

بسم الله الرحمن الرحيم

Statistics is a branch of science deals with **collection, organization, presentation, analysis the data.**

Descriptive Statistics: those statistical methods or techniques which are used for **presenting** and **summarizing** data in either **tables** or **graphs** form. It includes construction of charts, graphs and tables and calculation of averages, percentiles, dispersions and other descriptive measures.

Inferential Statistics: Those statistical methods or techniques which are used for **making conclusions** or **inferences about** the entire **population using** the observation from the **samples** by using the. It includes point estimation, interval estimation, hypothesis testing, statistical modeling, clustering and many more methods based on probability theory.

Population: It is a **set of all individuals**, persons, objects or historical events which are of some interest to the statistician to make inferences for a specific problem or experiment.

Sample: a sample is a **subset of population** which is used to collect information and to make inferences about the entire population.

Parameter: It is a **numerical characteristic of a population** that summarizes the data for the entire population.

Statistic: Statistic is a **function of a sample** (it is a **numerical characteristic for this sample**).

Types of variable

A-Qualitative Variables: متغير لا يعطي ارقام color, nationalities, names, religion.

student ID, telephone number (اي شي):

B-Quantitative Variables: متغير يعطي رقم: Weight, age, time, number of

Types of Quantitative Variables

A-Continuous Variables: متغير يعطي رقم يقبل النصف: Weight, age, time.

B-Discrete Variables: متغير يعطي رقم لا يقبل النصف: number of

age by years, weight by kg: مستمر تم تحديده :

Examlle1: give one example

- 1- Qualitative Variables
- 2- Quantitative Variables
- 3- Continuous Variables
- 4- Discrete Variables

Examble2: classify (Continuous or Discrete)

- 1- Time to finish exam
- 2- Age of student
- 3- Number of accidents
- 4- Weight of cars in kg

Examble3: classify (Qualitative or Quantitative)

- 1- Names of people
- 2- ID
- 3- Height of building
- 4- Grade of students

Consider the blood groups of the 40 persons below

O, O, A, B, A, O, A, A, A, O, B, O, B, O, O, A, O, O, A, A, A, A, AB, A, B, A, A, O,
O, A, O, O, A, A, A, O, A, O, O, AB.

variable	frequency	Relative frequency	Percent frequency
total		1	100%

- 1- Complete table
- 2- Draw bar and pie chart
- 3- Find the mode

In the shopping center recorded sales of traditional accessories for girls, whose prices are between 1 and 25 SR, we had the following data estimated at SR.

4 1 7 9 12 16 17 7 12 19 22 24 3 2

- 1- Construct the frequency distribution table for this data
- 2- Find from table:
 - a- Mean
 - b- Median
 - c- Mode
- 3- Draw histogram, polygon, ogive.
- 4- Find from raw data :
 - a- Mean
 - b- Median
 - c- Mode
 - d- Five numbers
 - e- P_{35}, D_7 .
 - f- Extreme values
 - g- Construct Box-plot

This table represents prices

Class limit	Class boundaries	Class Midpoint	F	R.F	A.C.F
		4	6		
		9		0.24	
		14			36
		19		0.12	
		24	8		
total			50		

- 1- Complete table
- 2- How many units less than 12 SR?
- 3- How many units more than 17 SR?

- 4- Find from table:
 - a- Mean
 - b- Median
 - c- Mode
- 5- Draw histogram, polygon, ogive.

- 1- In symmetric distribution mode = mean = median
- 2- In left skewed distribution mean > median > mode
- 3- In left skewed distribution mode < median < mean
- 4- In right skewed distribution mode > median > mean
- 5- In right skewed distribution mean < median < mode
- 6- **Sample statistics** are used to estimate **population**

