CONSTRUCTING GRAPHS

1. Decide on the appropriate type of graph, recalling that histograms and frequency polygons are appropriate for quantitative data, while bar graphs are appropriate for qualitative data.

2. Within the available space, use a ruler to draw the horizontal axis, then the vertical axis remembering that the vertical axis should be about as tall as the horizontal axis is wide.

3. Identify the string of class intervals that eventually will be superimposed on the horizontal axis. For qualitative data or ungrouped quantitative data, this is easy--just use the classes suggested by the data. For grouped quantitative data, proceed as if you were creating a set of class intervals for a frequency distribution.

4. Superimpose the string of class intervals (with gaps for bar graphs) along the entire length of the horizontal axis. For histograms and frequency polygons, be prepared for some trial and error--use a pencil! Don't use a string of empty class intervals to bridge a sizable gap between the origin of 0 and the smallest class interval. Instead, use a key mark such as wiggly lines to signal a break in scale, and then begin with the smallest class interval. Also, don't clutter the horizontal axis with excessive numbers just use a few convenient numbers.

5. Along the entire length of the vertical axis, superimpose a progression of convenient numbers, beginning at the bottom with 0 and ending at the top with a number as large as or slightly larger than the maximum observed frequency. If there's a considerable gap between the origin of 0 and the smallest observed frequency use a key mark such wiggly lines to signal a break in scale.

6. Using the scaled axes, construct, bars (or dots and lines) to reflect the frequency of observations within each class interval. For frequency polygons, dots should be located above the midpoints of class intervals, and both tails of the graph should be anchored to the horizontal axis(this may be accomplished by adding one class interval above and below the highest and lowest classes in your data).

7. Supply labels for both axes and a title (or even an explanatory sentence for the graph.

Adapted from Witte, Robert S. Statistics, 4th edition. New York: Harcourt, 1993, p. 50

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