Sampling and Its Types

Sampling is a powerful tool in research, allowing us to gather insights from a smaller group and generalize them to a larger population.

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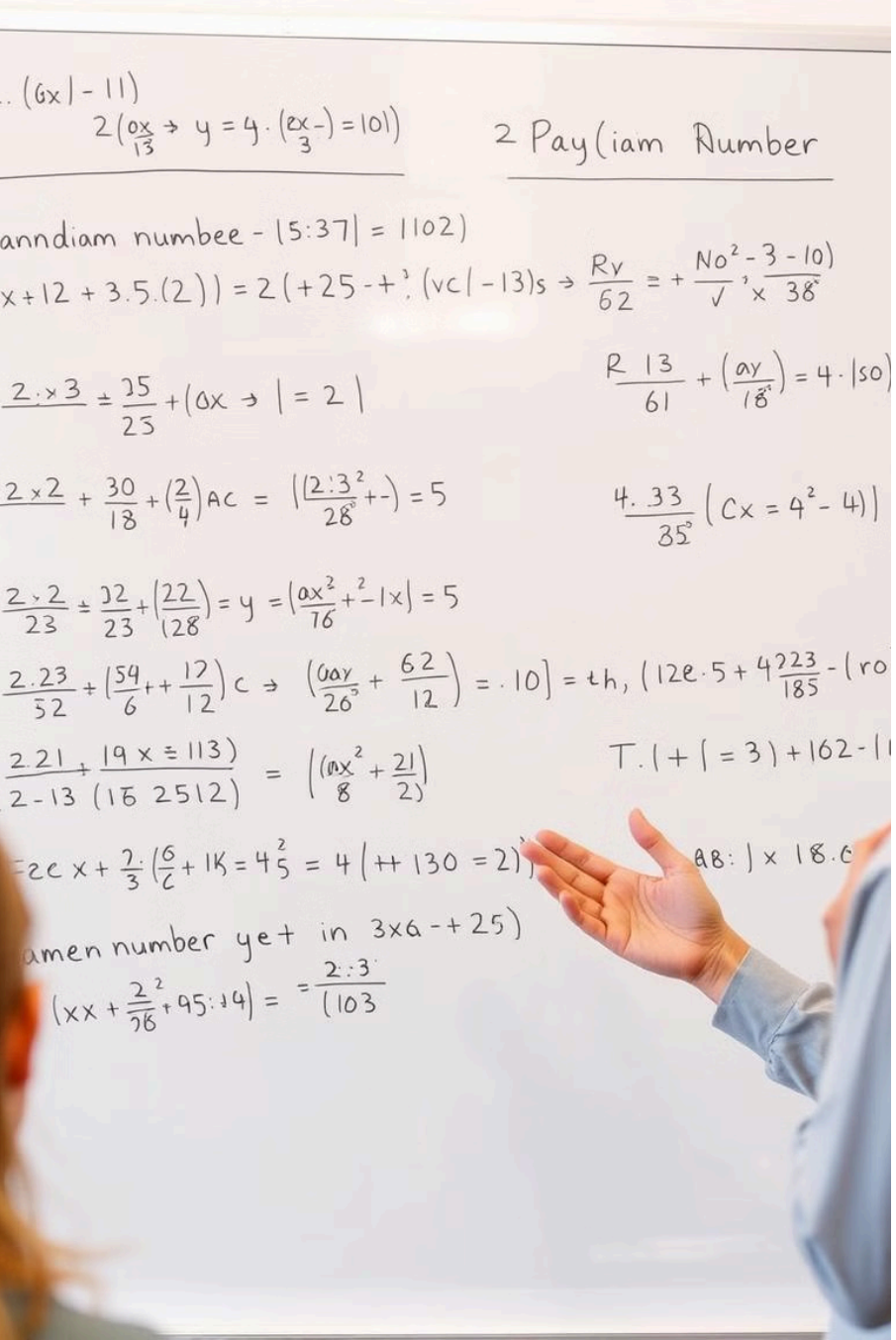
What is Sampling?

Sampling involves selecting a subset of individuals from a larger population to represent the characteristics of the whole.

This helps reduce costs, time, and resources, while still providing valuable data for analysis and decision-making.



Probability Sampling

Random Selection

Every member of the population has a known, non-zero chance of being selected for the sample.

Representative Sample

Probability sampling techniques aim to create a sample that accurately reflects the characteristics of the population.

Statistical Inference

This allows researchers to make statistically valid inferences about the entire population based on the sample data.

Simple Random Sampling

Random Selection

Each individual has an equal chance of being selected, like drawing names from a hat.

Easy to Implement

Simple random sampling is straightforward to implement using random number generators.

Time-Efficient

It's a relatively quick and efficient method for selecting a sample.

Systematic Sampling

1

Regular Intervals

Individuals are selected at regular intervals from a list, starting at a random point.

2

Efficient for Large Samples

Systematic sampling is efficient for large populations, as it requires less effort than simple random sampling.

3

Potential Bias

However, there's a risk of bias if the list has a hidden pattern that aligns with the sampling interval.

Stratified Sampling

1

Divide and Conquer

The population is divided into subgroups (strata) based on relevant characteristics, like age or gender.

2

Proportional Representation

Random samples are drawn from each stratum proportionally to their size in the population.

3

Increased Accuracy

Stratified sampling ensures that all subgroups are adequately represented in the sample.

Cluster Sampling

1

Clusters

The population is divided into clusters, usually geographically based.

2

Random Selection

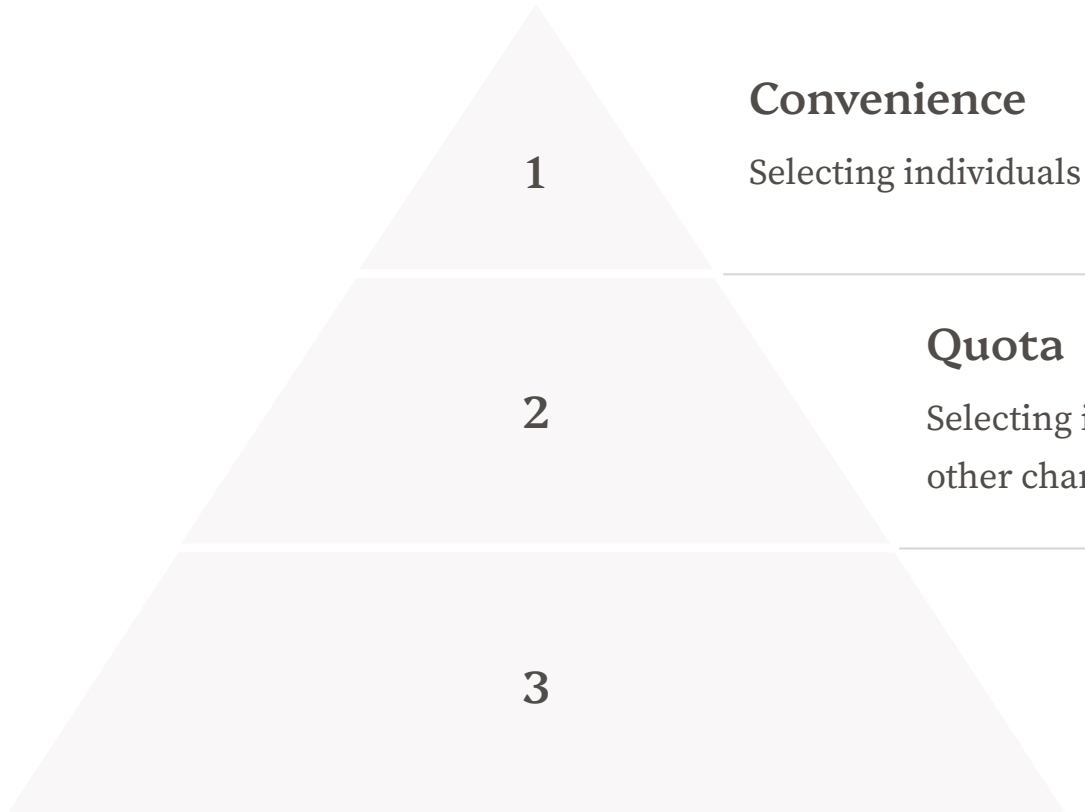
A random sample of clusters is selected, and all individuals within those clusters are included.

3

Efficiency

Cluster sampling is efficient for large populations, as it requires fewer data points than simple random sampling.

Non-Probability Sampling



Convenience

Selecting individuals who are readily available and easy to reach.

Quota

Selecting individuals to meet specific quotas based on demographics or other characteristics.

Snowball

Starting with a few individuals and asking them to refer others who fit the criteria.

Advantages and Limitations of Sampling