

Differentiating descriptive and inferential statistics



We can define statistics in two ways. First, in a plural sense statistics (plural of statistics) refer to a collection of data. To illustrate, examples of statistics are the collection of the number of citizens per household in Los Angeles, or the scores of 10 students in a state university. On the other hand, in the singular sense, statistics is the mathematical study pertaining to certain quantities.

The term statistics according to the Merriam-Webster Dictionary came from the Greek word statistik, which means “ a study of political facts and figures.” Statistics is currently used for several purposes. Some of the purposes of statistics are as follows:

1. To add credibility to an argument or claim;
2. To save time, effort and resources;
3. To identify relationships between given data; and,
4. To present the current status or condition of a given topic under study.

Statistics are used in research to add credibility to a certain argument or claim. To illustrate, a study on the effects of smoking would have added credibility if the relationship between smoking and health hazards, or life expectancy is established.

The use of statistics can also save time, effort and resources for researchers. For example, the government wishes to find the population of the United States. Instead of going to all the houses to check the number of individuals per household, they would use a census to estimate the population. Census uses statistics to make the most accurate estimate. Statistics are also

efficient in this sense because there are cases wherein not all individuals are available for sampling.

Statistics can also be used to establish relationships between variables. Using data and statistical methods, the type of relationship between a given set of variables can be identified, and for other cases establish that there is no significant relationship.

The use of statistics can also extend to present a certain status or condition. Statistics are used to describe what is happening to the area or field under study.

Statistics have two basic fields that are based on their purpose. Descriptive statistics are used to illustrate the characteristics of certain data under study. On the other hand, inferential statistics are concerned with forming generalizations from the universe under study.

Descriptive statistics are concerned with the summary of the characteristics of a sample. This type of statistics, according to Aron “ summarizes and describe a set of numbers similar to the results of a research study.” (2006: 7) The products of descriptive statistics are merely descriptions of the conditions and what the data shows. They use graphical or numerical data to show the status of a group.

For example, a scientific research on the average annual rainfall in the Philippine forests would fall under descriptive statistics.

The goal of inferential statistics is to make conclusions that go beyond the extents of the experiment. Aside from conclusions, Aron added that, “ researchers are able to draw ... inferences that are based from the research

study, but go beyond the given data. (2006: 7) They try to predict what the others might think or how a certain group might act given a limited amount of data. Inferential statistics use a method of studying a group (sample) to evaluate the whole (universe). Inferential statistics are also used to measure the probabilities the occurrences of certain outcomes.

For example, using statistics, you can identify the probability of having your six-digit lottery ticket of winning the 64-digit lottery.

We have distinguished the differences between inferential and descriptive statistics, now we will establish the relationship between the two. I will use an illustration to show this relationship.

Take for example, a study on the average monthly allowance of 100 teenage high school students in Los Angeles. We know, for a fact that this a descriptive statistic, provided that all 100 students will be surveyed. Using this data we can actually predict the average monthly allowance of all teenage high school students. In this example, the 100 teenage high school students is the sample and the universe consists of all teenage high school students.