**Section 1.3 Simple Random Sampling**

**Objective**

* 1. Obtain a Simple Random Sample

Introduction, Page 1

Observational studies can be conducted by administering a survey. When administering a survey, the researcher must first identify the population that is to be targeted.

1. Define: Random sampling

For the results of a survey to be reliable, the characteristics of the individuals in the sample must be representative of the characteristics of the individuals in the population.

The key to obtaining a sample representative of a population is to let chance or randomness play a role in dictating which individuals are in the sample, rather than convenience.

If convenience is used to obtain a sample, the results of the survey are meaningless.

Introduction, Page 2

1. Why are the survey results from the sample taken outside Fenway Park not likely to be reliable?
2. Why are the results of a survey of students in your statistics class likely to be misleading when trying to determine what proportion of students on your campus work?

Introduction, Page 3

1. List the four basic sampling techniques.

***Objective 1: Obtain a Simple Random Sample***

Objective 1, Page 1

1. What is a simple random sample?

The number of individuals in the sample is always less than the number of individuals in the population.

Objective 1, Page 2

**Example 1** ***Illustrating Simple Random Sampling***

Sophie has four tickets to a concert. Six of her friends, Yolanda, Michael, Kevin, Marissa, Annie, and Katie, have all expressed an interest in going to the concert. Sophie decides to randomly select three of her six friends to attend the concert.

1. List all possible samples of size *n* = 3 from the population of size *N* = 6. Once an individual is chosen, he/she cannot be chosen again.
2. Comment on the likelihood of the sample containing Michael, Kevin, and Marissa.

Objective 1, Page 5

How do we select the individuals in a simple random sample?

Typically, each individual in the population is assigned a unique number between 1 and *N*, where *N* is the size of the population. Then *n* distinct random numbers are selected, where *n* is the size of the sample. To number the individuals in the population, we need a frame**–** a list of all the individuals within the population.

Objective 1, Page 6

*Answer the following after watching the animation.*

1. What is the frame in this animation?
2. Explain why a second sample of 5 students will most likely be different than the first sample of 5 students?
3. Explain why inferences based on samples vary.

Objective 1, Page 8

**Example 2 *Obtaining a Simple Random Sample***

The accounting firm of Senese and Associates has grown. To make sure their clients are still satisfied with the services they are receiving, the company decides to send a survey out to a simple random sample of 5 of its 30 clients.

**TABLE 3**

* + 1. ABC Electric
    2. Brassil Construction
    3. Bridal Zone
    4. Casey's Glass House
    5. Chicago Locksmith
    6. DeSoto Painting
    7. Dino Jump
    8. Euro Car Care
    9. Farrell's Antiques
    10. First Fifth Bank
    11. Fox Studios
    12. Haynes Hauling
    13. House of Hair
    14. John's Bakery
    15. Logistics Management, Inc.
    16. Lucky Larry's Bistro
    17. Moe's Exterminating
    18. Nick's Tavern
    19. Orion Bowling
    20. Precise Plumbing
    21. R&Q Realty
    22. Ritter Engineering
    23. Simplex Forms
    24. Spruce Landscaping
    25. Thors, Robert DPS
    26. Travel Zone
    27. Ultimate Electric
    28. Venetian Gardens Restaurant
    29. Walker Insurance

Worldwide Wire