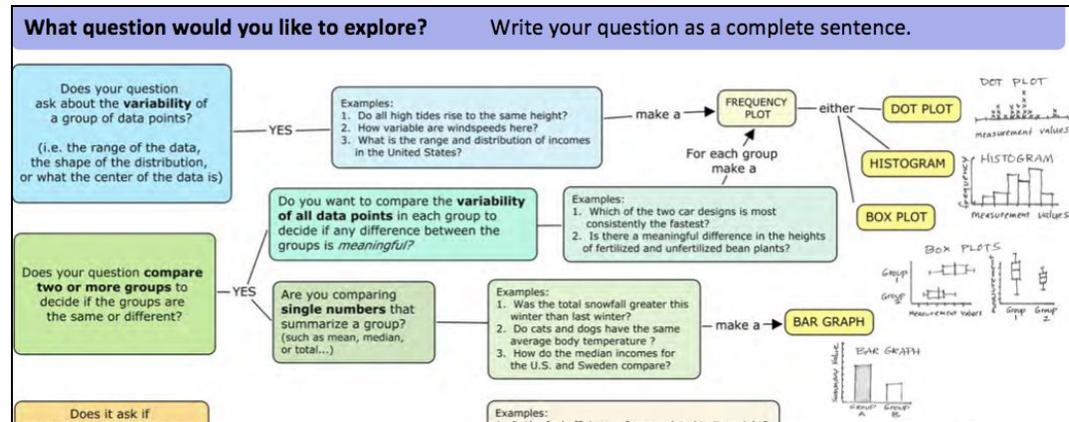


Guide to using the Graph Choice Chart



Tips for choosing a graph type

- Start with a clear question to ask about your data.
- Write your question out as a full sentence to help make it clear. It helps if your question mentions exactly which variables you are inquiring about.
- If needed, refine your question so it is similar to one of the question types in the left hand boxes.
 - Questions about the nature of a group in terms of one numeric variable.
 - Questions about how two or more groups compare one numeric variable.
 - Questions about correlation (relationship) between two numeric variables.
 - Questions about the particular relationship of how a numeric variable changes through time.
 - Questions about the composition of a group in terms of percentages.
- When you have a clear question that is similar to one in a left hand box, move to the right, answering questions along the way until you reach a final suggested graph type .
- The Graph Choice Chart makes only a suggestion, and is intended as a beginning guide for making a reasoned choice among several graph types. Sometimes more than one graph type will work well, and sometimes there are exceptions to the general rule of thumb. The important thing is, you have a choice.

Graph Choice Chart Vocabulary

Distribution, frequency plot, frequency distribution: A way of displaying data to show how spread out values are along a number line. Dot plots, box plots, and histograms are three different ways to show how data are distributed. Distributions can be described by their range, their center (mean, median, or mode), their symmetry and their shape.

Dot plot: The simplest kind of frequency plot. A dot plot is a single axis with a numeric scale and a dot placed along the number line for each value in the dataset. Dot plots make it easy to visualize how often a value occurs in a set of data, the range of values, and how clumped or spread out the values are.

Variability: How spread out data are from the center. The amount of variability in a group affects how confident you can be when making claims or predictions about the group. The greater the variability, the greater the uncertainty.

Categorical vs. quantitative (numeric) data: Categorical data is descriptive using words (site name, color, group number). Quantitative data are measurements on a numeric scale, usually with units (meters, grams, speed...)

Correlated, related, associated: Two factors are correlated when they form a linear pattern when plotted on X and Y axes. Correlated means when one factor increases, the other either increases or decreases -- the two factors change together in some way. (Correlation does not necessarily mean that one *causes* the other to change, it just means that as one changes, so does the other).

Time series: When one of the quantitative factors involved in a relationship is linear time (e.g. seconds, days, years), it is a special kind of relationship -- a time series. Because time is continuous, it often makes sense to connect the dots as a line graph.

Graph types:

- *Box plot:* A frequency plot showing the range of data points in each quartile of a distribution.
- *Histogram:* A frequency plot showing the number of values that fall into different sub-ranges, or bins, in a distribution.
- *Bar graph:* A way to show side by side the value, total, average, or other single value for one or more categorical groups.
- *Scatter plot:* A plot with two quantitative axes (XY), each axis with its own scale. Data points are not connected in a scatter plot.
- *Line graph:* Similar to an XY scatter plot, but with the data points connected. Points are connected only if values along one axis scale are changing constantly, such as with time, or depth.
- *Pie chart, stretched bar charts, and stacked bar charts:* All are ways of showing proportions of categories that make up a whole group. A stacked bar chart shows the size of the total group by its bar height.