

The following data represents recovery time for 16 patients (arranged in a table to help you out)

count	Days (X)	$X - \bar{X}$	$(X - \bar{X})^2$	Z Score
#1	2	-4	16	-1.27
#2	3	-3	9	-0.96
#3	4	-2	4	-0.64
#4	4	-2	4	-0.64
#5	5	-1	1	-0.32
#6	5	-1	1	-0.32
#7	5	-1	1	-0.32
#8	5	-1	1	-0.32
#9	5	-1	1	-0.32
#10	6	0	0	0.00
#11	6	0	0	0.00
#12	7	1	1	0.32
#13	7	1	1	0.32
#14	8	2	4	0.64
#15	8	2	4	0.64
#16	16	10	100	3.18
Totals	96		148	

1. Calculate the sample mean and median

$$\bar{X} = 96/16 = 6 \quad \text{Median } 5$$

2. Use the table to calculate the variance and standard deviation.

$$s^2 = 148/(16-1) = 9.867 \quad s = 3.141$$

3. Use the range of the data to see if the standard deviation makes sense. (Range should be between 3 and 6 standard deviations)

$$\text{Range}/s = 4.5, \text{ so the answer makes sense}$$

4. Using the empirical rule between what two numbers should you expect to see 68% of the data? 95% of the data? 99.7% of the data?

Within 1s	Within 2s	Within 3s
2.86	-0.28	-3.42
9.14	12.28	15.42

5. Calculate the Z-score for each observation. Do you think any of these data are outliers?

See above – 16 seems to be an outlier more than 3 standard deviations above the mean.

Math 10 Group Work – Percentiles and Outliers

6. Use the recovery time data from the standard deviation group work to answer the following questions.

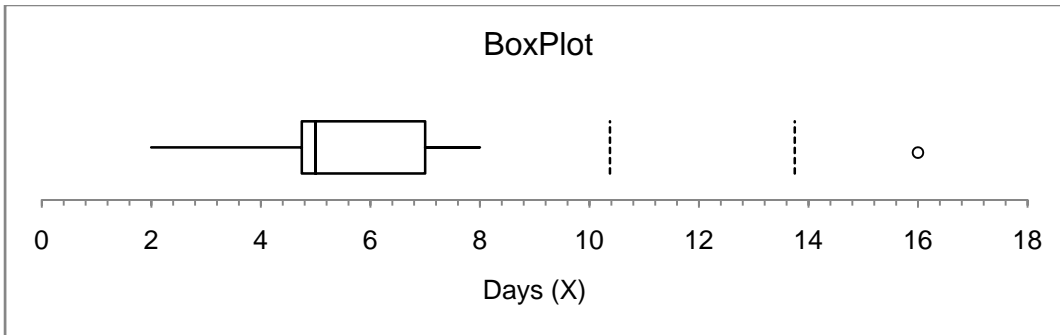
a. Determine the Median and 1st and 3^r quartiles of the data.

Q1=4.5 med = 5 Q3=7

b. Calculate and explain the Interquartile Range.

IQR = 7-4.5=2.5. The range of the middle 50% of the data

c. Construct a box plot of the data and describe the skewness.



Strange graph. Skewed left when outlier is excluded, but outlier skews data to the right.

d. Using the rule that possible outliers are more than 1.5 IQRs from the edge of the box, identify any possible outliers.

16 is a probable outlier