Compare Samples

A **population** is a group about which information is desired. Sometimes surveying everyone in an entire population is too time-consuming or expensive. When this is the case, a sample is surveyed. A **sample** is a part of a population chosen to get information about the whole population.

You can use a sample of a population to estimate how many people perform a certain task. For example, if you school is having an ice cream party and the principal would like to know the three different types of ice cream he should buy, the principal might take a sample of the whole population. Your whole school was the population for the survey. The sample will be the students that are asked to do the survey that the principal gives. There are numerous ways to achieve a sample for survey, a few are listed below:

A **stratified random sample** is a population of groups of individuals that are similar in some way that is important to the response that is combined with other groups of individuals that are similar to make a full sample. A stratified random sample might be used when estimating the average number of hours per week a college student devotes to studying. To make sure that the sample is unbiased the person conducting the study would divide the school population into smaller similar groups, such as freshmen, sophomores, juniors, and seniors or the similar groups can be based on age levels. Once the population has been reduced to smaller groups, a random sample of students will then be selected. The resulting information can be combined to obtain an estimate that is expected to be more precise than that obtained from a random sample of the entire population.

Simple random sampling is the basic sampling technique where we select a sample of subjects from a large population. Each individual is chosen entirely by chance and each member of the population has an equal chance of being included in the sample. Through a simple random sample, each member of the population is equally likely to be chosen at any stage in the sampling process.

A **convenience sample** chooses the individuals that are easiest to reach or sampling that is done easy. Interviewing people as they walk by you at the zoo or the movie theater is a convenience sample. A convenience sample does not represent the entire population so it is considered bias.

Cluster sampling is a sampling technique where the entire population is divided into groups, or clusters, and a random sample of these clusters are selected. All observations in the selected clusters are included in the sample.

In a **systematic sample** every *n*th item is included in the sample. Systematic samples are used when looking at large populations. If a survey is being conducted for a school district with 48 schools, you wouldn't want to deal with the population of 48 schools. With the systematic sample, you might choose every 8^{th} school. Therefore, your population sample has decreased from 48 schools to 6 schools. Dealing with the data for a population of 6 schools will be much easier to manage than from forty-eight schools.

A **voluntary response sample** consists of people who chose themselves by responding to a general appeal. A voluntary response sample can often over represent people with strong opinions and these opinions are most often negative. Every morning the local news station takes a survey on a question dealing with the headline news. They ask viewers to either call-in with their response or vote online. This survey is performed with a voluntary response sample. The people watching are able to choose whether or not they want to take part in the survey.