# 7.1 Marketing research

Name: _____ Class: _____ Date: _____ **Total: 16 marks**

**KEY WORDS** response rate • sampling error

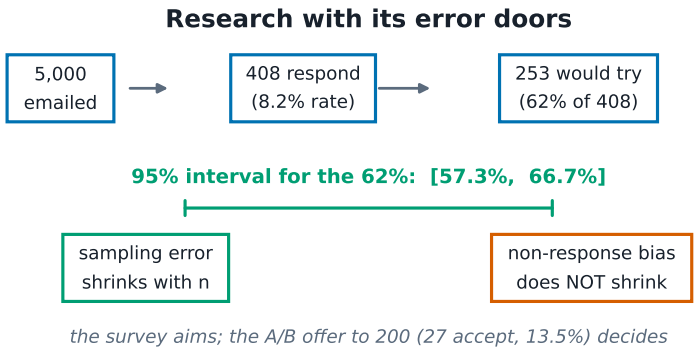
## Objective

Turn a belief into a testable question; compute response rates and intervals; separate sampling from design error; let behaviour overrule intention.

## 1 Key knowledge and worked examples

### ■ The machinery

The interval for a proportion: $p \pm 1.96\sqrt{p(1-p)/n}$. The **response rate** is a design warning, not a footnote. Stated intention overstates purchase – the A/B behaviour test decides.




*Sampling error on the interval, design error in the response rate*

### ■ Worked example. The survey and its repair

62% of 408 → [57.3, 66.7] ✓. Response 8.2% warns of regulars. The A/B offer to 200 lands at 13.5% – behaviour governs.

## 2 Practice

A garden brand emails 6,000 customers; 342 respond; 71% say they would join a plant-care subscription.

**2.1** Compute the response rate and the 95% interval for the 71%. [4]

**2.2** In two lines: why does the 71% likely overstate the customer base, and what cheap repair tests it? [3]

**2.3** Rewrite "Do people like our plants?" into a researchable question, and state the data that would answer it. [3]

**2.4** An A/B offer to 250 randomly chosen customers converts 29. Compute the rate and reconcile it with the 71%. [3]

**2.5** True or false, one line each: (a) doubling n halves the interval; (b) non-response bias shrinks with sample size; (c) a survey can describe but not prove causation. [3]

## Solutions

**2.1**

- Response rate = 342/6,000 = 5.7%.
- $1.96\sqrt{0.71 \times 0.29/342} = 0.048$.
- Interval = [66.2%, 75.8%].
- Stated with both hedges: interval AND response rate.

**2.2**

- Enthusiastic plant-lovers answer plant surveys – selection + non-response bias.
- Repair: an A/B offer to a random sample watches behaviour.
- Behaviour, not intention, is the launch number.

**2.3**

- "Of past customers, what share would subscribe at £X within 30 days?"
- Data: a random-sample offer with actual orders counted.
- Any refutable version earns the marks; unfalsifiable earns none.

**2.4**

- Rate = 29/250 = 11.6%.
- The intent-behaviour gap again: 71% said, 11.6% did – steer by the 11.6%.

**2.5**

- (a) False – needs 4× the sample (root n).
- (b) False – design error survives any size.
- (c) True – only controlled tests prove causation.

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