**Ministry of Higher Education
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College of education
Department of Biology**

Practical Ecology
Sampling methods and Strategy
1st lab.
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Objectives

- General definition and information about ecology
- Explaining what is sampling
- Types of sampling

What is Ecology ?

Ecology is the study of how organisms interact with one another and with their physical environment.

The distribution and abundance of organisms on Earth is shaped by both biotic, living-organism-related, and abiotic, nonliving or physical, factors.

Ecology is studied at many levels, including organism, population, community, ecosystem, and biosphere.

Levels of Ecological Organization

- The study of how organisms interact with each other and with their environments

- Scientists study ecology at various levels of organization.

Individual   Population   Community   Ecosystem   Biosphere
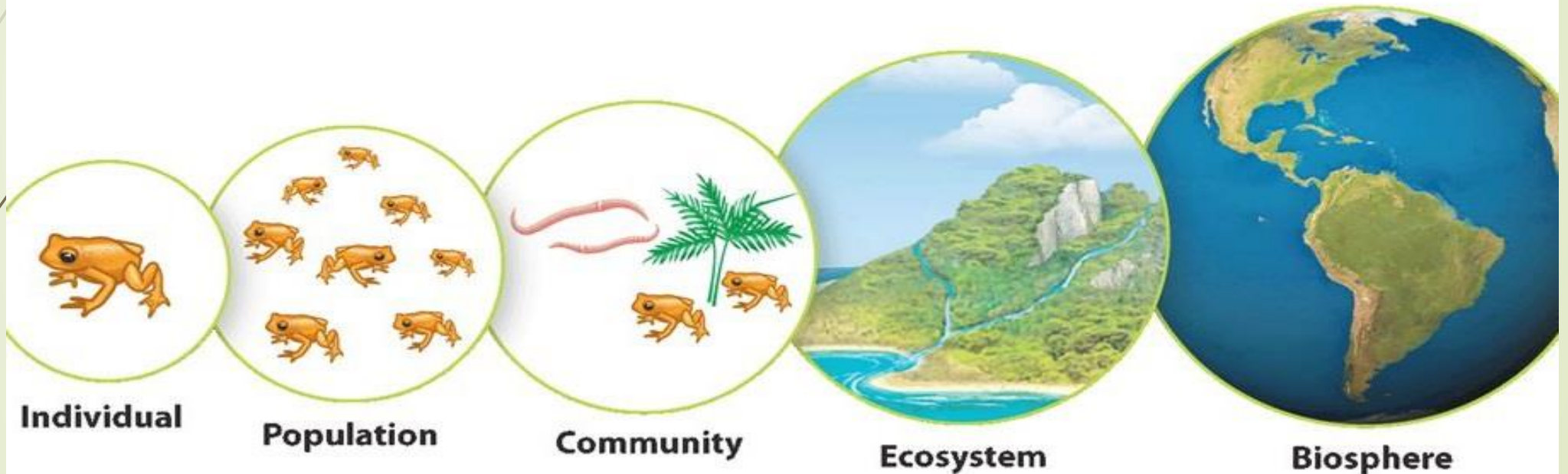
Organisms: The basic living system, a functional grouping of the lower-level components, including at least one cell

Populations: Groups of organisms of the same species

Communities: Interspecific groups of interacting populations

Ecosystems: Groups of organisms from all biological domains in conjunction with the physical (abiotic) environment

Biosphere: All life on Earth or all life plus the physical (abiotic) environment

What Is Sampling ?

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population.

Its difficult for a researcher to study the whole population due to limited resources e.g. **time, cost, and energy**

The methodology used to **sample** from a larger population depends on the type of analysis being performed
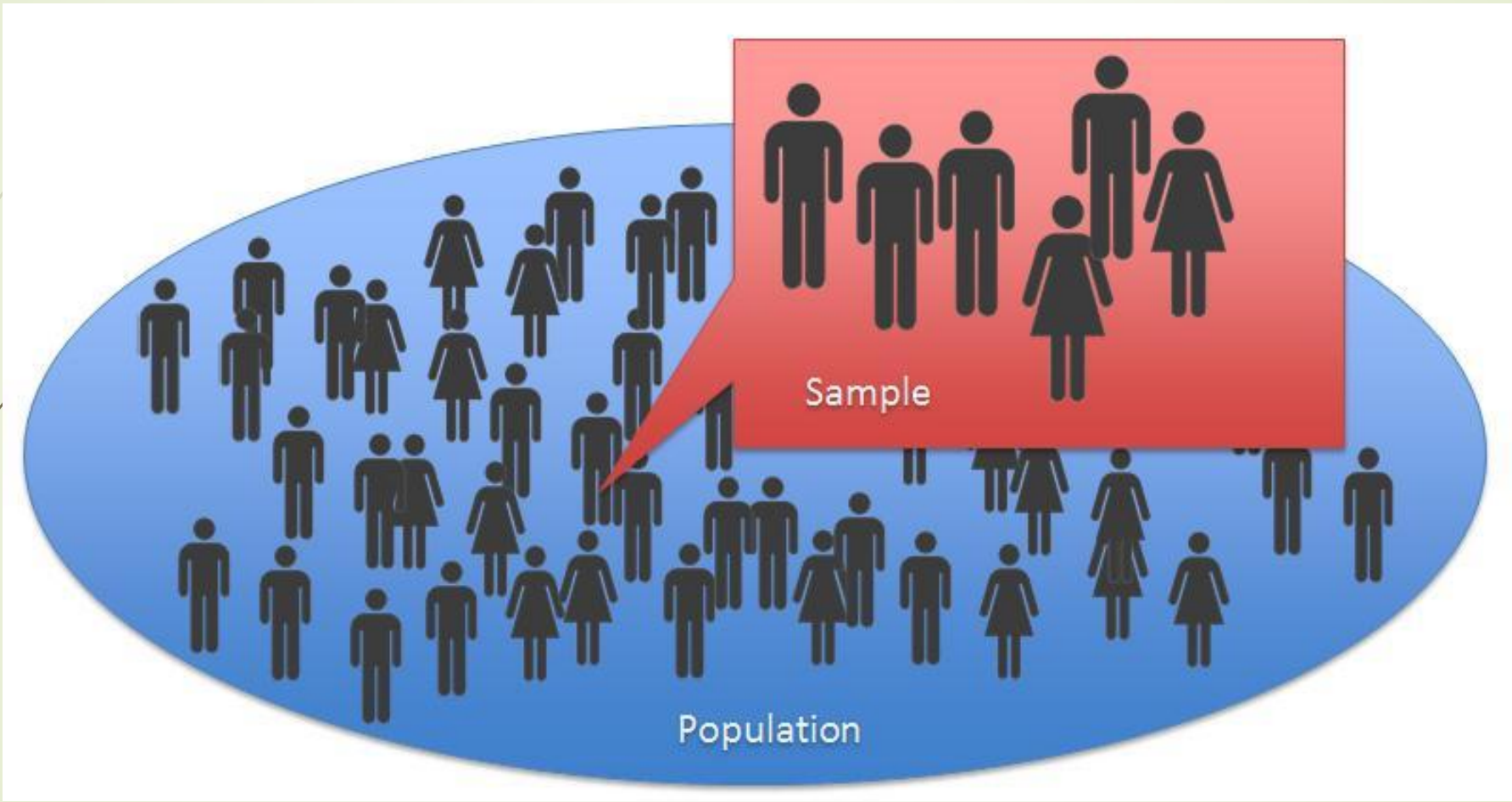
Sample

Population

The Terminologies relevant to sampling are as follows:-

➡️ **Sample** :The selected part of the population is known as a sample

➡️ **Sample Size**: The number of people in the selected sample is known as Sample size

➡️ **Sampling Frame** : Sampling frame means the list of individual or people included in the same. It reflects who will be included in the sample .For making a sampling frame. The researcher has to make a list of names and detail s of all the items of the sample.

➡️ **Sampling Technique**: It refers to the technique or procedure used to select the members of the sample . There are various types of sampling techniques

Types of sampling .

There are two major types of sampling

1-Probability
2-Non-probability Sampling,

which are further divided into sub-types as follows:

1-PROBABILITY SAMPLING.
-Simple Random Sampling.
-Stratified Random Sampling.
-Systematic Sampling
-Cluster Sampling
**-Multi-Stage Sampling**

2-NON-PROBABILITY SAMPLING.
-Purposive Sampling.
-Convenience Sampling.
-Snow-ball Sampling.
-Quota Sampling

What is probability sampling ?

Probability Sampling is a sampling technique in which sample from a larger population are chosen using a method based on the theory of probability. For a participant to be considered as a probability sample, he/she must be selected using a random selection.

Probability sampling gives you the best chance to create a sample that is truly representative of the population.
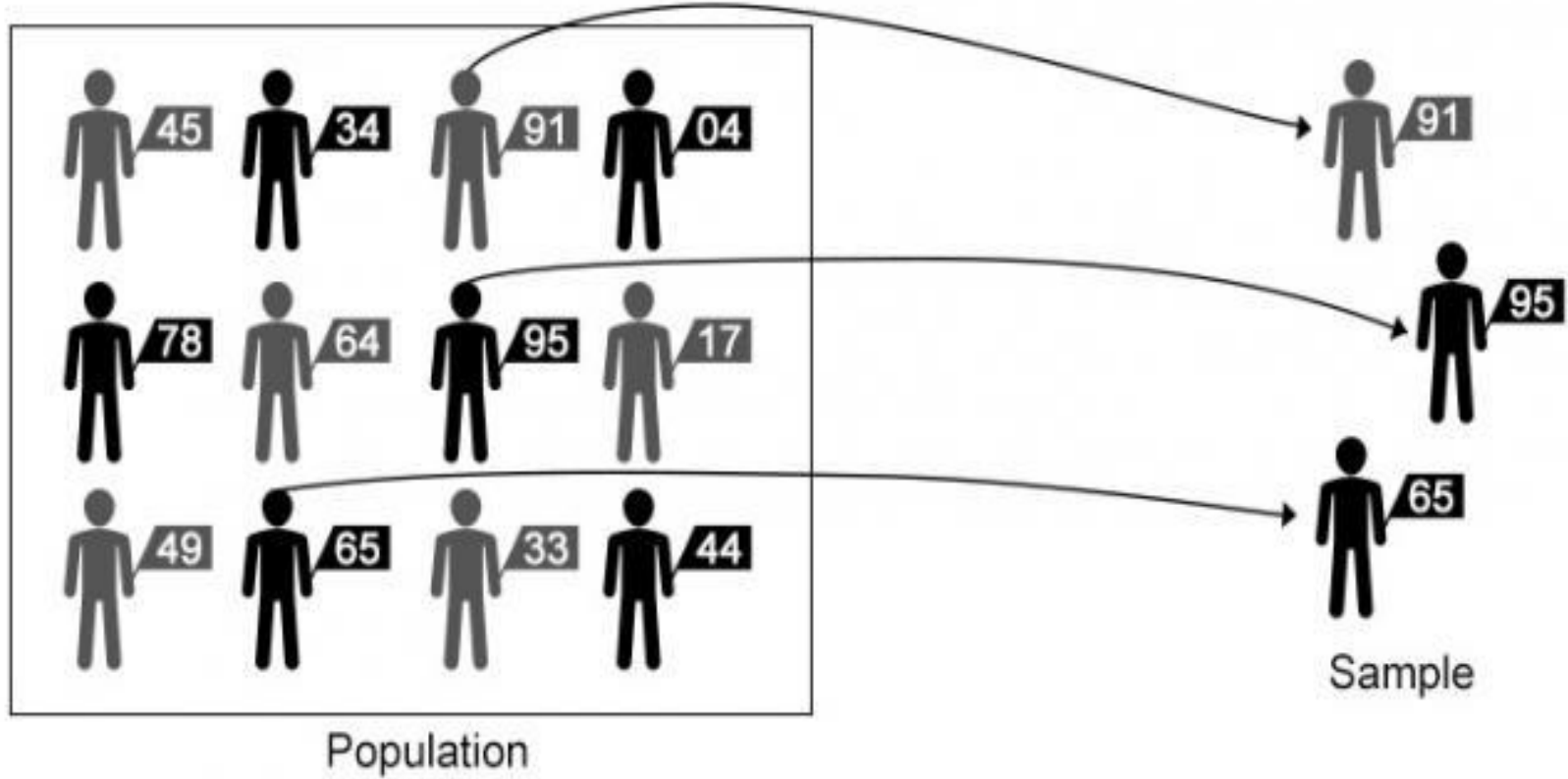
Population

Sample

Probability Sampling

-Simple Random Sampling.
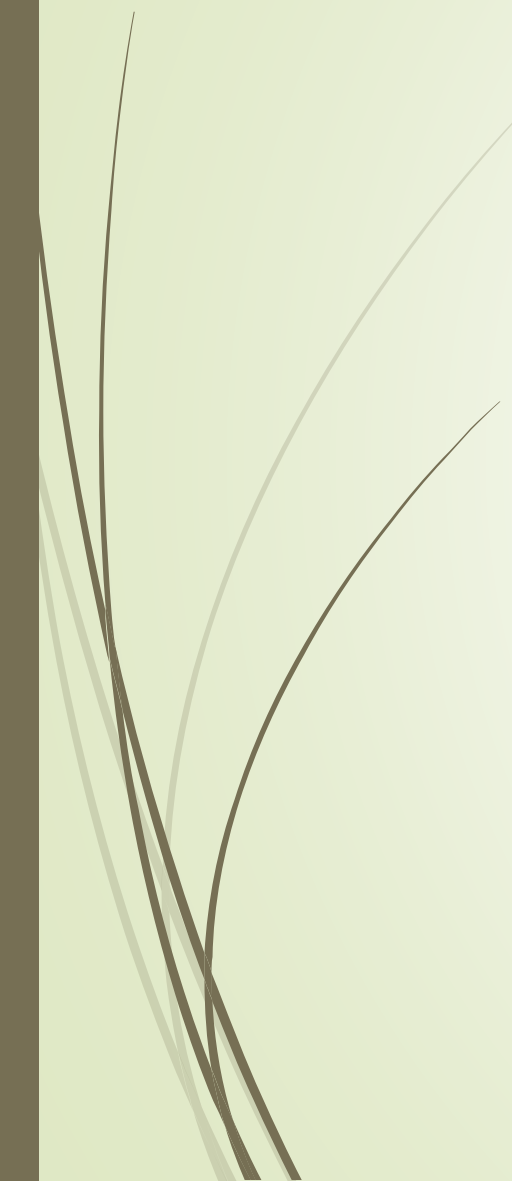
Cluster Sampling

Cluster
Sampling

Systematic Sampling

What are the steps involved in Probability Sampling?

- ➥ 1. Choose your population of interest carefully:

- ➥ 2. Determine a suitable sample frame

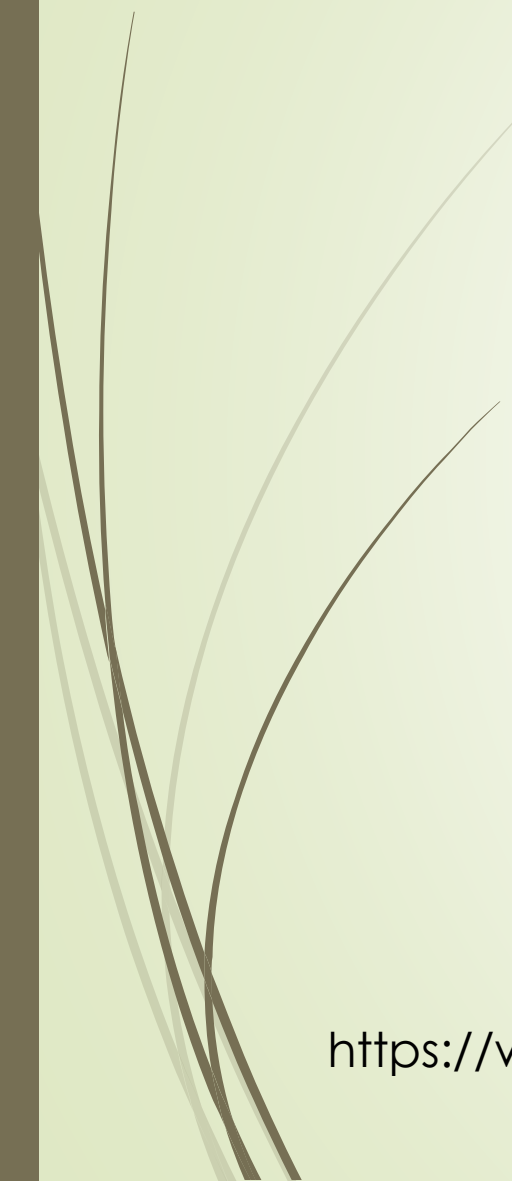- ➥ 3. Select your sample and start your survey

When to use Probability Sampling

- 1. When the sampling bias has to be reduced.
- 2. When the population is usually diverse.
- 3. To create an accurate sample.

Advantages of Probability Sampling

- 1. It's Cost-effective

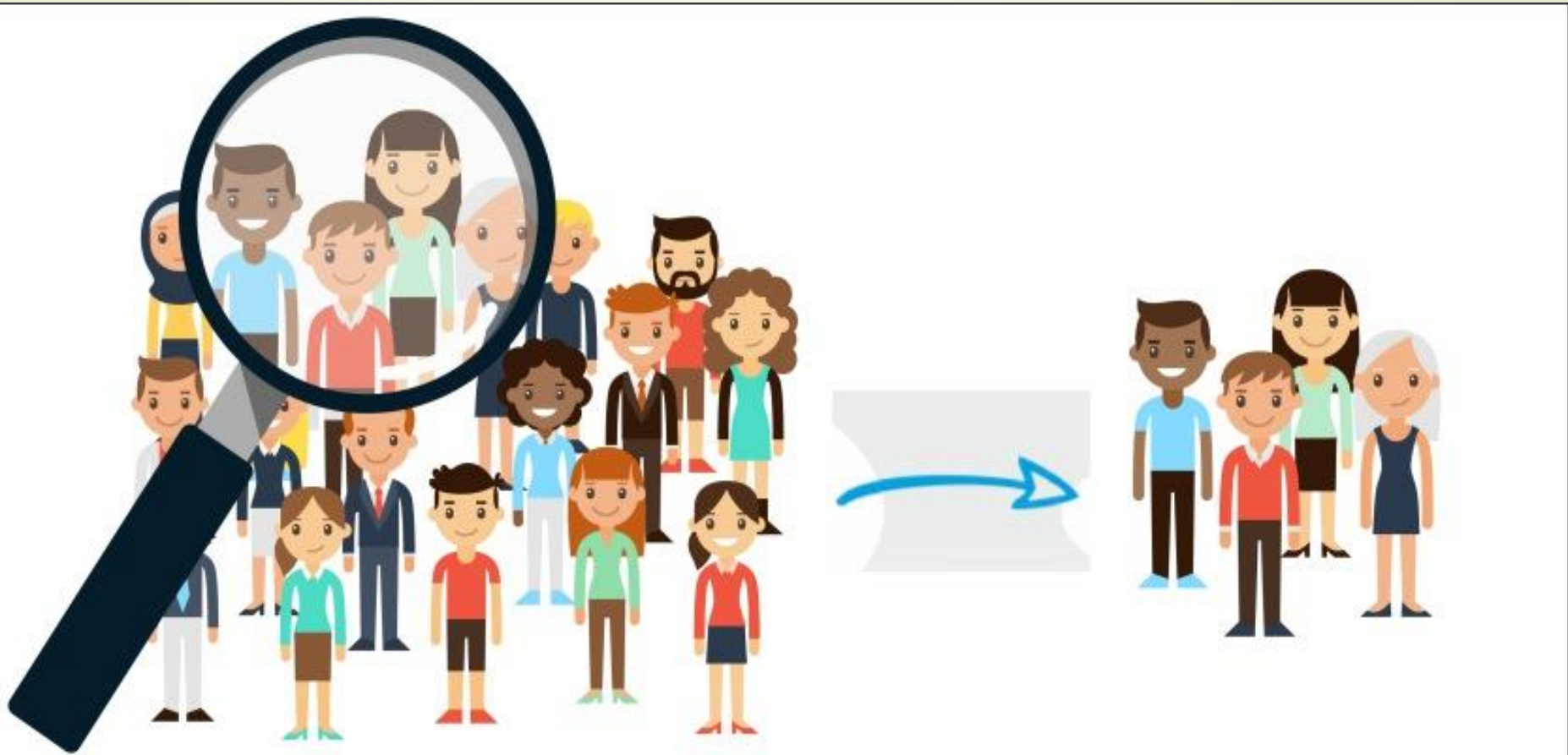- 2. It's simple and easy

- 3. It non-technical

What is NON-PROBABILITY SAMPLING.

Non-probability sampling is a sampling technique where the samples are gathered in a process that does not give all the individuals in the population equal chances of being selected.

https://explorable.com/non-probability-sampling

Non-Probability Sampling

QuestionPro

-Convenience Sampling.

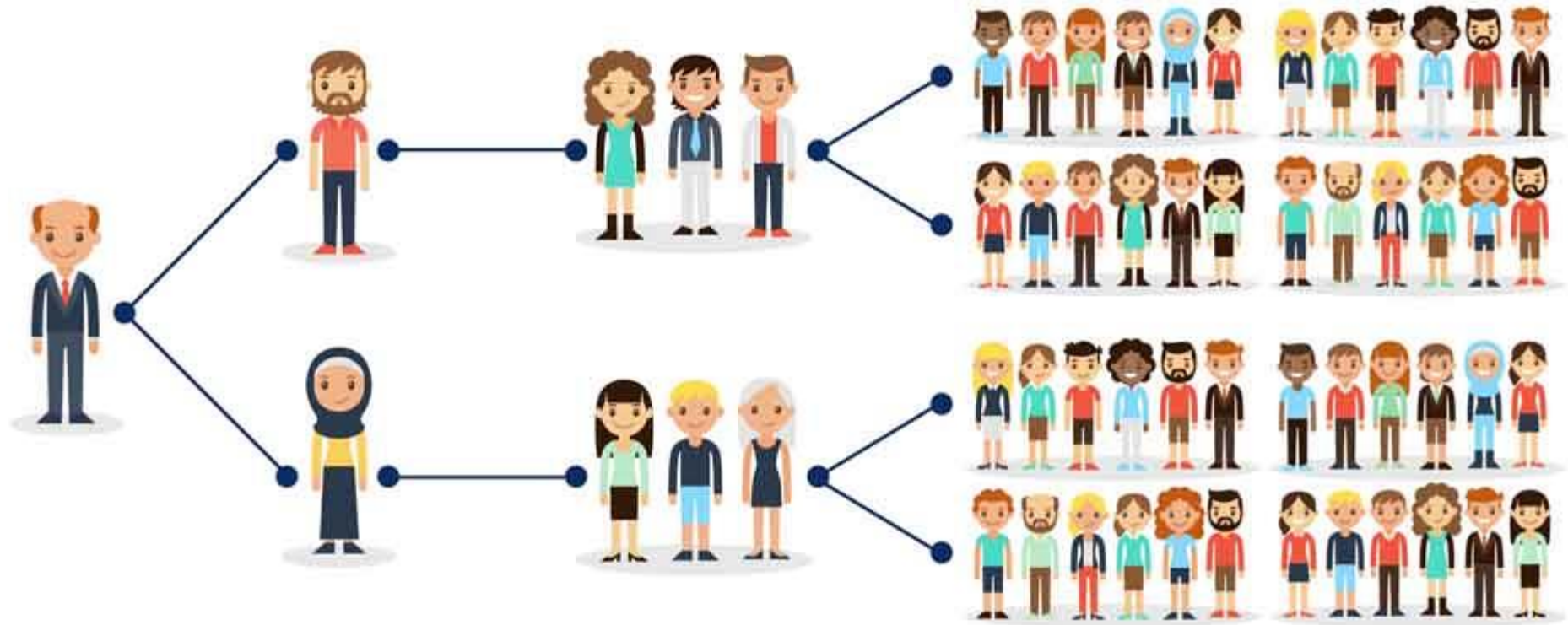# Quota Sampling

Snowball Sampling

When to Use Non-Probability Sampling

•This type of sampling can be used when demonstrating that a particular trait exists in the population.

•It can also be used when the researcher aims to do a qualitative, pilot or exploratory study.

•It can be used when randomization is impossible like when the population is almost limitless.

•It can be used when the research does not aim to generate results that will be used to create generalizations pertaining to the entire population.

•It is also useful when the researcher has limited budget, time and workforce.

Advantages and disadvantages of non-probability sampling

A major **advantage** with non-probability sampling is that — compared to probability sampling — it's very cost- and time-effective. It's also easy to use and can also be used when it's impossible to conduct probability sampling (e.g. when you have a very small population to work with).

One major **disadvantage** of non-probability sampling is that it's impossible to know how well you are representing the population. Plus, you can't calculate confidence intervals and margins of error. This is the major reason why, if at all possible, you should consider probability sampling methods first.

Basis for Comparison	Probability Sampling	Non-Probability Sampling
Meaning	Probability sampling is a sampling technique, in which the subjects of the population get an equal opportunity to be selected as a representative sample.	Nonprobability sampling is a method of sampling wherein, it is not known that which individual from the population will be selected as a sample.
Alternately known as	Random sampling	Non-random sampling
Basis of selection	Randomly	Arbitrarily
Opportunity of selection	Fixed and known	Not specified and unknown
Research	Conclusive	Exploratory
Result	Unbiased	Biased
Method	Objective	Subjective
Inferences	Statistical	Analytical
Hypothesis	Tested	Generated

THANK YOU FOR YOUR ATTENTION ☺

ANY QUESTIONS ???????