

10 Data Visualization Tips

Data visualizations are an effective tool to communicate research. But to realize their potential, designers should follow these tips to help readers decode their visualizations.

1. Keep it simple!

This is the golden rule. Always choose the simplest way to convey your information.

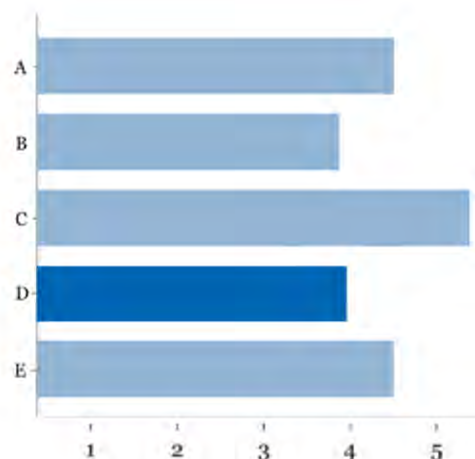
2. Have a specific message you want to communicate

Identify the relationships and patterns of your data and focus on what you want to show.

3. Select the right chart form

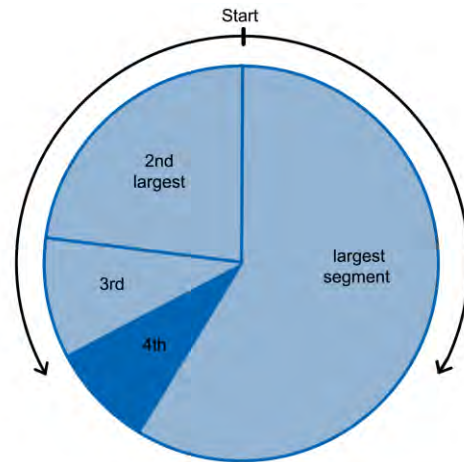
...and know its strengths and limits. Here are some common chart forms:

Bar charts



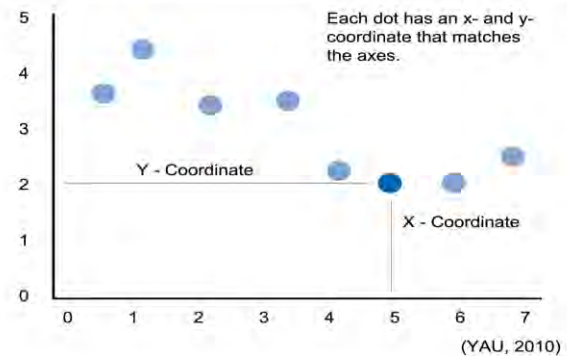
Depict nominal data. They are often used to illustrate comparisons. The value axis should always start at zero and use a consistent scale.

Pie Charts



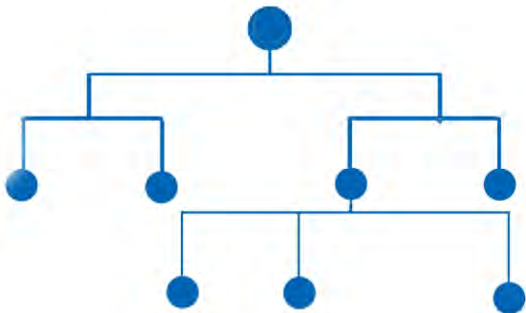
Depict slices of a whole. There should not be more than five slices, and their total value should equal 100%. The largest slice should start at the top and fall to the right.

Scatter Plots



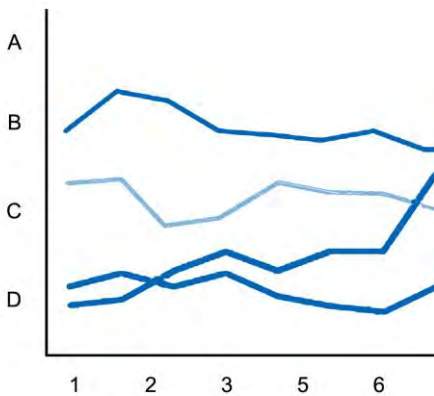
Depict relationships between two variables. They are effective with large datasets and to highlight patterns or correlations. Danger: the reader may assume a cause-and-effect relationship between the X and Y axes even when there isn't one.

Node-link Diagrams



Depict the hierarchical ordering or structure of data. This diagram is most effective when the parent node is located at the top with the others following below.

Line graphs



Depict patterns over a continuous range. They do not have to start at zero, but the data ranges should be clearly marked and the overall chart shape should retain a 5:8 height and width ratio.

Word Clouds

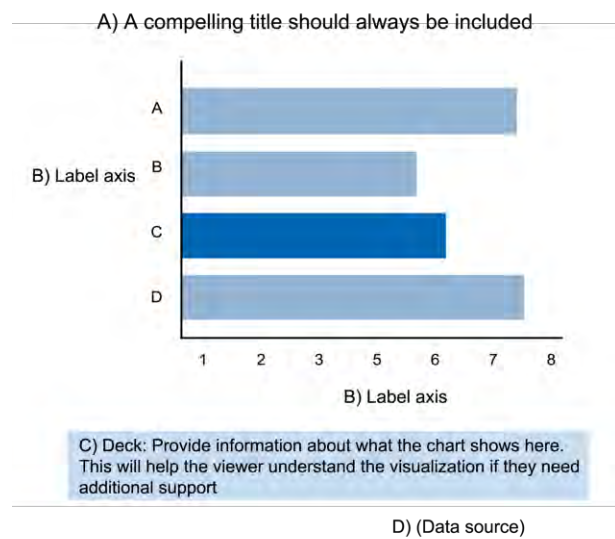


Depict the frequency of words within a document. If tailored by colour, size, or font, word clouds can add emphasis to specific findings.

Hot Tip: To find out more about choosing the right chart type for your data, go to:

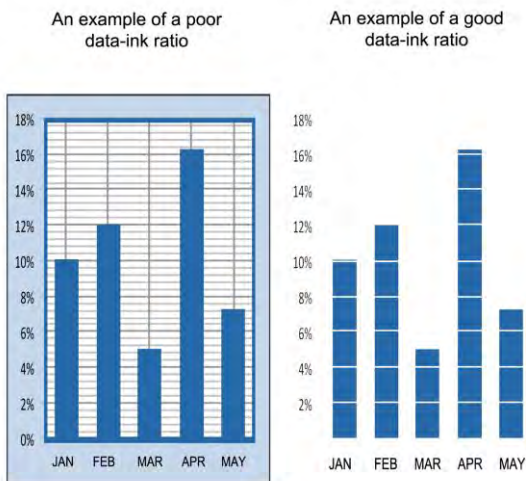
www.juiceanalytics.com/chart-chooser

4. Use compelling headlines and decks to describe the take-away message of the visualization.



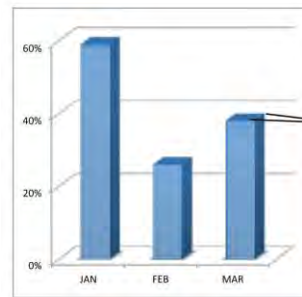
- A) Include a compelling headline to orient the viewer and communicate the main focus of the visualization. Do not capitalize all letters or make them bold.
- B) Label the axes. Labels should always be printed horizontally to make them easier to read.
- C) Use decks to describe what is depicted and to avoid any potential misinterpretation.
- D) Provide source information to establish credibility.

5. Maximize the data-ink ratio (Edward Tufte)



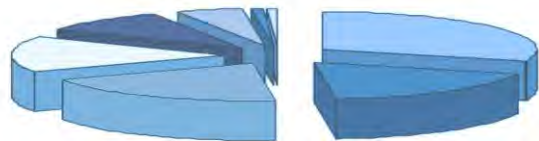
Show the data above everything else. Eliminate all extra ink that does not show the data. Exclude redundant information, including background colour, borders, and grids.

6. Avoid using special effects, such as 3D graphics.



BAR CHARTS
3D perspective distorts the overall length of the bars.

PIE CHARTS
3D perspective misrepresents the surface area of slices, distorting slices in the front to appear larger.



The perspective added in 3D graphics distorts the data and makes it difficult to interpret accurately.

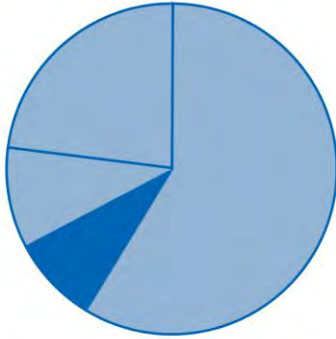
7. Add hierarchy to your data

Avoid cherry-picking data, but do not treat all data equally. Data should have an order of importance. This hierarchy can be communicated through the use of design choices (as indicated in tip 8).

8. Use colour, size, and position to help the reader see what is important.

Colour adds emphasis, highlights particular data points, and draws connections between graphs. The hue, value, and intensity of the colour are significant and may have cultural or social connotations.

Size and position draw attention to particular data points and show hierarchy. The top of charts and larger objects tend to draw the eye first. Cultural reading conventions also determine how people read charts.



Colour contrast can attract the eye and draw attention to particular data points.

Place the largest slices in a pie chart at the top because the eye is naturally drawn there first.

Hot tip: Visit these websites for help with colour schemes

- <http://design-seeds.com> for colour scheme inspiration
- <http://kuler.adobe.com> for colour inspiration
- <http://instant-eyedropper.com> for free software to identify colour codes on websites

9. Find the models you like and use them in your designs, or adapt them to fit your needs.

10. Revise and edit.

The more you design, the more you learn. It is important to give yourself time to design and to revise and edit, over and over again.

Hot tip: Visit these useful data visualization websites and blogs

- datavisualization.ch
- flowingdata.com
- informationisbeautiful.net
- visualcomplexity.com

Hot tip: Data visualization tools you should know about

Tableau Public

- tableausoftware.com/public

Many Eyes

- 958.ibm.com

Ushahidi

- ushahidi.com

Protovis

- mbostock.github.com/protovis

Polymaps

- polymaps.org