

WEEK 5

BASIC STATISTICAL CONCEPTS & FORMULATING HYPOTHESIS

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What are Statistics & Biostatistics ?



Statistics: the practice or science of collecting and analysing numerical data in large quantities, especially for the purpose of inferring proportions in a whole from those in a representative sample.

Biostatistics: the development and application of statistical methods to a wide range of topics in biology. It encompasses the design of biological experiments, the collection and analysis of data from those experiments and the interpretation of the results.

Statistics

Descriptive statistics

- organizing, summarizing, describing data

Inferential statistics

- making decisions from small samples

Some Statistical Terms

Data:

raw material of statistics. It is the observations of random variables made on the elements of a population or sample.

Variable:

a characteristic that can take values which vary from individual or group to group. E.g. height, weight, litter size...

Population:

collection of all people, objects, or events having one or more specified characteristics.

Sample:

a representative subset of the population

Some Statistical Terms

Parameter: any numerical quantity that characterizes a given population (a numerical summary of population)

Measurement: the process of assigning numbers or labels to characteristics of people, objects, or events according to a set of rules

Independent variable: the cause supposed to be responsible for bringing about change(s) in a phenomenon or situation.

Dependent variable: the outcome or change(s) brought about by introduction of an independent variable.

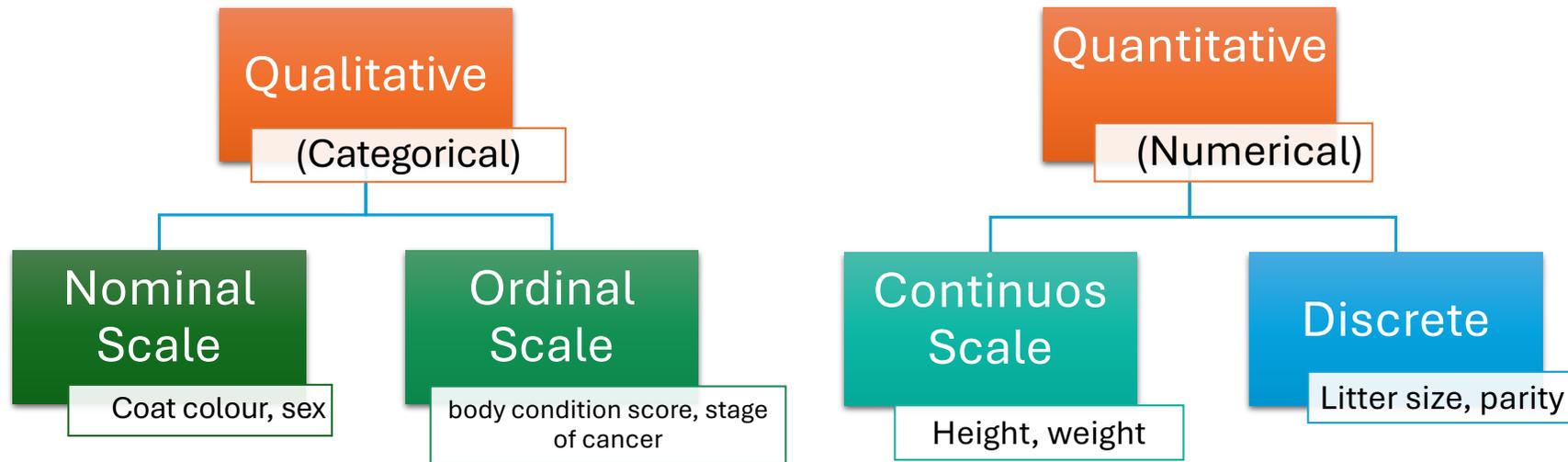
Exposure:

Prospective:

Retrospective:

Types of variable / LEVEL OF MEASUREMENT

In particular, the variable may be one of the following:



Population vs Sample

- Not possible to reach all population
- Limited resources
- Possibility of losing up-to-date data
- Time

