

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



السلام عليكم ورحمة الله وبركاته

Biostatistics



LI

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PROF. DR. WAQAR AL-KUBAISY

Types of Statistical Analysis

❑ The terms/concepts:

❖ Variable

❑ Distinguish between

▪ Nominal

▪ Ordinal

▪ Discrete

▪ continuous variable

▪ Distinguish between quantitative and quantitative data

❖ Frequency distribution

❖ Relative frequency

❖ Cumulative frequency

✓ Ways of Transform data set into information in the form of

➤ Tables,

➤ Graphs

➤ ????????

➤ ????????????

Biostatistics consist of

1-Collection of data .

2-Presentation of data

3-.Estimation of data

Statistics

Is a field of study that concern with

The **Collection** ,**Organization** and **Summarization** of data

And

استخلاص **Drawing** of **inference** about a body of data when only part of data are observed

Biostatistics

When data being analyzed are derived from biological sciences, and Medical observation .

Biostatistics Is a field of study that concern with the **Collection** Organization and Summarization of data. **Drawing of** inference about a body of data when only part of data are observed

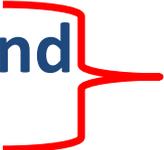
Biostatistics breaks into two main distinct components **or** two distinct subcategories:

I- Descriptive Biostatistics.

II- Inferential Biostatistics.

I Descriptive Statistics

It is a series of procedures designed to clarify the data ,
so that

its **principal** characteristics and **main** features.  are revealed

□ **for the purpose of**
conclusion استنتاج **at a late stage.**

This one **serve** as devices أجهزة for

➤ ***organizing and summarizing data***

and

➤ ***bringing into a focus their essential characteristics***

➤ **Reduce the information to a manageable size**

This include:

Presentation of data by

1. **Graph and or**
2. **Tables**
3. **Calculation** or numerical summaries, such as
Frequency, Average, Mean, Median, Mode
Percentages

Biostatistics consist of

1-Collection of **data** .

2-Presentation of **data**

3-.Estimation of **data**

Data??

Data

- ❖ Data are the values you get when you measure a **variable** example
20 years old, (age)
55 males. (Sex)
170 cm height
- The values of the **observations** for the variable is known as **data**.

- ❖ **Data** are the **raw** material of statistics
- ❖ **Data** carry little or no meaning when considered alone
 - needs further steps to become **valuable** (information)

- ❖ **Data** consist one or more **variable**

Variable ??? 

Variable (Y)

It is the **characteristics** ,that observed in:
persons, places or things .

This characteristic **is not the same** when observed in
different possessors

It is any aspect of an individual that is measured

Like;

B.P. cholesterol age, sex ,Blood sugar ??????

Variable

is some thing whose **value can vary**

example

age ,sex, weight height ????????

An important thing is the type of the variable concerned

Type of variable

There are two major types of variable

Each of these can be subdivided into two subtypes

1. Categorical variable
(Qualitative Variable)

1. Categorical variable

a- Nominal

b- ordinal

2 Metric variable
(Quantitative Variable)

2 Metric variable

a-Continuous

b-Discrete

1. Categorical variable

a- Nominal

b- ordinal

1. Categorical variable متغير تصنيفي

a- Nominal

Example

Blood group of 100 persons Just categorize the blood group into

A, B, AB, & O

then counting the No. of individuals (frequency)
in each group

(1) Data do not have any unit

(2) ordering of the categories is completely subjective

AB, A, B, & O

O, AB, A & B

b- Ordinal ترتیبی

example

grading of tumor I II III IV V

the order category in a meaningful

The difference between any adjacent two grades is not necessarily be the same (equal)

Therefore

1-the data are not properly measures

but

assessed in some way

❖ 2-these data are not real numbers and



as it is not real data

3--we cannot apply any arithmetic's roles

no adding,
no subtracting.
no multiply or
no divide



the ordinal vales

❖4- Data do not have any unit

❖5- ordering of the categories is not subjective

• the order category in a meaningful way

➤ difference between any adjacent two grades is not necessarily be equal

➤ Have no *interval property*

1. Categorical variable

2. Metric variable

2. Metric variable
a-Continuous
b-Discrete

2. Metric variable

Continuous variable (C.V)

Example Height, Weight

1- usually comes from measuring. Can be properly measured

so

2- they are real numbers

so

3- we can apply all mathematics' operations

4- All have units of measurement attached to them

5- The difference between any pairs of adjacent values are exactly the same (equal) this is

known as

the interval property

50-60-70-80



Can be properly measured

may assume any value along a continuum .

The value of a C.V. is **not limited to the set of integers**

.Height :158,160,

157.9 , 160.6 160.68

dose **not** possess a **gap** or interruptions.

ex.

B.P. Hb Blood sugar .

????????????

2 Discrete variable

usually comes from **counting** such as

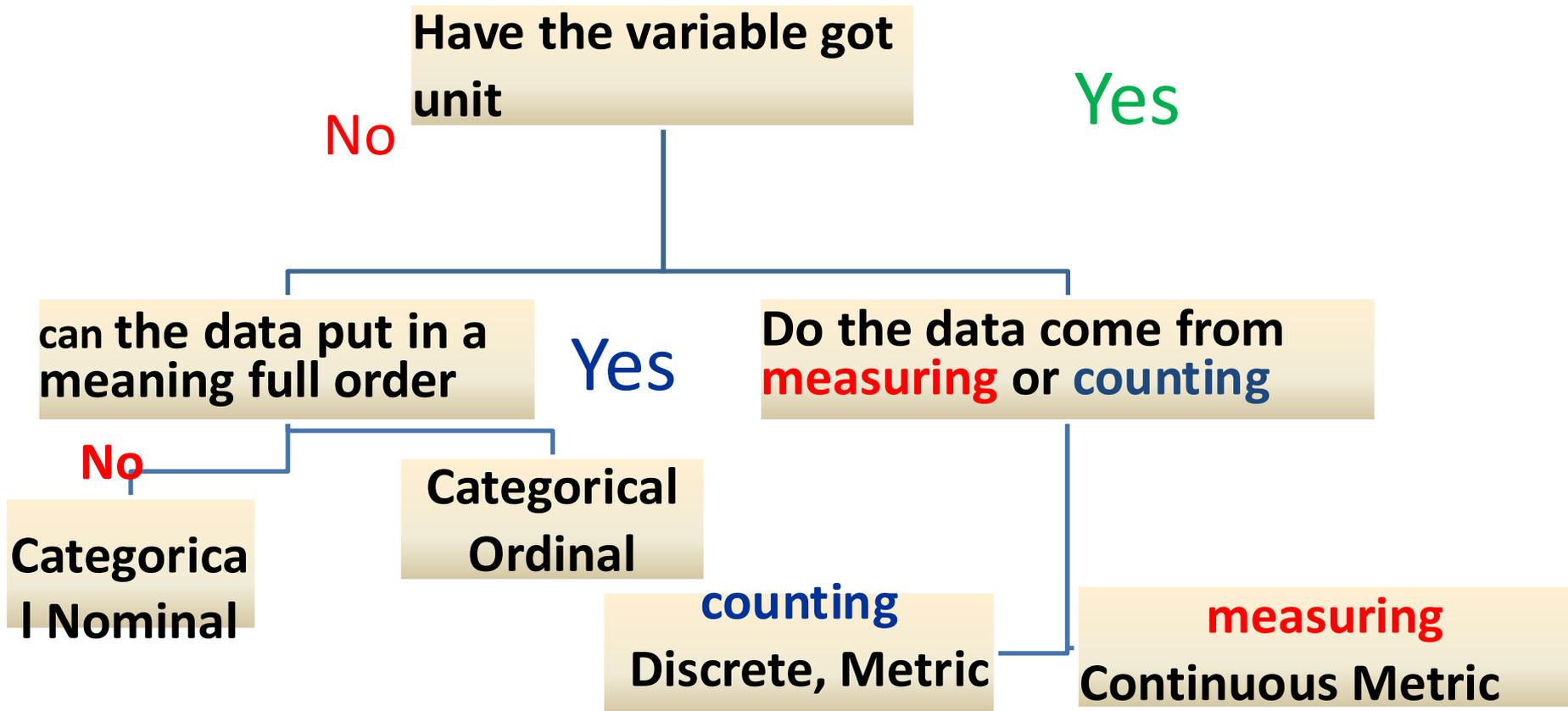
2 Metric variable
a-Continuous
b-Discrete

No. of death.
No. of students
No. of patients

all are
discrete metric variable

??????

- ❖ It is real numbers **So.....???**
- ❖ It can be counted
- ❖ It have a unit of measurements
- ❖ It is **integer**, measurement or values **are integers** (whole number
- ❖ They have the same **interval and ratio properties** as the continues variables



An important thing is the type of the variable concerned.

Quantitative Variable

The one that can be measured by the usual sense .

Qualitative Variable

The one which are not capable of being measured by the usual sense .

Type of feeding

Infants 600

Bottle 65

Breast 478

Mixed 57

???????

age of 50 patients

68, 62, 62, 66, 68, 65, 64, 71, 77, 74, 20, 33,
38, 42, 47, 50, 55, 56, 60, 72, 80, 74, 75, 74,
77, 80, 81, 89, 86, 85, 83, 72, 70, 71, 79, 76, 77,
80, 90, 97, 94, 90, 65, 60, 67, 63, 88, 84, 84, 87

???????

???????

120 individuals were asked about their level of satisfaction toward the health care given by Hospital X. The response as follows :

**29 very satisfied, 39 satisfied, 20 neutral
18 unsatisfied, 14 highly unsatisfied**

**29 very satisfied,
39 satisfied,
20 neutral
18 unsatisfied,
14 highly unsatisfied**

???????

Thank You

Presentation of Data

Data that collected from any source, are inadequate for planning .

Data need to be transformed into information

- by reducing them,
- by summarization and
- Arrange it in a simple and useful way to
- bring out the *important point clearly & concise*

This mean that

display the important feature of the sample .