

Worksheet 10/13/2023

Population = the complete set of things under study

Sample = a subset of the population from which data is collected

Population parameters = the quantities that are of interest

Sample statistics = the quantities found in the sample

Sampling methods: simple random sampling, systematic sampling, convenience sampling, cluster sampling, stratified sampling.

Two basic types of statistical studies: observational study, experiment (single anonymous/double anonymous/ non-anonymous).

For Problem 1 and 2, identify the population, sample, population parameters, and sample statistics.

1) In order to gauge public opinion on the President's plan to contain Iran's nuclear program, the Pew Research Center surveyed 1001 Americans by telephone.

2) A higher education research organization conducts an annual study of attitudes of incoming college students by surveying approximately 250,000 first-year students at 340 colleges and universities. There are approximately 1.4 million first-year college students in this country.

3) You want to determine the average number of classes skipped by first-year students at a small college during a particular semester. State whether each of the following samples is likely to be representative and explain why or why not.

Sample 1: 100 first-year students who belong to a sorority or fraternity

Sample 2: 100 first-year students who play a varsity sport

Sample 3: The first 100 first-year students whom you meet at the student union

Sample 4: 100 first-year students taking honors humanities courses

Identify the sampling method (simple random sampling, systematic sampling, convenience sampling, cluster sampling, or stratified sampling) in the following studies.

4) *US Weekly* magazine predicts Grammy Award winners by polling readers who voluntarily respond by email.

5) Student ID numbers are randomly selected by a computer for a survey of student opinions on college athletics.

Determine whether each of the studies described is observational or an experiment. If the study is an experiment, identify the control and treatment groups and discuss whether making the study single- or double-anonymous is necessary. If the study is observational, state whether it is a retrospective study, and if so, identify the cases and controls.

6) A study enrolled 2002 runners to look for relationships between specific types of running injuries and variables such as height, weight, body mass index, age, and running history.

7) Using a survey of 1502 Americans, the Pew Research Center determined that 85% of Americans believe that the country is more politically divided than in the past and that those divisions will persist.