

Statistics, Data Collection Methods and Sampling

In statistics, a _____ refers to all members of a group being studied.

A _____ is a smaller group selected from the population to draw conclusions.

Data should be collected in a way that the _____ accurately represents the population.

A good sample is selected _____ to avoid bias.

If a sample is **not large enough**, the conclusions drawn may not be _____.

1. What is a population in a statistical study?

- A) A random group of people
- B) A subset of a group
- C) The entire group being studied
- D) Only students in a single classroom

Answer is

2. Why do researchers use a sample instead of studying the whole population?

- A) It's more fun
- B) It's quicker and easier to manage
- C) The sample is always better
- D) Populations do not exist

Answer is

3. Which of the following would be a sample?

- A) All students in a school
- B) All teachers in the state
- C) One year level in a school
- D) Every student in the country

Answer is

4. What is important when selecting a sample?

- A) Picking your friends
- B) Choosing whoever is available
- C) Selecting randomly and ensuring it's representative
- D) Asking people who agree with your opinion

Answer is

Part B

Question 1

A city council wants to know how residents feel about a new park. They send surveys to 200 randomly selected households out of 5,000 in the city.

- a. Who makes up the population and how many people are in it?
- b. Who makes up the sample and how many people are in it?

Question 2:

A company has 1,200 employees. To gather opinions on a new work-from-home policy, managers interview 60 employees selected at random.

- a. Who makes up the population and how many people are in it?
- b. Who makes up the sample and how many people are in it?

Question 3:

A researcher wants to find out how often high school students use social media. She surveys 100 students from a school of 900.

- a. Who makes up the population and how many people are in it?
- b. Who makes up the sample and how many people are in it?

PART C

1. In _____ sampling, every member of the population has an equal chance of being selected.
2. In _____ sampling, selections are made at regular intervals after a randomly chosen starting point.
3. In _____ sampling, the population is divided into groups (strata), and a random sample is taken from each group.
4. In _____ sampling, individuals choose to participate themselves, which can lead to bias.
5. An example of _____ sampling is choosing 6 numbers from 45 in a Tattslotto draw.
6. $I=N/n$ where I = the interval, N = total and n = the sample size. This formulae is used in _____ sampling.

7. **1. Which sampling method ensures every individual has an equal chance of being selected?**

- A) Systematic sampling
- B) Stratified sampling
- C) Simple random sampling
- D) Self-selected sampling

Answer is

8. **2. What is a disadvantage of self-selected sampling?**

- A) It requires too much math
- B) It's always the fastest method
- C) It may be biased due to strong opinions
- D) It's more accurate than other methods

Answer is

9. **Which formula is used to calculate the sampling interval in systematic sampling?**

$$I = \text{Interval} \quad N = \text{population size} \quad n = \text{sample size}$$

- A) $I=N \times n$
- B) $I=N + n$
- C) $I=2(N-n)$
- D) $I=N/n$

Answer is

10. **Dividing a population into groups such as age or gender before sampling is called:**

- A) Simple random sampling
- B) Self-selected sampling
- C) Stratified sampling
- D) Systematic sampling

Answer is

11. **What is a real-world example of systematic sampling?**

- A) Drawing lottery numbers
- B) Testing every 20th product off a production line
- C) Broadcasting a survey to the public
- D) Asking volunteers to join a research project

Answer is

12. n _____ sampling, a randomly selected starting point is followed by regular intervals.

13. In stratified sampling, a _____ is a subgroup within the population that shares a characteristic.

14. In a _____ sampling method, volunteers participate, often leading to overrepresentation of strong opinions.

15. Dividing the population by **geographic region** and sampling each region is an example of _____ sampling.

16. Systematic sampling might hide trends if there's a _____ pattern in the population.

17. **6. What is a key feature of simple random sampling?**

- A) Volunteers join the study
- B) Sampling is done at fixed intervals
- C) Each member has an equal chance of being selected
- D) Groups are divided by characteristics

Answer is

18. **7. Why can self-selected sampling be unreliable?**

- A) It is too expensive
- B) It requires random number generators
- C) It often overrepresents strong opinions
- D) It requires group division

Answer is

19. 8. What is an example of stratified sampling?

- A) Picking every 10th person
- B) Picking a group based on who volunteers
- C) Selecting people randomly from each age group
- D) Letting people opt in to a survey

Answer is

20. Which of the following is NOT a feature of systematic sampling?

- A) Selection at regular intervals
- B) Use of strata
- C) Random starting point
- D) Sampling interval formula

Answer is

21. 10. What's a potential issue with systematic sampling?

- A) It's always biased
- B) It takes too long
- C) It may miss patterns if the population has cycles
- D) It's too random

Answer is