

What is Multistage Sampling?

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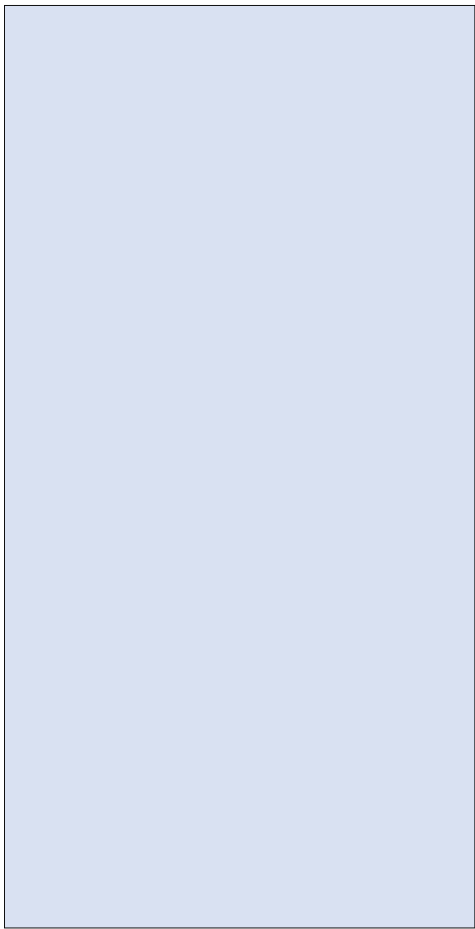
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What is Multistage Sampling? (Definition & Example)

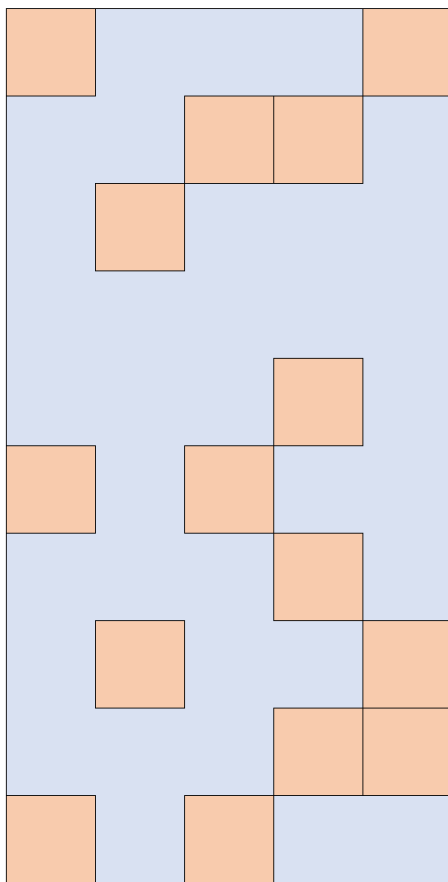
Multistage sampling is a method of obtaining a from a population by splitting a population into smaller and smaller groups and taking samples of individuals from the smallest resulting groups.

For example, suppose we're interested in estimating the average household income in the U.S. For simplicity, let's assume there are 100 million households. This represents the entire population we're interested in.



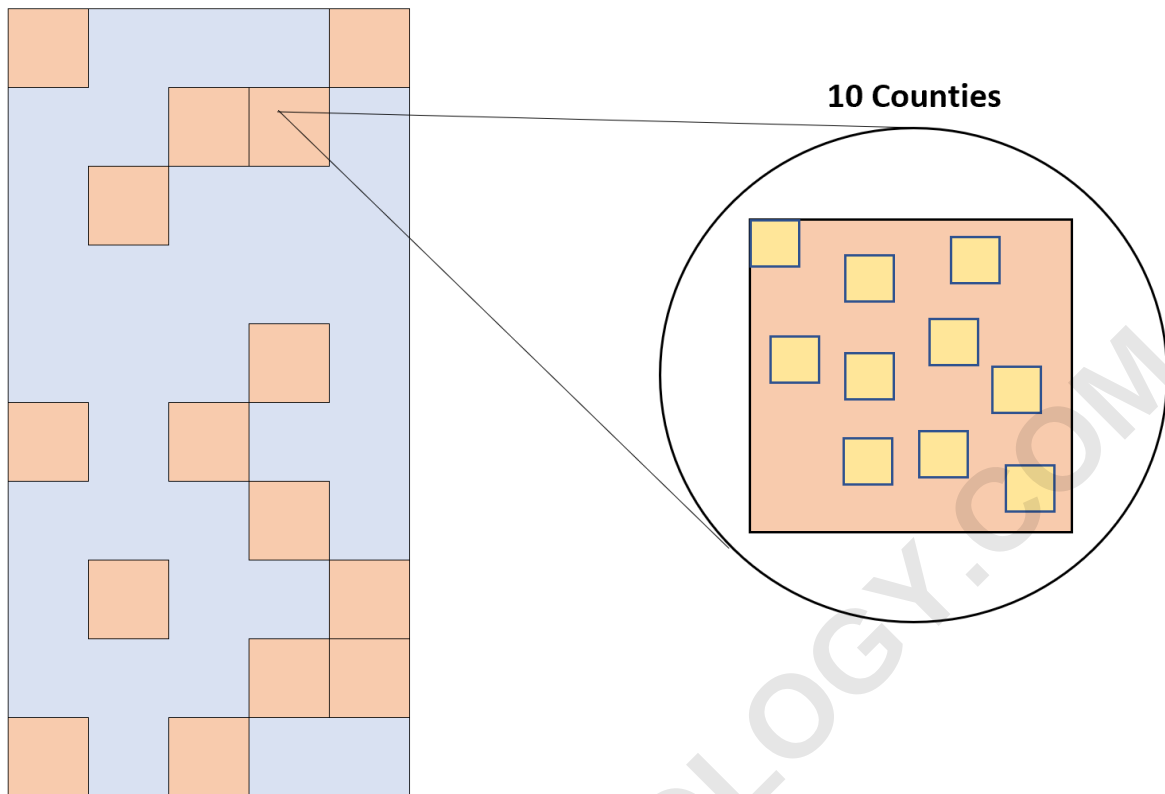
All U.S. Households

However, it would be too expensive and time-consuming to collect income data on each household, so instead we may take a simple random sample of 15 states.

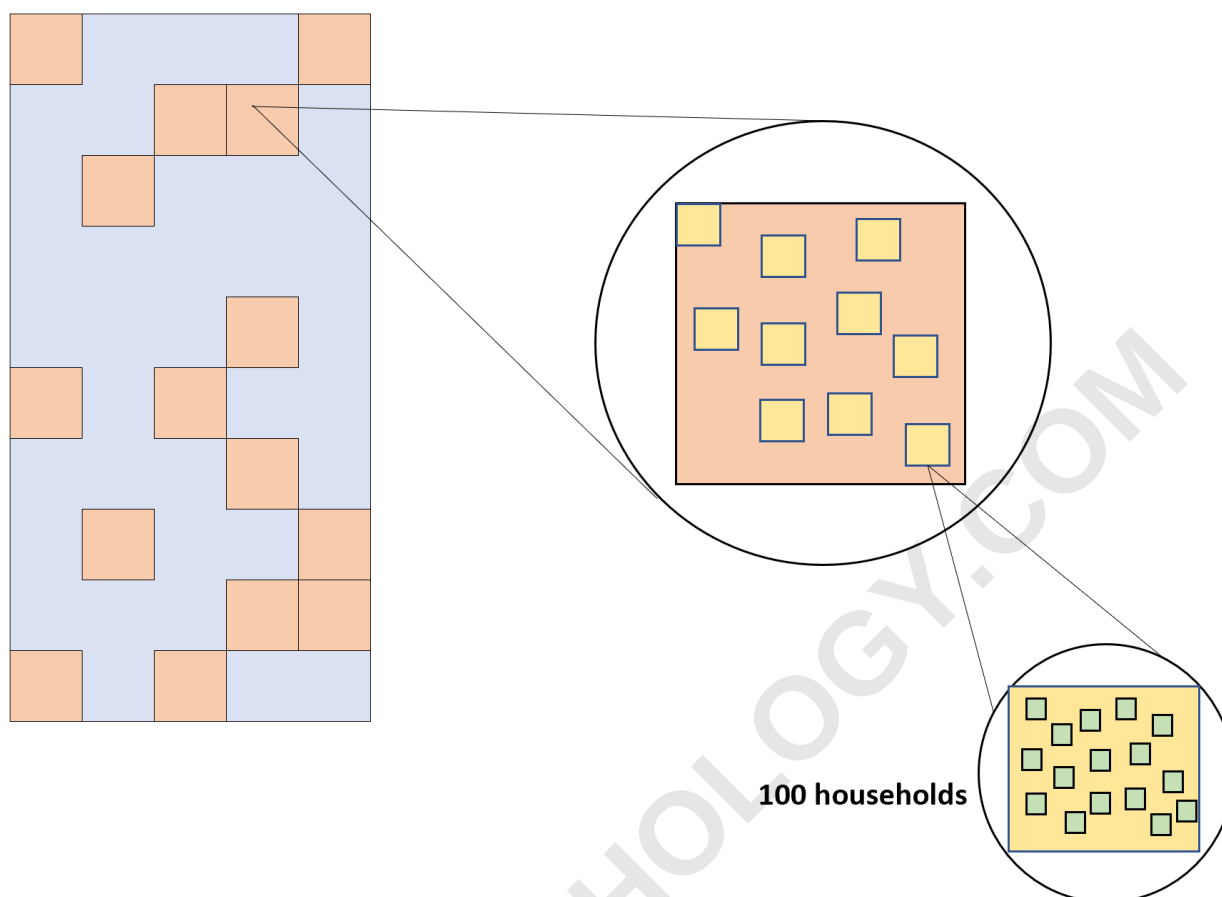


15 States

Then, within each state we may take a simple random sample of 10 counties.



Then, within each county we may take a simple random sample of 100 households.



Our resulting sample would contain 15,000 total households:

Sample = 15 states * 10 counties * 100 households = 15,000 households.

This method of obtaining this sample is known as multistage sampling.

In this example there were 3 different stages, but in practice any sampling method that uses two or more

stages can be considered multistage sampling.

The important thing is that we use a probability sampling method at each stage - that is, we use a method in which each member of a group is equally likely to be included in the sample.

Examples of probability sampling methods include:

Simple random sample

Stratified random sample

Cluster random sample

Systematic random sample

You can read details about each of these sampling methods .

Examples of Multistage Sampling

Multistage sampling is used in a variety of fields, including:

The Census Bureau: The U.S. Census Bureau uses multistage sampling by first taking a simple random sample of counties in each state, then taking another simple random sample of households in each county

and collecting data on those households.

Quality Control: Many warehouses use multistage sampling for assessing quality control. For example, a widget manufacturer may take a simple random sample of packages from a certain production run and then take another simple random sample of widgets from each package to get an estimate of the percentage of defective widgets.

Gallup Polls: Most Gallup polls select a simple random sample of districts in each state and then select a simple random sample of households within each district and collect data on those households.

Benefits of Multistage Sampling

Multistage sampling offers the following benefits:

It's convenient.

It's generally cost-effective.

It's particularly useful when individuals of interest are geographically dispersed.

It does not require a complete list of all individuals in a population.

Because of these benefits, it is commonly used in a variety of settings.

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