

Statistics: Important Definitions

What is Stats?

The study of facts given in the form of numbers or figures.

General Definitions

1 - A population (N): is the total set of people or objects to be considered in a statistical analysis.

2 - A sample (n): is a portion or a subset of a population.

3 - The survey rate is the sample divided by the population.

Survey Rate = $\frac{\text{Sample}}{\text{Population}}$

or Survey Rate = $\frac{n}{N}$

Statistical Survey

There are 3 ways to conduct a statistical survey:

1 - A census

2 - A sample survey

3 - A study

Census

A census is a statistical survey where every element in a population is examined.

For a census, the sample (n) is equal to the population (N).

So, the survey rate is equal to 1 or 100%

Survey Rate = $\frac{n}{N}$ = 1 or 100% since $n = N$

Sample Survey

A sample survey is a statistical survey where some of the elements in a population are examined.

If the sample survey has the same characteristics of the population from which it was selected, the sample is called a **representative sample**.

If the sample chosen from the population is not a representative sample, the sample is considered to be **bias**.

For a sample survey, the survey rate is less than 1 (since $n < N$)

Study

A study is a statistical survey where experts are asked to give their opinions on areas that are being targeted by this statistical survey.

In the case of a study, we do not calculate a survey rate.

Variables

- 1 - Quantitative Variable: expresses a quantity and gives us numerical values.
- 2 - Qualitative Variable: expresses a quality as oppose to numerical values.

Variables - Example #1

If a group of students have been asked how many pets each of them has in their homes, the answers would be 0, 1, 2, 3...

The number of pets, is this a quantitative variable or a qualitative variable?

Variables - Example 2

If a group of students have been asked what kind of pets do you have in your homes, the answers would be dog, cat, fish, hamster etc

The types of pet, is this a quantitative variable or a qualitative variable?