

INFERENCEAL STATISTICS

Section 17.5 notes

POPULATION: the entire set of individuals or objects being studied

SAMPLE: the subset of the population

SAMPLE SIZE: the number of objects in the sample

SAMPLING: the process of selecting a sample that represents the total population

SAMPLING THEORY: a branch of stats that deals with questions that come up when sample is taken

For example: How to select? Size?
How reliable are conclusions drawn from the sample?

NONPROBABILITY SAMPLING:

A procedure for selecting a sample which is **NOT a random process**

May be biased; different characteristics from population

- **Convenience Sampling**: the sample selected is easy and convenient
- **Judgment Sampling**: one or more experts select a representative sample based on their subjective judgment
- **Sampling by Questionnaire**: conclusions are based on voluntary responses (questions could be biased)

PROBABILITY SAMPLING:

Selecting sample based on **RANDOM** sample

- **Simple Random Sampling:** every element of population has equal and independent chance of being chosen

Example: flip a coin or a random generator

- **Stratified Random Sampling:** population broken into groups called strata; each stratum has a common property

Example: 2 strata - male group/female group

4 strata - freshmen/sophomores/juniors/seniors

EXAMPLE 1

State whether the sampling procedure described is an example of...

- a. convenience sampling b. judgment sampling c. sampling by questionnaire
d. simple random sampling e. stratified random sampling

1. A television rating organization mails a questionnaire to subscribers of a television magazine. On the basis of the responses to this questionnaire, it names the most popular shows.

C - sampling by questionnaire

2. A popular financial magazine would like to survey the techniques of successful managers. A managerial consultant is asked to select a group of 50 successful managers to participate in the survey.

B - judgment sampling

3. A school would like to know if students like the hamburger hot dish served at lunch. A school representative stands in front of school and asks the first 200 students who enter school if they like the dish.

A - convenience sampling

Alg III 17.5 lesson

EXAMPLE 2

Maryton High School has 860 students and 40 teachers.

The school newspaper interviewed 80 students and 15 teachers to see whether they were in favor of changing the schedule of the day. The results are listed in the table.

Stratum	PopulationSize	SamnleSize	Number in favor of change
Students	860	80	48
Teachers	40	15	8
Total	900	95	56

Estimate the percent of the school in favor of change.

(% of population)(% of vote) + (% of population)(% of vote) = % in favor of change (as decimal)

$$\left(\frac{860}{900}\right)\left(\frac{48}{80}\right) + \left(\frac{40}{900}\right)\left(\frac{8}{15}\right)$$

Type the fractions in calculator using parentheses. Only round in the very end!

=.597037037

Therefore, **59.7%** of the school is in favor of change.

H😊mew😊rk

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