

The first axis

Statistics Overview

- 1-What is meant by statistics**
- 2- Basic concepts in statistics**
- 3- Types of statistical variables**
- 4- Statistical Data Sources**

1- What is meant by statistics

Statistics refers to the branch of mathematics and science that involves collecting, organizing, analysing, interpreting, and presenting data.

It encompasses a wide range of techniques and methods used to make sense of numerical information.

Statistics is used in various fields such as science, economics, social sciences, and more to summarise data, make predictions, and draw meaningful conclusions from datasets. It helps us understand patterns, trends, and relationships within data, making it a crucial tool for decision-making and research.

2- Basic concepts in statistics

- **Statistical populaion:** it is a set of statistical units that share specific characteristics and attridutes under the statistics study. *Examples: a community of students, a community of families, Firms....*
- **Statistical unit :** is an individual element or entity within a statistical study or dataset that is the subject of data collection, analysis, or observtion.

Exemple: student, family, firm.....

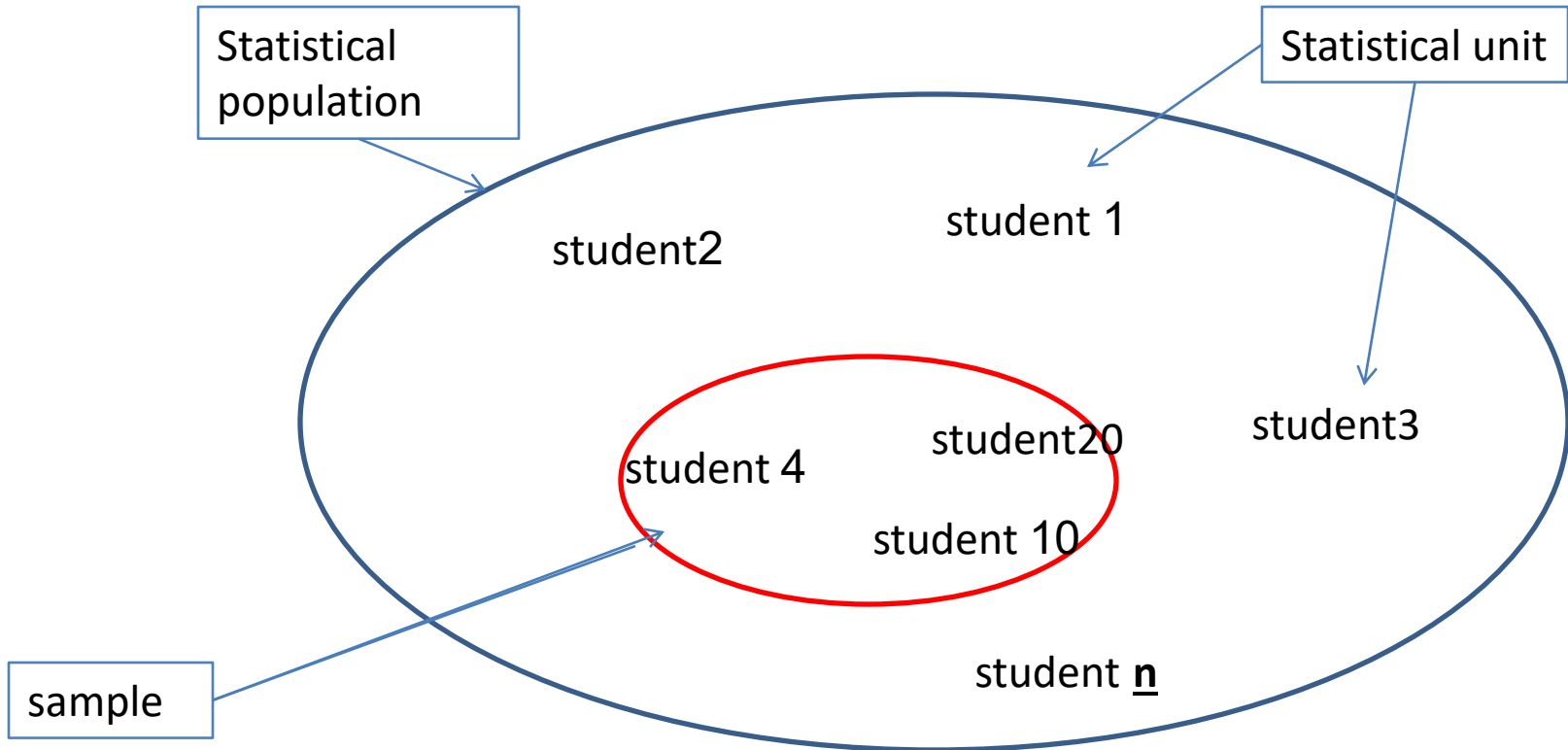
- **Statistical phenomenon:** it is an observation occurrence or event that can be studied and anlysed using statistical methods and tools.

Exemple : weight, length, investment,.....

- **Statistical sample:** sampling is a part of the statistical population that represents the population most accurately. There are several types of samples: random samples (simple, cluster, stratified) and non-random samples (quota, purposive method). However, random sampling is considered the most widely used.

Exemple : sample of students, sample of firms.....

The figure illustrates the basic concepts in statistics



Note: For the student community, we may be interested in the following statistical phenomena: weight, study department, mark.....

3- Types of statistical variables

Variables are divided into:

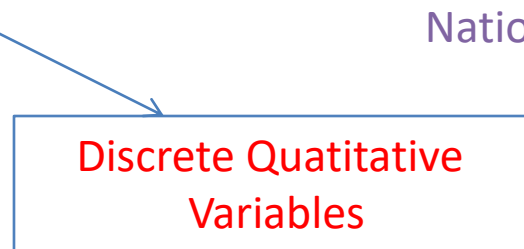
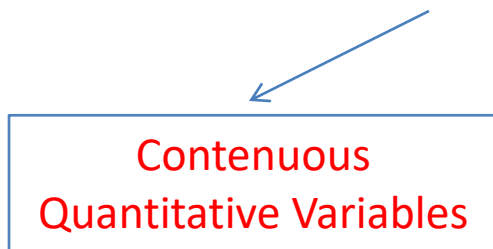


These are the measurable variables
Exemple : Production quantity, number of children, weight

These are the unmeasurable variable, also called the studied property.

Exemple:
Nationality, colors, car type...

It is divided into two sections



These are the variables that take every possible value within the study's range. Due to the infinite number of these value, we divide the study range into subranges called categories

Exemple: age, height, temperature

These are the variables that take integer value and cannot be subdivided.

Exemple: number of production, number of children.

4- Statistical Data Sources

Statistical data sources refer to the various places or origins from which statistical information or data is collected, compiled, and analyzed. These sources play a crucial role in providing accurate and reliable statistics for various purposes, including government policy-making, academic research, business planning, and more.

Here are some common examples of statistical data sources:

1. **Surveys and Questionnaires:** Government agencies, research organizations, and businesses often conduct surveys and questionnaires to collect data directly from individuals or organizations. Examples include population censuses, consumer surveys, and employee satisfaction surveys.

2. **Administrative Records:** Government agencies maintain administrative records that contain valuable statistical information. Examples include tax records, birth and death certificates, and healthcare records.

3. **Official Government Publications:** Government agencies publish statistical reports and publications that contain a wide range of data, such as economic indicators, crime statistics, and demographic information.

4. **Scientific Research:** Data collected from scientific experiments and studies can also serve as statistical data sources. This includes data from fields like medical research, environmental studies, and social sciences.

5. **Financial Reports:** Businesses and financial institutions provide financial reports that contain data on revenue, expenses, and economic trends. These reports are often used for economic analysis.

6. **Online Databases:** Many organizations and institutions maintain online databases that provide access to statistical data. Examples include databases from the World Bank, United Nations, and national statistical agencies.