

Bias in Data Collection and Determining the Sample Size

Complete each statement by typing in the correct answer. **Complete each statement with a full stop.**

1. One of the potential problems with drawing conclusions from a sample that is too small is that
- A) It ensures accurate results
 - B) It increases credibility
 - C) It may not be representative of the population
 - D) It eliminates bias
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2. A sample that fails to include all parts of the population proportionally is subject to
- A) Random error
 - B) Under coverage
 - C) Voluntary bias
 - D) Over sampling
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3. Which of the following is an example of **voluntary response bias**?
- A) Sampling every 10th person on a list
 - B) Surveying people who opt into a study
 - C) Choosing people randomly from a full list
 - D) Including every student in a school
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4. Selection bias is most likely to occur when
- A) All members of a population are surveyed
 - B) A random sample is selected
 - C) The sample is not representative of the population
 - D) The population size is too large
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5. Which of the following best describes **non-response bias**?
- A) The data is gathered using volunteers
 - B) Some selected individuals do not participate
 - C) Everyone responds to the survey
 - D) Too many questions are asked

6. Which sampling method helps eliminate bias?

- A) Sampling only from volunteers
 - B) Sampling from a convenient location
 - C) Random sampling
 - D) Asking people you know
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7. If a sample is not randomly selected, it will likely be

- A) Larger than needed
 - B) Too random to analyze
 - C) Biased
 - D) Statistically sound
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8. The main goal of a **representative sample** is

- A) To include only interested individuals
 - B) To save time
 - C) To reflect the characteristics of the whole population
 - D) To avoid using statistical tools
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9. What formula helps estimate an appropriate sample size?

- A) $N \div 2$
 - B) $\sqrt{N}$
 - C) $N + 1$
 - D) $N \times 2$
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10. Why is a sample that is too small problematic?

- A) It uses too much data
 - B) It always leads to selection bias
 - C) It may not provide reliable conclusions
 - D) It is easier to interpret
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11. Generalising from a sample that is too _____ may lead to conclusions that lack credibility.

12. A good sample should be _____ of the population.

13. Sampling from select groups without including the same _____ from all population groups introduces bias.

14. A sample that includes only readily available data may introduce _____.

15. The bias that results from an unrepresentative sample is called _____ bias.

16. _____ coverage occurs when some members of the population are inadequately represented.

17. When people chosen for a study choose not to respond, this is called _____ bias.

18. Voluntary response bias happens when the sample consists of _____ participants.

19. The number of people chosen from a population for study is known as the _____ size.

20. If the sample size is too small, the results are less _____.

21. How do I calculate the sample size of a school a population of 625 students?

a/ $625/2$

b/ $\sqrt{625}$

c/ 625^2

d/ $\sqrt{625} \times 2$

e/ 625×2

22. A company wants to survey its 10,000 employees. Using the square root rule, what is the smallest sample size that should be used?

23. For a population of 1,600 customers, what sample size should be chosen to ensure reliable data?

24. If a survey is to be conducted on a population of 2,500 households, what is the appropriate minimum sample size?

25. A town has a population of 900 people. What is the minimum recommended sample size?