Application of Computer in Health Research

Lecture 4

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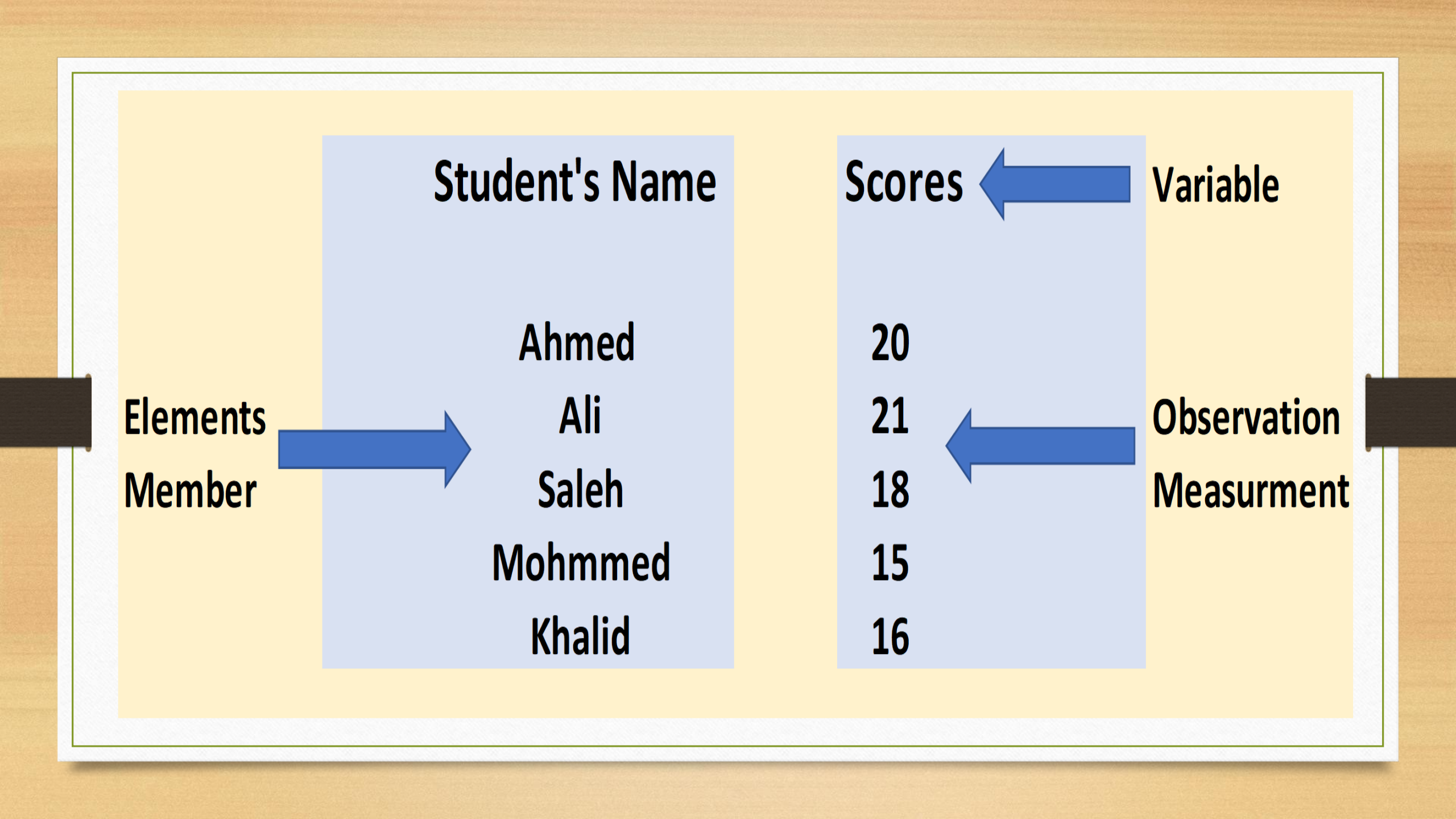
What is Statistics ?

- ***Statistics*** is a group of methods used to collect, analyze, present, and interpret data and to make decisions.

What are The Types of Statistics ?

Descriptive Statistics

Descriptive statistics consists of methods for organizing, displaying, and describing data by using tables, graphs, and summary measures

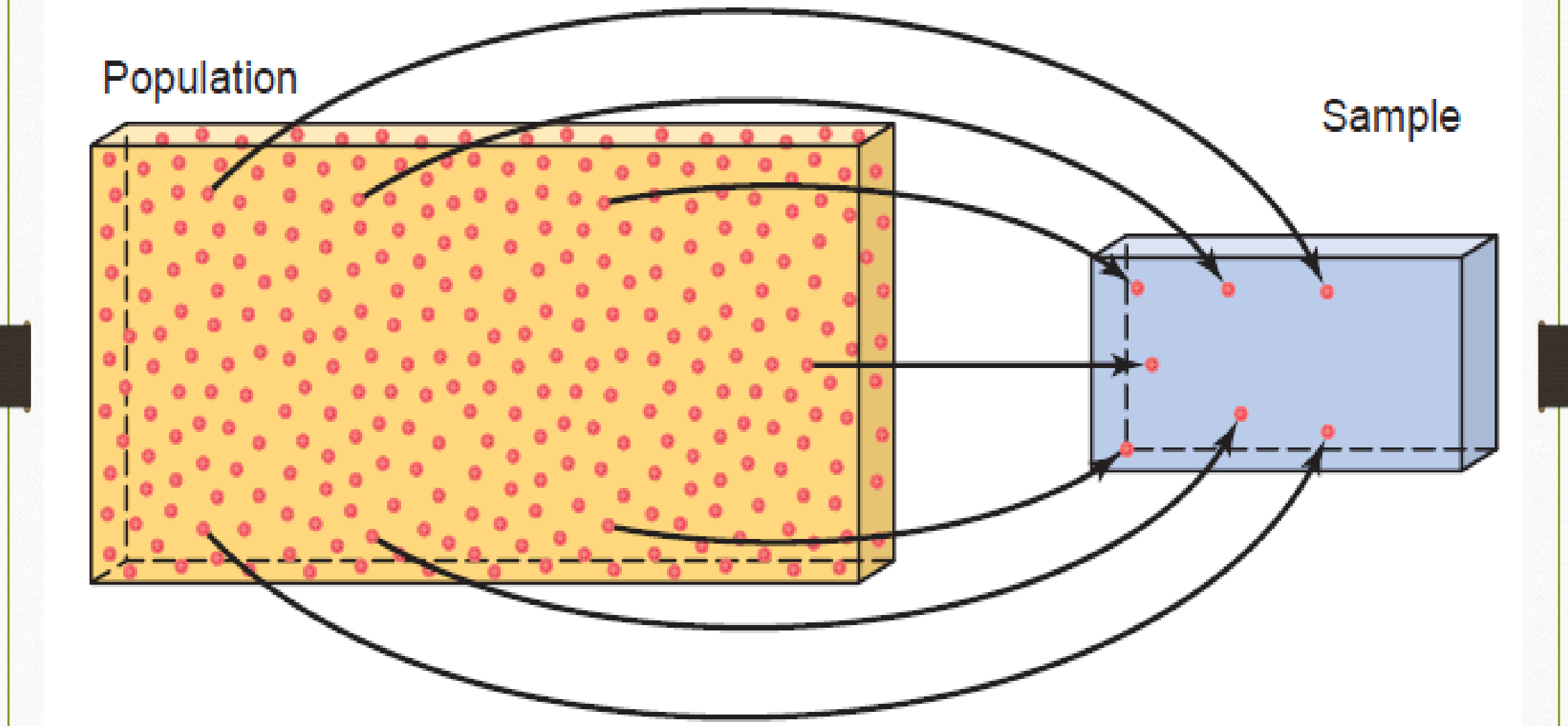

Student's Name
Scores
Variable
Ahmed
Ali
Saleh
Mohmmed
Khalid
20
21
18
15
16
Elements
Member
Observation
Measurment

In statistics, the collection of all elements of interest is called a **population**.

E.g. The number of all diabetic patients in AL-Baha City.

The selection of a few elements from this population is called a **sample**

E.g. The number of diabetic patients in a primary health care (A)


Population
Sample

What are The Types of Statistics ?

Inferential Statistics

Inferential statistics consists of methods that use sample results to help make decisions or predictions about a population.

What is The Meaning of Variable ?

- It is a characteristic under study that assumes different values (scores of students in biostatistics) for different elements (students in college of applied health sciences)

What are The Types of Variables ?

- **Quantitative variables** / It can be measured numerically

Types of quantitative variables

1- Continuous variable / Any numerical values over a certain interval or intervals (Should has a decimal)

E.g. (Length, age, height, weight, time, and blood cholesterol)

What are The Types of Variables ?

- 2- Discrete variable / Only a certain numerical values with no intermediate values (Never has a decimal).

- E.g. (Number of cars, houses, and accidents)

What are The Types of Variables ?

- **Qualitative variables** / It can not be measured numerically

Types of qualitative variables

1- Nominal variable / It is another name for a categorical variable

E.g. (Occupation, type of disease, type of cars)

What are The Types of Variables ?

2- Ordinal variables / They have ordered categories

E.g. (Severity of disease, socioeconomic class, level of education)

Low – Middle - High

Mild – Moderate - Severe

What are The Types of Variables ?

3- Binary variables / They have only two categories

E.g. (Gender : Male and Female)

Question answer (True, False)

Question (Yes, No)

Organizing and Displaying Data
Qualitative Data

- **Raw Data:**

Data recorded in the sequence in which they are collected and before they a processed or ranked are called ***raw data***.

Example of Raw Data

Scores of 50 students

21	19	24	25	29	34	26	27	37	33
18	20	19	22	19	19	25	22	25	23
25	19	31	19	23	18	23	19	23	26
22	28	21	20	22	22	21	20	19	21
25	23	18	37	27	23	21	25	21	24

ORGANIZING AND GRAPHING QUALITATIVE DATA

- Frequency Distributions
- Relative Frequency and Percentage Distributions
- Graphical Presentation of Qualitative Data
  - Bar Graphs
  - Pie Charts

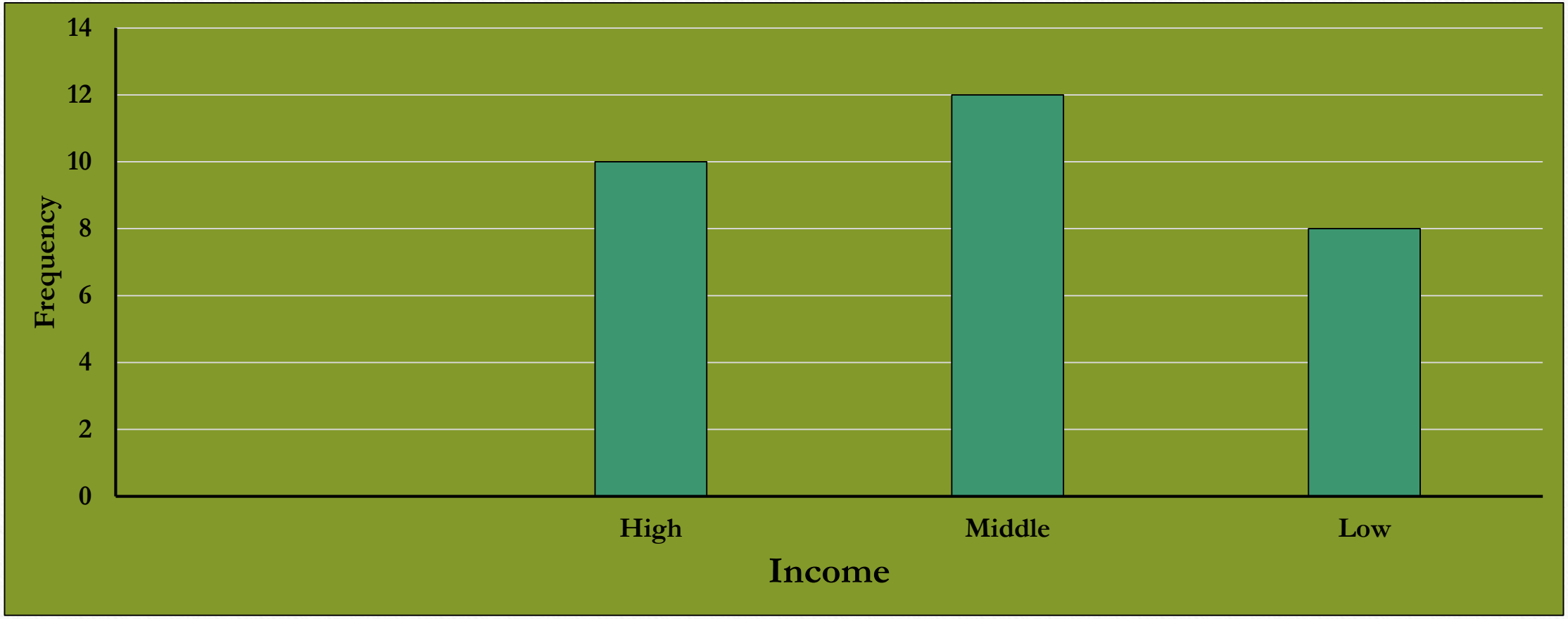
Graphical Presentation of Qualitative Data

Bar Graph – Bar Chart

Definition

A graph made of bars whose heights represent the frequencies of respective categories is called a ***bar graph***.

Bar Graph – Bar Chart



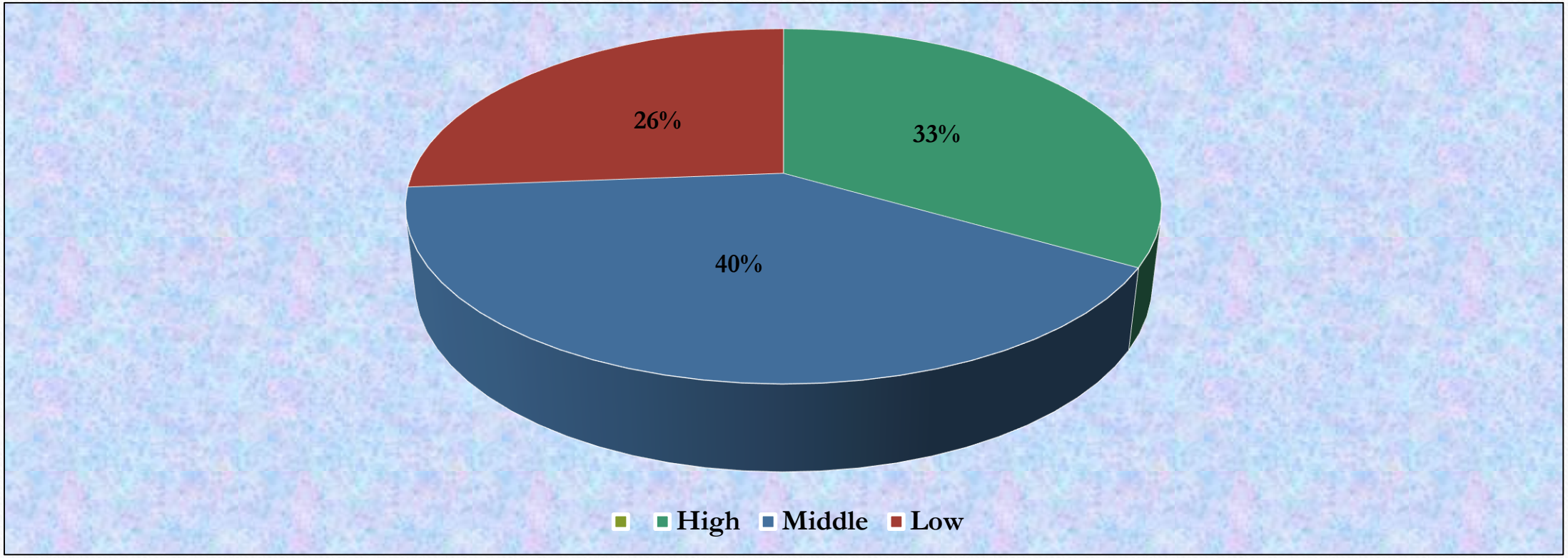
Graphical Presentation of Qualitative Data

Pie Graph - Pie Chart

Definition

A circle divided into portions that represent the relative frequencies or percentages of a population or a sample belonging to different categories is called a ***pie chart***.

Pie Graph - Pie Chart



Reference

- Prem S. Mann 1998, Introductory Statistics, 7th edn, New York, USA.

Good Luck for All Students

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سبحان الله وبحمده سبحان الله العظيم

ذكر الله أعظم ما في الوجود ،، لعل الله يرحمنا بعلم تعلمناه في الحياة الدنيا

أستغفر الله