

Data Visualization Checklist

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This checklist is meant to be used as a guide for the development of high impact data visualizations. Rate each aspect of the data visualization by circling the most appropriate number, where 2 points means the guideline was fully met, 1 means it was partially met, and 0 means it was not met at all. n/a should not be used frequently, but reserved for when the guideline truly does not apply. For example, a pie chart has no axes lines or tick marks to rate. Refer to the Data Visualization Anatomy Chart on the last page for guidance on vocabulary.

| | Guideline | Rating | | | |
|---|---|---------------|---|---|-----|
| Text Graphs don't contain much text, so existing text must encapsulate your message and pack a punch. | 6-12 word descriptive title is left-justified in upper left corner Short titles enable readers to comprehend takeaway messages even while quickly skimming the graph. Rather than a generic phrase, use a descriptive sentence that encapsulates the graph's finding or "so what?" Western cultures start reading in the upper left, so locate the title there. | 2 | 1 | 0 | n/a |
| | Subtitle and/or annotations provide additional information Subtitles and annotations (call-out text within the graph) can add explanatory and interpretive power to a graph. Use them to answer questions a viewer might have or to highlight one or two data points. | 2 | 1 | 0 | n/a |
| | Text size is hierarchical and readable Titles are in a larger size than subtitles or annotations, which are larger than labels, which are larger than axis labels, which are larger than source information. The smallest text - axis labels - are at least 9 point font size on paper, at least 20 on screen. | 2 | 1 | 0 | n/a |
| | Text is horizontal Titles, subtitles, annotations, and data labels are horizontal (not vertical or diagonal). Line labels and axis labels can deviate from this rule and still receive full points. | 2 | 1 | 0 | n/a |
| | Data are labeled directly Position data labels near the data rather than in a separate legend (e.g., on top of or next to bars or pie slices, and next to lines in line charts). Eliminate/embed legends when possible because eye movement back and forth between the legend and the data can interrupt the brain's attempts to interpret the graph. | 2 | 1 | 0 | n/a |
| | Labels are used sparingly Focus attention by removing the redundancy. For example, in line charts, label every other year on an axis. | 2 | 1 | 0 | n/a |

Arrangement

Improper arrangement of graph elements can confuse readers at best and mislead viewer at worst. Thoughtful arrangement makes a data visualization easier for a viewer to interpret.

Proportions are accurate

A viewer should be able to take a ruler to measure the length or area of the graph and find that it matches the relationship in the underlying data.

2 1 0 n/a

Data are intentionally ordered

Data should be displayed in an order that makes logical sense to the viewer. Data may be ordered by frequency counts (e.g., from greatest to least for nominal categories), by groupings or bins (e.g., histograms), by time period (e.g., line charts), alphabetically, etc.

2 1 0 n/a

Axis intervals are equidistant

The spaces between axis intervals should be the same unit, even if every axis interval isn't labeled.

2 1 0 n/a

Graph is two-dimensional

Avoid three-dimensional displays, bevels, and other distortions.

2 1 0 n/a

Display is free from decoration

Graph is free from clipart or other illustrations used solely for decoration. Some graphics, like icons, can support interpretation.

2 1 0 n/a

Color

Keep culture-laden color connotations in mind. For example, pink is highly associated with feminine qualities in the USA.

Use sites like Color Brewer to find color schemes suitable for reprinting in black-and-white and for colorblindness.

Color scheme is intentional

Colors should represent brand or other intentional choice, not default color schemes. A safe bet for consultants is to use your client's colors. Use online tools to identify brand colors and others that are compatible.

2 1 0 n/a

Color is used to highlight key patterns

Action colors should guide the viewer to key parts of the display. Less important or supporting data should be a muted color.

2 1 0 n/a

Color is legible when printed in black and white

When printed or photocopied in black and white, the viewer should still be able to see patterns in the data.

2 1 0 n/a

Color is legible for people with colorblindness

Avoid red-green and yellow-blue combinations when those colors touch one another.

2 1 0 n/a

Text sufficiently contrasts background

Black/very dark text against a white/transparent background is easiest to read.

2 1 0 n/a

Lines

Excessive lines—gridlines, borders, tick marks, and axes—can add clutter or noise to a graph, so eliminate them whenever they aren't useful for interpreting the data.

Gridlines, if present, are muted

Color should be faint gray, not black. Full points if no gridlines are used.

2 1 0 n/a

Graph does not have border line

Graph should bleed into the surrounding page or slide rather than being contained by a border.

2 1 0 n/a

Axes do not have unnecessary tick marks

Tick marks are useful in line graphs (to demarcate each point in time along the y-axis) but unnecessary in bar charts.

2 1 0 n/a

Graph has one horizontal and one vertical axis

Viewers can best interpret one x- and one y-axis, even if one is hidden. Don't add a second y-axis.

2 1 0 n/a

Overall

Graphs will catch a viewer's attention so only visualize the data that needs attention. Too many graphics of unimportant information dilute the power of visualization.

Graph highlights significant finding or conclusion

Graphs should have a "so what?" – either a practical or statistical significance (or both) to warrant their presence.

2 1 0 n/a

The type of graph is appropriate for data

Data are displayed using a graph type appropriate for the relationship within the data. For example, change over time is displayed as a line graph, area chart, slope graph, or dot plot.

2 1 0 n/a

Graph has appropriate level of precision

Few numeric labels need decimal places. When precision is important, choose a type of graph type that displays differences through length or points along a line (e.g., bar charts, dot plots). When precision is less important, you can use a graph that displays differences through angles or area (e.g., pie charts, circle charts).

2 1 0 n/a

Contextualized or comparison data are present

Comparisons—over time, across programs or subgroups of participants, etc.—help the viewer understand the significance of the data.

2 1 0 n/a

Individual chart elements work together to reinforce the overarching takeaway message

Choices about graph type, text, arrangement, color, and lines should reinforce the same takeaway message.

2 1 0 n/a

For more support, check out:

AnnKEmery.com/blog

StephanieEvergreen.com/blog

Stephanie Evergreen's book, *Presenting Data Effectively*

Score: _____ / _____ = _____ %

Well-formatted data visualizations score between 90-100% of available points. At this level, viewers are better able to read, interpret, and retain content.

Data Visualization Anatomy Chart

Confused by the terminology? Review the anatomy charts below for illustration of what's what.

