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STAT 607 — HW 1

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### Exercise 1.1

The article *“What Readers say About Marijuana”* reports that “more than 75% of the readers who took part in an informal PARADE telephone poll say marijuana should be as legal as alcoholic beverages.” The telephone poll was announced on page 5 of the June 12 issue; readers were instructed to “call 1-900-773-1200, at 75 cents a call, if you would like to answer the following questions. Use touch-tone phones only. To participate, call between 8 a.m. EDT on Saturday, June 11, and midnight EDT on Wednesday, June 15.”

#### Answer

Target population is readers of Parade. The sampling frame is the list of responders to the telephone survey. The sampling unit and observation unit is a person. Selection bias occurs because of self-selection; the responder is someone who wants to call and take the survey, which isn't necessarily representative of reader of Parade.

### Exercise 1.4

Potential jurors in some jurisdictions are chosen from a list of county residents who are registered voters or licensed drivers over age 18. In the fourth quarter of 1994, there were 100,300 jury summons mailed to Maricopa County, Arizona residents. Approximately 23,000 of those were returned from the post office as undeliverable. Approximately 7,000 persons were unqualified for service because they were not citizens, were under age 18, were convicted felons, or had other reasons that disqualified them from serving on a jury. An additional 22,000 were excused from jury service because of illness, financial hardship, military service, or other acceptable reason. The final sample consists of persons who appear for jury duty; some unexcused jurors fail to appear.

#### Answer

Target population is individuals qualified for jury service in Maricopa County. The sampling frame is the original list of 100,300 individuals. The sampling unit and observation unit is a person. Selection bias occurs because many in the target population are unreachable or unresponsive.

## **Exercise 1.6**

Approximately 16,500 women returned the Healthy Women Survey that appeared in the September 1992 issue of Prevention. The May 1993 issue, reporting on the survey, stated that “ninety-two percent of our readers rated their health as excellent, very good or good.”

### **Answer**

The target population is the readers of Prevention magazine. The target frame is the list of survey responders. The sampling unit and observation unit is a person. Selection bias occurs because the responders volunteered to take the survey.

## **Exercise 1.7**

A survey is conducted to find the average weight of cows in a region. A list of all farms is available for the region, and 50 farms are selected at random. Then the weight of each cow at the 50 selected farms is recorded.

### **Answer**

The target population is the cows in a region. The sampling frame is the list of farms in the region. The sampling unit is a farm. The observation unit is a cow. No selection bias or measurement bias appears from the given description.