1 CHAPTER

Statistics and Problem Solving

Population

A **population** is the total set of subjects or things we are interested in studying.

DEFINITION

Populations are defined by what a researcher is studying and can come in all shapes and sizes. If someone is studying monkeys in Brazil, then all the monkeys in Brazil would constitute the population. If you are studying students at your college, then all the students attending your college represent a population.

Frame

A list containing all members of the population is referred to as a **frame**.

DEFINITION

Census

A strict definition of a **census** is a survey that includes all the elements or units in the frame.

DEFINITION

Population Parameters

Population parameters are facts about the population. Since parameters are descriptions of the population, a population can have many parameters.

DEFINITION

The percentage of eligible voters who will vote on Election Day.

The percentage of voters who will vote for a specific candidate.

The percentage of men who favor a candidate.

The percentage of women who favor a candidate.

The percentage of people in the 18–25 age group who favor a candidate.

The average income of voters who favor a candidate.

Population

Described by Parameters

Sample
Described by
Statistics
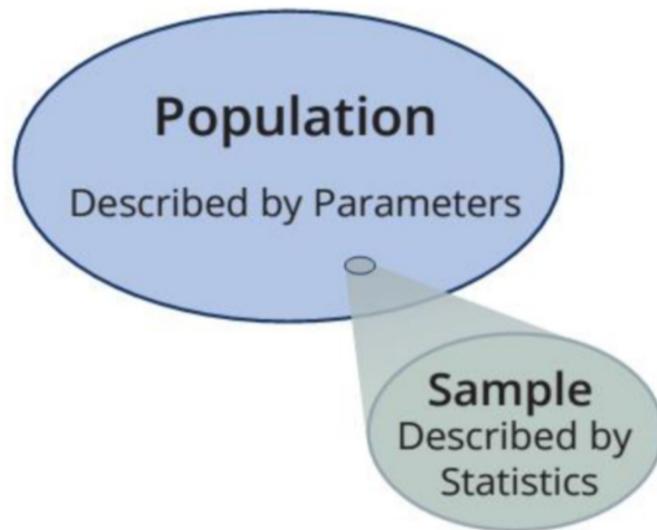
Sample

A **sample** is a subset of the population which is used to gain insight about the population. Samples are used to represent a larger group, the population.

DEFINITION

Statistic

A **statistic** is a fact or characteristic about the sample.

DEFINITION

A nurse is interested in the growth curve of boys from infancy to the age of 18. One thousand boys are randomly selected, and their heights are measured at various intervals from birth until the age of 18. Based on these measurements, growth curves are constructed based on the percentage of heights observed to be at or below a certain height at each interval (this population characteristic is called a percentile and will be discussed in Chapter 4).

Descriptive Statistics

Descriptive statistics is the collection, organization, analysis, and presentation of data.

DEFINITION

Inferential Statistics

The objective of **inferential statistics** is to make reasonable guesses about population characteristics using sample data.

DEFINITION

1. Where did the data come from?

2. How was it sampled and is the sample large enough?

3. How reliable or accurate were the measures used to generate the reported data?

4. Are the reported statistics appropriate for this kind of data?

5. Is a graph drawn appropriately?

6. How was this probabilistic statement calculated?

7. Do the claims make sense?

8. Should there be additional information?

9. Are there alternative interpretations?