

Graphics Checklist

STA 141A

First, make sure you’ve chosen an appropriate graphic. The table below has *suggestions*. Sometimes other graphics may be more appropriate.

First Feature	Second Feature	Plot
categorical		bar, dot
categorical	categorical	bar, dot, mosaic
numerical		box, density, histogram
numerical	categorical	box, density
numerical	numerical	line, scatter, smooth scatter

Next, go through this checklist with each graphic you plan to use:

- ☐ **Does the graphic convey important information?** Don’t include graphics that are uninformative or redundant.
- ☐ **Title?** Make sure the title explains what the graphic shows.
- ☐ **Axis labels?** Label the axes in plain language (no variable names!).
- ☐ **Axis units?** Label the axes with units (inches, dollars, etc).
- ☐ **Legend?** Any graphic that shows two or more categories coded by style or color must include a legend.
- ☐ **Appropriate scales and limits?** Make sure the scales and limits of the axes do not lead people to incorrect conclusions. For side-by-side graphics or graphics that viewers will compare, use identical scales and limits.
- ☐ **No overplotting?** Scatter plots where many plot points overlap hide the actual patterns in the data. Make the points smaller or use a two-dimensional density plot (a smooth scatter plot) instead.
- ☐ **No more than 5 lines?** Line plots with more than 5 lines risk becoming hard-to-read “spaghetti” plots. Generally a line plot with more than 5 lines should be split into multiple plots with fewer lines. If the x-axis is discrete, consider using a heat map instead.
- ☐ **Should it be a dot plot?** Pie plots are hard to read and bar plots don’t use space efficiently (Cleveland and McGill 1990; Heer and Bostock 2010). Generally a dot plot is a better choice.
- ☐ **Print safe?** Design graphics to be legible in black & white. Color is great, but use point and line styles to distinguish groups in addition to color. Also try to choose colors that are accessible to colorblind people. The `RColorBrewer` and `viridis` packages can help with choosing colors.