Basic Statistics Review

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1. **Mean:** The mean is the average formed by adding all the numbers and dividing by the number of items in the set.

In a quantitative research project, it describes the central location of the sample data.

In a qualitative research project, it could be the average patterns found by the researcher.

2. **Mode:** The most common number in a set.

In a quantitative research project, the mode is the value that appears the most.

In a qualitative research project, researchers use mode to characterize the data from their studies.

3. **Range:** The range is a measurement of spread, and it is the difference between the highest and lowest values in a data set.

In a quantitative research project, the range is used to show the data's values. For example, the age ranges of everyone in the state of VA.

In a qualitative research project, the range is the difference between the highest and lowest values of a variable or score.

4. **Population:** Population is every member in a group. For Example, if we are testing all students with disabilities, we are testing every student who has been found eligible for a disability in the world.

In a quantitative research project, a population is a pool of individuals from which a statistical sample is drawn for a study—for example, any selection of individuals grouped by a common feature.

In a qualitative research project, a population is a comprehensive group of individuals, institutions, or objects with common characteristics.

5. **Standard Deviation:** Standard Deviation is a measurement of disbursement, and it is how much your data is spread out.

In a quantitative research project, the standard deviation is used to make estimates, inferences, or exact values for a population.

In a qualitative research project, the standard deviation indicates how far the individual responses to a question vary from the mean. It tells the researcher how spread out the responses are.

6. **Margin of Error:** The degree of error in results received from random sampling surveys. It determines how reliable the survey is or how reliable the results of an experiment are.

In a quantitative research project, the margin of error shows researchers how much of a survey's results represent the views of its target population.

In a qualitative research project, the margin of error indicates how much lower or higher you are willing to let your sample mean fall. For example: political polls.

7. **Correlation:** A statistical measure expresses the extent to which two variables are linearly related (meaning they change together at a constant rate). It is a common tool for describing simple relationships without making a statement about cause and effect.

In a quantitative research project, correlation tells the strength of the relationship between two variables.

In a qualitative research project, correlation can be found through relationships among variables by graphing or using qualitative data analysis software.

8. **T-Test:** A t-test tells you how significant the differences between groups are. It is used in data sets and used as a hypothesis testing tool, which allows testing of an assumption applicable to a population.

In a quantitative research project, a t-test can be used to determine if two sets of data are significantly different from each other.

A t-test cannot be used in a qualitative research project because qualitative research does not produce variables that have a natural order and their differences cannot be quantified.

9. **Skew:** Skewness is a measure of the symmetry of a distribution. A distribution is skewed if the tail on one side of the mode is fatter or longer than on the other side, making it asymmetrical.

In a quantitative research project, skewness can be analyzed because it is collecting numerical data.

In a qualitative research project, data can be skewed by 1) limited sample size, 2) sampling bias and 3) observation biases: Hawthorne Effect and Observer-Expectancy Effect. This means that the data collected might have been changed or untrue by how the data is collected.

10. **Variable:** A variable is an unknown number or something unknown, and it is what a researcher is looking for.

In a quantitative research project, the research focuses on explaining the relationship between the variables.

In a qualitative research project, the research describes data that fits into categories.