We have Recommended reading this month with the advent
of Recommended Files for Excel, PowerPoint and Word. But that's not all: there is news on the demise of Internet Explorer, more functionality for Power Query on a Mac and details of increased file upload sizes for Microsoft 365 subscribers.

Then there are all the regulars. We have another Beat the Boredom Challenge, Charts & Dashboards, Visual Basics, Power Pivot Principles, Power Query Pointers, Power BI updates, Keyboard Shortcuts and one of the most useful Excel functions of them all that no one seems to know: **FORMULATEXT**.

As always, happy reading and remember: stay safe, stay happy, stay healthy.

Liam Bastick, Managing Director, SumProduct

Recommended Files

Microsoft Office now displays a list of recommended files on the File tab, or start page, of Word, Excel, or PowerPoint on Windows. This list allows you to keep track of work around you and quickly access files with activity you value most such as edits, mentions, comments by people you interact with.
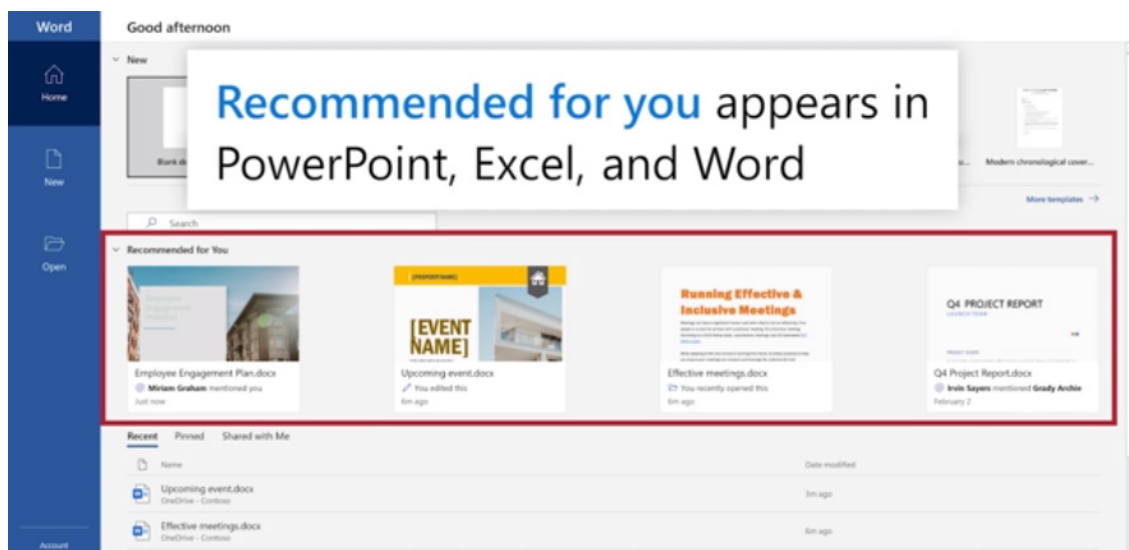
This feature uses machine learning to predict which files you're most likely to want to work on next and presents those as a set of cards you can choose from. It should be noted though that only files that you have access to in OneDrive or SharePoint are suggested. That's probably why I don't have any!
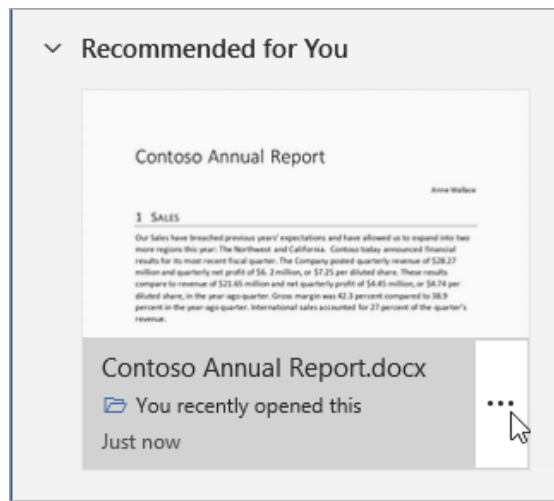
You do have a couple of things you can do to adjust how recommended files appears for you.

Remove a file from the list

It should be noted that the following does not delete the file from your system, it simply removes it from the Recommended list.

For the file you want to remove:

- hover over the card for the file you want to remove
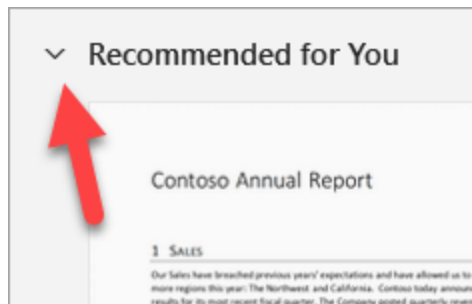- select the More options button (…)

- select 'Remove from list'.

Office will replace the card with a card for the next best Recommended file.

***Collapse the Recommended section***

The Recommended section is shown expanded by default. You can choose to minimise (or maximise once more) this section by clicking on the arrow to the left of the 'Recommended for You' section title.

The button is a toggle so if you click it the section will collapse and if you click it again it will re-expand.

Recommended files in Office has been available on Office.com and Office for Mac for a while and is now coming to Office on Windows, although it is currently available on Windows to Office Insiders on business or Enterprise subscriptions only.

Import Data from Local Files using Power Query in Excel for Mac
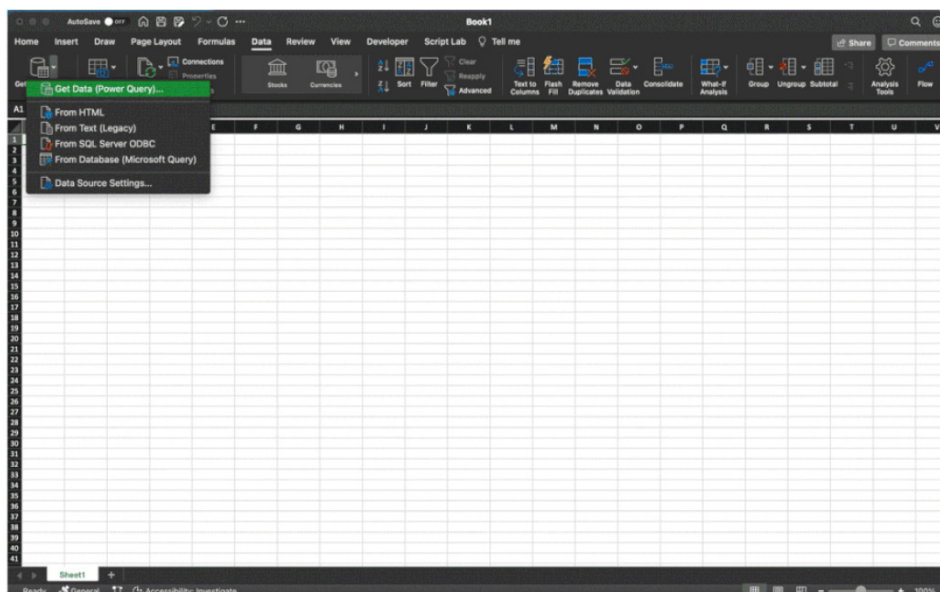
Just before the publishing deadline hit for this newsletter, we are pleased to hear that there is new update to Power Query (PQ) in Excel for Mac – the ability to import data from local files.

Now you can import data from local files including Excel workbooks, text and CSV files. This new functionality is available to Beta channel users running version 16.50 (build 21050400) or later.

To import data from local Excel workbooks, text or CSV files (note: it's not *everything* yet):

- click Get Data (Power Query) on the Data tab
- select Excel workbook or Text/CSV in the Choose data source dialog box
- click Browse to select the local file
- select the data you want to import and click the Load button.

Larger File Size Upload Limits

This has been around a while now, but has had little fanfare, so trumpets at the ready…

With the advent of "working from home" the new COVID-19 norm, remote work and learning has increased significantly. This means there is now a greater need to reliably and securely share large files, such as 4K or 8K video files, 3D models, CAD files, photographs or even Excel files (!) with co-workers, clients and peers.

Since the end of March *allegedly* (!), Microsoft has made it easier to store, synchronise and share large files in Microsoft 365. The company has increased the upload file size limit for Microsoft 365 from 100 GB to 250 GB, which includes uploads of files into SharePoint, Teams and OneDrive.

Microsoft has achieved the 250 GB limit by optimising storage for upload performance—each file is split into chunks and each piece is encrypted with a unique key. All your files are backed up in Azure Storage, ensuring high availability and performance. You can easily upload and download your large files when you need them, where you need them.

With something called **differential sync**, only the changes that you and your collaborators make are synchronised, shortening the amount of time it takes you to synchronise, helping improve performance and reducing network utilisation.

Death of Internet Explorer

The Internet Explorer 11 (IE11) desktop application will be retired on **Wednesday 15 June 2022**.

Microsoft has stated that the future of Internet Explorer on Windows 10 is in Microsoft Edge, and that Internet Explorer mode (IE mode) provides legacy browser support within Microsoft Edge. This means that the IE11 desktop application will no longer be supported and afterwards will redirect to Microsoft Edge if a user tries to access it.

If your organisation has legacy sites and applicationss with Internet Explorer dependencies, your business will need to set up IE mode so that users can access them through Microsoft Edge.

Beat the Boredom Challenge

*With many of us currently "working from home" / quarantined, there are only so Zoom / Teams calls and virtual parties you can make before you reach your (data) limit. Perhaps they should measure data allowance in blood pressure millimetres of mercury (mmHg). To try and keep our readers engaged, we will continue to reproduce some of our popular **Final Friday Fix** challenges from yesteryear in this and upcoming newsletters. One suggested solution may be found later in this newsletter. Here's this month's…*

Imagine you have data as follows:

In this example, I have certain "amounts" for each item, and each item has been 'auto-numbered' using the formula

=SUBTOTAL(103,$G$13:$G13)

which is a great formula to use for autonumbering <u>visible</u> data. For example, if I highlight all of the data, go to the 'Data' tab on the Ribbon and click on 'Filter' in the 'Sort & Filter' grouping (**ALT + A + T**), I can select 'USA' in the 'Country' filter as follows:

Data

Item Number	Country	Amount
		55
		70
		57
		31
		79
		37
		19
		53
		32
		73
		56
		84
		80
		12
		10
		71
		76
		74
		30
		70
		17
		45
		61
		88
		80

Filter dropdown menu contents:
- A↓ Sort A to Z
- Z↓ Sort Z to A
- Sort by Color ▸
- Clear Filter From "Country"
- Filter by Color ▸
- Text Filters ▸
- Search 🔍
- ▣ (Select All)
  - ☐ Australia
  - ☐ China
  - ☐ India
  - ☐ UK
  - ☑ USA
- OK   Cancel

Item No. 26	Australia	84
Item No. 27	China	54
Item No. 28	India	72

and I will get

Data

Item Number	Country	Amount
Item No. 1	USA	79
Item No. 2	USA	73
Item No. 3	USA	10
Item No. 4	USA	70
Item No. 5	USA	80
Item No. 6	USA	63

See how the auto-numbering accommodates the filtering? Anyway, it's a nice, useful trick but it distracts from this month's conundrum…

Let's imagine you want you to select 'Australia' from the 'Country' field:

Data

Item Number	Country	Amount
Item No. 1	Australia	55
Item No. 2	Australia	37
Item No. 3	Australia	56
Item No. 4	Australia	71
Item No. 5	Australia	17
Item No. 6	Australia	84
Item No. 7	USA	63

Huh? How come 'USA' is now part of the filtered 'Australia' subset? I assure you I selected all of the data for filtering – so what went wrong and how can you correct it?

Sound easy? Try it. One solution just might be found later in this newsletter – but no reading ahead!

Charts and Dashboards

It's time to chart our progress with an introductory series into the world of creating charts and dashboards in Excel. This month, we look at the elements of a chart.

The range and quality of the charts Excel provides are excellent generally. However, there will almost always be items within the chart you wish to change. Sometimes it may just be simple things like fonts, text sizes or colours, and other times it might be something more complex, like adding or formatting titles, legends or gridlines, or changing the axes scales or positions. Thankfully, Excel makes performing these changes quite simple and many are applicable to almost every chart style.

Before looking at the various modification options, it is important to understand the structure of a chart. Every chart will have a Chart Area, Plot Area, a Title and at least one data series, but other elements either vary from chart to chart or are optional. Below is an illustration showing the typical chart elements:
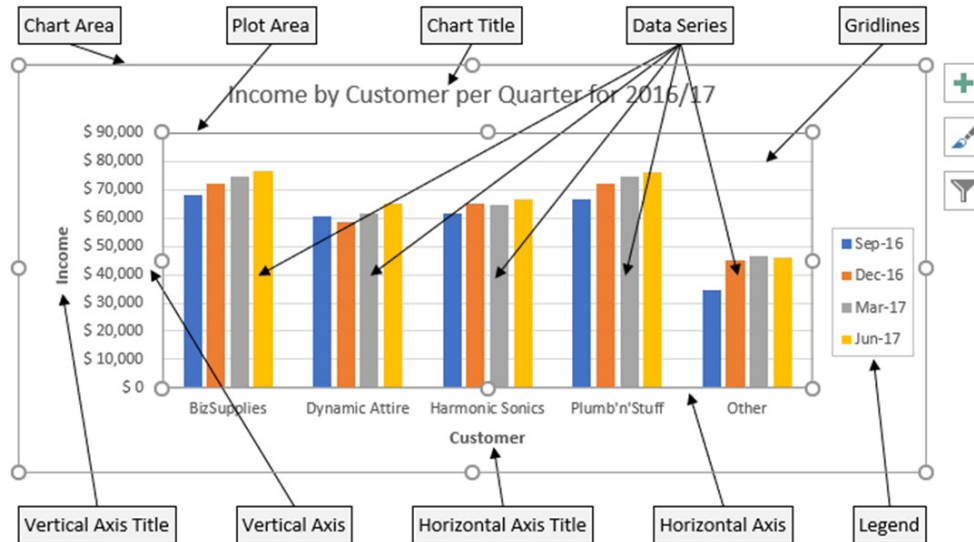
Note the little circles on the corners and midway along each side of the Chart Area and Plot Area. By holding my mouse on these markers, I can resize the chart and the plot area within the chart.

If I click and hold my mouse over the border of a chart element, I can move it. Let's say I want the Legend inside the chart, I would just single click on the legend and a circle marker appears on the outside of the Legend. I can then 'grab' the legend by clicking and holding on the border of the Legend and move it inside the chart. I can also resize the legend using the markers. Note that not all chart elements can be moved, and if I accidentally move an element, I can perform an Undo (or **CTRL + Z**) to return it back to its previous position.

There are also three symbols on the right of the chart. The plus sign button enables me to add, remove or change chart elements. The paint brush button allows me to set a style or apply a colour scheme to my chart. The funnel button gives me the ability to apply filters, thereby

setting what data points and names are displayed.

To change the formatting for any of the chart elements, one of the easiest ways is simply to right click on a chart element. A menu will then appear showing the various options I have to format the chosen chart element.

For example, if I want to change the background colour of the Plot Area, I would select the 'Plot Area' then right click and choose 'Format Plot Area', and a panel appears on the right side of the screen, allowing me to change the Fill and Border of the 'Plot Area', as well as many other options.
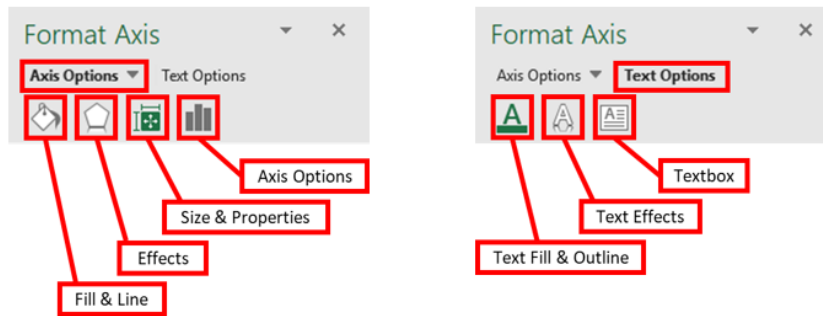
Let's say I want the background of the chart to be shaded from green at the top to white at the bottom, I would change the Fill to 'Gradient Fill', specifying the colours I want and the direction of the shading.
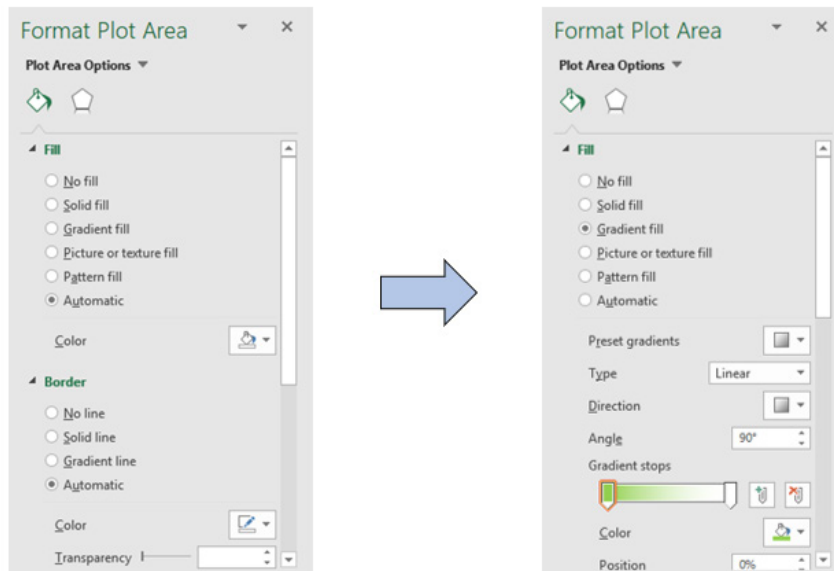
These panels of options are organised into groups, depending on the chart element I have chosen. For the 'Plot Area', under the heading of 'Plot Area Options', there are two groups, namely 'Fill & Line' and Effects.

Format Plot Area

Plot Area Options ▾

Effects

Fill & Line
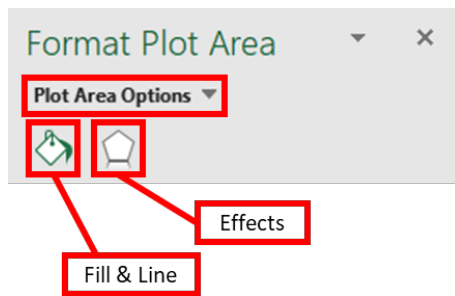
For Axis, there are two headings, being 'Axis Options' and 'Text Options', and under each there are multiple option groups.

Format Axis

Axis Options ▾   Text Options

Axis Options

Size & Properties

Effects

Fill & Line

Format Axis

Axis Options ▾   **Text Options**

Textbox

Text Effects

Text Fill & Outline

As I go through the chart elements, I also apply some modifications to the chart:

- changing the fonts and font sizes of the titles and axes
- changing the line and border colour of the Chart Area, the Plot Area and the Gridlines
- adding colour to the background of the Plot Area
- moving, resizing and putting shadow on the Legend
- changing the colour of data series and applying lines around the data series columns
- reducing the gap between the data series columns
- modifying the units / scale for the axes.

I can achieve a customised chart to my preferences and needs.

Income by Customer per Quarter for 2016/17

Income by Customer per Quarter for 2016/17
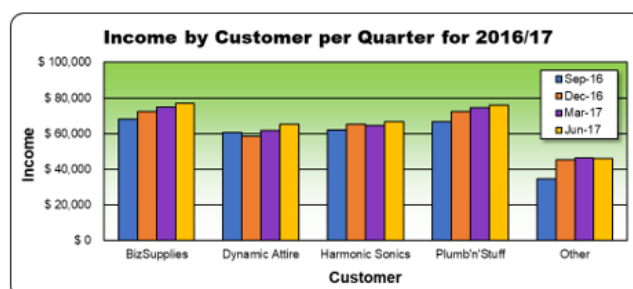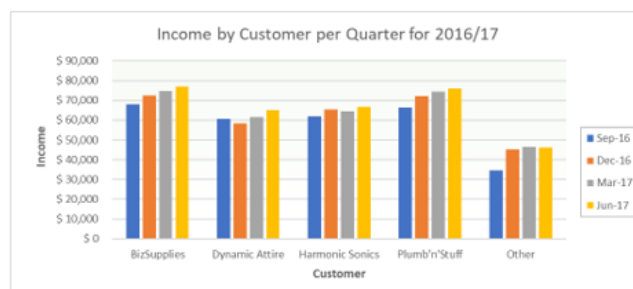
We'll continue next month…

Visual Basics

We thought we'd run an elementary series going through the rudiments of Visual Basic for Applications (VBA) as a springboard for newer users. This month, we look at scoping variables.

Last month's article examined the value of declaring variables. However, variables may also be used in different subroutines and functions. If there are items that are known to have constant values throughout the entire workbook, they can be declared explicitly in one place for easy reference.
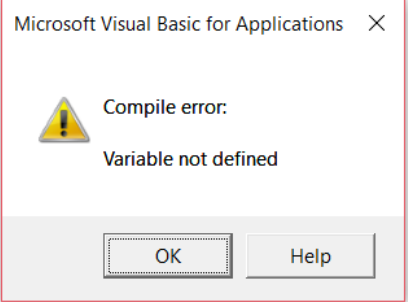
Let's examine how variables can be scoped according to the needs of the project. We'll start with a simple function:

```
(General)
    Sub ScopeTest()

    myTestString = "Hello World!"

    MsgBox myTestString
    |
    End Sub
```

Why is it always, "Hello World!"?

This shows that the variable is IMPLICITLY declared. However, to ensure that all variables are declared, at the beginning of the code the keywords "**Option Explicit**" are used:

```
(General)
    Option Explicit

    Sub ScopeTest()

    myTestString = "Hello World!"

    MsgBox myTestString

    End Sub
```

Microsoft Visual Basic for Applications ✕

⚠ Compile error:

Variable not defined

[OK]   [Help]

When the routine is activated, the VBA compiler issues an error message saying it is not defined. It must be defined by at least the **Dim statement** before it is run.

Let's make a new subroutine referencing **myTestString**:

```
(General)
    Option Explicit

    Sub ScopeTest()

    Dim myTestString As String
    myTestString = "Hello World!"

    End Sub

    Sub NextScopeTest()

    MsgBox myTestString

    End Sub
```
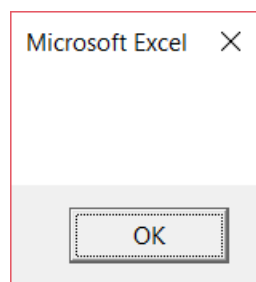
The declaration for the variable is in **ScopeTest**, but the subroutine calling it is not the one that defined it.
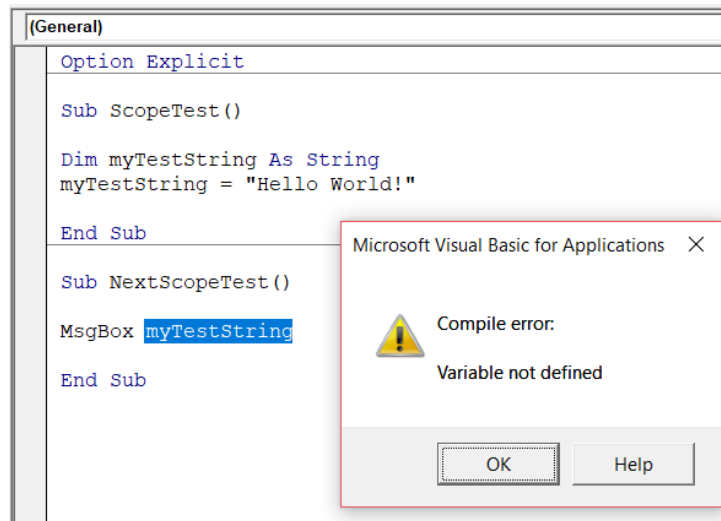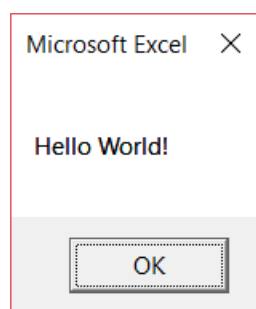

The "Variable not defined" message pops up again. Let's move the declaration OUTSIDE the subroutine, under the "**Option Explicit**" statement as follows:
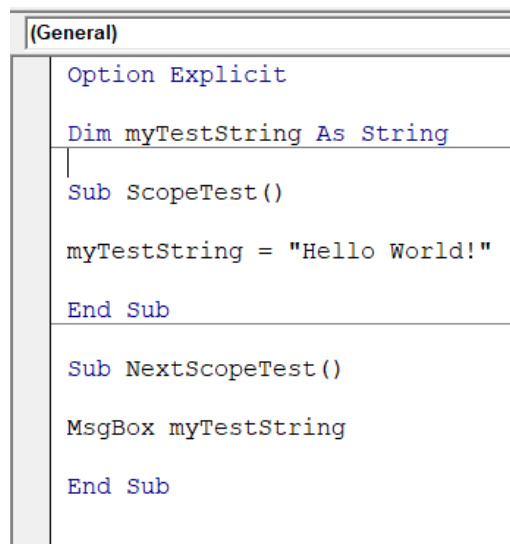
When **NextScopeTest** is run the following happens:

However, if **ScopeTest** is run prior to **NextScopeTest** then we get:

These graphics show that the variable is accessible to the entire module and is changed as required. The **Dim statement** outside any subroutines means the variable is accessible within the module that it is declared in.

You may notice that sometimes the '**Private**' statement in declaration can be used. This is for module level sharing and identical to the **Dim statement**. Using the two is interchangeable and is more for more good coding practice. Using **Private** makes the code much more reasonable and draws to the eye immediately the scope of the variable.

Let's move on. What if another module wants to reuse the same variable?
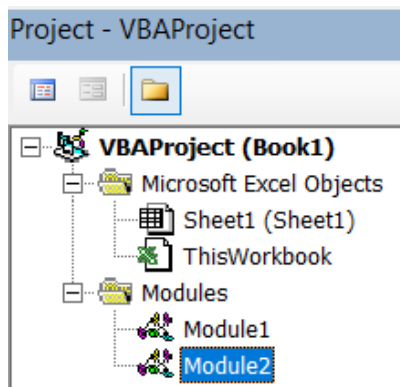
Module2 wants to use **myTestString**, but it is declared in Module1.
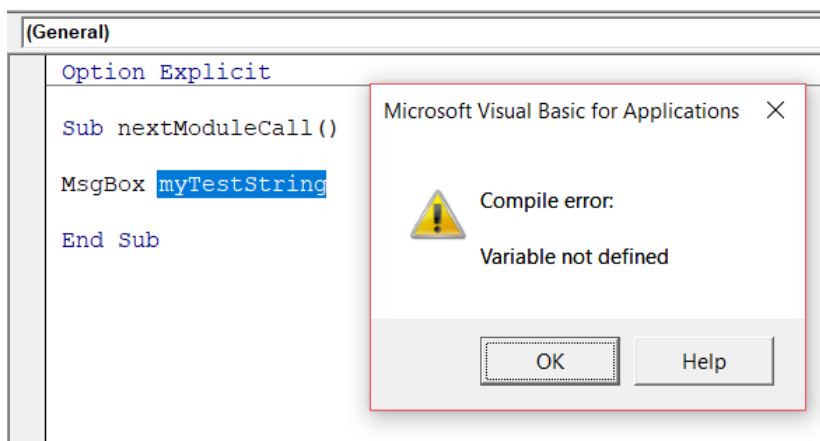
Upon running, it again says "Variable not defined". In order to force a variable to be accessible to the entire workbook, the '**Public**' statement may be used:
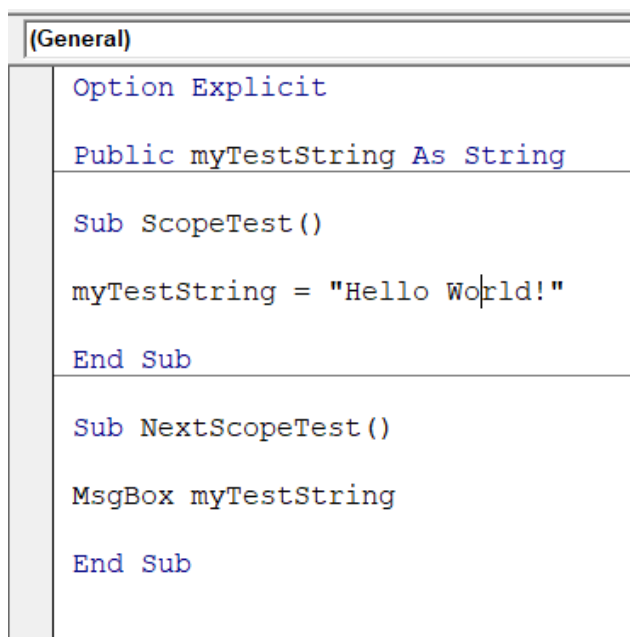
And now this will be accessible from Module2, so that when the following code is called,

```
(General)

    Option Explicit

    Sub nextModuleCall()

    myTestString = "Hello other world!"

    MsgBox myTestString

    End Sub
```

the variable is used as necessary and the expected response happens.
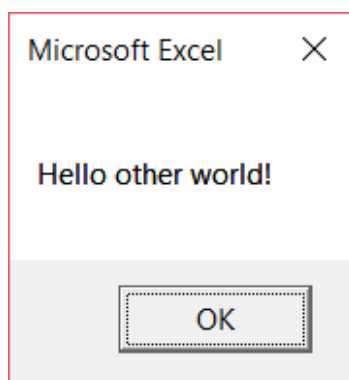
Be careful though. It's not actually a good idea to maintain public variables between function calls. It is much better coding practice for variables to be stored in subroutines and functions and passed as parameters. There shouldn't be any expectation for the VBA Project to maintain any values for variables. This is because that there are lots of things that can cause a VBA project to reset whilst using the workbook. All public variables will get reset.

Another reason is that if multiple projects are open, other projects can call upon the variable as well which could lead to very interesting results.

Save the heartache, avoid public variables. It's not just the stereotypical nightmare about appearing naked in public; variables get scared too!

There are more options for declarations that you might see including "Friend" and "Protected". However, this is done at the Class level which are essentially the Objects of VBA. which is out of scope for this month!

More next time.

Power Pivot Principles

We continue our series on the Excel COM add-in, Power Pivot. This month, we consider the Calendar table.

When analysing data, it is important to be able to access past financial information so that comparisons can be made over a time period. To allow us to perform comparisons more easily, we should utilise what is known as a **Calendar table**. A Calendar table is a date table that links in with the dates in our data. It is vital to have such a table in many types of relational database systems, including Power Pivot.

Before we begin to create our Calendar table, there are two important points to remember:

1. ensure that the start date in the Calendar table is before or on the earliest start date in your data model and end on or after the last date in your data model
2. dates must be contiguous (no gaps in days), in ascending order with no duplicates.

Let's create our calendar table manually in Excel, first create the following headings:

- Date
- Day
- Month Year
- Day of Week
- Month Name (Long)
- Month Name (Short)
- FY
- Qtr (CY)
- Qtr (FY)
- Weekday No.

Highlight the table headings and convert the range into a Table (**CTRL + T**):

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2		Date ▾	Day ▾	Month ▾	Year ▾	Day of Week ▾	Month Name (Long) ▾	Month Name (Short) ▾	FY ▾	Qtr (CY) ▾	Qtr (FY) ▾	Weekday No. ▾
3												

Name the Table 'Calendar' in the 'Properties' group of the context-specific 'Table Tools, Design' tab of the Ribbon. We can now enter the following formulae under each heading:

- Date: Ensure the start date is before or on the earliest date contained within the data model
- Day: **=DAY([@Date])**
- Month: **=MONTH([@Date])**
- Year: **=YEAR([@Date])**
- Day of Week: **=TEXT([@Date],"dddd")**
- Month Name (Long): **=TEXT(MONTH([@Date]),"MMMM")**
- Month Name (Short): **=TEXT(MONTH([@Date]),"MMM")**
- FY: **=YEAR([@Date])+IF(MONTH([@Date])>=7,1,0)** *(assumes June financial year-end)*
- Qtr (CY): **=ROUNDUP([@[Month]]/3,0)**
- Qtr (FY): **=MOD([@[Qtr (CY)]]-3,4)+1**
- Weekday No: **=WEEKDAY([@Date],2)**

Our Table should be populated as follows now:

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2		Date ▾	Day ▾	Month ▾	Year ▾	Day of Week ▾	Month Name (Long) ▾	Month Name (Short) ▾	FY ▾	Qtr (CY) ▾	Qtr (FY) ▾	Weekday No. ▾
3		01/01/2019	1	1	2019	Tuesday	January	Jan	2019	1	3	2
4		02/01/2019	2	1	2019	Wednesday	January	Jan	2019	1	3	3
5		03/01/2019	3	1	2019	Thursday	January	Jan	2019	1	3	4
6		04/01/2019	4	1	2019	Friday	January	Jan	2019	1	3	5
7		05/01/2019	5	1	2019	Saturday	January	Jan	2019	1	3	6

The next step is to add this table to Power Pivot and ensure the table is still called 'Calendar'.

With the Calendar table highlighted navigate to the 'Design' tab and select 'Mark as Date Table'.
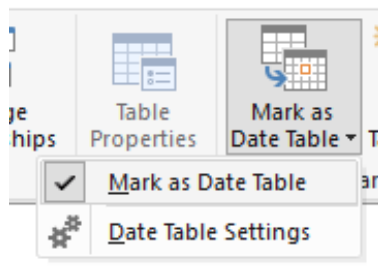
When creating new PivotTables from our Power Pivot data, we should always use date sources from the Calendar Table. In fact, if you always call your date field in the Calendar table 'Date', then any time series function in DAX requiring a date should cite **Calendar[Date]** – simple!
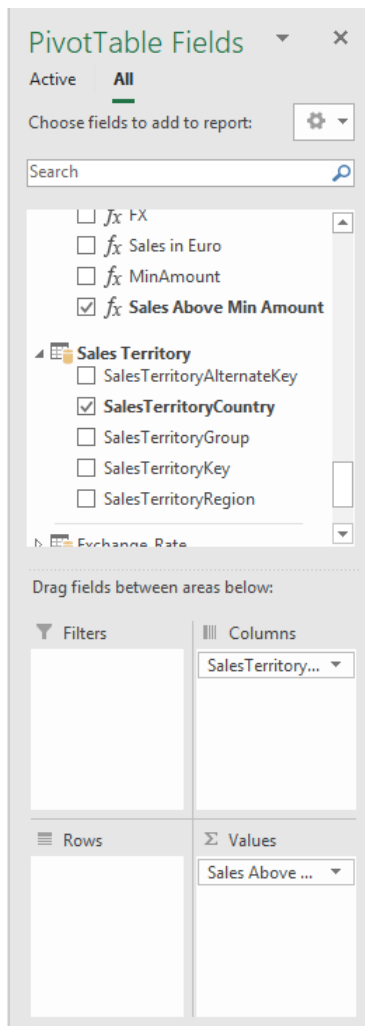
Create a PivotTable with fields from any table in the data model, then use the date fields from the Calendar Table.


It is important to use the Calendar Table because all of the time intelligence functions (for example, the **DATESYTD** function) require the contiguous dates to function properly.

More *Power Pivot Principles* next month.

Power Query Pointers

Each month we'll reproduce one of our articles on Power Query (Excel 2010 and 2013) / Get & Transform (Office 365, Excel 2016 and 2019) from www. sumproduct.com/blog. If you wish to read more in the meantime, simply check out our Blog section each Wednesday. This month, we look at the 'Query Options' screen and how it might be useful.

The 'Query Options' screen is on the 'Data' tab and may be found at the bottom of the dropdown when selecting 'New Query'.
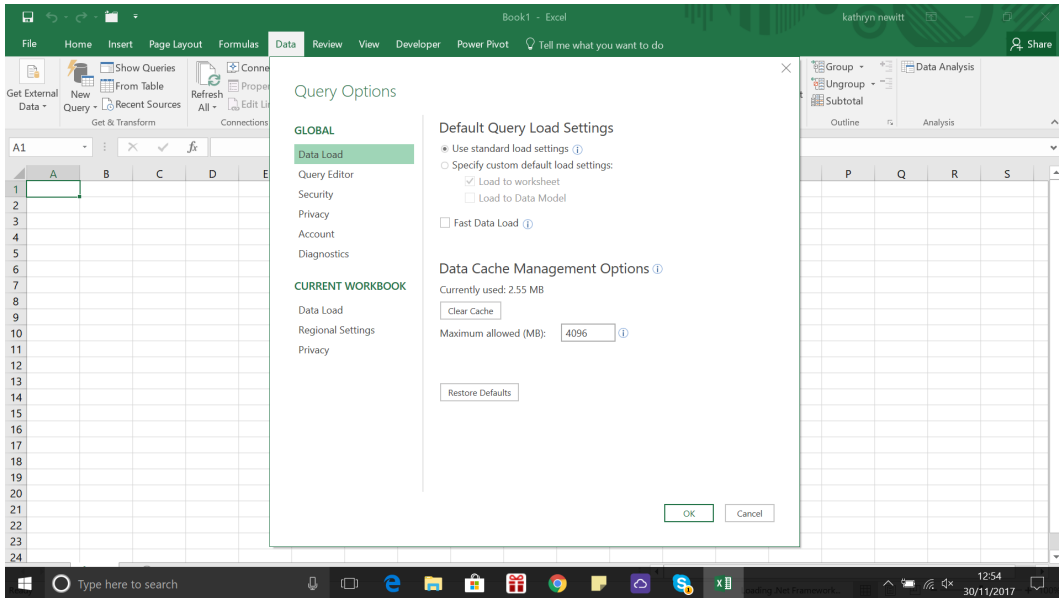
The screen gives you control over how your queries are created, either globally or in your current workbook, depending upon which tab you choose. Taking it from the top, 'Use standard load settings' sets the default action for where queries should be loaded:

- for single queries, the default is to load to a new worksheet
- for multiple queries, the default is to load to the data model.

You may choose to specify the defaults instead, but in any case, we can override this when we are actually loading a query.

'Fast Data Load' can also be set for individual queries in the 'Query Properties' screen (for more on this, please refer to Power Query: Managing Many Queries). Microsoft describes the fast data load setting below, which means it depends how quickly you need the information from your query and whether you are happy to let Excel hang in the meantime!

The default behaviour is "Background Data Load", but now users can instead choose the "Fast Data Load" mode in the Options dialog. When

loading a query using the "Fast Data Load" mode, your query will take less time to load, however, Excel may be unresponsive for long periods of time during the upload.

The 'Data Cache Management Options' basically show me the current size and limit of the cache and allows you to clear the cache and change the limit. Caches generally speed up retrieval and this is no exception: copies of query preview results may be held here for faster access. Whilst the maximum size can be controlled, it's not recommended to go below 32 MB.
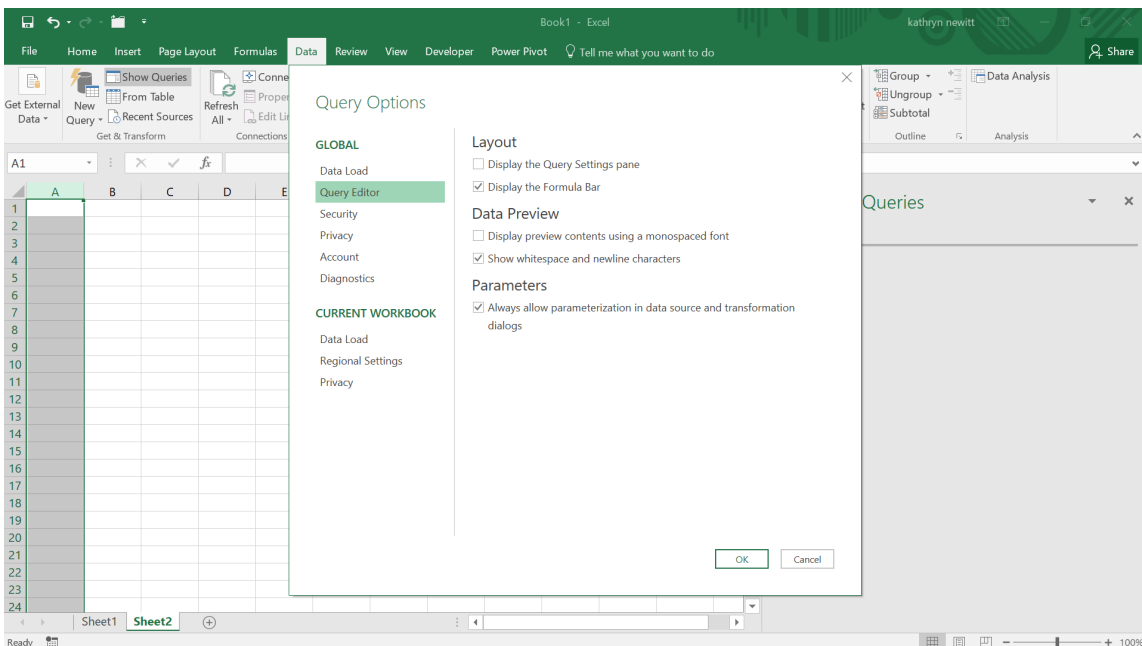
The 'Query Options' screen is mostly to do with how the Query Editor appears. The 'Parameters' section is interesting and deserves more explanation. If you enable 'Always allow parameterization…', then you may use the functionality associated with parameters from your query without first creating a parameter. As more experienced users, we often switch this on, but someone who was going to stick to simple queries probably wouldn't. For more on parameters, please see Power Query: Passing Through Parameters.
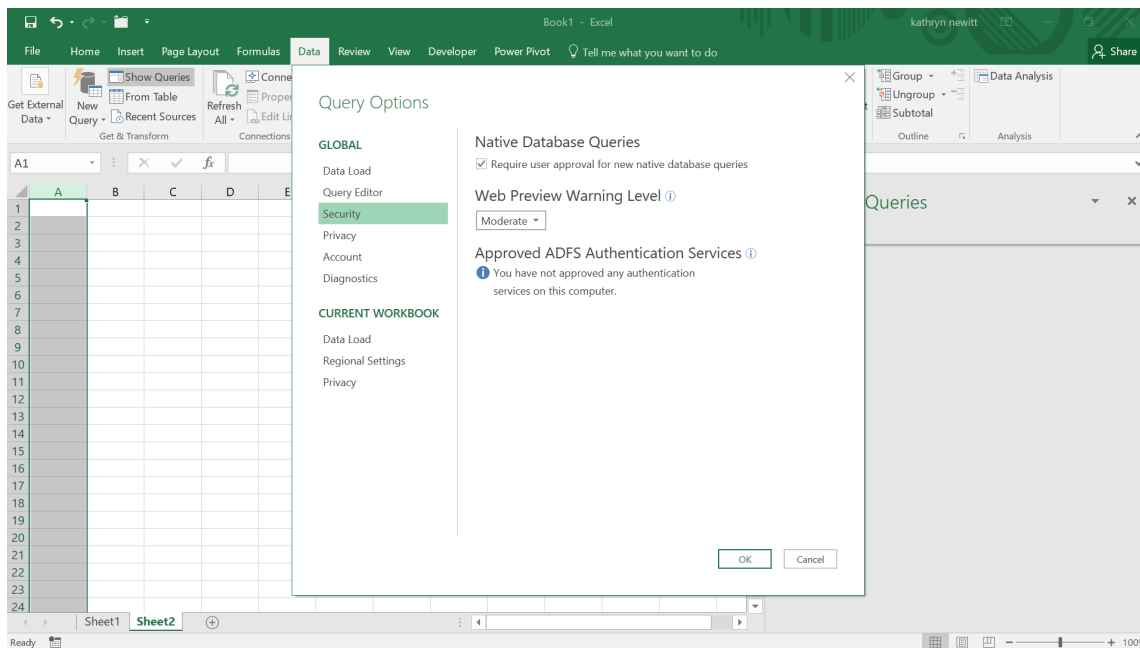
The next tabs are to do with protecting data. Requiring approval for new database queries is a sensible precaution, and warning users if they select a website that has not been approved as trusted or entered explicitly makes sense. We keep these default settings. I haven't approved any ADFS authentication services, but if I did, they would appear here.

Privacy levels are concerned with protecting my data sources and require a complete explanation – for this reason I will not try to simplify it. Microsoft explain the levels and how to combine them here so that this article doesn't have to! You may choose to specify privacy settings globally and for my current workbook.

I am not going to show the Account tab, as that is part of my privacy settings (hard luck)…
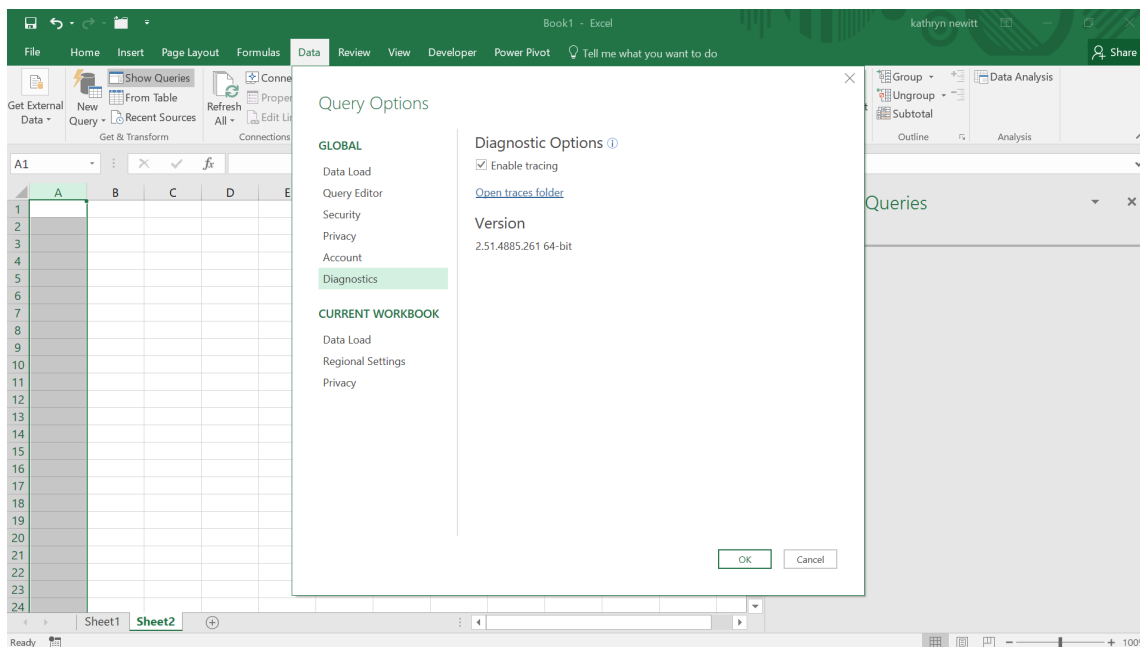
Diagnostics can be used if serious problems are encountered in Excel. I have created a simple query just to show what is created in the trace file. Any open Excel session will write to trace files until the session that has enabled tracing is closed or tracing is disabled. The screen helpfully tells you where the trace files are kept by letting you access the folder. One of my trace files is shown below:
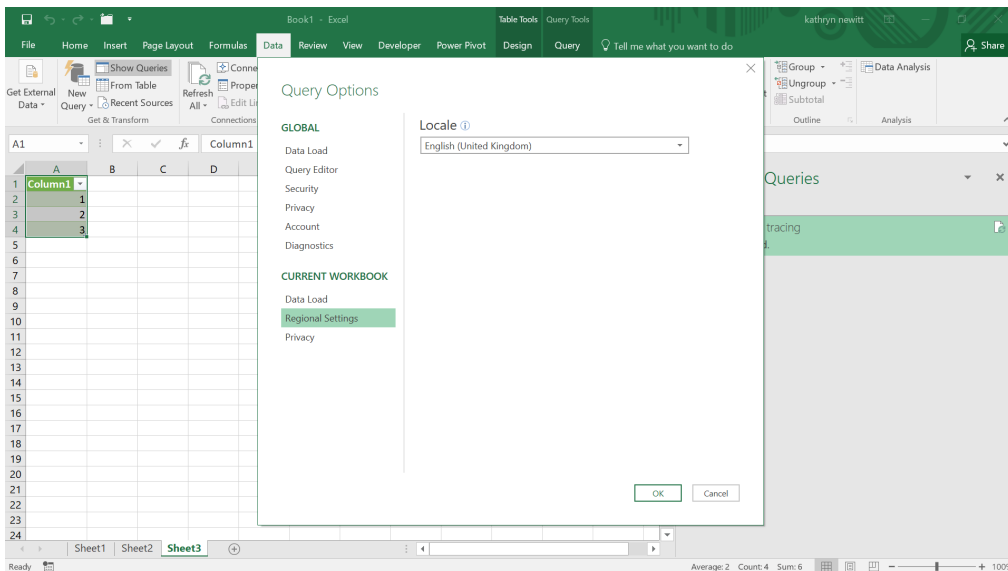
It's coming to a theatre near you soon.

It is essentially a list of steps, but it's used mainly to locate an error if there is a problem.

Finally, you may set the locale for your current workbook on the 'Regional Settings' tab. This influences how dates and times are interpreted as data is extracted. This may be useful if you are dealing with data from other locations where dates are presented differently (for example, if you are based in the UK and deal with US data). This only affects the query, not the underlying Excel workbook.
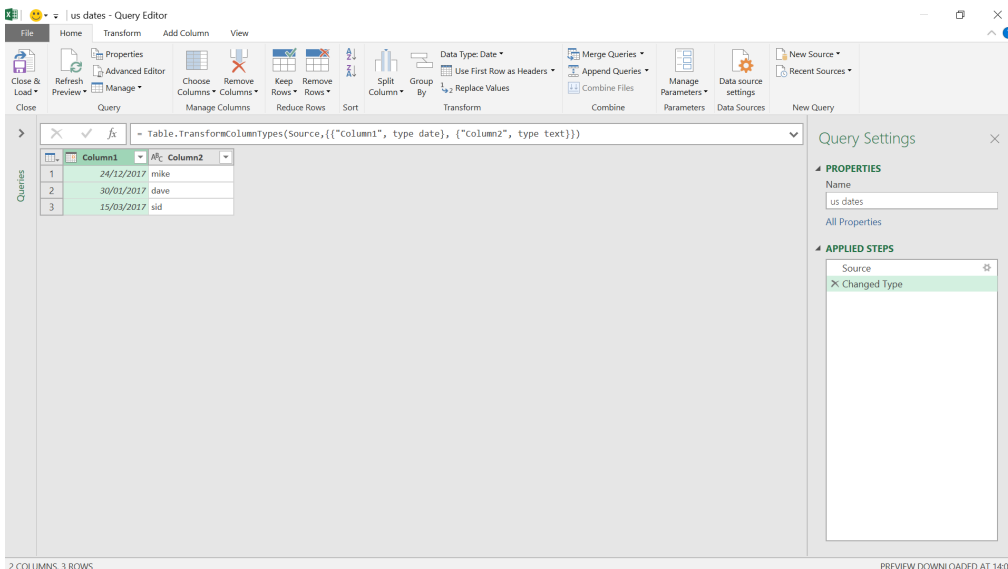
In the screenshot above, I have imported from my US file with my locale set to English (United States), and Power Query recognises that I have dates, as shown by the assumed data type. I can now load my data.
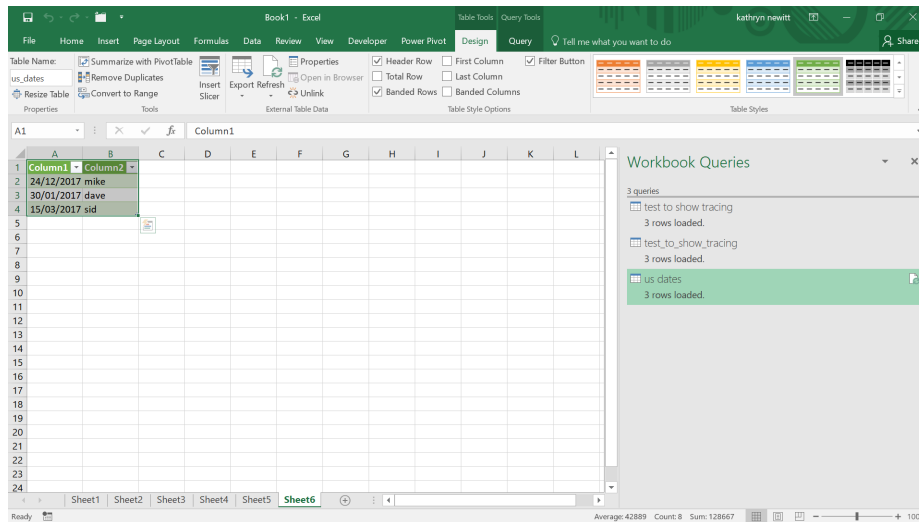
As I have my location set as English (United Kingdom) in Excel, the date is now shown in the correct format for me.
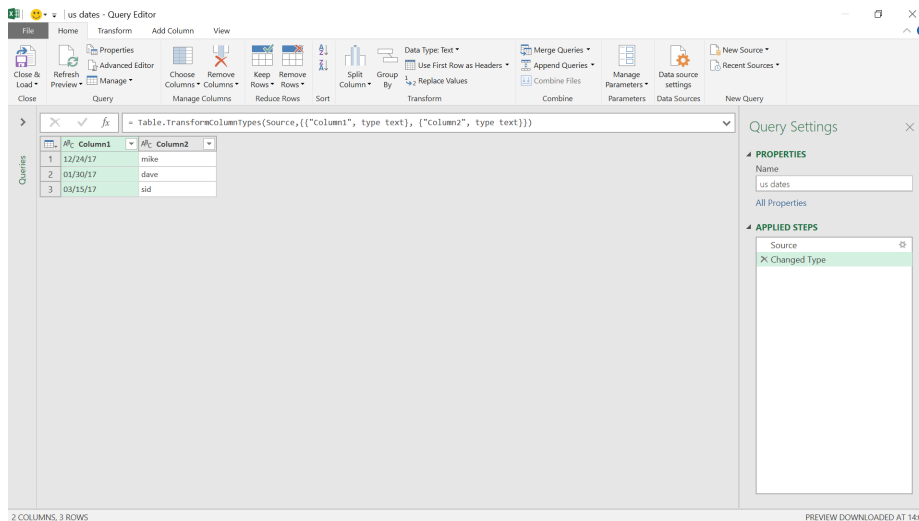
In the image above, I have set my locale back to English (United Kingdom) and extracted my data again. This time, the date fields appear as data type text because Power Query has not recognised this data as dates.
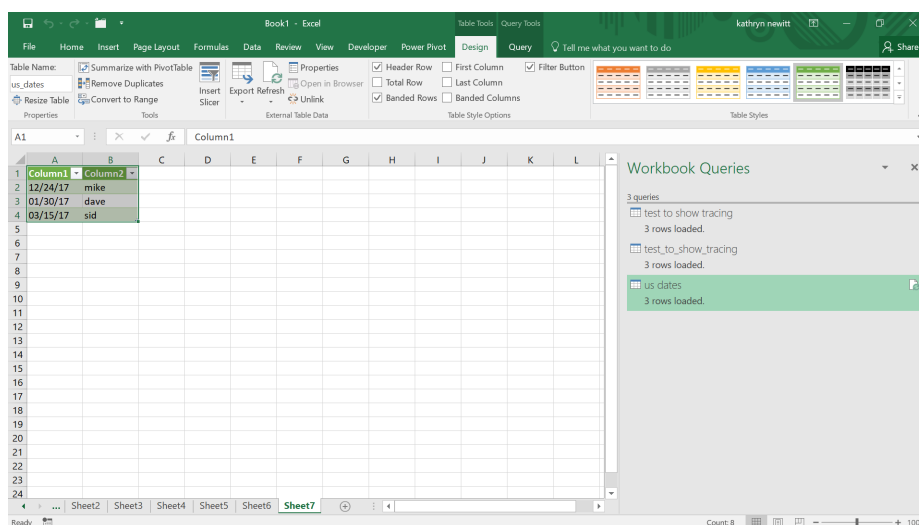
When I load to my spreadsheet, the dates are not shown correctly. Therefore, locale can be useful when I am using sources from other regions.

More next month!

Power BI Updates

This month's updates include a new Preview of visual ToolTips, an ability to quickly create reports from SharePoint lists and an update on sensitivity labels so that they are now inherited "downstream". But there is more, of course!

The full list reads as follows:

Reporting

- Modern visual ToolTips Preview
- Small multiples: now on by default and updated roadmap (Preview)
- New Field List is now Generally Available
- Support for removing the sensitivity label in Power BI Desktop

Analytics

- Smart Narratives and Anomaly detection are now Generally Available
- Q&A now supports DirectQuery for Power BI datasets and Azure Analysis Services

Modelling

- DirectQuery for Power BI datasets and Azure Analysis Services now in Preview
- Model View updates

Data Connectivity

- New connector: EQuIS
- Connector update: Automation Anywhere
- Connector update: Vena
- Connector update: Azure Databricks
- Connector update: Amazon Redshift
- Connector update: Vertica
- Connector deprecation: Microsoft Graph Security

Service

- Quickly create reports from SharePoint lists (Preview)
- Reports, apps and dataflows endorsement now Generally Available
- Datasets hub improvements

- Quick Edit Paginated Reports from the Service
- Single sign-on enabled for new on-premises data sources for paginated reports
- Downstream inheritance for sensitivity labels in Preview

Mobile

- Work side by side with other apps on your iPad or Android tablet

Visualisations

- New visuals
- ADWISE roadmap v2.0
- Bubble chart by Akvelon
- Cycle Plot by Nova Silva
- Drill Down Donut PRO by ZoomCharts
- Drill Down Map PRO by ZoomCharts
- Drill Down Pie PRO by ZoomCharts
- graphomate charts 2021.2
- graphomate matrix 2021.2

Template apps

- Dataflows Snapshot Analysis

Developers

- Dialog boxes support for Power BI custom visuals
- Displaying a warning icon for a custom visual

Other

- Share and Collaborate in Excel for the web connected to Power BI.

Let's go through each in turn.

Modern visual ToolTips Preview

This update sees a public Preview of the new visual ToolTips! These new ToolTips include datapoint drill actions and updated styling to match your report theme:
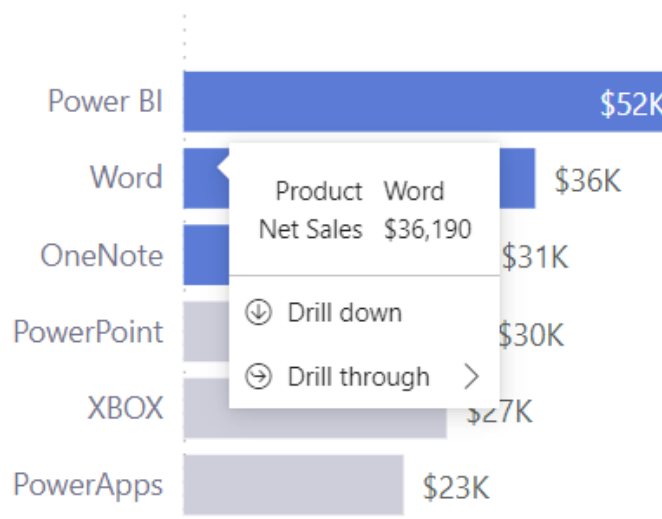
You can turn on this new ToolTip in Power BI Desktop by going to **File -> Options and settings -> Options -> Preview features -> Modern visual tooltips:**
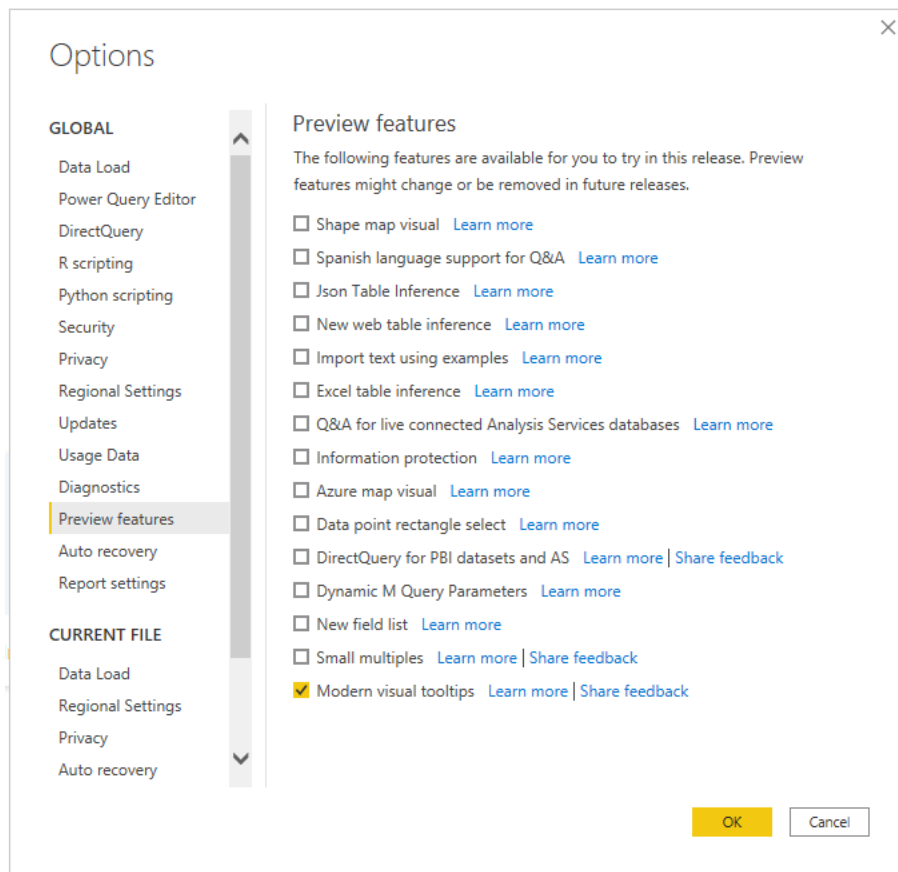
When you enable this Preview, all new reports will have the modern ToolTips enabled by default. However, to enable these new ToolTips for existing reports, you'll need to navigate to the 'Report settings' and turn on the 'Modern visual tooltips':
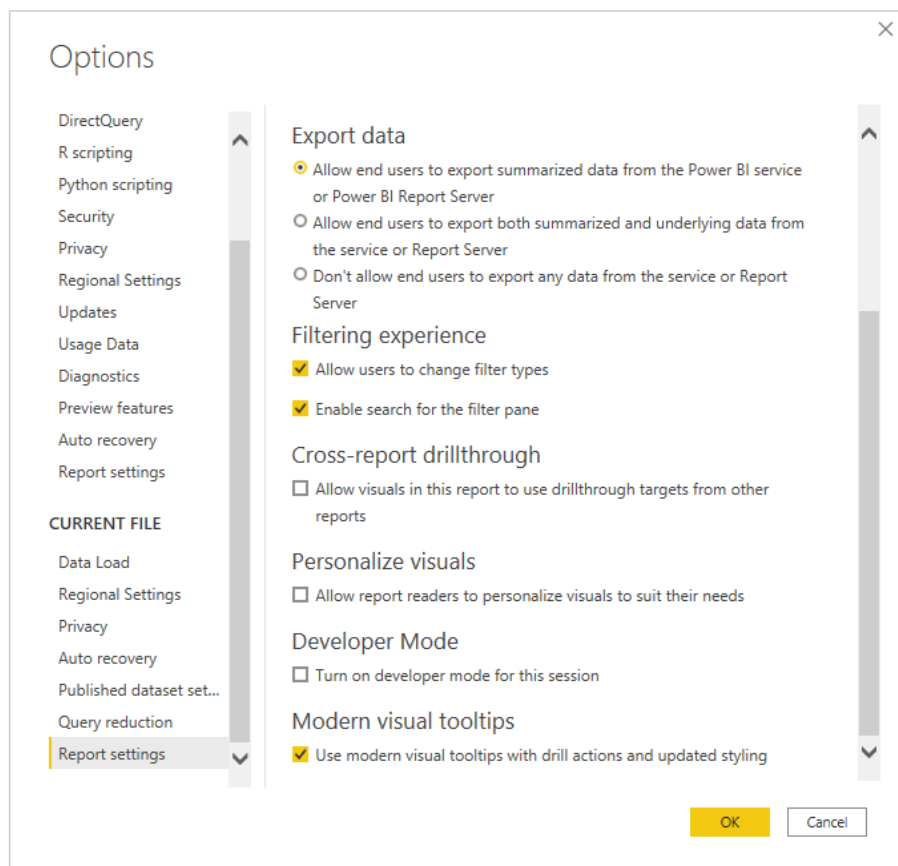
Once you enable these new ToolTips, you'll be able to drill down / up and drill through on a datapoint, without having to use the right-click menu or visual header. In this example, you can see the user is hovering over the Word datapoint, and they have the option to 'Drill down' on the datapoint or 'Drill through':
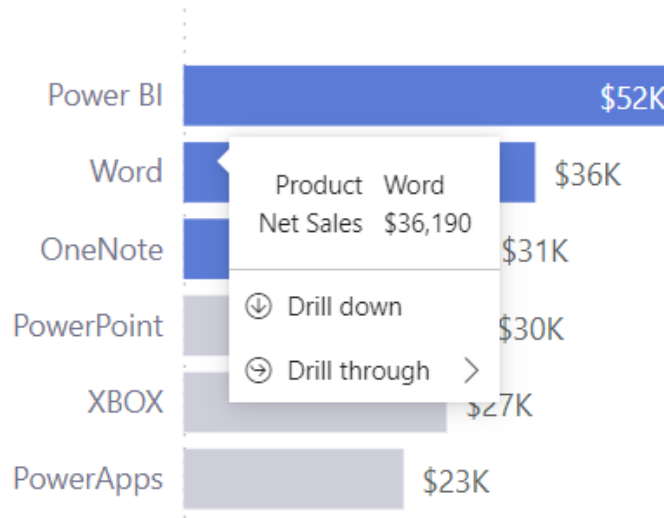
If the user clicks 'Drill down', the visual will update to display the next level in the hierarchy and filter to Word.
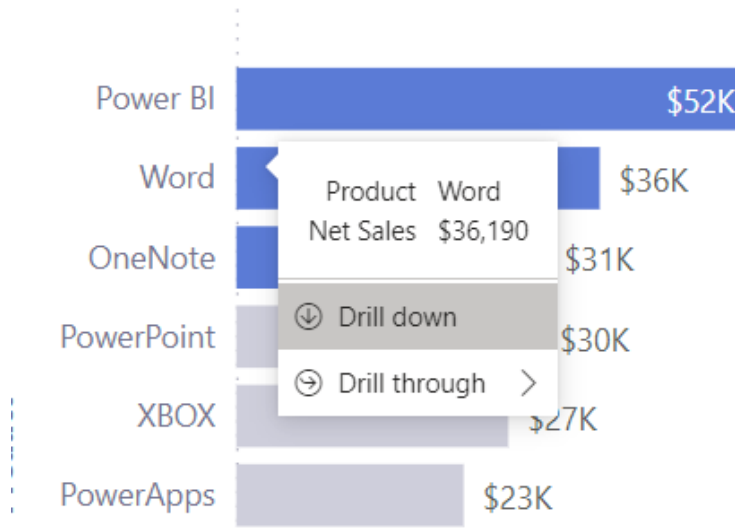
If the user selects 'Drill through', they will be able to see which pages they can drill through to:
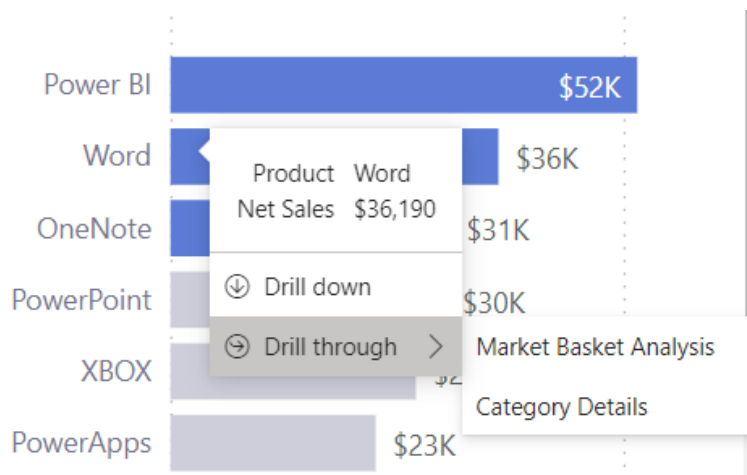
Selecting 'Market Basket Analysis' from the ToolTip will drill through to the 'Market Basket Analysis' page and filter the page to Word or any other filters on the source datapoint.

Once you upgrade to the new ToolTips, you'll also see that the colours for the ToolTips are now based upon the report's theme colours:

- the background of the ToolTips default to the 'Background elements'
- the text and icon colour of the ToolTips default to the 'First-level elements'
- the separator line and hover colour on the ToolTip default to the 'Secondary background elements'.

Here's an example of the styling for the Default theme:
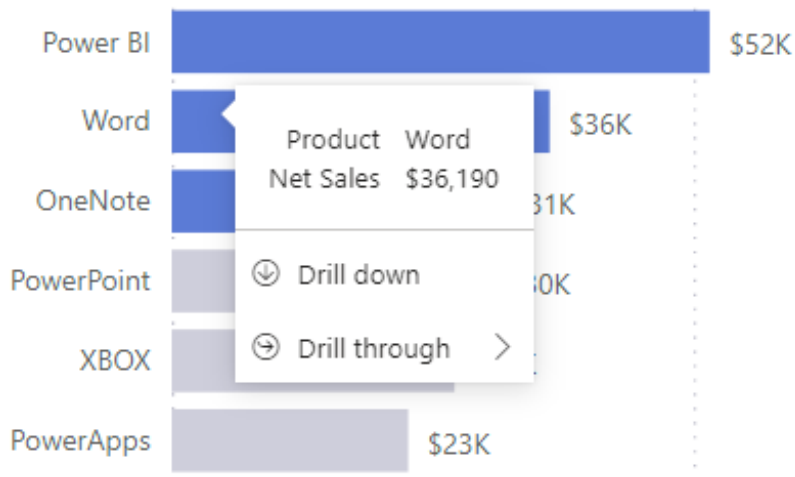
Here's an example with for the Innovate theme:
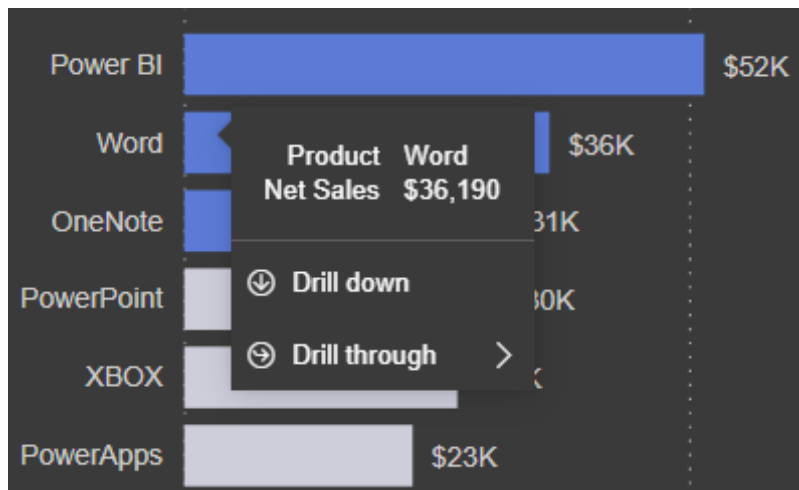
Here's an example with the Frontier theme:
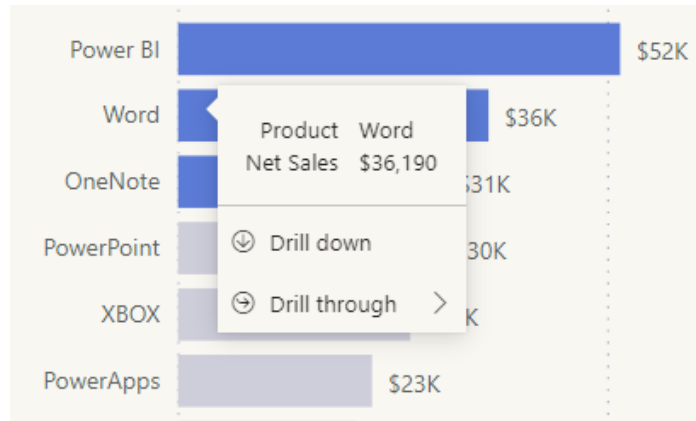
If you want to customise the styling further, you can always update the ToolTip theme in the 'Customize theme' dialog:
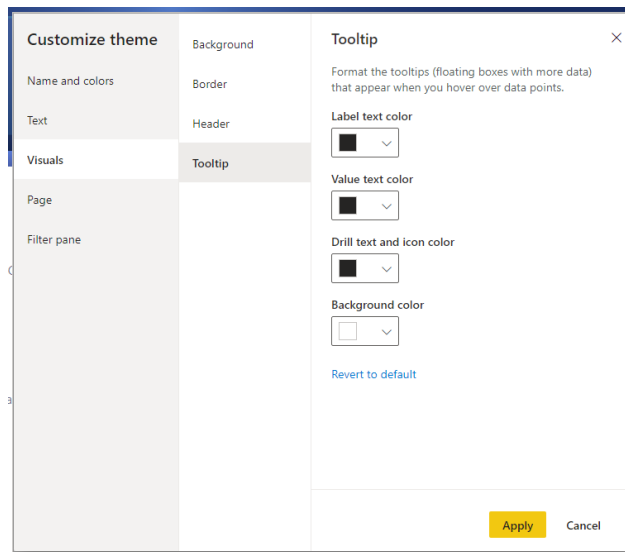
Additionally, if you want to format ToolTips per visual, you can customise the settings in the Format pane:
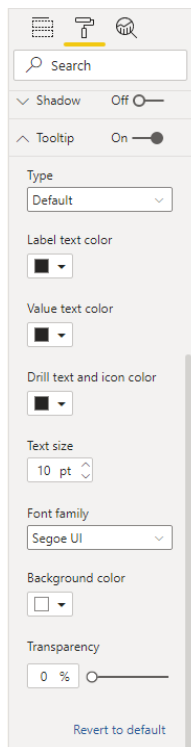
As great as they may be, currently, drill actions are not available in the ToolTip for the following scenarios / features:

- Report page ToolTips
- AppSource visuals (Custom visuals)
- Matrix visuals
- Line charts
- Area charts
- Stacked area charts
- Decomposition trees.

Presently, it's not possible to have visual-level control to turn on / off the drill actions for the ToolTips. To do this, you will need to enable / disable this capability at a report-level.

Small multiples: now on by default and updated roadmap (Preview)

The small multiples Preview feature is now enabled by default. This means it's "not quote Generally Available"! Microsoft has stated that they want to give it that "extra bit of discoverability as [they] continue our work on it, giving everyone a chance to find and try it out".

Additionally, this month, you can now set date hierarchies in your small multiple visuals to render as continuous axes. This is useful when using date hierarchies in line charts, for example, which will now allow you to see each line smoothly, without needing to scroll the axis horizontally.

New Field List is now Generally Available

The new Field List is now Generally Available for Power BI Desktop and will shortly be coming for Power BI Service too. This change will create consistency for functionality and user interface across views (where applicable) to address pre-existing customer feedback and confusion.

Support for removing the sensitivity label in Power BI Desktop

While removing sensitivity labels isn't something Microsoft recommends, this update has added this capability for customers who need to remove the label from the PBIX file. To remove a label from a file in Power BI Desktop, select the Sensitivity (Preview) button on the toolbar, and then click on the currently applied label (marked with a checkmark). This will deselect the label and remove it from the file.
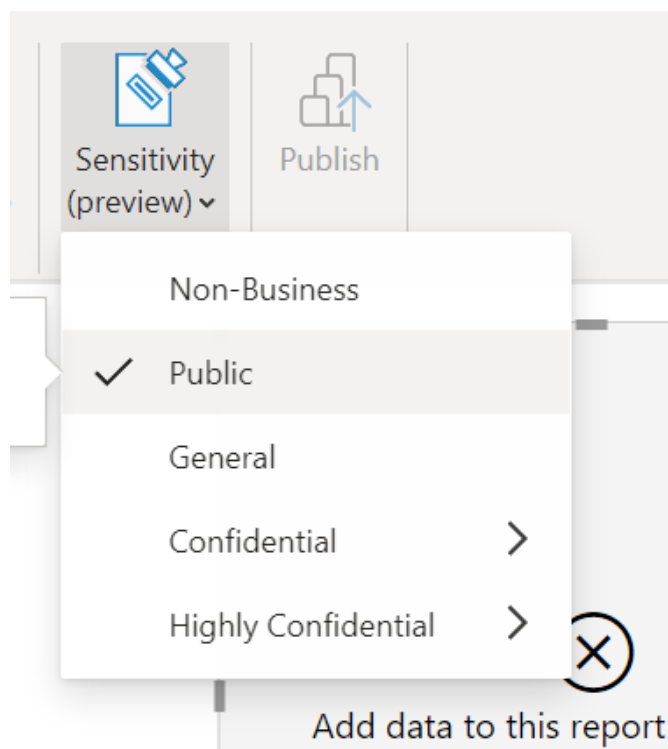
Smart Narratives and Anomaly detection are now Generally Available

Both Smart Narratives and Anomaly Detection are now Generally Available. Further, Smart Narratives now supports summarisation of more visuals such as Maps, KPI, Gauge, Card, Multi Card, Key Influencers and localisation for no less than 43 languages. Anomaly Detection and Smart Narratives are now fully accessible.
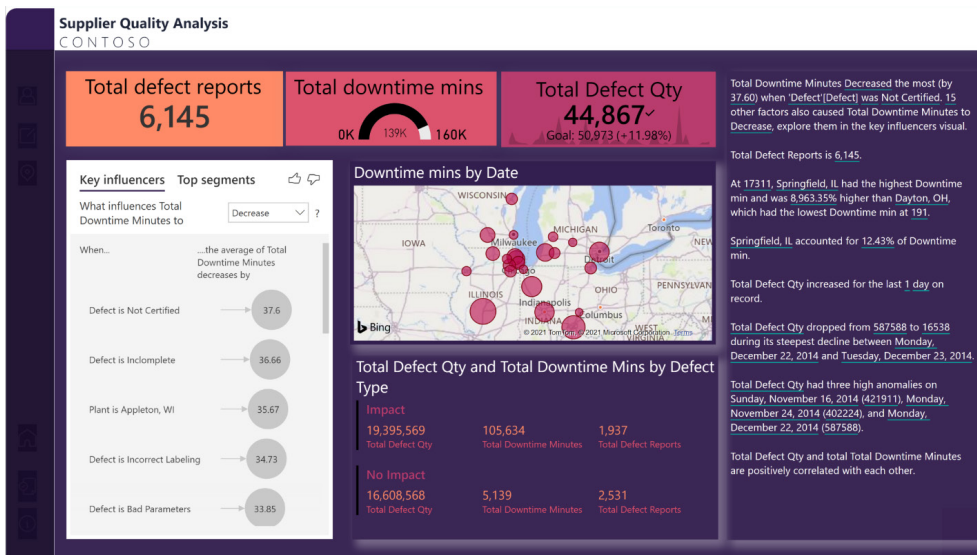
Q&A now supports DirectQuery for Power BI datasets and Azure Analysis Services

Q&A now supports DirectQuery for Power BI datasets and Azure Analysis Services. Furthermore, as part of this update, it is now possible to use Q&A setup against Azure Analysis Services models. This should unlock multiple scenarios including the ability to:

- define custom synonyms
- train Q&A custom business terms
- set featured questions
- see what questions were asked
- see flagged questions from end users.

As a reminder, DirectQuery for Power BI datasets and Azure Analysis Services is in Preview, so you'll need to make sure the preview is enabled:

DirectQuery for Power BI datasets and Azure Analysis Services now in Preview

LINEAGE VIEW AND IMPACT ANALYSIS SUPPORT

Microsoft has added support for this feature to the lineage view and impact analysis, both in the Service and in Power BI Desktop. Regardless of if the dataset is in the same workspace as the source datasets or in a different workspace, you can see it in lineage view and impact analysis. This allows you to:

- gain confidence in your data by understanding its sources
- troubleshoot your data flow to understand data mismatches and not up-to-date data
- see what can be impacted by a change in dataset and notify contacts about an upcoming change.

When you publish a dataset from Power BI Desktop, you can now see, in addition to reports and dashboards, what other datasets are directly connected to this dataset that you publish. You can then open the Power BI Service to see more details and notify relevant contacts about the change.
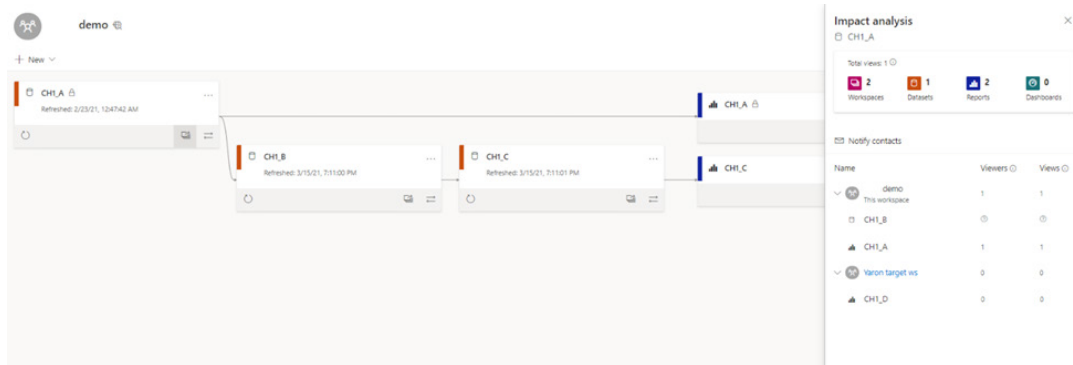
DISCOURAGE CHAINING

Microsoft has noted that users want the ability to limit which Power BI datasets and Azure Analysis Services datasets may be connected to through DirectQuery. Previously, the only way to limit this was through using third-party tools. Now, this update has added in a switch into the Options dialog in Power BI Desktop, so you may easily limit "DirectQuery-ing" *(new word, look it up)* to datasets.
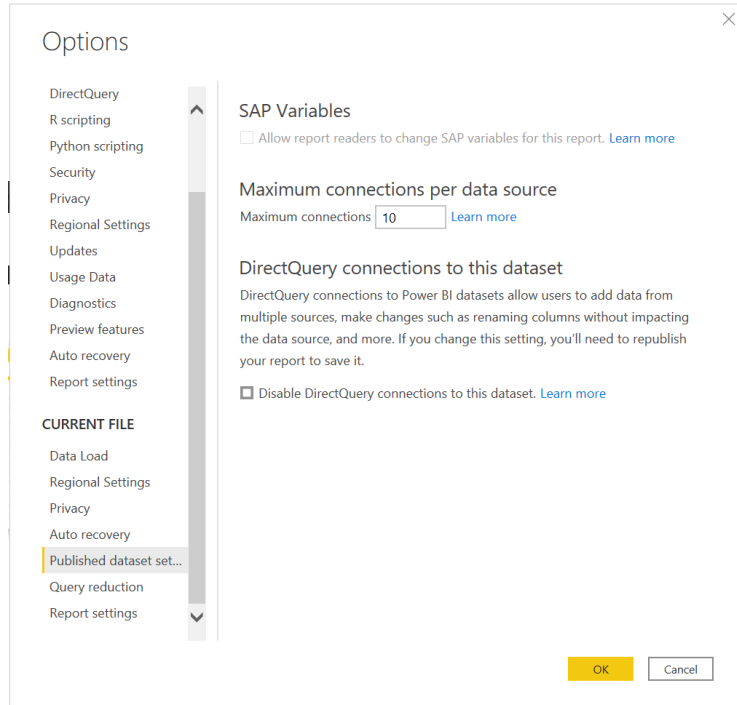
Q&A SUPPORT

Q&A now supports DirectQuery for Power BI datasets and Azure Analysis Services.

Model View updates

There are a few updates to upgrade to the new Model View experience this month. There aren't any changes to the Model View user interface this month, but you should be aware that the new Model View will soon be the default experience.

First, you may see a dialog that asks you to upgrade to the new model view user interface. You should ensure that you have enough time to upgrade your existing PBIX's before this change is made automatically. But do remember, if you upgrade, it will be permanent.

Second, when you create a new PBIX, the Model View will have the new user interface as its default.

New connector: EQuIS

There is now an EQuIS connector in Power BI Desktop. This enables to directly and easily access EQuIS data in Microsoft Power BI via the EQuIS Enterprise REST API. The EQuIS connector supports three types of user authentication: basic, API token and organisational account (aka Azure Active Directory). Through a secure, encrypted connection to the EQuIS REST API, the EQuIS connector allows users to import a variety of EQuIS datasets into Power BI (including facility data, location data and tabular report data).

Connector update: Automation Anywhere

The Automation Anywhere connector has been updated. It should also be noted that the A2019 cloud version has been updated and renamed to Automation 360 within the connector.

Connector update: Vena

The Vena connector has also been updated. This updated version includes support for rollup operators from Vena.

Connector update: Azure Databricks

The Azure Databricks connector has been updated. Apparently, it now has:

- better support for Unicode characters in DirectQuery mode
- a harder to access 'Batch Size' option, as this has now been deprecated and removed from the Connector dialog, but this functionality may still be provided in the Advanced (Query) Editor. Existing saved connections will not be affected
- minor improvements in query generation.

Connector update: Amazon Redshift

The Amazon Redshift connector has been updated to enable AAD Authentication in Power BI Desktop. You should note though that this type of authentication is not available in the Service.

Connector update: Vertica

The Vertica connector has been updated with a bug fix to support supplying a port value when connecting to Vertica.

Connector deprecation: Microsoft Graph Security

The Microsoft Graph Security connector is being deprecated, due to support ending from the data source service. This update will remove the connector from the 'Get Data' experience in Power BI Desktop, discouraging new connections from being made. Existing connections and reports will continue to work *for now*. Sounds ominous!

Quickly create reports from SharePoint lists (Preview)
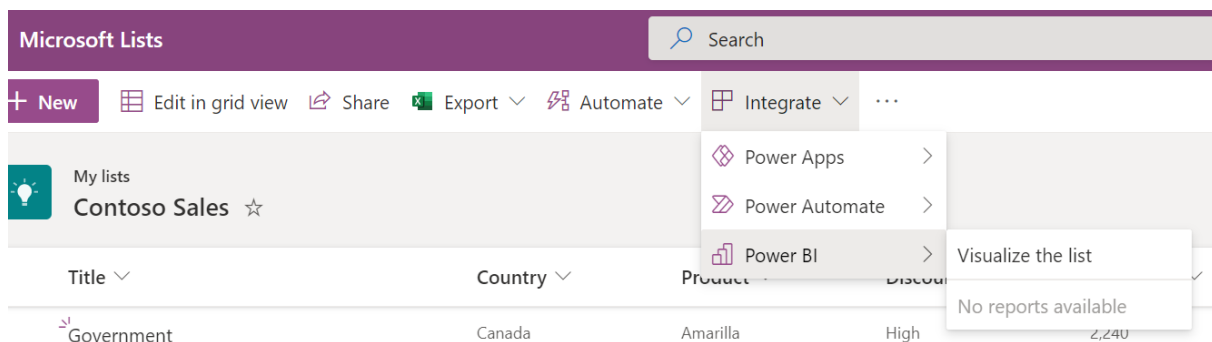
This update sees the launch of Power BI integrated within SharePoint lists. This experience empowers SharePoint list and Microsoft List users to easily explore their list data with just a few clicks. If you're part of the Targeted release experience, this capability is rolling out now, with the Standard release "…set in the future…". It sounds like a new sci-fi drama.

Reports, apps and dataflows endorsement now Generally Available

Last year saw the public Preview of reports and applications (apps), and dataflows endorsement. This capability is now Generally Available.

This now provides organisations with a mechanism they may use to distinguish their most valued and trusted content. Content certification may be tightly controlled and documented via an administrator control, ensuring that certification is a selective process.

Any content owner can promote their content, thereby marking it as trusted and ready to be shared. This promoted content will get better visibility in a variety of Power BI experiences, making it easier for business users to discover.

Datasets hub improvements

When you click on a specific dataset in the Datasets hub or in the 'Workspace content' list, you get to the 'Dataset details' page. In the 'Dataset details' page, you'll see some metadata about the dataset, actions you can perform and reports built on top of these datasets that you have access to.

With this release, there will be more metadata and actions you can perform from the 'Dataset details' page:

- **Tables view.** An essential piece of dataset metadata is the dataset's tables and its columns and measures. With this improvement, you no longer need to open a dataset in Power BI Desktop as it is all available as part of the dataset details page
- **Action bar.** This update addas an action bar to the top of the page to make all the actions available from within the dataset details page.

Apparently, there will be more actions, such as dataset refresh and view refresh history, coming soon.
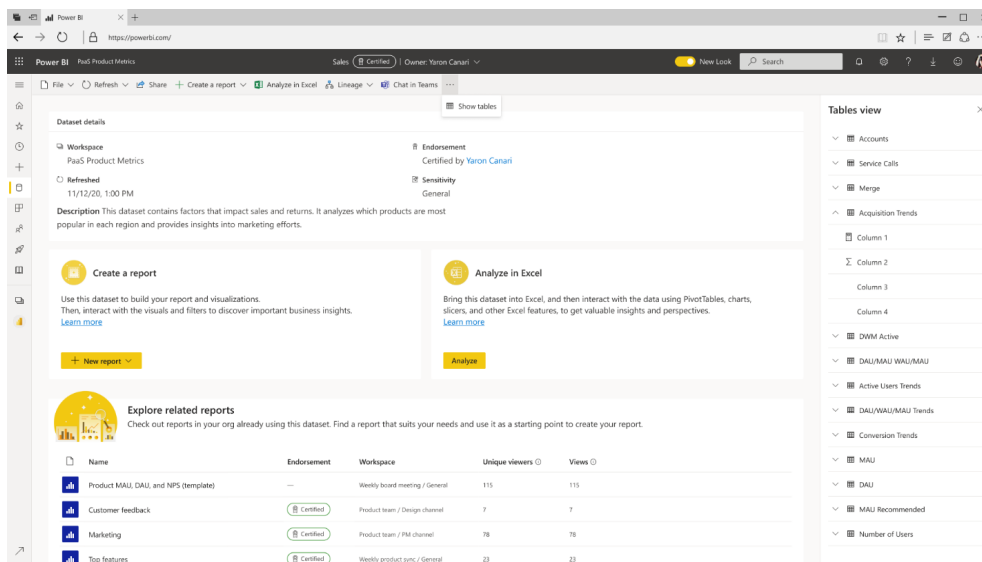
Quick Edit Paginated Reports from the Service

An 'Edit in Power BI Report Builder' option has now been added, to allow easier editing of Paginated Reports from the Service. Selecting this option will open the Paginated Report directly in Power BI Report Builder, where edits may be made. When you have finished making changes to the report, you can publish it back to the Service by simply selecting Publish.

You can find the new 'Edit in Power BI Report Builder' option by clicking the ellipsis menu (…) next to a Paginated Report in a workspace.
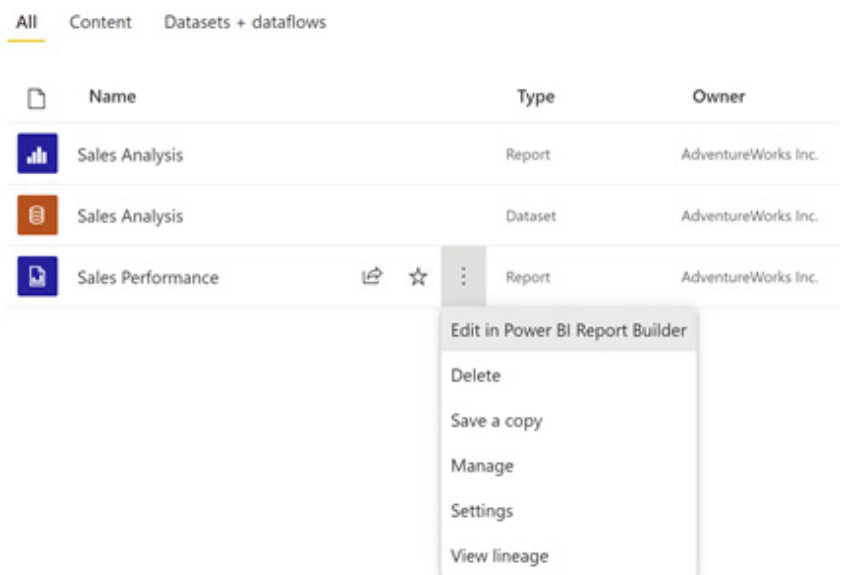
This option is also available in the File menu when you have a Paginated Report open in the Service.
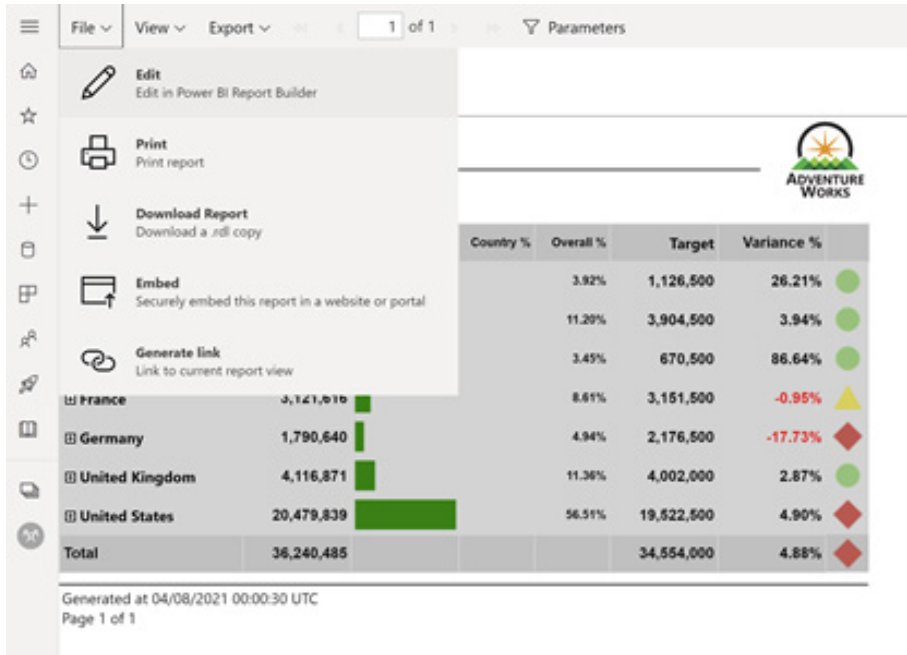
Single sign-on enabled for new on-premises data sources for paginated reports

This month sees the announcement of single sign-on (SSO) support for the gateway for your paginated reports, backed by either a SQL Server or Oracle on-premises data source. SSO makes it easy for paginated reports to refresh data from on-premises sources, while respecting user-level permission configured on those sources.

Once you have configured SSO through the gateway for either your SQL Server or Oracle data source, it's straightforward to enable SSO for a paginated report using that data source. In the 'Gateway connection' settings for your paginated report, select your data source to 'Add to gateway'. From the 'Advanced settings', you then choose to use SSO for your paginated report.

Downstream inheritance for sensitivity labels in Preview

Microsoft has stated they have "…introduce[d] the first-in-the-market label inheritance feature to provide more effective and accurate content labelling". With downstream inheritance of sensitivity labels, when you apply a sensitivity label to a dataset or report in the Power BI Service, it propagates down to any other content that uses that dataset or report as its underlying data. With downstream inheritance, you don't need to rely on multiple users to properly label and maintain the sensitivity of the data in use. Instead, you can trust the content creator (*e.g.* the dataset owner or the report author), as the one who is most familiar with the data, to tag the content most accurately with the proper sensitivity label as soon as it is published to the cloud.

Work side by side with other apps on your iPad or Android tablet

Being able to multitask with two apps open side by side on your mobile device is very useful. You may now do this with the Power BI Mobile app on supported iPad and Android tablet devices. Whilst viewing the relevant data in the Power BI mobile app, you can write an email, take notes about important analysis insights or even discuss the data with colleagues via chat. Indeed, you do not even have to switch between screens and lose the context.
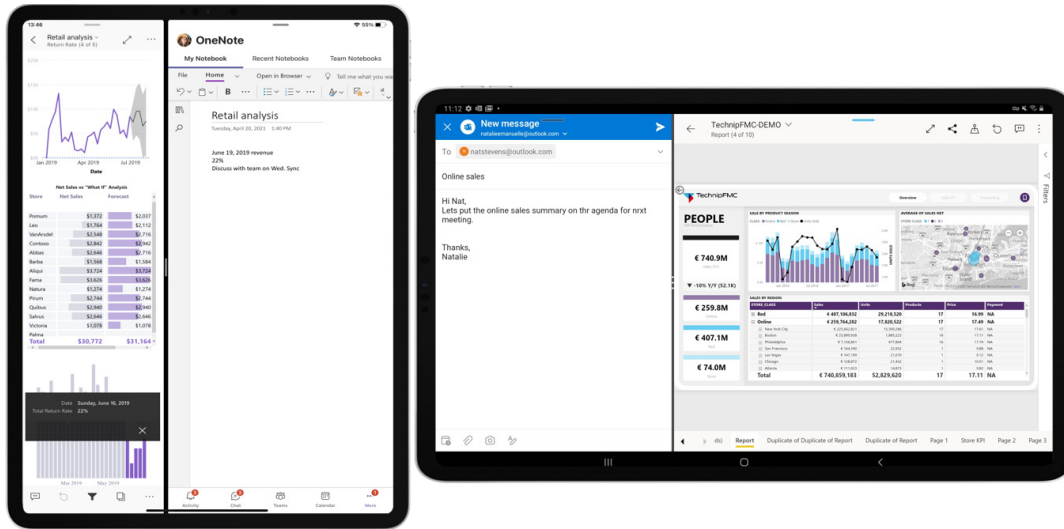
New visuals

There is the usual slew of new visuals:

- Advanced Toggle Switch
- Craydec Timelines
- Go To Stratum
- graphomate bubbles
- graphomate pictograms
- PureViz Infographic
- Soza Health Dial
- Tachometer by E&A.

ADWISE roadmap v2.0

The latest version of this visual has been added. This visual allows you to plan, roadmap and schedule phases and milestones. This visual can help you present your project, product, campaign plans, or visualise whatever else that may be "time-scheduled" (don't ask me, it must be a US word).

The new version 2.0 includes:

- **zoom functionality:** now you can zoom your RoadMap to see more details or fit larger datasets, horizontally as well as vertically
- **scrolling:** once your RoadMap does not fit into visual area (page), scroll bars will appear
- **fixed height of rows (option):** rows remain the same height when you are filtering, adding more data *etc.* (more suitable for scrolling large data sets)
- **progress bars:** you can show progress (of project) within the bar
- **bars:** different types of edges / corners (square or rounded) are now available, to better suit your graphical preferences
- **left axis:** right / left label alignment and text wrapping are now available
- **standard Power BI font added:** Segoe UI was added.

You can find this updated visual in AppSource.

Bubble chart by Akvelon
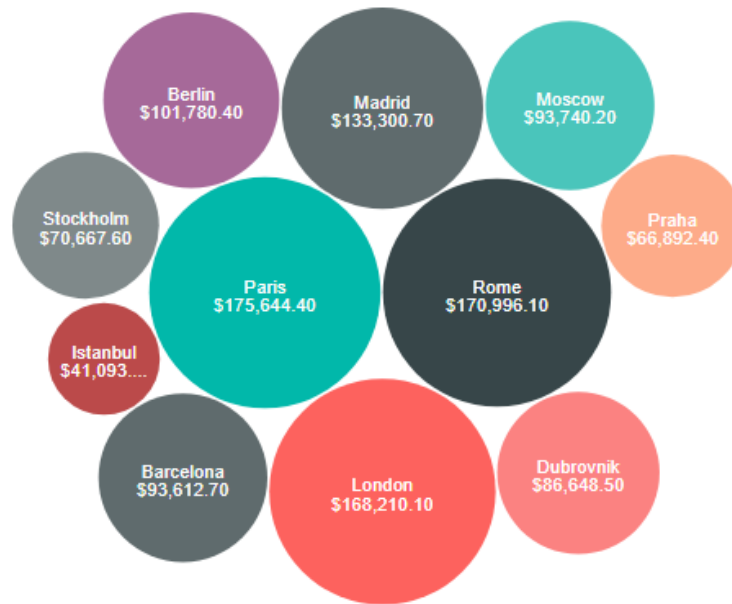
This Bubble Chart is one of the most popular custom visuals by Akvelon – which now has new features in version 2.2.2:

- **second level of bubble labels:** this is quite useful to show not only the name of the bubble, but also secondary information, for example sales per category. Users may drop columns from their data source into the 'Secondary label' field bucket to use second level bubble labels
- **word wrapping inside of bubble labels, on both levels:** now, Power BI users can show more text information on bubbles by wrapping text where needed. Users can find this switch in the Formatting settings of the visual
- **visual updated to meet new certification requirements by Microsoft:** this now prevents loading external resources into a visual. Now, users can take a column from their data source that contains a binary image and show it on a bubble surface.

The latest version of Bubble Chart by Akvelon is available in the AppSource.

Cycle Plot by Nova Silva

Time series visualisations are frequently used to clarify and quantify changes over time in measures. However, the trusty line chart can hide important patterns. This happens when the measure contains seasonality.

The Cycle Plot is a special line chart developed to show seasonal time series. It helps you to visualise trends within seasonal data.

Cyclical pattern in a line chart

Same data in a Cycle Plot by Nova Silva

For example, imagine you are reviewing items sold over several weeks. You might expect to sell more on weekdays compared to the weekend. A line chart will show low values during the weekend and higher values during the week. However, it's hard to tell if sales on Mondays are increasing or decreasing over the weeks. With the Cycle Plot, a subplot can be created for each day. You can show the change in sales over time for that day. All the subplots together still show the seasonal pattern as well, as seen in the image above.

Again, you can download this from the AppSource. All features are available for free to evaluate within Power BI Desktop.

Drill Down Donut PRO by ZoomCharts

Drill Down Donut PRO by ZoomCharts is a donut chart with touch-driven interactions that allows data exploration. You may click directly on the slice to drill down into the data category, pick a chart type and use various customisation options to control the look of the chart.

The new version 1.7 adds the following:

- **built-in quick access links:** when you place the visual on the report canvas, you are presented with quick links to useful sections of ZoomCharts website related to the visual
- **improved licence and trial experience:** you may try paid features of ZoomCharts Drill Down Donut Pro for 30 days for free. After the free period, you can extend the free access by 30 more days with a free ZoomCharts trial
- **improved responsiveness:** resize your chart to various dimensions.

To evaluate the Drill Down Donut PRO, simply download the visual from, yes, you've guessed it, the AppSource.

Drill Down Map PRO by ZoomCharts

Drill Down Map PRO by ZoomCharts lets you visualise location data on maps. This Power BI map pie chart *(above)* allows you to explore data by country, city or use the lasso tool to create storable filters for custom regions. Add pie charts on top of the map to visualise clusters of data.

The new version 1.7 adds the following:

- **built-in quick access links:** when you place the visual on the report canvas, you are presented with quick links to useful sections of ZoomCharts website related to the visual
- **improved licence and trial experience:** you may try paid features of ZoomCharts Drill Down Donut Pro for 30 days for free. After the free period, you can extend the free access by 30 more days with a free ZoomCharts trial
- **improved responsiveness:** resize your chart to various dimensions
- **numerous functionality and performance improvements.**

To evaluate the Drill Down Map PRO, it's again available from the AppSource.

Drill Down Pie PRO by ZoomCharts
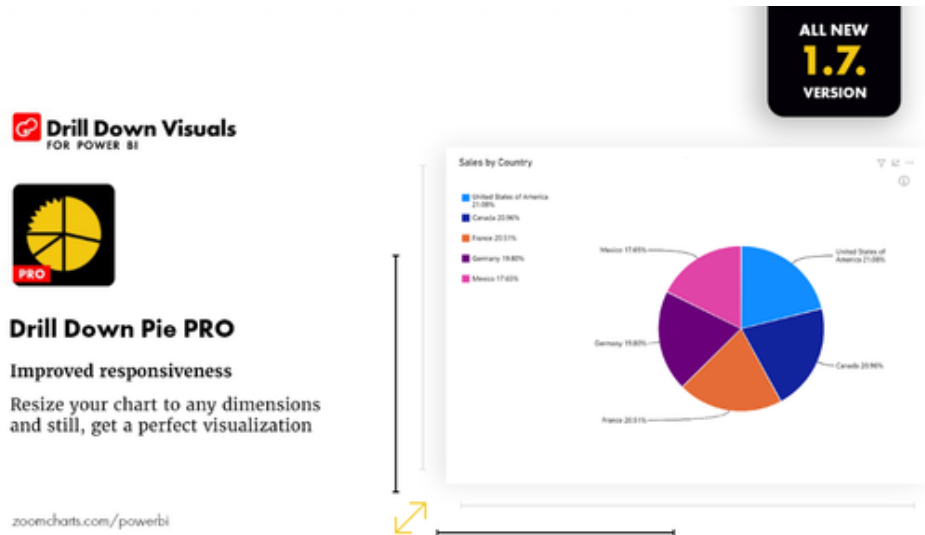
There is a new version of Drill Down Pie Pro by ZoomCharts as well. Again, this supports touch-driven interactions, adjustable slices, and various other customisation options.

The new version 1.7 adds the following (at the risk of sounding like a broken record):

- **built-in quick access links:** when you place the visual on the report canvas, you are presented with quick links to useful sections of ZoomCharts website related to the visual
- **improved licence and trial experience:** you may try paid features of ZoomCharts Drill Down Donut Pro for 30 days for free. After the free period, you can extend the free access by 30 more days with a free ZoomCharts trial
- **improved responsiveness:** resize your chart to various dimensions.

To evaluate the Drill Down Pie PRO, it's also in the AppSource.

graphomate charts 2021.2

graphomate charts apply the basic principle 'Information, not decoration!' and concentrate on getting the information across to the end user.

Therefore, the intention is to deliberately condense the display of key performance indicators (KPIs), meaning that you're able to show more data on the same page. Therefore, your data is better embedded into the context.

You may choose between six chart layouts, which can be aligned horizontally to represent data over a time period or vertically to show elements in a structured manner. All graphomate charts on a report page can be scaled within the same range to avoid misleading interpretation.

This is again available in the AppSource.

Display our data with graphomate charts using different chart types
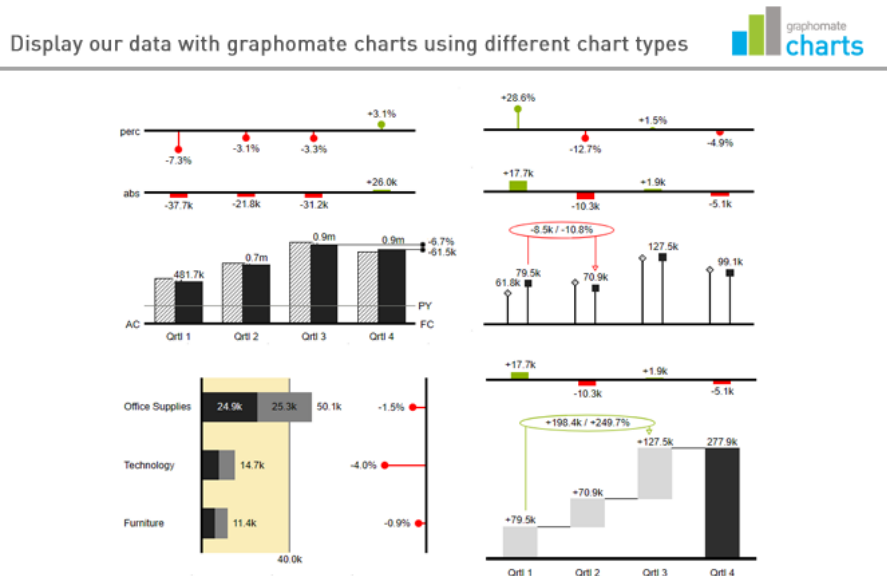
graphomate matrix 2021.2

Often data is structured in a hierarchical way. The graphomate matrix allows the visualisation of hierarchies in rows and columns. A good layout design allows you to understand the data quickly and easily.

The matrix visual provides various formatting options:

- multiple highly customisable value formatting options for distinct columns
- conditional styling of cells and values
- calculation of relative and absolute deviations
- display of correctly scaled In-Cell Charts as bar or pin
- custom features may be written, using the built-in cell formatting language
- the graphomate matrix allows both a hierarchical and a tabular (Cross Tab) view.

Yet again, it's available from the AppSource.
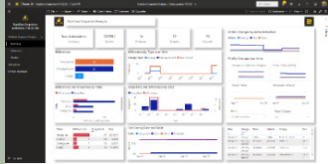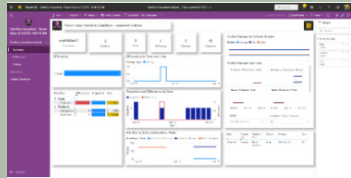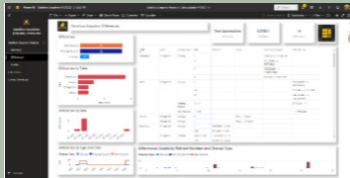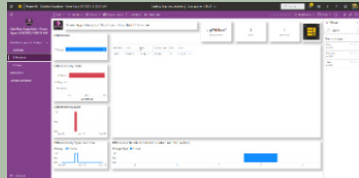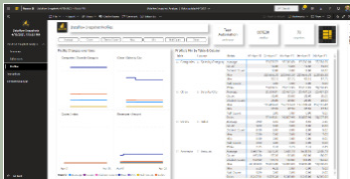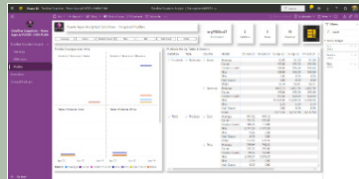
Dataflows Snapshot Analysis

Maintaining high data quality is a challenge in any BI or data-driven business application. Developers spend significant time creating complex data preparation processes with highly maintained pro-code tools or avoid automation and focus on executing long manual testing. As a result, data quality issues require more time and resources to detect and fix. DataChant has recognised this and released two new Power BI apps that leverage Power Query low-code data-shaping capabilities to deliver a data quality monitoring solution that monitors snapshots of your data as it gets refreshed in Power BI and Power Apps dataflows.

The Power BI Dataflow Snapshots Analysis and Dataflow Snapshots Analysis – Power Apps allow you to monitor your ADLS Gen2-connected dataflows and analyse their auto-generated snapshots. The apps read the snapshots and their CDM meta-data, profile the tables and look for changes in records over time.

Each app includes three report pages:

	Dataflow Snapshots Analysis	Dataflow Snapshots Analysis – Power Apps
Summary view In the Summary page, you can view the main data changes, review missing or new records, and find trends of key profiling metrics.		
Differences view In the Differences view, you can review all data changes in more detail in a tabular format and slice / dice the changes by tables, change types, or time periods. For example, you can filter the missing records or changes to a specific table by period.		
Profiles view The Profiles view highlights selected profiling metrics by tables, columns and snapshot dates, and allows you to find anomalies in any column in your tables based on minimum, average, maximum, standard deviation, null count, distinct count and row count.		

Dialog boxes support for Power BI custom visuals

Presently, dialog boxes may only open within the borders of a custom visual. This new API will enable developers to set the dialog box to open *outside* the custom visual's borders.

For instance, a dialog box can be used to display additional information to the user, or to display a calendar for a date picker. In such cases, the report author doesn't have to enlarge the visual boarder anymore, in order to see the full details the visual is generating.

The developer can display this data as a modal dialog box that will be triggered by a user action. The API is available with the 3.8 API release.
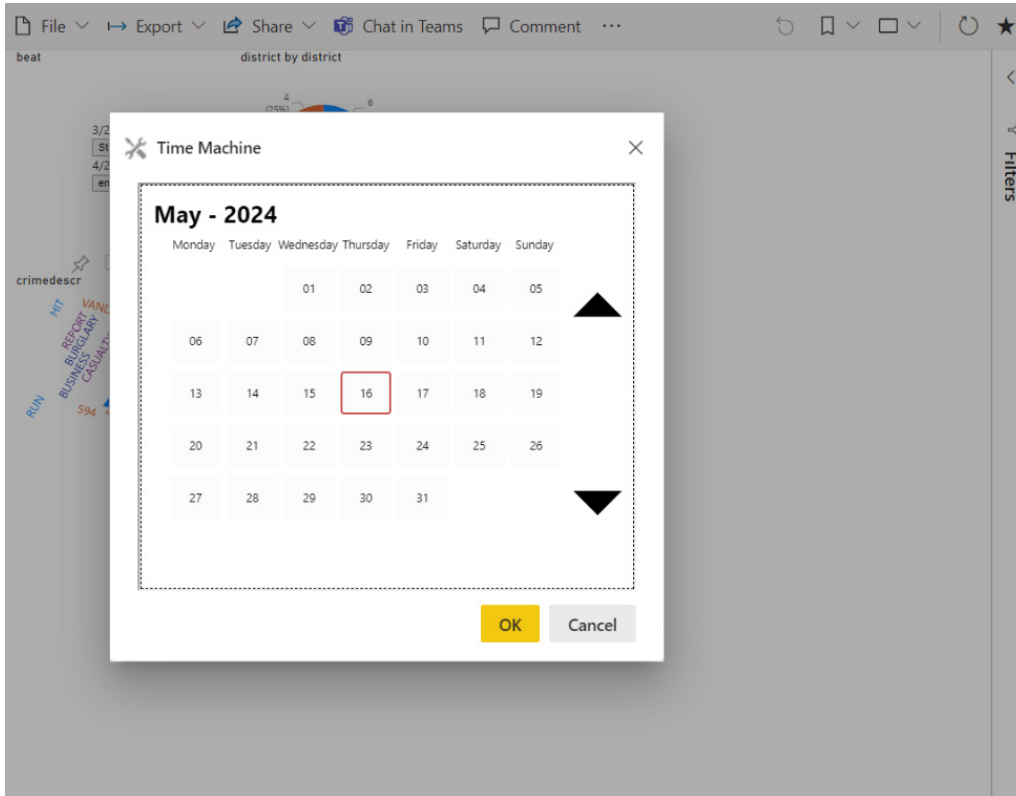
Displaying a warning icon for a custom visual

This API standardises the warning icon in the custom visual frame, in a way that is similar to the out-of-the-box visuals in Power BI. The API is available with the 3.7 API release.

The warning icon is triggered by the visual and will show in reports when users hover over the visual.

Out-of-the-box visuals display the warning icon when there are queries, issues or invalid data. For instance:

- maps give warnings for values outside latitude / longitude valid values
- Pie charts warn about negatives mixed with positives
- Cartesian charts warn about infinity values being dropped.
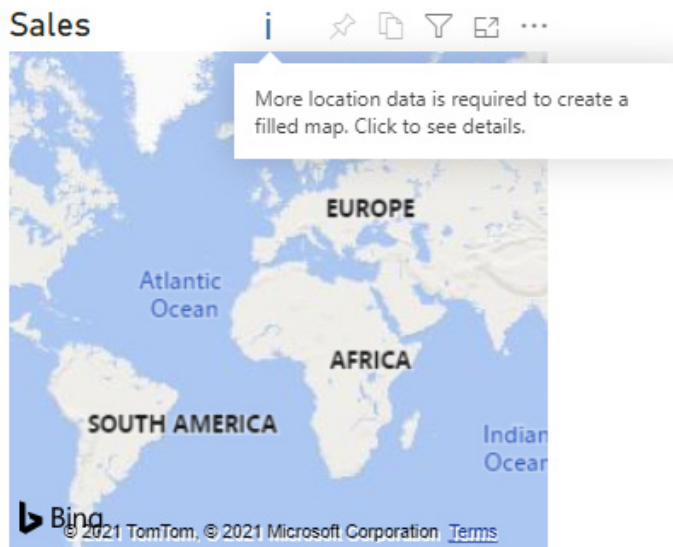
Share and Collaborate in Excel for the web connected to Power BI

Microsoft has recently announced the initial availability of a connected PivotTable refresh in Excel for the web. This new capability makes it easier for organisations to share data and collaborate using Power BI and Excel. You can now explore, and refresh PivotTables connected to Power BI inside Excel for the web, and easily share these workbooks through OneDrive and SharePoint.

Combined with Microsoft Information Protection (MIP) sensitivity labels now fully integrated, you can control sharing to keep your data trusted and secure.

To create a PivotTable connected to Power BI, you must create a workbook using one of these following entry points:

- Download a connected workbook in the Power BI Service
- Connect to a Power BI dataset in Excel Desktop.

DOWNLOAD A CONNECTED WORKBOOK IN THE POWER BI SERVICE

In the Power BI service, open any report or dataset you have access to and use the 'Analyze in Excel' option to download an Excel workbook connected to the underlying dataset.
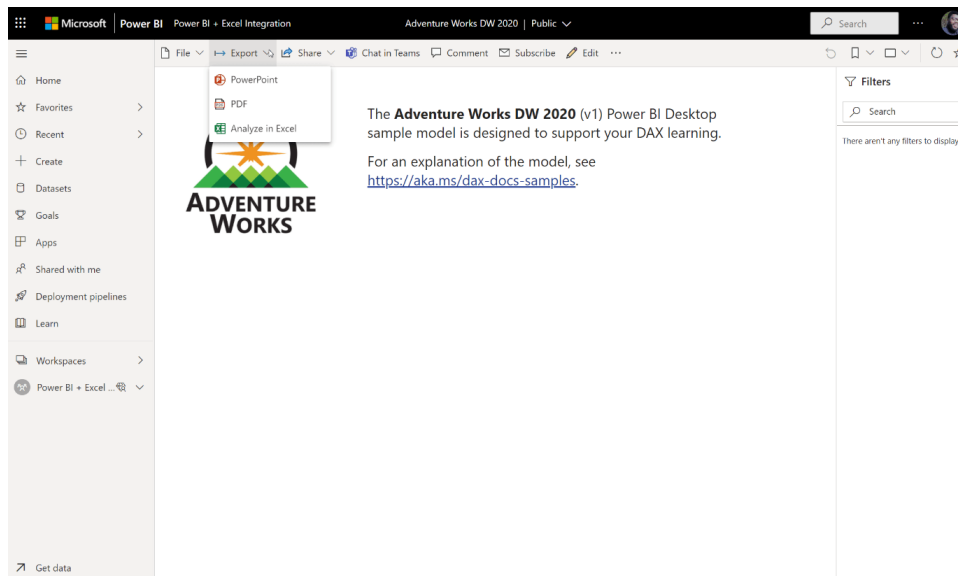
You then save the workbook in OneDrive, OneDrive for Business or SharePoint Online.

CONNECT TO POWER BI DATASET IN EXCEL DESKTOP

In the Excel Desktop Ribbon, connect to a Power BI dataset using either **Insert -> PivotTable -> From Power BI or Data -> Get Data -> From Power BI**.
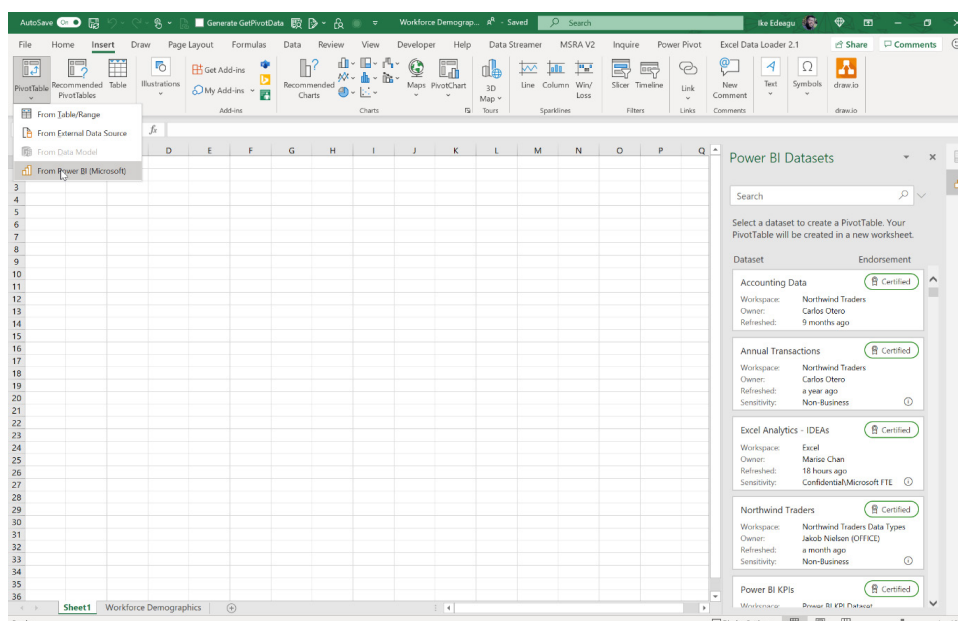
You then save the workbook in OneDrive, OneDrive for Business or SharePoint Online.

To refresh the connected PivotTable in Excel for the web, you then have one of two options:

1. directly in the browser
2. share Excel workbooks in Power BI Apps.

DIRECTLY IN THE BROWSER

The connected PivotTable can be refreshed by directly pasting the link to the workbook in your web browser. The link can be copied either by using the 'Share' button in the workbook or **File -> Info -> Copy path**. Users may now interact with the connected PivotTable in Excel for the web by dragging fields into the PivotTable area with the data staying connected to Power BI.

To ensure changes made to the workbook in Excel for the web, close any version of the workbook open in Excel Desktop.
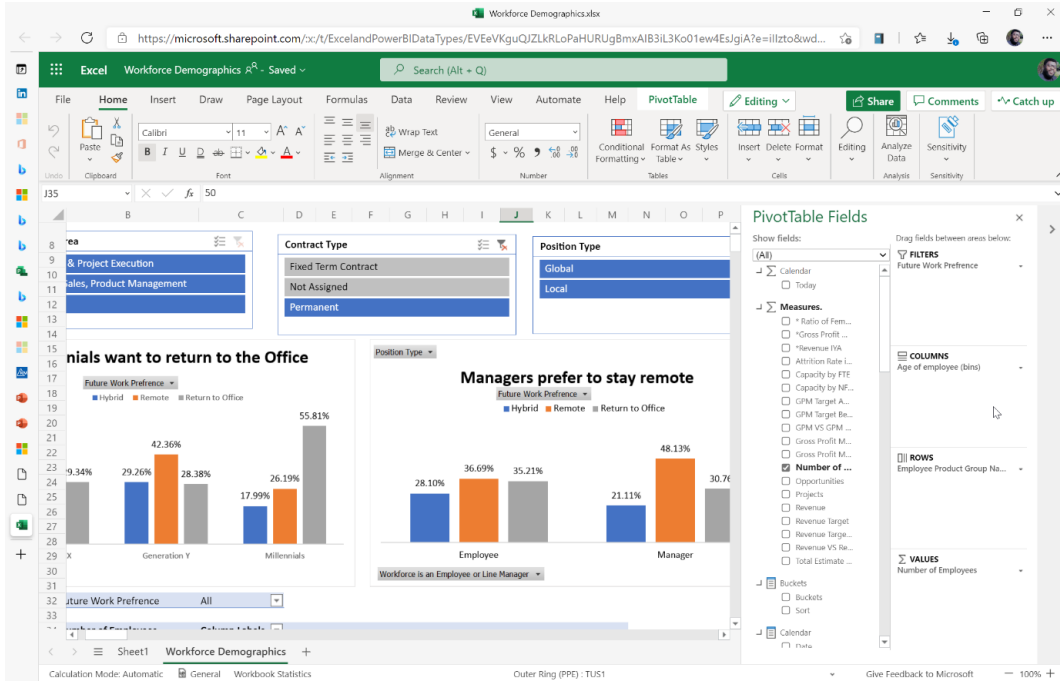
SHARE EXCEL WORKBOOKS IN POWER BI APPS

Another way to deliver Excel data analysis and visualisation across your organisation is by including Excel workbooks in Power BI Apps. Now that data refresh is fully supported, the workbooks in Power BI apps will stay up to date.
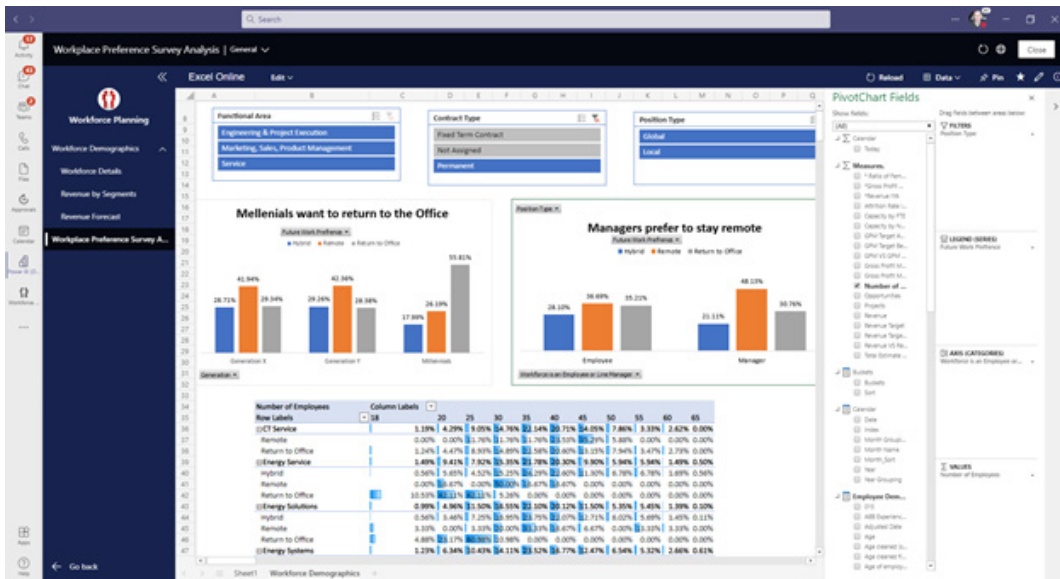
However, it should be noted that Power BI datasets built upon live connections to Analysis Services are not currently refreshable in Excel for the web.

More next month, we're sure!

The A to Z of Excel Functions: FORMULATEXT

First released in Excel 2013, this is one of the most used functions in our neck of the woods. It's a really useful tool for documenting formulae, as **FORMULATEXT** returns a formula as a text string. People have been writing User-Defined Functions (UDFs) for years to replicate that!
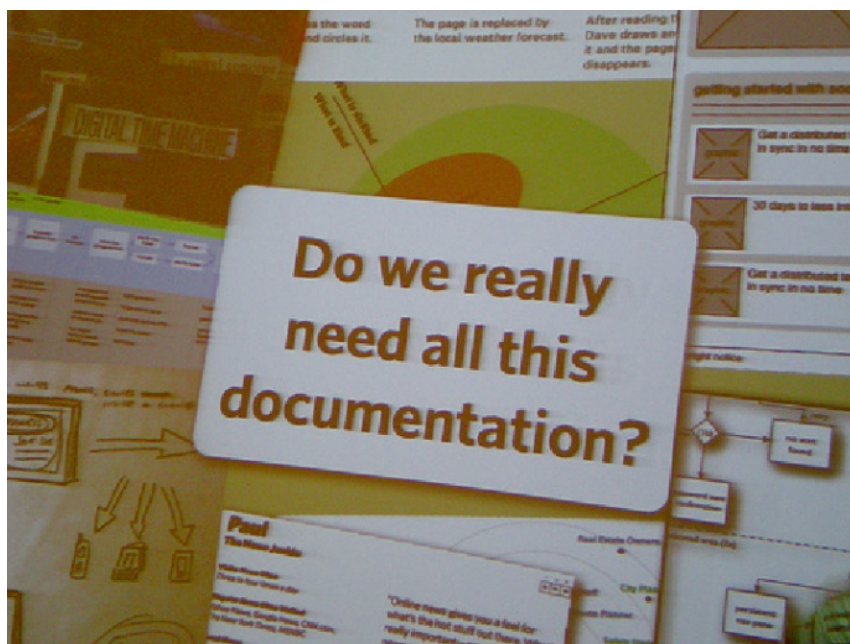
The **FORMULATEXT** function employs the following syntax to operate:

FORMULATEXT(reference)

The **FORMULATEXT** function has the following argument:

- **reference:** this is required and represents a cell or a reference to a range of cells.

It should be further noted that:

- the **FORMULATEXT** function returns what is displayed in the formula bar if you select the referenced cell
- the **reference** argument can be to another worksheet or workbook
- if the **reference** argument is to another workbook that is not open, **FORMULATEXT** returns the *#N/A* error value
- if the **reference** argument is to an entire row or column, or to a range or defined name containing more than one cell, **FORMULATEXT** returns the value in the upper leftmost cell of the row, column, or range
- in the following cases, **FORMULATEXT** returns the *#N/A* error value:
  - o   the cell used as the **reference** argument does not contain a formula
  - o   the formula in the cell is longer than 8,192 characters
  - o   the formula cannot be displayed in the worksheet; for example, due to worksheet protection
  - o   an external workbook that contains the formula is not open in Excel.
- invalid data types used as inputs will produce a *#VALUE!* error value
- entering a reference to the cell in which you are entering the function as the argument will not result in a circular reference warning **FORMULATEXT** will successfully return the formula as text in the cell.

Please see our example below:

	A	B	C
1	Formula	Description	Result
2	=FORMULATEXT(A2)	Now this is confusing. Cells **A2** and **C2** refer to each other with no circularity.	=FORMULATEXT(C2)

The A to Z of Excel Functions: FREQUENCY

Useful for constructing histograms, **FREQUENCY** calculates how often values occur within a range of values (known as "bins"), and then returns a vertical array of numbers. For example, you may use **FREQUENCY** to count the number of test scores that fall within ranges of scores. Because **FREQUENCY** returns an array, it must be entered as an array formula (*i.e.* by entering it using the keystrokes **CTRL + SHIFT + ENTER**).
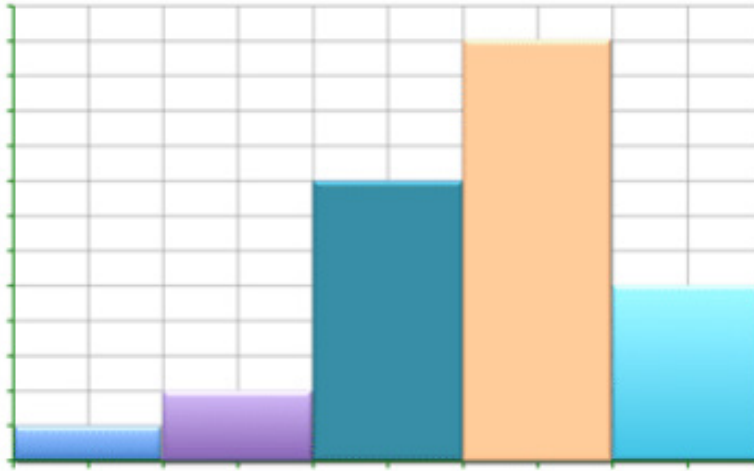
The **FREQUENCY** function employs the following syntax to operate:

FREQUENCY(data_array, bins_array).

The **FREQUENCY** function has the following arguments:

- **data_array:** this is required and represents an array of, or a reference to, a set of values for which you want to count frequencies. If **data_array** contains no values, **FREQUENCY** returns an array of zeros (0's)
- **bins_array:** this is also required. This denotes an array of, or reference to, intervals into which you want to group the values in **data_array**. If **bins_array** contains no values, **FREQUENCY** returns the number of elements in the **data_array**.

It should be further noted that:

- **FREQUENCY** is entered as an array formula in some versions of Excel (**CTRL + SHIFT + ENTER**) after you select a range of adjacent cells into which you want the returned distribution to appear
- the number of elements in the returned array is one more than the number of elements in **bins_array**. The extra element in the returned array returns the count of any values above the highest interval. For example, when counting three ranges of values (intervals) that are entered into three cells, be sure to enter **FREQUENCY** into four cells for the results. The extra cell returns the number of values in **data_array** that are greater than the third interval value
- **FREQUENCY** ignores blank cells and text
- formulae that return arrays must be entered as array formulae (**CTRL + SHIFT + ENTER**).

Please see my example below:
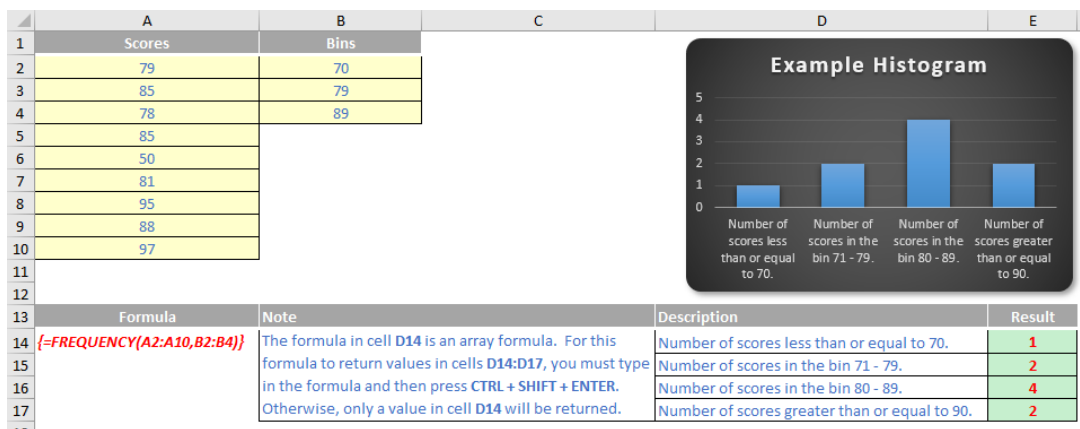
More Excel Functions next month.

Beat the Boredom Suggested Solution

This month's challenge was about filters not working in a simple data table in Excel. In our previously cited example, this file had data in the following format:

Highlighting the entire selection, I went to the 'Data' tab on the Ribbon and clicked on 'Filter' in the 'Sort & Filter' grouping (**ALT + A + T**) to create a filtered list. I then filtered on 'Country' for Australia and obtained the following subset:

Data

Item Number	Country	Amount
Item No. 1	Australia	55
Item No. 2	Australia	37
Item No. 3	Australia	56
Item No. 4	Australia	71
Item No. 5	Australia	17
Item No. 6	Australia	84
Item No. 7	USA	63

The problem was that when I did this 'USA' became part of the filtered 'Australia' subset. The questions were, why did this happen and how do you fix it?

The problem here resides with the formula in cells **F13:F42**, namely

=SUBTOTAL(103,$G$13:$G13)

Yes, I said earlier it was a great formula, as it will auto-number visible data, but there is an inherent problem in this formula too. Let me explain by first recapping on the **SUBTOTAL** function. On the face of it, it seems like many other Excel functions:

=SUBTOTAL(function_number, ref1, ref2, …)

The **function_number** is an integer between 1 and 11 inclusive or 101 and 111 inclusive as follows:

Hidden Values		Function
Included	Excluded	
1	101	AVERAGE
2	102	COUNT
3	103	COUNTA
4	104	MAX
5	105	MIN
6	106	PRODUCT
7	107	STDEV
8	108	STDEVP
9	109	SUM
10	110	VAR
11	111	VARP

For the **function_number** constants from 1 to 11, the **SUBTOTAL** function includes the values of rows hidden by the 'Hide Rows' command under the 'Hide & Unhide' submenu of the 'Format' command in the 'Cells' group on the 'Home' tab. These constants should be used when you want to subtotal hidden and unhidden (visible) numbers in a list. For the **function_number** constants from 101 to 111, the **SUBTOTAL** function ignores values of rows hidden by the 'Hide Rows' command. These constants should be used when you want to subtotal the visible numbers in a list only.

If there are other subtotals within **ref1, ref2, …** (or nested subtotals), these nested subtotals are ignored. This is an important feature as it allows you to consider complete ranges without any risk of double-counting.

SUBTOTAL(103, range) acts like **COUNTA** excluding any hidden cells, *i.e.*

it counts the number of non-empty visible cells in **range**. That's how the auto-numbering works.

There's just one problem.

SUBTOTAL also works with the built-in subtotal functionality of Excel, which totals numbers excluding – essentially, ignoring – the **SUBTOTAL** function. Therefore, Excel is trained to ignore what it thinks are subtotal rows.

Look again at the USA row included. It's the final row of the data selection and it begins with a **SUBTOTAL** function. Excel thinks it's a subtotal calculation. Therefore, it has excluded it quite deliberately from the filtering believing it to be a subtotal of the data. Since the **function_number** lies between 101 and 111, Excel realises this function is designed to include filtered items only, so programmatically it makes sense to retain this row. Excel thinks it's the sum of the above!

There are several ways that this logic can be defeated:

1. **double unary:** (*careful, that's not "urinary"*) possibly first discovered by Excel guru Dick Kusleika, putting two minus signs straight after the equals sign (*e.g.* =--**SUBTOTAL(103,$G$13:$G13)**) fools Excel into thinking it's a different formula. The first minus sign negates the calculation; the second makes it positive again

2. **multiplying by 1:** this one I am taking credit for! Who in their right mind would multiply a total by 1? Excel therefore thinks it isn't a total and hence it becomes part of the filter set

3. **add a column before the Item Number:** In most instances (but sadly, not all), adding a column of data before the column containing **SUBTOTAL** will make the dataset work as intended. Suddenly Excel doesn't believe the bottom row is a total anymore

4. **add a blank row at the bottom:** put a (sub)total at the bottom of the data? That's just what Excel expected you to do! So don't. Make it the penultimate row of the data by making a blank row part of the dataset. This is often quoted on the internet, but I think this is a terrible solution. If you need to add data, you'll need to insert it before the blank row. What end user would appreciate the first blank row is part of the dataset? Further, blanks will be included in the list of options for the 'Country' filter. This is not an ideal fix

5. **convert the data range to a Table:** by highlighting the data and then converting the range to a Table (**CTRL + T**), filtering will work as expected – and you will get built in filtering as a bonus! Table totals work in a different way, so Excel is not confused by the **SUBTOTAL** formula. I quite like this solution as it requires no modification to the formula or need to add a row or column.

Other than adding a blank row (not sold on that at all), the others all have their strengths and weaknesses. I don't want to advocate one solution over another. Hopefully, you came up with one of the above. If not – and it works – do let us know…

You can find out more about **SUBTOTAL** and Excel's subtotal functionality here. For more tricks and tips, check out our many examples at www.sumproduct.com/thought.

Until next time.

Upcoming SumProduct Training Courses - COVID-19 update

Due to the COVID-19 pandemic that is currently spreading around the globe, we are suspending our in-person courses until further notice. However, to accommodate the new working-from-home dynamic, we are switching our public and in-house courses to an online delivery stream, presented via Microsoft Teams, with a live presenter running through the same course material, downloadable workbooks to complete the hands-on exercises during the training session, and a recording of the sessions for your use within 1 month for you to refer back to in the event of technical difficulties. To assist with the pacing and flow of the course, we will also have a moderator who will help answer questions during the course.

If you're still not sure how this will work, please contact us at training@sumproduct.com and we'll be happy to walk you through the process.

Location	Course	Date	Date	Duration	Duration
Online (Australia)	Power Pivot, Power Query and Power BI	15 - 17 Jun 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	3 Days
Online (Australia)	Excel Tips and Tricks	22 Jun 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	1 Day
Online (Australia)	Financial Modelling	23 - 24 Jun 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	2 Days
Online (Australia)	Power Pivot, Power Query and Power BI	19 - 21 Jul 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	3 Days
Online (Australia)	Excel Tips and Tricks	26 Jul 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	1 Day
Online (Australia)	Financial Modelling	27 - 28 Jul 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	2 Days
Online (Australia)	Power Pivot, Power Query and Power BI	23 - 25 Aug 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	3 Days
Online (Australia)	Excel Tips and Tricks	30 Aug 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	1 Day
Online (Australia)	Financial Modelling	31 Aug - 1 Sep 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	2 Days
Online (Australia)	Power Pivot, Power Query and Power BI	29 Sep - 1 Oct 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	3 Days
Online (Australia)	Excel Tips and Tricks	6 Oct 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	1 Day
Online (Australia)	Financial Modelling	7 - 8 Oct 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	2 Days
Online (Australia)	Power Pivot, Power Query and Power BI	3 - 5 Nov 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	3 Days
Online (Australia)	Excel Tips and Tricks	10 Nov 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	1 Day
Online (Australia)	Financial Modelling	11 - 12 Nov 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	2 Days
Online (Australia)	Power Pivot, Power Query and Power BI	8 - 10 Dec 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	3 Days
Online (Australia)	Excel Tips and Tricks	15 Dec 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	1 Day
Online (Australia)	Financial Modelling	16 - 17 Dec 2021	09:00-17:00 AEDT	(-1 day) 22:00-07:00 GMT	2 Days

Key Strokes

Each newsletter, we'd like to introduce you to useful keystrokes you may or may not be aware of. This year, we thought we'd revisit each function key in depth (there are 12 – one for each month of the year!). Given it's now June, let's look at the **F6** tips, some of which are a Pane:

Keystroke	What it does
F6	Next Pane
ALT + F6	Switch to VBA Integrated Development Environment (IDE) (assuming it is open already)
CTRL + F6	Next window / workbook
SHIFT + F6	Previous Pane
CTRL + ALT + F6	Previous window / workbook

Hey, it's not our fault so many do the same thing this month!

There are *c.*550 keyboard shortcuts in Excel. For a comprehensive list, please download our Excel file at www.sumproduct.com/thought/keyboard-shortcuts. Also, check out our new daily **Excel Tip of the Day** feature on the www.sumproduct.com homepage.

Our Services

We have undertaken a vast array of assignments over the years, including:

· **Business planning**
· **Building three-way integrated financial statement projections**
· **Independent expert reviews**
· **Key driver analysis**
· **Model reviews / audits for internal and external purposes**
· **M&A work**
· **Model scoping**
· **Power BI, Power Query & Power Pivot**
· **Project finance**
· **Real options analysis**
· **Refinancing / restructuring**
· **Strategic modelling**
· **Valuations**
· **Working capital management**

If you require modelling assistance of any kind, please do not hesitate to contact us at contact@sumproduct.com.

Link to Others

These newsletters are not intended to be closely guarded secrets. Please feel free to forward this newsletter to anyone you think might be interested in converting to "the SumProduct way".

If you have received a forwarded newsletter and would like to receive future editions automatically, please subscribe by completing our newsletter registration process found at the foot of any www.sumproduct.com web page.

Any Questions?

If you have any tips, comments or queries for future newsletters, we'd be delighted to hear from you. Please drop us a line at newsletter@sumproduct.com.

Training

SumProduct offers a wide range of training courses, aimed at finance professionals and budding Excel experts. Courses include Excel Tricks & Tips, Financial Modelling 101, Introduction to Forecasting and M&A Modelling.

Check out our more popular courses in our training brochure:

Drop us a line at training@sumproduct.com for a copy of the brochure or download it directly from www.sumproduct.com/training.