

## Introduction.

Statistics is the science of collecting, organizing, analyzing, interpreting and presenting data.

## Types of statistics.

(1) Descriptive statistics. لا وصفی، لفظی

This consists of procedures used to summarize and describe the important characteristics of a set of measurements via numerical and graphical methods.

(2) Inferential statistics. لا استقرائی اور لا استنباطی

This consists of procedures used to inference about the population characteristics from information contained in a sample drawn from this population.

Inferences : • Estimates. • Decisions.  
• Predictions. • Generalizations

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## Common terminologies.

[1] The variable is a characteristic that varies from subject to subject and/or changes over time in a study.

### Examples:

(1) Population size of Jordan. Changes over time.

(2) Hair color. Varies from person to person.

(3) Blood pressure. Varies over time and from person to person.

[2] The experimental unit is the individual or object on which a variable is measured.

A measurement results when a variable is actually measured on an experimental unit.

Ex. We need to study GPAs of 50 students.

Variable: GPA.

Exp. unit: A student.

[3] The population is the set of all individuals of interest in a particular study.

4] The sample is the subject of the population.

The process of selecting a sample is known as sampling.

Ex. Identify the expr. units, population, variable, and sample of the following:-

Among all students at the Jordanian public universities, a recent study of GPAs taken at Yarmouk University found that GPAs increased.

Sample: The students at Yarmouk Univ.

Population: All students at all Jordanian public universities.

Variable: GPA.

Expr. unit: A student.

## Types of data.

### (1) Univariate data.

بيانات أحادية.

This consists observations when only a single variable is used.

### (2) Bivariate data

بيانات ثنائية.

This consists observations when exactly two variables are used.

### (3) Multivariate data

بيانات متعددة.

This consists observations when more than two variables are used.

Ex. A set of 4 students were selected from Math 131 students and the following measurements were recorded.

Student #	GPA	Gender	Major	# Credits
1	75	F	Phy.	80
2	80	M	Math.	90
3	85	M	Eng.	75
4	71	F	CS	55

Population: Students of Math 131.

Sample: 4 students taken from Math 131.

Exp. unit: A student from Math 131.

Variables: There are 4 variables, namely:  
GPA, Gender, Major, # Credits.

Type of data: Multivariate data.

### Types of variables.

(1) Qualitative: Non-numerical variables.

Examples: Major, Gender, Nationality, Eye color,  
Blood type, Smoking status.

(2) Quantitative: Numerical variables.

Examples: Number of children, weight, age,  
height.

### Types of quantitative variables.

(1) Continuous: This arises in situations when some sort of measurement is involved.

Examples: Height, weight, age, temperature,  
waiting time for customers at  
a bank's counter.

(2) Discrete : It assumes only some specified values . This arises in situations when counting is involved.

Examples; Number of children in a family,  
number of customers visiting  
a branch , etc.

Searching keywords:

- Descriptive statistics.
- Inferential statistics.
- Experimental unit, sample, population,
- Types of data, univariate, bivariate, multivariate.
- Types of variables, qualitative, quantitative, continuous, discrete.
- The University of Jordan الجامعة الأردنية
- Principles of Statistics مبادئ الإحصاء
- Baha Alzalg بهاء الزالق

References: See the course website

<http://sites.ju.edu.jo/sites/Alzalg/Pages/131.aspx>

For any comments or concerns, please use my email to contact me.



د. بهاء محمود الزالق  
The University of Jordan  
Dr. Baha Alzalg  
baha2math@gmail.com

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B. Alzalg, 2020, Amman, Jordan