

Chapter 3: measures of central tendency

1) What is central tendency measure?

Central tendency is what average case look like

Average income by occupation, by region, by race/gender, average height, weight, etc.

2) Mode

Mode: is the group in a variable with the highest frequency

Gender	Frequency	percentage	proportion
Men	7	$7/26 * 100$ = 26.9%	$7/26 = .27$
Women	19	$19/26 =$ 73.1	$19/26 = .73$
N (total number of cases)	26	100	1.00

Mode for gender for our class is “women.”

3) Median

Median is the middle point splitting the sample into two equal halves.

If N is odd number; the median would be located at the $(\frac{N+1}{2})^{th}$ location in a sample that is ascending ordered.

For example, if N = 9, then the median would be $(9+1)/2 = 5^{th}$.

If N is an even number, the median would be the average between the two values in $(\frac{N}{2})^{th}$ and $(\frac{N}{2} + 1)^{th}$ location in a sample that is ascending ordered.

For example, if N = 20, then the median would be the average between $20/2 = 10^{th}$ and 11^{th} .

25 35 41 52 12 69 78 16 0 5

Ascending order:

0 5 12 16 25 35 41 52 69 78



N = 10, which means the median would be the average between $(10/2)^{th} = 5^{th}$ and 6^{th} . $(25+35)/2 = 30$, so the median = 30.

4) mean

$$\bar{X} = \frac{\sum X_i}{N}$$

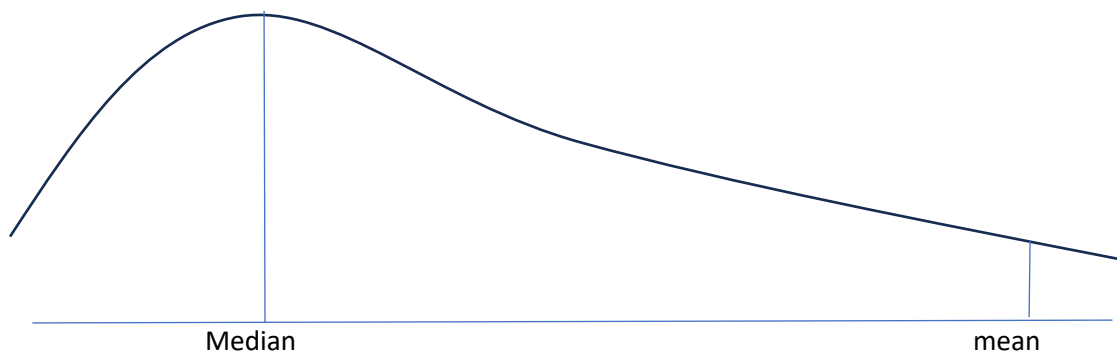
25 35 41 52 12 69 78 16 0 5

$$\bar{X} = \frac{25 + 35 + 41 + 52 + 12 + 69 + 78 + 16 + 0 + 5}{10} = 33.3$$

5) properties of central tendency measures

median is not sensitive to the outliers, whereas the mean is very sensitive to the outliers

Case #	Sample A	Sample B
1	\$45K	\$45K
2	\$55K	\$55K
3	\$60K	\$60K
4	\$78K	\$78K
5	\$90K	\$150,000K
Median	\$60K	\$60K
Mean	\$65.6K	\$30,048K



This is right skewed graph because mean is on the right side of median (Mean > Median)

