

18 Charts

The SPSS Graphs menu provides three options to create graphs, *Chart Builder*, *Graphboard Template Chooser* and *Legacy Dialogs*. We will be using Chart Builder.

This section will deal with creating charts and plots using the Chart Builder. We will assume that you have the data file *Health4.sav* open.

The Chart Builder allows you to drag elements and variables on to a preview of the type of chart you want to create.


Note: Charts and plots can be created from some statistical procedures on the Analyze menu.

19 Bar charts

Suppose you want to create a bar chart of Marital Status

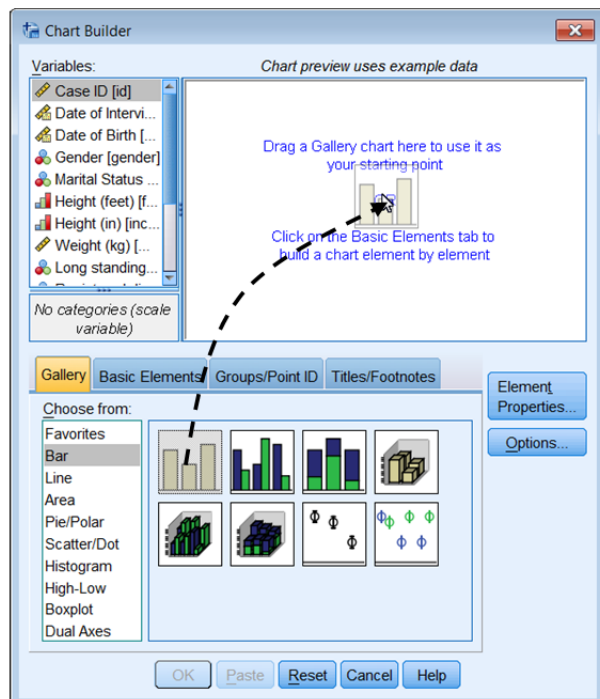
Select **Graphs | Chart Builder**. The dialog box opposite is shown.

Make sure that the *Gallery* tab is showing. Select *Bar* from the *Choose From:* list.

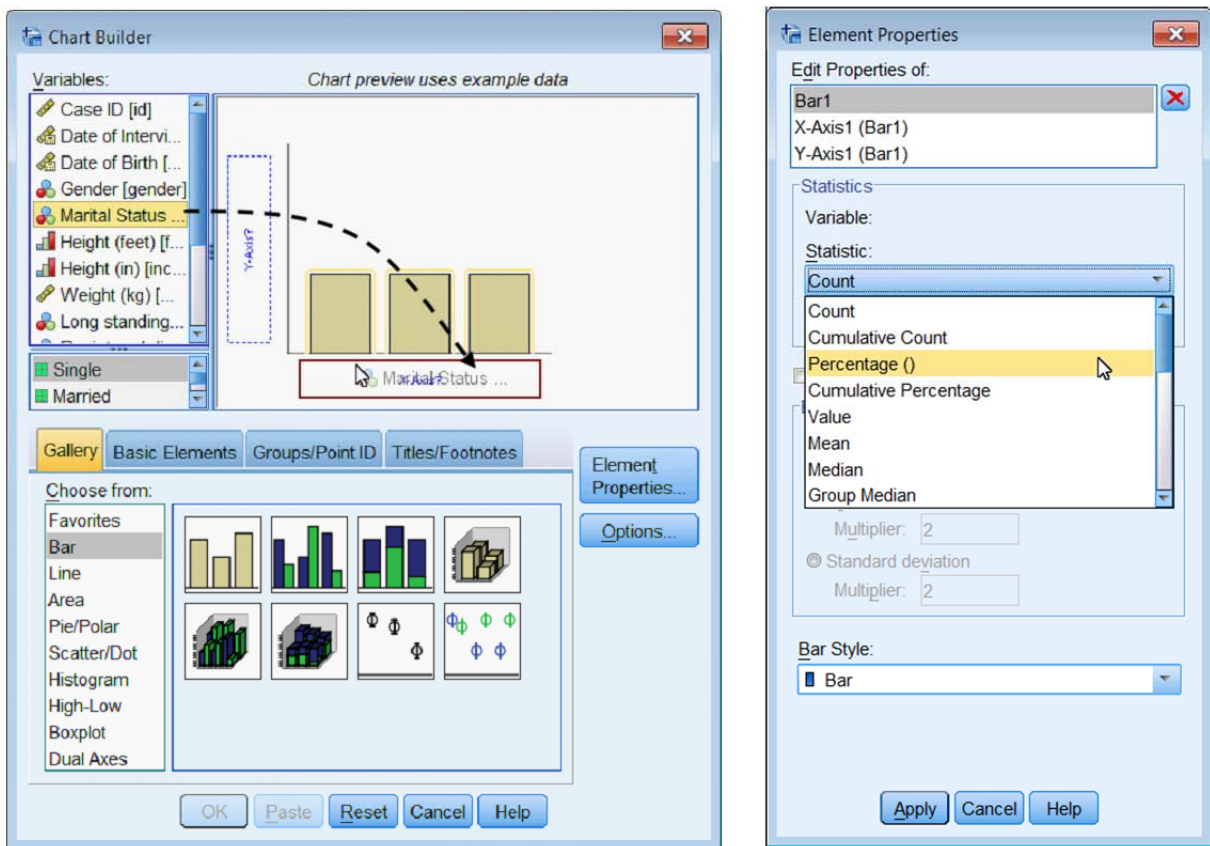
Drag the Simple Bar icon  on to the chart preview area.

A preview of the type of chart is displayed.

An Element Properties dialog will open, see next page.




Drag Marital Status from the Variables list on the X-Axis 'Drop Zone' X-Axis?



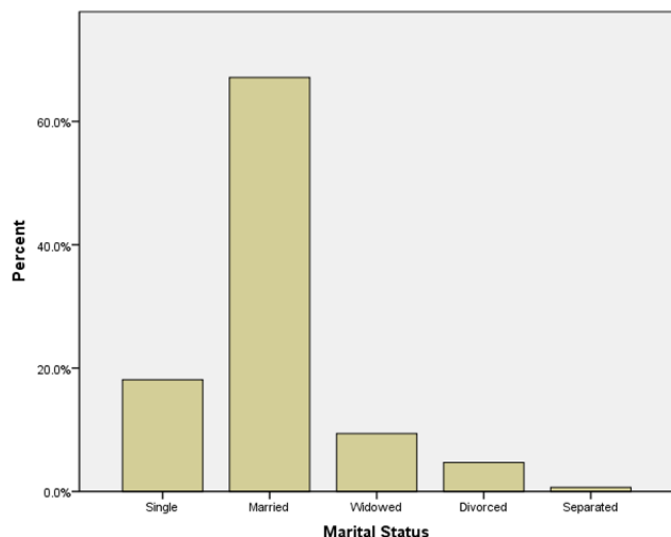
Select the Elements Properties dialog and ensure that in the *Edit Properties of* list **Bar1** is selected. Use the *Statistic* drop down list to select **Percentage()**. Click **Apply** to make this change.

An important point is that the **OK** and **Paste** buttons are not enabled until the Chart Builder has enough information to generate the chart.

Click on Paste, move to the Syntax1 window, highlight the commands (starting from the line *Chart Builder and ending with ENDPGL.) and **Click on**  to run them.

The Statistics Viewer window will display the chart opposite.


Charts can be edited by double clicking on them in the Statistics Viewer. They can be exported as graphics files or copied to other applications (Word, PowerPoint). This will be described later.



Clustered bar chart

A clustered bar chart is the diagrammatic equivalent of a cross tabulation. Suppose you want to create a chart of Marital Status by Gender.

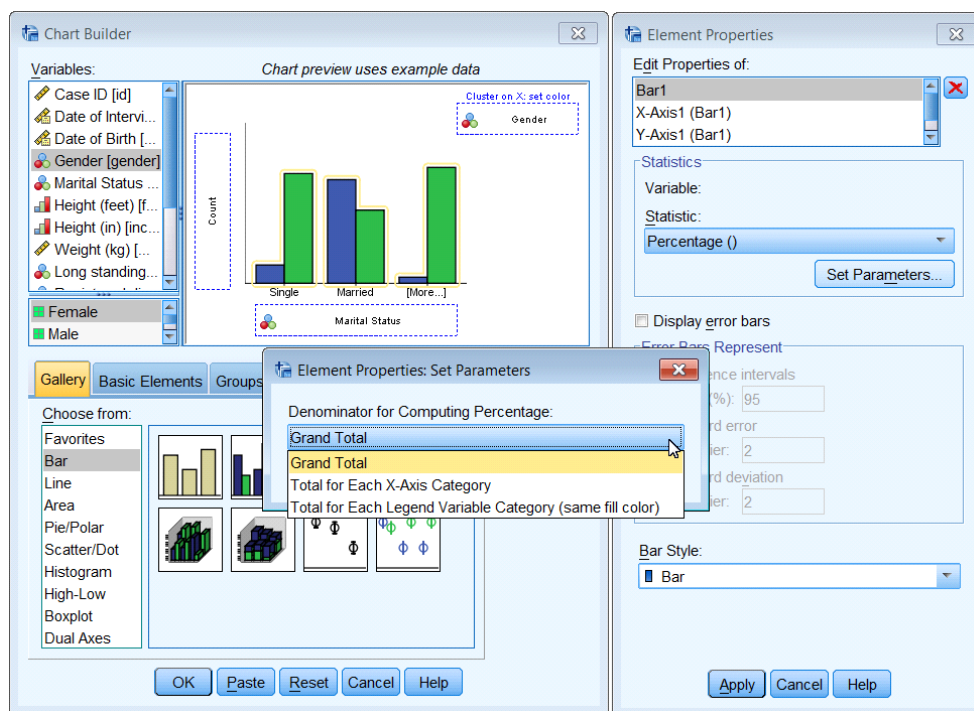
Select **Graphs | Chart Builder** the dialog will show the previous chart you created.

Drag the Clustered Bar icon  into the Chart preview. There is no need to Reset. Drag **Gender** from the Variables list to the **Cluster on X set color** 'Drop Zone'.

To use Percentages instead of Counts, change the **Statistic** drop down to **Percentage ()** in the Element Properties window.

Click the **Set Parameters** button to set the **Denominator for Computing Percentage** to **Grand Total**. There are various parameters which you chose depending on how you want to represent the data. Click to the Help button for an explanation of these.

Click **Continue** and then **Apply**.



If you want to add a title to the chart, select the **Titles/Footnotes** tab.

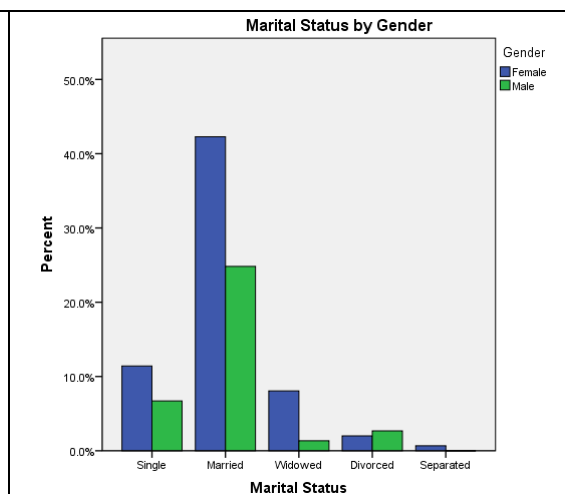
Tick the **Title 1** box.

Move to the **Elements Properties** dialog, select the **Content** panel and enter your title '**Marital Status by Gender**'

Click **Apply**

Click on **Paste** and **Run** the command from the syntax window.

The chart opposite will be produced.



Note: You may prefer to omit the title and add it as text in your Word or PowerPoint document above the imported image.


20 Scatterplots - XY graphs

To create a Scatterplot chart select **Graphs | Chart Builder**.

Press the **Reset** button to clear any previous charts.

Make sure that the **Gallery** tab is showing.


Select **Scatter/Dot** from the **Choose from:** list.

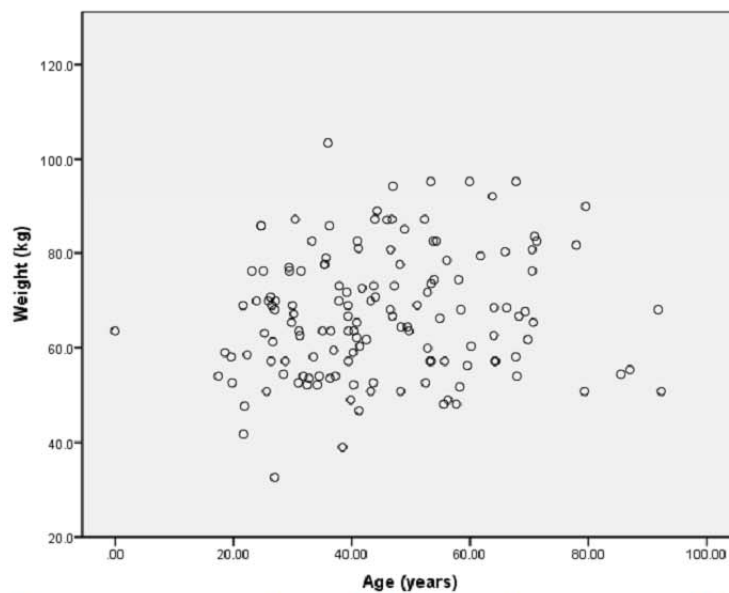
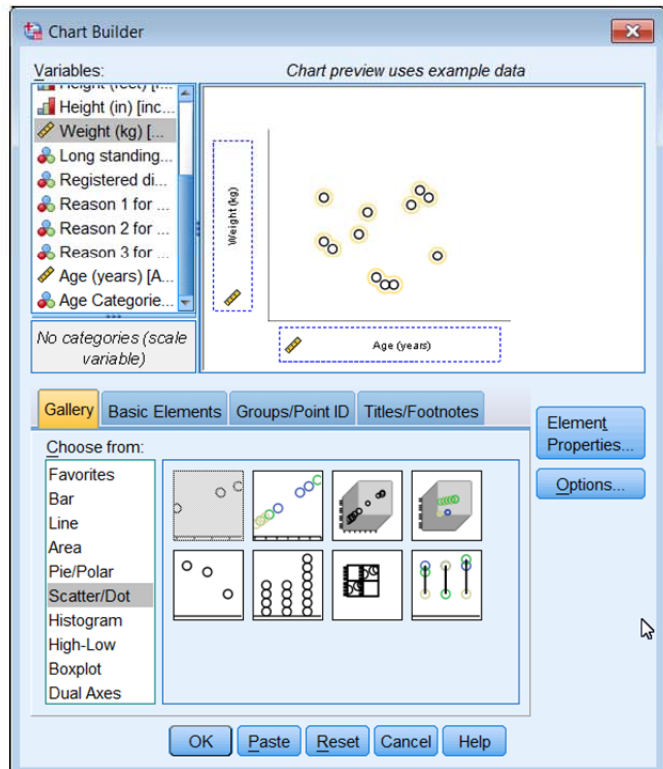
Drag the Simple Scatter icon  onto the chart preview area.

A preview of the type of chart is displayed.


Drag **Age** onto the X Axis Drop zone


Drag **Weight** onto the Y Axis Drop zone

Either **Click Paste** and then  from the syntax window, or **Click OK**.



Note: You can reduce or remove the decimal places on the axes scales before generating a chart using the Data Editor. In Variable View sheet and change the Decimals for each variable to zero

If you wish to identify males and female in the scatter plot, **Click** on the **Dialog Recall** button  on the toolbar and select **Chart Builder** from the list.

Choose the Gallery tab and drag the Grouped Scatter icon  on to the Chart Preview area. Drag **Gender** from the Variables list to the **Set color** 'Drop Zone'.

Paste and **Run** this command.

This will plot female and male data points as blue and green open circles.

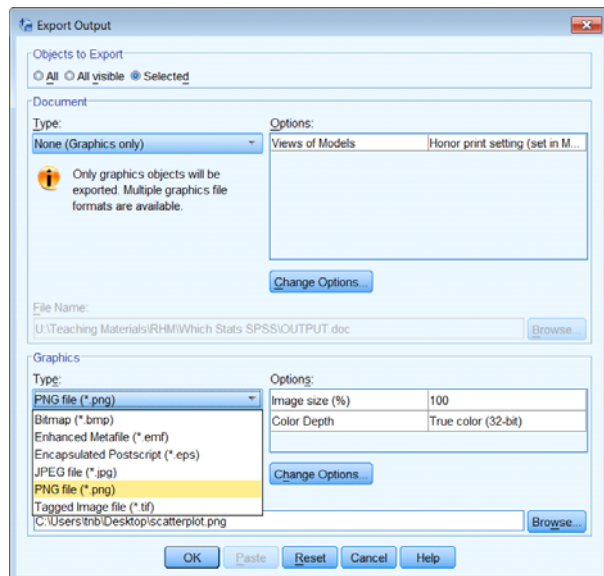
21 Incorporating SPSS charts into Word or PowerPoint

Note Make all the modifications/changes to your chart before transferring it to another application. Although Word and PowerPoint have some editing capability, they are less flexible!

There are two options for placing a chart in a document.

1. **Copying.** From the SPSS Statistics Viewer select the chart, select **Edit** | **Copy**. Move to the other application (such as Word or PowerPoint) and select **Edit** | **Paste**.
2. **Export** the chart, by selecting it in the SPSS Statistics Viewer. Select **File** | **Export** from the menu.
 - i. Choose which **Objects to Export**:
 - ii. From the **Document Type** drop down select **None (Graphics Only)**
 - iii. From the Graphics **Type** select **PNG File (*.PNG)**. Better than JPEG
 - iv. **Click** on **Browse** in the **Root File Name** panel to locate the folder and specify a name for the export file in the text box

Click OK



Saving a file as an image removes your ability to edit the chart again using SPSS. If you think that you might wish to edit the chart again, save the contents of the SPSS Statistics Viewer which will include the chart. The SPSS Statistics Viewer output document can be reopened and any Chart opened by the Chart Editor and changes made. However SPSS Statistics Viewer files (*.SPV) can be very large, so it is best delete any unwanted charts before saving the SPSS Statistics Viewer content.

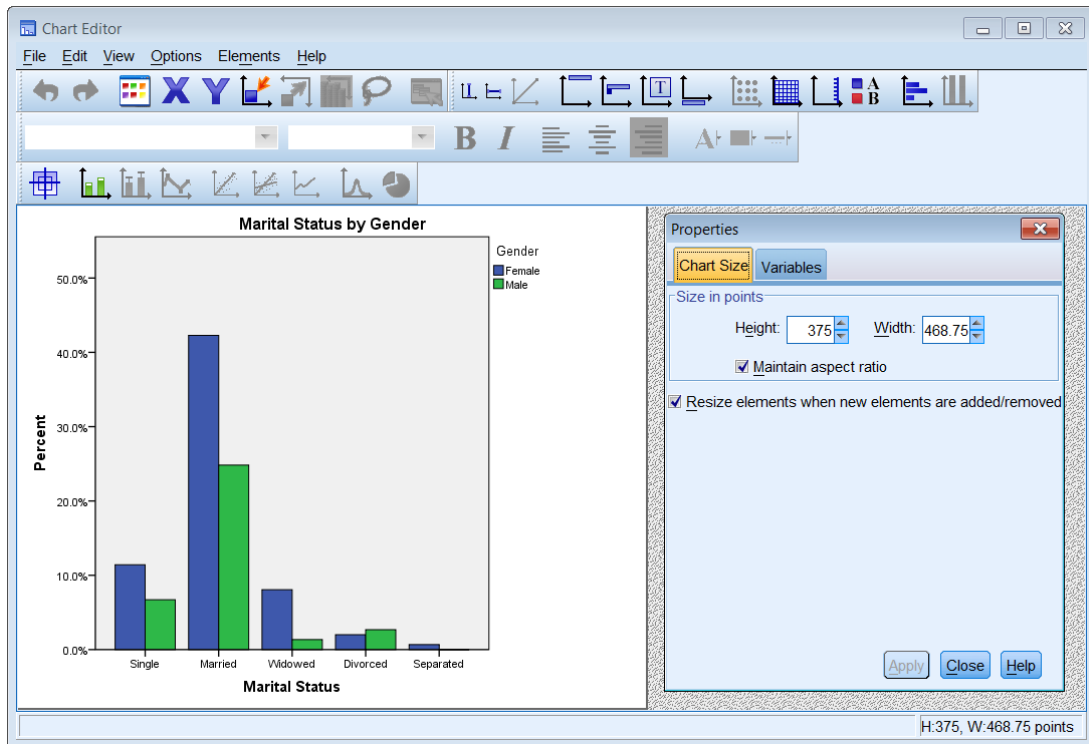
22 Saving Charts

It is recommended that you save charts as individual files if you intend to use them in other applications (Word or PowerPoint).

23 Modifying Charts

Charts may be modified by **double clicking** the chart in the SPSS Statistics Viewer. This opens the Chart Editor window, revealing the chart menu and buttons that may be used to modify the chart.

The figure below shows a Clustered Bar chart created previously for Marital Status by Gender displayed in the Chart Editor window. A properties dialog is also shown. The Properties dialogue displays different content according to which is the currently selected object in the chart.



The options for each menu item are described on the next page. They provide general and chart specific functions.

Chart Editor Menu options

File You can Save Chart Template (save a chart to use as a template on other charts), Apply Chart Template and Export Chart XML (to be read by or incorporated into other applications).

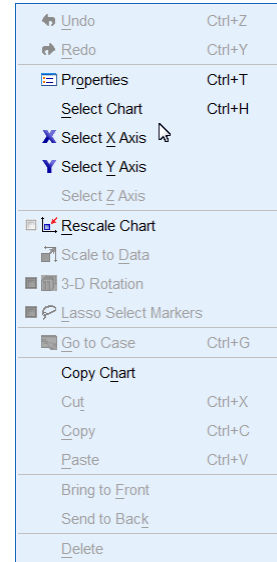
Edit Provides the standard **Undo** and **Redo** options and the Cut /Copy and Paste functions for some chart elements.

Properties displays the properties dialogue box which is used to change the properties of the currently selected element in the Chart Editor. The properties dialogue box can also be opened by

clicking , on the Chart editor toolbar.

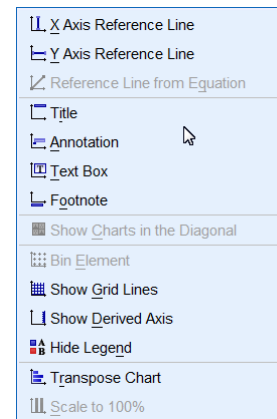
The tabs displayed vary according to the chart object that is currently selected.

Copy Chart copies the chart to the Clipboard from where it can be pasted into another application.

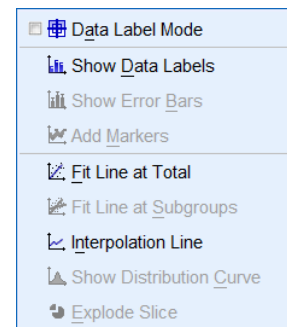


View From the View menu, you can control which toolbars are displayed and the size of the buttons on them.

Options Provides features to add text and lines to the chart. Many of these functions are provide on the Toolbar as well.



Elements Used to show Data Labels, Error Bars, Line Markers or add regression lines to a chart.



Help Provides the same access to Help as it does throughout the system.

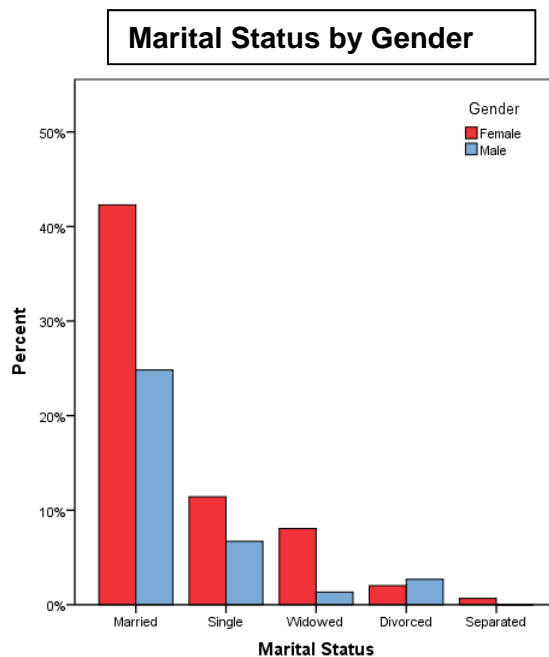
Modifying Chart Elements

The figure opposite shows the Clustered Bar chart created previously for Marital Status by Gender (see page 52) that has been modified using the Chart Editor.

A chart is made up of a number of Elements or Objects. Each element can be edited by clicking on it to select it.

The selected element is identified by a yellow border around it.


Note The chart editor can be slow to respond when you click on an object to select it. Be patient; count to five if it is slow!



To modify any chart objects either:

Double-click on the object in a chart, and the Properties window will appear;

or

Single right-click on the object and click the Show Properties Window icon, ;

or

Single-click on text (such as a label) and click again on the text to change the text content

or

Use select **Edit | Properties** on the Chart toolbar.

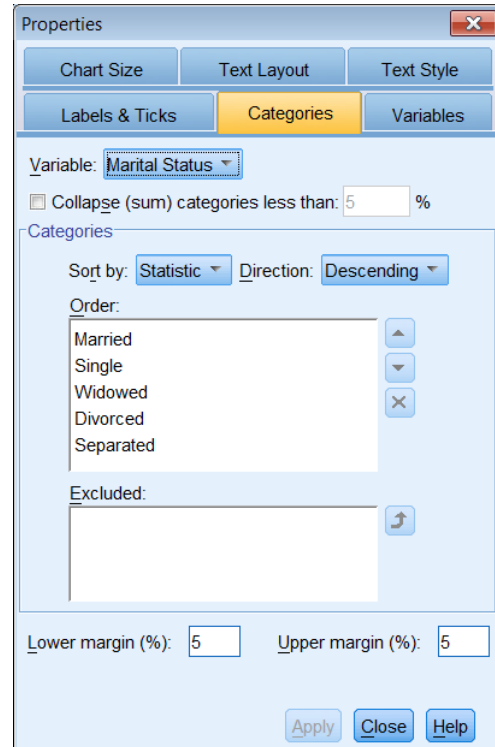
For example to change the order in which the categories for marital status are displayed, **double click** on any bar.

Select the **Categories** tab in the Properties window.

Select the **Variable** of interest, **Marital Status**








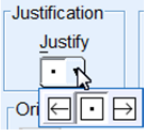
Select your **Sort by**: option, **Statistics**

Select the **Direction**: for the sort, **Descending**



Note: Whenever you make a change to an object in a chart you must click **Apply** for it to take effect.

The Marital Status by Gender clustered bar chart (shown above) was modified as follows:

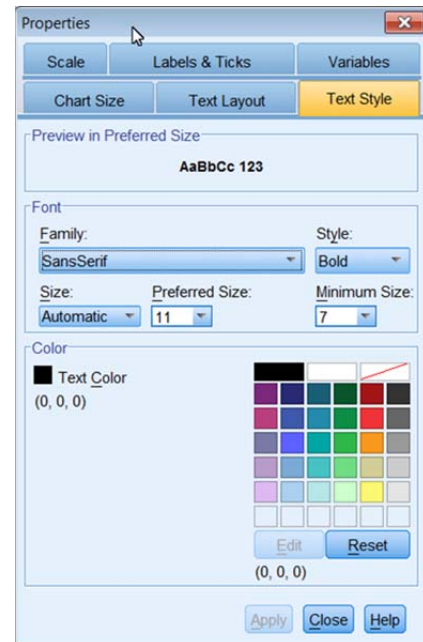
| | |
|-----------------------------|--|
| Chart window | <p>Double-click on the chart in the SPSS Statistics Viewer to open the Chart Editor window.</p> |
| Chart Title | <p>You are advised to add a chart title once the image has been imported into Word or PowerPoint.</p> <p>To remove a title, click on it, a yellow box with handle will appear. Press the Delete key.</p> <p>To add a title using the Chart Editor, click the <i>Insert a Title</i> icon  or select Options Title from the menu. Overtyping the word Title with <u>Marital Status by Gender</u>. (Make two single clicks on Title if it is not selected) Select the Properties dialog, Use the <i>Text Style</i> tab to change Font or Size. Click Apply</p> |
| Removing a Missing Data bar | <p>If a bar for missing data is displayed, it may be removed by highlighting the bars on the chart (click on any bar). The <i>Properties</i> window should be displayed, if the window does not appear click the Properties, , icon.</p> <p>Select the <i>Categories</i> tab, use the <i>Variable</i> drop down  to select the variable with the missing item (e.g. Marital Status).</p> <p>Select the "Missing" item from the items in the <i>Order:</i> list. It may be the first item with no text. Click, , to move it to the <i>Excluded:</i> list, Click Apply.</p> |
| Reordering the bars | <p>This was described on the previous page. To order bars according to your own requirements, use the <i>Properties</i> dialog and <i>Categories</i> section, change <i>Sort by:</i> to <i>Custom</i>, reorder the categories (to married, single, etc) using the up and down arrows .</p> <p>Click Apply.</p> |
| Moving the Legend | <p>It can be difficult to select the legend. Click to select it. The legend is selected when a yellow rectangle surrounds it. If only a part of it is selected, try again.</p> <p>Position the mouse over one of the yellow lines and drag the legend to its new location.</p>  |
| Changing axis titles | <p>To edit the title of the X or Y axis, single-click on the axis title to select it. Click again on the text to change the text of the Axis title.</p> <p>To change the title justification to Right Aligned, click on  to display the Properties dialog (if not already shown), select the <i>Text Layout</i> tab and select the right arrow in the Justification panel. Click on Apply.</p>  |

Changing axis styles

Use the **Text Style** tab (opposite) to change the Font and Size of text.

To change the scale, move the cursor over one of the scale numbers and click.

Use the **Scale** tab in the **Properties** dialog (not shown) to change the numbers and increments on an axis. Untick the options and replace them with your own values. Click the **Apply** button.




Changing bar colours


Clicking on a bar / category to select different items. **The number of clicks is important.**

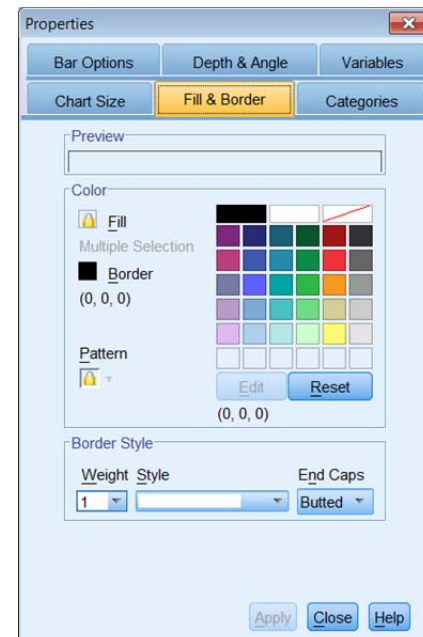
One click selects all bars in the chart – they show a yellow outline
A second click (not double click) selects one of the categories.
A third clicks select a single bar/category.

When a single category has been selected, clicking on another category selects that category.
To select all bars/categories again, click on another chart element and then click back on a bar/category.

Bar colours can be changed by selecting the **Fill & Border** tab in the Properties window. Using two clicks to select a bar, selecting the Fill colour box , and choosing a new colour from the palette. Click **Apply**.

In the example blue was changed to red, a green bar was clicked (to select all green bars) and these were changed to blue,


If the colour or border box displays  then you may have selected multiple objects (more than one bar); colours can only be changed for single objects.



If you wish to display the data as counts rather than percentages then you must specify this when creating the chart from the **Graphs | Bar...** dialogue box. Counts is the default option for the Y axis of a bar chart but percentages may be more helpful when comparing groups.

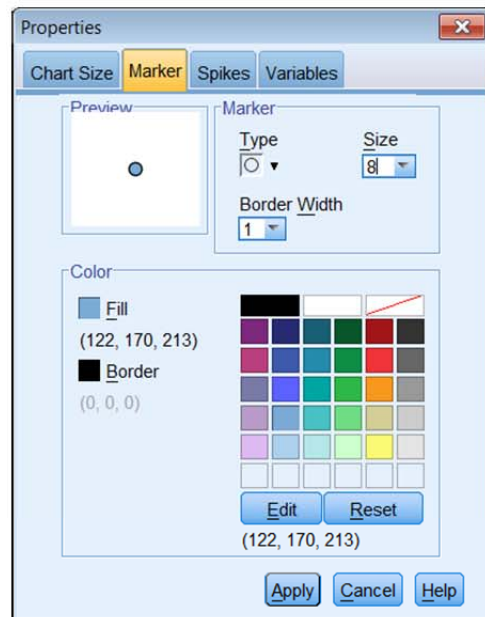
Modifying a scatter plot

Open the Chart Editor window by **double clicking** on the chart (shown on page **Error! Bookmark not defined.**).


To change the symbols used to plot each case, **double-click** on any of the plotted points (open circle) and the *Properties* window will appear. To change the symbol to a closed circle, click on the *Fill* box , then select a colour from the palette. You might wish to change the size of the symbol as well.

Click on **Apply** to make the changes.

Note: If you wish to change the fill colour or shape (Type) identified by a grouping / marker variable, e.g. Gender, select the marker for that group from the legend window, or click on a single data point twice so that only points of that colour are selected. Then change the properties of that group and click Apply.



Adding a regression line

To add a regression line through the points, click on the *Add Fit Line at Total* button.  The default Fit Method is to fit a linear regression line. To add confidence intervals for the line, use the *Properties* window, *Fit Line* tab to select the **Mean** in the Confidence Intervals panel (use 95% CI) and click the **Apply** button. Or, select the **Individual** option (to add the prediction limits) and click the **Apply** button. The figure below shows the regression line with the 95% confidence interval for the regression line. The legend has been deleted and decimal digits removed from the axes scales in the chart below.

