



MATH225

Sampling Data: An Overview of Statistics

An Overview of Statistics

Vocabulary:

Data: Consist of information coming from observations, counts, measurements, or responses.

Statistics: The science of collecting, organizing, analyzing, and interpreting data in order to make decisions.

Population: The collection of *all* outcomes, responses, measurements, or counts that are of interest. (every, each, etc.)

Sample: A subset of the population. (smaller group)

Parameter: A number that describes a population characteristic.

Statistic: A number that describes a sample characteristic.

Descriptive Statistics: Involves organizing, summarizing, and displaying data.
e.g. Tables, charts, averages

Inferential Statistics: Involves using *sample data* to draw conclusions about a *population*.



Example: Determine whether the data set is a population or a sample. Explain your reasoning.

The salary of each teacher in a school.

- a) **Population, because it is a collection of salaries for all teachers in the school.**
- b) Sample, because it is a collection of salaries for some teachers in the school.
- c) Population, because it is a subset of all schools in the city.
- d) Sample, because it is a collection of salaries for all teachers in the school but there are other schools.

The grade of 5 students in a classroom of 30.

- a) Sample, because it is a collection of grades for all students in the classroom, but there are other classrooms.
- b) Population, because it is a collection of grades for all students in the classroom.
- c) **Sample, because the collection of 5 students' grades is a subset of all students in the class.**
- d) Population, because it is a subset of all students in the class.

Example: In a poll, 1001 adults in a country were asked whether they favor or oppose the use of "federal tax dollars to fund medical research using stem cells obtained from human embryos." Among the respondents, 48% said that they were in favor. Describe the statistical study.

What is the population in the given problem?

- a) The 1001 adults selected.
- b) 48% of the 1001 adults selected.
- c) 48% of the adults in the country
- d) **All adults in the country.**

Identify the sample for the given problem.

- a) **The 1001 adults selected.**
- b) 48% of the 1001 adults selected.