Ten-Task Student Sampling Capstone

Notes for SHS • Topic 81 • All data are fictional • November 2026

Task 1 — Population and frame

Define 240 eligible units and roster with unique StudentCodes.

Task 2 — Sampling fraction

60/240=25%, distinct from response rate.

Task 3 — SRS

Select seed81 SRS and verify 60 unique IDs; mean 71.4.

Task 4 — Stratified

Select 30/18/12 at seed81; weighted mean 71.466667.

Task 5 — Systematic

Stipulated start3, interval4, final position239; mean 71.283333.

Task 6 — Composition

Compare SRS 34/13/13, strat 30/18/12, systematic 30/18/12 (coincidental for roster).

Task 7 — Estimation

True generated mean 72.154167; compare three errors.

Task 8 — Repeated sampling

Inspect 500 replicates per design and four systematic unique start samples.

Task 9 — Limitations

Discuss frame bias, nonresponse, periodicity, missing strata and variance.

Task 10 — Report

Include population, frame, sample sizes, seeds, selection, estimate, appropriate uncertainty and design caveats.