Lesson 13: Describing Variability using the Interquartile Range (IQR)

Problem Set

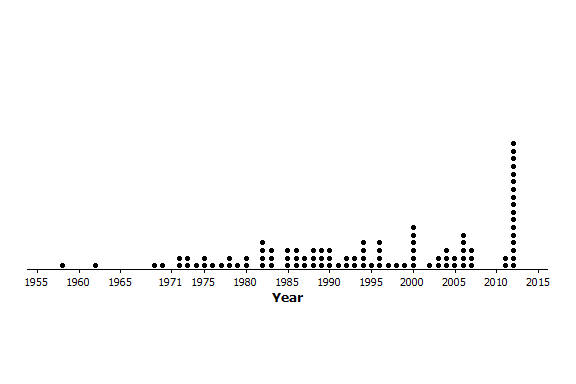
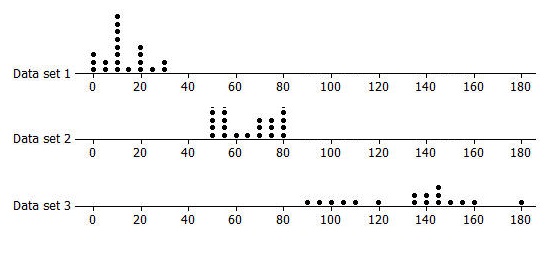
1. The average monthly high temperatures (in °F) for St. Louis and San Francisco are given in the table below.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec |
| St. Louis |  |  |  |  |  |  |  |  |  |  |  |  |
| San Francisco |  |  |  |  |  |  |  |  |  |  |  |  |

Data Source: [www.weather.com/weather/wxclimatology/monthly/graph/USCA0987](http://www.weather.com/weather/wxclimatology/monthly/graph/USCA0987)

[www.weather.com/weather/wxclimatology/monthly/graph/USMO0787](http://www.weather.com/weather/wxclimatology/monthly/graph/USMO0787)

* 1. How do you think the data might have been collected?
  2. Do you think it would be possible for of the temperatures in the month of July for St. Louis to be or above? Why or why not?
  3. Make a prediction about how the sizes of the IQR for the temperatures for each city compare. Explain your thinking.
  4. Find the IQR for the average monthly high temperature for each city. How do the results compare to your conjecture?

1. The plot below shows the years in which each of pennies were made.
   1. What does the stack of dots at 2012 representing pennies tell you about the “age” of the pennies in 2014?
   2. Here is some information about the sample of pennies. The mean year they were made is 1994; the first year any of the pennies were made was 1958; the newest pennies were made in 2012; Q1 is 1984, the median is 1994, and Q3 is 2006; the MAD is years. Use the information to indicate the years in which the middle half of the pennies was made.
2. Create a data set with at least elements such that it has the following:
   1. A small IQR and a big range (maximum-minimum).
   2. An IQR equal to the range.
   3. The lower quartile is the same as the median.
3. Rank the following three data sets by the value of the IQR.
4. Here are the counts of the fries in each of the bags from Restaurant A: and.
   1. Suppose one bag of fries had been overlooked in the sample and that bag had only fries. Would the IQR change? Explain your reasoning.
   2. Will adding another data value always change the IQR? Give an example to support your answer.