

Task 9

1-What is non-probability sampling methods?

- Non-probability sampling methods are techniques used in research and statistics to select a sample from a population without giving every individual or element in the population an equal chance of being included in the sample. These methods are in contrast to probability sampling methods, where every element in the population has a known and non-zero probability of being selected. Non-probability sampling methods are often used when it is difficult or impractical to create a complete list of all elements in the population or when the research budget and resources are limited.

However, they come with limitations and potential biases that researchers need to be aware of. Here are some common non-probability sampling methods:

- 1- **Convenience Sampling:** This is one of the most straightforward non-probability sampling methods. Researchers select the most readily available individuals or elements for the sample. It is quick and convenient but often results in a biased sample because it does not consider the representativeness of the sample.

- 2- **Judgmental or Purposive Sampling:** In this method, researchers use their judgment to select specific

individuals or elements that they believe are most relevant to the research objectives. It is often used in qualitative research or when experts are needed for a study.

- 3- **Snowball Sampling:** This method is frequently used in studies involving hard-to-reach populations or hidden communities. It starts with an initial participant or element and then relies on referrals from that participant to identify additional participants. This method is useful for studying populations that are difficult to access through other means.
- 4- **Quota Sampling:** Quota sampling involves dividing the population into subgroups or strata and then selecting individuals or elements from each subgroup until a predetermined quota for each subgroup is met. While it ensures diversity in the sample, it is still non-probabilistic and may introduce bias if the quotas are not chosen carefully.
- 5- **Purposive Sampling:** Purposive sampling involves selecting specific individuals or elements based on specific characteristics or criteria that are of interest to the study. Researchers intentionally choose participants who meet certain criteria, leading to a non-random sample.

2- Types of data distribution and types of density function?

- In statistics and probability theory, data distributions and density functions play a fundamental role in describing the patterns and characteristics of data. There are several types of data distributions and associated density functions. Here are some of the most common ones:

- 1- Normal Distribution (Gaussian Distribution)
- 2- Uniform Distribution
- 3- Exponential Distribution
- 4- Poisson Distribution
- 5- Binomial Distribution
- 6- Multinomial Distribution
- 7- Bernoulli Distribution
- 8- Log-Normal Distribution
- 9- Gamma Distribution