

occur even less often if you open the windows of your office fully.

- 14. Smoking and Lung Cancer.** There is a strong correlation between tobacco smoking and incidence of lung cancer, and most physicians believe that tobacco smoking causes lung cancer. Yet, not everyone who smokes gets lung cancer. Briefly describe how smoking could cause cancer when not all smokers get cancer.
- 15. Other Lung Cancer Causes.** Several things besides smoking have been shown to be probabilistic causal factors in lung cancer. For example, exposure to asbestos and exposure to radon gas, both of which are found in many homes, can cause lung cancer. Suppose that you meet a person who lives in a home that has a high radon level and insulation that contains asbestos. The person tells you, "I smoke, too, because I figure I'm doomed to lung cancer anyway." What would you say in response? Explain.
- 16. Longevity of Orchestra Conductors.** A famous study in *Forum on Medicine* concluded that the mean lifetime of conductors of major orchestras was 73.4 years, about 5 years longer than that of all American males at the time. The author claimed that a life of music *causes* a longer life. Evaluate the claim of causality and propose other explanations for the longer life expectancy of conductors.
- 17. Older Moms.** A study reported in *Nature* claims that women who give birth later in life tend to live longer. Of the 78 women who were at least 100 years old at the time of the study, 19% had given birth after their 40th birthday. Of the 54 women who were 73 years old at the time of the study, only 5.5% had given birth after their 40th birthday. A researcher stated that "if your reproductive system is aging slowly enough that you can have a child in your 40s, it probably bodes well for the fact that the rest of you is aging slowly too." Was this an observational study or an experiment? Does the study suggest that later child bearing *causes* longer lifetimes or that later child bearing reflects an underlying cause? Comment on how persuasive you find the conclusions of the report.
- 18. High-Voltage Power Lines.** Suppose that people living near a high-voltage power line have a higher incidence of cancer than people living farther from the power line. Can you conclude that the high-voltage power line is the cause of the elevated cancer rate? If not, what other explanations might there be for it? What other types of research would you like to see before you concluded that high-voltage power lines cause cancer?

19. Gun Control. Those who favor gun control often point to a positive correlation between the availability of handguns and murder rates to support their position that gun control would save lives. Does this correlation, by itself, indicate that handgun availability causes a higher murder rate? Suggest some other factors that might support or weaken this conclusion.

20. Vasectomies and Prostate Cancer. An article entitled "Does Vasectomy Cause Prostate Cancer?" (*Chance*, Vol. 10, No. 1) reports on several large studies that found an increased risk of prostate cancer among men with vasectomies. In the absence of a direct cause, several researchers attribute the correlation to *detection bias*, in which men with vasectomies are more likely to visit the doctor and thereby are more likely to have any prostate cancer found by the doctor. Briefly explain how this detection bias could affect the claim that vasectomies cause prostate cancer.



Projects for the Internet and Beyond

For useful links, select "Links for Internet Projects" for Chapter 7 at www.aw.com/bbt.

- 21. Air Bags and Children.** Starting from the Web site of the National Highway Traffic Safety Administration, research the latest studies on the safety of air bags, especially with regard to children. Write a short report summarizing your findings and offering recommendations for improving child safety in cars.
- 22. Dietary Fiber and Coronary Heart Disease.** In the largest study of how dietary fiber prevents coronary heart disease (CHD) in women (*Journal of the American Medical Association*, Vol. 281, No. 21), researchers detected a reduced risk of CHD among women who have a high-fiber diet. Find the research paper, summarize its findings, and discuss whether a cause for the correlation is proposed.
- 23. Coffee and Gallstones.** Writing in the *Journal of the American Medical Association* (Vol. 281, No. 22), researchers reported finding a negative correlation between incidence of gallstone disease and coffee consumption in men. Find the research paper, summarize its findings, and discuss whether a cause for the correlation is proposed.