**Section 1.4 Other Effective Sampling Methods**

**Objectives**

* 1. Obtain a Stratified Sample
  2. Obtain a Systematic Sample
  3. Obtain a Cluster Sample

Introduction, Page 1

1. What is the goal of sampling?

***Objective 1: Obtain a Stratified Sample***

Objective 1, Page 1

1. Explain how to obtain a stratified sample.

Objective 1, Page 2

**Example 1** ***Obtaining a Stratified Sample***

The president of DePaul University wants to conduct a survey to determine the community’s opinion regarding campus safety. The president divides the DePaul community into three groups: resident students, nonresident (commuting) students, and staff (including faculty) so that he can obtain a stratified sample.

Suppose there are 6,204 resident students, 13,304 nonresident students, and 2,401 staff, for a total of 21,909 individuals in the population. What percent of the DePaul community is made up of each group?

The president wants to obtain a sample of size 100, with the number of individuals selected from each stratum weighted by the population size. How many individuals should be selected from each stratum?

To obtain the stratified sample, construct a simple random sample within each group.

***Objective 2: Obtain a Systematic Sample***

Objective 2, Page 1

1. Explain how to obtain a systematic sample.

**Note:** Because systematic sampling does not require a frame, it is a useful technique when you cannot gather a list of the individuals in the population.

Objective 2, Page 2

**Example 2 *Obtaining a Systematic Sample without a Frame***

The manager of Kroger Food Stores wants to measure the satisfaction of the store’s customers. Design a sampling technique that can be used to obtain a sample of 40 customers.

Objective 2, Page 4

*Answer the following after watching the video.*

1. What can result from choosing a value of *k* that is too small?
2. What can result from choosing a value of *k* that is too large?

Objective 2, Page 5

 *Answer the following after watching the second video after Example 2.*

1. Explain how to determine the value of *k* if the population size *N* is known.

Objective 2, Page 7

1. List the five steps in obtaining a systematic sample.

Step 1

Step 2

Step 3

Step 4

Step 5

***Objective 3: Obtain a Cluster Sample***

Objective 3, Page 1

1. What is a cluster sample?

Objective 3, Page 2

**Example 3 *Obtaining a Cluster Sample***

A sociologist wants to gather data regarding household income within the city of Boston. Obtain a sample using cluster sampling.

Objective 3, Page 3

1. If the clusters have homogeneous individuals, is it better to have more clusters with fewer individuals in each cluster or fewer clusters with more individuals in each cluster?
2. If the clusters have heterogeneous individuals, is it better to have more clusters with fewer individuals in each cluster or fewer clusters with more individuals in each cluster?

Objective 3, Page 5

1. Define: Convenience sampling

Objective 3, Page 6

**Note:** The most popular convenience samples are those in which the individuals in the sample are self-selected**,** meaning the individuals themselves decide to participate in the survey. Self-selected surveys are also called voluntary response samples.

Objective 3, Page 7

1. Define: Multistage sampling
2. List the two stages Nielsen Media Research uses to investigate TV viewing habits.

Objective 3, Page 8

1. How many stages does the Census Bureau use for the Current Population Survey? What are those stages?

Objective 3, Page 9

Researchers need to know how many individuals they must survey to draw conclusions about the population within some predetermined margin of error. They must find a balance between the reliability of the results and the cost of obtaining these results. The bottom line is that time and money determine the level of confidence researchers will place on the conclusions drawn from the sample data. The more time and money researchers have available, the more accurate the results of the statistical inference.

Objective 3, Page 10

 *Watch the animation for a summary of simple random sampling, systematic sampling, stratified sampling, and cluster sampling.*