMP1022	C1467
AX10133	ENX2045	A104	EMP1038	C1350
AX10145	ENX2033	A111	EMP1007	C1666
AX10155	ENX2027	A111	EMP1024	C1176
AX10162	ENX2030	A158	EMP1015	C1120
AX10173	ENX2093	A115	EMP1040	C1366
AX10180	ENX2011	A148	EMP1006	C1350
AX10199	ENX2100	A115	EMP1001	C1350
AX10208	ENX2054	A132	EMP1029	C1194
AX10209	ENX2043	A120	EMP1040	C1571
AX10218	ENX2029	A123	EMP1018	C1612

Rename columns if required

The screenshot shows the Power BI Data Editor interface. A table is open with columns: Product ID, Product Name, Product Cost, Original Sale Price, and Discount. The 'Product Cost' column is currently selected. The ribbon bar at the top has sections for Close & Apply, New Source, Data Sources, Manage Parameters, Refresh Preview, Advanced Editor, Choose Columns, Remove Columns, Manage Columns, Keep Rows, Remove Rows, Sort, Transform, and Data Type: Whole Number. The 'Transform' section is active. To the right, the 'Properties' pane shows the query name 'Products'. The 'Applied Steps' pane lists a single step named 'Changed Type'.

To remove unrequired columns

Select the unrequired columns with **ctrl + select** -> right click -> remove columns

The screenshot shows the Power BI Data Editor interface. A table is open with columns: Households, Median Income, Land Area, and Water Area. The 'Households' column is currently selected. A context menu is open over this column, listing options such as Copy, Remove Columns, Remove Other Columns, Add Column From Examples..., Remove Duplicates, Remove Errors, Replace Values..., Fill, Change Type, Transform, Merge Columns, Sum, Product, Group By..., Unpivot Columns, Unpivot Other Columns, Unpivot Only Selected Columns, Move, and several entries for 'America/Los Angeles'.

To merge tables with similar columns

Home -> append queries -> three or more tables -> select table -> click add -> click ok (once all tables are added)

Once table appended , right click on unrequired tables and deselect Enable Load

To Group the columns

Select the tables -> right click -> move to group -> new group -> rename group -> click ok -> two groups are created (1. Created by us 2. other queries)

The screenshot shows the Power BI Data Editor interface. On the left, the 'Queries [7]' pane lists several tables: Customers, Locations, Products, Sales_2018, Sales_2019, Sales_2020, and Salespeople. The Salespeople table is currently selected. In the main area, a table preview for the Salespeople query is displayed, showing columns 'Salesperson ID' and 'Salesperson Name'. A context menu is open over the first few rows of the table, with the 'Move To Group' option highlighted. Below it, there is a 'New Group...' option.

This screenshot shows the 'Salespeople' query table in the Power BI Data Editor. A 'New Group' dialog box is overlaid on the table. It contains fields for 'Name' (set to 'Data model') and 'Description'. The 'OK' button at the bottom of the dialog is highlighted with a yellow box.

The screenshot shows the 'Salespeople' query table in the Power BI Data Editor. The 'Data model' group in the navigation pane now contains the Salespeople table, indicating it has been moved. The other tables (Customers, Locations, Products, Sales_2018, Sales_2019, Sales_2020) are still grouped under 'Other Queries'.

To Duplicate Columns

Select column -> right click -> duplicate column -> it will be duplicated at the end -> drag and drop to wherever you want

The screenshot shows the Power BI Data Editor interface. On the left, the 'Queries [7]' pane lists several queries including 'Customers', 'Locations', 'Products', and various 'Sales' queries. The main area displays a table with columns: 'State Code', 'State', 'Latitude', and 'Longitude'. A context menu is open over the 'State' column, with 'Duplicate Column' highlighted. Other options in the menu include 'Copy', 'Remove', 'Remove Other Columns', 'Add Column From Examples...', 'Remove Duplicates', 'Remove Errors', 'Change Type', 'Transform', 'Replace Values...', 'Replace Errors...', 'Split Column', 'Group By...', 'Fill', 'Unpivot Columns', 'Unpivot Other Columns', 'Unpivot Only Selected Columns', 'Rename...', 'Move', 'Drill Down', and 'Add as New Query'. To the right, the 'Query Settings' pane shows the query name 'Locations' and the applied step 'Changed Type'.

This screenshot shows the same Power BI Data Editor interface after the 'State' column has been duplicated. The table now includes two 'State' columns: 'State' and 'State - Copy'. The 'State - Copy' column contains identical data to the original 'State' column. The context menu from the previous screenshot is no longer visible. The 'Query Settings' pane remains the same, showing 'Locations' and 'Changed Type'.

This screenshot shows the final state of the table after the 'State - Copy' column has been moved to the second position using the drag-and-drop feature. The table now has columns: 'State', 'State - Copy', 'Latitude', 'Longitude', and 'Population'. The 'State - Copy' column is now the second column. The context menu and 'Query Settings' pane are no longer visible.

To format the column (lowercase/uppercase/proper/trim/clean/add prefix/add suffix)

Transform -> format -> uppercase

The screenshot shows the Power BI Data Editor interface. A context menu is open over a column named 'State'. The 'Format' option is selected, revealing a dropdown menu with various text transformation tools. The 'uppercase' option is currently highlighted. The main workspace displays a table with columns 'State Code' and 'State', both containing the value 'CA'. The 'APPLIED STEPS' pane on the right lists the steps taken so far, including 'Reordered Columns'.

To split the column (by delimiter/no of characters/positions/lowercase to uppercase/uppercase to lowercase/digit to non-digit/ non-digit to digit)

Transform -> split column -> by no of characters -> specify no of characters -> select appropriate option -> click ok

The screenshot shows the Power BI Data Editor interface. A context menu is open over a column named 'State'. The 'Split Column' option is selected, revealing a dropdown menu with various splitting methods. The 'By Position' option is currently highlighted. The main workspace displays a table with columns 'State Code' and 'State', both containing the value 'CA'. The 'APPLIED STEPS' pane on the right lists the steps taken so far, including 'Uppercased Text'.

Queries [7]

- Customers
- Locations
- Products
- Sales_2018
- Sales_2019
- Sales_2020
- Salespeople

Split Column by Number of Characters

Specify the number of characters used to split the text column.

Number of characters: 4

Split:

- Once, as far left as possible
- Once, as far right as possible
- Repeatedly

Advanced options

OK Cancel

	A ₁ C State Code	A ₁ C State	A ₁ C State - Copy	A ₁ C Type	1.2 Latitude
1	CA	California	CALIFORNIA	City	
2	CA	California	CALIFORNIA	City	
3	CA	California	CALIFORNIA	City	
4	CA	California	CALIFORNIA	City	
5	CA	California	CALIFORNIA	City	
6	CA	California	CALIFORNIA	City	
7					
8					
9	Y				
10					
11					
12					
13					
14					
15					
16					
17	CA	California	CALIFORNIA	City	
18	CA	California	CALIFORNIA	City	
19	CA	California	CALIFORNIA	City	
20	inty	California	CALIFORNIA	City	
21	CA	California	CALIFORNIA	City	
22	CA	California	CALIFORNIA	City	
23	CA	California	CALIFORNIA	City	
24	CA	California	CALIFORNIA	City	

Queries [7]

- Customers
- Locations
- Products
- Sales_2018
- Sales_2019
- Sales_2020
- Salespeople

Table.TransformColumnTypes(#"Split Column by Position", [{"State - Copy.1": type text}, {"state - Copy.2": type text}])

	A ₁ C State Code	A ₁ C State	A ₁ C State - Copy.1	A ₁ C State - Copy.2	A ₁ C Type
1	CA	California	CALI	FORNIA	City
2	CA	California	CALI	FORNIA	City
3	CA	California	CALI	FORNIA	City
4	CA	California	CALI	FORNIA	City
5	CA	California	CALI	FORNIA	City
6	CA	California	CALI	FORNIA	City
7	CA	California	CALI	FORNIA	City
8	CA	California	CALI	FORNIA	City
9	Y	California	CALI	FORNIA	City
10	CA	California	CALI	FORNIA	City
11	CA	California	CALI	FORNIA	City
12	CA	California	CALI	FORNIA	City
13	CA	California	CALI	FORNIA	City
14	CA	California	CALI	FORNIA	City
15	CA	California	CALI	FORNIA	City
16	CA	California	CALI	FORNIA	City
17	CA	California	CALI	FORNIA	City
18	CA	California	CALI	FORNIA	City
19					

How to bring in data from web in table

We want the California population data by city in the table

Home -> New source -> web -> paste the url -> click ok -> In the navigator we can see options such as table/html code/displayed text -> select table -> click ok -> new table is added to the dataset

Rename the new table -> right click -> move to required group

End to End Power BI Project Implementation | From Novice to an Expert in Power BI ⚡

The screenshot shows the Power BI Editor interface. On the left, the 'Queries [7]' pane lists various data sources and queries, with 'Locations' selected. In the center, a query editor displays a table with columns: 'A#C State', 'A#C State - Copy.1', 'A#C State - Copy.2', 'A#C Type', and '1.2 Lat'. The 'A#C State' column contains values like California, CALI, FORNIA, and CDP. The 'A#C State - Copy.1' and 'A#C State - Copy.2' columns show intermediate state representations. The 'A#C Type' column contains 'City' or 'CDP'. The '1.2 Lat' column is empty. The 'APPLIED STEPS' pane on the right shows a step named 'Changed Type1' under the 'Source' section. A 'From Web' dialog box is overlaid on the editor, prompting for a URL: https://www.california-demographics.com/cities_by_population.

This screenshot shows the same Power BI Editor environment as the previous one. The 'From Web' dialog box is now open, showing the URL https://www.california-demographics.com/cities_by_population. The 'OK' button is highlighted.

This screenshot shows the final result of the data import. The 'Table View' pane on the right displays a table titled 'Table 1' with columns 'Rank', 'City', and 'Population'. The table lists 29 cities in California, starting with Oakland (Rank 8) and ending with El Cajon (Rank 29). The 'APPLIED STEPS' pane on the right shows the 'Changed Type1' step under the 'Source' section. The 'From Web' dialog box is still visible at the bottom of the screen.

Rank	City	Population
8	Oakland	422575
9	Bakersfield	379879
10	Anaheim	353085
11	Santa Ana	332610
12	Riverside	327569
13	Stockton	311103
14	Irvine	272694
15	Chula Vista	268779
16	Fremont	234829
17	San Bernardino	216784
18	Modesto	214485
19	Fontana	213704
20	Santa Clarita	212519
21	Moreno Valley	208751
22	Oxnard	207722
23	Huntington Beach	199778
24	Glendale	199357
25	Santa Rosa	178391
26	Ontario	178194
27	Rancho Cucamonga	178060
28	Oceanside	175694
29	El Cajon	172320

Queries [8]

Data model [5]

- Customers
- Locations
- Products
- Sales_2018
- Salespeople

Other Queries [3]

- Sales_2019
- Sales_2020
- Table 1**

Table 1

Rank

Rank	City	Population
1	Los Angeles	3973278
2	San Diego	1414545
3	San Jose	1029409
4	San Francisco	874784
5	Fresno	526147
6	Sacramento	503482
7	Long Beach	462081
8	Oakland	422575
9	Bakersfield	379879
10	Anaheim	353085
11	Santa Ana	332610
12	Riverside	327569
13	Stockton	311103
14	Irvine	272694
15	Chula Vista	268779
16	Fremont	234829
17	San Bernardino	216784
18	Modesto	214485
19	Fontana	212704
20	Santa Clarita	212519
21	Moreno Valley	208751
22	Oxnard	207722
23	Huntington Beach	199778
24	Glendale	199357
25	Santa Rosa	178391

Query Settings

PROPERTIES

- Name: Table 1
- All Properties

APPLIED STEPS

- Source
- Extracted Table From Html
- Promoted Headers
- Changed Type**

Queries [8]

Data model [5]

- Customers
- Locations
- Products
- Sales_2018
- Salespeople

Other Queries [3]

- Sales_2019
- Sales_2020
- CA Population**

CA Population

Rank

Rank	City	Population
1	Los Angeles	3973278
2	San Diego	1414545
3	San Jose	1029409
4	San Francisco	874784
5	Fresno	526147
6	Sacramento	503482
7	Long Beach	462081
8	Oakland	422575
9	Bakersfield	379879
10	Anaheim	353085
11	Santa Ana	332610
12	Riverside	327569
13	Stockton	311103
14	Irvine	272694
15	Chula Vista	268779
16	Fremont	234829
17	San Bernardino	216784
18	Modesto	214485
19	Fontana	212704
20	Santa Clarita	212519
21	Moreno Valley	208751
22	Oxnard	207722
23	Huntington Beach	199778
24	Glendale	199357
25	Santa Rosa	178391

Query Settings

PROPERTIES

- Name: CA Population
- All Properties

APPLIED STEPS

- Source
- Extracted Table From Html
- Promoted Headers
- Changed Type**

Contextual menu open on CA Population query:

- Copy
- Paste
- Delete
- Rename
- Enable load**
- Include in report refresh**
- Duplicate
- Reference
- Move To Group
- Move Up
- Move Down
- Create Function...
- Convert To Parameter
- Advanced Editor
- Properties...

To combine different tables

Select Primary table -> Home -> merge queries -> select other table ->select common columns -> specify join condition -> column is merged into primary table (but it is in the form of a table) -> click expand -> select required columns -> click ok -> rename the column -> select the unrequired table -> right click -> unselect enable load -> right click -> move to group -> other queries

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The screenshot shows the Power BI desktop interface with the following details:

- Queries [8]**: Shows the current state of the data model.
- Data model [6]**: Contains tables for Customers, Locations, Products, Sales_2018, Salespeople, CA Population, and Other Queries.
- Location ID** table (selected): Contains columns: Name, County, State Code, and State.
- Applied Steps** pane on the right shows the steps taken to transform the data, specifically highlighting "Changed Type".

Merge

Select a table and matching columns to create a merged table.

Locations table preview:

Location ID	Name	County	State Code	State	State - Copy.1	State - Copy.2	Type
A100	Anaheim	Orange County	CA	California	CALI	FORNIA	City
A101	Antioch	Contra Costa County	CA	California	CALI	FORNIA	City
A102	Bakersfield	Kern County	CA	California	CALI	FORNIA	City
A103	Berkeley	Alameda County	CA	California	CALI	FORNIA	City
A104	Burbank	Los Angeles County	CA	California	CALI	FORNIA	City
A105	Carlsbad	San Diego County	CA	California	CALI	FORNIA	City
A106	Chula Vista	San Diego County	CA	California	CALI	FORNIA	City
A107	Clovis	Fresno County	CA	California	CALI	FORNIA	City
A108	Concord	Contra Costa County	CA	California	CALI	FORNIA	City
A109	Corona	Riverside County	CA	California	CALI	FORNIA	City
A110	Costa Mesa	Orange County	CA	California	CALI	FORNIA	City
A111	Daly City	San Mateo County	CA	California	CALI	FORNIA	City
A112	Downey	Los Angeles County	CA	California	CALI	FORNIA	City
A113	East Los Angeles	Los Angeles County	CA	California	CALI	FORNIA	City
A114	El Cajon	San Diego County	CA	California	CALI	FORNIA	City
A115	Elk Grove	Sacramento County	CA	California	CALI	FORNIA	City
A116	El Monte	Los Angeles County	CA	California	CALI	FORNIA	City
A117	Eskcondido	San Diego County	CA	California	CALI	FORNIA	City
A118	Fairfield	Solano County	CA	California	CALI	FORNIA	City
A119	Fontana	San Bernardino County	CA	California	CALI	FORNIA	City
A120	Fremont	Alameda County	CA	California	CALI	FORNIA	City

CA Population table preview:

Rank	City	Population
1	Los Angeles	3973278
2	San Diego	1414545
3	San Jose	1029409
4	San Francisco	874784
5	Fresno	526347

Join Kind: Left Outer (all from first, matching from second)

Use fuzzy matching to perform the merge

Fuzzy matching options

OK **Cancel**

Merge

Select a table and matching columns to create a merged table.

Locations table preview:

Location ID	Name	County	State Code	State	State - Copy.1	State - Copy.2	Type
A100	Anaheim	Orange County	CA	California	CALI	FORNIA	City
A101	Antioch	Contra Costa County	CA	California	CALI	FORNIA	City
A102	Bakersfield	Kern County	CA	California	CALI	FORNIA	City
A103	Berkeley	Alameda County	CA	California	CALI	FORNIA	City
A104	Burbank	Los Angeles County	CA	California	CALI	FORNIA	City
A105	Carlsbad	San Diego County	CA	California	CALI	FORNIA	City
A106	Chula Vista	San Diego County	CA	California	CALI	FORNIA	City
A107	Clovis	Fresno County	CA	California	CALI	FORNIA	City
A108	Concord	Contra Costa County	CA	California	CALI	FORNIA	City
A109	Corona	Riverside County	CA	California	CALI	FORNIA	City
A110	Costa Mesa	Orange County	CA	California	CALI	FORNIA	City
A111	Daly City	San Mateo County	CA	California	CALI	FORNIA	City
A112	Downey	Los Angeles County	CA	California	CALI	FORNIA	City
A113	East Los Angeles	Los Angeles County	CA	California	CALI	FORNIA	City
A114	El Cajon	San Diego County	CA	California	CALI	FORNIA	City
A115	Elk Grove	Sacramento County	CA	California	CALI	FORNIA	City
A116	El Monte	Los Angeles County	CA	California	CALI	FORNIA	City
A117	Eskcondido	San Diego County	CA	California	CALI	FORNIA	City
A118	Fairfield	Solano County	CA	California	CALI	FORNIA	City
A119	Fontana	San Bernardino County	CA	California	CALI	FORNIA	City
A120	Fremont	Alameda County	CA	California	CALI	FORNIA	City

CA Population table preview:

Rank	City	Population
1	Los Angeles	3973278
2	San Diego	1414545
3	San Jose	1029409
4	San Francisco	874784
5	Fresno	526347

Join Kind: Left Outer (all from first, matching from second)

Use fuzzy matching to perform the merge

Fuzzy matching options

Estimating matches based on data previews

OK **Cancel**

Queries [8]

Data model [6]

- Customers
- Locations
- Products
- Sales_2018
- Salespeople
- CA Population
- Other Queries [2]

= Table.NestedJoin(#"Changed Type1", {"Name"}, #"CA Population", {"City"}, "CA Population", CA Population

	Latitude	Longitude	Population	Time Zone	CA Population
1	33.83529	-117.9145	350742	America/Los Angeles	Table
2	38.00492	-121.80579	110542	America/Los Angeles	Table
3	35.37329	-119.01871	373640	America/Los Angeles	Table
4	37.87159	-122.27275	120972	America/Los Angeles	Table
5	34.18084	-118.30897	105313	America/Los Angeles	Table
6	33.15809	-117.35059	113453	America/Los Angeles	Table
7	32.64	-117.08417	265757	America/Los Angeles	Table
8	36.82523	-119.70292	104180	America/Los Angeles	Table
9	37.97798	-122.03107	128867	America/Los Angeles	Table
10	33.87529	-117.56644	164226	America/Los Angeles	Table
11	33.64113	-117.91867	113204	America/Los Angeles	Table
12	37.70583	-122.46194	106562	America/Los Angeles	Table
13	33.94001	-118.13257	114219	America/Los Angeles	Table
14	34.0239	-118.17202	127610	America/Los Angeles	Table
15	32.79477	-116.96253	103679	America/Los Angeles	Table
16	38.4088	-121.37162	166913	America/Los Angeles	Table
17	34.06862	-118.02757	116732	America/Los Angeles	Table
18	33.11921	-117.08642	151451	America/Los Angeles	Table
19	38.24936	-122.03997	112970	America/Los Angeles	Table
20	34.09223	-117.43505	207460	America/Los Angeles	Table
21	37.54827	-121.98857	232206	America/Los Angeles	Table
22	36.74773	-119.77237	520052	America/Los Angeles	Table
23	33.87029	-117.92534	140847	America/Los Angeles	Table
24	33.77391	-117.94145	175393	America/Los Angeles	Table

Properties

Name: Locations
All Properties

Applied Steps

- Source
- Navigation
- Changed Type
- Removed Columns
- Duplicated Column
- Reordered Columns
- Uppercased Text
- Split Column by Position
- Changed Type1
- Merged Queries

Query Settings

Properties

Name: Locations
All Properties

Applied Steps

- Source
- Navigation
- Changed Type
- Removed Columns
- Duplicated Column
- Reordered Columns
- Uppercased Text
- Split Column by Position
- Changed Type1
- Merged Queries

Properties

Name: Locations
All Properties

Applied Steps

- Source
- Navigation
- Changed Type
- Removed Columns
- Duplicated Column
- Reordered Columns
- Uppercased Text
- Split Column by Position
- Changed Type1
- Merged Queries

Query Settings

Properties

Name: Locations
All Properties

Applied Steps

- Source
- Navigation
- Changed Type
- Removed Columns
- Duplicated Column
- Reordered Columns
- Uppercased Text
- Split Column by Position
- Changed Type1
- Merged Queries

Queries [8]

Data model [6]

- Customers
- Locations
- Products
- Sales_2018
- Salespeople
- CA Population
- Other Queries [2]

= Table.ExpandTableColumn(#"Merged Queries", "CA Population", {"Population"}, {"CA Population.Population"})

de	Longitude	Population	Time Zone	CA Population.Population
1	33.83529	-117.9145	350742 America/Los Angeles	353085
2	34.05223	-118.24368	3971883 America/Los Angeles	3973278
3	38.00492	-121.80579	110542 America/Los Angeles	111468
4	32.71533	-117.15726	1394928 America/Los Angeles	1414545
5	35.37329	-119.01871	373640 America/Los Angeles	379879
6	37.33939	-121.89496	1026908 America/Los Angeles	1029409
7	37.87159	-122.27275	120972 America/Los Angeles	123065
8	37.775	-122.41944	864816 America/Los Angeles	874784
9	36.74773	-119.77237	520052 America/Los Angeles	526147
10	33.15809	-117.35059	113453 America/Los Angeles	114411
11	38.58157	-121.4944	490712 America/Los Angeles	503482
12	32.64	-117.08417	265757 America/Los Angeles	268779
13	33.76696	-118.18923	474140 America/Los Angeles	462081
14	36.82523	-119.70292	104180 America/Los Angeles	112663
15	37.80437	-122.2708	419267 America/Los Angeles	422575
16	37.97798	-122.03107	128667 America/Los Angeles	129227
17	33.87529	-117.56644	164226 America/Los Angeles	168112
18	33.64113	-117.91867	113204 America/Los Angeles	112958
19	33.74557	-117.86783	335400 America/Los Angeles	332610
20	37.70583	-122.46194	106562 America/Los Angeles	107197
21	33.95333	-117.39611	322424 America/Los Angeles	327569
22	33.94001	-118.13257	114219 America/Los Angeles	111263
23	37.9577	-121.29078	305658 America/Los Angeles	311103
24	34.0239	-118.17202	127610 America/Los Angeles	120504
25				

Query Settings

Properties

- Name: Locations
- All Properties

Applied Steps

- Source
- Navigation
- Changed Type
- Removed Columns
- Duplicated Column
- Reordered Columns
- Uppercased Text
- Split Column by Position
- Changed Type1
- Merged Queries
- Expanded CA Population

Queries [8]

Data model [6]

- Customers
- Locations
- Products
- Sales_2018
- Salespeople
- CA Population
- Other Queries [2]

= Table.RenameColumns(#"Expanded CA Population", {"CA Population.Population", "CA Population"})

Latitude	Longitude	Population	Time Zone	CA Population
1	33.83529	-117.9145	350742 America/Los Angeles	353085
2	34.05223	-118.24368	3971883 America/Los Angeles	3973278
3	38.00492	-121.80579	110542 America/Los Angeles	111468
4	32.71533	-117.15726	1394928 America/Los Angeles	1414545
5	35.37329	-119.01871	373640 America/Los Angeles	379879
6	37.33939	-121.89496	1026908 America/Los Angeles	1029409
7	37.87159	-122.27275	120972 America/Los Angeles	123065
8	37.775	-122.41944	864816 America/Los Angeles	874784
9	36.74773	-119.77237	520052 America/Los Angeles	526147
10	33.15809	-117.35059	113453 America/Los Angeles	114411
11	38.58157	-121.4944	490712 America/Los Angeles	503482
12	32.64	-117.08417	265757 America/Los Angeles	268779
13	33.76696	-118.18923	474140 America/Los Angeles	462081
14	36.82523	-119.70292	104180 America/Los Angeles	112663
15	37.80437	-122.2708	419267 America/Los Angeles	422575
16	37.97798	-122.03107	128667 America/Los Angeles	129227
17	33.87529	-117.56644	164226 America/Los Angeles	168112
18	33.64113	-117.91867	113204 America/Los Angeles	112958
19	33.74557	-117.86783	335400 America/Los Angeles	332610
20	37.70583	-122.46194	106562 America/Los Angeles	107197
21	33.95333	-117.39611	322424 America/Los Angeles	327569
22	33.94001	-118.13257	114219 America/Los Angeles	111263
23	37.9577	-121.29078	305658 America/Los Angeles	311103
24	34.0239	-118.17202	127610 America/Los Angeles	120504
25				

Query Settings

Properties

- Name: Locations
- All Properties

Applied Steps

- Source
- Navigation
- Changed Type
- Removed Columns
- Duplicated Column
- Reordered Columns
- Uppercased Text
- Split Column by Position
- Changed Type1
- Merged Queries
- Expanded CA Population
- Renamed Columns

Queries [8]

Data model [6]

- Customers
- Locations
- Products
- Sales_2018
- Salespeople
- CA Population
- Other Queries [2]

= Table.TransformColumnTypes(#"Promoted Headers", {"Rank", Int64.Type}, {"City", type text}, {"Population", type number})

Rank	City	Population
1	Los Angeles	3973278
2	San Diego	1414545
3	San Jose	1029409
4	San Francisco	874784
5	Fresno	526147
6	Sacramento	503482
7	Long Beach	462081
8	Oakland	422575
9	Bakersfield	379879
10	Anaheim	353085
11	Santa Ana	332610
12	Riverside	327569
13	Stockton	311103
14	Irvine	272694
15	Chula Vista	268779
16	Redding	234829
17	Modesto	216784
18	Merced	214485
19	Fontana	212704
20	Santa Clarita	212519
21	Moreno Valley	208751
22	Oxnard	207722
23	Huntington Beach	199778
24	Glendale	199357
25	Santa Rosa	198201

Query Settings

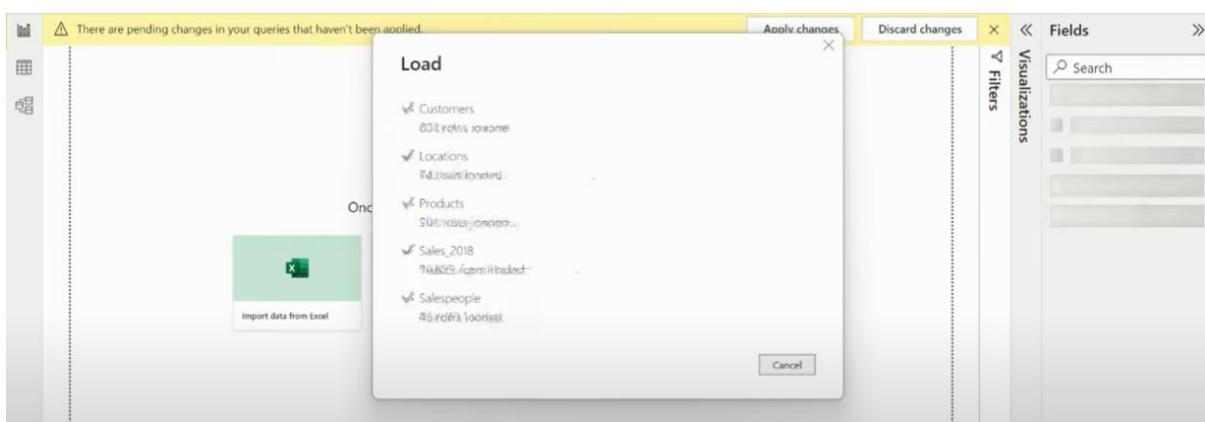
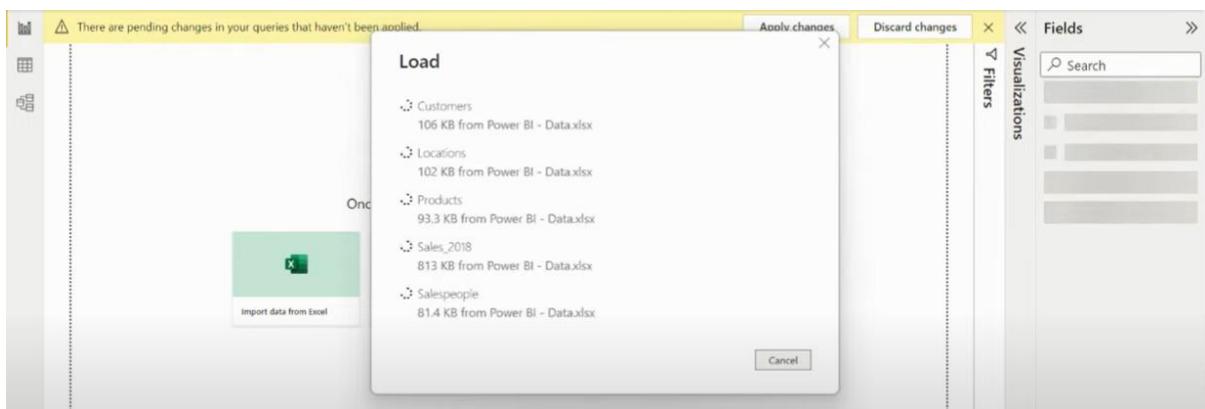
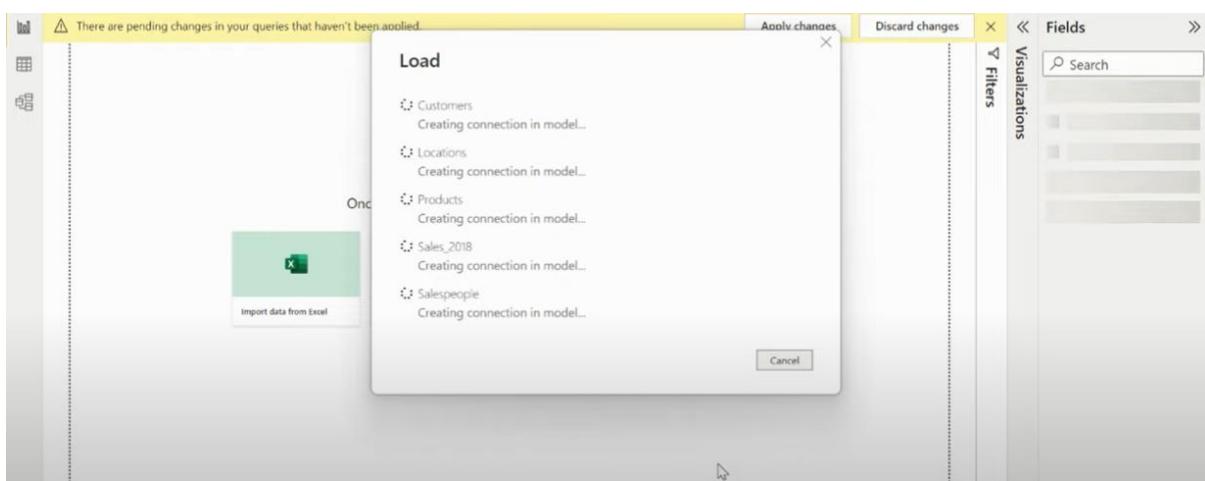
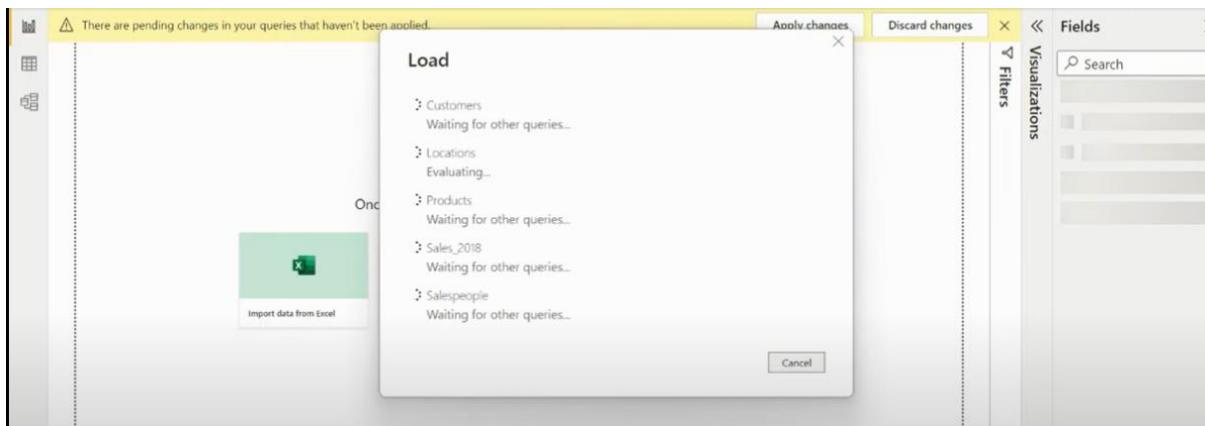
Properties

- Name: CA Population
- All Properties

Applied Steps

- Source
- Extracted Table From Html
- Promoted Headers
- Changed Type

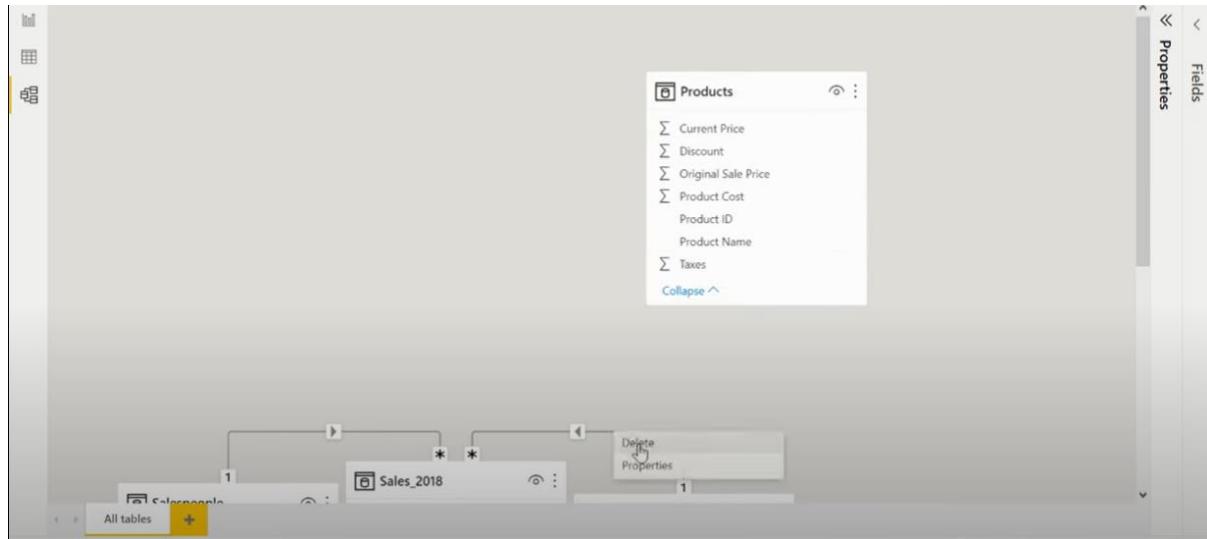
Once transformations are done , click on Close & apply then data will be loaded into Power BI



Data Modelling

Power BI will create the relations between the tables automatically.

Select the relation line -> right click -> delete



Use separate time based table to use in time intelligence functions

Go to Data section -> table tools -> new table -> rename as dates -> use **calenderauto()** function to extract dates as new table -< new date table will be created

The screenshot shows the Power BI Data Model view. A new table named 'Customers' is being created. The 'Structure' tab is selected, showing a table with columns 'Customer ID' and 'Customer Name'. The data in the table is as follows:

Customer ID	Customer Name
C1000	Jesse Evans
C1001	Victor Ramos
C1002	Mark Montgomery
C1003	Dennis Morris
C1004	Gregory Simmons
C1005	Jeremy Vasquez
C1006	Anthony Simpson
C1007	Ernest Rivera
C1008	Victor Martinez
C1009	Bobby Burton
C1010	Bruce Porter
C1011	Nicholas Simmons
C1012	Bruce Butler
C1013	Raymond Alexander
C1014	Jason Duncan
C1015	Philip Peters
C1016	James Castillo
C1017	Benjamin Kim
C1018	Shawn Long
C1019	Steve Diaz

The ribbon at the top shows 'Table Tools' and 'Calculated Columns'. The 'Fields' pane on the right lists other tables: Customers, Locations, Products, Sales_2018, and Salespeople. A search bar is also present in the Fields pane.

The screenshot shows the Power BI Data Model view. On the left, there is a table named "Dates" with 17 rows, each representing a date from January 1, 2018, to January 17, 2018. On the right, there is a "Fields" pane containing a list of tables: Customers, Dates, Locations, Products, Sales_2018, and Salespeople. The "Dates" table is currently selected.

Place the lookup tables on the top and fact table below them

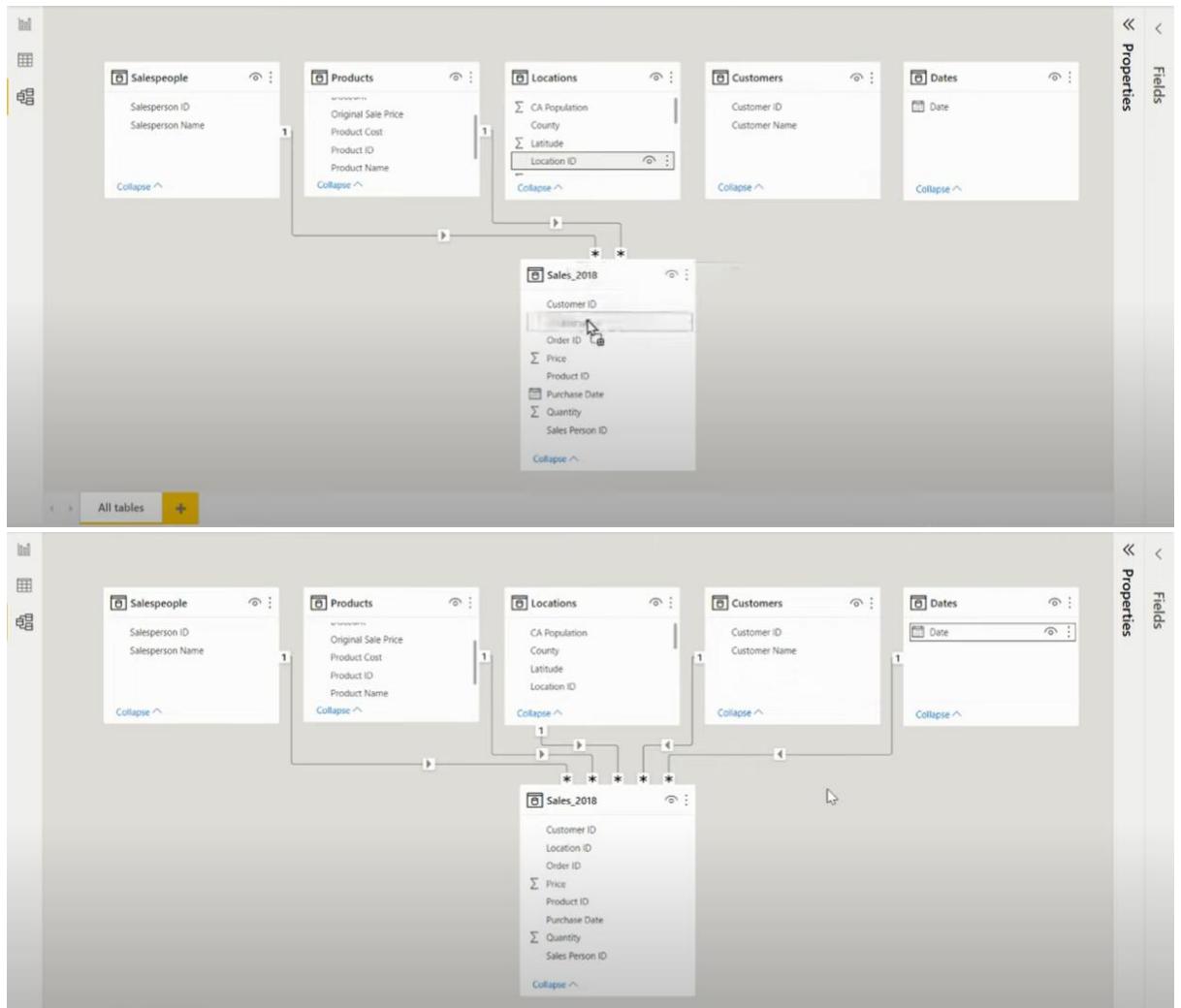
Lookup table (data table) – holds the primary keys

Fact table – holds the transactions of the lookup tables

The screenshot shows the Power BI Data Model view. There are five tables displayed: Salespeople, Products, Locations, Customers, and Dates. The Dates table is highlighted with a yellow border. Below these tables is the Sales_2018 fact table. A Properties pane is visible on the right side of the interface.

Create relationships between 2 tables

1. Drag column name from lookup table and drop it on fact table or
2. Go to manage relationships and create it



Creating DAX Expressions

New measure v/s new column

New measure – only logic will be computed in visualization

New column – will be created in the data (shall be created only if it is important)

The screenshot shows the Power BI Desktop interface. On the right, the 'Fields' pane is open, displaying a list of fields categorized under 'Sales_2018'. The 'Quantity Sold' measure is selected. The report canvas in the center shows a small icon representing a chart or visualization.

- Fields**
- Visualizations**
- Filters**
- Search**
- Sales_2018** (selected)
 - Customer ID
 - Customer Name
 - Measure
 - Dates
 - Locations
 - Products
 - Sales_2018
 - Customer ID
 - Location ID
 - Order ID
 - \sum Price
 - Product ID
 - Purchase Date
 - \sum Quantity
 - Sales Person ID
 - Salespeople

To move new created measures into a group

Go to Home ->enter data -> name the table (key measures) -> click load -> new group is created

The screenshot shows the Power BI Desktop interface with a table visual on the left and the Fields pane on the right. A red box highlights the 'Key Measures' group in the Fields pane.

Name	Key Measures
Aaron Carr	24 24
Aaron Cruz	26 26
Aaron Day	16 16
Aaron Johnson	16 16
Aaron Miller	20 20
Aaron Mills	20 20
Aaron Moreno	26 26
Aaron Tucker	26 26
Adam Alexander	21 21
Adam Bailey	32 32
Adam Duncan	30 30
Adam Hernandez	21 21
Adam Hunter	17 17
Adam Jenkins	38 38
Adam McCoy	22 22
Adam McDonald	18 18
Adam Myers	24 24
Adam Riley	26 26
Adam Thompson	29 29
Adam Wheeler	18 18
Adam White	21 21
Alan Gomez	19 19
Alan Green	31 31
Alan Miller	38 38
Alan Parker	36 36
Alan Perry	38 38
Alan Scott	43 43
Total	21078 21078

Storage mode: Import
Data refreshed: 8/14/2022, 9:10:59 PM

- Fields**
- Visualizations**
- Filters**
- Search**
- Key Measures** (highlighted)
- Dates**
- Locations**
- Products**
- Sales_2018**
- Salespeople**

Select new created measure -> measure tools -> home table -> select the group

The screenshot shows the Power BI Measure Tools dialog. The 'Name' field contains 'Quantity Sold'. The 'Home table' dropdown is set to 'Customers'. The 'Format' dropdown is set to 'Whole number'. The 'Data category' dropdown is set to 'Uncategorized'. The 'Calculations' section shows the formula: `Quantity Sold = SUM(Sales_2018[Quantity])`. The 'Fields' pane on the right lists various entities: Customers, Key Measures, Locations, Products, Sales_2018, and Salespeople. The 'Quantity Sold' field is selected under the 'Key Measures' group.

This screenshot is similar to the previous one, but the 'Quantity Sold' measure is now selected in the 'Fields' pane. A checkmark is visible next to the measure name in the pane. The rest of the interface remains the same, showing the measure definition and the list of entities.

More DAX expressions

The screenshot shows the Power BI Data Editor interface. In the top ribbon, the 'Measure tools' tab is selected. A new measure named 'Total Sales' has been created, based on the expression `SUMX(Sales_2018,Sales_2018[Quantity]*Sales_2018[Price])`. The Fields pane on the right lists the 'Key Measures' group, which includes 'Quantity Sold' and 'Total Sales'. The main area displays a table of sales data for 20 salespeople, with the total sales value being 21078.

To change the currency

Select measure -> measure tools -> formatting group -> select the currency type

In the same way, measure can be converted into percentage and decimal places can be specified

This screenshot shows the Power BI Data Editor with the 'Format' tab selected in the ribbon. The 'Total Sales' measure is now formatted as a whole number. The Fields pane on the right shows the 'Key Measures' group, with 'Quantity Sold' and 'Total Sales' highlighted. The main area displays the same sales data table as before.

Screenshot of Power BI Data Editor showing a table named "Sales_2018". The table has columns: Name, Sales ID, Order ID, and Price. A measure named "Total Transactions" is defined as COUNTROWS(Sales_2018). The table contains 21078 rows.

Name	Sales ID	Order ID	Price
Aaron Carr	24	24	\$26.846
Aaron Cruz	26	26	\$32.099
Aaron Day	16	16	\$22.123
Aaron Johnson	16	16	\$18.038
Aaron Miller	20	20	\$28.716
Aaron Mills	20	20	\$17.891
Aaron Moreno	26	26	\$27.996
Aaron Tucker	26	26	\$38.158
Adam Alexander	21	21	\$32.187
Adam Bailey	32	32	\$48.930
Adam Duncan	30	30	\$34.143
Adam Hernandez	21	21	\$18.793
Adam Hunter	17	17	\$21.762
Adam Jenkins	38	38	\$50.294
Adam Mccoy	22	22	\$31.402
Adam McDonald	18	18	\$27.727
Adam Myers	24	24	\$30.997
Adam Riley	26	26	\$45.066
Adam Thompson	29	29	\$39.779
Adam Wheeler	18	18	\$10.411
Adam White	21	21	\$18.967
Alan Gomez	19	19	\$26.129
Alan Green	31	31	\$36.911
Alan Miller	38	38	\$51.804
Alan Parker	36	36	\$39.137
Alan Perry	38	38	\$44.752
Alan Scott	43	43	\$52.058
Alan Smith	36	36	\$34.043
Total	21078	21078	\$2,56.61.209

To create DAX expression , two columns located in different tables

Quantity coming from sales table and product cost coming from products table

Screenshot of Power BI Data Editor showing a table named "Sales_2018". The table has columns: Name, Sales ID, Order ID, and Price. A measure named "Total Costs" is defined as SUMX(Sales_2018, Sales_2018[Quantity] * Products[Price]). The table contains 21078 rows.

Name	Sales ID	Order ID	Price
Aaron Carr	\$26.846	11	24
Aaron Cruz	\$32.099	16	26
Aaron Day	\$22.123	10	16
Aaron Johnson	\$18.038	9	16
Aaron Miller	\$28.716	11	20
Aaron Mills	\$17.891	13	20
Aaron Moreno	\$27.996	15	26
Aaron Tucker	\$38.158	16	26
Adam Alexander	\$32.187	11	21
Adam Bailey	\$48.930	19	32
Adam Duncan	\$34.143	17	30
Adam Hernandez	\$18.793	13	21
Adam Hunter	\$21.762	9	17
Adam Jenkins	\$50.294	19	38
Adam Mccoy	\$31.402	12	22
Adam McDonald	\$27.727	11	18
Adam Myers	\$30.997	11	24
Adam Riley	\$45.066	15	26
Adam Thompson	\$39.779	14	29
Adam Wheeler	\$18.411	9	16
Adam White	\$18.967	11	21
Alan Gomez	\$26.129	9	19
Alan Green	\$36.911	13	31
Alan Miller	\$51.804	23	38
Alan Parker	\$39.137	18	36
Alan Perry	\$44.752	18	38
Alan Scott	\$52.058	22	43
Alan Smith	\$34.043	17	36
Total	\$2,56.61.209	1089	21078

1 Total Costs = SUMX(Sales_2018,Sales_2018[Quantity] * RELATED(Products[Product Cost]))

Too few arguments were passed to the RELATED function. The minimum argument count for the function is 1.

Customer Name	Total Sales	Quantity Sold	Total Profits	Total Costs	Total Transactions
Aaron Carr	\$20,946	11	-\$2,094	\$2,099	26
Aaron Cruz	\$32,099	16	-\$3,209	\$2,099	26
Aaron Day	\$22,123	10	-\$2,212	\$2,099	16
Aaron Johnson	\$18,038	9	-\$1,804	\$2,099	16
Aaron Miller	\$28,716	11	-\$2,872	\$2,099	20
Aaron Mills	\$17,891	13	-\$1,789	\$2,099	20
Aaron Moreno	\$27,996	15	-\$2,799	\$2,099	26
Aaron Tucker	\$38,158	16	-\$3,816	\$2,099	26
Adam Alexander	\$32,187	11	-\$3,219	\$2,099	21
Adam Bailey	\$48,930	19	-\$4,893	\$2,099	32
Adam Duncan	\$34,143	17	-\$3,414	\$2,099	30
Adam Hernandez	\$18,793	13	-\$1,879	\$2,099	21
Adam Hunter	\$21,762	9	-\$2,176	\$2,099	17
Adam Jenkins	\$50,294	19	-\$5,029	\$2,099	38
Adam McCoy	\$31,402	12	-\$3,140	\$2,099	22
Adam McDonald	\$27,727	11	-\$2,773	\$2,099	18
Adam Myers	\$30,997	11	-\$3,099	\$2,099	24
Adam Riley	\$45,066	15	-\$4,507	\$2,099	26
Adam Thompson	\$39,779	14	-\$3,978	\$2,099	29
Adam Wheeler	\$18,411	9	-\$1,841	\$2,099	18
Adam White	\$18,967	11	-\$1,897	\$2,099	21
Alan Gomez	\$26,129	9	-\$2,613	\$2,099	19
Alan Green	\$36,911	13	-\$3,691	\$2,099	31
Alan Miller	\$51,804	23	-\$5,180	\$2,099	38
Alan Parker	\$39,137	18	-\$3,914	\$2,099	36
Alan Perry	\$44,752	18	-\$4,475	\$2,099	38
Alan Scott	\$52,058	22	-\$5,206	\$2,099	43
Alan Sims	\$34,741	17	-\$3,474	\$2,099	36
Total	\$2,56,61,209	10889	-\$2,56,61,209	\$2,099	21078

Using 2 measures to create 3rd measure

1 Total Profits = [Total Sales] - [Total Costs]

Customer Name	Total Sales	Total Costs	Total Profits
Aaron Carr	\$26,846	\$17,146	\$9,700
Aaron Cruz	\$32,099	\$20,715	\$11,384
Aaron Day	\$22,123	\$16,046	\$6,077
Aaron Johnson	\$18,038	\$11,812	\$6,226
Aaron Miller	\$28,716	\$19,256	\$9,460
Aaron Mills	\$17,891	\$13,519	\$4,372
Aaron Moreno	\$27,996	\$15,594	\$12,402
Aaron Tucker	\$38,158	\$26,291	\$11,867
Adam Alexander	\$32,187	\$23,439	\$8,748
Adam Bailey	\$48,930	\$33,488	\$15,452
Adam Duncan	\$34,143	\$24,473	\$9,669
Adam Hernandez	\$18,793	\$12,056	\$6,737
Adam Hunter	\$21,762	\$15,122	\$6,640
Adam Jenkins	\$50,294	\$26,954	\$13,340
Adam McCoy	\$31,402	\$21,636	\$9,766
Adam McDonald	\$27,727	\$19,470	\$8,257
Adam Myers	\$30,997	\$23,027	\$7,970
Adam Riley	\$45,066	\$34,057	\$10,999
Adam Thompson	\$39,779	\$24,656	\$15,123
Adam Wheeler	\$18,411	\$10,419	\$8,392
Adam White	\$18,967	\$12,625	\$6,342
Alan Gomez	\$26,129	\$16,208	\$9,921
Alan Green	\$36,911	\$23,836	\$13,075
Alan Miller	\$51,804	\$36,701	\$15,103
Alan Parker	\$39,137	\$25,094	\$14,043
Alan Perry	\$44,752	\$32,093	\$12,659
Alan Scott	\$52,058	\$35,767	\$16,291
Alan Sims	\$34,741	\$14,003	\$20,738
Total	\$2,56,61,209	\$1,73,17,316	\$1,83,493

1 Profit Margin = DIVIDE([Total Profits],[Total Sales])

Safe Divide function with ability to handle divide by zero case.

Customer Name	Total Sales	Total Profits	Profit Margin
Alan Carr	\$26,846	\$9,700	36%
Alan Thomas	\$32,099	\$11,384	35%
Albert Cunningham	\$22,123	\$6,077	27%
Albert Jacobs	\$18,038	\$6,226	34%
Albert Kennedy	\$28,716	\$9,460	33%
Albert King	\$17,891	\$4,372	25%
Albert Robinson	\$34,143	\$9,669	28%
Albert Young	\$18,793	\$6,737	36%
Andrew Burns	\$21,762	\$6,640	31%
Andrew Burns	\$36,911	\$13,075	36%
Andrew Butler	\$50,294	\$13,340	27%
Andrew Fernandez	\$31,402	\$9,766	31%
Andrew Graham	\$27,727	\$8,257	30%
Andrew Hansen	\$24,473	\$8,748	36%
Andrew James	\$32,099	\$11,384	35%
Andrew Martin	\$39,779	\$15,123	38%
Andrew Peters	\$18,411	\$8,392	48%
Andrew Reynolds	\$52,058	\$16,291	31%
Andrew Robinson	\$34,741	\$20,738	59%
Anthony Banks	\$8,721	\$2,248	26%
Anthony Berry	\$10,769	\$3,969	37%
Anthony Chapman	\$10,804	\$3,501	33%
Anthony Davis	\$10,849	\$3,579	33%
Anthony Little	\$9,381	\$1,696	18%
Anthony Parker	\$18,931	\$4,087	22%
Anthony Simpson	\$4,170	\$1,031	25%
Anthony Torres	\$10,576	\$3,017	29%
Anthony Turner	\$16,477	\$4,706	29%
Antonio Cooper	\$3,611	\$1,129	31%
Total	\$83,493	\$2,56,61,209	\$1,73,17,316

To remove data hierarchy

click on values dropdown -> unclick date hierarchy -> and click hierarchy

The screenshot shows the Power BI interface with a table visual on the left and a Fields pane on the right. In the Fields pane, under the 'Values' section, the 'Date' dropdown is open. A red circle highlights the 'Date' dropdown menu, which includes options like 'Remove field', 'Move', 'New quick measure', 'Show items with no data', and 'Drill through'. The 'Drill through' option is checked.

The screenshot shows the Power BI interface with a table visual on the left and a Fields pane on the right. In the Fields pane, under the 'Values' section, the 'Date' dropdown is open. The 'Drill through' option is unchecked. The 'Cross-report' and 'Keep all filters' options are also visible.

To change datatype of visual

Select visual -> column tools -> change datatype from structure group -> date format from formatting group

The screenshot shows the Power BI interface with a table visual on the left and a Fields pane on the right. In the Fields pane, under the 'Values' section, the 'Date' dropdown is open. The 'Drill through' option is unchecked. The 'Cross-report' and 'Keep all filters' options are also visible. The 'Format' dropdown in the ribbon shows '14-03-2001 13:30...'. The 'Column Tools' ribbon tab is selected, and the 'Data type' dropdown in the ribbon shows 'Date/time'.

Time Intelligence Calculations

Customer Name	Total Profits	Total Sales	Total Costs	Total Transactions	Quantity Sold	Profit Margin
Alan Sims	\$9,051	\$24,043	\$14,992	17	26	37.65%
Alan Thomas	\$17,140	\$52,423	\$35,278	17	35	32.71%
Albert Cunningham	\$34,110	\$84,945	\$50,635	17	38	31.39%
Albert Jacobs	\$10,981	\$15,470	\$4,409	10	38	30.96%
Albert Kennedy	\$10,227	\$33,240	\$23,013	11	25	30.77%
Albert Rice	\$15,225	\$48,671	\$11,436	14	34	32.64%
Albert Robinson	\$10,753	\$25,545	\$14,792	13	30	30.25%
Albert Young	\$3,556	\$14,303	\$10,827	11	15	24.72%
Andriene Adams	\$7,661	\$25,420	\$17,759	12	20	30.14%
Andrew Burns	\$18,431	\$51,204	\$15,304	20	38	34.25%
Andrew Collins	\$18,131	\$51,000	\$23,107	12	24	33.78%
Andrew Fernandez	\$5,701	\$16,527	\$10,736	7	15	35.04%
Andrew Graham	\$9,347	\$34,635	\$25,398	18	32	26.99%
Andrew Hansen	\$9,823	\$36,823	\$10,000	13	23	34.09%
Andrew James	\$7,643	\$23,815	\$16,172	12	24	32.09%
Andrew Martin	\$13,314	\$40,179	\$26,865	18	42	33.14%
Andrew Peters	\$15,363	\$41,127	\$25,762	18	33	37.36%
Andrew Reynolds	\$15,007	\$41,846	\$26,839	12	30	35.86%
Andrew Robinson	\$7,076	\$20,602	\$13,526	10	16	34.35%
Anthony Banks	\$8,721	\$20,869	\$22,148	14	22	28.25%
Anthony Betty	\$10,760	\$35,965	\$25,200	10	21	29.88%
Anthony Chapman	\$10,004	\$30,450	\$19,501	14	24	31.65%
Anthony Fisher	\$7,844	\$23,721	\$14,877	9	26	34.52%
Anthony Little	\$9,361	\$31,696	\$23,335	9	20	29.53%
Anthony Parker	\$18,591	\$48,087	\$20,496	13	32	38.66%
Anthony Simpson	\$4,170	\$18,031	\$13,861	10	15	23.13%
Anthony Tones	\$10,576	\$31,017	\$20,441	14	23	34.10%
Anthony Turner	\$16,477	\$47,706	\$31,229	15	34	34.54%
Antonio Cooper	\$3,611	\$11,129	\$7,518	10	13	32.45%
Antonio Diaz	\$13,711	\$33,451	\$19,740	13	31	40.95%
Total	\$83,43,089	\$2,56,61,209	\$1,73,17,316	10889	21078	32.52%

The screenshot shows the Microsoft Power BI desktop interface. At the top, the ribbon includes File, Home, Insert, Modeling, View, Help, Format, Data / Drill, Table tools, and Measure tools. The main area displays a calculated measure named "1 LY Sales = CALCULATE([Total Sales], SAMEPERIODLASTYEAR(Dates[Date]))". Below this, a table visual shows sales data from January 2018, with a total of \$2,56,61,209. To the right, the Fields pane lists measures like Profit Margin, Quantity Sold, Total Costs, Total Profits, Total Sales, and Total Transactions. The Visualizations pane offers various chart and report templates. A sidebar on the right contains sections for Customers, Dates, Locations, Products, Sales_2018, Salespeople, and Time Intelligence.

The screenshot shows a Power BI desktop interface. On the left is a table visualization titled "Customer Name" with columns: Customer Name, Total Profits, Total Sales, Total Costs, Total Transactions, Quantity Sold, and Profit Margin. The data includes rows for various customers like Aaron Cruz, Aaron Day, etc., with their respective sales figures. On the right is the "Fields" pane, which contains sections for "Key Measures", "Visualizations", "Filters", and "Values". The "Key Measures" section lists Profit Margin, Quantity Sold, Total Costs, Total Profits, Total Sales, and Total Transactions. The "Visualizations" section shows icons for different chart types. The "Filters" section has a search bar and a list of filters applied. The "Values" section shows the current filters applied: Date, Total Sales, LY Sales, and Date Hierarchy.

To Calculate Cumulative Sales

This screenshot shows the same Power BI desktop environment as above, but with a calculated column added to the table. The calculated column is named "Cumulative Sales" and uses the DAX formula: `CUMULATIVE SALES = CALCULATE(SUM(TOTAL_SALES), FILTER(ALLSELECTED(Dates), Dates[Date] <= MAX(Dates[Date])))`. This formula filters the total sales table by dates up to the current date and sums them. The resulting table shows the cumulative total for each customer. The "Fields" pane remains largely the same, with the addition of the newly created "Cumulative Sales" measure under the "Key Measures" section.

Cumulative Sales :

It will calculate cumulative sales based on Total sales DAX function

Filter function will filtered out the data

Allselected function will ignore all the applied filters

Filter condition : current date <= max date

1 Cumulative Sales = CALCULATE([Total Sales],
FILTER(ALLSELECTED(Dates),
Dates[Date] <= MAX(Dates[Date])))

	Date	Total Sales	LY Sales
Aaron Cruz	26-12-2019	\$24,187	\$44,831
Aaron Day	27-12-2019	\$45,914	\$25,966
Aaron Miller	28-12-2019	\$28,064	\$27,636
Aaron Moreno	29-12-2019	\$33,906	\$29,084
Aaron Tucker	30-12-2019	\$35,183	\$46,534
Adam Alexander	01-01-2020	\$10,641	\$20,220
Adam Bailey	02-01-2020	\$9,921	\$26,501
Adam Duncan	03-01-2020	\$4,974	\$33,201
Adam Fierberg	04-01-2020	\$2,105	\$32,301
Adam Hunter	05-01-2020	\$1,700	\$32,301
Adam Jenkins	06-01-2020	\$4,456	\$32,301
Adam McCoy	07-01-2020	\$3,737	\$32,301
Adam McDonald	08-01-2020	\$5,755	\$32,301
Adam Myers	09-01-2020	\$3,826	\$32,301
Adam Riley	10-01-2020	\$8,566	\$32,301
Adam Thompson	11-01-2020	\$8,604	\$32,301
Adam Wheeler	12-01-2020	\$8,609	\$32,301
Adam White	13-01-2020	\$6,073	\$32,301
Alan Gomez	14-01-2020	\$3,405	\$32,301
Alan Green	15-01-2020	\$11,304	\$32,301
Alan Miller	16-01-2020	\$9,161	\$32,301
Alan Parker	17-01-2020	\$12,650	\$32,301
Alan Perry	18-01-2020	\$10,955	\$32,301
Alan Scott	19-01-2020	\$8,455	\$32,301
Alan Sims	20-01-2020	\$12,175	\$32,301
Alan Thomas	21-01-2020	\$5,596	\$32,301
Albert Cunningham	22-01-2020	\$6,955	\$32,301
Alkaan Javvne	23-01-2020	\$5,703	\$32,301
Total		\$15,557.94	\$97,01,923
		4112	7989
		32.53%	

Visualizations Fields

Build visual

Search: Search

Key Measures

- Profit Margin
- Quantity Sold
- Total Costs
- Total Profits
- Total Sales
- Total Transactions

Customers

Dates

Locations

Products

Sales_2018

Salespeople

Time Intelligence

Column1

LY Sales

Measure

Report Building

Change the label contents

Select visual -> format visual -> visual -> options -> label contents -> select option

Visualizations Format visual

Search: county

Visual General ...

Legend Off

Slices

Detail labels On

Options

Position Outside

Overflow text Off

Label contents Data value, percent of

Values

Visualizations Format visual

Search: county

Visual General ...

Legend Off

Slices

Category

Data value

Percent of total

Category, data value

Category, percent of total

Data value, percent of total

All detail labels

Data value, percent of ^

Values

Home -> text box (for report heading)

The screenshot shows a donut chart titled "Total Sales by County" with various county names and their sales values. The chart is displayed in the main workspace. To the right, the "Visualizations" pane is open, showing the "Build visual" section with a donut icon selected. The "Fields" pane is also visible, with "county" selected in the search bar and "County" listed under the "Locations" category.

Select visual -> format visual -> visual -> data labels -> turn on

The screenshot shows a dashboard with two visualizations: a donut chart and a bar chart. The bar chart is titled "Total Sales by Customer Name" and displays sales for various customers. To the right, the "Format visual" pane is open for the bar chart, specifically the "Data labels" section. The "Data labels" toggle switch is turned on, and the "Position" dropdown is set to "Auto".

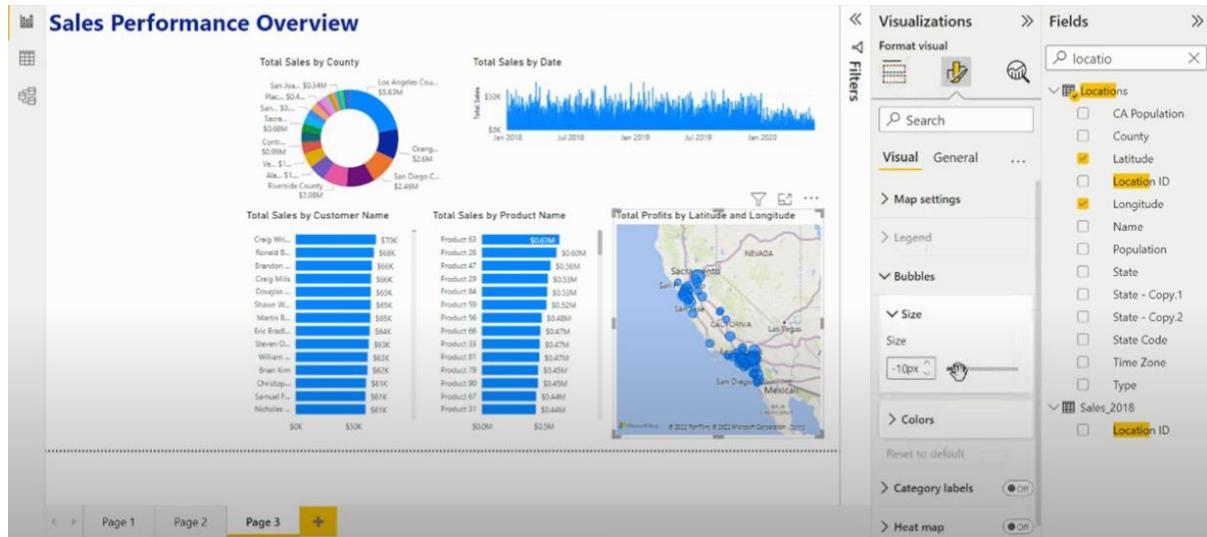
To show map as visual

The screenshot shows a dashboard with three visualizations: a donut chart, a bar chart, and a map visualization. The map visualization is titled "Total Sales by Product Name" and shows sales distribution across different products. To the right, the "Visualizations" pane is open, showing the "Build visual" section with a map icon selected. The "Fields" pane is also visible, with "produ" selected in the search bar and "Product ID" listed under the "Products" category.

Use latitude and longitude for location

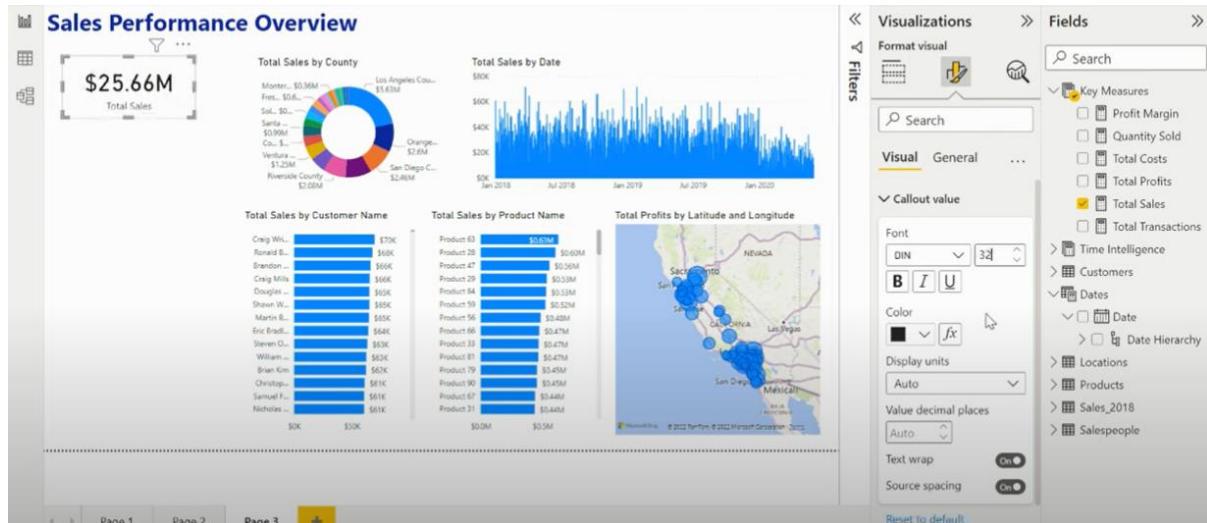
To increase the bubble size

Select visual -> format visual -> visual -> bubbles -> change size



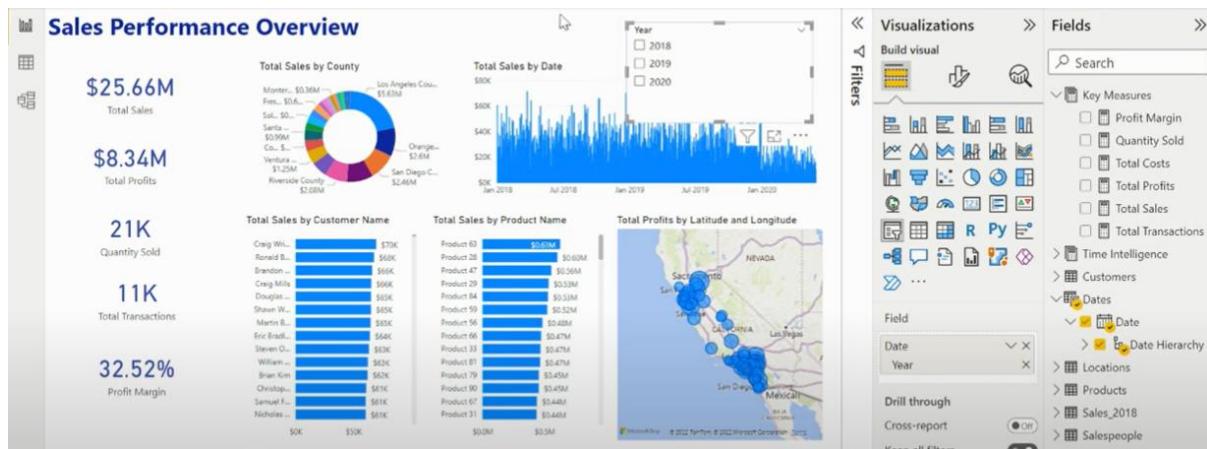
To format the cards

Select visual -> format visual -> visual -> callout value-> change size/colour/font

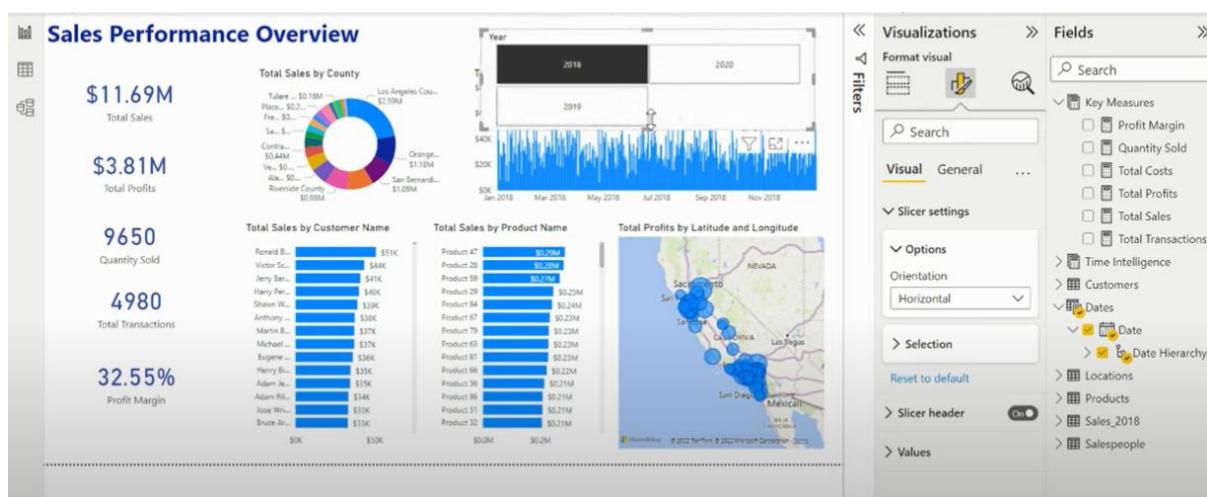
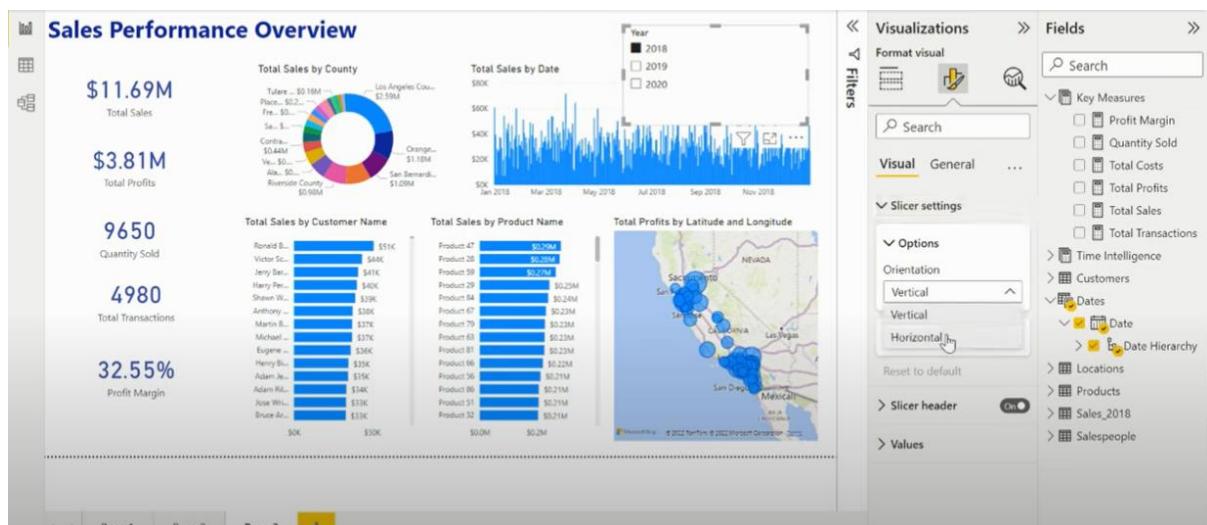


Insert slicer

Select date column -> select slicer -> date hierarchy -> keep year only

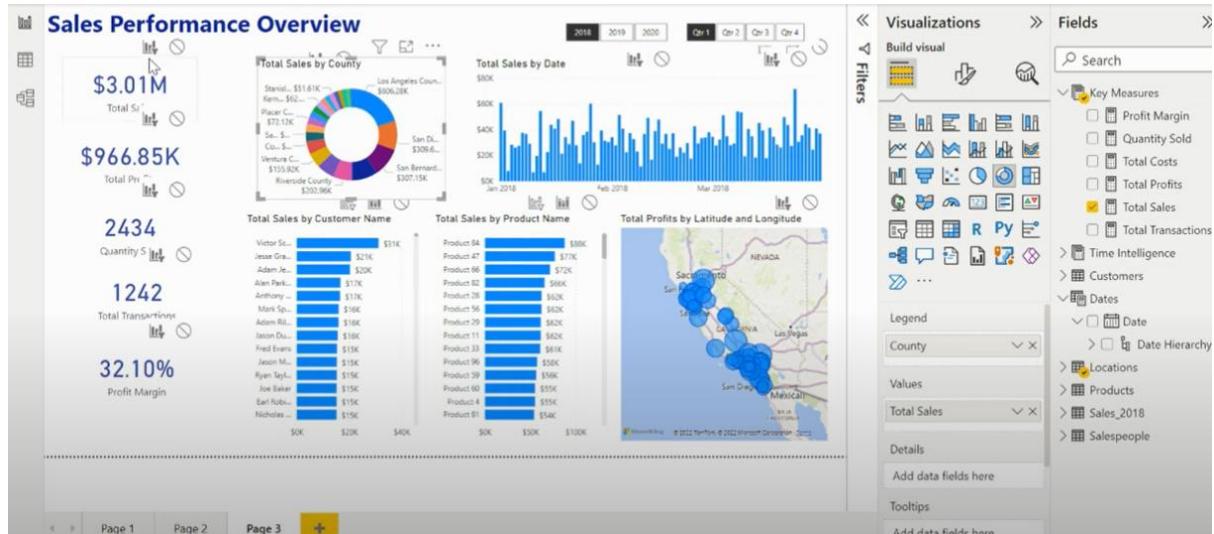


Select visual -> format visual -> visual -> slicer settings->options -> orientation -> horizontal -> adjust the slicer -> turn off slicer header



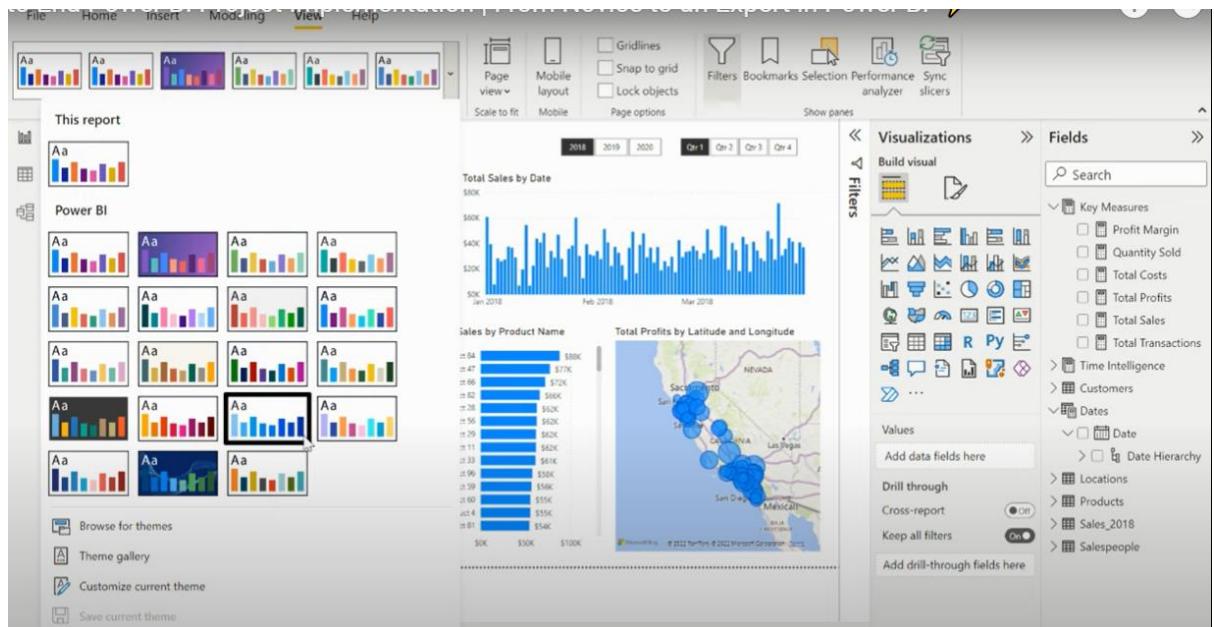
To format/highlight data as per selection in primary visual

Select primary visual -> format -> edit interactions -> select format/highlight for every other visual



To change theme

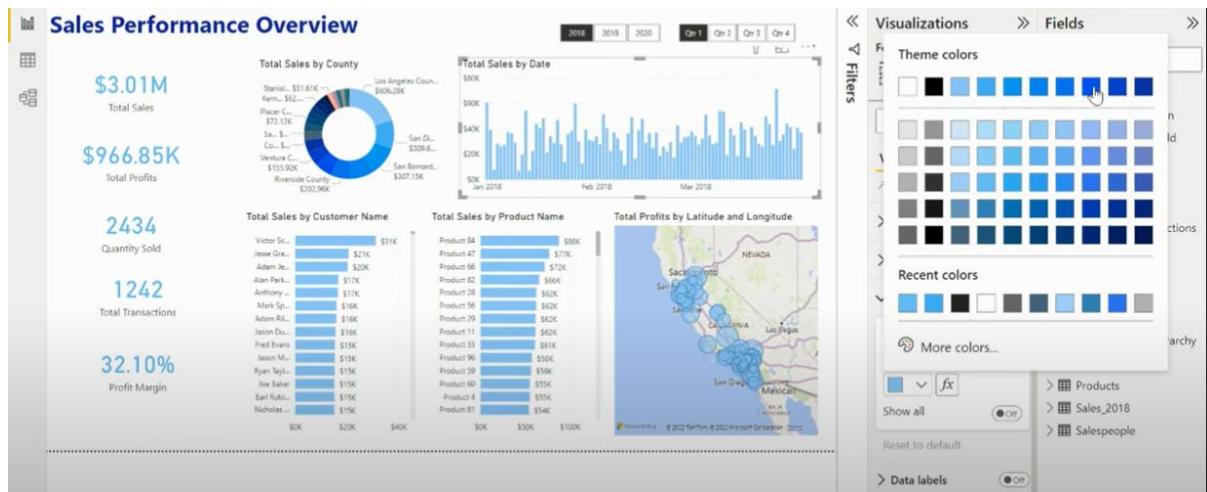
View -> themes group -> select theme



To change colour of visuals

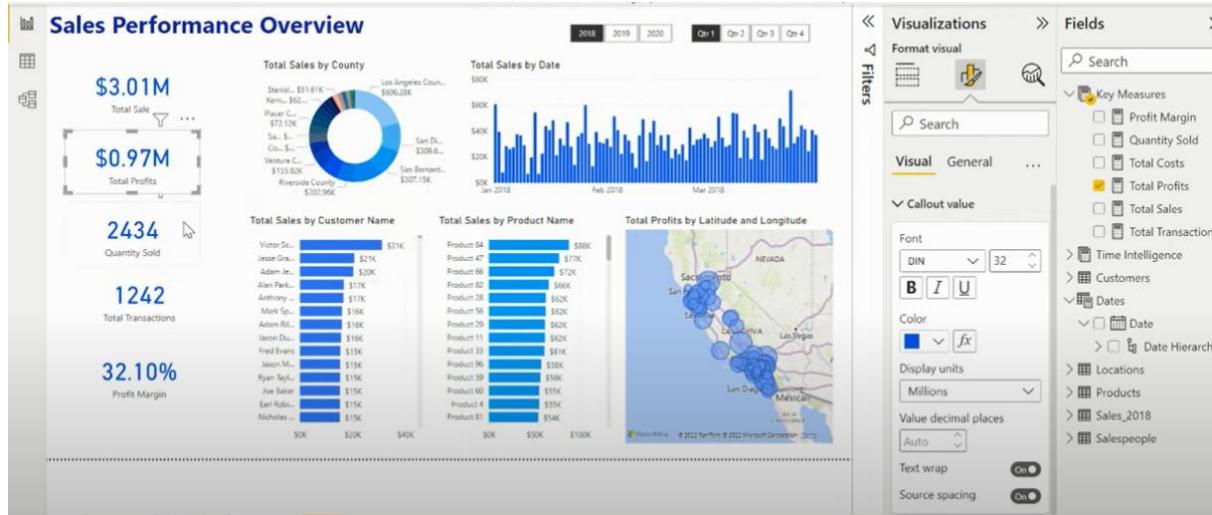
Select visual -> format visual -> visual -> columns -> color-> change colour

Can multi select visuals to give them same colour in one go (for cards)



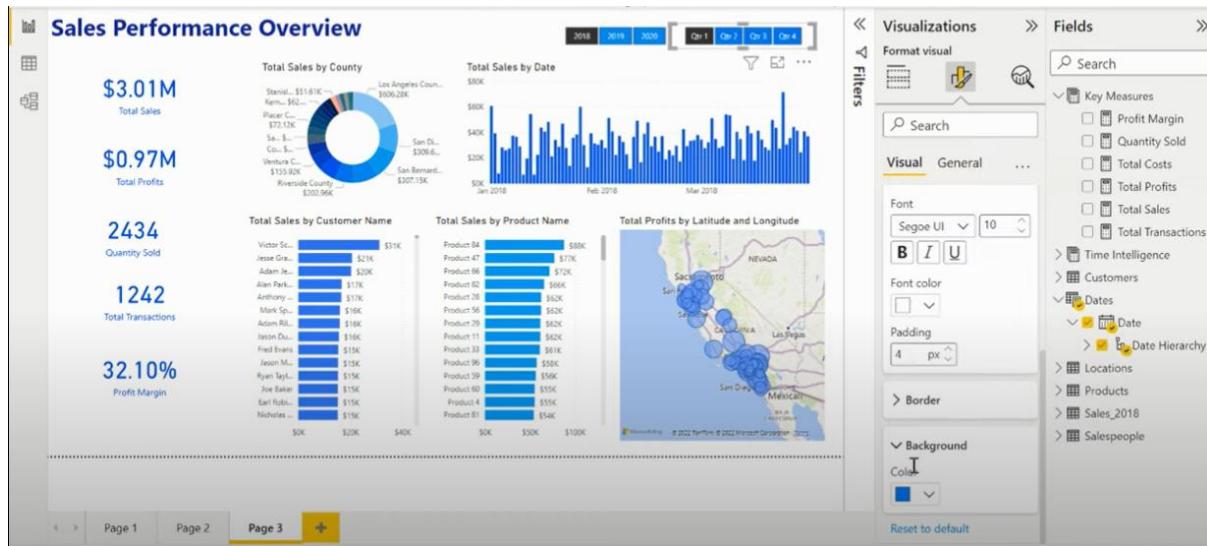
To change units

Select visual -> format visual -> visual -> callout value -> display units -> select unit



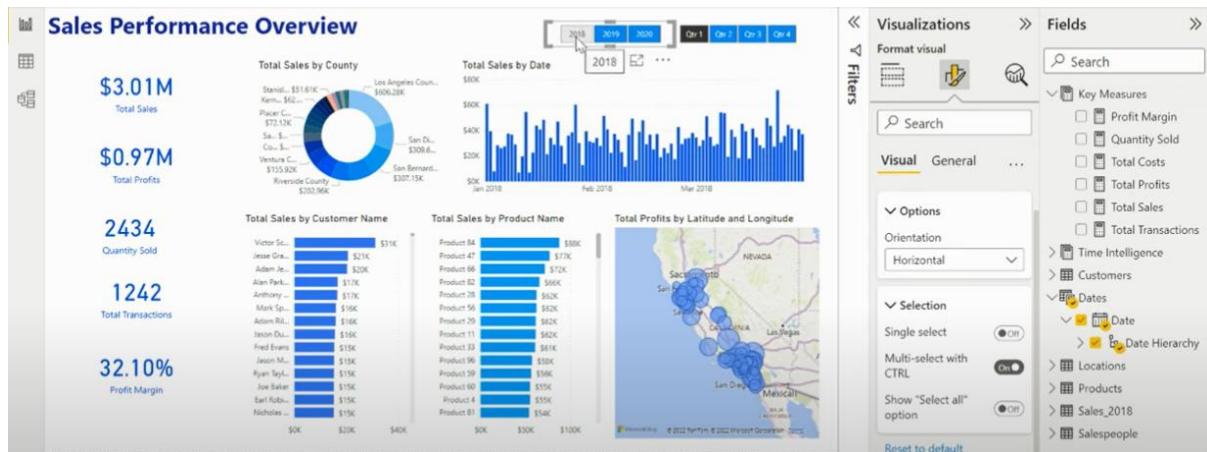
To change slicer colour

Select slicer -> format visual -> visual -> values -> background -> color -> change colour



Single / Multi Select Slicer

Select slicer -> format visual -> visual -> slicer settings->options -> selection -> choose selection option



How to find business working day or non working day ?

Load bank holiday list

Screenshot of Microsoft Power BI Data Get Data dialog showing the "Sheet1" table from "AP Bank Holidays.xlsx".

Date	Day	Occasion
01-01-2001	Saturday	New Year Day
01-01-2014	Friday	Bhogi
01-01-2015	Saturday	Makara Sankranti
01-01-2016	Wednesday	Republic Day
01-03-2001	Tuesday	Maha Sivarathri
01-03-2018	Friday	Holi
01-04-2002	Saturday	Ugadi
01-04-2010	Sunday	Sri Rama Navami
01-04-2014	Thursday	Dr.B.R.Ambedkar's Birthday/Mahaveer Jayanthi
01-04-2015	Friday	Good Friday
01-04-2017	Sunday	Easter
01-05-2001	Sunday	May Day
01-05-2003	Tuesday	Ramzan (Eid-ul-Fitr)
01-05-2016	Monday	Budha Purnima
01-07-2010	Sunday	Bakrid (Eid-ul-Azha)
01-08-2009	Tuesday	Moharrum
01-08-2015	Monday	Independence Day
01-08-2019	Friday	Sri Krishna Astami
01-08-1931	Wednesday	Vinayaka Chavithi
01-10-2002	Sunday	Mahatma Gandhi Jayanthi
01-10-2003	Monday	Durgashtami
01-10-2005	Wednesday	Vijayadasami
01-10-2009	Sunday	Eid Miladun Nabi
01-10-2024	Monday	Deepavali

Splitting the column by delimiter

Screenshot of Microsoft Power BI Advanced Editor showing the "Split Column by Delimiter" dialog.

The dialog shows the following settings:

- Select or enter delimiter: --Custom--
- Split at: Each occurrence of the delimiter (radio button selected)
- Quote Character: "
- Advanced options: Split using special characters (checkbox unchecked)

The preview pane shows the original data and the transformed data after splitting the "Date" column by the delimiter. The transformed data has three columns: Date.1, Date.2, and Date.3, which correspond to the split parts of the original Date column.

Screenshot of Microsoft Power BI Advanced Editor showing the transformed data and the "Query Settings" pane.

The transformed data table has columns: Date.1, Date.2, Date.3, Day, and Occasion.

The "Query Settings" pane shows the following properties:

- PROPERTIES**: Name: Bank holidays
- APPLIED STEPS**: Source, Navigation, Promoted Headers, Changed Type, Split Column by Delimiter, and a new step named "Changed Type1".

Splitting the incorrect date column

The screenshot shows the Power BI Desktop interface with a table containing four columns: Date.2, Date.3, Day, and Ocassion. The 'Split Column' context menu is open, with 'By Number of Characters' selected. Other options visible include 'By Delimiter', 'By Positions', 'By Lowercase to Uppercase', 'By Uppercase to Lowercase', 'By Digit to Non-Digit', and 'By Non-Digit to Digit'. The 'APPLIED STEPS' pane on the right shows the step 'Split Column by Delimiter'.

The screenshot shows the 'Split Column by Number of Characters' dialog box. It asks for the 'Number of characters' to split the text column, with a default value of 1. Below it, there are three radio button options: 'Once, as far left as possible' (selected), 'Once, as far right as possible', and 'Repeatedly'. At the bottom are 'OK' and 'Cancel' buttons.

The screenshot shows the Power BI Desktop interface with a table containing columns Day, weekday, Date.3.2, and day. The 'Rename Columns' context menu is open, with 'Renamed Columns' selected. Other options include 'Source', 'Navigation', 'Promoted Headers', 'Changed Type', 'Split Column by Delimiter', 'Changed Type1', and 'Changed Type2'. The 'APPLIED STEPS' pane on the right shows the step 'Renamed Columns'.

Delete unwanted columns

Adding new column

Add new column -> custom column -> give column name -> write custom formula -> click ok -> new column created at end -> rearrange it

Custom Column

Add a column that is computed from the other columns.

New column name: Custom

Custom column formula: =

Available columns: month, day, weekday, Ocassion

No syntax errors have been detected.

OK Cancel

Custom Column

Add a column that is computed from the other columns.

New column name: year

Custom column formula: = 2018

Available columns: month, day, weekday, Ocassion

No syntax errors have been detected.

OK Cancel

	day	weekday	Ocassion	year
1	1	Saturday	New Year Day	2018
2	1	Friday	Bhogi	2018
3	1	Saturday	Makara Sankranti	2018
4	1	Wednesday	Republic Day	2018
5	3	Tuesday	Maha Sivarathri	2018
6	3	Friday	Holi	2018
7	4	Saturday	Ugadi	2018
8	4	Sunday	Sri Rama Navami	2018
9	4	Thursday	Dr.B.R.Ambedkar's Birthday/Mahaveer Jayanthi	2018
10	4	Friday	Good Friday	2018
11	4	Sunday	Easter	2018
12	5	1	May Day	2018
13	5	Tuesday	Ramzan (Eid-ul-Fitr)	2018
14	5	Monday	Budha Purnima	2018
15	7	Sunday	Bakrid (Eid-ul-Azha)	2018
16	8	Tuesday	Moharrum	2018
17	8	Monday	Independence Day	2018

Change data type of year column to whole number

The screenshot shows the Power BI Query Editor interface. On the left, there's a tree view with 'Orders' and 'Bank holidays' selected. The main area displays a table with columns: year, month, day, weekday, and Occasion. The 'year' column is highlighted in the 'Selected columns' dropdown, which is currently set to 'Whole Number'. The 'Applied Steps' pane on the right lists several steps, including 'Changed Type'.

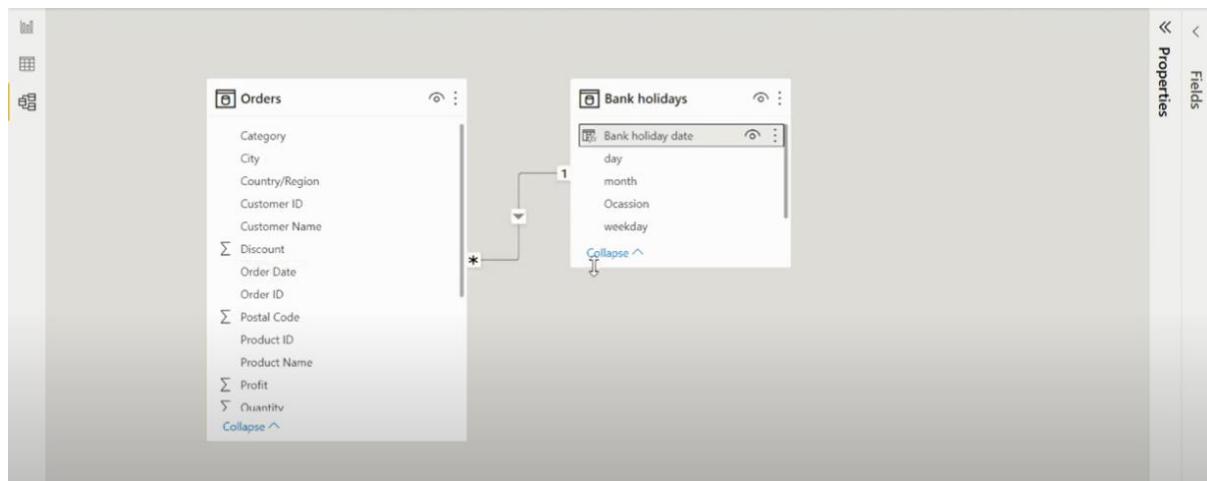
Select day column -> go to column tools -> properties section -> change summarization to don't summarize (same for month and year as well)

The screenshot shows the Power BI Desktop interface with the 'Column Tools' ribbon tab selected. In the 'Structure' group, the 'day' column is selected. In the 'Properties' group, the 'Summarization' dropdown is set to 'Don't summarize'. The 'Fields' pane on the right shows the 'Bank holidays' table with the 'day' field selected.

Convert day, month and year to date

The screenshot shows the Power BI Desktop interface with the M code editor open. The formula is: `Bank holiday date = DATE('Bank holidays'[year], 'Bank holidays'[month], 'Bank holidays'[day])`. The 'Fields' pane on the right shows the 'Bank holidays' table with the 'day' field selected.

Specify relationship between tables



In weekday function, 1st day of the week start from monday

This screenshot shows the Power BI Data Model ribbon with 'Column tools' selected. In the formula bar, a calculated column named 'is weekend' is defined with the formula: `IF(WEEKDAY(Orders[Order Date],2)>5,TRUE(),FALSE())`. The 'Bank holiday date' table is visible below the ribbon, showing dates from January 2018 to October 2018. The Fields pane on the right lists various columns from the 'Orders' and 'Bank holidays' tables.

This screenshot shows the Power BI Data Model ribbon with 'Column tools' selected. In the formula bar, a calculated column named 'is bank holiday' is defined with the formula: `IF(ISBLANK(RELATED('Bank holidays'[Bank holiday date])),FALSE(),TRUE())`. The 'Orders' table is visible below the ribbon, showing order dates from January 2018 to February 2018. The Fields pane on the right lists various columns from the 'Bank holidays' and 'Orders' tables.

1 is bank holiday = IF(ISBLANK(RELATED('Bank holidays'[Bank holiday date])),FALSE(),TRUE())

Order Date	is weekend	is bank holiday
03 January 2018	False	False
04 January 2018	False	False
05 January 2018	False	False
06 January 2018	True	False
07 January 2018	True	False
09 January 2018	False	False
10 January 2018	False	False
11 January 2018	False	False
13 January 2018	True	False
14 January 2018	True	True
15 January 2018	False	True
16 January 2018	False	False
18 January 2018	False	False
19 January 2018	False	False
20 January 2018	False	False
21 January 2018	True	False
23 January 2018	False	False
26 January 2018	False	True
27 January 2018	True	False
28 January 2018	True	False
30 January 2018	False	False
31 January 2018	False	False
01 February 2018	False	False
02 February 2018	False	False
03 February 2018	True	False
04 February 2018	True	False

IF(LogicalTest, ResultIfTrue, [ResultIfFalse])
Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE.

1 is working day = IF(or([orders[is bank holiday],Orders[is weekend]],"not working day", "working day")

Order Date	is weekend	is bank holiday	is working day
03 January 2018	False	False	False
04 January 2018	False	False	False
05 January 2018	False	False	False
06 January 2018	True	False	False
07 January 2018	True	False	False
09 January 2018	False	False	False
10 January 2018	False	False	False
11 January 2018	False	False	False
13 January 2018	True	False	False
14 January 2018	True	True	True
15 January 2018	False	True	True
16 January 2018	False	False	False
18 January 2018	False	False	False
19 January 2018	False	False	False
20 January 2018	True	False	False
21 January 2018	True	False	False
23 January 2018	False	False	False
26 January 2018	False	False	False
27 January 2018	True	False	False
28 January 2018	True	False	False
30 January 2018	False	False	False
31 January 2018	False	False	False
01 February 2018	False	False	False
02 February 2018	False	False	False
03 February 2018	True	False	False
04 February 2018	True	False	False

Order Date	is weekend	is bank holiday	is working day
03 January 2018	False	False	working day
04 January 2018	False	False	working day
05 January 2018	False	False	working day
06 January 2018	True	False	not working day
07 January 2018	True	False	not working day
09 January 2018	False	False	working day
10 January 2018	False	False	working day
11 January 2018	False	False	working day
13 January 2018	True	False	not working day
14 January 2018	True	True	not working day
15 January 2018	False	True	not working day
16 January 2018	False	False	working day
18 January 2018	False	False	working day
19 January 2018	False	False	working day
20 January 2018	True	False	not working day
21 January 2018	True	False	not working day
23 January 2018	False	False	working day
26 January 2018	False	False	not working day
27 January 2018	True	False	not working day
28 January 2018	True	False	not working day
30 January 2018	False	False	working day
31 January 2018	False	False	working day
01 February 2018	False	False	working day
02 February 2018	False	False	working day
03 February 2018	True	False	not working day
04 February 2018	True	False	not working day
05 February 2018	False	False	working day
07 February 2018	False	False	working day
08 February 2018	False	False	working day

Networkdays in Power BI

New and easy way to calculate Business working days

The screenshot shows the Microsoft documentation for the `NETWORKDAYS` function. On the left, there's a sidebar with a search bar and a list of related functions like `NOW`, `QUARTER`, etc. The main content area has a brief description: "Returns the number of whole workdays between two dates (inclusive). Parameters specify which and how many days are weekend days. Weekend days and days specified as holidays are not considered as workdays." Below this is the **Syntax** section with the DAX code: `NETWORKDAYS(<start_date>, <end_date>[, <weekend>, <holidays>])`. To the right is the **Parameters** table:

Term	Definition
<code>start_date</code>	A date that represents the start date. The dates for which the difference is to be computed. The <code>start_date</code> can be earlier than, the same as, or later than the <code>end_date</code> .
<code>end_date</code>	A date that represents the end date. The dates for which the difference is to be computed. The <code>start_date</code> can be earlier than, the same as, or later than the <code>end_date</code> .
<code>weekend</code>	Indicates the days of the week that are weekend days and are not included in

This screenshot shows the same documentation page as above, but the `weekend` parameter description is expanded. It states: "A date that represents the end date. The dates for which the difference is to be computed. The `start_date` can be earlier than, the same as, or later than the `end_date`". Below this, the `weekend` parameter is described as: "Indicates the days of the week that are weekend days and are not included in the number of whole working days between `start_date` and `end_date`. Weekend is a weekend number that specifies when weekends occur. Weekend number values indicate the following weekend days: 1 or omitted: Saturday, Sunday 2: Sunday, Monday 3: Monday, Tuesday 4: Tuesday, Wednesday 5: Wednesday, Thursday 6: Thursday, Friday 7: Friday, Saturday 11: Sunday only 12: Monday only 13: Tuesday only 14: Wednesday only 15: Thursday only 16: Friday only 17: Saturday only". The `holidays` parameter is also defined as "A column table of one or more dates that are to be excluded from the working day calendar".

This screenshot shows the **Return Value** section of the documentation. It states: "An integer number of whole workdays."

The screenshot shows the Power BI Data Editor interface. On the left, there's a DAX query editor with the following code:

```
1 netdays = NETWORKDAYS (
2     SELECTEDVALUE(Orders[Order Date]),
3     SELECTEDVALUE(Orders[Ship Date])
4 )
```

To the right is the **Fields** pane, which contains a visualization named "Orders" with several columns listed: `business_days`, `Category`, `City`, `Country/Region`, and `Cust_name`.

The screenshot shows the Power BI Data Editor interface. On the left, there is a code editor window containing the following DAX code:

```
1 business_days = var order_date = SELECTEDVALUE(Orders[Order Date])
2             | var ship_date = SELECTEDVALUE(Orders[Ship Date])
3             | return
4             | NETWORKDAYS(order_date, ship_date,1,'Public Holidays')
```

The code defines a variable `business_days` that calculates the number of business days between the selected `Order Date` and `Ship Date`, excluding public holidays.

On the right side of the interface, there is a "Fields" pane with a search bar and a tree view of available fields. The `Orders` table is expanded, showing various columns like `Category`, `City`, `Country/Region`, etc., and a `business_days` measure.

The screenshot shows the Power BI Report View interface. It displays a table visual titled "NETWORK DAYS IN POWER BI DAX". The table has three columns: `Order Date`, `Ship Date`, and `business_days`. A single row is shown with the values: 05 January 2018, 12 January 2018, and 6.

On the left, there is a filter pane for the `Order Date` column, which is set to 05 January 2018. On the right, there is a "Fields" pane with a search bar and a tree view of available fields. The `Orders` table is expanded, showing various columns like `Category`, `City`, `Country/Region`, etc., and a `business_days` measure.

Calendar and CalendarAuto in Power BI

The screenshot shows the Power BI Data Model ribbon with the 'Fields' tab selected. On the left, there is a 'Column' dropdown menu. The main area displays a list of fields from the 'Orders' table, including Category, City, Country/Region, Customer Name, Discount, Order ID, Postal Code, Product ID, and Product Name. A search bar at the top right allows filtering of the field list.

The screenshot shows the Power BI Data View interface. On the left, a table named 'Calendar' is displayed with columns 'Date' and 'Day'. The 'Date' column lists dates from September 1, 2022, to September 23, 2022. The 'Day' column contains the corresponding day numbers (1 through 23). On the right, a 'Fields' pane is open, showing a list of available fields categorized under 'Orders'. The listed fields include Category, City, Country/Region, Customer ID, Customer Name, Discount, Order Date, Order ID, Postal Code, Product ID, Product Name, Profit, Profit ratio, Profit ratio measure, Profit ratio new, Quantity, Region, and Sales.

Date	Day
01-09-2022 00:00:00	1
02-09-2022 00:00:00	2
03-09-2022 00:00:00	3
04-09-2022 00:00:00	4
05-09-2022 00:00:00	5
06-09-2022 00:00:00	6
07-09-2022 00:00:00	7
08-09-2022 00:00:00	8
09-09-2022 00:00:00	9
10-09-2022 00:00:00	10
11-09-2022 00:00:00	11
12-09-2022 00:00:00	12
13-09-2022 00:00:00	13
14-09-2022 00:00:00	14
15-09-2022 00:00:00	15
16-09-2022 00:00:00	16
17-09-2022 00:00:00	17
18-09-2022 00:00:00	18
19-09-2022 00:00:00	19
20-09-2022 00:00:00	20
21-09-2022 00:00:00	21
22-09-2022 00:00:00	22
23-09-2022 00:00:00	23

1 Calendar = CALENDAR(Fields
2	TODAY()-365,	> Calendar
3	TODAY()+365)	⋮ Orders
Date		Category
03-09-2021 00:00:00		City
04-09-2021 00:00:00		Country/Region
05-09-2021 00:00:00		Customer ID
06-09-2021 00:00:00		Customer Name
07-09-2021 00:00:00		Σ Discount
08-09-2021 00:00:00		> Order Date
09-09-2021 00:00:00		Order ID
10-09-2021 00:00:00		Σ Postal Code
11-09-2021 00:00:00		Product ID
12-09-2021 00:00:00		Product Name
13-09-2021 00:00:00		Σ Profit
14-09-2021 00:00:00		Profit
15-09-2021 00:00:00		Profit ratio
16-09-2021 00:00:00		Profit ratio measure
17-09-2021 00:00:00		Profit ratio new
18-09-2021 00:00:00		Σ Quantity
19-09-2021 00:00:00		Region
20-09-2021 00:00:00		

The screenshot shows the Power BI Data View interface. A calculated column named 'Calendar' is being defined using the following DAX formula:

```
1 Calendar = CALENDAR(  
2             MIN(Orders[Order Date]),  
3             MAX(Orders[Order Date]))  
4 )
```

The formula uses the CALENDAR function to generate a date range from the minimum to the maximum order date in the 'Orders' table. The resulting table is displayed below:

Date
03-01-2018 00:00:00
04-01-2018 00:00:00
05-01-2018 00:00:00
06-01-2018 00:00:00
07-01-2018 00:00:00
08-01-2018 00:00:00
09-01-2018 00:00:00
10-01-2018 00:00:00
11-01-2018 00:00:00
12-01-2018 00:00:00
13-01-2018 00:00:00
14-01-2018 00:00:00
15-01-2018 00:00:00
16-01-2018 00:00:00
17-01-2018 00:00:00
18-01-2018 00:00:00

The Power BI Fields pane is open on the right, showing the structure of the 'Orders' table. The 'Order Date' column is highlighted.

The screenshot shows the Power BI Data View interface. On the left, there is a table with columns 'Date' and '1 Calendar'. The 'Date' column contains dates from 03-01-2018 to 16-01-2018. The '1 Calendar' column contains the formula CALENDARAUTO([FiscalYearEndMonth]). A tooltip is displayed over the '1 Calendar' column, explaining that it is a table with one column calculated from the month selected in the Fiscal Year End Month slicer. The Fields pane on the right lists various fields such as Date, Search, Calendar, Orders, Category, City, Country/Region, Customer ID, Customer Name, Discount, Order Date, Order ID, Postal Code, and Product ID.

Date
01-01-2018 00:00:00
02-01-2018 00:00:00
03-01-2018 00:00:00
04-01-2018 00:00:00
05-01-2018 00:00:00
06-01-2018 00:00:00
07-01-2018 00:00:00
08-01-2018 00:00:00
09-01-2018 00:00:00
10-01-2018 00:00:00
11-01-2018 00:00:00
12-01-2018 00:00:00
13-01-2018 00:00:00
14-01-2018 00:00:00
15-01-2018 00:00:00
16-01-2018 00:00:00
17-01-2018 00:00:00
18-01-2018 00:00:00
19-01-2018 00:00:00
20-01-2018 00:00:00
21-01-2018 00:00:00
22-01-2018 00:00:00

Lookupvalue in Power BI

If created using a measure, it gives 1 result at a time corresponding to given search value and can be visualized using a card

The screenshot shows the Power BI Data Editor interface. The top ribbon is set to 'Measure tools'. A measure named 'Measure 2' is selected, which contains the DAX formula: `LOOKUPVALUE(Result_ColumnName, Search_ColumnName1, Search_Value, ... [Alternate_Result])`. The formula is described as 'Retrieves a value from a table.' Below the formula, there is a code editor window containing the same formula. To the right, the 'Fields' pane is open, showing a tree view of available fields including 'Orders' (business_days, Category, City, Country/Region, Customer ID n...), '2018 Sales', 'Customers', 'Locations', and '2018 Sales'.

This screenshot shows the same Power BI Data Editor interface as above, but with a different formula in the code editor: `1 Cust_name = LOOKUPVALUE(Orders[Customer Name],Orders[Customer ID new],19885)`. A yellow warning bar at the top indicates: 'Argument '3' in LOOKUPVALUE function is required.' The 'Fields' pane remains the same, showing the 'Orders' hierarchy and other tables.

This screenshot shows a Power BI report page titled 'LOOKUPVALUE() IN POWER BI DAX'. It features a single card visualization with the text 'Ruben Ausman' and the field 'Cust_name' below it. The 'Fields' pane on the right is expanded, showing the 'Orders' hierarchy and other tables, with 'Cust_name' highlighted.

If created using a column works same as vlookup in excel

The screenshot shows the Power BI Advanced Editor interface. The top navigation bar includes File, Home, Insert, Modeling, View, Help, Table Tools, and Column Tools. The Column Tools ribbon tab is selected. In the center, there's a code editor window with the following DAX formula:

```
$1 LOOKUPVALUE(Location_name, Locations[Location ID], '2018 Sales'[location ID])
$2 ... [Alternate_Result]
Retrieves a value from a table.
```

Below the code editor, the visual area displays a card with the text "John Lee" and "Cust_name". On the right side, the Fields pane shows a tree view of fields under the "2018 Sales" table, with "Location_name" highlighted.

This screenshot is similar to the one above, but the "Location_name" field in the Fields pane is circled in red. The rest of the interface, including the DAX code and the visual card, remains the same.

What is M (Mashup) Language in Power BI?

The steps taken during the data transformation stage are written in M language, the code is generated automatically.

M language is used to the transformation which are not possible with the default options given (for e.g. deleting custom rows)

Home -> Query Group -> Advanced Editor

Code is generated for all applied steps on right hand side

There are two main keywords **let** and **in**

Code is written inside **let** and ends with last step inside **in**

Each step from 2nd step onwards contains reference of previous step

```

let
    Source = Excel.Workbook(File.Contents("C:/Users/salla/OneDrive/Documents/PBI Training/Sample - Superstore.xls"), null, true),
    Orders1 = Source[[Name="Orders2"]][Data],
    #"Changed Type" = Table.TransformColumnTypes(Orders1,{{"Column1", type text}, {"Column2", type text}, {"Column3", type text}, {"Column4", type text}, {"Column5", type text}})
in
    #"Changed Type"
  
```

How to delete custom rows in Power BI?

Home -> Query Group -> Advanced Editor

Advanced Editor

Orders

```

let
    Source = Excel.Workbook(File.Contents("C:\Users\saila\OneDrive\Documents\PBI Training\Sample - Superstore.xls"), null, true),
    Orders1 = Source[[Name="Orders2"]][Data],
    #"Changed Type" = Table.TransformColumnTypes(Orders1,{{"Column1", type text}, {"Column2", type text}, {"Column3", type text}, {"Column4", type text}}),
    #"Removed Top Rows" = Table.Skip(#"Changed Type",4),
    #"Promoted Headers" = Table.PromoteHeaders(#"Removed Top Rows", [PromoteAllScalars=true]),
    #"Changed Type1" = Table.TransformColumnTypes(#"Promoted Headers",{{"Customer Name", type text}, {"Segment", type text}, {"Country/Region", type text}, {"Order Date", type date}}),
    #"Remove Custom Rows" = Table.RemoveRows(#"Changed Type1",5,7)
in
    #"Changed Type1"

```

No syntax errors have been detected.

Done

Advanced Editor

Orders

```

let
    Source = Excel.Workbook(File.Contents("C:\Users\saila\OneDrive\Documents\PBI Training\Sample - Superstore.xls"), null, true),
    Orders1 = Source[[Name="Orders2"]][Data],
    #"Changed Type" = Table.TransformColumnTypes(Orders1,{{"Column1", type text}, {"Column2", type text}, {"Column3", type text}, {"Column4", type text}}),
    #"Removed Top Rows" = Table.Skip(#"Changed Type",4),
    #"Promoted Headers" = Table.PromoteHeaders(#"Removed Top Rows", [PromoteAllScalars=true]),
    #"Changed Type1" = Table.TransformColumnTypes(#"Promoted Headers",{{"Customer Name", type text}, {"Segment", type text}, {"Country/Region", type text}, {"Order Date", type date}}),
    #"Remove Custom Rows" = Table.RemoveRows(#"Changed Type1",5,7)
in
    #"Changed Type1"

```

Table.RemoveRows(table as table, offset as number, count as nullable number)
 nullable number
 Removes the specified number of rows.

A Comma cannot precede a RightParen. Show error

Done Cancel

Orders

```

let
    Source = Excel.Workbook(File.Contents("C:\Users\saila\OneDrive\Documents\PBI Training\Sample - Superstore.xls"), null, true),
    Orders1 = Source[[Name="Orders2"]][Data],
    #"Changed Type" = Table.TransformColumnTypes(Orders1,{{"Column1", type text}, {"Column2", type text}, {"Column3", type text}, {"Column4", type text}}),
    #"Removed Top Rows" = Table.Skip(#"Changed Type",4),
    #"Promoted Headers" = Table.PromoteHeaders(#"Removed Top Rows", [PromoteAllScalars=true]),
    #"Changed Type1" = Table.TransformColumnTypes(#"Promoted Headers",{{"Customer Name", type text}, {"Segment", type text}, {"Country/Region", type text}, {"Order Date", type date}}),
    #"Remove Custom Rows" = Table.RemoveRows(#"Changed Type1",5,7)
in
    #"Remove Custom Rows"

```

No syntax errors have been detected.

Done Cancel