Histograms

A histogram is like a bar chart. Both show the frequency of data points using bars. The differences are:

1. A histogram uses classes along the horizontal axis instead of the unique data values.
2. The bars on a histogram touch, whereas the bars on a bar chart don't touch.

A histogram can show us:

- The center of the data.
- The variation of the data.
- The outliers of the data.

A relative frequency histogram looks the same as a histogram, except that the vertical axis is marked with the relative frequency instead of the frequency.

Frequency Polygon

A frequency polygon uses the class midpoint values along the horizontal axis. The frequency is plotted as a point, and the points are connected by line segments.

Ogive

An ogive is a variation of a frequency polygon. The points are plotted using cumulative frequency instead of frequency.

Dot plot

A dot plot marks the horizontal axis with the data values, and then "stacks" a dot on each data value each time it appears. The frequency of a data value is represented by the number of dots stacked on top of the value.

Stem-and-Leaf Plots

For a stem-and-leaf plot, we are going to split the digits of each data value. The leftmost part is called the stem, and the rightmost part is called the leaf.

The chart will have two columns: one for stems and one for leaves.

The chart will have a row for each unique stem value. Write the stem values in the stem column.

For each row, write the leaf values on the row for the stem it belongs to in increasing order. Write the leaf value each time it occurs – you may have two or more identical leaf values.

Pareto Chart

A Pareto chart is similar to a bar chart, except the horizontal axis is marked with labels instead of numbers. This is especially helpful when data is collected as a nominal level of measurement (a qualitative measure).

The bars are arranged in order of frequency in order to focus the attention on the more important categories.

Pie Charts

A pie chart is a variation of a Pareto chart. A pie chart shows the frequency of nominal data as a slice of the pie, proportional to the other slices.

Scatter Diagrams

A scatter diagram is simply an x-y plot of paired data points. The important idea here is paired data points – something not done with the other methods discussed so far. An example of paired data is if you wanted to plot height versus weight, and each point represented the height and weight of one person.

Time-Series Graph

A time-series graph is a variation of a frequency polygon. The difference is that a time-series graph uses intervals of time for the horizontal axis.

Other Graphs

There are many creative ways for displaying data. An excellent reference is Edward Tufte's "The Visual Display of Quantitative Information."

In a later section, will talk about box and whisker plots.