Data Analysis   Exercise 4A   RE: Text, Data Analysis Chapter 4, part 1

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1. According to the text, why are descriptive statistics used?
   Descriptive statistics is used to give a description of the data by determining measures of location and to express the variability.
2. For statistics, what is the mode?
   The mode is the category or class of the variable with the most observations or repetitions.
3. When is a sample (such as a biological sample) said to be bimodal?
   When there are two values for the mode, a biological sample or any sample is said to be bimodal.
4. For a set of observations, what must be done first in order to identify the median?
   To identify the median in a set of observations, the must place the observations in ascending order, and the median will be in the middle.
5. To calculate the median (or the mode) in Excel, what function is initially clicked before your median (or mode) is selected?
   To calculate the median or mode in Excel, we must first click on the paste function.
6. How is the mean (average) calculated?
   The mean is calculated by calculating all the data and dividing the sum by the number of observations.
7. When one is choosing between the median and mean, what becomes the deciding factor?
   The shape of the distribution from which the sample is taken becomes the deciding factor when one is choosing between the median and the mean.
8. When is it more preferable for a researcher to use the mean in analyzing the distribution of the data?   When a distribution is symmetrical, it is more preferable for a researcher to use the mean as opposed to the median or other measure of central tendency
9. When is it more preferable to use the median in analyzing the distribution of the data?
   It is more preferable to use the median in analyzing the distribution of data where a distribution is skewed or contains an excess of extremely small observations.

10. What are the names of three statistical tools that may be used to help describe the measures of variation of a set of observations?
    Range, variance, and standard deviation are names of three statistical tools that help describe measures of variation of a set of observations.
11. Simply stated, what is the range?
    The range simply means expressing the extent of variation in a sample or the difference between the maximum and minimum values.
12. What do the standard deviation and variance indicate about the values in a variable?
    The standard deviation and variance indicate how closely packed around the mean the values of interest are.
13. Teaching Point: In the formula for variance depicted on page 81 of the text, the greek letter symbol sigma within the formula is read as "the sum of each." What is the relationship between the variance and the standard deviation?

The measure of variation is taken to be the standard deviation which is the square root of the variance.

14. What does the standard error of the mean (SEM) tell us as a researcher about our data?
The standard error of the mean (SEM) tells the researcher how the true mean for the population is as a reflection of the value.

15. For what purpose are values for Kurtosis and skewness used?
The values for Kurtosis and skewness are used to characterize the data relative to a normal distribution.