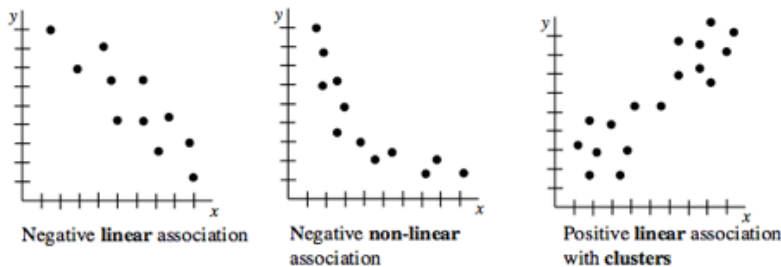# Describing Association

An association (relationship) between two numerical variables can be described by its form, direction, strength, and outliers.

The shape of the pattern is called the **form** of the association: **linear** or **non-linear**. The form can be made of **clusters** of data.

If one variable increases as the other variable increases, the **direction** is said to be a **positive association**. If one variable increases as the other variable decreases, there is said to be a **negative association**. If there is no apparent pattern in the scatterplot, then the variables have **no association**.

Negative **linear** association   Negative **non-linear** association   Positive **linear** association with **clusters**

Strength is a description of how much scatter there is in the data away from the line of best fit. See some examples below.

strong negative association   moderate negative association   weak positive association
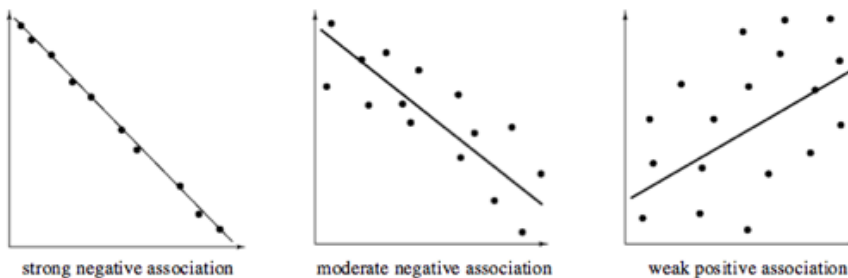
An **outlier** is a piece of data that does not seem to fit into the overall pattern. There is one obvious outlier in the association graphed at right.

outlier →