

ANSWERS

Sampling and Experimentation



Overview of Methods of Data Collection

Chapter

2

AP STATISTICS

HW 2A



Planning and Conducting Surveys

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EXAMPLE: A journalism class prints a survey in their school newspaper. Readers are asked to clip the survey from the paper, complete it, and return it to a drop box in the school cafeteria. What type of sample is this?

VOLUNTARY RESPONSE SURVEY

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EXAMPLE: A journalism class stations pollsters in front of the stadium during a football game. They ask each student who enters his or her opinion of the quality of the school's athletics program. What type of sample is this?

CONVENIENCE SAMPLE

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EXAMPLE:

A media research firm is conducting a poll on an upcoming election for city council. The firm obtains a list of all 15,000 registered voters in the council ward under consideration. The voters' ID numbers are entered into a computer and 500 are chosen at random, without replacement, to comprise the sample. What type of sampling design is this?

SIMPLE RANDOM SAMPLE

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EXAMPLE:

A media research firm is conducting a poll on an upcoming election for city council. The firm obtains a list of all 15,000 registered voters in the council ward under consideration. The voters' ID numbers and party affiliations (Democrat, Republican, Independent) are entered into a computer. The firm randomly selects, without replacement, 200 Democrats, 200 Republicans, and 100 Independents to comprise the sample. What type of sampling design is this?

COMPARE STRATA #7 VS CLUSTERS #8

STRATA ARE HOMOGENOUS GROUPS

STRATIFIED RANDOM SAMPLE

3 STRATA - Democrats	200	40%
Republicans	200	40%
Democrats	100	20%
	500	



QUESTION

ARE THE %'S FOR THE STRATA

REPRESENTATIVE OF THE POPULATION?

HOW WOULD YOU FIND THIS OUT?

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EXAMPLE:

A media research firm is conducting a poll on an upcoming election for city council. The firm obtains a list of all 15,000 registered voters in the council ward under consideration. The voters' ID numbers and voting precinct numbers (01-75) are entered into a computer. The firm first randomly selects 20 of the voting precincts. Then, from each of the chosen precincts, 25 voters are chosen with simple random samples. What type of sampling design is this?

CLUSTERS
ARE
HETEROGENEOUS
GROUPS
(i.e. precincts)

- 15,000 voters in 75 precincts
- Randomly select 20 voting precincts
→ THEN 25 voters are chosen with SRS.

CLUSTER SAMPLE

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EXAMPLE:

A media research firm is conducting a poll on an upcoming election for city council. The firm obtains a list of all 15,000 registered voters in the council ward under consideration. The list is sorted by voter ID number. The firm randomly selects one person from the first 100 on the list; then it selects every 100th person after that. The sample size is 150. What type of sampling design is this?

SYSTEMATIC RANDOM SAMPLE

10 EXAMPLE: A journalism class prints a survey in their school newspaper about the school charging students for parking. Readers are asked to clip the survey from the paper, complete it, and return it to a drop box in the school cafeteria. Why is this sample biased?

SURVEY IS SUBJECT TO VOLUNTARY RESPONSE BIAS. STUDENTS WHO WANT OR ARE DRIVING TO SCHOOL ARE MORE LIKELY TO RESPOND AND SKEW THE RESULTS.

11 EXAMPLE: A journalism class stations pollsters in front of the stadium during a football game. They ask each student who enters his or her opinion of the quality of the school's athletics program. Why is this sample biased?

THIS IS A CONVENIENCE STUDY AND IS SUBJECT TO UNDER COVERAGE SINCE STUDY ONLY INCLUDES STUDENTS AT FOOTBALL GAME & LEAVES OUT LARGE PORTIONS OF THE POPULATION.

12 EXAMPLE: A media research firm is conducting a poll on an upcoming election for city council. The firm obtains a list of all 15,000 registered voters in the council ward under consideration and a simple random sample of 500 voters is chosen. Over a 24-hour period, telephone calls are placed to the voters, with follow-up calls made to those voters who do not answer the phone on the first attempt. Pollsters could not reach 37 of the 500 voters selected. What sources of bias could exist in this survey?

THIS IS NON RESPONSE BIAS.

→ THE 37 VOTERS COULD AFFECT THE RESULTS OF THE SURVEY

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EXAMPLE:

A journalism class conducts a simple random sample of students at their school. They ask each student, "Given the fact that our school has won seven championships in the last five years, do you favor or oppose reducing funding for athletic programs?" What sources of bias could exist in this survey?

THIS IS A FORM OF **RESPONSE BIAS**.
THIS A LEADING QUESTION AND
SHOULD BE REWORDED TO GET
MORE ACCURATE RESULTS