

AP Statistics

2019-01-09 Section 4.1 Sampling & Surveys, Continued

Notes taken by: **Noah Overcash**

Warm-up

A large retailer prepares its customers' monthly credit card bills using an automatic machine that folds the bills, stuffs them into envelopes, and seals the envelopes for mailing. Are all the envelopes completely sealed? Inspectors choose 40 envelopes from the 1000 stuffed every hour for visual inspection. Identify the population and the sample.

Population: 1000 stuffed envelopes

Sample: 40 envelopes to be tested

At a party there are 30 students age 21 and 20 students under age 21. You choose at random 3 of those over 21 and separately choose at random 2 of those under 21 to interview about attitudes towards alcohol. You have given every student at the party the same chance to be interviewed. What is the chance? Why is your sample not a SRS?

Chance: $10\% = 0.10$

The sample is not a SRS as it is a stratified sample.

Sampling errors

Occurs from bad sampling methods, such as voluntary response.

Undercoverage is where some groups of the population are left out of the population

This is also called an incomplete sampling frame

For example, a survey of households will exclude not only homeless people but those in prison or students in dormitories.

Nonsampling errors

These errors can only occur after a sample has already been selected.

The main nonsampling error is nonresponse, which occurs when selected individuals can not or will not be surveyed.

There are no nonresponse errors in voluntary response errors

Incorrect responses are also a nonsampling error. Patterns of this can lead to response biases.

The wording of questions can also heavily influence the outcomes of a survey.

Confusing or leading questions can introduce strong bias, and changes in wording can greatly change an outcome.

The order in which questions are asked also matters.