Chapter 1 Review

The single most important concept presented in this chapter is to recognize that when one is using methods of statistics with sample data to form conclusions about a population, it is absolutely essential to collect sample data in a way that is appropriate. Using data from a voluntary response (self-selected) sample is a really bad idea, because such a sample could very easily be biased in that it might not be at all representative of the population. One common and effective method for collecting data is to use a *simple random sample*. With a simple random sample of n items, all possible samples of n items have the same chance of being selected.

Statistical literacy includes a clear understanding of such important terms as *sample, population, statistic, parameter, quantitative data, categorical data, voluntary response sample, observational study, experiment,* and *simple random sample*. Section 1-2 introduced statistical thinking, and Figure 1-2 summarized important issues to consider in preparation for analysis, conducting the analysis, and forming conclusions. Section 1-3 discussed different types of data, and it is crucial to understand the distinction between quantitative data and categorical data. After completing this chapter, you should be able to do the following:

- Distinguish between a population and a sample, and distinguish between a parameter and a statistic.
- Recognize the importance of good sampling methods in general, and recognize the importance of a *simple random sample* in particular. Understand that even though voluntary response samples are common, they should not be used for a statistical analysis.

Chapter Quick Quiz

1. Chicago Bulls The numbers of the current players for the Chicago Bulls basketball team are 1, 2, 3, 5, 6, 9, 11, 13, 16, 20, 22, 26, 32, and 40. Does it make sense to calculate the average (mean) of these numbers?

2. Chicago Bulls Which of the following best describes the level of measurement of the data listed in Exercise 1: nominal, ordinal, interval, ratio?

3. Earthquake Depths Data Set 16 includes depths (km) of the sources of earthquakes. Are these values discrete or continuous?

4. Earthquake Depths Are the earthquake depths described in Exercise 3 quantitative data or categorical data?

5. Earthquake Depths Which of the following best describes the level of measurement of the earthquake depths described in Exercise 3: nominal, ordinal, interval, ratio?

6. Earthquake Depths True or false: If you construct a sample by selecting every sixth earthquake depth from the list given in Data Set 16, the result is a simple random sample.

7. Gallup Poll In a recent Gallup poll, pollsters randomly selected adults and asked them whether they smoke. Because the subjects agreed to respond, is the sample a voluntary response sample?

8. Parameter and Statistic In a recent Gallup poll, pollsters randomly selected adults and asked them whether they smoke. Among the adults who responded to the survey question, 21% said that they did smoke. Is that value of 21% an example of a statistic or an example of a parameter?

9. Observational Study or Experiment Are the data described in Exercise 8 the result of an observational study or an experiment?

10. Statistical Significance and Practical Significance True or false: If data lead to a conclusion with statistical significance, then the results also have practical significance.