

Chapter 4

Page 65) The manager of a retail store gets a summary of the average daily sales for the prior month. The manager uses these data to monitor the performance of advertising and the employees. The store has been open for several years and has a steady history of solid business. In May, the manager learns that sales in April were below average.

- a. Should it be a surprise to find that sales in a month are below average?
- b. Before the manager concludes there's a problem, what plots would clarify the situation?
- c. Sales at this store average \$150,000 daily with standard deviation \$20,000. If sales were \$90,000 in April, what is the z-score for sales in April?
- d. Should the manager be concerned about the level of sales in April?

57. Information Industry This data table includes several characteristics of 428 companies classified as being in the information industry in 2010. One column gives the total revenue of the company, in millions of dollars.

- (a) Find the median, mean, and standard deviation of the total revenue of these companies. What units do these summary statistics share?
- (b) Describe the shape of the histogram and boxplot. What does the White Space Rule have to say about the histogram?
- (c) Do the data have any extreme outliers? Identify the company if there's an extreme outlier.
- (d) What do these graphs of the distribution of net sales tell you about this industry? Is the industry dominated by a few companies, or is there a level playing field with many comparable rivals?

61. Tech Stocks (See Exercise 59.) Some investors use the Sharpe ratio as a way of comparing the benefits of owning shares of stock in a company to the risks. The Sharpe ratio of a stock is defined as the ratio of the difference between the mean return on the stock and the mean return on government bonds (called the risk-free rate r_f) to the SD of the returns on the stock.

$$\text{Sharpe ratio} = \frac{\bar{y} - r_f}{s}$$

The mean return on government bonds is $r_f=0.0033$ per month (that is, about 1/3 of 1% per month, or 4% annually).

- (a) Find the Sharpe ratio of stock in these three companies. Which looks best from this investment point of view?
- (b) Form a new column by subtracting r_f from the return each month on Dell. Then divide this column of differences by the SD for Dell. What's the mean value for this column?
- (c) How does the Sharpe ratio differ from the type of standardizing used to form z-scores?