Make Data Work for You: Leverage What You Have

Design Tips and Resources

DATA
INNOVATION
PROJECT

Choosing the Right Visual (Chart)

The type of chart you choose to use isn't just about what looks nice. In fact, the visual elements should come _after_ you have figured out what kind of chart is fits with your data. For example, while you could show change over time through multiple pie charts, it is a lot easier to understand the message quickly when you use column or line charts.

Data Series: a row or column of numbers that are entered in a worksheet and plotted in your chart. A chart can have multiple data series.

There are five basic charts, and then a lot of variations. They are column, bar, line, pie and stacked.
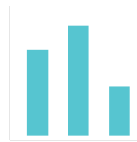
Column. A column chart shows comparison among different items, or it can show a comparison of items over time. Using vertical columns, it displays values for one or more data series. Especially effective in comparing values for multiple series.

Bar. A bar chart is a horizontal column chart. This type of chart helps avoid clutter when data labels are long or if you have a large quantity of values in a single series (e.g., more than 10). This type of visualization can also be used to display negative numbers.

Line. A line chart reveals trends or progress over time and can be used to show many different categories of data. Don't plot more than four lines to avoid visual distractions.
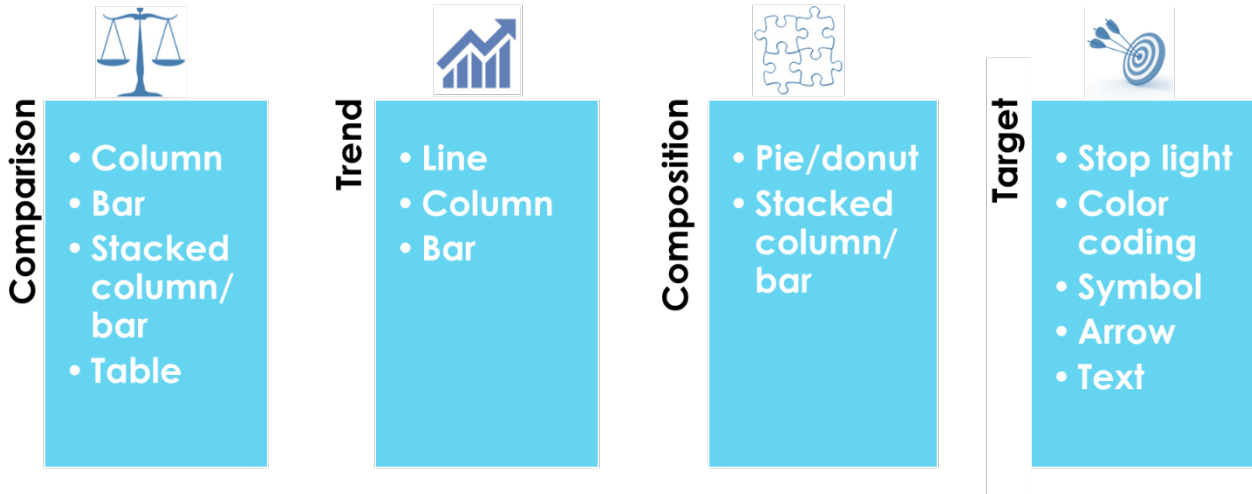
Pie. A pie chart shows how categories represent part of a whole -- the composition of something. The sum of all segments needs to equal your overall total. Don't include too many categories, and order the slices according to their size.

Stacked Column/Bar. A stacked bar or column chart should be used to compare many different items and show the composition of each item being compared. They are best used to illustrate part-to-whole relationships.

Comparison	Trend	Composition	Target
• Column • Bar • Stacked column/bar • Table	• Line • Column • Bar	• Pie/donut • Stacked column/bar	• Stop light • Color coding • Symbol • Arrow • Text

Organizing Information

How you organize your information is also important. Consider the following when you are designing charts and visuals.

Grouping and Proximity means to organize information into meaningful groups or put two pieces of related information near each other.

Prioritization and Ranking means to rank information by importance or from lowest to highest.

Sequencing and Order means the order in which information should be read. For example, arranging data points so they follow a process from start to finish (e.g., referral, intake, discharge).

Visually Speaking

Even in charts, basic formatting can be used to provide emphasis. For example, color, **width**, size, color intensity, position, shapes and enclosure can help the user notice important information. Similarly, icon arrays portray simple statics in a quickly understandable format.
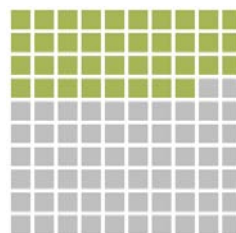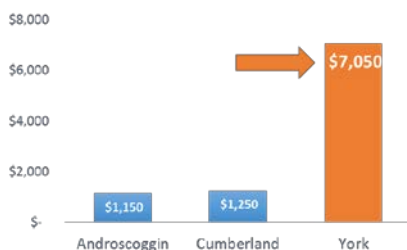
38% of interviewees observed changes in practice.

How to Create a Chart in Microsoft Excel (2007 and Newer)

1. Select the cells that contain the values you want shown in the chart.

- Click the first (top left) cell of data that you want to select.
- Holding the SHIFT key, and select the last (bottom right) cell you want to include. Or, click and drag the cursor from the top left cell to the bottom right cell of the worksheet.
    - Include your column and row headings when possible.
    - If your data has a "total" row do NOT include it.
    - Non-contiguous rows and columns of cells can be selected by pressing and holding the Ctrl key while selecting each group of cells.

2. Insert your chart.

- While still selecting the data you want to include, click the Insert tab.
- Select the chart type from the Charts section of the ribbon. The sub-type menu displays.
- Click the desired chart sub-type. The chart appears on the worksheet.

If you want to create a second chart, click somewhere in the worksheet to "deselect" the current chart first, or the new chart will replace the current chart.

Anatomy of a Chart

A chart has many elements and formatting options. Elements include axes, axis titles, chart titles, data labels, data tables, error bars, gridlines, legends, and trend lines. Formatting includes borders and gridlines. The figure below shows the basic parts of a chart.
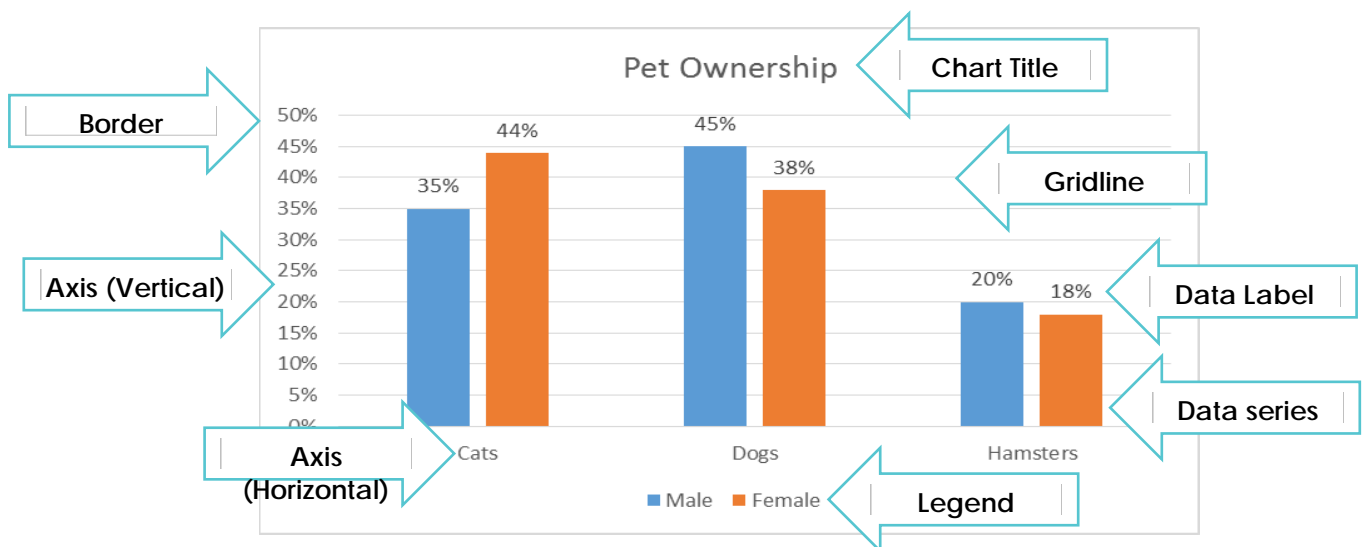
Modifying Chart Elements

Sometimes, MS Excel includes default elements that you may not want, or excludes elements that you do want. It also might include them but not in the way you want them to appear.

You can remove chart elements that you do not want to display, or add ones that you prefer. Some can be moved or placed in different areas (e.g., the legend or data labels) or formatted using bold, italic, color or size.

Add chart elements. In MS Excel 2013, select your chart and a green plus sign will show up directly to the right of the chart. When you click this icon, the Chart Elements menu will show up. This is where you can modify the chart elements, which includes: axes, axis titles, chart titles, data labels, data tables, error bars, gridlines, legends, and trend lines. In MS Excel 2007 and 2010, most elements are found in the Layout menu with drop down options.

Additional Ways to Format a Chart

In MS Excel 2013, elements can also be formatted using the Formatting Task Pane, which appears to the right when you double-click a specific element.

Edit colors or size. When you want to edit a chart element, click on it once to select it. From here, you can use formatting options on the "Design" and "Format" tabs at the top of the workbook. You can even custom select the color of a line or data series.

Axis parameters are entered as whole numbers. For percentages, a minimum of 0.0 and maximum of 0.5 produces an axis ranging from 0% to 50%. A major unit of 0.05 produces increments at 5% intervals.

To edit a single item (e.g., make one data label larger or one bar a different color), click once on the element, and then click again on the single item you want to edit.

Delete unwanted items. Click on a data element and then hit "delete" to get rid of it; for example, to remove the legend, axis or gridlines. You can also "hide" elements from view by changing the color to white.
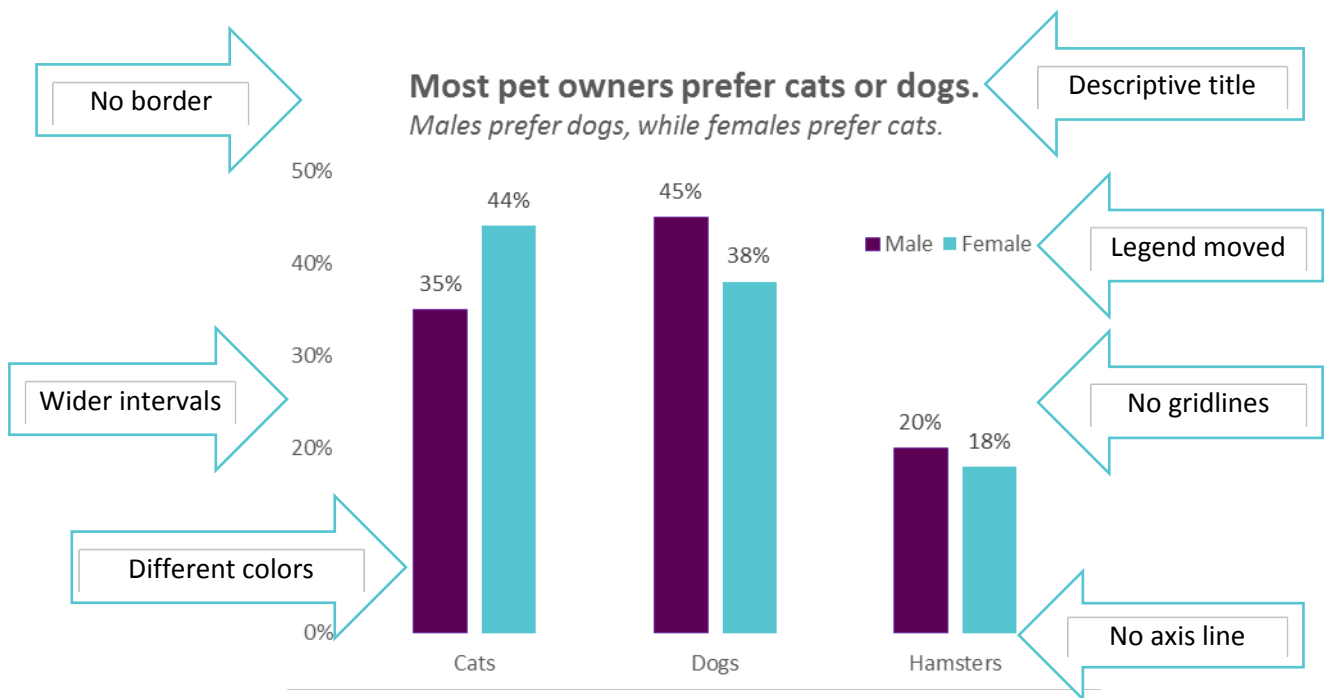
Modify an axis. To modify the range or increments on your numeric axis, double click on it. You can change the maximum and minimum, (called "Bounds") or the increments (called "Major unit"). Remember to always start at zero!

Design Tips

- Provide a descriptive title.
- Avoid 3-D visuals (they can distort your data).
- Eliminate chart elements (such as gridlines, tick marks, axes, data labels, etc.) when they don't help the user understand the chart.
- Use consistent colors throughout the chart. Avoid bright colors or too many colors.
- Use accent colors to highlight meaningful data points or changes over time.
- Sort data from highest to lowest (where appropriate).
- Start the y-axis at 0 to accurately reflect the values in your chart.
- Use solid lines only.
- Insert shapes (e.g., arrows) or text boxes overlaid on your chart to add additional interpretation or emphasis.

The chart below contains the same information as the chart found on page four. Which one do you prefer?

No border

Wider intervals

Different colors

Most pet owners prefer cats or dogs.
Males prefer dogs, while females prefer cats.

50%

44%

45%

40%

■ Male ■ Female

35%

38%

30%

20%

20%

18%

0%

Cats   Dogs   Hamsters

Descriptive title

Legend moved

No gridlines

No axis line

Helpful Resources

For more resources on MS Excel, charts or formatting specific design elements we've pulled together the following list of links.

MS Excel

www.gcflearnfree.org/

www.homeandlearn.co.uk/excel2007/Excel2007.html

www.youtube.com/user/ExcellsFun

http://www.customguide.com/free-computer-training

https://www.ablebits.com/office-addins-blog/2015/10/29/excel-charts-title-axis-legend/#add-chart-title

https://blogs.office.com/2012/10/31/chart-elements-customizing-your-chart/

Chart templates

http://labs.juiceanalytics.com/chartchooser/index.html