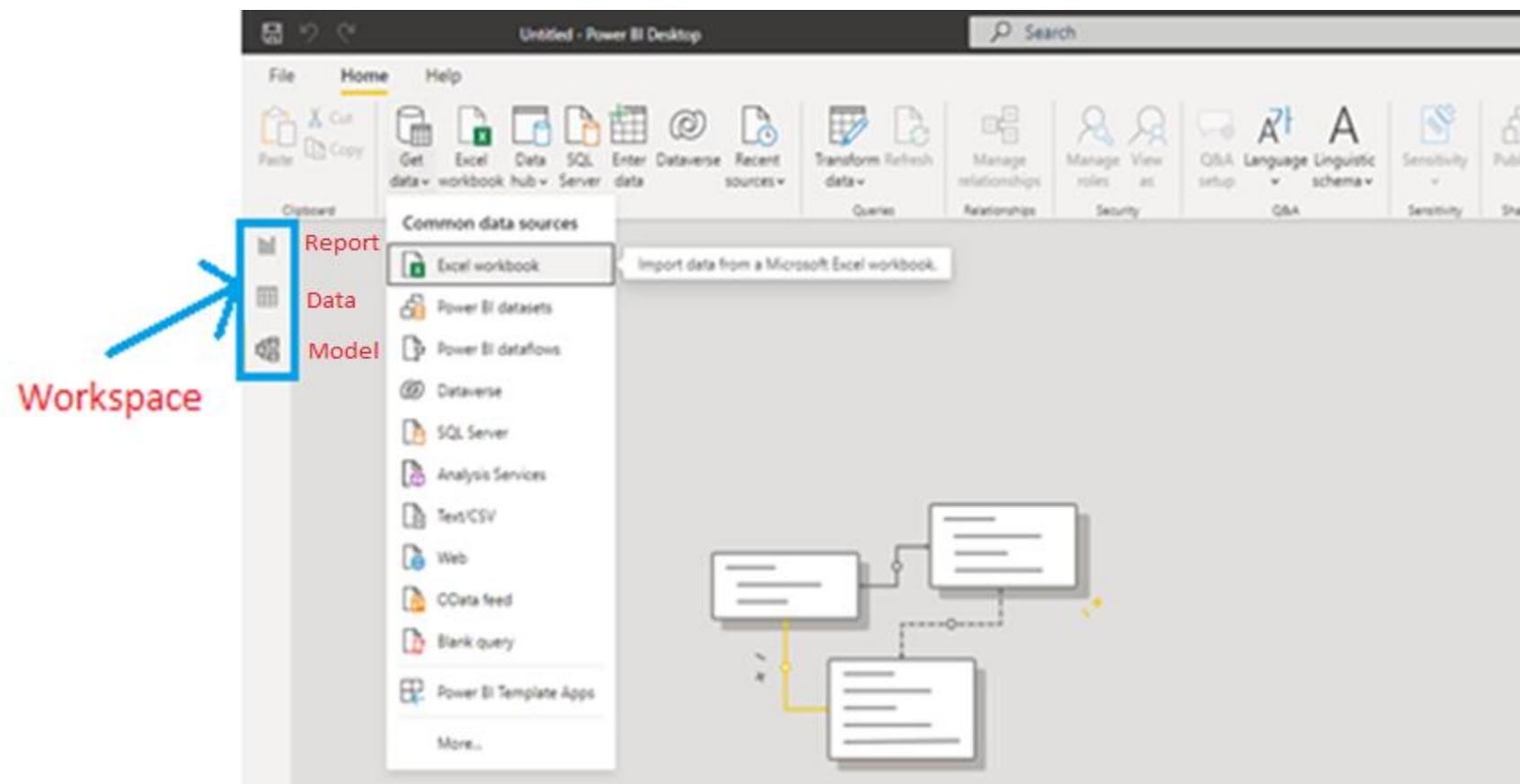


PowerBI interface



To open a file, go to Home->Get data, this will display a list of file types. Select the type which you want to use. This will open the “Navigator”.

Tick the checkbox of the desired file in the Navigator.

If you want to edit the data then click “Transform data” button, else click “Load”.

The screenshot shows the Power BI Navigator interface. On the left, there's a ribbon with File, Home, and Help tabs, and various icons for Paste, Cut, Copy, Get Data, Excel, Data, SQL, Enter Data, and Data Hub. Below the ribbon is a clipboard section with X and checkmark buttons. The main area is titled "Navigator" and contains a search bar and a "Display Options" dropdown. A tree view shows "gdp_data.xlsx [1]" expanded, with "gdp_data" selected and checked. Under "Suggested Tables [1]", there is "Table 1 (gdp_data)". To the right of the tree view is a preview pane for "gdp_data" showing columns: Country, Code, Year, and GDP-Growth. The preview lists countries from Aruba to Bosnia and Herzegovina. At the bottom of the preview pane is a red box around the "Transform Data" button, with the text "Click this" above it. Below the preview are three buttons: Load (yellow), Transform Data (red), and Cancel.

Country	Code	Year	GDP-Growth
Aruba	ABW	1960	
Afghanistan	AFG	1960	
Angola	AGO	1960	
Albania	ALB	1960	
Andorra	AND	1960	
Arab World	ARB	1960	
United Arab Emirates	ARE	1960	
Argentina	ARG	1960	-0.852021
Armenia	ARM	1960	
American Samoa	ASM	1960	
Antigua and Barbuda	ATG	1960	
Australia	AUS	1960	1.295676
Austria	AUT	1960	2.648671
Azerbaijan	AZE	1960	
Burundi	BDI	1960	9.063151
Belgium	BEL	1960	5.212001
Benin	BEN	1960	-3.426405
Burkina Faso	BFA	1960	6.128796
Bangladesh	BGD	1960	5.453021
Bulgaria	BGR	1960	
Bahrain	BHR	1960	
	null	null	null
Bosnia and Herzegovina	BIH	1960	

Part-I Data Transformations

Clicking on “Transform Data” in Navigator will open Query Editor.

The screenshot shows the Microsoft Power Query Editor interface. The ribbon at the top has tabs for File, Home, and Help. The Home tab is selected. The ribbon bar below the tabs contains icons for Paste, Cut, Copy, and various data transformation tools like Remove Columns, Sort, and Transform. The main area is titled "Untitled - Power Query Editor". On the left, there's a "Queries [1]" pane showing a single query named "gdp_data". The main workspace displays a table with 21 rows and 6 columns. The columns are labeled: Country, Code, Year, GDP-Growth, GDP-Per-Capita, and GDP. The first few rows show data for Aruba, Afghanistan, Angola, and Albania. The "Transform" tab is selected in the ribbon, and the ribbon bar below it includes "Data Type: Text", "Use First Row as Headers", and "Sort" options. To the right of the main workspace, there's a "Query Settings" pane with sections for "PROPERTIES" (Name: gdp_data) and "APPLIED STEPS" (listing "Source", "Navigation", "Promoted Headers", and "Changed Type"). At the bottom of the editor, status bars indicate "7 COLUMNS, 999+ ROWS" and "Column profiling based on top 1000 rows" on the left, and "PREVIEW DOWNLOADED AT 10:54 AM" on the right.

Before the name of each column, there is a symbol of datatype of the column i.e. ABC denotes text, 123 denotes integer, 1.2 denotes float.

Make first row as header: go to Home -> Use First Row as Headers -> Use First Row as Headers

The screenshot shows the Microsoft Power Query Editor interface. The ribbon at the top has 'File' selected. In the main area, there's a table titled 'gdp_data' with columns: Country, Code, Year, 12 GDP-Growth, 12 GDP-Per-Capita, and 12 GDP. The first row of the table is highlighted in yellow. On the far right of the ribbon, under the 'Data Type: Text' dropdown, there are three options: 'Use First Row as Headers' (which is checked), 'Append Queries', and 'Use Headers as First Row'. A tooltip for 'Use First Row as Headers' says 'Promote the first row of this table into column headers.' To the right of the table, there are sections for 'PROPERTIES' (Name: gdp_data) and 'APPLIED STEPS' (listing 'Source', 'Navigation', 'Promoted Headers', and 'Changed Type').

Country	Code	Year	12 GDP-Growth	12 GDP-Per-Capita	12 GDP
Aruba	ABW	1960	null	null	
Afghanistan	AFG	1960	null	null	
Angola	AGO	1960	null	null	
Albania	ALB	1960	null	null	
Andorra	AND	1960	null	null	
Arab World	ARB	1960	null	null	
United Arab Emirates	ARE	1960	null	null	
Argentina	ARG	1960	-0.852021523	5711.179338	
Armenia	ARM	1960	null	null	
American Samoa	ASM	1960	null	null	
Antigua and Barbuda	ATG	1960	null	null	
Australia	AUS	1960	1.295678128	19245.41027	
Austria	AUT	1960	2.648675113	13953.95	
Azerbaijan	AZE	1960	null	null	
Burundi	BDI	1960	9.063157935	193.1918807	
Belgium	BEL	1960	5.212003509	14465.97743	
Benin	BEN	1960	-3.426409823	503.590841	
Burkina Faso	BFA	1960	6.128798781	256.7771744	
Bangladesh	BGD	1960	5.45303097	393.6334506	

Undo a step: go to “Applied Steps” box on the right and delete the step.

The screenshot shows the Microsoft Word ribbon at the top with the Power Query Editor open. The main area displays a table named "gdp_data" with columns: Country, Code, Year, GDP-Growth, GDP-Per-Capita, and GDP. The "APPLIED STEPS" pane on the right is highlighted with a red box. It lists the following steps:

- Source
- Navigation
- Promoted Headers
- Changed Type
- Promoted Headers1 (marked with a red X)
- Changed Type1 (marked with a yellow X)

Below the table, the status bar indicates "7 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows".

Remove null rows from Country column: select the column, and go to “Remove Rows” in menu ribbon.

The screenshot shows the Microsoft Word ribbon at the top with the 'POWER BI' tab selected. Below it, the Power Query Editor window is open, displaying a table named 'gdp_data'. The 'Country' column is selected, and a context menu is open over the first blank row. The menu is titled 'Remove' and contains the option 'Remove Blank Rows', which is highlighted with a red box. A tooltip for this option states: 'Remove all blank rows from this table.' To the right of the menu, the 'Transform' ribbon tab is selected, showing various data transformation tools like 'Remove Top Rows', 'Remove Bottom Rows', and 'Remove Duplicates'. The 'Data Type' dropdown is set to 'Text'. On the far right, the 'Query Settings' pane shows the query name 'gdp_data' and a list of applied steps, with 'Changed Type1' being the most recent step.

Rank	Country	Code	Year	GDP	Per Capita
1	Aruba	ABW	1960	null	null
2	Afghanistan	AFG	1960	null	null
3	Angola	AGO	1960	null	null
4	Albania	ALB	1960	null	null
5	Andorra	AND	1960	null	null
6	Arab World	ARB	1960	null	null
7	United Arab Emirates	ARE	1960	null	null
8	Argentina	ARG	1960	-0.852021523	5711.179338
9	Armenia	ARM	1960	null	null
10	American Samoa	ASM	1960	null	null
11	Antigua and Barbuda	ATG	1960	null	null
12	Australia	AUS	1960	1.295678128	19245.41027
13	Austria	AUT	1960	2.648675113	13953.95
14	Azerbaijan	AZE	1960	null	null
15	Burundi	BDI	1960	9.063157935	193.1918807
16	Belgium	BEL	1960	5.212003509	14465.97743
17	Benin	BEN	1960	-3.426409823	503.5990841
18	Burkina Faso	BFA	1960	6.128798781	256.7771744
19	Bangladesh	BGD	1960	5.45303097	393.6334506
20	Bulgaria	BGR	1960	null	null
21					

Close the Query Editor after applying changes.

The screenshot shows the Microsoft Power Query Editor interface. The ribbon menu at the top includes File, Home, Transform, Add Column, View, Tools, and Help. The Home tab is selected. On the far left of the ribbon, there is a 'Close & Apply' button, which is highlighted with a red box. Below the ribbon, there are several toolbars and a preview pane. The preview pane displays a table with columns: Country, Code, Year, 1.2 GDP-Growth, 1.2 GDP-Per-Capita, and 1.2 GDP. The table contains 21 rows of data. To the right of the preview pane is a 'Query Settings' pane. Under 'PROPERTIES', the 'Name' is set to 'gdp_data'. Under 'APPLIED STEPS', the steps listed are: Source, Navigation, Promoted Headers, Changed Type, Promoted Headers1, Changed Type1, and a step labeled 'Removed Blank Rows' which is currently expanded. At the bottom of the editor, it says '7 COLUMNS, 999+ ROWS' and 'Column profiling based on top 1000 rows'. On the right side, it says 'PREVIEW DOWNLOADED AT 10:54 AM'.

Re-enter Query Editor: click “Transform Data” in Home menu.

The screenshot shows the Power BI Desktop interface. The top navigation bar has tabs for File, Home, Help, and Table tools. The Home tab is selected. Below the tabs are various icons for data sources like Excel, CSV, and databases. A prominent icon with a red border around it is labeled "Transform data". A tooltip for this icon says "Use the Power Query editor to connect, prepare, and transform data." To the right of the ribbon is a search bar and a "Sign in" button. The main workspace displays a table titled "gdp_data" with columns: Country, Code, Year, GDP-Growth, GDP-Per-Capita, GDP, and Column7. The table contains 14,307 rows of data. On the right side, there's a "Fields" pane with a search bar and a list containing "gdp_data". At the bottom right of the workspace, there's a watermark that says "Activate Windows Go to Settings to activate Windows."

Country	Code	Year	GDP-Growth	GDP-Per-Capita	GDP	Column7
Aruba	ABW	1960				
Afghanistan	AFG	1960				
Angola	AGO	1960				
Albania	ALB	1960				
Andorra	AND	1960				
Arab World	ARB	1960				
United Arab Emirates	ARE	1960				
Armenia	ARM	1960				
American Samoa	ASM	1960				
Antigua and Barbuda	ATG	1960				
Azerbaijan	AZE	1960				
Bulgaria	BGR	1960				
Bahrain	BHR	1960				
Bosnia and Herzegovina	BIH	1960				
Belarus	BLR	1960				
Barbados	BRB	1960				
Brunei Darussalam	BRN	1960				
Bhutan	BTN	1960				
Central Europe and the Baltics	CEB	1960				
Switzerland	CHE	1960				
Channel Islands	CHI	1960				
Comoros	COM	1960				
Cabo Verde	CPV	1960				
Caribbean small states	CSS	1960				
Cuba	CUB	1960				
Curacao	CUW	1960				
Cayman Islands	CYM	1960				
Cyprus	CYP	1960				
Czech Republic	CZE	1960				

Table: gdp_data (14,307 rows)

Remove a column: right-click on the column.

The screenshot shows the Power BI Desktop interface with the 'Home' tab selected. A context menu is open over the '1.2 GDP-Growth' column, which is highlighted in blue. The menu options are:

- Copy
- Remove
- Remove Other Columns
- Duplicate Column
- Add Column From Examples...
- Remove Errors
- Change Type
- Replace Errors...
- Fill
- Unpivot Columns
- Unpivot Other Columns
- Unpivot Only Selected Columns
- Rename...
- Move
- Drill Down
- Add as New Query

The 'Remove' option is highlighted with a red box.

Year	1.2 GDP-Growth	1.2 GDP Per Capita	1.2 GDP
1960	null	null	null
1960	null	null	null
1960	null	null	null
1960	null	null	null
1960	-0.05202123	1751.179338	1,204000+11
1960	null	null	null
1960	null	null	null
1960	null	null	null
1960	1.299579128	19243.43327	2,067540+11
1960	2.649675113	19951.95	20487163707
1960	null	null	null
1960	0.063157938	199.1918807	2036700117
1960	5.212001509	14463.97740	1,003882+11
1960	-0.420409829	509.5990842	1,263606139
1960	6.128798781	258.7772744	1273688494
1960	3.45303097	393.6334506	20077746684
1960	null	null	null
1960	null	null	null

Duplicate Column

A screenshot of a Microsoft Excel spreadsheet titled "Duplicate Column". The table contains 25 rows of data about countries and their political transitions. The columns are labeled: Country, Date, Birth of current form of government, Date_1, Date_2, and Most. A context menu is open over the "Date_1" column, specifically at the row for Algeria. The menu items include Copy, Remove, Remove Other Columns, Duplicate Column (which is highlighted with a red circle), 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.

	Country	Date	Birth of current form of government	Date_1	Date_2	Most
1	Algeria	1963	Adoption of the present constitution.	July 3, 1962	Referendum on independence held two ...	July 5, 1962
2	Angola	1975		November 11, 1975		Border
3	Benin			August 1, 1960		January 15, 1894
4	Botswana			September 30, 1966	Kingdom	December 13, 1999
5	Burkina Faso			August 5, 1960		Seduc
6	Burundi	November 28, 1966	Monarchy replaced by republic	July 1, 1962		
7	Cape Verde			July 5, 1975		
8	Cameroon			January 1, 1960		October 1, 1961
9	Central African Republic	September 21, 1979	Monarchy replaced by republic	August 13, 1960		Merg
10	Chad			August 11, 1960		February 3, 1997
11	Comoros			July 6, 1975	red	
12	Congo, Democratic Republic of the	May 17, 1997		June 30, 1960		
13	Congo, Republic of the			August 15, 1960		
14	Ivory Coast			August 7, 1960		
15	Djibouti			June 27, 1977		
16	Egypt	June 18, 1953	Egyptian revolution of 1952, Egyptian monarchy overthrown in a milit...	February 28, 1953	aining independence to Egypt	1925
17	Equatorial Guinea			October 12, 1968		
18	Eritrea			May 24, 1993	dared	April 1, 2002
19	Ethiopia	March 21, 1975	Monarchy abolished and replaced by republic	900		Badm
20	Gabon			August 17, 1960		April 1, 2002
21	Gambia			February 18, 1965	Kingdom	
22	Ghana			March 6, 1957	Drill Down	December 13, 1956
23	Guinea			October 2, 1958	Add as New Query	Union
24	Guinea-Bissau			September 24, 1973	Independence from Portugal declared	
25	Kenya			December 12, 1963	Independence from the United Kingdom	

Replace Values

Replacing Values - Power Query Editor

File Home Transform Add Column View Tools Help

CLOSE & APPLY NEW SOURCE RECENT SOURCES ENTER DATA DATA SOURCE SETTINGS MANAGE PARAMETERS REFRESH PREVIEW MANAGE CHOOSE COLUMNS REMOVE COLUMNS KEEP ROWS REMOVE ROWS SORT SPLIT COLUMN GROUP BY DATA TYPE: ANY USE FIRST ROW AS HEADERS MERGE QUERIES APPEND QUERIES VISION COMBINE FILES AZURE MACHINE LEARNING TRANSFORM REPLACE VALUES AI INSIGHTS

Queries [1] Countries

	Country	Country Code	Region	Population	Pop. Density (per sq. mi.)	1.2 Coastline (coast/area ratio)	1.2 Net migration
1	Afghanistan	AFG	ASIA (EX. NEAR EAST)	310	1	0	
2	Albania	ALB	EASTERN EUROPE	351	,6	46023	
3	Algeria	DZA	NORTHERN AFRICA	32930091	2381740	13,8	0,04
4	American Samoa	ASM	OCEANIA	57794	199	290,4	58,29
5	Andorra	AND	WESTERN EUROPE	71201	468	152,1	0
6	Angola	AGO	SUB-SAHARAN AFRICA	12127071	1246700	9.6999999999999993	0,13
7	Anguilla	AIA	LATIN AMER. & CARIB	13477	102	132,1	59,8
8	Antigua & Barbuda	ATG	LATIN AMER. & CARIB	69108	443	156	34,54
9	Argentina	ARG	LATIN AMER. & CARIB	39921833	2766890	14,4	0,18

Query Settings

PROPERTIES Name: Countries All Properties

APPLIED STEPS Source Navigation Removed Top Rows

Replace Values

Replace one value with another in the selected columns.

Value To Find:

Replace With:

Advanced options

OK Cancel

8	Antigua & Barbuda	ATG	LATIN AMER. & CARIB	69108	443	156	34,54
9	Argentina	ARG	LATIN AMER. & CARIB	39921833	2766890	14,4	0,18
10	Armenia	ARM	C.W. OF				0
11	Aruba	ABW	LATIN AM				35,49
12	Australia	AUS	OCEANIA				0,34
13	Austria	AUT	WESTERN				0
14	Azerbaijan	AZE	C.W. OF				0
15	Bahamas	BHS	LATIN AM				25,41
16	Bahrain	BHR	NEAR EA				24,21
17	Bangladesh	BGD	ASIA (EX.				0,4
18	Barbados	BRB	LATIN AM				22,51
19	Belarus	BLR	C.W. OF				0
20	Belgium	BEL	WESTERN				0,22
21	Belize	BLZ	LATIN AM				24838
22	Benin	BEN	SUB-SAH				0,11
23	Bermuda	BMU	NORTHE				194,34
24	Bhutan	BTN	ASIA (EX. NEAR EAST)	2279723	4/000	48,5	0
25	Bolivia	BOL	LATIN AMER. & CARIB	8989046	1098580	8.1999999999999993	0

Navigation
Removed Top Rows
Promoted Headers
Renamed Columns
Removed Errors
Removed Duplicates
Changed Type
X Removed Columns

Extract from a column

Screenshot of Power Query Editor showing the 'Extract' feature being used on the 'Date' column.

The 'Extract' dialog box is open over the 'Date' column, which is highlighted in yellow. The 'Text' tab is selected in the dialog.

Extract
Extract characters from Text values.

Column: Date_1

Resulting columns:

- Date_1: Date of acquisition of sovereignty
- Date_2: Date of independence
- Most: Country

Query Settings pane shows the query name is 'formdate'.

Country	Date	Birth of current form
Algeria	1963	Adoption of the present constitution.
Angola	1975	
Benin		
Botswana		
Burkina Faso		
Burundi	November 28, 1966	Monarchy replaced by republic
Cape Verde		
Cameroon		

Screenshot of Power Query Editor showing the 'Extract' feature being used on the 'Date' column.

The 'Extract' dialog box is open over the 'Date' column, which is highlighted in yellow. The 'Text' tab is selected in the dialog.

Extract
Extract characters from Text values.

Column: Date_1

Resulting columns:

- Date_1: Date of acquisition of sovereignty
- Date_2: Date of independence
- Most: Country

Query Settings pane shows the query name is 'formdate'.

Country	Date	Birth of current form
Algeria	1963	Adoption of the present
Angola	1975	
Benin		
Botswana		
Burkina Faso		
Burundi	November 28, 1966	Monarchy replaced by republic
Cape Verde		
Cameroon		

Screenshot of Power Query Editor showing the 'Extract Last Characters' dialog box.

The dialog box is titled 'Extract Last Characters' and asks 'Enter how many ending characters to keep.' A 'Count' input field contains the value '4'.

OK and Cancel buttons are at the bottom right of the dialog.

Background table (partially visible):

Country	Date	Event
Comoros	May 17, 1997	Independence from France declared
Congo, Democratic Republic of the		
Congo, Republic of the		
Ivory Coast		
Djibouti		
Egypt	June 18, 1953	Egyptian
Equatorial Guinea		
Eritrea	March 21, 1975	Monarch
Ethiopia		
Gabon		
Gambia		
Ghana		
Guinea		

Split Columns

Screenshot of the Power Query Editor showing the 'Transform' tab selected. A context menu is open over the 'Date of formation' column, with the 'Split Column' option highlighted and circled.

The 'Split Column' submenu includes:

- By Delimiter
- By Number of Characters
- By Positions
- By Lowercase to Uppercase
- By Uppercase to Lowercase
- By Digit to Non-Digit
- By Non-Digit to Digit

	Year of formation	Date of acquisition of sovereignty	Date_2	Most recent significant territorial modification	Date of formation
1		1962 French recognition of Algerian referendum on independence held two days earlier	July 5, 1962	Algeria gains sovereignty over the entire Algerian territory upon independence held two days earlier	July 3, 1962
2		1975 Independence from Portugal			November 11, 1975
3		1960 Independence from France	January 15, 1894	Borders of French Protectorate of Dahomey set at conclusion of Second World War	August 1, 1960
4		1966 Independence from the United Kingdom	December 13, 1999	Sedudu ruled to belong to Botswana rather than Namibia by the International Court of Justice	September 30, 1966
5		1960 Independence from France			August 5, 1960
6		1962 Independence from Belgium			July 1, 1962
7		1975 Independence from Portugal			July 5, 1975
8		1960 Independence from France	October 1, 1961	Merger of part of British Cameroons with Cameroon	January 1, 1960
9		1960 Independence from France			August 13, 1960

Screenshot of the Power Query Editor showing the 'Transform' tab selected. A context menu is open over the 'Date of acquisition of sovereignty' column, with the 'Split Column' option highlighted and circled.

The 'Split Column by Delimiter' dialog box is displayed, showing the 'Select or enter delimiter' dropdown set to 'Equals Sign'. The 'Equals Sign' option is also circled.

Specify the delimiter used to split the text column.

Select or enter delimiter

- Space
- Colon
- Comma
- Equals Sign
- Semicolon
- Space
- Tab
- Custom--

OK Cancel

	Year of formation	Date of acquisition of sovereignty	Date_2	Most recent significant territorial modification	Date of formation
1		1962 French recognition of Algerian referendum on independence held two days earlier	July 5, 1962	Algeria gains sovereignty over the entire Algerian territory upon independence held two days earlier	July 3, 1962
2		1975 Independence from Portugal			November 11, 1975
3		1960 Independence from France	January 15, 1894	Borders of French Protectorate of Dahomey set at conclusion of Second World War	August 1, 1960
4		1966 Independence from the United Kingdom	December 13, 1999	Sedudu ruled to belong to Botswana rather than Namibia by the International Court of Justice	September 30, 1966
5		1960 Independence from France			August 5, 1960
6		1962 Independence from Belgium			July 1, 1962
7		1975 Independence from Portugal			July 5, 1975
8		1960 Independence from France	October 1, 1961	Merger of part of British Cameroons with Cameroon	January 1, 1960
9		1960 Independence from France			August 13, 1960
10		1960 Independence from France			August 11, 1960
11		1975 Independence from France			July 6, 1975
12		1960 Independence from France			June 30, 1960
13		1960 Independence from France			August 15, 1960
14		1960 Independence from France			August 7, 1960
15		1977 Independence from Britain			June 27, 1977
16	narchy overthrown in a military coup	1922 Britain ends its protectorate over Egypt		Egyptian revolution leads to independence from Britain	February 28, 1922
17		1968 Independence from Rhodesia	October 12, 1968	Independence of Rhodesia from South Africa	October 12, 1968
18		1993 Independence from South Africa		Formation of the Republic of South Africa	May 24, 1994
19	ublic	900 Zagwe dynasty		Formation of the Republic of South Africa	900
20		1960 Independence from Rhodesia		Independence of Rhodesia from South Africa	August 17, 1960
21		1965 Independence from Rhodesia		Formation of the Republic of South Africa	February 18, 1965
22		1957 Independence from Rhodesia		Formation of the Republic of South Africa	March 6, 1957
23		1958 Independence from Rhodesia		Formation of the Republic of South Africa	October 2, 1958
24		1973 Independence from Rhodesia		Formation of the Republic of South Africa	September 24, 1973
25		1963 Independence from the United Kingdom		Formation of the Republic of South Africa	December 12, 1963

8		1960	Independence from France	October 1, 1961	Merger of part of British Cameroons with Cameroon	January 1, 1960
9		1960	Independence from			August 13, 1960
10		1960	Independence from			August 11, 1960
11		1975	Independence from			July 6, 1975
12		1960	Independence from			June 30, 1960
13		1960	Independence from			August 15, 1960
14		1960	Independence from			August 7, 1960
15		1977	Independence from			June 27, 1977
16	dictator overthrown in a milit...	1922	Britain ends its protec...			February 28, 1922
17		1968	Independence from			October 12, 1968
18		1993	Independence from			May 24, 1993
19	public	900	Zagwe dynasty			900
20		1960	Independence from			August 17, 1960
21		1965	Independence from			February 18, 1965
22		1957	Independence from			March 6, 1957
23		1958	Independence from			October 2, 1958
24		1973	Independence from			September 24, 1973
25		1963	Independence from the United Kingdom			December 12, 1963
26		1966	Independence from			October 4, 1966

Split Column by Delimiter

Specify the delimiter used to split the text column.

Select or enter delimiter

- Space
- Colon
- Comma
- Equals-Sign
- Semicolon
- Space
- Tab
- >Custom-->

->Custom-->

->Custom-->

OK

Cancel

9		1960	Independence from			August 13, 1960
10		1960	Independence from			August 11, 1960
11		1975	Independence from			July 6, 1975
12		1960	Independence from			June 30, 1960
13		1960	Independence from			August 15, 1960
14		1960	Independence from			August 7, 1960
15		1977	Independence from			June 27, 1977
16	dictator overthrown in a milit...	1922	Britain ends its protec...			February 28, 1922
17		1968	Independence from			October 12, 1968
18		1993	Independence from			May 24, 1993
19	public	900	Zagwe dynasty			900
20		1960	Independence from			August 17, 1960
21		1965	Independence from			February 18, 1965
22		1957	Independence from			March 6, 1957
23		1958	Independence from			October 2, 1958
24		1973	Independence from			September 24, 1973
25		1963	Independence from the United Kingdom			December 12, 1963
26		1966	Independence from			October 4, 1966

Split Column by Delimiter

Specify the delimiter used to split the text column.

Select or enter delimiter

->Custom-->

->Custom-->

from

Split at

Left-most delimiter

Right-most delimiter

Each occurrence of the delimiter

b Advanced options

OK

Cancel

	1	2	3	Year of formation	A ^B C Date of acquisition of sovereignty.1	A ^B C Date of acquisition of sovereignty.2	A ^B C Date_2	A ^B C Most recent significant territorial modification
1					1962 French recognition of Algerian referendum on in...		null July 5, 1962	Algeria gains sovereignty over the entire Algerian territory upon indep...
2					1975 Independence	Portugal		
3					1960 Independence	France	January 15, 1894	Borders of French Protectorate of Dahomey set at conclusion of Secor...
4					1966 Independence	the United Kingdom	December 13, 1999	Sedudu ruled to belong to Botswana rather than Namibia by the Inter...
5					1960 Independence	France		
6					1962 Independence	Belgium		
7					1975 Independence	Portugal		
8					1960 Independence	France	October 1, 1961	Merger of part of British Cameroons with Cameroon
9					1960 Independence	France		
10					1960 Independence	France	February 3, 1997	Aouzou Strip awarded to Chad
11					1975 Independence	France declared		
12					1960 Independence	Belgium		
13					1960 Independence	France		
14					1960 Independence	France		

Merge columns

Screenshot of the Power Query Editor showing the 'Merge Columns' feature being used on a table named 'formdate'.

The table contains the following columns:

- Year of formation
- Date of acquisition of sovereignty.1
- Date of acquisition of sovereignty.2
- Date_2
- Most recent significant territorial modification

The 'Merge Columns' button in the ribbon is highlighted with a red circle.

The 'APPLIED STEPS' pane shows the following steps:

- Source
- Promoted Headers
- Duplicated Column
- Extracted Last Characters
- Renamed Columns
- Changed Type
- Split Column by Delimiter
- Merged Columns**

Screenshot of the Power Query Editor showing the 'Merge Columns' dialog box.

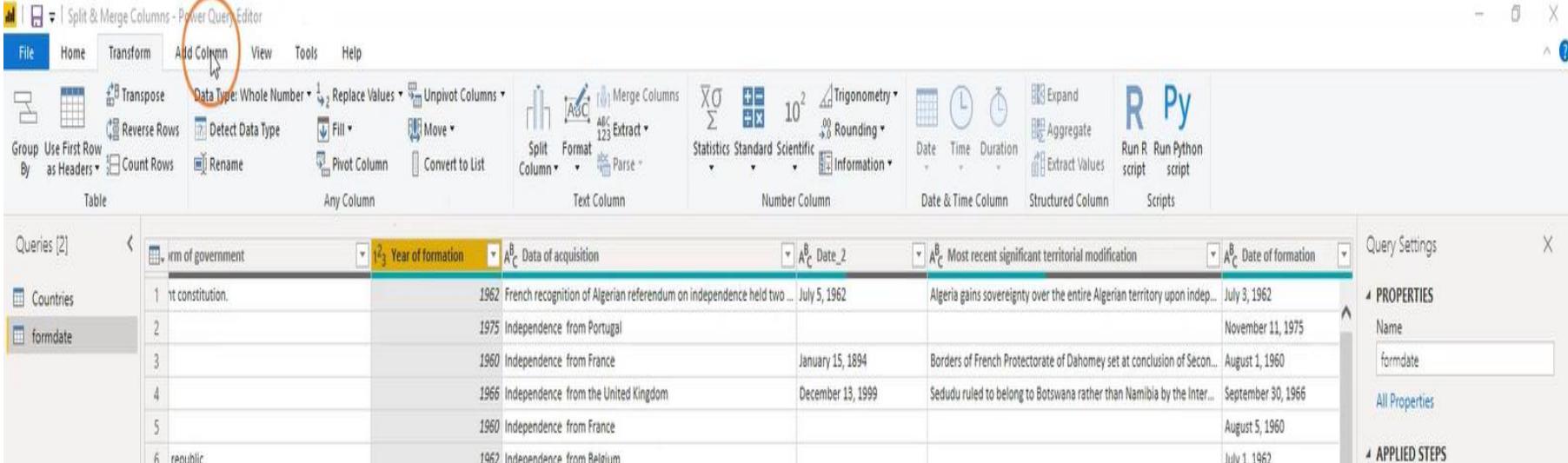
The dialog box displays the following settings:

- Separator: Custom
- from: Data of acquisition
- New column name (optional): Data of acquisition

The 'APPLIED STEPS' pane shows the following steps:

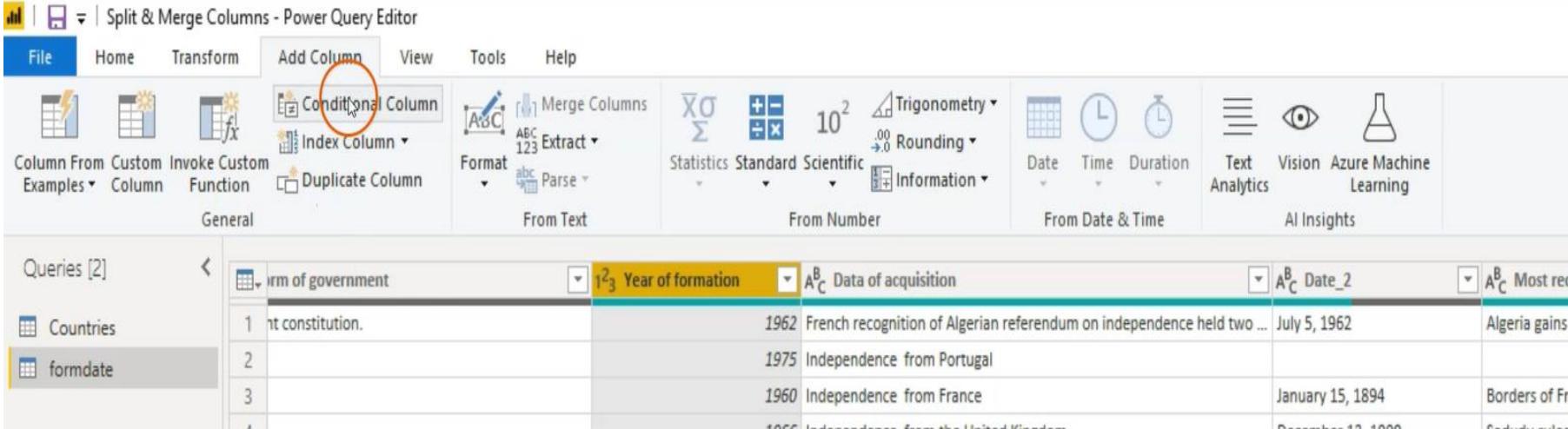
- Unpivoted Column
- Extracted Last Characters
- Renamed Columns
- Changed Type
- Renamed Columns1
- Split Column by Delimiter
- Merged Columns**

Add Column



The screenshot shows the Power Query Editor interface with the 'Add Column' tab selected in the ribbon. The ribbon also includes 'File', 'Home', 'Transform', 'View', 'Tools', and 'Help'. The 'Transform' tab is highlighted. The 'Add Column' tab has a red circle around it. The main area displays a table with six rows and several columns. The columns are labeled: 'Form of government', 'Year of formation', 'Data of acquisition', 'Date_2', 'Most recent significant territorial modification', and 'Date of formation'. The table contains historical data about countries gaining independence. To the right of the table, there is a 'Query Settings' pane with sections for 'PROPERTIES' (Name: 'formdate') and 'APPLIED STEPS'.

Form of government	Year of formation	Data of acquisition	Date_2	Most recent significant territorial modification	Date of formation
1	1962	French recognition of Algerian referendum on independence held two ...	July 5, 1962	Algeria gains sovereignty over the entire Algerian territory upon indep...	July 3, 1962
2	1975	Independence from Portugal			November 11, 1975
3	1960	Independence from France	January 15, 1894	Borders of French Protectorate of Dahomey set at conclusion of Second...	August 1, 1960
4	1966	Independence from the United Kingdom	December 13, 1999	Sedudu ruled to belong to Botswana rather than Namibia by the Internat...	September 30, 1966
5	1960	Independence from France			August 5, 1960
6	1962	Independence from Belgium			July 1, 1962



This screenshot shows the Power Query Editor with the 'Conditional Column' button circled in red. The ribbon tabs are identical to the previous screenshot. The main area shows the same table of historical independence data. The 'Conditional Column' button is located in the 'Add Column' group of the ribbon.

Form of government	Year of formation	Data of acquisition	Date_2	Most recent significant territorial modification
1	1962	French recognition of Algerian referendum on independence held two ...	July 5, 1962	Algeria gains sovereignty over the entire Algerian territory upon indep...
2	1975	Independence from Portugal		
3	1960	Independence from France	January 15, 1894	Borders of French Protectorate of Dahomey set at conclusion of Second...
4	1966	Independence from the United Kingdom	December 13, 1999	Sedudu ruled to belong to Botswana rather than Namibia by the Internat...

1975| Independence from Portugal

7	
8	
9	republic
10	
11	
12	
13	
14	
15	
16	1952, Egyptian monarchy overthrown in a milit...
17	
18	
19	nd replaced by republic
20	
21	
22	
23	
24	
25	
..	

Add Conditional Column

Add a conditional column that is computed from the other columns or values.

New column name: Custom

Column Name	Operator	Value	Output
If	is less than	123	Then ABC
... Add Clause			
Else		ABC	123

OK Cancel

July 5, 1975
January 1, 1960
August 13, 1960
August 11, 1960
July 6, 1975
June 30, 1960
August 15, 1960
August 7, 1960
June 27, 1977
to their pr...
February 28, 1922
October 12, 1968
y Commiss...
May 24, 1993
y Commiss...
900
August 17, 1960
February 18, 1965
March 6, 1957
October 2, 1958
September 24, 1973
December 12, 1963
..

1975| Independence from Portugal

7	
8	
9	republic
10	
11	
12	
13	
14	
15	
16	1952, Egyptian monarchy overthrown in a milit...
17	
18	
19	nd replaced by republic
20	
21	
22	
23	
24	
25	
..	

Add Conditional Column

Add a conditional column that is computed from the other columns or values.

New column name: Group of Year of formation

Column Name	Operator	Value	Output
If	Year of formation	is less than	Then ABC
123 1950 ...			
Add Clause			
Else	ABC	123	

Enter a value
Select a column
Parameter

OK Cancel

January 1, 1960
August 13, 1960
August 11, 1960
July 6, 1975
June 30, 1960
August 15, 1960
August 7, 1960
June 27, 1977
to their pr...
February 28, 1922
October 12, 1968
y Commiss...
May 24, 1993
y Commiss...
900
August 17, 1960
February 18, 1965
March 6, 1957
October 2, 1958
September 24, 1973
December 12, 1963
..

1975| Independence from Portugal

7	
8	
9	republic
10	
11	
12	
13	
14	
15	
16	1952, Egyptian monarchy overthrown in a milit...
17	
18	
19	nd replaced by republic
20	
21	
22	
23	
24	
25	
..	

Add Conditional Column

Add a conditional column that is computed from the other columns or values.

New column name: Group of Year of formation

Column Name	Operator	Value	Output
If	Year of formation	is less than	Then ABC
123 1950 Before 1950			
Else If	Year of formation	is less than or equal	Then ABC
123 1960 Between 1950 and 1960 ...			
Add Clause			
Else	ABC	123	After 1960

OK Cancel

January 1, 1960
August 13, 1960
August 11, 1960
July 6, 1975
June 30, 1960
August 15, 1960
August 7, 1960
June 27, 1977
to their pr...
February 28, 1922
October 12, 1968
y Commiss...
May 24, 1993
y Commiss...
900
August 17, 1960
February 18, 1965
March 6, 1957
October 2, 1958
September 24, 1973
December 12, 1963
October 4, 1966
July 26, 1847
..

Add Column from Examples

The screenshot shows the Power Query Editor interface. The 'Add Column' tab is active in the ribbon. A callout bubble highlights the 'From Selection' option under the 'From All Columns' dropdown menu.

Write some content in first row of new column which contains values from selected columns.

The screenshot shows the 'Add Column From Examples' dialog box. It displays a preview of the data with a new 'Merged' column. A callout bubble points to the first row of the 'Merged' column, showing the concatenated value 'Algeria has become independant in 1962'.

The suggested values of all rows of new column will be displayed. Press OK above to accept the suggested values.

The screenshot shows the 'Add Column From Examples' dialog box after pressing 'OK'. The 'Custom' column now contains the concatenated values for all rows. A callout bubble points to the 'OK' button.

Add Index column

The screenshot shows the Microsoft Power Query Editor interface. The title bar reads "Practise Transform Data - Power Query Editor". The ribbon menu is open at the top, with "File", "Home", "Transform", "Add Column", "View", "Tools", and "Help" visible. The "Add Column" tab is currently selected, indicated by a red box around its dropdown menu. The dropdown menu contains options like "Conditional Column", "Merge Columns", "Format", "Parse", and "Index Column". Below the ribbon, there are several toolbars with icons for various data transformation functions. On the left side, there's a navigation pane titled "Queries [1]" containing "Fact Tables [1]", "Country Fact Table", "Dimension Tables [3]", and "Countries". The main area displays a table with four rows and three columns. The columns are labeled "ID", "Continent", and "Description". The data is as follows:

ID	Continent	Description
1	1	Dry tropical or tundra and ice
2	2	Wet tropical
3	3	Temperate humid and subtropical and temperate continental
4	4	Dry hot summers and wet winters

On the right side, there is a "Query Settings" section and a "PROPERTIES" panel. The "PROPERTIES" panel has a "Name" field set to "Dim Climate" and a "All Properties" link.

Merge/Join Tables/Queries

The screenshot shows the Microsoft Power Query Editor interface. At the top, the ribbon has tabs: File, Home, Transform, Add Column, View, Tools, and Help. The 'Transform' tab is selected. On the far right of the ribbon, there is a 'Merge Queries' dropdown menu with several options: Merge Queries, Append Queries, Combine Files, Text Analytics, Vision, Azure Machine Learning, and AI Insights. The 'Merge Queries' option is highlighted with a red circle. Below the ribbon, the 'Queries [5]' pane shows five queries: Countries, ABC_123_Country Name, ABC_123_Country Code, ABC_123_Indicator Name, and ABC_123_Indicator Code. The 'ABC_123_Country Name' query is currently selected, displaying a table with one row for Aruba. The 'ABC_123_Indicator Code' query is also visible. On the left, the 'Properties' pane is open, showing various transformation tools like 'Choose Columns', 'Remove Columns', 'Keep Rows', 'Remove Rows', 'Split Column', 'Group By', and 'Replace Values'. The 'Transform' tab is selected in the Properties pane. The main workspace shows the data from the selected queries.

ABC_123_Country Name	ABC_123_Country Code	ABC_123_Indicator Name	ABC_123_Indicator Code	ABC_123_1960	ABC_123_1961	ABC_123_1962	ABC_123_1963	ABC_123_1964
1 Aruba	ABW	GDP (current US\$)	NY.GDP.MKTP.CD	1960	null	null	null	null

ABC 123 Country Name ABC 123 Country Code ABC 123 Indicator Name ABC 123 Indicator Code ABC 123 1960 ABC 123 1961 ABC 123 1962 ABC 123 1963 ABC 123 1964

	Country Name	Country Code	Indicator Name	Indicator Code	1960	1961	1962	1963	1964
1	Aruba	ABW	GDP (current US\$)	NY.GDP.MKTP.CD	null	null	null	null	null
2	Afghanistan	AFG			546666677.8	751111191.1			
3	Angola	AGO			null	null			
4	Albania	ALB			null	null			
5	Andorra	AND			null	null			
6	Arab World	ARB			null	null			
7	United Arab Emirates	ARE			null	null			
8	Argentina	ARG			24450604878	18272123664			
9	Armenia	ARM			null	null			
10	American Samoa	ASM			null	null			
11	Antigua and Barbuda	ATG			19911524247	21527606675			
12	Australia	AUS			7756110210	8374175258			
13	Austria	AUT			null	null			
14	Azerbaijan	AZE			21350006	232749998			
15	Burundi	BDI			13264015675	14260017387			
16	Belgium	BEL			236434906.8	253927646.5			
17	Benin	BEN			379567178.3	394040749.1			
18	Burkina Faso	BFA			5081413340	5319458351			
19	Bangladesh	BGD			null	null			
20	Bulgaria	BGR			212254902	237745098			
21	Bahrain	BHR			null	null			
22	Bahamas, The	BHS			31856922.86	33749405.01			
23	Bosnia and Herzegovina	BIH			94149985.97	96366652.31			
24	Belarus	BLR			669722541.3	721142957.3			
25	Belize	BLZ			19926293839	23021477292			
26	Bermuda	BMU			null	null			
27	Bolivia	BOL			35643207.63	38091150.57			
28	Brazil	BRA			112155598.9	123134584.5			
29	Barbados	BBR			41093453545	40767969454			
30	Brunei Darussalam	BRN			null	null			
31	Bhutan	BTN			41978852041	44657169109			
32	Botswana	BWA	GDP (current US\$)	NY.GDP.MKTP.CD	30412308.99	32902336.64			
33	Central African Republic	CAF	GDP (current US\$)	NY.GDP.MKTP.CD	9522746719	10712712465			
34	Canada	CAN	GDP (current US\$)	NY.GDP.MKTP.CD	4110000000	4609727273			
35	Central Europe and the Baltics	CEB	GDP (current US\$)	NY.GDP.MKTP.CD					
36	Switzerland	CHE	GDP (current US\$)	NY.GDP.MKTP.CD					
37	Channel Islands	CHI	GDP (current US\$)	NY.GDP.MKTP.CD					
38	Chile	CHL	GDP (current US\$)	NY.GDP.MKTP.CD					

Merge

Select tables and matching columns to create a merged table.

GDP by Country_1960-1980

Country Name	Country Code	Indicator Name	Indicator Code	1960	1961	1962	1963
Aruba	ABW	GDP (current US\$)	NY.GDP.MKTP.CD	null	null	null	null
Afghanistan	AFG	GDP (current US\$)	NY.GDP.MKTP.CD	53777811.1	54888895.6	546666677.8	751111191.1
Angola	AGO	GDP (current US\$)	NY.GDP.MKTP.CD	null	null	null	null
Albania	ALB	GDP (current US\$)	NY.GDP.MKTP.CD	null	null	null	null

GDP by Country_1961-1999

Country Name	Country Code	Indicator Name	Indicator Code	1981	1982	1983	1984
Aruba	ABW	GDP (current US\$)	NY.GDP.MKTP.CD	null	null	null	null
Afghanistan	AFG	GDP (current US\$)	NY.GDP.MKTP.CD	3478787909	null	null	null
Angola	AGO	GDP (current US\$)	NY.GDP.MKTP.CD	null	null	null	null
Albania	ALB	GDP (current US\$)	NY.GDP.MKTP.CD	null	null	null	1924

Join Kind

Left Outer (all from first, matching from second)

Left Outer (all from first, matching from second)

Right Outer (all from second, matching from first)

Full Outer (all rows from both)

Inner (only matching rows)

Left Anti (rows only in first)

Right Anti (rows only in second)

OK Cancel

Activate Windows
Go to Settings to activate Windows.
Odemy

Split & Merge Columns - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Recent Enter Data source settings Parameters Refresh Advanced Editor

Queries [6]

Countries

formdate

GDP by Country_1960-1980

GDP by Country_1961-1999

GDP by Country_2000-2016

Merge1

ABC 123 1974 ABC 123 1975 ABC 123 1976 ABC 123 1977 ABC 123 1978 ABC 123 1979 ABC 123 1980 ABC 123 1981

GDP by Country_1961-1999

	ABC 123 1974	ABC 123 1975	ABC 123 1976	ABC 123 1977	ABC 123 1978	ABC 123 1979	ABC 123 1980	ABC 123 1981
1	null	Table						
2	1733333264	215555498	2366666616	255555567	295333418	3300000109	3697940410	3641723322 Table
3	null	Table						
4	null	Table						
5	150820102.8	186558696.3	220127246.4	227281024.6	254020153.3	30800897.6	411578334.2	446416105.8 Table
6	15018394946	1.05146E+11	1.16337E+11	1.44848E+11	1.67308E+11	1.83556E+11	2.48646E+11	3.38177E+11 Table
7	null	null	14720672507	19213022691	24871775165	23775831783	31225463218	43598748449 Table
8	12544000117	72436777342	52438647922	51169499891	56781000101	58082870156	69252328953	76961293742 Table
9	null	Table						
10	null	Table						
11	null	null	null	77496740.74	87879333.33	109079963	131431037	Table
12	13782190903	88906411201	97226546497	1.04974E+11	1.10266E+11	1.18401E+11	1.34794E+11	1.49887E+11 Table
13	19515467988	35189299985	40059206763	42959976068	51545759221	62052258694	73937296655	82058912465 Table
14	null	Table						
15	304339839.6	345263492.1	420986666.7	448412753.6	54753555.6	61022555.6	782496666.7	919726666.7 Table
16	17999363072	56333010460	66029748931	71494539498	83283328419	1.01788E+11	1.16938E+11	1.27508E+11 Table
17	504376035.7	554654787	676870140.3	69840244.4	750049739.2	928843304.8	1186231265	1405251547 Table
18	674773821.2	751138642.6	939972703.5	976547572.2	1131225279	1475584037	1748480982	1928720390 Table
19	8086725729	12512460520	19448348073	10117113333	9651149302	13281767143	15565480322	18118049096 Table
20	null	Table						
21	null	Table						
22	670900000	632400000	596200000	642100000	713000000	832400000	1135800100	1335300000 Table
23	null	Table						
24	null	Table						
25	78343558.28	103216374.3	118066298.3	96905829.6	117650000	136300000	151800000	194750000 Table
26	269500000	312600000	345000000	386300000	447000000	475800000	517200000	613299968 Table
27	1263018491	2100249875	2404697651	2732083958	3227436282	3758220880	4421343606	4537487843 Table
28	19279057731	1.05136E+11	1.23709E+11	1.52678E+11	1.76171E+11	2.00801E+11	2.24969E+11	2.35025E+11 Table
29	null	Table						
30	433092003.6	1073577088	1168304306	1423061357	1732721181	1941600704	2803780006	4928824958 Table
31	null	Table						
32	244129088	306033848.4	355172413.8	372010119.6	451603325.4	590376720.6	819877300.6	1060923829 Table
33	271183061.4	281398668.2	378660016.3	451152450	507298120.7	610578523.8	700764892.7	797048028.8 Table
34	1.31322E+11	1.60409E+11	1.73834E+11	2.06576E+11	2.11612E+11	2.18633E+11	2.43072E+11	2.73854E+11 Table
35	null	Table						
36	null	null	null	null	null	null	1.19008E+11	Table
37	null	Table						
38	16836261173	16210404184	7622217352	10341925249	13962893422	15989933708	21803696985	29036709872 Table
39	1.38544E+11	1.44182E+11	1.63432E+11	1.5394E+11	1.74938E+11	1.49541E+11	1.78281E+11	1.91149E+11 Table
40	<							

26 COLUMNS, 264 ROWS Column profiling based on top 1000 rows

Query Settings

PROPERTIES

Name: Merge1
All Properties

APPLIED STEPS

Source
Removed Columns

Activate Windows
Go to Settings to activate Windows.



@demify

PREVIEW DOWNLOAD

Split & Merge Columns - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Data Data source settings Parameters Refresh Preview Advanced Editor Properties Manage Columns Choose Columns Remove Columns Keep Rows Remove Rows Sort Split Column Group By Replace Values Merge Queries Use First Row as Headers Append Queries Combine Files Text Analytics Vision Azure Machine Learning Combine AI Insights

Queries [6]

	ABC 123 1974	ABC 123 1975	ABC 123 1976	ABC 123 1977	ABC 123 1978	ABC 123 1979	ABC 123 1980	GDP by Country_1961-1999
1	null							
2	173333264	215555498	236666616	255555567	295333418	3300000109	369740410	
3	null							
4	null							
5	150820102.8	186558696.3	220127246.4	227281024.6	254020153.3	308008897.6	41157834.2	
6	15018394946	1.05146E+11	1.16337E+11	1.44846E+11	1.67308E+11	1.83556E+11	2.48546E+11	
7	null	14720672507	1921022691	24871775165	23775831783	31225463218		
8	12544000117	72436777342	52438647922	51169495981	56781000101	58082870156	69252328953	
9	null							
10	null							
11	null	null	null	null	77496740.74	87879333.33	109079963	
12	33782190903	88906411201	97226546497	1.04974E+11	1.10266E+11	1.18401E+11	1.34794E+11	
13	19515467988	35189299985	40059206763	42959975068	51545759221	62052258694	73937296655	
14	null							
15	304339839.6	345263492.1	420986666.7	448412753.6	54735555.6	610225555.6	782496666.7	
16	17999363072	56333010460	66029748931	71494539498	8328328419	1.01788E+11	1.16938E+11	
17	504376035.7	554654787	676870140.3	698408244.4	750049739.2	928843304.8	1186231265	
18	674773821.2	751133642.6	939972703.5	976547572.2	1131225279	1475584037	1748480982	
19	8086725729	12512460520	19448348073	1011713333	9651149302	13281767143	15565480322	
20	null							
21	null							
22	670900000	632400000	596200000	642100000	713000000	832400000	1139800100	
23	null							
24	null							
25	78343558.28	103216374.3	118066296.3	9693529.6	117650000	136300000	151800000	194750000 Table
26	269500000	312600000	345000000	386300000	447000000	475800000	517200000	613299968 Table
27	1263018491	2100249875	2404697651	2732083958	32273436282	3758220890	4421343606	4537487843 Table
28	9279057731	1.05136E+11	1.23709E+11	1.52678E+11	1.76171E+11	2.00801E+11	2.24969E+11	2.35025E+11 Table
29	null	Table						
30	433092003.6	1073577086	1168304506	1423061357	1732721161	1941600704	2803780006	4928824958 Table
31	null	Table						
32	244129088	306033848.4	355172413.8	372010119.6	451603325.4	590376720.6	819877300.6	1060923829 Table
33	271183061.4	281398668.2	378660016.3	451152450	507298120.7	610578523.8	700764892.7	797048028.8 Table
34	1.31322E+11	1.60409E+11	1.73834E+11	2.06576E+11	2.11612E+11	2.18633E+11	2.43072E+11	2.73584E+11 Table
35	null	Table						
36	null	null	null	null	null	null	1.19008E+11	Table
37	null	Table						
38	16836261173	16210404184	7622217552	10341925249	13962895422	15989953708	21803696985	29036709872 Table
39	1.38544E+11	1.44182E+11	1.63432E+11	1.5394E+11	1.74938E+11	1.49541E+11	1.78281E+11	1.91149E+11 Table
40	<							

26 COLUMNS, 264 ROWS - Column profiling based on top 1000 rows

Query Settings

PROPERTIES

Name: Merge1
Indicator Name: All Properties

APPLIED STEPS

Source: Removed Columns

Expand: Aggregate
Indicator Name: Indicator Code
Indicator Value: 1981
Indicator Value: 1982
Indicator Value: 1983 (circled)
Indicator Value: 1984
Indicator Value: 1985
Indicator Value: 1986
Indicator Value: 1987
Indicator Value: 1988
Indicator Value: 1989
Indicator Value: 1990
Indicator Value: 1991
Indicator Value: 1992
Indicator Value: 1993
Indicator Value: 1994
Indicator Value: 1995
Use original column name as prefix:

OK Cancel

Activate Windows
Go to Settings to activate Windows.

Appending Tables/Queries

The screenshot shows the Power Query Editor interface. In the top ribbon, under the 'Transform' tab, there is a dropdown menu labeled 'Append Queries'. This menu has three options: 'Append Queries', 'Append Queries as New', and 'Append Queries as Link'. A red box highlights this dropdown menu. On the left, a list of queries is shown, with 'GDP by Country_groups3' selected. The main area displays a table with columns: Column1, Column2, Column3, Column4, and Column5. The table contains 13 rows of country data. To the right, the 'Query Settings' pane shows the query name is 'GDP by Country_groups3'.

The screenshot shows the 'Append' dialog box. It has two tabs: 'Two tables' (unchecked) and 'Three or more tables' (checked). The 'Available tables' list on the left includes: countries, formdate, GDP by Country_1960-1980, GDP by Country_1961-1999, GDP by Country_2000-2016, Merge1, GDP by Country and Year, GDP by Country_groups1, GDP by Country_groups2, and GDP by Country_groups3. The 'Tables to append' list on the right includes: GDP by Country_groups1, GDP by Country_groups2, and GDP by Country_groups3. A red circle highlights the 'Add >>' button between the two lists. At the bottom are 'OK' and 'Cancel' buttons.

Group By



	Region	Country	Code	Continent	Total Population	Population Density	Capital	Actions
1	formdata							Removed Top Rows
2	GDP by Country_1960-1980	Argentina	ARG	LATIN AMER. & CARIB	39921833	2766890	14.4	0.16
3	GDP by Country_1961-1999	Armenia	ARM				99.9	0
4	GDP by Country_2000-2016	Aruba	ABW				372.5	35.45
5	Merge1	Australia	AUS				2.6	0.34
6	GDP by Country and Year	Austria	AUT				97.7	0
7	PopulationPerCountry	Azerbaijan	AZE				91.9	0
8	GDP by Country_1960-1980 (2)	Bahamas	BHS				21.8	25.41
9		Bahrain	BHR				1050.5	24.21
10		Bangladesh	BGD				1023.4	0.4
11		Barbados	BRB				649.5	22.51
12		Belarus	BLR				49.6	0
13		Belgium	BEL				340	0.22
14		Belize	BLZ				12.5	24836
15		Benin	BEN				69.8	0.11
16		Bermuda	BMU				1241	194.34
17		Bhutan	BTN				48.5	0
18		Bolivia	BOL	LATIN AMER. & CARIB	8989046	1098580	8.2	0
19		Bosnia & Herzegovina	BLR	EASTERN EUROPE	4498976	51129	88	0.04
20		Botswana	BWA	SUB-SAHARAN AFRICA	1639833	600370	2.7	0
21		Brazil	BRA	LATIN AMER. & CARIB	188078227	8511965	22.1	0.05
22		British Virgin Is.	VGB	LATIN AMER. & CARIB	23098	153	151	52.25
23		Brunei	BRN	ASIA (EX. NEAR EAST)	379444	5770	65.8	28887
24		Bulgaria	BGR	EASTERN EUROPE	7385387	110910	66.6	0.32
25		Burkina Faso	BFA	SUB-SAHARAN AFRICA	13902972	274200	50.7	0

A modal dialog box titled "Group By" is open in the center of the screen. It asks "Specify the column to group by and the desired output." There are two radio buttons: "Basic" (selected) and "Advanced". Under "Basic", there is a dropdown menu set to "Region" and a "New column name" input field containing "Count". Below it is a dropdown menu for "Operation" with "Count Rows" selected. To the right of the operation dropdown is a "Column" dropdown menu which is currently empty. At the bottom of the dialog are "OK" and "Cancel" buttons. A red circle highlights the "Count Rows" option in the operation dropdown.

Group By

Specify the column to group by and the desired output.

Basic Advanced

Region

New column name Operation Column

Number of countries Count Rows

OK Cancel

			LATIN AMER. & CARIB	69108	443	156	34.54	Navigation
8	Antigua & Barbuda	ATG	LATIN AMER. & CARIB	39921833	2766890	14.4	0.18	Removed Top Rows
9	Argentina	ARG	LATIN AMER. & CARIB			99.9	0	Promoted Headers
10	Armenia	ARM				372.5	35.45	Renamed Columns
11	Aruba	ABW				2.6	0.34	Removed Errors
12	Australia	AUS				97.7	0	Removed Duplicates
13	Austria	AUT				91.9	0	Changed Type
14	Azerbaijan	AZE				21.8	25.41	Removed Columns
15	Bahamas	BHS				1050.5	24.21	Replaced Value
16	Bahrain	BHR				1023.4	0.4	Changed Type1
17	Bangladesh	BGD				649.5	22.51	Filtered Rows
18	Barbados	BRB				49.6	0	
19	Belarus	BLR				340	0.22	
20	Belgium	BEL				12.5	24838	
21	Belize	BZL				69.8	0.11	
22	Benin	BEN				1241	194.34	
23	Bermuda	BMU				48.5	0	
24	Bhutan	BTN						
25	Bolivia	BOL	LATIN AMER. & CARIB	8989046	1098580	8.2	0	
26	Bosnia & Herzegovina	BLR	EASTERN EUROPE	4499976	51129	88	0.04	
27	Botswana	BWA	SUB-SAHARAN AFRICA	1639833	600370	2.7	0	

Entering data manually - Power Query Editor

File Home Transform Add Column View Tools Help

Transpose Reverse Rows Detect Data Type Replace Values Unpivot Columns Move Merge Columns

Group Use First Row as Headers Count Rows Rename Pivot Column Convert to List Split Column Format 123 Extract Statistics Standard Scientific Trigonometry Rounding Expand Aggregate Run R script Run Python script

Table Any Column Text Column Number Column Date & Time Column Structured Column Scripts

Queries [12]

	Region	Number of countries
1	ASIA (EX. NEAR EAST)	28
2	EASTERN EUROPE	12
3	NORTHERN AFRICA	6
4	OCEANIA	20
5	WESTERN EUROPE	28
6	SUB-SAHARAN AFRICA	51
7	LATIN AMER. & CARIB	45
8	C.W. OF IND. STATES	12
9	NEAR EAST	15
10	NORTHERN AMERICA	5
11	BALTICS	3

Query Settings

Properties

Name: Countries

All Properties

Applied Steps

Source
Navigation
Removed Top Rows
Promoted Headers
Renamed Columns
Removed Errors

The screenshot shows the Power Query Editor interface with the 'Applied Steps' pane open. The 'Grouped Rows' step is highlighted with a red circle. The query settings pane shows the query is named 'Countries'.

Applied Steps:

- Source
- Navigation
- Removed Top Rows
- Promoted Headers
- Renamed Columns
- Removed Errors
- Removed Duplicates
- Changed Type
- Removed Columns
- Replaced Value
- Changed Type1
- Filtered Rows
- Grouped Rows** (highlighted)

The screenshot shows the Power Query Editor interface with the 'Group By' dialog box open. The 'Region' column is selected for grouping, and the 'Number of countries' column is selected for aggregation (Sum). The 'Column' dropdown is set to 'Country'. The 'OK' button is highlighted with a red circle.

Group By Dialog:

Specify the column to group by and the desired output.

Basic Advanced

Region

New column name: Number of countries Operation: Sum Column: Country

OK Cancel

Entering data manually - Power Query Editor

File Home Transform Add Column View Tools Help

Group Use First Row By as Headers

Table Any Column Text Column Number Column Date & Time Column Structured Column Scripts

Queries [12]

- Fact Tables [1]
 - Country Fact Table
- Dimension Tables [3]
 - Countries**
 - MetaData Country
 - Dim Climate
- Other Queries [8]
 - formdate
 - GDP by Country_1960-1980
 - GDP by Country_1961-1999
 - GDP by Country_2000-2016
 - Merge1
 - GDP by Country and Year
 - PopulationPerCountry
 - GDP by Country_1960-1980 (2)

Region **Number of countries**

Region	Number of countries
ASIA (EX. NEAR EAST)	28
EASTERN EUROPE	12
NORTHERN AFRICA	6
OCEANIA	
WESTERN EUROPE	
SUB-SAHARAN AFRICA	
LATIN AMER. & CARIB	
C.W. OF IND. STATES	
NEAR EAST	
NORTHERN AMERICA	
BALTICS	

Group By
Specify the columns to group by and one or more outputs.

Basic Advanced

Region **Add grouping**

New column name Operation Column
 Number of countries Sum Population
 Average of area Average Area (sq. mi.)

Add aggregation

OK **Cancel**

Query Settings

PROPERTIES

Name Countries

APPLIED STEPS

- Source
- Navigation
- Removed Top Rows
- Promoted Headers
- Renamed Columns
- Removed Errors
- Removed Duplicates
- Changed Type
- Removed Columns
- Replaced Value
- Changed Type1
- Filtered Rows
- Grouped Rows**

Entering data manually - Power Query Editor

File Home Transform Add Column View Tools Help

Group Use First Row By as Headers

Table Any Column Text Column Number Column Date & Time Column Structured Column Scripts

Queries [12]

- Fact Tables [1]
 - Country Fact Table
- Dimension Tables [3]
 - Countries**
 - MetaData Country
 - Dim Climate
- Other Queries [8]
 - formdate
 - GDP by Country_1960-1980
 - GDP by Country_1961-1999
 - GDP by Country_2000-2016

Region **Number of countries** **Average of area**

Region	Number of countries	Average of area
ASIA (EX. NEAR EAST)	3687982236	824882.5714
EASTERN EUROPE	119914717	96018.5
NORTHERN AFRICA	161407133	1003148.333
OCEANIA	33110274	425978.6
WESTERN EUROPE	396339998	132517.0714
SUB-SAHARAN AFRICA	749437000	477282.4706
LATIN AMER. & CARIB	561824599	456535.2
C.W. OF IND. STATES	280081548	1841736.917
NEAR EAST	192607885	289981.7333
NORTHERN AMERICA	331672307	4556494.2
BALTICS	7184974	58338.33333

Query Settings

PROPERTIES

Name Countries

APPLIED STEPS

- Source
- Navigation
- Removed Top Rows
- Promoted Headers
- Renamed Columns
- Removed Errors
- Removed Duplicates

Mathematical operations on numeric columns

Screenshot of the Power Query Editor showing mathematical operations on numeric columns.

The screenshot shows the Power Query Editor interface with the "Transform" tab selected. A context menu is open over a numeric column, specifically the "GDP" column, which is highlighted in yellow. The menu is titled "Add" and contains the following options:

- Multiply
- Subtract
- Divide
- Integer-Divide
- Modulo
- Percentage
- Percent Of

A red circle highlights the "Add" button in the top-left corner of the context menu. Below the menu, a small "Add" dialog box is displayed, also with a red circle highlighting its title bar. The dialog box contains the text "Enter a number to add to each value in the column." and a "Value" input field containing the number "1".

The main table view shows data for Aruba from 1994 to 1998, with the "GDP" column values being added by 1. The "Year" column is also highlighted in yellow.

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Unpivot

1. Get the “life_expectancy_years” file, and transform.
2. The table has country as rows, and years as columns, with life expectancy as values.
3. In “gdp_data” file, country as well as years were columns.
4. So we need to unpivot the “life_expectancy_years” file.

The screenshot shows the Microsoft Power Query Editor interface. The ribbon at the top includes tabs for FILE, HOME, INSERT, DESIGN, PAGE LAYOUT, REFERENCES, MAILINGS, REVIEW, and VIEW. The main area displays a table with data for various countries across different years. A context menu is open over the first row of the table, specifically over the 'country' column header. The menu options include Copy, Remove, Remove Other Columns, Duplicate Column, 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 (which is highlighted in grey), Unpivot Only Selected Columns, Rename..., Move, and Drill Down. To the right of the table, the 'Query Settings' pane is visible, showing the query name 'life_expectancy_years' and a list of applied steps: Source, Navigation, Promoted Headers, Changed Type, Promoted Headers1, and a selected step 'Changed Type1'. The bottom status bar indicates '220 COLUMNS, 187 ROWS' and 'Column profiling based on top 10%'. The overall title bar of the window is 'PwerBI.docx - Word'.

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Recent Enter Data source settings Manage Parameters Refresh Advanced Editor Properties Manage Choose Columns Remove Columns Keep Rows Remove Rows Sort Split Column Group By Data Type: Any Use First Row as Headers Merge Queries Text Analytics Append Queries Vision Combine Files Azure Machine Learning Combine AI Insights

Queries [2]

= Table.UnpivotOtherColumns(#"Changed Type1", {"country"}, "Attribute", "Value")

	A ^B country	A ^B Attribute	1.2 Value
1	Afghanistan	1800	28.2
2	Afghanistan	1801	28.2
3	Afghanistan	1802	28.2
4	Afghanistan	1803	28.2
5	Afghanistan	1804	28.2
6	Afghanistan	1805	28.2
7	Afghanistan	1806	28.1
8	Afghanistan	1807	28.1
9	Afghanistan	1808	28.1
10	Afghanistan	1809	28.1
11	Afghanistan	1810	28.1
12	Afghanistan	1811	28.1
13	Afghanistan	1812	28.1
14	Afghanistan	1813	28.1
15	Afghanistan	1814	28.1
16	Afghanistan	1815	28.1
17	Afghanistan	1816	28.1
18	Afghanistan	1817	28
19	Afghanistan	1818	28
20	Afghanistan	1819	28
21	Afghanistan	1820	28

Query Settings

PROPERTIES

Name: life_expectancy_years

All Properties

APPLIED STEPS

- Source
- Navigation
- Promoted Headers
- Changed Type
- Promoted Headers1
- Changed Type1
- Unpivoted Other Columns

3 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED AT 10:51 AM

The middle column is by default named as “Attribute” but it contains year values. We can rename it to “Year” by double-clicking on the name.

The data type of year column is text, so we change it to whole number by right-clicking on it.

The screenshot shows the Power Query Editor interface with the following details:

- File** tab is selected.
- Home** tab is active.
- Transform**, **Add Column**, **View**, **Tools**, and **Help** tabs are visible.
- Data Sources** and **Parameters** buttons are present.
- Properties** button is selected.
- Advanced Editor** button is available.
- Query** tab is selected.
- Manage Columns** section includes **Choose Columns**, **Remove Columns**, **Keep Rows**, **Remove Rows**, **Sort**, **Split Column**, **Group By**, **Data Type** dropdown set to **Text**, and **Transform** section.
- Queries [2]** pane shows two queries: **gdp_data** and **life_expectancy_years**.
- life_expectancy_years** query is currently selected.
- Attribute** column is selected for modification.
- A context menu is open over the **Value** column, listing options such as **Copy**, **Remove**, **Remove Other Columns**, **Duplicate Column**, **Add Column From Examples...**, **Remove Duplicates**, **Remove Errors**, **Change Type** (selected), **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**.
- Whole Number** is highlighted under **Change Type**.
- Query Settings** pane shows the **Name** field set to **life_expectancy_years**.
- APPLIED STEPS** pane lists the steps taken: **Source**, **Navigation**, **Promoted Headers**, **Changed Type**, **Promoted Headers1**, **Changed Type1**, and **Unpivoted Other Columns**.
- Bottom status bar: **3 COLUMNS, 999+ ROWS**, **Column profiling based on top 1000 rows**, **PREVIEW DOWNLOADED AT 10:51 AM**, and a link to **13. Exploring the Query Editor**.

Part-II Joining tables (Model view)

The screenshot shows the Power BI Desktop interface in the Model view. On the left, the 'Model' tab is selected in the ribbon. Two tables are visible in the main area: 'gdp_data' and 'life_expectancy_years'. The 'life_expectancy_years' table is expanded, showing fields like 'country', 'Value', and 'Year'. A tooltip for the 'country' field indicates it is part of a relationship. On the right, the 'Properties' pane is open for the 'life_expectancy_years' table, displaying settings for cards and related fields. The 'Fields' pane shows the available tables in the model. The bottom status bar displays 'Activate Windows' and 'Go to Settings to activate Windows.'

Properties

- Show the database in the header when applicable
No
- Show related fields when card is collapsed
Yes
- Pin related fields to top of card
No

Fields

- gdp_data
- life_expectancy_years

For inner join, identify the columns on which inner join is to be done, and drag column from one table onto column from the second table.

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

- Home tab selected:** The Home tab is highlighted in the ribbon.
- Data Source Cards:** Two cards are visible:
 - gdp_data**: Shows fields like Country, GDP, GDP-Growth, GDP-Per-Capita, and Year.
 - life_expectancy_years**: Shows fields like country and Country, with options to sum Value or Year.
- Properties Panel:** On the right, the Properties panel is open for the **life_expectancy_years** card.
 - Fields** section: Shows the table name **life_expectancy_years**.
 - Properties** section:
 - Show the database in the header when applicable:** No (radio button)
 - Show related fields when card is collapsed:** Yes (radio button)
 - Pin related fields to top of card:** No (radio button)
- Bottom Navigation:** Buttons for All tables and a plus sign (+) are visible.
- Activation Message:** A message at the bottom right says "Activate Windows Go to Settings to activate Windows."

Screenshot of Power BI Desktop showing the "Create relationship" dialog box.

The dialog box shows two tables: "gdp_data" and "life_expectancy_years".

gdp_data:

Country	Code	Year	GDP-Growth	GDP-Per-Capita	GDP
Aruba	ABW	1960	null	null	null
Afghanistan	AFG	1960	null	null	null
Angola	AGO	1960	null	null	null

life_expectancy_years:

country	Year	Value
Chile	1800	32
Chile	1801	32
Chile	1802	32

Relationship Settings:

- Cardinality:** Many to many (*:*)
- Cross filter direction:** Both
- Make this relationship active
- Apply security filter in both directions
- Assume referential integrity

Note: This relationship has cardinality Many-Many. This should only be used if it is expected that neither column (Country and country) contains unique values, and that the significantly different behavior of Many-many relationships is understood. [Learn more](#)

Buttons: OK, Cancel

Activate Windows
Go to Settings to activate Windows.

We can set the cardinality (1-1, *-* , 1-* , *-1). The direction of arrow is in the direction of many.

We can also set the direction of arrow (cross filter direction) but usually it is set to both (useful only for visualization).

A relationship can also be deactivated in case of circular reference between 3 or more tables which is not allowed.

The screenshot shows the Power BI Desktop interface with the "Home" tab selected. On the left, the Data view displays two tables: "gdp_data" and "life_expectancy_years". A relationship is established between the "Country" field in "gdp_data" and the "country" field in "life_expectancy_years". The "Properties" pane on the right contains settings for cards, related fields, and pinned fields. The "Fields" pane lists the tables "gdp_data" and "life_expectancy_years".

Properties

- Show the database in the header when applicable
No
- Show related fields when card is collapsed
Yes
- Pin related fields to top of card
No

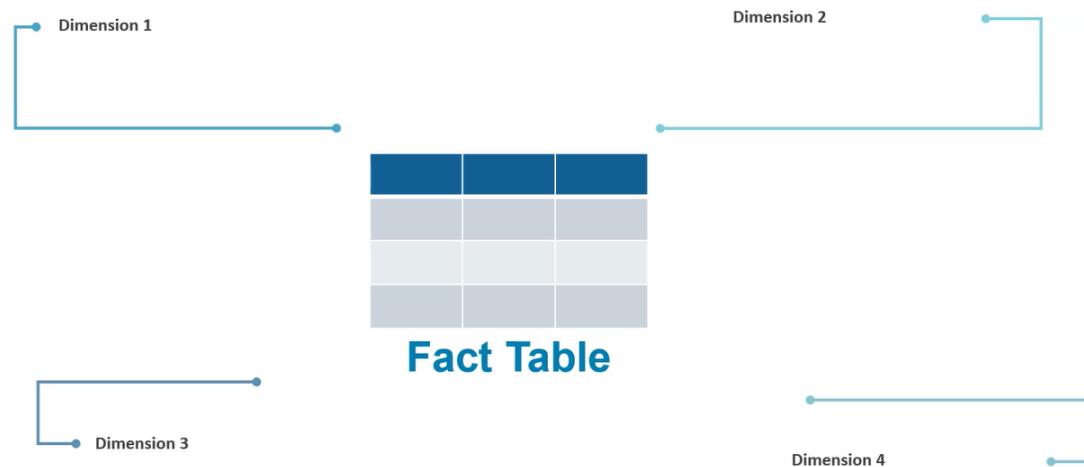
Fields

- Search
- > gdp_data
- > life_expectancy_years

* on the end of the arrow refers to “many” cardinality e.g. many-to-many relationship. The cardinality is automatically detected by PowerBI.

Right-click to on arrow to delete or edit the relationship.

Star schema



Transaction-ID	Product-ID	Price	Date	Location-ID	Location	Employees
12345	abcde	25\$	01-01-2020	1	Vancouver	10
...						

Transaction-ID	Product-ID	Price	Date	Location-ID
12345	1	25\$	01-01-2020	1
...	2	13\$	01-01-2020	2
	5	10\$	02-01-2020	1

Fact Table

10.000 data rows

Location-ID	Location	Employees	Sales area	...
1	Vancouver	10	110sqm	
2	Chicago	15	165sqm	
3	New York	12	105sqm	

Dimension table

5 data rows

Activate Windows
Go to Settings to activate Windows.

@odemy



Grouping queries

Queries [10]

	A ^B C Country Code	A ^B C Region	A ^B C IncomeGroup	A ^B C SpecialNotes	A ^B C Country
1	ABW	Latin America & Caribbean	High income	SNA data for 2000-2011 are updated from official government statistic...	Aruba
2	AFG	South Asia	Low income	Fiscal year end: March 20; reporting period for national accounts data ...	Afghanistan
3	AGO	Sub-Saharan Africa	Lower middle income		Angola
4	ALB	Europe & Central Asia	Upper middle income		Albania
5	AND	Europe & Central Asia	High income	WB-3 code changed from ADO to AND to align with ISO code.	Andorra
6	ARB			Arab World aggregate. Arab World is composed of members of the Le...	Arab World
7	ARE	Middle East & North Africa	High income		United Arab Emirates
8	ARG	Latin America & Caribbean	Upper middle income	National Institute of Statistics and Census revised national accounts fr...	Argentina
				The World Bank systematically assesses the appropriateness of official ex...	
9	ARM	Europe & Central Asia	Lower middle income		Armenia
10	ASM	East Asia & Pacific	Upper middle income		American Samoa
11	ATG	Latin America & Caribbean	High income		Antigua and Barbuda
12	AUS	East Asia & Pacific	High income	Fiscal year end: June 30; reporting period for national accounts data: F...	Australia
	AUT	Europe & Central Asia	High income	A simple multiplier is used to convert the national currencies of EMU ...	Austria
	AZE	Europe & Central Asia	Upper middle income		Azerbaijan
	BDI	Sub-Saharan Africa	Low income		Burundi
	BEL	Europe & Central Asia	High income	A simple multiplier is used to convert the national currencies of EMU ...	Belgium
	BEN	Sub-Saharan Africa	Low income		Benin
	BFA	Sub-Saharan Africa	Low income		Burkina Faso
	BGD	South Asia	Lower middle income	Fiscal year end: June 30; reporting period for national accounts data: FY...	Bangladesh
20	BGR	Europe & Central Asia	Upper middle income	The new reference year for chain linked series is 2010.	Bulgaria

Paste, New Query, New Parameter..., New Group..., Expand All, Collapse All

Query Settings

- PROPERTIES
 - Name: MetaData Country
 - All Properties
- APPLIED STEPS
 - Source
 - Promoted Headers
 - Removed Columns
 - Renamed Columns

PopulationPerCountry, Country Fact Table, MetaData Country

9	ARM	Europe & Central Asia	Lower middle income	
10	ASM	East Asia & Pacific	Upper middle income	
11	ATG	Latin America & Caribbean	High income	
12	AUS	East Asia & Pacific	High income	
13	AUT	Europe & Central Asia	High income	
14	AZE	Europe & Central Asia	Upper middle income	
15	BDI	Sub-Saharan Africa	Low income	
16	BEL	Europe & Central Asia	High income	
17	BEN	Sub-Saharan Africa	Low income	
18	BFA	Sub-Saharan Africa	Low income	
19	BGD	South Asia	Lower middle income	
20	BGR	Europe & Central Asia	Upper middle income	
21	BHR	Middle East & North Africa	High income	
22	BHS	Latin America & Caribbean	High income	

New Group

Name: Fact Tables

Description: This is the group of our fact tables

OK Cancel

Renamed Columns

Practise Transform Data - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Recent Sources Data source settings Manage Refresh Preview Advanced Editor Properties Choose Columns Remove Rows Keep Rows Remove Columns Group By Split Column Replace Values Data Type: Text Use First Row as Headers Merge Queries Text Analytics Append Queries Vision Combine Files Combine AI Insights Close New Query Data Sources Parameters Query Manage Columns Reduce Rows Sort Transform Combine AI Insights

Queries [10]

- Fact Tables (This is the group of our fact tables)
- Countries
- formdata
- GDP by Country_1960-1980
- GDP by Country_1961-1999
- GDP by Country_2000-2016

Fact Tables [1]

	Country	Country Code	Region	Population	Area (sq. mi.)	Pop. Density (per sq. mi.)	Coastline (coast/area ratio)	Net migration
1	Afghanistan	AFG	ASIA (EX. NEAR EAST)	31056997	647500	48.1	0	
2	Albania	ALB	EASTERN EUROPE	3581655	28748	124.6	46023	
3	Algeria	DZA	NORTHERN AFRICA	32930091	2381740	13.8	0.04	
	Samoa	ASM	OCEANIA	57794	199	290.4	58.29	
	AND	AND	WESTERN EUROPE	71201	468	152.1	0	
	AGO	AGO	SUB-SAHARAN AFRICA	12127071	1246700	9.7	0.13	
	AIA	AIA	LATIN AMER. & CARIB	13477	102	132.1	59.8	
	Barbuda	ATG	LATIN AMER. & CARIB	69108	443	156	34.54	
		ARG	LATIN AMER. & CARIB	39921833	2766890	14.4	0.18	
		ARM	C.W. OF IND. STATES	2976372	29800	99.9	0	
		ABW	LATIN AMER. & CARIB	71891	193	372.5	35.49	
		AUS	OCEANIA	20264082	7686850	2.6	0.34	
		AT	WESTERN EUROPE	8192880	83870	97.7	0	
		TE	C.W. OF IND. STATES	7961619	86600	91.9	0	
		AS	LATIN AMER. & CARIB	303770	13940	21.8	25.41	
		NE	NEAR EAST	698585	665	1050.5	24.21	
		ED	ASIA (EX. NEAR EAST)	147365352	144000	1023.4	0.4	
		BRB	LATIN AMER. & CARIB	279912	431	649.5	22.51	
		BLR	C.W. OF IND. STATES	10293011	207600	49.6	0	
		BEL	WESTERN EUROPE	10379067	30528	340	0.22	
		BLZ	LATIN AMER. & CARIB	287730	22966	12.5	24838	
		BEN	SUB-SAHARAN AFRICA	7862944	112620	69.8	0.11	
		BMU	NORTHERN AMERICA	65773	53	1241	194.34	

Properties

Name: Countries

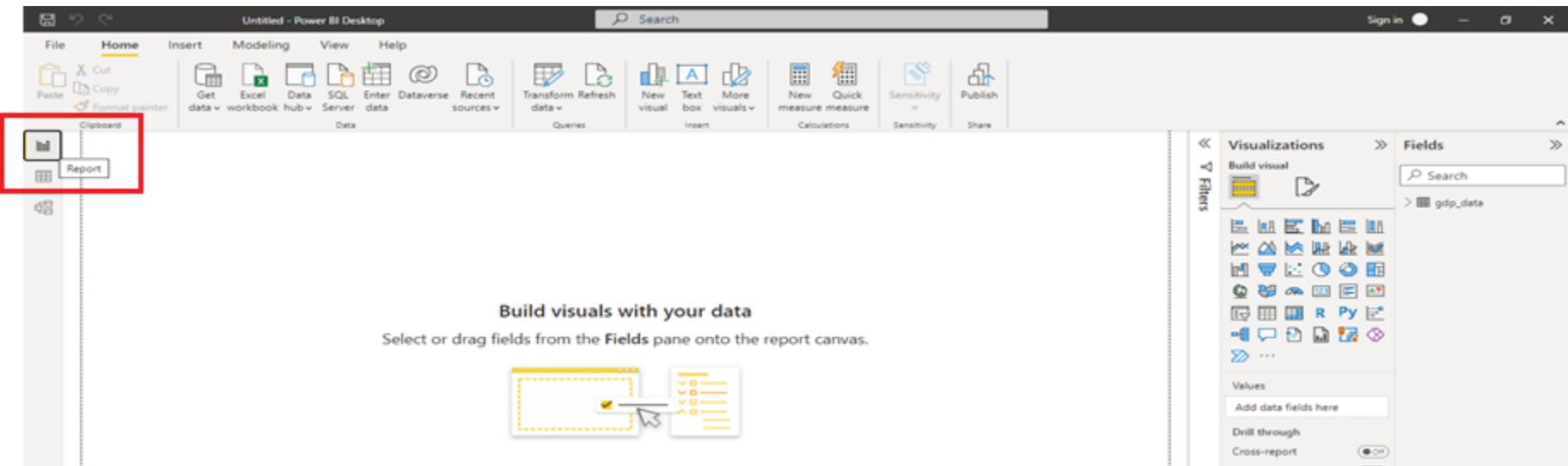
Applied Steps

- Source
- Navigation
- Removed Top Rows
- Promoted Headers
- Renamed Columns
- Removed Errors
- Removed Duplicates
- Changed Type
- Removed Columns
- Replaced Value

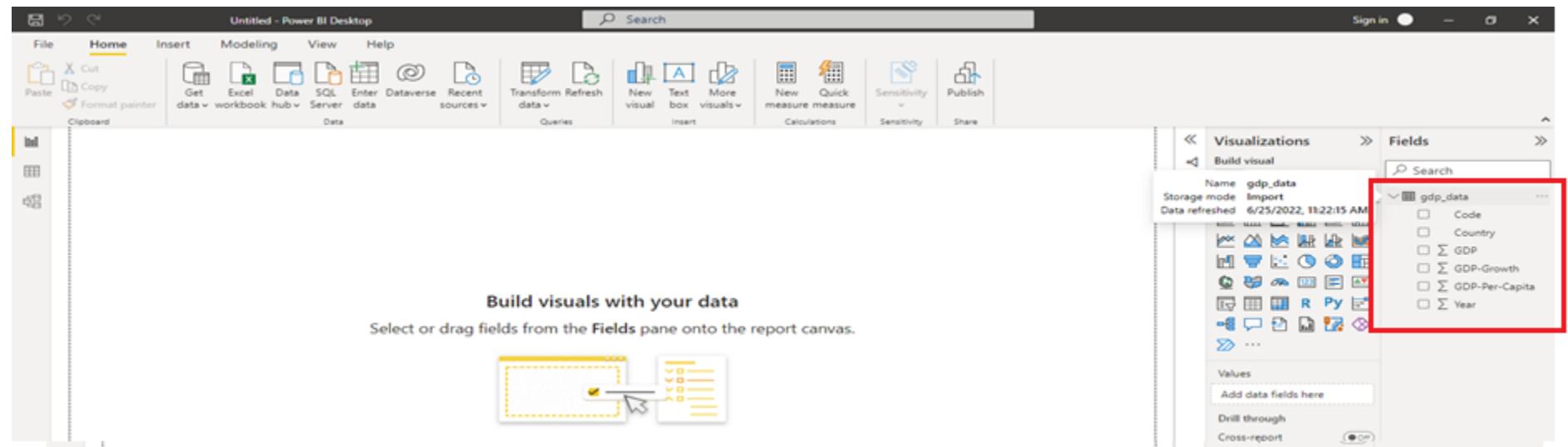
Changed Type1

Part-III Visualizations

Visualize data using Report.



The loaded dataset is on the right-side of the window.

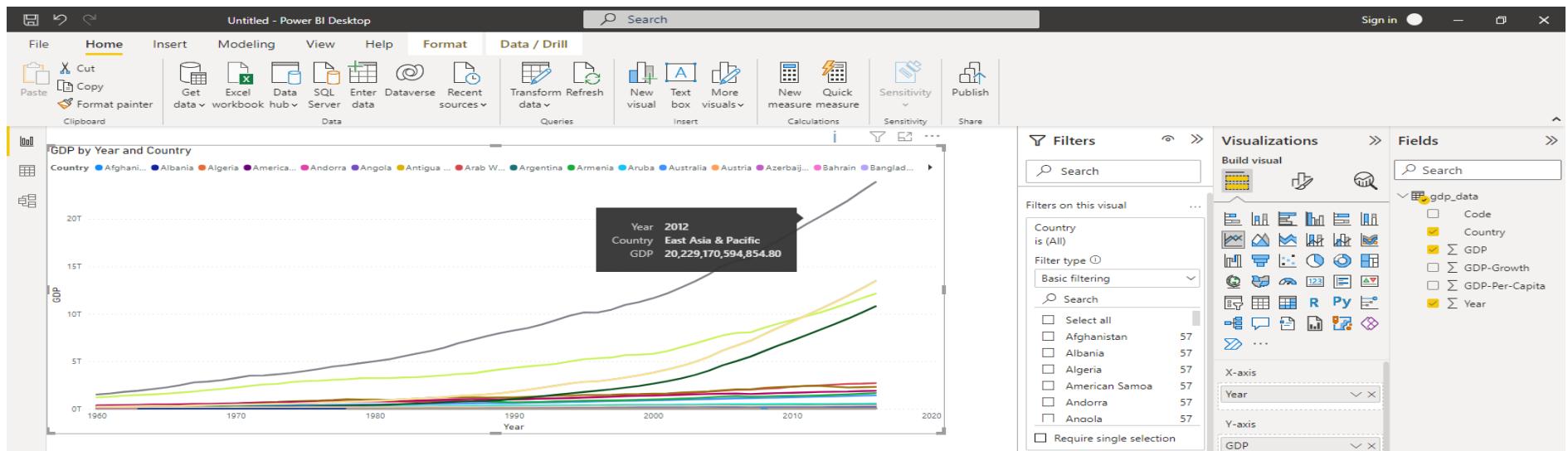


Click on any visual-type, and a blank visual will appear on screen along with a property box in Visualizations pane.

Drag the column names in to X-axis, Y-axis, Legend fields of the Visualizations pane.



Graphs are interactive. We can hover the mouse on the graph to know what it represents.



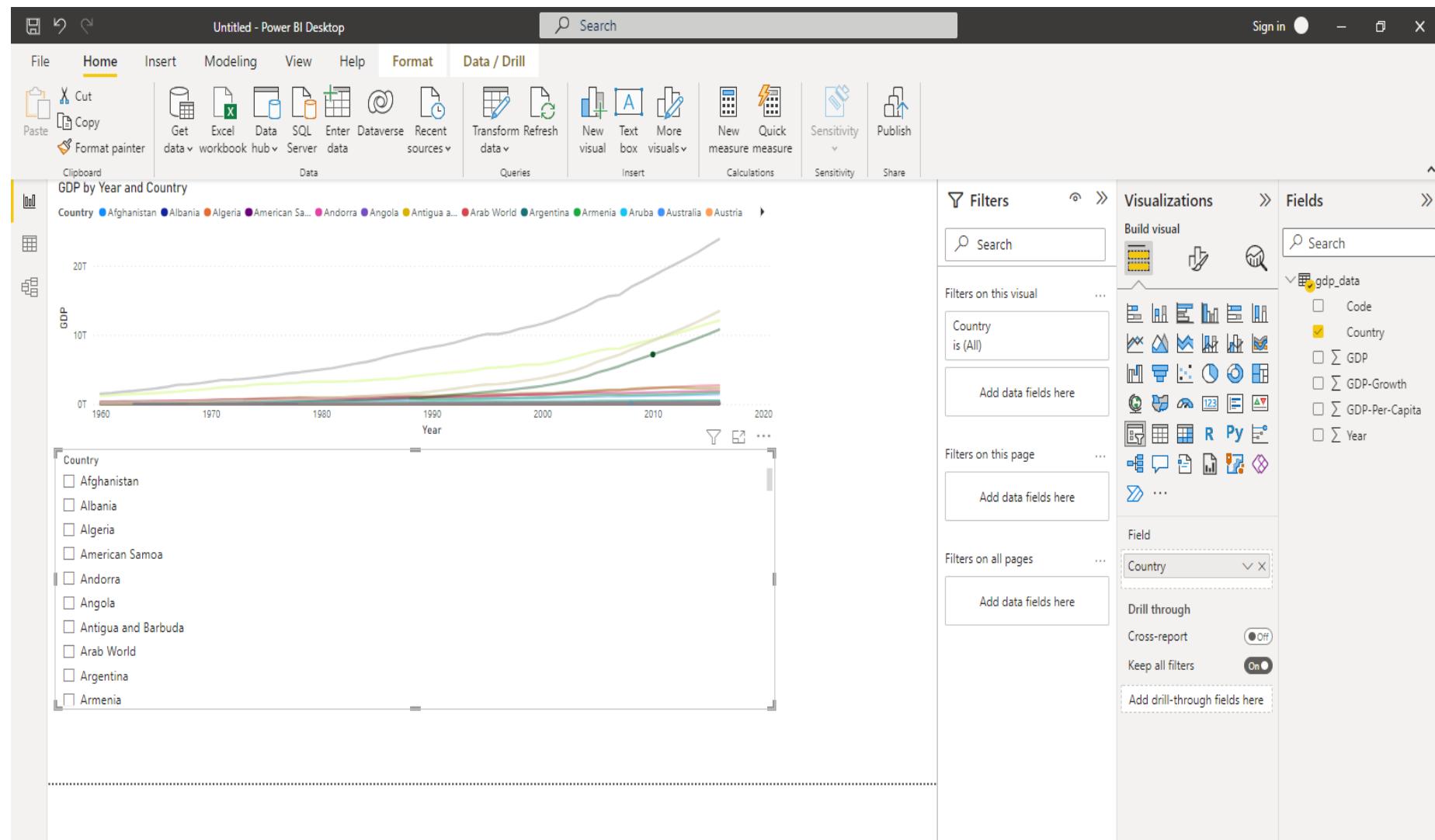
Slicer/Filter

We can filter using Filters pane. We can also add slicer which works like a filter.

The screenshot shows the Power BI Filters pane with three main tabs:

- Filters**: Contains sections for "Filters on this visual", "Filters on this page", and "Filters on all pages", each with a "Add data fields here" button.
- Visualizations**: Shows a grid of visualization icons, with the "Slicer" icon highlighted. It also includes sections for "Field", "Drill through", "Cross-report" (with an off/on toggle), and "Keep all filters" (with an on/off toggle).
- Fields**: Displays a search bar and a list of fields under the "gdp_data" table, including "Code", "Country", "Σ GDP", "Σ GDP-Growth", "Σ GDP-Per-Capita", and "Σ Year".

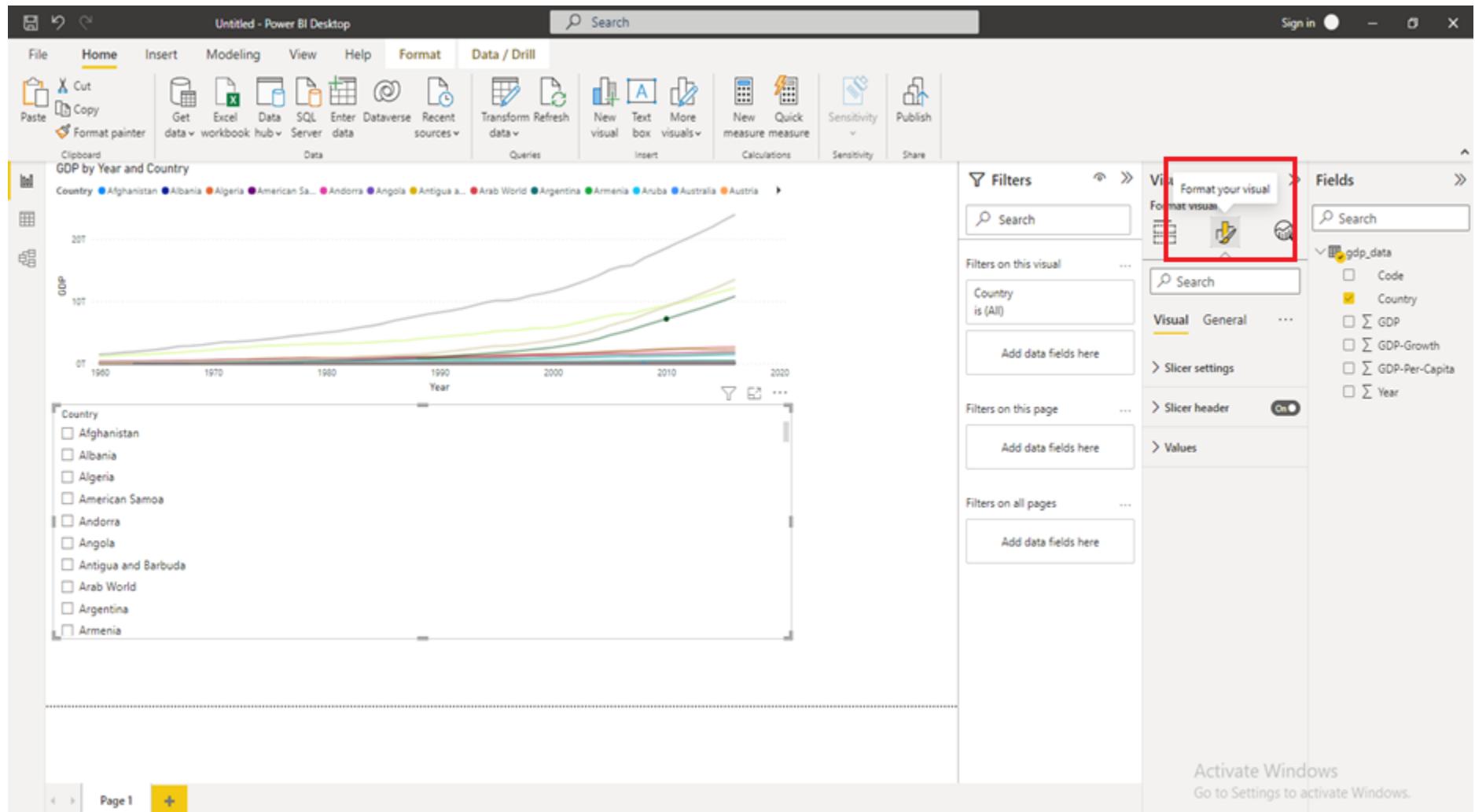
Drag and drop the field on which you want to apply filters.

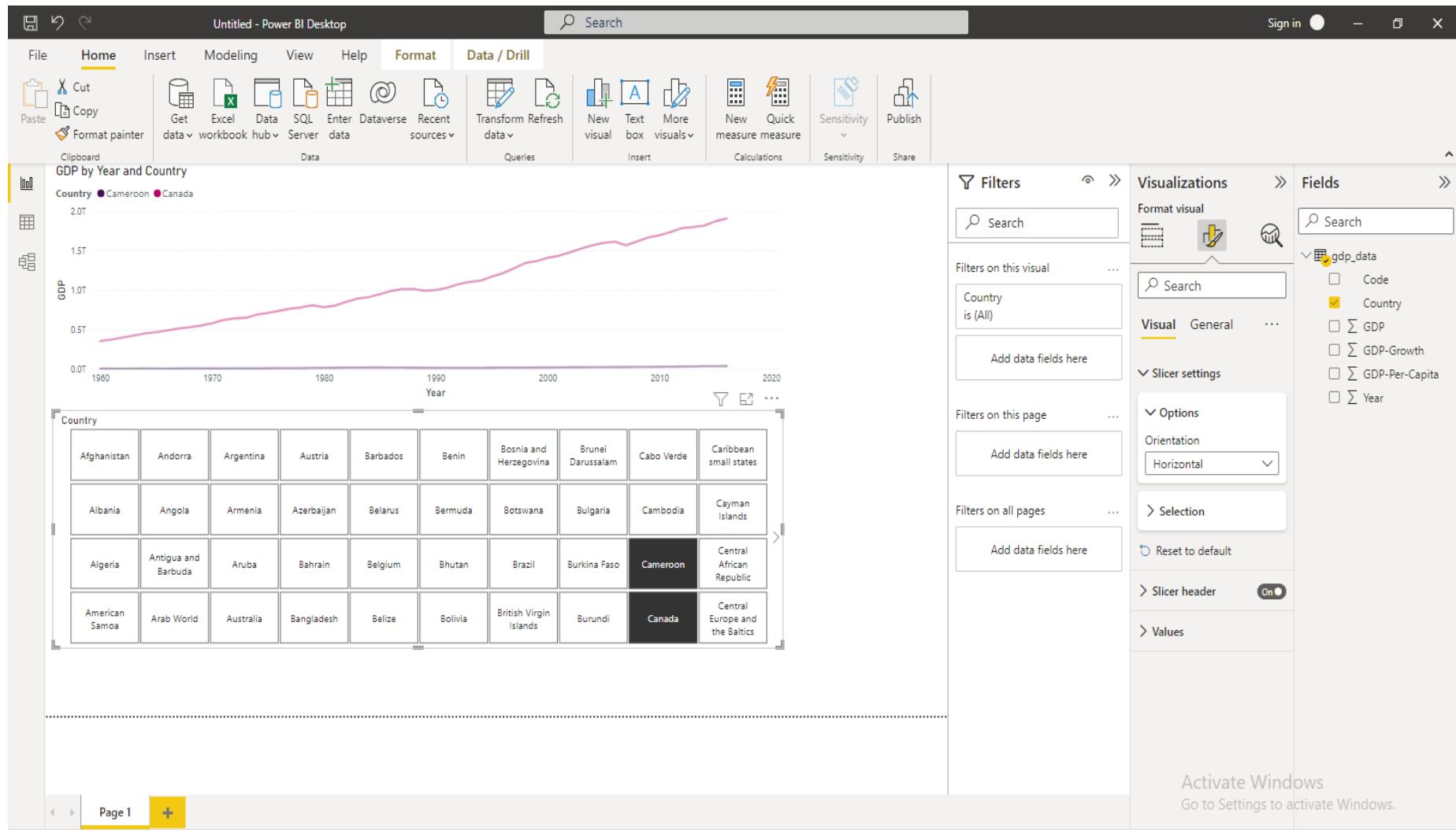


For more advanced filtering options, we can use Filters pane.

Format tab

We can format the slicer and other visuals.





Aggregate Functions

The screenshot displays a Power BI interface with three main sections: a visualization, a visualization, and the Fields pane.

Left Visualization: A horizontal bar chart titled "GDP (\$ per capital) by Description". The Y-axis is labeled "Description" and lists climate types: "Temperate humid and subtracial a...", "Wet tropical", "(Blank)", "Dry topical or tundra and ice", and "Dry hot summers and wet winters". The X-axis is labeled "GDP (\$ per capita)" with a scale from 0.0M to 0.9M. The bars show GDP values for each climate type.

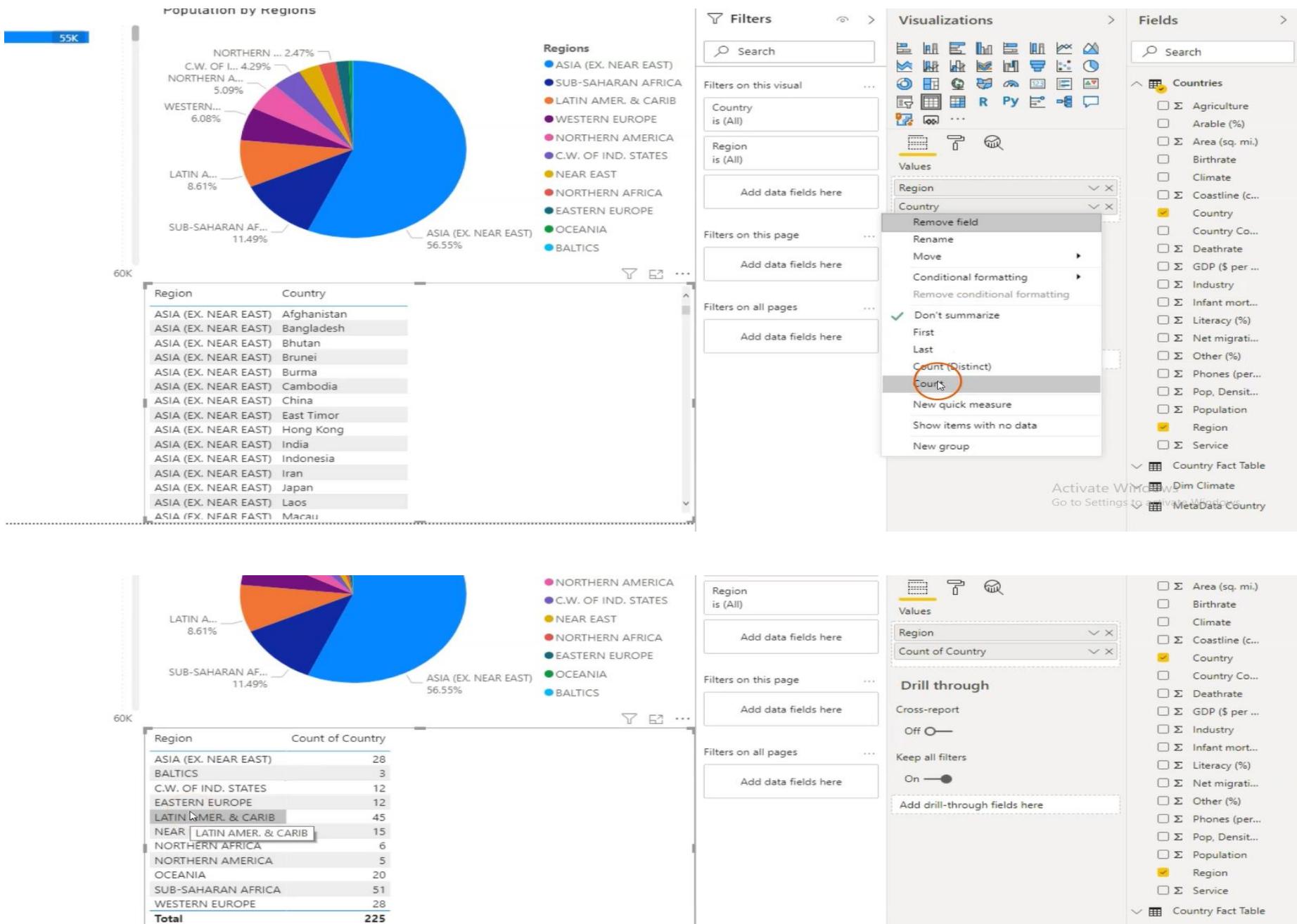
Middle Visualization: A horizontal bar chart titled "GDP (\$ per capital) by Country". The Y-axis is labeled "Country" and lists countries: Luxembourg, Norway, United States, Bermuda, Cayman Islands, San Marino, Switzerland, Denmark, Iceland, Austria, Canada, and Ireland. The X-axis is labeled "GDP (\$ per capita)" with a scale from 0K to 50K. The bars show GDP values for each country.

Fields Pane: The right side of the screen shows the Fields pane. In the "Values" section, under the "GDP (\$ per capita)" field, a context menu is open. The menu includes options like "Sum", "Average" (which is highlighted with a red circle), "Minimum", "Maximum", "Count (Distinct)", "Count", "Standard deviation", "Variance", "Median", "Show value as", "New quick measure", and "Table".

Tables

The screenshot shows the Power BI desktop interface with three main panes: 'Filters', 'Visualizations', and 'Fields'.

- Filters:** Contains sections for 'Search' and 'Filters on this page' (with an 'Add data fields here' button) and 'Filters on all pages' (with an 'Add data fields here' button).
- Visualizations:** Shows a grid of icons for different visualizations. The 'Table' icon is highlighted with a red circle and a mouse cursor. Other icons include various charts, maps, and data flow symbols.
- Fields:** Shows a search bar and a list of data fields under the 'Countries' category. Fields listed include:
 - Σ Agriculture
 - Arable (%)
 - Σ Area (sq. mi.)
 - Birthrate
 - Climate
 - Σ Coastline (c...)
 - Country
 - Country Co...
 - Σ Deathrate
 - Σ GDP (\$ per ...)
 - Σ Industry
 - Σ Infant mort...
 - Σ Literacy (%)
 - Σ Net migrati...
 - Outlays



Conditional Formatting

The screenshot shows the 'Conditional formatting' section for the 'Regions of the world' field. A red circle highlights the 'Conditional formatting' button. The interface includes sections for 'Background color', 'Font color', and 'Icons', each with an 'Off' button. Below these is a 'Web URL' field containing 'Activate Windows'.

Visualizations

- General
- Style
- Grid
- Column headers
- Values
- Total
- Field formatting
- Conditional formatting

Regions of the world

Background color: Off

Font color: Off

Icons: Off

Web URL: Activate Windows

Off Go to Settings to activate Windows.

Fields

- Countries
 - Agriculture
 - Arable (%)
 - Area (sq. mi.)
 - Birthrate
 - Climate
 - Coastline (c...)
 - Country
 - Country Co...
 - Deathrate
 - GDP (\$ per ...)
 - Industry
 - Infant mort...
 - Literacy (%)
 - Net migrati...
 - Other (%)
 - Phones (per...)
 - Pop. Densit...
 - Population
 - Region
 - Service
- Country Fact Table
- Dim Climate
- MetaData Country

Filters

Search:

Filters on this visual ...

- Population is (All)
- Regions of the world is (All)
- Add data fields here

Filters on this page ...

- Add data fields here

Filters on all pages ...

- Add data fields here

Visualizations

Search:

Population

Background color: Off

Font color: Off

Data bars: Off

Icons: On

Web URL: Off

Title: On

Background: Off

Lock aspect: Off

Border: Off

Shadow: Off

Tooltip: Off

[Advanced controls](#)

Activate Windows
Go to Settings to activate Windows.

Fields

Search:

Countries

- Agriculture
- Arable (%)
- Area (sq. mi.)
- Birthrate
- Climate
- Coastline (c...)
- Country
- Country Co...
- Deathrate
- GDP (\$ per ...)
- Industry
- Infant mort...
- Literacy (%)
- Net migrati...
- Other (%)
- Phones (per...)
- Pop. Densit...
- Population
- Region
- Service

Country Fact Table

Dim Climate

MetaData Country

File Home Insert Modeling View Help Format Data / Drill

Cut Copy Paste Format painter Clipboard

Get data v Excel datasets Server data sources v Transform Refresh New visual New measure

Queries Insert Calculations Share

GDP (\$ per capita) by Country

Population by Regions

Icons - Population

Format by: Rules Apply to: Values only

Based on field: Sum of Population Summarization: Sum

Icon layout: Left of data Icon alignment: Top Style: Red triangle icon

Rules:

- If value is greater than or equal to 0 Percent and is less than 33 Percent then Red diamond icon
- If value is greater than or equal to 33 Percent and is less than 67 Percent then Yellow triangle icon
- If value is greater than or equal to 67 Percent and is less than or equal to 100 Percent then Green circle icon

OK Cancel

Visualizations Fields

Search Countries

- Σ Agriculture
- Arable (%)
- Σ Area (sq. mi.)
- Birthrate
- Climate
- Σ Coastal (c...)
- Country
- Country Co...
- Σ Deathrate
- Σ GDP (\$ per ...)
- Σ Industry
- Σ Infant mort...
- Σ Literacy (%)
- Σ Net migrati...
- Σ Other (%)
- Σ Phones (per...
- Σ Pop. Densit...
- Σ Population
- Region
- Σ Service

Advanced controls

Web URL Off

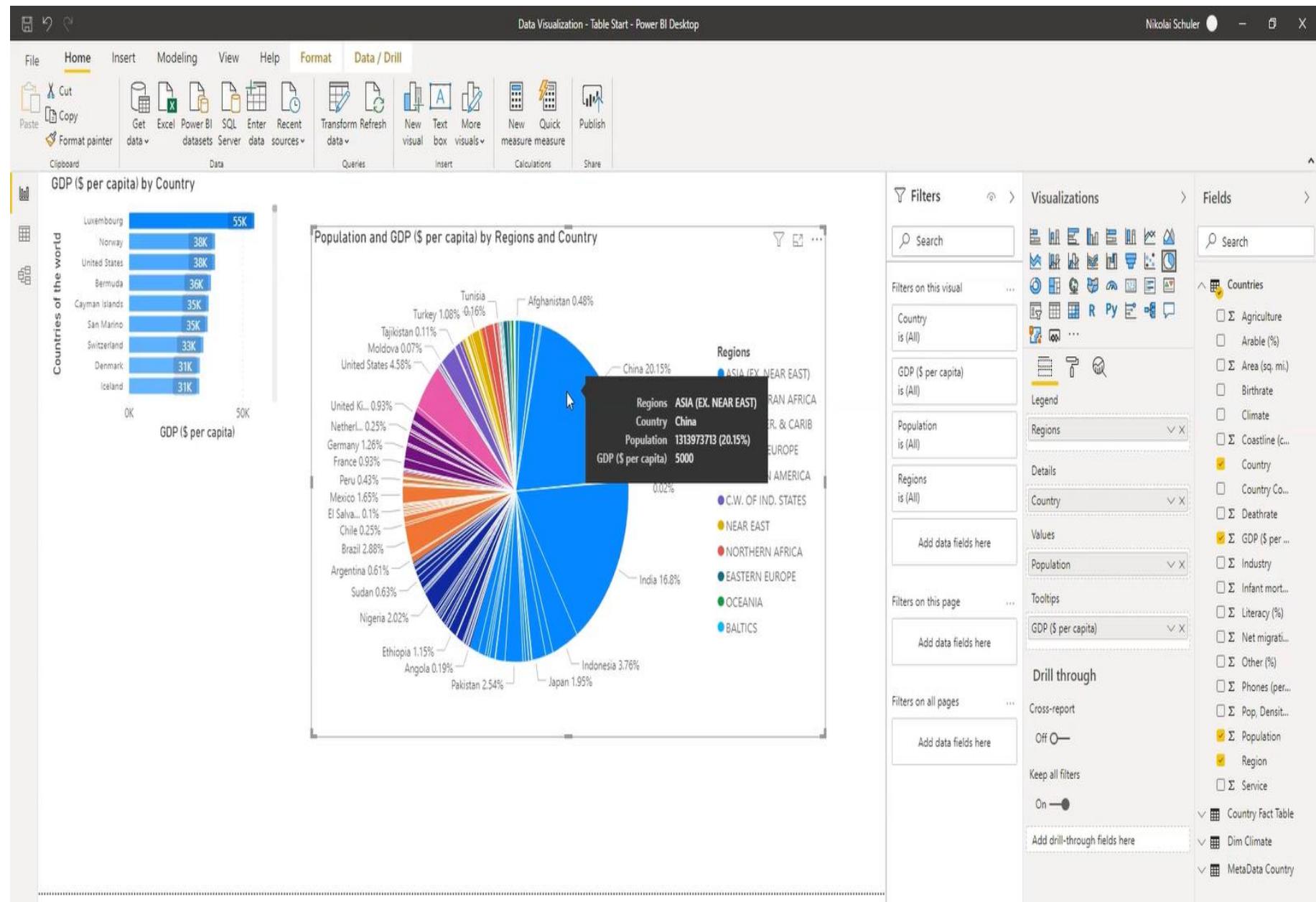
Icons On

Title On

Dim Climate Off

MetaData Country Off

Pie-chart



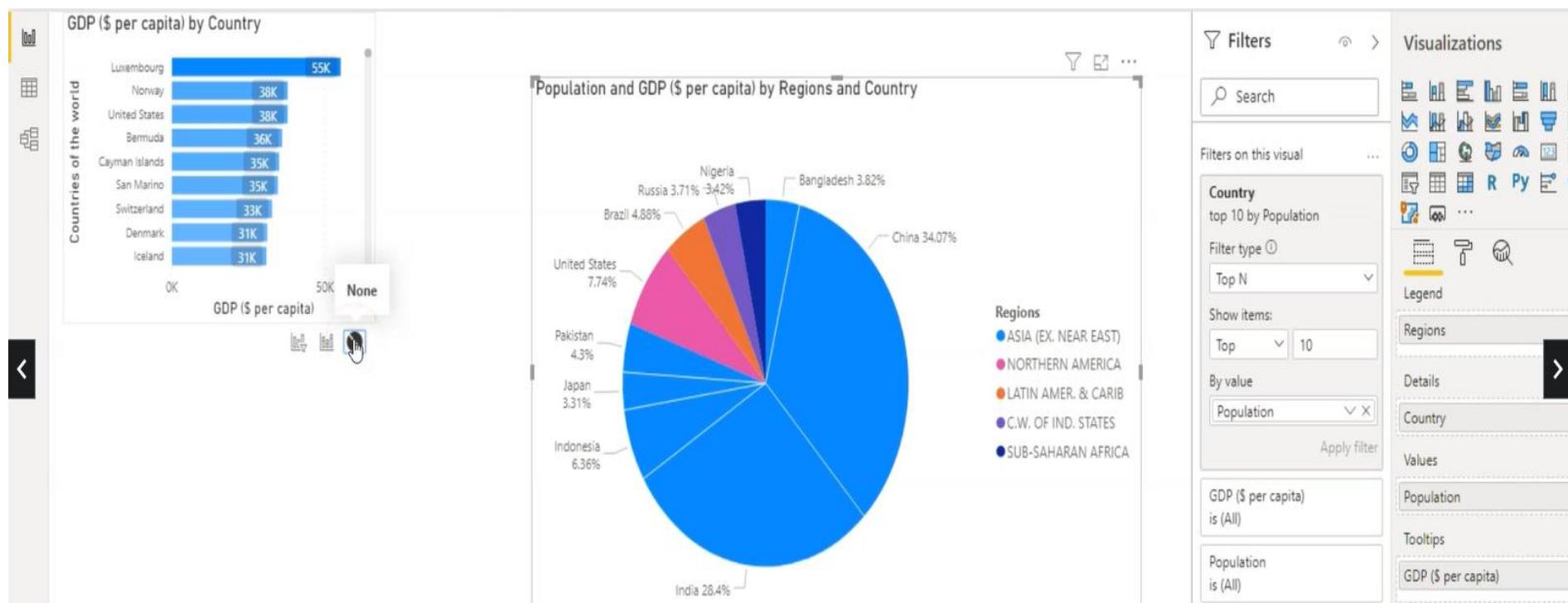
Cross-filtering

When there are two visuals with common fields, filtering data in one effects other also. To handle this we need to edit interactions between the visuals.

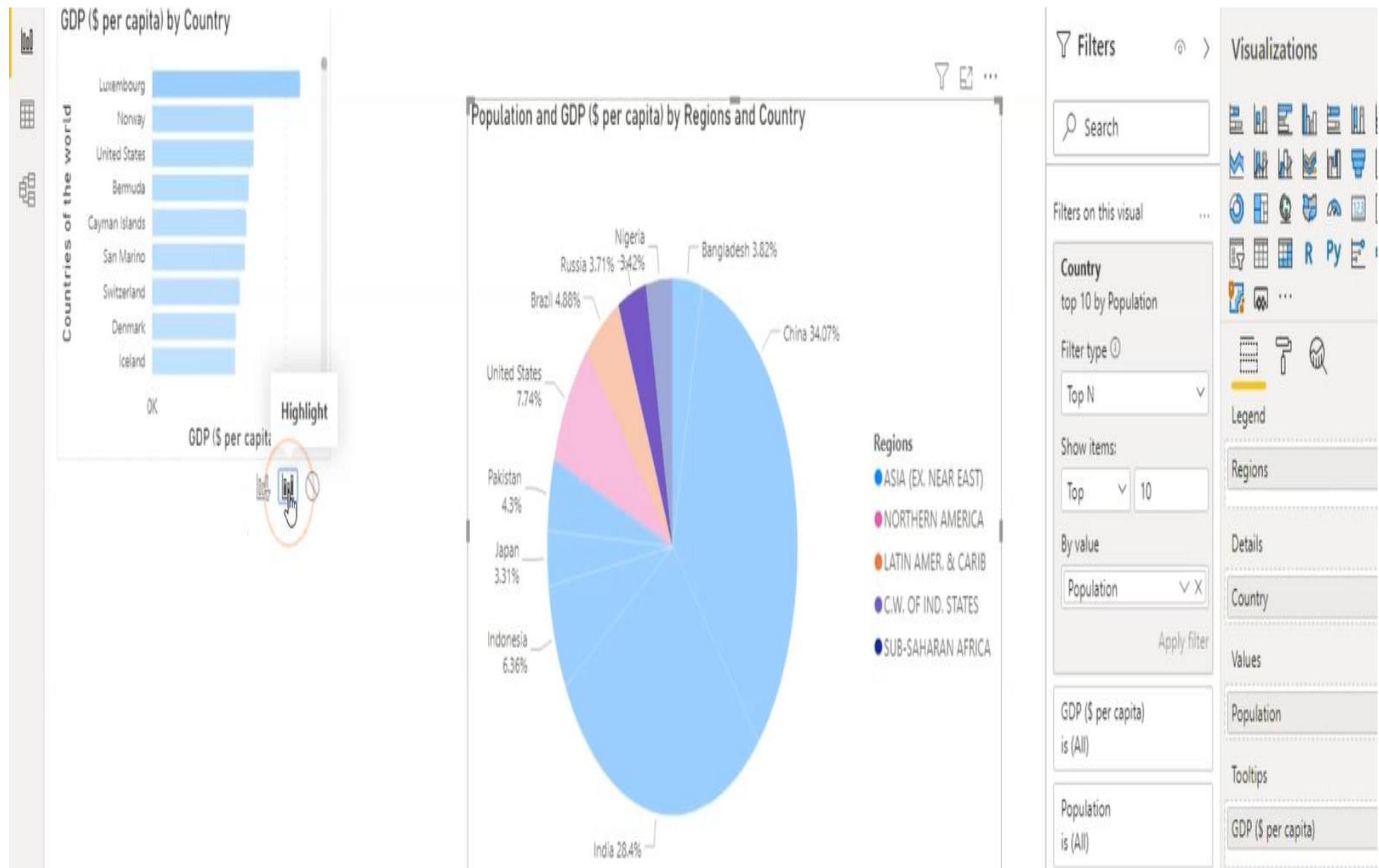
Select on the desired visual and go to Format -> Edit interactions.



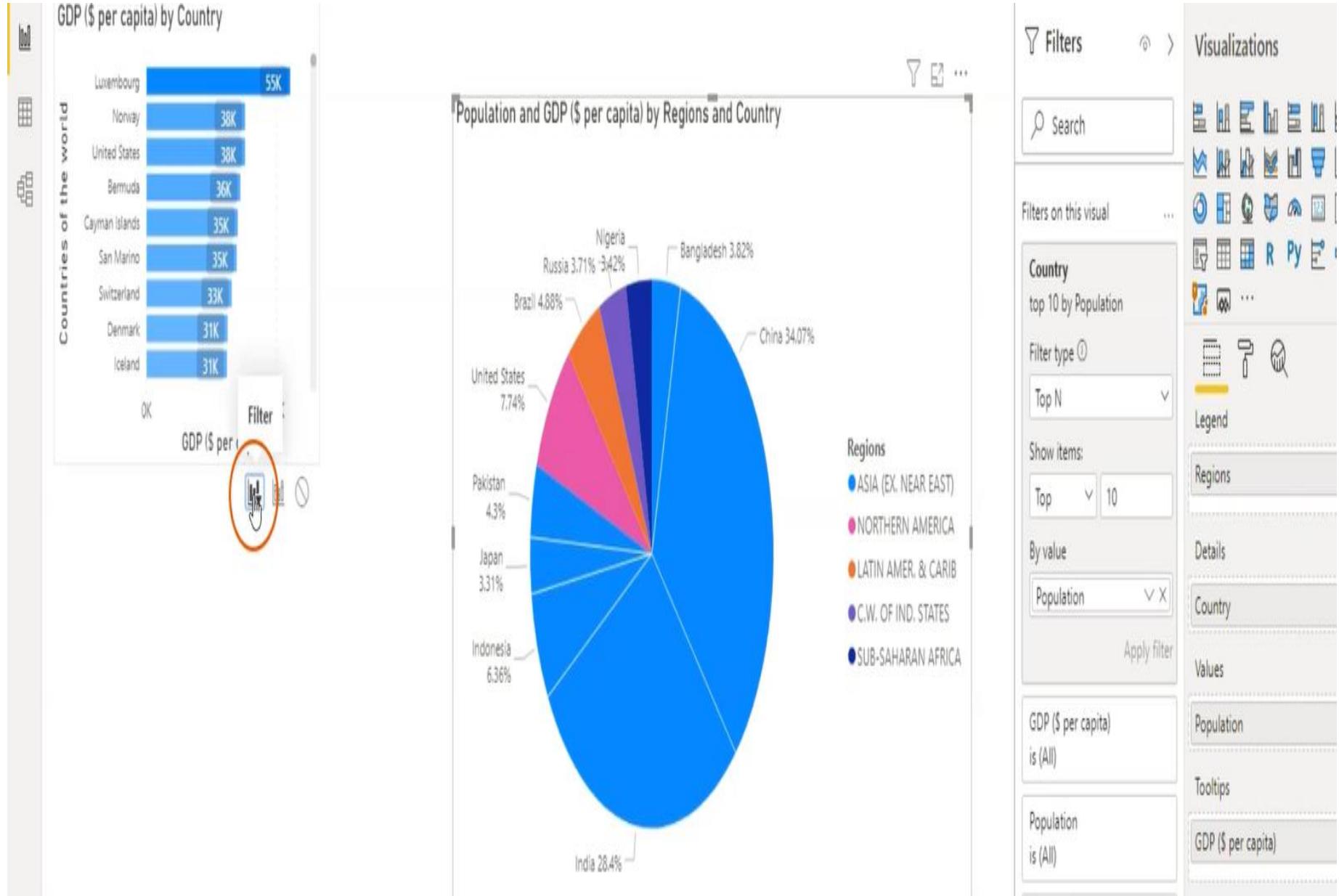
At the bottom of other visuals on the page, few icons will start getting displayed.



No interaction



The item selected in first is highlighted in second.



The item selected in first is displayed in second and rest are hidden.

Drill-down

When we select multiple columns in an axis which have a hierarchy (e.g. Region, Country), then in the visual 4 new icons appear on top right side, one with single up arrow, other with single down arrow and third with double down arrow. On clicking the icon, it will turn black indicating its ON.



The single down arrow is for drill-down e.g. if we click on South Asia bar then it will show the same visual for countries of South Asia. The single up arrow is for drill up.



The double down arrow is to “Go to the next level in the hierarchy”, this will join the columns as it goes down the hierarchy. Suppose, we select 4 columns in the axis in the hierarchy Year, Region, IncomeGroup, and Country.

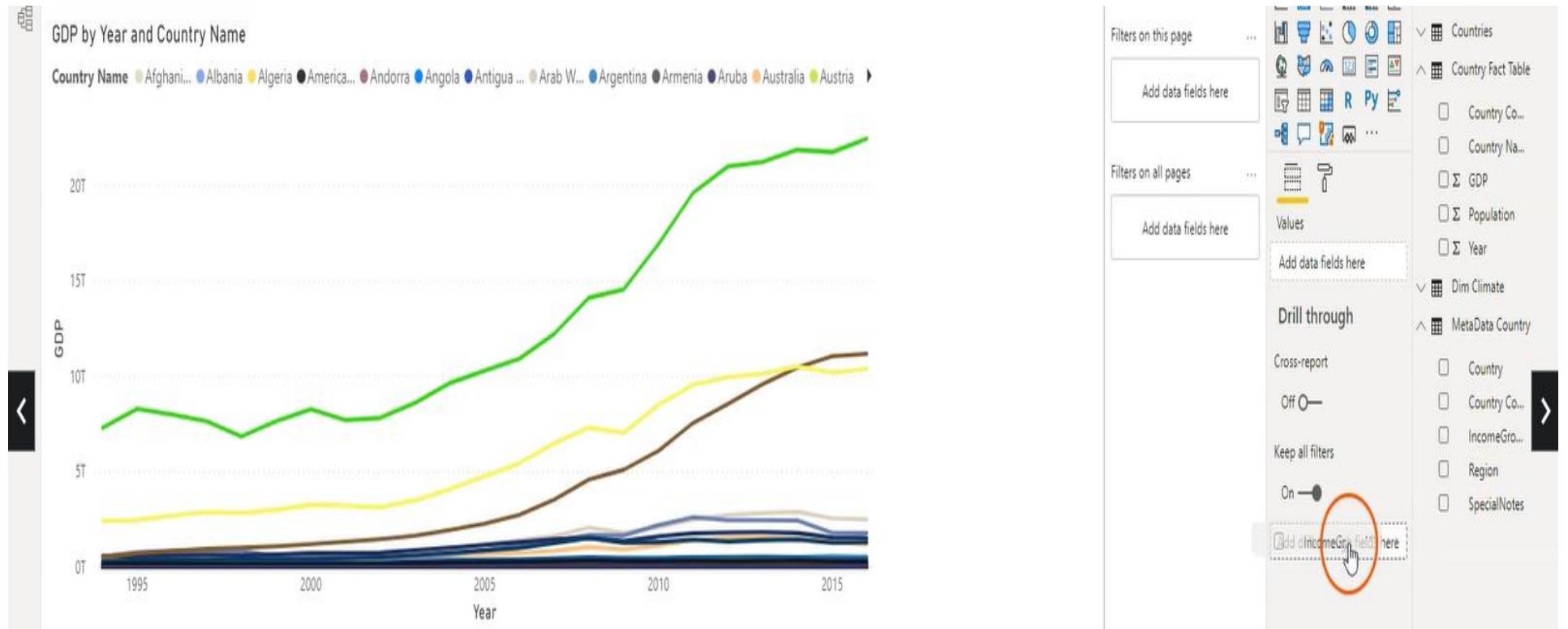
The top level will be Year, then next level will be Year+Region, then next will be Year+Region+IncomeGroup, and last will be Year+Region+IncomeGroup+Country.



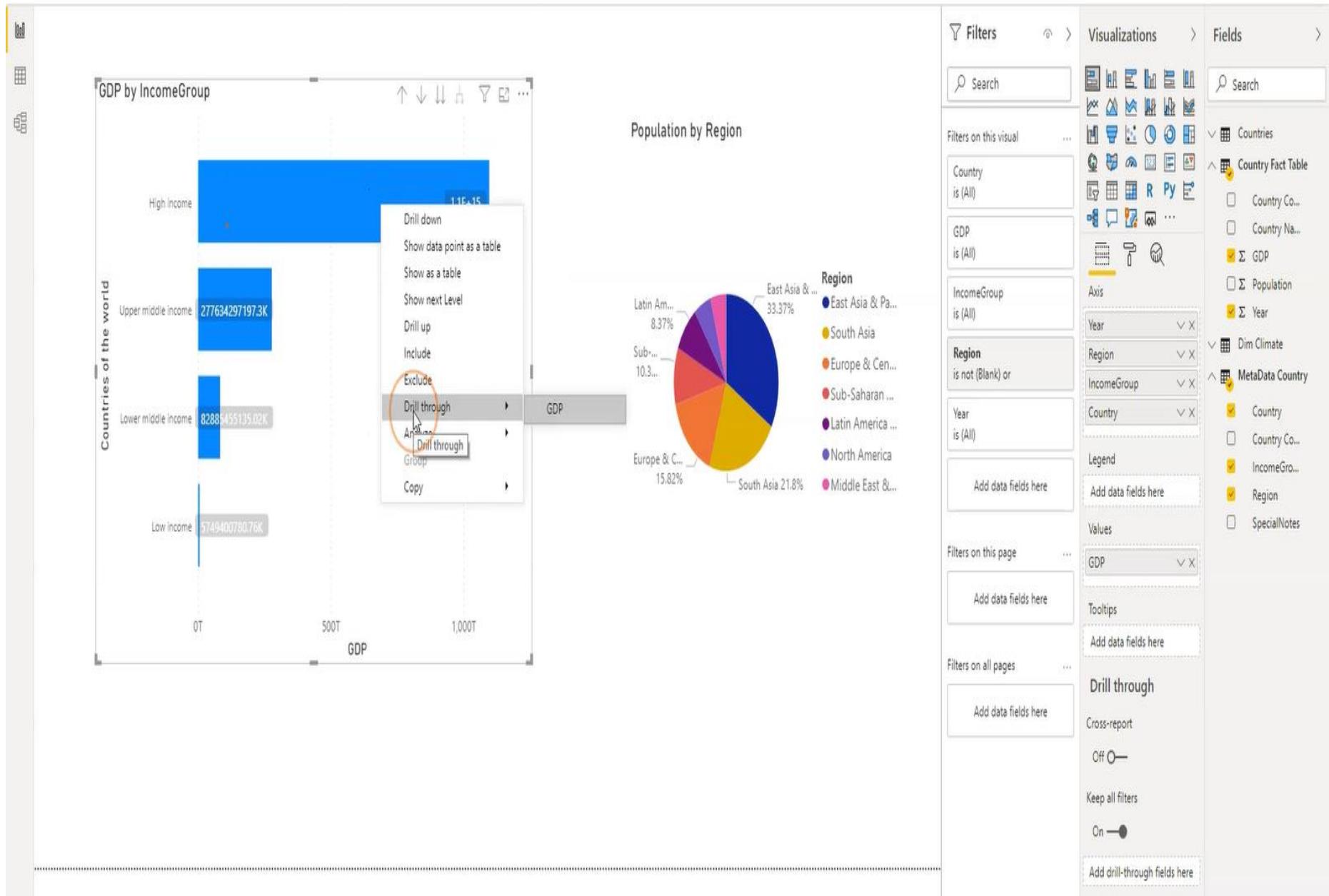
Drill through

It is drilling down/up between two visuals on different pages.

Suppose we have visuals on two different pages, GDPbyIncomeGroup and GDPbyYear. To drill through from GDPbyIncomeGroup visual to GDPbyYear visual, we go to GDP page, and in Visualizations pane we go to Values tab to “Drill through” option.

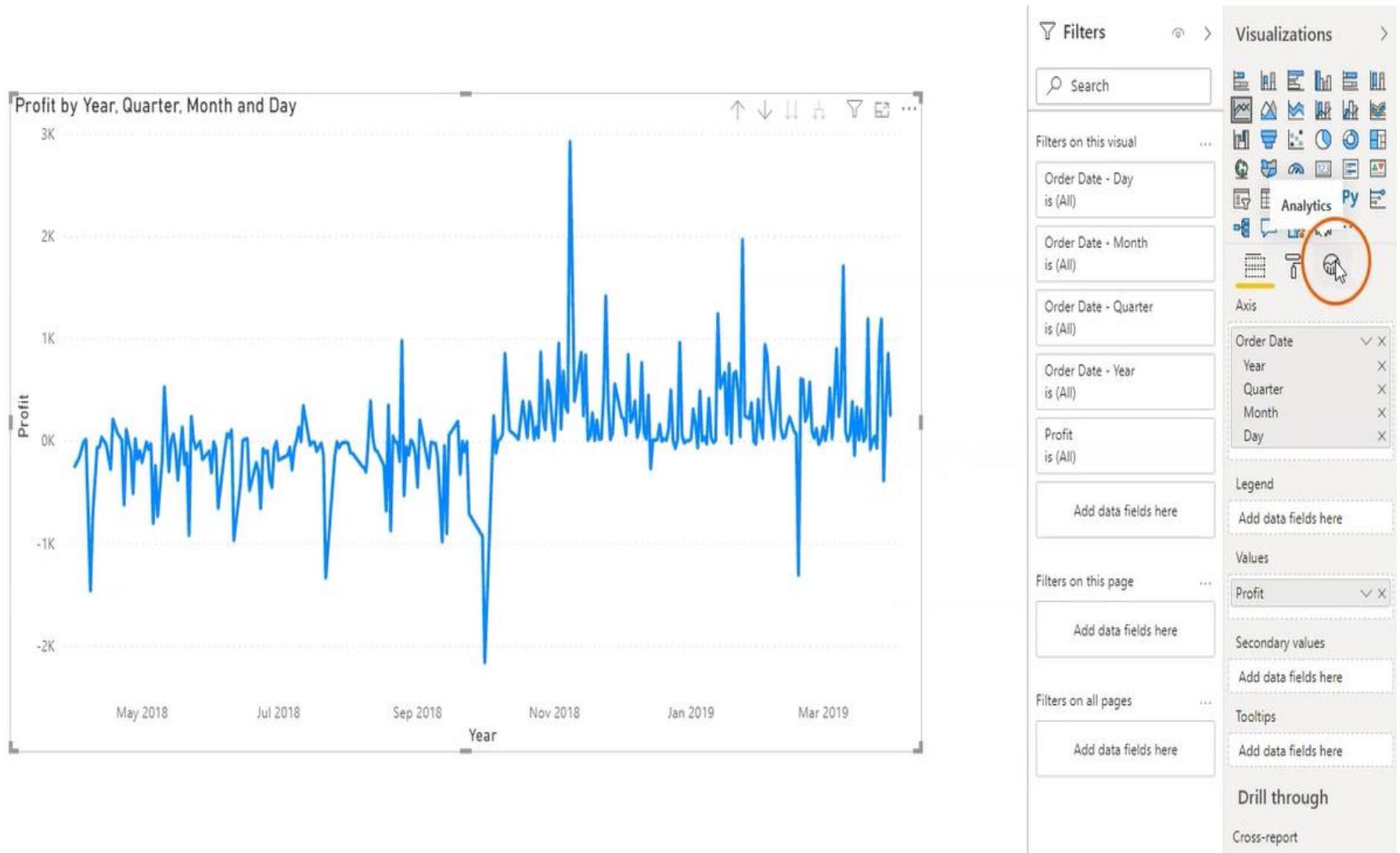


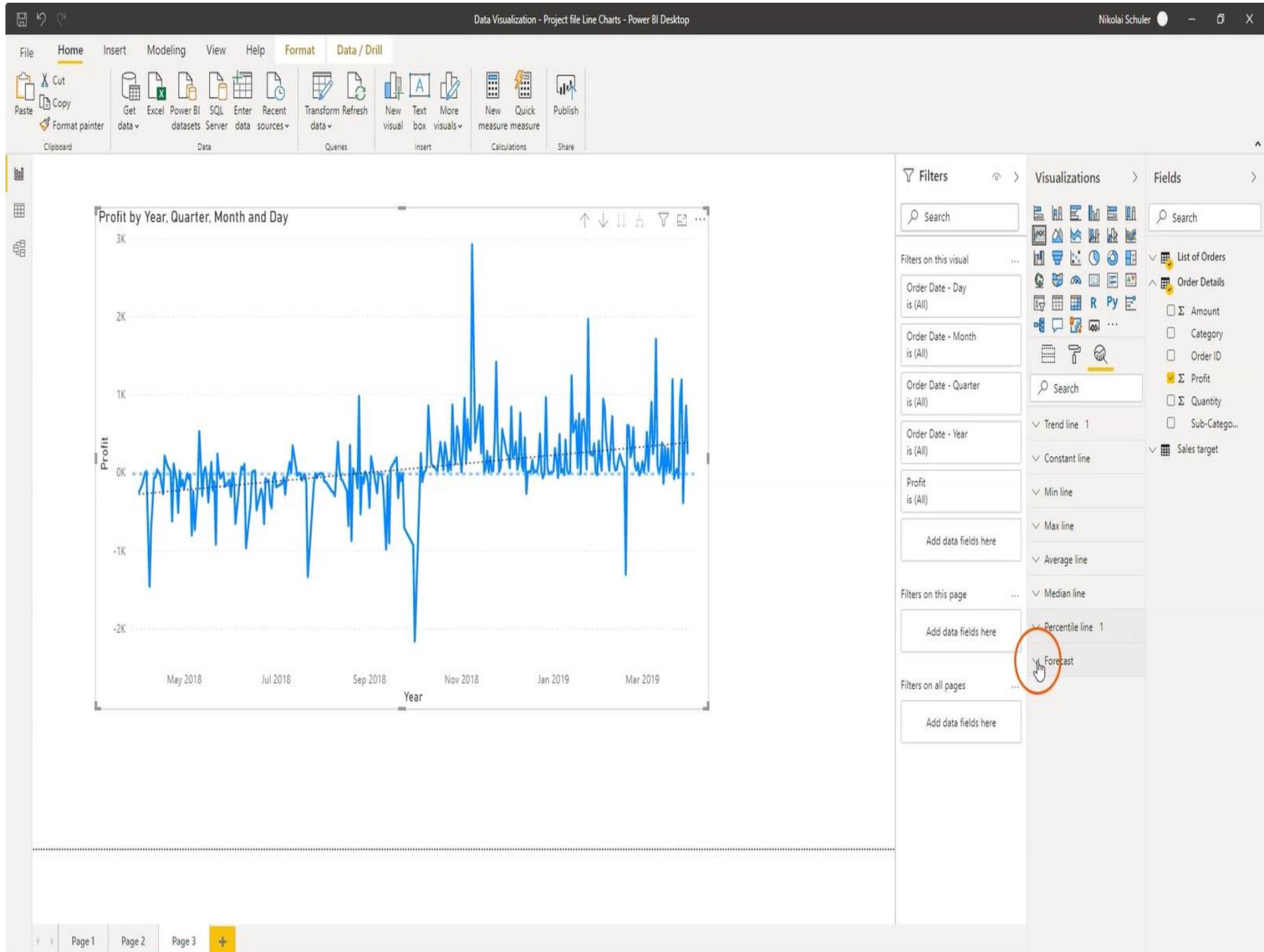
We drag the desired column (e.g. IncomeGroup) on basis on which we want to drill through the visual on current page.

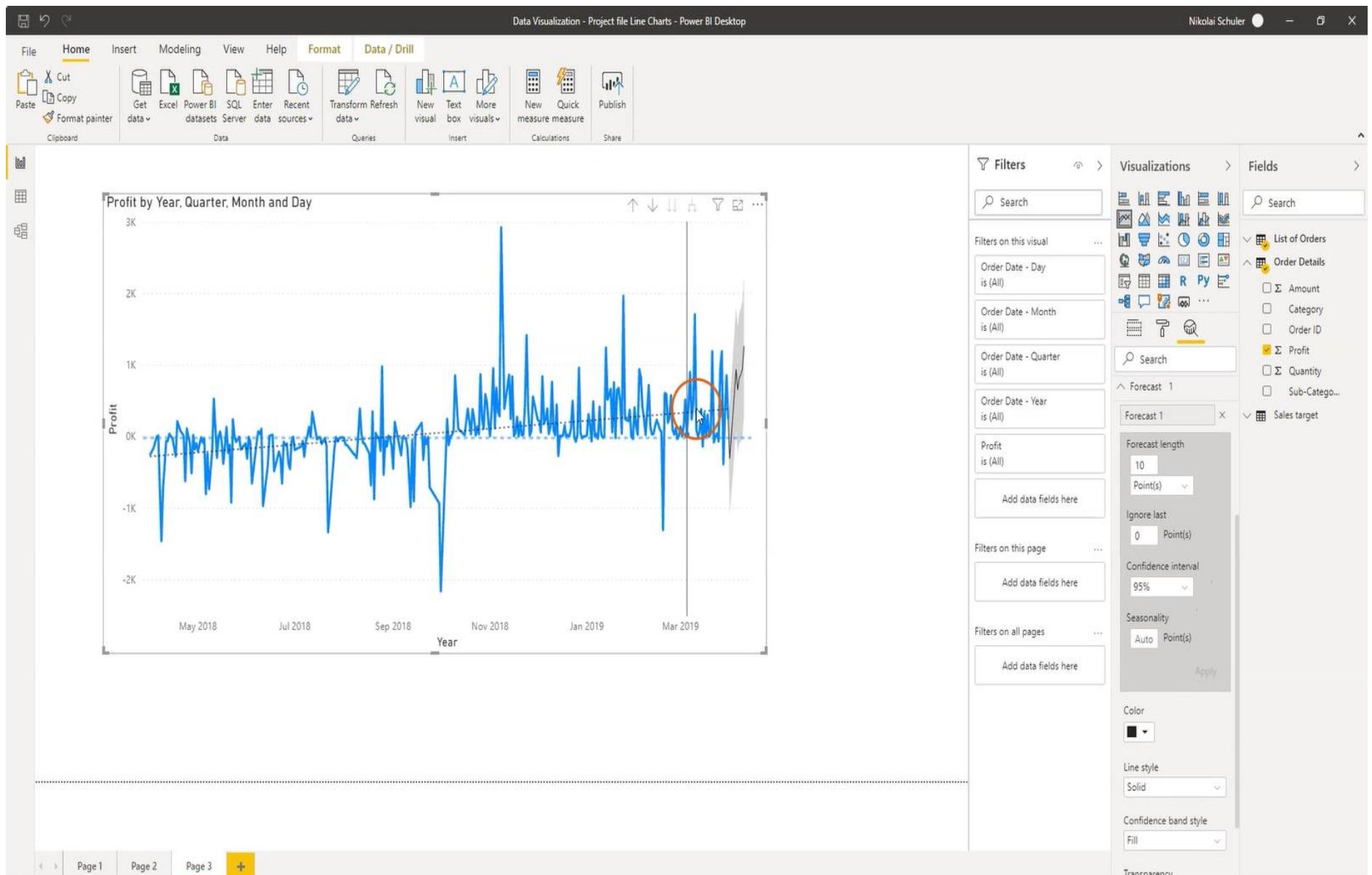


Forecasting

Select the line-chart visual for forecasting.







DAX (Data Analysis eXpressions) language

total_sales = SUM (financials [sales])

Calculated Column: These calculations will add an additional column to a table based on a formula. These columns are treated like any other field in the table.
e.g. Cost Price Per Unit = financials[COGS] / financials[Units Sold]

Measure: These calculations will add a summary or aggregated measure to a table based on a formula.
e.g. Profit margin = SUM (financials[Profit]) / SUM (financials[Sales])

Iterator: To explicitly define a row context in a measure, you need to use a special function called an iterator. Examples of iterator functions are SUMX, AVERAGEX, and COUNTX.
e.g. Average Cost Per Unit = AVERAGEX (financials, financials[COGS] / financials[Units Sold])

Filter Context: Filter context is applied on top of a row context and refers to a subset of rows or columns that are specified as filters in the report.
e.g. USA Profit Margin =
CALCULATE (SUM (financials[Profit]) / SUM (financials[Sales]), financials[Country] = "United States of America")

What is the average price of our products?

Average Product Price = AVERAGE(products[price])

What is the average profit of our sold products?

Average profit = AVERAGEX(products, products[price]*products[profit_margin])

What is the total quantity of our sales?

Sum of quantity = SUM(sales[quantity])

What is the total profit of our sold products?

Total of profit = SUMX(sales, sales[price] * sales[quantity] * RELATED(products[profit_margin]))

What is the average tax amount we pay in our sales?

Average Tax amount = AVERAGEX(sales, sales[price] * sales[quantity] * RELATED(products[tax_rate]))