

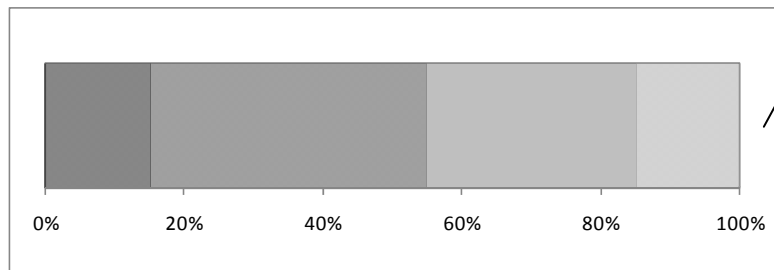
Bullet Charts and Charting Templates

Bullet Charts

Bullet Charts are an example of creating a chart using multiple Chart Types with a primary and secondary axis. Bullet charts use a combination of stacked bar or column charts to achieve the desired effect. Layering charts to add additional comparison points are discussed.

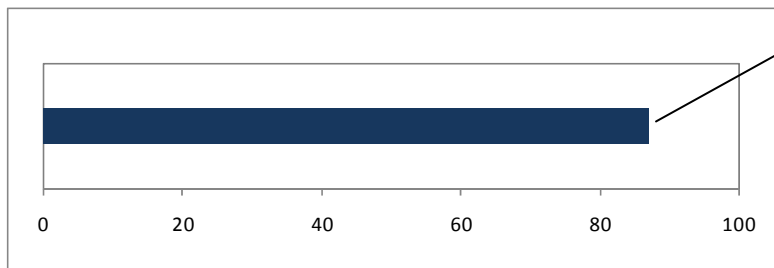
Introducing Bullet Charts

A Bullet Chart allows visual comparison between a background scale -



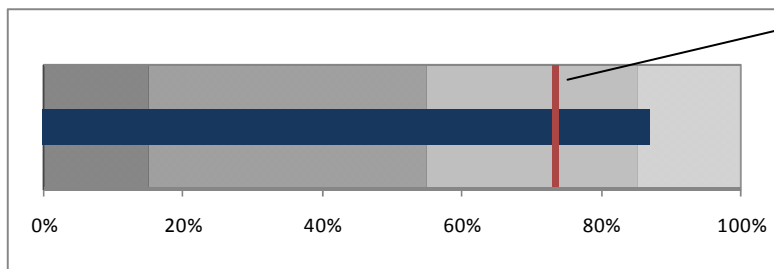
In this case, the class distribution of marks.

and a foreground performance indicator.



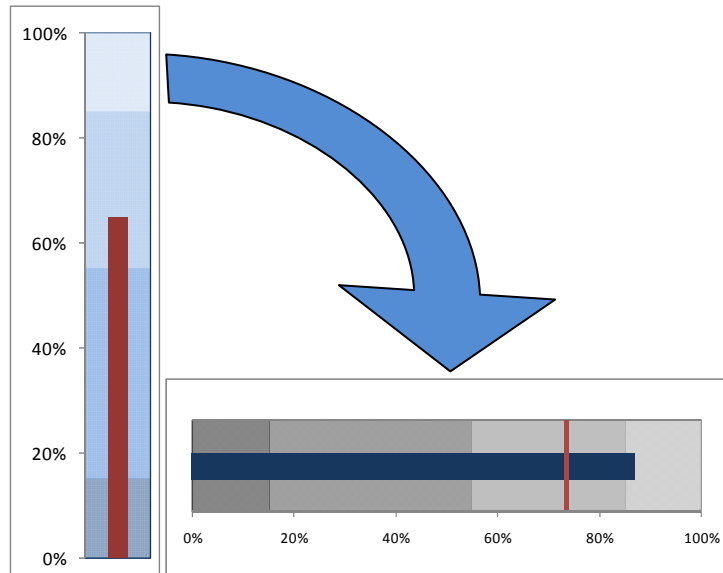
In this case, an individual student's mark.

Additional comparison indicators can also be added



In this case, the class average is indicated.

Bullet charts can have a vertical or horizontal orientation.

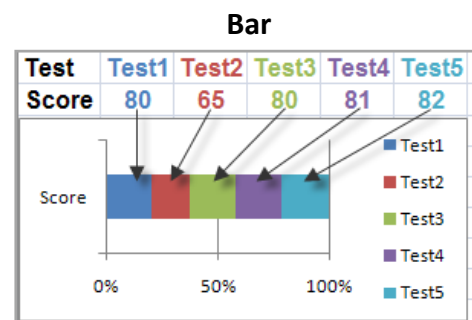
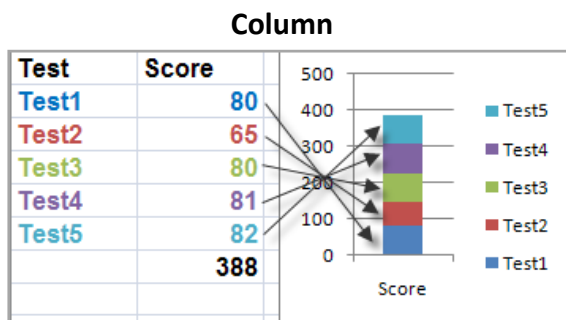


Understanding Stacked Bar and Column Charts

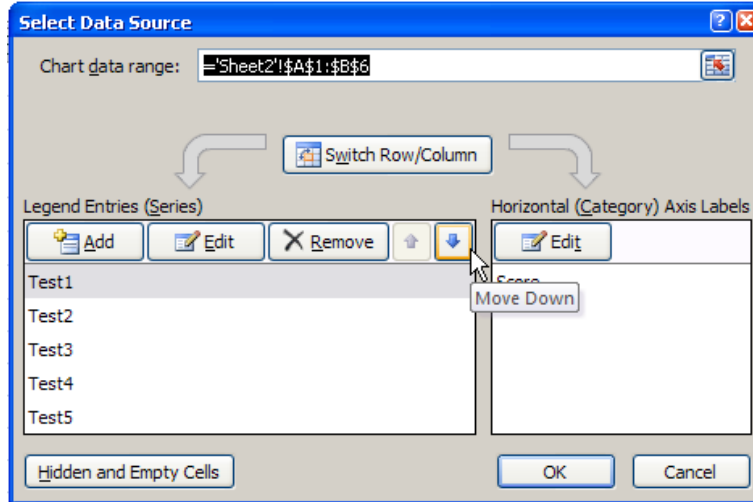
There are two types of Stacked Bar and Column Charts; the Stacked Chart and the 100% Stacked Chart. In both chart types the stack represents the amount each category contributes to the whole. The 100% Stacked Chart each value is represented as a percentage of all categories combined. And of course, the Bar and Column charts display on the horizontal vs. vertical plane.

In stacked chart types, the order that the data is added to the chart determines the *default* placement of the data categories.

In the column chart, data is placed from the bottom of the stack up; while in the bar chart data is placed from left to right.



The default data order can be changed within the Select Data Source Dialog box

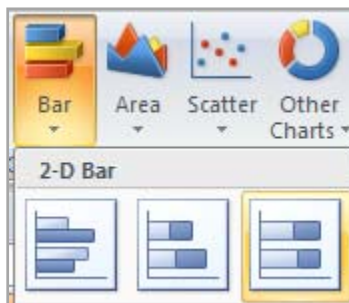


Creating the Chart

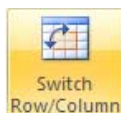
1. Select the data to be charted.

	A	B	C	D	E	F	G
1							
2				Letter Grade Distribution			
3	Student	Score	Average	D	C	B	A
4	Sally	80	70.5	45	25	25	25
5	Nancy	65					
6	Janet	80					
7	Kira	81					
8	Helene	82					
9	Spencer	83					
10	Barry	65					
11	Brendan	67					
12	Nathan	44					
13	George	58					

2. Select the Chart Type, make sure it is the 100% Stacked subtype.

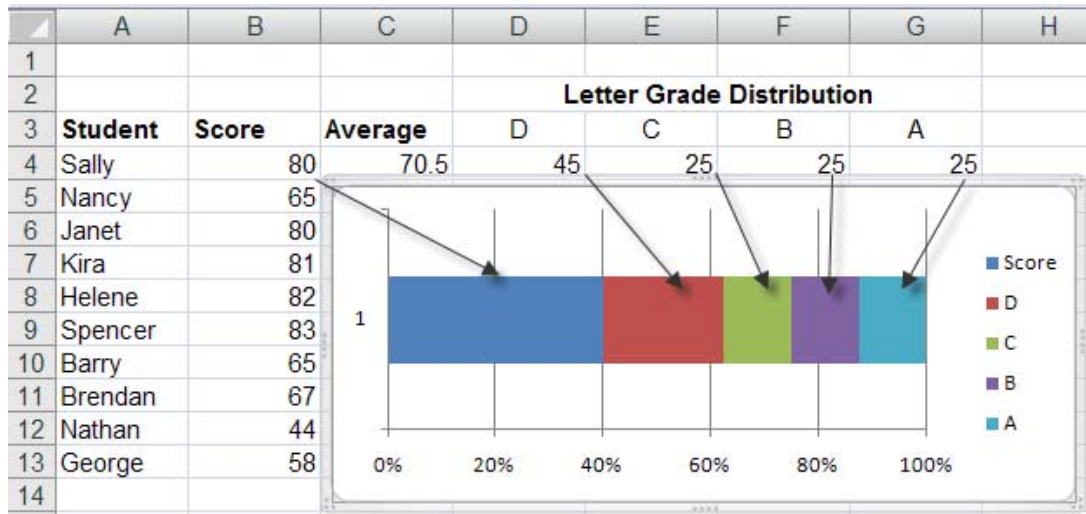


3. Use the



button to switch the orientation of the data

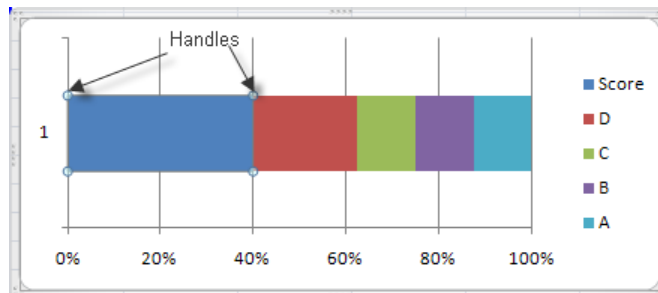
After switching the data orientation the chart will look like this:



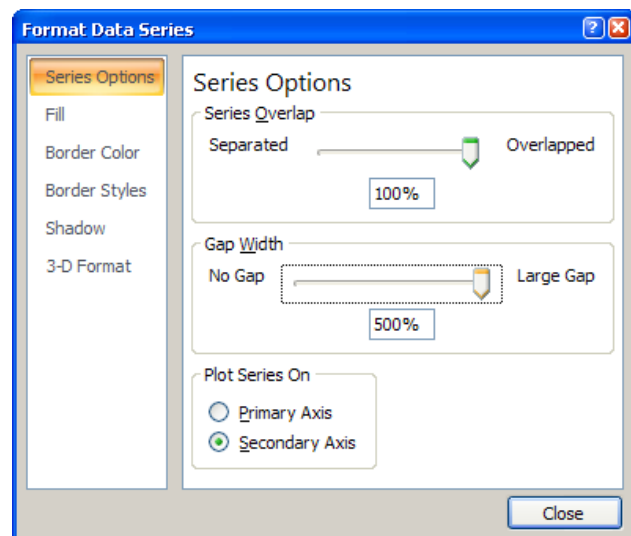
In this scenario, Sally’s score will be the foreground element in the chart, while the Letter Grade Distribution will be the background.

Background and Foreground Chart Elements

1. Select the foreground data point by clicking on it. Handles will appear in each corner to confirm the selection.



2. Right-Click on the data point and select **Format Data Series**. The Format Data Series dialogue box will open.
3. Select **Plot Series on Secondary Axis**. Important: Do this first!
4. Use the slider to set the **Gap Width** to its' highest value. The **Gap Width** can be adjusted later for a more aesthetic appearance.

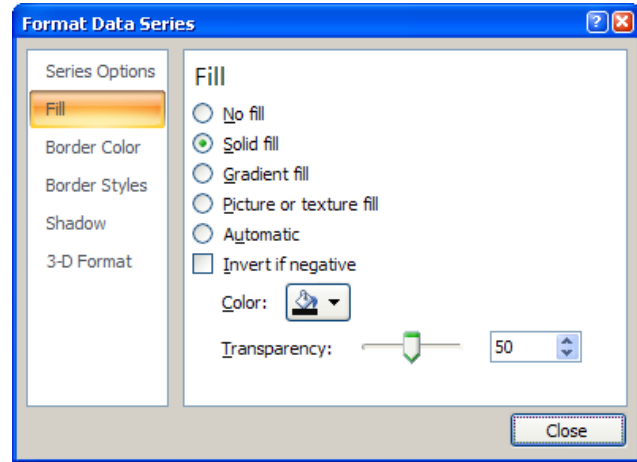


- Click on any data point from the background series (closing the dialogue box is not necessary before this step). Use the slider to set the **Gap Width** to its' lowest value.
- Select the **Fill** Category.

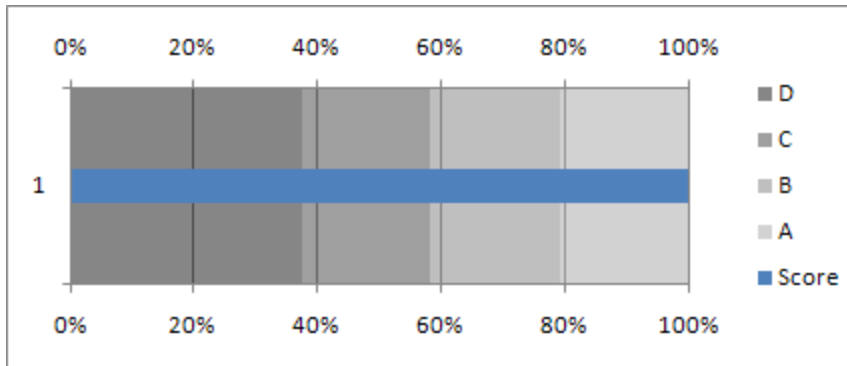
Choose **Solid Fill**, Pick a **Colour** and set the **Transparency** measurement.

This will allow for a more meaningful and aesthetically pleasing set of background colours.

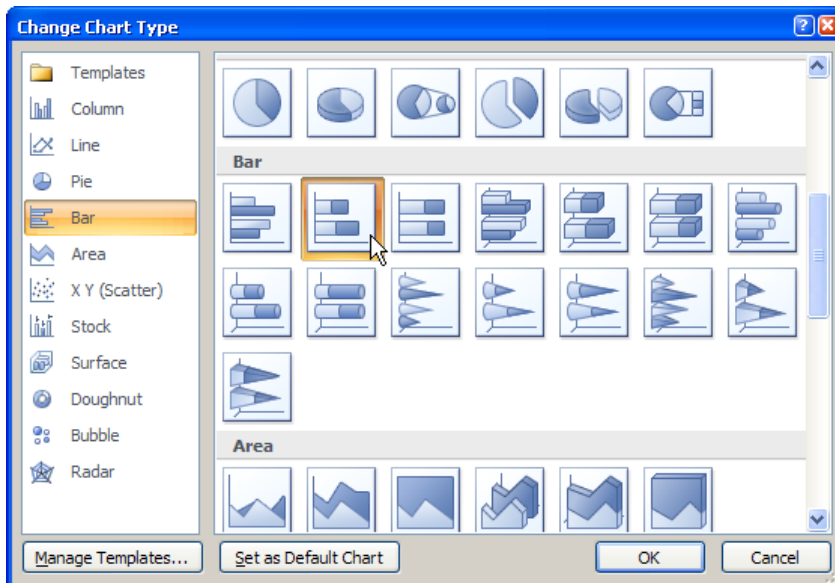
Click the **Close** button to close the dialogue.



- At this point both data series are using the same Chart Type - 100% Stacked.

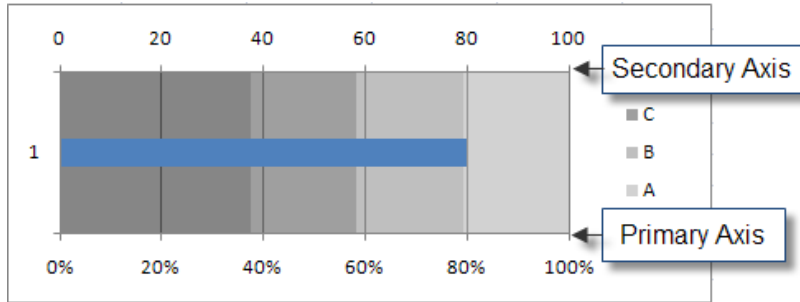


Right-Click on the foreground data series and choose **Change Series Chart Type ...**



Select the Stacked Bar type.

Click the **OK** button.



8. At this time, in our sample chart the two axes appear to use the same scale (however, this is an artefact of the sample data). The two axes should be set to the same scale, once both axes use the same scale, the Secondary Axis can be removed.

Right-Click on the Secondary Scale and select **Format Axis**.

9. The Format Axis dialogue box will appear.

Change the value of the **Maximum** end of the axis by setting it to **Fixed** with a value of 100%.

Under **Major tick mark type**, select **None**.

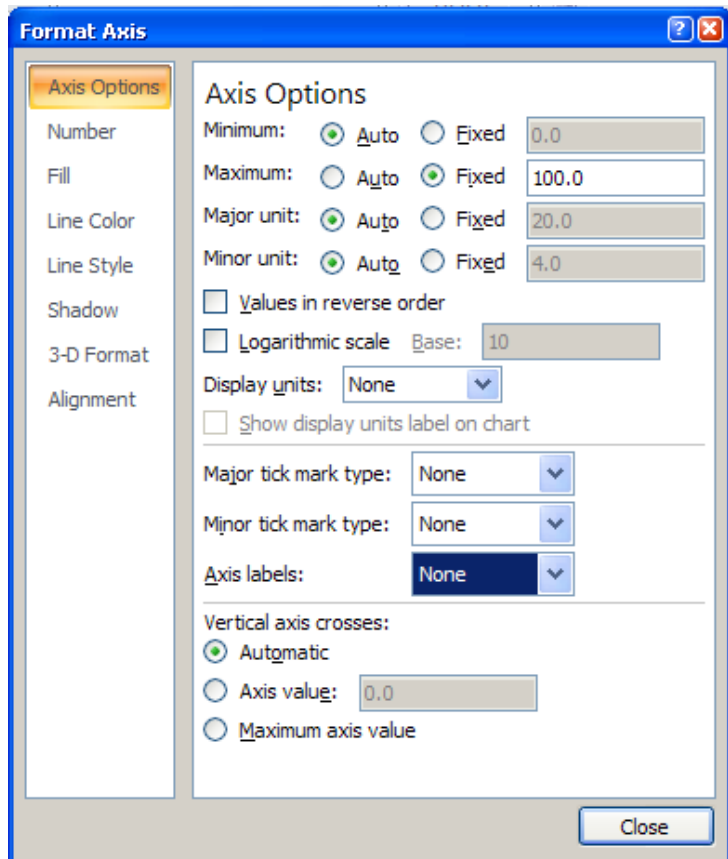
Under **Minor tick mark type**, select **None**.

Under **Axis labels**, select **None**.

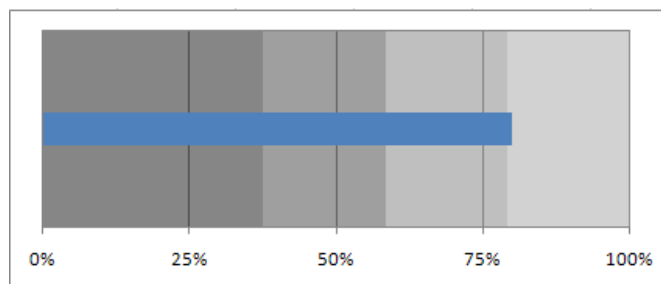
10. Click the **Close** Button.

11. Format the Primary Axis as desired. In this example; a **Fixed Major unit** of 25 was used.

12. Delete the legend and any other excess labelling.

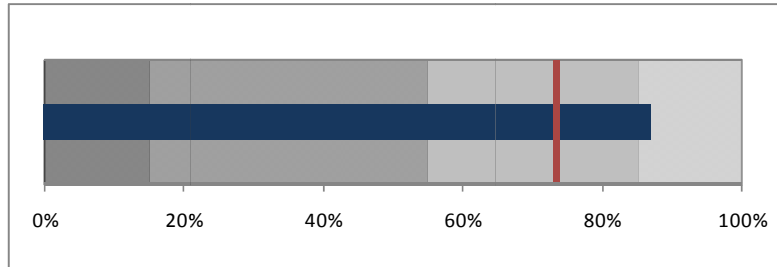


The completed chart will look like this:



Adding an Additional Indicator

When creating a chart that uses multiple axes and multiple chart types, there are limits to the combinations that can be performed. For example; there are mutually incompatible chart types. In our example, we wish to add an indicator to show the class average.

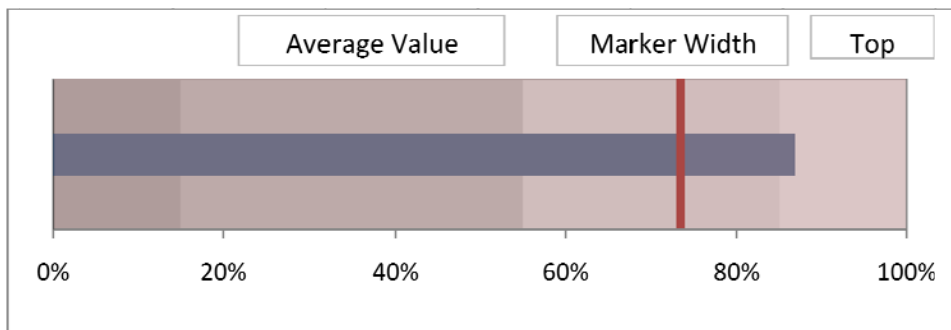


To chart the average (as opposed to using drawing tools to draw a line on the chart), requires a 100% Stacked Bar chart. However, this can't be charted on the primary axis of the current chart, since the series must stack on top of the current background series. It can't be charted on the secondary axis of the current chart, since a different chart type (Stacked Bar) is already using this axis.

The solution is to create a separate chart that will be layered on top of the first.

Create the Chart

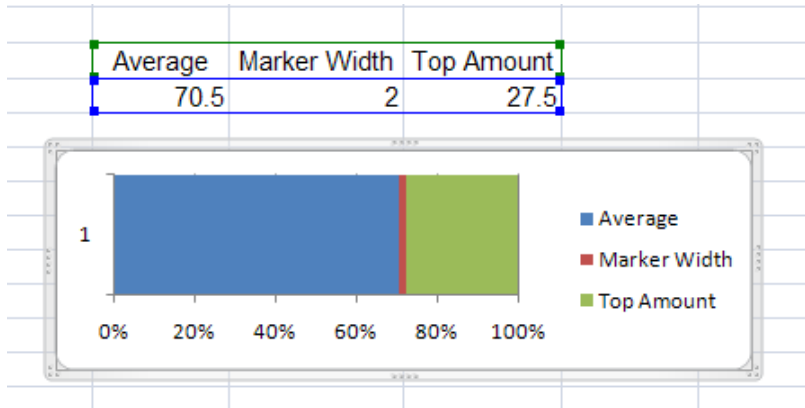
1. Prepare the data to be charted. The chart will have 3 sections.



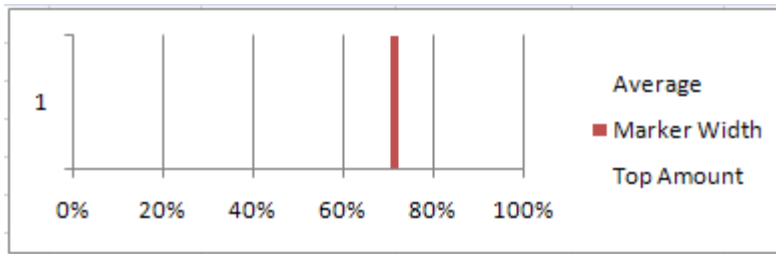
J	K	L
Average	Marker Width	Top Amount
70.5	2	27.5

The calculation for the Top Amount = $100 - (J + K)$

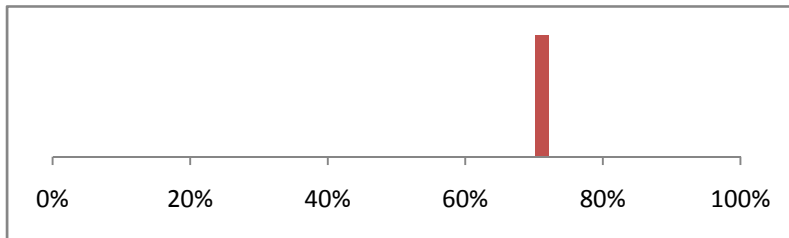
- Chart the data using a 100% Stacked Bar chart.



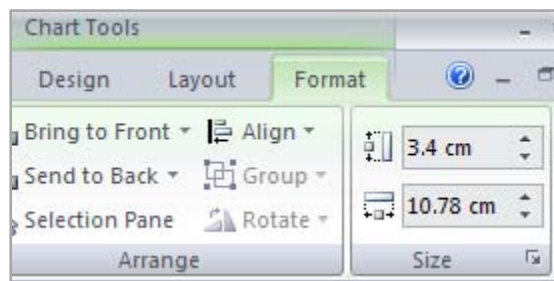
- Select the Average Value and choose **Format Data Series, Fill** and select the **No Fill** option. Do the same with the Top Amount Value.



- Remove the excess labels and gridlines from the chart.

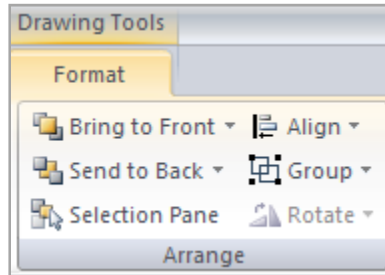


- Size the chart to the same dimensions as the previous chart.
 - Select the chart.
 - Select the **Chart Tools, Format Ribbon**. Use the size button to find the size of the chart and to change the size of the chart/s.



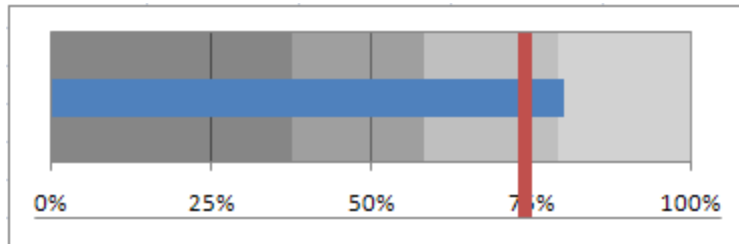
- Right-Click on the chart and choose **Format Chart Area ...**. The **Format Chart Area** dialogue will open.
- In the **Fill** category, select **No Fill**.

8. Select the **Plot Area** of the chart, and change the **Fill** to **No Fill**.
The chart is now transparent.
9. Remove the Primary Axis of the chart (see page 6, step 9). The plot areas of the two charts are now different sizes and will have to be adjusted.
10. Align and Group the charts.
 - a. Select both charts.
 - b. Select the **Drawing Tools, Format Ribbon**. Use the **Align** options to align both charts together.



- c. Use the **Group** button to group both charts together.

Stacked Charts



11. With both charts stacked, it will be easy to resize the plot area of the indicator chart to



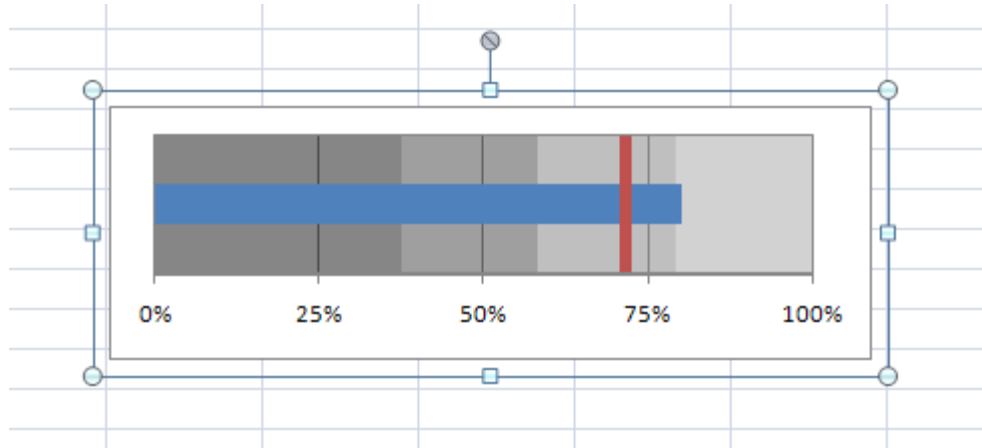
match the chart underneath. Click on the plot area of the indicator chart.

Object handles will display. Drag the handles

to resize the plot area to match the background chart. (If this is difficult, try changing the zoom to make the charts fill the screen).

Working with Multiple Charts

With both charts grouped together it is easier to select them. A single click on the chart will show the object handles. With the chart selected in this fashion it can be cut, copied and moved around the spreadsheet.



A second click will show the active chart border. The top chart in the stack can now be edited, cut, copied and moved. If you move the top chart off - the bottom chart can be selected and edited.

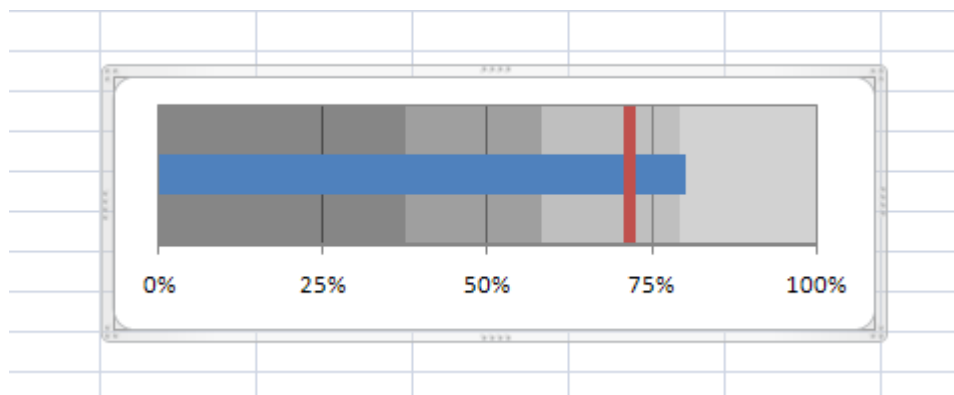
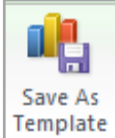


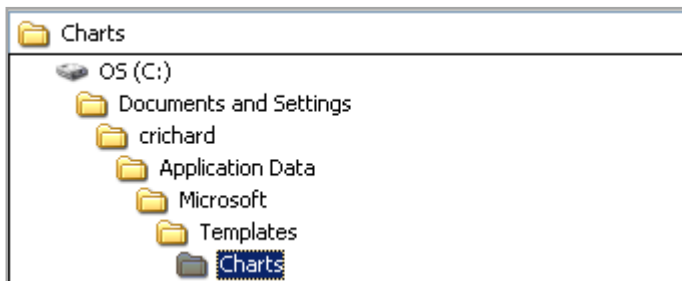
Chart Templates

It is now easier to reuse and share chart designs by saving them as chart templates. After saving a chart template you make take the resulting file and distribute it.

Creating the Chart Template

1. Select the chart you wish to make into a template. Select the **Chart Tools, Design Ribbon**.


2. Click  the button to save. Charts are saved in this location.




3. Chart files use the .crtx extension
Make sure to give the chart a descriptive name, for example:
Bullet Chart 4 Segment Gray Scale Background.crtx
This will be the name that is visible when using the chart template.

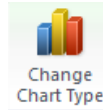
Applying the Chart Template

1. Select the data to be charted. Only select the background data range. Be aware that if your background data has more data points than your template your results may unpredictable.
2. Select the Chart Type, at this point, you will not pick your chart template. Select a Stacked subtype.

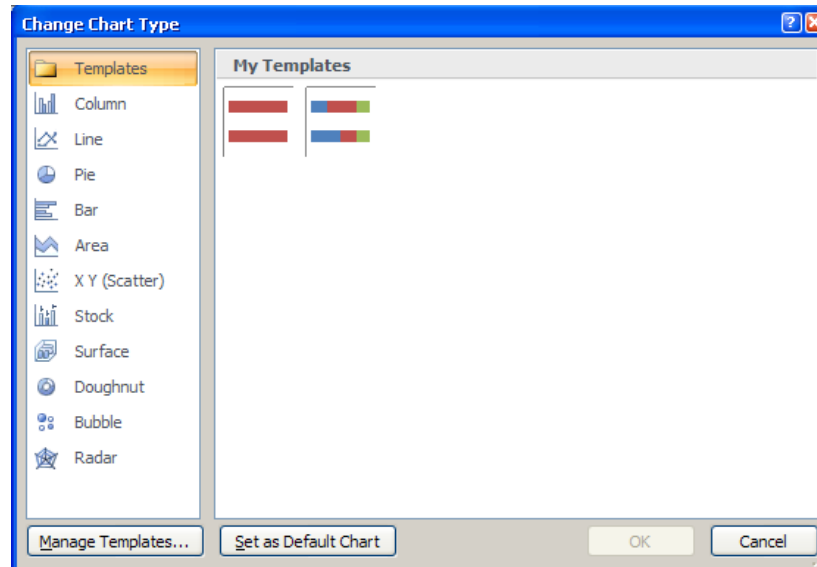
3. Use the  button to switch the orientation of the data.

This is only necessary if your data is not in the correct orientation.

4. Now, add the foreground data point, by using the  button.
5. Apply the template.
 - a. Select the **Chart Tools, Design Ribbon**.



- b. Click the **Change Chart Type** button.
- c. The **Change Chart Type** dialogue will appear.



- d. Select your template from the list of templates on the right. If you hover your mouse over the template, a pop-up containing the file name will appear. Unfortunately, the templates are not named, nor are the previous images useful. So it is important to make sure the file names are meaningful.
- e. Click the **OK** button to accept the template.

References

The following websites have excellent discussions and demonstrations on making bullet charts. The techniques used are slightly different than those discussed here.

- <http://www.exceluser.com/explore/bullet.htm>
- http://www.clearlyandsimply.com/clearly_and_simply/2009/09/bullet-graphs-for-excel-a-simple-way.html#more