

# 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.

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12. A good sample should be \_\_\_\_\_ of the population.

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

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

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

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

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

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

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

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

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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/  $625 \times 2$

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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?

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

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

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