2.2 Relationships Between Two Quantitative Variables (Part 3)

To describe the relationship shown in a scatterplot, follow the strategy from Chapter 1: Look for the *overall pattern* and for clear *departures* from that pattern.

Even when there is a clear relationship between two variables in a scatterplot, *the direction of the association only describes the overall trend* - not the relationship for each pair of points.

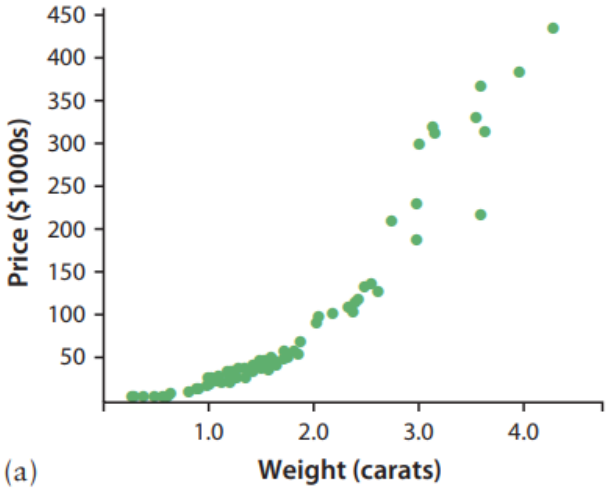
For example, in some pairs of diamonds, the heavier diamond costs less than the lighter one.

How to Describe a Scatterplot

To describe a scatterplot, make sure to address the following four characteristics in the context of the data:

1. **Direction**: A scatterplot can show a positive association, negative association, or no association. In a *positive association*, larger values of the explanatory variable tend to be paired with larger values of the response variable, and smaller values tend to be paired with smaller values. In a *negative association*, larger values of the explanatory variable tend to be paired with smaller values of the response variable and vice versa.
2. **Form**: A scatterplot can show a linear or a nonlinear form. The form is linear if the overall pattern follows a straight line. Otherwise, the form is nonlinear.
3. **Strength**: A scatterplot can show a weak, moderate, or strong association. An association is strong if the points do not deviate much from the form identified. An association is weak if the points deviate quite a bit from the form identified.
4. **Outliers**: Individual points that fall outside the overall pattern of the relationship.

Example: Describe the relationships shown in the scatterplots.



(a)

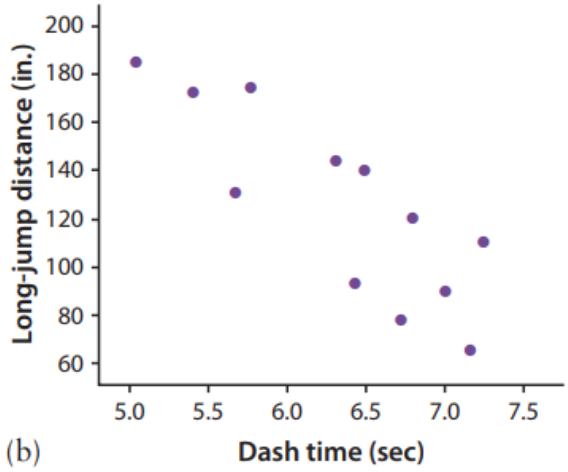
a.) Direction: positive

b.) Form: non linear

c.) Strength: moderate

d.) Outliers: none

Example: Describe the relationships shown in the scatterplots.



(b)

a.) Direction: negative

b.) Form: linear

c.) Strength: weak

d.) Outliers: none