Looking forward to 2016?

Given we're not even halfway through the year this may seem like an odd question, but Office 2016 Preview – including the keenly awaited Excel 2016 – is now available to all and sundry (are you "all" or are you "sundry"?). We summarise the main new features below.

One such new feature is greater charting power, including being able to produce waterfall charts amongst other new types. Given our estimate that less than 15% of users will migrate quickly to the new version of Office, we thought it was about time we showed you how to create these awkward blighters, given our frequently they blight our readers.

Until next month.

Liam Bastick, Managing Director, SumProduct

Office 2016 Preview Now Out
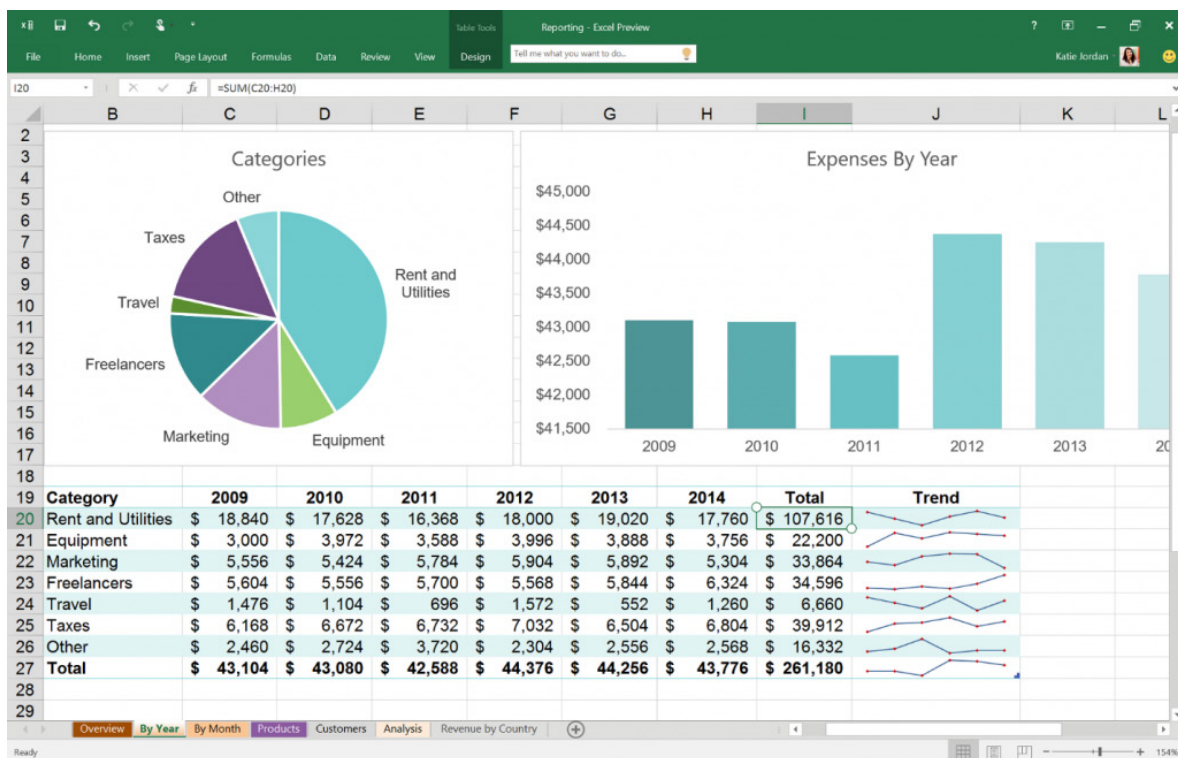
Back in March, Microsoft introduced an IT Pro and Developer Preview for the Office 2016 release and now they are releasing a version for the broader public. From 4 May (US time), the Office 2016 Preview has been expanded, making it available to Office users everywhere in preparation for general availability later in the year.

Not only will Office 2016 previewers will get an early look at the next release of Office on Windows desktop, users may provide interactive feedback which could shape the final version.

For our Excel readers in particular, Microsoft's intention is that the apps will learn as you work, taking advantage of subtle cues and clues to help you stay on task and get more out of Office. On such app is Tell Me, a new search tool available in Excel (as well as Word and PowerPoint), which serves up the commands you need by simply typing what you want to do (it has been emphasised that Clippy is NOT returning!!)

Other additions intend to make data analysis faster and easier with new capabilities built into Excel to pull, map, analyse and visualise more simply and quicker. New capabilities include:

- **One-click forecasting:** Create forecasts on your data series with one click to display future trends

- **Intuitive data connecting and shaping capabilities.** With integrated Power Query, all data may be centralised, shaped and combined to fit business needs providing insights quickly

- **Easy data modeling and powerful analysis:** Power Pivot continues to be improved, to perform deeper analysis with high speed

- **Publish to Microsoft Power BI Preview:** Workbooks may be readily published between users of Power BI

- **New modern charts and graphs:** Now including Box & Whisker, Histogram & Pareto, Sunburst, TreeMap and Waterfall to present data in ways so often required by business but not previously available in Excel.

Further, Office 2016 will offer new security, compliance, and deployment features, giving organisations more control over sensitive data and IT more flexibility in deployment and management, including Data Loss Protection (DLP). DLP is now available in Excel, PowerPoint and Word, so that IT may centrally create, manage and enforce policies for content authoring and document sharing. End users will see policy tips or sharing restrictions when the apps detect a potential policy violation.

If Office 2016 Preview sounds of interest to you, it may be downloaded from https://products.office.com/en-us/office-2016-preview. It should be noted that the Preview is still a work in progress and not all of the features expected to ship in the final release will be available for use now (*e.g.* some of the charts mentioned above). However, new features will be added every month via regular updates.

Waterfall Charts

We are often asked about creating **waterfall charts**. Although they may be coming to an Excel near you with Office 2016, we know it may be a while before some of our readers take the plunge and upgrade.

For those who don't know or are afraid to ask, a **waterfall chart** is a variation of an Excel column chart that provides a visual representation of what has made a key output vary between one period and the next, *viz.*
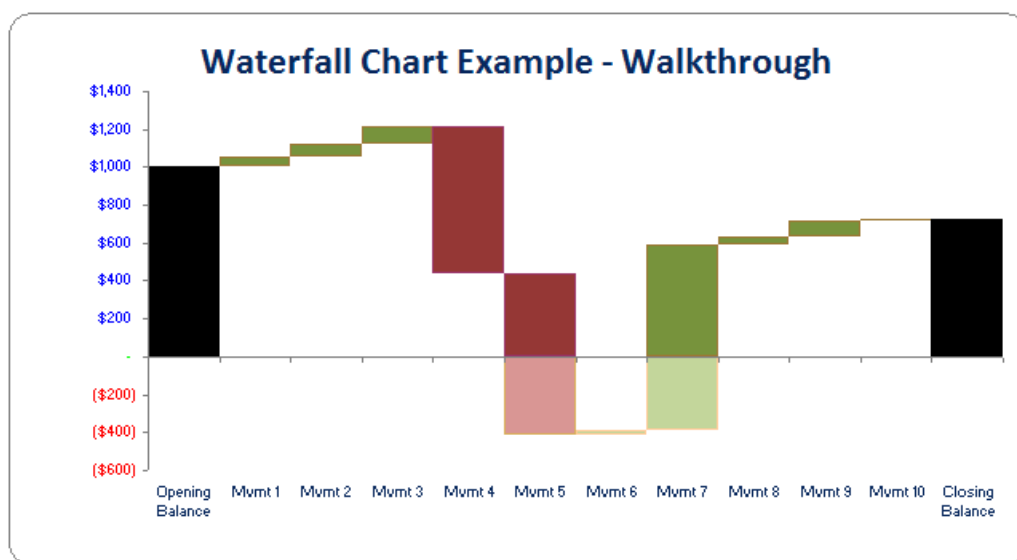
In the above example, the two black columns represent the opening and closing balances for a key output in a particular period. The intermediary blocks represent how various drivers have affected this balance within the period. Note how increases in value are coloured green and decreases are coloured red (slightly fainter if the cumulative total is below zero) in this example.

This graphic can be quite powerful in explaining key variances to end users, as needed.

To aid this month's article, you can download an example Excel file from http://www.sumproduct.com/thought/waterfall-charts. If you do decide to download it, you can see on the Waterfall Chart worksheet, the opening balance and intrinsic movements are recorded (perhaps linked to calculations elsewhere), with the closing balance a calculated cell.

Assumptions

	Amt.	Cum.
Opening Balance	$1,000.00	$1,000.00
Mvmt 1	$53.17	$1,053.17
Mvmt 2	$72.12	$1,125.29
Mvmt 3	$85.16	$1,210.45
Mvmt 4	($775.42)	$435.03
Mvmt 5	($853.16)	($418.13)
Mvmt 6	$28.33	($389.80)
Mvmt 7	$977.42	$587.62
Mvmt 8	$46.14	$633.76
Mvmt 9	$81.12	$714.88
Mvmt 10	$12.44	$727.32
Closing Balance	$727.32	

In this illustration, like with most of my example Excel files, white cells may be changed without affecting the calculative functionality of the model.

This table is not yet ready to be used to create our waterfall chart: to that end, we need to build an interim Chart Calculations Table (which is presented in rows 30 to 44 of the example file). It is recommended that the calculation table is built as follows as the order of the columns should not need to be changed when constructing the chart:

Column and Heading	Example Formula	Explanation
G: Opening Balance	=G11 (only first row)	• Provides opening balance
H: Closing Balance	=G22 (only last row)	• Provides closing balance
I: Positive Invisible	=IF(G12>0,MAX(H11,),MAX(H12,))	• If the particular movement is positive, this takes the previous movement's cumulative balance; if not, it takes the current movement's cumulative balance. In either case, the balance used must be positive This is used as an invisible column to 'prop up' the movement that will be displayed
J: Positive Decreasing Visible	=IF(G12<0,-MAX(G12,-MAX(H11,)),)	• If the movement is negative, display as a positive number the value closer to zero of the movement and the last movement's cumulative balance Together with column I, this will ensure a block appearing to go downwards will not go below the x-axis (i.e. a value of zero)
K: Positive Increasing Visible	=IF(G12>0,MIN(G12,MAX(H12,)),)	• Similar to column J, if the movement is positive, display as a positive number the smaller of the movement and the current movement's cumulative balance Together with column I, this will ensure a block appearing to go upwards will calculate correctly if the previous cumulative balance was negative
L: Negative Invisible	=IF(G12>0,MIN(H12,),MIN(H11,))	• Exactly the opposite of column I, if the particular movement is positive, this takes the current movement's cumulative balance; if not, it takes the previous movement's cumulative balance. In either case, the balance used must be positive This is used as an invisible column to 'prop down' the movement that will be displayed
M: Negative Dec. Visible	=IF(G12<0,SUM(J34:K34)-ABS(G12),)	• If the movement is negative, this calculates the amount of the movement that should be displayed below the x-axis (the positive amounts were calculated in columns J and K)
N: Negative Inc. Visible	=IF(G12>0,SUM(J34:K34)-ABS(G12),)	• Similar to column M. The distinction in whether the movement is positive or negative is so that positives may be coloured one way and negatives another.

In our illustration, our Chart Calculations Table will resemble the following:

Chart Calculations Table

	Op. Bal.	Cl. Bal.	Pos Inv	Pos Dec Vis	Pos Inc Vis	Neg Inv	Neg Dec Vis	Neg Inc Vis
Opening Balance	$1,000.00							
Mvmt 1			$1,000.00	-	$53.17	-	-	-
Mvmt 2			$1,053.17	-	$72.12	-	-	-
Mvmt 3			$1,125.29	-	$85.16	-	-	-
Mvmt 4			$435.03	$775.42	-	-	-	-
Mvmt 5			-	$435.03	-	-	($418.13)	-
Mvmt 6			-	-	-	($389.80)	-	($28.33)
Mvmt 7			-	-	$587.62	-	-	($389.80)
Mvmt 8			$587.62	-	$46.14	-	-	-
Mvmt 9			$633.76	-	$81.12	-	-	-
Mvmt 10			$714.88	-	$12.44	-	-	-
Closing Balance		$727.32						

At this juncture, the chart may now be constructed. By selecting the Chart Calculations Table (cells D32:N44 in our example), the chart may be built as follows:

Excel 2003 and earlier	Excel 2007 and later
• Select the Chart Wizard (ALT + I + H)	• On the 'Insert' tab of the Ribbon, select 'Column' in the Charts group and the 'Stacked Column' chart (second one on first row) from the 2-D column charts (ALT + N + C + Right Arrow + ENTER)
• In Step 1, select the Column chart type, and the Stacked Column chart sub-type (second one on first row)	• Right-click on the chart and select 'Select Data…' from the shortcut menu
• Click 'Next'	
• In Step 2, ensure the range has been correctly selected. In our example, ensure the Series is in 'Columns' not 'Rows'	• By using the 'Switch Row / Column' button if necessary, ensure that the Legend Entries are the titles from the top row of the data table (row 32 in our example) and that the Horizontal (Category) Axis Labels are the descriptions from the first column (column D in our example)
• Click 'Next'	
• In Step 3, add a Chart Title and Axes Labels as required. The legend should not be displayed (it will make the chart seem confusing)	• With the chart selected, go to the Chart Tools 'Layout' tab in the Ribbon and select 'Chart Title' and 'Axis Titles' labels from the 'Labels' group
• Click 'Next'	• Right-click on the Legend and select 'Delete' from the shortcut menu
• In Step 4, determine the Chart Location as required	
• Right-click on any column in the chart and then choose 'Format Data Series…' from the shortcut menu. Go to the 'Options' tab and select a 'Gap width' of zero	• Right-click on any column in the chart and then choose 'Format Data Series…' from the shortcut menu. Select the first entry, 'Series Options', in the first column and select a 'Gap width' of 'No Gap' by dragging the pointer to the left
• Delete grid lines if necessary.	• Delete grid lines if necessary.

The chart is almost there. Borders and fill patterns need to be changed for each data series. Whilst the colours for visible increases and decreases are a matter of taste, the invisible columns need to have no border and no fill pattern. To change these properties, simply select the required data series by clicking on the chart, and then:

Excel 2003 and earlier	Excel 2007 and later
• Right-click on the column in the chart and then choose 'Format Data Series…' from the shortcut menu	• Right-click on the column and then choose 'Format Data Series…' from the shortcut menu
• Go to the 'Patterns' tab and select the 'Border' and 'Area' properties as required.	• Select the third and fourth entries in the first column, 'Border Color' and 'Border Styles' and revise as necessary.

Finally, most modellers will not want the interim data table visible. Rather than hide it, we always recommend grouping rows or columns (in this example, select rows 30:44, then **ALT + SHIFT + Right Arrow**). However, with Excel's default settings, this will make the chart image 'disappear' if the data is not visible. To counter this irritating anomaly, select the chart (otherwise the options below may be greyed out) and then:

| Excel 2003 and earlier	Excel 2007 and later
• Go to Tools -> Options on the drop down menu (ALT + T + O)	• Right-click on the chart and select 'Select Data…' from the shortcut menu
• Go to the 'Chart' tab	• Click on the 'Hidden and Empty Cells' button in the bottom left hand corner
• Uncheck the check box titled 'Plot visible cells only'	• Check the check box titled 'Show data in hidden rows and columns'
• Click 'OK'.	• Click 'OK' buttons (twice).

Reader's Question

How can I hide the data from a chart without hiding the chart itself?

Advice: This is a common question, all attributable to a default setting in Excel, which is easily corrected. Consider the following chart example:
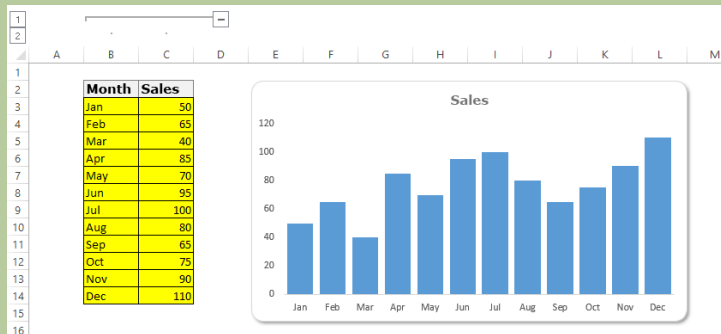

Imagine you wished to hide / group the data in columns B and C, which were used to generate the column chart. Without modification, if columns B and C are hidden or grouped, the chart will render as follows.

Hmm… Perhaps not the most informative of charts ever produced. To retain the chart image, unhide the columns and then right click on the chart and select 'Select Data…' from the shortcut menu. This produces the following dialog box:
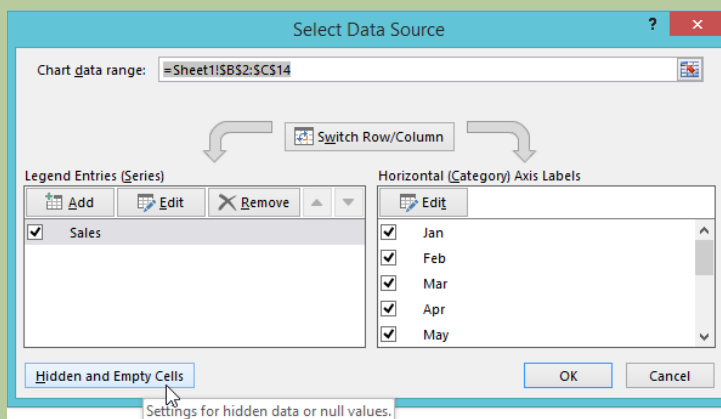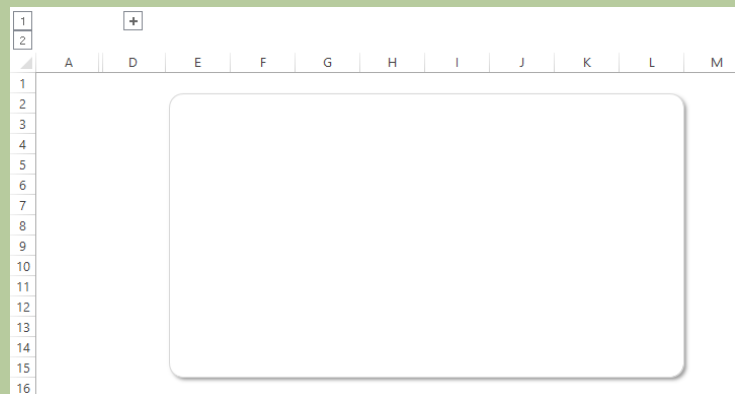
Click on the 'Hidden and Empty Cells' button in the bottom left hand corner and then check the box labelled 'Show data in hidden rows and columns'.

Once you click 'OK', the chart data can now be hidden:
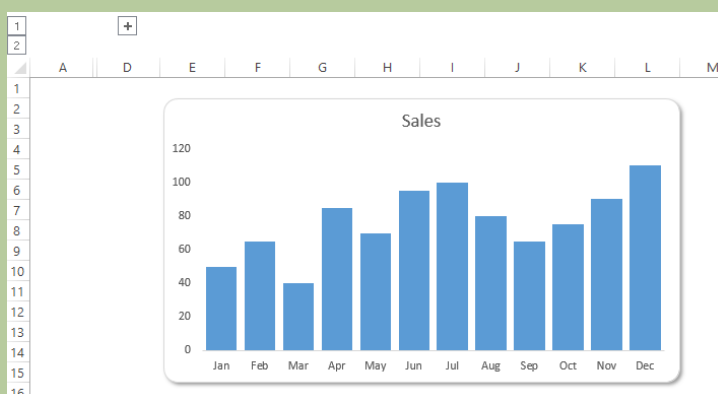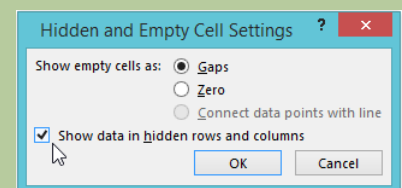
Easy!

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Key Strokes

Each newsletter, we'd like to introduce you to several useful keystrokes you may or may not be aware of. This month we consider some of the actions mentioned in the articles above:

Keystroke	What it does
F11	(After selecting data) Create column chart on new chart sheet
CTRL + 9	Hide row
CTRL + SHIFT + 9	Unhide row
CTRL + 0	Hide column
CTRL + SHIFT + 0	Unhide column

There are over 540 keyboard shortcuts in Excel. For a comprehensive list, please download our Excel file at http://www.sumproduct.com/thought/keyboard-shortcuts.

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