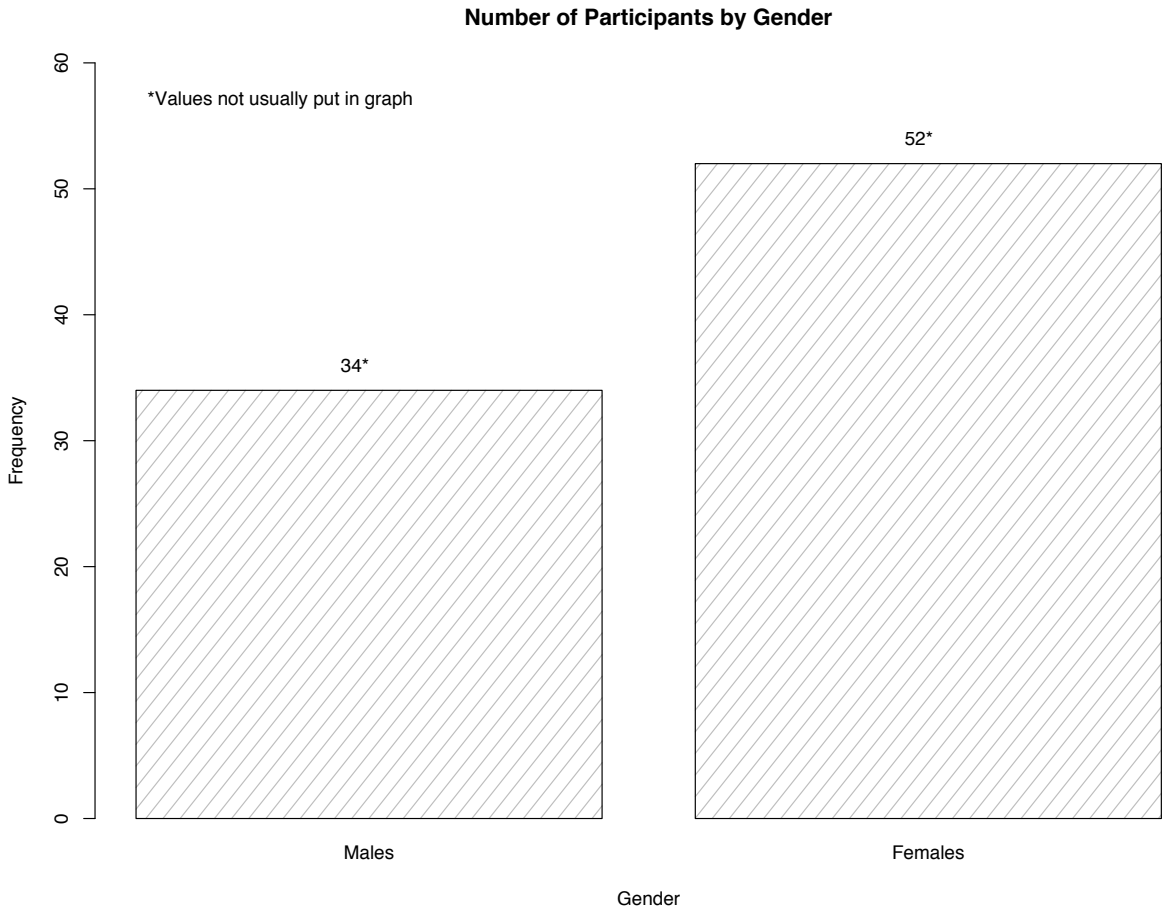
Bar Charts

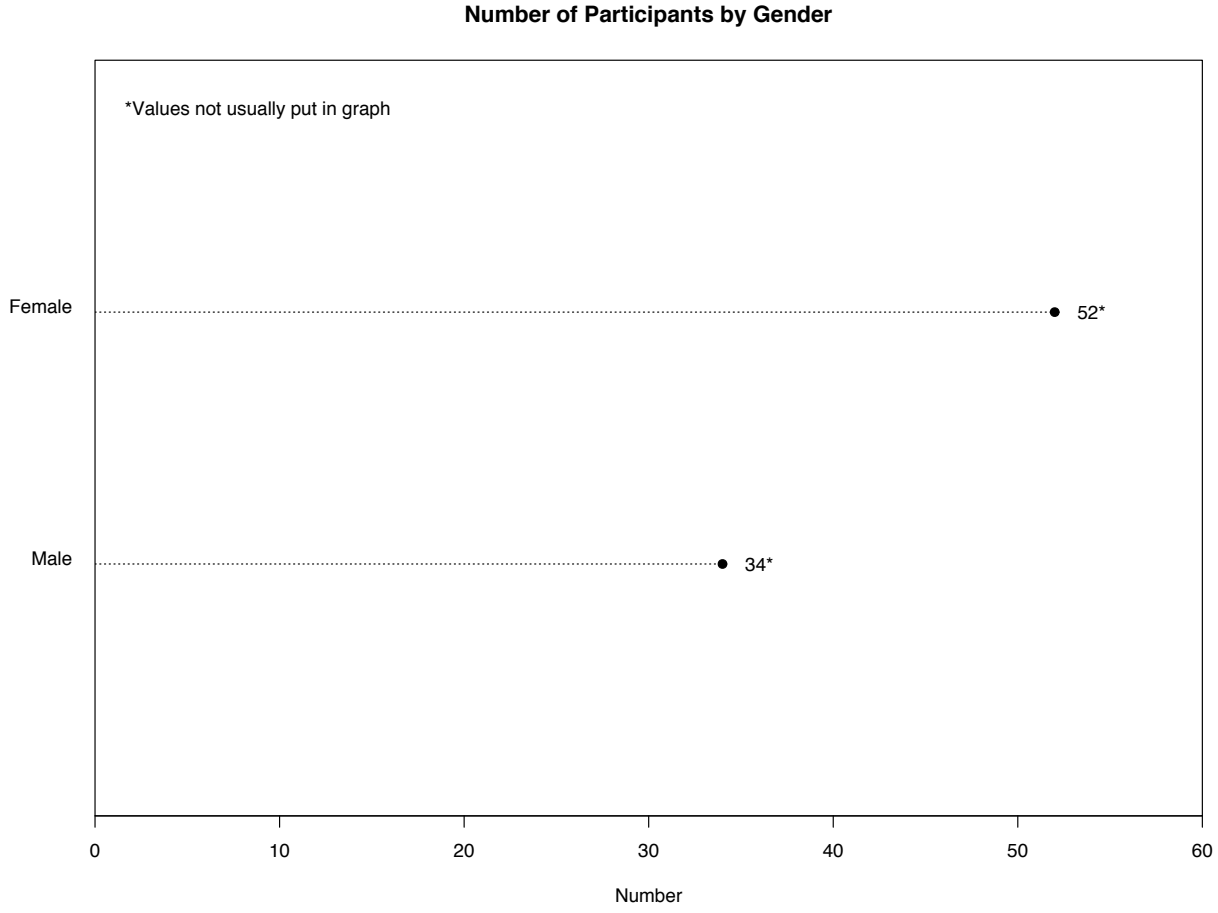
Bar charts are used to display 1 categorical variable on either a nominal or ordinal scale. The categories are usually placed on the *X*-axis and the frequency is usually placed on the *Y*-axis.



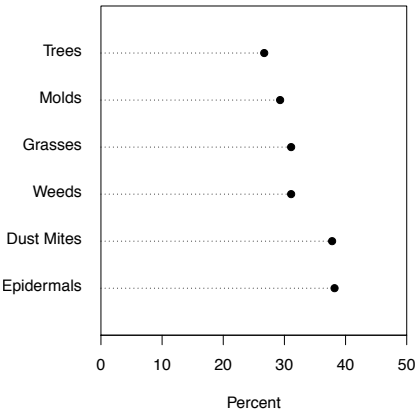
Dot Charts

Dot charts are also used to display categorical data, but dot charts convey information in a way that is easier to read and conserves ink. This is especially true when you have multiple categories. For instance, graph B is much easier to interpret than graph C due to the category names being horizontal and the lack of "clunky" bars that dominate graph C. Overall, dot charts are better, more efficient graphs than bar charts.

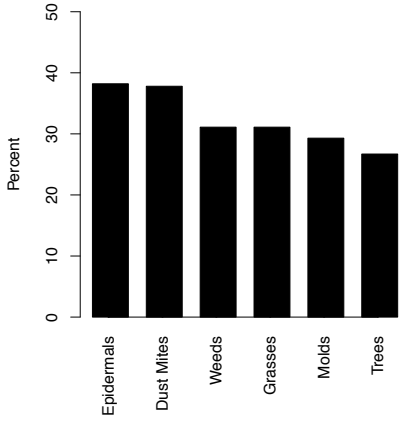
Graph A



Graph B



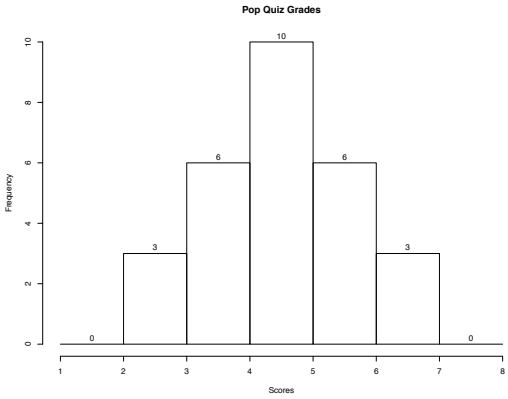
Graph C



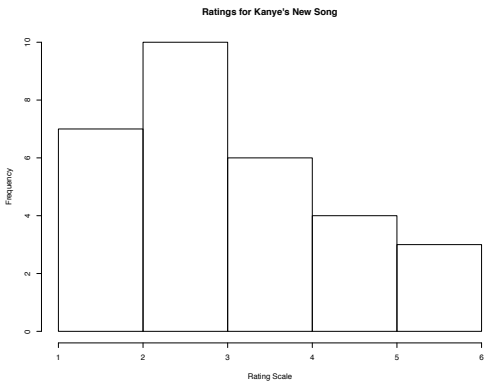
Histograms

Histograms are used to display frequency data for 1 numerical variable on either an interval or ratio scale.

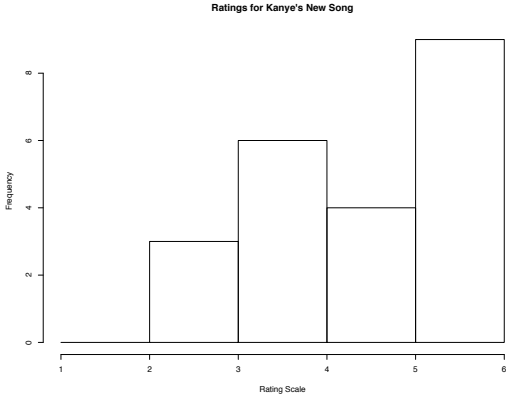
Symmetrical



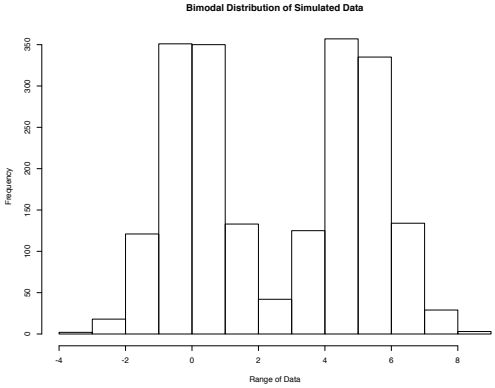
Positive Skew



Negative Skew



Bimodal



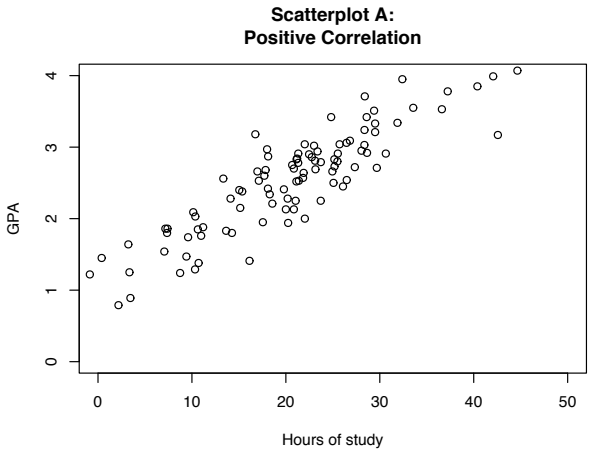
Scatterplots

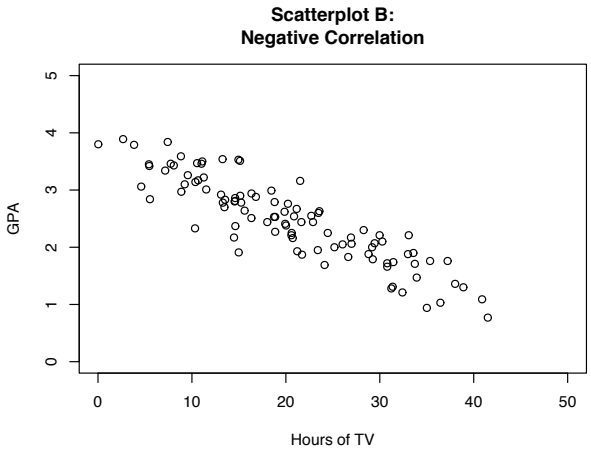
Scatterplots are used to examine the relationship between 2 numeric (interval or ratio data) variables. Each circle in a plot represents a measure of 2 variables. The *X*-axis variable is called the predictor variable and the *Y*-axis variable is sometimes called the outcome variable.

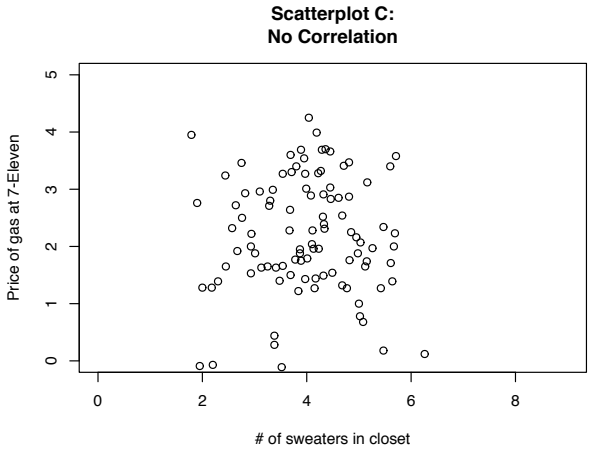
Scatterplot A indicates a positive, linear relationship between hours of study and GPA. As the values for hours of study increases, you can see that there is a subsequent increase in the values for GPA. We interpret this in the following way: GPA tends to improve the more one studies.

Scatterplot B indicates a negative, linear relationship between hours of TV watched and GPA. As the values for hours of TV watched increases, you can see that there is a subsequent decrease in the values for GPA. We interpret this in the following way: GPA tends to worsen the more one watches TV.

Scatterplot C indicates no relationship between number of sweaters owned and the price of gas on a given day. You can see that the price of gas on a given day is just as likely to be high irrespective of the number of sweaters anyone owns.

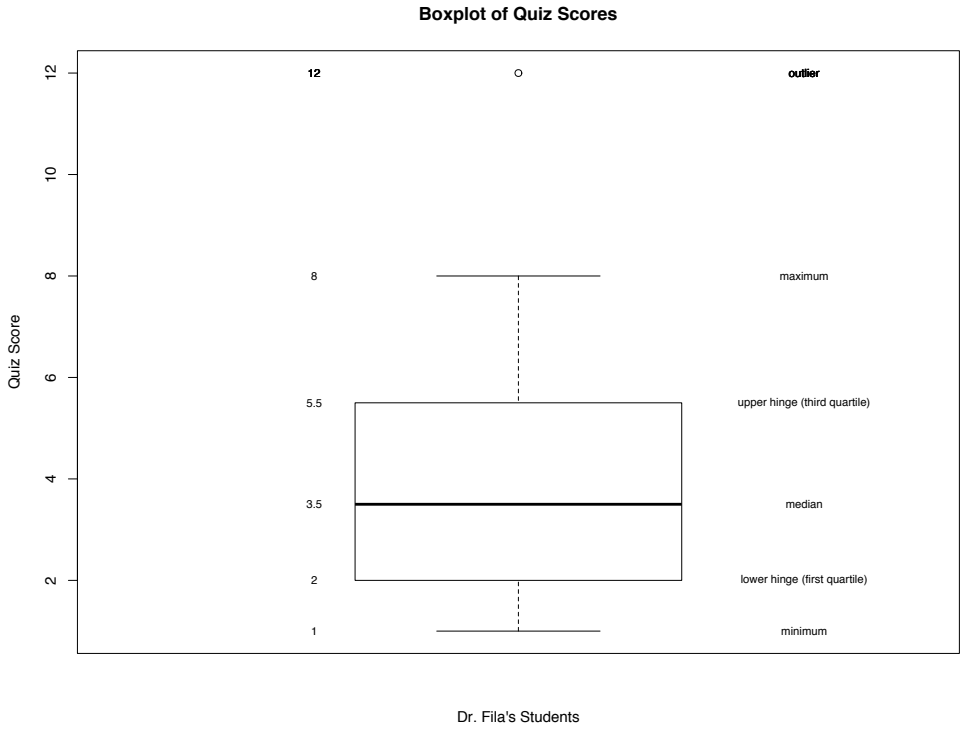






Boxplots

Boxplots are used to visualize numerical data, usually for specific categories. They provide a host of information including the median, quartiles, and any outliers.



They can be presented either vertically or horizontally.