Quiz 1 2pm Class

<u>Question:</u> What determines which numerical measures of center and spread are appropriate for describing a given distribution of a quantitative variable? Which measures will you use in each case?

Here are your answers in random order. See my comments.

the median and mean are two ways to describe measures of center. both use different ideas to describe numerically the center of a distribution. The range, Interquartile Range and the standard deviation help to quantify the variability of a distribution of measures of spread. That's all true but doesn't answer the question.

For measures of center its preferly to use the mean and the median. Whereas for the spread, the range and the Inter-Quartile Range (IQR) will be used. That's all true but doesn't answer the question.

How many people cooperated in the study. And how many possible variables did they have to choose from when answering. No, this answer has nothing to do with the question.

the shape of the distribution usually determines what is apropriate to use to describe a given distribution. In this case i would use the median because the graph is not symetric and the median is resistant to outliers that may be possible in this graph. usually you are suppose to use the mean only for symetric graphs therefore automatically this tells us to use the median. Good, although you refer to a graph here which I don't really understand. There were no graph attached to this question.

< No Response Given >

< No Response Given >

I will start off with looking at the obvious. If the spread or distribution is symmetric then i will you the mean. If I were to measure the variability I would then use the IQR. And if I was trying to measure the distance from the mean then I would use standard deviation. You are right about the mean, the part after doesn't really answer the question.

what it takes is looking at the way the distribution of the graph is set up. There are four parts that you have to look at the center, the variabilty , the shape, the outliers and the clusters. That's all true but doesn't answer the question.

For numerical measures of center and spread we use the mean and the median. If the graph is symmetric we use mean and for anything else we use median. In this case I would use the median because there might be an outlier and it will affect the mean. How about the spread?

Shape, Spread, center and outliers. Shape for symmetry/skewness of distribution. Spread for approximate range covered by the data. Center is the midpoint of the value that divides the distribution so that approximately half of the observations take smaller values and the other half take larger ones. Outliers- Observations that fall outs That's all true but doesn't answer the question.

Whether the distribution is symmetric or skewed. Mean should be used as a measure of distributions for symmetric distributions with no outliers. In all other cases, the median should be used to descibe the distribution. Good, but how about the measures of spread?

The mean is appropriate to use for measures of center and spread for symmetric distributions without any outliers. The median is the appropriate choice to describe the center of distribution. So the median is appropriate in what cases? And how about the measures of spread?

We Use Mean only symmetric observation , otherwise we use median. How about the measures of spread?

When using center and spread it all depends on the data. We would use center if we were looking at a histogram or even a dot plot. Spread would be used from a stem plot. This doesn't make sense at all.

well in the given distribution there are no outliers which means that the median would be the appropriate numerical measure for describing the given distribution. If there were outliers the median would not be appropriate to use because the answer would be wrong in that case you would use the center numerical measure. This is not correct, and doesn't really make sense.

you need a measure of the center and a measure of the spread. i will use standard diviation ,quartiles and quartile range for the spread. This doesn't answer the question.

if there are two different graphics and have different median, we use numerical measures of center. numerical measures of center use mean and median. if there are two different graphics but have the same median, we use numerical measures of spread. numerical measures of spread use range, inter-quartile range, and standard deviation. This doesn't make sense, and doesn't answer the question.

standard deviation and mean can be used with reasonably symmetric distributions. median and IQR should be used otherwise. Good.

In order to determine a given distribution, the numerical measures of center and spread that is appropriate for describing it depends on whether or not it is symmetric and what kind of data is needed. Two numerical measures of center is the mean and median which can determine the center as the average value if the the distribution is symmetric and if not, the median can be used because it is not resistant to outliers. For measures of spread, the range, inter-quartile range (IQR), and standard deviation is best used to measure the variability. The range can pinpoint the

exact distance from the smallest data to the largest which is also called the min and max. The IQR can describe the middle 50% of the data as well as identify the any outliers. A graphical display is the boxplot which uses the Five Number Star summary, consisting of Min., Q1, M, Q3, and Max., and quickly shows the numerical description and most useful for side by side comparison. Lastly, standard deviation can measure the spread as well as center because it examines how far the observations are from the mean. What you said about the measures of center is close to correct, but what you said about the measures of spread doesn't answer the question.

Histogram, stemplots, and boxplots. This doesn't answer the question.

for the center the measures are the median or the mean. And for the spread range. In this case we would use the median for the measure of spread. This doesn't make sense at all.

< No Response Given >

Usually if the graph is skewed, the median is used since the mean can be easily influenced by outliers. Using the mean in this case may give an inaccurate analysis of the spread and center. What do you mean "in this case"? And what would you use for the spread?

Use mean & standard deviation as measures of center & spread for reasonably symmetric distributions with no outliers. Use the five number summary for all other cases. Good.

< No Response Given >

The type of data being analyzed determines what numerical measure should be used to describe the distribution. What do you mean "type of data"? The question was about a quantitative variable.

standard deviation, variance This doesn't make sense, and doesn't answer the question.

The center would measure mean and median. The spread would measure range, and IQR. Stemplots, Histograms, and Boxplots would be used for measuring spread and center. No, this is incorrect, and doesn't answer the question.

For symmetric distributions with no outliers, one should use the mean to find the measure of center. For all other cases, they should use the median to find the measure of center. The range is an okay measure to find the measure of spread of a distribution. But when one is using the median as the measure of center, they should use the inter-quartile range, and when they are using the mean as the measure of center, they should use the standard deviation. Good.

The median determines the center and the IQR determines the spread. When? All the time? So why do we have mean, standard deviation, and the other measures?

The Median and the IQR When? All the time? So why do we have mean, standard deviation, and the other measures?

symmetric with no outliers - mean and standard deviation any other case - median and inter quartile range median and iqr are outlier resistant Good.

In order to describe the ditribution we need a graphical display in oder to measure the center and the variablility of the distribution. This is not correct, and doesn't answer the question.

It depends on the shape of the graph, the median, the range of the data given. For center I would use the median it's distribution is the mid point, the value would divide the distribution so approx. half the observation take smaller values and the other will take larger values. The spread i would use range to find out approx. the value that the data covered. When? All the time? So why do we have mean, standard deviation, and the other measures?

The two numerical measures of center are the median and the mean. And the three numerical measures for spread are range, standard deviation and IQR. The mean and range or standard deviation should be used when the distribution is symmetric. The IQR should be used when the median is used as the measure of center. Good, but when would you use the IQR and the median?

I would use the mean only for symmetric distribution, otherwise, I would use the median. Good, but how about the measures of spread?

< No Response Given >