

Chapter 2: Collecting Data

Name _____

1. Consider the following three methods for random sampling: (a) simple random sampling, (b) stratified random sampling, and (c) cluster sampling. In a few sentences, discuss the similarities and differences among these sampling methods. Specifically, what aspects of the population would lead you to choose each of these methods?

2. Each paragraph below presents information about a health study. Each paragraph gives a hint about possible bias. Decide whether the possible problem is (i) selection bias, (ii) response bias, or (iii) nonresponse bias, and in a few sentences explain why you chose your answer.
- a) One part of the Nurses Health Study is concerned with possible causes of skin cancer. Nurses were asked about different behaviors and aspects of their health when they entered the study. Those nurses subsequently diagnosed with cancer were given the questionnaires again. Investigators discovered that after the diagnosis the nurses tended to report a reduced ability to tan. The investigators concluded that the shift in reporting might be caused by an awareness of their diagnosis.
- b) One part of the Demographic and Health Surveys Program is concerned with measures of malnutrition. Investigators measure physical characteristics of children, at different ages. Sadly, in some countries, many children die early, and thus a bias is introduced in the study because the investigators can not collect data from the deceased children.

3. After reading the description below, determine whether the study is an observational or experimental study. Justify your answer with specific references to the information in the study.

“Before expanding the regional airport, nearby children were determined to be in one of two aircraft-noise groups (i) aircraft noise at present or (ii) aircraft noise would come with the expansion. Three hundred twenty-six children (mean age = 10.4 years) took part in three data-collection waves, one before and two after the expansion of the airports. After the expansion, long-term memory and reading were found to be impaired in the group newly exposed to aircraft noise.”

- (a) Describe the treatments you will use in your experiment

- (b) One possible confounding variable is the time of day; students may be more alert at certain times of the day than at other times. Describe a method that could be used to control this variable. Students have already been assigned their schedules, and these cannot be changed.

- (c) Do you feel the results of your experiment could be generalized to Math classes? Explain why or why not.