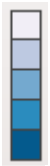
Choosing Colours

In general, use light colours for low values and darker ones for high values.

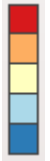
Also be aware that in some cases certain colours may have ‘natural’ associations - for example, red and debt.

White is generally used to indicate areas where data is missing or unavailable.

You should also consider how your chart will look printed, to colour blind people and in black and white.



Sequential schemes are ordered from light to dark, with light colours for low data values to dark colours for high data values.



Diverging schemes use contrasting colours to show difference from an average, with darker colours at both ends of the scale and lighter colours in the middle.

Qualitative schemes use different colours to create the differences between classes. Qualitative schemes are best suited to representing unrelated data such as names or categories. Eg. Network areas

Further information: http://colorbrewer2.org/ designed to help people select good colour schemes for maps.

Sources:

- Dr Steven Rogers, Data Visualisation Unit, Office for National Statistics
- UK Parliament Statistics Policy, Guide to Statistical Tables, Paul Bolton, March 2009
- http://colorbrewer2.org/

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Better Charts

A bitesize guide

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CORNWALL COUNCIL

Introduction

Charts are a good way to help people understand information, however they can be open to interpretation and creative use of colour and scales can be misleading.

This leaflet aims to help those creating charts to communicate data more effectively.

General Principles

Accuracy: the patterns in the chart accurately reflect the underlying data

Economy: the chart includes only those elements which display the data and those necessary to understand it.

Clarity: the patterns/values the chart depicts are as easy as possible for the reader to interpret.

A default Excel chart goes against many of these principles. This is easy to remove in Excel using the format options. In most cases it is helpful to remove:

- Grey chart background and border
- Border around the legend
- Gridlines

3d charts are misleading and should be avoided.

Clear Charts

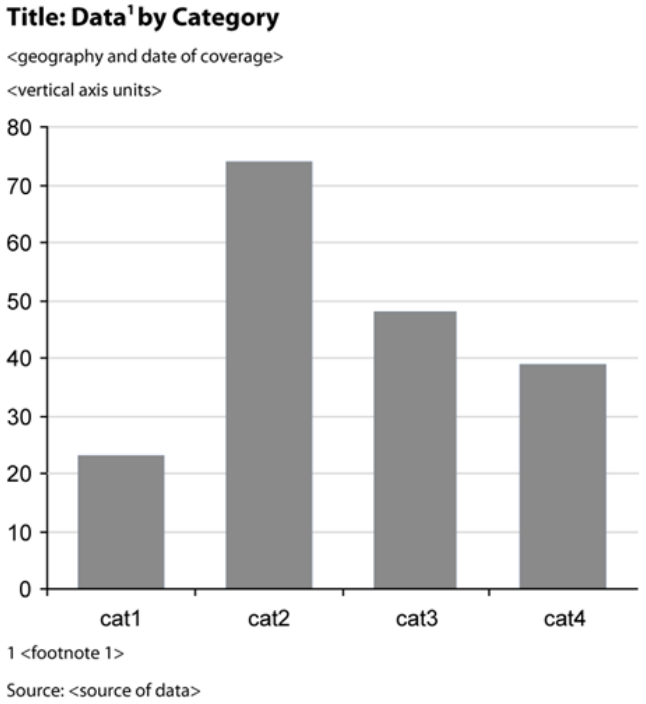
Start with a clear idea of what you want your chart to communicate, and test your final design against what you hoped to achieve.

Your chart should include:

- Clear font: verdana 11 is the Cornwall Council standard.
- Title: this needs to be a clear description, including what, where and when. Font size should be larger and bold.
- Source: font smaller and located in the bottom left hand corner of the chart.
- Y axis units: include as few digits as possible and add the unit to the title, eg. 1, 2, 3 instead of 1000, 2000, 3000 with (thousands) in the title. Rounding and decimal places must be consistent.
- X axis labels: align horizontally if possible.
- Legend, direct labelling is preferable, but if you include a legend add it to an empty part of the plot area.
- Data labels, only include if necessary, round to the most appropriate decimal place.
- Order the data if appropriate.

Comparing Numbers

Bar charts are best for comparing numbers.

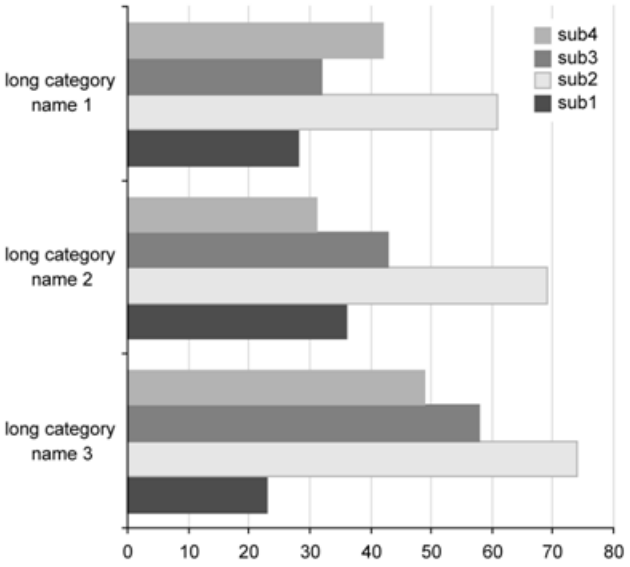


The y axis should always start at 0. This is because the number of pixels representing the shape should match the values. This makes it easier for the reader to interpret the differences between the bars.

For the same reason labels should not be placed on the bar as it makes it harder to interpret the relative bar sizes.

Bar Charts

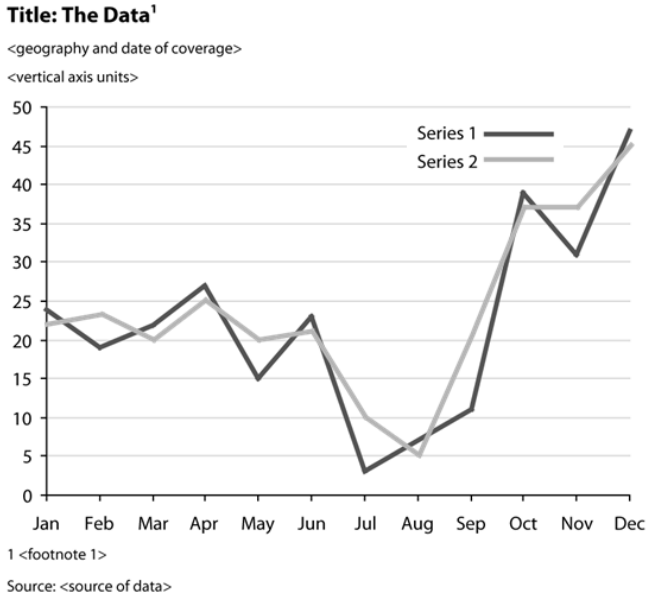
Bar charts are the same as column charts, but better for use when you have long labels. It is better to rotate the chart than the labels.



- Too many bars can make it difficult to interpret – consider alternatives for more than 4 series.

Time Series

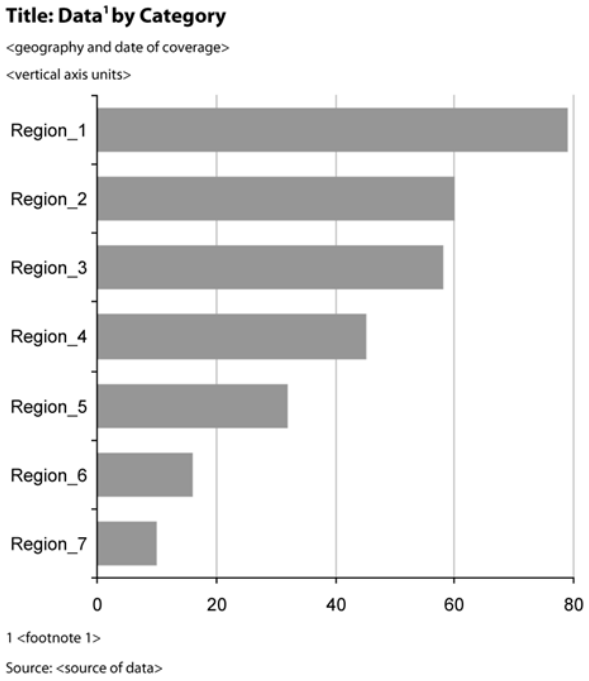
The line chart is best for showing data over time.



- Ensure that lines are labelled, either directly on the chart or using a legend.
- Too many lines can make the chart confusing, changing colour and using dotted lines and markers can help distinguish between lines.
- Keep the axis on the left.
- The Y axis doesn't have to start at zero, choose the most appropriate for your message.
- Do not smooth lines.

Ranking

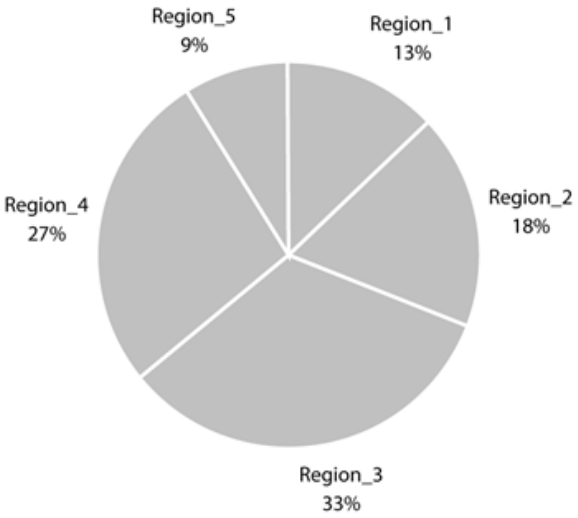
Bar charts are useful for ranking.



- Sort the data so that the reader can see at a glance what the highest and lowest values are.
- Depending on the content, it can also be helpful to add context, such as a line to show the average.

Proportions

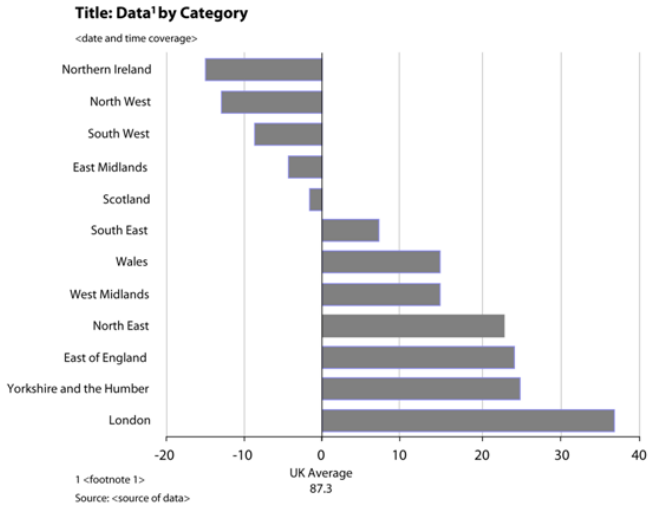
Pie charts or bar charts are good for representing proportions.



- Bar charts are more effective when the values are similar as it is more difficult for the brain to interpret angles than bars.
- Use bar charts when there are more than 5 categories.
- Use bar charts when the rank order is important.
- Use pie charts for categorical values or to break up a page of bar charts.

Deviation (differences)

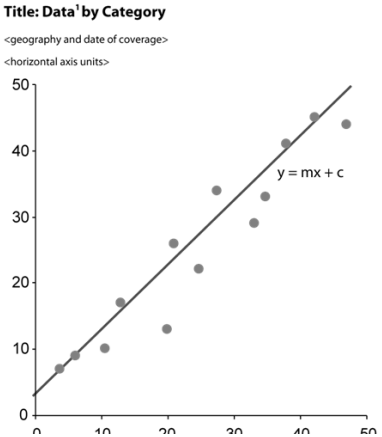
A bar chart where the Y axis crosses the X axis is best for showing deviation.



It is helpful to rank the data.

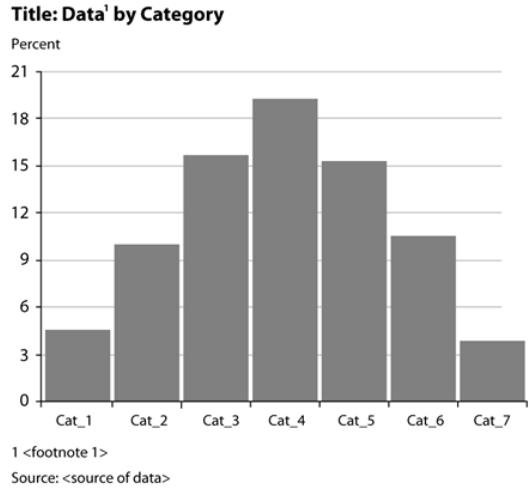
Correlation

Bubble plots are best for showing the relationship between datasets. Use a line of best fit.



Distribution (single variable)

Bar charts – make sure that the bars are close so that you can see the distribution curve.



Distribution (two categories)