Power BI Course (Business Intelligence)

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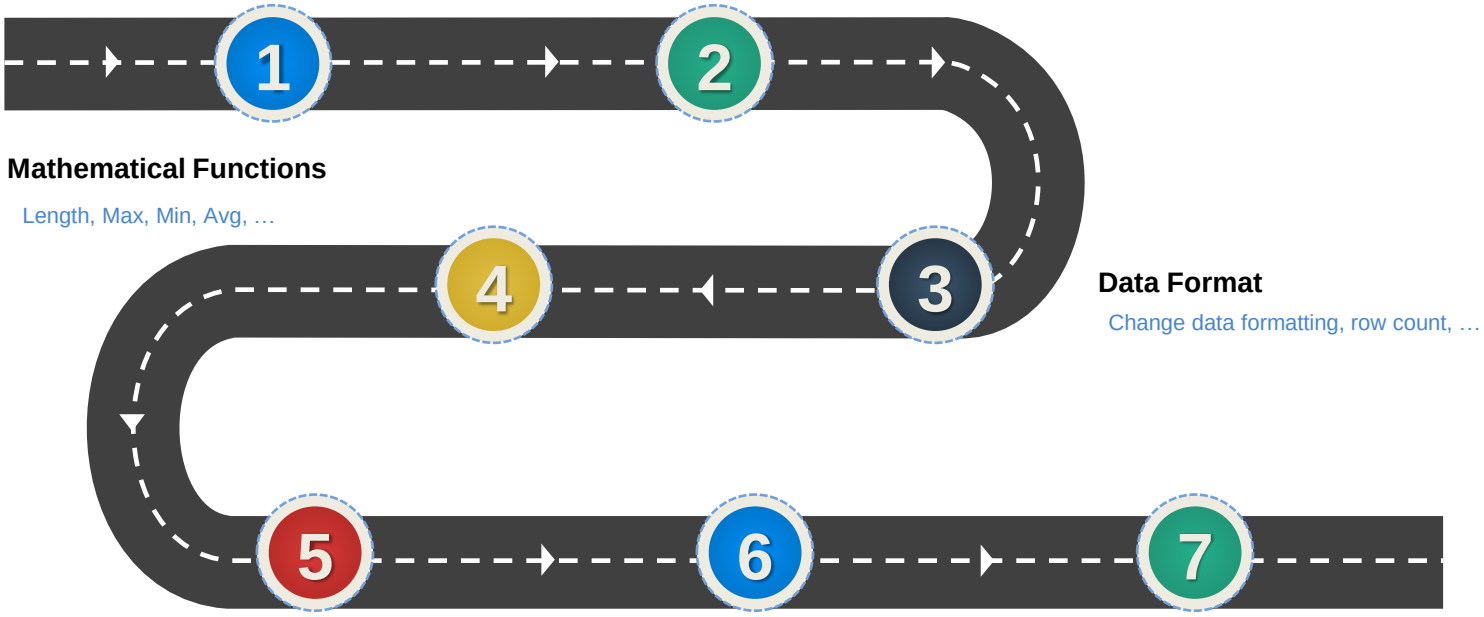
Second Section: Data Visualization & Advanced Functions

- Importing Data
- Transpose Table & Reverse Rows
- Change Formatting Data & Count Rows
- Extract Characters from Data
- Mathematical Functions
- Pivot Column
- Data Visualization Charts
- Advanced Data Visualization Charts

What we'll cover?



Importing Data

CSV, Excel, Website, ….

Transpose Table

Transpose table, reverse rows, …

Mathematical Functions

Length, Max, Min, Avg, …

Data Format

Change data formatting, row count, …

Pivot Column

Group By, Pivot table, ….

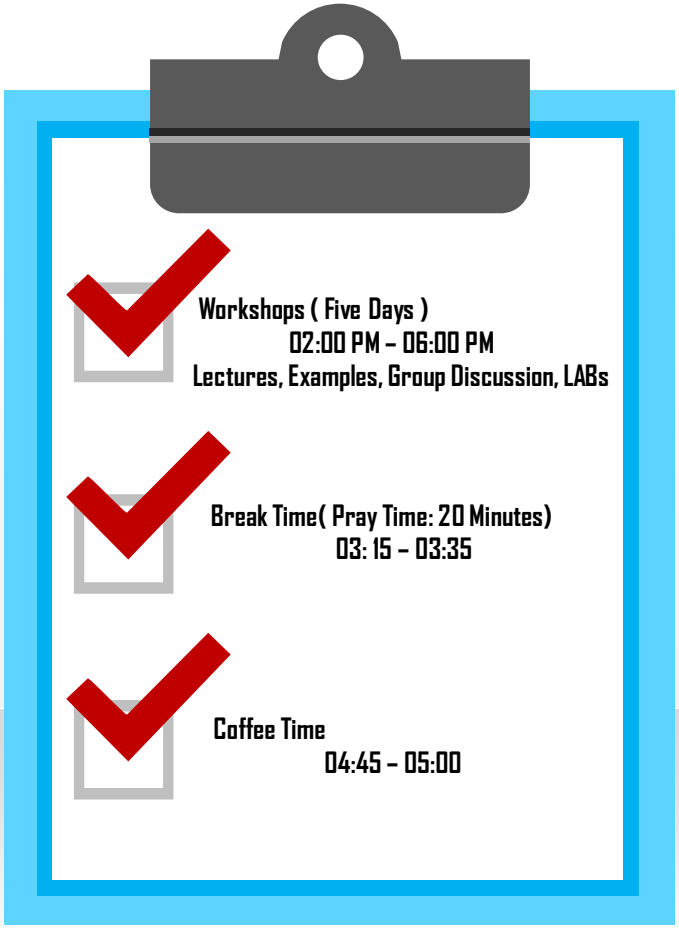
Visualization Charts

Line, pie, histogram, ….

Advanced Visualization Charts

Map, shape map, ….

Time Management



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What is Business Intelligence?

Group Discussion:

What is CVS files?

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Power BI Desktop: Import Dataset (*.CSV)

Car Dataset

```
3,?,alfa-romero,gas,std,two,convertible,rwd,front,88.60,168.80,64.10,48.80,2548,dohc,four,130,mpfi,3.47,2.68,9.00,111,5000,21,27,13495
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1,158,audi,gas,turbo,four,sedan,fwd,front,105.80,192.70,71.40,55.90,3086,ohc,five,131,mpfi,3.13,3.40,8.30,140,5500,17,20,23875
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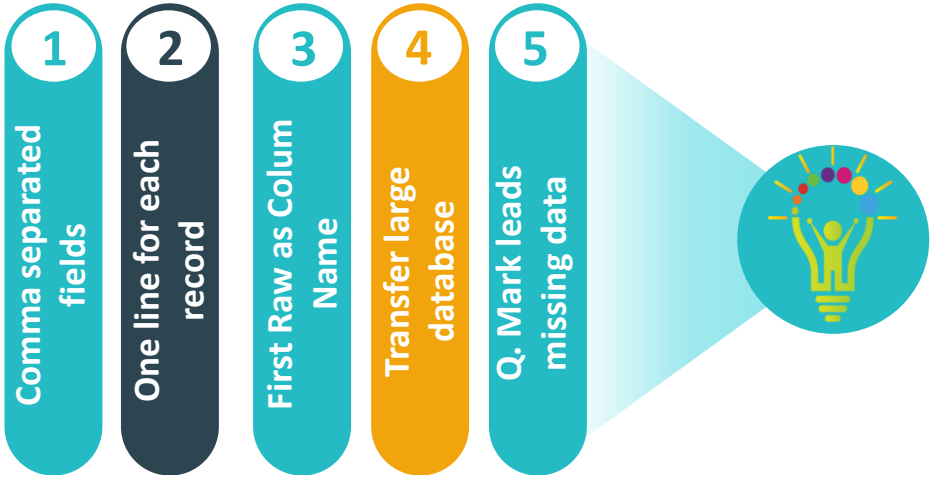

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Power BI Desktop: Import Dataset (*.CSV)

No.	Attribute Name	Attribute Range
1	symboling	-3, -2, -1, 0, 1, 2, 3.
2	normalized-losses	continuous from 65 to 256
3	make	alfa-romero, audi, etc.
4	fuel-type	diesel, gas.
5	aspiration	std, turbo.
6	num-of-doors	four, two
7	body-style	hardtop, wagon, etc.
8	drive-wheels	4wd, fwd, rwd.
9	engine-location	front, rear.
10	wheel-base	continuous from 86.6 120.9.
11	length	continuous from 141.1 to 208.1.
12	width	continuous from 60.3 to 72.3.
13	height	continuous from 47.8 to 59.8.

No.	Attribute Name	Attribute Range
14	curb-weight	continuous from 1488 to 4066.
15	engine-type	condohc, dohcv, l, ohc, etc.
16	num-of-cylinders	eight, five, four, six, three, etc.
17	engine-size	continuous from 61 to 326.
18	fuel-system	1bbl, 2bbl, 4bbl, idi, mfi, etc.
19	bore	continuous from 2.54 to 3.94.
20	stroke	continuous from 2.07 to 4.17.
21	compression-ratio	continuous from 7 to 23.
22	horsepower	continuous from 48 to 288.
23	peak-rpm	continuous from 4150 to 6600.
24	city-mpg	continuous from 13 to 49.
25	highway-mpg	continuous from 16 to 54.
26	price	continuous from 5118 to 45400.

Target (Label)

https://github.com/plotly/datasets/blob/master/imports-85.csv

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What is Business Intelligence?

Group Discussion:

How to import CSV files in Power BI?

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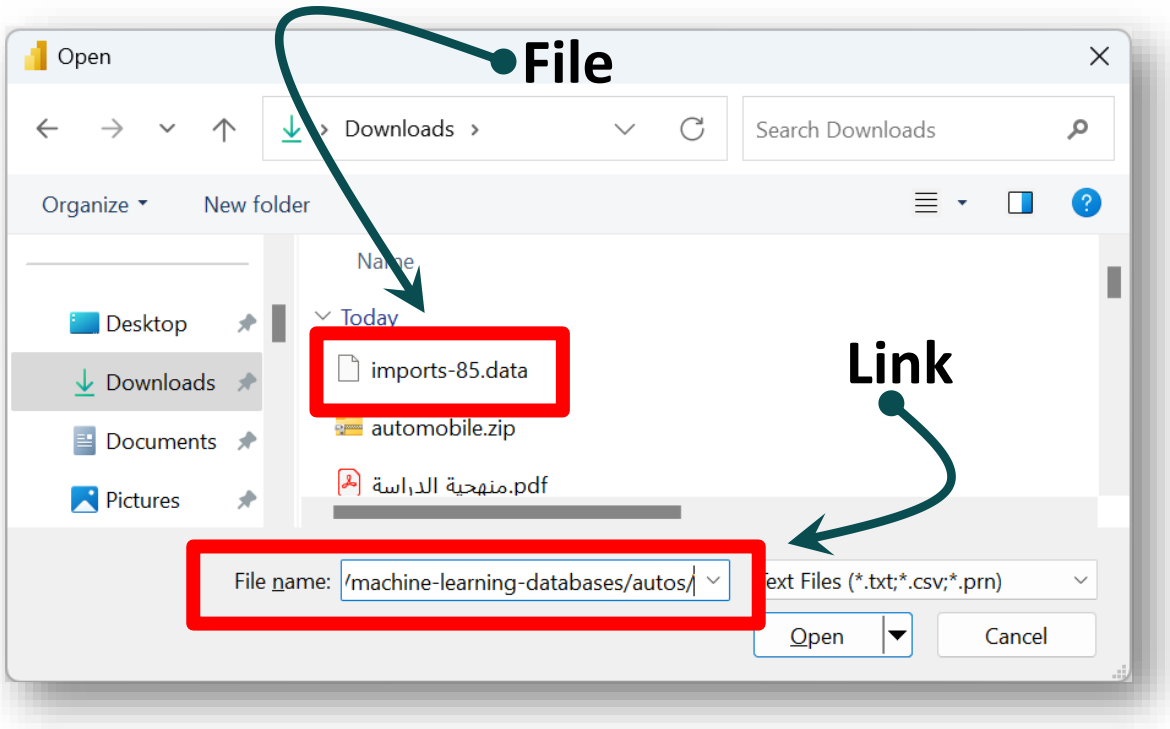
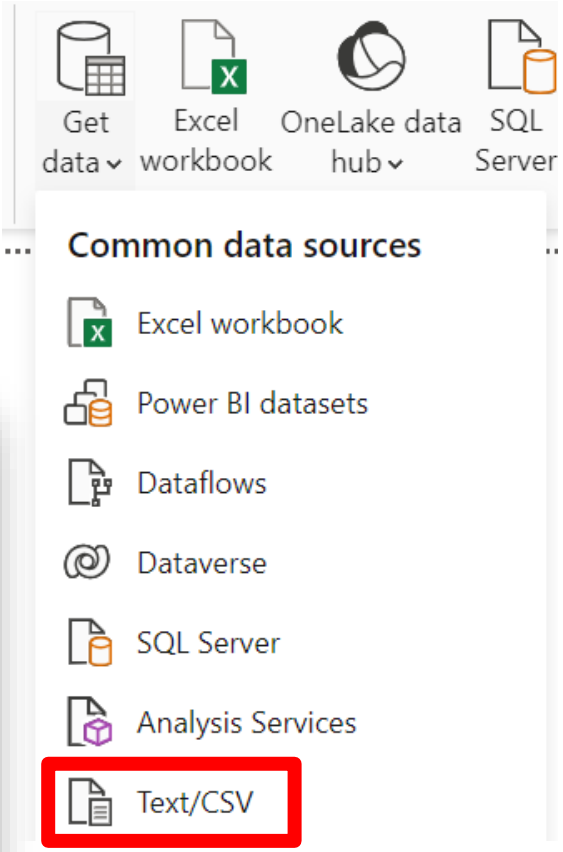
Power BI Desktop: Import Dataset (*.CSV)

To import (CSV File) in Power BI as following:

1. **Go to the Home tab & "Data" group**
2. **Click on "Get Data"**
3. **Determine "Text/CSV"**





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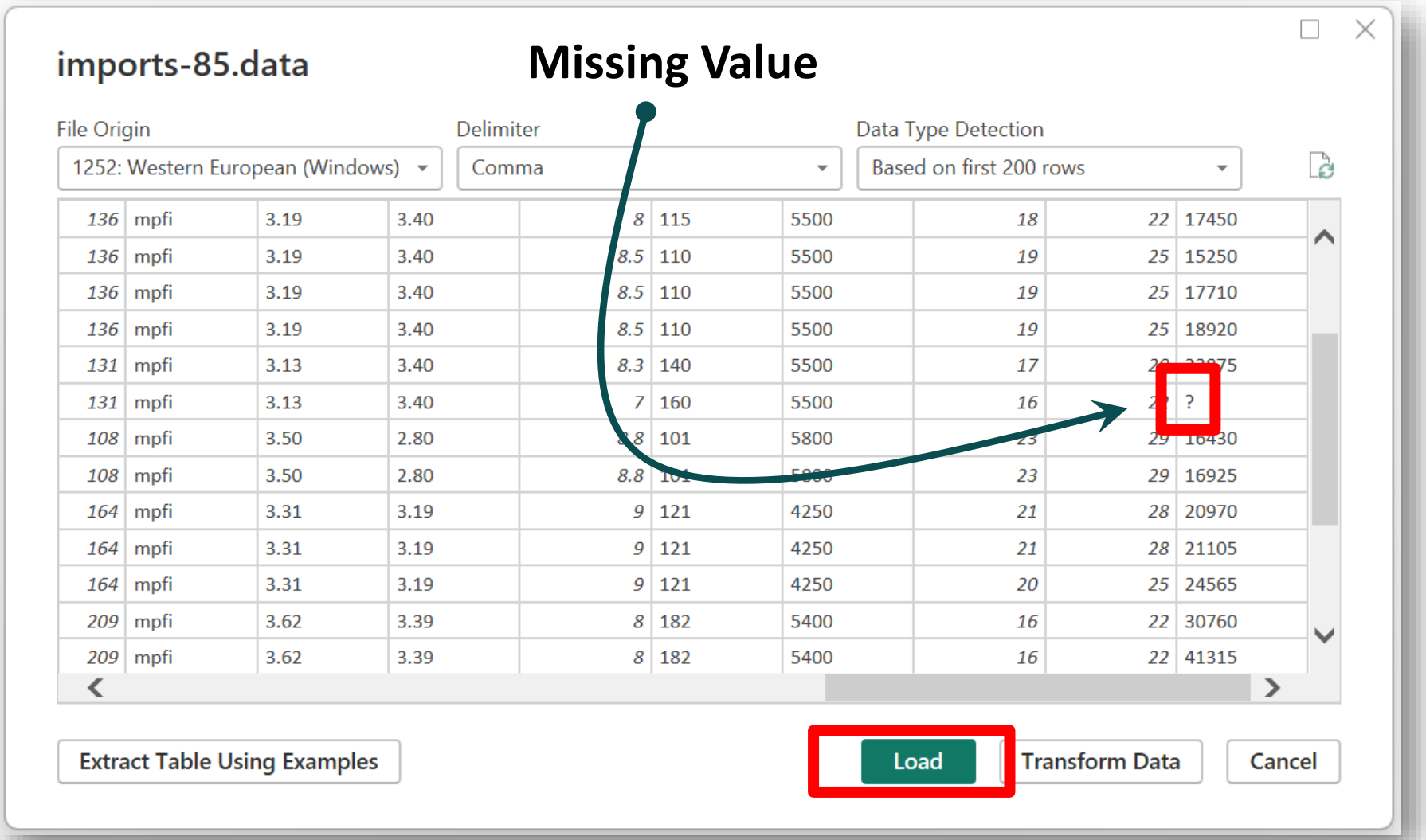
Power BI Desktop: Import Dataset (*.CSV)



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Power BI Desktop: Import Dataset (*.CSV)

	Column1	Column2	Column3	Column4
1	3	?	alfa-romero	gas
2	3	?	alfa-romero	gas
3	1	?	alfa-romero	gas
4	2	164	audi	gas
5	2	164	audi	gas
6	2	?	audi	gas
7	1	158	audi	gas
8	1	?	audi	gas
9	1	158	audi	gas
10	0	?	audi	gas

No Header File

Note 1: You can add header by double-click on Column Header

Note 2: You can change missing values by “Replace Values”

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What is Business Intelligence?

Group Discussion:

How to determine Count Rows?

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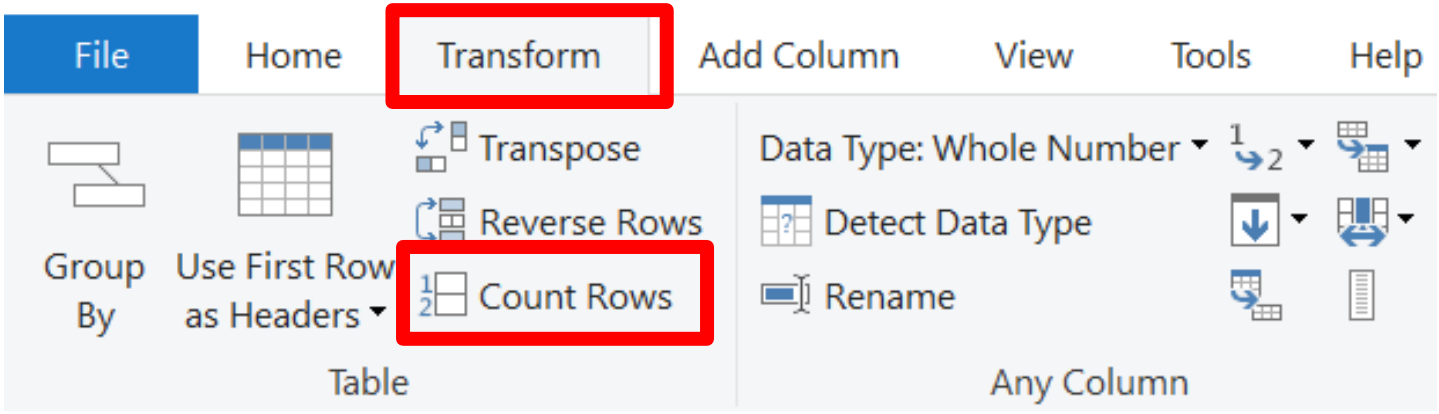
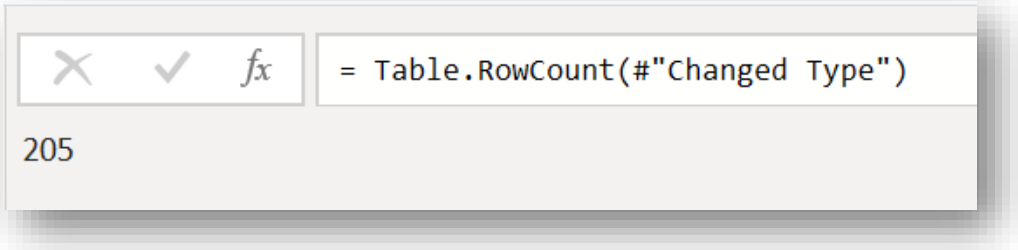
Power BI Desktop: Count Row

To show count rows in Power BI as following:

1. **Go to the Transform tab & from "Table" group**
2. **Click on "Count Rows"**





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What is Business Intelligence?

Group Discussion:

What is Transpose? How to do it?

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Power BI Desktop: Transpose Table

	ID	Name	Department
1	101	Ali	IT
2	102	Mohammed	Sales
3	103	Salah	HR

	Column1	Column2	Column3
	101	102	103
2	Ali	Mohammed	Salah
3	IT	Sales	HR

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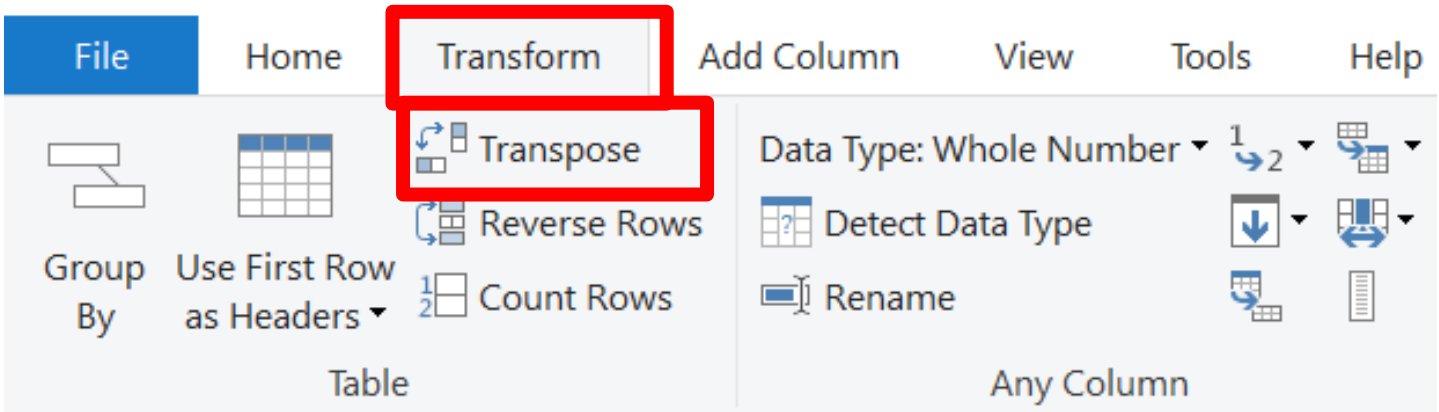
Power BI Desktop: Transpose Table

To travel rows as columns & columns as rows in Power BI as following:

1. **Go to the Transform tab & from “Table” group**
2. **Click on “Transpose”**



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What is Business Intelligence?

Group Discussion:

How to Reverse Rows in Table?

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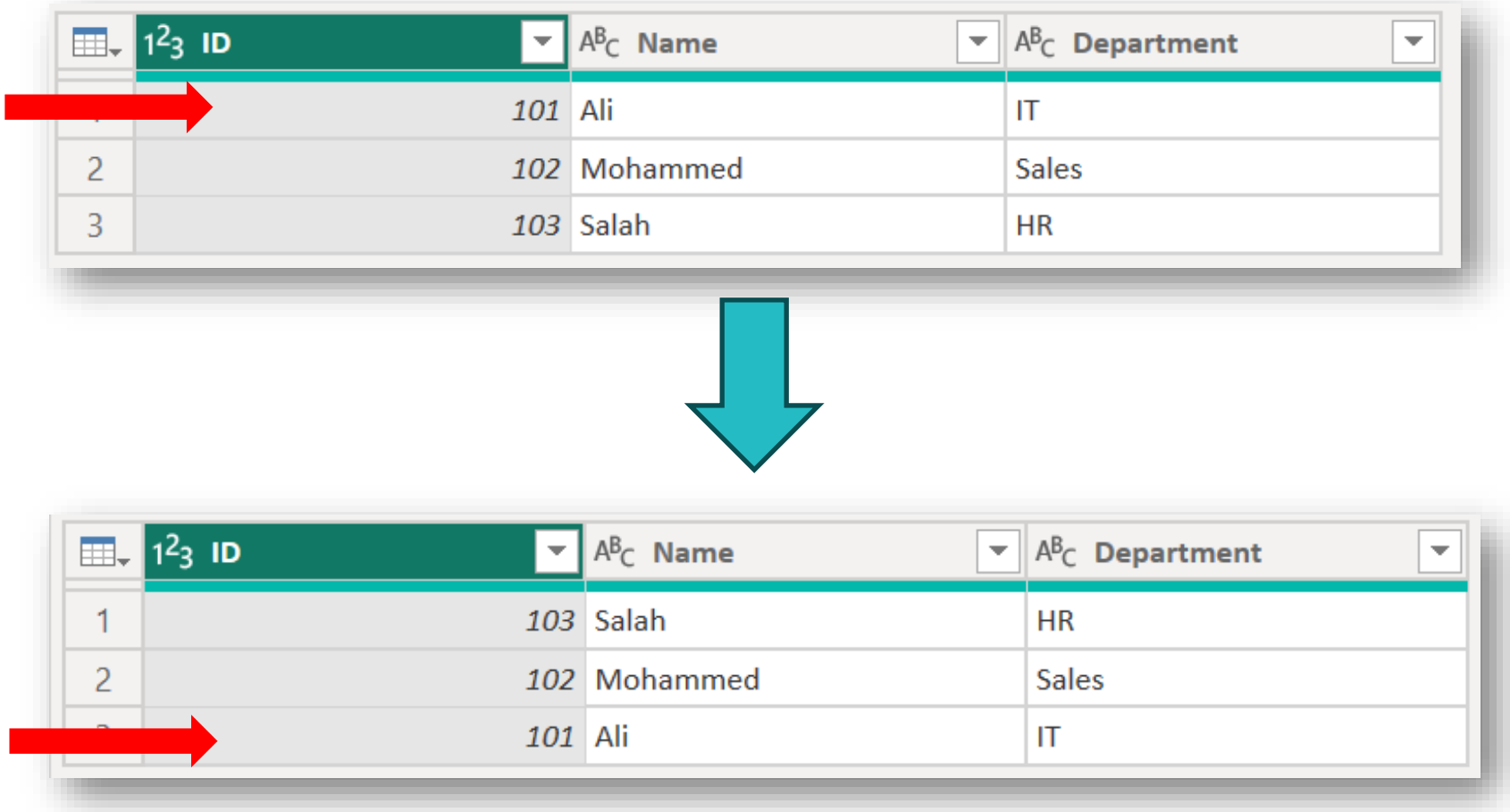
Power BI Desktop: Reverse Rows



	ID	Name	Department
1	101	Ali	IT
2	102	Mohammed	Sales
3	103	Salah	HR

	ID	Name	Department
1	103	Salah	HR
2	102	Mohammed	Sales
3	101	Ali	IT

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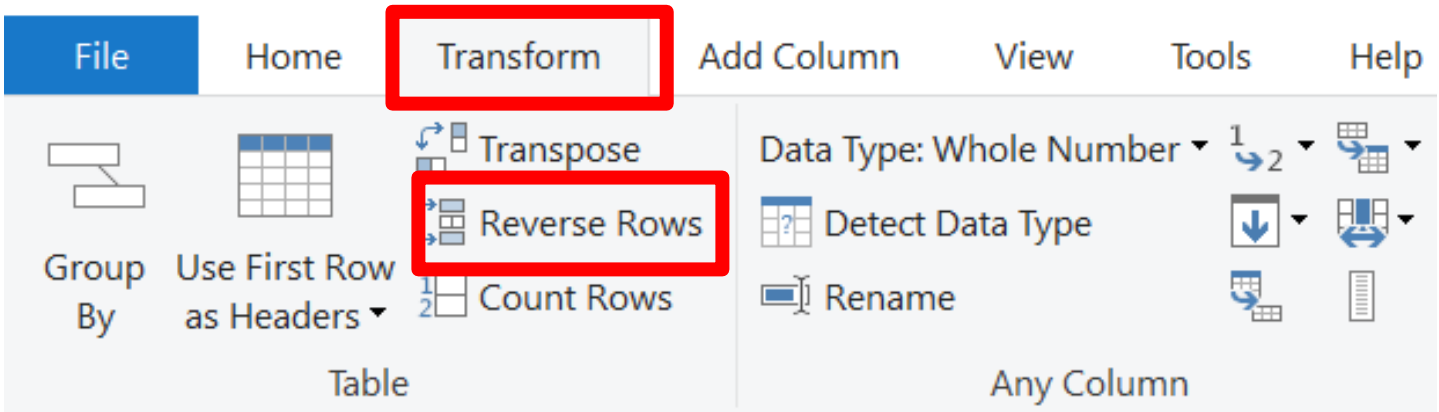
Power BI Desktop: Reverse Rows

To invert the last row as first row in Power BI as following:

1. **Go to the Transform tab & from "Table" group**
2. **Click on "Reverse Rows"**



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What is Business Intelligence?

Group Discussion:

How to change Attribute Format?

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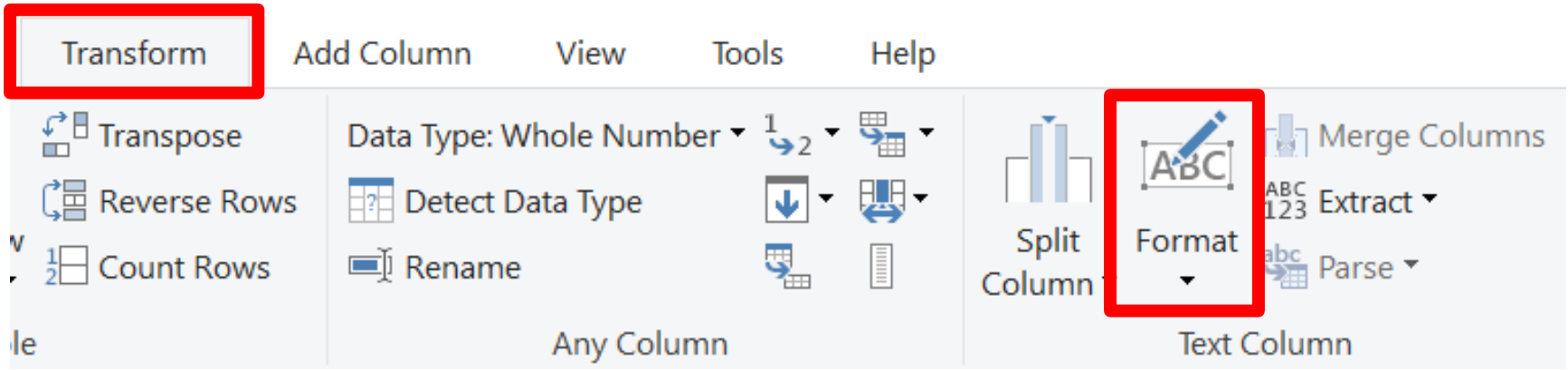
Power BI Desktop: Data Format

To invert the last row as first row in Power BI as following:

1. **Select Data**
2. **Go to the Transform tab & from "Text Column" group**
3. **Click on "Format"**
   - Lowercase
   - Uppercase
   - Capitalize Each Word
   - Trim
   - Clean
   - Add Prefix or Suffix



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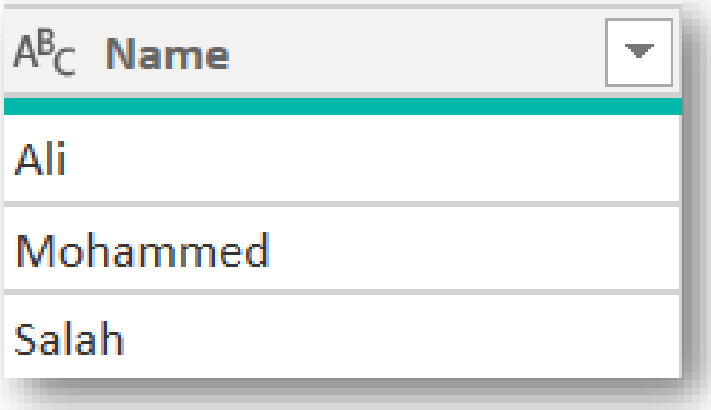
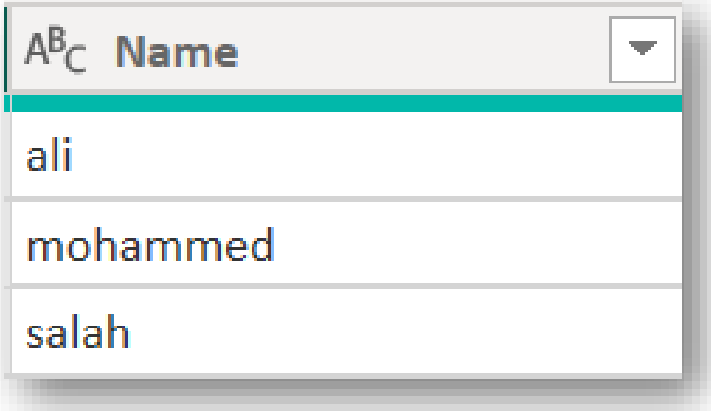
Power BI Desktop: Data Format

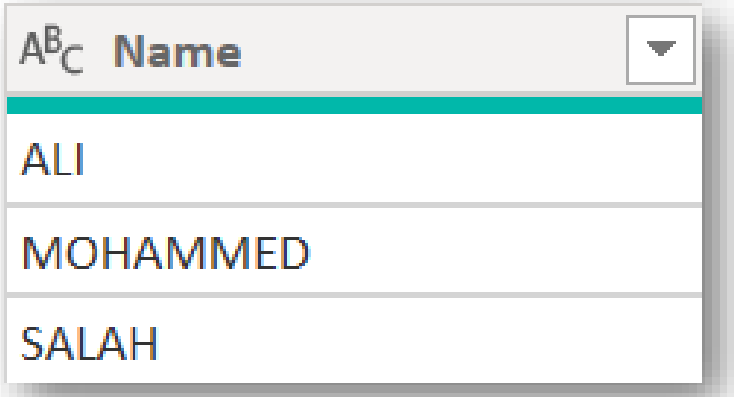
Capitalize Each Word



Lowercase Characters



Uppercase Characters



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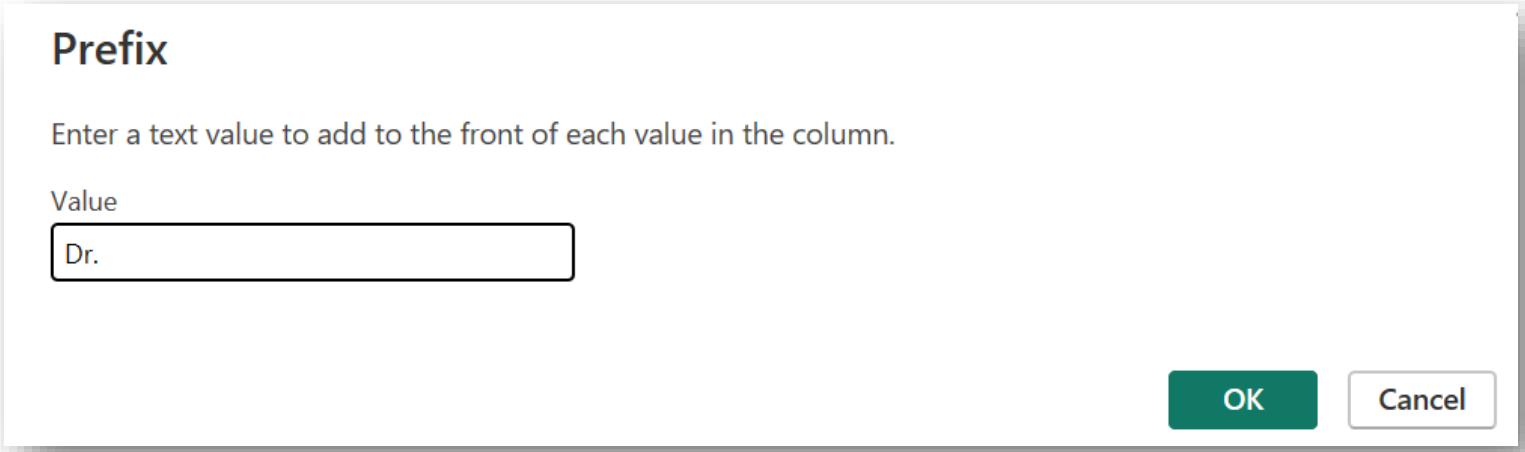
Power BI Desktop: Add Prefix or Suffix



	ID	Name	Department
1	101	Dr. ALI	IT
2	102	Dr. MOHAMMED	Sales
3	103	Dr. SALAH	HR

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Power BI Desktop: Add New Row

To add new row in Power BI as following:

Method 1: Write this statement in Cell Equation

```
= Table.InsertRows(Source, 3,
{[ID = 104, Name = "       Ghalib", Department = "IT"]})
```

	ID	Name	Department
1	101	Ali	IT
2	102	Mohammed	Sales
3	103	Salah	HR
4	*104*	Ghalib	IT

Trim

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Power BI Desktop: Add New Row

To add new row in Power BI as following:

Method 2: Create a new table, and then append

	ID	Name	Department
1	101	Ali	IT
2	102	Mohammed	Sales
3	103	Salah	HR

+

	ID	Name	Department
1	*104*	Ghalib	IT

=

	ID	Name	Department
1	101	Ali	IT
2	102	Mohammed	Sales
3	103	Salah	HR
4	*104*	Ghalib	IT

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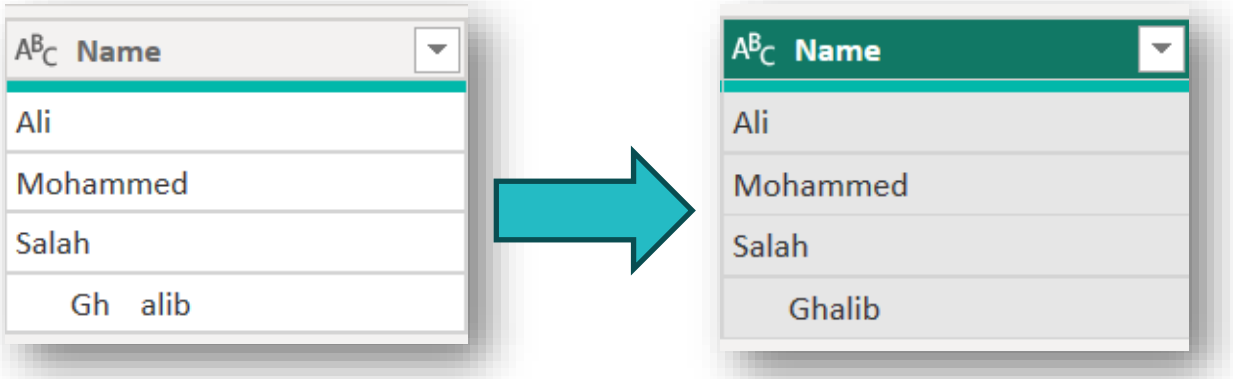
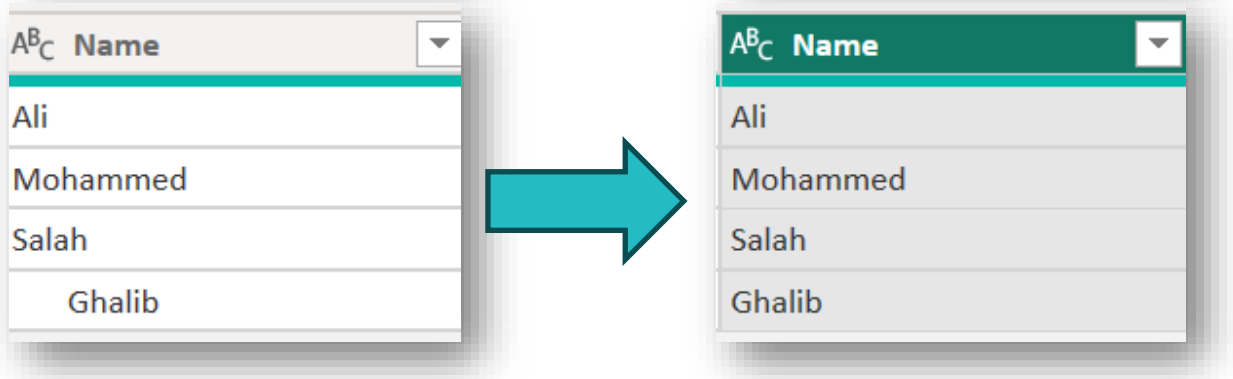
Power BI Desktop: Clean & Trim Text

In Power Query, **clean** removes control or non-printable characters (line breaks, for example) from a text value, whereas **Trim** just removes leading or trailing whitespace.

Clean



Trim



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What is Business Intelligence?

Group Discussion:

How to extract a specific data for each attribute?

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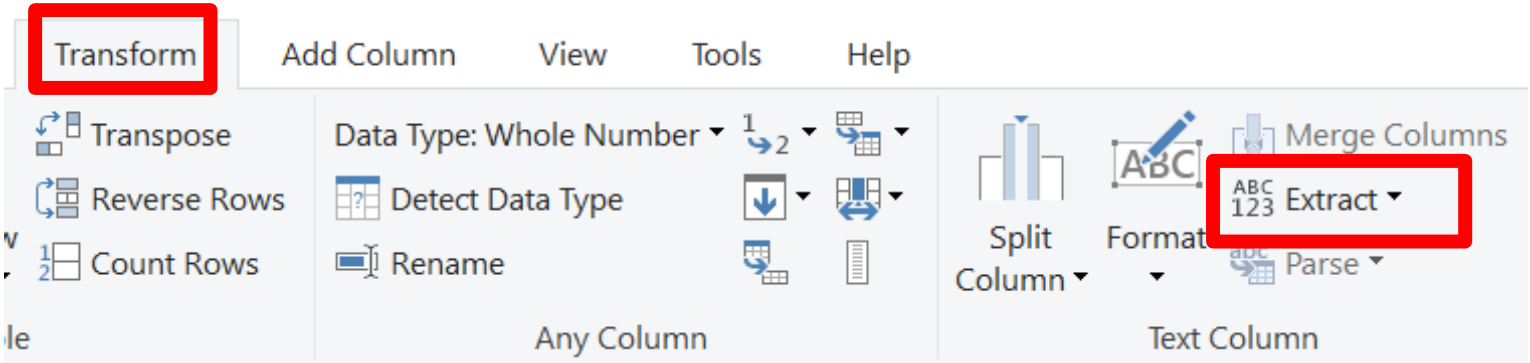
Power BI Desktop: Extract info. from Data

To extract info from data in Power BI as following:

1. **Select Data**
2. **Go to the Transform tab & from "Text Column" group**
3. **Click on "Extract"**
   - Length
   - First Characters
   - Last Characters
   - Range
   - Text Before Delimiter
   - Text After Delimiter
   - Text Between Delimiter



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Power BI Desktop: Extract info. from Data

Length

Name	Department
Ali	IT
Mohammed	Sales
Salah	HR
Ghalib	IT

Name	Department
3	IT
8	Sales
5	HR
6	IT

First & Last Characters

Extract First Characters

Enter how many starting characters to keep.

Count

2

Name	Department
Al	IT
Mo	Sales
Sa	HR
Gh	IT

Extract Last Characters

Enter how many ending characters to keep.

Count

3

Name	Department
Ali	IT
med	Sales
lah	HR
lib	IT

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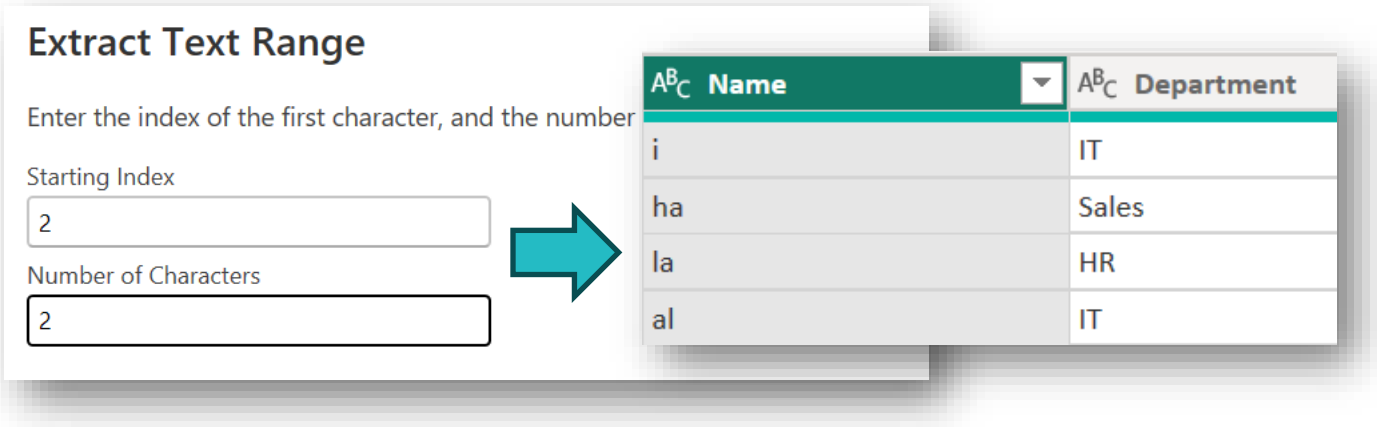
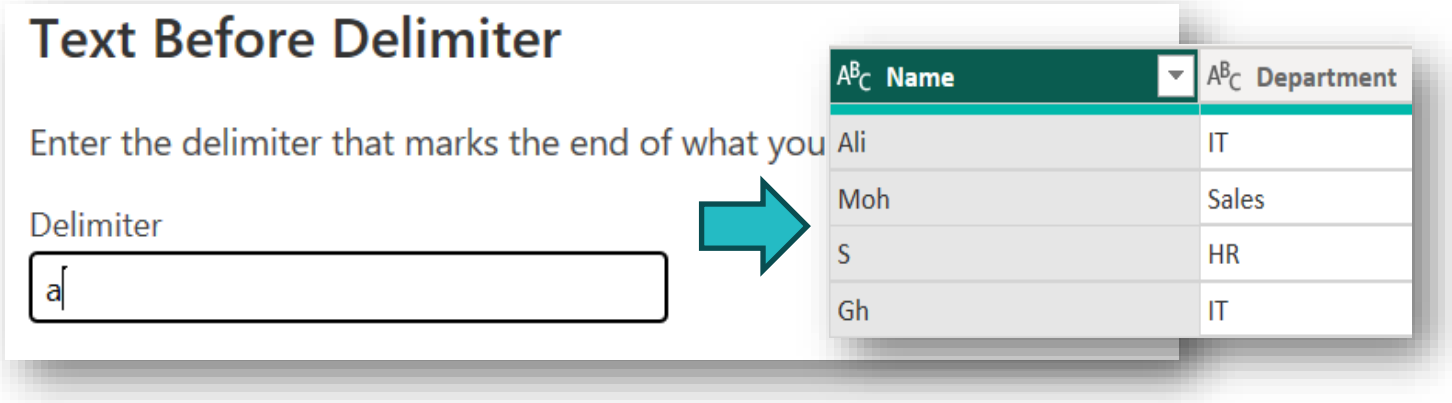
Power BI Desktop: Extract info. from Data

Range



Text Delimiters



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What is Business Intelligence?

Group Discussion:

How to apply statistical functions?

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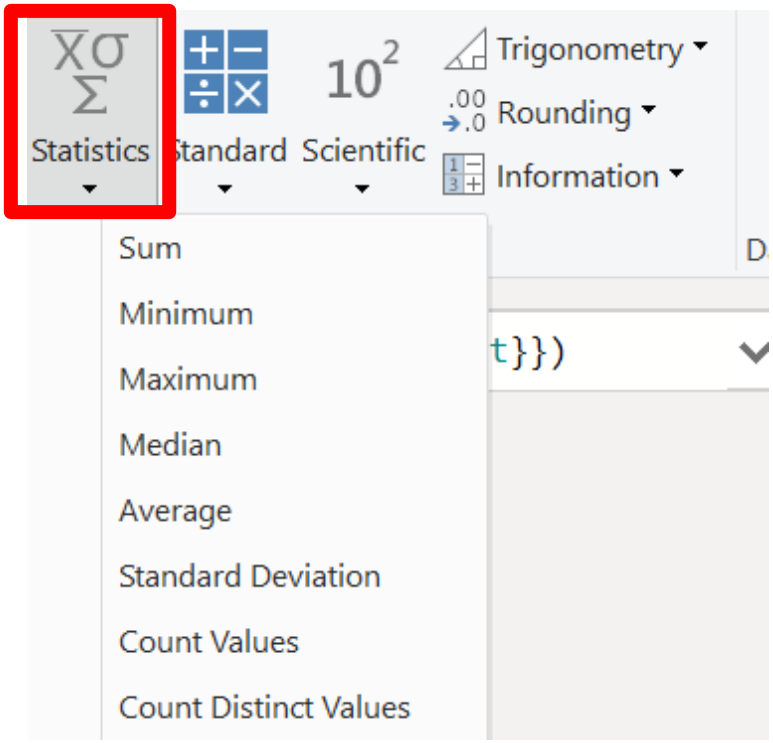
Power BI Desktop: Statistics

To show statistic functions in Power BI as following:

1. **Select Data**
2. **Go to the Transform tab & from "Number Column" group**
3. **Click on "Statistics"**
   - Sum
   - Minimum & Maximum
   - Median
   - Average
   - Standard Deviation
   - Count Values
   - Count Distinct Values



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Power BI Desktop: Statistics

Sum: return sum up all selected cells in Table

Minimum & Maximum: return the minimum or maximum value in a given list of arguments

Median: return the measurement of central tendency, which is the location of the center of a group of numbers in a statistical distribution

Average: return the average value of a given series of numbers

Standard Deviation: measures the dispersion of a dataset relative to its mean and is calculated as the square root of the variance

$$\sigma = \sqrt{\frac{\sum(x_i - \mu)^2}{N}}$$

Count Values: return the number of entries in a number field that is in a range or array of numbers

Count Distinct Values: returns the number of unique values in a field for each GROUP BY result

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What is Business Intelligence?

Group Discussion:

How to apply standard mathematical equations?

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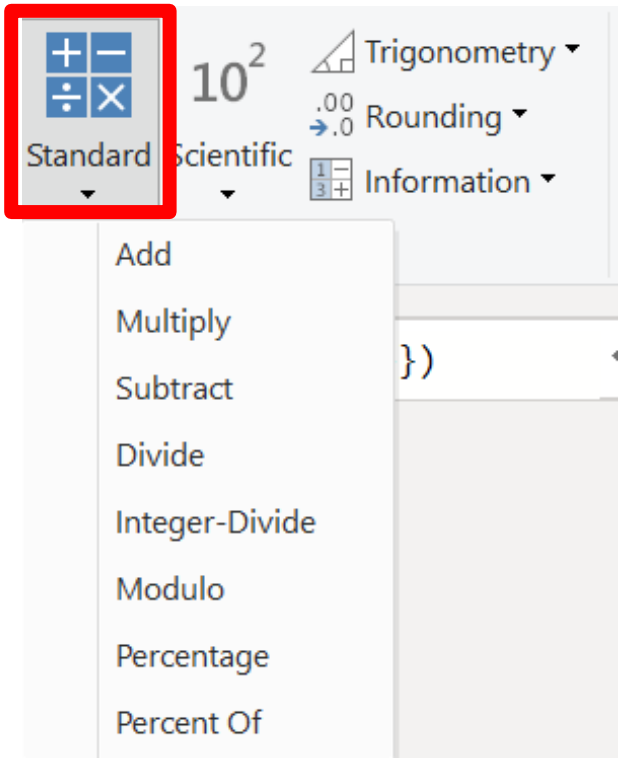
Power BI Desktop: Standard

To show standard functions in Power BI as following:

1. **Select Data**
2. **Go to the Transform tab & from "Number Column" group**
3. **Click on "Standard"**
   - Add & Subtract
   - Multiply & Divide
   - Integer-Divide
   - Modulo
   - Percentage
   - Percent of



Power BI Desktop: Standard

Add: add a specific value to all selected columns

Subtract: subtract a specific value to all selected columns

Multiply: multiply a specific value with all selected columns

Divide: divide a specific value with all selected columns

Integer-Divide: return the integer portion of the result form dividing a specific value by all selected columns

Modulo: return the remainder resulting from the integer division of number by divisor

Percentage: return the current cells multiply with a specific value and then divide by 100

Percent of: return the current cells divide by a specific value and then multiples with 100

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What is Business Intelligence?

Group Discussion:

How to apply scientific equations?

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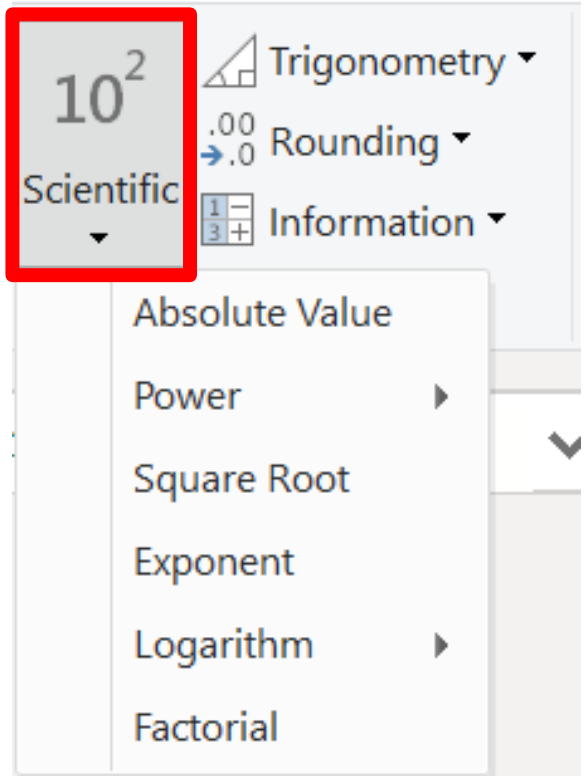
Power BI Desktop: Scientific

To show standard functions in Power BI as following:

1. **Select Data**
2. **Go to the Transform tab & from "Number Column" group**
3. **Click on "Scientific"**
   - Absolute Value
   - Power
   - Square Root
   - Exponent
   - Logarithm
   - Factorial



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Power BI Desktop: Scientific

Absolute Value: return the absolute of all selected columns

Power: return the result of raising specific number for all selected columns

Square Root: return the square root of a specific value for all selected columns

Exponent: return the result of a specific value to a power

Logarithm: return the logarithm of a specific value

Factorial: return the factorial of a specific value

Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

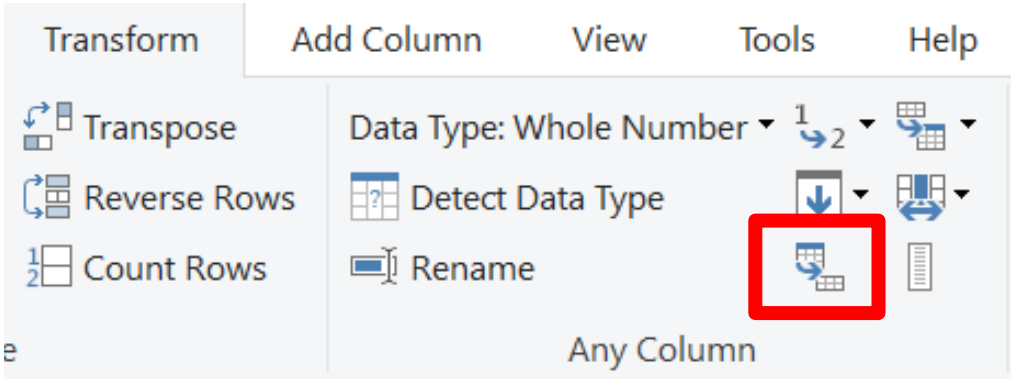
How to pivot Table?

Ghalib Alshammri, PhD

Power BI Desktop: Pivot Columns

To pivot columns in Power BI as following:

1. **Group By your columns**
2. **Go to the Transform tab & from “Any Column” group**
3. **Click on “Pivot Column”**

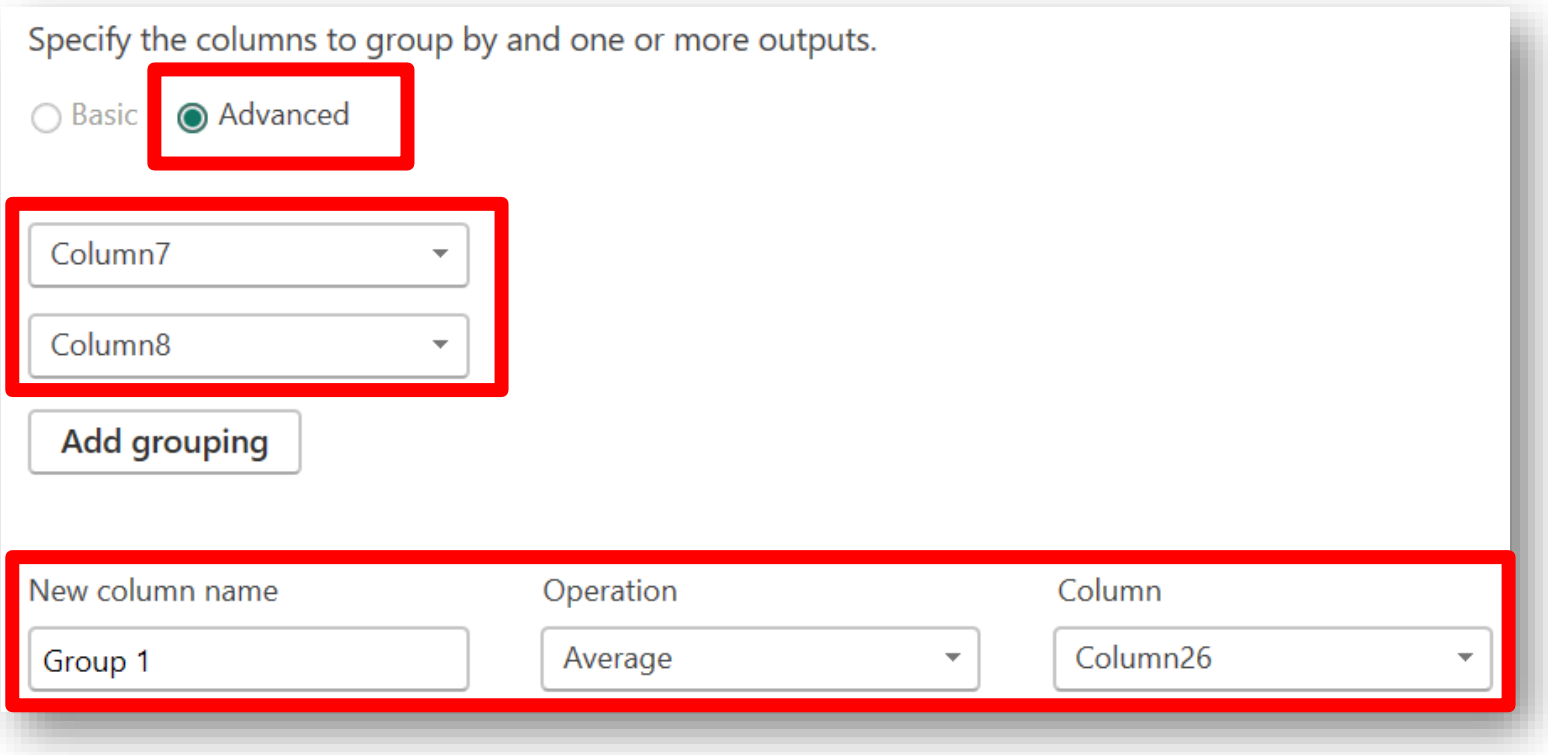


Ghalib Alshammri, PhD

Power BI Desktop: Pivot Columns

Example:

1. **Clean missing data**
2. **Go to the Home tab & from "Transform" group**
3. **Select "Group By" (Drive-Wheels & Body-Style) columns with an average of (Price) column**



Ghalib Alshammri, PhD

Power BI Desktop: Pivot Columns

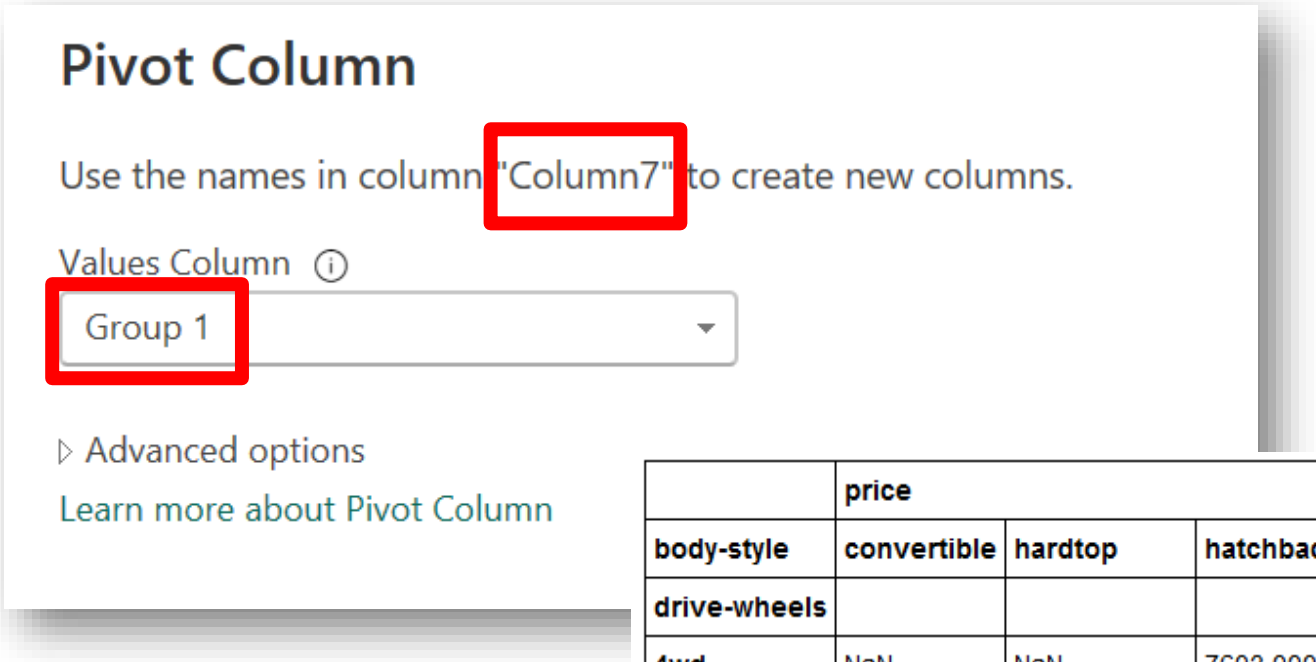
	Column7	Column8	1.2 Group 1
1	convertible	rwd	23949.6
2	hatchback	rwd	14337.77778
3	sedan	fwd	9811.8
4	sedan	4wd	12647.33333
5	wagon	fwd	9997.333333
6	sedan	rwd	21711.83333
7	hatchback	fwd	8396.387755
8	wagon	rwd	16994.22222
9	hardtop	rwd	24202.71429
10	hardtop	fwd	8249
11	hatchback	4wd	7603
12	wagon	4wd	9095.75
13	convertible	fwd	11595

Ghalib Alshammri, PhD

Power BI Desktop: Pivot Columns

Example:

1. **Go to the Transform tab & from “Any Column” group**
2. **Select “Pivot Column”**



	price				
body-style	**convertible**	**hardtop**	**hatchback**	**sedan**	**wagon**
drive-wheels					
4wd	NaN	NaN	7603.000000	12647.333333	9095.750000
fwd	11595.0	8249.000000	8396.387755	9811.800000	9997.333333
rwd	23949.6	24202.714286	14337.777778	21711.833333	16994.222222

Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

What is Data Visualizations?

Ghalib Alshammri, PhD

Power BI Desktop: Data Visualization Tools

"Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data"

In the world of Big Data, data visualization tools and technologies are essential to analyze massive amounts of information and make data-driven decisions.

Ghalib Alshammri, PhD

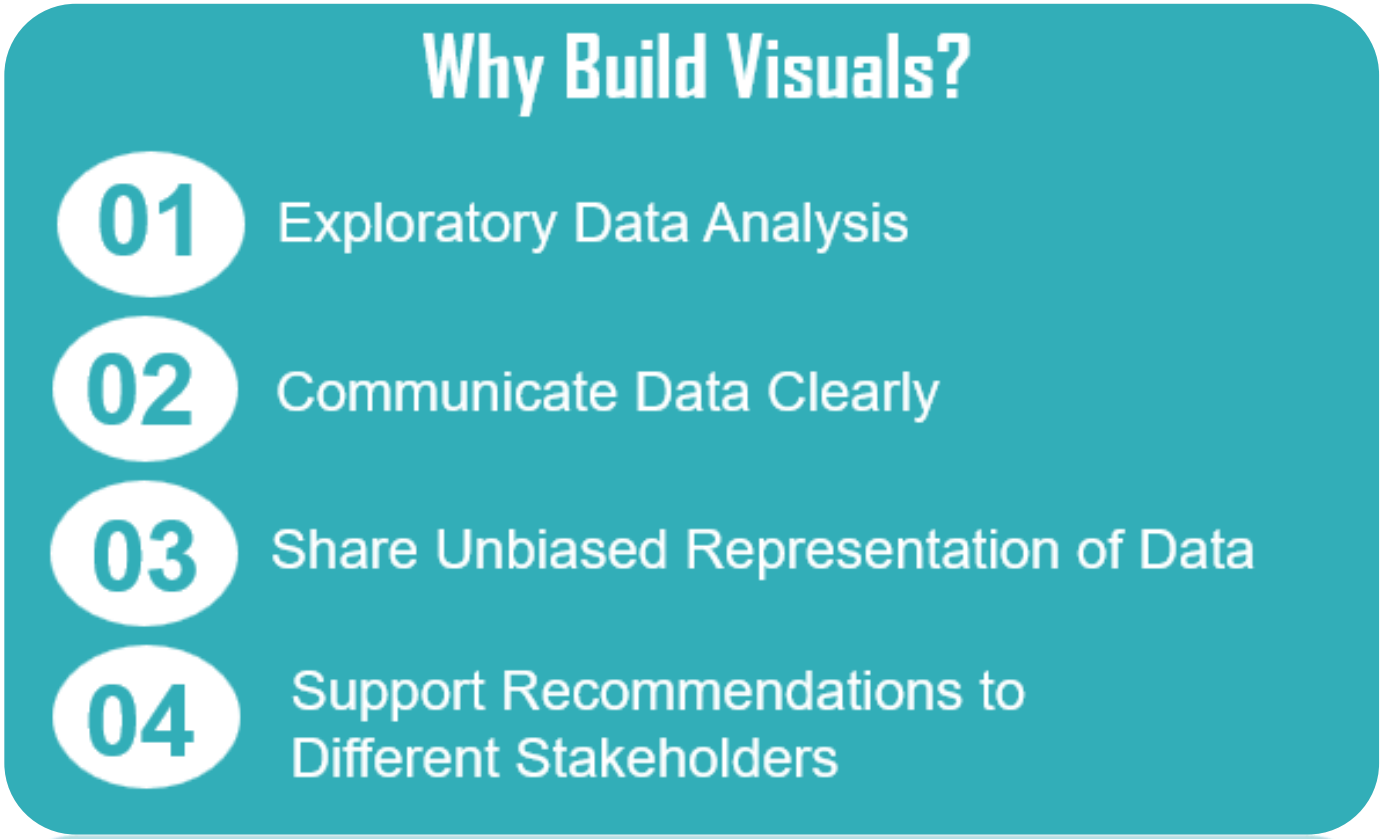
What is Business Intelligence?

Group Discussion:

Why Data Visualizations?

Ghalib Alshammri, PhD

Power BI Desktop: Data Visualization Tools



Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

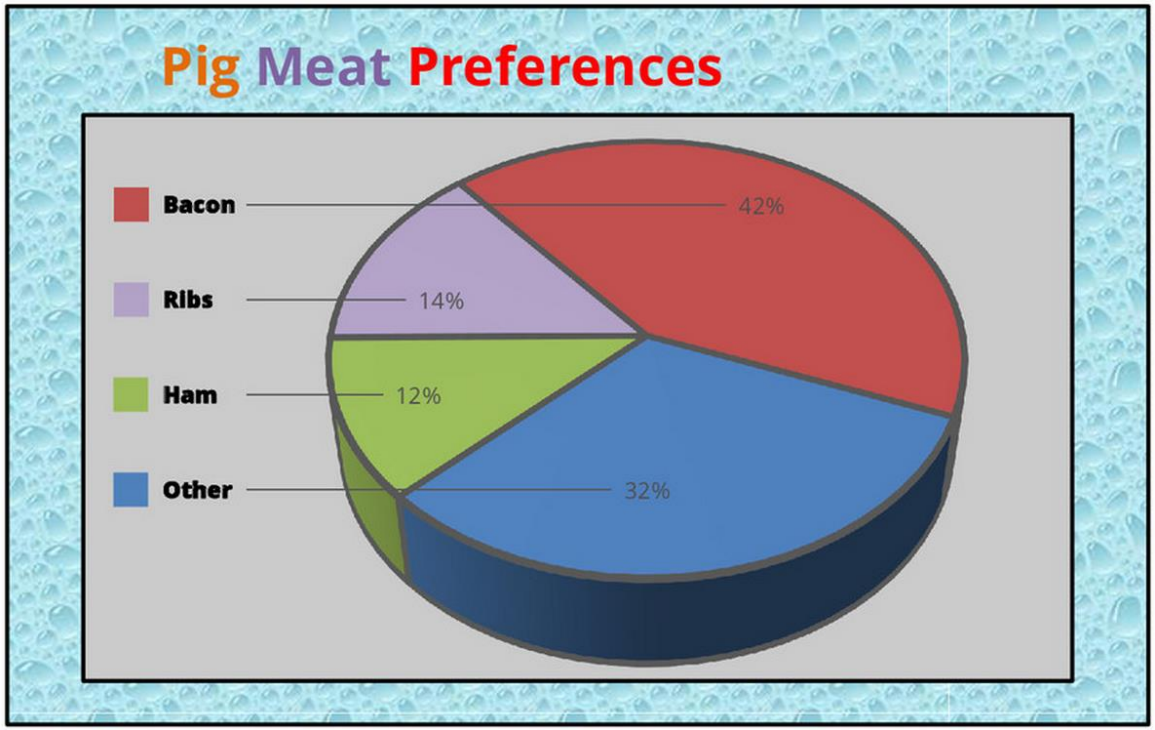
What should be ….. in Data Visualizations?

Ghalib Alshammri, PhD

Power BI Desktop: Data Visualization Tools

Ghalib Alshammri, PhD

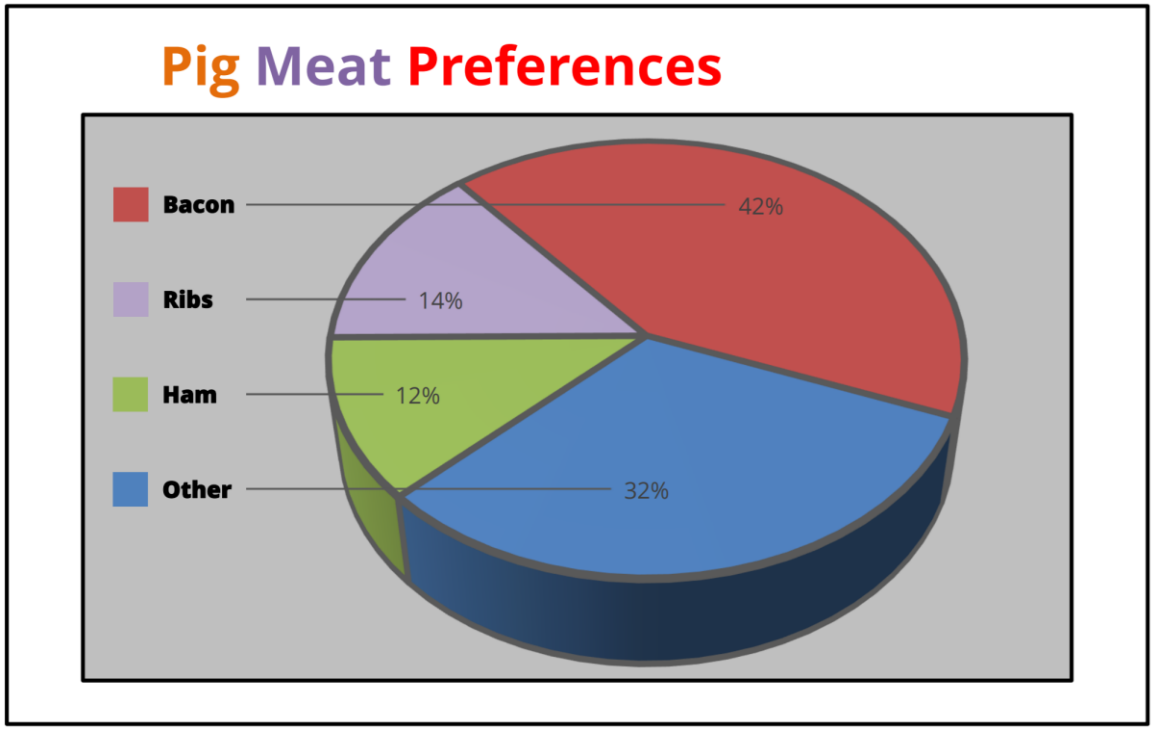
Power BI Desktop: Data Visualization Tools



Question: Is This Graph more effective, attractive, and impactive? Why?

Ghalib Alshammri, PhD

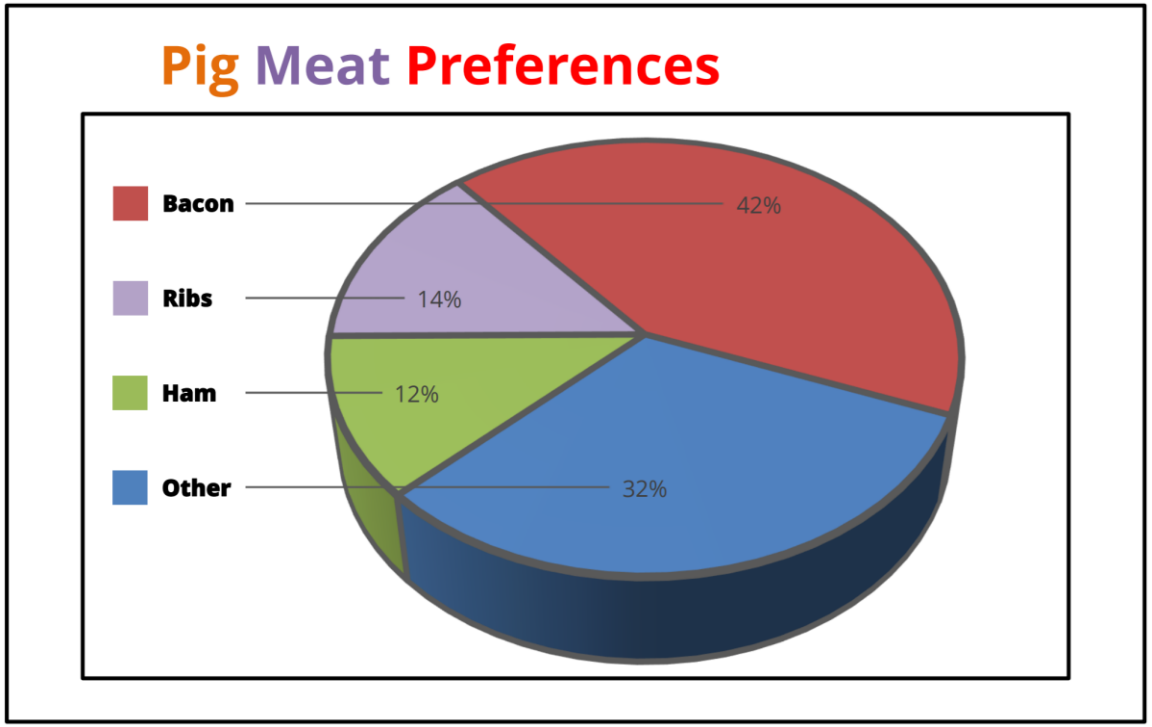
Power BI Desktop: Data Visualization Tools



1 Remove Background

Ghalib Alshammri, PhD

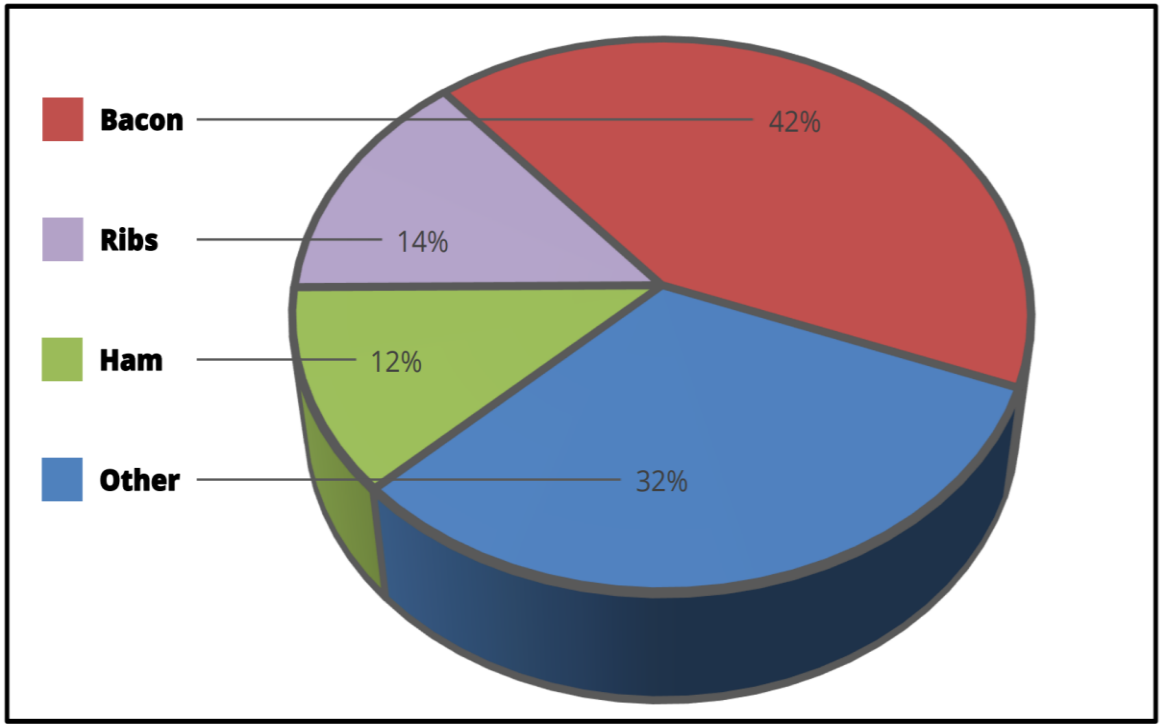
Power BI Desktop: Data Visualization Tools



1 Remove Background

Ghalib Alshammri, PhD

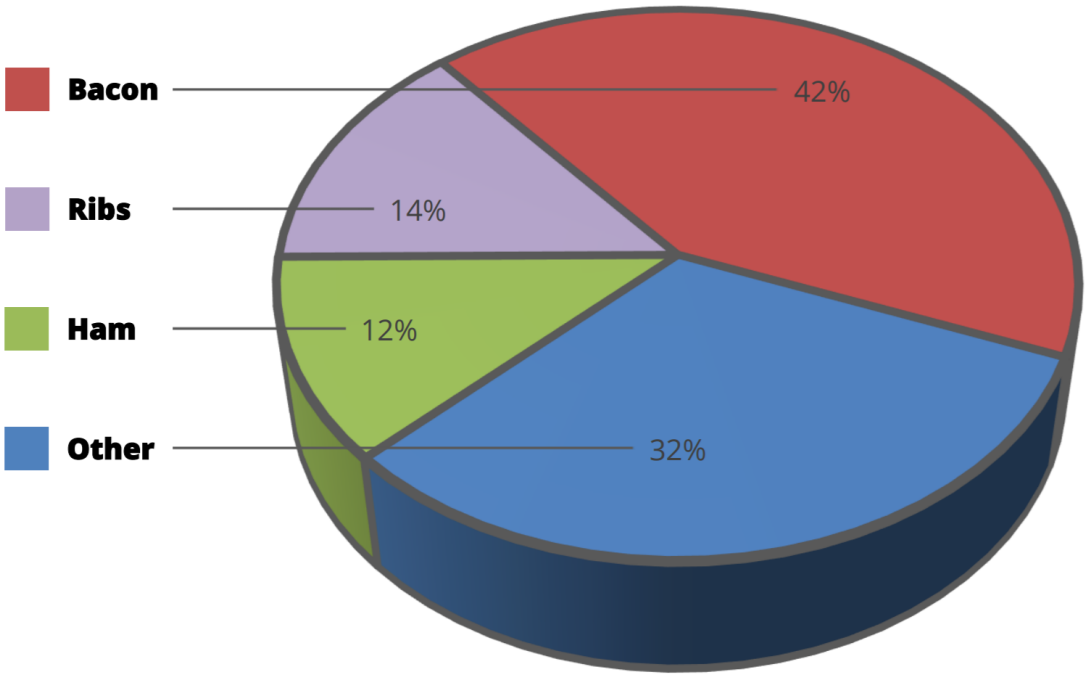
Power BI Desktop: Data Visualization Tools



1. Remove Background
2. Remove Borders

Ghalib Alshammri, PhD

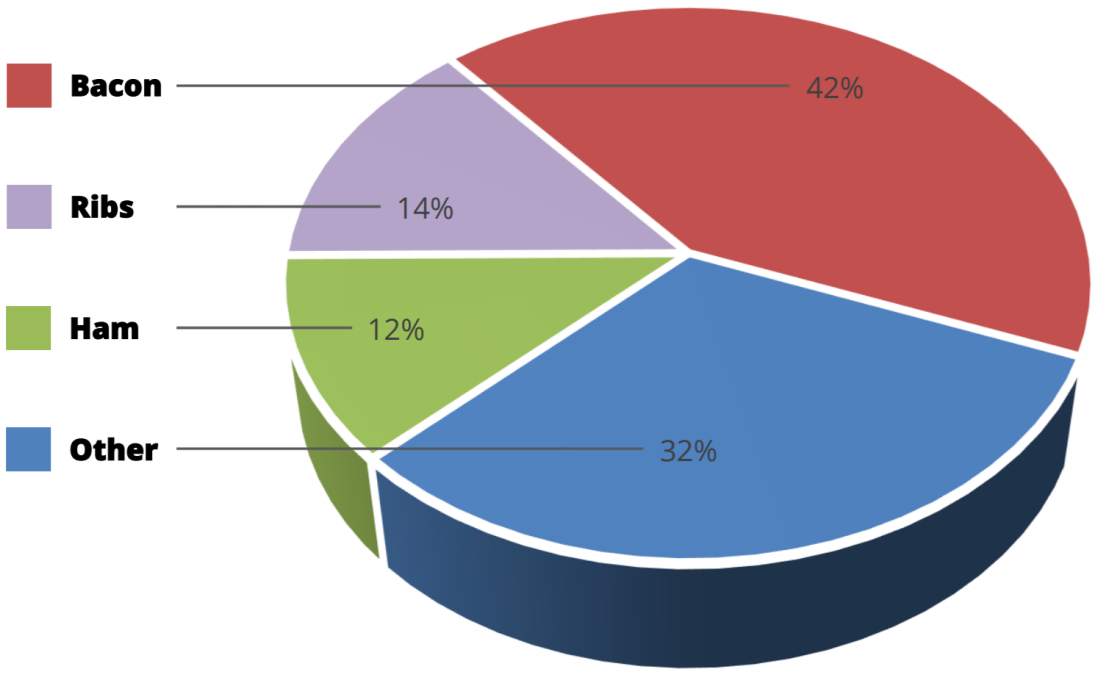
Power BI Desktop: Data Visualization Tools



1. Remove Background
2. Remove Borders

Ghalib Alshammri, PhD

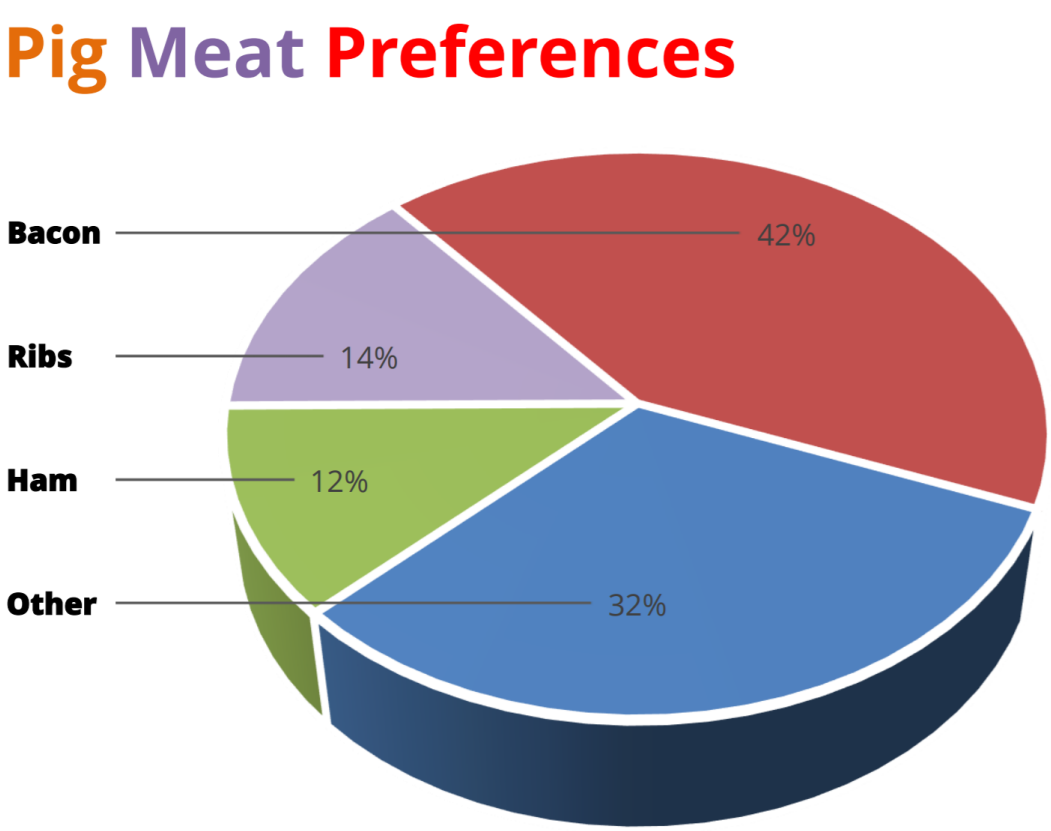
Power BI Desktop: Data Visualization Tools



1. Remove Background
2. Remove Borders

Ghalib Alshammri, PhD

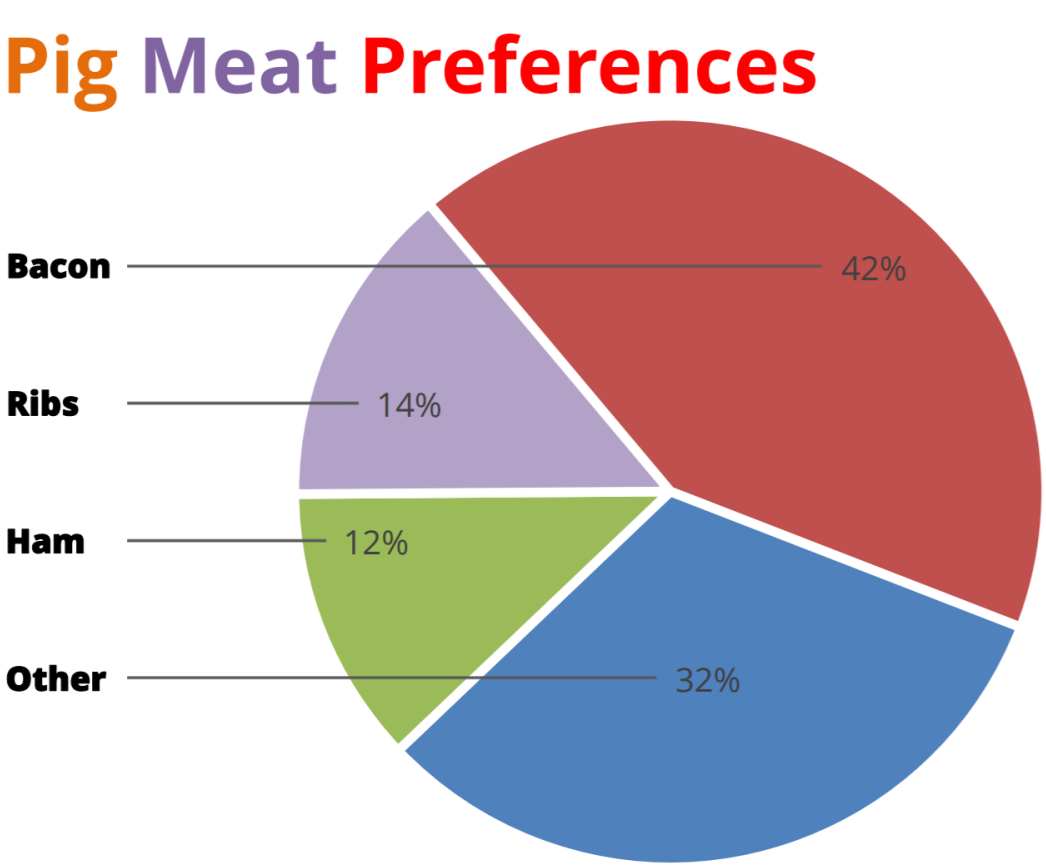
Power BI Desktop: Data Visualization Tools



1. Remove Background
2. Remove Borders
3. Remove Redundant Legend

Ghalib Alshammri, PhD

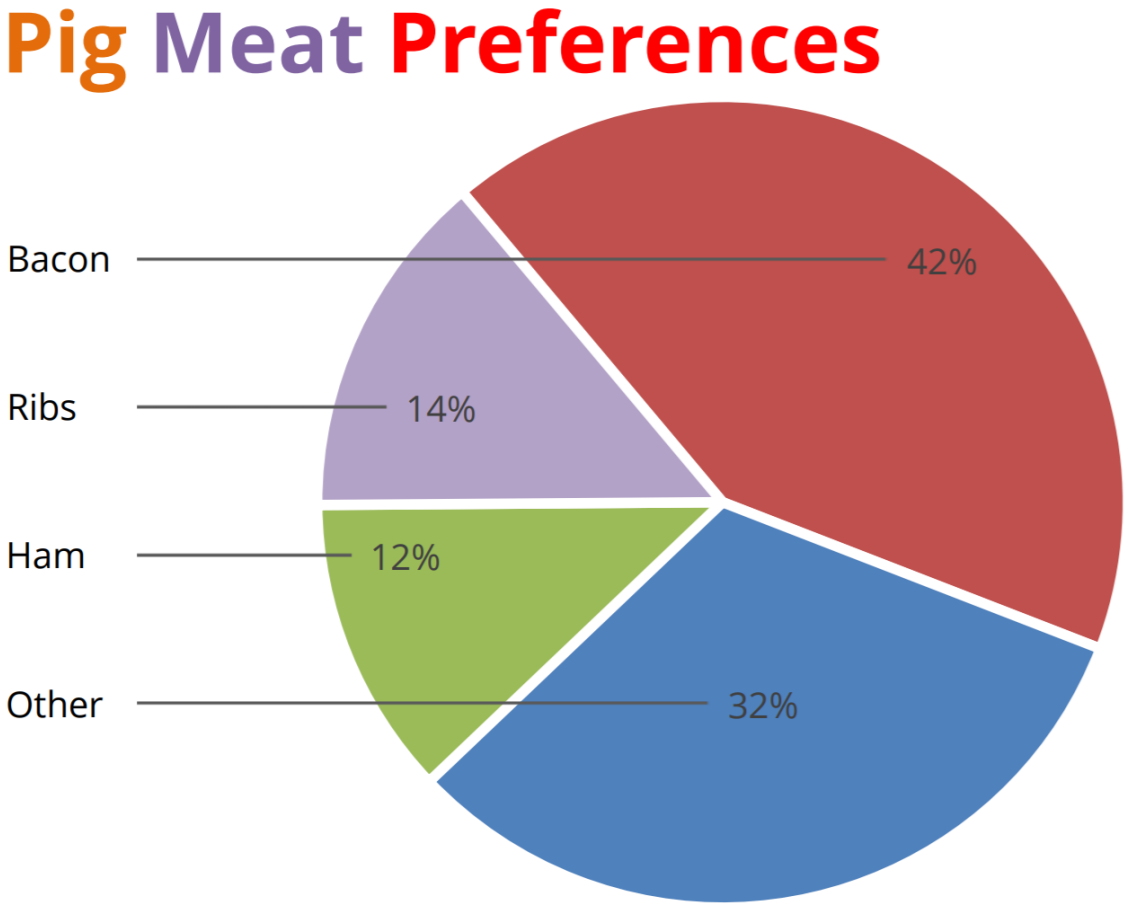
Power BI Desktop: Data Visualization Tools



1. Remove Background
2. Remove Borders
3. Remove Redundant Legend & 3D

Ghalib Alshammri, PhD

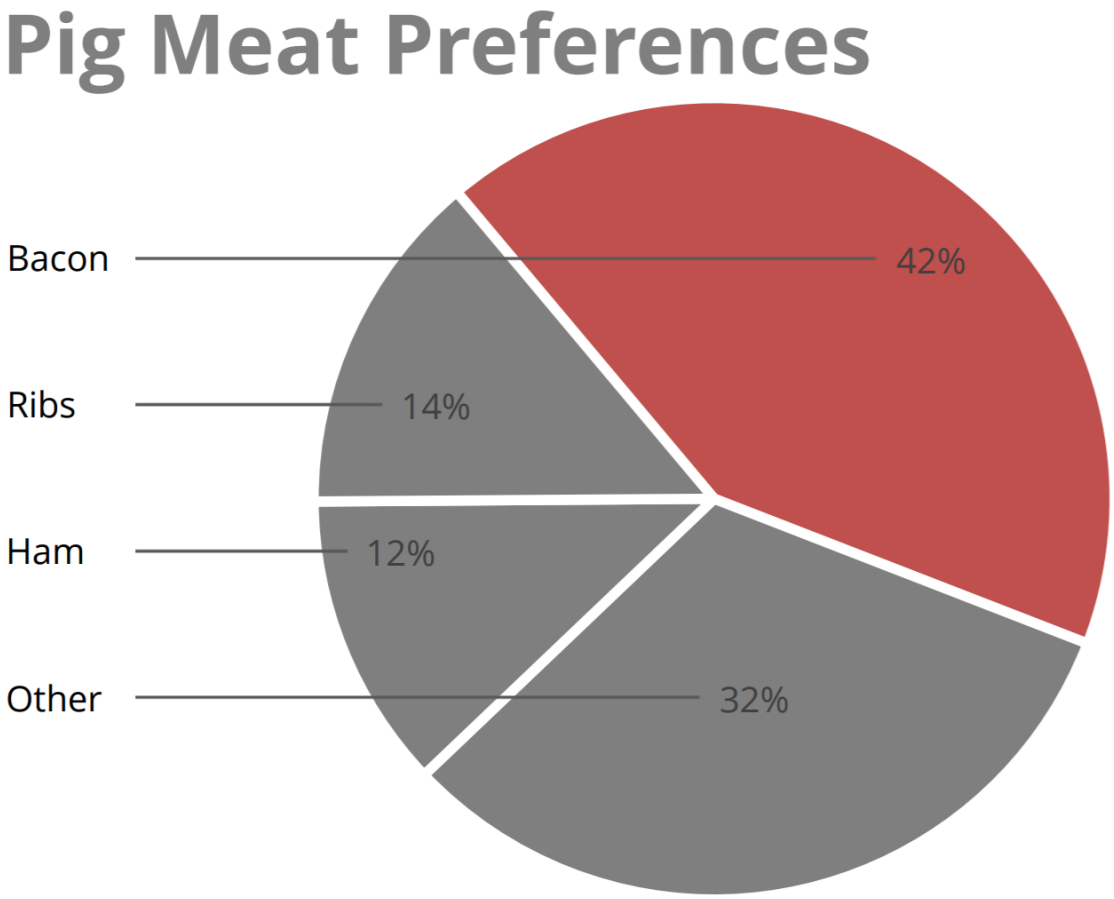
Power BI Desktop: Data Visualization Tools



1. Remove Background
2. Remove Borders
3. Remove Redundant Legend & 3D & Bold

Ghalib Alshammri, PhD

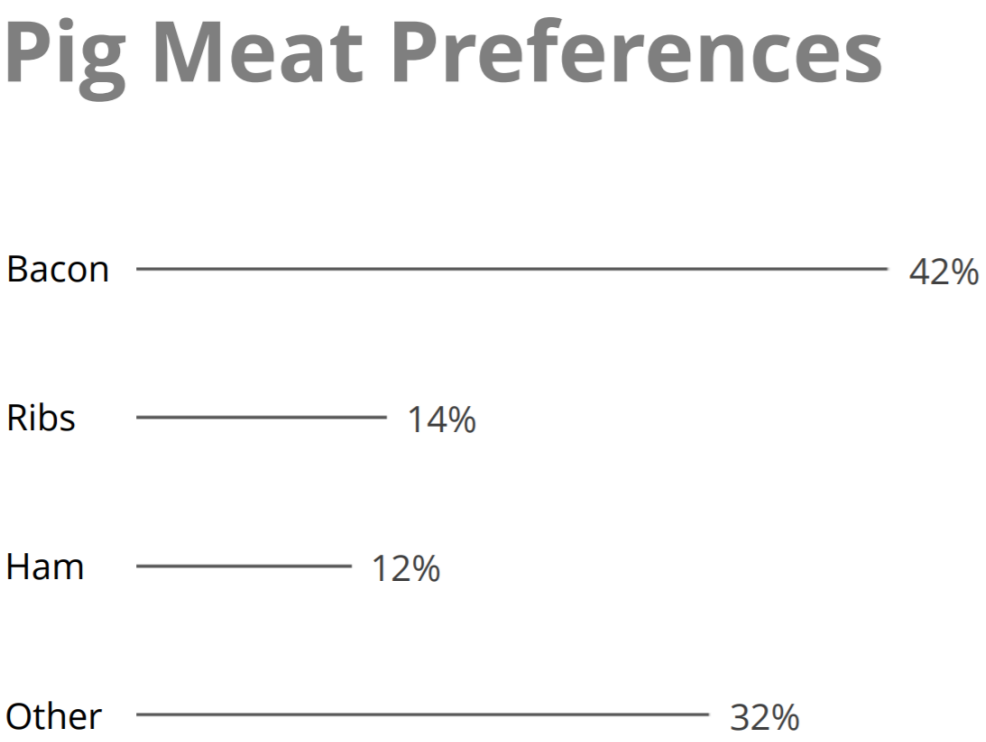
Power BI Desktop: Data Visualization Tools



1. Remove Background
2. Remove Borders
3. Remove Redundant Legend & 3D & Bold
4. Reduce Colors

Ghalib Alshammri, PhD

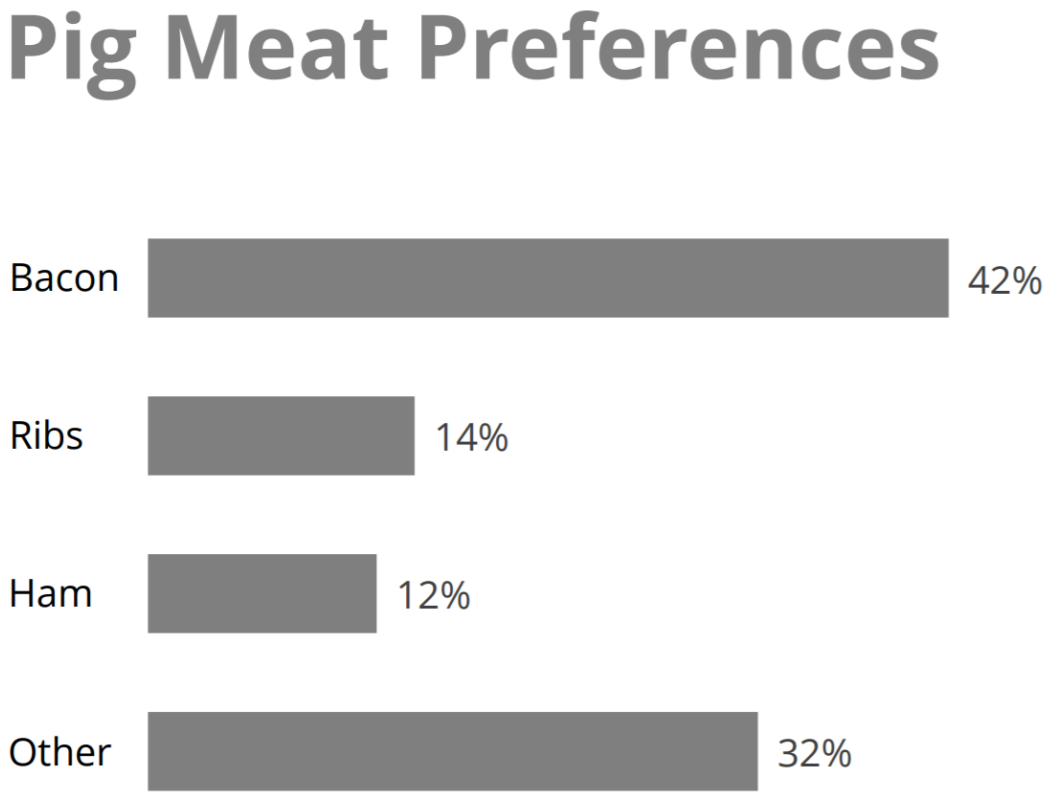
Power BI Desktop: Data Visualization Tools



1. Remove Background
2. Remove Borders
3. Remove Redundant Legend & 3D & Bold
4. Reduce Colors Remove The Wedges

Ghalib Alshammri, PhD

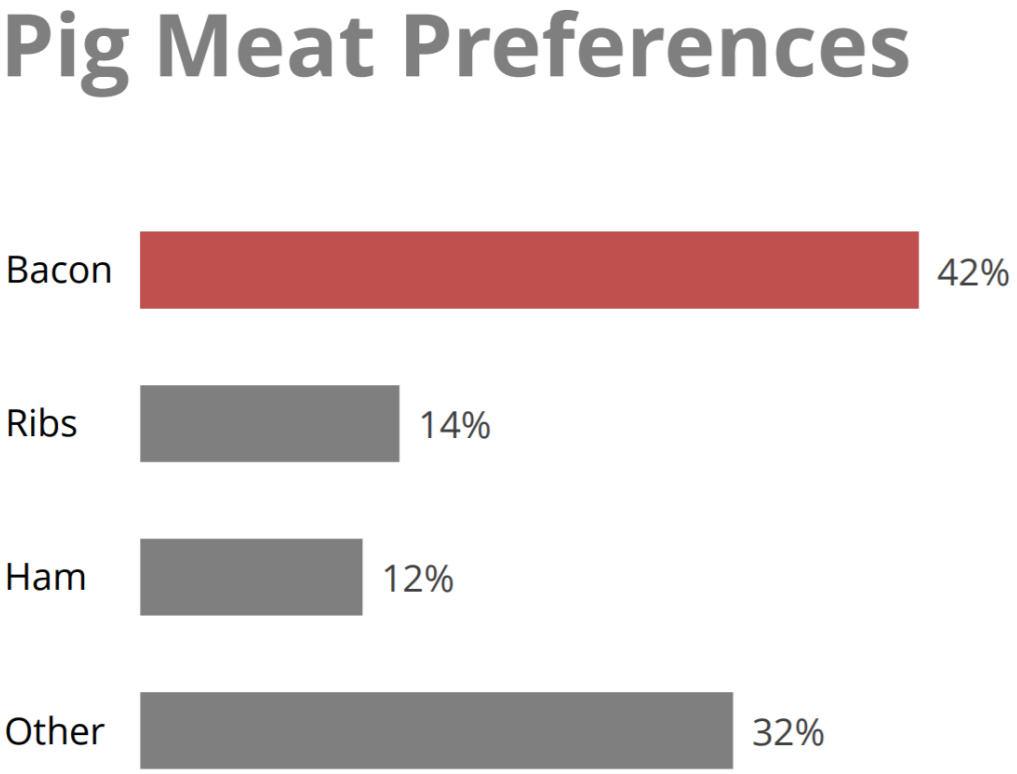
Power BI Desktop: Data Visualization Tools



1. Remove Background
2. Remove Borders
3. Remove Redundant Legend & 3D & Bold
4. Reduce Colors Remove The Wedges
5. Thicken The Lines

Ghalib Alshammri, PhD

Power BI Desktop: Data Visualization Tools



1. Remove Background
2. Remove Borders
3. Remove Redundant Legend & 3D & Bold
4. Reduce Colors Remove The Wedges
5. Thicken The Lines Emphasize the highest

Question: How can you determine a fair graphical types?

Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

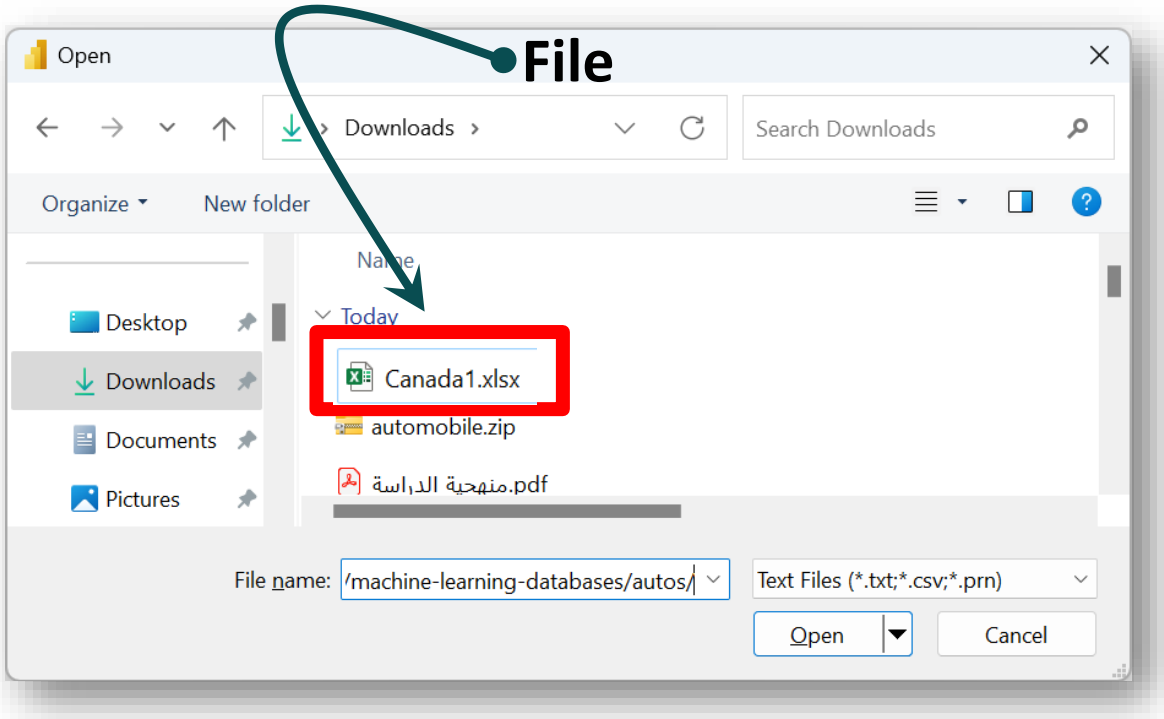
How to import Excel Files?

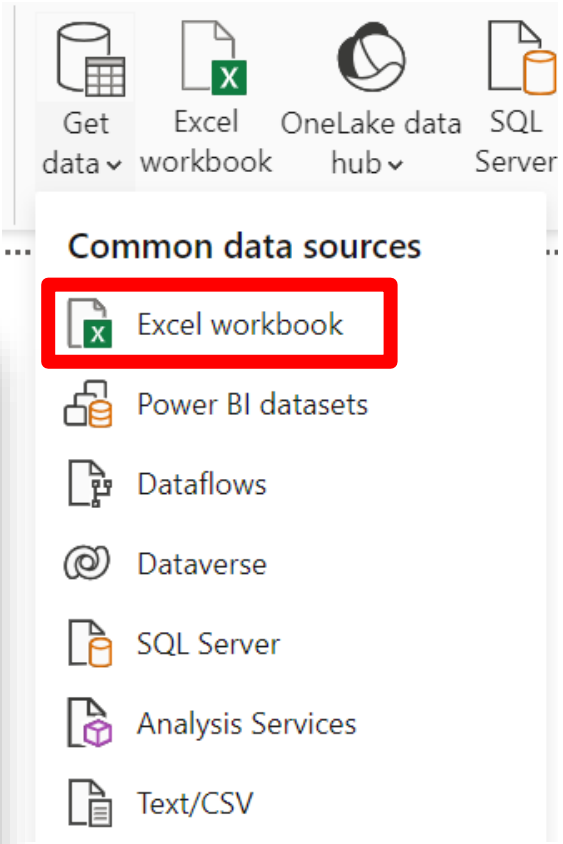
Ghalib Alshammri, PhD

Power BI Desktop: Import Excel Sheet

To import (XLS File) in Power BI as following:

1. **Go to the Home tab & "Data" group**
2. **Click on "Get Data"**
3. **Determine "Excel Workbook"**





Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

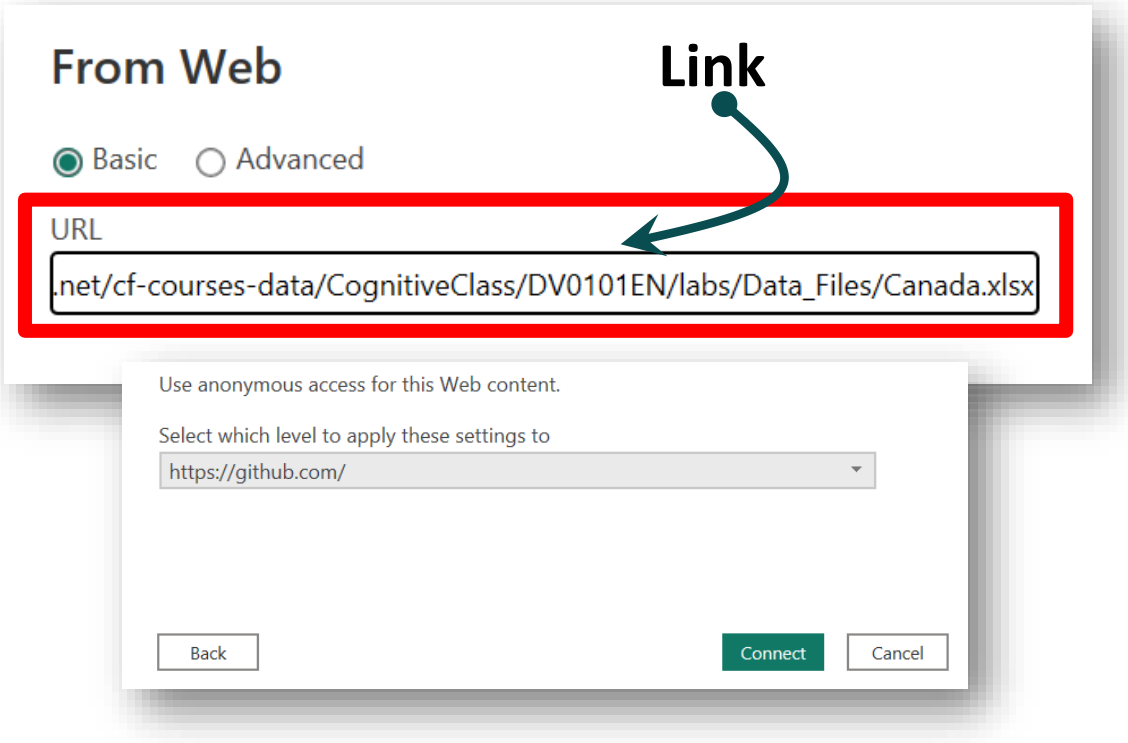
How to import online resources?

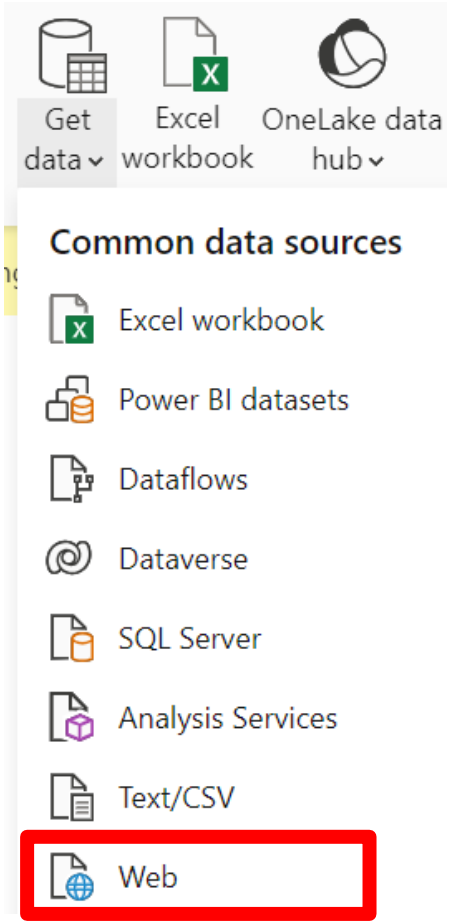
Ghalib Alshammri, PhD

Power BI Desktop: Import Excel Sheet

To import (XLS File) in Power BI as following:

1. **Go to the Home tab & "Data" group**
2. **Click on "Get Data"**
3. **Determine "Web"**





https://s3-api.us-geo.objectstorage.softlayer.net/cf-courses-data/CognitiveClass/DV0101EN/labs/Data_Files/Canada.xlsx

Ghalib Alshammri, PhD

Power BI Desktop: Import Excel Sheet

Excel Sheets

Data

Canada by Citizenship (2)

Column1	Column2	Column3	Column4	Column5
Type	Coverage	OdName	AREA	AreaName
Immigrants	Foreigners	Afghanistan	935	Asia
Immigrants	Foreigners	Albania	908	Europe
Immigrants	Foreigners	Algeria	903	Africa
Immigrants	Foreigners	American Samoa	909	Oceania
Immigrants	Foreigners	Andorra	908	Europe
Immigrants	Foreigners	Angola	903	Africa
Immigrants	Foreigners	Antigua and Barbuda	904	Latin America and tl
Immigrants	Foreigners	Argentina	904	Latin America and tl

The data in the preview has been truncated due to size limits.

Ghalib Alshammri, PhD

Power BI Desktop: Use First Row as Header

	Type	Coverage	OdName	AREA
1	Immigrants	Foreigners	Afghanistan	935
2	Immigrants	Foreigners	Albania	908
3	Immigrants	Foreigners	Algeria	903
4	Immigrants	Foreigners	American Samoa	909
5	Immigrants	Foreigners	Andorra	908
6	Immigrants	Foreigners	Angola	903
7	Immigrants	Foreigners	Antigua and Barbuda	904
8	Immigrants	Foreigners	Argentina	904
9	Immigrants	Foreigners	Armenia	935
10	Immigrants	Foreigners	Australia	909
11	Immigrants	Foreigners	Austria	908
12	Immigrants	Foreigners	Azerbaijan	935
13	Immigrants	Foreigners	Bahamas	904
14	Immigrants	Foreigners	Bahrain	935
15	Immigrants	Foreigners	Bangladesh	935
16	Immigrants	Foreigners	Barbados	904

Ghalib Alshammri, PhD

Power BI Desktop: Exercises

Apply the following steps in Power BI:

1. **Rename Columns**
2. **Show the number of records**
3. **Remove missing values & errors**
4. **Delete Columns**
5. **Add “Total” column**
6. **Sort Data as “Total” column**
7. **Group “Country” by using “Continent”**

Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

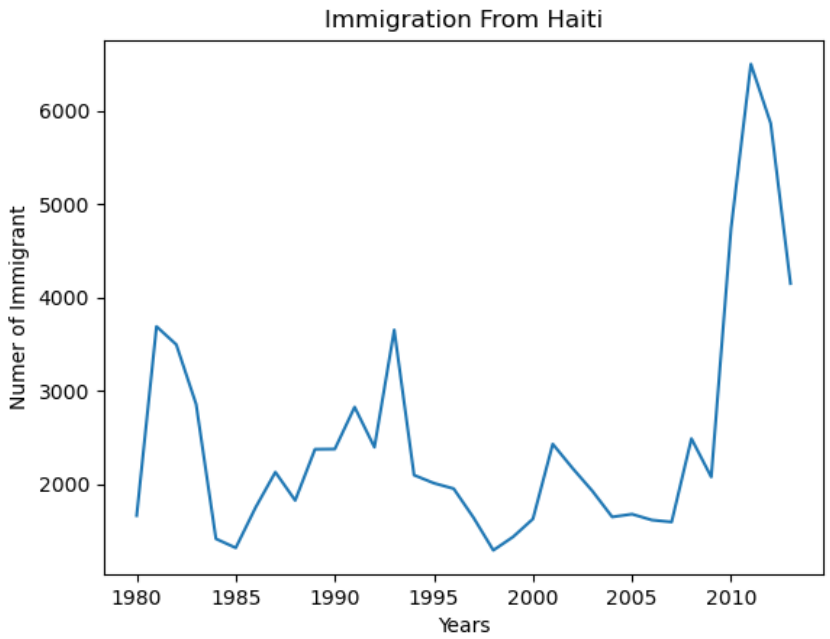
What is Line Chart?

Ghalib Alshammri, PhD

Power BI Desktop: Data Visualization Tools

A **line Chart** is a type of plot which displays information as a series of data points call ‘Markers’ connected by straight line segments.

- Provide a quick and easy way to organize data.
- Best used when comparing fewer than 25 different numbers.
- Continuous Dataset over a period of time.

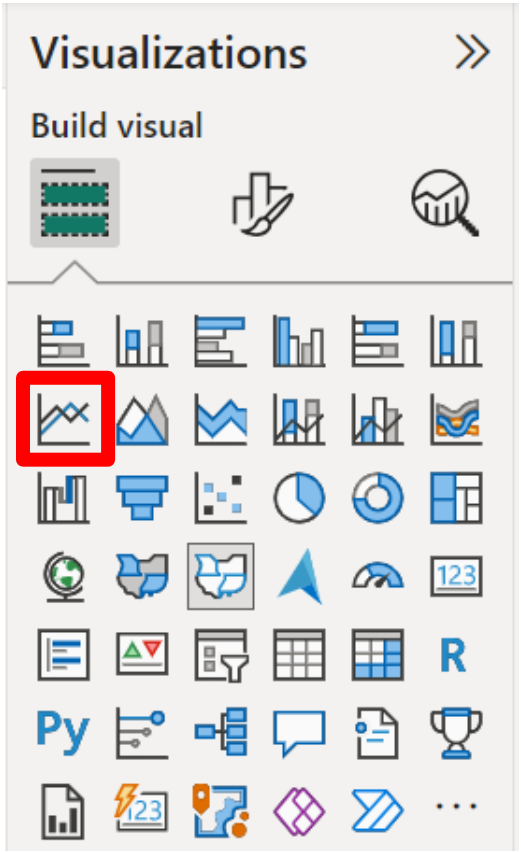


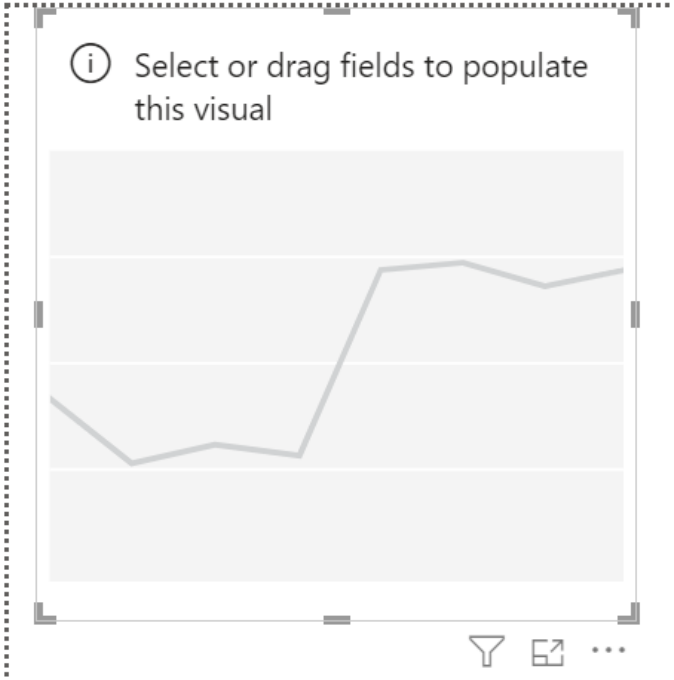
Ghalib Alshammri, PhD

Power BI Desktop: Line Chart

To create line chart in Power BI as following:

1. **Select “Line Chart” icon from the Visualization pane**
2. **Create it on visual design canvas**



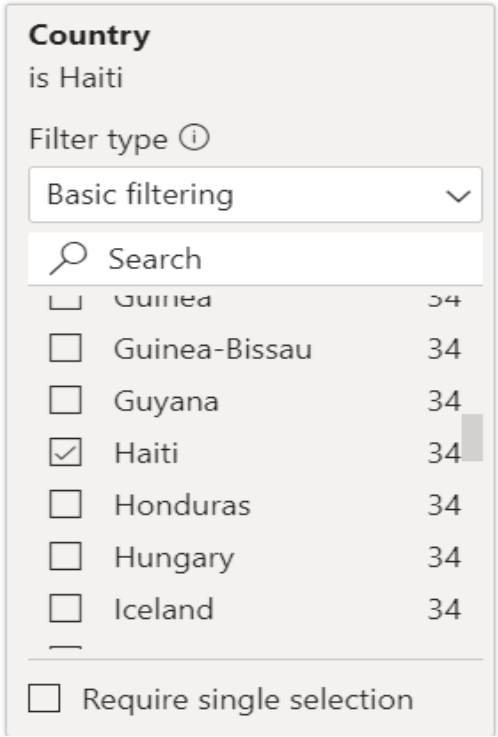


Ghalib Alshammri, PhD

Power BI Desktop: Line Chart

To create line chart in Power BI as following:

3. **Select all columns that represent years**
4. **From Transform tab, select “Unpivot Only Selected Columns”**
5. **Drag & drop “Attribute & Country” in X-axis, and “Value” in Y-axis**
6. **Filter “Country” for only Haiti**



Ghalib Alshammri, PhD

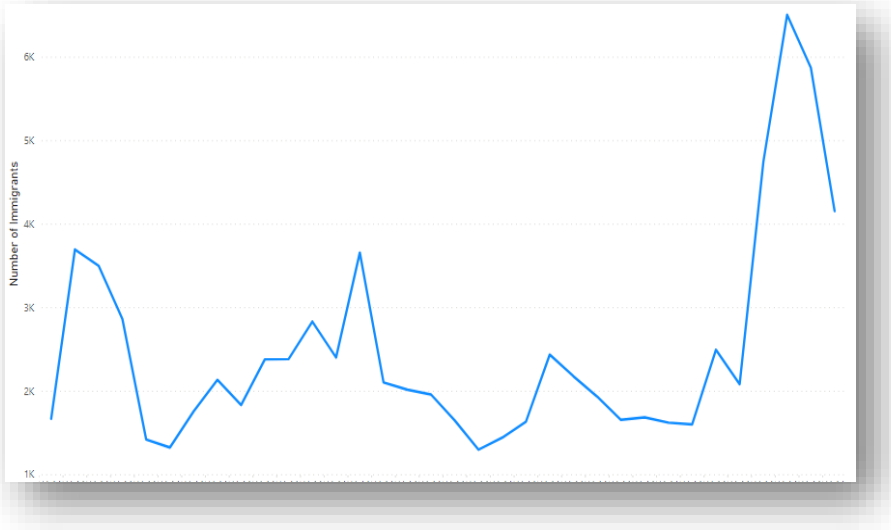
Power BI Desktop: Line Chart

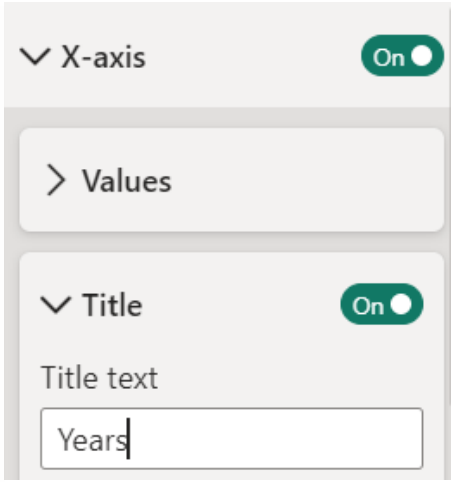
To create line chart in Power BI as following:

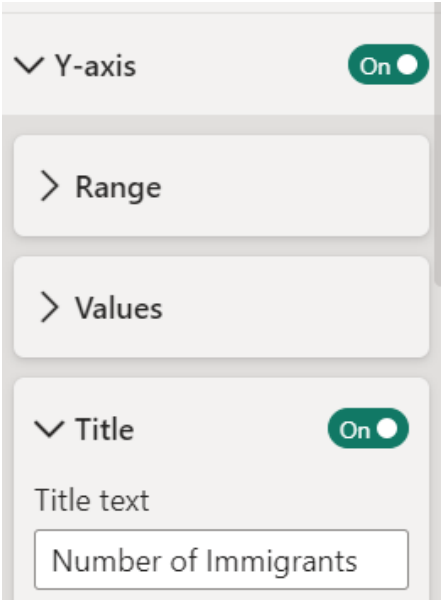
6. **To Change Chart Format**

   Format Visual → Visual → Line Chart Settings

6. **X-axis → Title → write "Years"** to change x-axis title
7. **Y-axis → Title → write "Number of Immigrants"** to change y-axis title







Ghalib Alshammri, PhD

What is Business Intelligence?

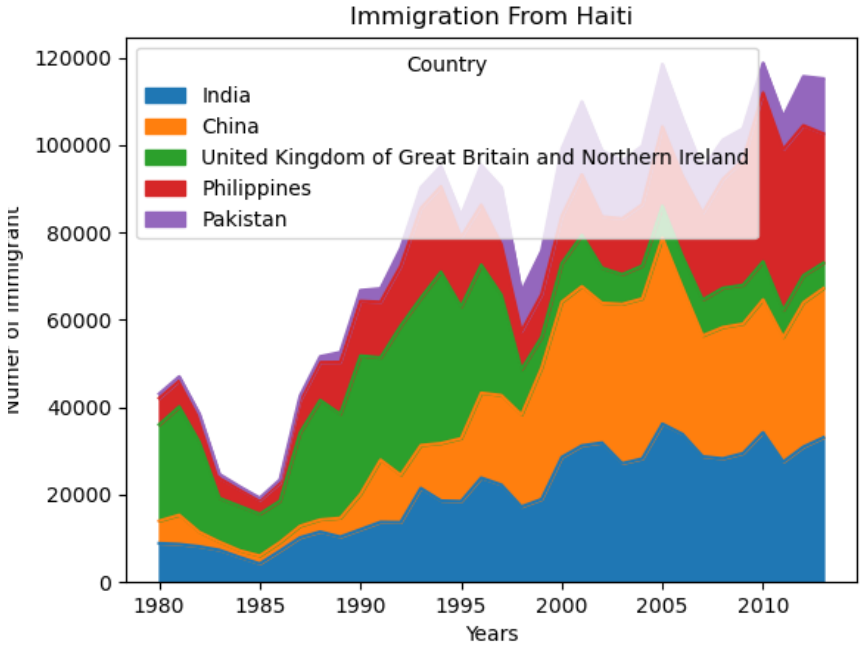
Group Discussion:

What is Area Chart?

Ghalib Alshammri, PhD

Power BI Desktop: Data Visualization Tools

An **Area chart** or area graph displays graphically quantitative data. It is based on the line chart. The area between axis and line are commonly emphasized with colors, textures and hatchings. Commonly one compares two or more quantities with an area chart. Commonly used to represent cumulated totals using numbers or percentages over time.

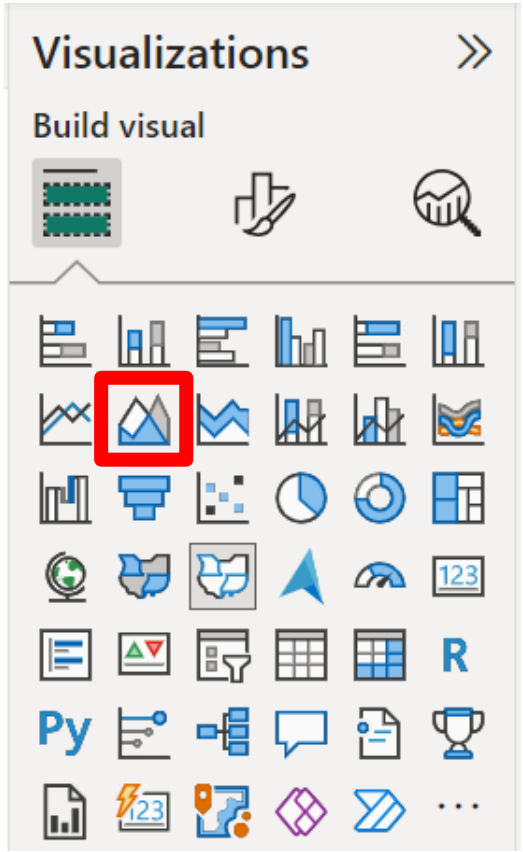


Ghalib Alshammri, PhD

Power BI Desktop: Area Chart

To create area chart in Power BI as following:

1. **Select “Area Chart” icon from the Visualization pane**
2. **Create it on visual design canvas**

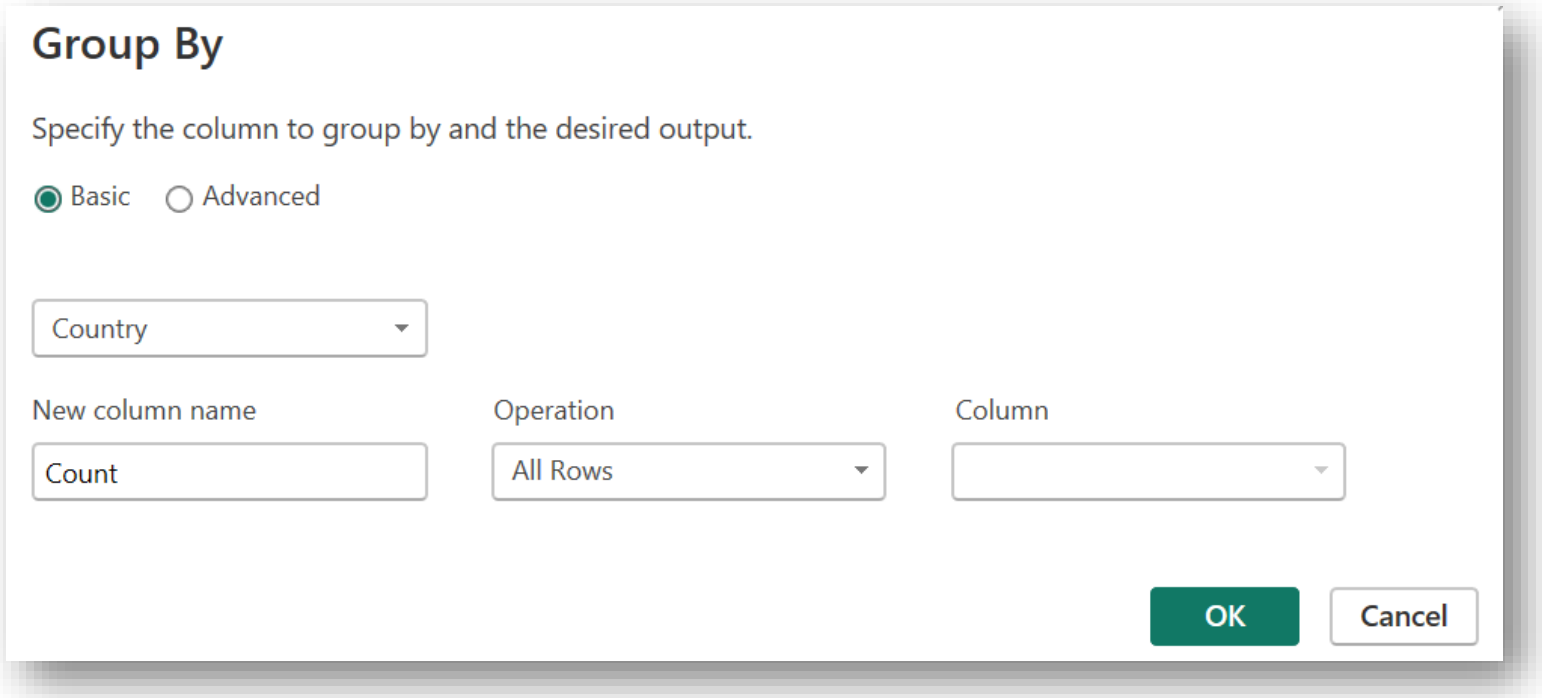


Ghalib Alshammri, PhD

Power BI Desktop: Area Chart

To create area chart in Power BI as following:

3. **Select all columns that represent years**
4. **From Transform tab, select "Unpivot Only Selected Columns"**
5. **From Home tab, select Group By**

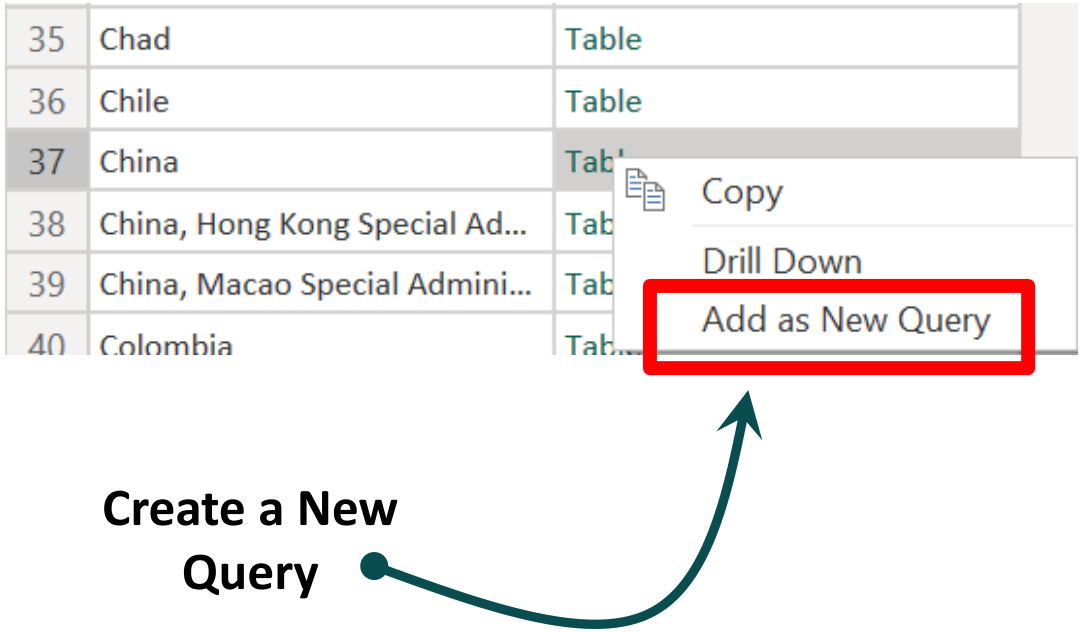


Ghalib Alshammri, PhD

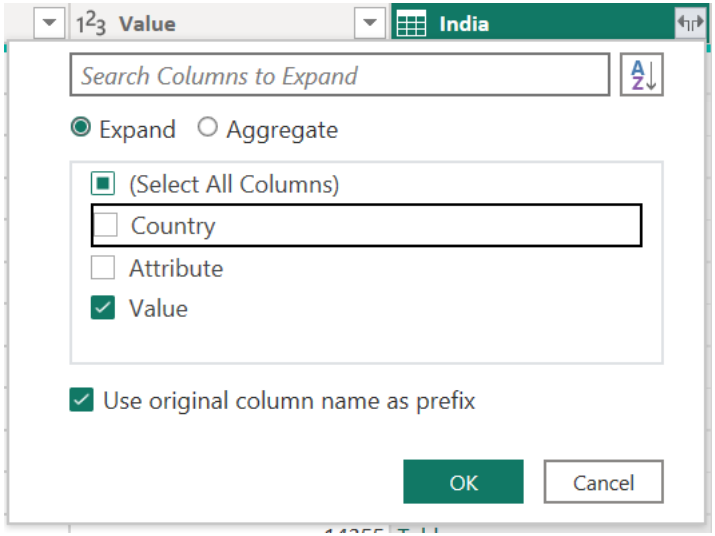
Power BI Desktop: Area Chart

To create area chart in Power BI as following:

6. **Create a new query for all selected country**
7. **Merage all selected tables**
8. **Show only "value" field (Filter)**



Filter Value

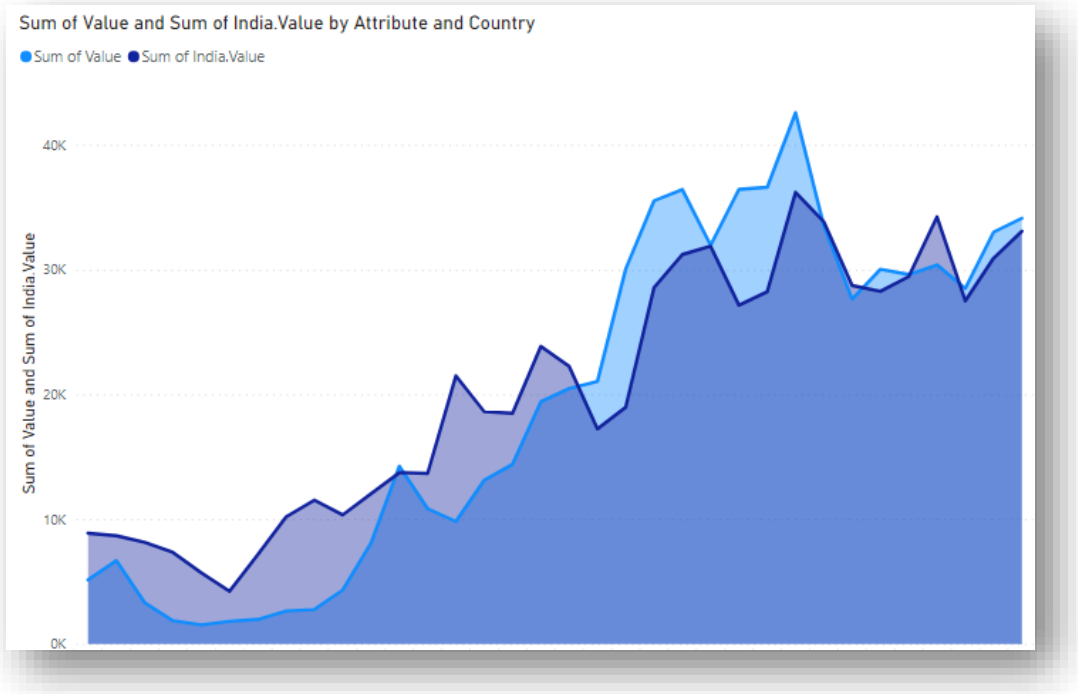


Ghalib Alshammri, PhD

Power BI Desktop: Area Chart

To create area chart in Power BI as following:

9. **Drag & drop "Attribute & Country" in X-axis**
10. **Drag & drop all value fields for countries in Y-axis**



Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

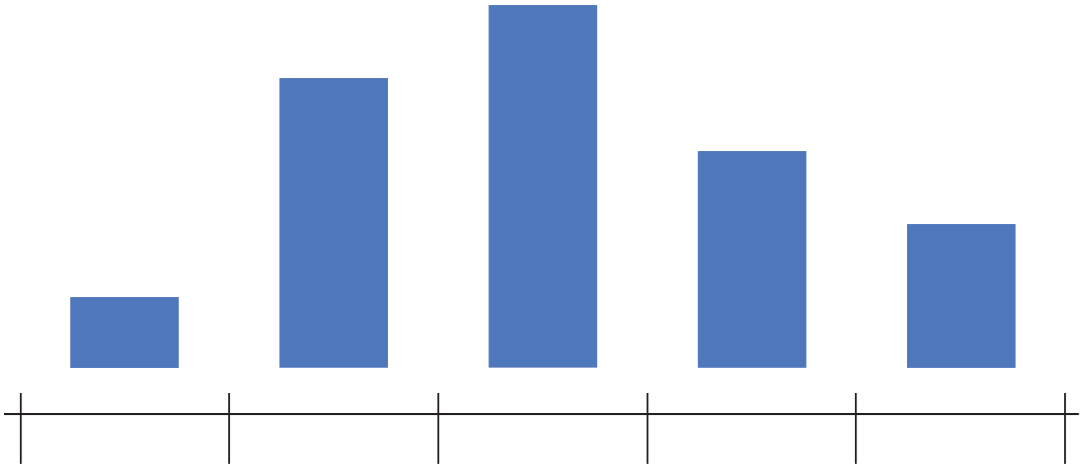
What is Histogram Chart?

Ghalib Alshammri, PhD

Power BI Desktop: Data Visualization Tools

Histogram is a way of representing the frequency distribution of a variable.

- Provide a visual representation of numerical data by indicating the number of data points that lie within a range of values.
- The highest frequency is the greater data value in that bin.
- Use with the appropriate binomial distribution table or straightforward calculations with the binomial formula.



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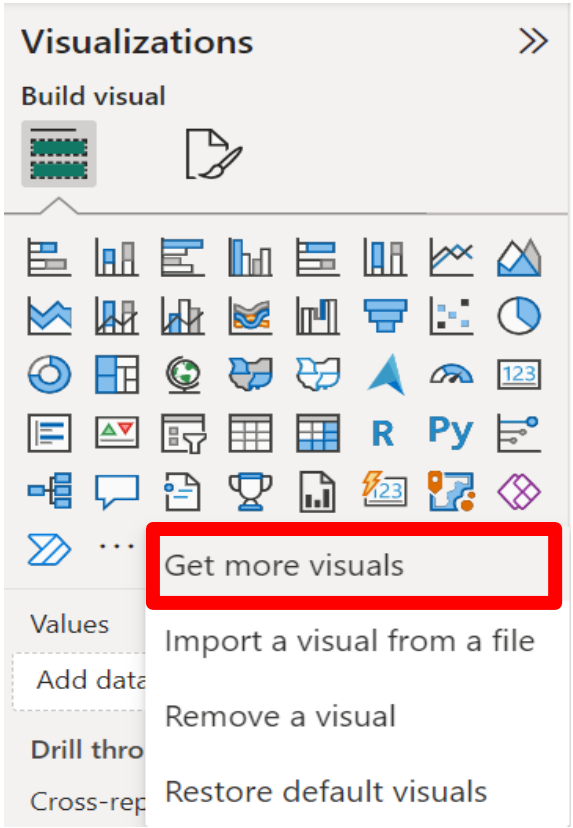
Power BI Desktop: Histogram Chart

To create histogram chart in Power BI as following:

1. **Import the histogram chart from "Get more visuals"**
2. **Create it on visual design canvas**



Ghalib Alshammri, PhD

What is Business Intelligence?

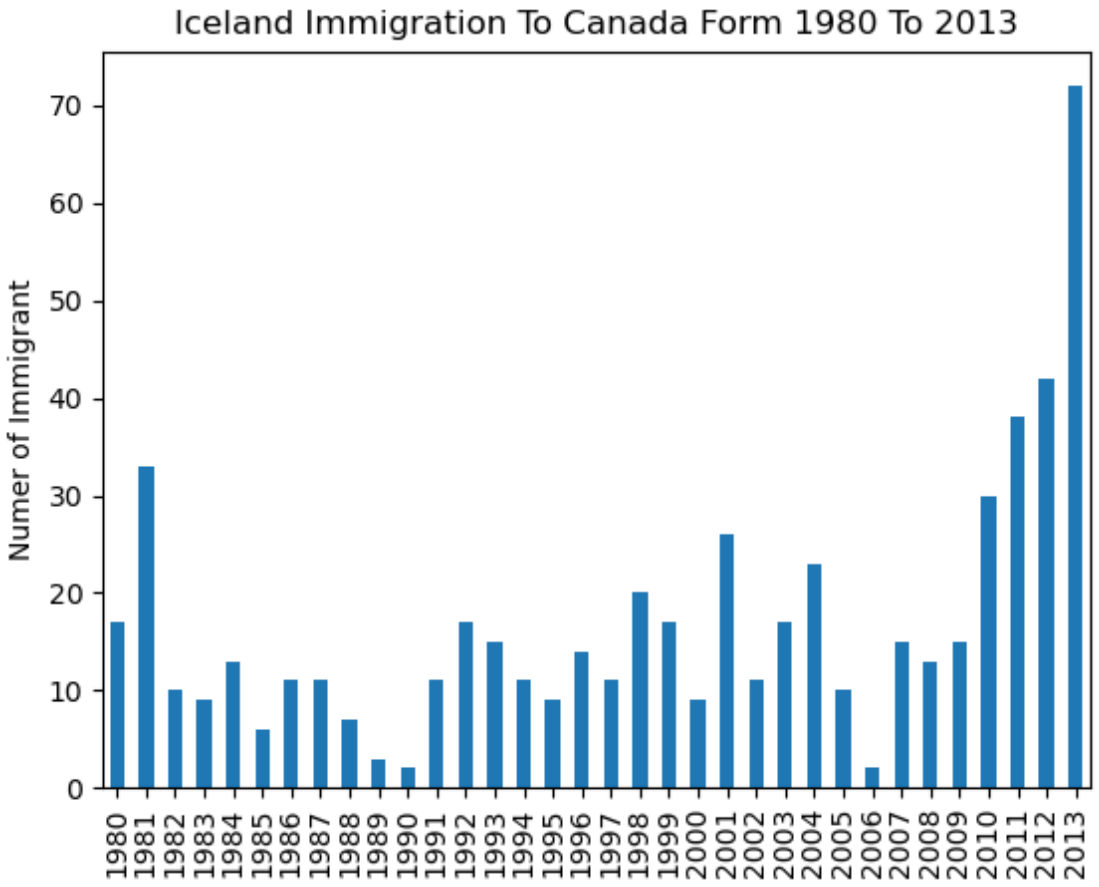
Group Discussion:

What is Bar Chart (Column Chart)?

Ghalib Alshammri, PhD

Power BI Desktop: Data Visualization Tools

Unlike a Histogram, **a Column chart** is commonly used to compare the value of a variable at a given point in time.

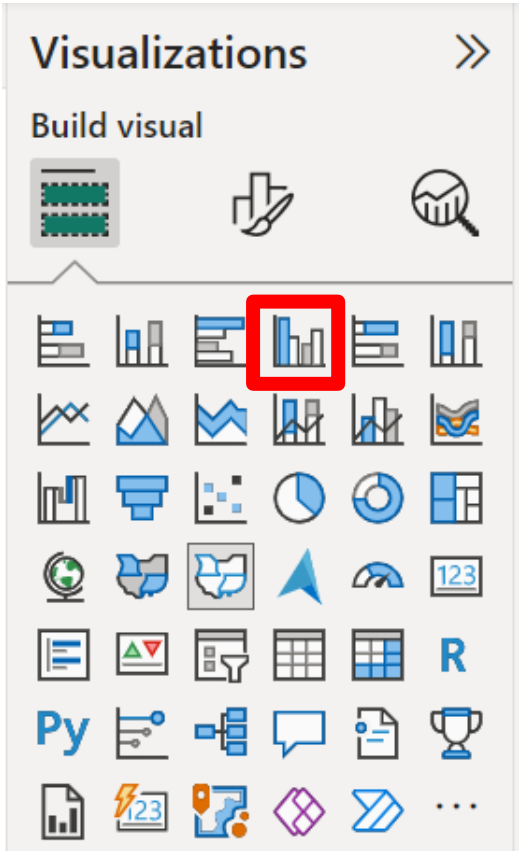


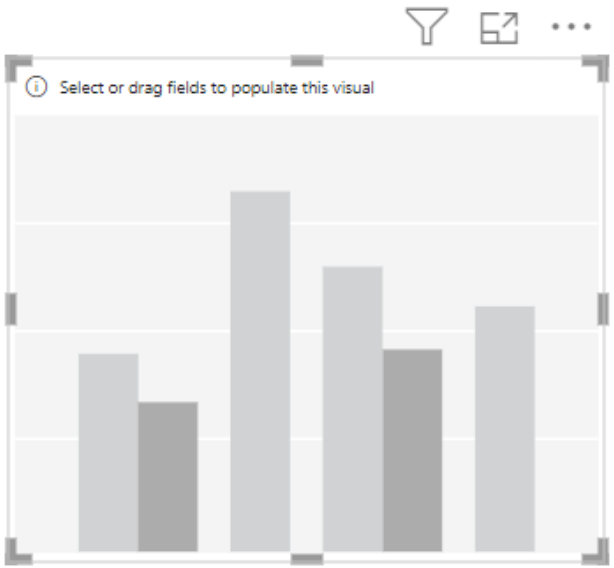
Ghalib Alshammri, PhD

Power BI Desktop: Column Chart

To create column chart in Power BI as following:

1. **Select “Clustered Column Chart” from the Visualization pane**
2. **Create it on visual design canvas**





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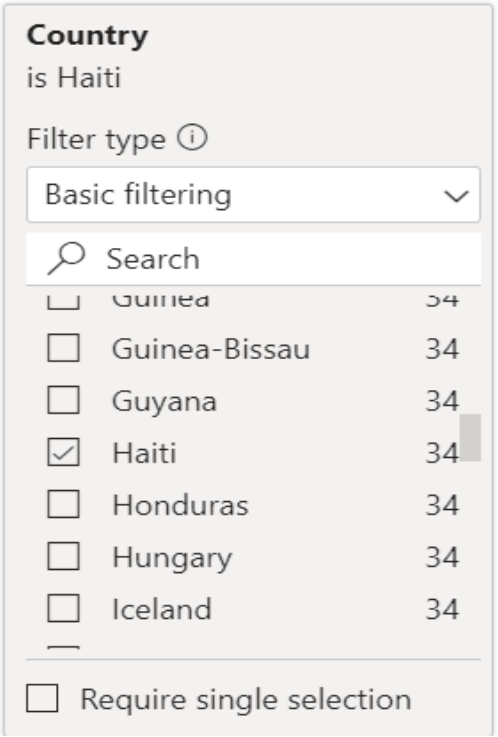
Power BI Desktop: Column Chart

To create column chart in Power BI as following:

3. **Select all columns that represent years**
4. **From Transform tab, select “Unpivot Only Selected Columns”**
5. **Drag & drop “Attribute & Country” in X-axis, and “Value” in Y-axis**
6. **Filter “Country” for only Haiti**



Ghalib Alshammri, PhD

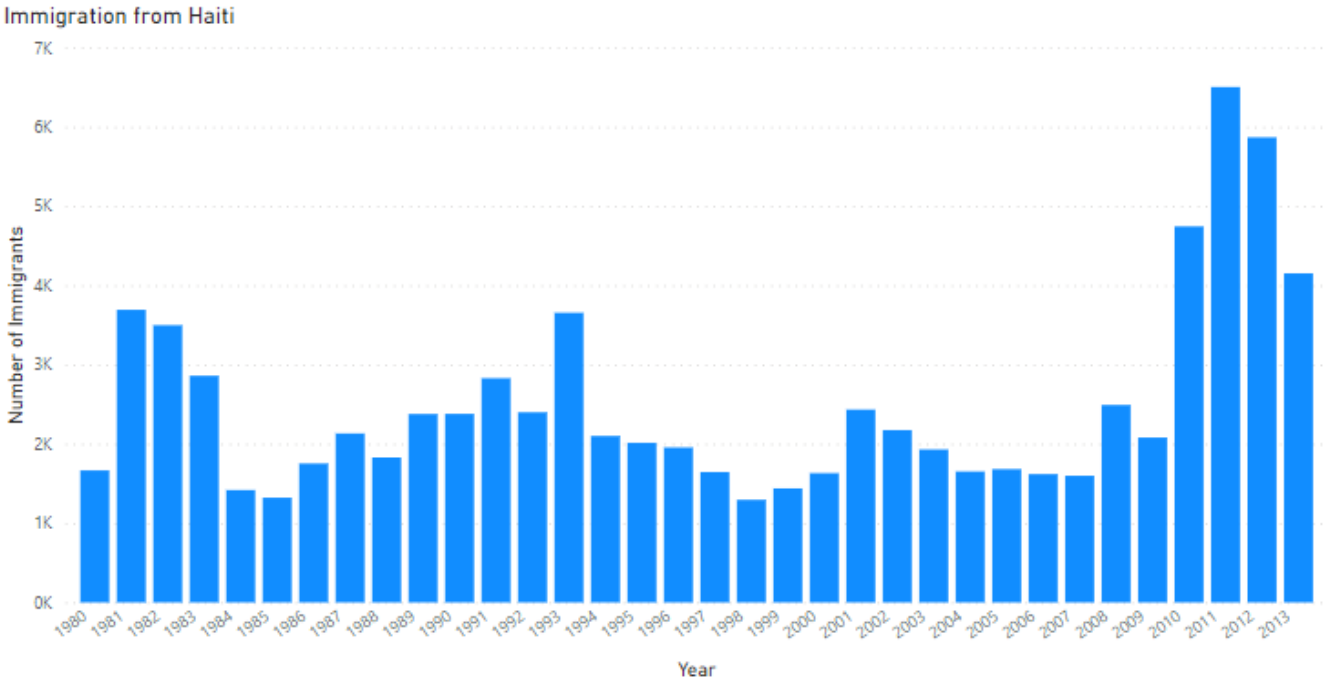
Power BI Desktop: Column Chart

To create Column chart in Power BI as following:

6. **To Change Chart Format**

   Format Visual → Visual → Column Chart Settings

6. **X-axis → Title → write "Years"** to change x-axis title
7. **Y-axis → Title → write "Number of Immigrants"** to change y-axis title



Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

What is Pie Chart?

Ghalib Alshammri, PhD

Power BI Desktop: Data Visualization Tools

A **pie chart** (or a **circle chart**) is a circular statistical graphic, which is divided into slices to illustrate numerical proportion. Pie charts are very widely used in the business world and the mass media, e.g. showing the populations of English native speakers.

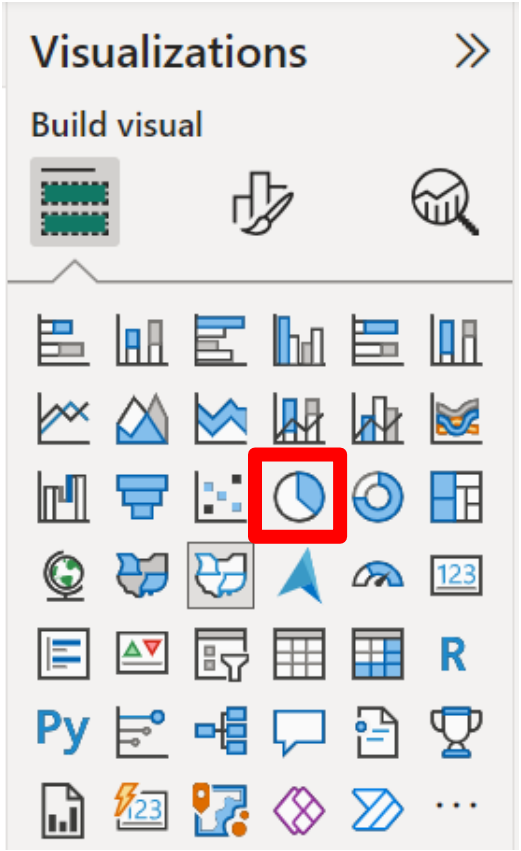
- Useful for displaying data that are classified into nominal or ordinal categories. Nominal data are categorized according to descriptive or qualitative information such as county of birth. Ordinal data are similar, but the different categories can also be ranked, for example in a survey people may be asked to say whether they classed something as very poor, poor, fair, good, very good.
- Show percentage or proportional data for each category.
- Great for displaying data for around 6 categories or fewer.

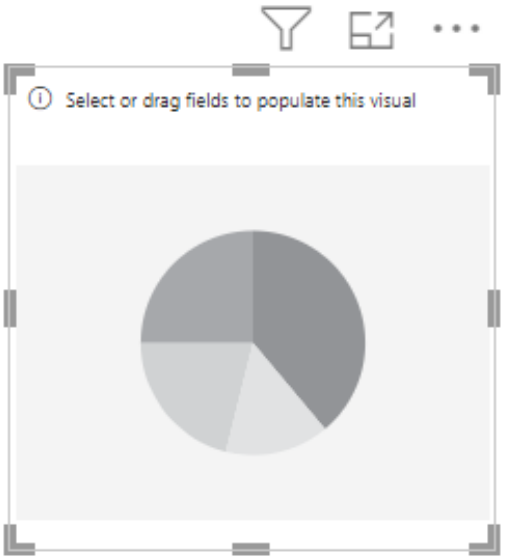
Ghalib Alshammri, PhD

Power BI Desktop: Pie Chart

To create Pie chart in Power BI as following:

1. **Select “Pie Chart” icon from the Visualization pane**
2. **Create it on visual design canvas**





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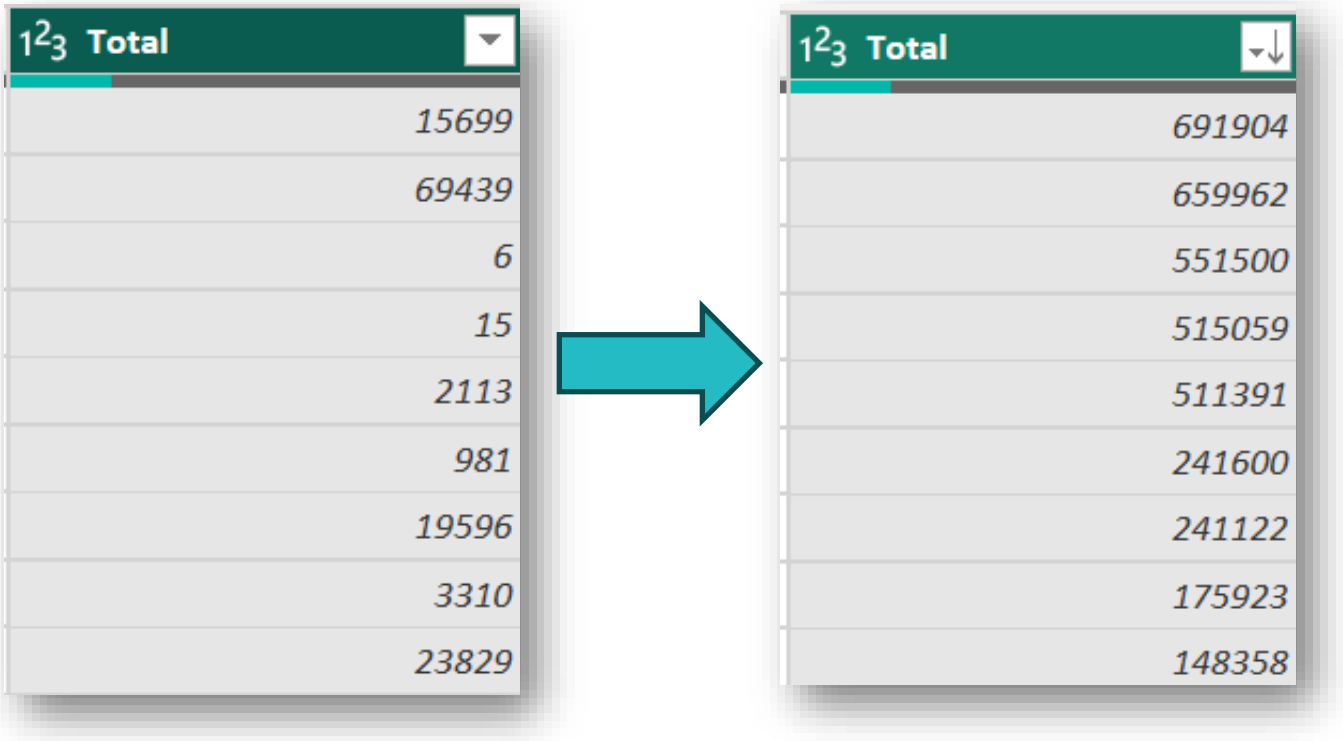
Power BI Desktop: Pie Chart

To create Pie chart in Power BI as following:

3. **In Dataset, all columns you want to calculate**
4. **From Transform tab, select "Statistics" → "Sum"**
5. **Sort table as Descending, from Home tab**



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2113
981
19596
3310
23829

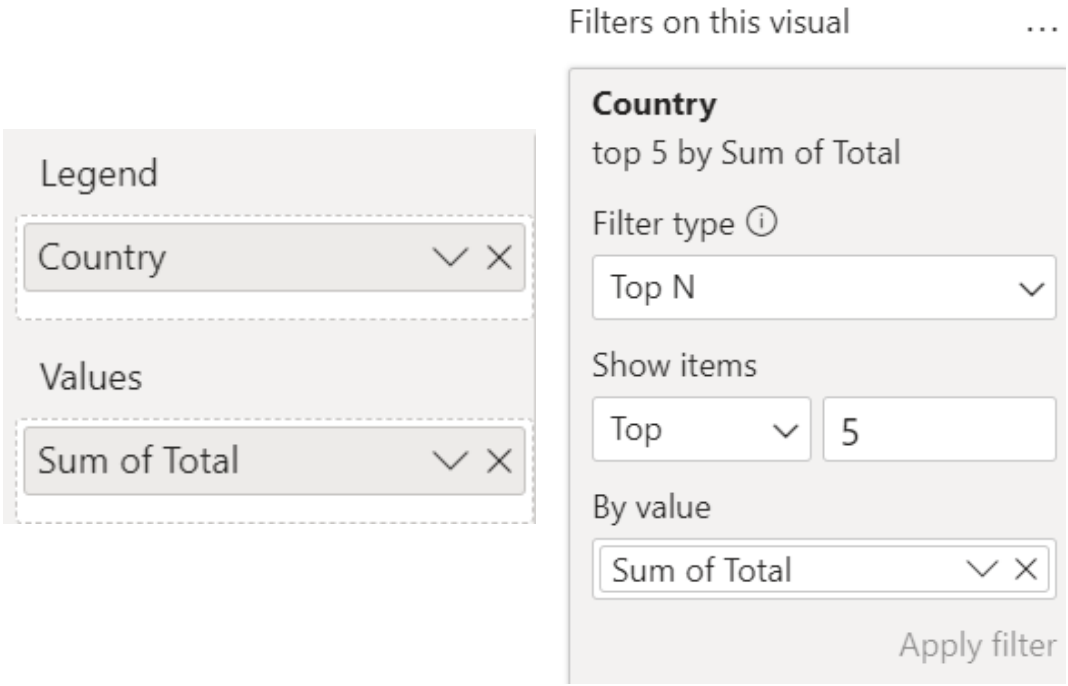
123 Total
691904
659962
551500
515059
511391
241600
241122
175923
148358

Ghalib Alshammri, PhD

Power BI Desktop: Pie Chart

To create Pie chart in Power BI as following:

6. **Add “Country” column to Legend**
7. **Add “Total” column to Values**
8. **From Filter, select Filter Type as “Top N” → Top = 5**
9. **Select “By Value” → “Total” column**



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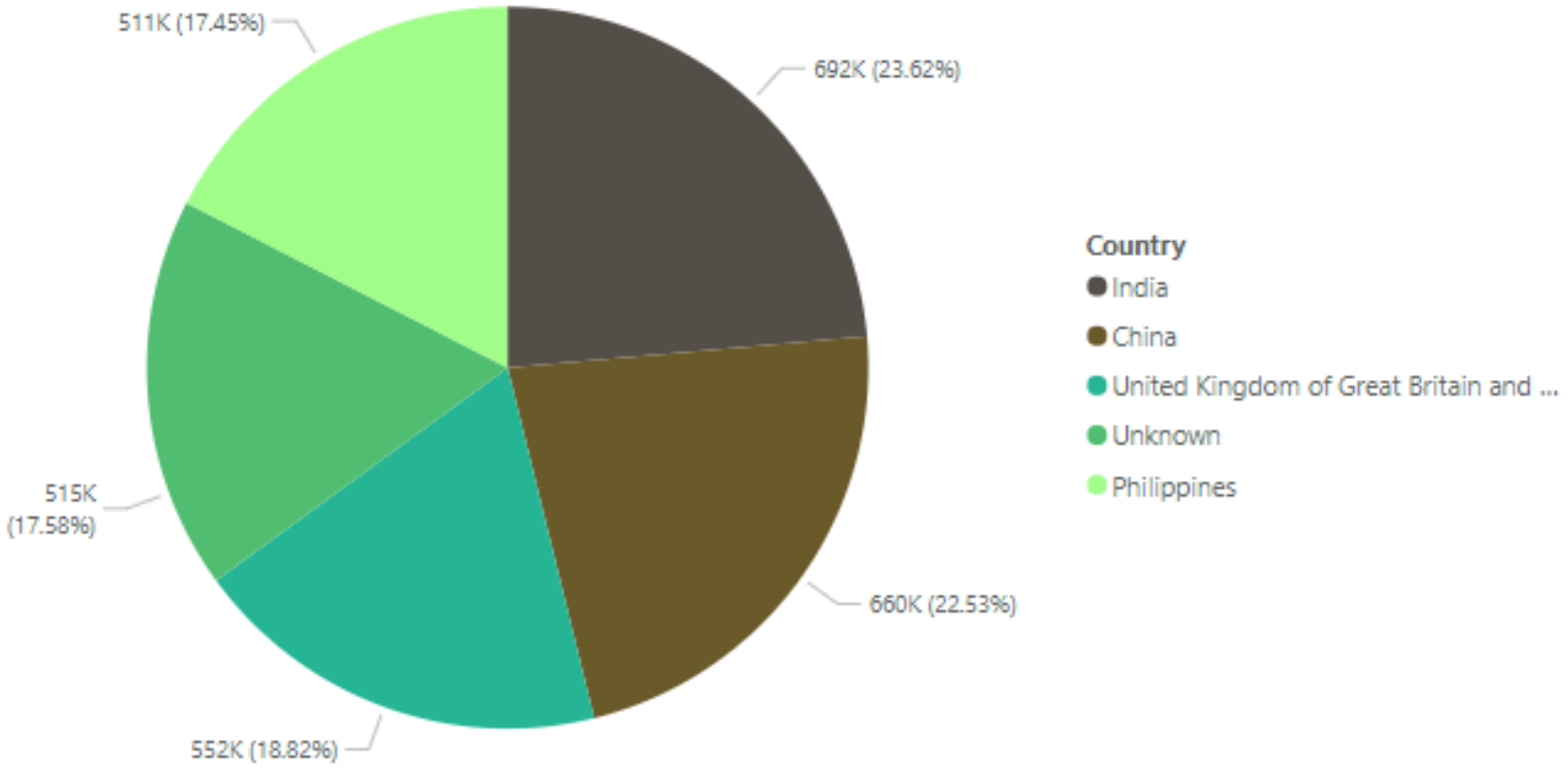
Power BI Desktop: Pie Chart



Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

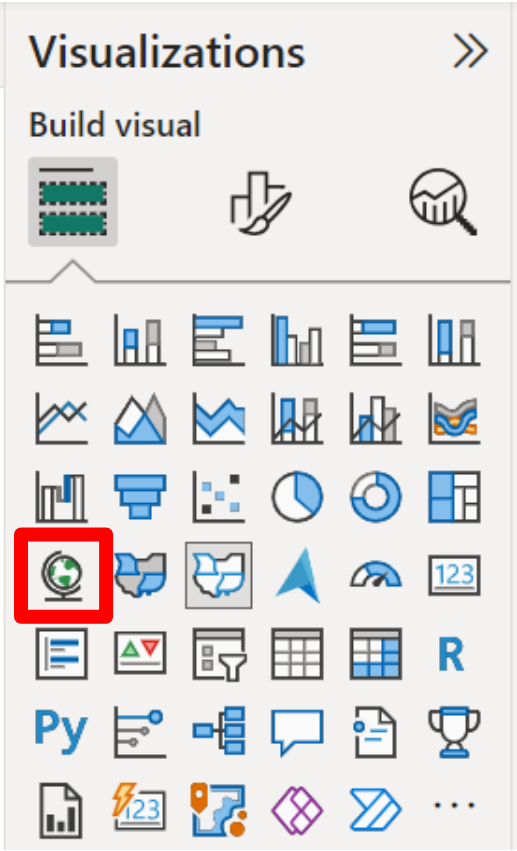
What is Map Chart?

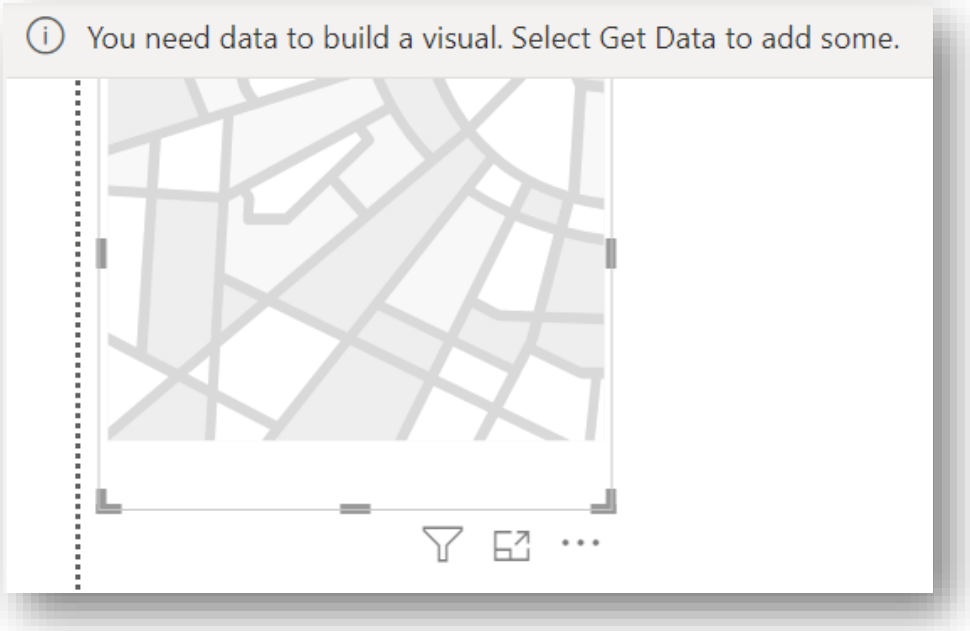
Ghalib Alshammri, PhD

Power BI Desktop: Creating Map

To create map in Power BI as following:

1. **Select “Map” icon from the Visualization pane**
2. **Create it on visual design canvas**



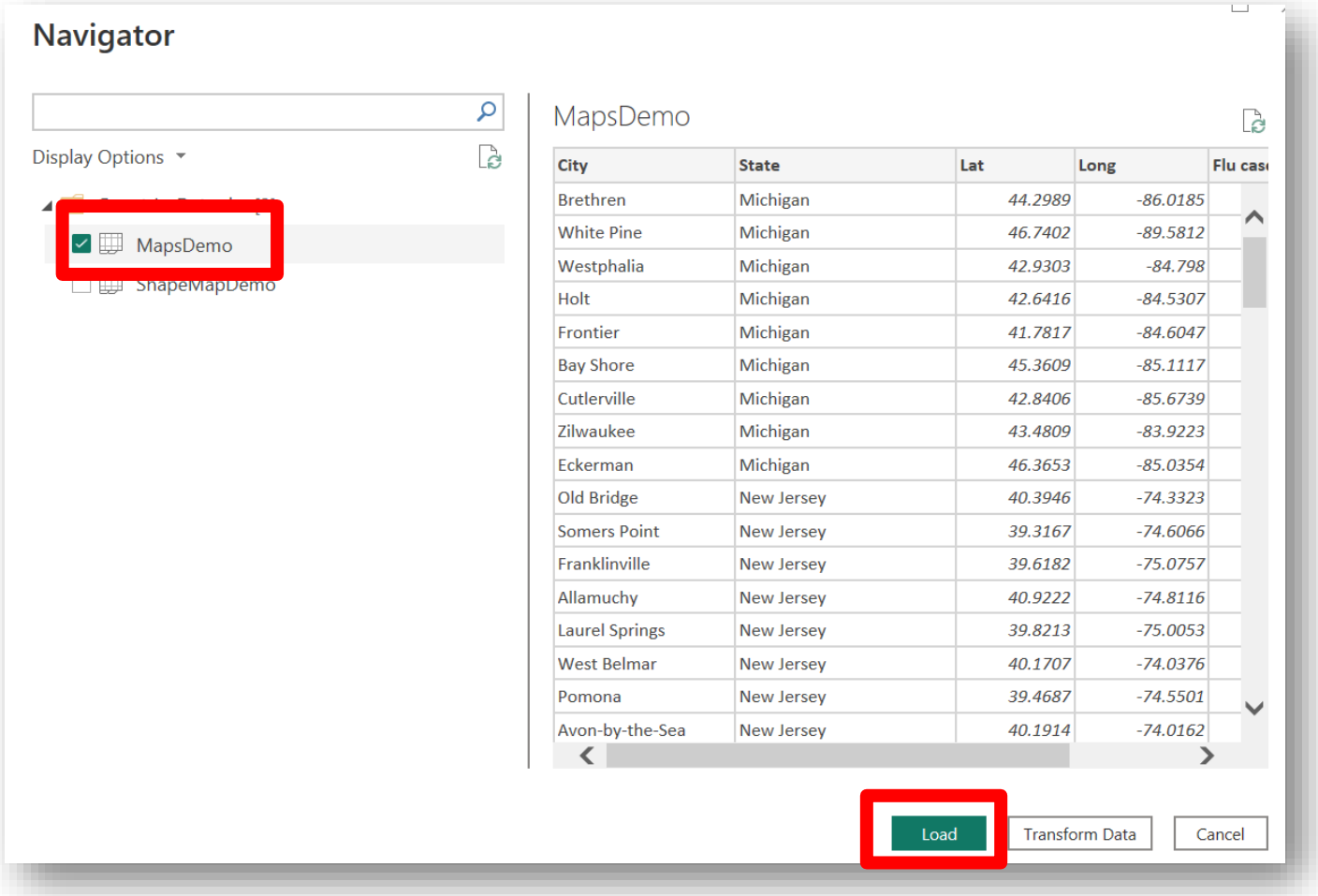


Ghalib Alshammri, PhD

Power BI Desktop: Creating Map

To create map in Power BI as following:

3. Import Map Data "CountriesData.xlsx"



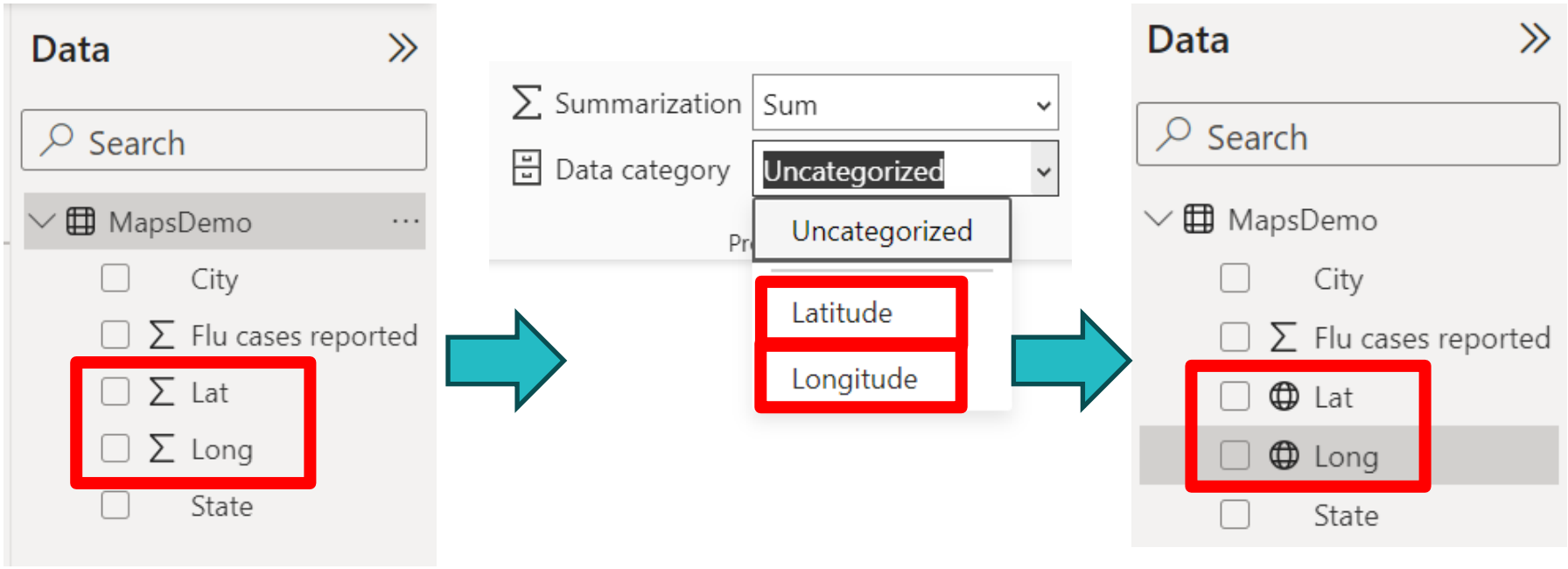
Ghalib Alshammri, PhD

Power BI Desktop: Creating Map

To create map in Power BI as following:

4. **See all fields**
5. **To recognize values correctly, we need to map them to respective Latitude & Longitude data categories:**

   Column tools → Data category

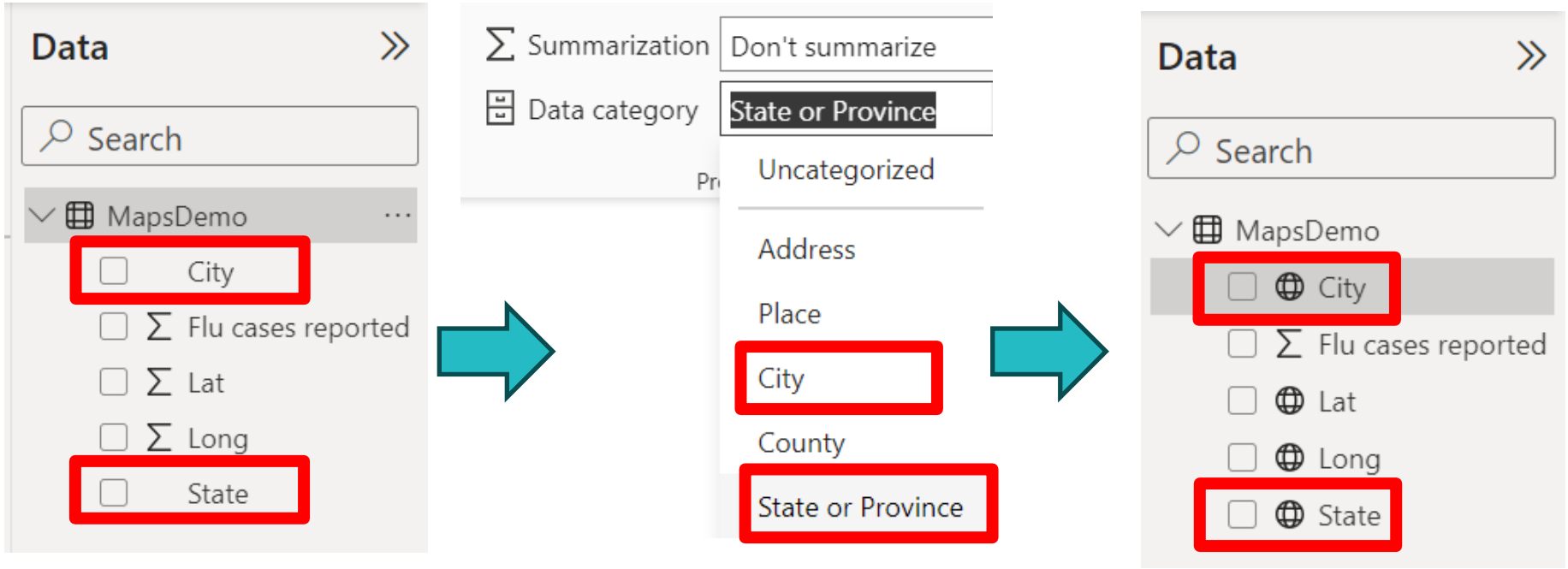


Ghalib Alshammri, PhD

Power BI Desktop: Creating Map

To create map in Power BI as following:

6. **To recognize values correctly, we need to map them to respective City & State data categories:**
   - **Column tools → Data category**



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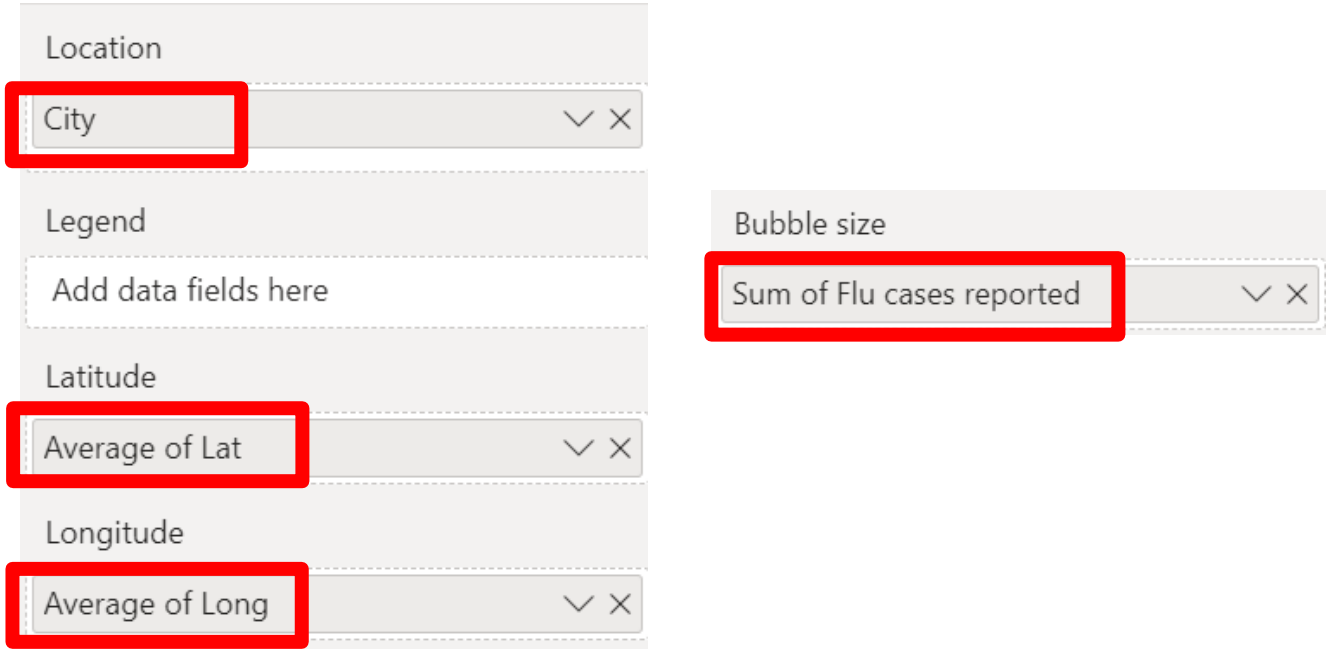
Power BI Desktop: Creating Map

To create map in Power BI as following:

7. **Drag & drop "City" field to Location in Visualization pane**
8. **Drag & drop "Lat" field to Latitude**
9. **Drag & drop "Long" field to Longitude**
10. **Drag & drop "Flu cases" field to Size**



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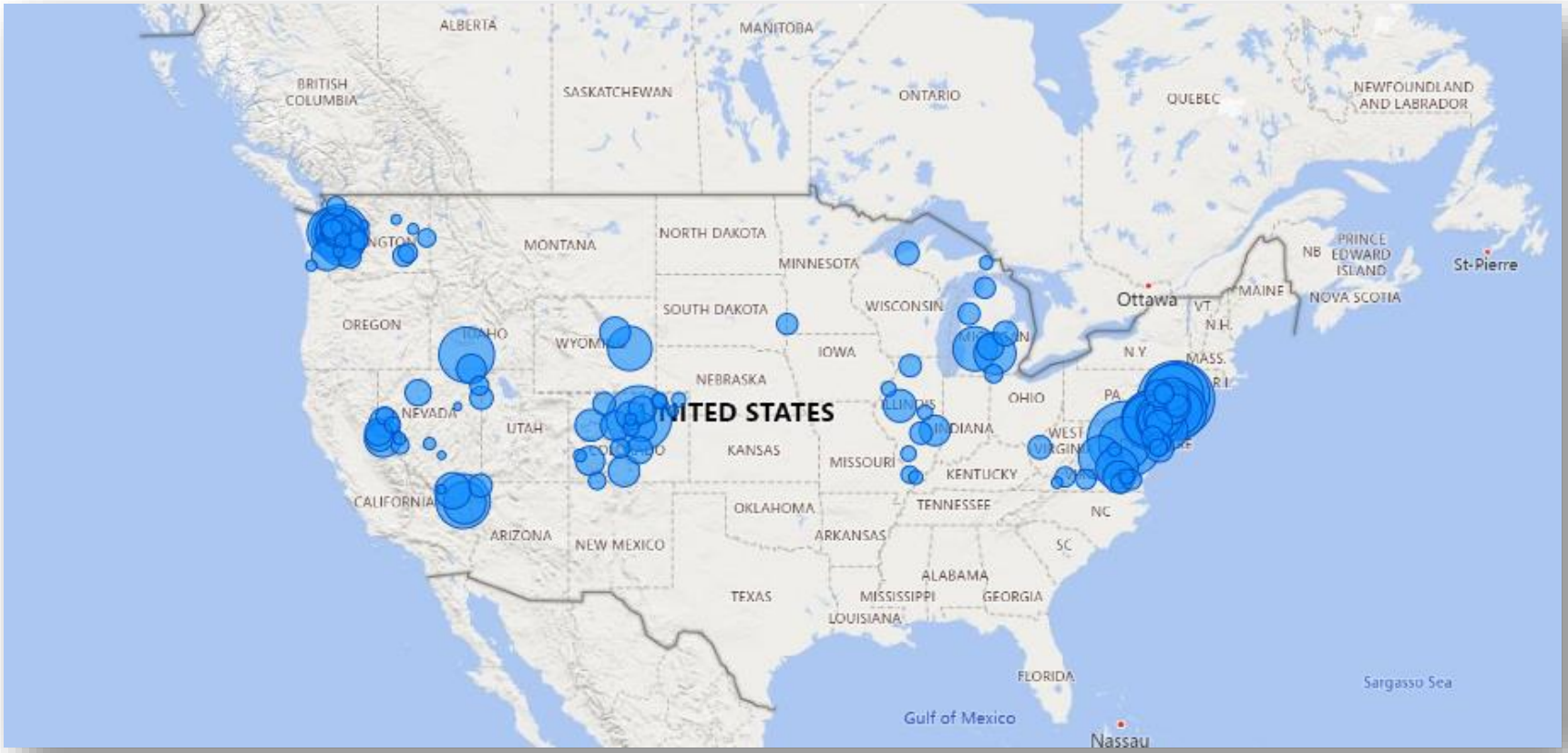
Power BI Desktop: Creating Map



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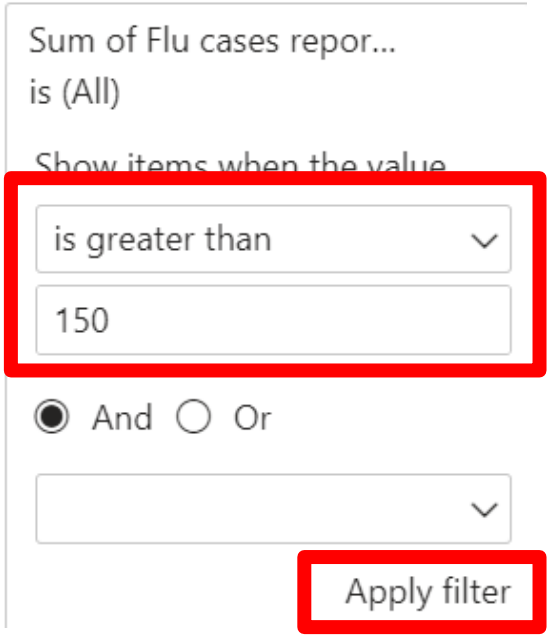
Power BI Desktop: Filtering Map

To filter map in Power BI as following:

11. **Show only more than 150 flu cases in total from Filters pane**



Note: You can filter City, State, or location

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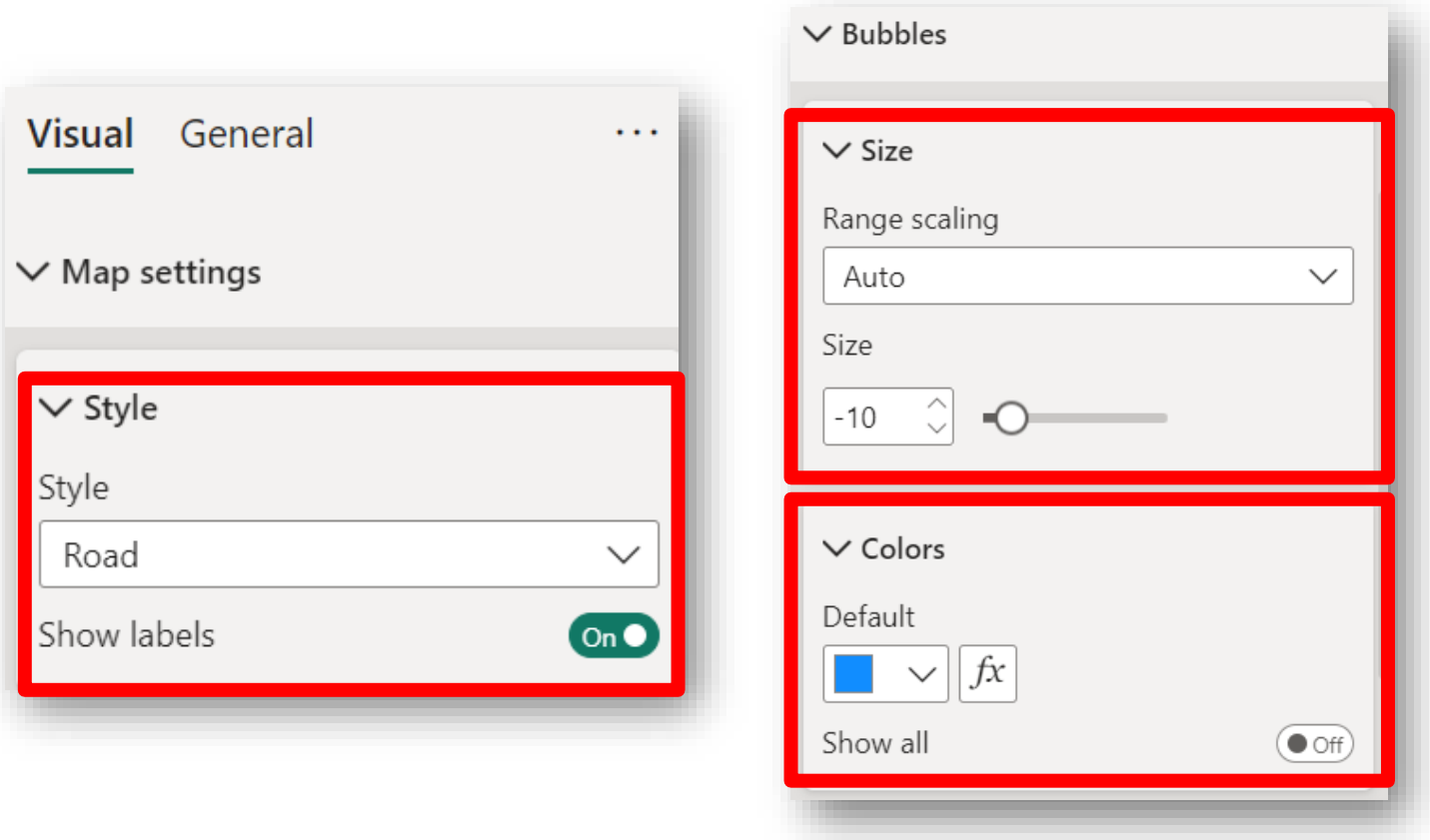
Power BI Desktop: Formatting Map

To filter map in Power BI as following:

12. **Change map style**
15. **Change bubbles size & color**

Format Visual → Visual → Map Settings

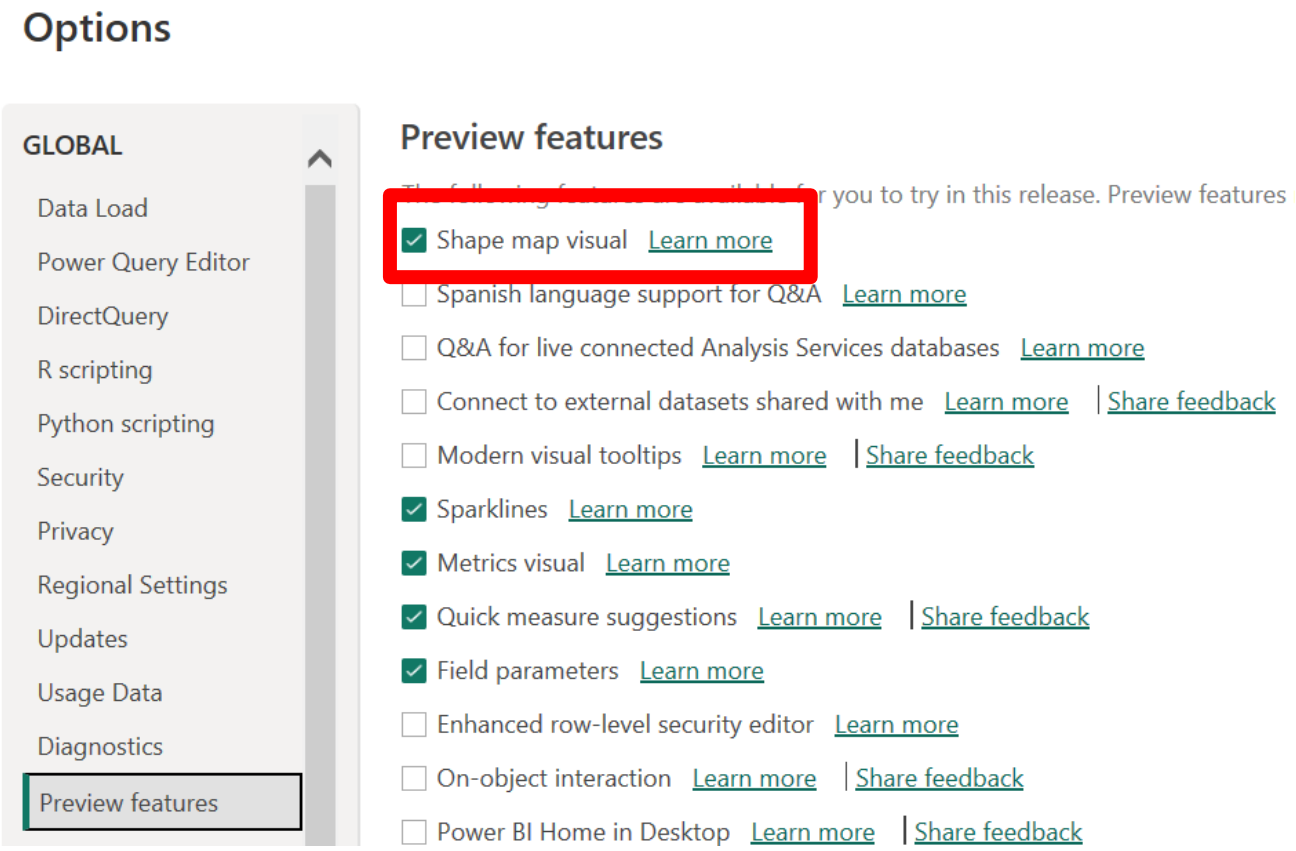


Ghalib Alshammri, PhD

Power BI Desktop: Enabling Shape Map

To enable shape map in Power BI as following:

1. **To enable Shape Map: File → Options & Settings**
2. **Select "Options" → Preview Features → Shape Map Visual**

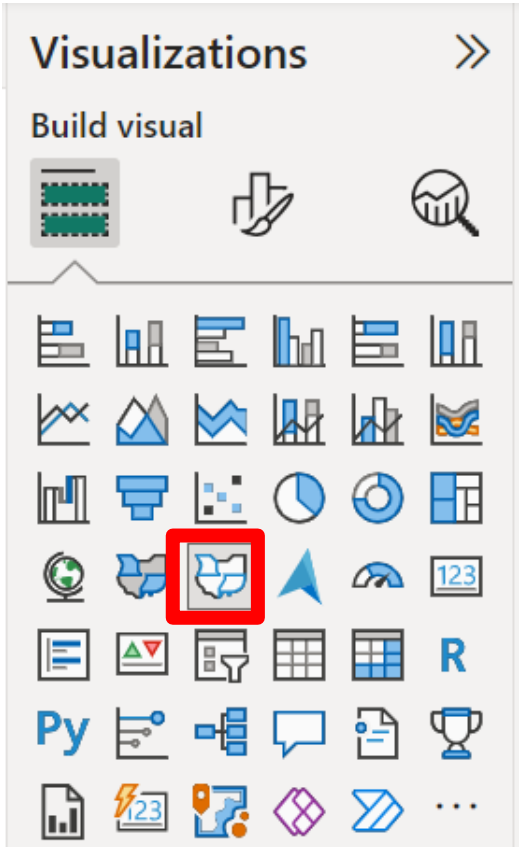


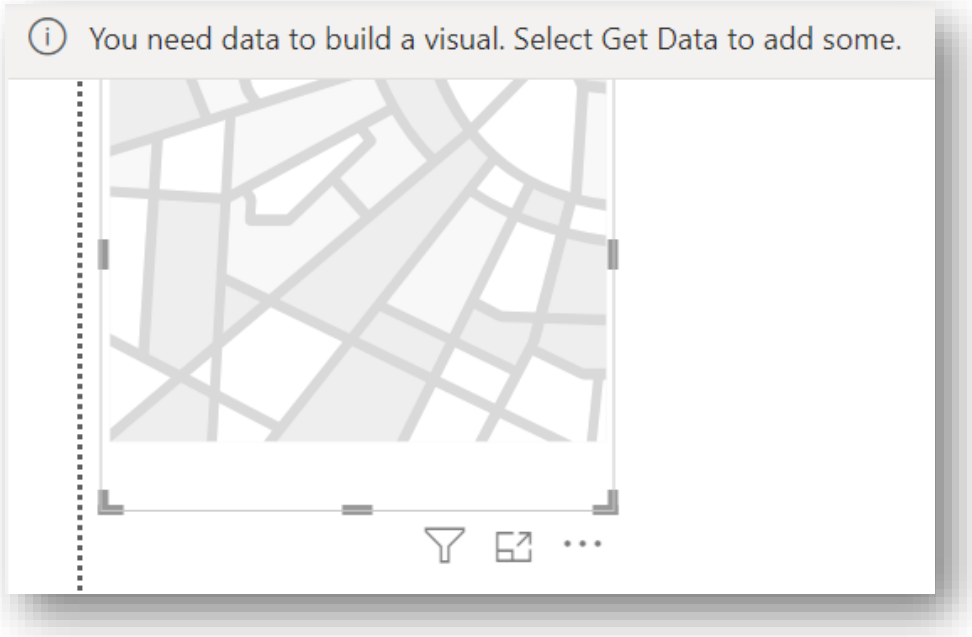
Ghalib Alshammri, PhD

Power BI Desktop: Creating Shape Map

To create shape map in Power BI as following:

1. **Select “Shape Map” icon from the Visualization pane**
2. **Create it on visual design canvas**



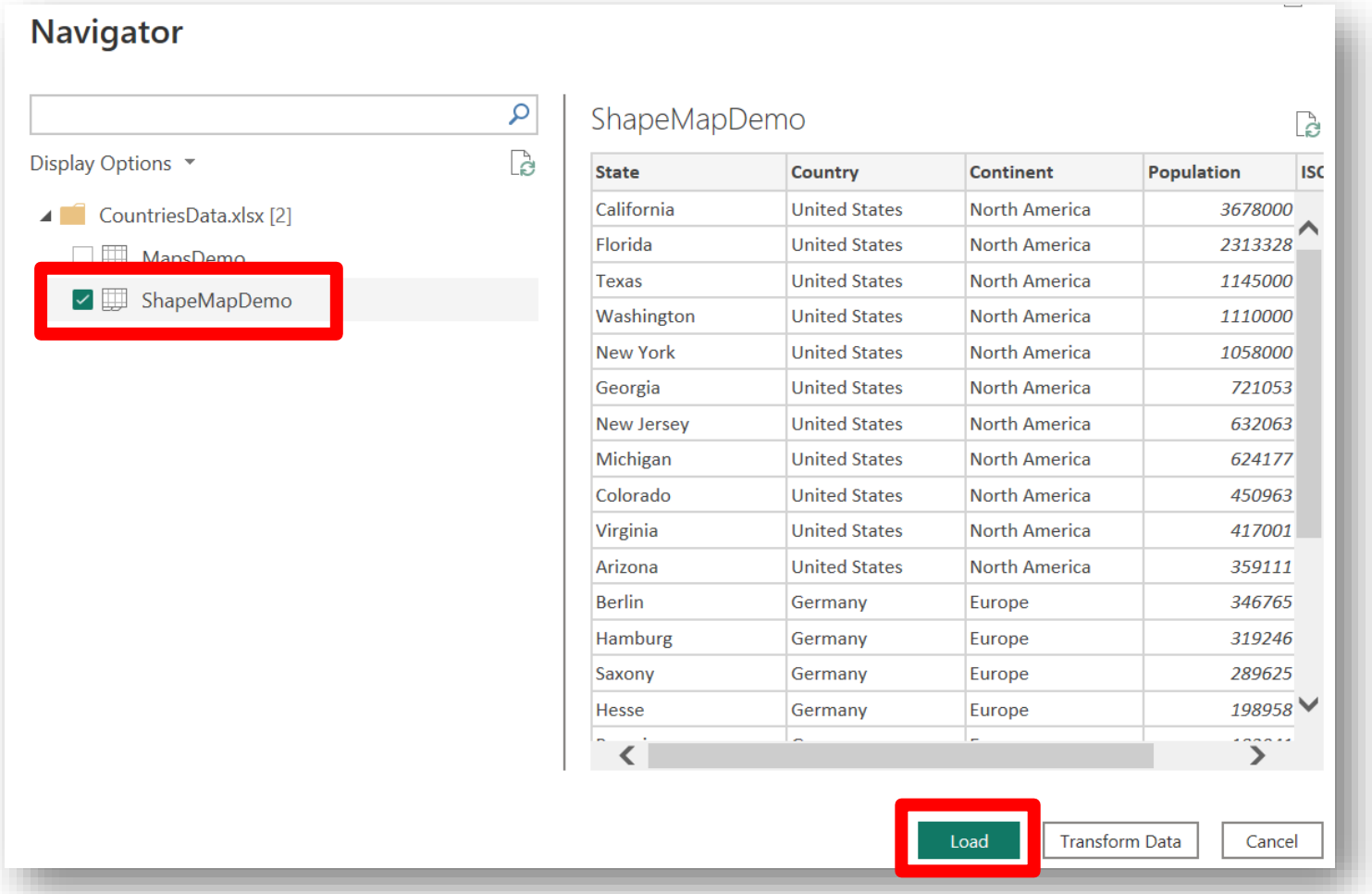


Ghalib Alshammri, PhD

Power BI Desktop: Creating Shape Map

To create shape map in Power BI as following:

3. Import Map Data "CountriesData.xlsx"



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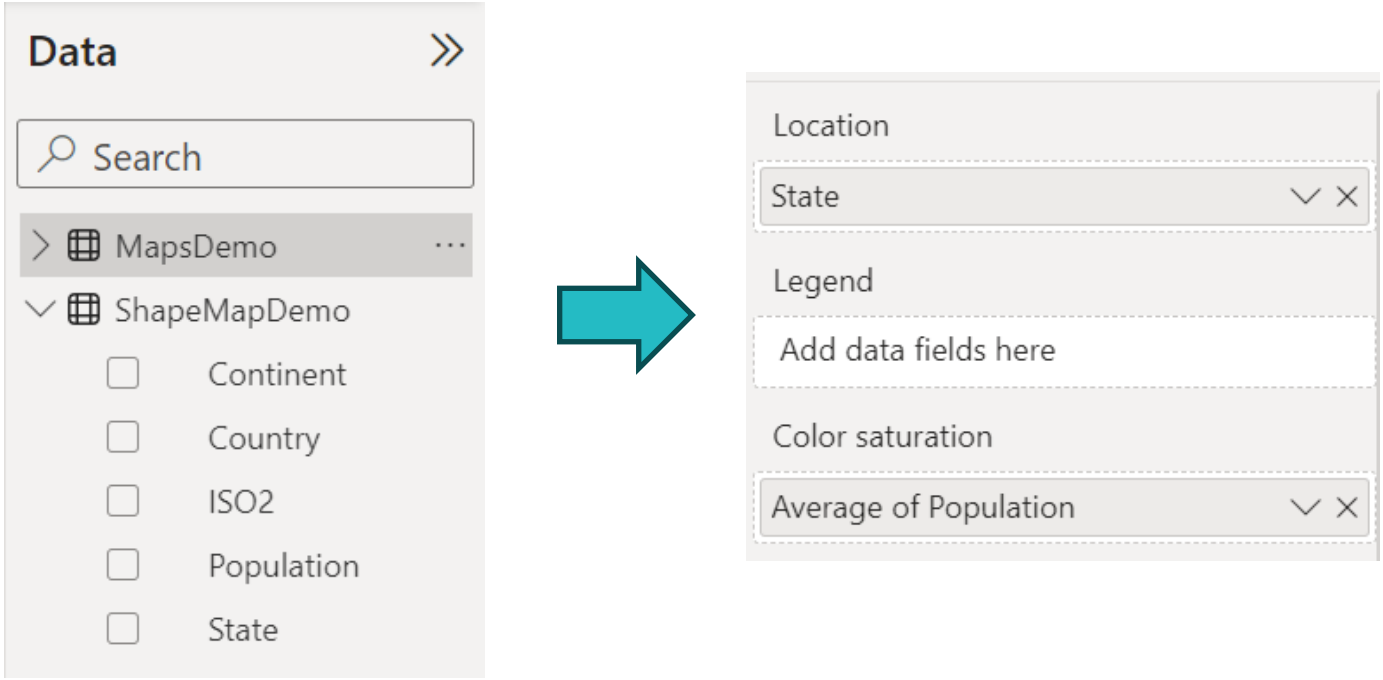
Power BI Desktop: Creating Shape Map

To create shape map in Power BI as following:

4. **Drag & drop "State" to location**
5. **Drag & drop "Population" to Color Saturation**



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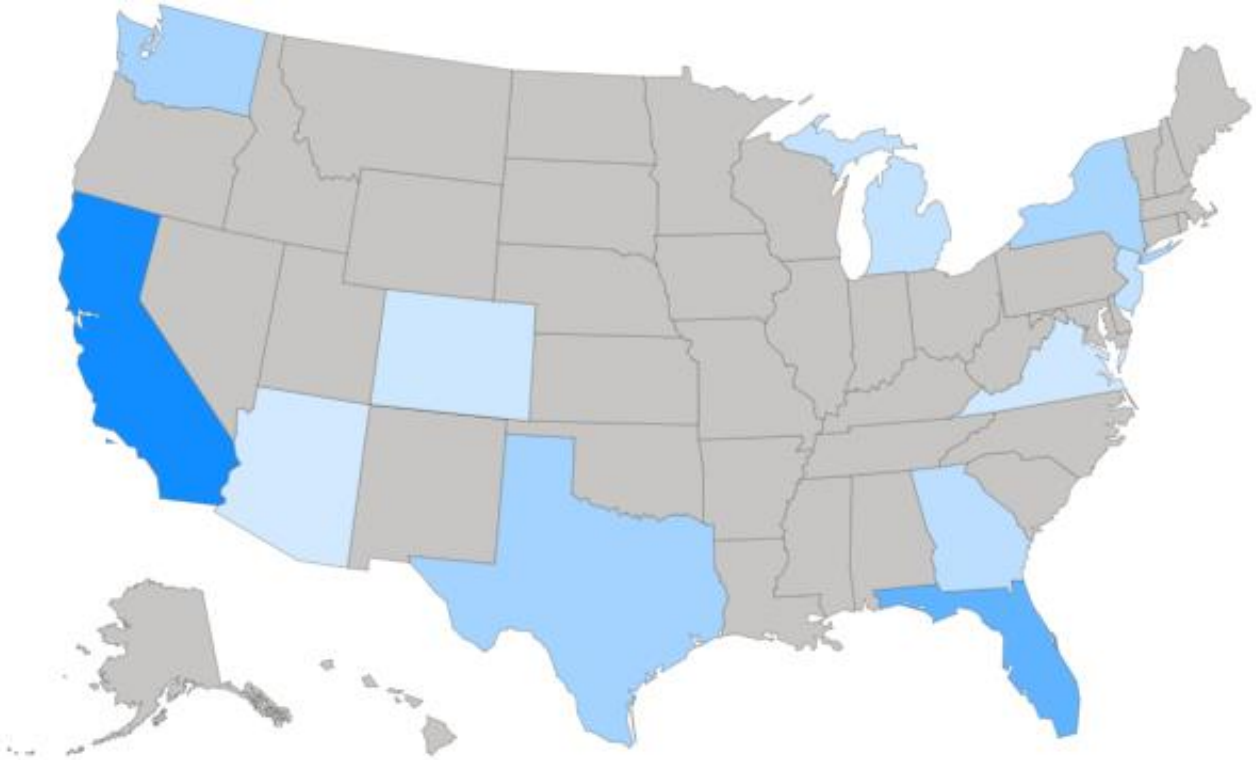
Power BI Desktop: Creating Shape Map



Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

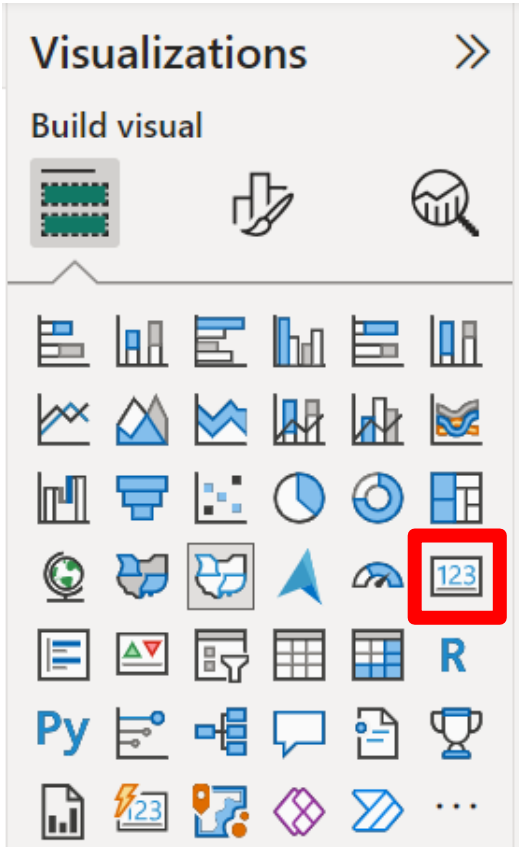
What is Card Chart?

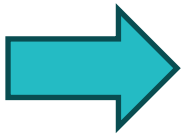
Ghalib Alshammri, PhD

Power BI Desktop: Creating Card

To create card in Power BI as following:

1. **Select “card” icon from the Visualization pane**
2. **Create it on visual design canvas**





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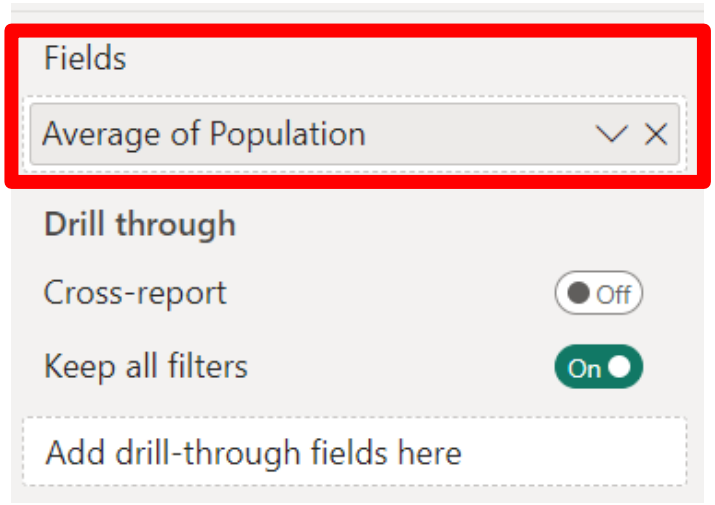
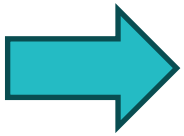
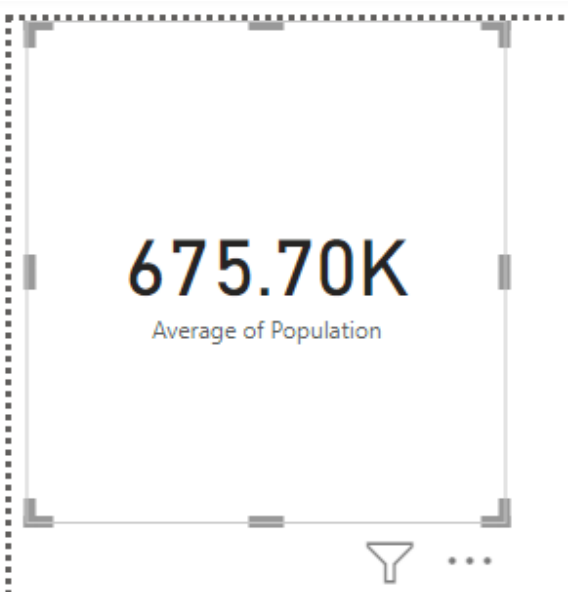
Power BI Desktop: Creating Card

To create card in Power BI as following:

1. **To create an average of population (previous example)**
2. **Drag & drop "Population" to Fields in visualization pane**







Ghalib Alshammri, PhD

What is Business Intelligence?

Group Discussion:

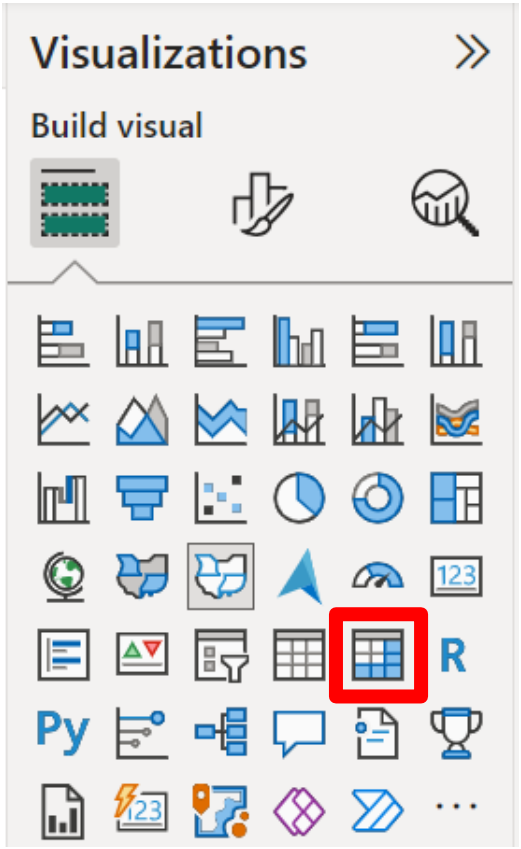
What is Matrix Chart?

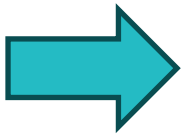
Ghalib Alshammri, PhD

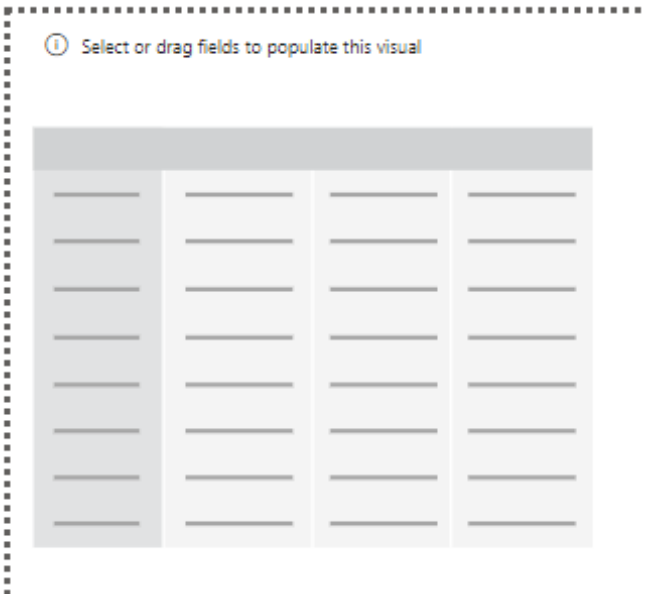
Power BI Desktop: Creating Matrix

To create matrix in Power BI as following:

1. **Select “card” icon from the Visualization pane**
2. **Create it on visual design canvas**







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Power BI Desktop: Creating Matrix

To create matrix in Power BI as following:

In Matrix, we should determine (previous example):

- **Column (Continent)**
- **Row (Country)**
- **Value (Sum of Population)**

Continent	Australia	Germany	United States	Total
Australia	1210096			**1210096**
Europe		1822358		**1822358**
North America			12508696	**12508696**
Total	**1210096**	**1822358**	**12508696**	**15541150**