This is the link of the required video: [https://mediaplayer.pearsoncmg.com/assets/cWSUSyFy...](https://mediaplayer.pearsoncmg.com/assets/cWSUSyFyf2fjOGj5lEJQ_w73ZBZdo4JW)

***Discussion #1:***

***You may read in the newspaper that a study of a new drug for cancer "increases survival by an average of eight weeks". It turns out that this is a median, and it is use for cmplicated statistical reasons. In a perfect world, would you prefer to know the increase in mean or median survival?***

While discussing this topic, I will also be working this out. If eight weeks is the median increase of survival time, that means that half of the individuals on this new drug survived eight weeks or greater and the other half survived less than eight weeks. However, the mean of this set of data is also at eight weeks if you look at it by two's. 2, 4, 6, **8**, 10, 12, 14 added together equals 56. 56 divided by 7 would be equal to eight weeks. If we increase the individuals though, and the median is still eight weeks, the mean increses by a week. So, 0, 2, 4, 6, 8, 10, 12, 14, 16 which equals 72. 72 divided by 8 would be equal to 9 weeks. If we used median and lived in a perfect world, we would know which individuals had a greater chance of surviving to eight weeks or more and who would not. So, on one hand, it depends on the idividuals used in the data because the median can change and then the mean could change too. But if the median did not change, and the amount of individuals changed, how much would the mean change? Not that much. So some examples where the median does not change but numbers on either side of the median do. We will start with our first one with the median in bold text.

1. Median: 2, 4, 6, **8**, 10, 12, 14

Mean: 2+4+6+8+10+12+14 = 56 and 56 divided by 7 is 8 weeks

2. Median: 4, 5, 6, 7, **8**, 9, 10, 11, 12

Mean: 4+5+6+7+8+9+10+11+12= 72 and 72 divided by 9 is 8 weeks

So what if we broke it down week by week in which week one we lost one and week two we lost two, etc.

That would be:

3. Median: 1, 2, 3, 4 , 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

Mean: 1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+16= 136 and 136 divided by 16 equals 8.5 weeks.

Assuming I already knew the difference between the two as a cancer patient trying to face the odds, I supposes I would prefer mean because the mean shows a greater chance of survival and the median shows a half chance of survival. The median suggests that half of the individuals will not make it to eight weeks and the other half will and I don't know which half I will be in. However, if I am the one surviving then naturally I would want the odds that show a better favor of my survival which can also be biased in the view of just statistics. In a perfect world, we would know which half we would fall under. The mean and the median in this circumstance, though they are both a statiscal measurement, are a way to provide a calculation. How it is presented is the key!!

Discussion #2:

Should you use the median or mean to describe a data set if the data are not skewed? Are the standard deviation or the interquartile range factors?

A mean Is described as a simple average of a data set, for example to calculate your grade point average you would add the grades from each class and divide by the number of classes. The result would be your grade point average. When used to determine statistical data provided by research for specific topics we use it to compare and make decisions. Like what type of car to purchase or weather a surgery is worth the risk or not.

A median is described as a simple measure of the middle or center of a data set. When the data set is arranged in order from smallest to largest the median is the center or middle of that arranged data set. If the set of data has an even number of components, then the median would be the average of the two middle values. If the data set has an odd number of components, then the median is the center nor middle component. Median averages are best used for describing data. To find the median of your grades would have no real meaning or value. However, to find the mean of the grade point averages of the class and compare them with another class would have significance because you would be comparing data. Median is also used when a data set is skewed.

Skewed data for example one class had a student that had significantly lower grade point average which caused the data to be skewed or have significant gap in the data set. If the mean was utilized to compare the data sets then the skewed data would not be taken into consideration this is significant when comparing data. When median is used the skewed data, set is taken into consideration and the data can be accurately compared. In conclusion you would use the median for a data set that is skewed.

Standard deviation is used to determine the range of the data set how they are spread out from the mean. A standard deviation that is low tells that the data is close to the mean, if the standard deviations high it tells that the data is spread out. The interquartile range factor is the difference between the upper and lower medians.

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