
Consider the batting averages per year for Chipper Jones and Alex Rodriguez:

Year	Chipper Jones	Alex Rodriguez
2004	.248	.287
2005	.296	.322
2006	.325	.290
2007	.337	.314
2008	.364	.302

A)What is the mean absolute deviation for Chipper Jones' batting averages?

B)What is the mean absolute deviation for Alex Rodriguez's batting averages?

C)Which player has the higher **mean** batting average (not mean absolute deviation)?

D)Based on the mean absolute deviations from A) and B) above, who has been the more consistent hitter? Write a complete sentence.

E)Based on the means from C) above, who has been the better hitter?

Mean Absolute Deviation (MAD)

Another measure of variability is called the mean absolute deviation. The **mean absolute deviation** (MAD) is the average of the absolute values of the differences between each data value in a data set and the set's mean. In other words, it is the average distance that each value is away from the mean.

If a data set has a small mean absolute deviation, then this means that the data values are relatively close to the mean. Would does this mean about the dispersion of the data?

If the mean absolute deviation is large, then the values are spread out and far from the mean.

To find the MAD:

1. Find the mean
2. Subtract each data value from the mean
3. Take the absolute value of each value from step #2.
4. Add up all values from step #3.
5. Divide by the number of data values.

EX. Find the MAD (Mean Absolute Deviation) of the numbers shown below.

80, 76 , 63 , 92 , 47 , 82 and 76.

MAD worksheet

x	$\bar{x}$	$x - \bar{x}$	$\lvert x - \bar{x} \rvert$
80			
76			
63			
92			
47			
82			
76			

SUM: _____

$$MAD = \frac{sum}{n} =$$

To decide which measure of central tendency (mean or median) and which measure of variability Interquartile Range (IQR), Mean Absolute Deviation (MAD), or Standard Deviation (SD) is best:

1. See which describes the data best. Which number seems to be more in the center of the numbers?
2. If there are outliers, median and IQR will be best.
3. If there are no outliers, choose which number seems to be closer to most of the data values.

Look at Problem 1: 4, 12, 5, 7, 11, 3, 6, and 12

Mean = _____ Median = _____ IQR = _____ MAD = _____ SD = _____

Which measure of central tendency and measure of variability describe the data best?

Look at Problem 2: 30, 35, 42 , 15 , 20, 87 , and 23

Mean = _____ Median = _____ IQR = _____ MAD = _____ SD = _____

Which measure of central tendency and measure of variability describe the data best?

What do you notice about the differences in the numbers in Problem 1 vs. Problem 2?

Notes and HW on Mean Absolute Deviation Name_____

Measures of spread, or **measures of variability**, are statistics used to measure the distribution of the data in a set. When a measure of spread is high, then this means that the data is "spread out" or not consistent. When a measure of spread is low, then this means that the data is not "spread out" or consistent.

The first measure of variability to be taught was the interquartile range.

Here are the number of points scored over the last five years for *NBA* players Kobe Bryant and LeBron James:

Bryant: {2201, 2323, 2430, 2832, 1819} James: {2304, 2250, 2132, 2478, 2176}

Find the means of both data sets. Based on the means, who is the better scorer per year?

1

In the financial climate of the *NBA*, teams like consistency from their players so that they will be able to accurately measure expectations. Find the interquartile range for both players. Based on these results, which player is a more consistent scorer?

Another measure of variability is called the mean absolute deviation. The **mean absolute deviation** is the average of the absolute values of the differences between each data value in a data set and the set's mean. In other words, it is the average distance that each value is away from the mean.

If a data set has a small mean absolute deviation, then this means that the data values are relatively close to the mean. Would this make the data consistent or inconsistent?

If the mean absolute deviation is large, then the values are spread out and far from the mean.

2

First, one must calculate the mean. What is the mean?_____ For Kobe

Second, calculate the absolute value of the difference (or the distance) between each data value and the mean.

_____ _____ _____ _____ _____

Finally, find the mean of each of these differences. _____

This is the mean absolute deviation.

3 now find Lebron's M.A.D.