

Potential Problems with Sampling Quiz

1. A school nutritionist was interested in how students at a certain school would feel after taking a nutritional supplement. The nutritionist selected a random sample of twenty students from the school to participate in the study. Participants were asked to keep a journal on how well they felt after taking the supplement each day. What possible source of bias is present in the method of data collection?
- (A) Bias from a sampling method that only uses volunteers
 - (B) Undercoverage bias
 - (C) Nonresponse bias
 - (D) Response bias where responses are self-reported ✓
 - (E) Response bias where the question wording is leading or confusing

Answer D

Correct. The participants were asked to assess and record how they felt, making it more likely they could overestimate or underestimate the effects of the supplement.

2. A city has designed a survey to collect information about residents' opinions about city services. Which of the following describes a scenario in which nonresponse bias is likely present?
- (A) Surveys were mailed to 500 people, and 200 of the surveys were completed and returned. ✓
 - (B) Surveys were mailed to one-half of the neighborhoods in the city and all surveys were returned
 - (C) Surveys were completed by the first 500 residents who listened to a radio show
 - (D) Surveys were completed by 500 residents selected at random
 - (E) Surveys were given to all residents in one neighborhood of the city and all surveys were returned

Answer A

Correct. Since only 200 surveys out of the 500 surveys mailed were completed and returned, this high nonresponse rate is likely to lead to nonresponse bias.

3. Which of the following does not describe a sampling method that has a potential source of voluntary response bias for the administration of a survey about college athletics at a university?

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- (A) Giving the survey to 30 students selected at random from each of the eight dorms on campus ✓
- (B) Giving the survey to the first 50 students who call the university radio station after the broadcaster announces the survey on air
- (C) Giving the survey to any student who stops at a table set up in the student union after the survey is advertised
- (D) Giving the survey to all students who respond to an advertisement in the student newspaper
- (E) Giving the survey to physical education majors who receive extra credit for completing the survey

Answer A

Correct. Since the 30 students are selected at random, they are not volunteers, so the selection of those students is not a likely source of voluntary response bias.