LAB 22 Conducting a Survey

In this lab you will use everything you have learned about surveys and sampling to design and conduct a survey of your own. Then you will use what you know about organizing and analyzing data to interpret and communicate your results.

Conducting a Survey

1 Determine the topic of the survey and develop one or more survey questions.

2 Define the population for the survey and select an appropriate sample.

3 Conduct the survey and organize the data.

4 Analyze the data using measures of central tendency and dispersion.

5 Choose an appropriate graph to display the data.

6 Use the data to make predictions about the population.

STEP 1 **Determine the topic of the survey and develop one or more survey questions.**

EXAMPLE A survey can help you find out how long it takes students to get to your school in the morning. For this survey, you could ask, "To the nearest minute, how long does it take you to travel from your front door to the door of the school on a typical morning?"

a. What is the general topic of your survey? What question(s) will you ask?

b. Is your survey question biased? Why or why not?

c. If your question is biased, how can you reword the question so that it is unbiased?

STEP 2 **Define the population for the survey and select an appropriate sample.**

EXAMPLE For the survey on travel times, the population is all of the students at your school. In order to choose a sample, you could get a list of the students at the school and choose every 40th name on the list. This is a systematic sample. In a school of 800 students, this method would yield a sample of 20 students.

a. What is the population for your survey?

b. How many people are in your population? Provide an estimate if an exact count is not possible.

c. Is it possible to conduct a census of the population? Why or why not?

d. How can you choose a sample that is representative of the population? What type of sampling method will you use?

e. Could your sample be biased? Is any part of the population overrepresented or underrepresented? Explain.

STEP ❸ Conduct the survey and organize the data.

    EXAMPLE The data below are the morning travel times, rounded to the nearest minute, for 20 students. These data are quantitative, univariate, and discrete.
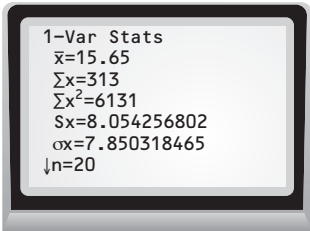
    5 5 6 6 7 9 10 12 12 15 17 18 18 20 23 25 25 25 25 30

    a. Are your data quantitative or qualitative?

    b. Are your data univariate or bivariate?

    c. Are your data discrete or continuous?

STEP ❹ Analyze the data using measures of central tendency and dispersion.

    EXAMPLE The data on student travel times have a mean of 15.65 minutes, a median of 16 minutes, and a mode of 25 minutes. The standard deviation is about 7.9 minutes.

    a. Find measures of central tendency and measures of dispersion for your data.

    b. What do these measures tell you about your data?
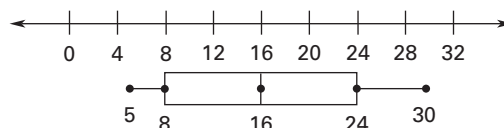
```
1-Var Stats
 x̄=15.65
 Σx=313
 Σx²=6131
 Sx=8.054256802
 σx=7.850318465
↓n=20
```

STEP ❺ Choose an appropriate graph to display the data.

    EXAMPLE The data on student travel times can be displayed with a box-and-whisker plot.

    a. What type of display is most appropriate for your data? Why?

    b. What does the display tell you about your data?

STEP ❻ Use the data to make predictions about the population.

    EXAMPLE In the sample, 14 of 20 students travel 10 or more minutes to get to school. You can use the proportion $\frac{14}{20} = \frac{x}{800}$ to predict that 560 students in a school of 800 students travel 10 or more minutes to get to school.

    a. Use your data to make at least two predictions about the population.

    b. Write a paragraph to summarize your survey and communicate your findings.

What Do You Think?

    1. Give an example of how your results might have been different if you had chosen a different sample or if you had worded one or more of your questions differently.

    2. Describe what you could have done differently to develop more accurate predictions about the population.