Creating Visuals that Communicate your Story

Summarized from: Few, Stephen. (2012). *Show Me the Numbers: Designing Tables and Graphs to Enlighten.* Burlingame, CA: Analytics Press.

Steps in the Design Process:

1) Determine your message
2) Select the best means to display your message
3) Design the display to show the information simply, clearly, and accurately
   a. Make all the data (versus non-data) prominent and clear
   b. Remove all components that aren't necessary (both data and non-data components)
   c. Reduce the visual salience of the remaining non-data components in comparison to the data.
   d. Highlight the information that's most important to your message

Selecting Graphs:

Bars: Horizontal or Vertical
Can be used for nominal comparisons, time series, ranking, part-to-whole, deviation, single distribution (histogram), or correlation (as a table lens)

- Use in time series when goal is to place emphasis more on individual values and their comparisons (versus overall trend/shape)
- Avoid use for multiple distributions (too much overlap)
- Use horizontal bars when category labels are wide

Points or Dot Plots
Can be used for nominal comparisons, distributions, correlations, time series, or rankings

- Often used instead of bars when scale does not begin at zero
- In time series, use when values were not collected at consistent intervals

Relationships:

Nominal Comparison: a simple comparison of values for a set of unordered items.

Time Series: values display how something changed through time.

Ranking: values are ordered by size (ascending or descending).

Part-to-Whole: values represent parts (proportions) of a whole.

Deviation: the difference between two sets of values.

Distribution: counts of values per interval from lowest to highest.

Correlation: comparison of two paired sets of values to determine if there is a relationship between them.

Lines

Can be used for time series, part-to-whole (to show changes in parts over time), deviation, and distribution (frequency polygon)

- Use in time series to feature trends and support comparisons; only include individual points when needed for clarity
- For comparing two or more distributions, preferable to histograms (bars)

Boxes/Box Plot

Used primarily for distributions; could show in time-series or ranking displays

Using Visual Attributes to Highlight Importance:

Width/Size	Boldface text	**Position/**	Positioned at top, left or center
	Thicker graph lines	**Orientation**	Position/orientation that is out
	Wider bars		of alignment with the other elements
	Bigger font/shape/object		Italic font
Color	Brighter more vivid colors (intensity)		
	Different color from norm (hue)		
Shape	Different font or symbol shape from norm		

General Good Practices:

Encode quantities to correspond accurately to the visual scale

- Keep scale marks consistently spaced
- Include zero in quantitative scale (especially when using bars) or alert readers when you don't
- Avoid 3-D displays

Use muted hues and light lines for all necessary "non-data ink" → grid lines, tick marks, axes, labels, borders, etc.

Use gridlines only to 1) ease look up of values, 2) ease comparison of values, 3) ease perception and comparison of patterns.

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PROMOTING THE USE OF DATA TO ENHANCE
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