Statistics, Population, and Samples

Statistics:

Population:

Sample:

Example 1: In a survey, 834 employees in the United States were asked whether they thought their jobs were highly stressful. Of the 834 respondents, 517 said yes. Identify the population and sample.

You Try: In a survey of 1501 ninth to twelfth graders in the United States, 1215 said "leaders today are more concerned with their own agenda than with achieving the overall goals of the organization they serve." Identify the population and the sample.

Example 2: Identify the population and the sample:

a. A survey of 1353 American households found that 18% of the households own a computer.

b. A recent survey of 2625 elementary school children found that 28% of the children could be classified obese.

c. The average weight of every sixth person entering the mall within 3-hour period was 146 lb

d. In the United States, a survey of 2000 households with at least one child found that 1280 of them eat dinner together every night.

Population Parameter

Sample Statistic

Example 3: Determine whether each number describes a population parameter or a sample statistic.

a. The freshmen class at a university has an average SAT math score of 514.

b. In a random check of several hundred retail stores, the Food and Drug Administration found that 34% of the stores were not storing fish at the proper temperature.

You Try: Determine whether each number describes a population parameter or a sample statistic. Explain your reasoning.

a. Last year, a small company spent a total of $5,150,694 on all employees' salaries.

b. In the United States, a survey of a few thousand adults with hearing loss found that 43% have difficulty remembering conversations.

Example 4: Determine whether the data are collected from a population or a sample.

a. Total number of college students in the United States

b. Color of every third car that passes your house

c. A survey of 100 spectators at a sporting event with 1800 spectators

d. The age of each dentist in the United States

Descriptive Statistics

Inferential Statistics

Example 5: A study of 300 Wall Street analysts found that the percentage who incorrectly forecasted high-tech earnings in a recent year was 44%.

a. Identify the population and the sample

b. Determine which part of the study represents the descriptive branch of statistics

c. What conclusions might be drawn from the study using inferential statistics

You Try: A study of 1000 U.S. adults found that when they have a question about their medication, three out of four adults will consult their physician or pharmacist and only 8% visit a medication-specific website.

d. Identify the population and the sample

e. Determine which part of the study represents the descriptive branch of statistics

f. What conclusions might be drawn from the study using inferential statistics

Sampling Techniques

Random sample

- **Simple random sample**

- **Stratified Sample**

- **Systematic sample**

Convenience Sampling

Sampling error

Example 6: You are doing a study to determine the opinions of students at your school regarding stem cell research. Identify the sampling technique you are using when you select the samples listed.

a. You divide the student population with respect to majors and randomly select and question some students in each major.

b. You assign each student a number and generate random numbers. You then question each student whose number is randomly selected.

You Try: You are doing a study to determine the opinions of students at your school regarding stem cell research. Identify the sampling technique you are using when you select the samples listed.

a. You select students in your statistics class.

a. You assign each student a number and, after choosing a starting number, question every 25^{th} student.

Example 7: You would like to determine if there is a difference between male and female US college students and the number of text messages they send in a day.

a. Population:

b. Sample:

c. Questions that must be asked

d. Possible additional questions that relate to the topic

Example 8: You would like to determine if there is a difference between the final grade received in a college math course and the number of classes attended for freshmen at private colleges in the US.

a. Population:

b. Sample:

c. Questions that must be asked

d. Possible additional questions that relate to the topic