

## 9.5 A Checklist for Statistical Pictures

*To summarize, here are 10 questions you should ask when you look at a statistical picture—before you even begin to try to interpret the data displayed.*

1. Does the message of interest stand out clearly?
2. Is the purpose or title of the picture evident?
3. Is a source given for the data, either with the picture or in an accompanying article?
4. Did the information in the picture come from a reliable, believable source?
5. Is everything clearly labeled, leaving no ambiguity?
6. Do the axes start at zero or not?
7. Do the axes maintain a constant scale?
8. Are there any breaks in the numbers on the axes that may be easy to miss?
9. For financial data, have the numbers been adjusted for inflation?
10. Is there information cluttering the picture or misleading the eye?

### CASE STUDY 9.1

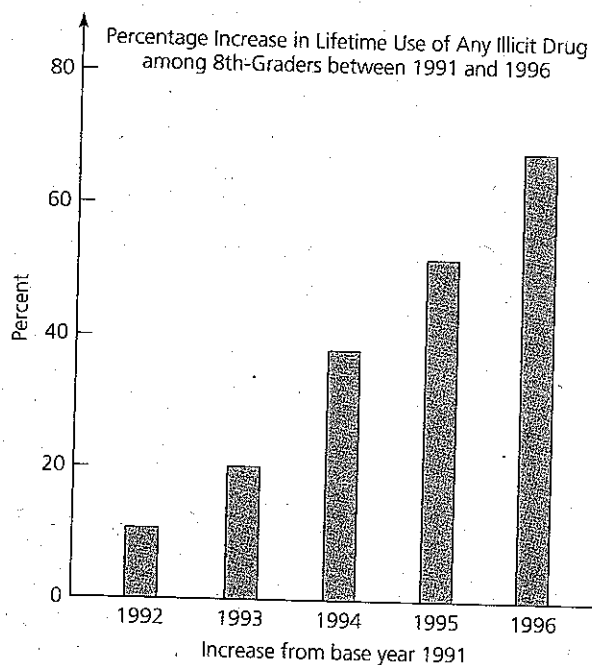
#### Time to Panic about Illicit Drug Use?

The graph illustrated in Figure 9.12 (see next page) appeared on the Web site for the U.S. Department of Justice, Drug Enforcement Agency, in spring 1998 (<http://www.usdoj.gov/dea/drugdata/cp-316.htm>). The headline over the graph reads “Emergency Situation among Our Youth.” Look quickly at the graph, and describe what you see. Did it lead you to believe that almost 80% of 8th-graders used illicit drugs in 1996, compared with only about 10% in 1992? The graph is constructed so that you might easily draw that conclusion. Notice that careful reading indicates otherwise, and crucial information is missing. The graph tells us only that in 1996 the rate of use was 80% higher, or 1.8 times what it was in 1991. The actual rate of use is *not* provided at all in the graph. Only after searching the remainder of the Web site does that emerge. The rate of illicit drug use among 8th-graders in 1991 was about 11%, and thus, in 1996, it was about 1.8 times that, or about 19.8%. Additional information elsewhere on the Web site indicates that about 8% of 8th-graders used marijuana in 1991, and thus this was the most common illicit drug used. These are still disturbing statistics, but not as disturbing as the graph would lead you to believe. ■

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**Figure 9.12**

Emergency situation  
among our youth:  
8th-grade drug use  
Source: U.S. Dept. of Justice.



## Exercises

*Asterisked (\*) exercises are included in the Solutions at the back of the book.*

- \*1. Give the name of a type of statistical picture that could be used for each of the following kinds of data:
  - \*a. One categorical variable
  - \*b. One measurement variable
  - \*c. Two categorical variables
  - \*d. Two measurement variables
2. Suppose a real estate company in your area sold 100 houses last month, whereas their two major competitors sold 50 houses and 25 houses, respectively. The top company wants to display its better record with a pictogram using a simple two-dimensional picture of a house. Draw two pictograms displaying this information, one of which is misleading and one of which is not. (The horizontal axis should list the three companies and the vertical axis should list the number of houses sold.)
3. One method used to compare authors or to determine authorship on unsigned writing is to look at the frequency with which words of different lengths appear in a piece of text. For this exercise, you are going to compare your own writing with that of the author of this book.