Group Work - Chapter 3

1 The file "max_temp_dec17.csv" on D2L contains the daily high temperatures (in F) for December.

(a) Find the mean, median, mode and midrange of the sample. What is the most appropriate measure of center for this data?

Mean	Median	Mode	Midrange
24.65	25	22, 24, 29	24.50

Since temperatures are roughly normal and symmetric, mean is the most appropriate measure of center.

(b) Find the range, variance and standard deviation of the sample. Be sure to include the correct units for each measure.

Range	Variance	SD
65 ˚F	252.90 (˚F)^2	15.90 ˚F

(c) Within the data set, what percentile is 45 degrees? What temperature is the 10th percentile?

**46 ˚F is the 88th percentile.**
The 10th percentile is 3 ˚F.

2 The file "mpls_home_sales.csv" on D2L contains the adjusted sale prices (in dollars) of a sample of home sold in Minneapolis in 2016.

(a) Find the mean, median, mode and midrange of the sample. What is the most appropriate measure of center for this data?

Mean	Median	Mode	Midrange
234980.59	202750.00	None	451000.00

By looking at the histogram, we can see that the data is right skewed with a few extremely high values. Thus, median is the most appropriate measure of center.
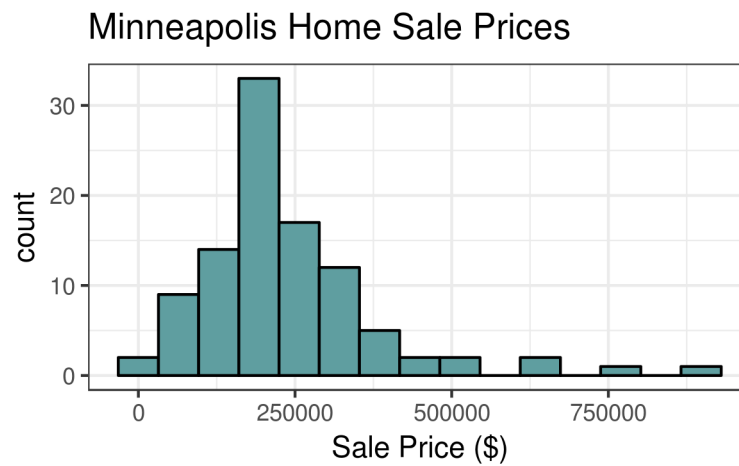

(b) Find the range, variance and standard deviation of the sample. Be sure to include the correct units for each measure.

Range	Variance	SD
898000 $	21434941764.24 ^{2}	146406.77 $

(c) Find the 5 number summary of the sample and create a boxplot. What does the boxplot tell you about the distribution of the data.

Min	Q1	Med	Q3	Max
2000.00	161250.00	202750.00	286225.00	900000.00

Boxplot of Minneapolis Home Sale Prices
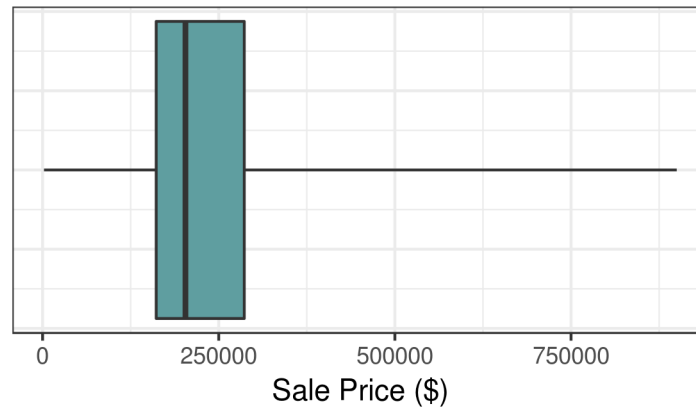
Like the histogram, the boxplot shows a heavily right skewed distribution.

3 The file "heights.csv" on D2L contains simulated heights (in inches) of 25 men and 25 women in a statistics class.

(a) Find the mean and median of both samples. What is the most appropriate measure of center for this data?

	Mean	Median
men	70.24	70.30
women	63.29	63.70

We expect heights to be approximately normal, so mean is the most appropriate measure of center.

(b) Find standard deviation of both samples.

	SD
men	5.04 in
women	5.28 in

(c) Suppose two new students join the class. One is a woman who is 71 inches tall and one is a man who is 74 inches tall. Calculate z-scores for both. Who is taller for their gender? Are either of them unusually tall?

$$z = \frac{x - \bar{x}}{s}$$

$$z_w = \frac{71 - 63.29}{5.28} = 1.46$$

$$z_m = \frac{74 - 70.24}{5.04} = 0.75$$

The woman has a higher z-score, so she is taller for her gender than the man is. Neither z-score is greater than 2, so neither new student has an unusual height.