Exercise walk-through

Introducing Statistics: Why Is My Sample Not Like Yours? ▪ 5.1

eXercise

You must be able to

- describe **sampling variability** 抽样变异性
- distinguish a **statistic** 统计量 (describes a sample) from a **parameter** 参数 (describes a population)
- explain why different samples give different statistics

Method — Sampling variability

Different random samples from the same population give **different** values of a statistic — this is **sampling variability**.

Method — Statistic vs parameter

- A **statistic** (like $\bar{x}$ or $\hat{p}$) is computed from a **sample** and varies.
- A **parameter** (like μ or p) is a fixed number describing the whole **population**.

Practice 2.1 ▪ 1 mark

Define sampling variability.

Solution 2.1

Method: Sampling variability

Worked steps

the natural variation in a statistic from one random sample to another B1.

Practice 2.2 ▪ 2 marks

State the difference between a statistic and a parameter.

Solution 2.2

Method: Statistic vs parameter

Worked steps

a statistic describes a sample and varies; a parameter describes the population and is fixed B1 B1.

Practice 2.3 ▪ 1 mark

State why two random samples give different means.

Solution 2.3

Method: Sampling variability

Worked steps

each sample contains different individuals (sampling variability) B1.

Exam-style 3.1 ▪ 1 mark

A number describing a sample is a

A parameter

B statistic

C population

D census

Solution 3.1

Method: Statistic vs parameter

A parameter

B statistic ✓

C population

D census

Worked steps

B.

Exam-style 3.2 ▪ 1 mark

A number describing a population is a

A statistic

B parameter

C sample

D residual

Solution 3.2

Method: Statistic vs parameter

A statistic

B parameter ✓

C sample

D residual

Worked steps

B.

Exam-style 3.3 ▪ 1 mark

Two students each survey 50 people and get different sample proportions.
(a) Name the reason for the difference.
(b) Name the value computed from each sample.
(c) Name the fixed population value.

Solution 3.3

Method: Statistic vs parameter

Worked steps

(a) sampling variability B1. (b) a statistic B1. (c) a parameter B1.