(5.2 - Buy or Sell A Car)

Analyze measures of central tendency like:

mean (average) = $\frac{\text{add all}}{\#\text{ items}}$

median = the one in the middle

mode = the one that appears the most

range: high # - low #

* Arrange the #'s in ascending order to calculate.

Do ex 1-4 on p.225-226

Which is best to use?

Compare the mean and median. If they are not equal then they are skewed and analyze the mean for an outlier (an exception)

Average salaries:

30,000 30,000 35,000 Donald Trump 2,000,000

Find the mean, mode, median and range.

* The range is also an indicator of an outlier. The range shows dispersion (how spread out the data is)

mean: $\frac{30{,}000 + 30{,}000 + 35{,}000 + 2{,}000{,}000}{4}$

$= 523{,}750$

median:

30000 30000 35000 2,000,000

$\frac{30{,}000 + 35000}{2} = 32500$

mode: 30,000 range: 2000000 - 30,000 = 1,970,000

Analyze Quartiles p. 227

15, 17, 21, 25, 31, 32, 32, 32, 34

Step 1 Find the median of all the items. This is Quarter 2.

$Q_2 = 31$

Step 2/ Find the median of the set of numbers below Q_2. This is Q_1

15, (17, 21), 25 $\quad Q_1 = 19$

Step 3 Find the median of the set of numbers above Q_2. This is Q_3

32, (32, 32), 34 $\quad Q_3 = 32$

Step 4 Q_4 is the maximum value in the range.

$Q_4 = 34$

$Q_1 = 19$ $Q_2 = 31$ $Q_3 = 32$ $Q_4 = 34$

Analyze

The IQR (interquartile range) $= Q_3 - Q_1$. The IQR shows where the middle 50% of the data are

so 50% of the #'s fall between 19 and 32.

Q_1 Q_3

IQR = 32 - 19 = 13

Outliers for the IQR

$Q_1 - 1.5(IQR)$ Lower outlier

$19 - 1.5(13) = -.5$

Upper outliers for IQR

$Q_3 + 1.5(IQR)$

$32 + 1.5(13) = 51.5$

so outliers occur below $-.5$ or above 51.5

$-.5 < X$ or $X > 51.5$

* Outliers distort your values.

Calculate the IQR and its outliers for:

5800 6700 7700 | 7800 8650 9100

$Q_1 = 6700$

$Q_2 = \frac{7700+7800}{2} = 7750$

$Q_3 = 8650$

$Q_4 = 9100$

$$IQR = Q_3 - Q_1 = 8650 - 6700$$
$$= 1950$$

Lower Outlier: $6700 - 1.5(1950)$
$= 3,775$

Upper Outlier: $8650 + 1.5(1950)$
$= 11,575$