

Introduction to Statistics and Data Analysis

Sampling

Part I

Identify the type of bias (selection, response/measurement, or non-response) AND explain why this bias may be present.

- i. A drywall inspector uses her new digital tape measure to determine the size of drywall sheets randomly selected from a recent shipment to her business. Afterwards, her assistant realizes that he forgot to calibrate the tape measure.
- ii. To determine if an ice cream shop can be successful in a particular town, a market researcher randomly selects 150 households and mails them a questionnaire about their ice cream eating habits and flavor preferences. Only 4 questionnaires are returned.
- iii. A researcher is conducting a survey about drug use among teenagers. She randomly selects twelve high schools and has teachers at the schools interview randomly selected students there.
- iv. A college vice-president wants to conduct a study on the achievement of undergraduate students. He selects the first 50 students who enter the building on a given day and administers his survey.

Part II

Identify the sampling method (simple random, stratified, cluster, systematic, or convenience)

- i. *Glamour* magazine collects data on its readers by asking them to fill out and send in a survey from the March issue of the magazine.
- ii. A farmer divides his orchard into 50 subsections, randomly selects four, and samples all the trees within the four subsections to approximate the yield of his orchard.
- iii. A group of lobbyists has a list of the 100 senators of the United States. To determine the Senate's position regarding farm subsidies, they decide to talk with every seventh senator on the list, starting with the third.
- iv. A teacher puts all her students' names in a hat, then selects three names from the hat. These students will take a standardized test.
- v. The President of a college randomly selects two students from each department to serve on an advisory board.