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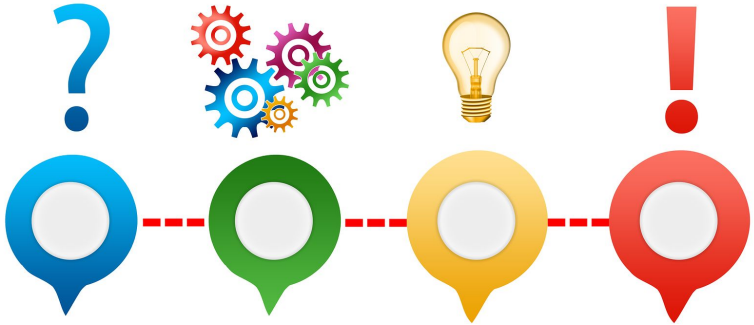
Overview of Power BI

Power BI Overview

- Install Power BI
- Understand the basics such as views, panes and tabs
- Connect flat files into your project
- Generate basic graphs such as line and bar charts
- Create calculated columns and measures
- Learn how to drill through data



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Microsoft Power BI Desktop outline

Why are we learning Power BI Desktop?

Data visualisation is a important part of the fundamentals of data science that you learn here at Explore Data Science Academy.

Dashboards are a graphical user interface which provides at-a-glance views of key performance indicators applicable to a specific objective or business process.

Dashboarding skills are highly sought after in the workplace and this train will give you an introduction into one of the most powerful dashboard creation tools on the market. While there are other alternatives to Power BI Desktop (such as Tableau), in this train we will primarily be focusing on Power BI data for visualisation.

This train will equip you with the basic skills necessary for you to navigate through Power BI. The onus is on you to go out there and discover the more advanced features of this powerful tool.

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Harnessing the power of Power Bi

Power BI is Microsoft's interactive data visualisation and analytic tool that can be utilised to collate, manage, and analyse data from a variety of sources.

Power BI is able to connect to a wide range of data sets and "tidies up" the info it's fed so that it can be better digested and understood. Reports and visuals can also be easily shared using Power BI.

Applications of Power BI include:

- **Dashboard creation**- can be used to create dashboards that be accessed easily
- **Visualisation of data**- aids visualisation of data to assist decision making in a business setting
- **Identification of valuable trends**- Built-in machine learning can be used to identify valuable trends in data
- **Improve publishing efficiency and accuracy**- aids in pipeline deployment by providing a platform for the creation of visual tools to move content from development and testing to production.

Now that we have learnt more Power BI and its capabilities, we can go ahead and install the application on your computer.

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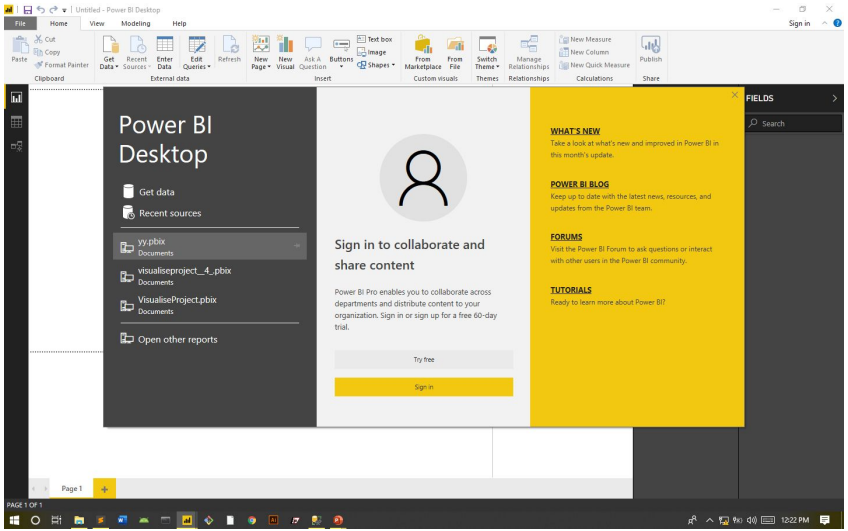
Installation of Power BI

- You can download Microsoft Power BI here and then proceed to installation.
- After you have completed installation you can go ahead and launch the app. You should be welcomed with the following screen:



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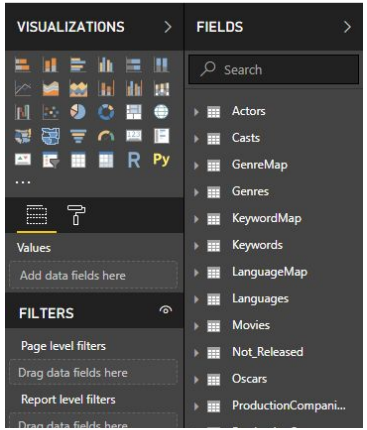
Getting Started with Power BI – Views and Panes

Select the ‘X’ button on the Welcome Screen. Once the screen is closed you should now be in the **Report** view of your Power BI Desktop.

Report View – See your visuals here

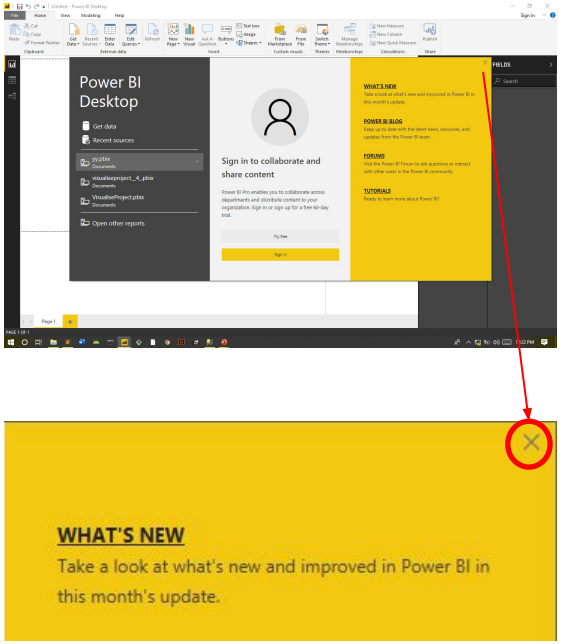
Data View – See your data tables here

Model View – See your relationship diagrams here



Visualizations – This is where you can access different visuals, apply filters to the data, import custom visuals, drill through the data and more.

Fields – This is where you can see what tables exist in your dataset. You can create quick measures, hide tables, view properties, refresh data and a lot more.



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Getting Started with Power BI – Views and Panes

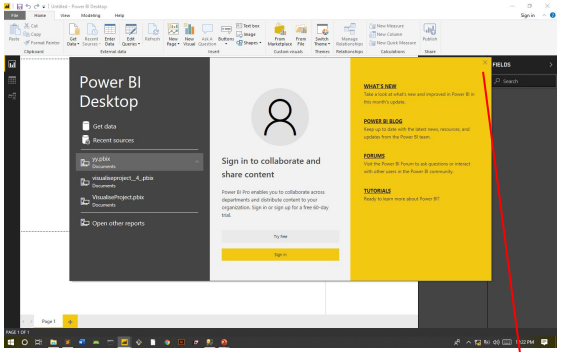
Select the 'X' button on the Welcome Screen. Once the screen is closed you should [illegible] Power BI Desktop.

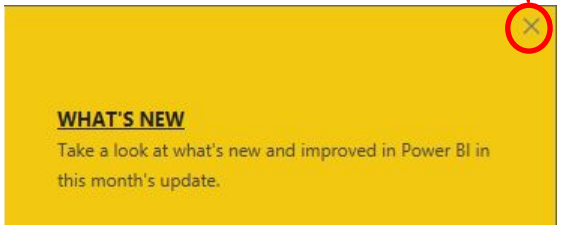
Note: Depending on your PowerBI version, the icons, views and panes might be in dark mode or light mode. However, their functionality and layout will most likely be the same.

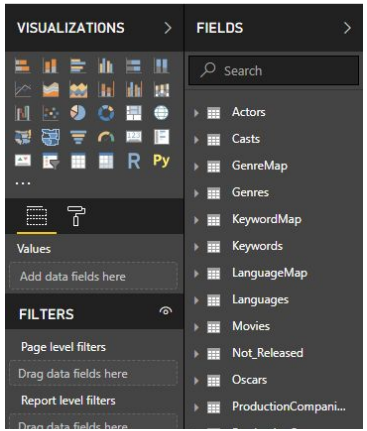
Report View – See your reports here

Data View – See your data tables here

Model View – See your relationship diagrams here







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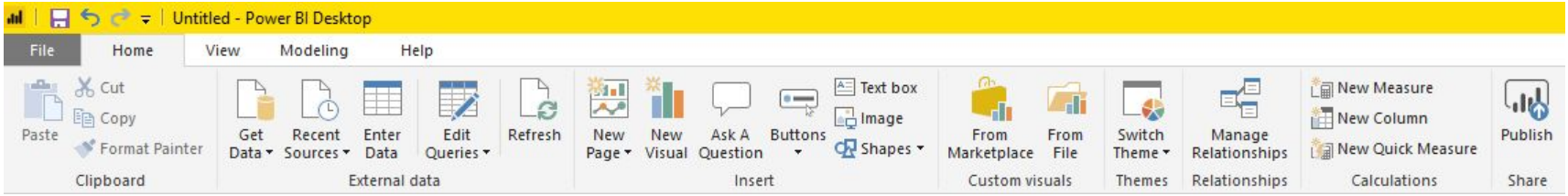
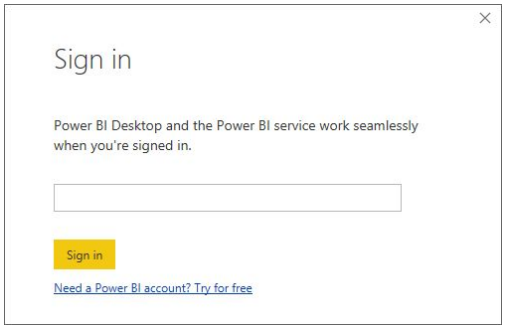
Getting Started with Power BI - Tabs

The ribbon has five tabs: **File**, **Home**, **View**, **Modeling** and **Help**. By default Power BI Desktop will be in the **Home** tab.



Page Selector – This is found at the bottom left of the page and allows for navigation between your pages.



Sign In – By selecting 'Sign In' from the top right of the window this dialogue box pops up. We will not sign in yet. Instead, we will work offline.

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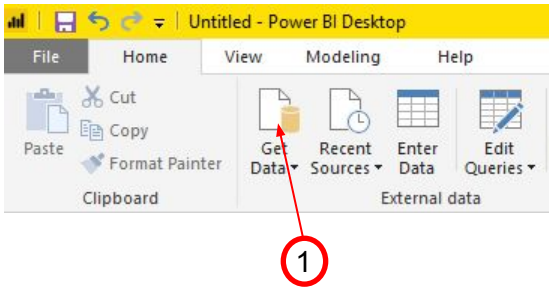
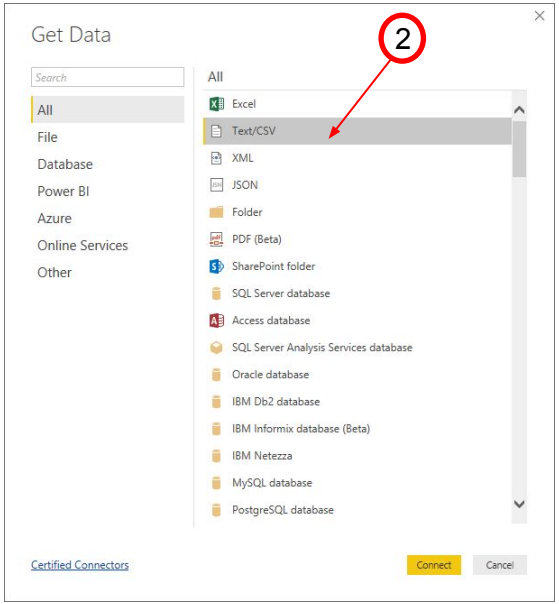
Connecting Data – Text/CSV files

Here we will load data into Power BI Desktop. First download the data attached to this train on Athena and unzip it into a location of your choosing.





1. Next, select the '**Get Data**' button in the Home tab.

2. On the dialogue box select '**Text/CSV**' for the connection.

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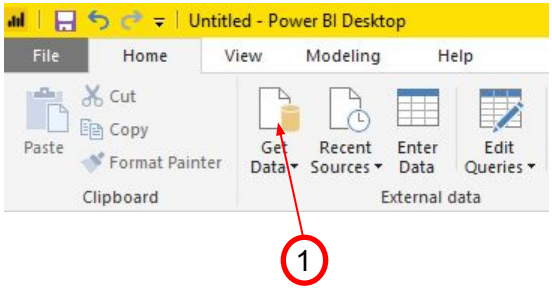

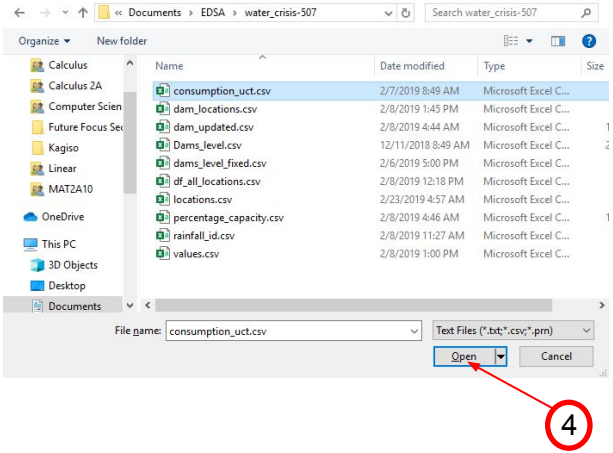

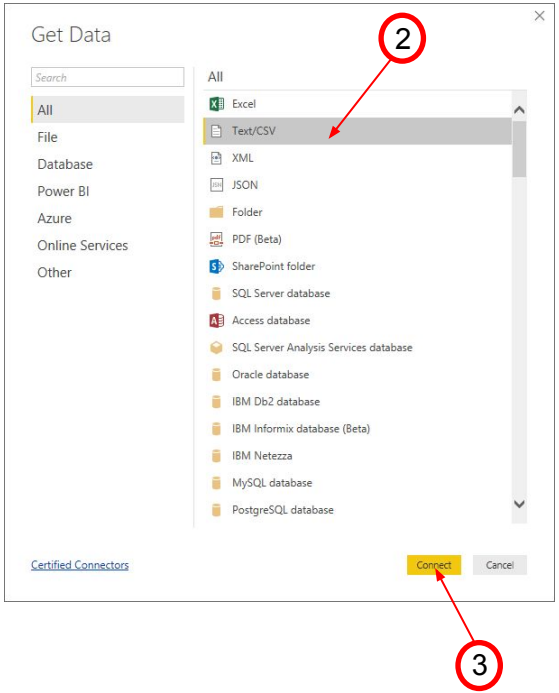

1. Next, select the '**Get Data**' button in the Home tab.

2. On the dialogue box select '**Text/CSV**' for the connection.

3. Hit '**Connect**' when you've selected the type of data you want to connect.

4. Navigate to the desired CSV file in your computer, select and click **'Open'**.

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Connecting Data – Text/CSV files

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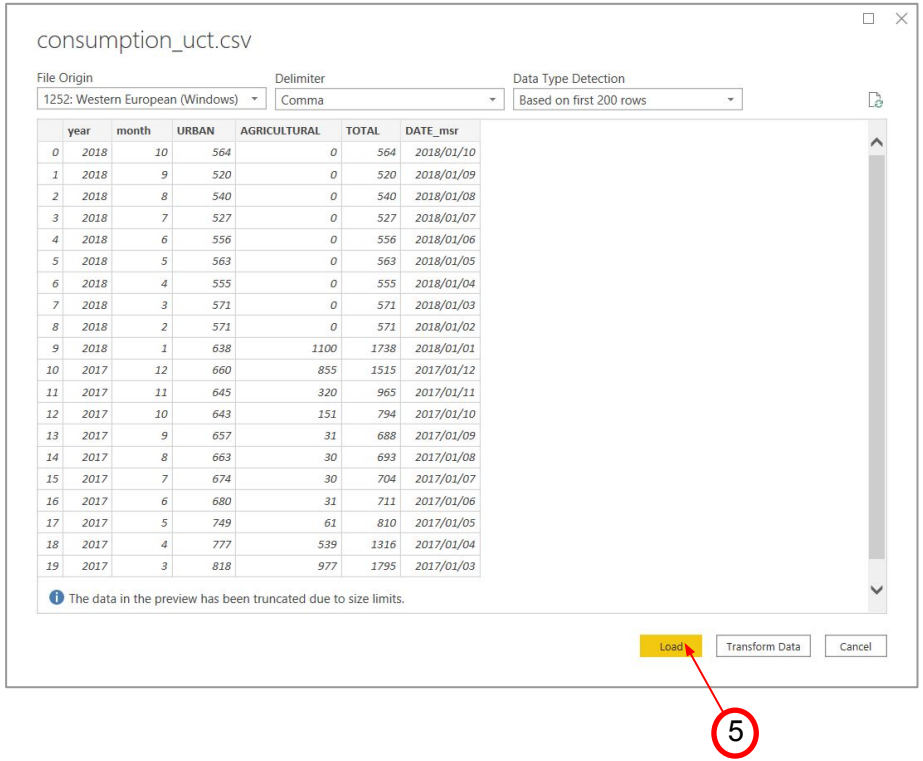

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3. Hit '**Connect**' when you've selected the type of data you want to connect.
4. Navigate to the desired CSV file in your computer, select and click **'Open'**.
5. Finally hit '**Load**' and you're good to go!

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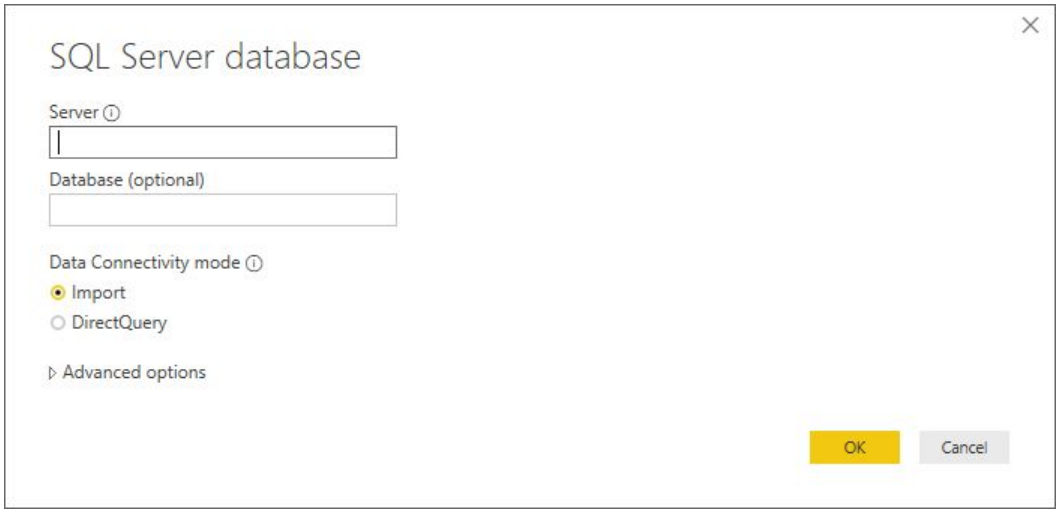
Connecting Data – Other files

You can also load data from a SQL Server database directly onto your Power BI Desktop. These alternative dataset connections will be covered in a separate train that focuses on **Connecting SQL to Power BI**.

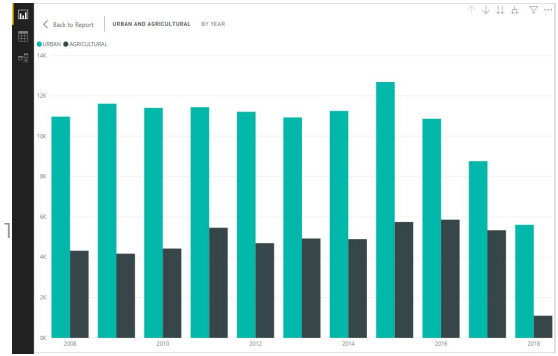


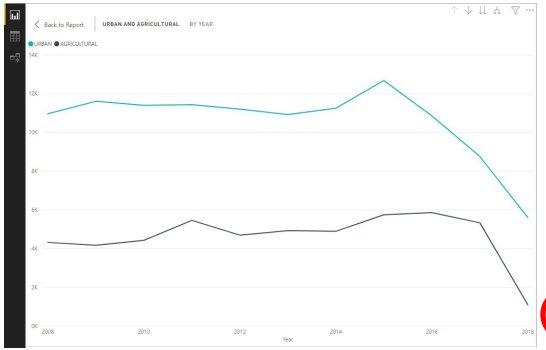
Graphs – Line & Bar Graphs

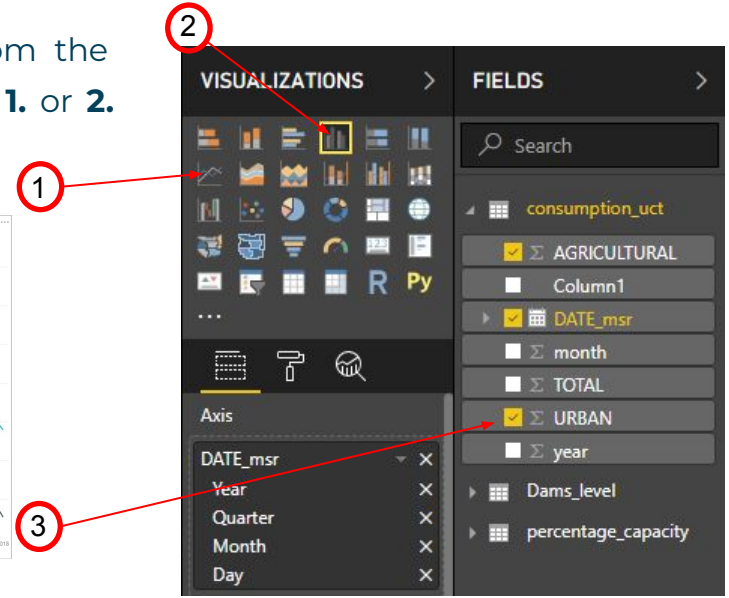
To create a line or bar graph

1. Select the '**Line Graph**' from the Visualisations banner.
2. Alternatively, select '**Clustered Column Chart**' for a bar graph.
3. Drag and drop **DATE_msr**, **URBAN,** and **AGRICULTURAL** from the *consumption_uct* table into the empty visual chosen at step **1.** or **2.** and one of the following graphs should appear.

Make sure you have loaded the three CSVs necessary for the visuals namely: **dams_level.csv**, **consumption_uct.csv & percentage_capacity.csv**







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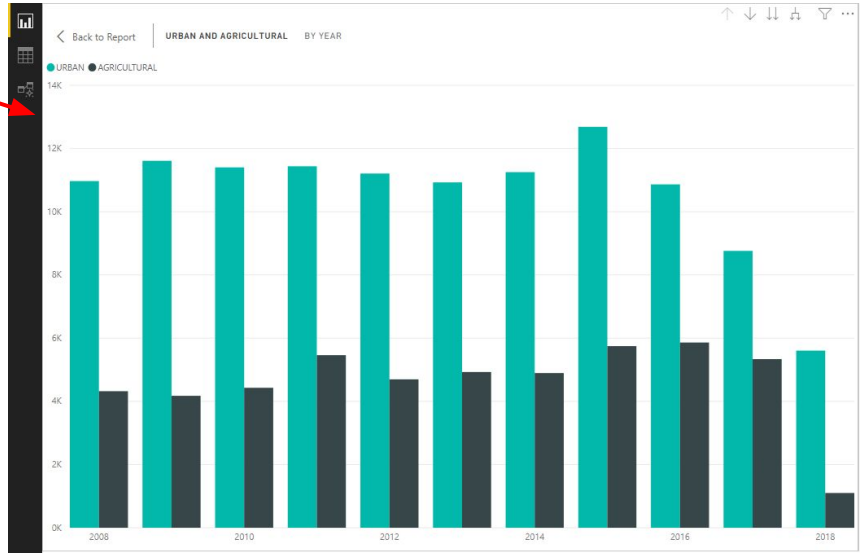
Graphs – Line & Bar Graphs

Power BI visuals come with a set of options that allow you to further interact with your data or generate different views from the same visual.

- These options can be found on top or below your Power BI visuals.

For example, '**Focus Mode**' allows you to zoom in and 'focus' on a single powerBI visual in your report.



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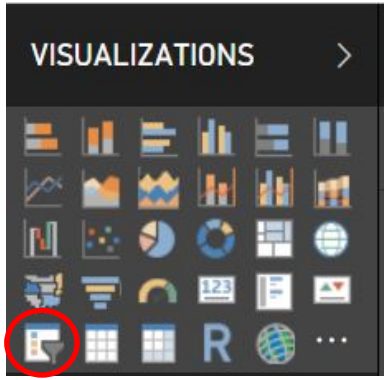
Graphs – Visualization tabs & Slicing

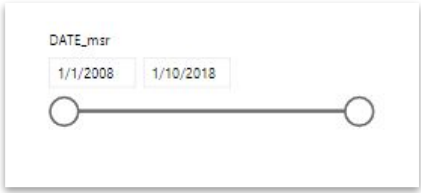
Here we create slicers and look at two other tabs in Visualization.

- Look for the '**Slicer**' in the available visuals on the Visualization banner. Before you select it make sure you've deselected the other visuals.

- Once the empty slicer appears go ahead and tick **DATE_msr** from *consumption_uct*.

- The white slider box below should appear with **DATE_msr**. Go ahead and move the slider and see what happens to the graph.





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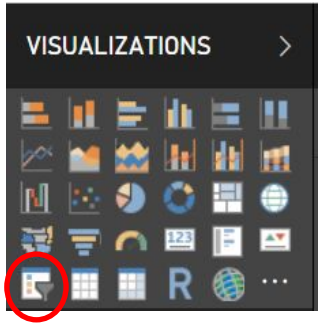
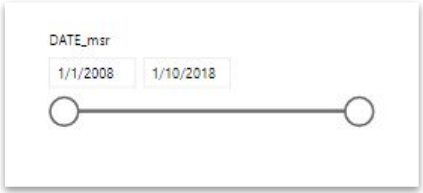
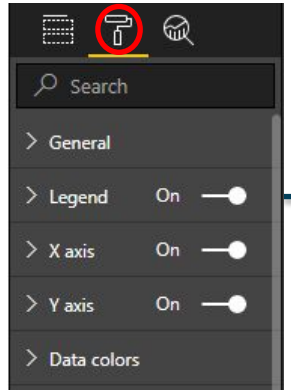




Selecting the '**Format**' tab in the visualization banner will allow you to edit things such as your graph's title, axes labels, data points, colour scheme and a lot more.



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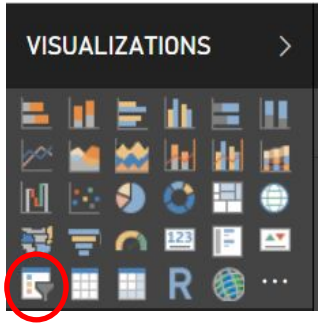

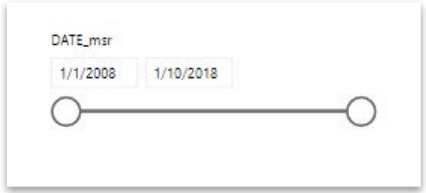

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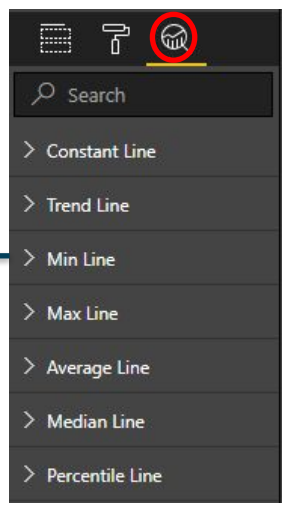

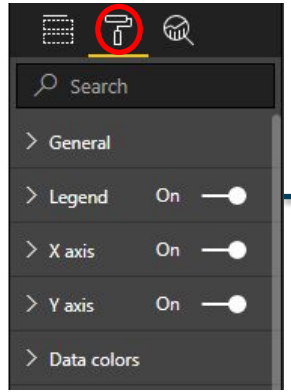

Selecting the '**Analytics**' tab in allows you to look at your data's constant, trend, percentile, min and max lines.

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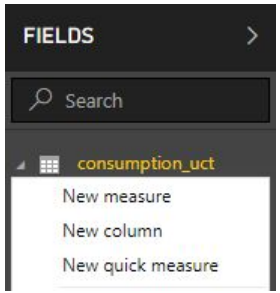
Calculated Columns

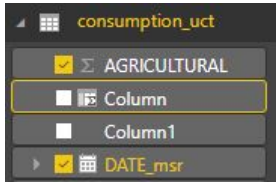
Here we will look at how to create calculated columns.

1. Select the ellipses next to your table name and select '**New column**' in the pop up.
2. A new column will be formed and named '**Column**' by default.

1



2



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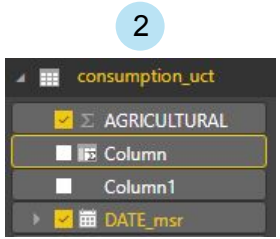
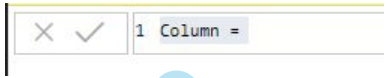
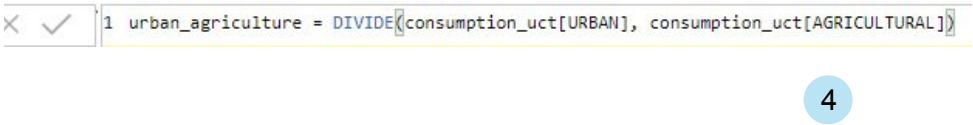
3. You should now see a new bar (next to the icon) that requires you to enter something into it, this is where your DAX goes (more on DAX later).
4. Enter the DAX formula shown in the figure which is a division between urban and agriculture water usage.







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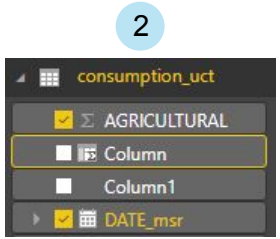
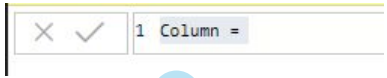
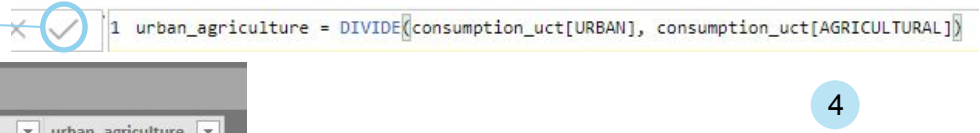
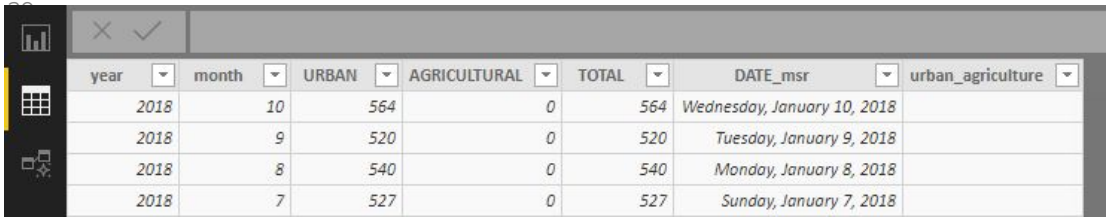
4. Enter the DAX formula shown in the figure which is a division between urban and agriculture water usage.
5. Hit the '**commit**' tick to implement the DAX formula.
6. The final table under the '**Data**' view should look just like the one in the figure.









year	month	URBAN	AGRICULTURAL	TOTAL	DATE_msr	urban_agriculture
2018	10	564	0	564	Wednesday, January 10, 2018	
2018	9	520	0	520	Tuesday, January 9, 2018	
2018	8	540	0	540	Monday, January 8, 2018	
2018	7	527	0	527	Sunday, January 7, 2018	

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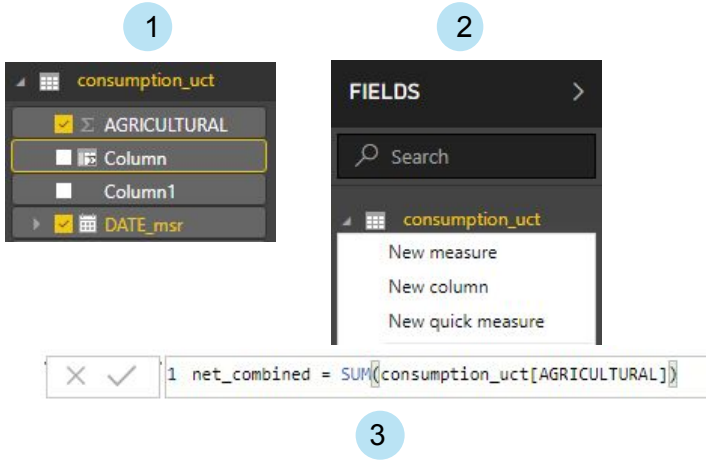
Measures

Here we will look at how to create calculated columns.

In the **‘Fields’** section:

1. Select the ellipsis next to your table name or table column name and select ‘**New measure**’ in the pop up.
2. A new column will be formed and named ‘**Measure**’ by default.
3. Enter the DAX formula shown in the figure which is a sum of the agriculture water usage.



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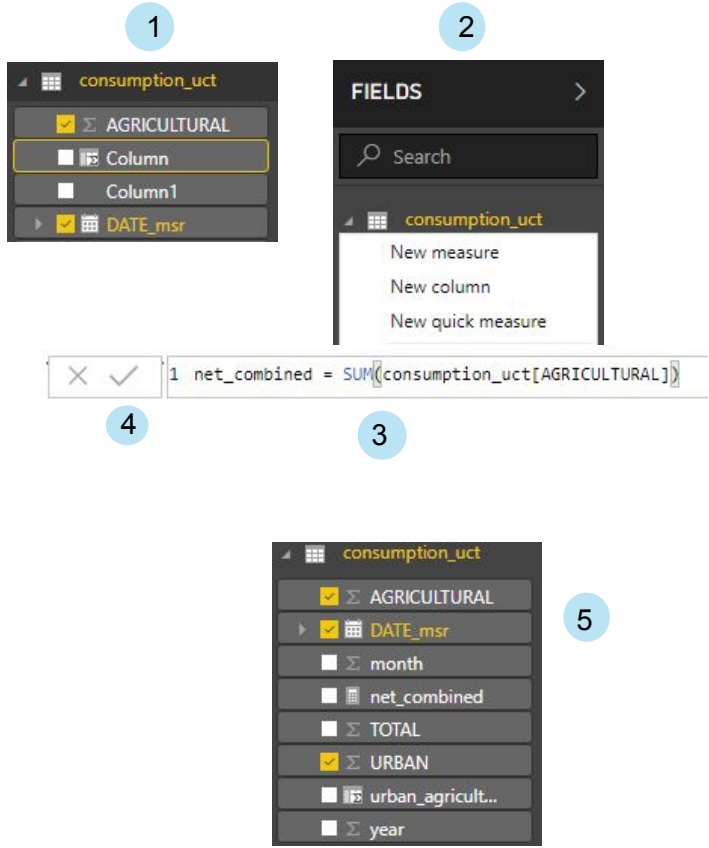
2. A new column will be formed and named '**Measure**' by default.
3. Enter the DAX formula shown in the figure which is a sum of the agriculture water usage.
4. Hit the '**commit**' tick to implement the DAX formula.
5. The final table result will not show in the **Data** view like the calculated column. Instead it will only appear in your **Fields** banner under the table *consumption_uct*.

The measure can be used with most visuals, such as the slicer.



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Data / Drill

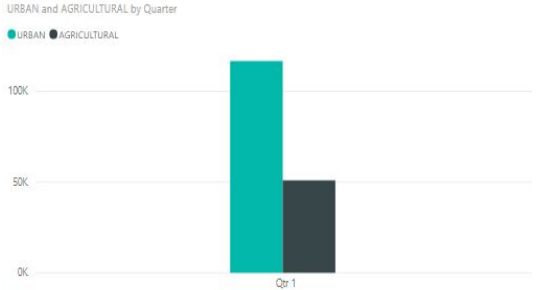
Here we will look at how to drill through data.

1. Select the bar graph and the ‘Visualise Tools’ tab should appear in the tabs section, proceed to the ‘Data Drill’ tab.
2. Select ‘**Show next level**’ and the graph should show ‘Qtr1’ for *Urban* and *Agricultural*. By selecting ‘**Drill Up**’ you will return to the original graph.
3. If you select ‘**Expand next level**’ you will see the years in a quarterly basis. Drilling up will return to the original graph.

The drill tab can basically be used to look at your data at different levels. Drill Up and Drill Down will navigate you through the data. You can choose to expand or show the next level in the hierarchy.

1

2



3

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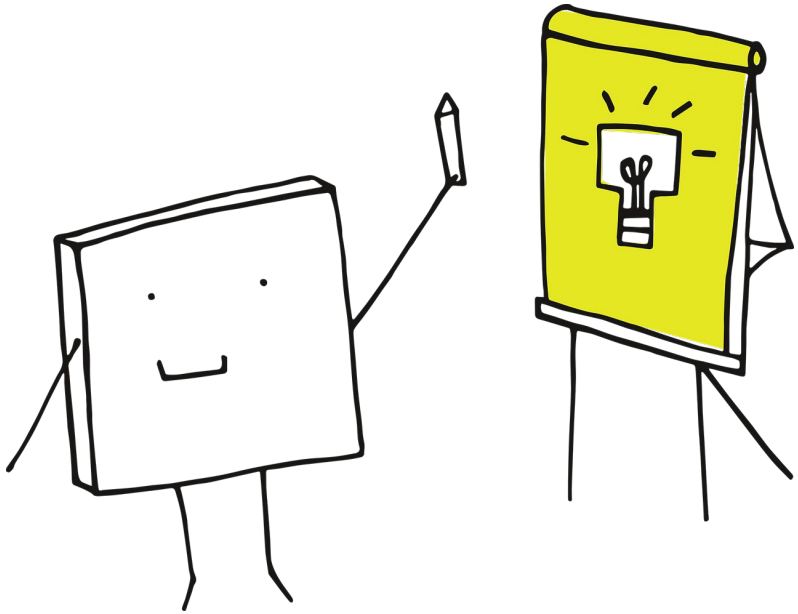
Conclusion

What we have learned

In this train, we have examined how to:

- Create various charts;
- Calculate columns and measures;
- Drilled through data and
- Loaded data into our dashboard.

This provides a great basis for getting started with Power BI, but there is still lots to learn!



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Appendix

Additional trains on Athena regarding Power BI:

- Load Data Into Power BI

Additional sources:

- What is Power BI
- Power BI

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