D6 Power BI
Essentials
Extra Insights v01

D6 (2-3 Day)
Power BI
Essentials Extra Insights

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Throughout these notes you will find useful and timesaving advice. Down the left-hand side of some pages, you'll see icons that highlight certain points and make the guide easier to follow.

Extra Insight

1 CALCULATE Explained

As mentioned earlier CALCULATE is hugely powerful and is the basis for many different measures.

CALCULATE ALLOWS YOU TO CHANGE FILTERS

Understanding CALCULATE is the key to becoming very productive with Power BI.

Cost Centre Name	Actual	YTD Actual	Full Year Budget	Actuals Last Year
Administration	4,241	15,884	1,684,715	10,814
Completion	631,503	631,503	1,478,367	84,668
Drilling	627,593	627,593	1,452,288	590,651
Geological & GeoPhysical			750,519	
Land & Leasing	203,366	203,366	706,487	169,106
Seismic	112,066	112,066	730,873	118,492
Write-offs			-665,403	
Total	**1,578,768**	**1,590,411**	**6,137,845**	**973,732**

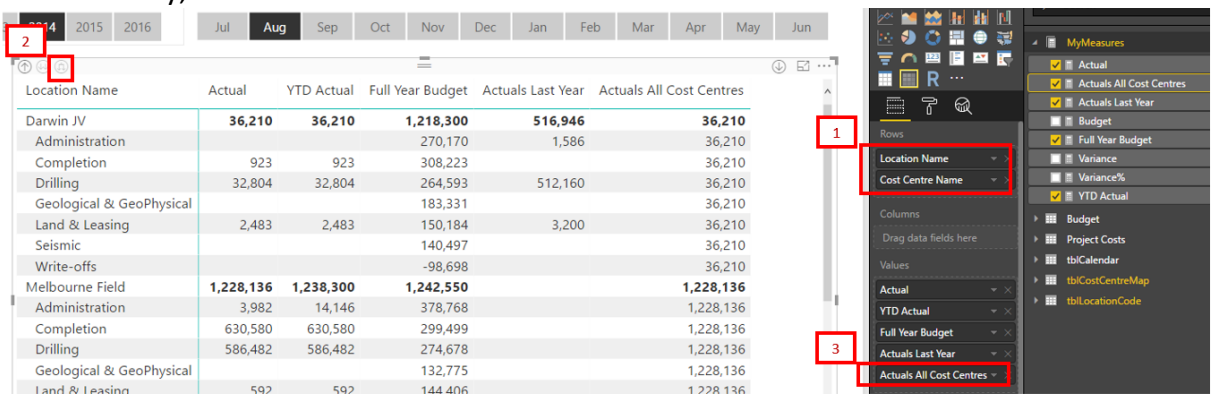
Let's say we want to calculate what percentage each Cost Centre (e.g Administration , Drilling etc) represents as % of all cost centres.

i.e. Admin Cost / **Total Cost for ALL Cost Centres**

We need to use CALCULATE to give us a measure with the **Total Cost for ALL Cost Centres**. This is the same approach as we used for Full Year Budget

Actuals ALL Cost Centres
=CALCULATE([Actual] , ALL (CostCentre[Cost Centre Name]))

- Swap around Location Name and Cost Centre name as per step 1 below
- Expand out to show the 2 columns as per step 2
- Finally, add the new measure to the Values box



Note that the new figure matches the sub total for the group, which is what we would expect.

Explaining CALCULATE

The CALCULATE function takes a Measure [ACTUAL] and a Filter Parameter. The ALL function forces CALCULATE to ignore all filters relating to whatever you've included in ALL

In our case we used ALL (CostCentre[Cost Centre Name])

CostCentre[Cost Centre Name] is the row filter we have in our Pivot Table

The CALCULATE function is therefore being told to Ignore this specific row filter and return the remaining results.

These are the internal processes Power Pivot uses for the values in the **[ACTUAL]** measure:

Take the Project Costs Table
Filter it by Year (2014) and Month (Aug)
Filter it by Location (Darwin JV)
Filter it by Cost Centre Name (e.g. Administration)
SUM the AMOUNT column of the remaining rows

The internal STEPS for the values in the **[Actuals - ALL Cost Centres]** calculation are exactly the same except we are using CALCULATE to force it to IGNORE the **Filter it by Cost Centre Name (e.g. Administration)**

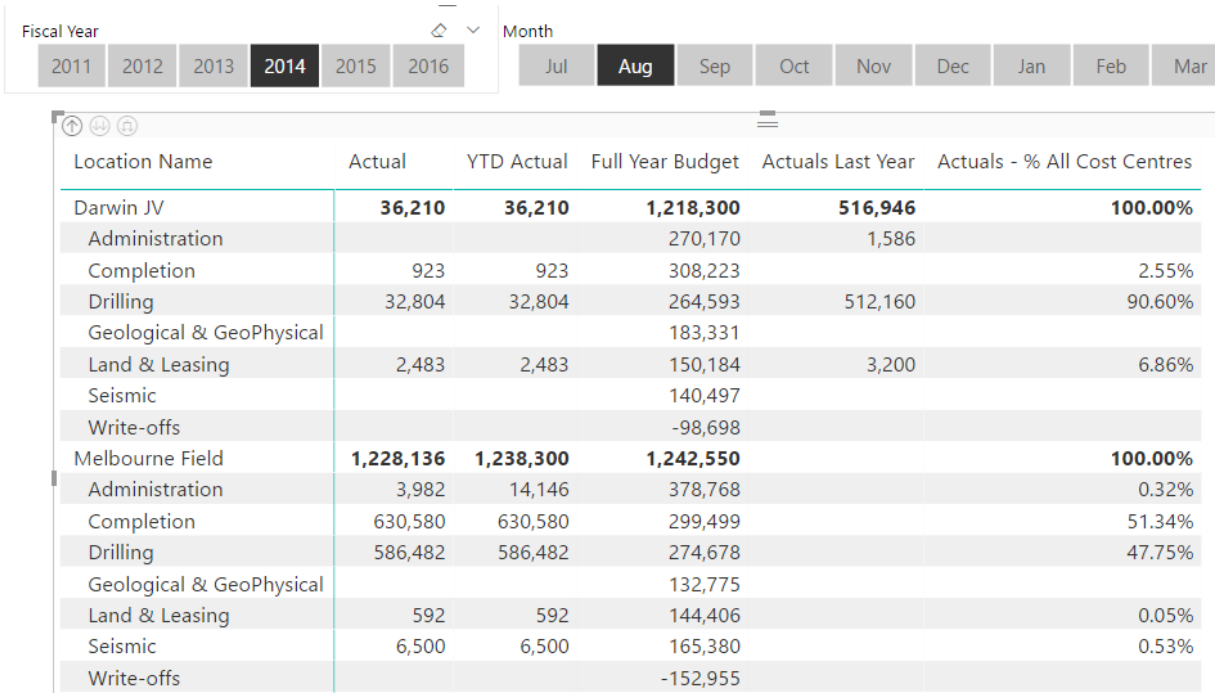
This measure is a little meaningless in this scenario, but we need it to calculate the % of Total Costs for each line

Now we add the % measure
Actuals - % All Cost Centres
= DIVIDE ([Actual] , [Actuals ALL Cost Centres])

Remember to set this as a Percentage Format

Add the measure to the Matrix

Then remove the [Actuals – ALL Cost Centres] measure from your Pivot Table



Location Name	Actual	YTD Actual	Full Year Budget	Actuals Last Year	Actuals - % All Cost Centres
Darwin JV	**36,210**	**36,210**	**1,218,300**	**516,946**	**100.00%**
Administration			270,170	1,586	
Completion	923	923	308,223		2.55%
Drilling	32,804	32,804	264,593	512,160	90.60%
Geological & GeoPhysical			183,331		
Land & Leasing	2,483	2,483	150,184	3,200	6.86%
Seismic			140,497		
Write-offs			-98,698		
Melbourne Field	**1,228,136**	**1,238,300**	**1,242,550**		**100.00%**
Administration	3,982	14,146	378,768		0.32%
Completion	630,580	630,580	299,499		51.34%
Drilling	586,482	586,482	274,678		47.75%
Geological & GeoPhysical			132,775		
Land & Leasing	592	592	144,406		0.05%
Seismic	6,500	6,500	165,380		0.53%
Write-offs			-152,955		

You can even remove your other measures the formula still works.

Location Name	Actual	Actuals - % All Cost Centres
Darwin JV	**36,210**	**100.00%**
Administration		
Completion	923	2.55%
Drilling	32,804	90.60%
Geological & GeoPhysical		
Land & Leasing	2,483	6.86%
Seismic		
Write-offs		
Melbourne Field	**1,228,136**	**100.00%**
Administration	3,982	0.32%
Completion	630,580	51.34%
Drilling	586,482	47.75%
Geological & GeoPhysical		
Land & Leasing	592	0.05%
Seismic	6,500	0.53%
Write-offs		

1.1 ISFILTERED()

It would be good if we could hide or turn off the 100% at the top of each group

Location Name	Actual	Actuals - % All Cost Centres
Darwin JV	**36,210**	**100.00%**
Completion	923	2.55%
Drilling	32,804	90.60%
Land & Leasing	2,483	6.86%
Melbourne Field	**1,228,136**	**100.00%**
Administration	3,982	0.32%
Completion	630,580	51.34%
Drilling	586,482	47.75%
Land & Leasing	592	0.05%
Seismic	6,500	0.53%
Other	**297,457**	**100.00%**
Land & Leasing	191,891	64.51%
Seismic	105,566	35.49%
Perth Field	**16,966**	**100.00%**
Administration	259	1.53%
Drilling	8,307	48.96%
Land & Leasing	8,400	49.51%
Total	**1,578,768**	**100.00%**

ISFILTERED returns TRUE when a column Name is being filtered directly. If there is no filter on the column or if the filtering happens because a different column in the same table or in a related table is being filtered then the function returns FALSE.

For example if we apply ISFILTERED to the table above with reference to Cost Centre Name, then for each of Administration, Drilling etc it would return a TRUE since there is a filter being applied directly to the Cost Centre Name column.

However, for the Location Code such as Darwin JV no direct filter is applied to Cost Centre Name column and therefore ISFILTERED returns FALSE.

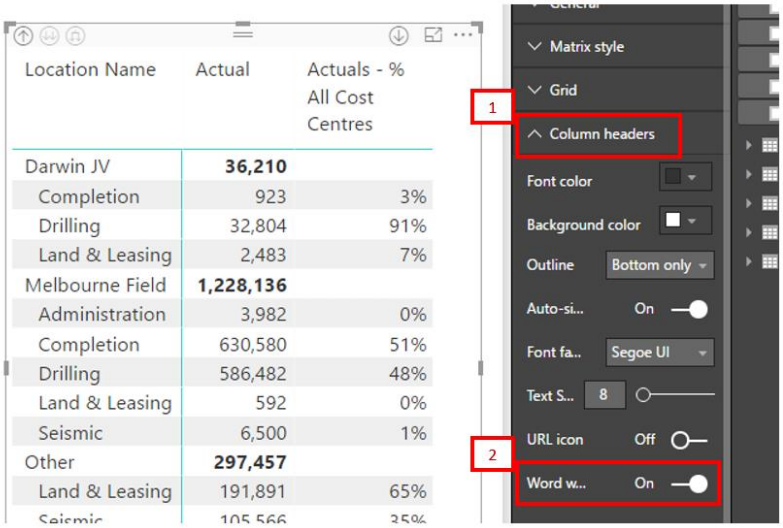
We can amend our formula for [Actuals - % ALL Cost Centres] as follows

```
=
IF (
   ISFILTERED ( CostCentre[Cost Centre Name] ),
   DIVIDE (  [Actual] , [Actuals - ALL Cost Centres] ),
   BLANK ()
)
```

Note: Use Shift and Enter or the WEBSITE http://www.daxformatter.com/ to format my DAX into the layout above.

WRAP Column Headers

Just to finish our table lets make the % column narrower and wrap the column heading.



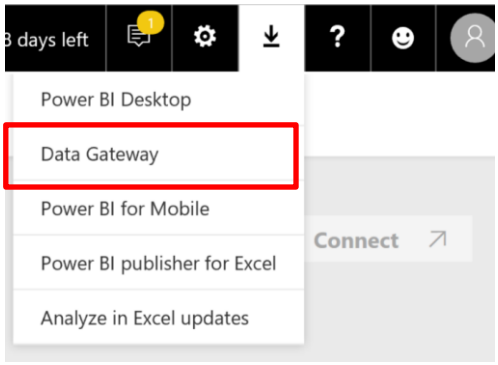
2 Data Gateway

The ideal way to refresh your dataset is to set up a Gateway.

The Gateway is a piece of software which acts as a gatekeeper and interface between **on-premises** data sources and Power BI.

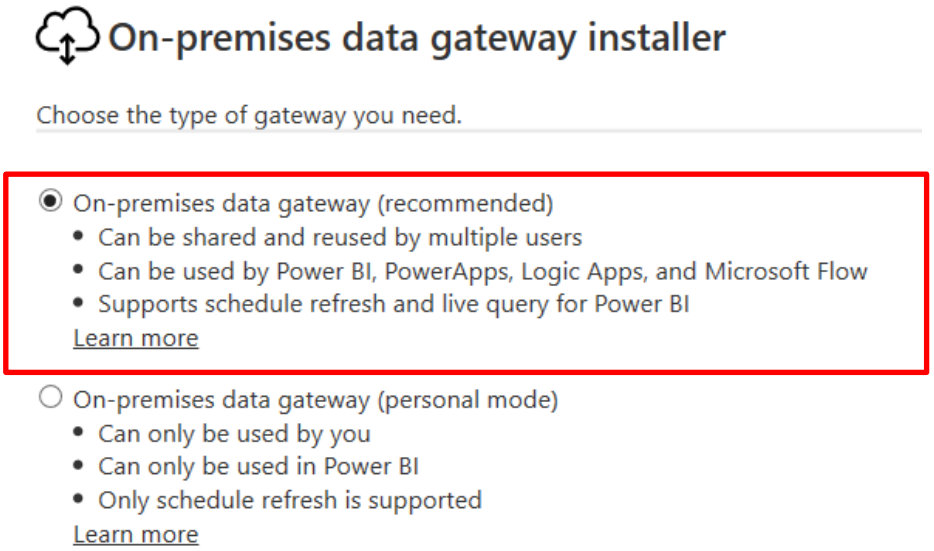
After setting up a gateway you can either schedule refresh, or use Refresh Now.

To setup the gateway, you need to firstly download it from Power BI.com



Download the installation file and. Ideally, the machine or server you install it onto will be on and connected to the Internet whenever the refresh is scheduled to happen.

Run the file, then, when prompted, select on-premises data gateway.



There are two modes of Gateway:

- On-premises data gateway
- On-premises data gateway (personal mode)

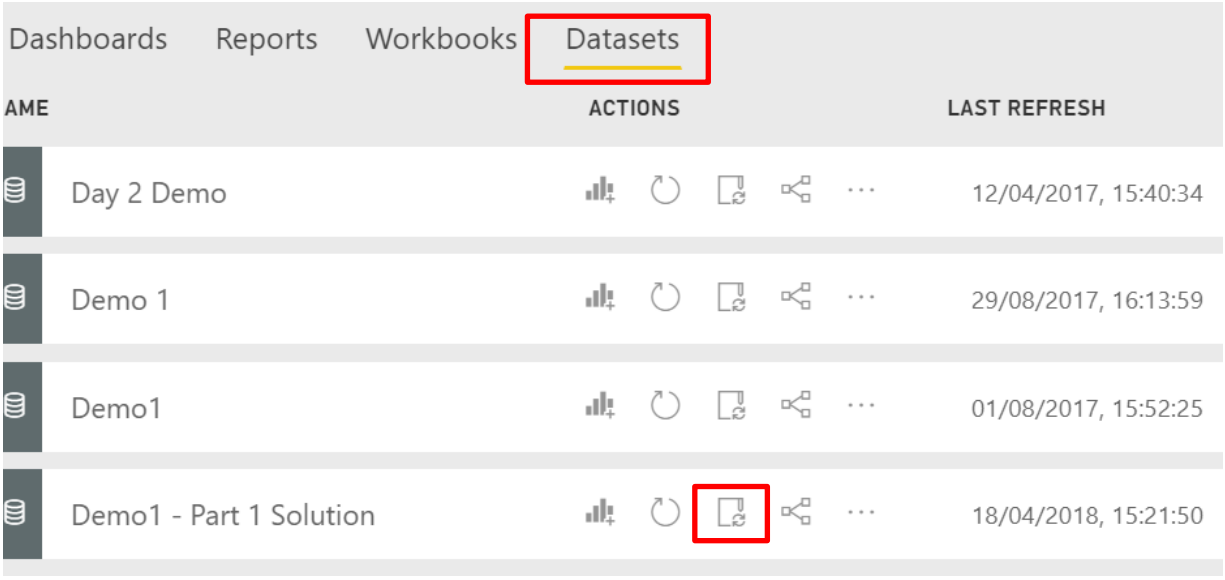
The main difference between the modes is that the Personal mode does not require machine Admin access but also is limited as it allows **only one user** to connect to data sources.

The **On-Premises Gateway** allows **multiple users** to connect to multiple data sources at the same time and can be used for other apps as well (such as PowerApps, Flow and Azure Logic). The On-Premises Gateway can also store a user's security settings and applies these to the data source.

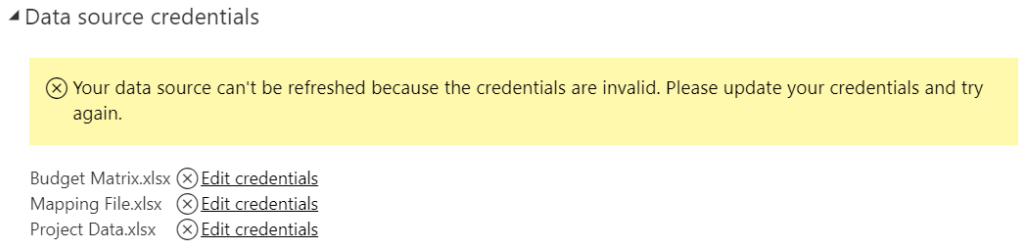
In the process of installation, you will be prompted to enter your Power BI account details.

Once your Gateway is set up you can click on the ellipse "…" next to the Dataset of your choice and you will see this pop-out menu. You should see the **Refresh Now** and **Schedule Refresh** options.

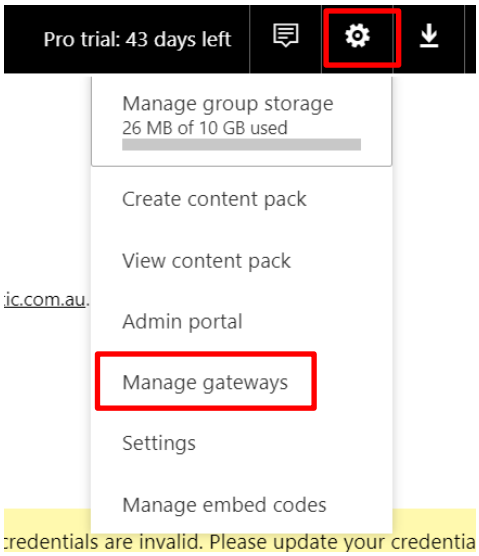
To set up your refresh, select your workspace and go to Datasets and click the Refresh Icon for the relevant data set



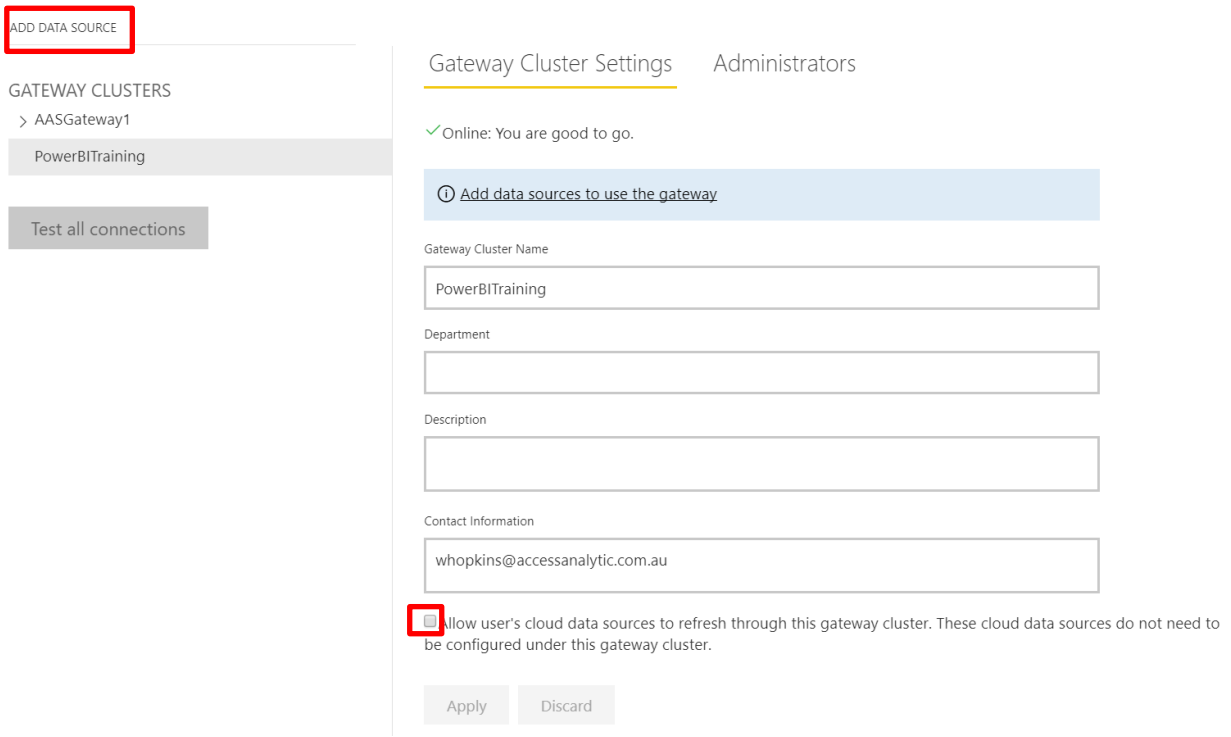
Note that I have 3 different data sources that are coming from an "on-prem" data source. In order to allow Power BI to access these data sources I must add each of them to my Gateway.



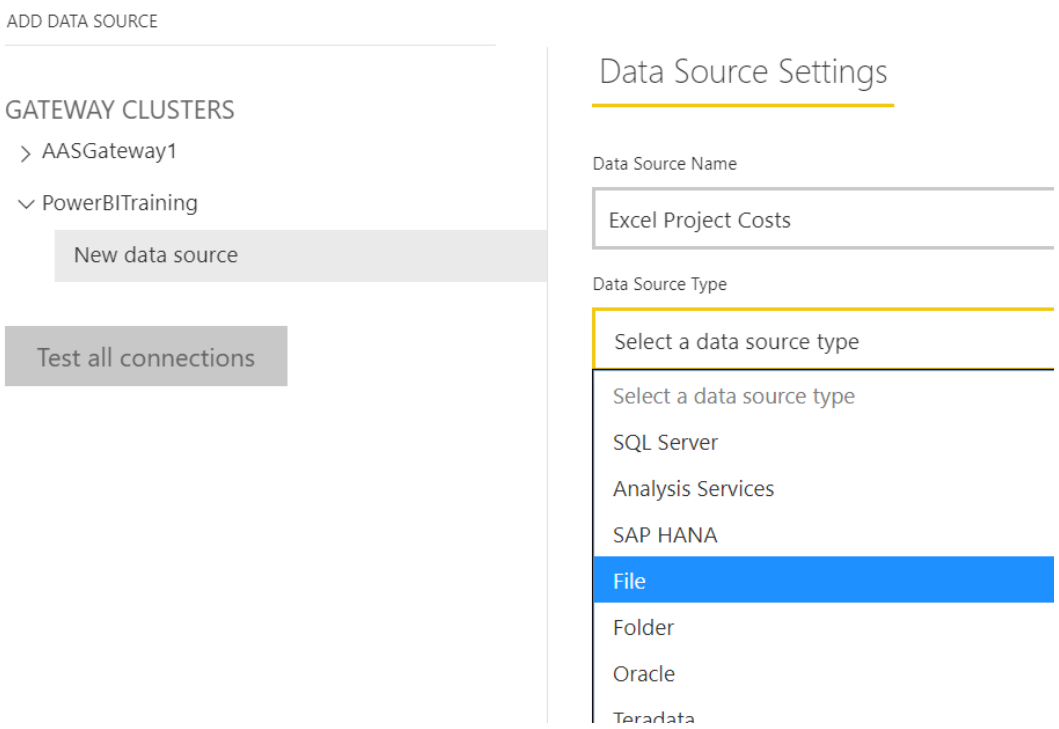
Click on the cog and select Manage Gateways



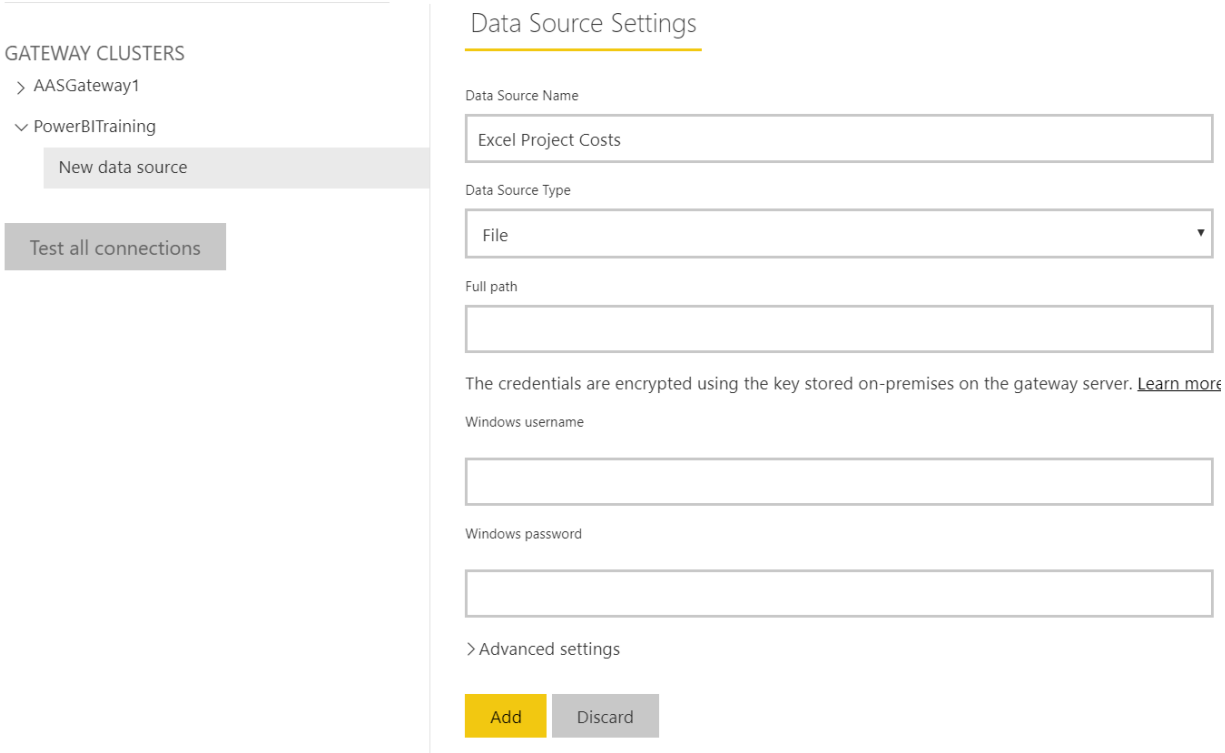
Choose the Gateway you have set up then click ADD DATA SOURCE
(note you can also tick allow cloud data sources to allow reports to refresh that use a combination of on-line and on-prem data sources)



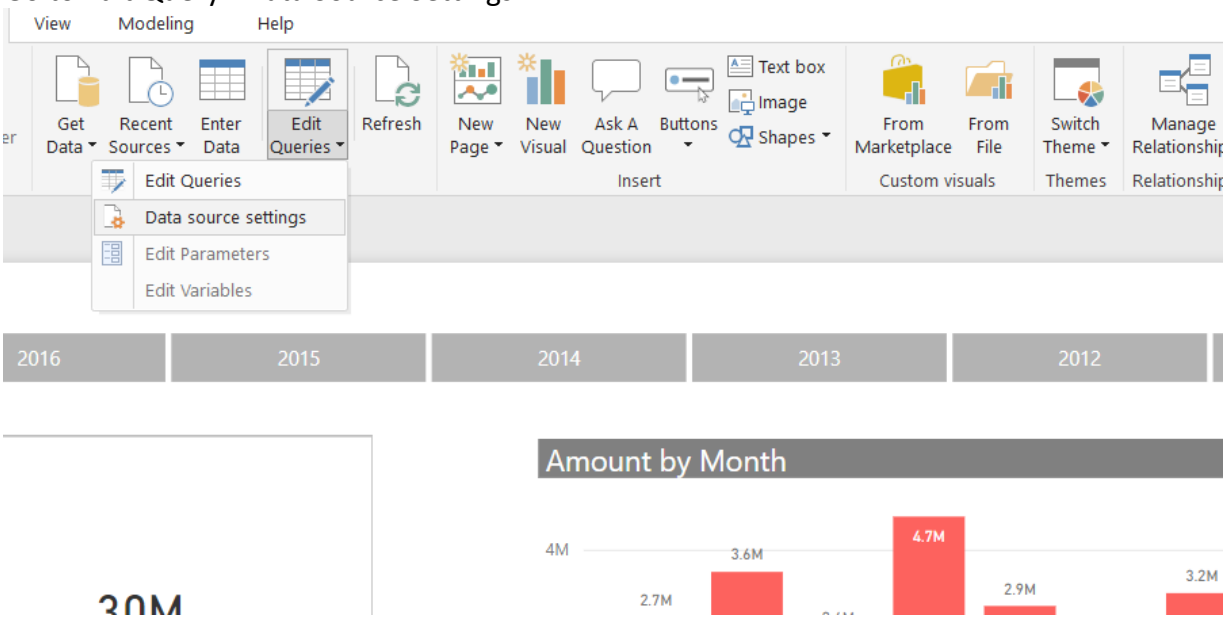
We need to add all 3 Excel files as individual data sources



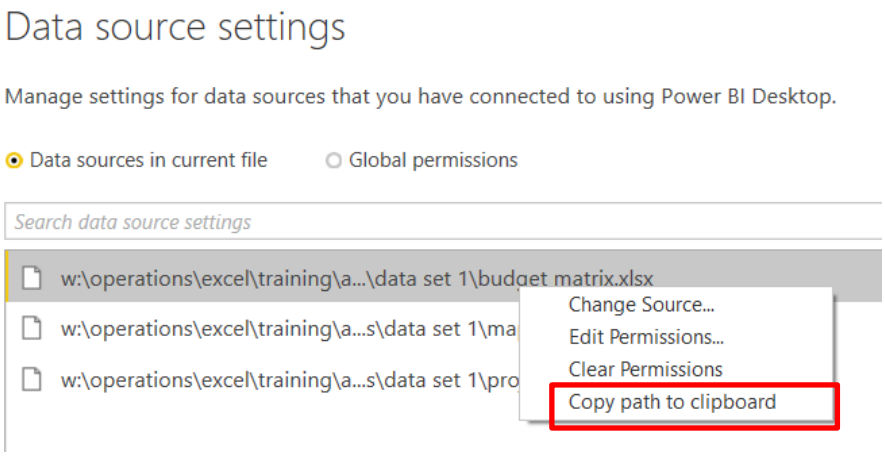
You then have to enter the full path of the Excel file and windows credentials. You can get the full file path from your Power BI Desktop file.



Go to Edit Query - Data Source Settings



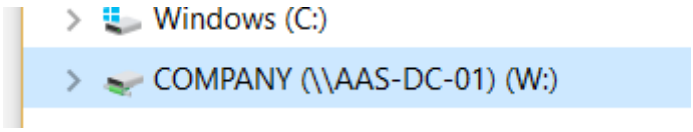
Then you can right-click and select Copy path to clipboard



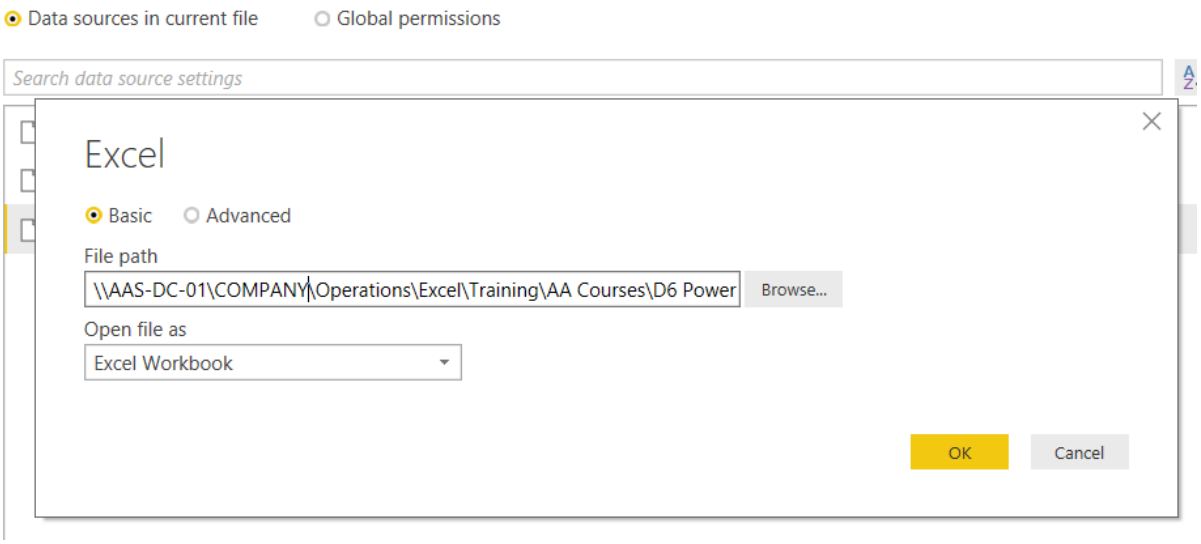
PROBLEM!!!

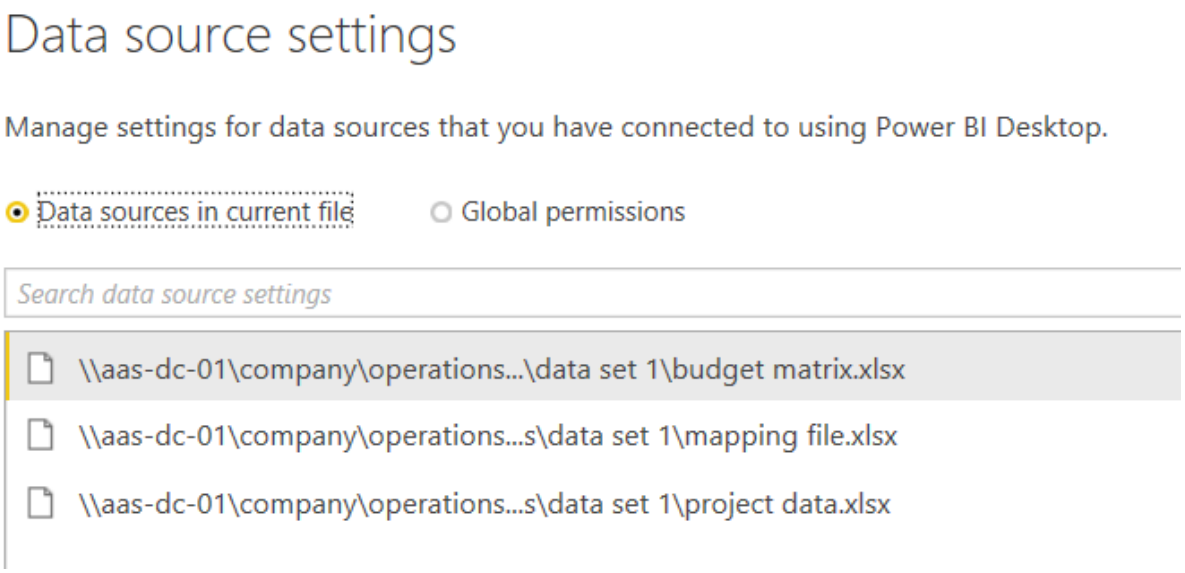
Power BI Gateway cannot locate files on mapped network names, such as W: or P: or S:

Frustratingly, you must change your data sources in your Power BI Desktop file to the full UNC path e.g. my W: needs to be replaced with \\AAS-DC-01\COMPANY



You must do this for all data sources.

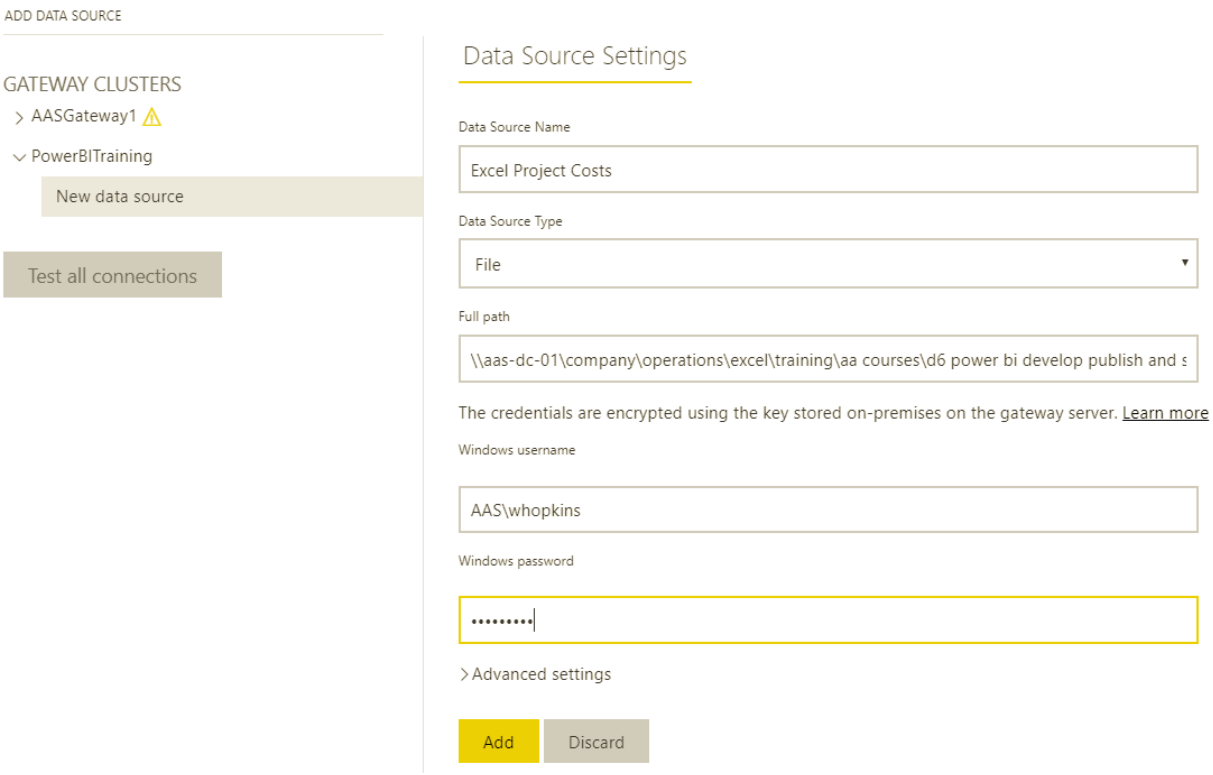




Now we can copy these file paths and add the data sources to the Gateway

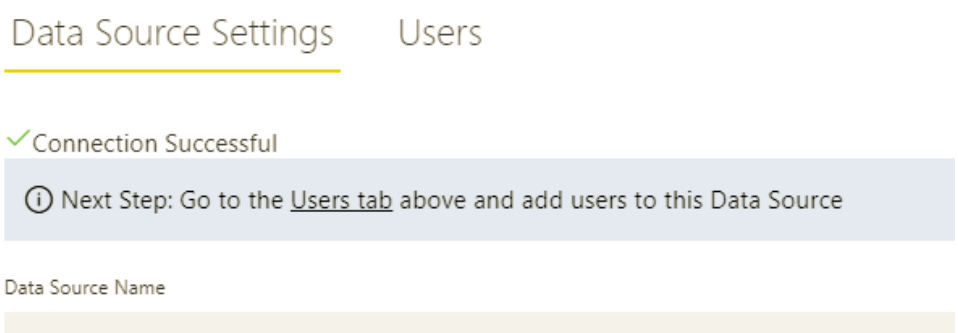
Note: now that we have made a change here to the PBI Desktop file, we will need to save and re-publish it.

Example of New Data Source



You should get a successful connection.
Repeat this for the 2 other data sources

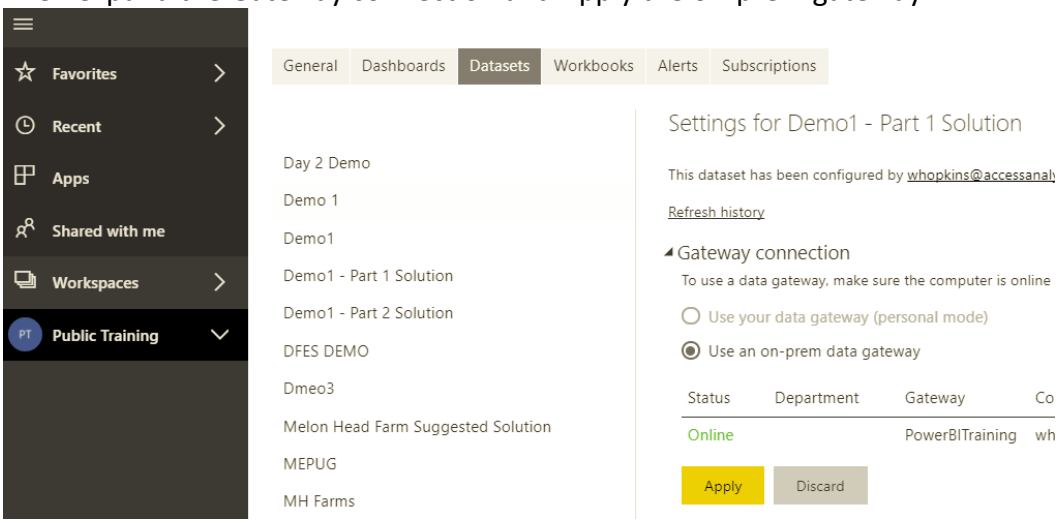
Note: you can also then assign developers who are allowed to "share" or get access to these data sources through the gateway.



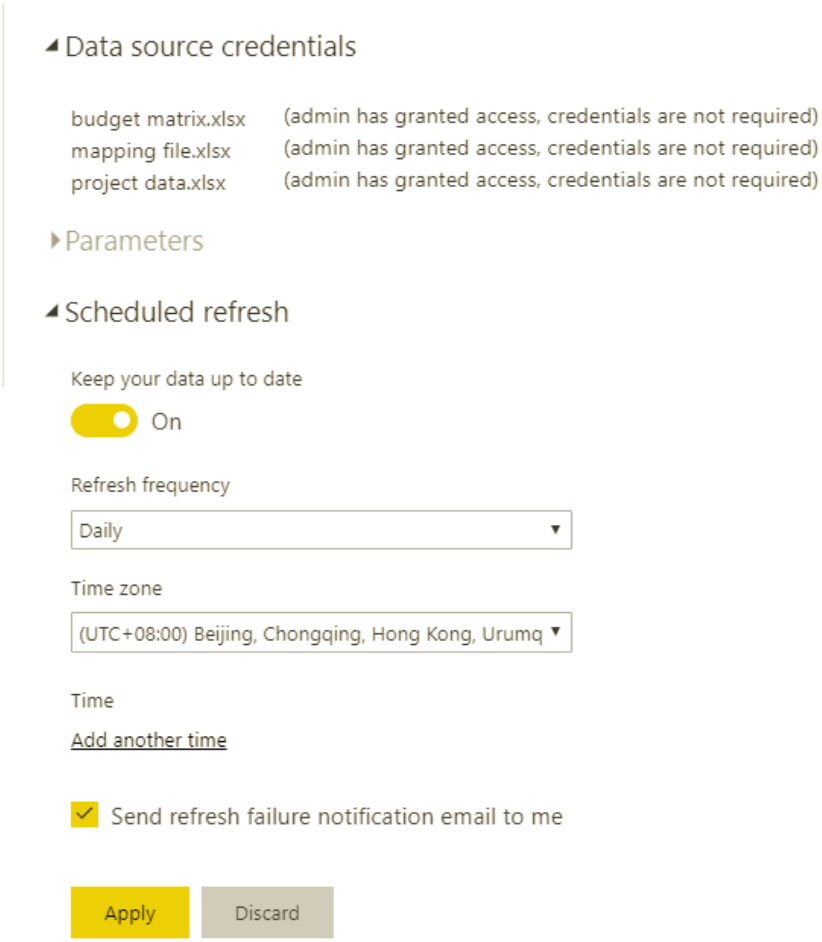
Now that the Gateway is set up and the data sources added to it we can go back to our schedule refresh section and add our credentials.

Workspace > Datasets > click the schedule refresh icon

Then expand the Gateway connection and Apply the on-prem gateway



Expand the Data source credentials and the Gateway should recognise them
Then expand and enable Scheduled refresh



NOTE: In your Gateway you **<u>can add a folder</u>** as a data source instead of individual files

3 Connect to a OneDrive / SharePoint as a data source

A useful alternative for connecting to Excel data sources is to store the Excel file containing the data on OneDrive, and connect your Power BI project to this.

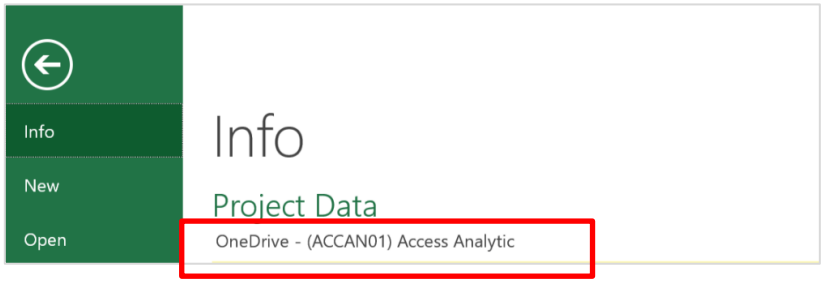
To enable this, you will have to setup your data sources in Power BI desktop using the Get Data->Web connector.

In the 'From Web' window you need to specify the path to your file.

This is not as simple as you would hope but you need to do the following:

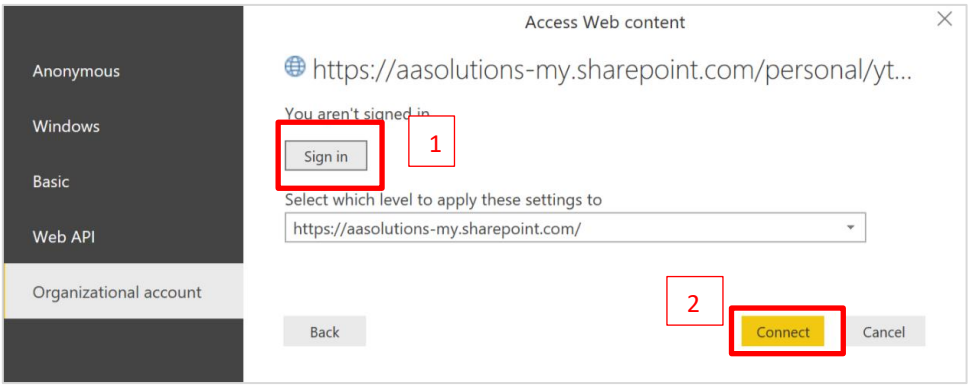
Open the file from OneDrive in the Excel desktop version,
Go to File->Info and click on the file location (as shown below)
Select the option Copy Path to Clipboard,
Then paste this into the 'From Web' window of Power BI Desktop file.

Before clicking 'OK', you neen to remove the last ?web=1 characters from the link (highlighted in yellow below).



After pasting the link, click 'OK'. In the subsequent window, select 'Organisational account', then 'Sign in' to your OneDrive accounts, where the source file is held.

Finally, click 'Connect' to finalise your data connection.


Access Web content
Anonymous
Windows
Basic
Web API
Organizational account
https://aasolutions-my.sharepoint.com/personal/yt...
You aren't signed in.
Sign in
1
Select which level to apply these settings to
https://aasolutions-my.sharepoint.com/
2
Back
Connect
Cancel

4 Creating Mapping Checks

This is an extra section if you finish early…

OPEN UP YOUR Demo 1 FILE

Once you start to use manual mapping tables as we have done in this example you need to be able to flag when new items need adding to them

Let's say for example a new project has been created that has a new cost centre code but the new cost centre hasn't been included in our mapping table.

- We refresh our data and it pulls in the new project.
- Power BI tries to connect its Cost Centre Code to up to tblCostCentreMap (the lookup table) but it doesn't work for this new code.

Think of it like a VLOOKUP showing N/A# except here we can't see what is missing.

We need to build a check that compares tblCostCentreMap(Cost Centre Code) with tblProjectCosts(Cost Centre Code) and flag wherever these don't match.

Steps:

- BEFORE we do anything we need to create our problem, so go into the Project Costs.xlsx file and change the very first cost code in our file from A040 to A040NEW to setup the problem

- Save the Excel file
- Refresh the Demo 1 PBIX file
- The change we made was to a code in 2011 so click on the 2011 slicer

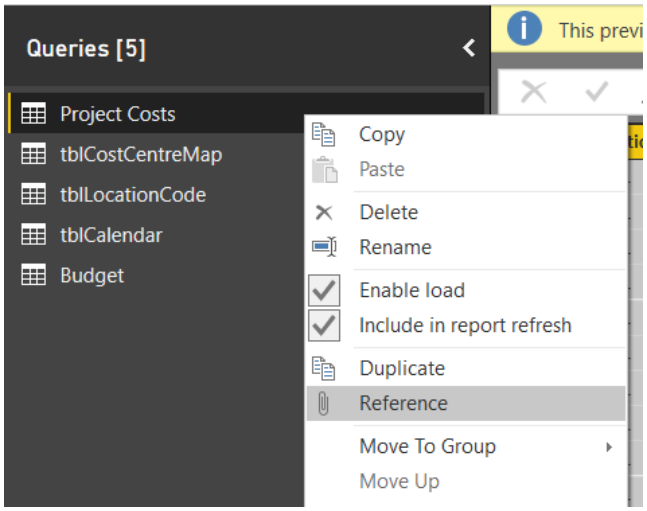
Actual v Budget

Cost Centre Name	Amount	Budget
	13,258	
Administration	454,523	
Completion	152,664	
Drilling	1,672,548	
Land & Leasing	337,802	
Write-offs	-1,022,559	
Total	**1,608,236**	

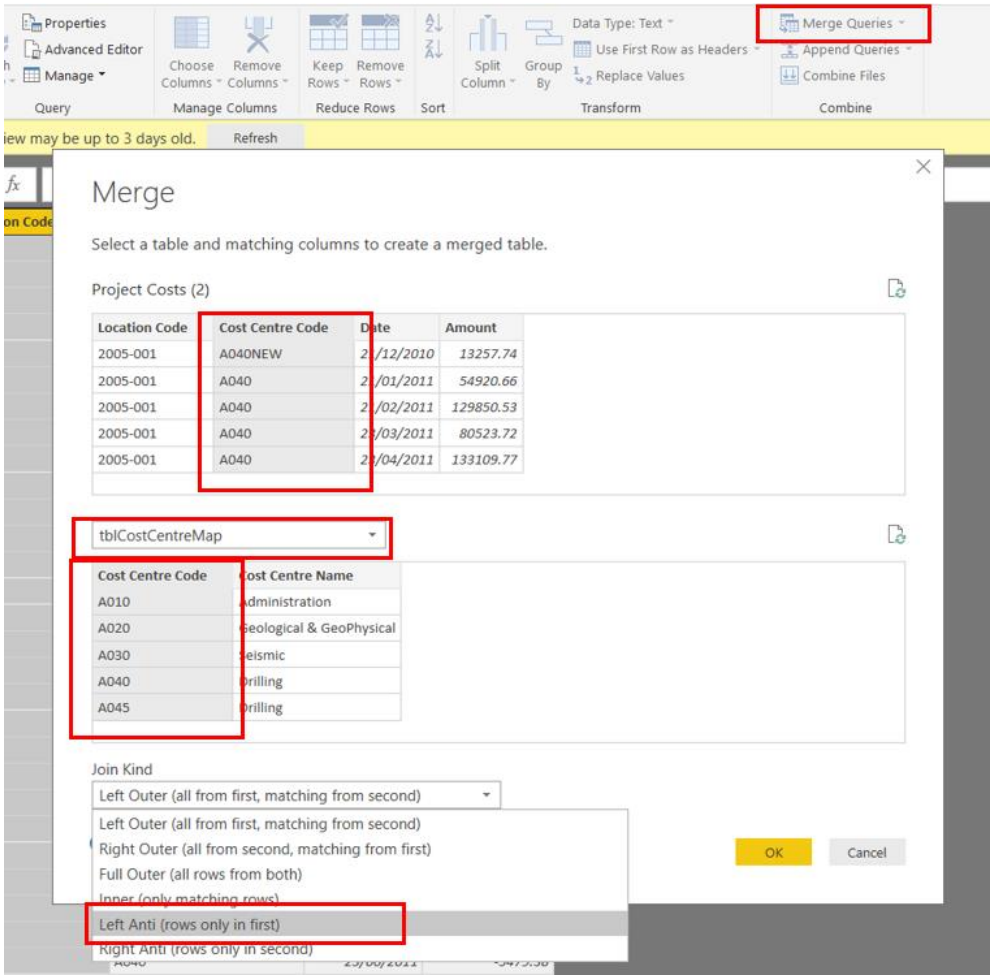
You should see a blank row in the Actual v Budget table with a cost of 13,258 against it.

We now need to setup a query that will compare the Project Costs Codes with the Cost Centre Map codes and just return those that don't exist in the Cost Centre Map

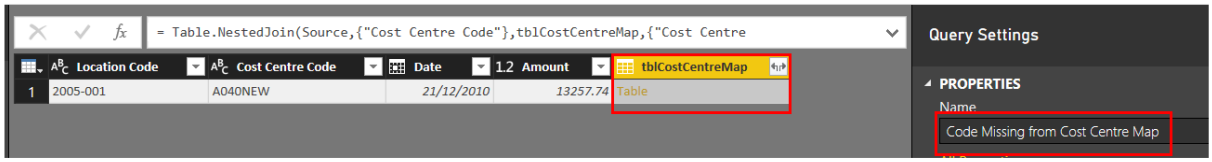
Click Edit Queries
Right Click on Project Costs and Select Reference to create a new query that is linked to Project Costs.



- Click on Merge Queries and set up a "Left Anti" join as shown below



- Remove the column called tblCostCentreMap
- Rename your query as Code Missing from Cost Centre Map

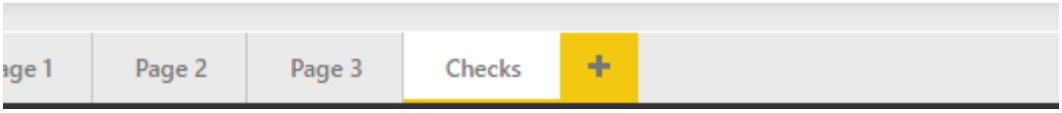


- Click Home > Close and Apply

- Create a new sheet called Checks and add this matrix

Code Missing from Cost Centre Map

Cost Centre Code	Location Code	Date	Amount
A040NEW	2005-001	Tuesday, 21 December 2010	13,257.74
Total			**13,257.74**

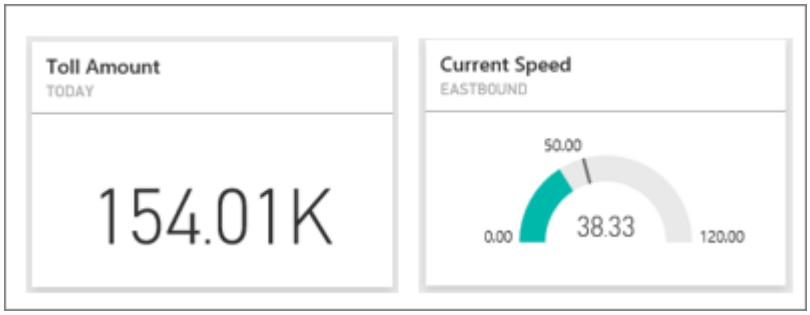


5 Alerts

Set alerts to notify you when data in your dashboards changes beyond limits you set. Alerts can only be set up on tiles pinned from report visuals (not on streaming tiles), and only on gauges, KPIs and cards.

Only you can see the alerts you set, even if you share your dashboard. Although you can automate the process of emailing multiple people if you have Office 365 and use Microsoft Flow.

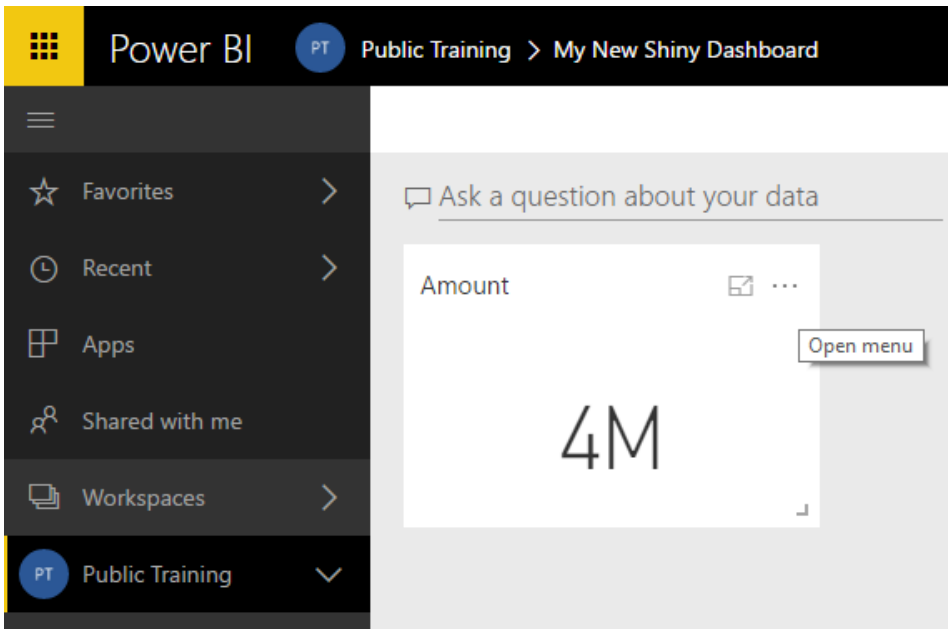
You can set and view data alerts in the Power BI mobile apps and in the Power BI service. They cannot be set in Power BI Desktop.



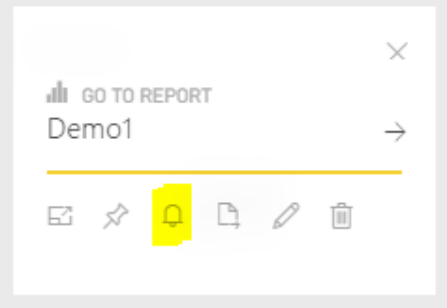
5.1.1 Set data alerts in Power BI service

This example uses a card tile from the Demo 1 file.

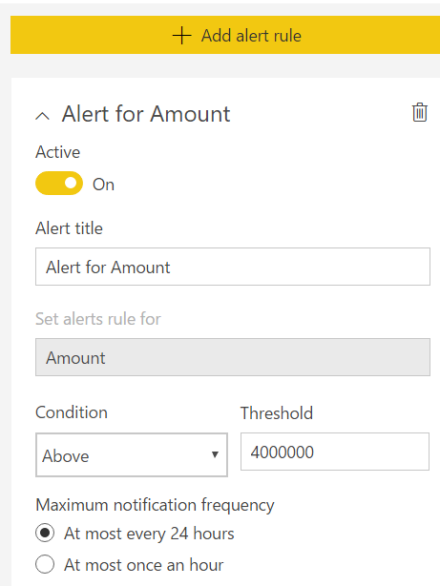
- Firstly we need to go to the dashboard we created earlier
- Click on the elipse (…) in the top right hand corner to open the menu



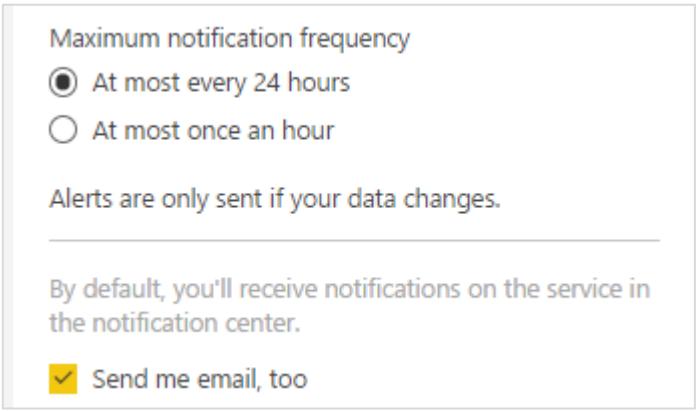
- Select the bell icon  to add one or more alerts for **Amount**.



- To start, ensure the slider is set to **On**, and give your alert a title. Titles help you easily recognize your alerts.



- Set Power BI to send us an email



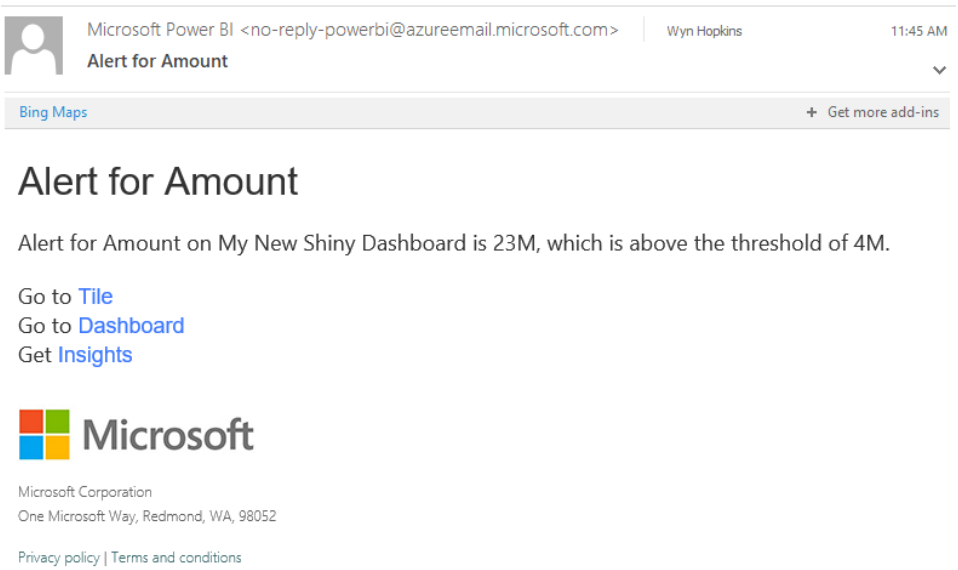
Select **Save**.

5.1.2 Receiving alerts

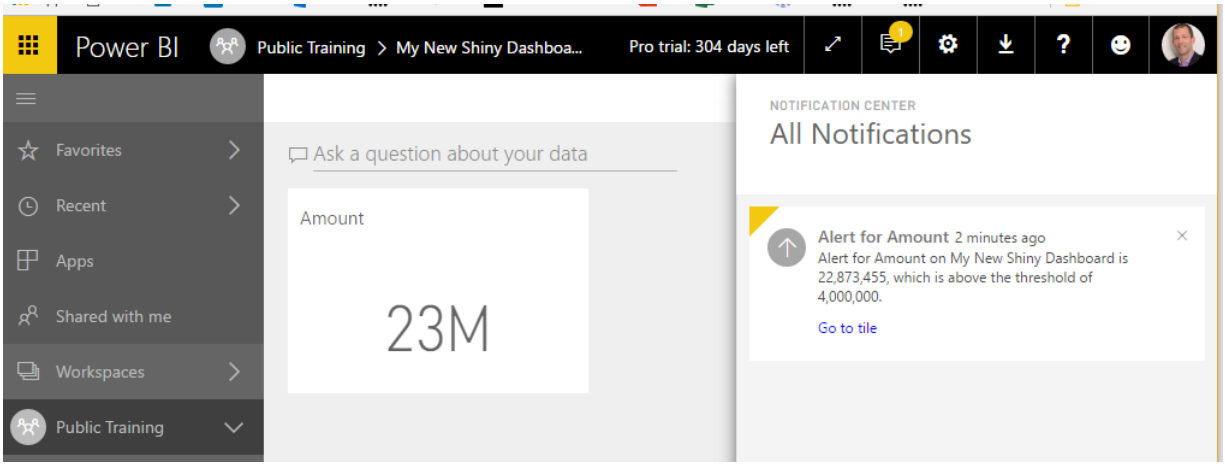
When the data being tracked reaches one of the thresholds you've set, several things will happen. First, Power BI checks to see if it's been more than an hour or more than 24 hours (depending on the option you selected) since the last alert was sent. As long as the data is past the threshold, you'll get an alert.

Next, Power BI sends an alert to your notification center and, optionally, in email. Each alert contains a direct link to your data. Select the link to see the relevant tile where you can explore, share, and learn more.

If you've set the alert to send you an email, you'll find something like this in your Inbox.



Power BI also adds a message to your **Notification Centre**



Note:
Alerts only work on data that is refreshed. When data refreshes, Power BI looks to see if an alert is set for that data. If the data has reached an alert threshold, an alert is triggered.

6 Analyze in Excel

There are times when you may want to use Excel to view and interact with a dataset that you have published to Power BI.com

With **Analyze in Excel**, you can do just that, and access PivotTable, chart, and slicer features in Excel based on the dataset that exists in Power BI.

So before proceeding on with Analyze in Excel lets open and publish the Demo 1 file to Power BI.com

Once published proceed with the following….

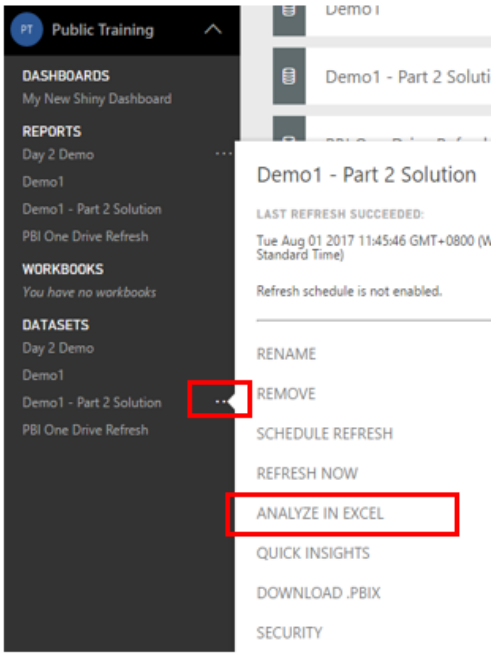
6.1.1 Requirements

There are a few requirements for using **Analyze in Excel**:

- **Analyze in Excel** is supported for Microsoft Excel 2010 SP1 and later.
- Excel PivotTables do not support drag-and-drop aggregation of numeric fields. Your dataset in Power BI ***must have pre-defined measures***.
- Some organizations may have Group Policy rules that prevent installing the required **Analyze in Excel** updates to Excel. If you're unable to install the updates, check with your administrator.

6.1.2 Get started with Analyze in Excel

In Power BI, select the ellipses menu beside a report or dataset (the ... beside the report or dataset name), and from the menu that appears, select **Analyze in Excel**.



How does it work?

When you select **Analyze in Excel** from the ellipses menu (the ...) associated with a dataset or report in **Power BI**, Power BI creates an .ODC file and downloads it from the browser to your computer.

This is essentially a file that simply provides Excel with a connection to your dataset.

When you open the file in Excel, an empty **PivotTable** and **Fields** list appears with the tables, fields, and measures from the Power BI dataset. You can create PivotTables, charts, and analyse that dataset just as you would work with a local dataset in Excel.

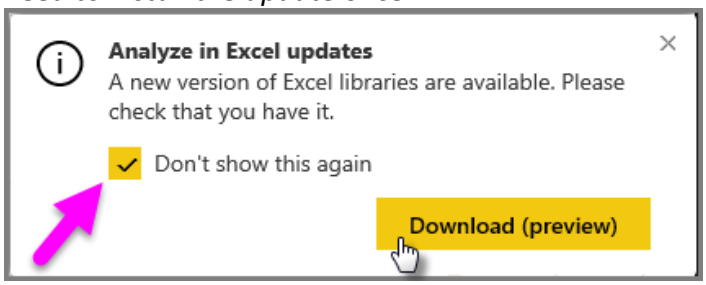
The .ODC file has an MSOLAP connection string that connects to your dataset in Power BI. When you analyse or work with the data, Excel queries that dataset in Power BI and returns the results to Excel. If that dataset connects to a live data source using DirectQuery, Power BI queries the data source and returns the result to Excel.

Analyze in Excel is very useful for datasets and reports that connect to *Analysis Services Tabular* or *Multidimensional* databases, or from Power BI Desktop files or Excel workbooks with data models that have model measures created using Data Analysis Expressions (DAX).

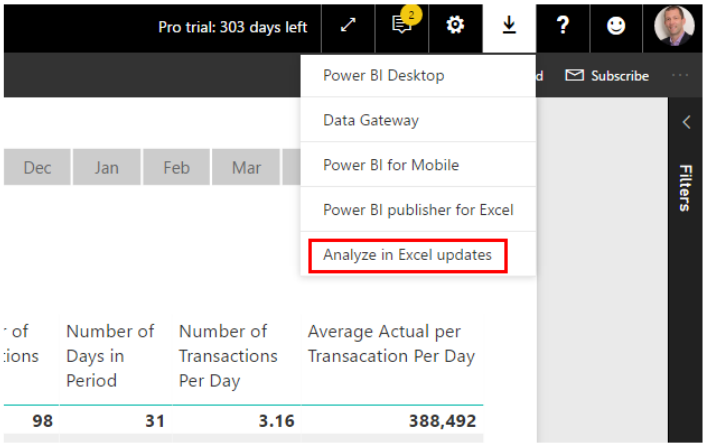
6.1.3 Install Excel updates

When you first use **Analyze in Excel**, you need to install updates to the Excel libraries. You'll be prompted to download and run Excel updates (this initiates installation of the *SQL_AS_OLEDDB.msi* Windows installer package). This package installs **Microsoft AS OLE DB Provider for SQL Server 2016 RC0 (Preview)**.

***Note:** Be sure to check **Don't show this again** in the **Install Excel updates** dialog. You only need to install the update once.*



If you do need to install the Excel updates for **Analyze in Excel** again, you can download the update from the **Download** icon in Power BI, as shown in the following image.

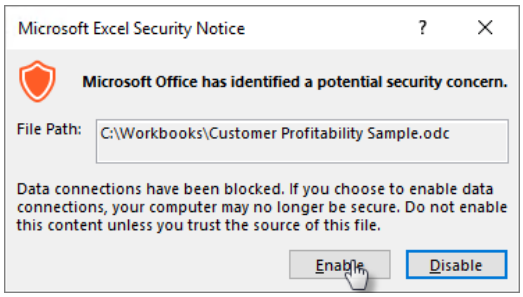


6.1.4 Sign in to Power BI

Although you're signed in to Power BI in your browser, the first time you open a new .ODC file in Excel you may be asked to sign in to Power BI with your Power BI account. This authenticates the connection from Excel to Power BI.

6.1.5 Enable data connections

In order to analyze your Power BI data in Excel, you are prompted to verify the file name and path for the .odc file, and then select **Enable**.



Note: *Administrators for Power BI tenants can use the Power BI Admin Portal to disable the use of* ***Analyze in Excel*** *with on-premises datasets housed in Analysis Services (AS) databases. When that option is disabled,* ***Analyze in Excel*** *is disabled for AS databases, but continues to be available for use with other datasets.*

Now that Excel has opened and you have an empty PivotTable, you're ready to do all sorts of analysis with your Power BI dataset. Just as with other local workbooks, with Analyze with Excel you can create PivotTables, charts, add data from other sources, and so on. And of course, you can create different worksheets with all sorts of views into your data.

7 Power Query & Power Pivot in Excel

The great thing about learning Power BI is that once you know how to use Power Query, the data model and measures in this software, you can also apply your knowledge to Excel because both solutions function very similarly.

In this section, we'll go through our Demo 1 exercise to illustrate how similar the two software systems are. There are some important differences but as you'll soon see, about 95% is exactly the same.

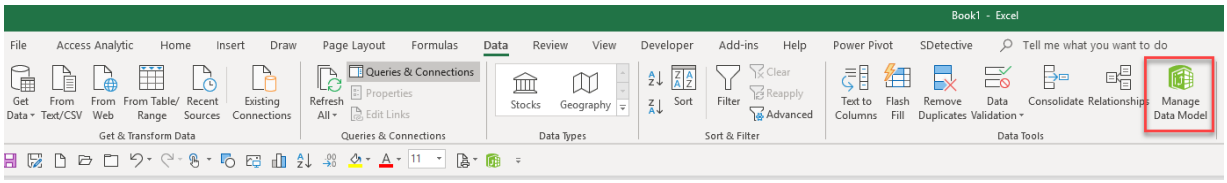
Which version of Excel?

Power Pivot, the pre-cursor to Excel's data model, was first introduced in Excel 2010 … but it wasn't particularly useful so not many people used it in this version.

Excel 2013 was the first version that integrated Power Query and Power Pivot (available as add-ins via separate downloads).

But Excel 2016 was the first version where both these products were "baked in".

Before you begin this section, ensure you have both the Power Query and Power Pivot add-ins installed (Excel 2010/2013). In Excel 2016+, these are built-in already so there's nothing to install (you might just need to activate the add-in by the green **Manage Data Model** button on the Data ribbon.



Now that I know Power BI, why would I ever want to use Excel?

Power BI is an amazing tool for visualisation and reporting however it's not perfect for everything.

Some situations where you might still want to use Excel:

1. You need to present a lot of tabular data
2. Your users aren't yet ready for Power BI
3. You need to do a lot of complex calculations
4. You want to transfer data from one system to another and transform it from one format to another e.g. changing accounting or ERP systems, moving to a new CRM system etc.

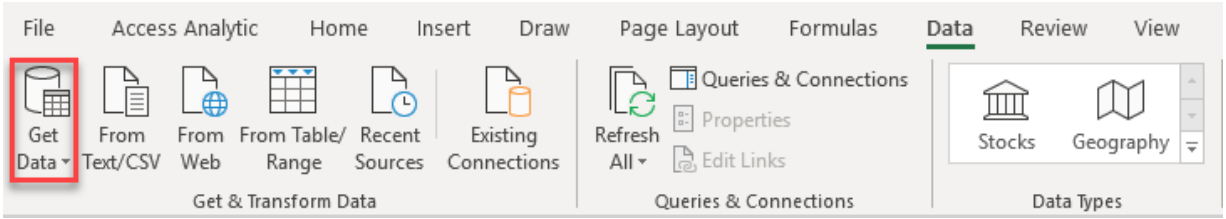
The point is that it's good to know how to apply these tools to Excel so that you can select the right tool for the job.

Power Query in Excel

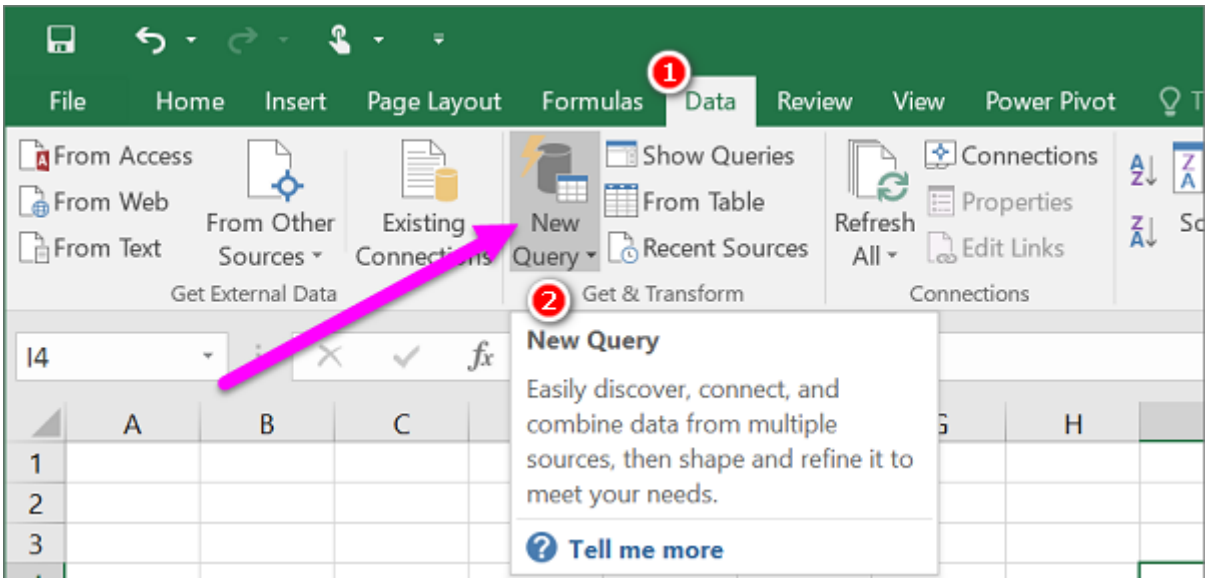
Open Excel and create a new blank Workbook. We'll use this to pull data in from other Excel workbooks.

Where to Find Power Query in Excel 2016+

Depending on your version, Power Query could be called “Get Data” or “New Query”.



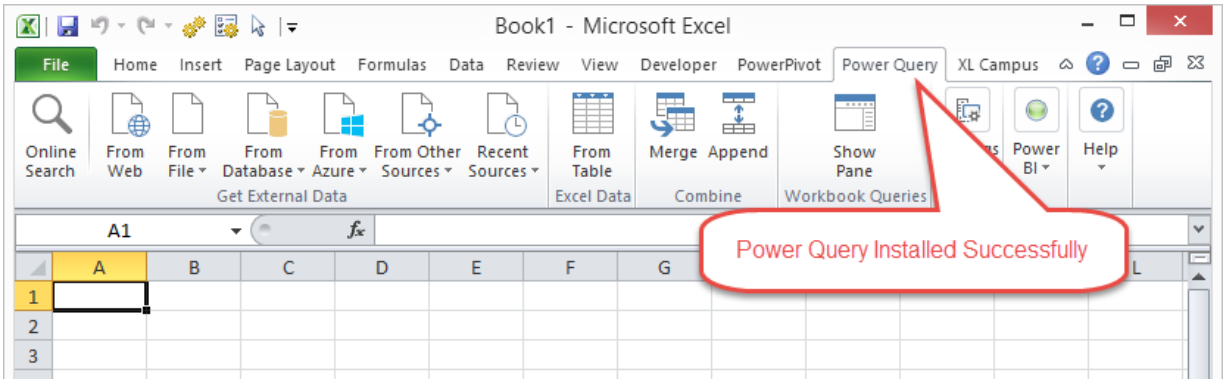
To create a new query that pulls data from another Excel file in this version, you’d go to **Data > Get Data > From File > From Workbook**



To create a new query that pulls data from another Excel file in this version, you’d go to **Data > New Query > From File > From Workbook**

Where to Find Power Query in Excel 2013/2010

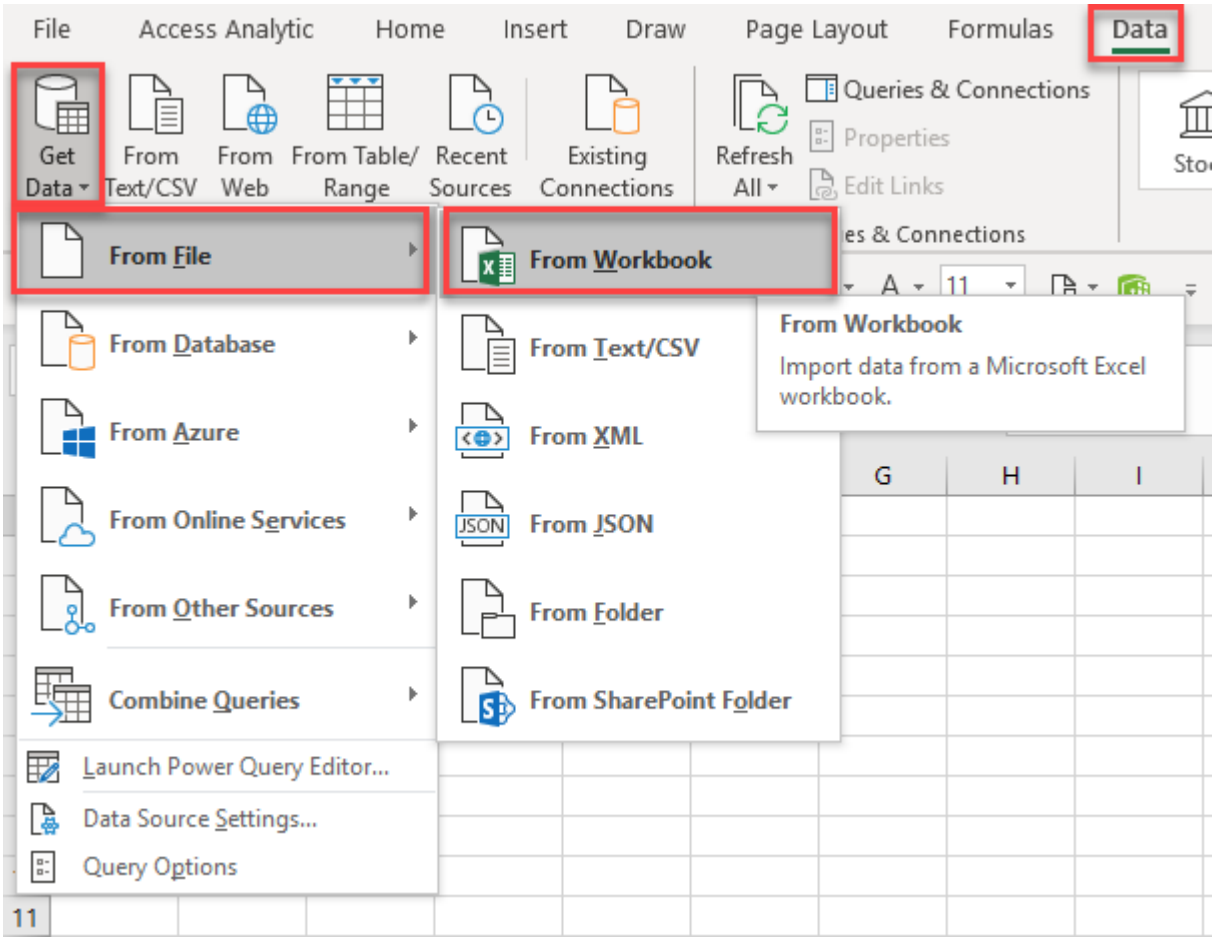
In these versions, you need to download and install the Power Query add-in. This creates a new Power Query ribbon.



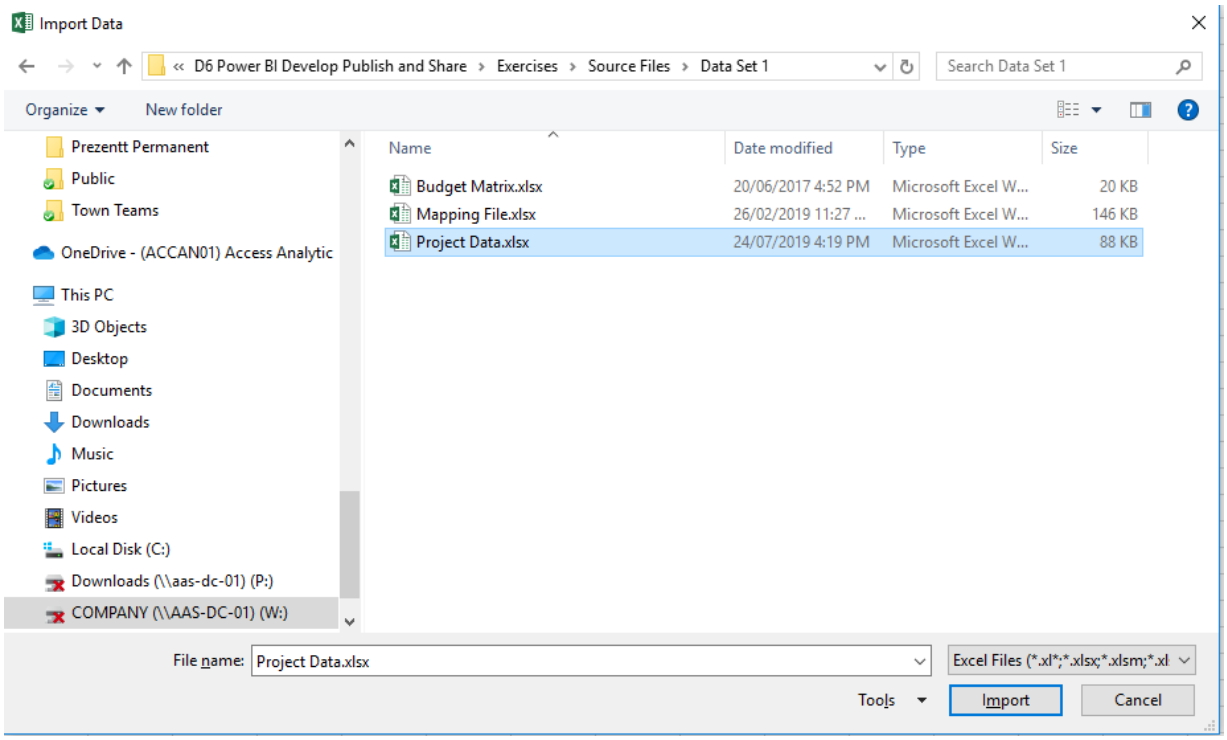
To create a new query that pulls data from another Excel file in this version, you’d go to **Power Query > From File > From Workbook**

To save space, we're just going to say "Create a new Excel workbook query" from now on … just follow the steps that relate to your version!

Creating a new Excel workbook query



Create a new workbook query using the steps in the previous section and choose our "Project Data.xlsx" file from Exercises > Source Files > Data Set 1.

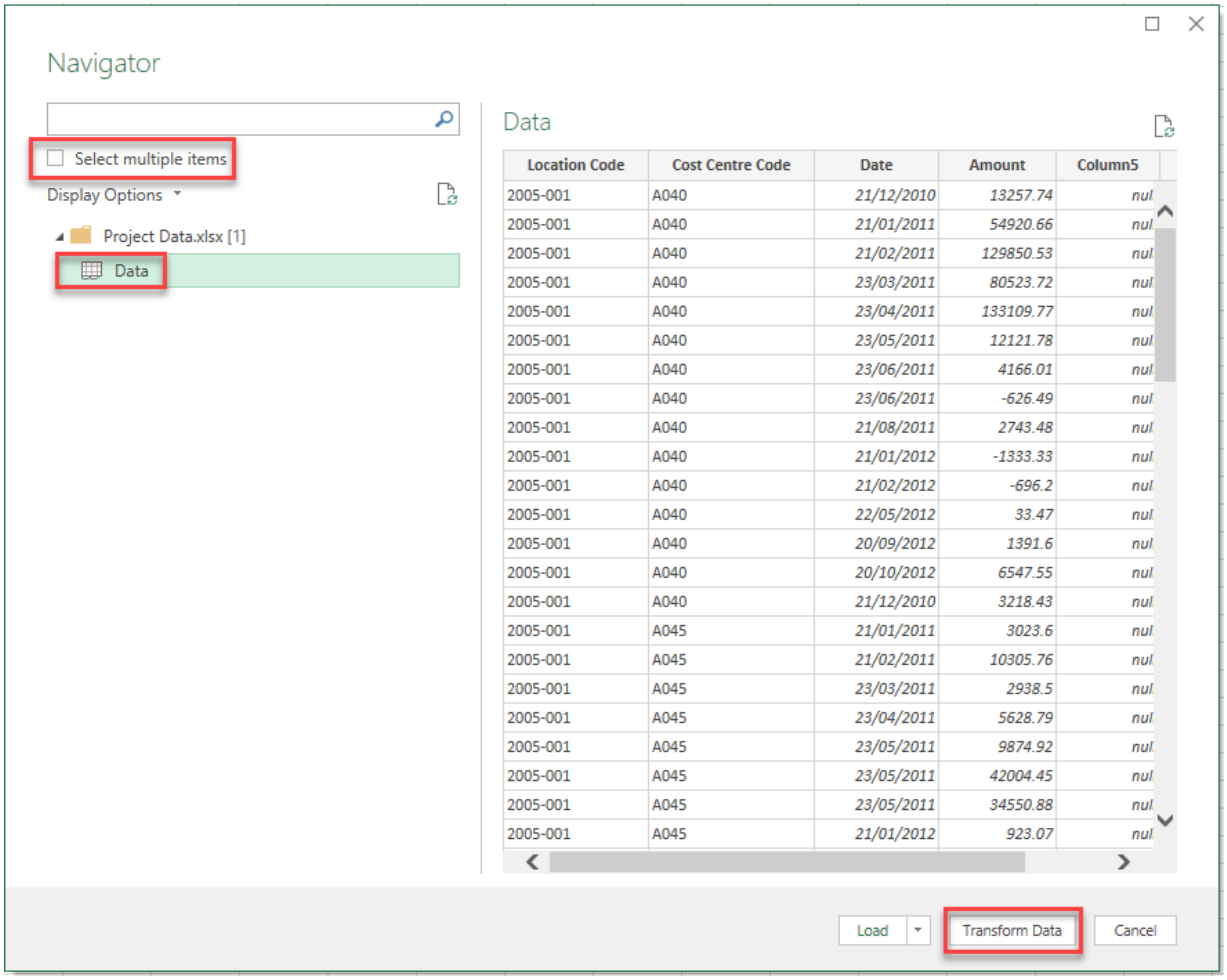


The next screen we see looks very familiar!

There is one small difference: to select multiple items, you need to click the "**Select multiple items**" checkbox at the top of the screen (this doesn't exist in Power BI).

Choose **Data** to see a preview then click the **Edit** or **Transform Data** button (depending on your version) at the bottom of the screen.

You'll now see the familiar Power Query screen where you can use all the same functions we saw previously in Power BI.

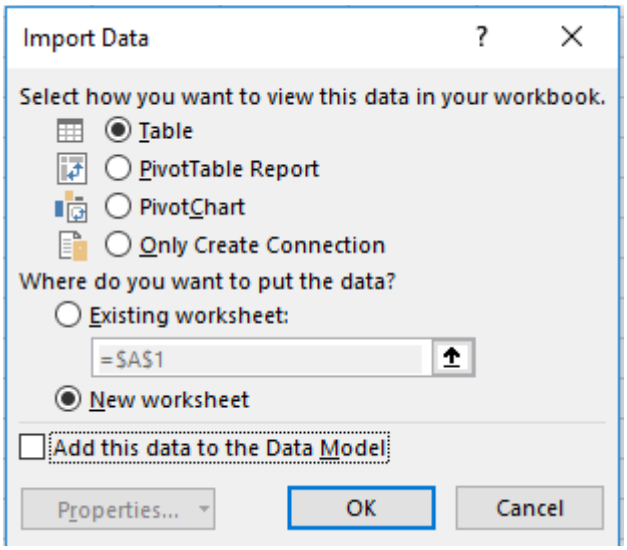


Location Code	Cost Centre Code	Date	Amount	Column5
2005-001	A040	21/12/2010	13257.74	nul
2005-001	A040	21/01/2011	54920.66	nul
2005-001	A040	21/02/2011	129850.53	nul
2005-001	A040	23/03/2011	80523.72	nul
2005-001	A040	23/04/2011	133109.77	nul
2005-001	A040	23/05/2011	12121.78	nul
2005-001	A040	23/06/2011	4166.01	nul
2005-001	A040	23/06/2011	-626.49	nul
2005-001	A040	21/08/2011	2743.48	nul
2005-001	A040	21/01/2012	-1333.33	nul
2005-001	A040	21/02/2012	-696.2	nul
2005-001	A040	22/05/2012	33.47	nul
2005-001	A040	20/09/2012	1391.6	nul
2005-001	A040	20/10/2012	6547.55	nul
2005-001	A040	21/12/2010	3218.43	nul
2005-001	A045	21/01/2011	3023.6	nul
2005-001	A045	21/02/2011	10305.76	nul
2005-001	A045	23/03/2011	2938.5	nul
2005-001	A045	23/04/2011	5628.79	nul
2005-001	A045	23/05/2011	9874.92	nul
2005-001	A045	23/05/2011	42004.45	nul
2005-001	A045	23/05/2011	34550.88	nul
2005-001	A045	21/01/2012	923.07	nul

Remove the last two columns like we did last time, rename the query to "**Project Costs**" then go to the Close and Load dropdown and choose **Close and Load To**

This displays a few different options so you can choose where to put your cleaned-up data set.

This is where things are a little different to Power BI. In Power BI, the **only** place you can load data to is Power BI's data model. In Excel, we can load data to Excel's data model and/or a worksheet, a Pivot Table or Pivot chart.



Why would I want my data in a table on a worksheet?

Reasons might include:

- You want your data to be available to another workbook query e.g. this file acts as a source for many other files.
- You want to use the results of the query in calculations and functions e.g. a financial model, a journal or a budget model
- You just want to see your data in Excel for some reason

Why would I NOT want my data in a table on a worksheet?

Excel's data model is like a mini data warehouse that sits behind Excel's worksheets. It's part of the Excel workbook but you won't see it on any worksheet.

Unless there is some reason for loading your data to a worksheet (per above), it's going to be best to store the data in Excel's data model.

This is useful for several reasons:

- It makes your file smaller. The data model is much more efficient when it comes to storing data.
- If you have more than 1,048,576 rows of data, it won't fit on a worksheet
- You can link your data set to other data sets using Power Pivot and then build reports and measures across all the data sets in your data model.

Most of the time, you'll want to load data into your data model so you can choose "**Only Create Connection**" and check the "**Add this data to the Data Model**" option.

When would I NOT load data into the data model?

- If your query is reading data that is only going to be used by other queries e.g. a parameter for a query like a date or file path from an Excel range name.
- If the only purpose for your query is to read a data set that is used by another query e.g. a query that gets merged or appended to another query

In these cases, there is no reason to load the query into the data model. You'll just clutter up the data model with unnecessary queries.

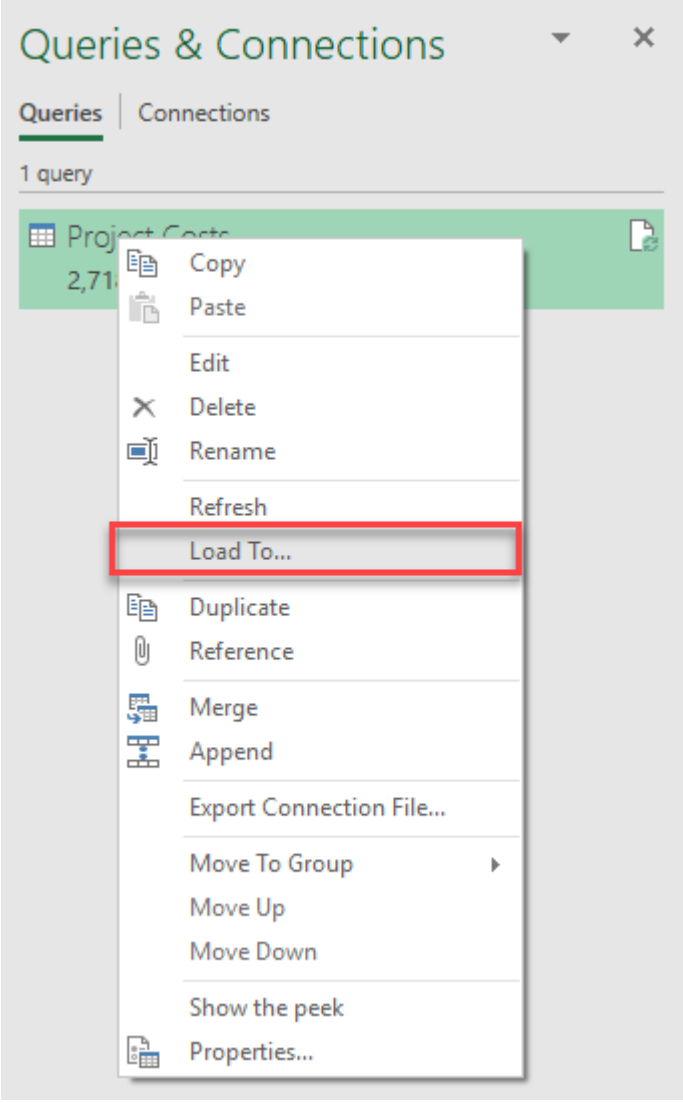
Changing where a query is loaded

If you accidentally load a query to the wrong place, it's easy to fix.

From Excel, ensure you have the Queries & Connections panel visible. This shows a list of all the data queries in your file. To display this, use one of the methods below:

- Excel 2010/2013: Power Query > Show Pane
- Excel 2016+: Data > Show Queries
- Excel 2016+: Data > Queries & Connections

Right-click on the query you want to change and select "Load to"



This brings up the Import Data dialog box where you can change the Load To options.

More Queries

Now that you've created your first query, let's bring in the same data sets as before.

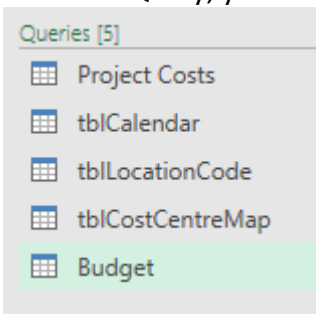
Following the process above, create new queries for:

- Locations
- Cost Centres
- Calendar
- Budget

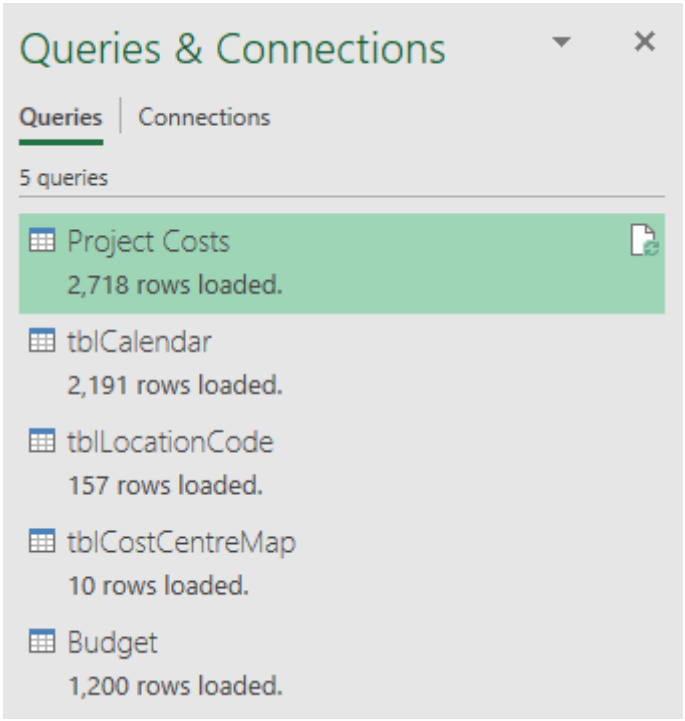
Ensure you follow the same steps we did previously, including unpivoting the budget data.

At the end of this process, you should have 5 queries in your file.

In Power Query, you should see the list of queries on the left-hand side:



In Excel, you should see the same list of the right-hand side:

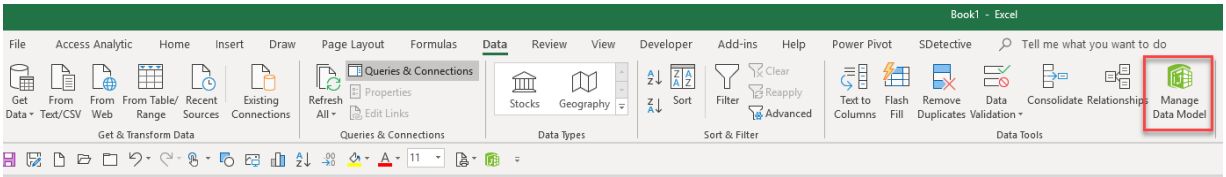


Power Pivot in Excel (the Data Model)

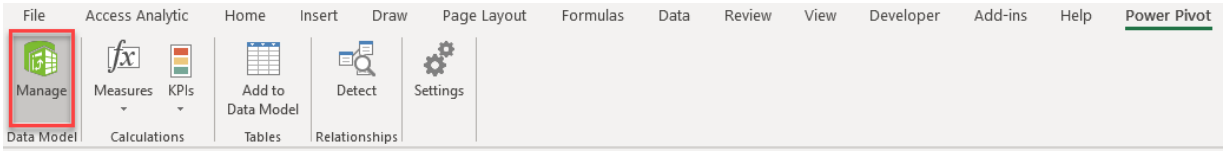
Now that we've loaded all these queries into Excel, we need to go into the data model to see them and create relationships.

From either the Data ribbon or the Power Pivot ribbon (depending on your version), click the **Manage Data Model** button.

Excel 2016 Data Ribbon:



Excel 2016/2013/2010 Power Pivot Ribbon:

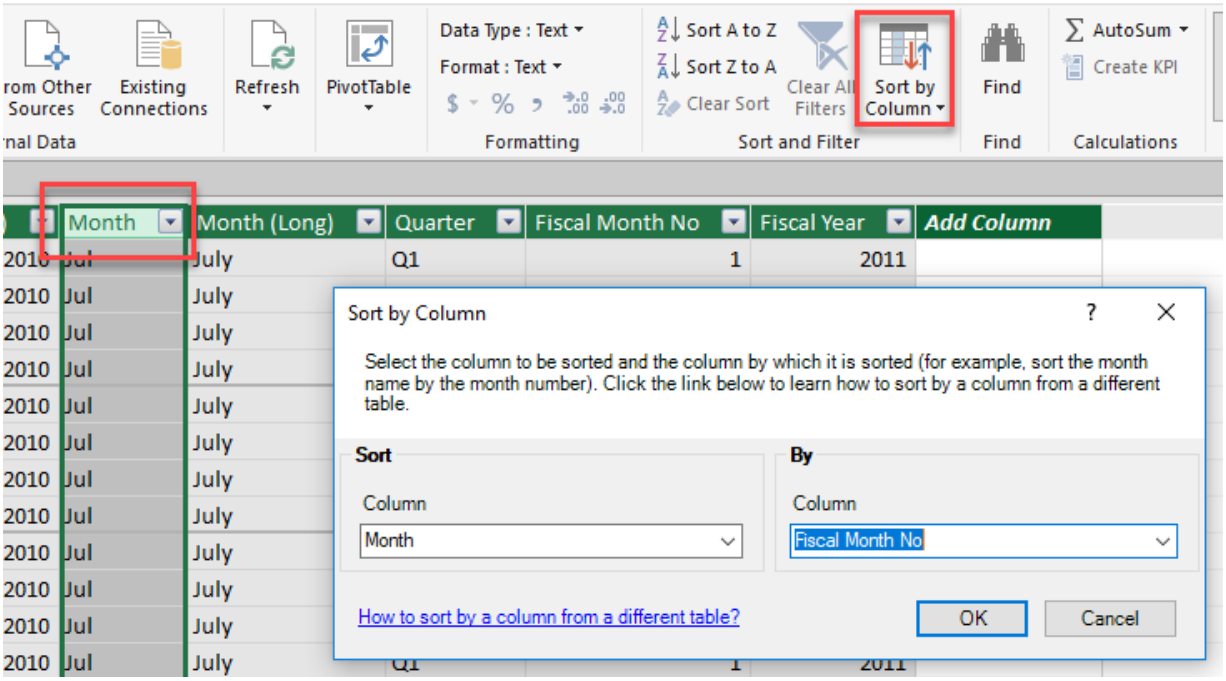


You are now viewing the Power Pivot data view. This view is equivalent to the Data view in Power BI and works very similarly.

Each query is displayed like an Excel sheet so you'll see all your query names along the bottom of the screen.

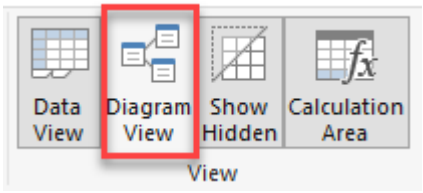
Use this screen to browse your data, add calculated columns using DAX, sort one column by another and more.

While we're here, let's sort the Month column by the Fiscal Month Number column in our Calendar.

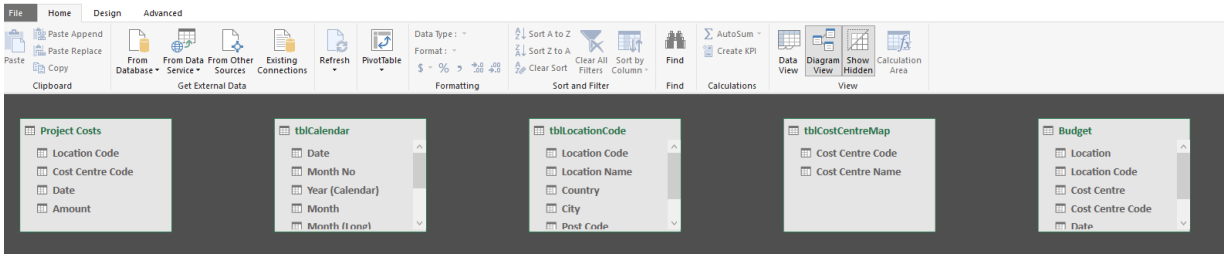


Creating Relationships

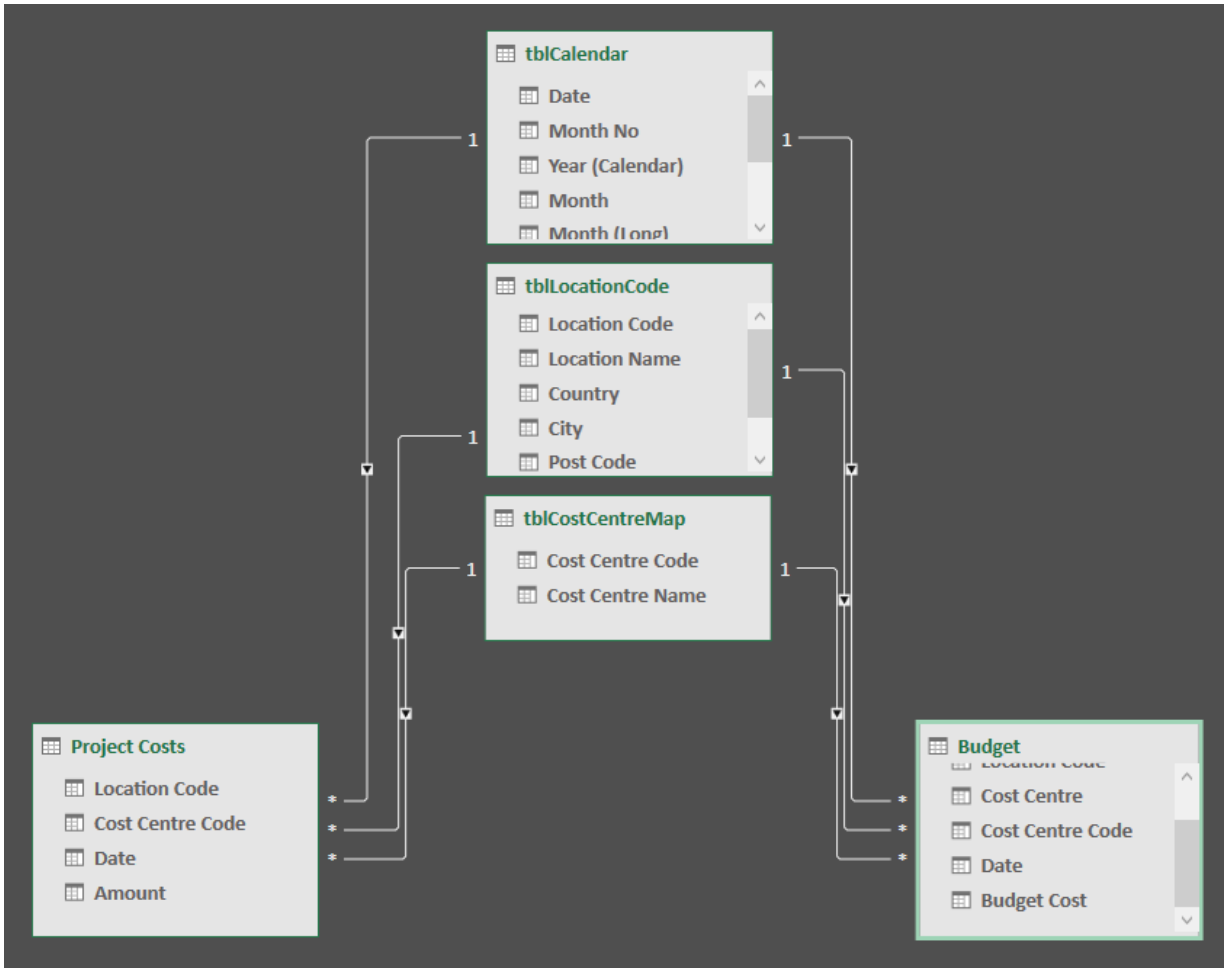
On the right-hand side of the Home menu, you'll see a **Diagram View** button. This is where we go to create relationships and is equivalent to Power BI's Relationship or Model view (the name depends on the version).



Excel's Diagram View isn't quite as helpful as Power BI's since it doesn't join the data sets up automatically for us. It also places all the data sets in a line across the top of the page. Often, if you can't find a data set you've just added, just scroll across to the right.



Let's re-arrange the tables and create our relationships, the same as before:

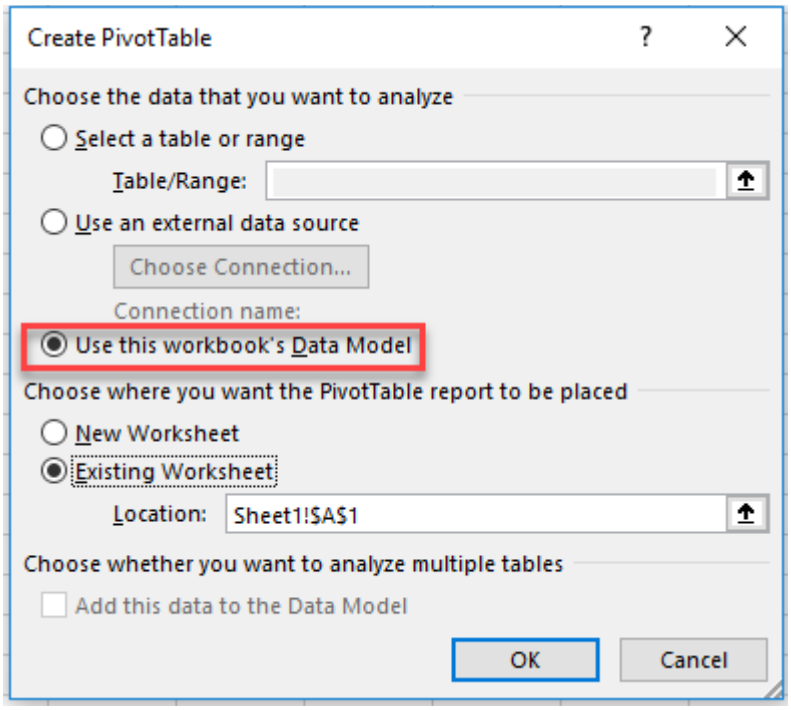


You can close the Power Pivot window at any time (this just returns you to Excel) or leave it open if you have two monitors and want to continue making changes.

Reporting in Excel

To create reports in Excel that use the data stored in the data model, you need to create Pivot Tables and/or Pivot Charts.

In earlier versions of Excel, the only way to do this was using the Pivot Table button in Power Pivot. In more recent versions, when you go to Insert > Pivot Table, Excel defaults to use the file's data model as the source for the Pivot Table.



Because of the relationships you've created between the data sets, you can now create reports similar to what we did in Power BI.

Here's an excerpt from a Pivot Table. See if you can re-create this using your data sets.

	A	B	C
1			
2	Fiscal Year	2014	
3			
4	**Row Labels**	**Sum of Amount**	**Sum of Budget Cost**
5	**Darwin JV**		
6	Administration	236.6	270169.5
7	Completion	0	308223.25
8	Drilling	58555.39	264592.5
9	Geological & GeoPhysical		183330.75
10	Land & Leasing	2482.61	150184
11	Seismic		140497.25
12	Write-offs		-98697.75
13	**Melbourne Field**		
14	Administration	301502.45	378768.25
15	Completion	4972555.41	299498.5
16	Drilling	7806684.58	274677.5
17	Geological & GeoPhysical	876.54	132775.25
18	Land & Leasing	177193.36	144405.5
19	Seismic	4011.98	165380
20	Write-offs		-152954.75

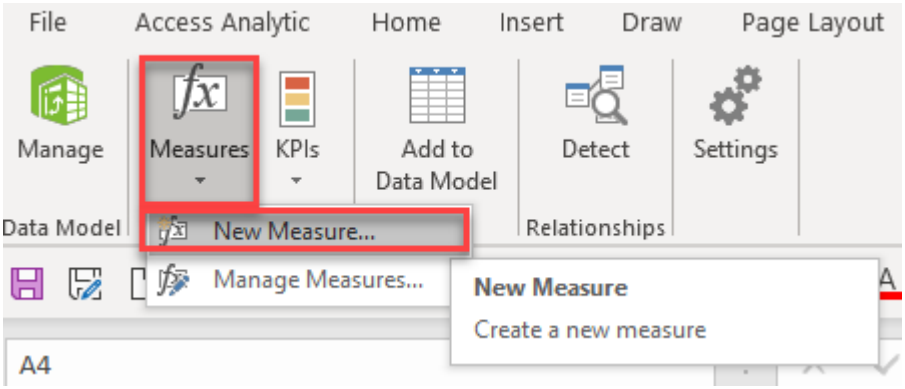
Measures in Excel

Like Power BI, Excel also allows us to create measures using the DAX language.
Measures Table.

Most things work identically between the two, although there are a few differences too.

Let's create measures for our Total Actuals and YTD Actuals, then place these into our Pivot Table.

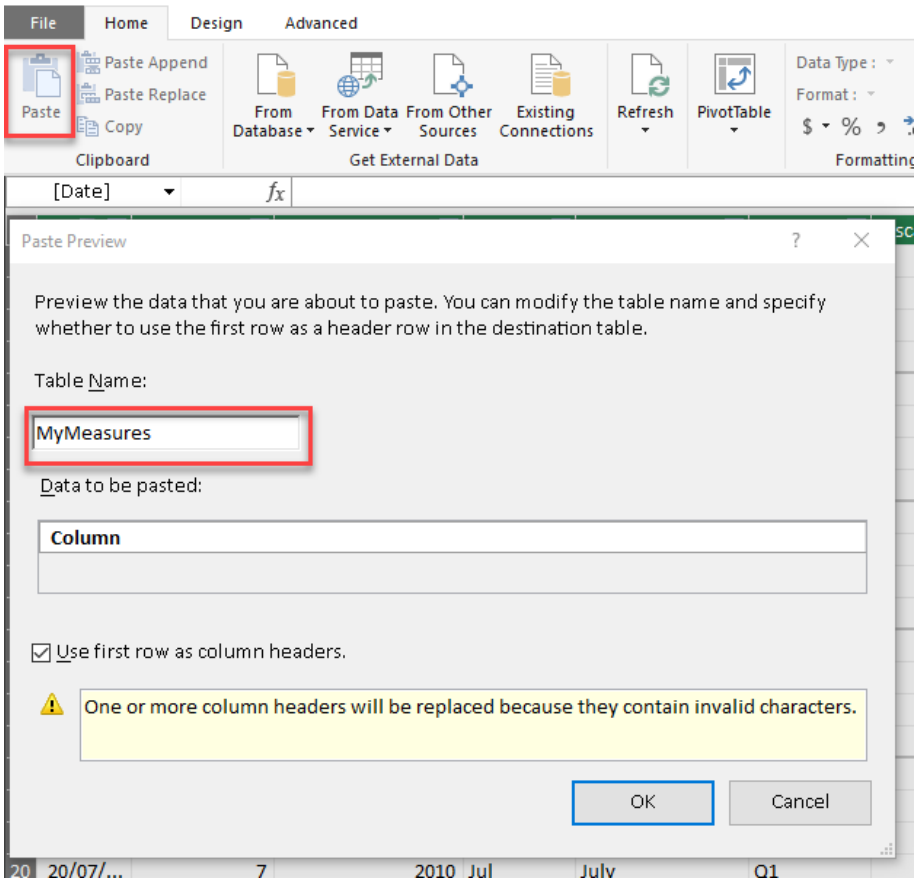
To create a measure in Excel, go to **Power Pivot > Measures > New Measure**



Creating a MyMeasures Table

The simplest way to create a measures table in Excel is to:

- Copy a blank cell
- Go into **Manage the Data Model**
- Click the **Paste** button (but DON'T press Ctrl+V)



This creates a blank table into which you can place all your measures.

SAVE YOUR FILE

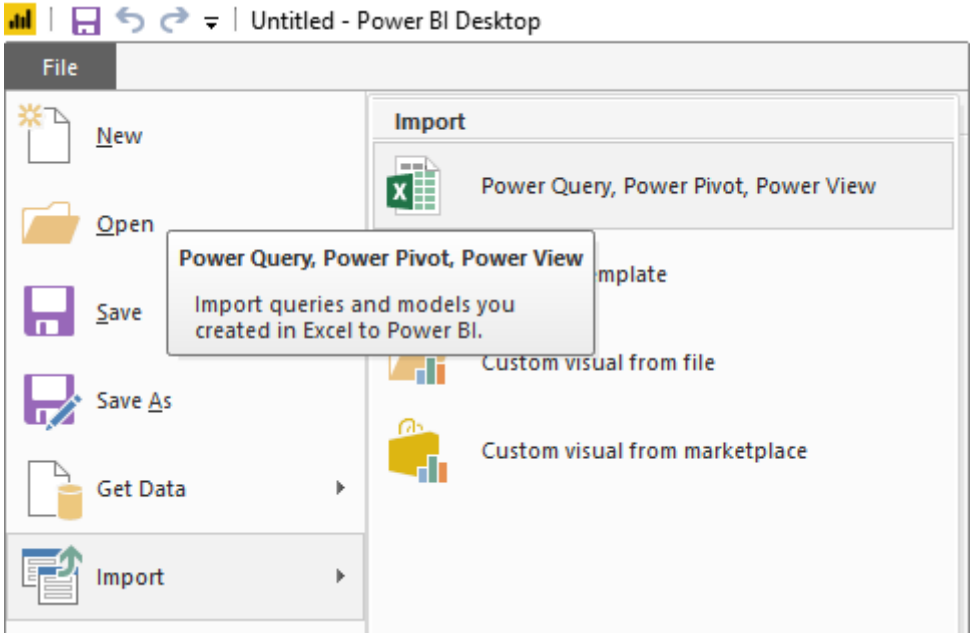
Importing an Excel Model into Power BI

One more great thing about Power BI (as if you needed anymore!) is that it allows you to import a data model from Excel.

This means that if you want, you can start doing a model in Excel (e.g. because your users aren't quite ready for Power BI), then once they're comfortable with using the data model you've built for them, you can easily transfer it into Power BI.

Power BI imports all the queries, relationships, calculated columns, and measures from an Excel data model. The only things it doesn't import are your Pivot Table reports and charts.

From Power BI, you start with a new Power BI file, then simply go to **File > Import > Power Query, Power Pivot, Power View**



The only thing you'll need to do is re-arrange your tables in the Relationship (or Model) view.

Note that this is completely different to doing a new query to extract data from an Excel file. Here, you are importing the entire data model from Excel.

8 Best Websites for Help

Google away….

Then look out for these websites:

Website	Comment
https://accessanalytic.com.au/blog	Tips, Tricks and Helpful demos
https://Power BI.microsoft.com/en-us/guided-learning/	Useful bitesize videos for Power BI.com
https://Power BI.microsoft.com/en-us/documentation/Power BI-service-get-started/	End to end guide of Power BI.com
https://www.youtube.com/channel/UCFp1vaKzpfvoGai0vE5VJ0w	Guy in a Cube -a wealth of Power BI info
https://PowerBI.tips/	Power BI Tips and Tricks
http://www.excelguru.ca/	Ken Puls: Excel legend – co-author of M is for Data Monkey (Power Query)