

Population and Samples

Term	Definition
Population	A collection of individual people or items
Finite population	Countable
Infinite population	Impossible to count (different from infinite number, e.g. grains of sand)
Census	Information obtained from all members of the population
Advantages of a census	<ul style="list-style-type: none"> • Every single member of the population is used • It is unbiased • It gives an accurate answer
Disadvantages of a census	<ul style="list-style-type: none"> • Takes a long time • Costly • Difficult to ensure the whole population is surveyed
Sample	A subset of the population
Sampling units	Individual units of the population (e.g. people)
Sampling frame	Individually named or numbered sampling units to form a list or other representation of data
Advantages of sampling	<ul style="list-style-type: none"> • If the population is large and well mixed the sample will be representative • Cheaper than a census • Advantageous when testing results in destruction • Data is more readily available
Disadvantages of sampling	<ul style="list-style-type: none"> • Uncertainty as there is variation between samples • Could have bias
Bias	Anything which prevents a sample becoming truly representative
Statistic	A quantity calculated solely from the observations in a sample. It does not involve any unknown parameters
Simple random sampling	A sample taken so every possible sample has equal chance of being selected