Chapter 15

1. What information is provided by the numerical value of the Pearson correlation?
2. In the following data, there are three scores (X, Y, and Z) for each of the n = 5 individuals:

X Y Z

3 5 5

4 3 2

2 4 6

1 1 3

0 2 4

1. Sketch a graph showing the relationship between X and Y. Compute the Pearson correlation between X and Y.
2. Sketch a graph showing the relationship between Y and Z. Compute the Pearson correlation between Y and Z.
3. Given the results of parts a and b, what would you predict for the correlation between X and Z?
4. Sketch a graph showing the relationship between X and Z. Compute the Pearson correlation for these data.
5. What general conclusion can you make concerning relationships among correlations? If X is related Y and Y is related to Z, does this necessarily mean that X is related to Z?
6. Sketch a graph showing the line for the equation Y = 2X – 3. On the same graph, show the line Y = -2X + 8.
7. A set of scores produces a regression equation of Y = 7x – 2. Use the equation to find the predicted value of Y for each of the following X scores: 0, 2, 5, 8, 10.
8. For the following data:
9. Find the regression equation for predicting Y and X.
10. Use the regression equation to find a predicted Y for each X.
11. Find the difference between the actual Y value and the predicted Y value for each individual, square the differences, and add the squared values to obtain SS residual.

 **X Y**

 7 16

 5 2

 6 1

 3 2

 4 9

Chapter 16

1. A professor noticed that the representatives on the college student consist of 31 males and only 9 females. The general college population, on the other hand, consists of 55% females and 45% males. Is the gender distribution for student government representatives significantly different from the distribution for the college population? Test at the .05 level of significance.
2. Data from the Department of Motor Vehicle indicate that 80% of all licensed drivers are older than age 25.
3. In a sample of n = 50 people who recently received speeding tickets, 32 were older than 25 years and the other 18 were age 25 or younger. Is the age distribution for this sample significantly different from the distribution for the population of licensed drivers? Use a = .05
4. In a sample of n = 50 people who recently received parking tickets, 38 were older than 25 years and the other 12 were age 25 or younger. Is the age distribution for this sample significantly different for the population of licensed drivers? Use a = .05.
5. A researcher obtained a random sample of n = 60 students to determine whether there were any significant preferences among three leading brands of colas. Each student tasted all three brands and then selected his or her favorite. The resulting frequency distribution is as follows:

 **Brand A Brand B Brand C**

 28 14 18

Are the data sufficient to indicate any preferences among the three brands? Test with a = .05.

1. A social psychologists suspect that people who serve on juries tend to be much older than citizens in the general population. Jurors are selected from the list of registered voters, so the ages for jurors should have the same distribution as the ages for voters. The psychologist obtains voter registration records and finds that 20% of registered are between 18 and 29 years old, 45% are between 30 and 49 years old, and 35% are age 50 or older. The psychologist also monitors jury composition over several weeks and observes the following distribution of ages for actual juries:

 Ages Categories for Jurors

 18 – 29 30 – 49 50 and over

 12 36 32

1. Are the data sufficient to conclude that the age distribution for jurors is significantly different from distribution for the population of registered voters? Test with a = .05.
2. A psychology professor is trying to decide which textbook to use for next year’s introductory class. To help make the decision the professor asks the current students to review three texts and identify which one they prefer. The distribution of preferences for the current is as follows:

 Book 1 Book 2 Book 3

 52 41 27

Do the data indicate any significant preference among the three books? Test with a = .05.