Sum Froduct

NEWSLETTER #141 - August 2024

www.sumproduct.com | www.sumproduct.com/thought

And then there were still three! As SumProduct heads into August, we have received the fantastic

news that all three of our Excel Most Valuable Professionals (MVPs) are *still* MVPs. That's a total of 22 awards for the company now, which we think is a fantastic achievement, even if we do say so ourselves! Congratulations to all.

Of course, that's not our only news. There's the latest Gartner[®] Magic Quadrant[™] announcement, checkboxes are now Generally Available in Excel, there are two new Excel translation functions (*"tlhorgh potlhwl" pov 'lq"*) on their way, we introduce a new Python editor and the online Excel grid gets a makeover.

Plus the usual gang! We have the usual Beat the Boredom Challenge, Charts & Dashboards tips, Excel for Mac, Visual Basics, Power Pivot Principles, Power Query Pointers, the new Over to AI, Power BI Updates and more Excel Updates too. Our Keyboard Shortcuts put another **SHIFT** in, but we had to coerce the A to Z of Excel functions this month: they said **NOT NOW** but we insisted...

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

Liam Bastick, Managing Director, SumProduct



Microsoft[®] MVP Most Valuable

Professional

MVP Renewal 2024





SumProduct is pleased to announce that two of our Directors, **Liam Bastick** and **Tim Heng**, have been re-awarded Microsoft's Most Valuable Professional (MVP) award for Excel for 2024-25. Our third MVP, **Steve Kraynak**, did not need to bite his fingernails for this round as he was only recently awarded the honour (we think he just chewed on his toenails instead...).

This award recognises exceptional technical community leaders from around the world who voluntarily share their high-quality, real-world expertise with others. Microsoft MVPs are a highly select group of experts representing technology's best and brightest who share a deep commitment to community and a willingness to help others. Worldwide, there are over 100 million participants in technical communities; of these participants, there are c.4,000 active Microsoft MVPs. In Excel, we believe there are approximately 130 that have received this award.

Microsoft's MVP Award evaluates technical expertise and voluntary community contributions for the past year, considering the quality, quantity and level of impact of contributions. It's a difficult award to attain and just as difficult to retain.

At SumProduct, you can rely on our experience and willingness to help - simply drop us a line at contact@sumproduct.com.



Latest Magic Quadrant for Analytics and Business Intelligence Platforms

From time to time, we do get accused of perhaps jumping too much onto the Microsoft bandwagon, but whilst we celebrate our success of MVP renewal, if other software serves our clients' needs better, we will always use that. Therefore, it's interesting to view the latest Gartner[®] Magic Quadrant[™], which still depicts Microsoft as furthest along both the Completeness of Vision and Ability to Execute spectra.



Gartner (June 2024)

Gartner

Microsoft has stated that it perceives its evolution of Power BI into Fabric and AI's interaction with Power BI as key factors in its success. This is the sixth year it has topped both of Gartner's scales. And that's why we remain on board. Congratulations to Microsoft: we continue to advocate for many of their products, but as always, all of us here at SumProduct will keep a watching brief on the business intelligence and analytical future on behalf of all our (potential) clients.

Laying Out a Financial Model

Most spreadsheets serve a purpose, typically to communicate a forecast, evaluate a project or undertake some other form of quantitative analysis. Note the verb: *communicate*. They are communicative tools first and foremost. However, that communication is frequently sullied by poor layouts, insufficient labels and inconsistencies which cause end users

difficulties in understanding the model purpose and content. These issues can cause unnecessary extra work for the model builder, difficulty in comprehension for the decision maker and lead to conclusions based upon errors in logic and / or formulae which are not readily identifiable / visible. Therefore, you should put some thought into designing your spreadsheets and not just the formulae, functions and formats you use. That's what I want to concentrate on today. You may recall from Best Practice Modelling, "Best Practice" should be considered a proper noun to reflect the idea that a good model has four key attributes I call **CRaFT**:

- Consistency;
- Robustness;
- Flexibility; and
- Transparency.

With this borne in mind, let me explain how I think when putting a worksheet together. To begin with, let's start with a blank worksheet:

日	ن ج	e - 1	÷				В	ook1 - Excel					Ā	-	o x
File	Hom	e Ins	ert Pag	e Layout	Formulas	Data	Review	View	Developer	∑ Tell r	me what y	rou want to do	Lia	am Bastick	₽ Share
Paste	K Ca B rd ⊑	alibri 3 I <u>U</u>	• 11 • ⊞ • Font	т А́а А		₩ 👻 👻 🗮 🗮 📲	₽ 11 •	General ♀ ~ % * 60 →0 Number	Cond	litional Form at as Table * Styles * Styles	atting -	Ensert	∑ - 4 ↓ - 4 ◆ - 6	Sort & Find & Filter * Select Editing	*
Q24			Ŧ	: ×	$\sqrt{-f_x}$										~
	A	в	С	D	Е	F	G	н	1	J	к	L	м	N	0 🔺
1															
2															
4															
5															
6															
8															
9															
10															
11															
13															
14															
15															
10															
18															
19															
20															
21		Ch													
Ready		sheet1	(+)								Ħ			-	+ 100%

Building an effective communication tool by laying out an appropriate financial model is simple: it's all about designing and scoping. The problem is, we are all time poor in today's business environment with perpetual pressure on producing results more and more quickly. Getting a layout structure won't solve all of your problems but it's a start. Let me show you how I develop this basic worksheet. Assuming this isn't a dashboard output page where column widths may be more critical, I tend to narrow the first few columns (highlight columns, then right-click and select 'Column width...' from the pop-up context menu):



It may not be clear why I choose to do this, but read on (hey, I need to keep you on the edge of your seat!). I choose a width of 3 as this effectively makes the cells in these columns square.

	Α	В	С	D	Е	F	G	
1								
2								
3								
4								
5								
6								
7								

You can elect to highlight a different number of columns and you can modify the width too. There are two key points to this:

- 1. Keep column **A** blank other than for the sheet headings (I will explain later)
- 2. Be consistent, both with the widths of the columns narrowed here and with other worksheets within the same workbook (again, I will explain soon).

Next, let's put the sheet title in cell **A1**. This should be the same as the description in the sheet tab. For the purposes of this example, I am going to call it "Sheet Title" to emphasise the purpose of this placeholder, but without the quotation marks:

	Α	В	С	D	Е	F	:	
1	She	et Ti	tle					
2								
3								
4								
5								
6								
7								
8								
	•	Þ		She	eet 1	itle		(+)

There are three reasons for this:

- 1. Given that sheet tab names cannot be infinitely long, sheet title is more succinct and easier for the end user to understand
- 2. Given that the sheet title appears on the worksheet, the name has to be written formally and cannot be an incomprehensible abbreviation, similar to many sheet tab names out there
- 3. This approach promotes consistency, one of the four key concepts of Best Practice modelling.

In cell **A2**, I will put the model name. This is important as often we only show extracts of a workbook in an appendix to a report or a PowerPoint presentation. Therefore, I place it here rather than in the header or footer of each worksheet instead (but you may do both):

Footer			?	×
Footer				
To format text: select the text	xt, then choose the Format Text bu	utton.		
To insert a page number, da	te, time, file path, filename, or tab it how then choose the appropria	name: position the		
To insert picture: press the li cursor in the edit box an	nsert Picture button. To format yo d press the Format Picture button	ur picture, place the		
	A # [# 0			
Left section:	Center section:	Insert File Name ction:		
	~			~
	× .	~		\sim
		ОК	Car	ncel

If you intend to add this to the header or footer, these attributes may be accessed by the keyboard shortcut **ALT + P + SP -> 'Header / Footer' tab -> 'Custom Footer...' button**. I acknowledge it's simpler than my alternative, but this filename will only display when the worksheet is printed. What if it is an image on a PowerPoint slide or, say, as Appendix 4 in a Word document? This is why I keep the model name front and centre on my worksheets.

There's a formula too:

=IFERROR(MID(CELL("filename",A1),FIND("[",CELL("filename",A1))+1,FIND("]",CELL("filename",A1))-FIND("[",CELL("filename",A1))-1),"")

A	2		Ŧ	:)	×	f _x =IF FIN	ERROR(MIE ID("]",CELL	D(CELL("file ("filename	ename",A1 ",A1))-FIN	.),FIND("[" D("[",CELL	,CELL("file ("filename	name",A1)) ",A1))-1),")+1, ")
1	She	et Ti	tle											
2	Exar	mple	e Lay	out	File.	xlsm								
3														
4														
5														

The next key item to position at the top of the sheet is a navigation aid. Today's workbooks can be quite complex with many worksheets. I recommend incorporating a central navigation page – a "Table of Contents" – which allows the end user to traverse the workbook quickly and easily.

	Α	В	С	D	Е	F	G	Н	
1	She	et Ti	tle						
2	Exa	mple	e Lay	out	File.	xlsm			
3	<u>Go t</u>	o Ta	ble	of Co	onte	<u>nts</u>			
4									
5									

It looks like I have added a hyperlink in cell A3, right? Not quite. I am a little craftier than that. Actually, I have highlighted cells A3:F3 and then merged the cells using Excel's Merge Across functionality (ALT + H + M + A):

Home	Inse	rt	Pa	ige Layoi	ut	Formulas		Data	Rev	view	View	Developer	Ō.
Cut		Cal	bri		× 11	• A	A	\equiv	= =	» 7 -	Ē	Wrap Text	G
Format Pai	inter	В	I	<u>u</u> -	•	🕭 - 🛕	-	≡	= =	€≣⇒		Merge & Center	- 5
oboard	E.			Fo	ont		E.			Ali	gnm 🖽	Merge & <u>C</u> ente	r
				£								Merge <u>A</u> cross	
· · · ·			× .	Jx								Merge Cells	45
			_		_							<u>U</u> nmerge Cells	

Hyperlinks may be created easily using the keyboard shortcut **CTRL + K** (or click the 'Link' button on the 'Insert' tab) to link to a place in your document. The intention is to set up a central Table of Contents worksheet where all of the hyperlinks to the other worksheets reside:

1. Table of Contents

<u>Cover</u> <u>Style Guide</u> <u>Model Parameters</u> <u>Timing</u> <u>Error Checks</u> <u>Change Loq</u> The hyperlink should link to cell **A1** (*say*) of that worksheet and that cell should have a range name such **HL_TOC**. A range name is essential in order to avoid a broken link should someone rename the destination worksheet and '**HL**' simply denotes that the cell is used as the destination for a <u>hyperlink</u>. The reason cells **A3:F3** are merged is so that if the end user clicks anywhere in that range the hyperlink will activate; otherwise, the user will have to click on cell **A3** only for the hyperlink to work.

This brings us on nicely to cell A4:

	Α	В	С	D	Ε	F	G	Н
1	She	et Ti	tle					
2	Exa	mple	e Lay	out	File.	xlsm		
3	<u>Go t</u>	o Ta	ble	of Co	onte	<u>nts</u>		
4	Erro	r Ch	ecks	:				
5								

We can add a formula here to summarise all / any error checks present in the model. Typically, to conserve real estate on the worksheet, dates and other headings may share this row too:

4	Α	В	С	D	Е	F	G	н	1	J	K	L	М	N	
I	She	et Ti	itle												
2	Exar	nple	e Lay	out	File.	xlsm									
3	<u>Go t</u>	о Та	ble	of Co	onte	<u>nts</u>									
1	Erro	r Ch	ecks	:		ОК	Units			Date 1	Date 2	Date 3	Date 4	Date 5	
5															
5															

In my layout, I have made column **G** my **Units** column: down this column I shall put in all of my units so end users may distinguish between numerical fields. How often have you seen an output printed out and not known if it is in \$, \$'000, \$m, kg or sliced tomatoes? This will make this issue a thing of the past. It should be noted that this column is not always required. For instance, on an outputs worksheet, you may simply state near the top of the sheet, "All outputs are displayed in \$m unless stated otherwise".

Cells **J4:N4** contain the date headings. The dates should be periodic (*e.g.* monthly, quarterly, annually) and should always start and end in the same columns (and rows) on each forecast worksheet. That is not always possible: sometimes, you require some of you model to be annually forecast and other aspects monthly. Where different reporting periodicities are necessary, these inconsistent worksheets should be clearly delineated from other areas of the workbook.

You may have noticed as well that there is a line inserted in between rows 4 and 5 of our image:

A B C D	E F	G	Н	1	J	K	L	М	N
I Sheet Title									
Example Layout F	ile.xlsm								
Go to Table of Co	ntents								
Error Checks:	ОК	Units			Date 1	Date 2	Date 3	Date 4	Date 5
5									
5									

This is not a drawn line. This is called a frozen pane. Frozen panes break up the worksheet in to as many four pieces and allow parts of the worksheet to remain on view ("be frozen") whilst the reader scrolls down or across the worksheet. Located in the 'Window' grouping of the 'View' tab of the Ribbon, there are three ways to create a frozen pane:

View	Develo	per (2 Tell m	ne what you w	ant to do	
Q				Split	CD View Side by Side	
Zoom to Selection	New Window	Arrange All	Freeze Panes •	Unhide	문의 Synchronous Scrolling 문은 Reset Window Position	Switch Window
Н	1			<u>Freeze Pan</u> Keep rows a the workshe Freeze Top Keep the to	es ind columns visible while the r eet scrolls (based on current se <u>R</u> ow p row visible while scrolling th	rest of lection). rough
				the rest of t Freeze Firs Keep the fir through the	he worksheet. t <u>C</u>olumn st column visible while scrollir rest of the worksheet.	ıg

- Freeze top row: Keeps the top row visible no matter how far down the spreadsheet you scroll
- Freeze first column: Keeps the first column visible no matter how far to the right you scroll the spreadsheet
- Custom (Freeze Panes): Creates a frozen locus at the intersection of the top row and the first column of the cell(s) selected.

That final option is a little confusing. Essentially the frozen panes are created as follows:



Frozen panes are created for the region the selection is in, the region directly above, the region to the immediate left and diagonally opposite the top left-hand corner of the selection. If the selection were in column **A**, there would only be two frozen panes: the rows immediately above and the remainder of the sheet. If the selection were in row 1, again, there would only be two frozen panes: the columns to the left and the remainder.

In our example, cell **A5** has been made the basis of the frozen pane, so that rows 1 to 4 will always be visible. This cell should be given a range name, *e.g.* **HL_Home**, as this is the cell hyperlinks to this sheet should

link. This cell 'resets' the sheet when a frozen pane has been added (not cell **A1**) and makes the model easier to navigate consequently. This cell can always be identified by employing the keyboard shortcut **CTRL** + **HOME**.

At this point, let me revisit my unexplained narrowing of the first few columns. I would suggest headings should start in column **B**, not **A**, and then move out a column or two for sub headings and sub sub headings respectively. This causes a natural indentation. I then put data labels directly beneath sub sub headings:

	A	В	С	D	E	F	G	н	I.	J	ĸ	L	M	N	
1	She	et Ti	tle												
2	Exa	mple	e Lay	out	File.	xlsm									
3	Go	to Ta	ble	of Co	onte	<u>nts</u>									
4	Erro	or Ch	r Checks: OK				Units			Date 1	Date 2	Date 3	Date 4	Date 5	
5															
6		Mai	n He	adin	g										
7															
8			Sub Heading												
9															
10				Sub	Sub	Heading									
11				Labe	el										
12				Labe	el										
13				Labe	el										
14				Labe	el										
15				Labe	el										
16															
17															

I have called them "Headings" and "Sub Headings" etc. to make it clear, but this approach will become cumbersome quickly. Renaming the headings "Heading 1" and so is clearer. This also makes them consistent with pre-existing Style names (hint, hint):

	Α	В	С	D	Е	F	G	н	1	J	K	L	М	N	
1	She	et Ti	tle												
2	2 Example Layout File.xlsm														
3	Got	to Ta	ble (of Co	onter	nts									
4	Erro	or Ch	ecks	:		ОК	Units			Date 1	Date 2	Date 3	Date 4	Date 5	
5															
6		Hea	ding	; 1											
7															
8			Hea	ding	2										
9															
10				Hea	ding	3									
11				Lab	el										
12				Lab	el										
13				Lab	el										
14				Lab	el										
15				Lab	el										
16															
17															
18		Hea	ding	1											
19															
20			Hea	ding	2										
21															
22				Hea	ding	3									
23				Lab	el										
24				Lab	el										
25				Lab	el										
26				Lab	el										
27				Lab	el										
28															
20															

Aside from keeping column **A** clear, do you now see why I have narrowed columns **B**, **C** and **D** (I am keeping column **E** "just in case")? The narrowing of the columns effectively indents the headings and makes worksheets easier to read and navigate (especially if the gridlines, **ALT + W + VG**, are toggled off).

Take special note of the spacing: one blank row between headings; two lines between sections. That's my preference. You choose your own if

you would prefer – just be consistent. It makes it very simple to copy sections and keep referencing if spacing is deliberate.

Blank columns **H** and **I** are in existence in case we have any calculations, inputs or referred values that do not refer to a particular time period. If they are not required, I tend to narrow the columns to a width of 1 (say), so that they are still there in case they are needed later.

Adding labels, data and formulae:

	Α	В	С	D	E	F	G	Н	1	J	K	L	М	N	
1	She	et T	itle												
2	Exa	mple	e Lay	out	File.	xlsm									
3	Go	to Ta	ble	of Co	onte	nts									
4	Erro	or Ch	ecks	:		ОК	Units			Date 1	Date 2	Date 3	Date 4	Date 5	
5															
6		Hea	ding	g 1											
7															
8			Hea	ding	g 2										
9															
10				Hea	nding	3									
11				Lab	el		Number			7481	2962	19411	8388	7157	
12				Lab	el		\$/unit			3.8	3.81	3.82	3.83	3.84	
13				Lab	el		\$/unit			2.95	2.94	2.93	2.92	2.91	
14				Lab	el		\$/unit			4.5	4.5	4.5	4.5	4.5	
15				Lab	el		\$/unit			3.75	3.7	4.1	3.9	4.22	
16															
17															
18		Hea	ding	g 1											
19															
20			Hea	ding	g 2										
21															
22				Hea	nding	3									
23				Lab	el		Number			7481	2962	19411	8388	7157	
24				Lab	el		\$'000			28427.8	11285.22	74150.02	32126.04	27482.88	
25	_			Lab	el		\$'000			22068.95	8708.28	56874.23	24492.96	20826.87	
26				Lab	el		\$'000			33664.5	13329	87349.5	37746	32206.5	
27				Lab	el		\$'000			28053.75	10959.4	79585.1	32713.2	30202.54	
28															
20															

It's starting to look more like a spreadsheet now. The next step is to incorporate Styles (ALT + H + J):

Custom							
Accounts Ref	Assumption	Constraint	Date	Date Heading	Empty		
~ ଏକି ଏକି ଏକି	Heading 1	Heading 1	Heading	Heading 3	Hyperlink Text		
Internal Ref	Line Calc	Line Total	Model N	Normal 2	Notes		
Numbers 0	Parameter	Range Name	Right Currency	Right Number	Row Ref		
Row_Summary	Sheet	Table_Heading	Units	WIP			
Good, Bad and Neutral							
Normal	Bad	Good	Neutral				
Data and Model							
Calculation	Check Cell	Explanatory	Followed Hype	<u>Hyperlink</u>	Input		
Linked Cell	Note	Output	Warning Text				
Titles and Headings							
Headin	Heading 2	Heading 3	Heading 4	litle	Total		
Themed Cell Styl	es						
20% - Accent1	20% - Accent2	20% - Accent3	20% - Accent4	20% - Accent5	20% - Accent6		
40% - Accent1	40% - Accent2	40% - Accent3	40% - Accent4	40% - Accent5	40% - Accent6		
60% - Accent1	60% - Accent2	60% - Accent3	60% - Accent4	60% - Accent5	60% - Accent6		
Accent1	Accent2	Accent3	Accent4	Accent5	Accent6		
Number Format							
Comma	Comma [0]	Currency	Currency [0]	Percent			
New Cell Style	e						
Merge Styles.							

1 Sheet Title 2 Example Layout File.xlsm 3 Go to Table of Contents 4 Error Checks: OK 9 Inits Date 1 10 Heading 2 9 Heading 3 11 Label 12 Label 5/unit \$ 3.80 \$ 5.81 \$ 5.81 \$ 5.82 \$ 5.31	<u>4 Date 5</u>
2 Example Layout File.xlsm 3 Go to Table of Contents 4 Error Checks: OK Units Date 1 Date 2 Date 3 Date 5 6 Heading 1 7	<u>4 Date 5</u>
3 Go to Table of Contents 4 Error Checks: OK Units Date 1 Date 2 Date 3 Date 5 6 Heading 1 7 8 9 9 9 10 Heading 3 11 Label Number 7,481 2,962 19,411 8,33 14	e 4 Date 5
4 Error Checks: OK Units Date 1 Date 2 Date 3 Date 5 5 6 Heading 1 7 8 Heading 2 9 9 10 Heading 3 11 Label Number 7,481 2,962 19,411 8.5 12 Label \$/unit \$ 3.80 \$ 3.81 \$ 3.82 \$ 3.20<	24 Date 5
5 6 Heading 1 7 8 Heading 2 9 10 Heading 3 11 Label Number 7,481 2,962 19,411 8,3 12 Label \$/unit \$ 3.80 \$ 3.81 \$ 3.82 \$ 4.32 \$ 3.20 \$ 5.32\$	
6 Heading 1 7 8 9 10 10 Heading 3 11 Label 12 Label 13 John Low 14 South State 15 South State 16 South State 17 South State 18 South State 19 South State 10 South State 11 South State 12 South State 13 South State 14 South State 15 South State 16 South State 17 South State 18 South State 19 South State 11 South State 12 South State 13 South State 14 South State 15 South State 16 South State 17 South State 18 South State 19 South State 10	
7 8 Heading 2 9 10 Heading 3 11 Label Number 12 Label \$/unit 13 Label \$/unit 14 \$ \$	
8 Heading 2 9 10 11 Label 12 Label 13 Label 14 \$ 3.80 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.81 \$ 3.82 \$ 3.81	
9 10 Heading 3 11 Label Number 7,481 2,962 19,411 8,5 12 Label \$/unit \$3.80 \$3.81 \$3.82 \$3.82 \$3.81 \$3.82 \$3.82 \$3.81 \$3.82	
10 Heading 3 11 Label Number 7,481 2,962 19,411 8,33 12 Label \$/unit \$ 3.80 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 4.82 \$ 4.82 \$ 3.81 \$ 3.82 \$ 4.82 \$ 4.82 13 Label \$/unit \$ 2.86 \$ 6.82\$ \$ 4.62\$ \$ 0.00\$ \$ 0.81 \$ 6.82\$ \$ 0.82\$	
11 Label Number 7,481 2,962 19,411 8,1 12 Label \$/unit \$ 3.80 \$ 3.81 \$ 3.82 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3.82 \$ 3.81 \$ 3	
12 Label \$/unit \$ 3.80 \$ 3.81 \$ 3.82 \$ 3 12 Label \$/unit \$ 3.80 \$ 3.81 \$ 3.82 \$ 3	388 7,157
	.83 \$ 3.84
15 Laber 5/unit 5 2.93 5 2.94 5 2.93 5 2	.92 \$ 2.91
14 Label \$/unit \$ 4.50	.50 \$ 4.50
15 Label \$/unit \$ 3.75 \$ 3.70 \$ 4.10 \$ 3	.90 \$ 4.22
16	
17	
18 Heading 1	
19	
20 Heading 2	
21	
22 Heading 3	
23 Label Number 7,481 2,962 19,411 8,3	88 7,157
24 Label \$'000 \$ 28.4 \$ 11.3 \$ 74.2 \$ 3	2.1 \$ 27.5
25 Label \$'000 \$ 22.1 \$ 8.7 \$ 56.9 \$ 2	4.5 \$ 20.8
26 Label \$'000 \$ 33.7 \$ 13.3 \$ 87.3 \$ 3	7.7 \$ 32.2
27 Label \$'000 \$ 28.1 \$ 11.0 \$ 79.6 \$ 3	

If I switch off gridlines on my spreadsheets, then the majority of my files appear to have a white background. There is more to this point than merely aesthetics. Adding a colour to the background of a spreadsheet can make a file significantly larger – unnecessarily.

The spacing is deliberate too. Not only does it look neater (remember, Excel 2007 onwards has 1,048,576 rows and 16,384 columns, *i.e.* it is 1,024 times larger than an Excel 2003 worksheet so there is plenty of room), but the space is functional too.

Want to navigate between the main headings in column **B**? Click on cell **B6**, go **CTRL + Down Arrow** and you will arrive at cell **B18**. Repeat this action and the next cell you will hit is cell **B1048576**, *i.e.* the very bottom of the spreadsheet because there is nothing else in this column.

Click on cell **D10** (Heading 3) and use the keyboard shortcut **CTRL + Down Arrow** to take you to cell **D15**, the final cell in the contiguous

range. **CTRL + Up Arrow**, **CTRL + Right Arrow** and **CTRL + Left Arrow** will all perform similar actions. Need to highlight a range? Click on any cell within the range and **CTRL + A** will select the whole contiguous range. This makes the model easier for developer and user alike to navigate and manipulate.

So why have I kept column **A** blank? The reason is to consider work in progress. How often have you started creating a spreadsheet only to be interrupted, have to go to a meeting, take a telephone call, go home or go to sleep? The point is, when we are interrupted we need to remember how far along we were. If you design a spreadsheet similar to the one discussed here, imagine you are interrupted without notice. Before you turn your attention to the disruption, whichever row you are working on, press the **HOME** key which will take you to column **A** of that row. Type anything in that cell, *e.g.* "w" for "work in progress" or "check" and so on. That's it.

Word to the Wise

Whatever you decide to do, keep it consistent, make it transparent, ensure there are checks to protect the robustness and that inputs are clearly marked to aid flexibility. Any layout addressing these points will necessarily adhere to the **CRaFT** ideology.

Checkboxes in Excel

Checkboxes are finally released to production in Excel. These are useful for checklists (obviously!), managing tasks and visualising your data quickly. With just a few clicks, you can insert Checkboxes into any cell, making your spreadsheets more dynamic and user-friendly.



File	Но	me In	sert Nev	v Tab	Draw	Page Layout	Formulas	
Pive	ot Table	Recomme PivotTab Tables	nded Tabl	e III	ustrations	Checkbox Controls	Recommend Charts	
B5		~ :	$\times \checkmark f_x$	~ T	RUE			
	А	В			С			
1								
2			Step					
3		\checkmark	New: Checkboxes in Excel					
4		\checkmark	Manage tasks easily					
5		M	User-friendly files					
C								

To insert Checkboxes:

- select the range where you want the Checkboxes
- select Insert -> Checkbox.

File	Home	Insert	New Tab	Draw	Page Lay	yout F	ormu	las	Data
PivotTa	ble Recor Piv	mmended otTables	Table	Pictures	 ✓ (2) 31 ✓ 2¹ 51 ✓ 51 ✓ 51 ✓ 51 	D Models martArt treenshot	*	Chec	kbox:
	Tal	bles			Illustration	s		Con	trols

To check or uncheck a Checkbox:

- click on the checkbox
- Select one or more checkboxes and press **SPACE**.

To remove Checkboxes:

- press the DELETE key
- if any of the Checkboxes were checked, **DELETE** will first uncheck them. Press **DELETE** again to remove them.

These Checkboxes should be available to you all by the time you read this here!

- Windows and Mac Desktop: rollout began June 26
- on Web and Mobile (iPad, iOS & Android): coming soon.

Microsoft expects all users on Current Channel to have access by the end of July.

New Translation Functions in Excel



There are two new Preview functions coming to Excel. Be careful using these: their signature and results may change substantially before being broadly released, based upon feedback from those fortunate enough to be able to access them. Therefore, we strongly recommend you do not rely on these functions in important workbooks until they are Generally Available.

The two new translation functions out in Preview now are TRANSLATE and DETECTLANGUAGE.

Microsoft is introducing these two new functions to simplify and automate translations directly within your spreadsheet:

- TRANSLATE(): a function that translates a text from one language to another
- DETECTLANGUAGE(): a function that detects the language of the specified text.

TRANSLATE

TRANSLATE takes text you provide and translates it from one language to another using Microsoft Translation Services. Currently, there are 133 languages supported – including two variations of Klingon!!



At the time of writing, these are:

- 1. Afrikaans
- 2. Albanian
- 3. Amharic
- 4. Arabic
- 5. Armenian
- 6. Assamese
- 7. Azerbaijani (Latin)
- 8. Bangla
- 9. Bashkir
- 10. Basque
- 11. Bhojpuri
- 12. Bodo
- 13. Bosnian (Latin)
- 14. Bulgarian
- 15. Cantonese (Traditional)
- 16. Catalan
- 17. Chinese (Literary)
- 18. Chinese Simplified
- 19. Chinese Traditional
- 20. chiShona
- 21. Croatian
- 22. Czech
- 23. Danish
- 24. Dari

- 25. Divehi
- 26. Dogri
- 27. Dutch
- 28. English
- 29. Estonian
- 30. Faroese
- 31. Fijian
- 32. Filipino
- 33. Finnish
- 34. French
- 35. French (Canada)
- 36. Galician
- 37. Georgian
- 38. German
- 39. Greek
- 40. Gujarati
- 41. Haitian Creole
- 42. Hausa
- 43. Hebrew
- 44. Hindi
- 45. Hmong Daw (Latin)
- 46. Hungarian
- 47. Icelandic
- 48. Igbo
- 49. Indonesian

50.	Inuinnaqtun	92. Portuguese (Brazil)
51.	Inuktitut	93. Portuguese (Portugal)
52.	Inuktitut (Latin)	94. Punjabi
53.	Irish	95. Queretaro Otomi
54.	Italian	96. Romanian
55.	Japanese	97. Rundi
56.	Kannada	98. Russian
57.	Kashmiri	99. Samoan (Latin)
58.	Kazakh	100. Serbian (Cyrillic)
59.	Khmer	101. Serbian (Latin)
60.	Kinyarwanda	102. Sesotho
61.	Klingon	103. Sesotho sa Leboa
62.	Klingon (plqaD)	104. Setswana
63.	Konkani	105. Sindhi
64.	Korean ko	106. Sinhala
65.	Kurdish (Central)	107. Slovak
66.	Kurdish (Northern)	108. Slovenian
67.	Kyrgyz (Cyrillic)	109. Somali (Arabic)
68.	Lao	110. Spanish es
69.	Latvian	111. Swahili (Latin)
70.	Lithuanian	112. Swedish
71.	Lingala	113. Tahitian
72.	Lower Sorbian	114. Tamil
73.	Luganda	115. Tatar (Latin)
74.	Macedonian	116. Telugu
75.	Maithili	117. Thai
76.	Malagasy	118. Tibetan
77.	Malay (Latin)	119. Tigrinya
78.	Malayalam	120. Tongan
79.	Maltese	121. Turkish
80.	Maori	122. Turkmen (Latin)
81.	Marathi	123. Ukrainian
82.	Mongolian (Cyrillic)	124. Upper Sorbian
83.	Mongolian (Traditional)	125. Urdu
84.	Myanmar	126. Uyghur (Arabic)
85.	Nepali	127. Uzbek (Latin)
86.	Norwegian	128. Vietnamese
87.	Nyanja	129. Welsh
88.	Odia	130. Xhosa
89.	Pashto	131. Yoruba
90.	Persian	132. Yucatec Maya
91.	Polish	133. Zulu.

As mentioned above, the **TRANSLATE** function allows you to translate text from one language to another in Microsoft Excel by using Microsoft Translation Services. The full signature is:

TRANSLATE(text, [source_language], [target_language])

This function has the following arguments:

- text: the text to translate. This value should either be enclosed in quotation marks or be a reference to a cell containing the appropriate text
- **source_language (optional):** the language code of the source language (*e.g.* "en" for English or "es" for Spanish). If not specified, the language will be automatically detected based upon the **text** provided. Auto-detection is supported for most languages. It is recommended to specify the language if known, especially for shorter texts
- target_language (optional): the language code of the target language (*e.g.* "en" for English or "es" for Spanish). If not specified, the system language will be used as the target language.

The supported languages and their respective language codes are as follows:

Language	Language code
Afrikaans	af
Albanian	sq
Amharic	am
Arabic	ar
Armenian	hy
Assamese	as
Azerbaijani (Latin)	az
Bangla	bn
Bashkir	ba
Basque	eu
Bhojpuri	bho
Bodo	brx
Bosnian (Latin)	bs
Bulgarian	bg
Cantonese (Traditional)	yue
Catalan	са
Chinese (Literary)	lzh
Chinese Simplified	zh-Hans
Chinese Traditional	zh-Hant
chiShona	sn
Croatian	hr
Czech	CS
Danish	da
Dari	prs
Divehi	dv
Dogri	doi
Dutch	nl
English	en
Estonian	et
Faroese	fo
Fijian	fj

Language	Language code
Filipino	fil
Finnish	fi
French	fr
French (Canada)	fr-ca
Galician	gl
Georgian	ka
German	de
Greek	el
Gujarati	gu
Haitian Creole	ht
Hausa	ha
Hebrew	he
Hindi	hi
Hmong Daw (Latin)	mww
Hungarian	hu
Icelandic	is
Igbo	ig
Indonesian	id
Inuinnaqtun	ikt
Inuktitut	iu
Inuktitut (Latin)	iu-Latn
Irish	ga
Italian	it
Japanese	ја
Kannada	kn
Kashmiri	ks
Kazakh	kk
Khmer	km
Kinyarwanda	rw
Klingon	tlh-Latn
Klingon (plqaD)	tlh-Piqd

Language	Language code
Konkani	gom
Korean	ko
Kurdish (Central)	ku
Kurdish (Northern)	kmr
Kyrgyz (Cyrillic)	ky
Lao	lo
Latvian	lv
Lithuanian	lt
Lingala	In
Lower Sorbian	dsb
Luganda	lug
Macedonian	mk
Maithili	mai
Malagasy	mg
Malay (Latin)	ms
Malayalam	ml
Maltese	mt
Maori	mi
Marathi	mr
Mongolian (Cyrillic)	mn-Cyrl
Mongolian (Traditional)	mn-Mong
Myanmar	my
Nepali	ne
Norwegian	nb
Nyanja	nya
Odia	or
Pashto	ps
Persian	fa
Polish	pl
Portuguese (Brazil)	pt
Portuguese (Portugal)	pt-pt

Language	Language code
Punjabi	ра
Queretaro Otomi	otq
Romanian	ro
Rundi	run
Russian	ru
Samoan (Latin)	sm
Serbian (Cyrillic)	sr-Cyrl
Serbian (Latin)	sr-Latn
Sesotho	st
Sesotho sa Leboa	nso
Setswana	tn
Sindhi	sd
Sinhala	si
Slovak	sk
Slovenian	sl
Somali (Arabic)	SO
Spanish	es
Swahili (Latin)	SW
Swedish	SV
Tahitian	ty
Tamil	ta
Tatar (Latin)	tt
Telugu	te
Thai	th
Tibetan	bo
Tigrinya	ti
Tongan	to
Turkish	tr
Turkmen (Latin)	tk
Ukrainian	uk
Upper Sorbian	hsb

Language	Language code
Urdu	ur
Uyghur (Arabic)	ug
Uzbek (Latin)	uz
Vietnamese	vi
Welsh	су
Xhosa	xh
Yoruba	уо
Yucatec Maya	уиа
Zulu	zu

Suppose you have the following text in cell A1: "Hello, World!" and you want to translate it to Spanish. You can use the TRANSLATE function as follows:

=TRANSLATE(A1, "en", "es")

In this example, the source language is English (en) and the target language is Spanish (es). The translated text, "Hola mundo!" will be displayed in the cell where you entered the formula.

Alternatively, you may just type the text in, viz.

SUM		~ : 🗙 🗸	$f_x \sim = TR/$	ANSLATE("H	Hello, wor	ld!","en	
	A	В	С	D	E	F	G
1							
2							
3							
4							
5		= TRANSLA	TE ("Hello, w	orld!","en			
6		TRANSLATE	(text, [source_l	anguage], [tai	rget_language])	
7				() [•] af	f" - Afrikaans		
8				()*sc	q" - Albanian		
9				()*ar	m" - Amharic		
10				() ar	r" - Arabic		
11				() h	y - Armenian		
12				() as	s - Assamese		
10				(/ d2	- Azerbaijarii		

SUM		✓ : × ✓.	$f_x \sim = TRA$	NSLATE("	Hello, wor	ld!","en'	',"es"
	A	В	с	D	E	F	G
1							
2							
3							
4							
5		= T R ANS LAT	E ("Hello, wo	orld!","en","	'es"		
6		TRANSLATE(1	ext, [source_la	inguage], [ta i	rget_language	1)	
7					() "af" - Afrika	ans	
8					() "sq" - Albar	nian	
9					() "am" - Amh	aric	
10					() "ar" - Arabio	c .	
11					() hy - Arme	nian	
12					() as - Asyan () az* - Azerb	aijani	
					ALCID	ajam	

B 6	B6 \checkmark : $\times \checkmark f_x \checkmark$									
	A	В	С	D	E	F	G			
1										
2										
3										
4										
5		;Hola mundo!								
6										
7										
8										
9										
10					n					
11					÷					
12										

Common errors include the following:

- Text Too Long: you have too many characters in a cell. Reduce your cell size and try again
- Error in Value: you have a non-text value in your cell. The function only accepts a text argument
- Invalid Language: you have entered an invalid language code or one not presently supported (see above)
- **Request Throttled:** you have exceeded your daily quota of the translation function (now that is interesting, but we are not quite sure what that means at the time of writing).

DETECTLANGUAGE

DETECTLANGAUGE detects the language of text you provide using the Microsoft Translation Services and returns the language code. The full signature is:

DETECTLANGUAGE(text)

The function has the following arguments:

• text: the text or reference to cells containing text to evaluate.

The supported languages and their respective language codes are as above.

Suppose you have the following text in cell A1: "Hola mundo!" and you want to find out what the language of the text is. You can use the **DETECTLANGUAGE** function as follows:

=DETECTLANGUAGE(A1)

This will return the detected language for the text in cell A1. The language code "es" for Spanish will be displayed in the cell where you entered the formula.

Alternatively, you may just type the text in, viz.

SUM		✓ : × ✓.	fx ∨ =DE	TECTLANG	UAGE("Hola	mundo"	
	A	В	С	D	E	F	G
1							
2							
3							
4							
5		=DETECTLA	NGUAGE	("Hola mur	ndo")		
6							
7							
8			- ^				
9			~ J *				

B6		\checkmark : $\times \checkmark$	$f_x \vee$			
	A	В	С	D	E	
1						
2						
3						
4						
5		es				
6						
7						

Common errors include the following:

- Text Too Long: you have too many characters in a cell. Reduce your cell size and try again •
- Error in Value: you have a non-text value in your cell. The function only accepts a text argument •
- Invalid Language: you have entered an invalid language code or one not presently supported (see above) •
- Request Throttled: you have exceeded your daily quota of the translation function. •

These functions are currently available to some Beta Channel users running:

- Windows: Version 2407 (Build 16.0.17808.20000) or later •
- Mac: 16.87 (Build 24062430) or later. •

We say "some" as we haven't access yet. 😣

Revamped Excel Grid

Not yet detailed in the Excel Updates (see below), one update for web users provides versatile features designed to make your spreadsheet tasks simpler and more efficient. Essentially Excel for the web is transforming from this:



Mode: Automatic General Workbook Statistics Help Improve Office

to this:

:::	×	Inclusive Design.xlsx 🐔 Confidential - Sa	ved 🗸		D Sear	rch (Alt + Q)										£93
File	Home	Insert Formulas Data Review	View	Automate	Help					MM 🚍	FS +4	∽ Catch U	lp CS Cor	nments	/ Editing 🗸	😢 Sha
9	~ Ĉ	~ 🍕 🛛 Aptos 🔹 11 *	B 🗄	~ 💁 ~	<u>A</u> ~	≣ ~ \$\$	• -	General	~ €0	.00 →.0 Ⅲ	~ 😿 ~	$\Sigma \sim \frac{1}{2}$	v Q v		š ~ …	
D10		•] [f _X] [
4	A	8	с	E	F	G		В	,	к	L	N	0	Р	r u	v
8		Column1	Rate	Feb 22	March 22 🔄		April 22 -	June 22 🖂	July 22 🖂	Aug 22 🖂	Sept 22 🖂	Nov 22	Dec 22 🖂	Total		
		ANTICIPATED SALES TOTAL \$(000)		20,000.00	50,000.00		150,000.00	150,000.00	150,000.00	180,000.00	250,000.00	arments r	*******	*******		
0		PERSONNEL (% OF TOTAL SALES)		0.55	0.65		0.75	0.93	0.97	0.94	0.77	6 = 0.77	0.77	23.00		
1		Human Resources - Headcount	500.00%	6.00	5.00		5.00	5.00	5.00	5.00	5.00	E 1566	10.00			
2	1.1	Human Resources - Cost		30.00	30.00		30.00	25.00	35.00	35.00	35.00	6 (5.00	35.00	380.00		
3		Commission	0.10%	45.00	50.00		150.00	150.00	150.00	180.00	250.00	6 230.00	3,000.50	4,633.00		
4		Personnel Total \$(000)		75.00	80.00		180.00	175.00	185.00	215.00	285.00	6 201.00	3,035.50	5,013.00		
5		DIRECT MARKETING (% OF TOTAL SALES		0.45	0.50		0.40	0.12	0.07	0.02	0.05	6 0.05	0.05			
5		Telemarketing (% of Direct Sales)		0.50	0.50		0.34	0.50	0.50	0.50	0.50	6 0.50	0.50			
7		Human Resources - Headcount	300.00%	1.50	1.50		1.02	1.50	1.50	1.50	1.50	€ 140	1.50	19.02		
3		Infrastructure Support		10.00	25.00		15.00	10.00	25.00	10.00	25.00	6 35.05	10.00	215.00		
•		Commission	0.10%	4.50	12.50		20.40	9.00	5.25	1.80	6.25	6.25	75.01	168.76		
0		Training		10.00	25.00		10.00	10.00	25.00	10.00	25.00	1 25.00	10.00	210.00		
		Internet Marketing (% of Direct Sales)		0.25	0.25		0.25	0.25	0.25	0.25	0.25	4 025	0.25			
2		Human Resources - Headcount	100.00%	0.25	0.25		0.25	0.25	0.25	0.25	0.25	6. 025	0.25	3.00		
8		Website Development (one-time cost)												500.00		
1		Hosting		10.00	10.00		10.00	10.00	10.00	10.00	10.00	6. 10.00	10.00	120.00		
5		Support & Maintenance										f = 23.00		50.00		
5		Internet Marketing Total \$(000)		10.25	10.25		10.25	10.25	10.25	10.25	10.25	4 19.15	10.25	673.00		
7		Direct email (% of direct sales)														
3		Human Resources - Cost					9. N. 1998.				1885.1			0.00		
9		Material		1,000.00	1,000.00		1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	6.1.000.00	1,000.00	12,000.00		
0		Postage		250.00	250.00		250.00	250.00	250.00	250.00	230.00	6.1264.66	250.00	2,980.00		

Calculation Mode: Automatic 🛛 General Workbook Statistics

You may now quickly resize rows and columns for better data visibility and presentation. All you need to do is hover over the border of a row or column header, click and hold the handles, and then drag to resize.

	А		В	C	D		Е
1	Expense -2021						
2							
3	Cost Category	Region	Year	One-Time Cost	Total Cost	Cos	st/Month
4	Advertising/Marketing	EU	2023	2100	56	€	3,750.00
5	Hardware	North America	2023	1200	1450	€	250.00
6	Postage/shipping	North America	2021	0	1500	€	1,500.00
7	Postage/shipping	North America	2022	0	1500	€	1,500.00
8	Postage/shipping	North America	2023	0	1500	€	1,500.00
9	Hardware	Southeast Asia	2022	2500	2750	€	250.00
10	Hardware	North America	2021	1750	2000	€	250.00
11	Postage/shipping	EU	2021	0	2000	€	2,000.00
12	Postage/shipping	EU	2022	0	2000	€	2,000.00
13	Postage/shipping	EU	2023	0	2000	€	2,000.00
14	Hardware	Southeast Asia	2023	1800	2050	€	275.00
15	Hardware	EU	2021	2200	2250	€	250.00
16	Hardware	Southeast Asia	2021	2000	2250	€	250.00
17	Hardware	EU	2022	2200	2450	€	250.00
18	Hardware	EU	2023	2200	2450	€	300.00
19	Hardware	North America	2022	2250	2500	€	250.00

There is also a new simplified interface which makes adding rows, or columns to your spreadsheet straightforward. Just hover over the respective row or column header and then click on the small circles (convert to + on hover).

				€ :::	0			
	А	В	c	D D	E	F	G	
1	Expense -2021							
2								
3	Cost Category	Region	Year	One-Time Cost	Total Cost	Cost/Month		
4	Advertising/Marketing	EU	2023	2100	56	€ 3,750.00		
5	Hardware	North America	2023	1200	1450	€ 250.00		
6	Postage/shipping	North America	2021	0	1500	€ 1,500.00		
7	Postage/shipping	North America	2022	0	1500	€ 1,500.00		
8	Postage/shipping	North America	2023	0	1500	€ 1,500.00		
9	Hardware	Southeast Asia	2022	2500	2750	€ 250.00		
10	Hardware	North America	2021	1750	2000	€ 250.00		
11	Postage/shipping	EU	2021	0	2000	€ 2,000.00		
12	Postage/shipping	EU	2022	0	2000	€ 2,000.00		
13	Postage/shipping	EU	2023	0	2000	€ 2,000.00		
14	Hardware	Southeast Asia	2023	1800	2050	€ 275.00		
15	Hardware	EU	2021	2200	2250	€ 250.00		
16	Hardware	Southeast Asia	2021	2000	2250	€ 250.00		
17	Hardware	EU	2022	2200	2450	€ 250.00		
18	Hardware	EU	2023	2200	2450	€ 300.00		
19	Hardware	North America	2022	2250	2500	€ 250.00		

				0	0			
	А	В	С	► D	E	F	G	
1	Expense -2021							
2								
3	Cost Category	Region	Year		One-Time Cost	Total Cost	Cost/Month	
4	Advertising/Marketing	EU	2023		2100	56	€ 3,750.00	
5	Hardware	North America	2023		1200	1450	€ 250.00	
6	Postage/shipping	North America	2021		0	1500	€ 1,500.00	
7	Postage/shipping	North America	2022		0	1500	€ 1,500.00	
8	Postage/shipping	North America	2023		0	1500	€ 1,500.00	
9	Hardware	Southeast Asia	2022		2500	2750	€ 250.00	
10	Hardware	North America	2021		1750	2000	€ 250.00	
11	Postage/shipping	EU	2021		0	2000	€ 2,000.00	
12	Postage/shipping	EU	2022		0	2000	€ 2,000.00	
13	Postage/shipping	EU	2023		0	2000	€ 2,000.00	
14	Hardware	Southeast Asia	2023		1800	2050	€ 275.00	
15	Hardware	EU	2021		2200	2250	€ 250.00	
16	Hardware	Southeast Asia	2021		2000	2250	€ 250.00	
17	Hardware	EU	2022		2200	2450	€ 250.00	
18	Hardware	EU	2023		2200	2450	€ 300.00	
19	Hardware	North America	2022		2250	2500	€ 250.00	

You may also show hidden rows or columns with one click and get a complete view of your data instantly. Just hover over the row or column header and then select the small arrows that appear.

	А	С	D	Е	G	Н	I
1	Expense -2021			•			
2							
3	Cost Category	Year	One-Time Cost	Total Cost			
4	Advertising/Marketing	2023	2100	56			
5	Hardware	2023	1200	1450			
6	Postage/shipping	2021	0	1500			Cost/Month
8	Postage/shipping	2023	0	1500			Sum of Total Cost
9	Hardware	2022	2500	2750			Row Labels
10	Hardware	2021	1750	2000			⊟Advertising/Marketing
11	Postage/shipping	2021	0	2000			EU
12	Postage/shipping	2022	0	2000			North America
14	Hardware	2023	1800	2050			Employee Payroll Taxe
15	Hardware	2021	2200	2250			EU
16	Hardware	2021	2000	2250			North America
17	Hardware	2022	2200	2450			Southeast Asia
18	Hardware	2023	2200	2450			Employee Salaries
19	Hardware	2022	2250	2500			EU
20	Postage/shipping	2021	0	2500			North America
21	Postage/shipping	2022	0	2500			Southeast Asia

	А	С	D	E	F	G	Н	
1	Expense -2021			÷				
2				-				
3	Cost Category 🗸	Year	One-Time Cost	Total Cost	Cost/Month			
4	Advertising/Marketing	2023	2100	56	€ 3,750.00			
5	Hardware	2023	1200	1450	€ 250.00			
6	Postage/shipping	2021	0	1500	€ 1,500.00			Cost/M
8	Postage/shipping	2023	0	1500	€ 1,500.00			Sum of
9	Hardware	2022	2500	2750	€ 250.00			Row La
10	Hardware	2021	1750	2000	€ 250.00			Adve
11	Postage/shipping	2021	0	2000	€ 2,000.00			EU
12	Postage/shipping	2022	0	2000	€ 2,000.00			North
14	Hardware	2023	1800	2050	€ 275.00			⊟Emp
15	Hardware	2021	2200	2250	€ 250.00			EU
16	Hardware	2021	2000	2250	€ 250.00			North
17	Hardware	2022	2200	2450	€ 250.00			South
18	Hardware	2023	2200	2450	€ 300.00			⊟Emp
19	Hardware	2022	2250	2500	€ 250.00			EU
20	Postage/shipping	2021	0	2500	€ 2,500.00			North
21	Postage/shipping	2022	0	2500	€ 2,500.00			Sout

You may also keep important headers or columns visible as you scroll to ensure that important information stays visible, no matter how far you scroll down or across your spreadsheet. To do so, drag the handles in the top left corner of the headers and drag them to the desired position. To change existing freeze panes, just drag the freeze pane line.

	ф А	В	С	D	Е		F	G
1	Expense -2021							
2								
3	Cost Category	Region	Year	One-Time Cost	Total Cost	Co	st/Month	
4	Advertising/Marketing	EU	2023	2100	56	€	3,750.00	
5	Hardware	North America	2023	1200	1450	€	250.00	
6	Postage/shipping	North America	2021	0	1500	€	1,500.00	
7	Postage/shipping	North America	2022	0	1500	€	1,500.00	
8	Postage/shipping	North America	2023	0	1500	€	1,500.00	
9	Hardware	Southeast Asia	2022	2500	2750	€	250.00	
10	Hardware	North America	2021	1750	2000	€	250.00	
11	Postage/shipping	EU	2021	0	2000	€	2,000.00	
12	Postage/shipping	EU	2022	0	2000	€	2,000.00	
13	Postage/shipping	EU	2023	0	2000	€	2,000.00	
14	Hardware	Southeast Asia	2023	1800	2050	€	275.00	
15	Hardware	EU	2021	2200	2250	€	250.00	
16	Hardware	Southeast Asia	2021	2000	2250	€	250.00	
17	Hardware	EU	2022	2200	2450	€	250.00	
18	Hardware	EU	2023	2200	2450	€	300.00	
19	Hardware	North America	2022	2250	2500	€	250.00	

	А	в		D	Е		F	G
1	Expense -2021	\langle	\mathcal{D}					
2								
3	Cost Category	Region	Year	One-Time Cost	Total Cost	Co	st/Month	
4	Advertising/Marketing	EU	2023	2100	56	€	3,750.00	
5	Hardware	North America	2023	1200	1450	€	250.00	
6	Postage/shipping	North America	2021	0	1500	€	1,500.00	
7	Postage/shipping	North America	2022	0	1500	€	1,500.00	
8	Postage/shipping	North America	2023	0	1500	€	1,500.00	
9	Hardware	Southeast Asia	2022	2500	2750	€	250.00	
10	Hardware	North America	2021	1750	2000	€	250.00	
11	Postage/shipping	EU	2021	0	2000	€	2,000.00	
12	Postage/shipping	EU	2022	0	2000	€	2,000.00	
13	Postage/shipping	EU	2023	0	2000	€	2,000.00	
14	Hardware	Southeast Asia	2023	1800	2050	€	275.00	
15	Hardware	EU	2021	2200	2250	€	250.00	
16	Hardware	Southeast Asia	2021	2000	2250	€	250.00	
17	Hardware	EU	2022	2200	2450	€	250.00	
18	Hardware	EU	2023	2200	2450	€	300.00	
19	Hardware	North America	2022	2250	2500	€	250.00	

Another simplified feature is the ability to rearrange elements in your worksheet with drag and drop, making data organisation rudimentary. To try the drag and drop feature, select any row or column, hold and drag when the cursor shows the hand icon, and then drop in any other row or column.

		2117	0				
	A	B	С	D	E	F	G
1	Expense -2021						
2							
3	Cost Category	Total Co 🖂	Region	Year	One-Time Cost	Cost/Month	
4	Advertising/Marketing	56	EU	2023	2100	€ 3,750.00	
5	Hardware	1450	North America	2023	1200	€ 250.00	
6	Postage/shipping	1500	North America	2021	0	€ 1,500.00	
7	Postage/shipping	1500	North America	2022	0	€ 1,500.00	
8	Postage/shipping	1500	North America	2023	0	€ 1,500.00	
9	Hardware	2750	Southeast Asia	2022	2500	€ 250.00	
10	Hardware	2000	North America	2021	1750	€ 250.00	
11	Postage/shipping	2000	EU	2021	0	€ 2,000.00	
12	Postage/shipping	2000	EU	2022	0	€ 2,000.00	
13	Postage/shipping	2000	EU	2023	0	€ 2,000.00	
14	Hardware	2050	Southeast Asia	2023	1800	€ 275.00	
15	Hardware	2250	EU	2021	2200	€ 250.00	
16	Hardware	2250	Southeast Asia	2021	2000	€ 250.00	
17	Hardware	2450	EU	2022	2200	€ 250.00	
18	Hardware	2450	EU	2023	2200	€ 300.00	
19	Hardware	2500	North America	2022	2250	€ 250.00	

	А	В	С	D	E	€ F	G
1	Expense -2021						
2							
3	Cost Category	Region	Year	One-Time Cost	Total Cost	Cost/Month	
4	Advertising/Marketing	EU	2023	2100	56	€ 3,750.00	
5	Hardware	North America	2023	1200	1450	€ 250.00	
6	Postage/shipping	North America	2021	0	1500	€ 1,500.00	
7	Postage/shipping	North America	2022	0	1500	€ 1,500.00	
8	Postage/shipping	North America	2023	0	1500	€ 1,500.00	
9	Hardware	Southeast Asia	2022	2500	2750	€ 250.00	
10	Hardware	North America	2021	1750	2000	€ 250.00	
11	Postage/shipping	EU	2021	0	2000	€ 2,000.00	
12	Postage/shipping	EU	2022	0	2000	€ 2,000.00	
13	Postage/shipping	EU	2023	0	2000	€ 2,000.00	
14	Hardware	Southeast Asia	2023	1800	2050	€ 275.00	
15	Hardware	EU	2021	2200	2250	€ 250.00	
16	Hardware	Southeast Asia	2021	2000	2250	€ 250.00	
17	Hardware	EU	2022	2200	2450	€ 250.00	
18	Hardware	EU	2023	2200	2450	€ 300.00	
19	Hardware	North America	2022	2250	2500	€ 250.00	

You may also highlight important cells to emphasise critical information and improve readability. To use this feature, just select a row, column, range of cells or individual cell.

	A	В	С	D	E	F	G
1	Expense -2021						
2							
3	Cost Category	Region	Year	One-Time Cost	Total Cost	Cost/Month	
4	Advertising/Marketing	EU	2023	2100	56	€ 3,750.00	
5	Hardware	North America	2023	1200	1450	€ 250.00	
6	Postage/shipping	North America	2021	0	1500	€ 1,500.00	
7	Postage/shipping	North America	2022	0	1500	€ 1,500.00	
8	Postage/shipping	Southeast Asia	2023	0	1500	€ 1,500.00	
9	Hardware	Southeast Asia	2022	2500	2750	€ 250.00	
10	Hardware	North America	2021	1750	2000	€ 250.00	
11	Postage/shipping	EU	2021	0	2000	€ 2,000.00	
12	Postage/shipping	EU	2022	0	2000	€ 2,000.00	
13	Postage/shipping	EU	2023	(4) 0	2000	€ 2,000.00	
14	Hardware	Southeast Asia	2023	1800	2050	€ 275.00	
15	Hardware	EU	2021	2200	2250	€ 250.00	
16	Hardware	Southeast Asia	2021	2000	2250	€ 250.00	
17	Hardware	EU	2022	2200	2450	€ 250.00	
18	Hardware	EU	2023	2200	2450	€ 300.00	
19	Hardware	North America	2022	2250	2500	€ 250.00	

Another change is that when you now hover over web or internal links, you'll see improved hyperlink previews with options to copy, edit or remove the link. If a thumbnail of the linked page is available, you'll see that too, giving you a better idea of where the link will take you.

1	А	В	С	D	E		F	G
5	Hardware	North America	2023	1200	1450	€	250.00	
6	Postage/shipping	North Americ	North	America	-		,500.00	
7	Postage/shipping	North Americ	W https:	//en.wikipedia.org/wik		8	,500.00	
8	Postage/shipping	Southeast As					,500.00	
9	Hardware	Southeast As		12 0 2			250.00	
10	Hardware	North Americ			18		250.00	
11	Postage/shipping	EU					,000.00	
12	Postage/shipping	EU		Tr			,000.00	
13	Postage/shipping	EU		1 miles			,000.00	
14	Hardware	Southeast As		The second	121		275.00	
15	Hardware	EU					250.00	
16	Hardware	Southeast As		2	r		250.00	
17	Hardware	EU	North Amer	ica is a continent in the l	Northern and		250.00	
18	Hardware	EU	Western He	mispheres. North Americ	a is bordered	to	300.00	
19	Hardware	North Americ	the north by	y the Arctic Ocean, to the	e east by the		250.00	
20	Postage/shipping	Southeast As	Atlantic Oce	ean, to the southeast by :	South America		,500.00	
21	Postage/shipping	Southeast As					,500.00	
22	Postage/shipping	Southeast Asia	2023	0	2500	€	2,500.00	
23	Research & Development	Innovation	2021	0	3000	€	3,000.00	
24	Possarch & Dovolonmont	Innovation	2022	0	2000	6	2 000 00	

Customising your grid zoom is also easier now with the Status bar. You may now quickly edit zoom values to suit your preferences by either selecting a percentage or typing one in.

\$57.00	United States	California
\$371.00	United States	California
\$467.00	Australia	Victoria
\$307.00	Australia	Victoria
\$428.00	Canada	British Columbia
\$395.00	Canada	British Columbia
\$284.00	United States	Oregon
\$424.00	United States	Washington
\$480.00	United States	California
*		o
		⑦ ୬° − 120% × +

Renaming sheets has also been updated. Simply go to the sheet tab and double-click to rename it directly (just as you can on the desktop version): no more navigating through dialogs is required.

22	Pending	Male	Luke	Lal	11019	Langley
23	Pending	Male	Jordan	King	11020	Metchosin
24	Pending	Female	Destiny	Wilson	11021	Beaverton
25	Pending	Male	Edward	Hernandez	11144	New York
26	Verified	Male	Seth	Edwards	11023	Bellflower
27	Verified	Male	Russell	Xie	11024	Concord
28	Verified	Male	Alejandro	Beck	11025	Hawthorne
29	Pending	Male	Harold	Sai	11026	Goulburn
30	Verified	Male	Jessie	Zhao	11027	Warrnambool
31	Verified	Female	Jill	Jimenez	11028	St. Leonards
32	Verified	Male	Jimmy	Moreno	11029	Bendigo
33	Verified	Female	Bethany	Yuan	11030	Cloverdale
34	Verified	Female	Theresa	Ramos	11031	Matraville
35	Verified	Female	Denise	Stone	11032	Melbourne
36	Verified	Male	Jaime	Nath	11033	Milsons Point
37	Verified	Female	Ebony	Gonzalez	11034	North Sydney
<	> 🔳 Fin	ancial trends	2024 Summary	y 2023 Summary	Details	+

There is also a new 'Open files from this device' option in the File menu. This lets you upload a local file to your OneDrive and access it directly from your browser.

ile Home Insert S	hare Page	Layout Formulas Data Review V					
Autosaved online to Cont	oso Essentials						
• New	>	D E F G					
🔁 Open	>	Recently Opened					
Share	>	Contoso Plants Launch Plan.xlsx					
Create a Copy	>	Book11.xlsx					
→ Export	>	Book 17.xlsx					
Print		Book 16.xlsx					
 Rename Move File 		 Book 15.xlsx EOU FY 25 Ideas.xlsx 					
Version History		C View all files					
i) Info	>	G Open files from this device					
Coptions	>						
19							
20							
21							
12							

Next up, Microsoft has added support for accelerator keyboard shortcuts (ALT + E, ALT + V, ALT + O) plus over 120 legacy shortcuts. Additionally, the Keyboard Shortcuts dialog has been modified, with richer information and styling.

F Customer Key	G	Keyboard Shortcuts		×	М	Ν	0	Р
11000	Bockhampton							
11012	Bremerton	Q Search keyboard shortcuts						
11001	Seaford							
11002	Hobart	All shortcuts						
11003	North Ryde	All shortedts	d Show overhides					
11004	Wollongong			_				
11005	East Brisbane							
11006	Matraville	Description	Shortcut					
11007	Warrnambool							
11008	Bendigo	Convert the auto-detected range to data	Option + Shift + F3					
11009	Hervey Bay	types						
11010	East Brisbane	Onen context many						
11011	East Brisbane	Open context menu	Shift + F10					
11013	Lebanon							
11014	Redmond	Open shortcuts dialog	# + / or					
11015	Burbank							
11016	Imperial Beach		Option + Shift + A					
11017	Sunbury							
11018	Bendigo	Read column header	Option + Shift + # + H					
11019	Langley							
11020	Metchosin	Read row header	Option + Shift + ¥ + T					
11021	Beaverton							
11144	New York	Production (conserving off						
11023	Bellflower	Read column from active cell	Option + Shift + # +					
11024	Concord		Page Down					
11025	Hawthorne							
11026	Goulburn							
11027	Warrnambool	Some shortcuts are reserved by your browse	r and always appear disabled. Use					
11028	St. Leonards	the alternates instead.						
11029	Bendigo							
11030	Cloverdale	Enable common shortcuts	Learn mo	re				
11031	Matraville							
11032	Melbourne			_				

Finally (for now!), you may now quickly access shortcuts to Feedback, Help and Keyboard shortcuts straight from the Status bar.



These features are currently rolling out to all Excel for the web users. I wouldn't say they are gamechangers, but they do modernise the look and feel of Excel online.

Python Editor in Insiders Beta

Almost a year ago, Microsoft shipped a new experiment to the Excel Labs add-in. This experiment allowed you to write and edit Python formulae in Excel using a dedicated code editor with similar capabilities as those available in Python notebook environments. Now, Microsoft is making the editor available as an in-the-box option, and they have improved the appearance and usability of the Python Editor. You'll see a slightly different user interface that stays faithful to the original design, but there will be other changes shortly too.



The Python Editor enhances the Python in Excel experience by providing a bigger editing space for writing larger code blocks as well as productivity features.

From the Python Editor, you can see a list of all the Python cells in your spreadsheet. Each cell is treated like that of a code cell in a Jupyter notebook. Within the Python Editor pane, you can edit the cells and run them. The output of the Python cell can be displayed natively in your

Excel spreadsheet, whether it is plain text, numeric or even a visualisation or DataFrame.

This new Python Editor is powered by the same technology that supports notebooks in other Microsoft products so you can use the full range of editor features like IntelliSense, colourisation and function help as you code in Excel.

The Python Editor offers several benefits when writing and editing Python formulae in Excel:

• See the flow of code execution with results: the Python Editor shows Python cells in execution order in addition to the output of each cell's code, which can help you more easily debug and understand your code. This is useful because, Python in Excel cells execute in row major order



• Easily edit longer chunks of code: the Python Editor provides a new way to create and edit your Python code, offering more immersion when working with longer scripts



• Gain flexibility with coding workflows: the Python Editor allows you to write code, click elsewhere in the application, but not commit the code to Excel until you are happy with it. This gives you more flexibility and control over when and how you apply your code to your workbook. Additionally, when in manual recalculation mode, editing and committing from the Editor will calculate just that cell (like a notebook) providing a faster feedback loop

嘲				
Fi	le Home Insert Dr	aw Page Layout Form	ulas Data Review View	Share - Catch up A
B	16 \sim : $\times \sim f$	x ~		~
1 2 3 4 5 6 7 8	A 5 Day Weath Generatias areast large, cla Generatias a beneast large, cla Generation and the second second Historical Data Weather Labels Model Predicted Weather Full Forecast	B er Forecast y. chardy: Australian (re) DataFrame [re] DataFrame [re] DataFrame [re] DataFrame [re] DataFrame [re] DataFrame	Python Editor Python Editor Image: State of the state of	v × ⊃ ≅ d⊃ v data) ions sa_transform
10	Weekday	Tuesday	$_{B8} \rightarrow$	ラ~ 日 4 ¹ ~ 2
11	Weather Forecast	cloudy	1 import pandas as pd	
12	Temperature	79°	2 # Create a DataFrame of the weather forecast results forecast df = pd.DataFrame({	ilts
13	Humidity	69%	4 'Weekday': [(datetime.now() + timedelta(days=	day)).strftime
14 15 16 17 18 19 20	Tomorrows Forecas	t	<pre>('34') for day in range(lengredicte_weather_con betweether_forecast: predicted_weather_conditi 0)) 7 # Combine for [0] forecast_data (forecast_datw0 forecast_data (forecast_datw0 forecast_data (forecast_datw0 forecast_data 9 tomorrows_forecast = fored 9 tomorrows_forecast = fored 10 forecast_combined</pre>	ditions))], ons
21 22			DataFrame > (Unsaved changes
Real	dy Calculate	+ :		+ 100%

For the near term, there will still be two versions of the Editor, making it available wherever Python in Excel is available:

1. Built into Excel: if you are using Insiders Beta, Microsoft has now begun the rollout and you can try out the feature by going to the Ribbon and opening the 'Editor button in the 'Formulas' tab

Fo	rmulas	Data	Review	View			
t	Date & Time ~	Lookup & Reference	Hath & Trig ~	More Functions ~	Insert Python	 ✓ Reset → ☐ Diagnostics ☐ Initialization 	🎾 Editor
ary						Python (Preview	v)

2. Excel Labs: the Python Editor will remain in Excel Labs as Microsoft ships to additional audiences.

You need to have access to Python in Excel to make use of the Python Editor.

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

There may be a time when you are using Excel that you wish to extract a name of a person from a churn of endless text strings that have all sorts of characters that you have never seen or used before. Indeed, the recently announced regular expression ("regex") functions may resolve this simply very soon. In the meantime, to replicate that experience, we 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...

give you a similar challenge here.

This month's challenge is to write a **formula** to extract the name of a person from <u>any</u> given text string. The result should look like similar to the following:

	Text	Ŧ	Solution 🔽
1.	Sara's Address		Sara
2.	Brian T's Job title		Brian T
3.	Karina's Date of Birth	۱	Karina

As always, there are some requirements:

- the formula needs to be within just one column (no "helper" cells)
- this is a formula challenge; no Power Query / Get & Transform or VBA!
- the formula should be dynamic enough when a similar text string is added.

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

Over to Al



Here at SumProduct we write many articles for many magazines and our authoring contracts have been revised recently to ensure Artificial Intelligence hasn't taken over our duties. We can assure everyone they have not. They'd never be able to make as many mistakes as we ltgsdgafjksw/.

But it did get us thinking: what if we did let Al loose and write a regular article for the newsletter?

So that's what we've done. See what you think. Is it better than the usual rubbish..?

This Month's Prompt: Write the Perfect Article for a Financial Modelling Newsletter

WHAT IS FINANCIAL MODELLING AND WHY IS IT IMPORTANT?

Financial modelling is the process of creating a representation of a real-world financial situation or scenario, such as the performance of a business, a project or an investment. Financial models are used for various purposes, such as budgeting, forecasting, valuation, decision making and risk analysis. Financial modelling is a vital skill for anyone who works in finance, accounting, investment banking, corporate development or consulting.

WHAT ARE THE LATEST TRENDS IN FINANCIAL MODELLING?

The field of financial modelling is constantly evolving and adapting to the changing needs and challenges of the business world. Some of the current trends that are shaping the future of financial modelling are:

- Automation and artificial intelligence: With the advancement of technology, many tasks and processes in financial modelling can be
 automated or enhanced by artificial intelligence. For example, AI can help with data collection, validation, analysis and visualisation, as
 well as generate insights and recommendations based on the model outputs. Automation and AI can also reduce human errors, save
 time and improve efficiency and accuracy.
- Scenario analysis and stress testing: In the wake of the COVID-19 pandemic and the resulting economic uncertainty, scenario analysis and stress testing have become more important than ever for financial modelling. Scenario analysis is the process of evaluating the impact of different assumptions and variables on the model outcomes, while stress testing is the process of assessing the resilience of the model under extreme or adverse conditions. Scenario analysis and stress testing can help financial modellers to identify and mitigate risks, as well as to explore opportunities and alternatives.
- Cloud computing and collaboration: Cloud computing is the delivery of computing services, such as data storage, processing and software, over the internet. Cloud computing enables financial modellers to access and share data and models from anywhere, anytime, and on any device. Cloud computing also offers scalability, security and cost-effectiveness. Collaboration is the ability to work together with other people on the same or related models. Collaboration can enhance the quality and reliability of the models, as well as foster innovation and creativity.

WHAT ARE THE BEST TIPS AND TOOLS FOR FINANCIAL MODELLING?

Financial modelling is both an art and a science, and it requires a combination of knowledge, skills and tools. Here are some of the best tips and tools for financial modelling:

Tip: Follow the best practices and standards for financial modelling. Some of the best practices and standards are: use clear and consistent assumptions, formulas, and formatting; document and explain your model logic and structure; avoid circular references and hard-coding; use error checks and validation; perform sensitivity and quality analysis.

Tool: Excel is the most widely used and versatile tool for financial modelling. Excel offers a range of features and functions that can help you create and manipulate financial models, such as formulas, charts, pivot tables, data analysis and macros. Excel also integrates well with other tools and platforms, such as Power BI, Python and VBA.

Tip: Learn from the experts and the community. Financial modelling is a dynamic and competitive field, and it is important to keep learning and

improving your skills and knowledge. You can learn from the experts and the community by taking online courses, reading books and blogs, watching videos and podcasts, joining forums and groups, and attending events and workshops.

Tool: Financial Modelling software is a specialised software that is designed to facilitate and enhance the process and output of financial modelling. Financial modelling software can offer features and functions that are not available or limited in Excel, such as advanced modelling capabilities, data integration, scenario analysis, reporting and visualisation.

What do you think? Do you agree? (I am still trying to find those agreed best practices and standards for financial modelling...) Send us your comments and ideas for questions to contact@sumproduct.com.

Excel for Mac

With Steve Kraynak joining the team, we thought we would exploit his knowledge and recant all about Microsoft Excel for Mac. Each month, we'll cover a different topic to help you understand how Excel for Mac is different than Excel for Windows. This month, we show how to customise your keyboard shortcuts using both Excel's built-in 'Customize Keyboard' feature or Mac's keyboard shortcut preferences. This is one of the things you can do with Excel for Mac that you can't do on Windows.

To create or change a keyboard shortcut in Excel for Mac, follow these steps:

- Go to the Tools menu and choose 'Customize Keyboard'
- Pick the category of command you're trying to find, and then search or browse for the command in the list
- Select a command, press a key combination, and see if it's used already. If it's already in use, you may want to pick a different combination
- Then just click the 'Add' button to assign the key combination to the selected command.

In the example below, we show the category called 'Commands Not in the Ribbon' with a search for commands with the word "value", which filters to the commands 'Values & Number Formatting' and Values & Source Formatting'.

🗯 Excel File Edit View Insert Format	Tools Data Window Help	Customize Keyboard
■ Excel File Edit View Insert Format ■ AutoSave or II I S S · S = Home Insert Draw Page Layout Formulas Paste Format B I U · II · S · S · A A B C D E 1 2 3 4	Tools Data Window Help Spelling Thesaurus へて発用 Smart Lookup へて発用 Language AutoCorrect Options Error Checking Translate へて発T Check Accessibility Track Changes Merge Workbooks Protection	Customize Keyboard Specify a Command Categories: PivotChart Tools Format Tat Sparkline Tools Sparkline Ta Timeline Tools Sparkline Ta Silicer Tools Slicer Tab Commands Not in the Ribbon Other Commands < <no labe<="" td=""></no>
5 6 7 8 9 10 11 12 13	Goal Seek Scenarios Auditing Macro Excel Add-ins Customize Keyboard	Specify a Keyboard Shortcut Current keys: Option+Control+V Command+Option+V Press new keyboard shortcut: Add
		Description: Paste Values and Number Formatting Reset All OK

You should note that some commands may not be available. Generally, only commands that appear in the 'Ribbon Customization' dialog can be found in the 'Customize Keyboard' dialog. For example, there is no command that allows you to set a cell format to use a particular font. Some keyboard shortcuts may be used by your Mac and you may not be

able to use these key combinations, even though you can assign them in the dialog.

You can read more details here: Create a Custom Keyboard Shortcut.

macOS Keyboard Shortcuts

Another way to create a customised keyboard shortcut is to use the Mac Preferences. This allows you to set a keyboard shortcut for any app, but only for commands that appear in one of that app's menus.

Just follow the simple steps below:

• Look for a menu command that you want to use a keyboard shortcut to activate. For example, you can go to the Data menu in Excel and you'll see 'Validation...', which will open the 'Data Validation' dialog:



• Go to macOS -> Preferences -> Keyboard -> Keyboard Shortcuts -> App Shortcuts





• Select 'Microsoft Excel.app' from the list of applications

Menu Title	Validation
Enter the exact name of the menu comm	and you want to add.
Keyboard Shortcut	企業D

- In the Menu Title field, type the name of the menu item exactly as it appears in Excel. For example, type 'Validation...' to create a shortcut that will simulate opening the Data menu and pressing 'Validation...', which opens the 'Data Validation' dialog
- Press a key combination. It's a good idea to choose a key combination that's not already used to do something else
- Now go back to Excel and try out the new shortcut you just created!

 Launchpad & Dock Display Mission Control Keyboard Input Sources Screenshots Services Spotlight Accessibility
 Display Display Mission Control Keyboard Input Sources Screenshots Spotlight Accessibility
 Mission Control Keyboard Input Sources Screenshots Spotlight Accessibility
Keyboard Microsoft Excel.app Input Sources Validation Screenshots Services Spotlight Accessibility
Input Sources + - Screenshots Services Spotlight Accessibility
 Screenshots Services Spotlight Accessibility
 Services Spotlight Accessibility
Spotlight Image: Constraint of the second
0 Accessibility
App Shortcuts
fn Function Keys
Modifier Keys

See Apple's help article for more information: Use macOS keyboard shortcuts - Apple Support

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 take continue our discussion on control structures.

In a programming, a control structure determines the order in which statements are executed. The iteration control structure is used for repetitively executing a block of code multiple times.



The iteration structure executes a sequence of statements repeatedly if a condition holds true. There are three main types of loops in VBA:

1. While ... Wend



The WHILE...WEND loop executes a series of statements as long as a given condition is True. The syntax is very simple:

While condition

[statements]

Wend

The condition must result in a Boolean value of **True** or **False**. **WHILE** tests the condition and if it is **True** then proceeds to execute the statements inside the loop.

```
Sub WhileWend()
Dim counter As Integer
counter = 0
While counter < 5
    counter = counter + 1
    Debug.Print counter
Wend</pre>
```

```
End Sub
```

Immediate	
1	
2	
3	
4	
5	

While loops are preferred when the number of iterations is unknown. For example, modelling how many days it takes to reach sales a target, or running through a worksheet column until it reaches an empty cell.

Notice how the condition is tested first – this means that the code will not run at all if the condition is not met. WHILE...WEND is a remnant from BASIC where VBA originated from. These are not as powerful as **DO...LOOP**.

2. FOR



The **FOR...NEXT** loop uses a variable, which cycles through a series of values within a specified range and the statements inside the loop is then executed for each value.

```
For counter = start To end [ Step step ]
[ statements ]
Exit For
[ statements ]
Next [ counter ]
Here's a simple example:
Sub ForNext()
Dim counter As Integer
For counter = 1 To 5
Debug.Print counter
Next counter
End Sub
```



The STEP keyword allows the specification of how the counter changes. It defaults to an increment of 1, but it can be used for jumps and decrements.

```
Sub ForNextStep()
```

```
Dim counter As Integer
For counter = 10 To 0 Step -2
Debug.Print counter
Next counter
```

```
End Sub
```

Immediate	
10	
8	
6	
4	
2	
0	

EXIT FOR

EXIT FOR statements may be placed anywhere in the loop as an alternate way to exit. This is often used after evaluating of some condition, for example **IF...THEN**, and then skips to the statements after the loop.

```
Sub ForNextExit()
Dim counter As Integer
For counter = 10 To 0 Step -2
Debug.Print counter
If counter = 6 Then
Exit For
End If
Next counter
End Sub
```



FOR EACH...NEXT

What if an action is needed to be performed to every object in a set?

FOR EACH...NEXT loops are a great way to cycle through sets – like an array or a range. Sometimes the number of rows or columns is uncertain. It is relatively easy to count the number of objects and set the upper bound of the **FOR...NEXT** loop appropriately. However, using **FOR EACH...NEXT** more clearly illustrates that the instructions are happening to every object.

```
As an example:
```

```
Sub ForEach()
Dim myNumbers() As Variant
myNumbers = Array(1, 5, 10, 15)
Dim aNumber As Variant
For Each aNumber In myNumbers
Debug.Print aNumber * 5
Next
```

End Sub

l	mmediate
	5
	25
	50
	75



The final loops belong to the **DO** family. There are several members and examples are presented below.

DO...LOOP

DO...LOOP loops are considered the upgraded alternative to WHILE WEND. Let's have a look at how they work:

```
Do [{ While |Until } condition ]
   [ statements ]
   [ Exit Do ]
   [ statements]
```

Loop

How does the code change from WHILE WEND to DO...LOOP? Simply replace the WHILE with DO WHILE and WEND with LOOP. It's as easy as that!

Option Explicit	Option Explicit
Sub JackAndJill()	Sub JackAndJillDo()
Dim CurrentStepsTaken As Integer CurrentStepsTaken = 0	Dim CurrentStepsTaken As Integer CurrentStepsTaken = 0
Dim FallenDown As Boolean FallenDown = False	Dim FallenDown As Boolean FallenDown = False
While FallenDown = False	Do While FallenDown = False
CurrentStepsTaken = CurrentStepsTaken + 1	CurrentStepsTaken = CurrentStepsTaken + 1
If Rnd() <= 0.3 Then FallenDown = True End If	If Rnd() <= 0.3 Then FallenDown = True End If
Wend	Loop
<pre>Debug.Print CurrentStepsTaken & " step(s) up the hill were taken." Debug.Print "Jack fell down the hill!" Debug.Print "Jill came tumbling after"</pre>	Debug.Print CurrentStepsTaken & " step(s) up the hill were taken." Debug.Print "Jack fell down the hill!" Debug.Print "Jill came tumbling after"
End Sub	End Sub

DO...LOOP is superior to While Wend for several reasons:

- WHILE WEND has no ability to have an EXIT
- WHILE WEND loops check for the condition prior to running but with DO...LOOP the condition can be checked at the end. This is useful if the code needs to be run at least once.

This is done by simply moving the "WHILE [condition]" part of the DO statement next to LOOP. The syntax changes to:

statements]	
Exit Do]	
statements]	
oop [{ While Until } condition]	
Sub JackAndJillDo()	Sub JackAndJillDoItAtLeastOnce()
Dim CurrentStepsTaken As Integer CurrentStepsTaken = 0	Dim CurrentStepsTaken As Integer CurrentStepsTaken = 0
Dim FallenDown As Boolean FallenDown = False	Dim FallenDown As Boolean FallenDown = False
Do While FallenDown = False	Do
CurrentStepsTaken = CurrentStepsTaken + 1	CurrentStepsTaken = CurrentStepsTaken + 1
If Rnd() <= 0.3 Then	If Rnd() <= 0.3 Then
FallenDown = True	FallenDown = True
End If	End If
Loop	Loop While FallenDown = False
Debug.Print CurrentStepsTaken & " step(s) up the hill were taken."	Debug.Print CurrentStepsTaken & " step(s) up the hill were taken."
Debug.Print "Jack fell down the hill!"	Debug.Print "Jack fell down the hill!"
Debug.Print "Jill came tumbling after"	Debug.Print "Jill came tumbling after"

• The ability to replace WHILE with UNTIL: what effect does this achieve? This essentially reverses the value of the condition to be tested.

WHILE executes the block of code when the condition is True and keeps executing that till the condition becomes False. Once the condition becomes False, the loop is terminated. However, if the condition tested is initially False, the condition must be tested as: DO WHILE condition = FALSE

UNTIL does the opposite. It executes the block of code when the condition is False and keep executing that till the condition becomes True. Once the condition becomes True, the **UNTIL** loop is terminated.

It should be noted that the [condition] is a Boolean value, the loop can then be adjusted with the starting statement:

Sub JackAndJillDo()	Sub JackAndJillDoUntil()
Dim CurrentStepsTaken As Integer CurrentStepsTaken = 0	Dim CurrentStepsTaken As Integer CurrentStepsTaken = 0
Dim FallenDown As Boolean FallenDown = False	Dim FallenDown As Boolean FallenDown = False
Do While FallenDown = False	Do Until FallenDown
CurrentStepsTaken = CurrentStepsTaken + 1	CurrentStepsTaken = CurrentStepsTaken + 1
<pre>If Rnd() <= 0.3 Then</pre>	If Rnd() <= 0.3 Then
End If	Fallenbown = True End If
Loop	Loop
Debug.Print CurrentStepsTaken & " step(s) up the hill were taken."	Debug.Print CurrentStepsTaken & " step(s) up the hill were taken."
Debug.Print "Jack fell down the hill!"	Debug.Print "Jack fell down the hill!"
Debug.Print "Jill came tumbling after"	Debug.Print "Jill came tumbling after"
End Sub	End Sub

More next time.

Charts and Dashboards

DO UNTIL condition

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

When modelling working capital adjustments (https://www.sumproduct.com/thought/working-capital-adjustments), a chart is useful to facilitate the presentation of cash flow figures against existing profit and loss projections.



This time, we will see how we can create a Working Capital Adjustment chart, by using the example data (below).

	Α	В	С	D	E	F		G	H		1	J	
6													
7	Simple Example												
8													
9	This assumes that the number of days in the period exceeds the												
10													
11	Assumptions												
12													
13				Тур	e of E	xample		Debtor					
14									_		_		
15				Day	s Rec	eivable		90	<			>	
16													
1/				Sale	es in F	eriod		1,000					
18					- : 14			205					
19				Day	SINY	ear		360					
20													
21													
23			Cor	ntrol	Acco	unt							
23			001	i i i i	Acci	June							
25				Ope	nina F)ebtors				Prior	BS		
26				Sale	s in P	eriod		1.000		IS			
27				Cas	h Rec	eipts		(753)		CFS			
28				Clos	ing D	ebtors		247	-	Curre	ent BS		
29									-				

To create the scroll bar, go to the Developer tab on the Ribbon (which you may need to install using **Tools -> Options -> Customize Ribbon** and then check the Developer tab in the 'Main Tabs' section). From Insert,

choose 'Scroll Bar (Form Control)' and draw a scroll bar box next to the 'Days Receivable' cell (holding the ALT button down makes the graphic "snap to grid"):



Then, right-click on the scroll bar box, choose 'Format Control' and link the 'Days Receivable' cell, cell G15, whose value will adjust as we adjust the scroll bar.

	Format Control ? ×								
	Size	Protection	Properties	Alt Text	Control				
	<u>C</u> urrent va	lue:	90						
	<u>M</u> inimum	value:	0						
	Ma <u>x</u> imum	value:	365						
	Increment	al change:	1						
	<u>P</u> age chan	ige:	10						
	Cell <u>l</u> ink:		\$G\$15		1				
	<u> </u>	ading							
					OK		Cancal		
					OK		Cancel		

We need to prepare the data that can be used in the chart similar to below. The formulae for the calculated cells in columns **G** are noted down in column **I**.

	A B	С	DE		F	G	Н	I	J
30									
31		Chai	t Data						
32									
33						365	0	=Days_in_Year	-
34		5	Sales in	Period		365		=Days_in_Year	
35						365	0	=Days_in_Year	-
36		(Cash Re	eceipts		90	275	=IF(G26,G28/G26*Da	90
37						365	0	=Days_in_Year	
38									
39							3		
40						90	2	=G36	
41									
42						91	3	=Days_in_Year/4	
43						181	2	=G40+G42	
44									
45						183	3	=Days_in_Year/2	
46						273	2	=G45+G40	
47						074	~	0.40.0.45	
48						274	3	=G42+G45	
49						364	2	=648+640	
50						205	2	-Devis in Mean	
51						365	3	=Days_In_Year	
52						455	2	=657+640	
53									

Next, highlight all the group of chart data cells in column **G**, **H** and **J** to create a Bar chart. Then from the 'Chart Design' tab on the Ribbon, choose 'Change Chart Type'. Here, keep the Series 1, 2 and 3 as 'Stacked Bar' and change Series 4 to 8 to 'Scatter with Smooth Line'.

Change Chart Type					? ×
Recommended Charts Al	Charts				
 Recent Templates Column 			1		
Line Dia	Custom Combin				
Bar		Chart Ti	itle		
📉 Area	1			Series2	
X Y (Scatter)	2			Series3	
Stock	3		_	Series4	
↓ Surface	4			— Series5 — Series6	
😭 Radar	5			Series7	
Combo		365	730	Series8	
	Choose the chart type a Series Name	ind axis for your data Chart 1	i series: Type	Se	econdary Axis 🔺
	Series I	St	аскей ваг	Ň	
	Series2	Sta	acked Bar	~	
	Series3	Sta	acked Bar	~	
	Series4	Sc	atter with Smooth Lines	~	
	Series5	Sc	catter with Smooth Lines	~	
	Series6	Sc	catter with Smooth Lines	~	
	Series7	Sc	atter with Smooth Lines	~	
	Series8	Sc	atter with Smooth Lines	~	✓ ✓
				ОК	Cancel

Right-click on Series 4, choose 'Format Data Series', here change the Color, Dash type, Begin / End Arrow type, and repeat the same format settings for Series 5 to 7.

Format Data Series	5	•	×
Series Options 🗸			
🔨 Line 🛛 🖍 Marker			
▲ Line			
○ <u>N</u> o line			
Solid line			
O <u>G</u> radient line			
○ A <u>u</u> tomatic			
<u>C</u> olor		-	
Transparency	0%	Ŷ	
<u>W</u> idth	1.5 p	t ੍	
<u>C</u> ompound type		=-	
<u>D</u> ash type			
C <u>a</u> p type	Ro	und 👻	
Join type	Ro	und 👻	
<u>B</u> egin Arrow type		→ →	·
Begin Arrow <u>s</u> ize		-	·
End Arrow type		⇒ •	
E <u>n</u> d Arrow size		-	·
✓ Smoothed line			

Finally, remove the chart title and add labels to enhance the chart information and the chart is done!



More next time.

Power Pivot Principles

We continue our series on the Excel COM add-in, Power Pivot. This month, we show you how the DATESINPERIOD function works.

The DATESINPERIOD Function is a time intelligence function, just like the DATESYTD and DATEADD functions. We have covered the DATESYTD and the DATEADD functions previously.

The DATESINPERIOD function uses the following syntax to operate:

DATESINPERIOD(dates, start_date, number_of_intervals, interval)

It should be noted that:

- This function returns with a table. This table will contain a column of dates that begins with the **start_date** and continues on with the specified **number_of_intervals**.
- The **dates** parameter has to be a column with dates.
- The interval parameter has to be one of four predefined inputs by PowerPivot: year, quarter, month, day.
- This function is commonly used together with the **CALCULATE** function.

Let's take a look at a simple example. Imagine we had the following sales data:

Date	ΨĪ	Total Sales		-
1/07/	2018		490.0	00
2/07/	2018		475.	30
3/07/	2018		451.	54
4/07/	2018		465.0	08
5/07/	2018		483.	68
6/07/	2018		498.3	19
7/07/	2018		518.3	12
8/07/	2018		492.2	22
9/07/	2018		477.4	45
10/07/	2018		472.	68
11/07/	2018		491.	58
12/07/	2018		506.	33
13/07/	2018		521.	52
14/07/	2018		537.	17
15/07/	2018		521.0	05
16/07/	2018		531.4	47
17/07/	2018		504.	90
18/07/	2018		515.0	00
19/07/	2018		494.4	40
20/07/	2018		504.3	28
21/07/	2018		509.3	33
22/07/	2018		529.	70
23/07/	2018		550.	89
24/07/	2018		523.	34
25/07/	2018		518.3	11
26/07/	2018		523.3	29
27/07/	2018		528.	52
28/07/	2018		517.9	95

In this example we want to create a rolling sum for every three days. We can use the following measure:

=CALCULATE(SUM(SaleDataJul1[Total Sales]), DATESINPERIOD(SaleDataJul1[Date], MIN(SaleDataJul1[Date]), З, DAY)) Measure ? \times SaleDataJul1 Table name: \sim Measure name: Rolling Sum Description: Formula: f_X Check formula =CALCULATE(SUM(SaleDataJul1[Total Sales]), DATESINPERIOD(SaleDataJul1[Date], MIN(SaleDataJul1[Date]), 3. DAY)) Formatting Options Category: General Number Decimal Number \sim Format: Currency 2 🜲 Decimal places: Date TRUE/FALSE Use 1000 separator (.)

This would result in the following PivotTable:

	Α	В	С	D			_	~
1					Pivot i able Fields		*	
2					Active All			
3		Date 👻	Sum of Total Sales	Rolling Sum	Choose fields to add to report	:	1	÷ -
4		1/07/2018	353.00	1,182.00	-			
5		2/07/2018	446.00	1,112.00	Search			Q
6		3/07/2018	383.00	951.00				
7		4/07/2018	283.00	1,014.00	✓ I SaleDataJul1			
8		5/07/2018	285.00	1,054.00				
9		6/07/2018	446.00	1,068.00	✓ Total Sales			
10		7/07/2018	323.00	978.00	Calculated Column	1		Ŧ
11		8/07/2018	299.00	1,090.00				
12		9/07/2018	356.00	1,109.00	Drag fields between areas bel	ow:		
13		10/07/2018	435.00	1,111.00	Tiltor	Columns		
14		11/07/2018	318.00	1,089.00	i riiteis	Nalues		-
15		12/07/2018	358.00	1,117.00				
16		13/07/2018	413.00	1,208.00				
17		14/07/2018	346.00	1,284.00	Rows	Σ Values		
18		15/07/2018	449.00	1,215.00	Date 🔻	Sum of Total Sale	es	-
19		16/07/2018	489.00	1,206.00		Rolling Sum		-
20		17/07/2018	277.00	1,041.00		1		

ОК

Cancel

Strangely, the rolling sum seems to be adding up the future dates. This is because we entered '3' as the **number_of_intervals**. Therefore, it looks like positive intervals means that the measure will use future dates. Let's try '-3':

SUM(SaleDataJul1[Total Sales]), DATESINPERIOD(SaleDataJul1[Date], MIN(SaleDataJul1[Date]), -3,	
DATESINPERIOD(SaleDataJul1[Date], MIN(SaleDataJul1[Date]), -3,	
SaleDataJul1[Date], MIN(SaleDataJul1[Date]), -3,	
MIN(SaleDataJul1[Date]), -3,	
-3,	
DAY	
)	
Measure ?	X
Table name: SaleDataJul1	~
Measure name: Rolling Sum	
Description:	
Formula: f_X Check formula	
=CALCULATE(
SUM(SaleDataJul1[Total Sales]),	
SaleDataJul1[Date],	
MIN(SaleDataJul1[Date]), -3	
DAY	
Formatting Options	
Category:	
General Format: Decimal Number	~
Currency Decimal places: 2	
TRUE/FALSE Use 1000 separator (.)	
ОК Са	ancel

Dragging the new measure into our PivotTable:

Date 💌	Sum of Total Sales	Rolling Sum
1/07/2018	353.00	353.00
2/07/2018	446.00	799.00
3/07/2018	383.00	1,182.00
4/07/2018	283.00	1,112.00
5/07/2018	285.00	951.00
6/07/2018	446.00	1,014.00
7/07/2018	323.00	1,054.00
8/07/2018	299.00	1,068.00
9/07/2018	356.00	978.00
10/07/2018	435.00	1,090.00
11/07/2018	318.00	1,109.00
12/07/2018	358.00	1,111.00
13/07/2018	413.00	1,089.00
14/07/2018	346.00	1,117.00

Now the measure is adding up sales from the previous dates rather than the future dates. This is all well and good, but having the rolling sum isn't that useful. What if we changed the **SUM** function into an **AVERAGE** function instead?

=CALCULATE(AVERAGE(SaleDataJul1[Total Sales]), DATESINPERIOD(SaleDataJul1[Date], MIN(SaleDataJul1[Date]), -3, DAY)) Measure ? \times SaleDataJul1 v Table name: Measure name: 3 Day Rolling Average Description: Formula: f_X Check formula =CALCULATE(AVERAGE(SaleDataJul1[Total Sales]). DATESINPERIOD(SaleDataJul1[Date] MIN(SaleDataJul1[Date]), -3. DAY)) Formatting Options Category: General Decimal Number \sim Format: Number Currency 2 🜲 Decimal places: Date TRUE/FALSE Use 1000 separator (,) OK Cancel

Adding this measure into our PivotTable:

	А	В	С	D	E		D' (T) C')	_ ~
2							Pivot lable Fields	* X
3		Date 💌	Sum of Total Sales	Rolling Sum	3 Day Rolling Average		Active All	
4		1/07/2018	353.00	1,182.00	353.00		Choose fields to add to repor	6 🖓 🔻
5		2/07/2018	446.00	1,112.00	399.50		-	
6		3/07/2018	383.00	951.00	394.00		Search	م
7		4/07/2018	283.00	1,014.00	370.67			
8		5/07/2018	285.00	1,054.00	317.00		∡ I SaleDataJul1	
9		6/07/2018	446.00	1,068.00	338.00			
10		7/07/2018	323.00	978.00	351.33		✓ Total Sales	
11		8/07/2018	299.00	1,090.00	356.00		Calculated Column	1
12		9/07/2018	356.00	1,109.00	326.00		$\checkmark f_x$ Rolling Sum	
13		10/07/2018	435.00	1,111.00	363.33	_	□ f 2 D D-III A	· · · · · · · · · · · · · · · · · · ·
14		11/07/2018	318.00	1,089.00	369.67	_	Drag fields between areas be	lowe
15		12/07/2018	358.00	1,117.00	370.33	_	brug neus between areas be	
16		13/07/2018	413.00	1,208.00	363.00		▼ Filters	III Columns
17		14/07/2018	346.00	1,284.00	372.33			Σ Values 👻
18		15/07/2018	449.00	1,215.00	402.67			
19		16/07/2018	489.00	1,206.00	428.00			
20		17/07/2018	277.00	1,041.00	405.00		■ Rows	Σ Values
21		18/07/2018	440.00	1,145.00	402.00		Date 🔻	Sum of Total Sales 🔹
22		19/07/2018	324.00	1,006.00	347.00			Rolling Sum 🔻
23		20/07/2018	381.00	1,004.00	381.67			3 Day Rolling Average 🔻

Thus, a rolling average measure where we can change the number of days / periods we want to include in the average.

That's it for this month; more next time.

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 consider how to fill in rows when there is a gap in dates.

Let's have the following data from our imaginary salesperson, Mary.

ଳ ଚ	• 👌 🖬 =							В	ook1 - Exce	I		ЧЦ		IIII), ,	kathryn n	ewitt 🖭	-	a	X
File	Home Insert	Page Lay	rout Formu	las Dat	a Reviev	v View	Develo	oper He	lp Power	Pivot 🖇	⊃ Tell me wh	iat you wan	t to do					A	Share
Paste S C Paste S C Clipbo	ut Cal opy - ormat Painter bard 5	ibri IU~ E For ✓ fa	• 11 • A A	· = = • = = =	₩ • Align	eb Wrap Merge ment	Text & Center	General • 😨 • %	• ● ● 0.00 .00 →.0 mber 5	Conditio Formattir	nal Format a ng * Table * Styles	s Cell Styles ▼	Insert Delete	e Format	∑ AutoSum ↓ Fill + ◆ Clear + Ec	Sort & Fir Filter * Se	Q id & ect ▼		~
	в	c	D	F	F	G	н		1	к	1.1	м	N	0	Р	0	R	S	
1 Salesn	erscDate	Sales	Commission	-												4			
2 Mary	01/05/2016	£150.00	£12.00																_
3 Mary	02/05/2016	£100.00	£8.00																
4 Mary	03/05/2016	£50.00	£4.00																
5 Mary	20/05/2016	£300.00	£24.00																
6 Mary	21/05/2016	£100.00	£8.00																
7 Mary	22/05/2016	£50.00	£4.00																
8 Mary	23/05/2016	£90.00	£7.20																
9 Mary	24/05/2016	£75.00	£6.00																
10 Mary	25/05/2016	£0.00	£0.00																
11 Mary	26/05/2016	£100.00	£8.00																
12 Mary	27/05/2016	£100.00	£8.00																
13 Mary	28/05/2016	£60.00	£4.80																
14 Mary	29/05/2016	£80.00	£6.40																
15 Mary	30/05/2016	£100.00	£8.00																
16 Mary	31/05/2016	£150.00	£12.00																
17																			
18																			
19																			
20																			
21																			
22																			
23																			
24																			Ŧ
\rightarrow	Sheet1 (+)									1								Þ
Ready																E 🗉 -			+ 100%

Mary has supplied us with her sales figures for May 2016 (she is a little late with her report!). We need to add these to existing data, but there is a problem. Mary was on holiday from May 4th to May 19th, so she hasn't created any data for these dates. We want to add the missing rows.

<u> </u>	- c) - 🗐 -							Book	1 - Excel						kathryn new	itt 📧	-7	٥	×
File	Home Insert	Page Layou	ıt Formulas	Data	Review	View	Developer	Help	Power Piv		ell me what y	ou want to							
Get External Data *	New Query - CoRecent Get & Transfe	Queries Table Sources Al	Connections	tions 2↓ ies ∡↓ ks	Sort & Filter	K Clear Reapp Advar	oly nced Colu	t to mns	ash Fill emove Duplic ata Validation Data	ites ¤∰ Re • @ Ma Tools	nsolidate lationships anage Data M	odel Ana	hat-If Foree Ilysis - She Forecast	ast et	up + + roup + = total tline - 5	Data Ar	alysis s		^
A1	• I 🗙	$\checkmark f_x$	22/05/2010	6															×
1 Salesp 2 Mary 3 Mary 4 Mary 5 Mary 6 Mary 7 Mary 8 Mary 9 Mary 10 Mary 11 Mary 12 Mary 13 Mary	A B berson Date 01/05/20 02/05/20 03/05/20 21/05/20 22/05/20 24/05/20 24/05/20 26/05/20 26/05/20 28/05/20	C Sales 16 £150.00 16 £100.00 16 £300.00 16 £300.00 16 £100.00 16 £50.00 16 £50.00 16 £50.00 16 £50.00 16 £50.00 16 £75.00 16 £100.00 16 £100.00 16 £100.00 16 £60.00	D Commission £12.00 £8.00 £24.00 £4.00 £4.00 £7.20 £6.00 £0.00 £8.00 £8.00 £8.00 £4.80	E	F	G	H	1		К		M Crez Whe	N te Table re is the data \$A\$1:\$D\$ Y My table	O or your table? IE	P ?	Q ×	R	S	
14 Mary 15 Mary 16 Mary 17 18 19 20 21 22 23 23 24	29/05/20 30/05/20 31/05/20	16 £80.00 16 £100.00 16 £150.00	£6.40 £8.00 £12.00											ОК	Cancel				
< >	Sheet1	1)									1				1111 (TTT)	m _			•
POIN															H E	E		+	.00%

We begin by creating a query 'From Table' in the 'Get & Transform' section of the 'Data' tab. We are prompted to define the boundaries of our Table (and to check that headers exist) and we'll accept the defaults.

Close & Load •	Re Pre	Froperties	r Choose Columns • C	Remove	Keep Remove Rows • Rows •	⊉↓ ∡↓ 「 co	Split (lumn •	Group	Data Type: Text • Use First Row as Headers •	Merge Queries Append Queries Combine Files	Manage Parameters •	Data source settings	Canal New	r Source * ent Sources *		
Close		Query	Manage C	olumns	Reduce Rows	Sort			Transform	Combine	Parameters	Data Sources	Nev	w Query		
>	×	√ fx = Tab	le.Transform	ıColumn⊤y	pes(Source,{{	Salespe	rson",	type :	text}, {"Date", type da	tetime}, {"Sales",	Int64.Type	},	~	Quen	Settings	\sim
		Ale Salasparson	Data	¥	122 Salas	1.2 Cor	mission	Ţ	1					Quer	y settings	^
۰ L	1	Mary	01/05/2016	00.00	1-3 54143	1.2 001	innaaion	12							RTIES	
- lerie	2	Mary	02/05/2016	00:00	10	2		8						Name		
ă –	3	Mary	03/05/2016	00:00	5	2		4						Table		
-	4	Mary	20/05/2016	00:00	30	2		24						All Pro	perties	
	5	Mary	21/05/2016	00:00	10	,		8								
	6	Mary	22/05/2016	00:00	5	2		4						▲ APPLI	ED STEPS	
	7	Mary	23/05/2016	00:00	9	7		7.2						So	urce	_
	8	Mary	24/05/2016	00:00	7.	5		6						×Ch	anged Type	
	9	Mary	25/05/2016	00:00		2		0								
	10	Mary	26/05/2016	00:00	10	0		8								
	11	Mary	27/05/2016	00:00	10	2		8								
	12	Mary	28/05/2016	00:00	6	0		4.8								
	13	Mary	29/05/2016	00:00	8	2		6.4								
	14	Mary	30/05/2016	00:00	10	2		8								
	15	Mary	31/05/2016	00:00	15	2		12								

Now we need to add the missing rows.

File Close & Load • Close	R	Home Transform Fransform Fransf	Ac	Id Column View Choose Remove Columns • Columns • Manage Columns	Keep Remove Rows * Rows * Reduce Rows Sort	Split Group 1,2 Olumn By Tra	a Type: Text ¥ Use First Row as Headers ¥ Replace Values nsform	Merge Queries * Append Queries * Combine Files Combine	Manage Parameters • Parameters	Data source settings Data Sources	New :	Source * nt Sources *		B	^ (?
Queries		Copy Parto	×	A ^B C Salesperson	ble.TransformColumnT	ypes(Source,{{"S	alesperson", type te	xt}, {"Date", type	e datetime},	{"Sales",	~	Query	Settings		×
	×	Delete Rename		Mary Mary Mary	02/05/2016 00:00 03/05/2016 00:00 20/05/2016 00:00	100 50 300	8 4 24					Name Mary Di All Prope	ata with Gap		
	0	Reference Move To Group Move Up	÷	Mary Mary Mary	21/05/2016 00:00 22/05/2016 00:00 23/05/2016 00:00	100 50 90	8 4 7.2					APPLIED	o STEPS		
	τ.	Move Down Create Function Convert To Parameter		Mary Mary Mary Mary	24/05/2018 00:00 25/05/2016 00:00 26/05/2016 00:00 27/05/2016 00:00	0 100 100	0 8 8								
	2 2	Advanced Editor Properties	13	Mary Mary Mary	28/05/2016 00:00 29/05/2016 00:00 30/05/2016 00:00	60 80 100	4.8 6.4 8								
			15	Mary	\$1/05/2016 00:00	150	12								

We will start by creating a copy of the existing query, and to do this, we will create a reference query. For more on the differences between reference and duplicate queries see Power Query: Cleanse, Tone and Upload.

Image: Second	he ga A Editor	dd Column View dd Column View Choose Remove Columns Columns - Manage Columns	Keep Remove Remove Reduce Rows Sort	Split Split Jumn • By +22 Tra	a Type: Text ¥ Use First Row as Headers ¥ Replace Values Insform	Merge Queries • Combine Files Combine	Manage Parameters • Parameters	Data source settings Data Sources	New Sou	urce * Sources * uery		D	× ^ 0
Queries [2]	1 2 3 4 5 6 7 7 8 9 10 11 11 12 13 14 15	Mc Salasperson • Mary • • Mary<	Typ Data with Gap" Data w 01/05/2016 00:00. 02/05/2016 00:00. 02/05/2016 00:00. 20/05/2016 00:00. 20/05/2016 00:00. 20/05/2016 00:00. 21/05/2016 00:00. 21/05/2016 00:00. 21/05/2016 00:00. 25/05/2016 00:00. 26/05/2016 00:00. 28/05/2016 00:00. 30/05/2016 00:00. 31/05/2016 00:00.	123 Salea ▼ 150 150 50 50 50 755 0 100 100 100 100 100 100 100	12 Commission ▼ 12 0 4 24 6 4 7.2 0 6 0 0 0 6 0 6 4 7.2 2 8 0 8 12				~	Query S PROPERS	ettings ES filling the gap les TEPS		×
4 COLUMNS, 15 ROWS											PREVIEW DOWN	ILOADED .	AT 12:55

We now have two queries containing Mary's data; we are going to savage this query by only keeping one row!

Home Transform Image: Properties Image: Properties Image: Properties Image: Properties	Ad Editor	Choose Remove Columns • Columns •	Keep Romove Rows • CO	Split Group	Data Type: Any *	aders *	Merge Queries Append Queries Combine Files	Manage Parameters •	Data source settings	New Source *	
e Query		Manage Columns	Reduce Rows Sort		Transform		Combine	Parameters	Data Sources	New Query	
ries [2] <	$\left[\times \right]$	√ fx = #"	Keep Rows Choose the rows you wan	t to keep.						V Query S	Settings
Mary Data With Gap		AB _C Salesperson	Date 💌	143 Sales	▼ 1.2 Commission	¥.					
Mary Data filling the	1	Mary	01/05/2016 00:00.		150	12				▲ PROPERT	IES
	2	Mary	02/05/2016 00:00.		100	8				Name	- Elling de la sua
	3	Mary	03/05/2016 00:00.		50	4				Mary Dat	a ming the gap
	4	Mary	20/05/2016 00:00.		300	24				All Proper	ties
	5	Mary	21/05/2016 00:00.		100	8				4 APPLIED	STEPS
	6	Mary	22/05/2016 00:00.		50	4				Source	0
	7	Mary	23/05/2016 00:00.		90	7.2				Jouro	c
	8	Mary	24/05/2016 00:00.		75	6					
	9	Mary	25/05/2016 00:00.		0	0					
	10	Mary	26/05/2016 00:00		100	8					
	11	Mary	27/05/2016 00:00.		100	8					
	12	Mary	28/05/2016 00:00.		60	4.8					
	13	Mary	2970572016 00:00.		80	0.4					
	14	Manu	31/05/2016 00:00.		150	12					
	15	LIGT Å	5170572018 00:00.		150	12					
	Sales	Date 01/05/2015 00:5	10-00								
		Calas 150	0.00								
	Com	sales 130									
	com	11001011 12									

We can do this by using the 'Keep Rows' option:

le Home Transform	Ad	d Column View											~
e & Refresh d ▼ Preview ▼ Manage ▼	ditor	Choose Remove Columns • Columns	Keep Remove Rows * Rows *	Ž↓ Ž↓	Split Group Column • By	Data Type: Any • Use First Row as H 1 22 Replace Values	eaders *	Merge Queries *	Manage Parameters •	Data source settings	Rec	w Source * cent Sources *	
			1100000 110110	Sont				000000	rananiecera	000000000		7	
Mary Data with Gan		<i>√ ∫x</i> =	#"Mary Data wi	th Gap"							~	Query Settings	\times
Many Data filling the		AB _C Salesperson	💌 🔣 Date		1 ² 3 Sales	▼ 1.2 Commission	Ψ.						
- mary bata ming them	1	Mary	01/05/201	5 00:00.		150	12					Name	
	2	Mary	02/05/201	5 00:00.		100	8					Mary Data filling the gap	
	3	Mary									×	All Properties	
	4 c	Mary	Keep Top R	ows								Antroperaes	
	6	Mary	Specify how may	w rowe to	keen							▲ APPLIED STEPS	
	7	Mary	specity now mai	iy rows a	э кеер.							Source	
	8	Mary	Number of rows										
	9	Mary	1.2 • 1										
	10	Mary											
	11	Mary							OK	Cancel			
	12	Mary											
	13	Mary			-		_				_		
	14	Mary	30/05/201	5 00:00.		100	8						
	15	Mary	31/05/201	5 00:00.		150	12						
	Sales	person Mary										-	
		Sales 150	0:00:00									-	
	Comr	nission 17										-	
	com	11001011 11											

We choose to keep just the top row.

	Add Column Vie	w		/
nn From Custom Invoke Custo nples • Column Function General	Conditional Colum Index Column * C Duplicate Column	n the second sec	Date Time Duration	
ries [2] <	× √ fx	= Table.FirstN(Source,1)		Y Ouony Sottings
Mary Data with Gap		The Transformer The Transformer Transforme		Query settings
Mary Data filling the	1 Mary	01/05/2016 00:00 150 12		▲ PROPERTIES
				Name
			×	Mary Data filling the gap
		Custom Column		All Properties
		New column name		▲ APPLIED STEPS
		Each_Date		Source
		Custom column formula:	Available columns:	× Kept First Rows
		=List.Dates(#date(Date.Year([Date]), Date.Month([Date]), Date.Dav([Date])), 31, #duration(1, 0, 0, 0))	Salesperson	
			Sales	
			Commission	
			<< Insert	
		Learn about Power Query formulas		
		No syntax errors have been detected	OK Cancel	

We create a new column by using 'Custom Column' from the 'Add Column' tab. We use this to create a list of dates from the date on the row for 31 days:

= List.Dates(#date(Date.Year([Date]), Date.Month([Date]), Date.Day([Date])), 31, #duration(1, 0, 0, 0))

File Home Transform	Add Column View		~ 🛛
Column From Custom Examples • Column Function General	Image: Conditional Column Image: Column to the second s		
Queres () () () () () () () () () () () () ()	Nom net Nom net Nom net Nom net Nom net Image: State of the sta	Query Settings Ame Mary Data filing the gap All Properties 5 APPLIED STEP Source Kept First Rows X Added Custom	8 9
5 COLUMNIC 4 DOM		200 10 10 00 10 00	

We expand the list in **Each_Date** to new rows.

Home Transform	Add Column View							
	Conditional Column	ABC ABC ABC ABC	$\Sigma \stackrel{\text{XO}}{\underset{{}_{\overset{}}{\overset{}}}{\overset{}}} 10^2 \stackrel{\overset{}{\underset{{}_{\overset{}}{\overset{}}}{\overset{}}}$	Trigonometry * Rounding *				
nn From Custom Invoke Custo mples Column Function	m 📑 Duplicate Column	Parse *	Statistics Standard Scientific	Information *	Date Time Duration			
General		From Text	From Number		From Date & Time			
ries (2)	× × k	= Table.ExpandListColumn	(#"Added Custom", "Each	Date")		~	0	
Mary Data with Gap		- Tubre Texponder Second	(* Added Custon) Each_	ouce y			Query Settings	
Mary Data filling the	A ^B C Salesperson	V Bo Date V	123 Sales V 1.2 Comm	ission 👻 🤶	Zi Each_Date		A PROPERTIES	
	1 Mary	01/05/2016 00:00	150	12	01/05/2018	~	Name	
	2 Mary	01/05/2016 00:00	150	12	02/05/2016		Mary Data filling the gap	
	3 Mary	01/05/2016 00:00	150	12	03/05/2016		All Properties	
	4 Many	01/05/2016 00:00	150	12	04/05/2016		AirFroperties	
	6 Mary	01/05/2016 00:00	150	12	06/05/2016		APPLIED STEPS	
	7 Mary	01/05/2016 00:00	150	12	07/05/2016		Source	
	9 Mary	01/05/2016 00:00	150	12	08/05/2016		Kept First Rows	
	9 Mary	01/05/2016 00:00	150	12	09/05/2016		Added Custom	
	10 Mary	01/05/2016 00:00	150	12	10/05/2016		➤ Expanded Each_Date	
	11 Mary	01/05/2016 00:00	150	12	11/05/2016			
	12 Mary	01/05/2016 00:00	150	12	12/05/2016			
	13 Mary	01/05/2016 00:00	150	12	13/05/2016			
	14 Mary	01/05/2016 00:00	150	12	14/05/2016			
	15 Mary	01/05/2016 00:00	150	12	15/05/2016			
	16 Mary	01/05/2016 00:00	150	12	16/05/2016			
	17 Mary	01/05/2016 00:00	150	12	17/05/2016			
	18 Mary	01/05/2016 00:00	150	12	18/05/2016			
	19 Mary	01/05/2016 00:00	150	12	19/05/2016			
	20 Mary	01/05/2016 00:00	150	12	20/05/2016			
	21 Mary	01/05/2016 00:00	150	12	21/05/2016			
	22 Mary	01/05/2016 00:00	150	12	22/05/2016			
	23 Mary	01/05/2016 00:00	150	12	23/05/2016	~		

We now have a row for each date in the date range. Our new column doesn't look like a date though, so we need to change the data type ready for the next step.

X∃ 🙂- File		ie gaj Ai	o - Power Query Editor Id Column View												٥	× ^ (
Close & Load • Close	Refresh Preview • Query	ditor	Choose Remove Columns • Columns • Manage Columns	Keep Remove Rows* Rows* Reduce Rows Sort	Split Column • By	Da	ta Type: Date/Time • Use First Row as Headers • 2 Replace Values ansform	1	Merge Queries * Append Queries * Combine Files Combine	Manage Parameters * Parameters	Data source settings Data Sources	New Control New New	Source • nt Sources • r Query			
Queries (2	() <	>	√ <i>f</i> x = Tal	ble.TransformColum	nTypes(#"Expan	c	hange Data Type		type datetim	2}})		~	Query	/ Settings		×
i Ma	ry Data with Gap		ABC Salesperson	E Date	▼ 1 ² 3 Sales		selected column.		_Date 💌							
📖 Ma	ry Data filling the	1	Mary	01/05/2016 00:0	0	150	0 12	01/0	5/2016 00:00				▲ PROPE	RTIES		
		2	Mary	01/05/2016 00:0	0	150	12	02/0	5/2016 00:00			<u></u>	Name			
		3	Mary	01/05/2016 00:0	0	150	12	03/0	5/2016 00:00				Mary D	Data filling the gap		
		4	Mary	01/05/2016 00:0	0	150	12	04/0	5/2016 00:00				All Prop	perties		
		5	Mary	01/05/2016 00:0	0	150	12	05/0	5/2016 00:00					D CTCDC		
		6	Mary	01/05/2016 00:0	0	150	12	06/0	5/2016 00:00				APPLIE	DSTEPS		
		7	Mary	01/05/2016 00:0	0	150	12	07/0	5/2016 00:00				Sou	irce		
		8	Mary	01/05/2016 00:0	0	150	12	08/0	5/2016 00:00				Kep	ot First Rows		*
		9	Mary	01/05/2016 00:0	0	150	12	09/0	5/2016 00:00				Ado	ded Custom		*
		10	Mary	01/05/2016 00:0	0	150	12	10/0	5/2016 00:00				Exp	anded Each_Date		
		11	Mary	01/05/2016 00:0	0	150	12	11/0	5/2016 00:00				× Cha	inged Type		
		12	Mary	01/05/2016 00:0	0	150	12	12/0	5/2016 00:00							
		13	Mary	01/05/2016 00:0	0	150	12	13/0	5/2016 00:00							
		14	Mary	01/05/2016 00:0	0	150	12	14/0	5/2016 00:00							
		15	Mary	01/05/2016 00:0	0	150	12	15/0	5/2016 00:00							
		16	Mary	01/05/2016 00:0	0	150	12	16/0	5/2016 00:00							
		17	Mary	01/05/2016 00:0	0	150	12	17/0	5/2016 00:00							
		18	Mary	01/05/2016 00:0	0	150	12	18/0	5/2016 00:00							
		19	Mary	01/05/2016 00:0	0	150	12	19/0	5/2016 00:00							
		20	Mary	01/05/2016 00:0	0	150	12	20/0	5/2016 00:00							
		21	Mary	01/05/2016 00:0	0	150	12	21/0	5/2016 00:00							
		22	Mary	01/05/2016 00:0	0	150	12	22/0	5/2016 00:00							
		23	Mary	01/05/2016 00:0	0	150	12	23/0	5/2016 00:00			~				
		24	Mary	01/05/2016 00:0		150	12	24/1	5/2016 00:00							

5 COLUMNS, 31 ROWS

We want to simplify my query as we don't need the original Date, Sales and Commission columns - these will come from Mary's data.

Home Inansform	Add Column View								
Sose & Refresh Properties Advanced E Properties Advanced E Preview Manage *	Editor	Keep Remove Rows * Rows * Reduce Rows Sort	Data Type: Date/Time * Use First Row as Headers * Poup By Transform	Merge Queries Append Queries Combine Files Combine	Manage Parameters * Parameters	Data source settings Data Sources	Recer	Source * nt Sources * Query	
hueries (2)	×	able RemoveColumns(#"Changed	Duno" ("Doto" "Solos" "Co	mission"))					
Mary Data with Gap	<i>μ</i> − 1	able.Renovecordnins(# changed	Type , toate , sales , co	mission ;;			~	Query Settings	
Mary Data filling the	□, A ^g C Salesperson	• Each_Date •							
	1 Mary	01/05/2016 00:00					~	Name	
	2 Mary	02/05/2016 00:00						Mary Data filling the gap	
	3 Mary	03/05/2016 00:00						All Properties	
	4 Mary	05/05/2016 00:00						Air roperces	
	6 Mary	06/05/2016 00:00						▲ APPLIED STEPS	
	7 Mary	07/05/2016 00:00						Source	
	8 Mary	08/05/2016 00:00						Kept First Rows	3
	9 Mary	09/05/2016 00:00						Added Custom	
	10 Mary	10/05/2016 00:00						Expanded Each_Date	
	11 Mary	11/05/2016 00:00						Changed Type	
	12 Mary	12/05/2016 00:00						× Removed Columns	
	13 Mary	13/05/2016 00:00							
	14 Mary	14/05/2016 00:00							
	15 Mary	15/05/2016 00:00							
	16 Mary	16/05/2016 00:00							
	17 Mary	17/05/2016 00:00							
	18 Mary	18/05/2016 00:00							
	19 Mary	19/05/2016 00:00							
	20 Mary	20/05/2016 00:00							
	21 Mary	21/05/2016 00:00							
	22 Mary	22/05/2016 00:00							
	23 Mary	23/05/2016 00:00					~		

Now all we need to do is put Mary's data back in.

Mary Data filling t	he gap - Power Query E	litor				- 0 ×
Close & Load * Preview * Manage *	Editor Choose Remo	ve Keep Remove Is * Rows * Rows *	Data Type: Date/Time *	Merge Queries Merge Queries	Data source settings	Source * nt Sources *
Close Query	Manage Column	s Reduce Rows Sort	Transform	Combine Merge this gue	ry with another	Query
Queries [2]	$\times \sqrt{f_x}$	= Table.RemoveColumns(#"Changed Type	e".{"Date", "Sales", "Com	query in this wi	orkbook to create a	Ourse Cattings
Mary Data with Gap				new query.		Query settings X
Mary Data filling the	1 Maxw	• Ex Each_Date •				A PROPERTIES
	2 Mary	02/05/2016 00:00			^	Name
	2 Mary	03/05/2016 00:00				Mary Data filling the gap
	4 Mary	04/05/2016 00:00				All Properties
	5 Mary	05/05/2016 00:00				
	6 Mary	06/05/2016 00:00				A APPLIED STEPS
	7 Mary	07/05/2016 00:00				Source
	8 Mary	08/05/2016 00:00				Kept First Rows
	9 Mary	09/05/2016 00:00				Added Custom
	10 Mary	10/05/2016 00:00				Expanded Each_Date
	11 Mary	11/05/2016 00:00				Changed Type
	12 Mary	12/05/2016 00:00				× Kemoved Columns
	13 Mary	13/05/2016 00:00				
	14 Mary	14/05/2016 00:00				
	15 Mary	15/05/2016 00:00				
	16 Mary	16/05/2016 00:00				
	17 Mary	17/05/2016 00:00				
	18 Mary	18/05/2016 00:00				
	19 Mary	19/05/2016 00:00				
	20 Mary	20/05/2016 00:00				
	21 Mary	21/05/2016 00:00				
	22 mary	22/05/2016 00:00				
	23 mary	25/05/2016 00:00			~	
2 COLUMNS 21 DOME	- M BALV	2470572016-00:00				DEDUENU DOMANI CADED AT 12:11

We choose 'Merge Queries as New' from the 'Merge Queries' section from the 'Home' tab.

Image: Second state Image: Second state File Home Transform	the gap - Power Query E Add Column Vie	Editor w			- 0 ×
Close & Load • Proview • Manage	s Editor Choose Re Columns * Colu	Merge		× New Rece	Source * nt Sources *
Close Query Queries [2] Mary Data with Gap	Manage Colu	Select tables and matching columns Mary Data filling the gap	to create a merged table.		Query Settings ×
Mary Data filling the	#c Salespense 1 Mary 2 Mary 3 Mary 4 Mary 5 Mary 6 Mary	Salesperson Each_Date Mary 01/05/2016 00:00:00 Mary 02/05/2016 00:00:00 Mary 03/05/2016 00:00:00 Mary 04/05/2016 00:00:00 Mary 04/05/2016 00:00:00		^	A PROPERTIES Name Mary Data filing the gap All Properties APPLIED STEPS
	7 Mary 8 Mary 9 Mary	Mary Data with Gap	•	G	Source Kept First Rows IP Added Custom IP Expanded Each Date
	10 Mary 11 Mary 12 Mary 13 Mary 14 Mary	Salesperson Date Sa Mary 01/05/2016 00:00:00 Mary 02/05/2016 00:00:00 Mary 02/05/2016 00:00:00 Mary 02/05/2016 00:00:00 Mary 02/05/2016 00:00:00 Mary 02/05/2016 00:00:00	ales Commission 150 12 100 8 50 4 300 24		Changed Type
	15 Mary 16 Mary 17 Mary 18 Mary 19 Mary	Mary 21/05/2016 00:00:00 Join Kind Left Outer (all from first, matching from	100 8 m second) *		
	20 Mary 21 Mary 22 Mary	The selection has matched 15 out of	of the first 31 rows.	DK Cancel	
2 COLUMNS, 31 ROWS	23 Mary 24 Mary	24/05/2016 00:00		~	PREVIEW DOWNLOADED AT 13:11

We want all the rows from our first query and matching rows (with the sales data) from the second query. We will use the 'Left Outer' join.

Image: Transform File Home Transform Image: Transform <tr< th=""><th>ditor Add Column View ditor Choose Remo Columns Column Manage Column</th><th>e keep Remove \$1 Image: Compare Linkle* Image: Compare Lin</th><th>rge Queries *</th></tr<>	ditor Add Column View ditor Choose Remo Columns Column Manage Column	e keep Remove \$1 Image: Compare Linkle* Image: Compare Lin	rge Queries *
Cuerter (3) <	X X K Im. APC Solesperson I Mary 1 Mary Solesperson Mary 2 Mary Mary Mary 3 Mary Mary Mary 4 Mary Mary Mary 5 Mary Mary Mary 9 Mary Mary Mary 10 Mary Mary Mary 12 Mary Mary Mary 13 Mary Mary Mary 14 Mary Mary Mary 15 Mary Mary Mary 20 Mary Mary Mary 22 Mary Mary Mary	Table.HestedJoin(#"Nary Data filling the gap",("tach_Date"),#"Nar © Cath_Date	y Data with Gap", ("Date"), "Nary V Query Settings × 4 Rooperties All Properties 5 Source 0

A new query 'Merge1' is created, and Mary's data is held in column **Mary Data with Gap** which contains a table. We choose to expand the **Sales** and **Commission** columns. We will (of course) uncheck the 'Use original column name as prefix' option.

Kall Corr = Merge1 - Power Q File Home Transform	uery E Ac	ditor Id Column View									- 0	× ^ (
Close & Refresh Manage *	ditor	Choose Remove Columns • Columns •	Keep Remove Rows * Rows *	Split Split Group By	Data Type: Whole Number *	Merge Queries Append Queries Combine Files	Manage Parameters •	Data source settings	Recent	iurce * Sources *		
Close Query		Manage Columns	Reduce Rows Sort		Transform	Combine	Parameters	Data Sources	New C	luery		
Queries [3]	X	$\sqrt{f_X} = Tat$	le.ExpandTableColum	n(Source, "M	ary Data with Gap", {"Sa	les", "Commission"	},		~	Querv	Settings	×
Mary Data with Gap		t ^B c Salesperson ▼	Each Date	1 ² 2 Sales	× 1.2 Commission					Query	Settings	
Mary Data filling the	1	Mary	01/05/2016 00:00.		150 12					A PROPER	RTIES	
Merge1	2	Mary	02/05/2016 00:00.		100 8				^	Name		
	3	Mary	03/05/2016 00:00.		50 4					Merge1		
	4	Mary	04/05/2016 00:00.	n	ull null					All Prop	erties	
	5	Mary	05/05/2016 00:00.	n	ull null							
	6	Mary	06/05/2016 00:00.	n	ull null					APPLIEL	JSTEPS	
	7	Mary	07/05/2016 00:00.	n	ull null					Sour	rce	*
	8	Mary	08/05/2016 00:00.		ull null					× Expa	anded Mary Data with Gap	2 2
	9	Mary	09/05/2016 00:00.	. n	ull null							
	10	Mary	10/05/2016 00:00.	. n	ull null							
	11	Mary	11/05/2016 00:00.	. n	ull null							
	12	Mary	12/05/2016 00:00.	n	ull null							
	13	Mary	13/05/2016 00:00.	n	ull null							
	14	Mary	14/05/2016 00:00.	n	ull null							
	15	Mary	15/05/2016 00:00.	n	ull null							
	16	Mary	16/05/2016 00:00-	. n	ull null							
	17	Mary	17/05/2016 00:00.	n	ull null							
	18	Mary	18/05/2016 00:00.	. n	ull null							
	19	Mary	19/05/2016 00:00.	. n	ull null							
	20	Mary	20/05/2016 00:00.		300 24							
	21	Mary	21/05/2016 00:00.		100 8							
	22	Mary	22/05/2016 00:00.		50 4							
	23	Mary	23/05/2016 00:00.		90 7.2				~			
A COLUMNIC 21 DOWN	24	Mary	24/05/2016 00:00		75 6						000 000 0000000000000000000000000000000	ED AT 12/2

We now have data for each date - but it needs to be tidied. We want zeroes instead of null values in the currency columns.

🚺 🕛 = Merge1 - Power (Query Editor						- 0	×
File Home Transform	Add Column View							_ ^ (
Close & Load v Close & Close & Close &	Editor	Keep Remove Rows * Rows *	Data Type: Whole Number * Data Type: Whole Number * Use First Row as Header to By the Part of the P	Merge Queries Merge Queries Merge Queries Combine Files Combine	Manage Parameters • Data Source Barameters • Data Source	New Source *	-	
close query	interinge containing	incode nons son	Transform.	compile	Talancers bata source	- Heir query		
Queries [3]	$\times \sqrt{f_x} = Ti$	able.ExpandTableColumn(Sc	ource, "Mary Data with Gap", {	"Sales", "Commission"}	,	✓ Oue	rv Settinas	×
Mary Data with Gap	ABc Salesperson	▼ Each Date ▼ 123	Sales - 1.2 Commission	-			· · · · · · · · · · · · · · · · · · ·	
Mary Data filling the	1 Mary	01/05/2016 00:00	150 1	2		I PRO	PERTIES	
Merge1	2 Mary					Nam	e	
	3 Mary					Mer	ge1	_
	4 Mary R	eplace Values				All P	roperties	
	5 Mary Re	eplace one value with anoth	er in the selected columns.			4 400		
	6 Mary	Lo To Paul				- AFF		
	7 Mary	2 x mill				~	ource	8
	8 Mary	-z · [100				~	xpanded Mary Data With Gap	×
	9 Mary Re	eplace With						
	10 Mary	.2 * 0						
	11 Mary							
	12 Mary			[OK Cancel			
	13 Mary							
	14 Mary							
	15 Mary	15/05/2016 00:00	null nul	2				
	16 Mary	16/05/2016 00:00	null nul	1				
	17 Mary	17/05/2016 00:00	null nul	2				
	18 Mary	18/05/2016 00:00	1011 101	1				
	19 Mary	19/05/2016 00:00	nu11 nul	1				
	20 mary	20/05/2016 00:00	100 2	0				
	21 naty	21/05/2016 00:00	100	4				
	22 Mary	23/05/2016 00:00	00 7	2				
	24 Mary	24/05/2016 00:00.	75	6		*		
4 COLUMNS, 31 ROWS							PREVIEW DOWNLOADER	D AT 13:2

contact@sumproduct.com | www.sumproduct.com | +61 3 9020 2071

We may replace values to achieve this.

Home Transform	Ac	ld Column View											
e Query	ditor	Choose Remove Columns • Columns • Manage Columns	Keep Remove Rows ▼ Rows ▼ Reduce Rows Sort	Split Column •	Group 1 By	ata Type: Whole Numb Use First Row as Hei Replace Values ransform	er * iders *	Merge Queries * Append Queries * Combine Files Combine	Manage Parameters * Parameters	Data source settings Data Sources	New Contract New	/ Source * ent Sources * w Query	
ries (3) 🔨		√ fr = Ta	hle.RenlaceValue(#"Expanded	L Mary D	ata with Gan".nu	11.0.1	Renlacer.RenlaceVal	ue.		~	0.5.11	
Mary Data with Gap						- 1.2			,		•	Query Settings	
Mary Data filling the		Mc Salesperson •	01/05/2016 00-	• 1-3 Sa	10	1.2 Commission	12					▲ PROPERTIES	
Merge1	-	Maxw	02/05/2016 00:	00	10	0					^	Name	
	2	Manu	02/05/2016 00:	00	10	0	-					Merge1	
	-	Mary	04/05/2016 00:	00	-	0	0					All Properties	
	5	Mary	05/05/2016 00:	00		0	0						
	6	Mary	06/05/2016 00:	00		0	0					APPLIED STEPS	
	7	Mary	07/05/2016 00:	00		0	0					Source	
	8	Mary	08/05/2016 00:			0	0					Expanded Mary Data with Ga	ap
	9	Mary	09/05/2016 00:			0	0					➤ Replaced Value	
	10	Mary	10/05/2016 00:	00		0	0						
	11	Mary	11/05/2016 00:	00		0	0						
	12	Mary	12/05/2016 00:	00		0	0						
	13	Mary	13/05/2016 00:	00		0	0						
	14	Mary	14/05/2016 00:	00		0	0						
	15	Mary	15/05/2016 00:	00		0	0						
	16	Mary	16/05/2016 00:	00		0	0						
	17	Mary	17/05/2016 00:	00		0	0						
	18	Mary	18/05/2016 00:	00		0	0						
	19	Mary	19/05/2016 00:	00		0	0						
	20	Mary	20/05/2016 00:	00	30	0	24						
	21	Mary	21/05/2016 00:	00	10	0	8						
	22	Mary	22/05/2016 00:	00	5	0	4						
	23	Mary	23/05/2016 00:	00	9	0	7.2				~		

We now have entries for each date so that this data can be combined with other similar data.

Until next month.

Power BI Updates

Another month, another load of updates for Power BI. The latest round allows you to customise your reference layers in Azure Maps visual, DAX query view is now available in live connect and there is also an update to the Power BI enhanced report format (PBIR).

The full list of updates is as follows:

Reporting

• Customise your reference layers in the Azure Maps visual

Modelling

- Announcing the General Availability of the enhanced Row Level Security editor in Power BI Desktop
- DAX query view is now available in live connect
- Add or update multiple measures in DAX query view

Data Connectivity

• Certified connector updates

Service

• Storytelling in PowerPoint: new 'Export to PowerPoint' dialog

Developers

- New update for field parameter feature for custom visuals
- Power BI enhanced report format (PBIR) update

Customise your reference layers in the Azure Maps visual

Recently, Microsoft has brought numerous improvements to the Azure Maps visual, including reference layer support for a variety of new data formats. This month sees the announcement of several more improvements to reference layers:

- CSV support
- new customisation options
- dynamic URL sources.

Firstly, the Azure Maps visual now supports CSV files as data sources for reference layers. Just as you can already use GeoJSON, Shapefiles, WKT and KML files, you may now upload a CSV file instead in the reference layer section of the Formatting pane.

Visualisations

- New visuals in AppSource
- Linear Gauge by Powerviz
- Drill Down Map PRO by ZoomCharts
- PowerGantt Chart by Nova Silva
- Advanced Geospatial Analytics Made Simple with Icon Map Pro for Power BI

Paginated Reports

- Bind to Gateway API support for Paginated Reports
- Parameters, Header / Footer and much more in the web authoring experience for Paginated Reports in Preview

Power BI Report Server

• Power BI Report Server key in Fabric Capacities.

Let's look at each in turn.

Secondly, you may also now format reference layer shapes from within the Formatting pane. Previously, Azure Maps required you to define the colour and width of points, lines and polygons from within your reference layer files. Otherwise, these shapes would be drawn on your maps with the default colours and formatting. This requirement brought additional complexity to working with your reference layers in Power BI, since the files needed more than just the data you intended to visualise. Now, these have been added as standard formatting settings to each type of object in the reference layers in the Formatting pane, so you can customise them directly from within Power BI.

Lastly, for those of you who need your reference layers to change with time or other data-bound conditions, you can now provide a dynamic

URL using conditional formatting. This allows you to set custom logic to determine the reference layer URL the Azure Maps visual will use. For example, you can load in different reference layers based upon the categories selected by a slicer, *e.g.* to visualise performance of different product lines over the same geography.

Announcing the General Availability of the enhanced Row Level Security editor in Power BI Desktop

This month also welcomes the General Availability of the enhanced Row Level Security editor in Power BI Desktop. With this editor, you can quickly and easily create row-level security roles and filters. Simply choose 'Manage roles' from the Ribbon to open the editor.



By default, this will open an easy-to-use drop-down interface for creating and editing security roles all without having to write any DAX.

Manage security role	S	X
Create new security roles ar	nd use filters to define row-le	vel data restrictions.
Roles	Select tables	Filter data Switch to DAX editor
+ New	⊞ Customer ···	+ New Select all 🔟 Delete 🕃 Group 👫 Ungroup
₽ East	I Date	Show data if All \checkmark of these rules are true
-2	Product	Column Condition Value
	Reseller	Region V Equals V East
	I Sales	+ New
	I Sales Order	
	I Sales Territory □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	
		Save Close

If you prefer using **DAX** or need it for your filter definitions, you can switch to use the DAX editor to define your role. This is a rich editor complete with autocomplete for formulae (IntelliSense). It also allows you to easily verify the validity of your **DAX** expressions by selecting the check button and revert any changes by selecting the **X** button.

At any point you can also switch back to the default editor by selecting 'Switch to default editor'. All changes made in either editor persist when switching interfaces when possible, giving you maximum flexibility as you create your row-level security roles.

Manage security role	S		×
Create new security roles a	nd use filters to define row-l	evel data restrictions.	
Roles	Select tables	Filter data	Switch to default editor
+ New	E Customer Date Product Aeseller Sales Sales Territory 文	1 [Region] "East" && [C []] [Country]	~ ×
		Filter the data that this role can see by entering a DAX filter expressivalue. For example: [Entity ID] = "Value"	on that returns a True/False Save Close

DAX query view is now available in live connect

There is now the ability to use DAX query view while live connected to a published semantic model. With this release you may write **DAX** queries with DAX query view when live connected to a published semantic model in Power BI Desktop.

This includes live connecting to Direct Lake semantic models created in Microsoft Fabric. You may live connect to your published Direct Lake,

import, DirectQuery or composite semantic model in Desktop and use the DAX query view to quickly view data without having to create any visuals. Use quick queries to have a **DAX** query generated for you from any table, column or measure, and Copilot can help you as you write your **DAX** queries.

File	Hon	ne Help Externa	tools				🖻 Share 🗸
Paste	X Cut	Format Comment Uncomm	nent Find Replace Comma palett	and Copilot (preview) Copilot			~
[tol]	🕞 Rur	T Update model	with changes (0)	C Share feedb	Data		>>
49 A	€ 1 EVALUAT 2 SEL 3 4 5 6 7 8 9	VALUATE SELECTCOLUMNS(TOPN(100, 'Products', 'Products'[ASC),	roductCategoryID],	2	E. Tables Q. Search > ■ Pick a r > ■ Date > ■ Geo	Model	
	10	'Products [Products]	ctCategory]),	Show ton 100 rows	Ouick queries	ts	5
	11 12) ORDER BY 'Products'	ProductCategoryID1 ASC	Show column statistics	Select columns		
		onder of frondeed [riodacecacegory10, Abe	Define all measures in this table	Select measures		
	Decide	Desult 1 of 1 of	0.0	Define all measures in this model	Unhide all		
	Resun	Kesuit For I V	© сору ∨		Collapse all		
	E	Products[ProductCateg	Products[ProductCateg		Expand all		
	1	1	Accessories				
	2	2	Bikes				
	3	3	Clothing				
	< > C	Query 1 OQuery 2	+				
🕑 Su	ccess (95.3 r	ms) Query 2 of 2 Result	1 of 1 2 columns, 3 rows			·	+ 100%

This can be helpful to further your analysis beyond report authoring even when you are using a published semantic model managed by someone else.

IJ	୬୯	Jntitled - Power Bl Desktop		م ا	Search	
File	e Hor	ne Help External too	ls			
Paste	Cut Copy	→ =	Find Replace Command palette	ppilot eview)		
Inall		Tundate model with	changes (0)	opilot		
<u></u>	22	i opuate model with	changes (0)			
	23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	<pre>)) // Calculate the average // Calculate the average MEASURE 'Pick a meas AVERAGEX(VALUES('Date 'Date'[Date] >] 'Date'[Date] <=) // Compare the monthly avera VALUATE SUMMARIZECOLUMNS(ProductS[ProductCate "Latest 6 Months Av "Previous 6 Months Av ('Add a column tos '/ Add a column tos ''Increasing", ''Decreasing",))</pre>	<pre>profit for the previous 6 ure'[PreviousSixMonthsProf: '[Monthly]), TwelveMonthsAgo, _SixMonthsAgo age profit for the latest 6 agory], trage Profit", [LatestSixMontwarage Profit", [PreviousSixMonth] user and the increasing or de profit] > [PreviousSixMonth]</pre>	<pre>months t] = CALCULATE(months with the previou thsProfit], xNonthsProfit], creasing isProfit],</pre>	s 6 months fo	or each product category
	Resul	ts Result 1 of 1 🗸	🔲 Сору 🗸			
	Ħ	Products[ProductCategory]	[Latest 6 Months Average Profi	[Previous 6 Months Aver	age Profit]	[Trend]
	1	Bikes	31338875	21 3	099920739.17	Increasing
	2	Clothing	313314482	4.5 3	099378621.67	Increasing
	3	Accessories	3133271675	17 3	100098420.33	Increasing
🕑 Su	(4213)	Query 1 Query 2 0 ms) Query 3 of 3 Result 1	Query 3 + of 1 4 columns, 4 rows			

Add or update multiple measures in DAX query view

Another popular request for DAX query view is also now available, namely to add or update the model with multiple measure changes.

In a **DAX** query, you can use the **DEFINE** syntax to add a measure. These **DAX** query scoped measures are helpful for authoring **DAX** formulae and trying them out with different groups by columns before adding them to the model. In DAX query view, Microsoft has made it simpler to then

add these measures to the model by clicking the text between the lines above the **DEFINE MEASURE**. **DAX** queries also allow you to define many measures at once, so it can be tedious to click each one. Now this task is very easy with the option to update the model with a single click for all measures.

File Ho A Cat Paste Copy Clabcard	Help Extern →■ '-■ '5 Format Comment Unco query	nal tools	and Capilot (preview) Copilot						£ 5	uro \
	n 不 Update mode	el with changes (9)					C Sh	are feedback	Data	
1 1 1 1 1 1 1 1 1 1 1 1 1 1	CETPE Updem model Add over m VEX.081 * (France Lal 201186) [Testa 3 hor [Testa 3 hor [Testa 3 hor [Testa 3 hor [Testa 3 hor [Testa 3 hor [Testa 2 ho	<pre>muse *[Profit Hargin] = fat], Atture BLANG if division muse *[Conta Units Sold] = *[Conta Units Sold] = *[Conta Units Sold] = *[Conta Units Sold] = *[Conta Units Porta] = *[Conta Units Porta] = *[Conta Units Cala Porta] =</pre>	n by zero					Rank	Tables Model C. Scorth Scorth Scorth Galaxies space (0.5) Galaxies space (0.5) Galaxies (0.5) Galaxies (0.5) Galaxies (0.5) B. Average Mandemating Prior Total Octomatis B. Total Octomatis Total Octomatis	
Resu	Its Result 1 of 1	✓ ○ Copy ✓						~	Perspectives (0)	
=	Financials/Segment]	(Profit Margin)	[Total Units Sold]	[Total Sales]	[Total Profit]	GAverage Sale Pricel	(Average Manufacturing	[Total Discou	> Relationships (1)	
1	Government	0.22	470673.5	52504260.67	11388173.17	125.67	97.13		Roles (D)	
2	Midmarket	0.29	172178	2381882.07	660103.00	15	47.56		> Tables (4)	
3	Channel Partners	0.73	161263.5	1800593.64	1316803.14	12	97.14			
4	Enterprise	-6.03	168552	19611694.30	-614545.63	125	95.05			
5	Small Business	0.1	153139	42427918.5	4143168.5	300	104.21			
• • •	Query 1 Query 2	Query 3 +	o			_				1001

This can be handy to quickly format all your DAX formulae at once:

- in DAX query view, right-click in the Data pane and choose Quick queries -> Define all measures in this model
- click the 'Format query' button in the Ribbon
- click 'Update model with changes' button.

Certified connector updates

There are four new / updated connectors in this latest release:

- 1. BuildingConnected (new)
- 2. SingleStore (updated)
- 3. SmartSheet (updated)
- 4. Windsor (new).

Storytelling in PowerPoint: new 'Export to PowerPoint' dialog

To reduce complexity and drive more clarity, Microsoft has now merged the two [2] options to export to PowerPoint into a single dialog. You may now choose between embedding live data using the Power BI add-in for PowerPoint and exporting the report as images from the same dialog.

Embed live data	\sim		
Embed live data			
Export as image	isting	presentation, Or select C	Open in
https://app.powerbi	.com/groups/me/repor	<u>ts/cea5682a-aet</u>	Сору

New update for field parameter feature for custom visuals

sourceFieldParameters is a new property in DataViewMetadataColumn that identifies whether a query field results from a field parameter resolution. If a single field can originate from multiple field parameters, this property will list all the related field parameters. This new update is available with API v5.10.0.

Power BI enhanced report format (PBIR) update

The following previously announced limitations of the PBIR format have been resolved:

- cannot be exported to PPTX or PDF
- cannot be included in Subscriptions
- Mobile layouts aren't applied
- cannot be used in Power BI Embedded.

New visuals in AppSource

There are eight [8] new visuals this month:

- 1. Icon Map Pro
- 2. Multilevel Matrix Xerppa
- 3. Sankey Diagram
- 4. Smart Grid-Map
- 5. SPC visual
- 6. StackedTrends visual
- 7. Waffle Chart Maker
- 8. Waterfall chart.

Linear Gauge by Powerviz

Powerviz Linear Gauge is a visual that is used to display the progress against set targets on a linear scale, with an axis displaying a range of values or percentages. The Linear Gauge quickly conveys the status or progress of a task or value being measured.

Key features include:

- Gauge styles: four [4] different gauges including Linear, Bar in Bar, Cylinder, Thermometer and various customisation options
- Templates: select from pre-made templates or customise your own
- Scale: select an absolute or percentage scale, with a customisable minimum maximum range
- Targets: set a custom target or apply a target using a value field
- Data colours: 30+ colour palettes available
- **Band:** 30+ colour palettes and customisation options
- Labels: improve readability with labels
- Small Multiples: divide visuals based upon fields
- Ranking: filter Top / Bottom N shows remaining as "Others".

Other features included are fill pattern, annotation, grid view, show condition amongst others.

Business use cases include sales performance tracking, project milestone monitoring and financial KPI analysis.

An adv	anced visual i	10	ss on a nnear scale again.	st the targets.
		Four Differe	nt Gauge Style	
Seles Analysis Server CP2 Utilizations The Server CP2 Utilizations The Server CP2 Utilizations Analysis and Server CP2 Utilizations Analysis	nge	ten fuger ter and ter	Kana kanga Kana kanga Kana kanga Kana kanga	
Linear	en de	Bar In Bar	Thermometer	Cylinder
			Feet X. : \$850M	The Snowman : \$750M
ok 13k	25k	38k 50k	The Big Shore (SABDA	Dure: Part Two: 1655M
ok 13k	25k 20*c 40 Scale	37.80K 38k 50k	The fig Sheet 1000M	Dave his bits
0k 13k	25k 20°c 40 Scale	37.30K 38k 50k	The by Shee 19604	Due he is \$504 Multiple 2.24k
0k 13k	25k 20°c 40 Scale Scale	37.00K 38k 50k → 50k → 50k + 60°c	The big Street (MSDM The big Street (MSDM Small	Autor have be staded of the state of the sta
0k 13k	20°c 40 Scale Scale Survey 10 Survey	328 S0k 388 S0k 5000 50000 100000 10000 10000 10000 10000 10000 10000 1000	The fig Shore 10000 The fig Shore 10000 Small	Aure har he : 19304 Core har he : 19304 Multiple 2.24K Stor Fatales Stor Fatales Minimum Middle Mateman mething Coar C
0k 13k 0c 10c 10c 10c 10c 10c 10c 10c 10c 10c 1	25k 20°c 40 Scale Cooler Innov 75% Cooler Innov Innov 10 Innov 10	38k 50k jrc 60rc	The Fig. Shore: 19600 The Fig. Shore: 19600 Small	Authors is seen and a second an



Drill Down Map PRO by ZoomCharts

When visualising data with geographic coordinates, maps are usually the best way to go. Map charts are therefore becoming a more popular visualisation type in Power BI reports, and the Drill Down Map PRO custom visual by ZoomCharts expands on the capabilities of built-in Map charts.

Features include:

- Node clustering: multiple nearby nodes can create clusters and even display the values as Pie charts; simply zoom in to drill down
- Base layer customisation: choose between AzureMaps or any custom tileserver, use your own images as the base layer or else disable it entirely
- Custom shape layers: enable up to 10 individually customisable shape layers. You may use preset shapes or import your own KML / GeoJSON files
- **Conditional formatting:** automatically apply colour fill to each area by comparing their values against other shapes or by using each shape's own reference value
- **Others:** paginated ToolTips, custom ToolTip fields, auras, node images and a lasso tool.

Drill Down Map PRO works well with other visuals by dynamically cross-filtering data, enabling you to build insightful and user-friendly Power BI reports.



PowerGantt Chart by Nova Silva

In the latest release of the PowerGantt Chart, several new features have been added. These include the ability to show incomplete tasks and display progress as a separate column. Links have also been included in the additional columns and their formatting options have been enhanced. You can now change the milestone shapes and wrap text in columns for better readability too.



Additionally, an option has been added to preset the zoom slider, expand and collapse all hierarchy elements, and add milestone labels. To further improve the experience, the display and formatting of vertical grid lines has also been enabled.

Advanced Geospatial Analytics Made Simple with Icon Map Pro for Power BI

Icon Map Pro, the new professional version of Icon Map, has been developed with an extensive set of new features and a simplified interface. This tool offers a robust solution for visualising and analysing geospatial data within Power BI. It is designed for data analysts, GIS specialists and business intelligence professionals, addressing the need for integration of geographic insights into Business Intelligence dashboards. Users can now transform complex geospatial data into actionable visuals, enhancing decision-making and strategic planning with the intuitive low / no-code Power BI interface.



Icon Map Pro : Data-bound layers

Map PRO

Icon Map Pro enables you to draw a wide range of objects types on your map, position and conditionally format them based on data in your Power BI semantic model.







Heatmaps

Create heatmaps based on up to 180000 rows of data.



Images & Labels Draw images on the map. Use conditional formatting to pick images, rotate and resize.



Shapes Upload from local files, external URLs, Mapbox Tilesets, ArcGIS Feature Layers or vector tiles.



H3 Hexagons

Aggregate Power BI point data within Icon Map Pro or use pre-generated H3 cell indexes.



Multiple types & Drill Down Combine the different elements on the same map, filter using slicers and drill-down into more detail



Icon Map Pro : Backgrounds, Reference Layers & Interactivity

Icon Map Pro enables you to add additional context to your data, whether that's from the use of specific mapping services, additional reference layers or real-time context such as traffic and weather, all with the familiar experience of a Power BI visual supporting tooltips, cross-highlighting, drill down and drill through.



Map Backgrounds

Icon Map Pro comes with its **own world-wide background mapping service included**. It is also possible to use third-party providers including Azure Maps, Google Maps, Mapbox, ArcGIS, MapTiler and Ordnance Survey with the appropriate subscription. In addition, custom layers are supported from raster tiles and vector tiles.



Overlays and Reference Layers

Additional information can be overlayed over the base map. Examples include; Place names, Daylight Terminator, Shapes (from external URLs, uploaded files or ArcGIS Online feature layers), WMS layers, Traffic from Azure Maps and Google Maps, and Weather from Azure Maps and OpenWeatherMap.



Controls and Interactivity

Add controls to control the zoom, add metric, imperial or nautical scales, lasso map elements, measure distances or add custom attribution messages for compliance with custom layers. Icon Map Pro supports cross filtering and highlighting other visuals, tooltip customisation, report page tooltips, drill down and drill through.

Bind to Gateway API support for Paginated Reports

You can now bind your paginated reports to gateways with a REST API. This will allow Paginated Reports to connect to on-premises gateways without requiring users to go to the user interface in the Power BI Service and bind the report to the specified gateway.

Parameters, Header / Footer and much more in the web authoring experience for Paginated Reports in Preview

A new experience to web author paginated reports has now been introduced. It's not just an update to the look and feel, but also it has introduced a host of new capabilities. You may now define parameters, headers, footers and page numbers in your web authored reports. Once you select the fields, they will appear in the Editor along with a 'Preview' of the report with sample data. You can move the table in the Editor and the Preview will reflect the change as well.

Editor				⇒ «	Filters	× >>	Data
-≎ Account Name	Opportunity Count In) Probability	Forecast		✓ Search		✓ Search
🖽 Account Name	m	Probability	E Forecast		> Account Name	×	RegionalSalesSample
Total	Total(Opportunity Count In	Total(Probability)	Total(Forecast)		> Probability	×	🖽 🗆 Davs Remaini
			Ŭ				∑ □ DaveTeClose
					Add data field	is nere	
							Decision Mak
							∑ □ Discount
							📱 🗹 Forecast
review	1 ▷ ▷▷			\otimes			📙 🗆 Forecast %
	we up to 500 rows. Switch to view	ing mode or export the re	port to see all rows.	×			🔲 🗆 Forecast by W
Editing mode only show	vs up to soo rows, switch to vice						
Editing mode only show	as up to soo rows, switch to vice						🗍 🗌 Opportunity (
Editing mode only show							 Opportunity C Opportunity C
Editing mode only show	Opportunity Count In Pipeline	Probability	Forecast	Î			 Opportunity C Opportunity C Opportunity C
Editing mode only shov Account Name A. Datum Corporation	Opportunity Count In Pipeline (U.S.) 225	Probability 17.9%	Forecast \$1,361,262	Î			 ☐ Opportunity C ∑ ≤ Probability
Editing mode only show Account Name A. Datum Corporation Abbott Group (Andorra	Opportunity Count In Pipeline (U.S.) 225 a) 164	Probability 17.9% 27.2%	Forecast \$1,361,262 \$1,279,590	Î			 Opportunity C Opportunity C Opportunity C Opportunity C Probability Parchase Res
Editing mode only show	Opportunity Count In Pipeline 225 0) 164 21 21	Probability 17.9% 27.2% 26.8%	Forecast \$1,361,262 \$1,279,590 \$199,588	Î			 Opportunity 0 Opportunity 0 Opportunity 0 Probability Purchase Proc

You can choose to add a header, footer, textbox or image. To add a footer, choose 'Insert' and select 'Footer'.

Editor					\approx	«	Filters	\sim »	Data	>>
	Product	Opportunity Count In	Probability	Forecast	1	Build	✓ Search			
	III, Product	mpeline 	R Probability	E Forecast			> Product	×	RegionalSalesSample	
	Total Total	Total(Opportunity Count In	Total(Probability)	Total(Forecast)			> Probability	×	∑ □ Discount	4
							Add data fie	lds here	🗒 🗹 Forecast	
									📋 🗆 Forecast %	
									🗒 🗆 Forecast by Win	٧L
					•				🖺 🗌 Opportunity Co	unt
000 Preview	44 4 1 Þ Þ				\otimes				🗒 🗾 Opportunity Co	u
() Editing r	ode only shows up to 500 ro	ws. Switch to viewing mode or ex	port the report to see all ro	ws.	×				🛗 🗌 Opportunity Cre	ea
									\Sigma 🜌 Probability	
									Purchase Proces	ss
									Rating	
									🗒 🗆 Revenue In Pipe	eline
									🗒 🗆 Revenue Open	

You can add a Text box, Image, page number and / or execution time. You may choose to display the footer and header on the first and last pages as well.

Footer V A lext box Image	# Page number			X			1. II.		
Editor	Page number			*	~	Filters	~ >>	Data	»
	① Execution time				Build	✓ Search		✓ Search	
Footer						> Account Name > Probability	× ×	RegionalSalesSample	anning I
Execution time			Page number			Add data fiel	ds here	Σ DaysToCle	se
								Decision M	/laker Id
< ────								□ Decision M ∑ □ Discount	/laker Id
■ 100 Preview <1 >	ÞÞ			• •				□ Decision M ∑ □ Discount □ ☑ Forecast □ □ Forecast 9	Maker Id
Preview	⊳⊳ ows. Switch to viewing mode	or export the report to s	see all rows.	> > ×				 Decision N ∑ Discount ☐ Forecast ☐ Forecast 9 ☐ Forecast 10 	daker Id 5 y Win/L
	⊳⊳ ows. Switch to viewing mode 54	or export the report to s	see all rows.	×				□ Decision N Σ □ Discount □ S Forecast □ Forecast 9 □ Forecast 1 □ Copportun	/laker ld 5 y Win/L ty Count
Ab Preview I Preview I Preview I Preview I Preview I Preview I I Preview I I Preview I I Preview I I Preview I I Preview I I Preview I I Preview I I Preview I I Preview I I I	▷▷ ows. Switch to viewing mode 54 5,333	or export the report to s 45.1% 31.0%	see all rows. \$357.442 \$46,336,286	×				 Decision 1 Σ Discount Ξ Forecast Ξ Forecast Ξ Opportun Ξ Opportun 	/laker ld 5 y Win/L ty Count ty Cou
Preview 1 P Editing mode only shows up to 500 n geaman and sons Total	▷▷ ows. Switch to viewing mode 54 5,333	or export the report to s 43.1% 31.0%	see all rows. 337/442 \$46,336,286	×				Decision 1 Decision 1 Decount Decount Forecast Forecast Opportun Opportun Opportun Opportun	/laker Id 5 y Win/L ity Count ty Cou ty Crea
In Preview of 1 Editing mode only shows up to 500 Editing mode only shows up to 500	⊳⊳ ows. Switch to viewing mode 54 5,333	or export the report to s 43.1% 31.0%	see all rows. 3357,442 \$46,336,286	×				Decision 1 Decision 1 Decision 1 Discount Secarat Forecast Oportun Opportun Opportun Opportun Opportun Opportun Decision 1 Decis	/laker ld 5 y Win/L ity Count ity Cou ty Crea r
Preview 1 Preview 1 Preview Control Control Contro Contro Control	▷ ows. Switch to viewing mode 54 5,333	or export the report to 4 43.1% 31.0%	see all rows. 333/442 \$46,336,286	×				Decision 1 Decision 1 Discount Second Forecast Opportun Opportun Opportun Opportun Copportun Decision 1 De	/daker Id 5 y Win/L ity Count ity Cou ty Crea ' 'rocess

You can exit the footer by clicking out. Once you are in the body of the report, you can 'Create parameter'. By creating a parameter, you can create a report that requires the viewer of the report to enter one or more values to view the report.

Editor					♦	«	Filters	× >>	Data	>>
						Build				_
	Product	Opportunity Count In Pipeline	Forecast	Probability			> Product	··· ×	RegionalSalesSample	
	III, Product	III, Opportunity Count In Pipeline	III, Forecast	田, Probability			Deshahilitu	Creat	parameter	
	Total	Total(Opportunity Count In Pipel	Total(Forecast)	Total(Probability)			/ Probability	create	cast	
					- 1		Add data fields he	10	Forecast %	
					- 1		Add data fields fie	ie	E Forecast by Win	л
					-				Opportunity Co	unt
					•				🗒 🗹 Opportunity Co	J
00 Preview	44 4 1 ▷				\approx				🛗 🗌 Opportunity Cre	a i
	mode only shows up to 500) rows. Switch to viewing mode or expo	t the report to see all rows.		×				\sum 🗹 Probability	
U LUIUIU									Purchase Proces	s
C Luining									Rating	
Unung										
Prod	luct Opports	inity Count In Pipeline Forecast	Probability						Revenue In Pipe	line
Prod 1 Yes	luct Opports	unity Count In Pipeline Forecast	Probability	38.7%					Revenue In Pipe	line
Prod 1 Yea Black	luct Opportu ar Warranty : cover 6*	unity Count In Pipeline Forecast 1,175 904	Probability \$14,567,813 \$4,887,034	38.7% 19.9%					Revenue In Pipe Revenue Open Revenue Open	line
Prod 1 Yes Black Black	luct Opportu rr Warranty cover 6" cover 7"	unity Count In Pipeline Forecast 1,175 904 522	Probability \$14,567,813 \$4,887,034 \$5,653,985	38.7% 19.9% 30.0%	ľ				Revenue In Pipe Revenue Open Revenue Won	line

When you 'Create parameter', you can see the parameter at the top of the 'Preview' portion of the screen. You may show / hide the parameter by clicking on the 'Parameters' on the Preview Ribbon.

ditor					\approx	«	Filters	`≈ >>	Data
]		Buil	₽ Search		₽ Search
Product		Opportunity Count In Pipeline	Forecast	Probability		1	Product	0 x	RegionalSalesSample
E	思 Product	🖽 Opportunity Count In Pipeline	III. Forecast	III. Probability					
	Total	Total(Opportunity Count In Pipel	Total(Forecast)	Total(Probability)			> Probability	×	🗄 🗹 Forecast
							Add data fi	elds here	🗒 🗆 Forecast %
									📋 🗆 Forecast by W
									🗍 🗌 Opportunity C
						·			🗒 🗹 Opportunity C
view 🚳 🔄	1 ▷ ▷▷	√ Parameters			\approx				🛗 🗌 Opportunity C
					View report				\Sigma 🗹 Probability
1 Year Warranty,	Black co V X				view report				Purchase Proc
diting mode only sh	ows up to 500 row	s. Switch to viewing mode or expo	rt the report to see all rows.		×				Rating
					4				📋 🗌 Revenue In Pip
									🗄 🗆 Revenue Oper
Product	Opportunity	Count In Pipeline Forecast	Probability						🖺 🗌 Revenue Won
1 Year Warranty		1,175	\$14,567,813	38.7%					P Revenue Mon
		004	\$4,997,034	10.0%					La Chevenue won

When you save the report, it is saved with the parameter defined and the viewer of the report must specify the parameters to view the report. You can now share the report with others. This is a Preview feature and will not be available on Sovereign clouds until it is Generally Available. The update will be rolling out in the coming weeks.

Power BI Report Server key in Fabric Capacities

Power BI Report Server is now included with F64+ Reserved Instance purchases. It continues to be available with SQL Server Enterprise core licenses with software assurance. You can get the PBIRS key in the 'Fabric Capacity' tab under 'Capacity Settings' in the admin portal.

Admin portal							
Tenant settings (New) Usage metrics	Power BI Premium Pow	er BI Embedded Trial Fabric Capacity					
Users Premium Par User	PREMIUM CAPACITIES						Power BI Report Server key
Audit logs	CAPACITY NAME	CAPACITY ADMINS	ACTIONS	CAPACITY SKU	CAPACITY UNITS	REGION	STATUS
Domains 🎃	dzilg4n4	Automititization, taskic Public $\mathcal{A}^{(i)}_{i}$ test $\tau_{i} \neq \mathcal{A}$ make \sim	49	F64	64	$p_{ASS}(1) \sim 2 \text{Elips}(1)$	Active
Tags (Preview) Capacity settings	0ssjiljen	Agnén, priminuran (1. Terti ker?	σ	F4	4	PANI US 2 EU/Ar	Active
Refresh summary	dodstrimi mee 2e	in (b/30) (kew) (ŵ	F64	64	Zasr US 2. EC/17	Active
Organizational visuals	preinder spacity2	AdminUser01, restater5	2	F4	4	East US 2 EUAF	Active
Azure connections Workspaces	Bartesicapacity	AdminUser01	~	F2	2	East for 5 House	Active
Custom branding Protection metrics	ceites: nacity2	iestusers	64	F2	2		Active
Fabric identities Featured content	caltestransity/	"estused		F2	2	East US 2 EUAP	Active
Microsoft Purview setting	6-Restropacity3	VesiUseri		F2	2	Sact US 2 LUAP	Active

More next month.

New Features for Excel

This month sees you able to prompt Copilot in Excel to work with columns and formulae in Excel for web, Windows and Mac. But that's not all: in what appears to be a second successive "abridged" month, you are also now able to navigate and perform tasks more quickly with KeyTips in Excel for Mac (albeit Beta Channel users), plus view and open

Excel for the web, Windows and Mac (but no cheese)

• Copilot in Excel: working with columns and formulae

Excel for Mac

• KeyTips (Insiders)

Excel for iOS

Recent Files widgets (Insiders).

Let's get started.

your most recently accessed Excel files from the Home screen on your iOS device (in Insiders).

We know we mention two other features elsewhere in this newsletter, but they aren't "formally announced" in the *Excel Updates* section of Microsoft's website, so it's a short but sweet summary this time out:

Copilot in Excel: working with columns and formulae

Coming to Excel for the web, Excel for Windows and Excel for Mac, Copilot in Excel can now write additional formulae, including ones that work with text. The following example demonstrates Excel Copilot's ability to work with complex formulae with a dataset containing some noteworthy individuals.

Improvements made this month include:

- Organise data by splitting a single column into multiple columns
- Calculate age by extracting the years from a string of text.

Let's take a look.

ORGANISE DATA BY SPLITTING A SINGLE COLUMN INTO MULTIPLE COLUMNS

We have data that comes in this format:

Alan Turing (1912-1954, United Kingdom):

However, we would like to make the Table cleaner by splitting the data into multiple columns.

Alan Turing	1912-1954	United Kingdom

Here. the prompt used for Copilot in Excel was:

Split the first column into three: Name, Years alive, and Country. Insert after the first column.

Copilot is able to take natural language input, make an educated guess as to what part of the original column means 'Years alive' for example, and perform the task by generating a formula that works on the data supplied:

A52	- × × h				
	A	8	c	D	Conject assure X
1	Noteworthy Figures	Description			
2	Alan Turing (1912-1954, United Kingdom):	Played a crucial role in breaking the German Enigma code during World War II			
3	Audre Lorde (1934-1992, United States):	Poet, essayist, and feminist who addressed intersectionality and social justice			Create
4	Barbara Gittings (1932-2007, United States):	Pioneering LGBTQ+ activist and organizer of early gay rights demonstrations			Add formula columns
5	Bayard Rustin (1912-1987, United States):	Organized the 1963 March on Washington for Jobs and Freedom, emphasizing nonviolent protest			
E	Billy Tipton (1914-1989, United States):	Jazz musician and transgender man who defied gender norms during his career			A Edia
7	Ellen DeGeneres (born 1958, United States):	Comedian, actress, and talk show host who came out publicly in 1997			U Lor
8	Frida Kahlo (1907-1954, Mexico):	Iconic artist known for her self-portraits and exploration of identity and pain			nigniignt
9	George Takei (born 1937, United States):	Actor, activist, and LGBTQ+ advocate, famous for his role as Sulu in "Star Trek"			
10	Gertrude Stein (1874-1946, United States):	Influential writer, art collector, and salon hostess during the Parisian avant-garde era			👻 Edit
11	Harvey Milk (1930-1978, United States):	First openly gay elected official in California, advocating for LGBTQ+ rights			Sort and filter
12	James Baldwin (1924-1987, United States):	Acclaimed novelist, essayist, and civil rights activist who explored race, sexuality, and identity			
13	Laverne Cox (born 1972, United States):	Transgender actress and advocate, known for her role in "Orange Is the New Black"			♀ Understand
14	Marsha P. Johnson (1945-1992, United States):	Co-founded the Gay Liberation Front and advocated for homeless LGBTQ+ youth			Analyze
15	Martina Navratilova (born 1956, Czechoslovakia/United S	tat Tennis legend and LGBTQ+ activist who fought for equality in sports			
16	Oscar Wilde (1854-1900, Ireland):	Celebrated playwright, poet, and novelist known for his wit and flamboyant lifestyle			
17	Ruth Ellis (1899-2000, United States):	One of the first openly lesbian African American women to own a gay bar			
18	Sylvia Rivera (1951-2002, United States):	Co-founded Street Transvestite Action Revolutionaries (STAR) alongside Marsha P. Johnson			
19	Virginia Woolf (1882-1941, United Kingdom):	Renowned writer and modernist who explored gender and sexuality in her works			
20					
21	Sources: ITV News, BBC Newsround, advocate.com				
22					
23					
24					Split the first column into three:
25					Insert after the first column
26					
27					
28					Working on it
29					
30					16 Stop generating

Et voila!

-	A	D	C .	0	E	F G H I	, 🥶 (opnot me	ARTIN.		
1	Noteworthy Figures .	Name	Years alive	Country	Description		i .				
2 /	Alan Turing (1912-1954, United Kingdom):	Alan Turing	1912-1954	United Kingdom	Played a crucial role in breaking	the German Enigma code during World War II	Extr	acts the cour	ntry of ori-	gin of each	h
3 /	Audre Lorde (1934-1992, United States):	Audre Lorde	1934-1992	United States	Poet, essayist, and feminist who	addressed intersectionality and social justice	note	sworthy figur	re by findi	ing the text	£.
E	Barbara Gittings (1932-2007, United States):	Barbara Gittings	1932-2007	United States	Pioneering LGBTQ+ activist and	organizer of early gay rights demonstrations	bets	ween the con	nma and t	the closing	1
E	Bayard Rustin (1912-1987, United States):	Bayard Rustin	1912-1987	United States	Organized the 1963 March on W	ashington for Jobs and Freedom, emphasizing no	pare colu	inthesis in th	able.	orthy Figu	res"
E	Billy Tipton (1914-1989, United States):	Billy Tipton	1914-1989	United States	Jazz musician and transgender r	nan who defied gender norms during his career					0
E	Ellen DeGeneres (born 1958, United States):	Ellen DeGeneres	born 1958	United States	Comedian, actress, and talk sho	w host who came out publicly in 1997	A	1			U
F	rida Kahlo (1907-1954, Mexico):	Frida Kahlo	1907-1954	Mexico	Iconic artist known for her self-p	ortraits and exploration of identity and pain		ID([@[Note	sworthy		
(George Takei (born 1937, United States):	George Takei	born 1937	United States	Actor, activist, and LGBTQ+ advo	cate, famous for his role as Sulu in "Star Trek"	FI	igures]],F3	(ND(",",	(@[Notewa	orthy
(Gertrude Stein (1874-1946, United States):	Gertrude Stein	1874-1946	United States	Influential writer, art collector, a	nd salon hostess during the Parisian avant-garde	F1 Te	.gures]])+3	2,FIND(")):", esll).	
ŀ	Harvey Milk (1930-1978, United States):	Harvey Milk	1930-1978	United States	First openly gay elected official i	n California, advocating for LGBTQ+ rights	FI	IND(",",[@!	Notewor	thy	
J	ames Baldwin (1924-1987, United States):	James Baldwin	1924-1987	United States	Acclaimed novelist, essayist, an	d civil rights activist who explored race, sexuality,	6	mines111-3	27		
l	averne Cox (born 1972, United States):	Laverne Cox	born 1972	United States	Transgender actress and advoca	te, known for her role in "Orange Is the New Black				show explan	ation ~
ŀ	Marsha P. Johnson (1945-1992, United States):	Marsha P. Johnson	1945-1992	United States	Co-founded the Gay Liberation F	ront and advocated for homeless LGBTQ+ youth		8		с	D
1	Martina Navratilova (born 1956, Czechoslovakia/United Stat	Martina Navratilova	born 1956	Czechoslovakia/United States	Tennis legend and LGBTQ+ activ	ist who fought for equality in sports	1	Name	Years	alive Cour	stry
	Dscar Wilde (1854-1900, Ireland):	Oscar Wilde	1854-1900	Ireland	Celebrated playwright, poet, and	d novelist known for his wit and flamboyant lifesty		Audre Lord	ie 1934	-1954 Unit	rd Kingol
F	Ruth Ellis (1899-2000, United States):	Ruth Ellis	1899-2000	United States	One of the first openly lesbian A	frican American women to own a gay bar	4	Barbara Git	tings 1932	-2007 Unit	ed States
\$	Sylvia Rivera (1951-2002, United States):	Sylvia Rivera	1951-2002	United States	Co-founded Street Transvestite	Action Revolutionaries (STAR) alongside Marsha F	5	Bayard Rust	tin 1912	-1987 Unit	ed States
N	/irginia Woolf (1882-1941, United Kingdom):	Virginia Woolf	1882-1941	United Kingdom	Renowned writer and modernist	who explored gender and sexuality in her works		-	-	-	
ſ							A ge	merated content (may be incom	ect.	0.5
\$	Sources: ITV News, BBC Newsround, advocate.com										
41											

CALCULATE AGE BY EXTRACTING THE YEARS FROM A STRING OF TEXT

For this illustration, imagine you have the data as follows:

Alan Turing	1912-1954	United Kingdom
George Takei	born 1937	United States

In this instance, the intention is to get Copilot to add a column with the individual's age as follows:

Alan Turing	1912-1954	42	United Kingdom
George Takei	born 1937	Alive today	United States



Here, the following prompt was used:





KeyTips

For Excel for Mac, KeyTips are keyboard shortcuts for items in the Ribbon menu in Microsoft applications. They provide a quick way to navigate and perform tasks with your keyboard: no clicking is required.

You might be familiar with KeyTips on a Windows PC, and they function the same way on a Mac.

To access them, press the Option (\frown) or ALT key. KeyTip shortcuts will appear over your Ribbon tabs, as well as the Quick Access Toolbar (QAT) and the buttons to the right of the Ribbon.



You may then find the command you wish to use and press the characters shown in the KeyTip over that command. Otherwise, to cancel an action and hide KeyTips, press the **ESC** or Option (\neg) keys.

It should be noted that some KeyTips lead to additional KeyTips. For example, if the Home tab is active and you press **N**, the Insert tab appears along with KeyTips for items in that tab.

KeyTips are currently available only in English for Microsoft 365 Insiders but will be available in all languages upon general release. With regards to availability, KeyTips in Office for Mac are available to Beta Channel users of Word, Excel, PowerPoint and OneNote for Mac running Version 16.86 (Build 24052212) or later. The feature will become available to all users in the coming months.

Don't forget, you can create or change a keyboard shortcut in Excel by following these steps:

- Go to the Tools menu and choose 'Customize Keyboard'
- Pick the category of command you're trying to find, and then search or browse for the command in the list
- Select a command, press a key combination, and see if it's used already. If it's already in use, you may want to pick a different combination
- Then just click the 'Add' button to assign the key combination to the selected command.

In the example below, we show the category called 'Commands Not in the Ribbon' with a search for commands with the word "value", which filters to the commands 'Values & Number Formatting' and Values & Source Formatting'.

🗯 Excel File Edit View Insert Format	Tools Data Window Help	Customize Keyboard
AutoSave OFF I I → 5 · 0 = Home Insert Draw Page Layout Formulas I → ↓ Cut Paste Format B I U · II · A A B C D E	Spelling Thesaurus へて第に Smart Lookup へて第に Language AutoCorrect Options Error Checking Translate へて第T Check Accessibility	Specify a Command Categories: Commands: PivotChart Tools Format Tab Sparkline Tools Sparkline Ta Timeline Tools Options Tab Slicer Tools Slicer Tab Commands Not in the Ribbon Other Commands < <no labe<="" td=""></no>
2 3 4 5 6 7 8 9 10 11	Track Changes ► Merge Workbooks Protection ► Goal Seek Scenarios Auditing ► Macro ► Excel Add-ins Curtomic Kurboard	Specify a Keyboard Shortcut Current keys: Option+Control+V Command+Option+V Press new keyboard shortcut:
13		Add Description: Paste Values and Number Formatting Reset All OK

You should note that some commands may not be available. Generally, only commands that appear in the 'Ribbon Customization' dialog can be found in the 'Customize Keyboard' dialog. For example, there is no command that allows you to set a cell format to use a particular font. Some keyboard shortcuts may be used by your Mac and you may not be

able to use these key combinations, even though you can assign them in the dialog.

You can read more details here: Create a Custom Keyboard Shortcut.

Another way to create a customised keyboard shortcut is to use the Mac Preferences. This allows you to set a keyboard shortcut for any app, but only for commands that appear in one of that app's menus.

Just follow the simple steps below:

• Look for a menu command that you want to use a keyboard shortcut to activate. For example, you can go to the Data menu in Excel and you'll see 'Validation...', which will open the 'Data Validation' dialog:



• Go to macOS -> Preferences -> Keyboard -> Keyboard Shortcuts -> App Shortcuts

•••	Keyboard	
Q Search	Keyboard brightness	
Screen Saver Battery	Turn keyboard backlight off a	after inactivity Never 🗘
Lock Screen	Press 🌐 key to	Change Input Source 🗘
Touch ID & Password Users & Groups	Keyboard navigation Use keyboard navigation to move to move focus forward and Shift T	focus between controls. Press the Tab key Tab to move focus backward.
Passwords		Keyboard Shortcuts
 Internet Accounts Game Center 	Text Input	
🔄 Wallet & Apple Pay	Input-Sources	U.S., British, and 1 other Edit
Every Keyboard		Text Replacements
Trackpad		
Printers & Scanners	Dictation	

• Click the + button to add a new shortcut



Select 'Microsoft Excel.app' from the list of applications

Application	Microsoft Excel.app 😂
Menu Title	Validation
Enter the exact name of the menu co	mmand you want to add.
Keyboard Shortcut	ዕ #D

- In the Menu Title field, type the name of the menu item exactly as it appears in Excel. For example, type 'Validation...' to create a shortcut that will simulate opening the Data menu and pressing 'Validation...', which opens the 'Data Validation' dialog
- Press a key combination. It's a good idea to choose a key combination that's not already used to do something else
- Now go back to Excel and try out the new shortcut you just created!

👯 Launchpad & Dock	
📰 Display	To change a shortcut, double click the key combination, and then type the new keys.
Mission Control	> All Applications
Keyboard	 Microsoft Excel.app
Input Sources	Validation ↔ #D
Screenshots	
Services	
Q Spotlight	
🕜 Accessibility	
App Shortcuts	
fn Function Keys	
Modifier Keys	Done

See Apple's help article for more information: Use macOS keyboard shortcuts - Apple Support.

Recent Files widgets

You can add Recent Files widgets for Word, Excel and PowerPoint directly to your iPhone or iPad home screen. The widgets allow you to both view and open your most recently accessed files in that app from the home screen on your device. It works as follows:

• On the device Home screen, press and hold an empty space and notice the + icon that appears at the top left corner of the screen



• Tap the + icon, scroll through or search the list of widgets, and tap to select the app widget you want



• A 'Recents' (more great grammar – Ed.) screen will appear. Scroll through the icons and pick the size of the widget you want, then tap 'Add Widget'



• Tap the widget to open it and then select the File card that you want; the file will open in the app.



The Recent Files widget offers sizes to choose from on the iPad, ranging from small to extra-large. There are three sizes to choose from on the iPhone: small, medium and large. If you would like to open the app's home page instead of a recent file, tap anywhere on the widget outside of the file cards.

This feature is rolling out to Microsoft 365 Insiders running iOS Version 2.85 (Build 24042818) or later.

Until next month.

The A to Z of Excel Functions: NOT



Liam, will you make a stupid pun here? Sorry, I'm a frayed knot.

NOT is one of Excel's logic functions and reverses the logic of its argument (oh no it doesn't, oh yes it does, ... [please stop - Ed.]).

where:

• logical: the condition whose logic you wish to reverse.

It should be noted that:

- the arguments must evaluate to logical values, such as TRUE or FALSE, or the arguments must be arrays or references that contain logical values
- if an array or reference argument contains text or empty cells, those values are ignored
- blank cells are treated as FALSE
- all numerical values except zero [0] are treated as TRUE; zero is considered FALSE
- if the specified argument contains no logical values, the NOT function returns the #VALUE! error value.

Please see our example below:

	А	В	С
1	Condition 1		blank cell
2	Condition 2	0	
3	Condition 3	(4.7)	
4	Condition 4	TRUE	
5	Condition 5	text	
6			
7			
7 8	Description	Results	Formula
7 8 9	Description Condition 1	Results TRUE	Formula =NOT(B1)
7 8 9 10	Description Condition 1 Condition 2	Results TRUE TRUE	Formula =NOT(B1) =NOT(B2)
7 8 9 10 11	Description Condition 1 Condition 2 Condition 3	Results TRUE TRUE FALSE	Formula =NOT(B1) =NOT(B2) =NOT(B3)
7 8 9 10 11 12	Description Condition 1 Condition 2 Condition 3 Condition 4	Results TRUE TRUE FALSE FALSE	Formula =NOT(B1) =NOT(B2) =NOT(B3) =NOT(B4)
7 8 9 10 11 12 13	Description Condition 1 Condition 2 Condition 3 Condition 4 Condition 5	Results TRUE TRUE FALSE FALSE #VALUE!	Formula =NOT(B1) =NOT(B2) =NOT(B3) =NOT(B4) =NOT(B5)

The A to Z of Excel Functions: NOW



Dates count from 1 January 1900, *e.g.* what is known as serial number one [1] is 1 January 1900, serial number two [2] is 2 January 1900, under the default Excel for Windows settings. The **NOW** function returns the serial number of the current date and time (the date is an integer at precisely midnight). If the cell format were General before the function was entered, Excel changes the cell format so that it matches the date and time format of your regional settings. You can change the date and time format for the cell by using the commands in the Number group of the Home tab on the Ribbon. This function is useful when you need to display the current date and time on a worksheet or calculate a value based on the current date and time, and have that value updated each time you open the worksheet.

However, should the **NOW** function not update cell values when you expect it to, you might need to change the relevant settings that control when the workbook or worksheet recalculates. These settings may be changed in **File -> Options -> Formulas -> Calculation options**.

The **NOW** function has the following syntax:

The **NOW** function takes no prisoners or arguments.

It should be noted that:

- Excel stores dates as sequential serial numbers so that they can be used in calculations. By default, January 1, 1900 is serial number 1, and January 1, 2008 is serial number 39448 because it is 39,447 days after January 1, 1900
- numbers to the right of the decimal point in the serial number represent the time; numbers to the left represent the date. For example, the serial number 0.5 represents the time 12:00 noon
- the results of the **NOW** function change only when the worksheet is calculated or when a macro that contains the function is run. It is not updated continuously.

Please see our final example for this month below:

	А	В	С	
1	Description	Results	Formula	Γ
2	Returns the current dat and time	13-07-22 15:25	=NOW()	
3	Returns the date and time 12 hours (0.5 days) ago	13-07-22 3:25	=NOW() - 0.5	
4	Returns the time a week from now (seven days in the future)	20-07-22 15:25	=NOW() + 7	
5	Type mismatch: numerical and text values may not be added	#VALUE!	=NOW() + "dog"	
~				

More Excel Functions next month.

Beat the Boredom Suggested Solution

The challenge this month was to extract a name from a text string that contained special characters.

The Challenge

There may be a time when you are using Excel that you wish to extract a name of a person from a churn of endless text strings that has all sorts of characters that you have never seen or used before. Therefore, this month's challenge was to write a **formula** to extract the name of a person from <u>any</u> text string. The result should look similar to the following:

	Text 💽	•	Solution	•
1.	Sara's Address		Sara	
2.	Brian T's Job title		Brian T	
3.	Karina's Date of Birth		Karina	

As always, there were some requirements:

- the formula needed to be within just one column (no "helper" cells)
- this was a formula challenge; no Power Query / Get & Transform or VBA!
- the formula should be dynamic enough when a similar text string was added.

Suggested Solution

Before we discuss the solution, there are several complicating factors here. Let's go through them.

Problem 1: The Unremovable White Space

When tackling this problem, we might rely on some functions like **TRIM** and **CLEAN** to clear the text. The **TRIM** function helps us strip extra white space from the text leaving only a single space between words and no space characters at the start or end of the text. The **CLEAN** function helps us remove all nonprintable characters from text. Thus, using the **TRIM** and **CLEAN** functions might help us remove all unwanted white spaces and nonprintable characters:

In the formula above, **Text** is the name of the table. Therefore, **Text**[@ **Text**] specifies one row of column **Text**, where the above formula is located. However, these two functions do not appear to work with these text strings no matter how many times these functions apply: the white space is still there. This is because there are some special invisible characters that the **TRIM** and **CLEAN** function cannot remove. Hence, using **TRIM** and **CLEAN** functions for this challenge will not solve our problem.

=CLEAN(TRIM(Text[@Text]))

Problem 2: The Unfindable Apostrophe

The **FIND** function is quite useful here to address the challenge. It may help us look for the position of a character within the text string. Moreover, the target text we need to extract is between the white space and the apostrophe, so **FIND** can give us the location of those items which can, later on, be used to extract the target text.

However, you might run into the problem that the **FIND** function results in the *#VALUE!* error when you try to search for the apostrophe. This is because there is a "weird" apostrophe within the text string which is different from the normal apostrophe on the keyboard. Therefore, the **FIND** function must be tweaked to be able to search for that apostrophe in the text string.

Brainstorming

To address the unremovable white space and unfindable apostrophe problems, we will need a quick inspection of the text string to fully understand it. Therefore, we will transform each letter of the text string into individual cells in the spreadsheet.

For Microsoft Excel 365 and online versions, we may use Dynamic Arrays with the following formula:

=MID(Text[@Text], SEQUENCE(1, LEN(Text[@Text])),1)

SEQUENCE(1, LEN(Text[@Text])) will help us create a horizontal list of the consecutive text string from one [1] to the last number which is equal to the length of the string. For example:

1	А	В	C	D	E
1	1	2	3	4	5

The MID function will then extract each character of a string with the starting point one by one, equal to the number list created by SEQUENCE above.

After you copy down the formula, the result should look like this:

1	Α	В	С	D	Е	F	G	Н	1	J	K	L	Μ	N	0	P	Q	R	S	T	U	V	W	Х	Y	Z	AA	AB	AC	AD	
1	1								S	а	r	а	1	s		Α	d	d	r	е	s	s									Ē
2	2								В	r	i –	а	n		Т	3	s		J	0	b		t	i –	t	L	е				
3	3								K	а	r -	i –	n	а	,	s		D	а	t	е		0	f		В	i –	r	t	h	

We can see that there are many invisible characters and white space at the beginning of the strings.

Next, we will need to identify what those invisible characters are. We can use **UNICODE** and **UNICHAR** functions to our Dynamic Arrays above. **UNICODE** allows us to return numeric code for the first character in a text string. **UNICHAR** translates that code back into a character. (You can also use **CODE** and **CHAR** functions here, but we suggest using **UNICODE** and **UNICHAR** as some special characters are not in the database of **CODE** and **CHAR**). The formula to return numeric code is as follows:

=UNICODE(MID(Text[@Text], SEQUENCE(1, LEN(Text[@Text])),1))

The result is as follows:

	1 .	-	-	-	-	-	-	1	1 .						-					-	1					-				
_	A	В	C	D	E	F	G	H		J	K	L .	M	N	0	P	Q	R	S	T	0	V	W	X	Y	Z	AA	AB	AC	AD
1	1								S	а	r	a		s		A	d	d	r	e	s	s								
2	2								В	r	i 👘	а	n		т	,	s		J	0	b		t	i	t	1	е			
3	3								К	а	r	i	n	а		s		D	а	t	е		0	f		В	i 👘	r	t	h
4																														
5	49	46	160	160	160	160	160	32	83	97	114	97	8217	115	32	65	100	100	114	101	115	115								
6	50	46	160	160	160	160	160	32	66	114	105	97	110	32	84	8217	115	32	74	111	98	32	116	105	116	108	101			
7	51	46	160	160	160	160	160	32	75	07	114	105	110	07	8217	115	32	68	07	116	101	32	111	102	32	66	105	114	116	104

Upon inspection, we can see that the codes of these "invisible characters" are 160 and 32. Unicode 32 is our normal "Space" generated by pressing the spacebar on the keyboard, while 160 is the "No-Break Space", generated by pressing **ALT + 0160**.

For the normal "Apostrophe" that we use on the keyboard, they have the Unicode of 39, while the apostrophe used in the text string is the "Right Single Quotation Mark" which has the Unicode 8217.

Back to the Suggested Solution

As we can see here, all 3-text strings have 32 in front of the target name and 8217 at the end of the target name. So, we can write a FIND function to find their position of them.

This situation is perfect to extract the key data from the text string as **FIND** function will give out the position of the first appearance of the letter. So, if we use **FIND** function on the "No-Break Space" character that has Unicode 160, it will result in three [3] which is not a desirable starting position.

Hence, the starting position of the target text should be:

=FIND(UNICHAR(32), Text[@Text])+1

and the number of characters we extract is:

=FIND(UNICHAR(8217), Text[@Text String])-FIND(UNICHAR(32), Text[@Text])-1

From here we can use the MID function to extract the target text as follows:

=MID(Text[@Text], FIND(UNICHAR(32), Text[@Text]) +1, FIND(UNICHAR(8217), Text[@Text])-FIND(UNICHAR (32), Text[@Text])-1)

More next month.

Upcoming SumProduct Training Courses

Location	Course	Course Date	Local Time	υтс	Duration
London UK	Power Pivot, Power Query and Power Bl	8 August 2024 - 9 August 2024	09:00 - 17:00 BST	08 Aug 2024 08:00 UTC - 09 Aug 2024 16:00 UTC	2 Days
London UK	Financial Modelling	12 August 2024 - 13 August 2024	09:00 - 17:00 BST	12 Aug 2024 08:00 UTC - 13 Aug 2024 16:00 UTC	2 Days
Sydney Australia	ChatGPT	20 August 2024 - 21 August 2024	09:00 - 17:00 AEST	19 Aug 2024 23:00 UTC - 21 Aug 2024 07:00 UTC	2 Days
Melbourne Australia	Excel Tips and Tricks	28 August 2024	09:00 - 17:00 AEST	27 Aug 2024 23:00 UTC - 28 Aug 2024 07:00 UTC	1 Day
Sydney Australia	Excel Tips and Tricks	1 October 2024	09:00 - 17:00 AEST	31 Sep 2024 23:00 UTC - 01 Oct 2024 07:00 UTC	1 Day
Melbourne Australia	Financial Modelling	14 October 2024 - 15 October 2024	09:00 - 17:00 AEDT	13 Oct 2024 22:00 UTC - 15 Oct 2024 06:00 UTC	2 Days
London UK	ChatGPT	29 October 2024 - 30 October 2024	09:00 - 17:00 GMT	29 Oct 2024 09:00 UTC - 30 Oct 2024 17:00 UTC	2 Days
Melbourne Australia	Power Pivot, Power Query and Power Bl	11 November 2024 - 12 November 2024	09:00 - 17:00 AEDT	10 Nov 2024 22:00 UTC - 12 Nov 2024 06:00 UTC	2 Days

Key Strokes

Each newsletter, we'd like to introduce you to useful keystrokes you may or may not be aware of. We need to get a SHIFT on with those pesky function keys this month:

Keystroke	What it does	
SHIFT + F1	What is (Help)	
SHIFT + F2	Insert / edit comment	
SHIFT + F3	Function wizard	
SHIFT + F4	Find next (from most recent Search)	
SHIFT + F5	'Find' dialog	
SHIFT + F6	Previous pane	
SHIFT + F7	Thesaurus	
SHIFT + F8	Add to Selection Mode	
SHIFT + F9	Calculation sheet	
SHIFT + F10	Activate context menus (right-click)	
SHIFT + F11	Insert new worksheet	
SHIFT + F12	Save	

There are c.550 keyboard shortcuts in Excel. For a comprehensive list, please download our Excel file at http://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.

Sydney Address:SumProduct Pty Ltd, Suite 803, Level 8, 276 Pitt Street, Sydney NSW 2000New York Address:SumProduct Pty Ltd, 48 Wall Street, New York, NY, USA 10005London Address:SumProduct Pty Ltd, Office 7, 3537 Ludgate Hill, London, EC4M 7JN, UKMelbourne Address:SumProduct Pty Ltd, Ground Floor, 470 St Kilda Road, Melbourne, VIC 3004Registered Address:SumProduct Pty Ltd, Level 14, 440 Collins Street, Melbourne, VIC 3000

contact@sumproduct.com www.sumproduct.com +61 3 9020 2071