Charts, Graphs, Tables, and Presentations

Distinctions

Charts, graphs, plots refer to graphical representations of data. They include histograms, bar charts, line graphs, pie charts, etc.

Tables are arrangements of rows and columns of data.

"Data graphics visually display measured quantities by means of the combined use of points, lines, a coordinate system, numbers, symbols, words, shading, and color" Tufte 1983, 1

Goals of Graphical Excellence (after Tufte)

"…complex quantitative ideas communicated with clarity, precision, and efficiency" (51)

Show the data
Induce reader to think about substance
Avoid distorting data
Present many numbers in small space
Make the large and complex coherent
Encourage comparisons
Reveal multiple levels of detail in data
Serve a well-defined purpose
Connect with textual descriptions and tabular presentations of data

Overall
Multivariate
Truth

TYPES OF CHARTS

Data Maps
Time Series
Time Space Charts

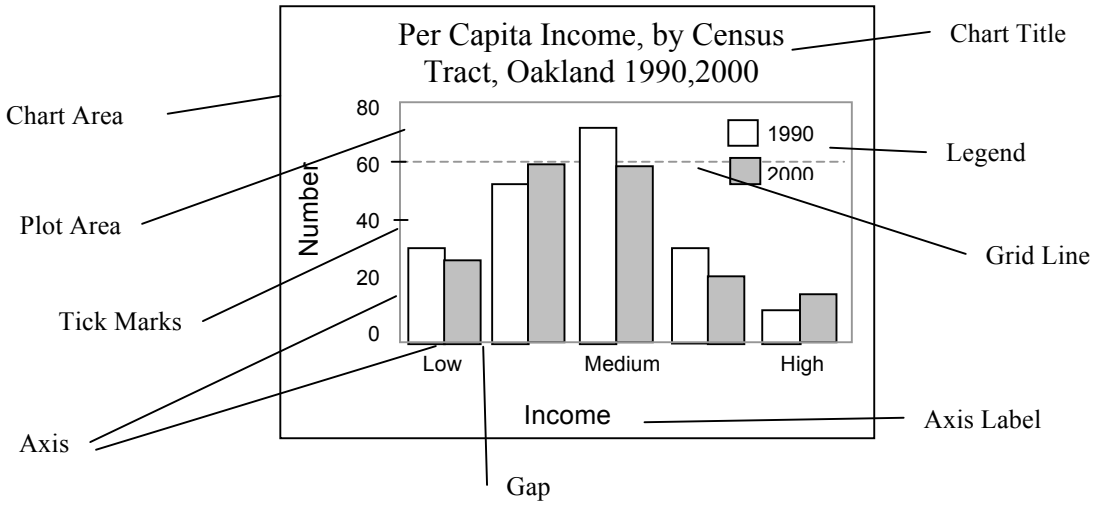
Small Multiples

Integrity

Area and the Lie Factor

Baselines

The Anatomy of a Chart



Types of Charts

Basic data set : cases by variables. Common secondary version is values by frequency.

Bar Charts

One set of data

Good for comparing absolute frequency of categorical variables.

Caution when classes are of different "widths" or "open-ended"

Frequency histogram as most common

Grouped Bar

As above but more than one set of data

Stacked Bar

Use when categories are subsets of a whole and mutually exclusive and (probably) exhaustive.

Stack Bar 100%

Useful for showing comparative composition.

Line Charts

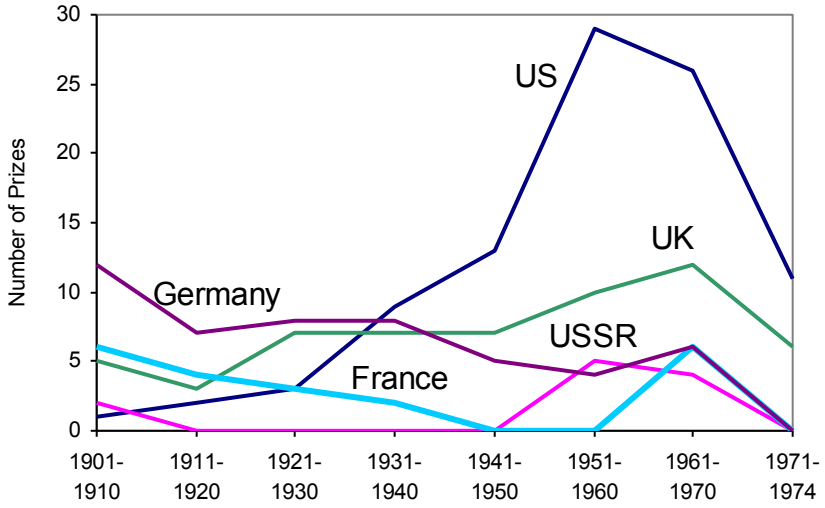
X-Y Charts

Pie Charts

Exercises

Fix this chart. Read the chart as presented. What story does it tell the eye. Examine the chart more closely (and the data) and repair it to present a more truthful view of this data.

Nobel Prizes Awarded in Science, for Selected Countries, 1901-1974



Tufte, 1983, p. 60

	1901-1910	1911-1920	1921-1930	1931-1940	1941-1950	1951-1960	1961-1970	1971-1974
US	1	2	3	9	13	29	26	11
USSR	2	0	0	0	0	5	4	0
UK	5	3	7	7	7	10	12	6
France	6	4	3	2	0	0	6	0
Germany	12	7	8	8	5	4	6	0

Basic Principles of Graphic Design[1]

(apply to tables, charts, presentation slides, etc.)

CRAP : Contrast, Repetition, Alignment, Proximity

Contrast

For contrast to be effective, it must be strong. If things are different, do not let them be similar.

Creates interesting page. Adds to organization. Must support intended focus, not create new ones.

Rule

- Avoid using two typefaces that are similar. If they are not exactly the same, they should be different. Don't mix brown text with black titles or commit other such close-but-not-quites.

Repetition

AKA "being consistent." Unifies piece. Keeps reader's eye on the page.

Rules

- Find existing repetitions and strengthen them.
- But avoid overdoing it. Keep contrast in mind.

Alignment

Alignment helps tie together the elements that make up a page. Always find something else on the page to align each new element with.

Rules

- Avoid mixing text alignments on same page.
- Always choose centered alignments consciously, never by default.

Proximity

When objects are near one another they become a visual unit. Proximity's basic purpose is organization. Good use of proximity also produces good white space.

Rules

- Limit the number of visual units on the page.
- Don't stick things in corners and middle.
- Avoid leaving exactly equal amounts of white space between objects unless groups are part of a subset.
- Allow no confusion about what goes with what.
- Don't create (visual) relationships between things that are not related.