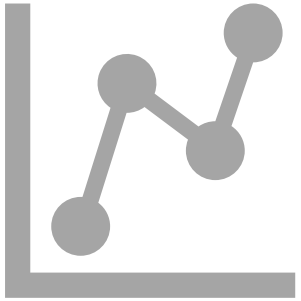
Sample Design

Implication of Sample Design

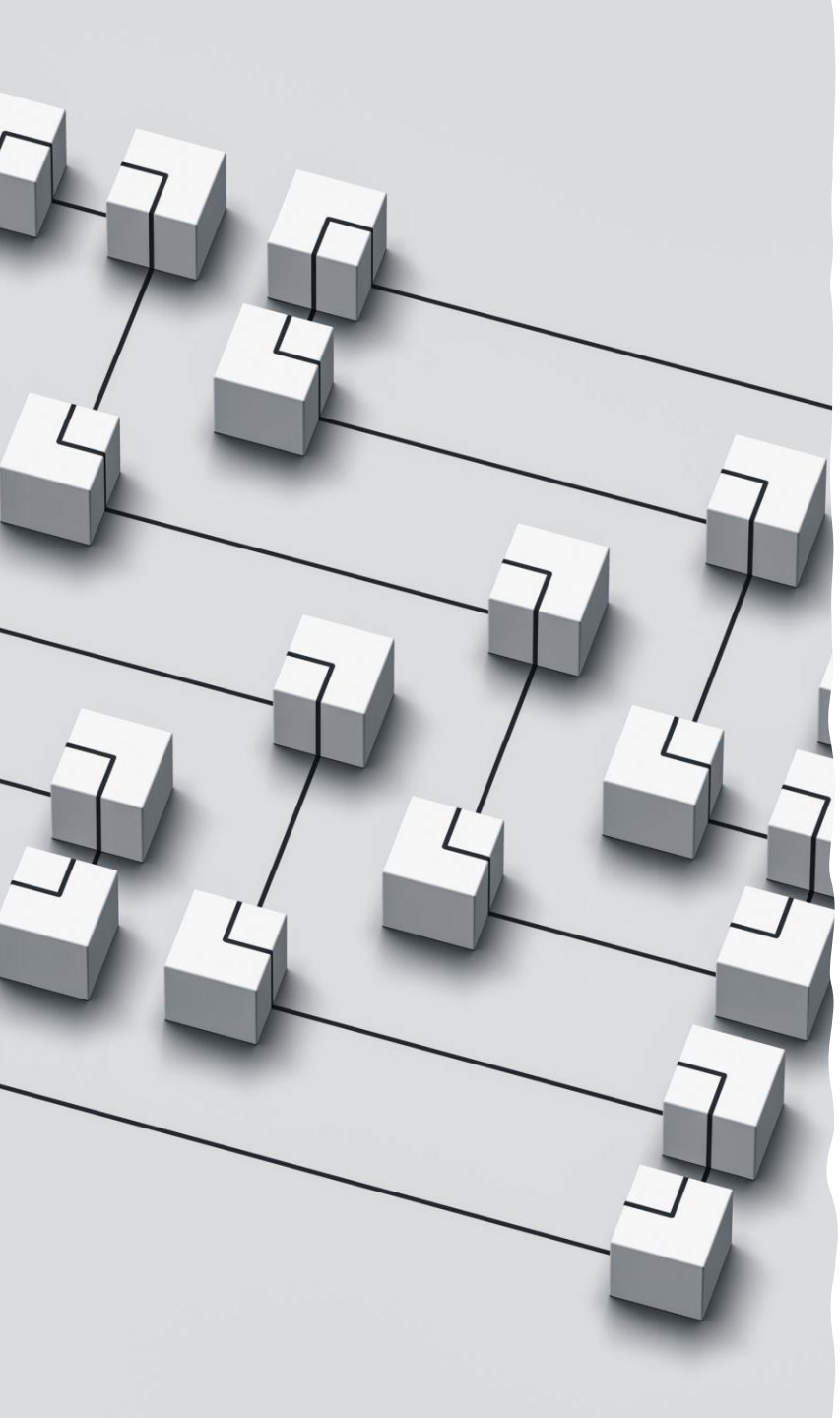
Sample design refers to the process of selecting a subset, or sample, from a larger population for research purposes.



The quality and appropriateness of the sample design have a significant impact on the validity and generalizability of research findings.

Steps in Sample Design

Define	Determine	Select	Implement	Evaluate
Define the target population: Identify the specific population of interest for the research study.	Determine the sample size: Determine the appropriate number of participants or units to include in the sample.	Select the sampling technique: Choose a suitable sampling technique based on the research objectives and characteristics of the population.	Implement the sampling procedure: Execute the selected sampling technique to select the sample from the population.	Evaluate the sample: Assess the representativeness and characteristics of the selected sample.

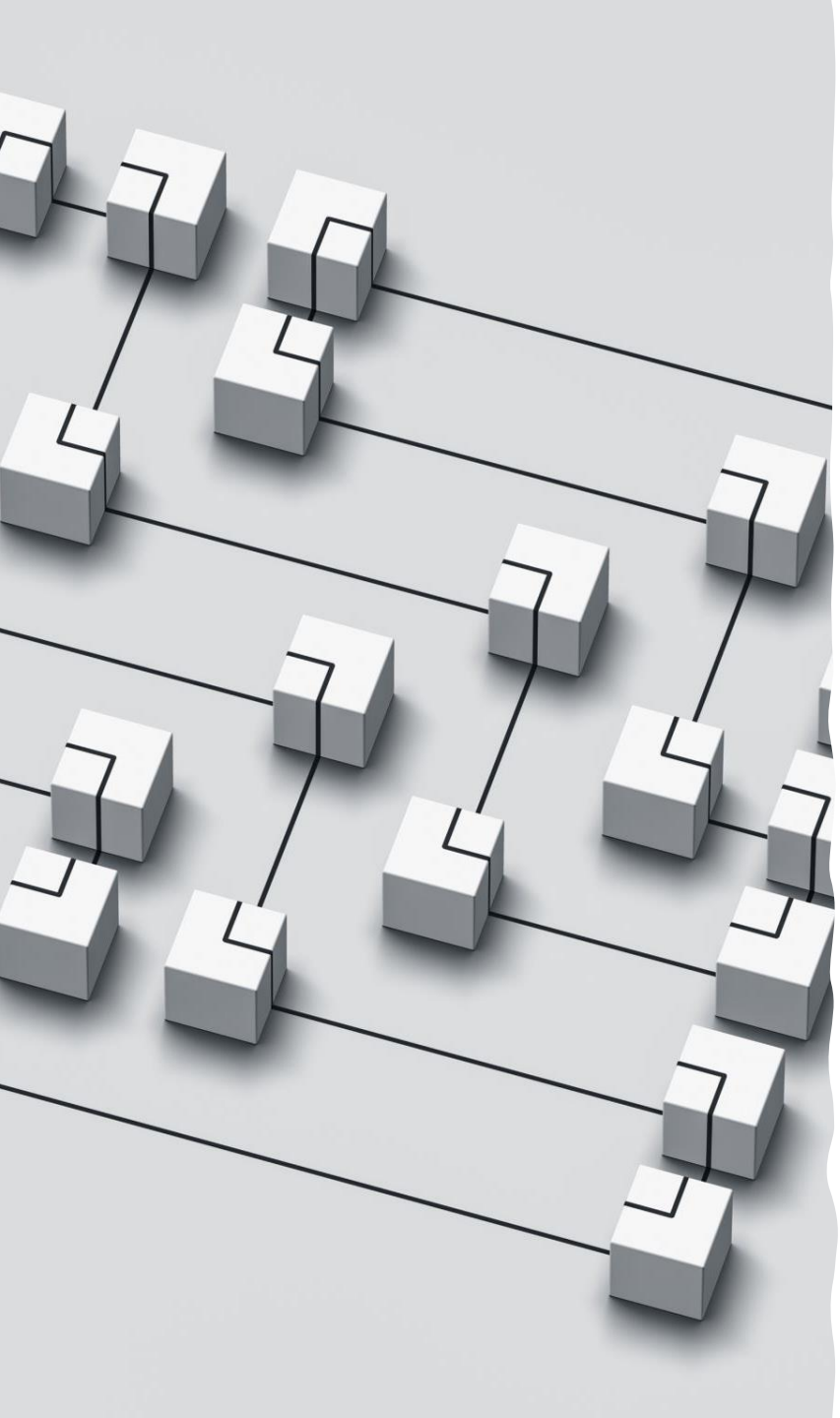


Criteria for Selecting a Sample Procedure

1. Representativeness: The sample should accurately represent the characteristics of the population.
2. Reliability: The sample procedure should yield consistent results if repeated.
3. Efficiency: The sample design should be cost-effective and time-efficient.
4. Feasibility: The sample design should be feasible within the available resources and constraints.
5. Precision: The sample should provide sufficiently precise estimates for the research objectives.

Characteristics of a Good Sampling Procedure

1. Randomness: The procedure should ensure equal and unbiased chances of selection for all population members.
2. Adequacy: The sample size should be sufficient to provide reliable estimates and allow for statistical analysis.
3. Non-bias: The procedure should minimize biases in sample selection, ensuring all members have an equal chance of being included.
4. Efficiency: The procedure should strike a balance between accuracy and resources required.
5. Generalizability: The sample should be representative of the target population to allow for generalization of research findings.



Types of Sample Design

1. Random Sampling: Involves selecting participants randomly from the population, ensuring every member has an equal chance of being chosen.

2. Stratified Sampling: Divides the population into distinct subgroups (strata) and randomly samples from each subgroup.

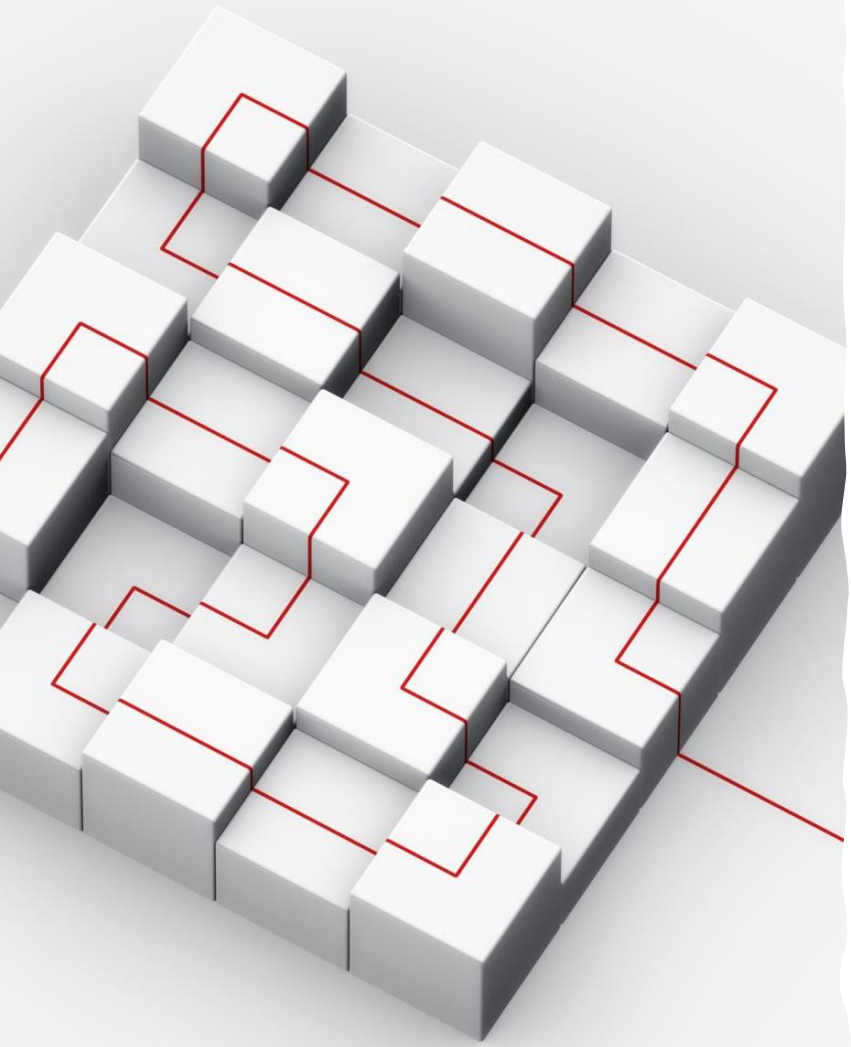
3. Cluster Sampling: Divides the population into clusters, randomly selects clusters, and includes all members within the selected clusters.

4. Systematic Sampling: Selects every nth member from a list or population after randomly selecting a starting point.

5. Convenience Sampling: Involves selecting participants based on their availability or accessibility.

Selecting Random Samples

- Random samples are selected using randomization techniques to ensure each member of the population has an equal chance of being chosen.
- Common techniques include random number tables, random number generators, or randomization software.
- Random samples are essential for reducing bias and allowing for statistical inference.



Complex Random Sampling Design

- Complex random sampling designs involve multiple stages or layers of sampling.
- Examples include multistage sampling, stratified cluster sampling, or stratified random sampling.
- These designs are used when the population is large or heterogeneous, requiring more elaborate sampling procedures.