SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107
An Autonomous Institution
Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF MANAGEMENT STUDIES

COURSE NAME : 19BA106 FUNDAMENTALS OF DATA ANALYSIS

I YEAR /I SEMESTER

Unit 2 – SAMPLING AND ESTIMATION

Topic 2: FDA – Sampling Method

SAMPLING METHODS

➢To draw valid conclusions from your results, you have to carefully decide how you will select a sample that is representative of the group as a whole
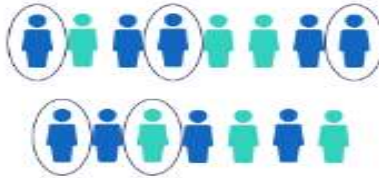
i) Probability sampling - Probability sampling means that every member of the population has a equal chance of being selected.

ii) Non-probability sampling involves non-random selection based on convenience or other criteria, allowing you to easily collect initial data.
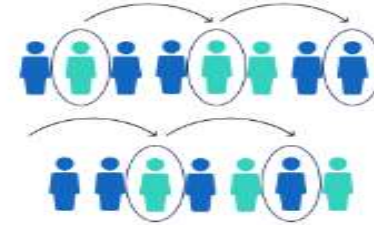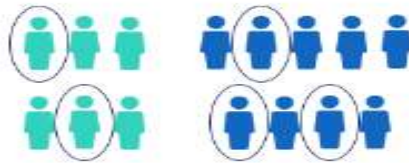
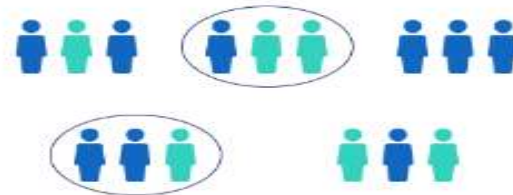# THERE ARE FOUR MAIN TYPES OF PROBABILITY SAMPLE

SIMPLE RANDOM SAMPLING

➢To conduct this type of sampling, you can use tools like random number generators or other techniques that are based entirely on chance.

➢**Example**

You want to select a simple random sample of 100 employees of Company X. You assign a number to every employee in the company database from 1 to 1000, and use a random number generator to select 100 numbers.
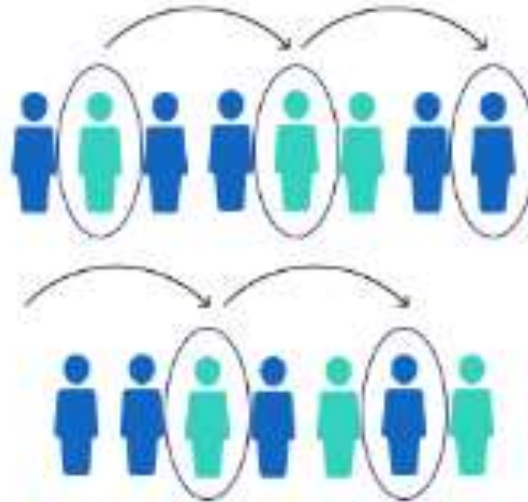
Simple random sample
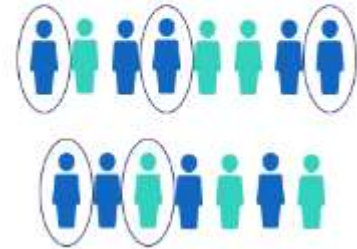
SYSTEMATIC SAMPLING

Systematic sample

SYSTEMATIC SAMPLING

➢Systematic sampling is similar to simple random sampling, but it is usually slightly easier to conduct.

➢Every member of the population is listed with a number, but instead of randomly generating numbers, individuals are chosen at regular intervals.

➢**Example**

All employees of the company are listed in alphabetical order. From the first 10 numbers, you randomly select a starting point: number 6.

From number 6 onwards, every 10th person on the list is selected (6, 16, 26, 36, and so on), and you end up with a sample of 100 people

STRATIFIED SAMPLING

➢Stratified sampling involves dividing the population into subpopulations that may differ in important ways. It allows you draw more precise conclusions by ensuring that every subgroup is properly represented in the sample.

➢To use this sampling method, you divide the population into subgroups (called strata) based on the relevant characteristic (e.g. gender, age range, income bracket, job role).

➢Based on the overall proportions of the population, you calculate how many people should be sampled from each subgroup. Then you use random or systematic sampling to select a sample from each subgroup.

STRATIFIED SAMPLING

Example

➢The company has 800 female employees and 200 male employees. You want to ensure that the sample reflects the gender balance of the company.

➢ So you sort the population into two strata based on gender. Then you use random sampling on each group, selecting 80 women and 20 men, which gives you a representative sample of 100 people.
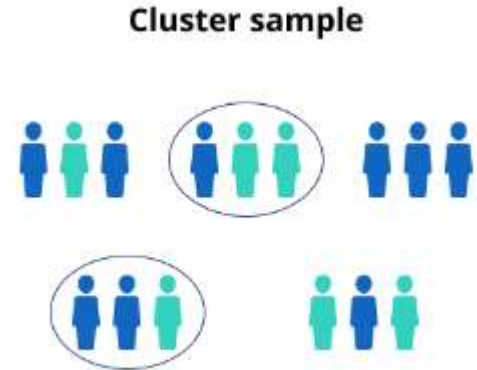
Stratified sample
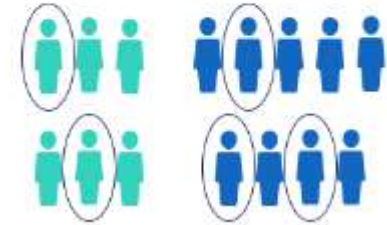
CLUSTER SAMPLING

➤Cluster sampling also involves dividing the population into subgroups, but each subgroup should have similar characteristics to the whole sample.

➤Instead of sampling individuals from each subgroup, you randomly select entire subgroups.

Cluster sample

CLUSTER SAMPLING

Example

➤The company has offices in 10 cities across the country (all with roughly the same number of employees in similar roles).

➤You don't have the capacity to travel to every office to collect your data, so you use random sampling to select 3 offices – these are your clusters.
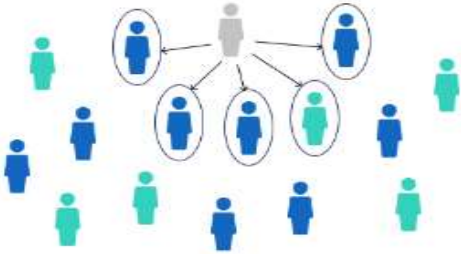
Cluster sample
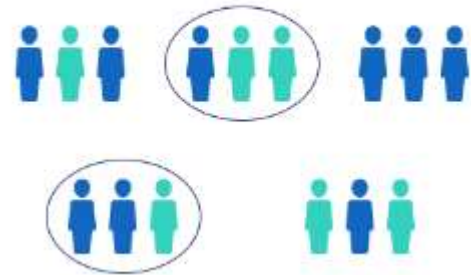
NON-PROBABILITY SAMPLING METHODS

➢In a non-probability sample, individuals are selected based on non-random criteria, and not every individual has a chance of being included.

➢This type of sample is easier and cheaper to access, but it has a higher risk of sampling bias, and you can't use it to make valid statistical inferences about the whole population.
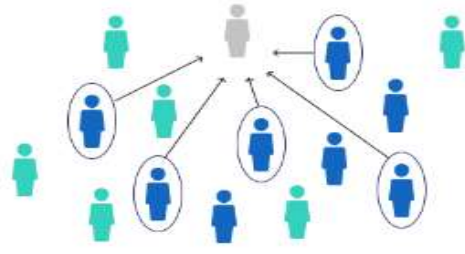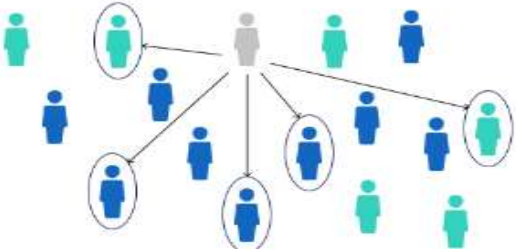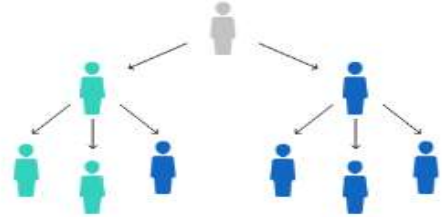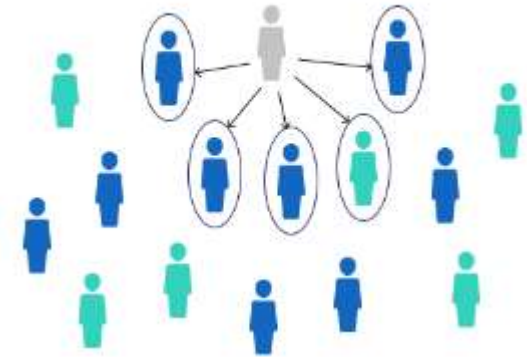
NON-PROBABILITY SAMPLING METHODS

NON-PROBABILITY SAMPLING METHODS

Convenience sampling

➢A convenience sample simply includes the individuals who happen to be most accessible to the researcher.

➢This is an easy and inexpensive way to gather initial data, but there is no way to tell if the sample is representative of the population, so it can't produce generalizable results.

Convenience sample

NON-PROBABILITY SAMPLING METHODS

Voluntary response sampling

➤ Similar to a convenience sample, a voluntary response sample is mainly based on ease of access. Instead of the researcher choosing participants and directly contacting them, people volunteer themselves (e.g. by responding to a public online survey).

➤ Voluntary response samples are always at least somewhat biased, as some people will inherently be more likely to volunteer than others
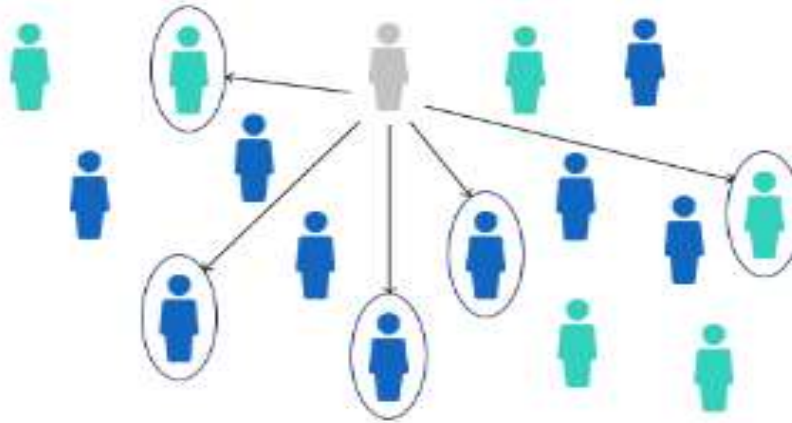
Voluntary response sample
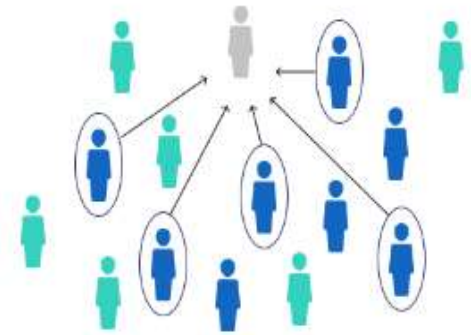
NON-PROBABILITY SAMPLING METHODS

Purposive sample
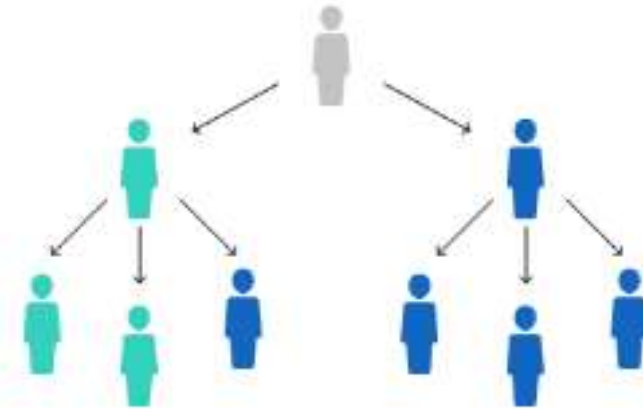
NON-PROBABILITY SAMPLING METHODS

Purposive sampling

➢This type of sampling, also known as judgment sampling, involves the researcher using their expertise to select a sample that is most useful to the purposes of the research.

➢It is often used in qualitative research, where the researcher wants to gain detailed knowledge about a specific phenomenon rather than make statistical inferences, or where the population is very small and specific. An effective purposive sample must have clear criteria and rationale for inclusion.

NON-PROBABILITY SAMPLING METHODS

Snowball sample

NON-PROBABILITY SAMPLING METHODS

Snowball sampling

If the population is hard to access, snowball sampling can be used to recruit participants via other participants.

Example
You are researching experiences of homelessness in your city. Since there is no list of all homeless people in the city, probability sampling isn't possible. You meet one person who agrees to participate in the research, and she puts you in contact with other homeless people that she knows in the area.

RECAP

QUESTIONS???

THANK YOU