# Assignment: Statistical Thinking Problem Set Module 11Q

### Skills

1. Families of children at a middle school were asked how often they eat out in a week. Their answers are

 2, 5, 1, 4, 2, 1, 3, 2, 1, 5, 3, 7, 1, 1, 4, 3.

 (a) What is the mean?

 (b) What is the median?

 (c) What is the mode?

 (d) construct a dot plot of the data.

2. A group of adults at the dentist were asked how many cavities they had last year. Their answers are

 1, 1, 1, 3, 1, 5, 1, 2, 1, 1, 3, 1

 (a) What is the mean?

 (b) What is the median?

 (c) What is the mode?

 (d) construct a dot plot of the data.

3. The ages of cars in years in a company parking lot is listed below.

 12, 15, 10, 12, 8, 6, 4, 1, 1, 20, 13, 17, 9, 8, 5, 5, 6, 5, 6, 2, 3, 1, 22, 12, 15, 9, 6, 2, 3

 (a) What is the mean?

 (b) What is the median?

 (c) What is the mode?

 (d) Construct a dot plot.

 (d) What is the 5 number summary?

 (e) Construct a box plot.

4. The number of days between thunderstorms in the summer one particular year is given below.

 1, 4, 1, 7, 3, 2, 5, 2, 9, 1, 3, 7, 4, 1, 2, 5, 10, 5, 1

 (a) What is the mean?

 (b) What is the median?

 (c) What is the mode?

 (d) Construct a histogram.

5. The price of a shampoo, cut, and blow dry at 10 area salons are listed below.

 28, 35, 45, 25, 32, 60, 18, 27, 35, 42, 27

 (a) What is the mean?

 (b) What is the median?

 (c) What is the mode?

 (d) Construct a histogram.

### Concepts

For each of the following data sets, find the mean, median, standard deviation, range, and skewness. Construct a visual or graphical representation that you think best represents an interesting characteristic of the data.

6) The heights of 24 women in inches are

56, 58, 58, 60, 60, 60, 61,62, 62, 62, 62, 63, 63, 63, 63, 63, 64, 64, 64, 66, 68, 69, 70, 72.

7) The shoe sizes (U.S.) of 15 men are

6, 8, 8.5, 9.5, 9.5, 10, 10, 10.5, 10.5, 10.5, 11, 11, 11.5, 13, 14

8) The grades on a recent chemistry exam are

48, 59, 60, 65, 66, 67, 68, 69, 70, 71, 72, 73, 73, 74, 75, 75, 76, 78, 78, 79, 80, 82, 85, 85, 86, 89, 91, 91, 92, 95, 97, 99

9) The annual salaries of 10 actors living in Los Angeles are

12k, 18k, 26k, 30k, 31k, 37k, 38k, 49k, 87k, 126k

Each of the following data sets include two sets of data to compare. For each, get the descriptive statistics of each, then plot them side by side in a scatterplot and a box plot. Discuss central tendency and spread and how the data compares between the two sets.

10) The average ages of the consumers of a certain product before and after a marketing campaign are

Before: 33, 45, 27, 35, 37, 52, 55, 57, 48, 42, 27, 23, 36, 34, 35, 39, 42, 41, 40 ,35, 33

After: 19, 22, 27, 33, 28, 18, 26, 25, 27, 35, 55, 57, 42, 35, 33, 32, 25, 27, 29, 30, 27

### Explorations

Use a spreadsheet and statistical tools to perform descriptive statistics on the following problems.

12. The World Jigsaw Puzzle Championship is celebrated each September at the Millennium Dome in Valladolid, Spain. A list of final times for completing a 500 piece puzzle by individual competitors competing in the 2019 world championship is given below.



 (a) Use the Data Analysis tool in Excel to find the mean and median of the set. What can you say about the central tendencies and symmetry of the data according to the descriptive statics?

(b) Perform a Frequency Table and Histogram of the data. Do these representations support what you concluded about the shaper and center of the data based on the descriptive statistics? Do you notice anything different now that you have a visual representation?

13. Are U.S. Presidents being elected at different ages now than they used to be? Are they living longer? The ages at inauguration and ages at death for the first 41 presidents (except #39, Jimmy Carter, who was still living at the time this was written) can be found in the text file below. Chart them side by side as parallel box plots and parallel scatter plots to look for trends.



(a) What trends do you notice comparing the charts? Discuss mean age for each column, range, and standard deviation.

(b) What was the youngest age at which a president was inaugurated? The oldest?

(c) What was the youngest age at which a president died? The oldest?