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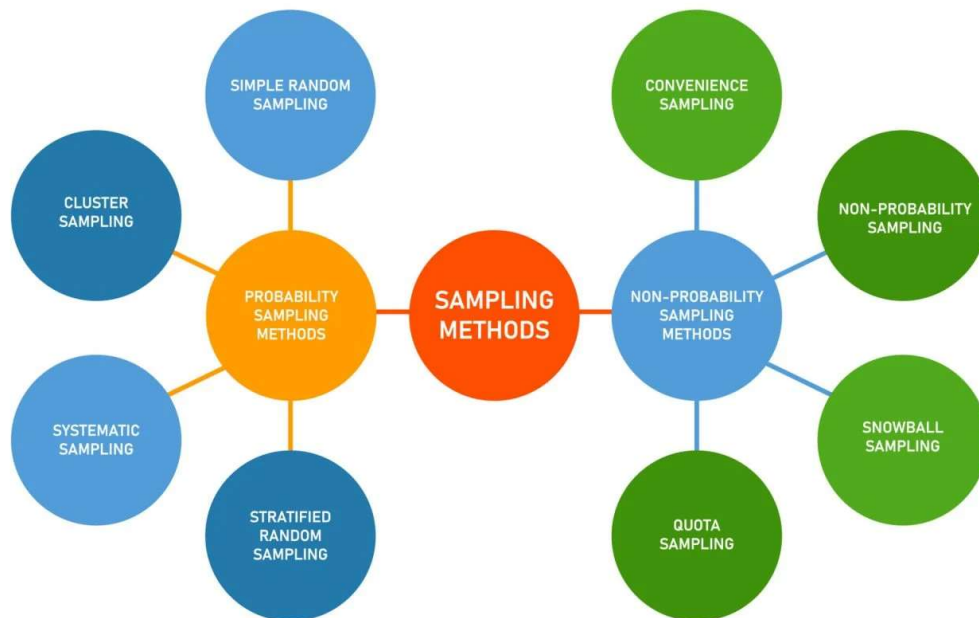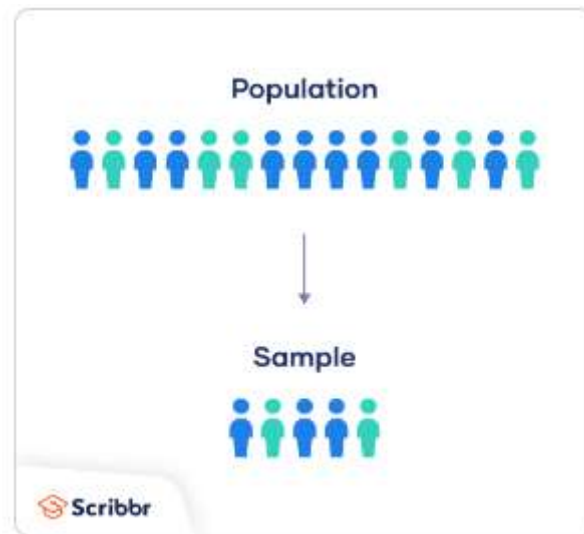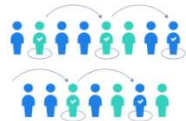
Sampling Techniques

Simple random sample   **Systematic sample**
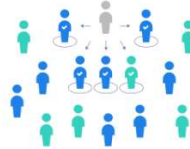
Stratified sample   **Cluster sample**
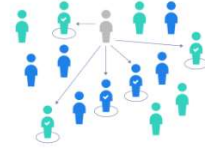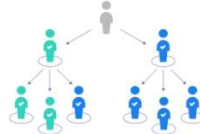
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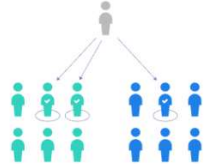
Convenience sample   **Purposive sample**

Snowball sample   **Quota sample**

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Probability and non-probability sampling

Sampling strategies in research vary widely across different disciplines and research areas, and from study to study.

There are two major types of sampling methods – probability and non-probability sampling.

> Probability sampling, also known as random sampling, is a kind of sample selection where randomization is used instead of deliberate choice. Non-probability sampling techniques are where the researcher deliberately picks items or individuals for the sample based on their research goals or knowledge.

Probability sampling methods

There's a wide range of probability sampling methods to explore and consider. Here are some of the best-known options.

1. Simple random sampling

With simple random sampling, every element in the population has an equal chance of being selected as part of the sample. It's something like picking a name out of a hat. Simple random sampling can be done by anonymizing the population – e.g by assigning each item or person in the population a number and then picking numbers at random.

Simple random sampling is easy to do and cheap, and it removes all risk of bias from the sampling process. However, it also offers no control for the researcher and may lead to unrepresentative groupings being picked by chance.

2. Systematic sampling

With systematic sampling, also known as systematic clustering, the random selection only applies to the first item chosen. A rule then applies so that every nth item or person after that is picked.

Although there's randomness involved, the researcher can change the interval at which items are picked, which allows them to make sure the selections won't be accidentally clustered together.

3. Stratified sampling

Stratified sampling involves random selection within predefined groups. It's useful when researchers know something about the target population and can decide how to subdivide it (stratify it) in a way that makes sense for the research.

For example, if you were researching travel behaviors in a group of people, it might be helpful to separate those who own or have use of a car from those who are dependent on public transport.

Stratified sampling has benefits but it also introduces the question of how to stratify a population, which can create more risk of bias.

4. Cluster sampling

With cluster sampling, groups rather than individual units of the target population are selected at random for the test. These might be pre-existing groups, such as people in certain zip codes or students belonging to an academic year.

Cluster sampling can be done by selecting the entire cluster, or in the case of two-stage cluster sampling, by randomly selecting the cluster itself, then selecting at random again within the cluster.

Non-probability sampling methods

The non-probability sampling methodology doesn't offer the same bias-removal benefits as probability sampling, but there are times when these types of sampling are chosen for expediency or simplicity. Here are some forms of non-probability sampling and how they work.

1. Convenience sampling

People or elements in a sample are selected on the basis of their accessibility and availability. If you are doing a research survey and you work at a university, for example, a convenience sample might consist of students or co-workers who happen to be on campus with open schedules who are willing to take your questionnaire.

This kind of sample can have value, especially if it's done as an early or preliminary step, but significant bias will be introduced.

2. Quota sampling

Like the probability-based stratified sampling method, this approach aims to achieve a spread across the target population by specifying who should be recruited for a survey according to certain groups or criteria. For example, your quota might include a certain number of males and a certain number of females. Alternatively, you might want your samples to be at a specific income level or in certain age brackets or ethnic groups.

Bias may be introduced during the selection itself – for example, volunteer bias might skew the sample towards people with free time who are interested in taking part. Or bias may be part and parcel of the way categories for the quotas are selected by researchers.

3. Purposive sampling

Participants for the sample are chosen consciously by researchers based on their knowledge and understanding of the research question at hand or their goals. Also known as judgment sampling, this technique is unlikely to result in a representative sample, but it is a quick and fairly easy way to get a range of results or responses.

4. Snowball or referral sampling

With this approach, people recruited to be part of a sample are asked to invite those they know to take part, who are then asked to invite their friends and family and so on. The participation radiates through a community of connected individuals like a snowball rolling downhill.

This method can be helpful when the researcher doesn't know very much about the target population and has no easy way to contact or access them. However it will introduce bias, for example by missing out isolated members of a community or skewing towards certain age or interest groups who recruit amongst themselves.