2.2 Relationships Between Two Quantitative Variables (Part 1)

In Chapter 1, you learned how to display the distribution of a single quantitative variable using dotplots, stemplots, histograms, and boxplots. Although there are many ways to display the distribution of a single quantitative variable, a **scatterplot** is the best way to display the relationship between two quantitative variables.
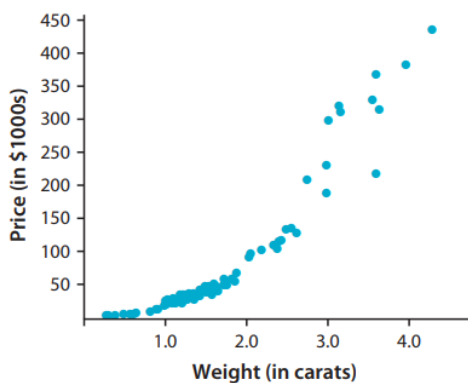
A **scatterplot** shows the relationship between two quantitative variables measured on the same individuals. The values of one variable appear on the horizontal axis, and the values of the other variable appear on the vertical axis. Each individual in the data set appears as a point in the graph.

It is fairly easy to make a scatterplot by hand. The first step is to determine which variable is the response/explanatory variable. Like in the last section, response variables measure an outcome of a study and explanatory variables may help predict or explain changes in response variables.

(In the previous scatterplot, we used carat weight as the explanatory variable because the size of a diamond helps explain how expensive it is.) However, in some cases, there isn't a clear explanatory or response variable. For example, in the relationship between SAT math and SAT critical reading scores, either variable could be used to predict or explain the other.

Example: Identify the explanatory variables for each relationship.

a.) The average income and life expectancy in a sample of countries

b.) The heights of husbands and the heights of wives in a sample of married couples

No correlation