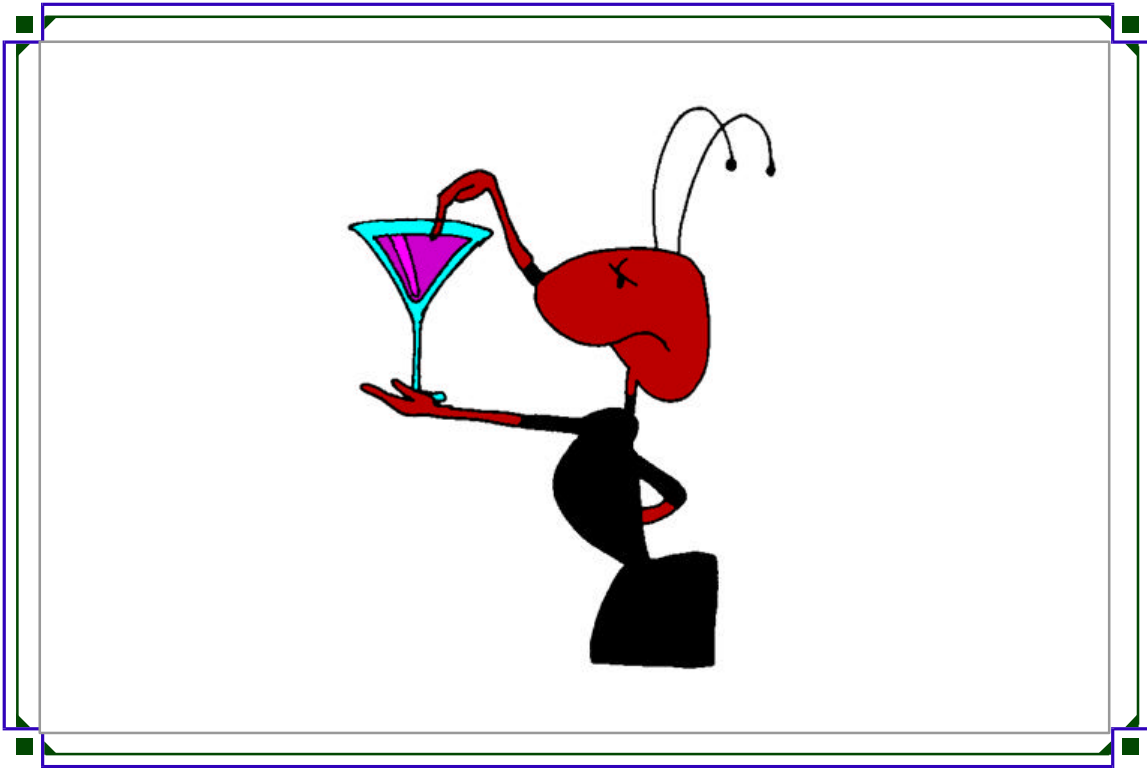


SAMPLING



Purpose

A sample is any number of persons, objects, or events selected from a population. The goal of sampling is to obtain data about the characteristics of a group of individual cases (the sample) that will allow us to estimate the value of those same characteristics for the entire population.

When a team wants to understand the nature of a problem or process in a work environment, it may need to draw a sample from the population. Samples can be used when a team wants to gather information about a population, but it is too expensive or time consuming to collect data from every member of that population.

If the team suspects that customers are dissatisfied with the levels of service they are getting, you could ask a sampling of customers if they are satisfied with service. If the majority of the sample is dissatisfied, this would indicate that the majority of all customers are dissatisfied. The sample population used could help you identify a problem or process that needs to be addressed.

Sampling is most commonly done when:

1. It is too expensive to examine the whole population.
2. Resources are not available to examine the whole population.
3. When desired information is needed quickly.
4. When there are too many items in the population to measure.

Sampling takes three major forms.

Simple Random Sampling- Items are picked entirely at random from the entire population with each item having an equal chance of being selected. Random sampling helps to ensure that the sample resembles the population as closely as possible and that selection of items does not bias the sample. Bias in a sample will lead to inaccurate predictions about the population.

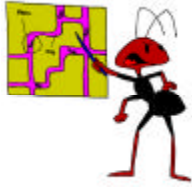
Example: Names of the entire population are placed in a jar, someone reaches in the jar and selects several. Each member of the population has an equal chance of being selected.

Stratified Random Sampling- Major components of the population are sampled separately because of the differences in characteristics of parts of the population.

Example: Sampling is broken into age categories when sampling about TV preferences. Age groups have different interests in television viewing.

Systematic Sampling- The sampling of some members of the population based on discrete numbers assigned to a population member. This method requires that the population be arrayed with a specific number assigned to that item of the population. It should not be used if there is a belief that the population has been arrayed in any other way than randomly.

Example: When conducting a survey of employees, those employees with the number seven as the last digit of their social security number might be selected. Therefore, a sample size of one in ten is selected with each person selected not based on any other factor other than a number.



Process

1. Review data desired from sampling. Deciding what the team needs to know will help determine the appropriate method of sampling to be used. Part of the review would include clarification of what population is to be sampled. Is it the population of the State? Are you only dealing with registered trucks permitted for 80,000 gw? Or does the process in question only involve a specific work group in data entry?
2. What are the available resources to conduct the sampling? How many people will be involved and how much will the sampling cost per sample collected?
3. From statistical tables determine the level of confidence required for the data collected. The higher the required confidence level the higher the sample size required to support that level of confidence. If you can conduct a sampling of the whole population, you can be assured that the responses gathered will represent the responses of 100% of the population. For large populations this normally is not feasible.
4. Does the data to be collected support stratified random sampling? Are there characteristics of the population that would indicate a need to stratify the population?



Example

1. Team decides to take a work sample. They have decided they would like to know how many of each type of call personnel handle. It was decided that the most appropriate method of measuring the sample was to monitor calls. The population they are dealing with includes eighty customer service personnel.
2. The team has a total of eight members available to conduct the sampling. In order to spread out the work and to get 100% involvement, all members would each conduct an equal number of work samplings. There will be no direct costs involved in this sampling.
3. Due to time limitations, it has been decided that they will conduct a 20% sampling which will give them adequate confidence that their sampling will fairly represent the total population of customer service personnel.
4. Since all eighty customer service personnel handle all types of calls, no stratification appears to be present.



Key Points

- A sample, if selected correctly, should look like a smaller version of the entire population from which the sample has been drawn.