Office Doc

MS-OFFICE 2016 - EXCEL

English version

Charts and graphic objects

© **Office Doc** Place Longemale 2B – CH-1262 Eysins - www.office-doc.ch

Terms and conditions of sale or use : the purchased files can be freely printed with no restriction in terms of quantity and time but only for the company's internal use. The files can also be installed on the company's Intranet. Buying does not allow to distribute - even free - or sell to third parties. Only internal use is permitted. You may use touchup tools to slightly modify the PDF files (adding a logo for instance) but only if such changes do not significantly alter the source text and do not lead to removing the name of the company and the author.

Modifying the source .docx files is permitted. You may reorganize the chapters order, add or remove contents, insert screen captures specific to your company's environment. Nevertheless, such changes must not lead to removing the name of the company and the author or significantly alter the source text.

Table of contents

CHARTS 7

1 Generalities 9
1.1 Words specific to charts 9
1.2 What should you select to create a chart ? 9

2 Creating the chart and choosing its type 10
2.1 Creating 10
2.2 Using RECOMMENDED CHARTS to create the chart 11
2.3 Making a personal choice to create the chart 11

3 Location, size and deletion 13

4 GENERAL formatting : adding elements, colors, styles, source data, type … 13
4.1 Adding specific elements 14
4.2 Working on the chart look (colors, style) 14
4.3 Switching row/column 15
4.4 Managing the source data 16
4.4.1 Source range of cells 16
4.4.2 Switch Row/Column 17
4.4.3 Add or delete a series, manage empty or hidden source cells 17
4.5 Changing the type (for the whole chart – for a series) 20
4.6 Chart location 20

5 Options specific to the active element 21
5.1 Working with the FORMAT Pane 21
5.2 Chart Area 22
5.2.1 Ratio 22
5.2.2 Printing the graphic object and interaction with the underlying cells 22
5.3 Data labels 23
5.3.1 Text orientation 23
5.3.2 Contents and position 23
5.3.3 Labels linked to cells outside source data 24
5.3.4 Custom labels 25
5.3.5 Number format 25
5.4 Chart title, axis title, gridlines 26
5.4.1 Special : link a title (chart or axis) to the content of a given cell 26
5.5 X horizontal axis 26
5.5.1 Axis Options 26
5.5.2 Tick Marks 28
5.5.3 Labels 29
5.5.4 Number 30
5.6 Y Vertical axis 31
5.6.1 Axis Options 31
5.6.2 Tick Marks 33
5.6.3 Labels 33
5.6.4 Number 33
5.7 Series 33
5.7.1 Primary and Secondary Axis 34
5.7.2 Series Overlap & Gap Width for a column, Angle & Explosion for a pie 34
5.7.3 Pyramid or cone shapes 35
5.8 Data Table 35
5.9 Plot area 36

6 Adding lines, bars, error bars and trendline 37
6.1 Adding projection lines to a chart (line type) 37
6.2 Adding error bars 38
6.3 Adding a trend line 40

7 Formatting the active element 41
7.1 Working with the FORMAT Pane or the FORMAT Tab 41
7.1.1 Format Pane 41
7.1.2 FORMAT Tab 42
7.1.3 Some examples 42
7.2 When a modification implies changing a color 43
7.2.1 Default colors 43
7.2.2 Theme Colors 43
7.2.3 Standard Colors 43
7.2.4 More Colors 43
7.3 FORMAT Tab : how to reset to the default settings 43
7.4 FORMAT Tab : Foreground and Background, Selection Pane, Alignment, Size and Chart Properties 44
7.4.1 Arrange group 44
7.4.2 Size group 45

8 Filtering some elements from the chart 45

9 Creating a template (customization) 46
9.1 Saving a chart as a template 46
9.2 Creating a chart based onto a template 47
9.3 Managing templates 47

10 Printing the chart 48

11 Less common chart types : examples 48
11.1 Bar chart 48
11.2 Area chart 49
11.3 Scatter chart 50
11.4 Radar chart 51
11.5 Stock chart 52
11.6 Bubble chart 53
11.7 New 2016 chart : Treemap 54
11.8 New 2016 chart : Sunburst 57
11.9 New 2016 chart : Histogram 58
11.10 New 2016 chart : Pareto 60
11.11 New 2016 chart : Box and Whisker 62
11.12 New 2016 chart : Waterfall 63

12 Forecast sheet – with a chart automatically created 66

13 Sparkline charts 68
13.1 What is it ? 68
13.2 Creating the chart 68
13.1 Managing 69

14 Data and maps 70
14.1 Elementary views with Bing et People Graph 70
14.1.1 BING MAPS 71
14.1.2 PEOPLE GRAPH 72
14.2 3D Maps – a powerful feature 73
14.2.1 Type of data 73
14.2.2 Access 74
14.2.3 Default window 74
14.2.4 Building the map 75

DRAWN SHAPES AND SMARTART 81

1 Drawn shape 83
1.1 Using the chart FORMAT Tab or the INSERT Tab to draw the shape 83
1.2 Will the shape belong to the chart or to the worksheet ? 83
1.3 Creating the shape 83
1.3.1 Drawing perfect shapes (squares, rounds ...) 83
1.3.2 Drawing from the center outward 84
1.3.3 Drawing a perfect shape from the center outward 84
1.3.4 Drawing the same shape several times 84
1.3.5 Special : scribble and freeform 84
1.3.6 Adding text 84
1.4 Managing the shape by using the mouse 84
1.5 FORMAT Tab 85
1.5.1 The INSERT SHAPES group 85
1.5.2 The SHAPE STYLES and WORDART STYLES groups 86
1.5.3 The ARRANGE group : bring to front or send to back, alignment, rotation … 86
1.5.4 The SIZE group 86
1.6 Set the current shape format as default format 86

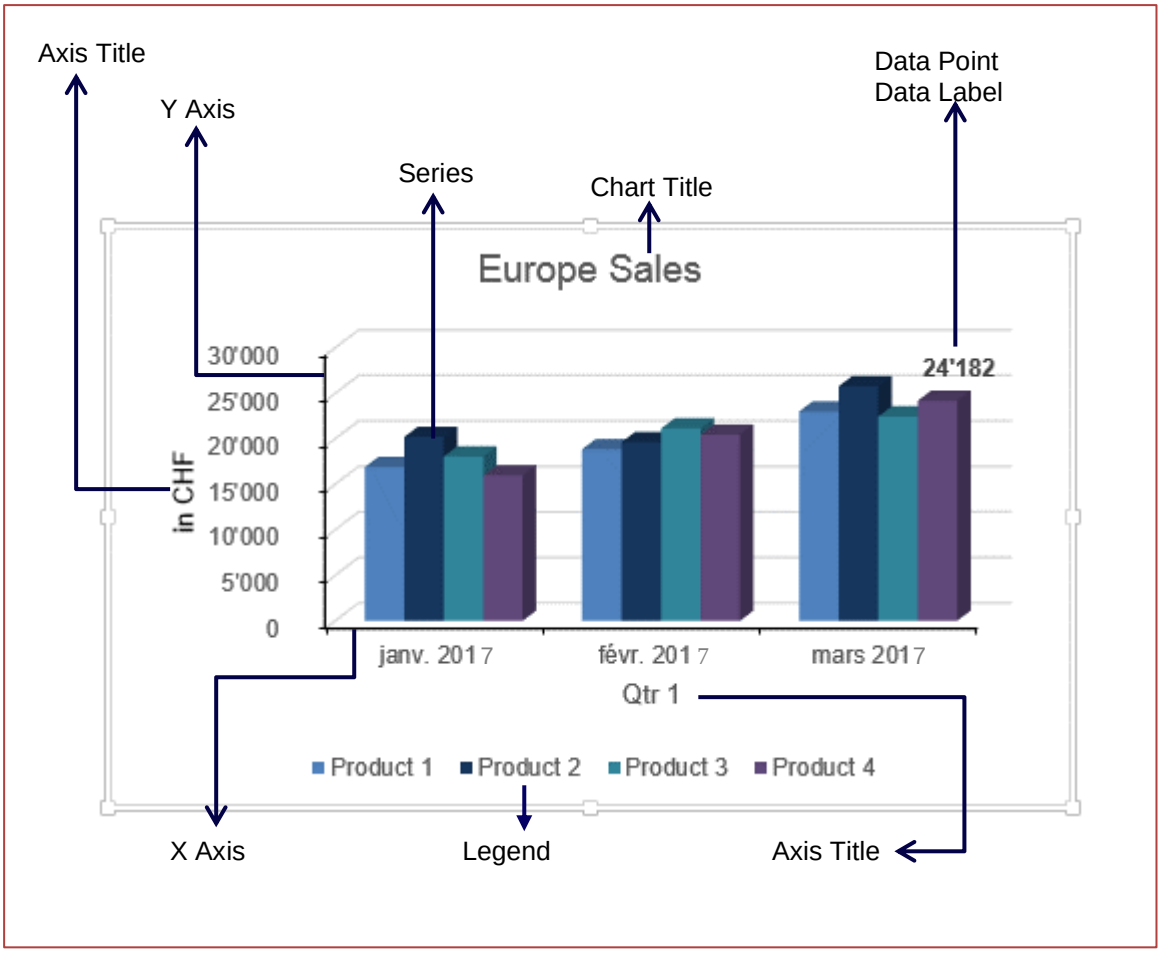
2 SmartArt 87
2.1 Creating 87
2.2 Managing the SmartArt by using the mouse 88
2.3 DESIGN Tab 88
2.3.1 The CREATE GRAPHIC group : adding a shape, a bullet, changing the layout, the shapes order … 88
2.3.2 The LAYOUTS group : changing the SmartArt 89
2.3.3 The SMARTART STYLES group : adding styles effects 89
2.3.4 The RESET group 90
2.4 FORMAT Tab 90
2.4.1 The SHAPES group : working each shape individually 90
2.4.2 The SHAPE STYLES group : colors, fill, outline … 90
2.4.3 The WORDART STYLES group : effects applied to the shape text 91
2.4.4 The ARRANGE group : bringing to front or sending to back, aligning, rotating … 91
2.4.5 The SIZE group 91

3 Ink equation 92

CHARTS

1 Generalities

1.1 Words specific to charts



The Y axis displays the series *values (figures)*
The X axis displays the *categories (« the analysis ratio » - timely or other)*

1.2 What should you select to create a chart ?

Select :

- What will become the X axis (horizontal) categories
- What will become the Y axis (vertical) and the series (the figures)
- The figures labels that will generate the legend

Excel will try to build the chart using your selection. To determine the future X and Y axis, Excel expects to find dates. They will be automatically considered as a timely analysis and will become the X axis of categories.

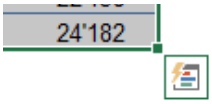
But caution, if it is easy for Excel to recognize a *Jan-14,* it is impossible for Excel to understand *Qtr 1, Zone 1* etc. In this latter case, Excel will proceed according to the number of rows and columns. The highest number is systematically understood as the future X axis.

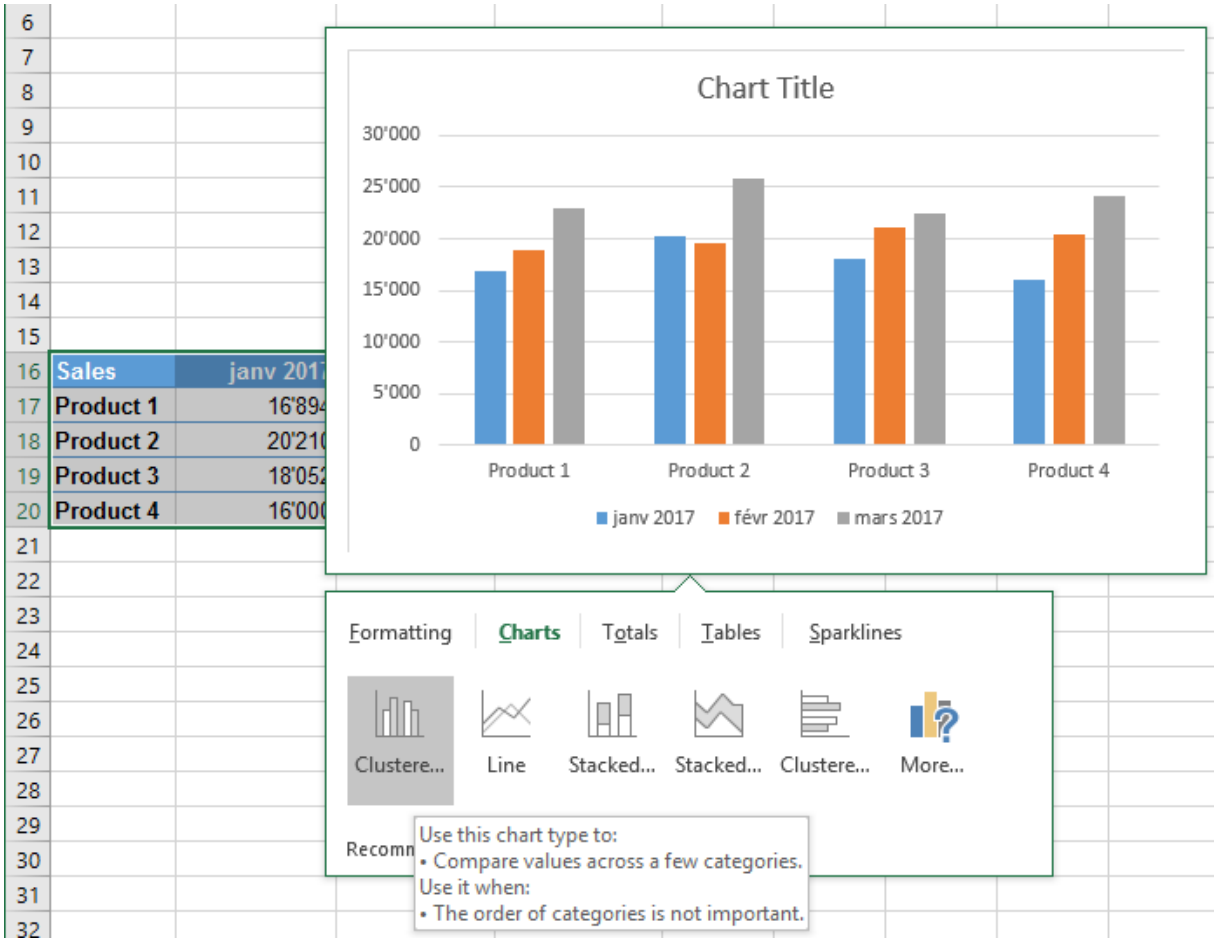
If what Excel automatic creates is not what you expect and need, the commands related to charts include a *Switch Row/Column* option.

2 Creating the chart and choosing its type

2.1 Creating

- Select the data
- Tag at the bottom of the selection



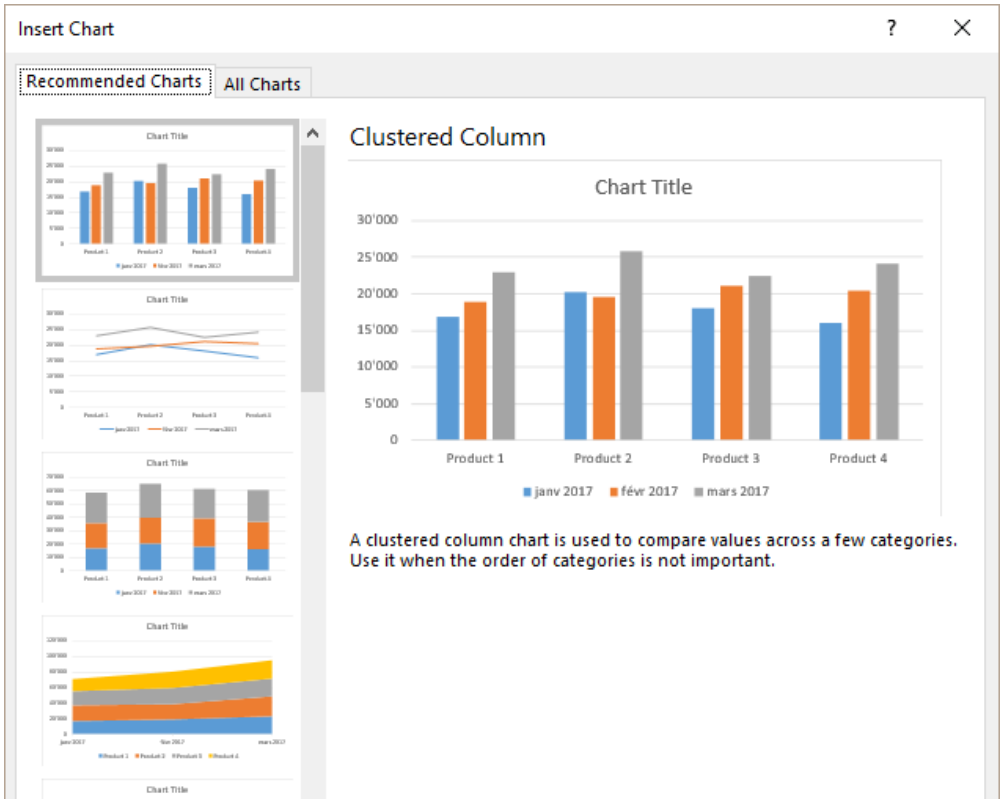


Point a type and a preview will be displayed.
Click to validate your choice and insert the chart onto the sheet (floating object to place).

2.2 Using RECOMMENDED CHARTS to create the chart

- Select data
- INSERT Tab – CHARTS Group

The suggested charts are presented into a dialog box. They are identical to those displayed by the quick analysis tag.

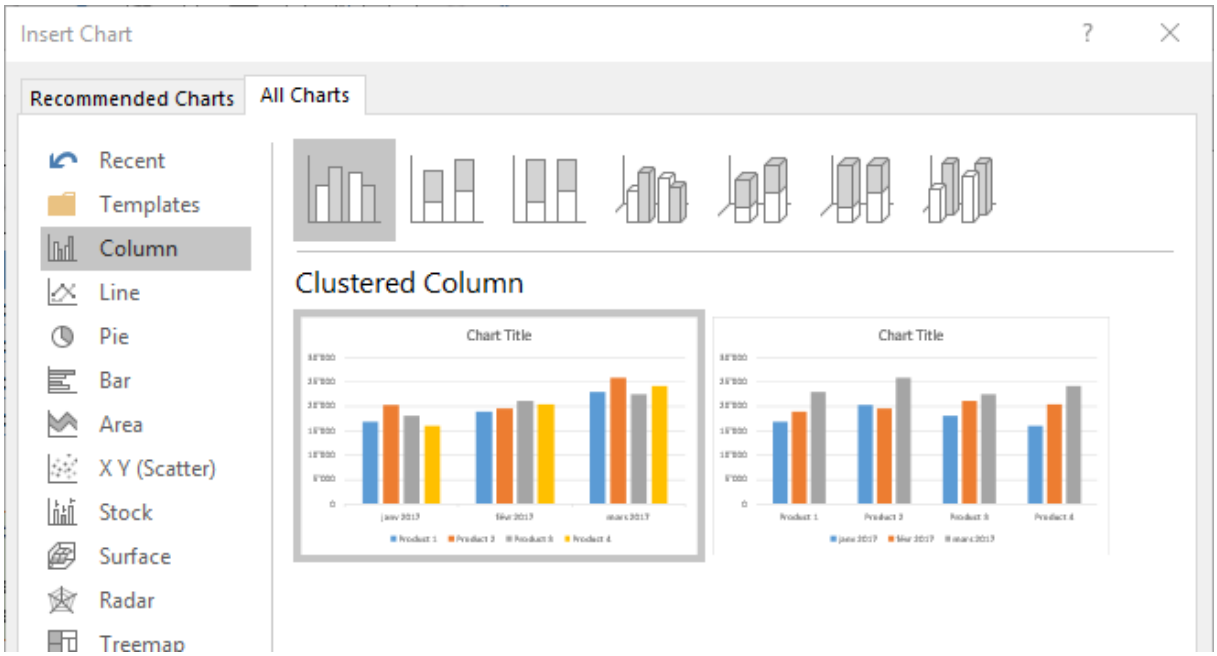


2.3 Making a personal choice to create the chart

- Select data
- Select the type of chart : INSERT Tab – CHARTS Group

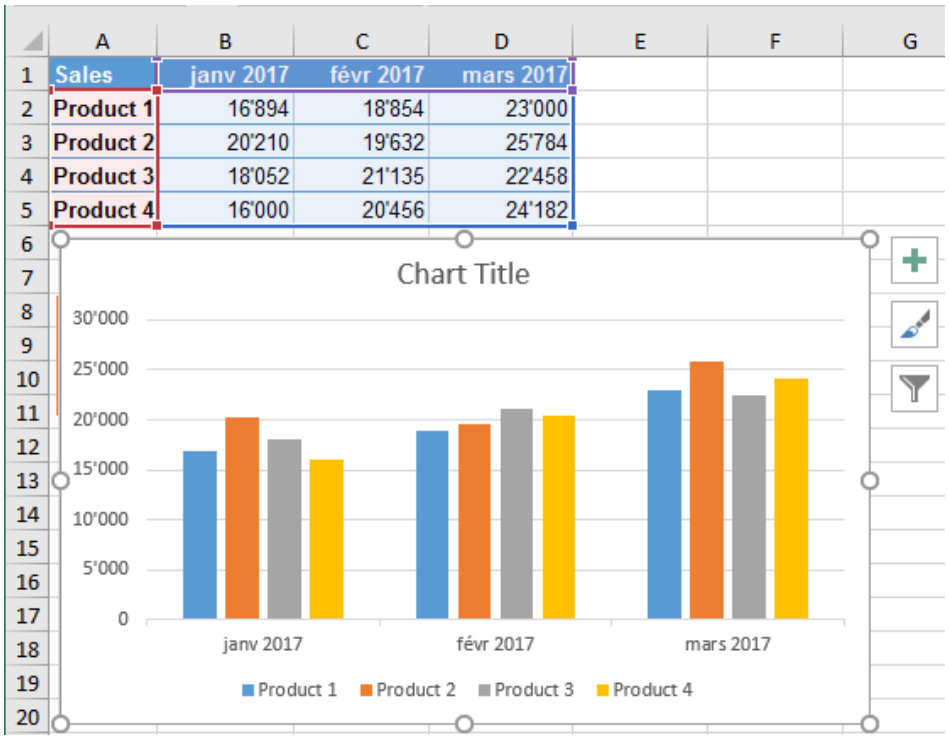
Each drop-down list displays an option to access the above dialog box at the ALL CHARTS Tab

Recently used types, custom charts (explained later on), list of all possible tyles … make your choice.



* *The older versions included pyramid and cone chart types. This is no longer the case with Excel 2013. But you can apply a pyramid or cone shape to a series for a 3D column or bar chart. See explanations on page 35.*

The chart will be automatically created and placed onto the Excel worksheet containing the data. The default colors are from the current theme.



When you select the chart, the source data is automatically displayed with colored borders.

The chart is always linked to its source data. Any change in the source data and the chart will be automatically updated accordingly.

The Ribbon displays two additional tabs : DESIGN and FORMAT.

Use the commands of the DESIGN tab to work globally on the chart (select the source data, change the chart type and so on)

Use the FORMAT tab to add drawn shapes and format them

Three buttons are displayed at the top right side of the chart

Use the *plus* button to add elements to the chart
Use the *brush* button to work on the chart format
(you can also use the corresponding buttons on the Ribbon – the possibilities are the same)

Use the *funnel* button to filter data

Keyboard shortcuts to create a chart : select the data and **ALT + F1 for an embedded chart** (on the same sheet containing the source data) and **F11 for a chart in full page** (a new chart sheet is created). By default : the previous shortcuts create a column chart.

3 Location, size and deletion

The chart is an *object,* you may manage it as any standard drawn shape, picture and so on.

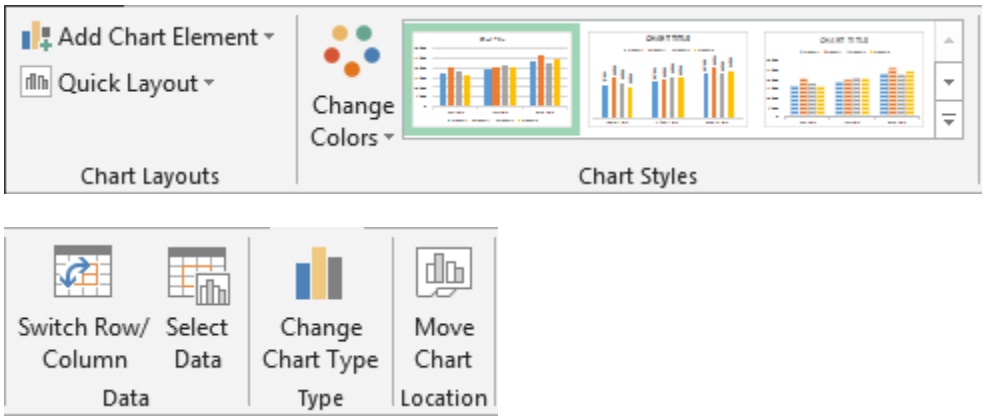
Location : click and drag the chart as required, but make sure not to drag a sizing handle or an inside element. (if you right click and drag the chart, a shortcut menu will be displayed and will offer the choice between *moving* or *copying.* If you click and drag the chart while pressing the ALT key, you will follow the underlying cells).

Size : click and drag a sizing handle. These handle are the three little dots located at each corner of the chart and also in the middle of each side. There is no problem of proportionality as with pictures.

Delete : click anywhere else than onto an inside element (border, white area …) and press the DELETE key.

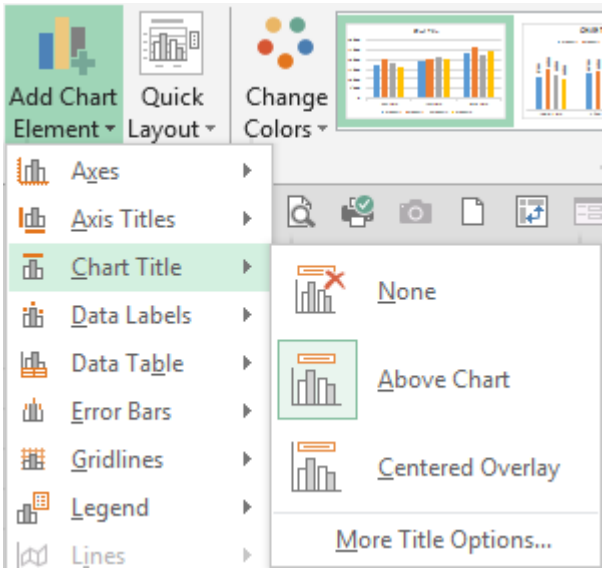
4 GENERAL formatting : adding elements, colors, styles, source data, type …

The DESIGN Tab commands :



4.1 Adding specific elements

CHART LAYOUTS Group

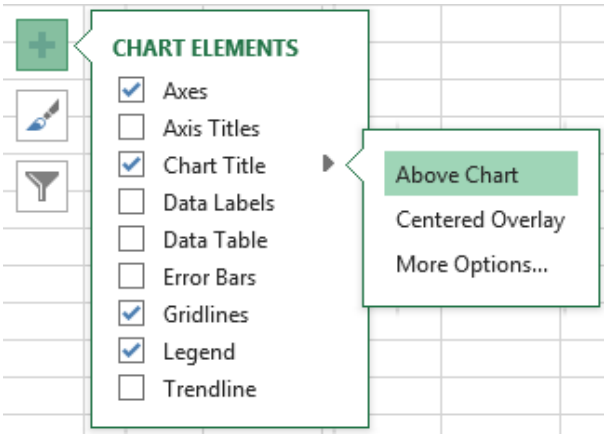


Or

The following button (top right of chart) :

Click on the check box to add an element using common settings

Click on the triangle to add an element using specific additional settings



4.2 Working on the chart look (colors, style)

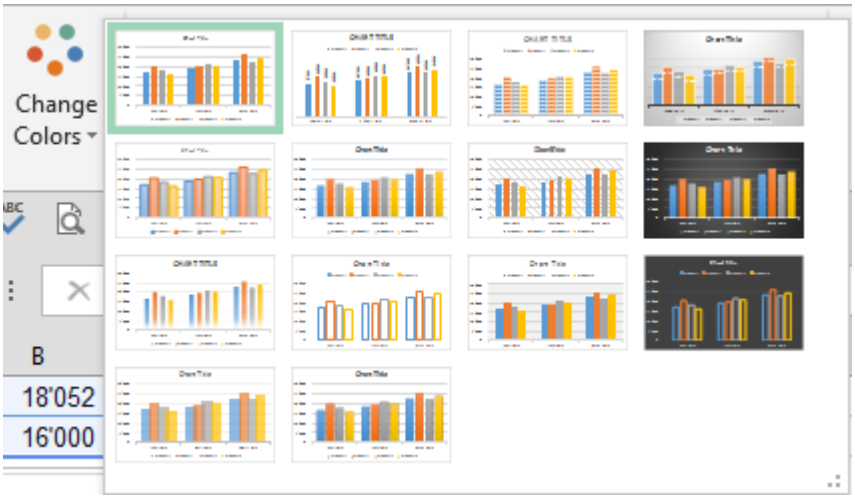
CHART LAYOUTS Group – QUICK LAYOUTS Button

Each sample displays a preview how the chart element will be arranged : chart title present or missing, position of the legend and so on.
Of course, the same layout can be obtained manually (inserting the title, legend, axis …)

CHART STYLES Group

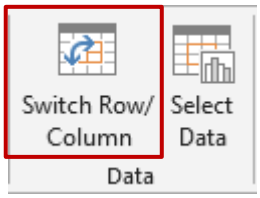
Reminder : colors comme from the active theme (by default the OFFICE theme)

CHART STYLES Group



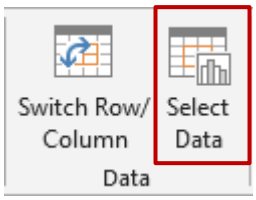
4.3 Switching row/column

When Excel's *automatic* building is not what you need, simply click on the following button :

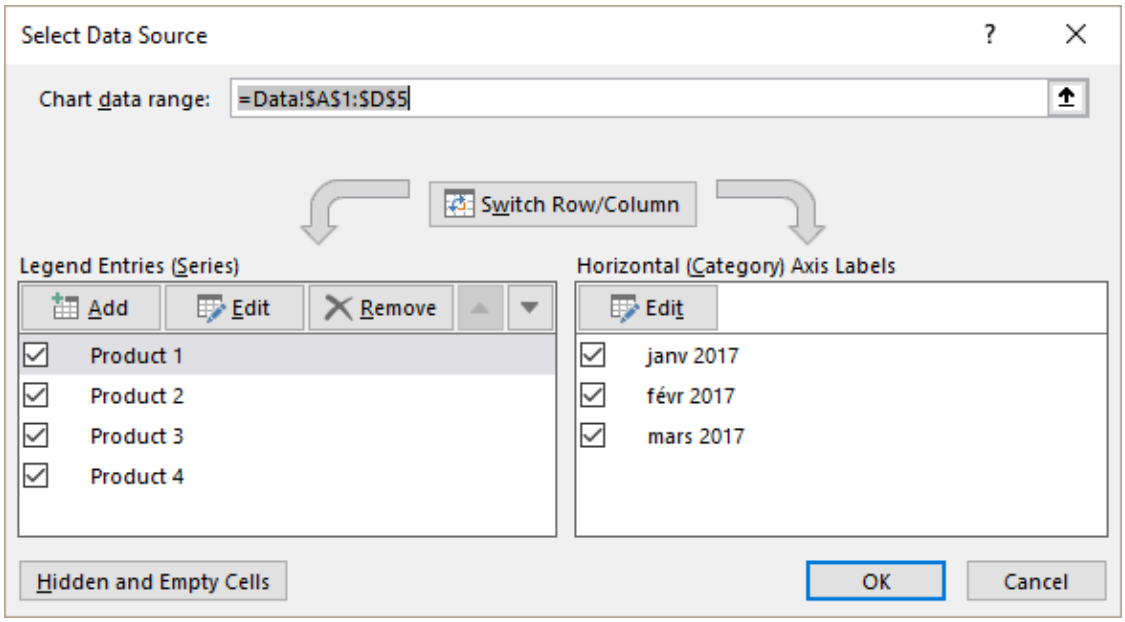


Excel will switch from : to :

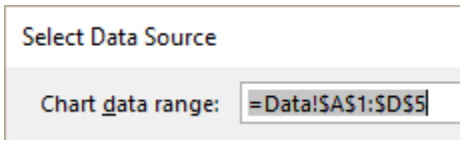
4.4 Managing the source data



Dialog box:



4.4.1 Source range of cells



Check the source data
Can be modified as needed.

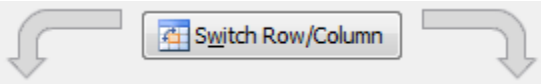
Directly on the worksheet : no need to use the above dialog box to modify the source range of cells. If you select the chart, the source data are automatically displayed with a colored border (like formula precedents). Click on the border line or handle either to change it or resize it.

Sales	janv 2017	févr 2017	mars 2017
Product 1	16'894	18'854	23'000
Product 2	20'210	19'632	25'784
Product 3	18'052	21'135	22'458
Product 4	16'000	20'456	24'182

Point a corner and drag to *size*.

Point the border and drag to *move*

4.4.2 Switch Row/Column



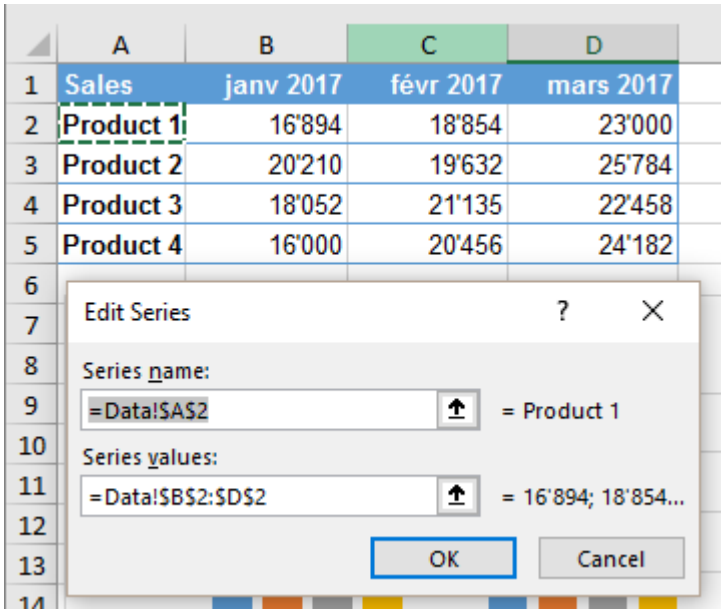
Same as the SWITCH ROW/COLUMN button

4.4.3 Add or delete a series, manage empty or hidden source cells

Legend Entries (Series)

Whatever you want to do, the dialog box is the same.

Select the required series (to add or to modify)



The dialog box displays the source data for the series name and its figures. Can be changed as needed.

Adding without going through the above dialog box : it is also possible – and certainly more comfortable – to select the series on the sheet (name and figures) and copy-paste directly inside the chart. The series is automatically added.

✎ You can even modify by clicking on the series and changing the arguments of the SERIES(….) function in the formula bar.

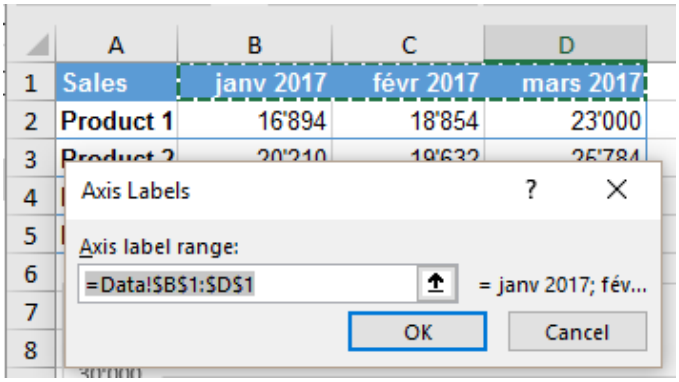
Caution : no confirmation message

Arrows

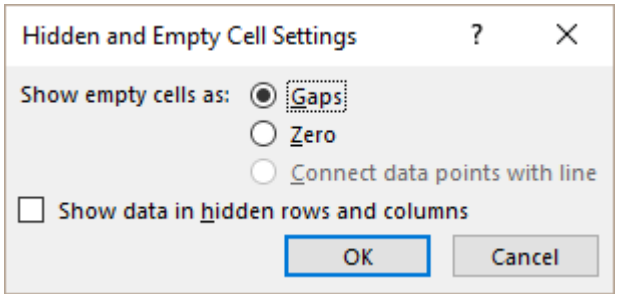
To change the series order in the chart (and not in the source data).

Horizontal (Category) Axis Labels

Same as for series but applied to the labels of the category axis.

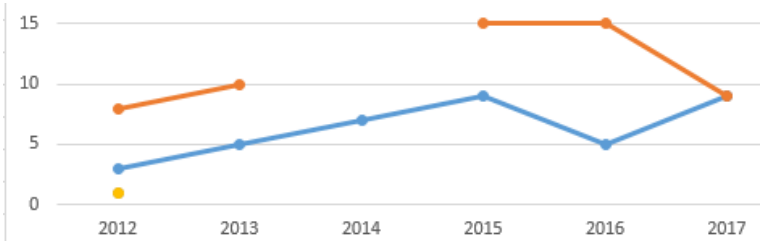


HIDDEN AND EMPTY CELLS Button

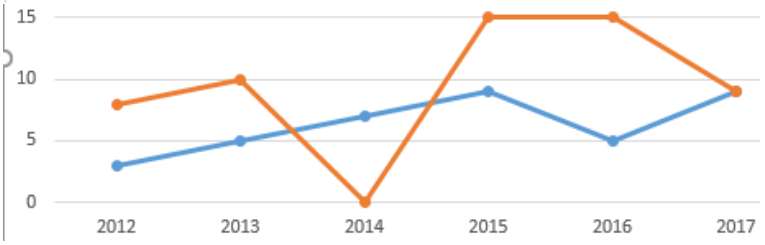


These options are particularly striking for line charts.

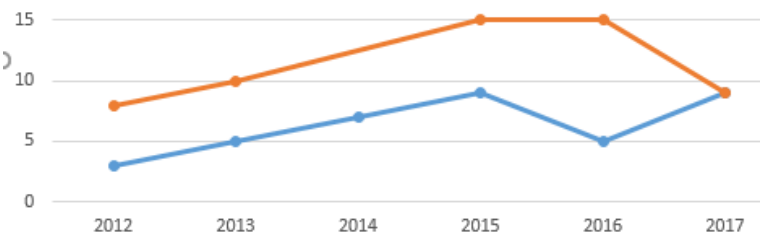
Gap



Zero

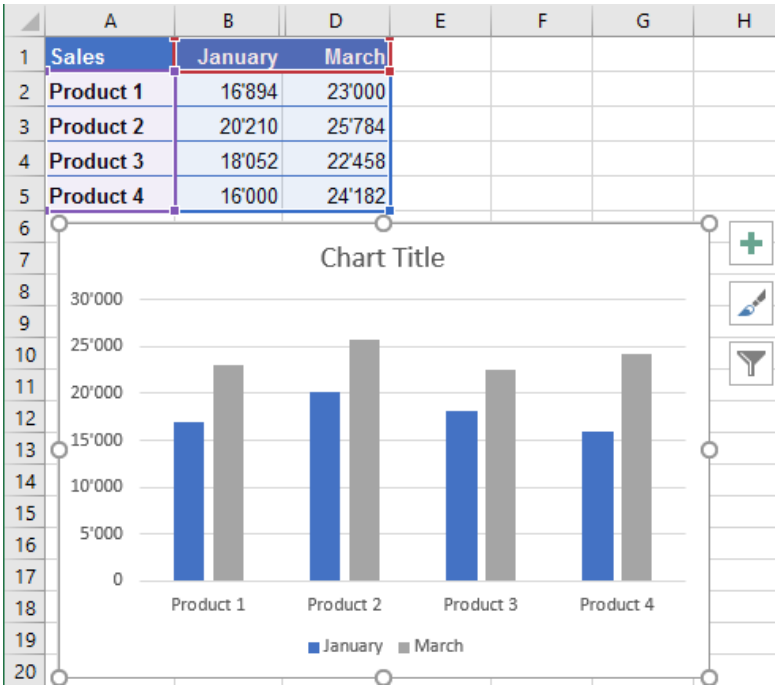


Connect data points with line



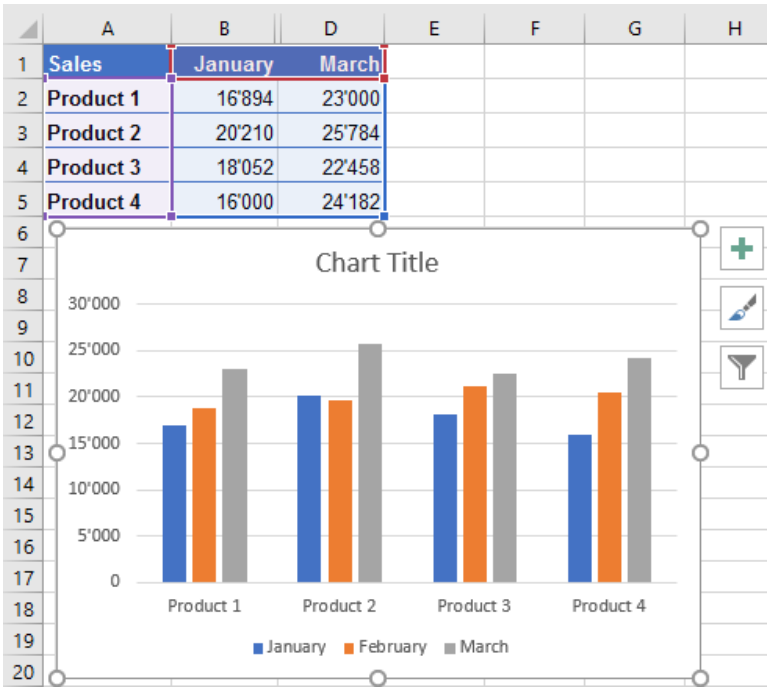
Show data in hidden rows and columns

When a chart source data contains hidden rows or columns, Excel automatically* omits what is hidden :
(*sometimes does not work with special chronological data)



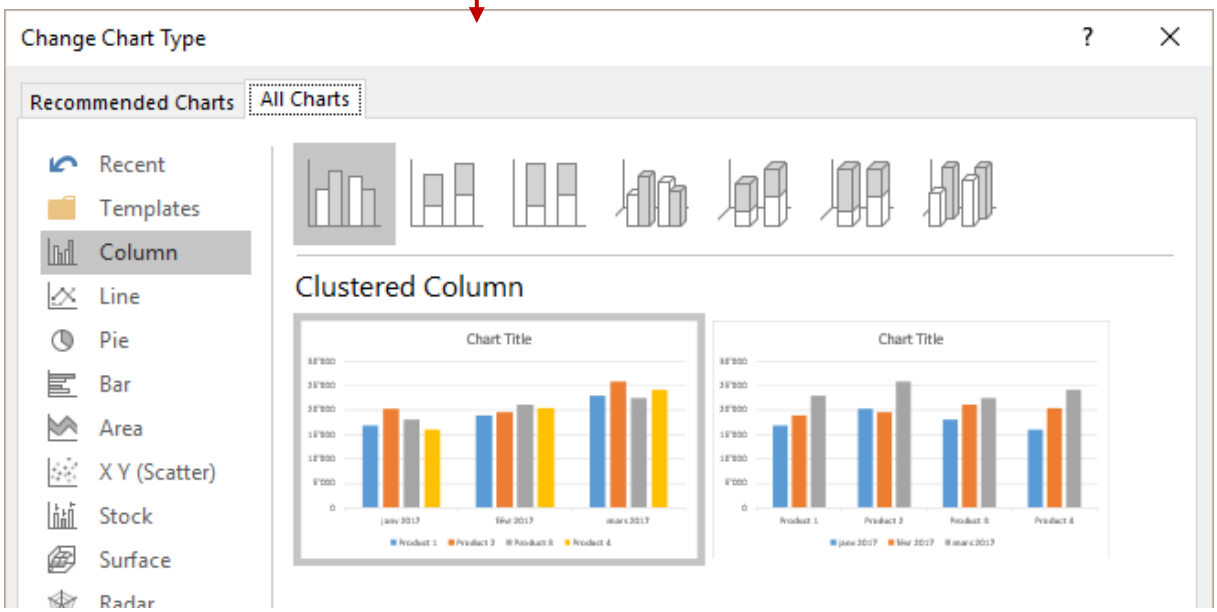
If you unhide the hidden column, it will be automatically displayed in the chart.

If you turn on the option, you can *display the hidden column in the chart without displaying it in the data sheet :*

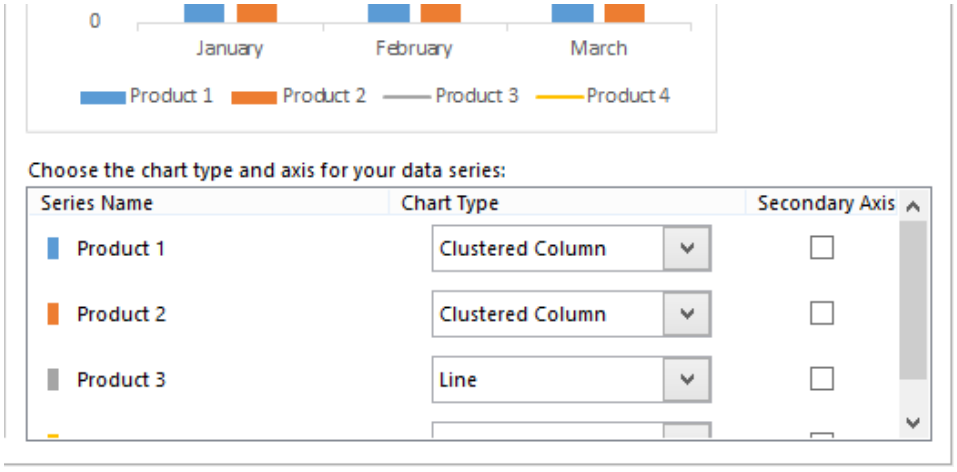


4.5 Changing the type (for the whole chart – for a series)

The *All Charts* dialog box is displayed

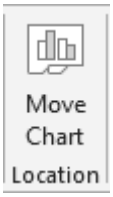


Make your choice to modify *the whole chart*.
Select COMBO to *modify one or more series only*

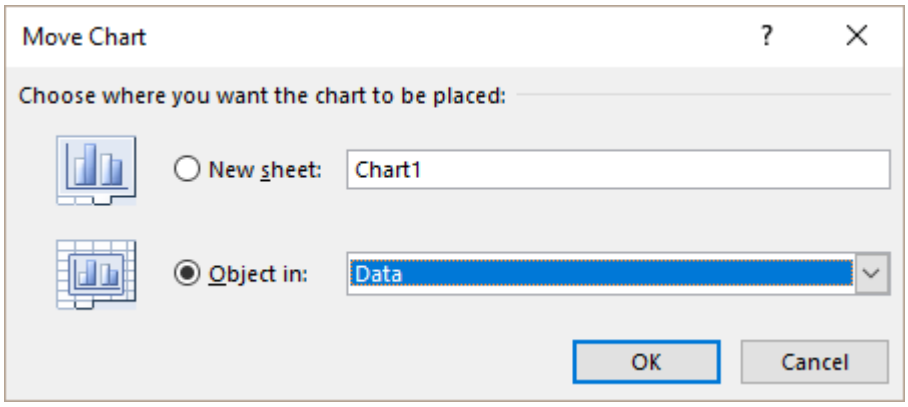


4.6 Chart location

Group



Here below the dialog box :



By default, Excel creates a chart that is an *object.* You may remove it and replace it by a *full page* chart. Excel will create a new sheet and you may name the sheet directly into the above dialog box. The chart will occupy the whole screen. *Particularly appropriate when data is important or to get a better display for 3D charts.*

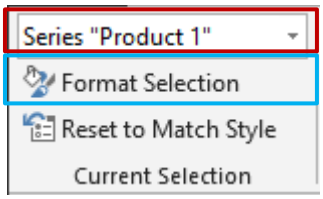
5 Options specific to the active element

5.1 Working with the FORMAT Pane

❶ Double-click on the element such as an axis, a series …
The Pane will be automatically displayed

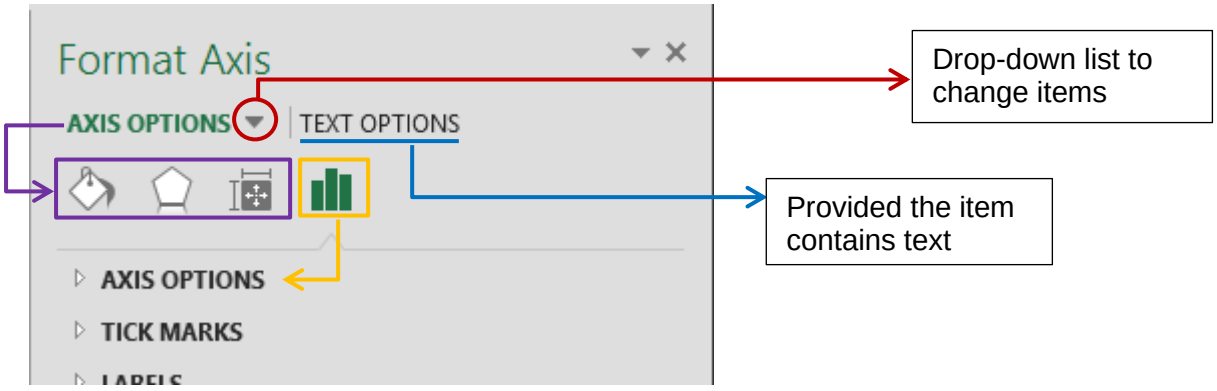
❷ *FORMAT Tab – CURRENT SELECTION Group*
Select from the drop-down list

Then click on FORMAT SELECTION …



❸ *The MORE OPTIONS option (from the drop-down lists – page 14*

Here below the Pane opened for the vertical axis (all sections are collapsed)



The first buttons (circled in violet) are to work on the element general format. They are explained in a specific topic. The options specific to the active element are circled in yellow.

5.2 35BChart Area

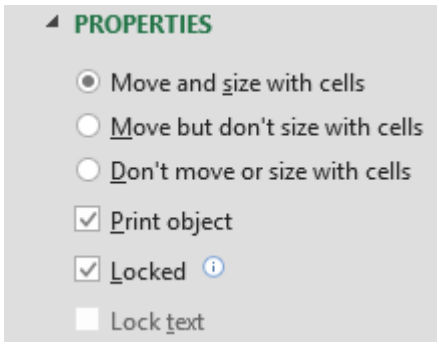
5.2.1 83B*Ratio*

CHART OPTIONS – Button SIZE

Contrary to a picture, the ratio is not automatically preserved when you size a chart. Tick the box to preserve it.

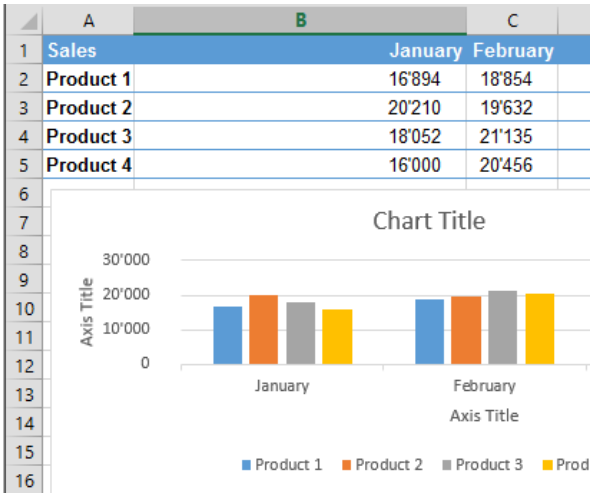
5.2.2 84B*Printing the graphic object and interaction with the underlying cells*

CHART OPTIONS Button

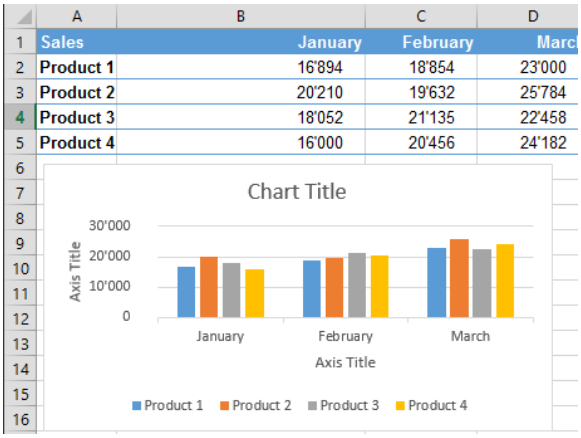


Move and size with cells …. or not
The three options help you to decide how the chart should be impacted when the width of an underlying column / row is modified. Indeed, the chart behaves like an *graphic objects* whose rules it follows. Example :

By default: if an underlying column is modified the chart is modified accordingly :



Setting that it should not be sized :



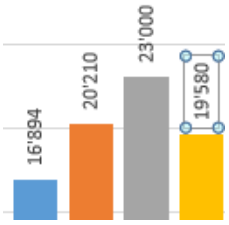
Print object
The chart will be visible but it will not be printed. A rather uncommon choice for a chart but far more common for graphic objects such as a macro button, a hyperlink …

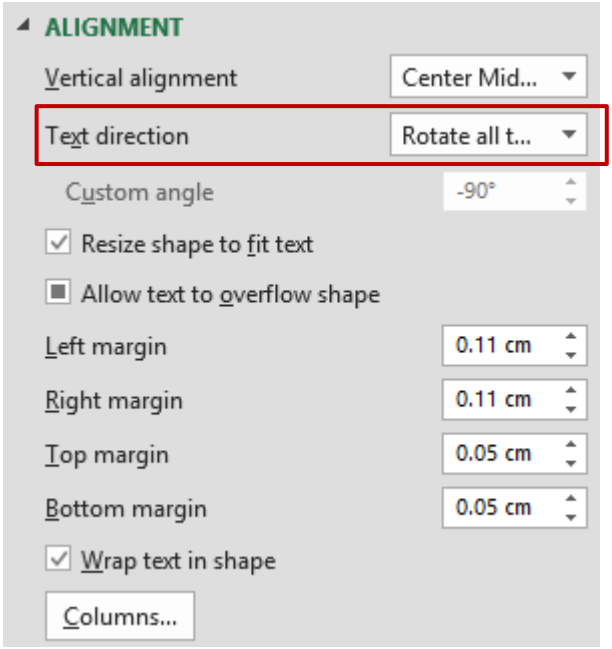
Locked (on by default)
Linked to protection. If the chart is not locked, it can be modified even though the sheet itself is locked.

5.3 Data labels

5.3.1 85B*Text orientation*

DATA LABELS

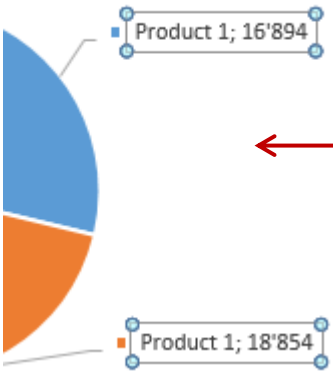


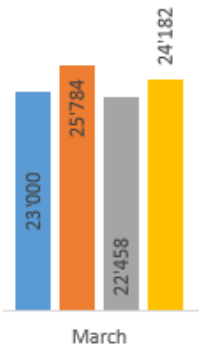


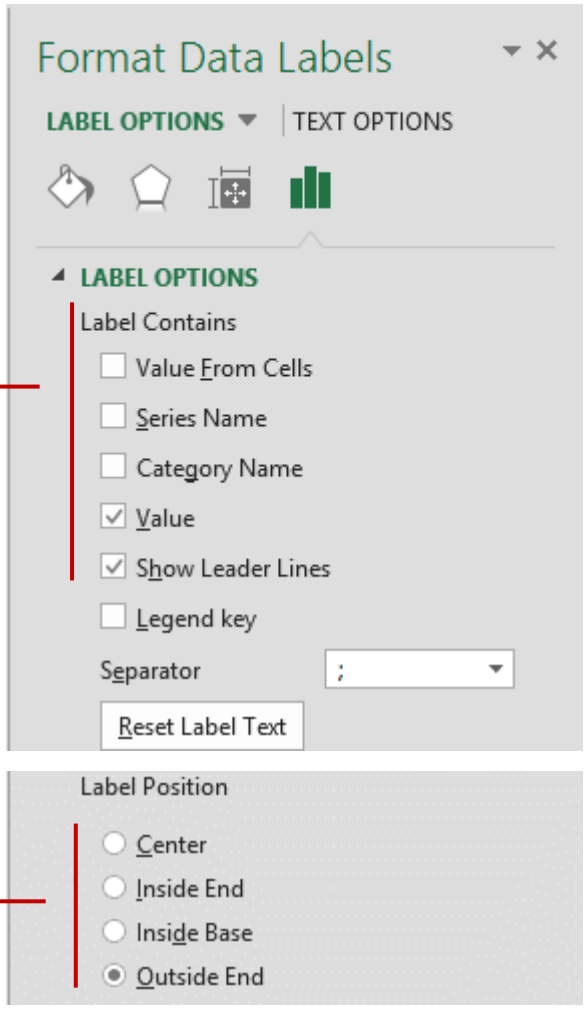
* The same options can be accessed through the section TEXT OPTIONS – Button

5.3.2 86B*Contents and position*

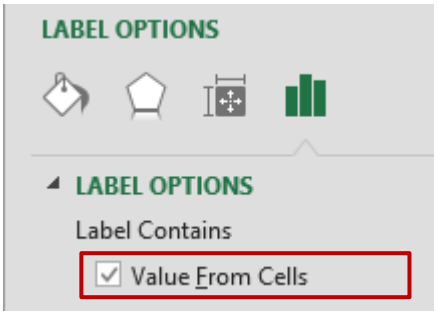
DATA LABELS





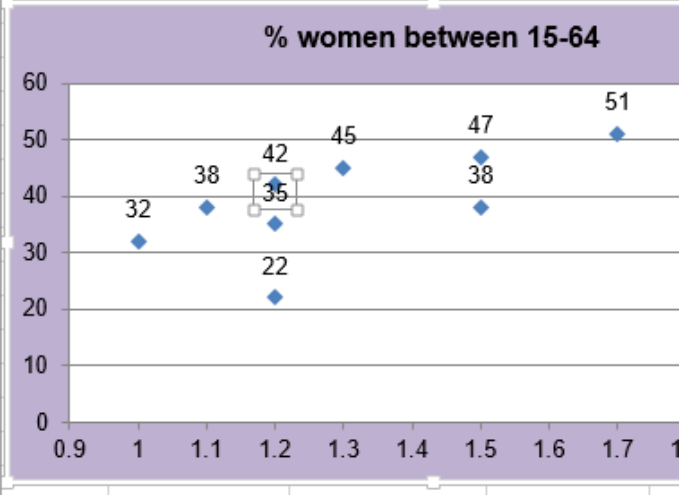


5.3.3 87B*Labels linked to cells outside source data*



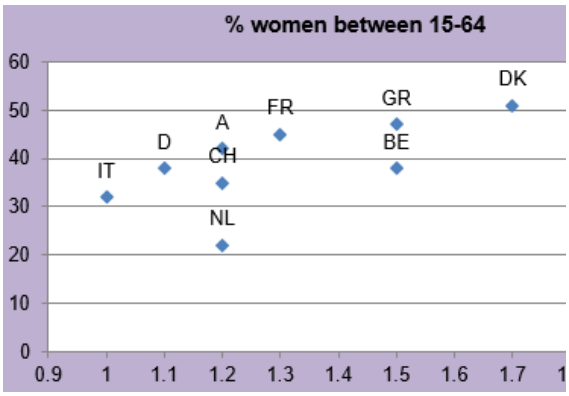
Here below the source data and a scatter chart showing labels (by default Y values) :

	A	B	C	D
30	Country	Fertility rate (not real !)	% women between 15-64	
31	A	42	1.2	
32	BE	38	1.5	
33	CH	35	1.2	
34	D	38	1.1	
35	DK	51	1.7	
36	FIN	54	2	
37	FR	45	1.3	
38	GR	47	1.5	
39	IT	32	1	
40	NL	22	1.2	

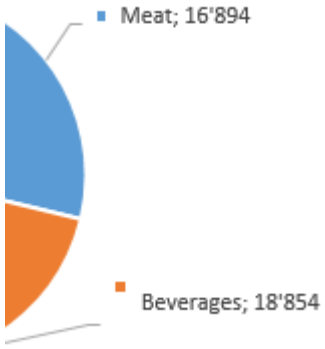


Showing X or Y values is of no interest for this special chart. The data points correspond to countries bt these are not part of the source data ….

Thanks to the VALUES FROM CELLS option, we can select the required cells and display their content on the chart. Y values can simply be checked off.

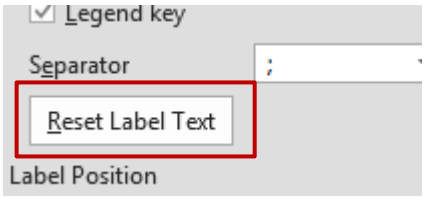


5.3.4 88B*Custom labels*



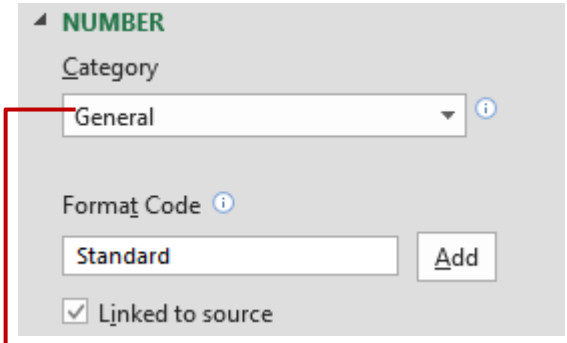
Select each label and type the text manally. The link with the source cell is broken.

Click on the following button to reset the link with the source cells :

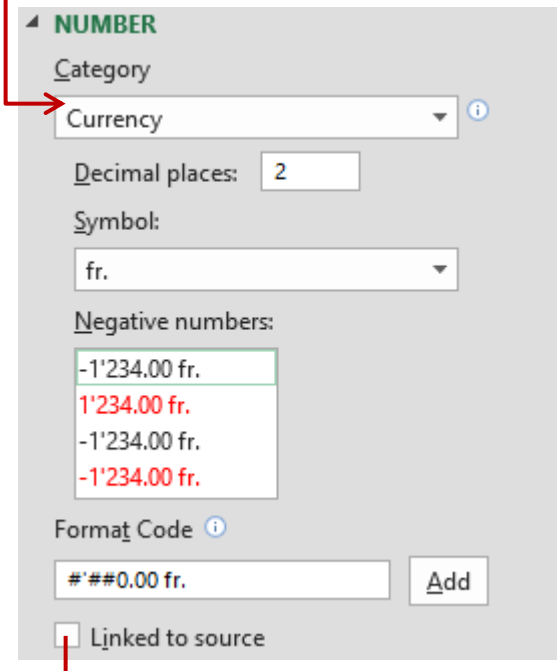


5.3.5 89B*Number format*

The GENERAL drop-down list displays the usual Excel number formats.



Here *Currency* and its settings



If you master the codes behind formats (#, *, ? …), you can modify the format as you need. But caution, it will be memorized only if you click on the ADD button.

It will be added to the list and can be used later on for the data labels of another series or for another chart. But please note that this custom format is not added to the custom formats of the *current worksheet.*

The *Linked to source* checkbox is automatically ticked off as custom formats are not linked to the source data. To revert to the default format, simply click again on the *Linked to source* option.

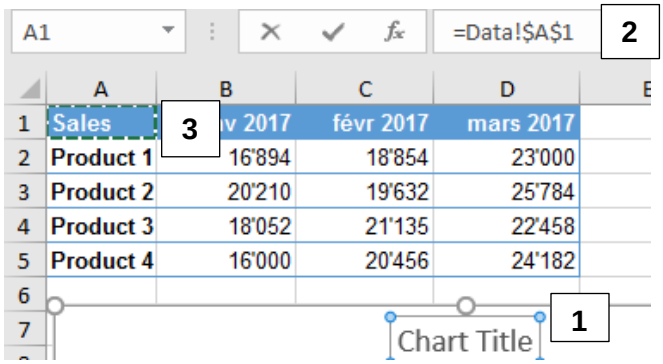
5.4 Chart title, axis title, gridlines

No options other than the formatting commands and the text commands

Respectively and (see page 41)

5.4.1 *Special : link a title (chart or axis) to the content of a given cell*

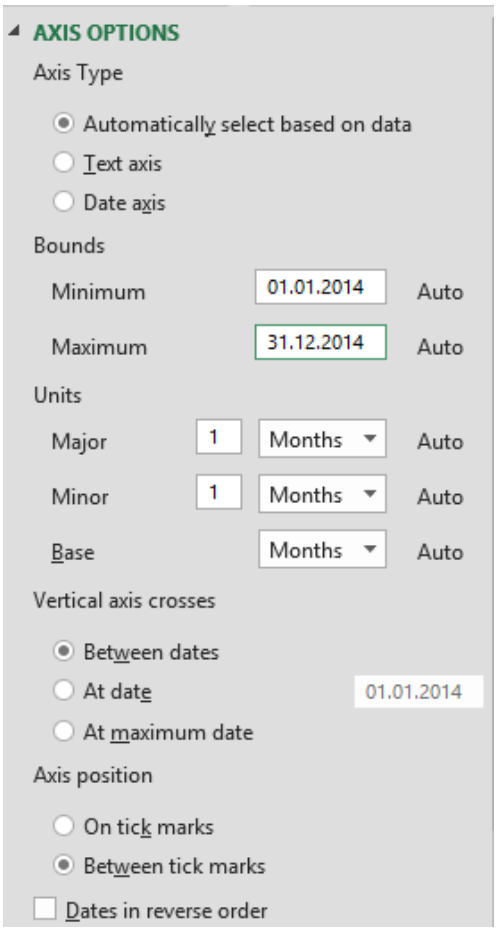
1. Select the title
2. Type the = sign in the formula bar
3. Click on the cell containing the text and validate



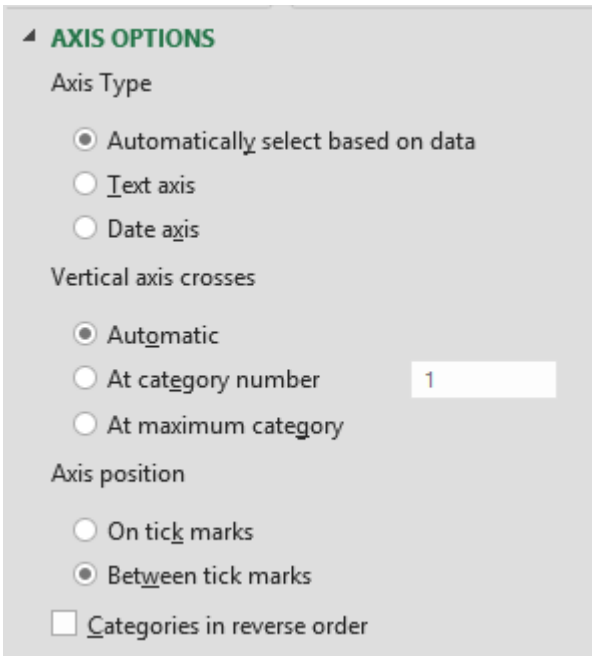
5.5 X horizontal axis

5.5.1 *Axis Options*

With dates



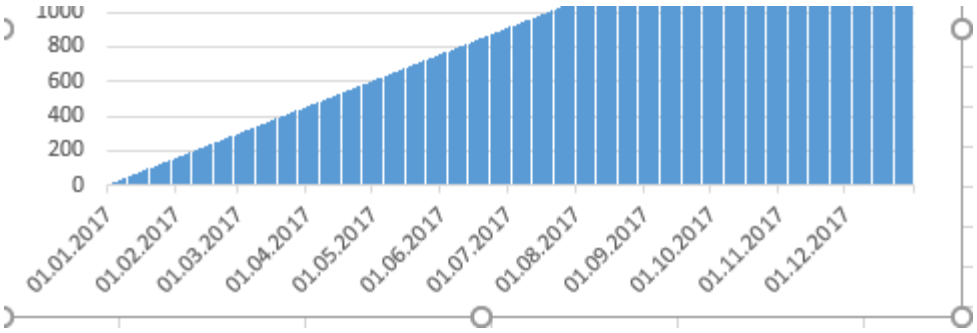
With text



Axis Type

If left on *Automatic,* Excel applies the type that is most appropriate to your source data. Usually it is satisfactory.

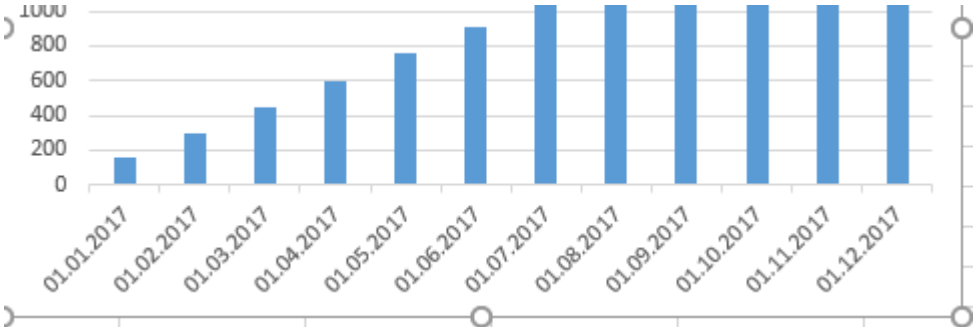
Date axis – here the 365 days of the year – labels are displayed one by month



The settings automatically applied by Excel are those of the screen capture on the previous page (the left one). Usually Excel is quite clever … But it can happen that the data are not clear enough and you will have to help Excel by changing the start / end date or the intervals or even by changing the type of axis.

An interesting modification with the above chart : going by MONTHS instead DAYS

The sales are summed up and the chart becomes far easier to read :



Changing the type of axis can be interesting with a non-chronological axis – a classical case : you have typed years but Excel did not recognize them as “dates” because you have typed 2001, 2002 … Moreover the interval between the year is not equal. Consequently Excel understands the axis as being a *text* one. Here below the horizontal axis :

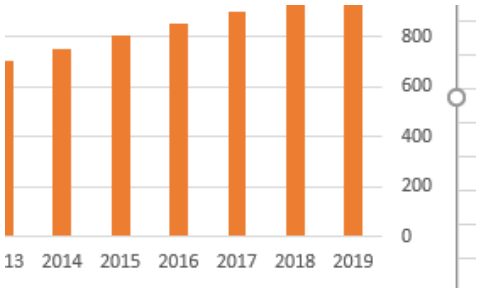
One solution would be to change the chart to a scatter one but you may not want to work with dots or lines at best. If you do not want to change the type of chart, switch the axis to « date » and – magic ! – Excel will display the chronology correctly :

Vertical axis crosses

(category for a text axis / date for a date axis)

To change where the horizontal and vertical axis cross.
Caution : labels of the vertical axis and the series may overlap.

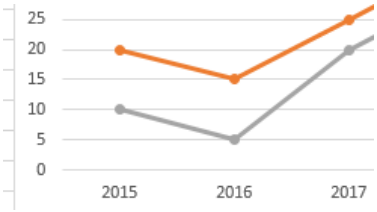
Choosing to cross at *maximum date* will display the vertical axis at the right end the horizontal axis :



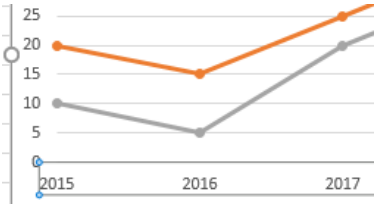
Axis position

For 2D area, column and line charts.
Position of the data points and the axis labels versus the graduation marks. *Particularly interesting with lines. It will make the line «touch » the axis (at both ends).*

Between tick marks



On tick marks

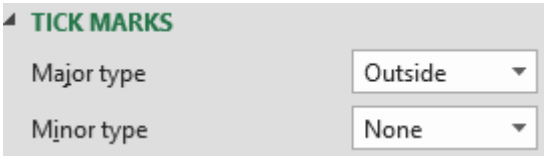


Reverse order

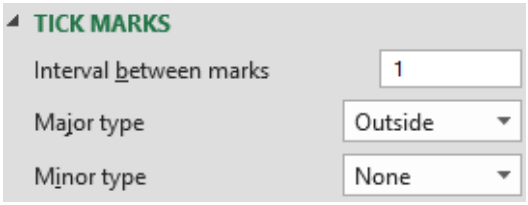
The order is reverse. *For instance, a column chart will be represented from right to left, including axes.*

5.5.2 Tick Marks

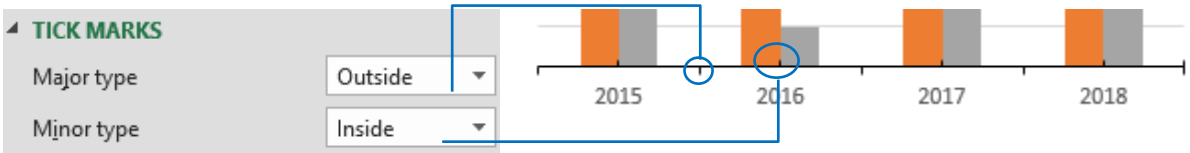
Date axis

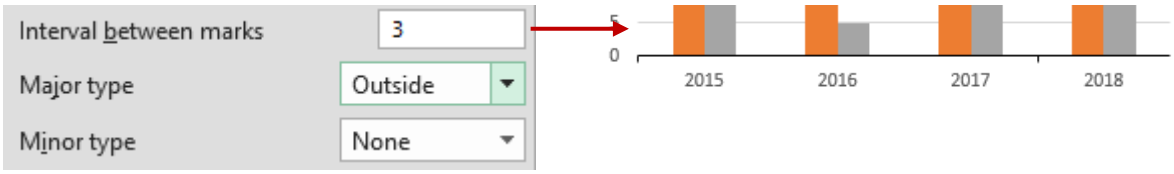


Text axis



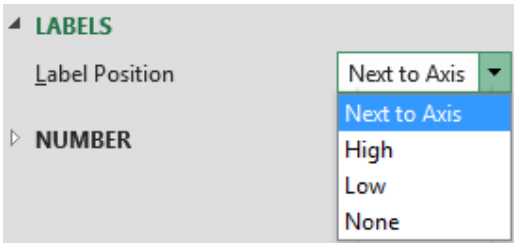
The axis can display small “bars” to show the graduation.
(By default : outside for a date axis – no mark for a text axis).



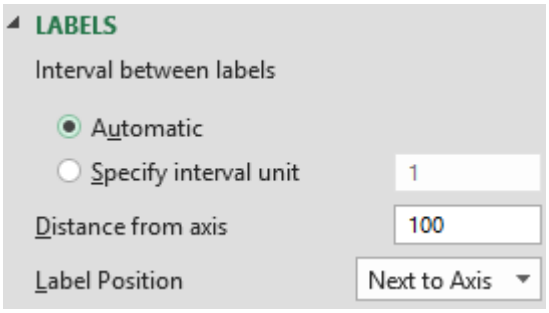


5.5.3 Labels

Date axis



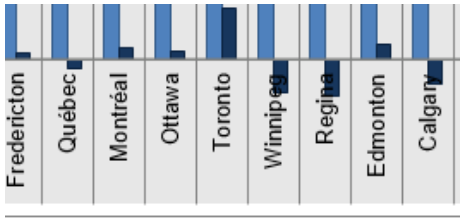
Text axis



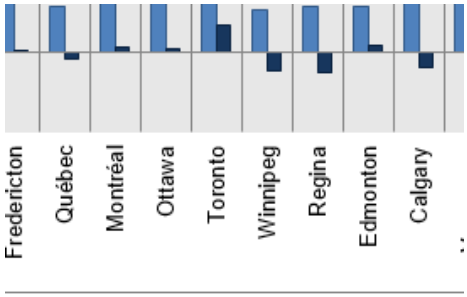
Label Position Position of the labels on the axis.

Low : a usual case : a column chart with negative values for some series.

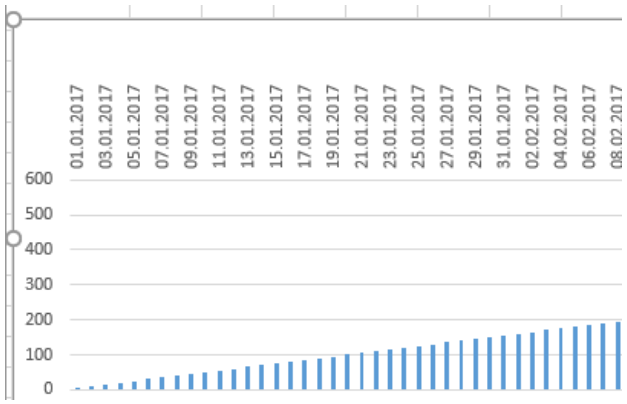
Normal (Next to Axis)
(but with major gridlines added)



Low



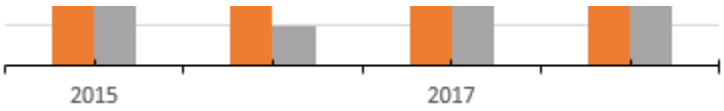
Haut
(the tick marks have been removed because they are left “alone” on the horizontal axis at the bottom of the chart)



For a text axis

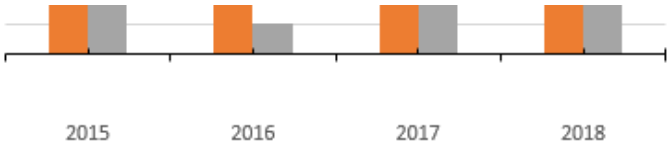
Interval between labels

You can display only one label every 2 or 3 (here every 2)

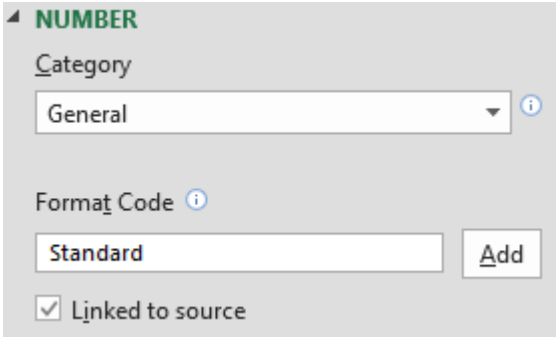


Distance from axis (option only when the categories are not dates)

A value from 0 to 1000. *Cautin, the number seems very large but the real distance is not at all. Her below a distance set at 800*

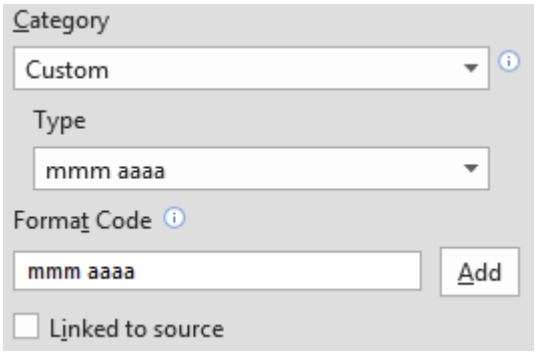


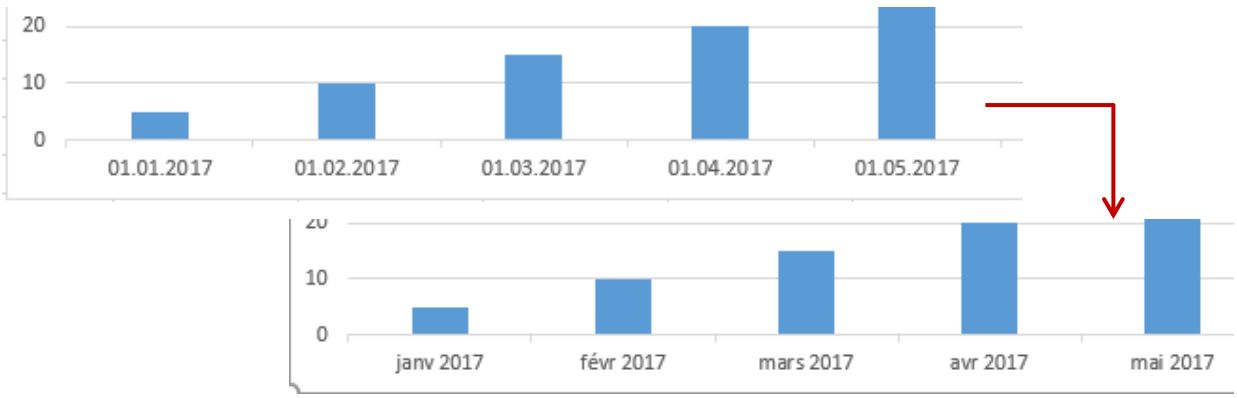
5.5.4 Number



The usual Excel number formats.
See explanations at page 25

Here below an interesting custom format for a date horizontal axis :

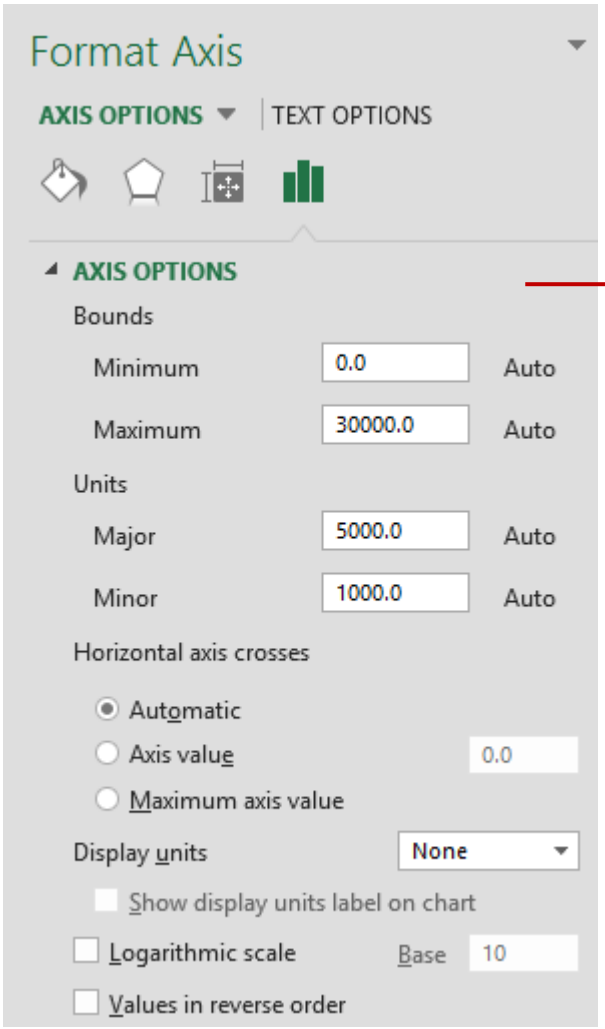


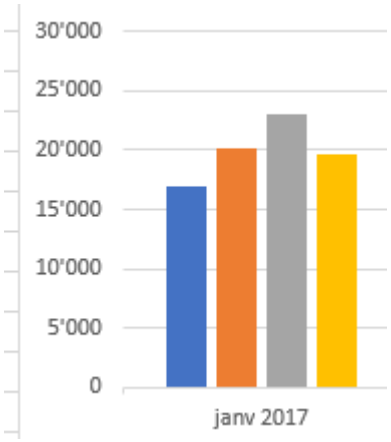


5.6 Y Vertical axis

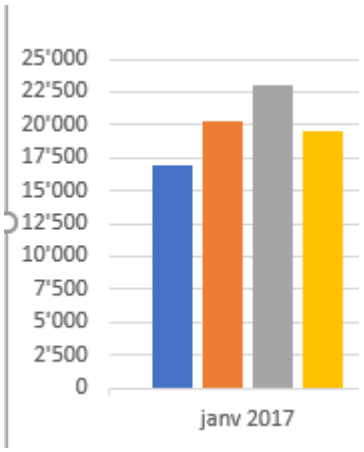
The options are very similar to those explained for the X horizontal axis

5.6.1 Axis Options



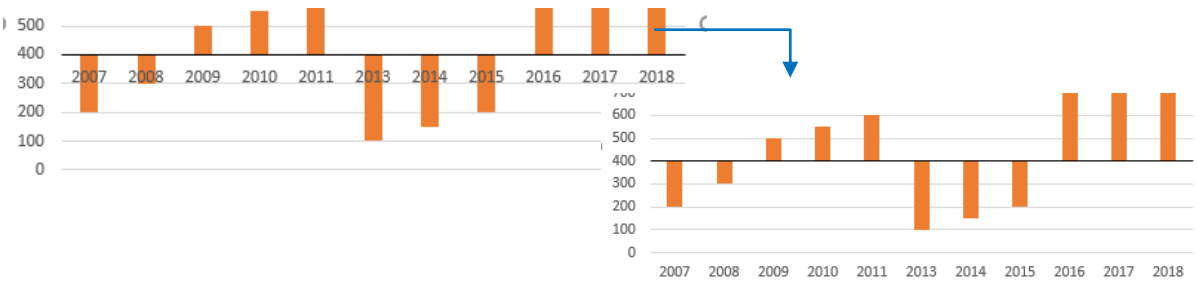


Setting the maximum at 27'000 and the major unit at 2'500 :



Horizontal axis crosses

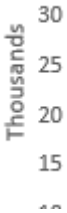
Make your choice. Caution, if you cross at a higher value than the automatic one will show the figures below this crossing value as « negatives ». Series then overlap the category labels which is not very esthetic unless you set these labels as *Low*.



Display units

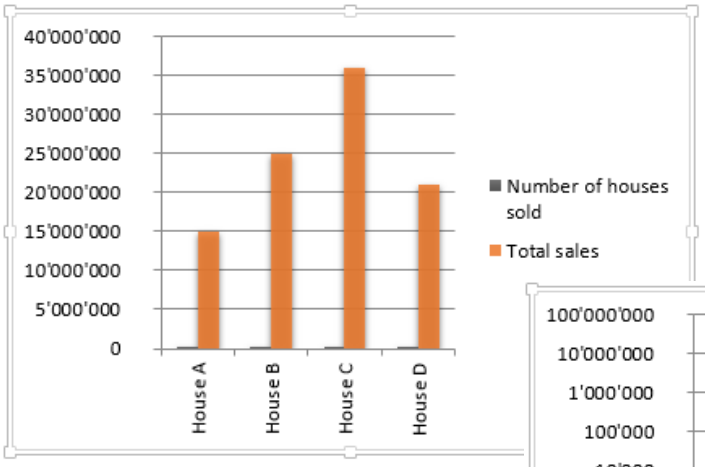
Very handy when the figures are high and use up too much space next to the axis.

As soon as you choose a type of unit, a little informative text box will be displayed next to the axis.

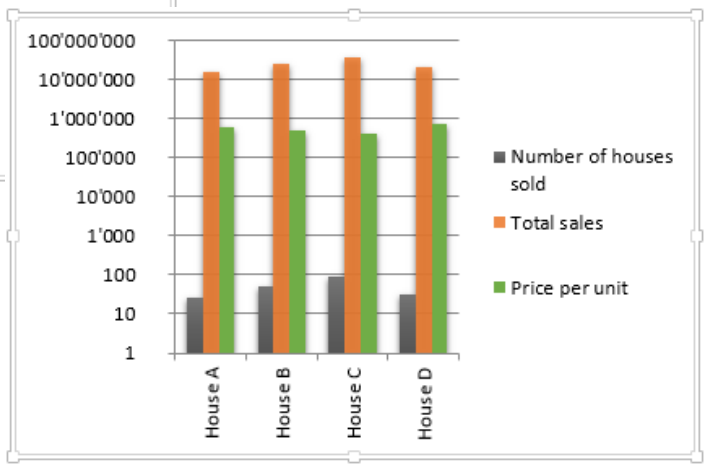


Logarithmic scale

Usual case : the series figures are in total disproportion (hundreds and millions for example). With a "standard" chart the « small » series are on the « floor », hardly visible



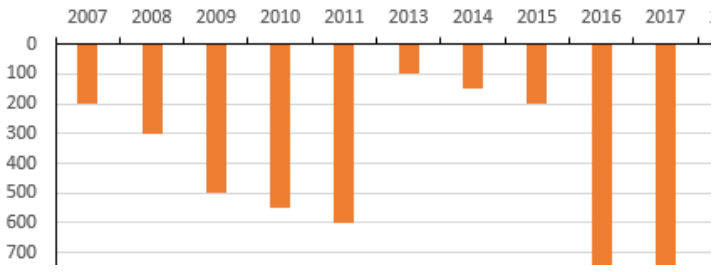
The same chart but with a logarithmic scale – basis 10 and having also added a series :



You can also set a secondary axis.
See chapter on this subject

Values in reverse order

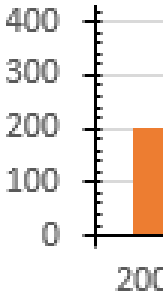
Caution : the result might surprise you. The horizontal axis will automatically be placed at the top of the chart. The vertical axis will have to be read from top to bottom. Quite rare



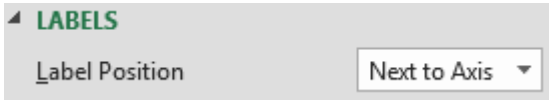
5.6.2 Tick Marks

Position on the axis

Here : outside and inside

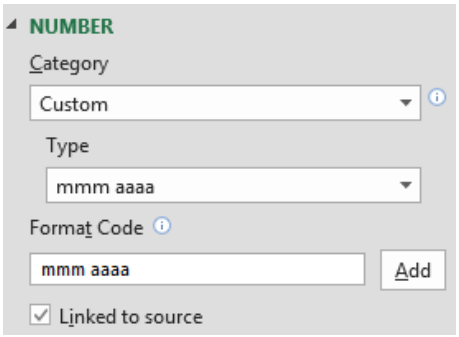


5.6.3 Labels



Position of the labels. The effect will depend on the type of chart. For a column chart *High* will show them at the right end of the chart.

5.6.4 Number

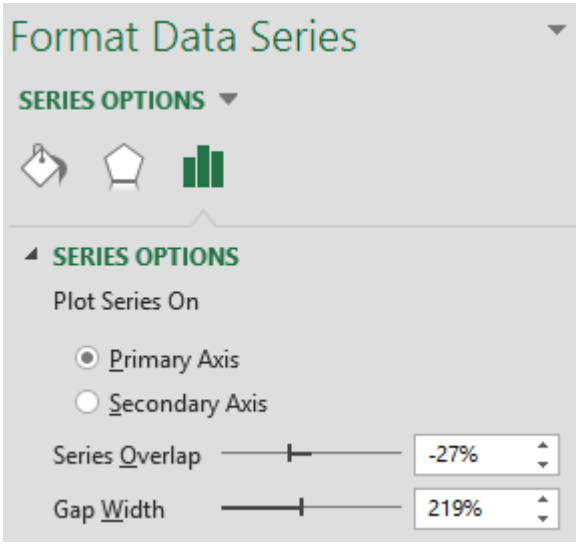


The usual Excel number formats.
See explanations at page 25

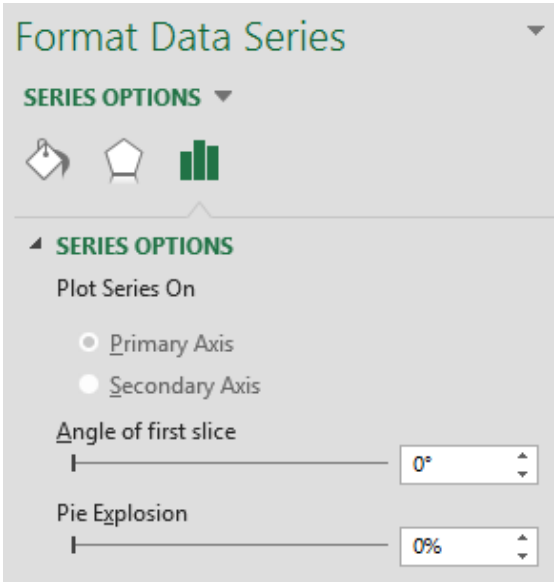
5.7 Series

Some options depend on the type of chart.

Column (selecting a data-point or a series)



Pie (general selection and not just a slice)



If you select a slice, the option changes to *Point Explosion*

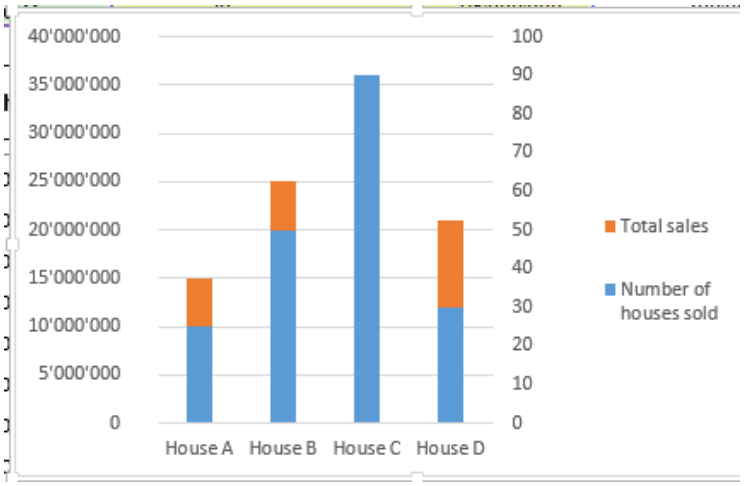
5.7.1 Primary and Secondary Axis

Available for a fair number of charts but more common with columns

You can add a secondary axis when series figures are in total disproportion (hundreds or thousands versus millions for example). The series with the « small » figures are often invisible or at best « on the floor ». As previously explained, it is possible to work with a logarithmic scale but another alternative is to add a secondary axis to the required series.

After having added the axis to the *Number of houses sold* series

Use the drop-down list of FORMAT Tab – CURRENT SELECTION

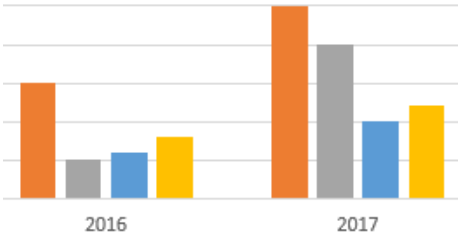


The *stacked* series was modified into a line for a better readability.

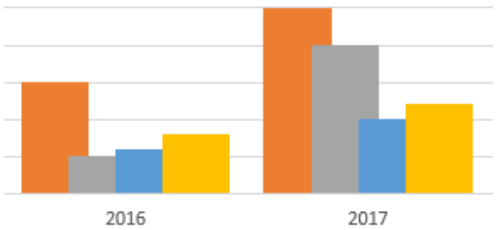
In fact you « cheat » : the left eye should read the axis on the left for the sales series while the right eye should read the number of houses sold

5.7.2 Series Overlap & Gap Width for a column, Angle & Explosion for a pie

Standard column



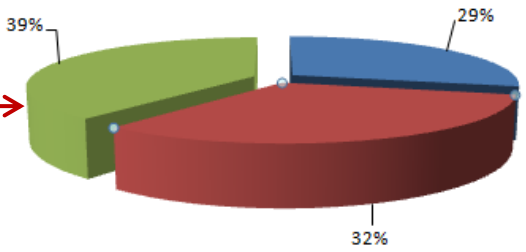
Example with 30% and 50%



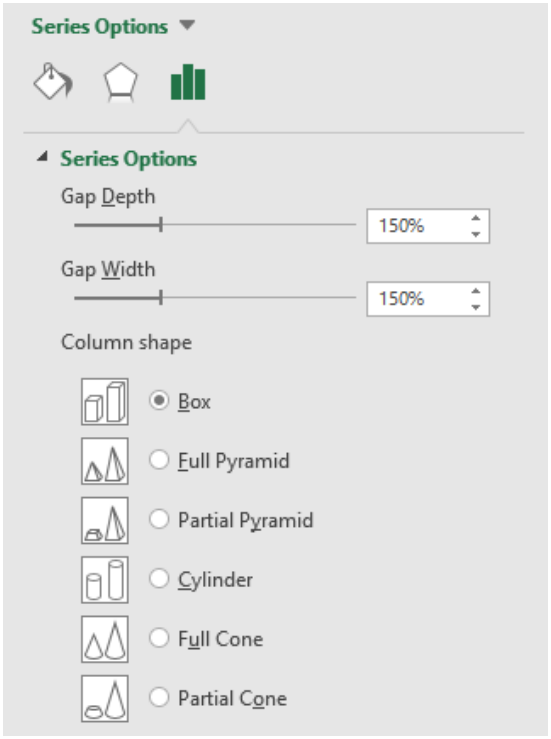
Angle of first slice : set a value to bring a given slice « in front of you ».

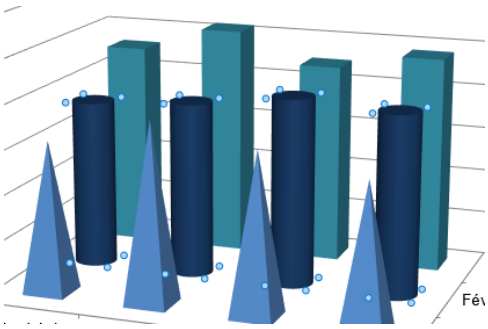
Sample for a general pie explosion of 10%

For one slice : it easier to select and drag it



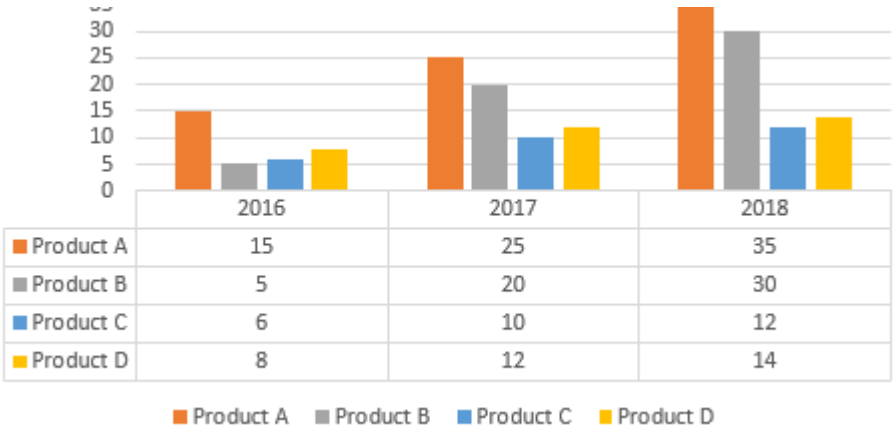
5.7.3 Pyramid or cone shapes

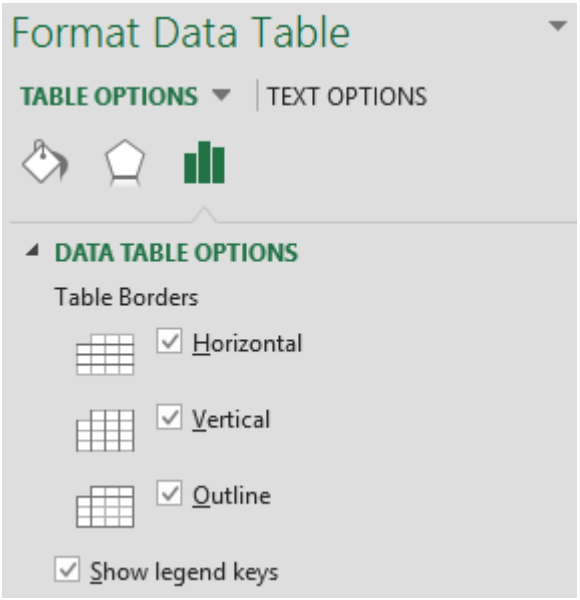




5.8 Data Table

Add a data table to insert the source data directly inside the chart.
Advice : add the data table to a full page chart rather than to an object chart..





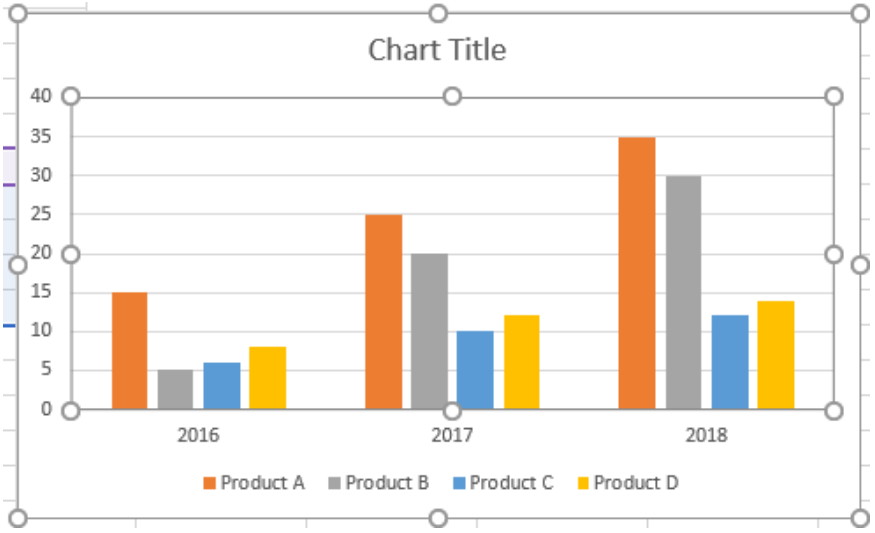
As you can notice : not many options
You can only work on the table borders and the legend keys.

Adding the data table is only possible for column, bar, line, area and stock charts. It is not possible for pie, scatter, radar, surface and bubble charts.

5.9 Plot area

If selecting the plot area is difficult, use the drop-down list of FORMAT Tab – CURRENT SELECTION Group.

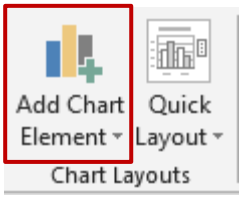
Sizing the plot area can prove very handy as it enables you to select the chart only and not the full chart object. *Can be useful with pie charts.*



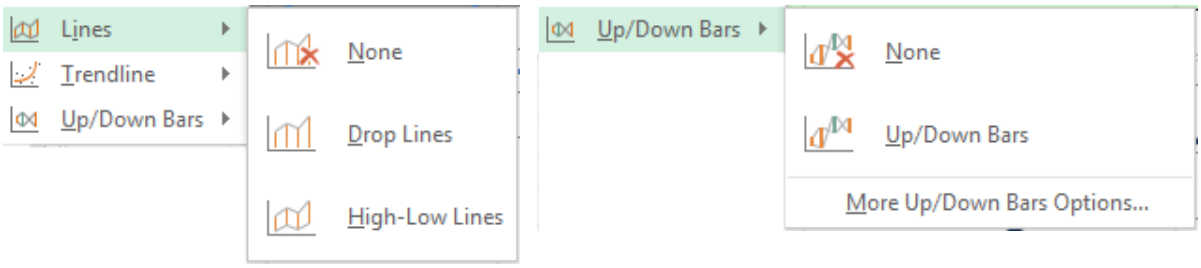
6 Adding lines, bars, error bars and trendline

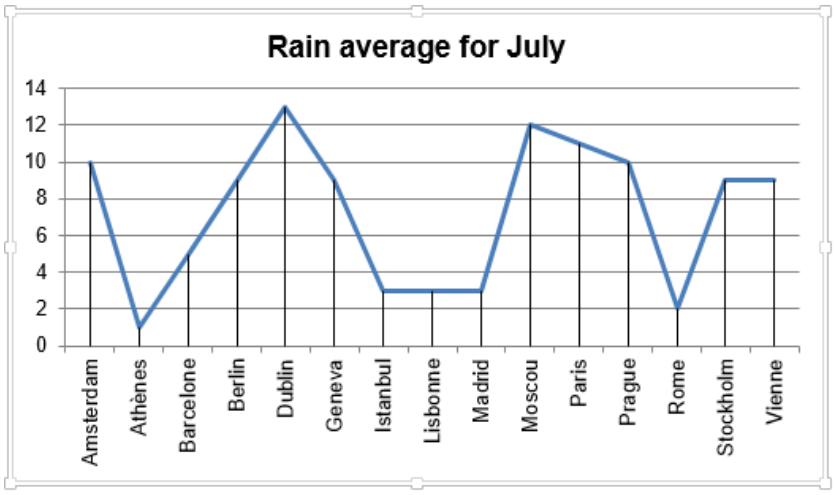
DESIGN Tab – CHART LAYOUTS Group – Drop-down list of the button ADD CHART ELEMENT

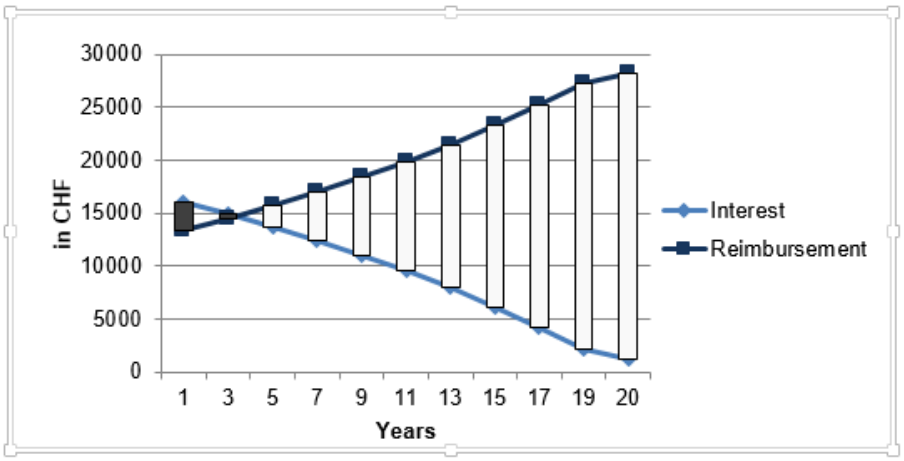
Also if yo click on the button (top right end of chart) but the list if not as complete



6.1 Adding projection lines to a chart (line type)





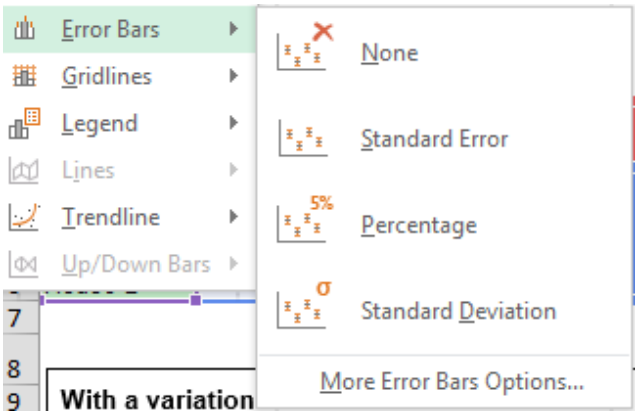


The buttons are not available if the chart type is different.

Remove : click on a bar and press the DEL key

6.2 Adding error bars

Error bars are a visual hint given to the chart reader that the series *actual* figures could fluctuate. Here below the possibilities :

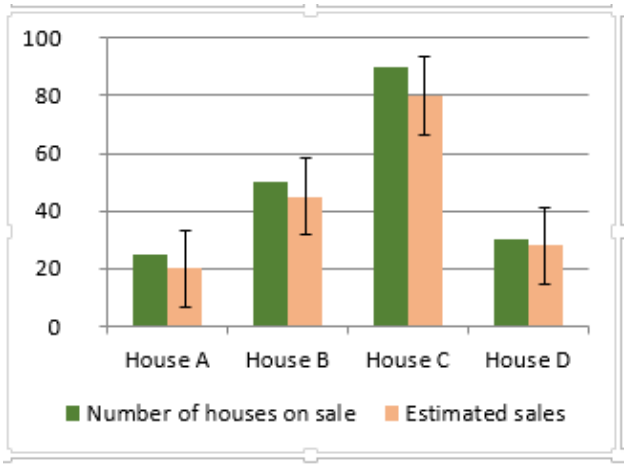


Standard Error
Variation of n *units* from the data point. Default variation = 10

Percentage
Variation of 5% from the data point.

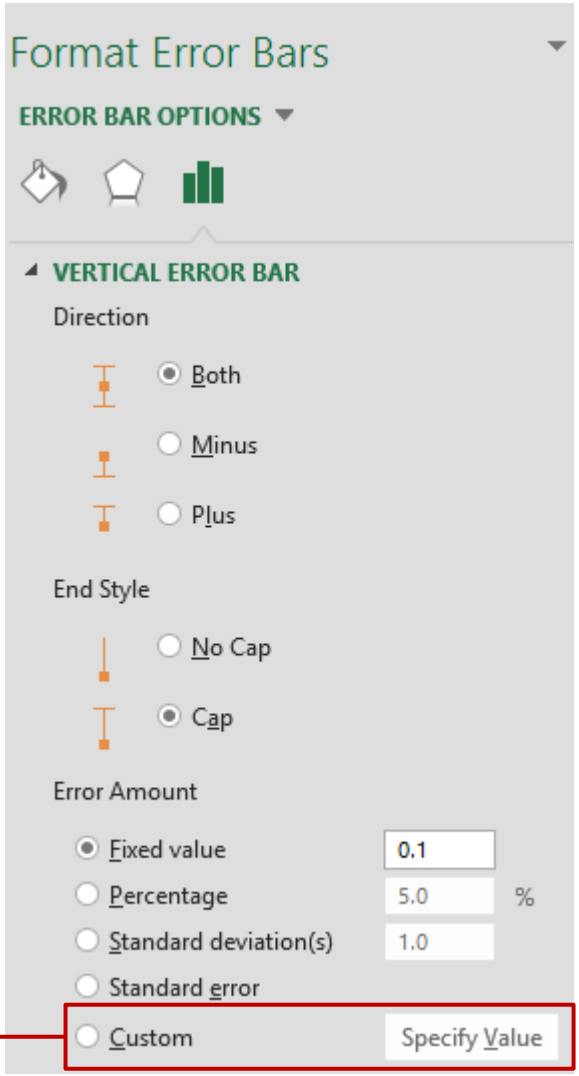
Standard Deviation
For stats

Standard Error (10 by default)

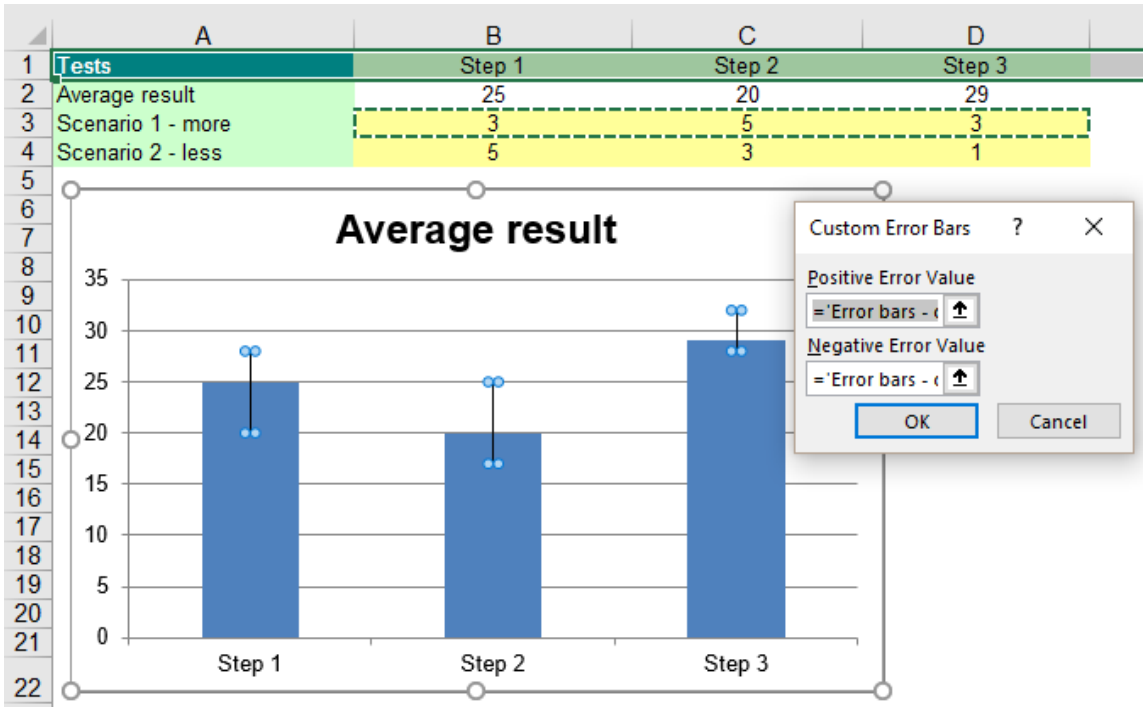


Percentage (5% by default)

The default values can be modified by clicking on the MORE ERROR BARS OPTIONS at the bottom of the drop-down list :



The bars can be customized :
check on the CUSTOM option and click on SPECIFY VALUE :

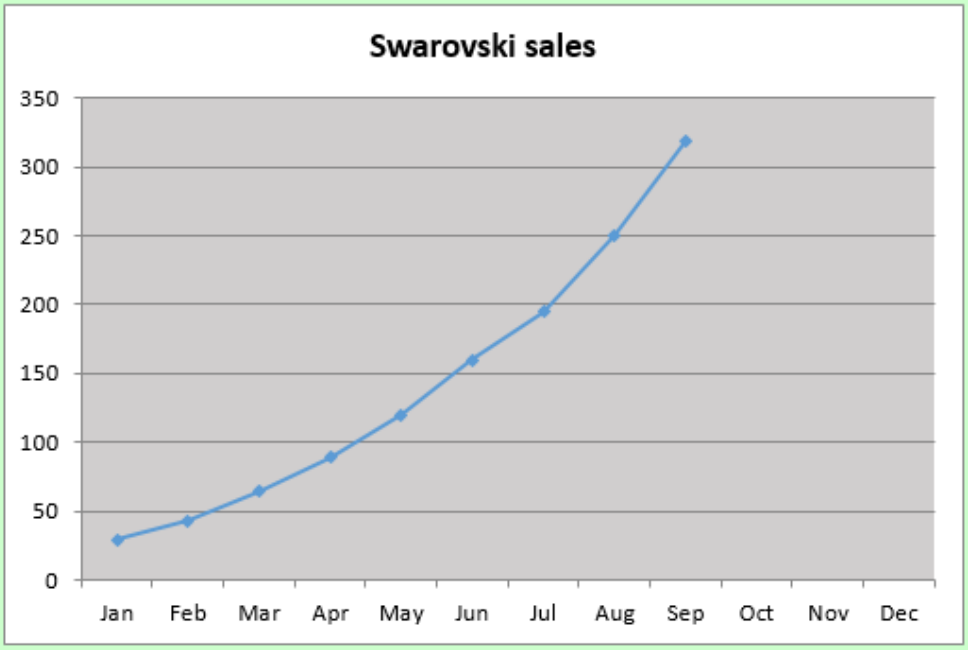


Remove : click on the lines or bas and press the DEL key

6.3 Adding a trend line

Let's state from the very beginning that trend lines are on the math side and are used in specific cases only. Here after a "simple" explanation : a trend line is used to depict trends in your existing data or forecasts of future data. You can extend a trend line in a chart beyond the actual data to predict future values (the current figures are used to calculate the future "missing" values).

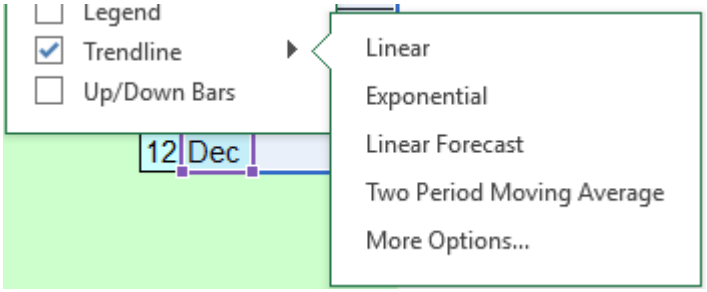
Here below a good whose sales are subject to market trends :



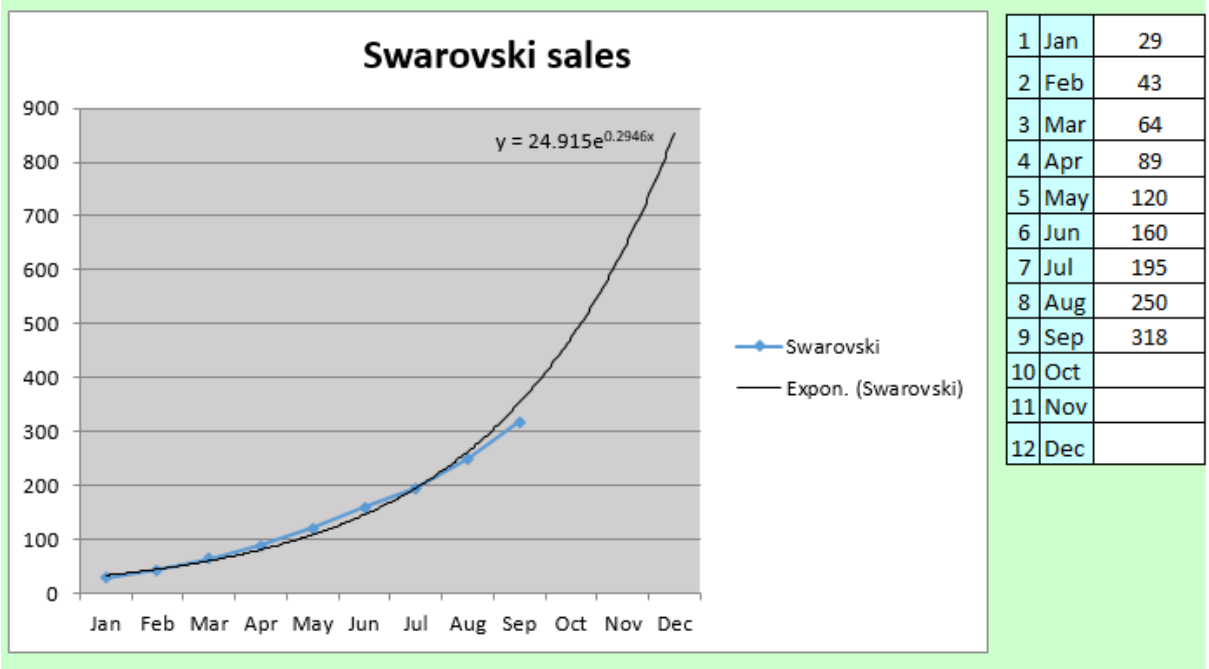
1	Jan	29
2	Feb	43
3	Mar	64
4	Apr	89
5	May	120
6	Jun	160
7	Jul	195
8	Aug	250
9	Sep	318
10	Oct	
11	Nov	
12	Dec	

Provided the "fashion" lasts, what will be our next 3 months sales ?

Here after the drop-down list of the UP/DOWN BARS button :



Here below our sales – we have chosen *Exponential*



1	Jan	29
2	Feb	43
3	Mar	64
4	Apr	89
5	May	120
6	Jun	160
7	Jul	195
8	Aug	250
9	Sep	318
10	Oct	
11	Nov	
12	Dec	

As you can see, the trend line can display the corresponding mathematical equation (one setting of the MORE TRENDLINE OPTIONS command)

The classical question from people not too familiar with maths : why does the trend omit to display the figures ? Answer : the figures have to be calculated using the equation !

Here after an equation for a linear trend line. $y = 0.170x + 0.875$
Are you good at algebra …. ? $R^2 = 0.980$

Remove : click on the trend line and press the DEL key

7 Formatting the active element

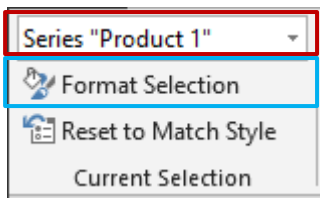
7.1 Working with the FORMAT Pane or the FORMAT Tab

7.1.1 Format Pane

❶ Double-click on the element such as an axis, a series …
The Pane will be automatically displayed

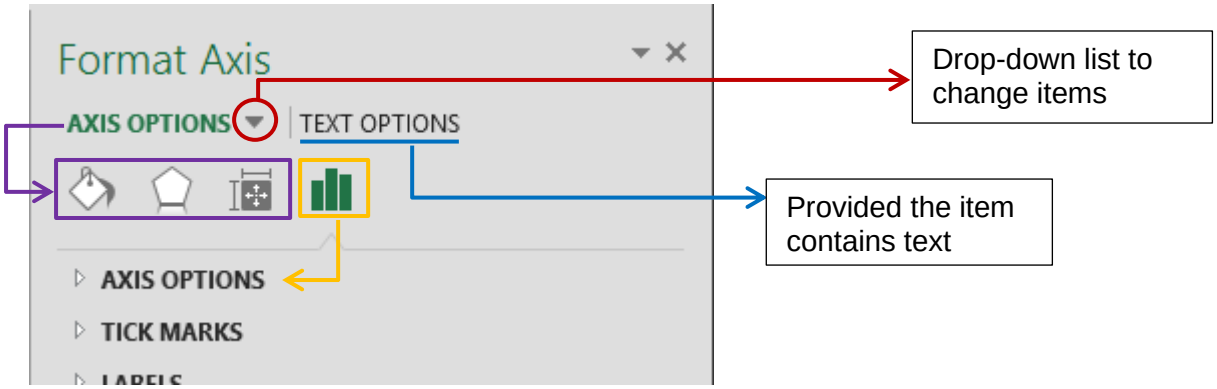
❷ *FORMAT Tab – CURRENT SELECTION Group*
Select from the drop-down list

Then click on FORMAT SELECTION …



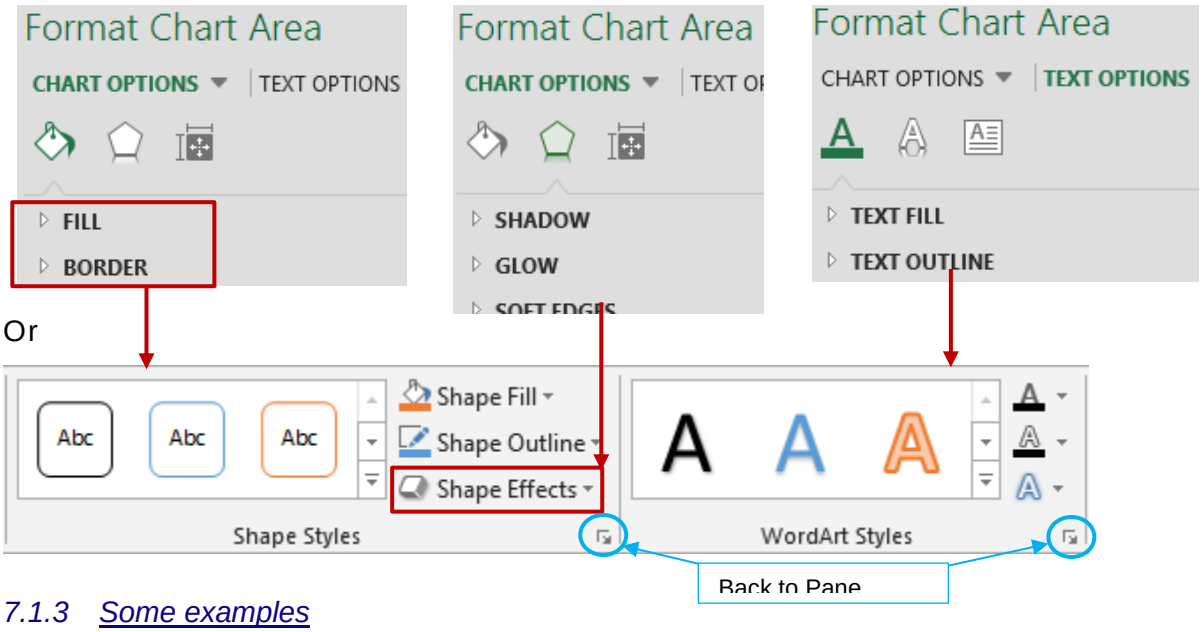
❸ *The MORE OPTIONS option (from the drop-down lists – page 14*

Here below the Pane opened for the vertical axis (all sections are collapsed)



7.1.2 FORMAT Tab

The usual commands common to the 2007-2010-2013 interface are available and identical. Here below some corresponding commands :

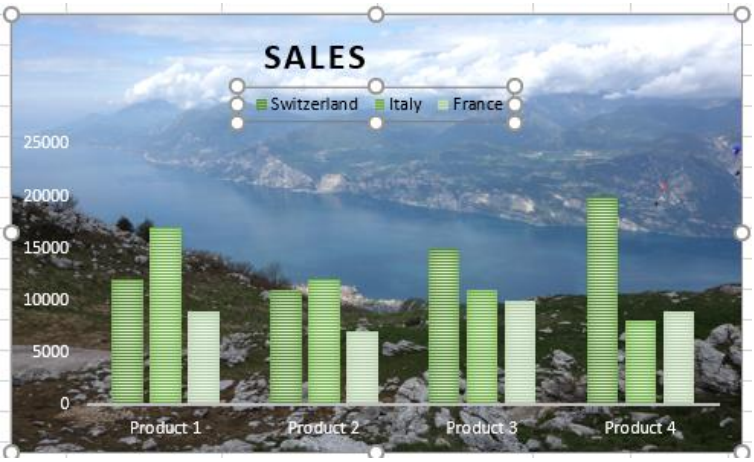


7.1.3 Some examples

/ Fill - Picture

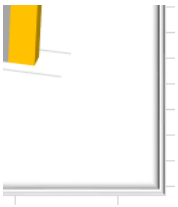
The chart title, the series have been formatted.

A picture has been set for the background. This source picture can be a file, the content of the clipboard or even an online picture.



/ Effects - Bevel

Use the FORMAT 3D option to add interesting effects such as this ….. border



/ WordArt Styles

Font color, shadow, reflection, glow and so on.

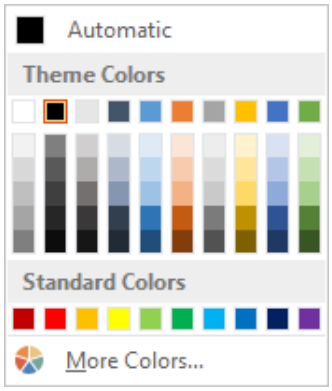
7.2 When a modification implies changing a color

7.2.1 105B*Default colors*

The colors are those of the active theme.
To check the theme and its associated colors, fonts and effects :

PAGE LAYOT Tab – THEMES Group

When you set a color, you can choose from the following tear-off :



7.2.2 106B*Theme Colors*

The color is « dynamic ». If you assign a new theme to the workbook, the color will be automatically updated

7.2.3 107B*Standard Colors*

These are basic colors, « not dynamic » because are not related to themes

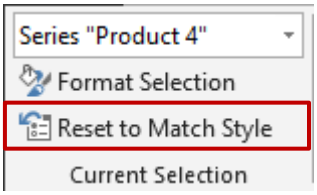
7.2.4 108B*More Colors*

« non dynamic » colors. Access to the colors dialog box and its two tabs. STANDARD displays the usual colors hexagon (polygon with 6 sides) and CUSTOM gives access to the RGB (red-green-blue) boxes to create a custom color.

7.3 FORMAT Tab : how to reset to the default settings

- Select the element
- FORMAT Tab – CURRENT SELECTION Group – RESET … Button

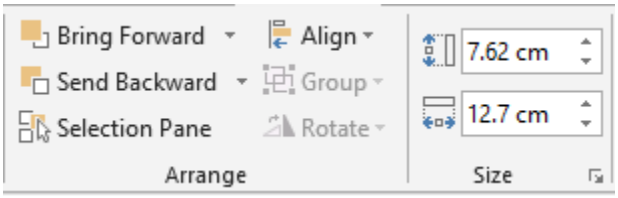
The chart title on the previous page :



7.4 FORMAT Tab : Foreground and Background, Selection Pane, Alignment, Size and Chart Properties

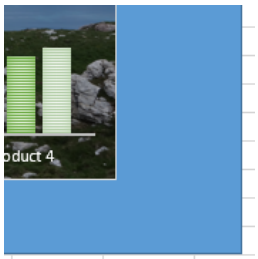
7.4.1 Arrange group

The ARRANGE and SIZE groups



Bring to Front
Sent to Back

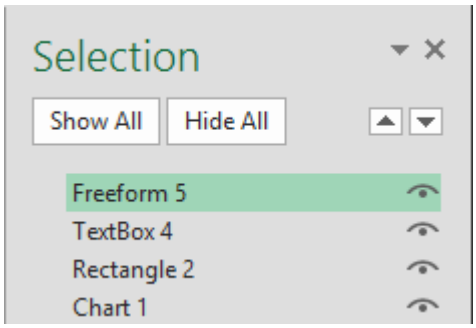
To set the chart position when they are other « floating » objects on the worksheet



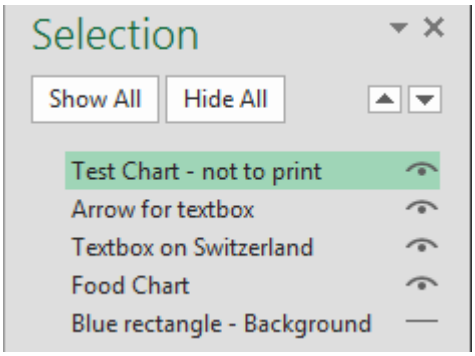
Selection Pane

Caution : it affect the chart but also any other graphic object on the worksheet. It also impacts screen display as printing.

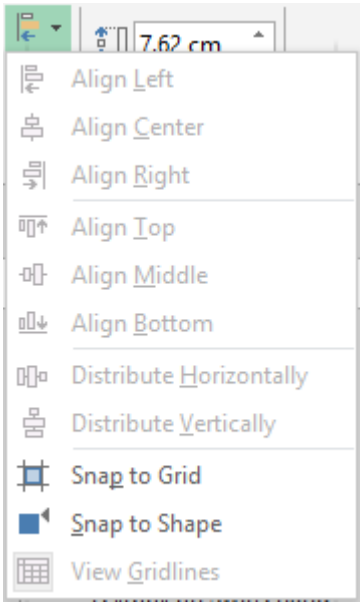
A selection pane is displayed on the right of the Excel window and the *eye* button hides or shows the selected element.



<u>Interest</u> : when the worksheet is crowded with graphic objects you end up not knowing what is what … In the Selection Pane you can double-click an object and rename it. Example :



Drop-down list of Align



Usually the commands of this list are related to drawn shapes. That is why most options are not available. Except SNAP TO GRID and SNAP TO SHAPE (not on by default).

The grid is an invisible network of lines that covers the screen. As you draw objects, their corners align on the nearest intersection of the grid. Although you cannot see the grid, it automatically helps align objects. If you release the mouse button and the shape, chart … automatically « jumps » one or two millimeters it means that the grid is active.

Snap to shape means that the shape sides become slightly attractive to help you align a drawing on the vertical or horizontal lines of another drawing.

7.4.2 Size group

Size in cm

Indicate the height and width in cm. As it is not a picture, there is no proportionality issue, so you can work height and width separately.

Dialog box launcher

The FORMAT PANE is displayed at SIZE and PROPERTIES

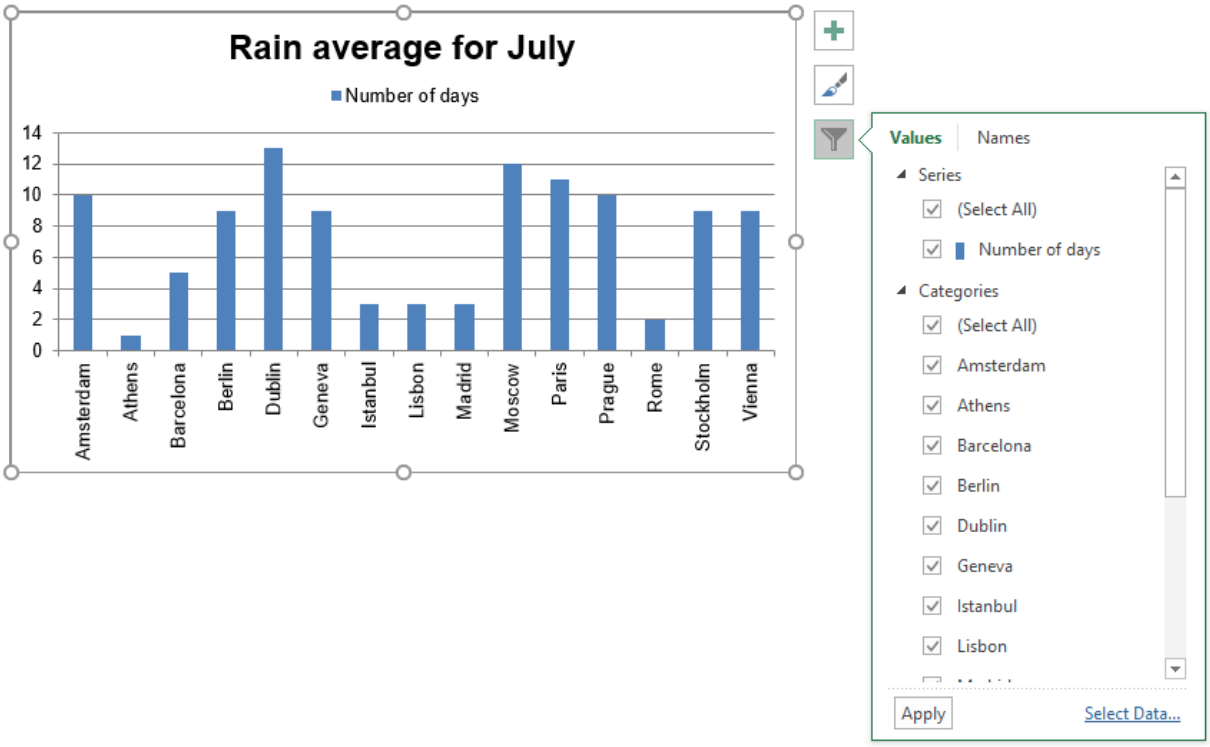
Size : you can set that you need to keep the ratio for the chart or the drawin shape

Properties : to manage the links between the chart or the drawn shape and the underlying cells.
See explanations at page 22

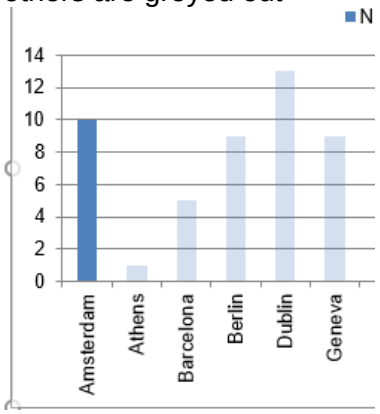
8 Filtering some elements from the chart

It is the funnel button

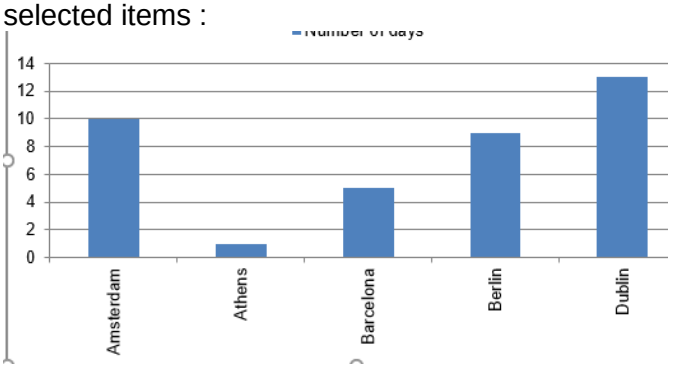
The following list will be displayed :



If you **point** one element, then the others are greyed out



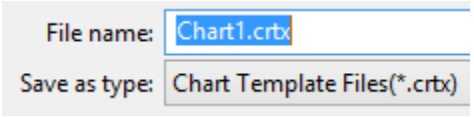
If you **tick off** elements and then you click on the **APPLY** button, then the chart only displays the selected items :



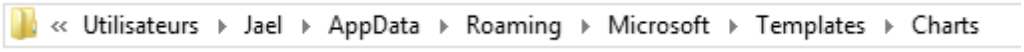
9 Creating a template (customization)

9.1 Saving a chart as a template

- Set the chart as required
- The DESIGN and FORMAT Tab do not display any corresponding command. You need to right click the chart and select the SAVE AS TEMPLATE command.
- A dialog box like a standard File-Open will be displayed
- Give a name to your template



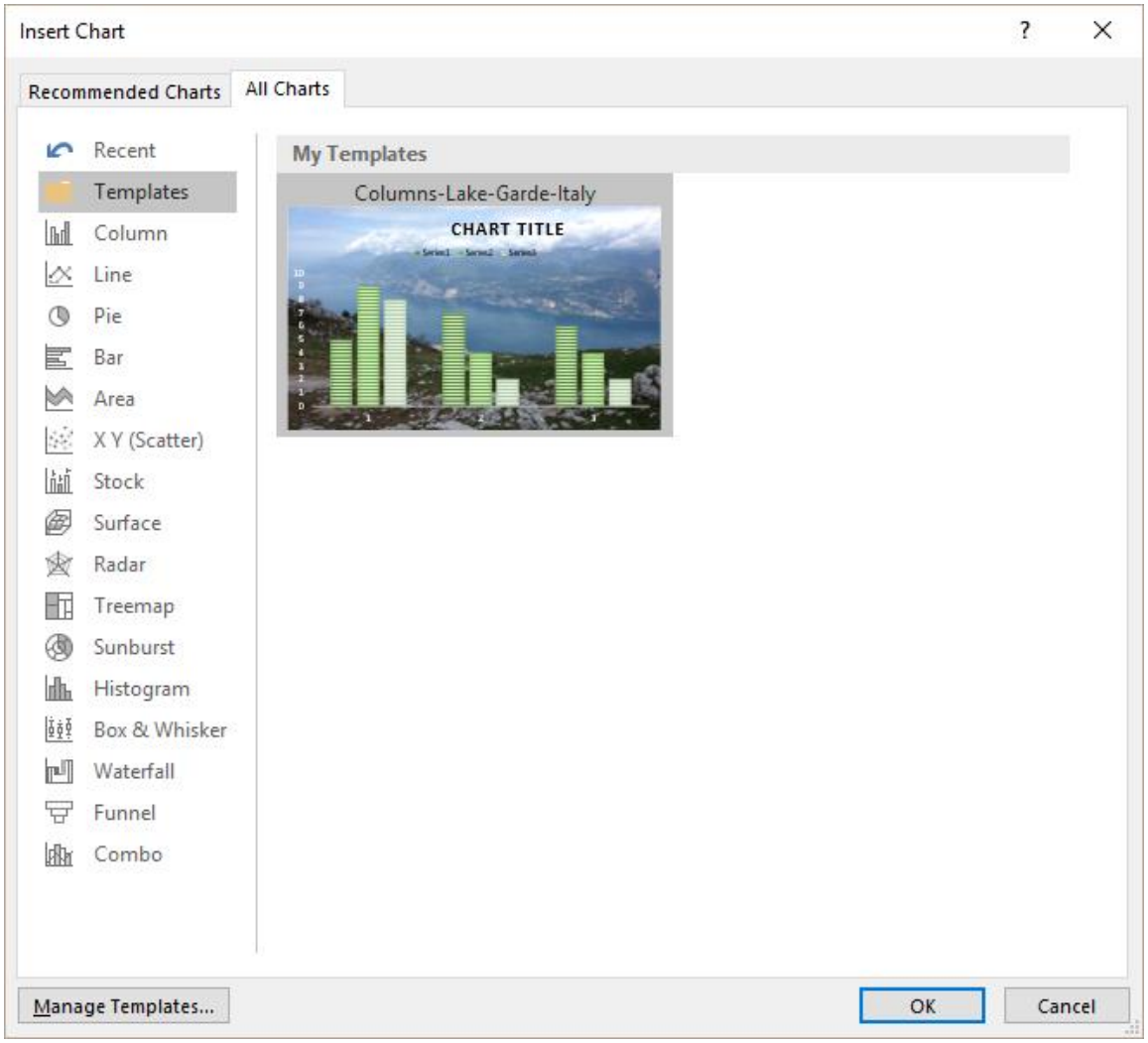
The default path on C :



What will be saved : the type of chart, the colors, whether there are titles, axes, a legend …

9.2 Creating a chart based onto a template

- Select the data
- Display the dialog box with the ALL CHARTS Tab
  Either through the quick analysis tag and MORE CHARTS or through INSERT – RECOMMENDED CHARTS etc …
- Category TEMPLATES



9.3 Managing templates

- MANAGE TEMPLATES button
- The Windows Explorer will open and display the folder containing the template : delete, copy, rename …

10 Printing the chart

Your selection = any cell on the current worksheet
You will print *the worksheet* and consequently its chart object.
Setup values as usual

Your selection = the chart or a full page chart
You will print the *chart* only and it will cover an entire page.

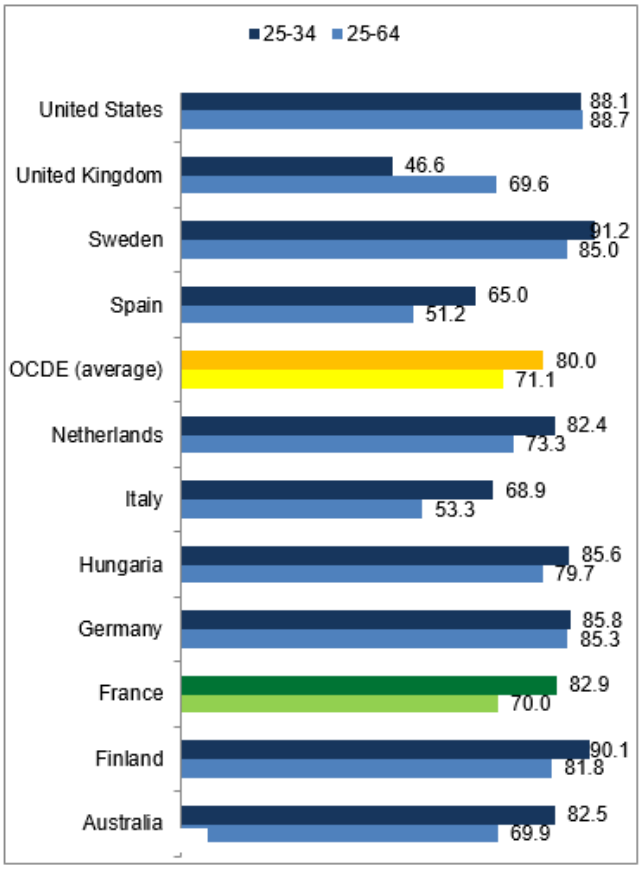
11 Less common chart types : examples

11.1 Bar chart

Part of active population (25-64 and 25-34) with a diploma of secondary cycle (2008)

In %	25-64	25-34
Australia	69.9	82.5
Finland	81.8	90.1
France	70.0	82.9
Germany	85.3	85.8
Hungaria	79.7	85.6
Italy	53.3	68.9
Netherlands	73.3	82.4
OCDE (average)	71.1	80.0
Spain	51.2	65.0
Sweden	85.0	91.2
United Kingdom	69.6	46.6
United States	88.7	88.1

Hints
Add data labels (Outside End)
Remove gridlines (click and DEL)
Remove horizontal axis (click and DEL)
Apply special colors to France and OCDE

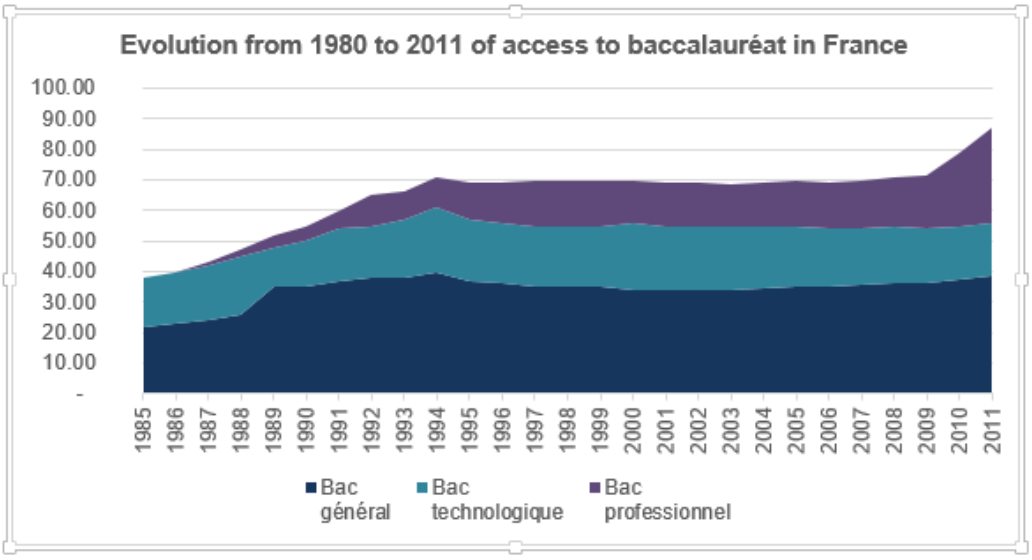


11.2 Area chart

In %	Bac général	Bac technologique	Bac professionnel
1985	22.00	16.00	
1986	23.00	17.00	
1987	24.00	18.00	1.00
1988	26.00	19.00	2.00
1989	35.00	13.00	4.00
1990	35.00	15.00	5.00
1991	37.00	17.00	6.00
1992	38.00	17.00	10.00
1993	38.00	19.00	9.00
1994	40.00	21.00	10.00
1995	37.00	20.00	12.00
1996	36.00	20.00	13.00
1997	35.00	20.00	15.00
1998	35.00	20.00	15.00
1999	35.00	20.00	15.00
2000	34.20	21.70	14.00
2001	33.90	21.10	14.20
2002	33.70	21.00	14.20
2003	33.90	20.70	14.20
2004	34.60	20.40	14.40
2005	35.10	19.90	14.70
2006	35.10	18.80	15.20
2007	35.50	18.60	15.80
2008	36.40	18.30	16.30
2009	36.50	17.90	17.00
2010	37.30	17.70	23.80
2011	38.50	17.10	31.60

source : Ministère Education Nationale
leaflet handed out to parents
around year 2004

source : INSEE - Internet on 23.10.2013



Hints

Area (preferably no 2)

Button SELECT DATA

- *remove extra series created for "In %"*
- *select the correct source range of cells for the years*

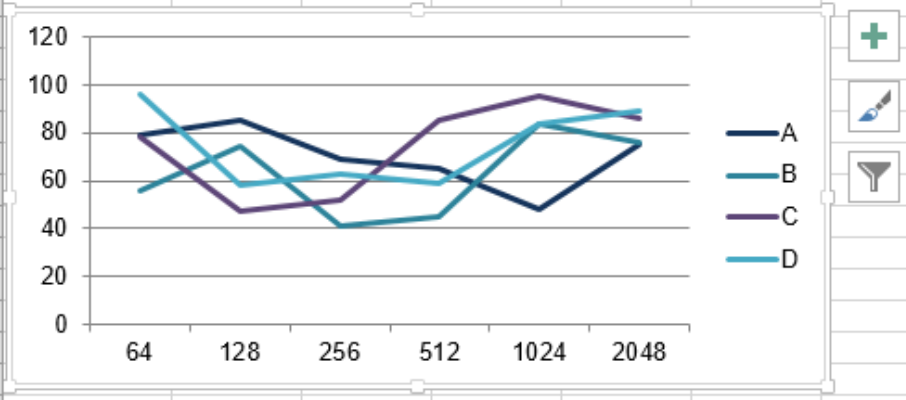
Horizontal axis : labels to align vertically

11.3 Scatter chart

Mainly used when the values of the category axix (X) are not *linear* (interval is not always *1 unit*).

	A	B	C	D	E	F	G
1	**Profitability**	**64**	**128**	**256**	**512**	**1024**	**2048**
2	**A**	79	85	69	65	48	75
3	**B**	56	74	41	45	84	76
4	**C**	78	47	52	85	95	86
5	**D**	96	58	63	59	84	89

Usual chart - X data is understood as linear values : FALSE !!!

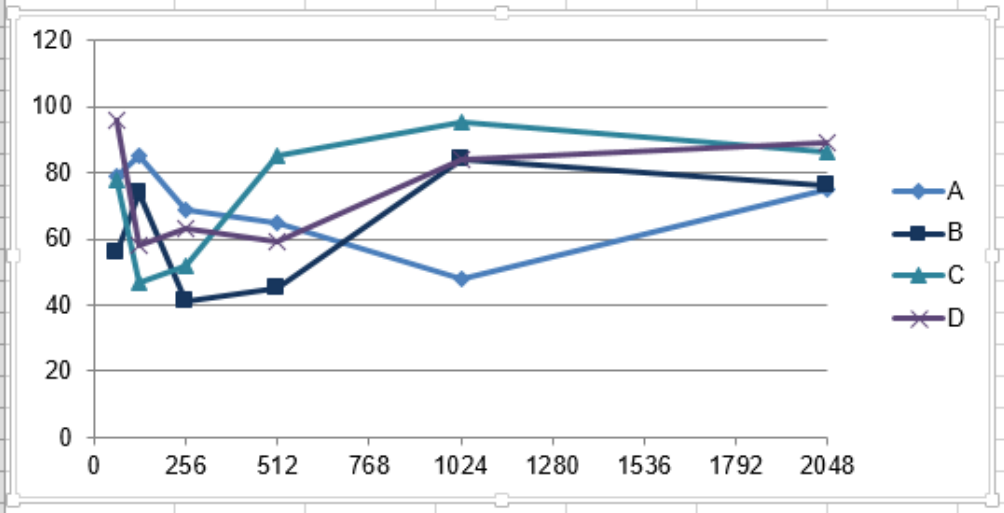


Caution

Excel understands PROFITABILITY as a series (remove it)

Category (X) axis labels are not read properly

Chart type SCATTER - X values are understood as logarithmic - OK ...



Caution

Choose type number 2 or 4 (to automatically add *Smooth / Straight Line and Markers*)

Work on the horizontal axis : max 2048 - major unit 256 (to show mutliple of 64)

*Caution : never type 64**K** - 256**K** ... in source data or the axis will be standard whatever the type of chart*

11.4 Radar chart

Used to compare data

Here below the data :

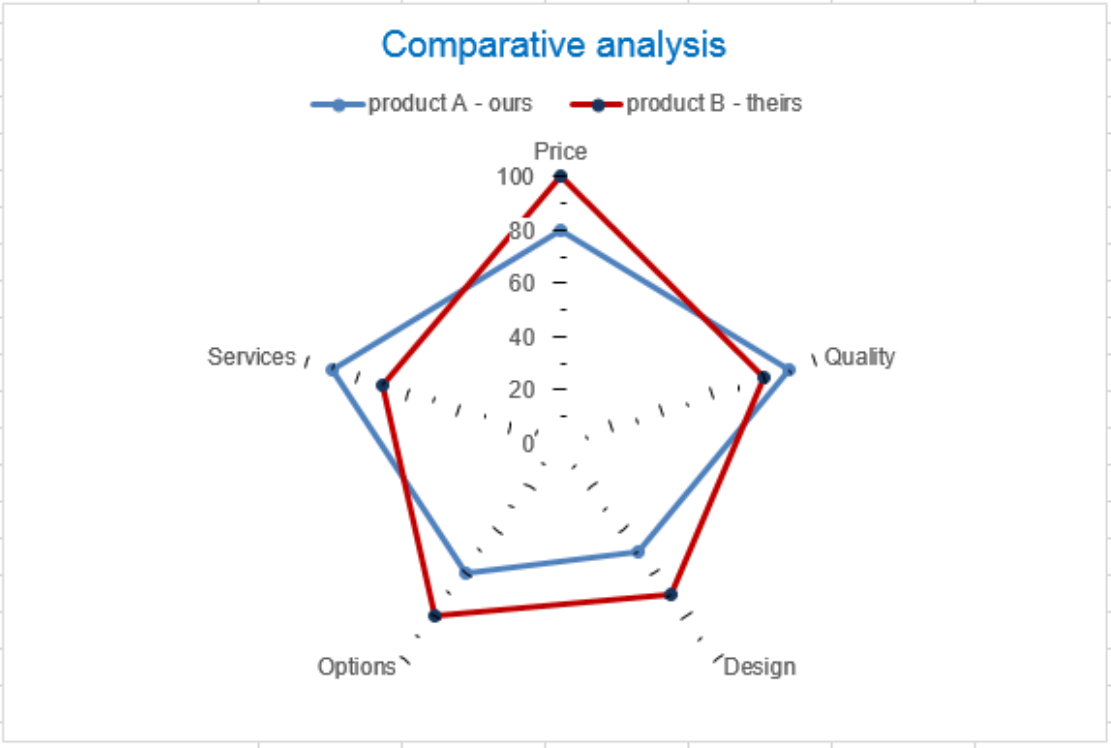
	Comparative analysis	Price	Quality	Design	Options	Services
product A - ours		80	90	50	60	90
product B - theirs		100	80	70	80	70

The figures can come from internal tests, evaluation questions to clients and so on...
The answers have been added and converted into percentages

Note : the same type of chart could be used for analysing people : work, adaptability, QI, performances ...

Here below the chart :

Analysis : The chart created using above figures will show whether the product price is slightly above market if we should improve our design and options ...



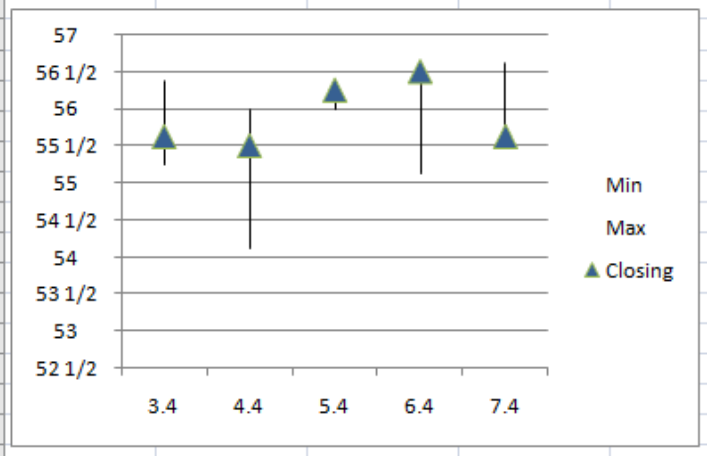
Hints

Radar type 2 (with markers)
Remove gridlines (if you don't, major tick marks don't display)
Vertical axis : major unit Fat 20 and minor at 10
No line for axis : did not succeed in adding it ...
Add tick marks - outside for major / insinde for minor

11.5 Stock chart

When data correspond to min-max-average values. Therefore not only for Stock Exchange values. Here after two examples :

Date	Min	Max	Closing
3.4	55 1/4	56 3/8	55 5/8
4.4	54 1/8	56	55 1/2
5.4	56	56 3/8	56 1/4
6.4	55 1/8	56 3/8	56 1/2
7.4	56	56 5/8	55 5/8



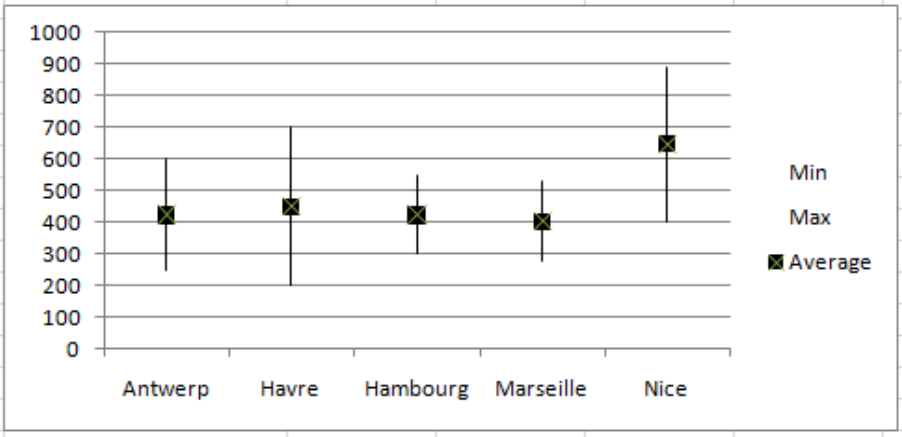
Caution : if Excel displays a message warning you about the order of the data, this means that your data do not correspond to the type of stock chart you have chosen. If you click on the OK button, no chart will be created. It is for instance the case if you select the chart type number 2 for the data of the screen capture. It has to be the number 1 type.

The marks for the Closing series are be default small and squares. They have been modified (shape and size)

Port productivity

Containers movements	Min	Max	Average
Antwerp	250	600	425
Havre	200	700	450
Hambourg	300	550	425
Marseille	280	530	405
Nice	400	890	645

= Uploading / Downloading / per hour

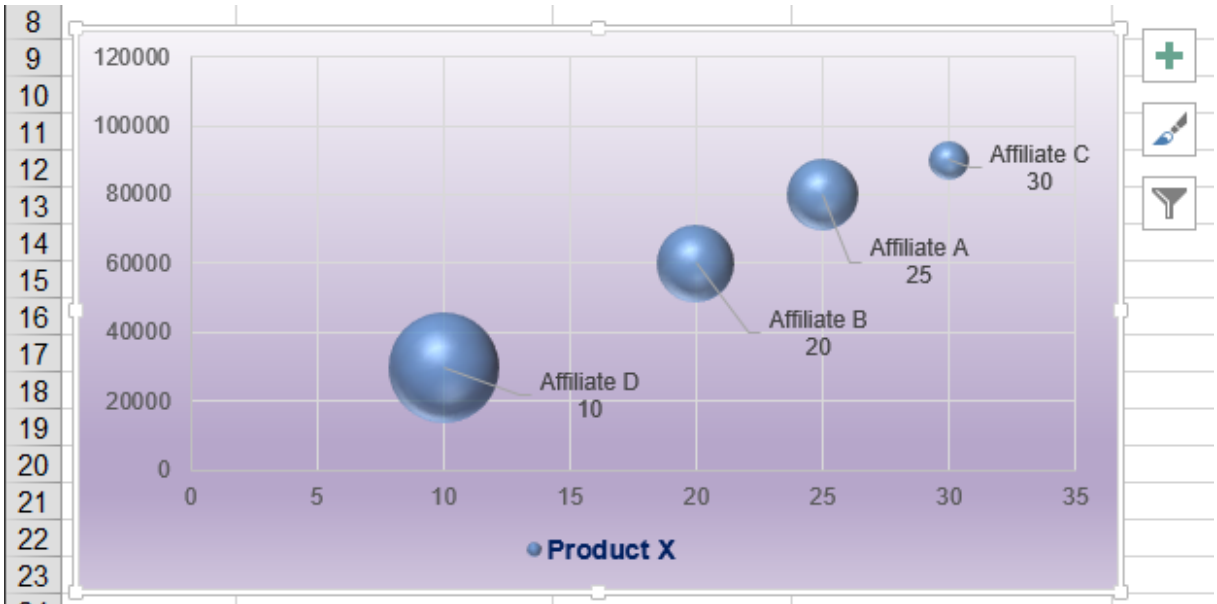


11.6 Bubble chart

Used to represent a series using 3 *dimensions instead of 2.*

Here below an example :

Affiliate	Number of products	Sales	Market position
A	10	80000	25
B	12	60000	20
C	3	90000	30
D	25	30000	10
	size	y	x



The chart clearly shows that the D Affiliate offers a fair number of products but does not really conquer the market in terms of sales or market position.

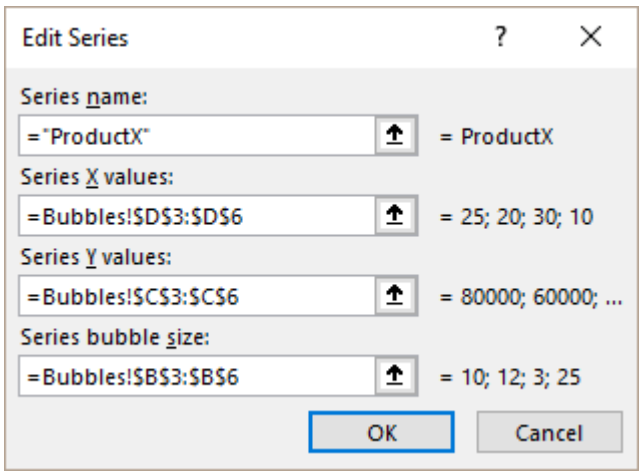
On the other hand, the chart indicates that the C Affiliate has limited its offer to fewer products and shows the best performance in terms of sales and market position.

Advice : to make sure the chart can be easily read and understood it is advisable to name all axes *(here Number of products for X and Sales for Y)*, to add labels (*here the bubble size, the Affiliates, both separated with a new line).*

Caution

Do not select anything because Excel will be lost anyway

- Choose to create a bubble chart with no selection and you will get an empty chart frame.
- DESIGN Tab – SELECT DATA Button – ADD Button. Delete whatever you be there
- ADD Button
- Build the series values **(there is one series with three values)**



It is up to you to decide what value will build the axes.
Here our choice was the following : X (market position), Y values (sales), size (number of products). *The rest is formatting and adding text boxes …*

11.7 New 2016 chart : Treemap

A treemap chart provides a hierarchical view of your data and makes it easy to spot patterns, such as which items are a store's best sellers.

The tree branches are represented by rectangles and each sub-branch is shown as a smaller rectangle.

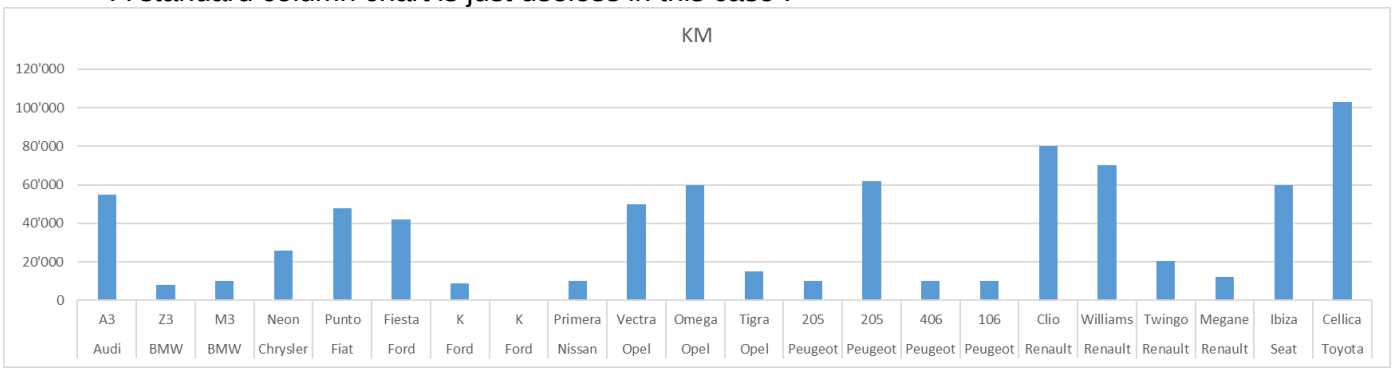
The treemap chart displays categories y color and proximity and can easily show lots of data which would be difficult with other chart types

However, if treemap charts are good for comparing proportions within the hierarchy, they are not great at showing hierarchical levels between the largest categories and each data point. A sunburst chart is a much better visual chart for showing that.

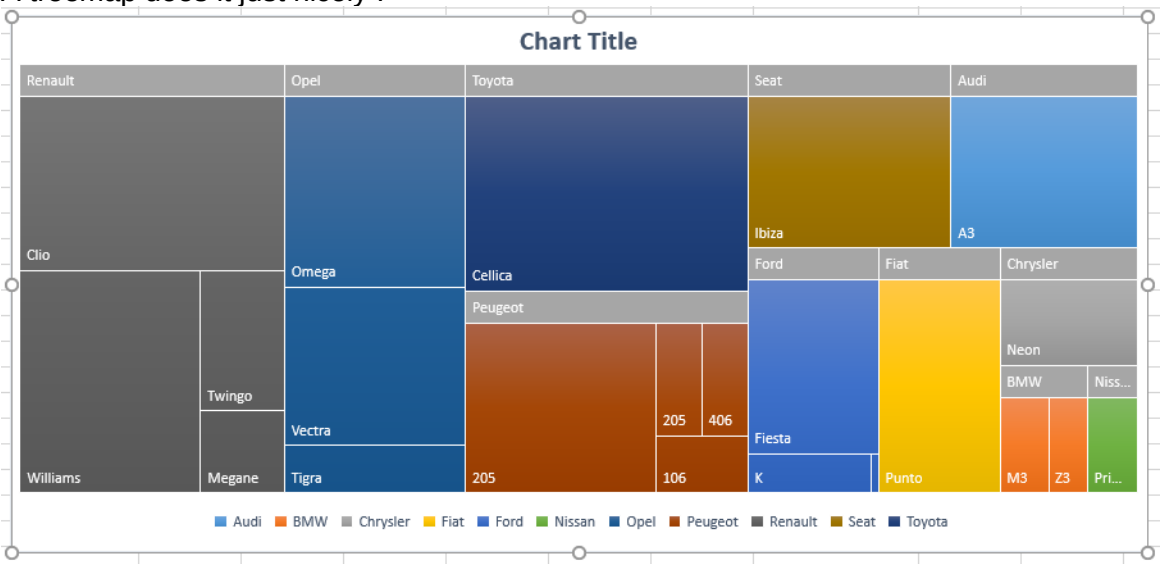
Example : in this table we want the number of km by brand and type of car to stand out :

Trademark	Type	Color	Year	KM	Price
Audi	A3	Violet	2015	55'000	25'000
BMW	Z3	Dark Blue	2016	8'000	39'000
BMW	M3	Black	2007	10'000	85'000
Chrysler	Neon	Blue	2012	26'000	34'000
Fiat	Punto	Red	2014	48'000	18'000
Ford	Fiesta	Grey	2012	42'000	8'500
Ford	K	Grey	2016	9'000	15'000
Ford	K	Grey	2010	500	60'000
Nissan	Primera	Green	2015	10'200	28'000
Opel	Vectra	White	2010	50'000	9'000
Opel	Omega	Black	2013	60'000	23'000
Opel	Tigra	Violet	2015	15'000	18'000
Peugeot	205	Black	2015	10'000	20'000
Peugeot	205	Red	2015	62'000	10'000
Peugeot	406	Yellow	2007	10'000	36'000
Peugeot	106	White	2012	10'000	14'500
Renault	Clio	Green	2010	80'000	10'200
Renault	Williams	Dark Blue	2012	70'000	10'000
Renault	Twingo	Pink	2013	20'500	15'000
Renault	Megane	Yellow	2015	12'000	22'000
Seat	Ibiza	Violet	2014	60'000	13'000
Toyota	Cellica	White	2010	103'000	14'000

A standard column chart is just useless in this case !



A treemap does it just nicely :



Caution when selecting the data. Normally the selection is standard. Consequently, it includes the labels cells. But with these data I had the following problem : Excel ignored the selection and only used the data partially. In such a case, it is necessary to click on the SELECT DATA button and re-adjust the data selection.

The highest hierarchical category – namely here the car brand – is displayed by default in the cell, but usually users will prefer to display it at here, at the top of the rectangles. Easy : choose from the styles gallery.

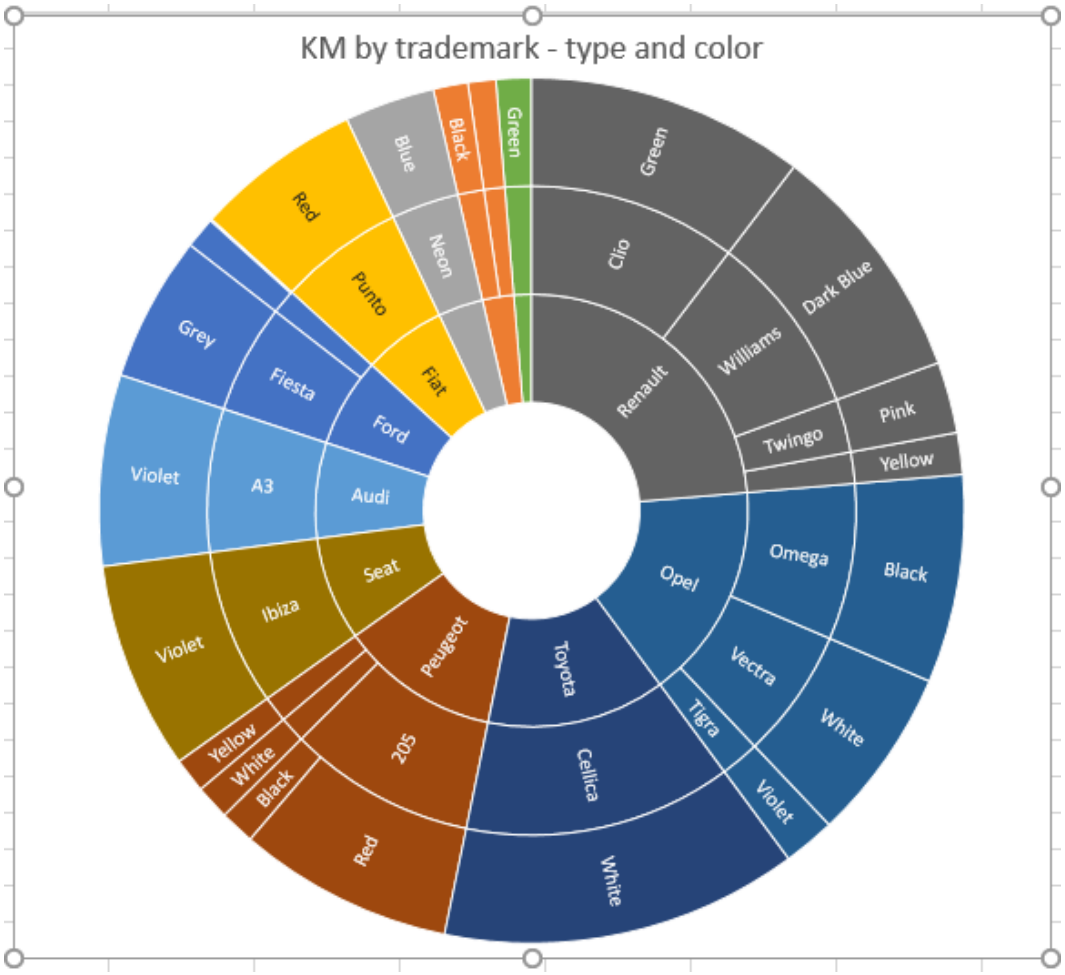
11.8 New 2016 chart : Sunburst

Sunburst charts are ideal for displaying hierarchical data. Each level of the hierarchy is represented by on ring or circle **with the innermost circle as the top of the hierarchy**.

A sunburst chart without any hierarchical data (one level of categories), looks similar to a doughnut chart. However, a sunburst chart with multiple levels of categories shows how the outer rings relate to the inner rings. The sunburst chart is most effective at showing how one ringt is broken into its contributing pieces.

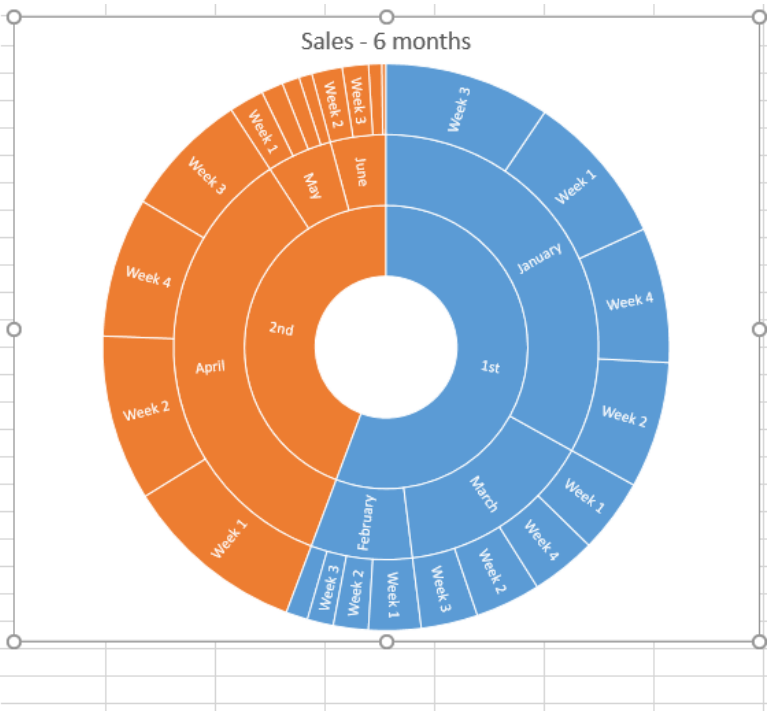
If we apply a treemap type to our previous list of cars (brand – type – km), and we try to add the color to the distribution, the visual result gets unsatisfactory whereas a sunburst is very efficient :

(advice : work with a full page chart)



The sunburst is also interesting when the categories are not all filled (empty cells) as the example below shows it :

Quarter	Month	Week	Sales
1st	January	Week 1	3.5
		Week 2	2.9
		Week 3	3.8
		Week 4	3.1
	February	Week 1	1.2
		Week 2	0.8
		Week 3	0.6
		Week 4	0.5
	March	Week 1	1.7
		Week 2	1.5
		Week 3	1.3
		Week 4	1.5
2nd	April	Week 1	4.2
		Week 2	3.8
		Week 3	2.9
		Week 4	3.2
	May	Week 1	0.8
		Week 2	0.5
		Week 3	0.4
		Week 4	0.3
	June	Week 1	0.3
		Week 2	0.7
		Week 3	0.6
		Week 4	0.1

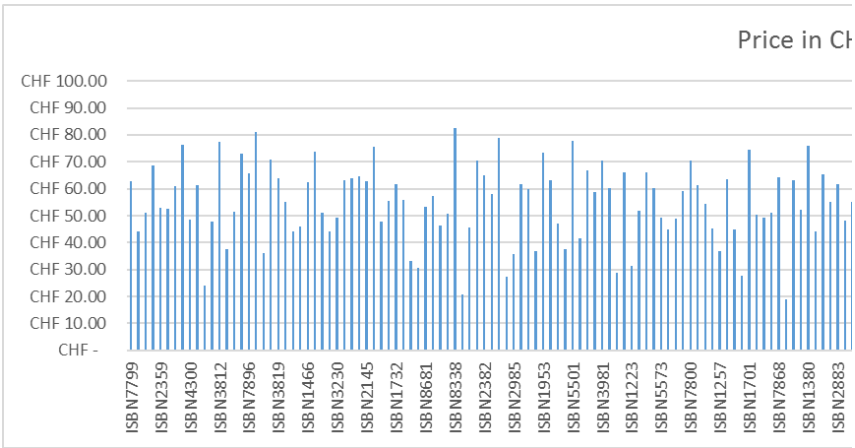


11.9 New 2016 chart : Histogram

A well-known chart used in statistics
It displays the frequencies within a distribution

Example : here below the sales for books (the reference number for each book and its retail price)

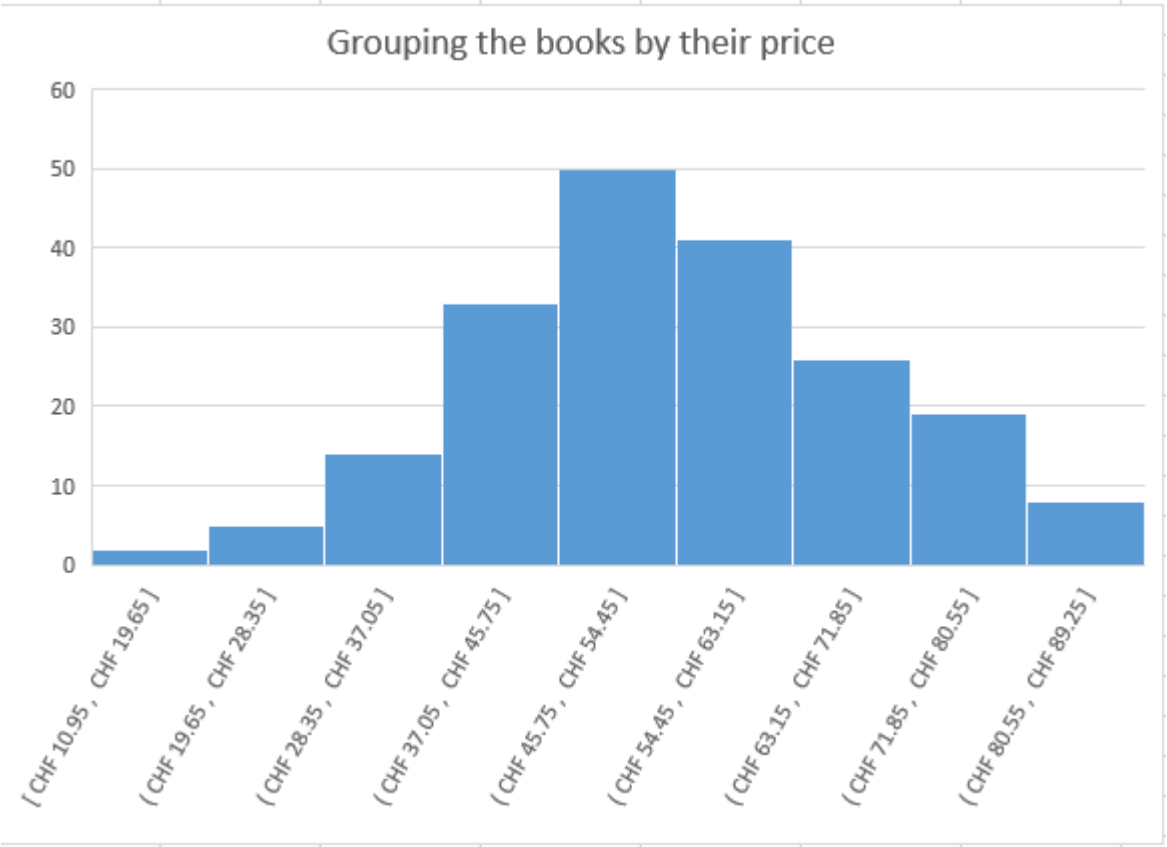
A column chart shows nothing !



Ref number and price

ISBN No.	Price in Cl
ISBN7799	CHF 62.84
ISBN3458	CHF 44.08
ISBN8409	CHF 51.20
ISBN2979	CHF 68.81
ISBN2359	CHF 53.03
ISBN2088	CHF 52.51
ISBN7069	CHF 60.87
ISBN4129	CHF 76.30
ISBN4300	CHF 48.41
ISBN4419	CHF 61.28
ISBN4091	CHF 23.88
ISBN4521	CHF 47.70
ISBN3812	CHF 77.59
ISBN6490	CHF 37.48
ISBN5112	CHF 51.44

Here below a histogram chart built on the full list (by default) :



How are the intervals – called BIN – calculated ?

The chart groups all prices by intervals of x
(this x is the result of a math algorithm called Scott's binning algorithm)

Scott's binning algorithm

$$\text{Bin size} = \frac{3.5 \times \text{standard deviation})}{\sqrt[3]{\text{Number of values in the data source}}}$$

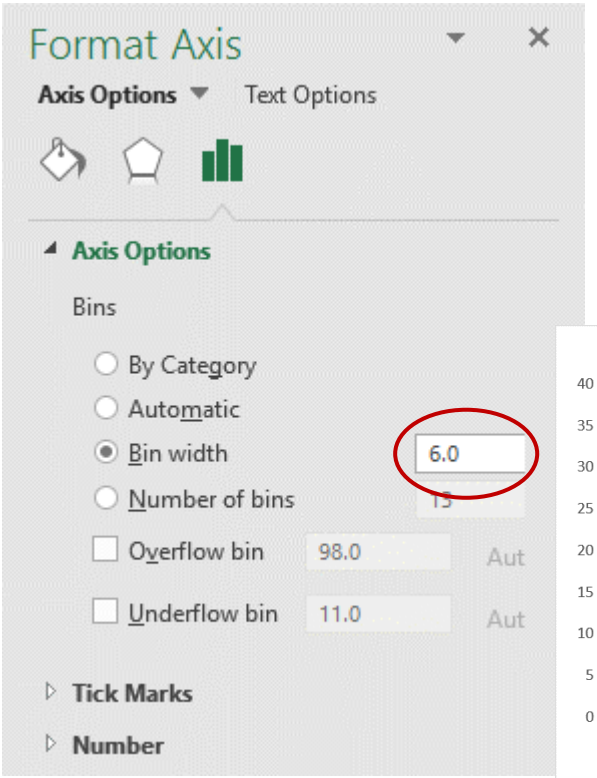
Scott created this algorith after analyzing what can be found in nature such as the people height, the IQ for a given sample of people and so on ..

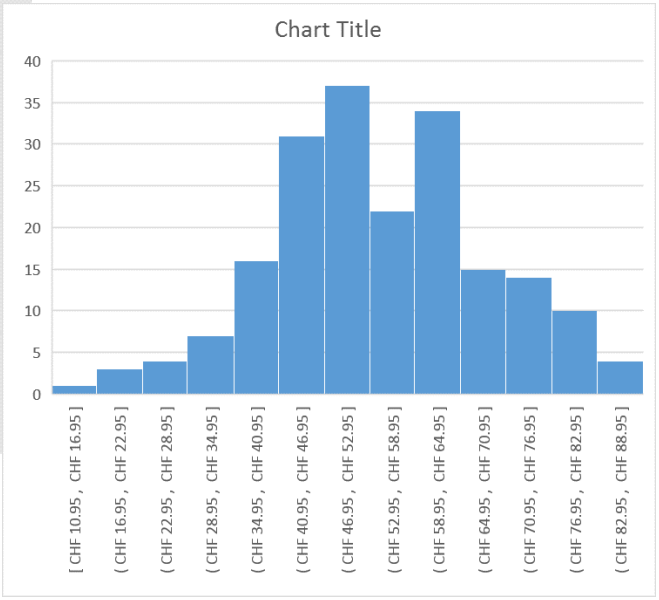
Interesting to read the bin

(or) to indicate that the value is not included
[or] to indicate that the value is included

Modify the bin

Here the bin returned by the algorithm is 8.7 but this can be changed in the horizontal axis settings :



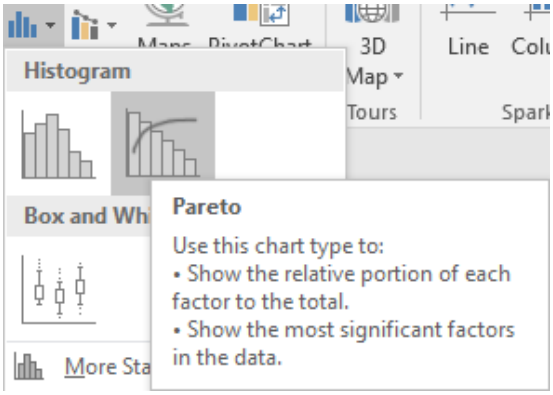


The distribution will then be slightly different

11.10 New 2016 chart : Pareto

Also a statistical chart

Note : this chart is not listed in the charts dialog box on the ALL CHARTS Tab. It is a sub category of the HISTOGRAM type



Why this name Pareto ?

It is named after Vilfredo Pareto, most famous for his popular eponym, the Pareto Principle, also known as the 80-20 rule. This principle states that a few reasosn (about 20%) account for a majority (or about 80%) of issues.

Here after the beginning of a table.
It shows the returns of an A good and the reasons given by the clients

(the books of the previous example).

After sales service : reasons o

Problem	Number
Defect	74
Defect	46
Defect	91
Wrong book	35
Wrong book	120
Price too high	200
Unknown	178
Poor quality	14
Incorrect pricing	81
Incorrect pricing	36
Incorrect pricing	99
Defect	29
Defect	68

Explaining the Pareto chart :

The Pareto chart is a combination of columns with a line graph (the Pareto line), which shows the cumulative contribution of each column as you move from left to right.

The vertical axis shows the numbers of returns
The horizontal axis shows the reasons : Defect – Incorrect price etc …
The vertical axis showing percentages at the right end corresponds to the Pareto line. It indicates each category as a percentage of the total of reasons.

The first intersection indicates that Defect account for 40% of the returns. The second intersection of 70% corresponds to Defect + Incorrect Prince etc ...

The Pareto shows in which area the company should improve

I tried to make the Pareto line show the intersection points but I did not succeed …

Important reminder : the percentage of each category is added to the previous one.

11.11 New 2016 chart : Box and Whisker

Also a statistical chart. Maybe the most complicated one for non-statisticians

Using the same example of a shop selling books (our source data for Histogram and Pareto)

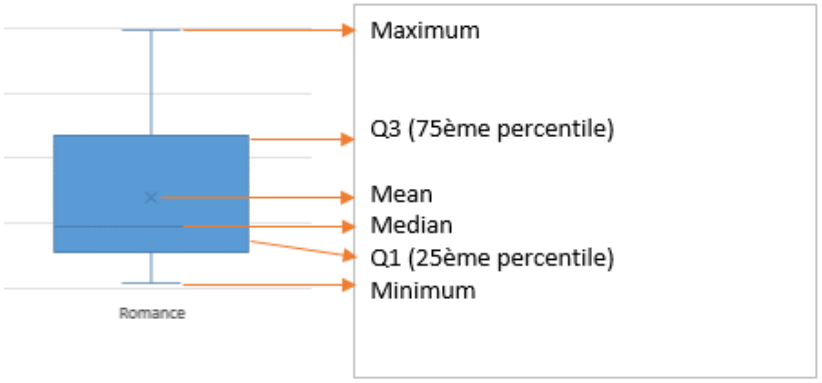
A genre has been assigned to every book : Mystery – Children's – Romance

Genre	Price
Mystery	CHF 10.00
Mystery	CHF 12.00
Mystery	CHF 13.00
Mystery	CHF 15.00
Mystery	CHF 15.00
Mystery	CHF 18.00
Mystery	CHF 18.00
Mystery	CHF 19.00
Mystery	CHF 19.00
Mystery	CHF 22.00
Mystery	CHF 22.00
Mystery	CHF 25.00
Mystery	CHF 25.00
Mystery	CHF 26.00

The Box and Whisker chart is designed to quickly and easily highliht important characteristics related to the distribution of your data, by providing basic statistical details like mean, median and percentile groupings, as well as illuminating outliers that exist beyond the general clustering of your data.

Each group is divided into four sections, inlcuding a rectangle (the "box") that is split into two parts and thin T-shapted projections on each end (the "whiskers"). The bottom whisker is called the "Local Minimum". Just above the whisker is the bottom of the box, which marks the "first quartile".
The values in between the end of the whisker and the bottom of the box are considered part of the lowest quarter of values in the data set.

Chart reading
Each genre has 4 parts



Jargon
Local Minimum = the lowest price
Q1 = First Quartile
Median = does not correspond to an average because the average is the *mean*. The points are sorted from the smallest to the highest and the median is the value in the middle of the list. Example : for the following list 1-2-3-7-10-14-15 - the median value is 7 while the average is 7.42.
Mean = mathematical average of all points
Q3
Local Maximum = not the highest price
Outliers (here only one) : standard Tukey industry that considers a value as an outlier when it is 1.5 higher that the box height (the "interquartile" range.
Test : change the last value to 350 and a second outlier will appear

Structure of the box
From Minimum at the bottom of the box = the first 25% (1/4)
Q1 = 25% (2/4)
From Median to the top of the box = 25% (3/4)
From the top of the box to the Local maximum = 25% (4/4)

** For more explanations : search the web !*

11.12 New 2016 chart : Waterfall

A waterfall chart show the cumulative effect of sequentially introduced positive or negative values. *Also known as a flying bricks chart or Mario chart*

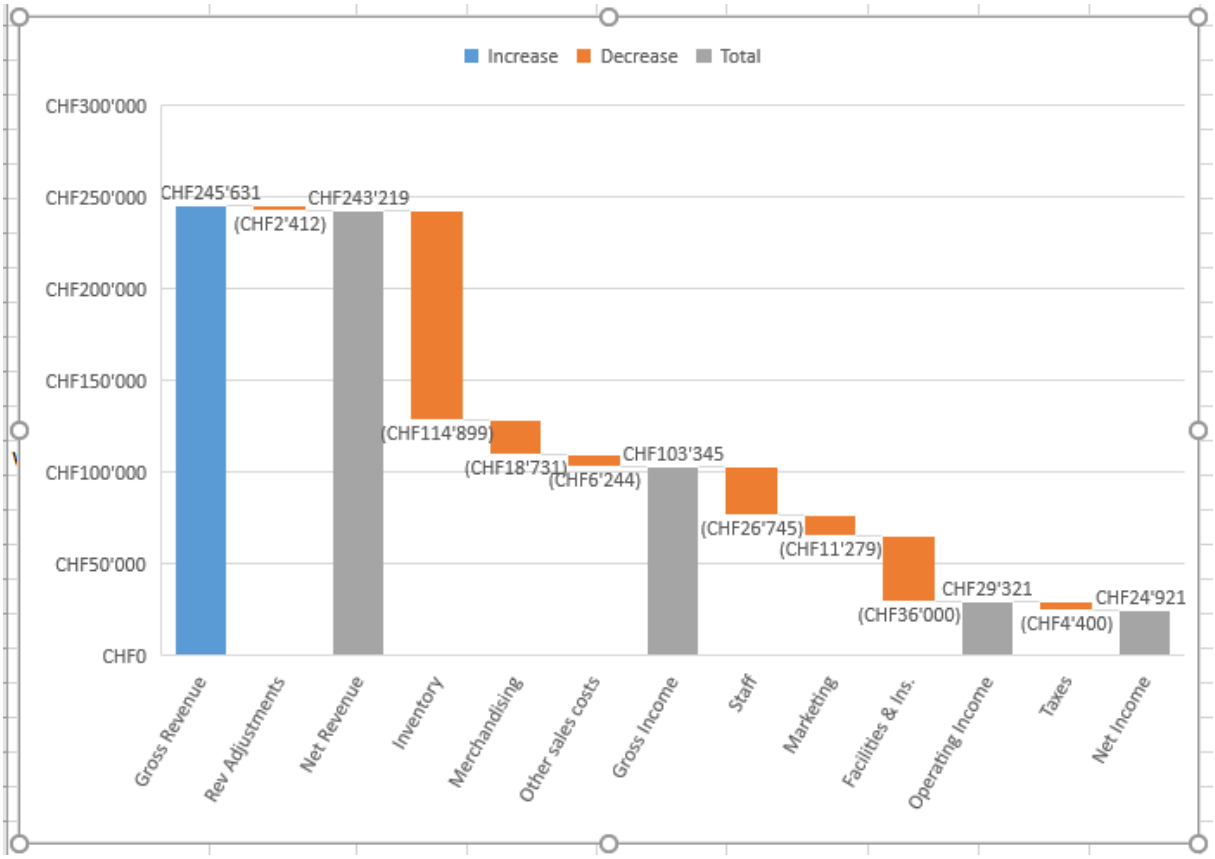
It shows a running total as values are added or subtracted. It is useful to understand how the initial value is affected.

The columns are color coded so you can quickly tell positive from negative numbers.
The initial and the final value often start on the horizontal axis, while the intermediate values are floating columns, while the intermediate values are floating columns. Because of this look, it is also called « bridge » chart.

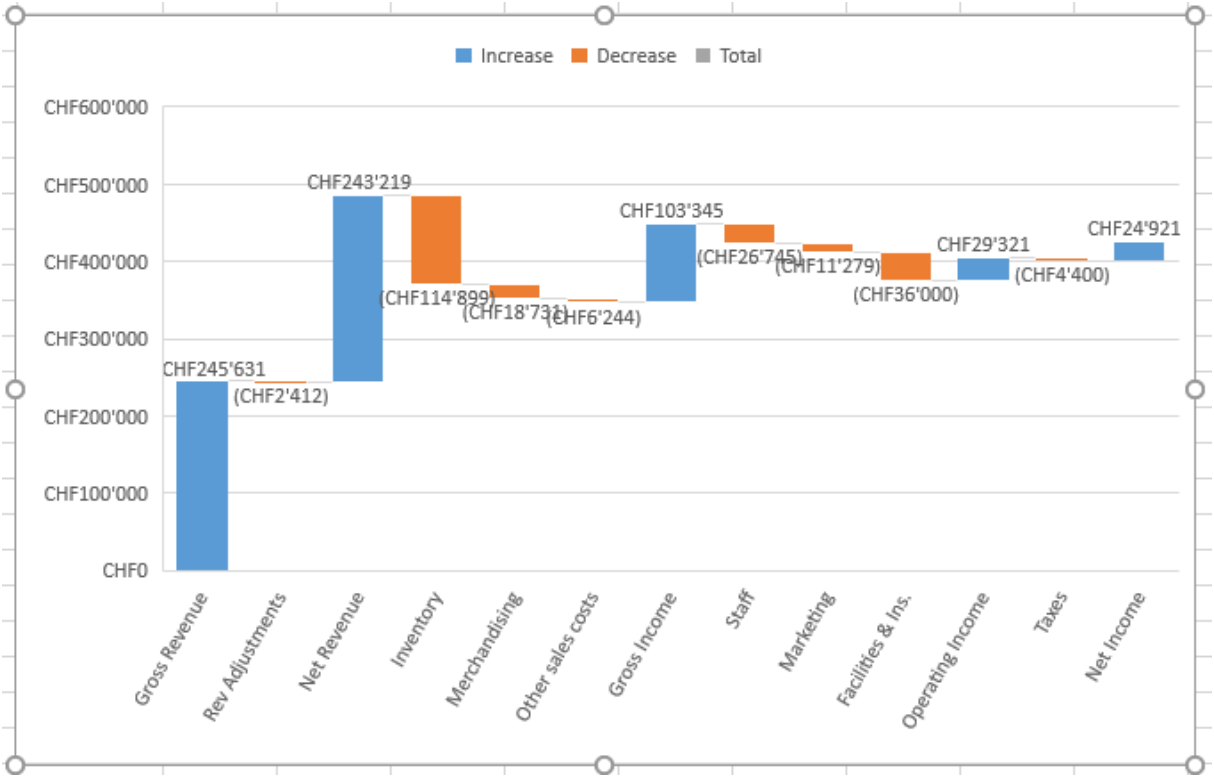
The source data :

Year Balance	
Gross Revenue	CHF245'631
Rev Adjustments	(CHF2'412)
Net Revenue	**CHF243'219**
Inventory	(CHF114'899)
Merchandising	(CHF18'731)
Other sales costs	(CHF6'244)
Gross Income	**CHF103'345**
Staff	(CHF26'745)
Marketing	(CHF11'279)
Facilities & Ins.	(CHF36'000)
Operating Income	**CHF29'321**
Taxes	(CHF4'400)
Net Income	**CHF24'921**

** Data selection : usually without the title. If the title cell is included either it makes no difference or it does as in the chart below where the CHF currency would be missing.*



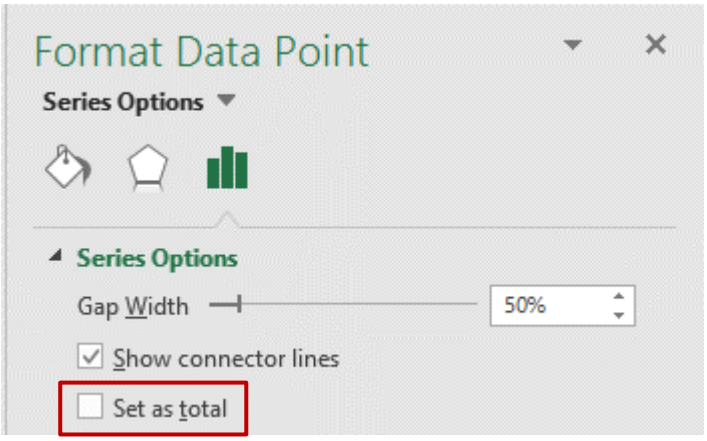
When you first create the chart there is no waterfall effect. The chart is simply a floating column one as each value is simply added or subtracted to the previous one :



To get the waterfall effect :

Right click the data point and select SET AS TOTAL from the drop-down menu. Also double-click the data point and same option on the Format Pane

(the option is displayed only if it is a sub-total)



In the above chart : the first data-point could be defined as a total (the option is available) but we did not do it because it is the starting value and that way we can keep the color code)

Take the opportunity to decide whether you want to keep the connector lines (on by default)

12 Forecast sheet – with a chart automatically created

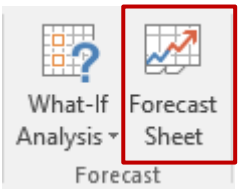
Here after an Excel sheet showing a list of sales. But it stops at the end of the month (31.1.2017). The next month is “missing”

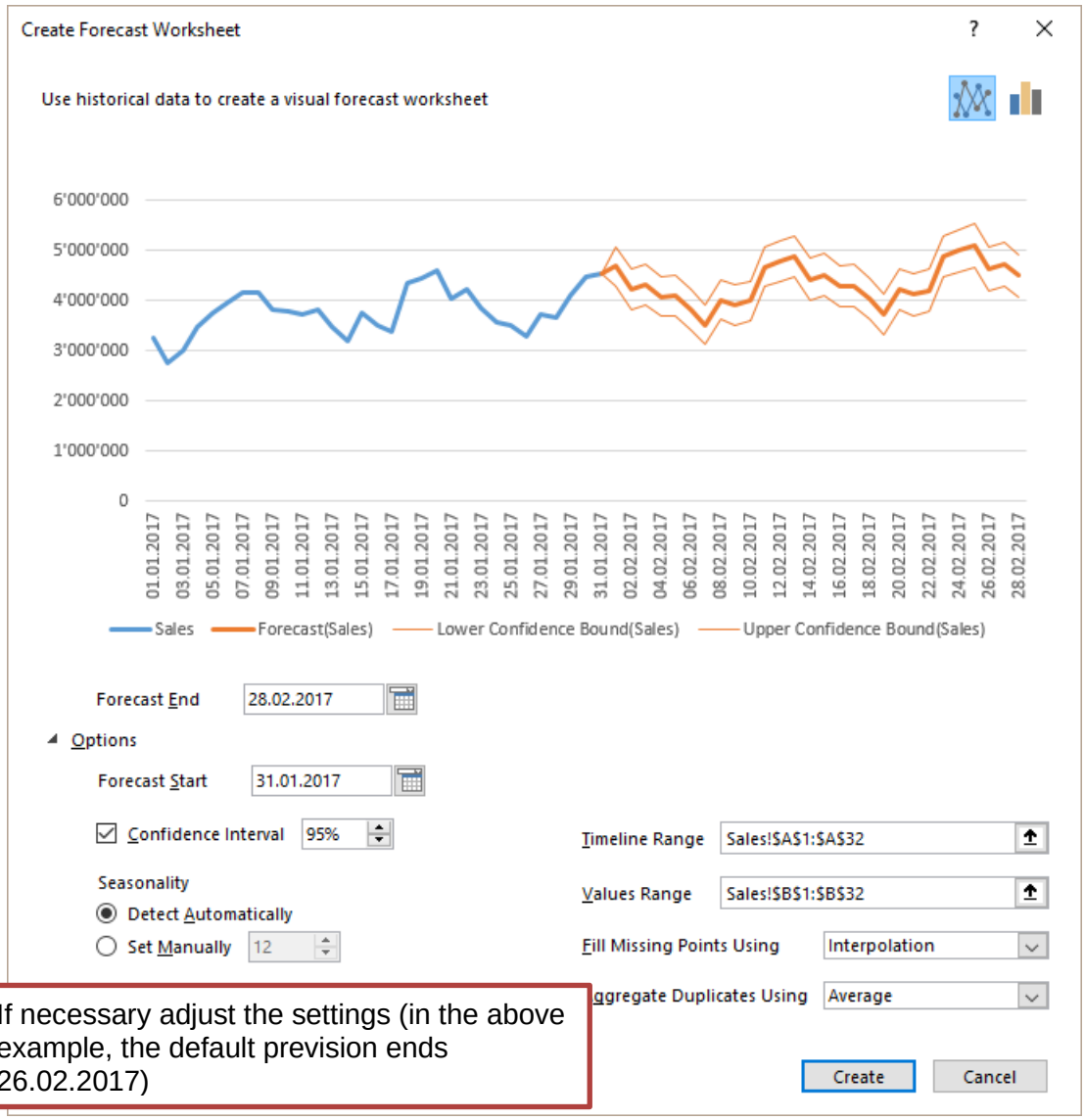
	A	B
1	Date	Sales
2	01.01.2017	3'240'325
3	02.01.2017	2'741'349
4	03.01.2017	2'987'427
5	04.01.2017	3'456'892
6	05.01.2017	3'740'738
7	06.01.2017	3'979'178
8	07.01.2017	4'160'454

Excel 2016 includes a forecast exponential smoothing feature. Several functions are available, as FORECAST.ETS() for example.

For more explanations : Internet …

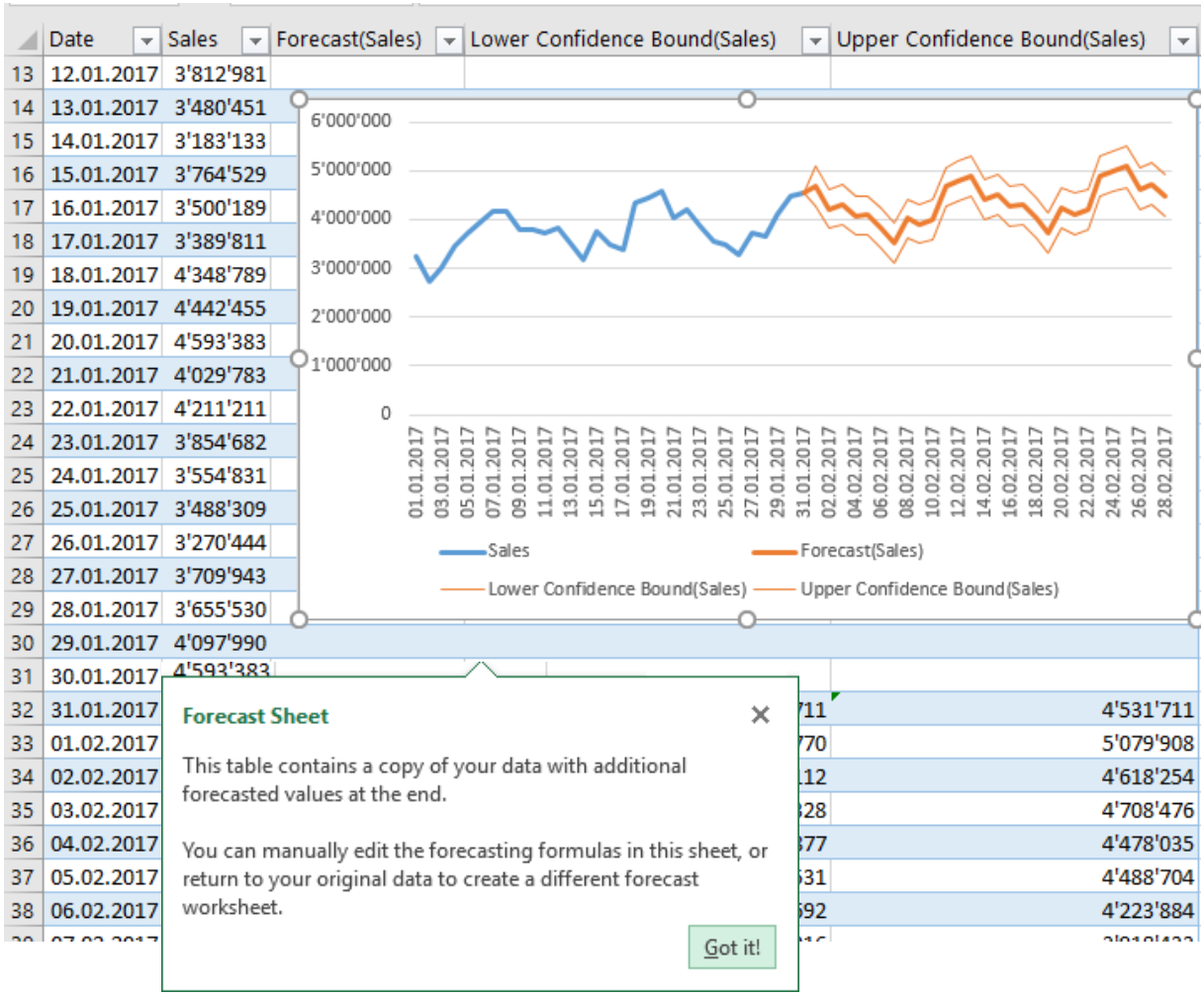
Click inside any of the two columns
DATA Tab – FORECAST Group





If necessary adjust the settings (in the above example, the default prevision ends 26.02.2017)

CREATE Button



Excel creates a new sheet automatically placed before the sheet containing the source data. The data is copied and set as a *table.* Excel then adds the chart that was suggested in the previous dialog box.

Math explanations about how the forecasted values are calculated : I am no statistician and I will let this to the professionals …

13 Sparkline charts

13.1 What is it ?

A sparkline chart is a sort of « mini-chart » inside a cell

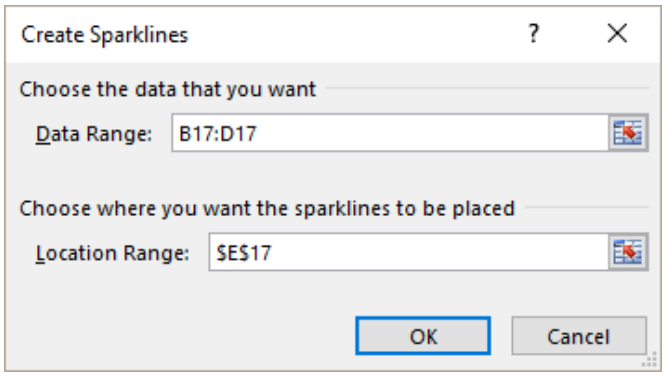
2	*Additional seasonal workers*			
3		**Business**	**Agriculture**	**Tourism**
4	**January**	2%	1%	1%
5	**February**	2%	1%	1%
6	**March**	2%	1%	1%
7	**April**	2%	1%	1%
8	**May**	2%	10%	5%
9	**June**	2%	12%	8%
10	**July**	4%	15%	15%
11	**August**	4%	20%	15%
12	**September**	2%	15%	8%
13	**October**	2%	10%	1%
14	**November**	8%	1%	1%
15	**December**	10%	1%	10%
16	Spartkline			

Advantage :regaining space !!!

13.2 Creating the chart

It is not necessary to select the data as you would for a traditional chart.

- Select the select into which you need to insert a chart
- INSERT Tab – SPARKLINE Group
- Select the type of chart. You can choose from LINE – COLUMN and WIN/LOSS
- Here below the dialog box

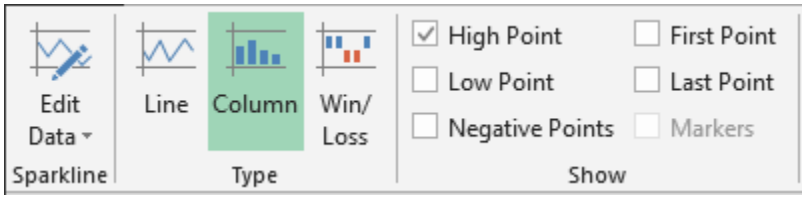


As for functions and other calculations, the range of cells can be relative references (this will let you create contiguous charts with a simple click-and-drag operation) or they can be absolute references.

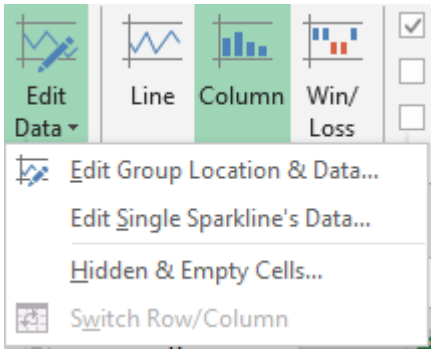
Check if necessary the destination cell

13.1 Managing

A tab dedicated to sparkline charts will be automatically displayed in the ribbon.



Sparkline

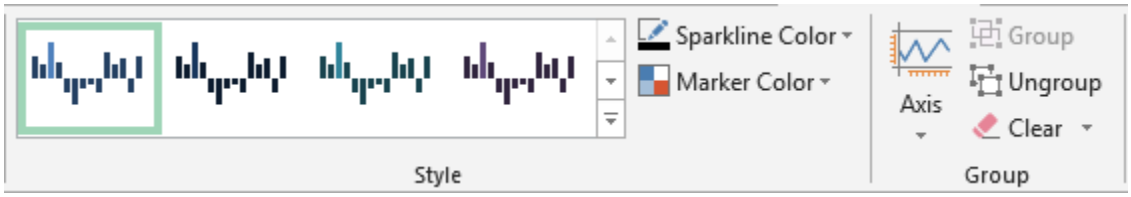


Provided data ranges are compatible (number and orientation) you can change the source data range of cells for all sparkline charts or one only.

As for a traditional chart, you may also manage how the chart should display empty or hidden cells

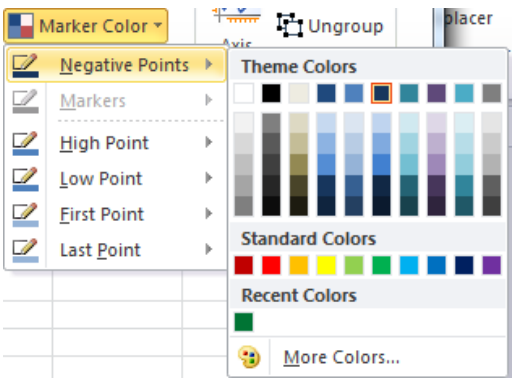
Type To change the type of chart

Show To work on esthetical details (points for a line chart, colors for a column chart …)



Style A traditional 2007-2010-2013 style gallery …
Caution : no real-time preview …. you need to click …

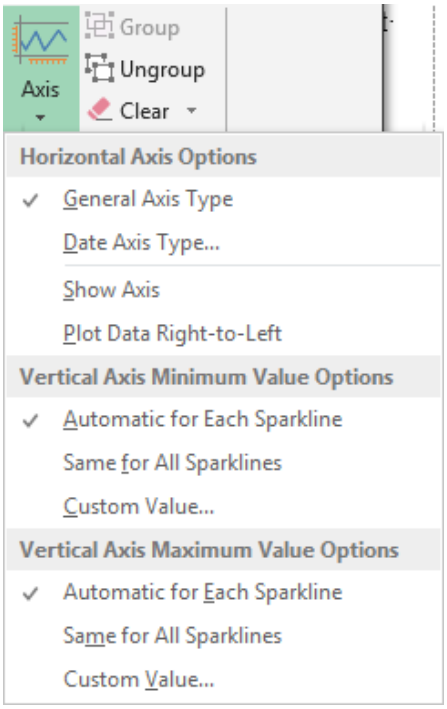
Custom colors : for the chart – for the points



Group

Group – Ungroup
All previously mentioned commands are applied to all sparkline charts unless you decide to UNGROUP. In this latter case, the commands will be applied to the selected chart only.

Axis
Advanced options

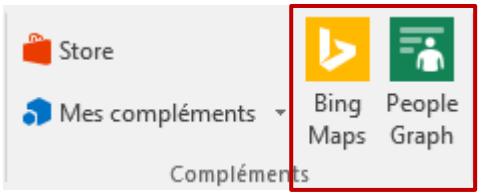


14 Data and maps

14.1 Elementary views with Bing et People Graph

- INSERT Tab – ADD-INS Group

At first use, a message prompts you to download them from the Store : free and within 2 seconds



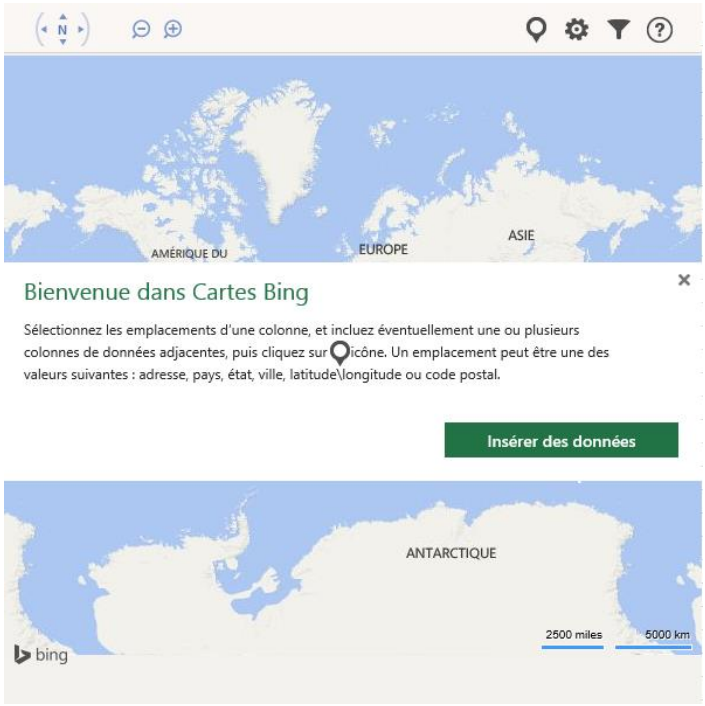
Example :

	A	B	C	D
1	City	Bikes	Balls for handball, volley ...	Athletics equipment
2	Geneva	500	100	600
3	Lausanne	300	600	900
4	Fribourg	400	800	800
5	Neuchâtel	100	400	700
6	Bern	200	200	400
7	Zurich	800	300	600
8	Bâle	900	400	200

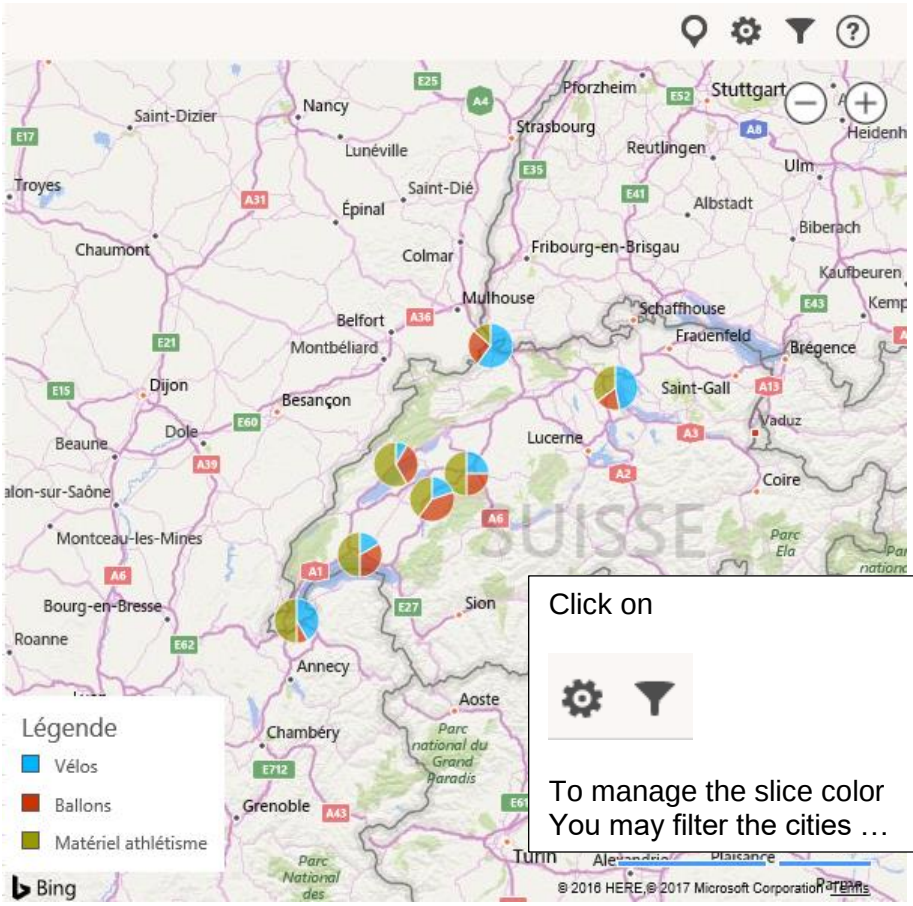
14.1.1 BING MAPS

Select the data

A world map is automatically displayed



Click on the MAGNIFIER button to insert the data on the map. The map is automatically adjusted to the corresponding area and the message in the middle is removed.

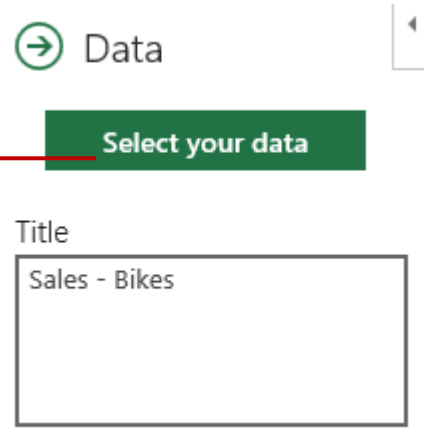


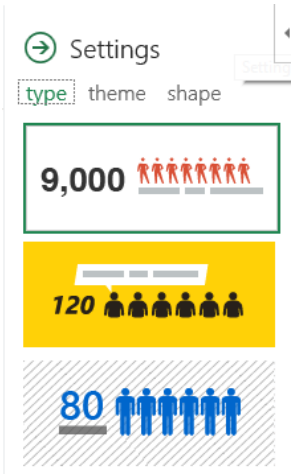
Click on

To manage the slice color
You may filter the cities …

14.1.2 PEOPLE GRAPH

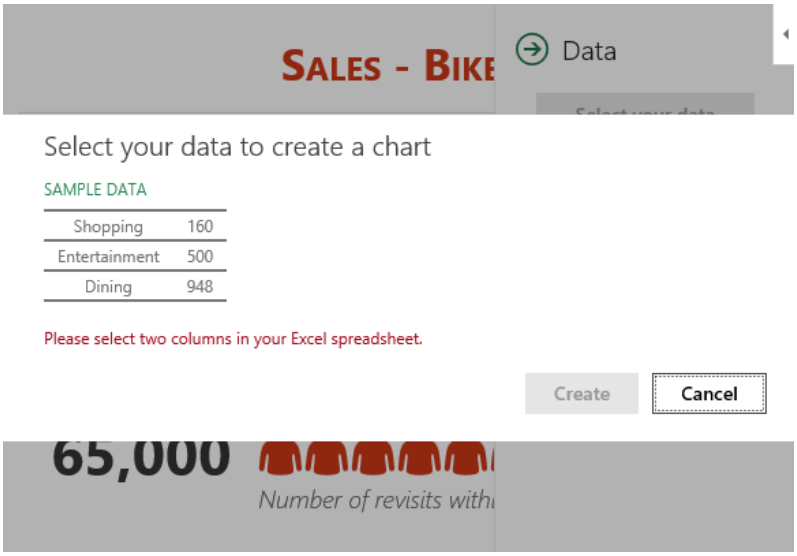
This is the default window





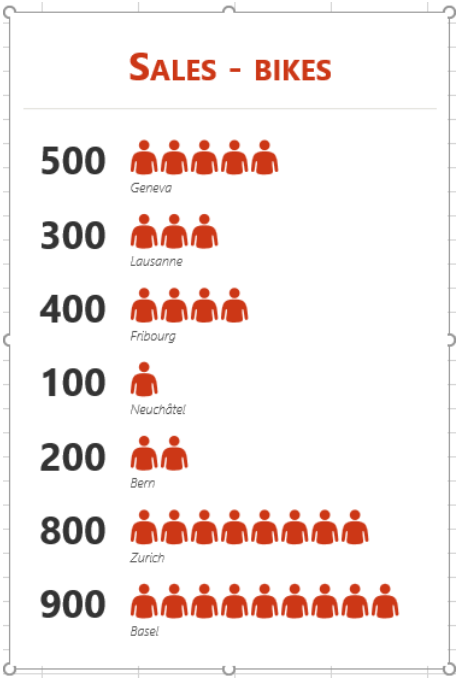
Various style effects

As soon as you select the data – caution only two columns (labels + values) – and they must be contiguous, the CREATE button turns green :



(if you select all, only the first two columns are actually read)

The result :



Positive comments :

- *Bing* : you can move and zoom as you would do in a Google Map

Two negative comments :

- *People* : the content of the window adapts but not as much as I would want. Consequently, you are forced to enlarge until everything fits inside

14.2 3D Maps – a powerful feature

Microsoft 3D Maps for Excel is a three-dimensional (3-D) data visualization tool
With 3D Maps, you can plot geographic and temporal data on a 3-D globe or custom map, show it over time, and create visual tours you can share with other people.

14.2.1 Type of data

3D Maps requires at least one geographic value per row of data. This could be a Latitude/Longitude pair, City, Country/Region, Zip code/Postal code, State/Province, or Address. The accuracy of 3D Maps depends on the amount and variety of geographic data you provide and the search results from Bing.

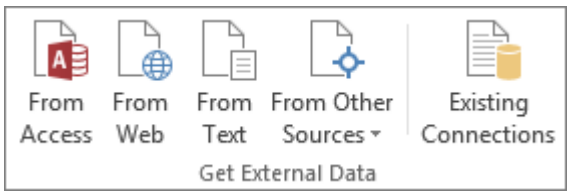
For example, because there are 18 cities in the US alone called Columbus, it helps to have a State column so the right city can be recognized.

Date or time fields : 3D Maps requires at least one date or time field per row of data if you want to view your data over time.

If you'll be working with large sets of data, it'll probably be stored in an external source, such as a database, data feed, or web site. You'll need to import it into your workbook for 3D Maps to use

To connect to external data from Excel (that is, not through PowerPivot) :

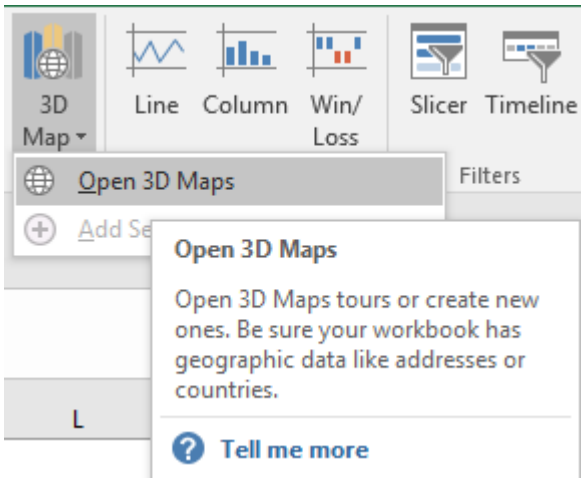
DATA Tab - GET EXTERNAL DATA Group



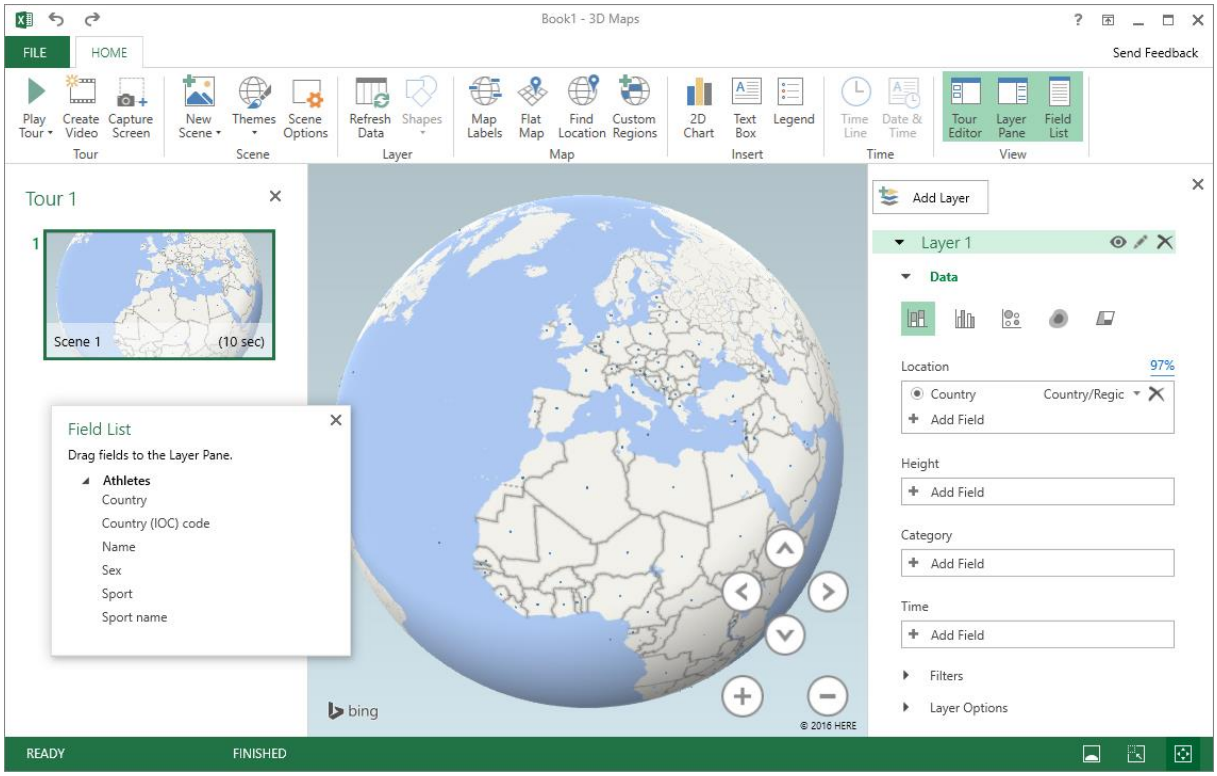
It can be a list but a real Excel table is better

14.2.2 Access

INSERT Tab – TOURS Group - 3D MAPS Button



14.2.3 Default window

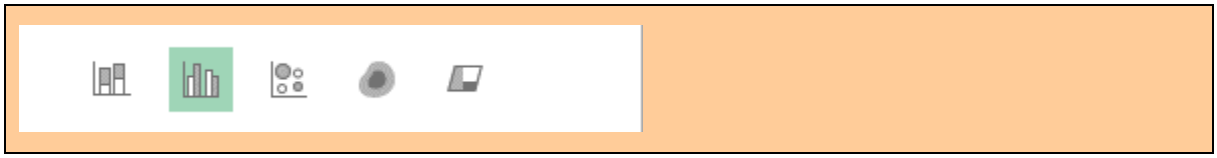


By default : a window with a 3D globe on which the data will be mapped

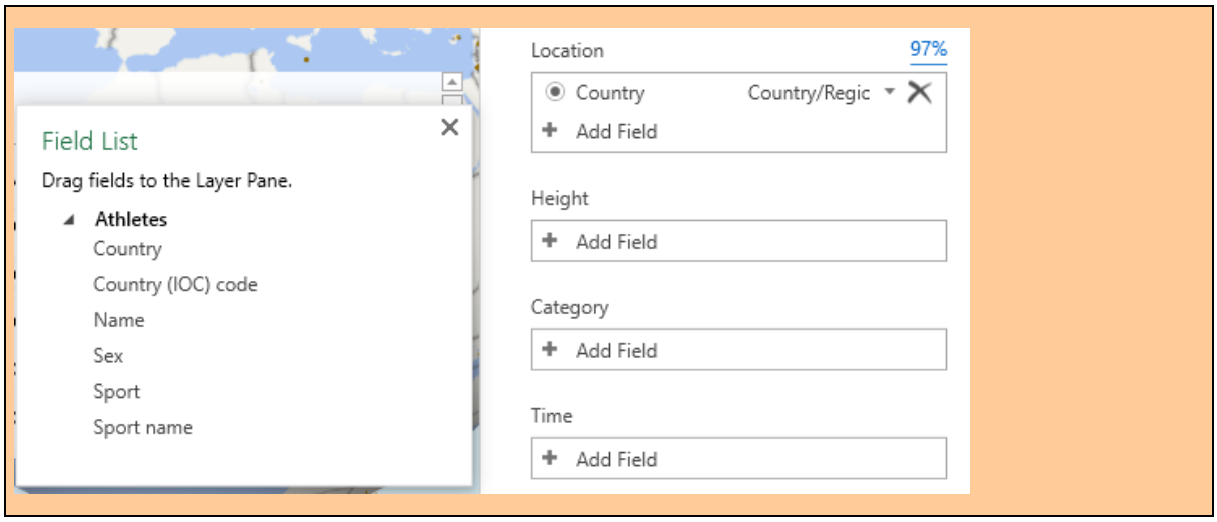
Left pane — **Tour Editor Pane.**
It contains thumbnails of the prepared scenes for the active tour (by default, there is just one scene marked Scene 1 when you create your first tour).

Right pane — **Layer Pane**
It contains all the tools to correction map your data

14.2.4 Building the map



Type of chart

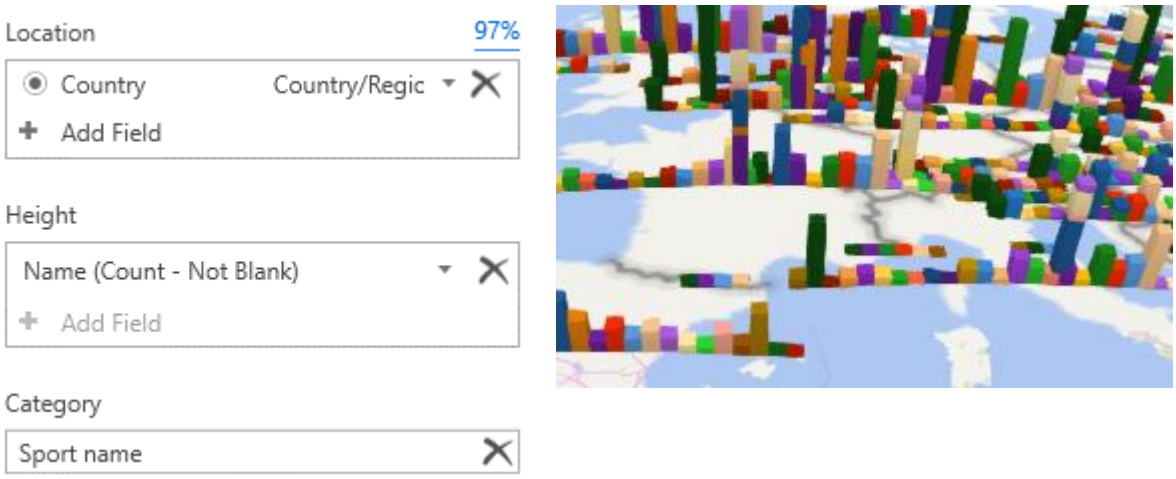


Drag fields from the floating FIELD LIST to LOCATION, HEIGHT, CATEGORY …

Location	Excel reads the data and automatically sets the location accordingly. If not … use ADD FIELD
Height	What do you want to add up or count ?
Category	How do you want to structure the sum or the count)

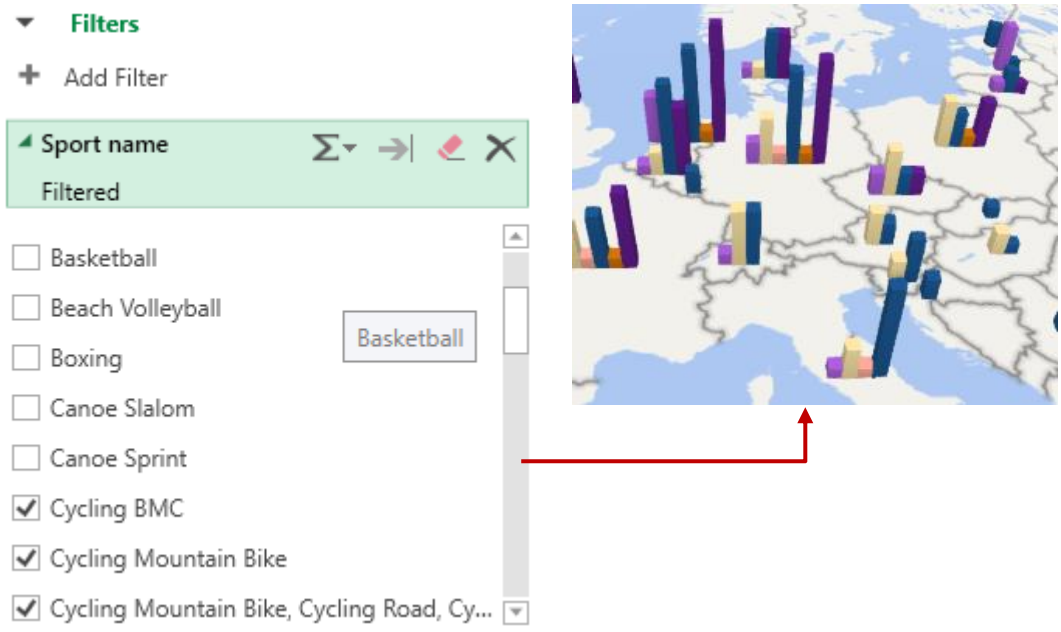
Example :

Count of athletes (names) by sport name
The problem is that all countries send athletes in all sports
The columns are consequently too many

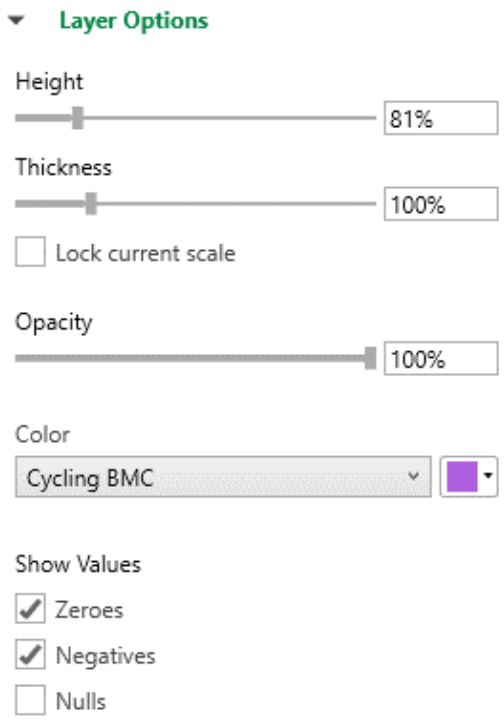


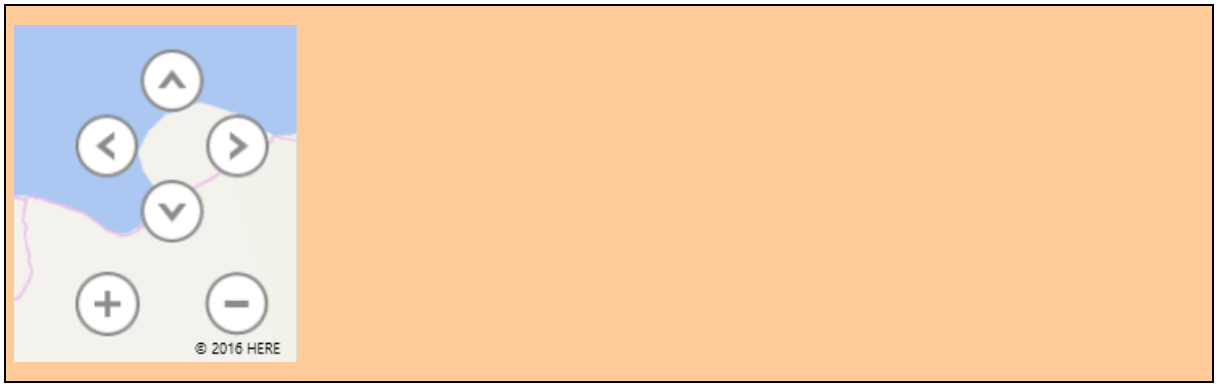
Filters

I have filtered on the sport name to only keep sports related to cycling



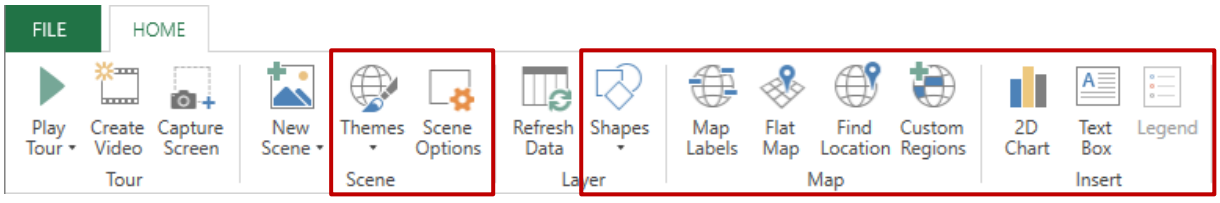
Play up with the possibilities.
It is very intuitive

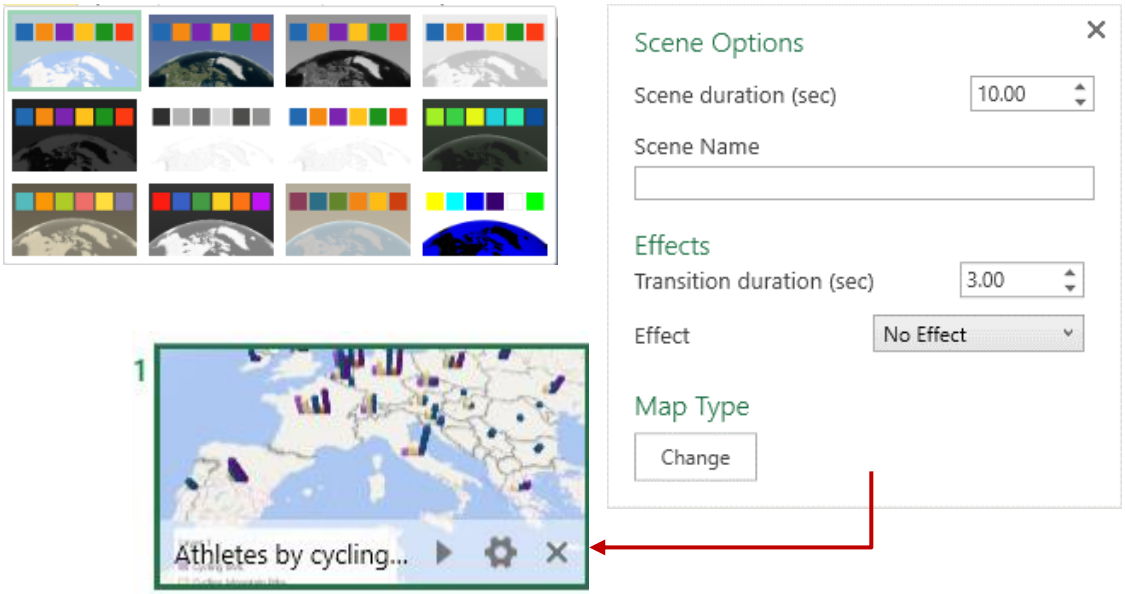




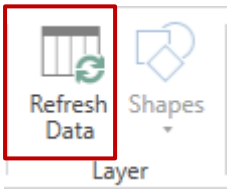
To move the globe around, to zoom in and out

Fine tuning tools





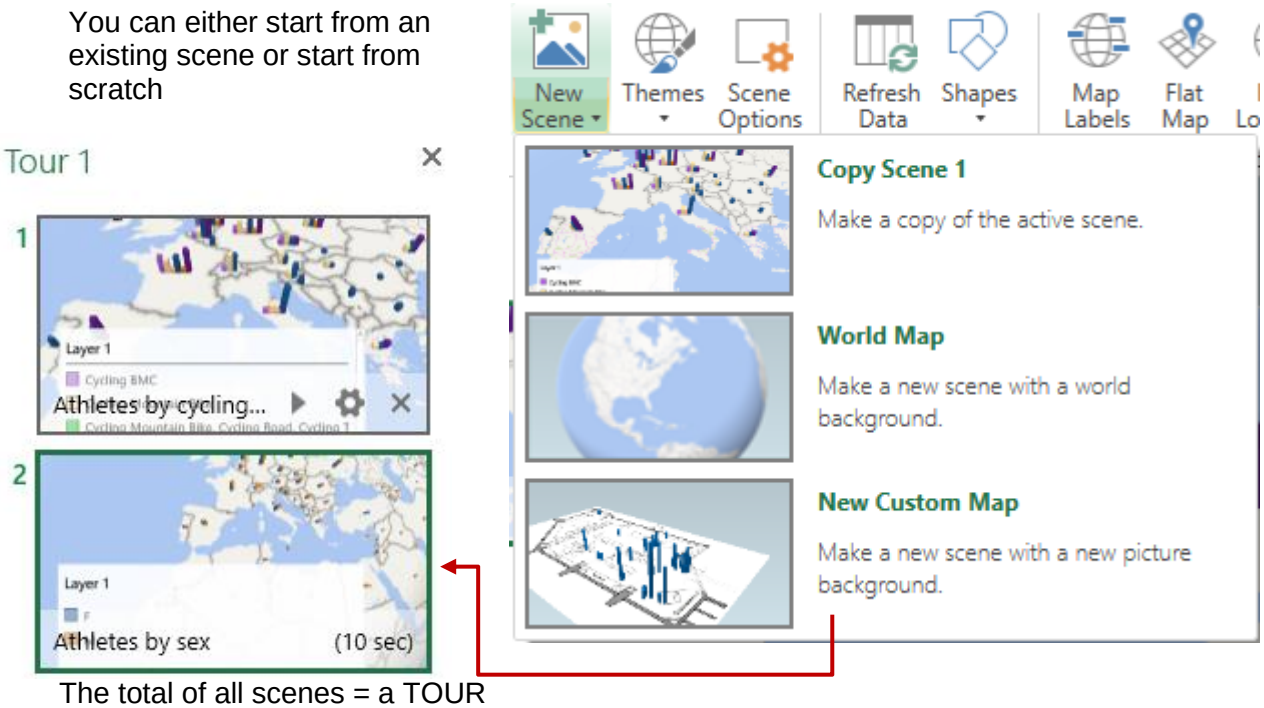
Data update



New scene

Using the same list of data, you can create a new scene that is a new analysis or chart

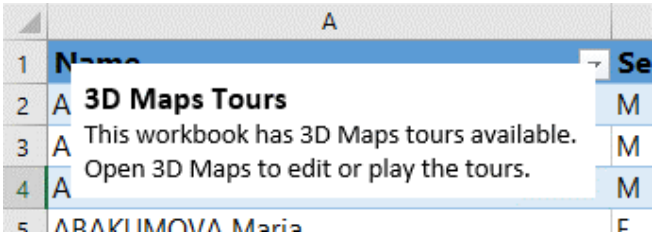
You can either start from an existing scene or start from scratch



The total of all scenes = a TOUR

It is automatically animated and can be run by clicking on the PLAY TOUR button or on the run button at the bottom of the thumbnail

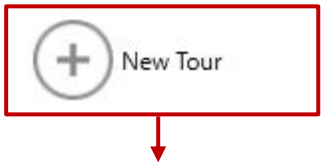
The workbook indicates that there is / are 3D Charts for this workbook



Create a new TOUR

Another list or another table in the workbook ?

Run 3D Maps again



Build the map as explained above

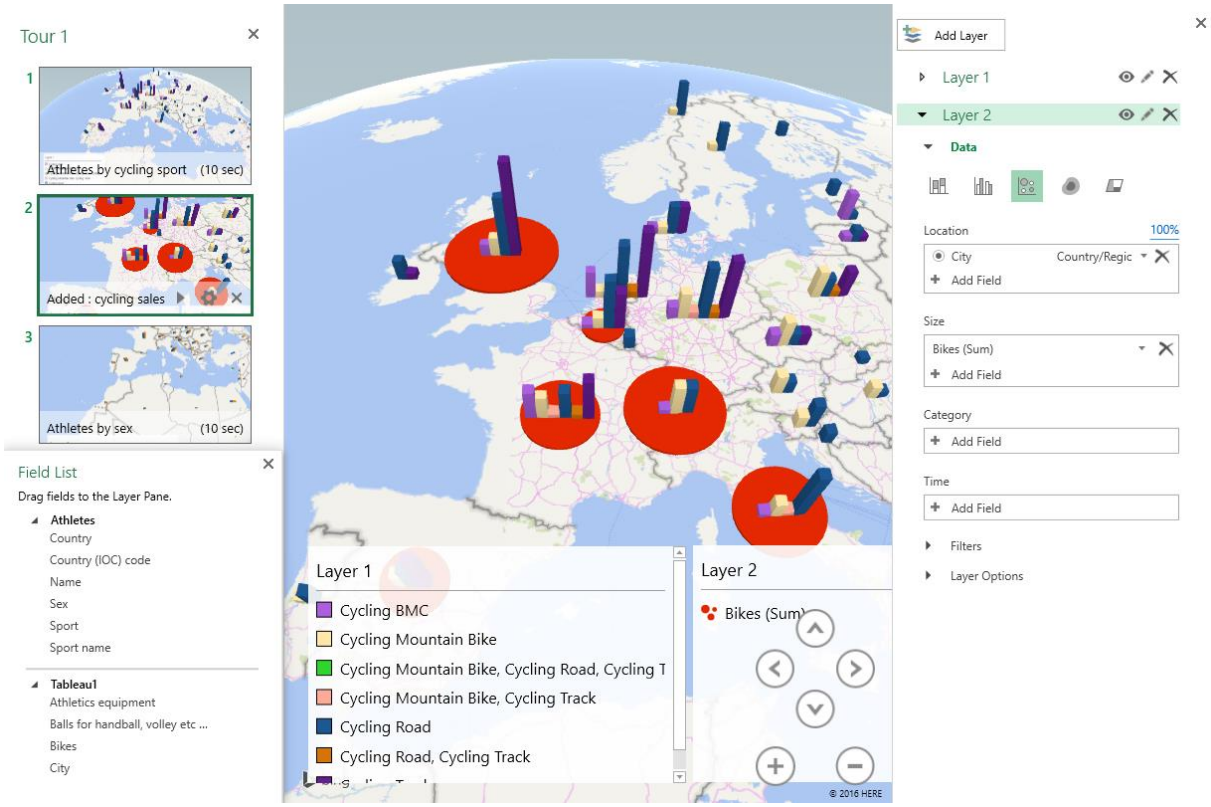
Layer (advanced)

You can create another point of analysis into the same chart ! A bit heavy

To mix the analysis with another list from the workbook - whose figures are related

Example :

- The present 3D Maps window shows a count of olympic athletes by cycling sportst (Tour 1 - Scene 1)
- Another list - also populated in the 3D Maps window - gives sales for cycling bikes (Tour 2 - Scene 1) - off screen capture
- Run Tour 1 again
- Copy Scene 1 and rename it (here *Added : cycling sales*)
- Create a new layer (Layer 2)
- The Field List displays the fields for the two data lists (country - athletes etc ... and sports sales)
- Drag the fields to build the added data to the map and choose the type of chart

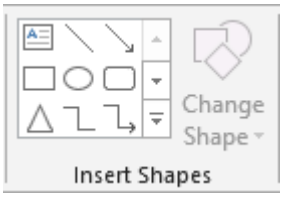


DRAWN SHAPES AND SMARTART

1 Drawn shape

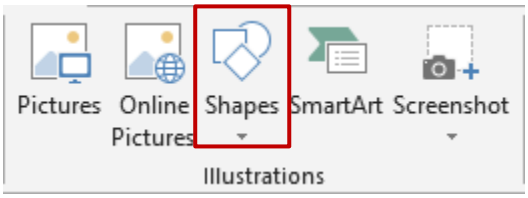
1.1 Using the chart FORMAT Tab or the INSERT Tab to draw the shape

Select the chart
FORMAT Tab – INSERT SHAPES Group



ou

Select a cell (worksheet)
INSERT Tab – ILLUSTRATIONS Group



Particularity

As soon as you draw a shape from the chart FORMAT tab, the Ribbon displays an additional FORMAT tab (DRAWING TOOLS). The options are the same on both tabs.

1.2 Will the shape belong to the chart or to the worksheet ?

It will depend on your selection when you draw the shape :

The chart is selected.

You can draw the shape from the FORMAT tab or the INSERT tab.
The shape belongs to the chart.
If you move the chart, the shape is moved accordingly.

A cell is selected

You can draw the shape only from the INSERT tab (the FORMAT tab is not displayed).
The shape belongs to the worksheet.
If you move the chart, the shape is not affected.

1.3 Creating the shape

- Click on the required type then release mouse
- Position the mouse pointer where you need to start drawing
- Click and drag to size the shape

1.3.1 Drawing perfect shapes (squares, rounds ...)

Keep the SHIFT key pressed while drawing.

1.3.2 Drawing from the center outward

Keep the CTRL key pressed while drawing.

1.3.3 Drawing a perfect shape from the center outward

Keep the CTRL + SHIFT keys pressed while drawing.

1.3.4 Drawing the same shape several times

For all shapes except the text box

Right click the required shape
Select the LOCK DRAWING MODE option
Click and drag and create as many shapes as you need

Finished ? : press the ESC key on the keyboard

1.3.5 Special : scribble and freeform

Scribble : the mouse pointer turns into a pencil. Click and drag to draw.
Free form : click in sequence to create straight segments and click and drag to create curves. Double-click to end the shape or click on the start point.

Edit segments to modify them : right click the shape and select the EDIT POINTS option.
See topic on page 85.

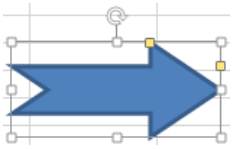
1.3.6 Adding text

Select the shape and type *or*
Right click the shape and EDIT TEXT

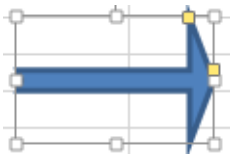
1.4 Managing the shape by using the mouse

Selecting	Click on the shape Select more than one shapes by using the usual Windows techniques : CTRL or SHIFT. You may also use the *arrow* to select objects. *HOME Tab – EDITING Group – Drop-down list of the FIND & SELECT Button –SELECT OBJECTS Option* Objects will have a selection priority. You can click and drag to include all the required objects (any object 100% included will be selected)
Sizing	Click and drag a side or corner handle. No proportionality issue as for pictures.

The yellow lozenge



Many shapes will display this yellow lozenge when selected. You can use it to re-size a portion of the shape.



Here the top lozenge has been used to work on the arrow's length and the side lozenge on the arrow's width

Rotating It is the round handle located at the middle top of the shape. The text follows the shape.

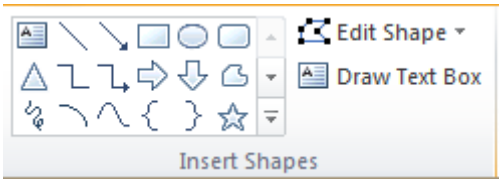
Moving/Copying *Move* : click and drag the shape (caution do not click onto a sizing handle). If you combine this with the CTRL key, you will *copy* the shape.

Or click and drag the shape but using the right mouse button and you will be prompted to choose between a copy and a move.

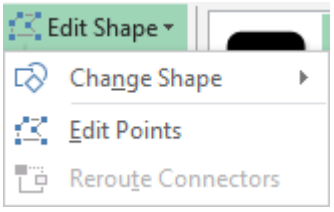
Deleting Click to select the shape and press the DELETE key

1.5 FORMAT Tab

1.5.1 The INSERT SHAPES group

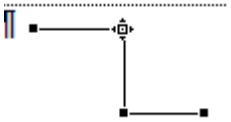


The Insert Shapes gallery To change the type of shape without having to switch to the INSERT tab.

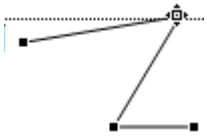


Change Shape
To change the shape without losing formatting attributes (colors, effects …)

Edit Points
Each segment is displayed

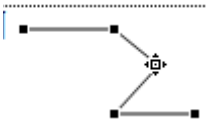


Click and drag a point = the « arrow » is distorted



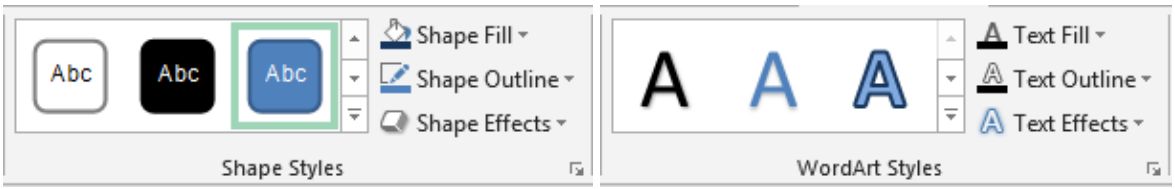
CTRL + click a point = the point is deleted and the two segments are consequently merged

Click and drag a segment = you create a new point at the dragging start point.



Draw Text Box Button To insert a new text box without reverting to the INSERT Tab

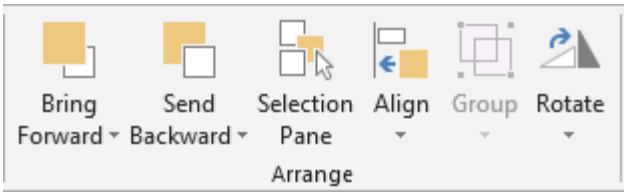
1.5.2 The SHAPE STYLES and WORDART STYLES groups



The Shape Styles gallery
Colors and various shadings … from the current theme.

WordArt Styles
WordArt Text effects are applied to the shape selected text

1.5.3 The ARRANGE group : bring to front or send to back, alignment, rotation …



Usual commands to arrange shapes when there are more than one (align, stacking order …)
Use the Selection Pane to view / hide one or more shapes.

1.5.4 The SIZE group

Set the size in cm.
Sizing using the mouse can be more comfortable.

1.6 75BSet the current shape format as default format

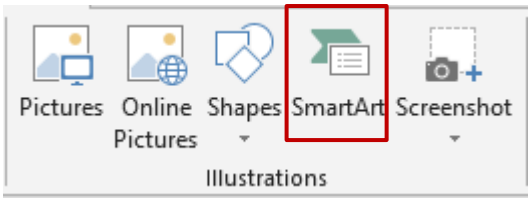
Only valid for this workbook

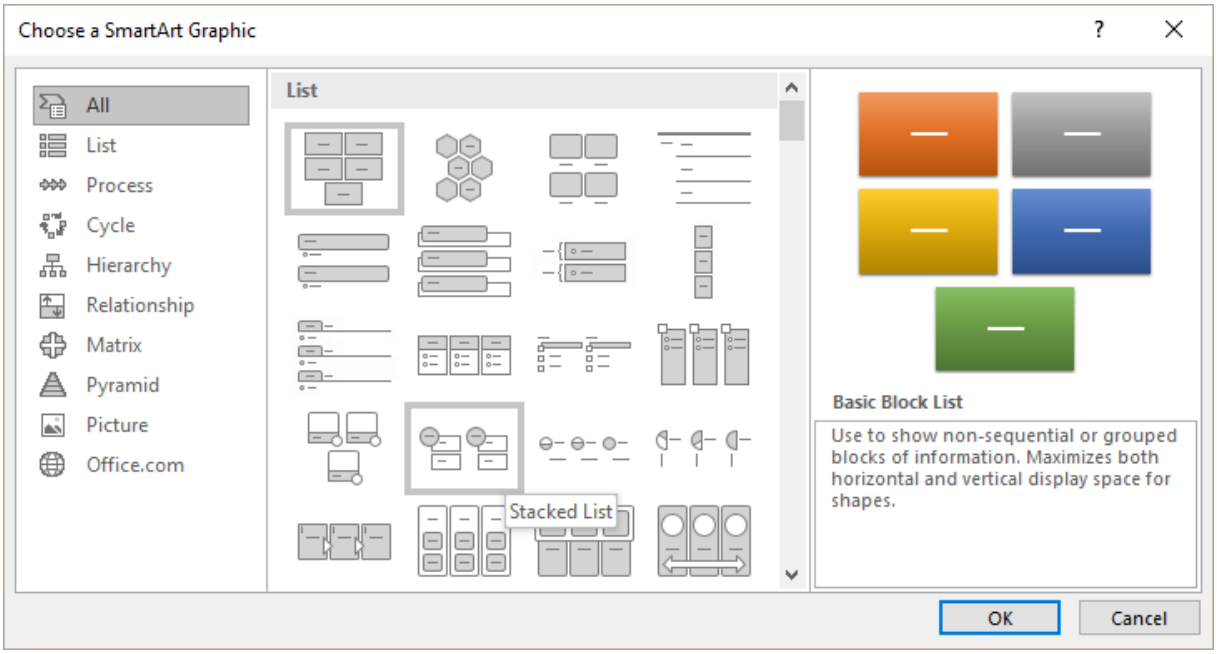
Right click on the shape and select the SET AUTOSHAPE DEFAULTS option.

2 SmartArt

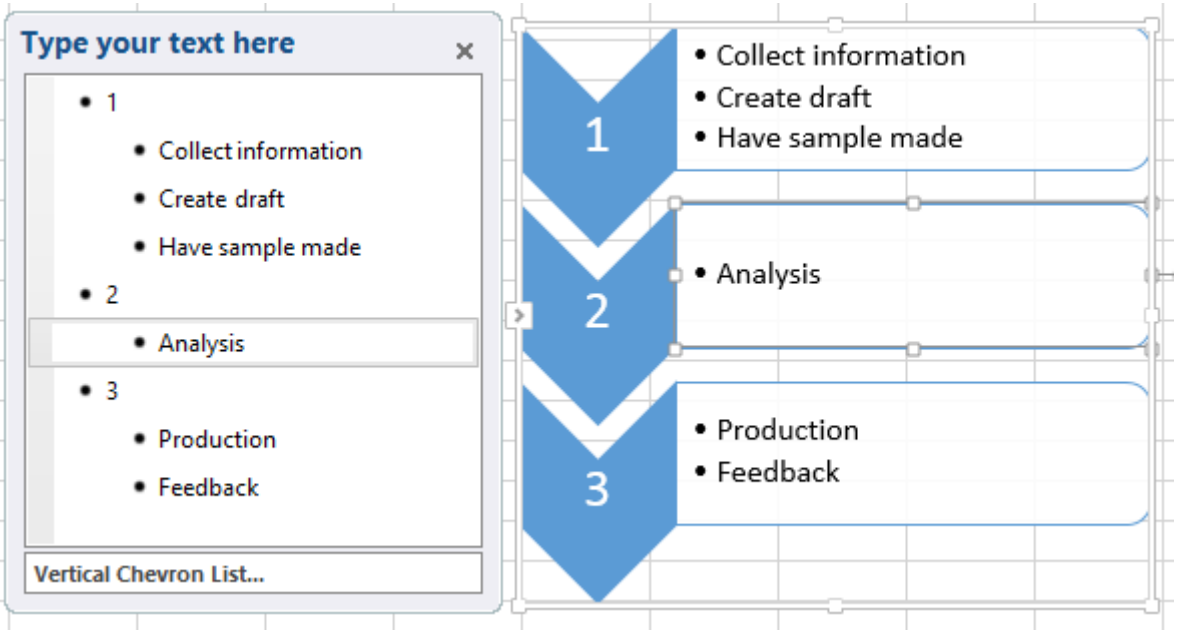
2.1 Creating

- INSERTION Tab – ILLUSTRATIONS Group – SMARTART Button





Here below an example :



2.2 Managing the SmartArt by using the mouse

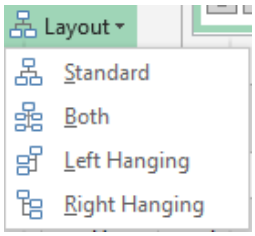
Selecting	Click on the outside border. No round handles as for pictures but corner handles display three little dots. No green rotation handle. If you click on one of the inside shapes, you only select this one. This shape will display the usual sizing round handles and the green rotation handle. When you click onto text, you simply position the cursor.
Deleting	Select according to what you need to delete (either the SmartArt itself or a given inside shape) and press the DELETE key.
Moving/Copying	Inside shapes can be freely moved (they are *floating* inside the SmartArt)
Sizing	Click and drag a size or corner handle (no problem of proportionality as with pictures).
View / Hide Text Pane	Click on its handle (left size – in the middle)

2.3 DESIGN Tab

2.3.1 The CREATE GRAPHIC group : adding a shape, a bullet, changing the layout, the shapes order …

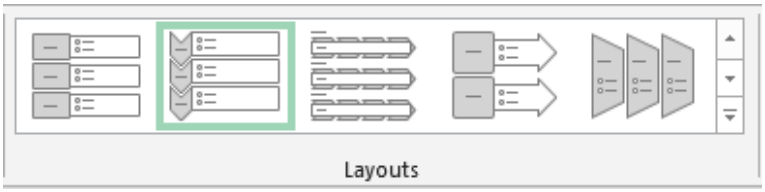
Add Shape	To add in an *inside* shape. *Note* : some types of diagrams will not allow you to add shapes (such as the gear type).
Add Bullet	You can add a bullet provided that the insertion point is placed in the text, inside a shape. *Note :* pressing the ENTER key at the end of a bullet paragraph will produce the same result According to the type of diagram, adding a new bullet may generate : *a new paragraph inside the existing shape* (list diagrams for example) or *a new shape containing a bulleted paragraph but attached to the active shape* (gear diagram for example).
Text Pane	To show or hide the typing pane that is displayed at the left or at the right of the SmartArt.

Layout	Not available for all types. Essentially for hierarchy diagrams
Promote / Demote **Move Up / Move Down**	Change the shape/bullet position in the SmarArt hierarchy Change the shape/bullet order position *Visual help : display the Text Pane* *For a bullet : TAB = demote / SHIFT + TAB = promote*
Right to Left	Inside shapes are reversed according to the chosen direction (one click = from right to left / one more click = from left to right)



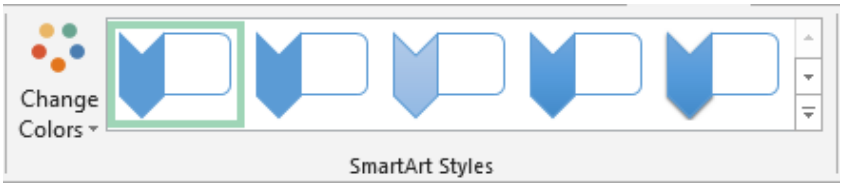
- **Typing text inside a bulleted list** : when the quantity of text increases, the size is automatically reduced accordingly. Not only inside the current shape, but in all shapes.
- **Format of the text** : you may apply formatting attributes in the Text Pane or directly in the shape itself. But please note that the format will be displayed only in the shape (not in the Text Pane)

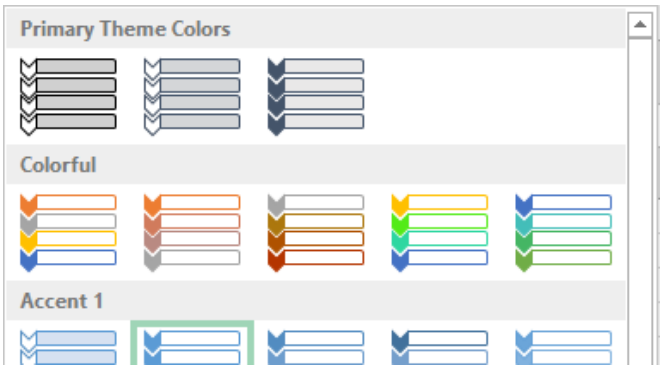
2.3.2 The LAYOUTS group : changing the SmartArt

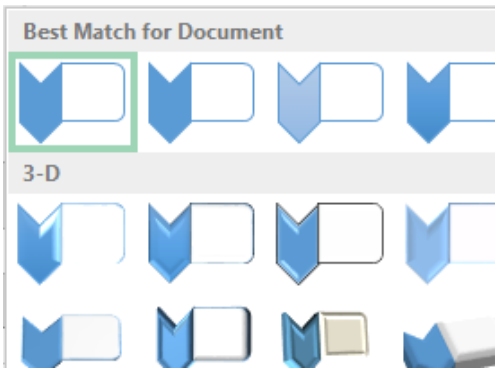


To change the SmartArt without having to return to the INSERT Tab …
Point the required type in the gallery : real-time preview … At the bottom of the gallery . the MORE LAYOUTS option display the general SmartArt insert dialog box.

2.3.3 The SMARTART STYLES group : adding styles effects



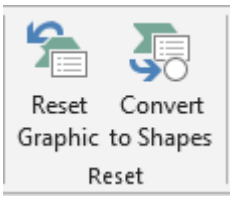




Les couleurs proposées proviennent du thème actif

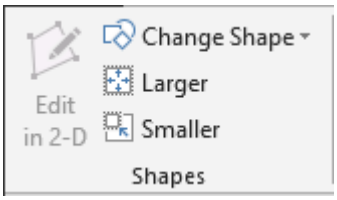
2.3.4 *The RESET group*

CONVERT TO SHAPES
Permet de convertir chaque forme en un dessin indépendant



2.4 FORMAT Tab

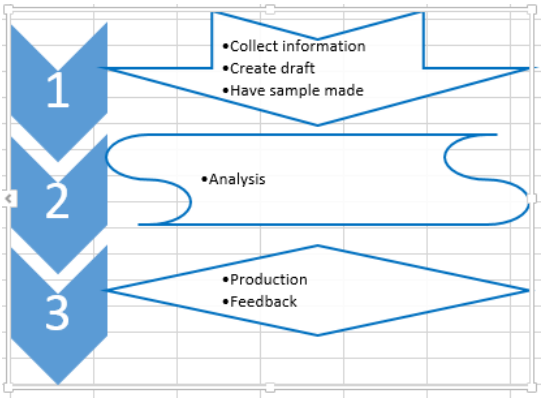
2.4.1 *The SHAPES group : working each shape individually*



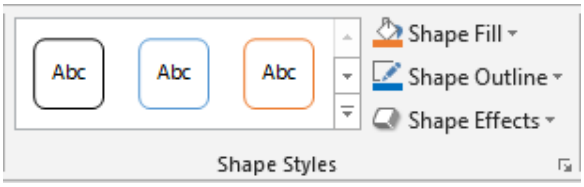
Select the required inside shape(s)

Edit in 2-D	Available only if the SmartArt is in 2D *style*
Change Shape	The gallery is the one displayed when you need to create a drawn shape. Make your choice and the shape will be adapted accordingly.
Larger / Smaller	To change the size of the inside shapes You may also produce the same result by clicking and dragging the shape handles.

Here after our SmartArt with a few changes :



2.4.2 *The SHAPE STYLES group : colors, fill, outline …*



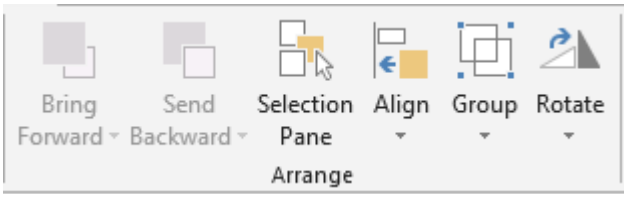
According to your selection : the whole SmartArt or the selected shape(s)

Reminder on colors: they follow the active theme
Outline, Fill …. …. the possibilities are …. numerous

2.4.3 The WORDART STYLES group : effects applied to the shape text

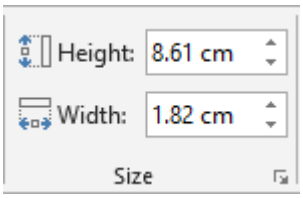
According to the selected text
Reminder on colors : they follow the theme color
Fill : color of the letters
Outline = border line of the letters
Text effects : heap of effects ,,,

2.4.4 The ARRANGE group : bringing to front or sending to back, aligning, rotating ...



The usual commands to arrange shapes they are more than one (align, group …).
Use the Selection Pane to view / hide one or more SmartArt.

2.4.5 The SIZE group

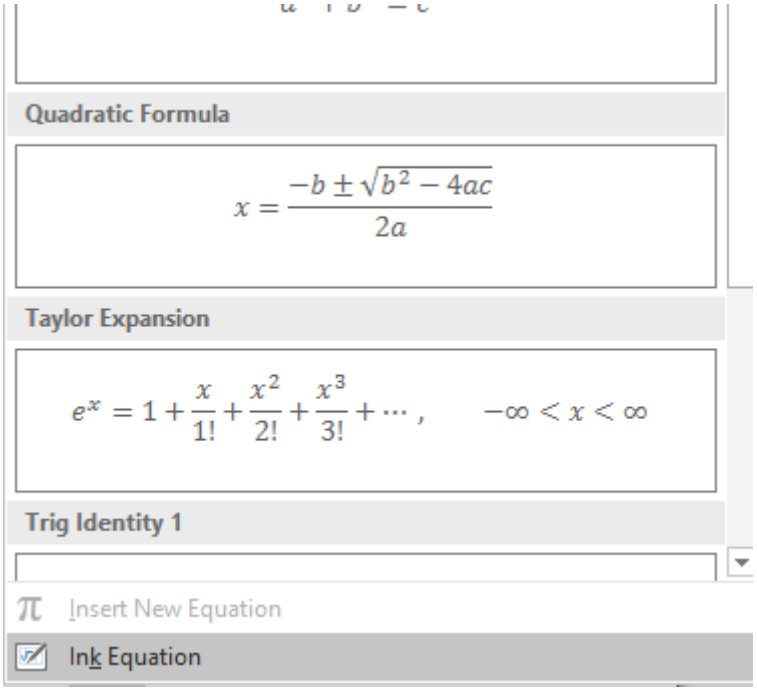


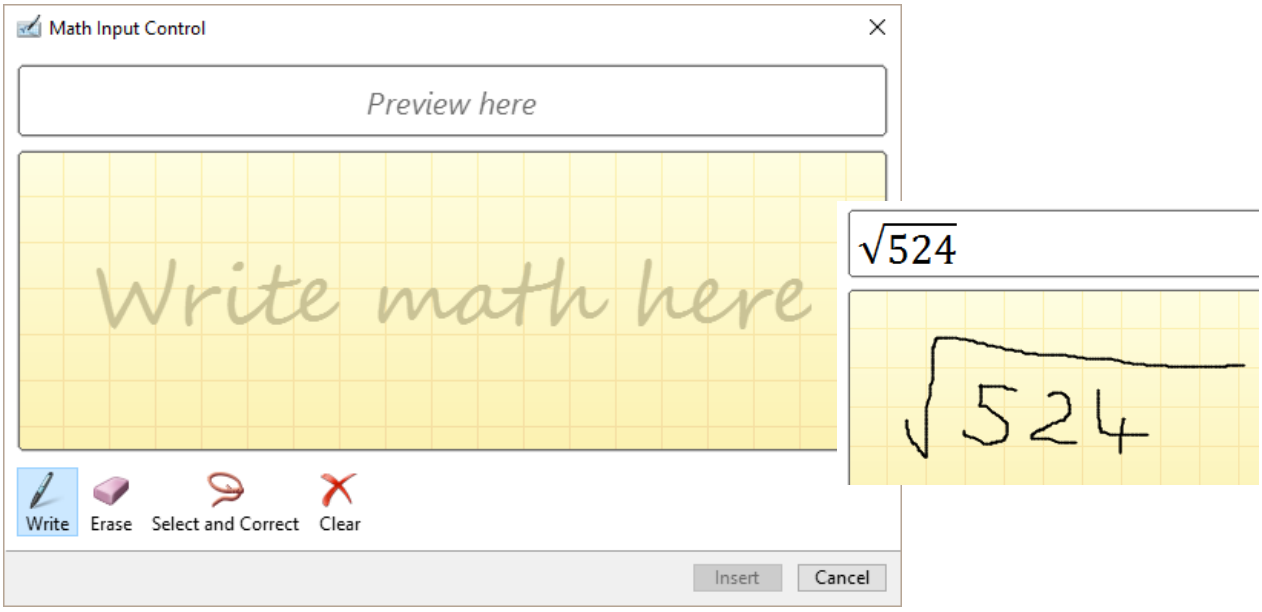
Set the size in cm

Note : you may also size the SmartArt by simply clicking and dragging its sizing handles.

3 Ink equation

- INSERT Tab – SYMBOL Group



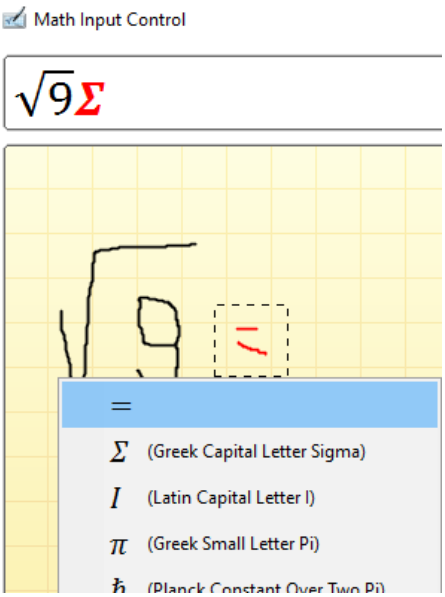


If you do not draw nicely …. you'll get a bad understanding !.

The ERASE button (eraser) : you can erase and draw again

The CLEAR button (cross) : caution ! EVERYTHING is removed

The SELECT AND CORRECT button : you select the badly understood part and a list of suggested corrections is displayed (here a problem with an equal sign) :



Click on the INSERT button
The result is a standard object

Managing : the DESIGN Tab