Sampling: Stratified vs Cluster

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Stratified Sampling

- In stratified sampling entire population is bifurcated into various mutually exclusive, homogeneous and non-overlapping subgroups known as *strata*.

- Then the sample is drawn randomly from each *stratum*

- The procedure of drawing simple random samples from each *stratum* is called as *stratified random sampling*.

- The sub-types of stratified sampling are:
  - Proportionate Stratified Sampling
  - Disproportionate Stratified Sampling
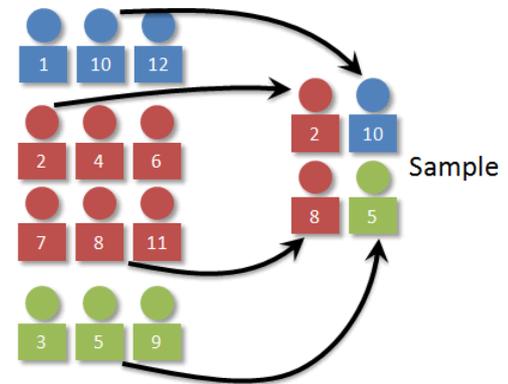
Stratum refers to a single subgroup or category and *Strata* refers to several, or all, groups

Cluster Sampling

- Cluster sampling is defined as a sampling technique in which the population is divided into already existing groupings (clusters).

- Then a sample of the cluster is selected randomly from the population.

- The term cluster refers to a natural, but heterogeneous, intact grouping of the members of the population.

- The most common variables used in the clustering population are the geographical area, buildings, school, etc.

- Heterogeneity of the cluster is an important feature of an ideal cluster sample design.

- Sub-types of cluster sampling:
    - Single-stage cluster sampling
    - Two-stage cluster sampling
    - Multistage cluster sampling
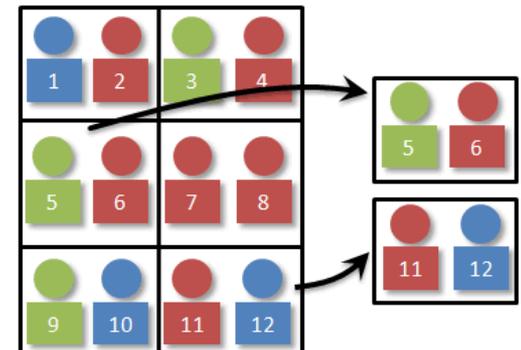
Key Differences

Key	Stratified Sampling	Cluster Sampling
Meaning	Stratified sampling is one, in which the population is divided into homogeneous segments, and then the sample is randomly taken from the segments.	Cluster sampling refers to a sampling method wherein the members of the population are selected at random, from naturally occurring groups called 'cluster'.
Sample	Randomly selected individuals are taken from all the strata.	All the individuals are taken from randomly selected clusters.
Selection of population elements	Individually	Collectively
Homogeneity	Within group	Between groups
Heterogeneity	Between groups	Within group
Bifurcation	Imposed by the researcher	Naturally occurring groups
Objective	To increase precision and representation.	To reduce cost and improve efficiency.

Summary

- Stratified sample wants low variance within strata, high variance between strata, whereas cluster sample wants high variance within clusters, low variance between clusters.

- Stratified sampling is very efficient and aims at providing precise statistical data while cluster sampling aims at increasing the efficiency of sampling.

- Stratified sampling takes a longer period of time to accomplish while cluster sampling is time efficient.

- Stratified sampling requires a larger number of samples since the population is divided into several strata while cluster sampling does not.

- Cluster sampling is very cost efficient since samples are already specified while stratified sampling can be expensive.

- Stratified sampling allows researchers to use different approaches for each stratum and see which approach works best while cluster sampling does not.

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