Charts (Part 2)

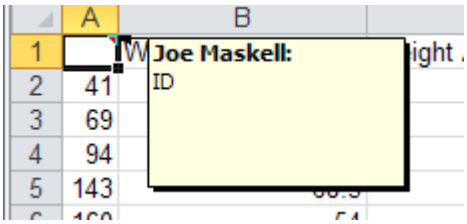
"Before and after" charts

If you are interested in looking at a characteristic of a group of people before and after some event then a line graph is the best one to use.

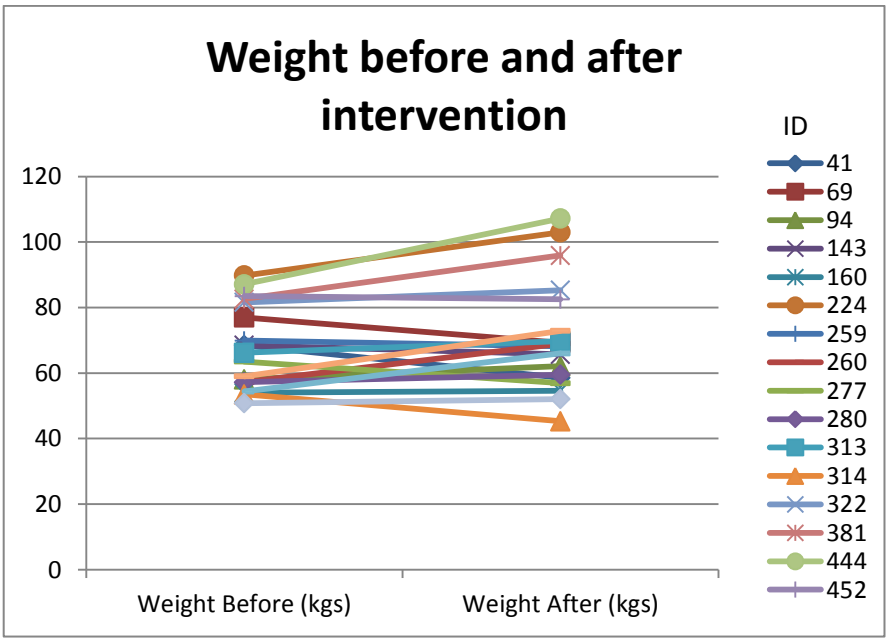
Say you have some data that is similar to the data below and you want to look at a chart that shows the before and after data points for each ID.

ID	Weight Before (kgs)	Weight After (kgs)
41	68.5	58.6
69	77	69.3
94	58.1	62.1
143	68.5	65.7
160	54	54.6
224	89.8	103
259	69.9	68.2
260	57.2	69
277	63.5	56.9
280	57.2	59.5
313	66.2	69.7
314	53.5	45.3
322	81.6	85.3
381	82.6	95.9
444	87.1	107.2
452	83.5	82.5
498	54.4	66
516	59	72.9
600	50.8	52.1

To do this, first you need to delete "ID" as a column label. This is because if it is there then Excel takes the information in that column as another data series and then it is time consuming to turn it back into labels. To label the column you can put a comment where the heading was and write "ID" as the comment.



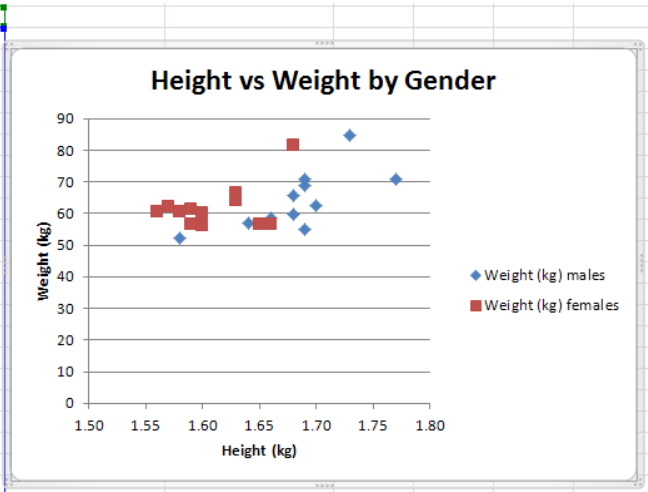
Next, highlight the data and click on ***Line*** in the ***Charts*** group of the **Insert** tab. Choose ***Line with Markers***. Then, with the chart selected, click on ***Switch Row/Column*** in the ***Data*** group of the **Design** tab of ***Chart Tools***. After adding a title and a text box above the legend the chart looks like this.



Distinguishing between groups on a Scatter Plot

In Charts (part 1) we produced a scatterplot of height vs. weight. Say we have gender in our data we might want to distinguish between these two groups in our chart. To do this we have to organise the data in a particular way.

	Gender	Height (m)	Weight (kg)	Weight (kg) males	Weight (kg) females
27					
28	f	1.56	60.4		60.4
29	f	1.58	60.5		60.5
30	f	1.59	56.7		56.7
31	f	1.60	56.0		56.0
32	f	1.65	56.7		56.7
33	f	1.66	56.5		56.5
34	f	1.60	60.3		60.3
35	f	1.57	62.0		62.0
36	f	1.59	61.5		61.5
37	f	1.63	66.5		66.5
38	f	1.63	64.1		64.1
39	f	1.68	81.7		81.7
40	m	1.58	52.2	52.2	
41	m	1.66	58.6	58.6	
42	m	1.64	56.8	56.8	
43	m	1.68	59.8	59.8	
44	m	1.69	54.9	54.9	
45	m	1.68	65.5	65.5	
46	m	1.69	71.0	71.0	
47	m	1.69	69.0	69.0	
48	m	1.70	62.4	62.4	
49	m	1.73	84.6	84.6	
50	m	1.77	70.8	70.8	



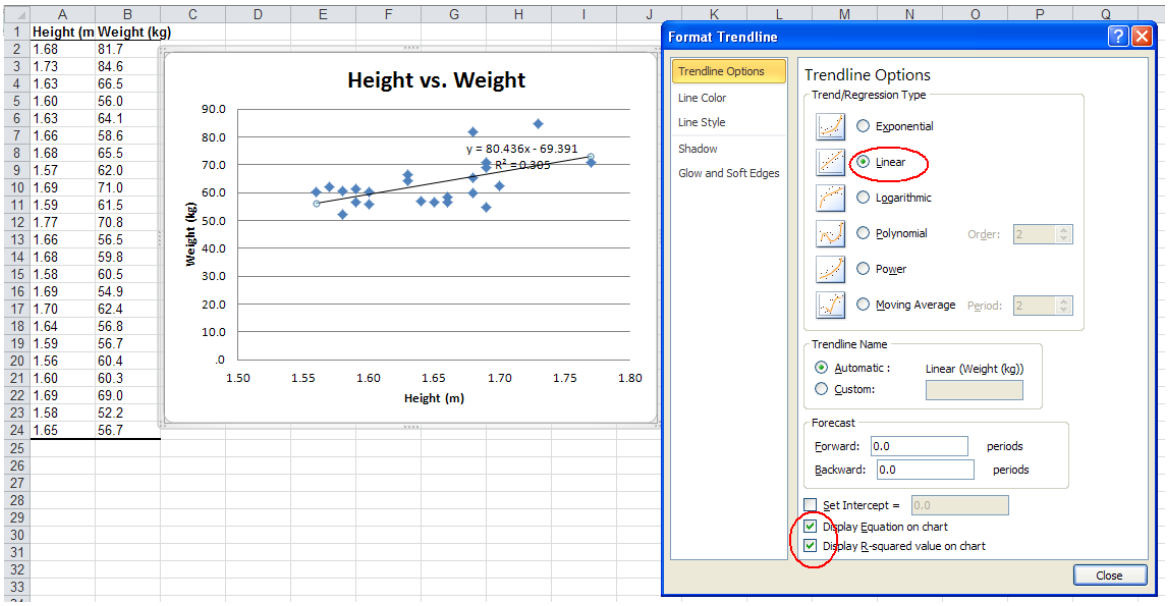
You can see in the screen shot above that the data has been sorted by Gender.

Then the Weight (kg) column has been split into two columns, one for males and one for females. It is important that you split the data that is going to appear on the vertical axis and not the data that appears on the horizontal axis. Also, remember that the data that is going to appear on the horizontal axis must be to the .

Note *To select data that is not adjacent, use the <Ctrl> key to select non-consecutive columns or rows. Highlight the first column then hold down the <Ctrl> key whilst highlighting further column(s). Do not leave any empty rows or columns in the area of data to be plotted. Include cells containing labels for rows or columns.*

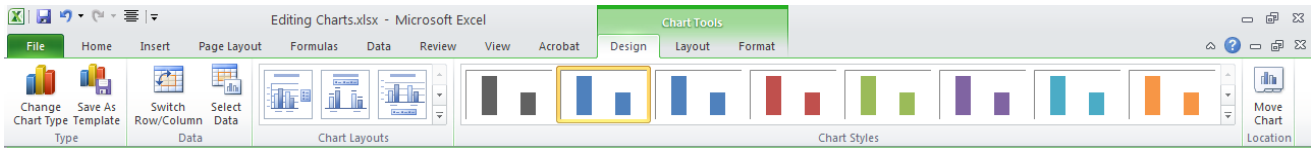
Adding Regression lines

If we want to add a regression line to our scatter plot then all we have to do is right click on a datapoint and choose ***Add Trendline…***Then in the ***Format Trendline*** dialogue box choose ***Trend/Regression Type*** as ***Linear*** and, to see the *R-squared value* and the equation of the line, select these tick boxes at the bottom of the dialogue box as shown below.

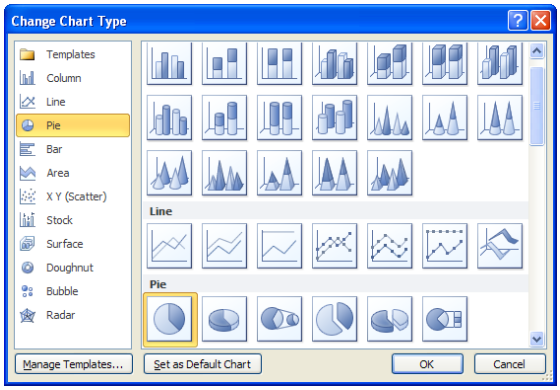


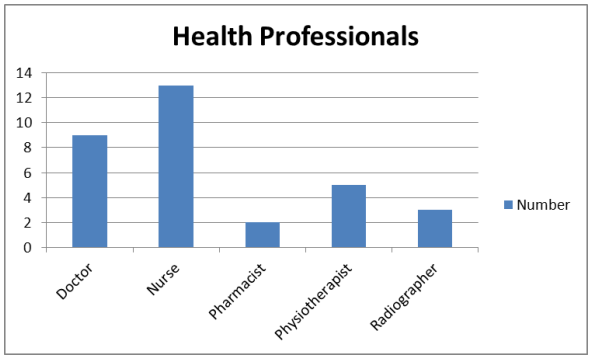
Editing Charts

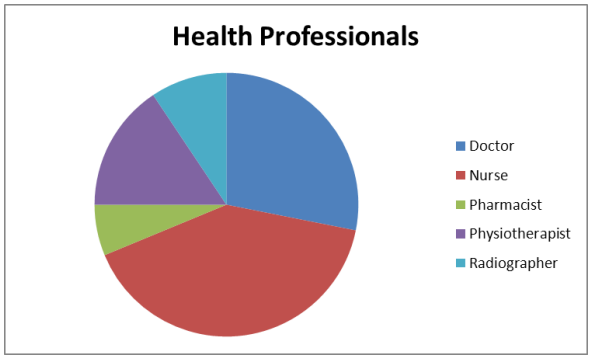
It is very easy to edit charts in Excel 2010. You select the chart by clicking on it and then use the various options available in the ***Chart Tools*** group that appears once you have selected the chart.



In the ***Design*** part of ***Chart Tools*** (the left hand tab of the green group above) we can change the chart ***Type***. For example we can change the bar graph we made in the charts section into a pie chart. Simply click on ***Change Chart Type*** (on the far left) and choose ***Pie***.

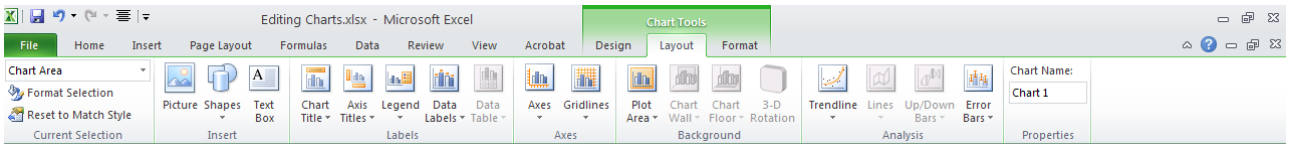




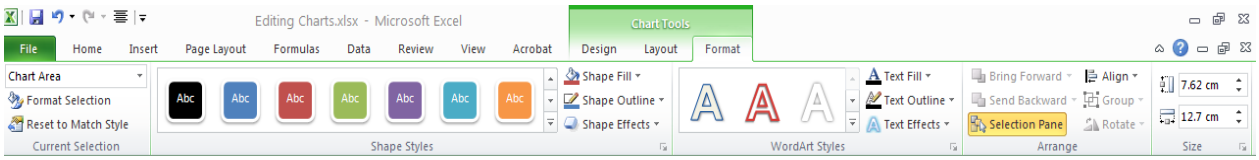


We can change the colour scheme, what information is displayed on the chart and the location of the chart all in the **Design** part of ***Chart Tools***.

In the **Layout** part of ***Chart Tools*** we can add shapes like arrows and text boxes to write explanations about the chart in, and we can add a title to the chart and to each axis. We can decide what information to display on each axis and add or remove gridlines. We can add a trendline and error bars to a chart.



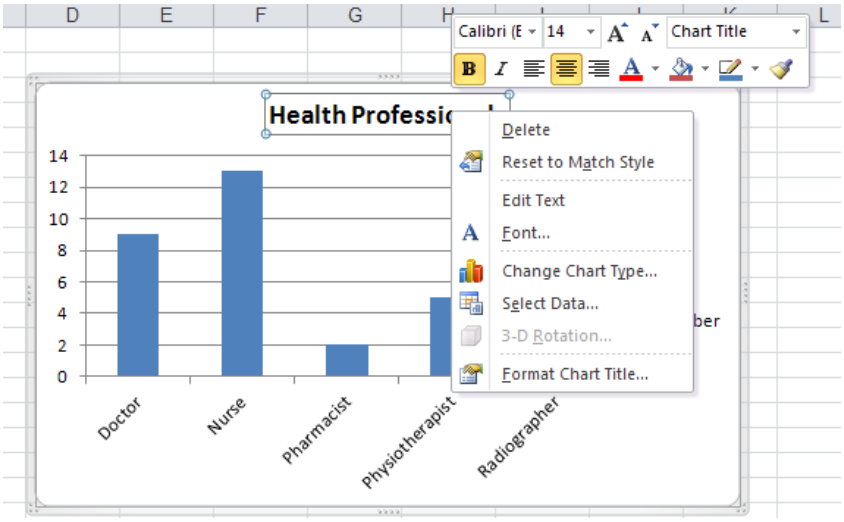
In the format section we can change the colours and the shape and size of different elements in our chart and format any text that is on the chart.



Each part of a chart is considered to be a distinct object, for example the main title, the category (x) axis, the plot area. Each object has its own set of attributes whose format can be changed, or the object can be cleared.

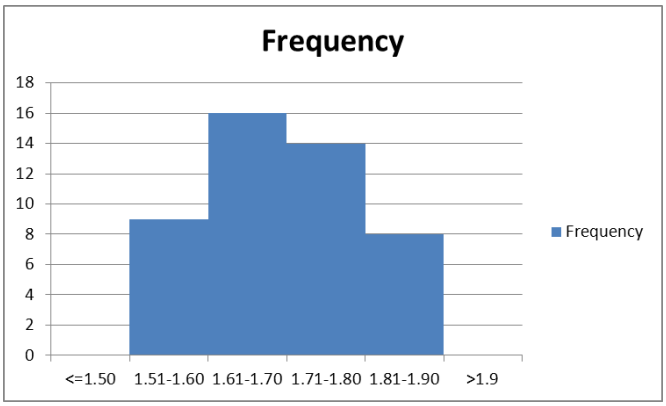
To edit a chart you can use the options in the ribbons that we have just looked at or you can double-click on the area or item that you wish to edit and the appropriate dialogue box should appear, or click the right mouse button over an object to reveal a dialogue box or tool bar and select from this. For example, if you double clicked over the bars, in a bar chart, the ***Format Data Series*** dialogue box is displayed. If you double click a single bar then the ***Format Data Point*** dialogue box is displayed.

To edit text directly, for example the main title or an axis title, without using dialogue boxes, make two single clicks (not a double click) on the text, which can then be modified. To edit the font, right click on the text and choose your changes from the toolbar that appears above.



Example of editing a chart

Let's edit the histogram we produced at the end of the Charts section. If you remember, it looked like this.



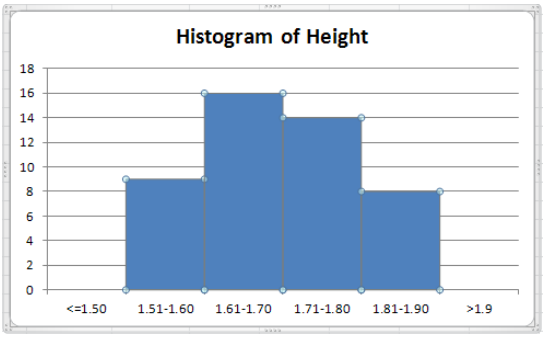
We can click twice on the title to change what is written. Then we can right click on it to edit the size of the text. I'm going to make it smaller.

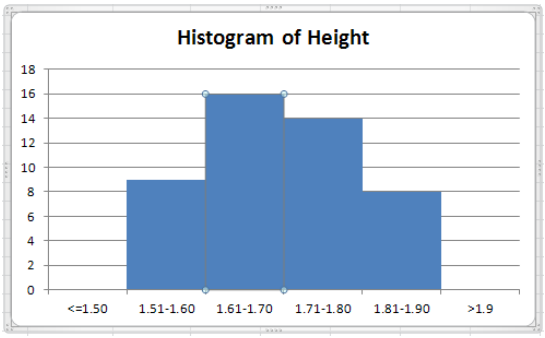
I'll delete the legend. I can do this by clicking on it and then pressing delete, or right clicking on it and selecting delete, or by going to the Layout tab in Chart Tools, clicking on the Legend icon in the labels group and selecting None.

I could add borders around each rectangle so it doesn't look so much like a blob.

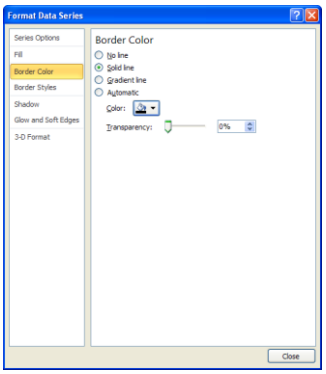
When you click on the data series such as the columns in this chart with the first click the whole data series is highlighted and so you can then edit the whole series at once. If you click

again (but not a ‘double-click’) then an individual data-point will be highlighted. This is shown by the dots at the corner of each rectangle.



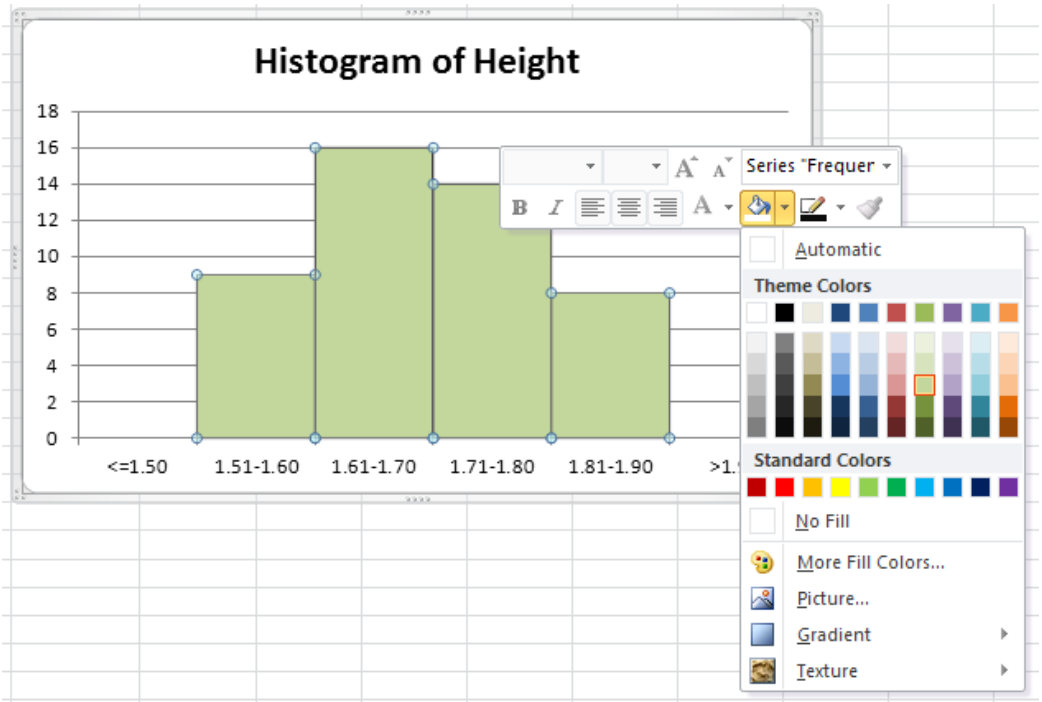


Right clicking on the highlighted rectangles and then selecting ***Format Data Series…***brings up the ***Format Data Series*** dialogue box If you double click on the columns of the chart then you will get to the same dialogue box.



By choosing ***Border Color*** and then clicking on Solid line and using the drop-down menu to change the colour to black and then clicking ***Close*** borders will appear around our rectangles.

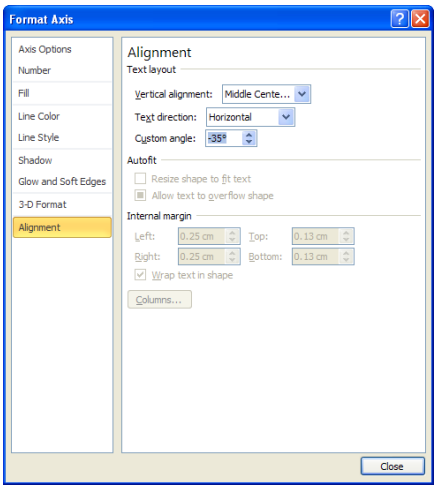
We can also change the colour of the rectangles. To do this, select all of the rectangles and right click to reveal a toolbar with various editing options.



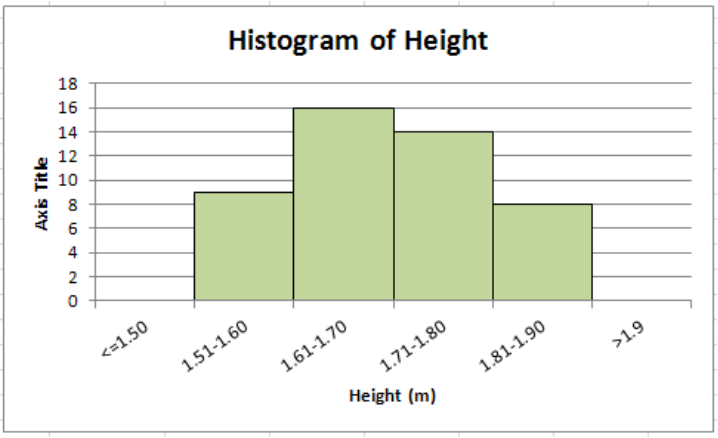
The paint can is the icon to click on for changing the fill colour. If I select this then I can choose the colour from the choices available. As you glide over the colours with the mouse pointer the rectangles will change colour, giving you a preview before you click on the colour you want them to be. The icon to the right of the paint is the icon for changing the shape outline. We could have used this earlier to produce our black outlines.

What next? We could make the labelling on the x-axis clearer. Double clicking on the x-axis brings up the Format Axis dialogue box.

I've selected Alignment on the left and I've changed the custom angle to -35 degrees so that there is more space between each label.



We could also labels the x and y axes. To do this click on the **Layout** tab in ***Chart Tools***. With the chart selected, click on **Layout** and then ***Axis Titles***. Select ***Primary Horizontal Axis Title*** and ***Title Below Axis*** and then select ***Primary Vertical Axis Title*** and ***Rotated Title***. Then we can edit these titles by clicking twice on them. Finally I'm going to decrease the font size of the title and my histogram looks like this.



Embedded charts and chart sheets

You can create an embedded chart as an object on a worksheet when you want to display a chart along with its associated data. For example, you can use embedded charts for reports and other documents in which it is best to display a chart within the context of the worksheet data.

An embedded chart can be sized or moved on the worksheet. To size an embedded chart:

1. Click once anywhere on the chart so a transparent outline surrounds the chart.
2. Position the mouse pointer over a handle so it changes to a double headed arrow.
3. Click and drag the arrow to size the chart. ***Hold down the <Shift> key whilst sizing to keep the embedded chart's original proportions***.

To move an embedded chart:

1. Position the mouse pointer anywhere over the chart.
2. Click and drag the whole chart to a new position. ***Hold the <Alt> key whilst sizing or moving for the embedded chart to snap to the cell grid.***