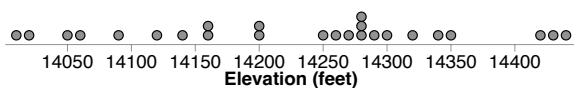


1. There are 25 mountain peaks in Colorado that are over 14,000 feet in elevation. The elevations are displayed in the dotplot and summary statistics are provided.

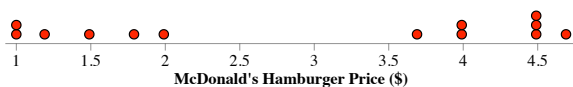


n	Mean	SD	Min	Q_1	Med	Q_3	Max
25	14,229.04	125.53	14,011	14,126	14,259	14,310.5	14,440

There are some serious hikers who are only interested in summitting peaks that are taller than 14,000 feet. These hikers are often only interested in the height above 14,000 feet for each of these mountain peaks.

- How many feet above 14,000 is the peak of Mount Elbert, which has an elevation of 14,440 feet? What mathematical operation was used for this calculation?
- What are the mean and standard deviation of the distribution of height above 14,000 feet for these 25 Colorado mountain peaks?
- What is the five-number summary of the distribution of height above 14,000 feet for these 25 Colorado mountain peaks?
- How does the median and IQR of the distances above 14,000 compare to the median and IQR of the original elevations?

2. McDonald's has 13 different hamburgers on the menu. The prices are displayed in the dotplot and summary statistics are provided.

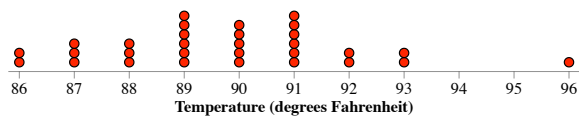


n	Mean	SD	Min	Q_1	Med	Q_3	Max
13	2.95	1.53	1	1.34	3.69	4.49	4.69

A McDonald's manager in Michigan, where there is a sales tax of 6%, adjusts all these prices to include this sales tax.

- What is the price that includes sales tax for the Big Mac priced at \$4.49? What mathematical operation was used for this calculation?
- What is the shape of the distribution of McDonald's hamburger prices that include sales tax?
- What are the mean and standard deviation of the distribution of McDonald's hamburger prices that include sales tax?
- What are the median and IQR of the distribution of McDonald's hamburger prices that include sales tax?

3. AP Statistics exams are graded in Tampa Bay every summer in June. A teacher who was invited to participate wondered about the weather, so she looked up the high temperatures (in degrees Fahrenheit) recorded for each day in June in a recent year. The temperatures are displayed in the dotplot and summary statistics are provided.

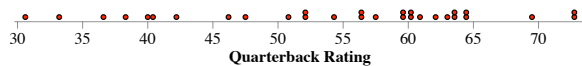


<i>n</i>	Mean	SD	Min	Q_1	Med	Q_3	Max
30	89.77	2.22	86	88	90	91	96

Another teacher from overseas was also invited, but this teacher wanted to convert the temperatures from degrees Fahrenheit (F) to degrees Celsius (C) using the following equation: $C = 0.556F - 17.778$

- What is the shape of the distribution of temperatures in degrees Celsius?
- What is the mean and standard deviation of the distribution of temperatures in degrees Celsius?

4. The quarterback rating (QBR) is a statistical measure used to evaluate a quarterback's performance. Here are the top 30 quarterback ratings for a recent season in the National Football League (NFL).



n	Mean	SD	Min	Q_1	Med	Q_3	Max
30	54.37	11.55	30.6	46.2	56.95	63	72.8

- Calculate and interpret the z -score for Patrick Mahomes, with a quarterback rating of 63.
- Describe the mathematical operations used to calculate the z -score for Patrick Mahomes.
- Suppose that we converted all 30 of the quarterback ratings into z -scores. What would be the shape, mean, and standard deviation of the z -scores?

5. Here are the summary statistics for the all-time top 50 women's long jump distances (in meters).

n	Mean	SD	Min	Q_1	Med	Q_3	Max
50	7.2	0.12	7.06	7.11	7.17	7.27	7.52

- a. Calculate the z -score for American Jackie Joyner-Kersey, who jumped 7.49 meters in 1994.
- b. How far did Jackie Joyner-Kersey jump in feet (1 meter = 3.28 feet)?
- c. If all 50 jumps were converted to feet, what would be the new mean and new standard deviation of the distances?
- d. Calculate the z -score for Jackie Joyner-Kersey's jump when it is measured in feet. What do you notice?
6. A local farmer sells chicken eggs at a farmers market every weekend. She keeps track of the number of dozens of eggs sold each weekend for an entire year, and finds the mean is 14.7 dozen and the standard deviation is 3.0 dozen.
- a. What is the variance for the distribution of dozens of eggs sold?
- b. Suppose the farmer converts all the values from dozens of eggs to number of eggs. What is the new mean and new standard deviation?
- c. What is the variance for the distribution of number of eggs sold?
- d. How does this new variance compare to the original variance?

7. In New York City, the cost of a taxi ride is based on the distance for the trip. The cost includes a starting fee of \$5.00 plus \$3.25 for each additional mile. The cost for a taxi ride can be determined with this equation: $\text{cost} = 5 + 3.25(\text{distance})$

Danielle keeps track of all her taxi rides for one year. Here are the summary statistics for the number of miles travelled during these trips.

n	Mean	SD	Min	Q_1	Med	Q_3	Max
12	6.75	6.61	1	2.5	3.5	10.5	23

- a. Danielle's longest taxi ride was 23 miles to the Museum of Modern Art. Use the $1.5 \times \text{IQR}$ rule to determine if this is an outlier. Show your work.
- b. What was the cost for Danielle's taxi ride to the Museum of Modern Art?
- c. Suppose we found the cost for each of Danielle's taxi rides. What is the Q_1 and Q_3 for the cost of the taxi rides?
- d. Use the $1.5 \times \text{IQR}$ rule to determine if the cost for Danielle's taxi ride to the Museum of Modern Art is an outlier. Show your work.
8. The distance, in miles, traveled to work for each person in a sample is recorded. After the data are collected, all the distances are converted to kilometers by multiplying each value by 1.609. Which of the following statistics will remain the same for both units, miles and kilometers?
- A) The minimum of the distances
- B) The z -scores of the distances
- C) The mean of the distances
- D) The range of the distances