

## Exploring The Web

### Chapter 1

**1.47 Natural gas prices.** The Department of Energy website contains information about monthly wholesale and retail prices for natural gas in each state. Go to [www.eia.doe.gov/naturalgas/data.cfm](http://www.eia.doe.gov/naturalgas/data.cfm) and then click on the link to SUMMARY and then to Summary—price, supply dispositon. In the window that opens, under Area, choose a state of interest to you, make sure the Period is monthly, and then under Residential Price click on the KEY ICON in the Graph column. A window will open and if you scroll down the page, there is a time plot covering approximately a 35-year period, along with a table of the monthly residential prices for each year.

- (a) If you have access to statistical software, you can download the data by clicking on the word DOWNLOAD directly above the time plot. After clicking on DOWNLOAD, click on DOWNLOAD DATA, which will then download a CSV file to your computer which can be opened in Excel. Once you have the data as an Excel workbook, you should be able to enter the data into your software package and reproduce the time series plot using the graphic capabilities of your software package. Be sure you use an appropriate title and axis labels. If you do not have access to appropriate software, provide a rough sketch of the time plot that is given on the website.
- (b) Is there a regular pattern of seasonal variation that repeats each year? Describe it. Are the prices increasing over time?

**1.48 Hank Aaron's home run record.** The all-time home run leader prior to 2007 was Hank Aaron. You can find his career statistics by going to the website [www.baseball-reference.com](http://www.baseball-reference.com) and then clicking on the PLAYERS tab at the top of the page and going to Hank Aaron.

- (a) Make a stemplot or a histogram of the number of home runs that Hank Aaron hit in each year during his career. Is the distribution roughly symmetric, clearly skewed, or neither? About how many home runs did Aaron hit in a typical year? Are there any outliers?
- (b) Would a time plot be appropriate for these data? If so, what information would be included in the time plot that is not in the stemplot?
- (c) How has the average number of home runs per game changed over time? You can find information about average home runs per game on the website [www.baseball-reference.com/leagues/MLB/bat.shtml](http://www.baseball-reference.com/leagues/MLB/bat.shtml). Give an appropriate plot and describe any patterns that you see. Do you see any difficulties comparing the home run records of players whose careers spanned different eras? Explain.