

3.4 Potential Problems with Sampling

Name: _____ Class: _____ Date: _____ **Total: 8 marks**

KEY WORDS undercoverage 覆盖不足 • response bias 应答偏差 • voluntary response 自愿应答
• question wording bias 问题措辞偏差 • nonresponse 无应答

Objective

Build the skills to answer exam questions on **potential problems with sampling**.

You must be able to:

- identify **undercoverage** 覆盖不足 and **voluntary response** 自愿应答 as sources of bias
- describe how **nonresponse** 无应答 and **response bias** 应答偏差 distort results
- explain how poorly worded questions produce **question wording bias** 问题措辞偏差

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Sources of sampling bias

- **Undercoverage** — part of the population is left out.
- **Voluntary response** — only those who choose to reply are counted (often the strongly opinionated).
- **Nonresponse** — selected people cannot be reached or refuse.
- **Response bias** — people give untrue answers (e.g. on sensitive topics).
- **Question wording bias** — a leading question pushes people toward an answer.

■ Spotting the bias

An online poll on a news site asks readers to click “agree” or “disagree.” This has **voluntary response** (only motivated readers click) and **undercoverage** (only that site’s visitors, not the whole population). Name the type from *who is left out* or *why the answers are distorted*.

2 Practice

2.1 Define undercoverage. [1]

2.2 Define nonresponse bias. [1]

2.3 State one source of bias that comes from how a question is asked. [1]

3 Exam-style questions

3.1 A survey in which people choose whether to respond suffers from [1]

- | | |
|---|---|
| A | B |
| C | D |
- A** undercoverage
B voluntary response bias
C randomization
D replication

3.2 When selected people cannot be reached or refuse to answer, it is [1]

- | | |
|---|---|
| A | B |
| C | D |
- A** nonresponse
B a placebo
C blocking
D an SRS

3.3 A survey uses a leading question that pushes people toward one answer.

(a) Name this type of bias. [1]

(b) Name a bias caused by leaving out part of the population. [1]

(c) Name a bias when only volunteers reply. [1]