

Compare your notes to the descriptions given below.

The following information is not comprehensive, and you may have other equally valid strengths and weakness noted down from your research into each method.

Simple Random Sampling

Key feature:

- each member of the population has an equal chance of being selected for the sample

Strengths:

- the random element of this process ensures the sample is less likely to be biased, and more likely to be representative of the population
- can be quick to generate the list of those who are to be included in the sample

Weaknesses:

- needs a full list of the entire population
- often needs a large sample size for reliability
- can often be a slow process to locate all the selected members in the population
- need to be very careful if sampling with replacement, to avoid double counting members of the population

Systematic Sampling

Key feature:

- each member of the population has an equal chance of being selected for the sample, so long as the starting position is randomly selected and members are selected at regular intervals

Strengths:

- the random element of this process ensures this gives samples that are less likely to be biased, so long as the initial population list has been ordered on a different criteria to that which is being measured

Weaknesses:

- needs a full list of the entire population; this list needs to have been ordered on a different criteria to the which is being measured, else unintended bias may occur if any cyclic patterns exist in the list.

Stratified Sampling

Key feature:

- there are clearly identifiable strata in the population that each have a common trait (*compare this to cluster sampling*)

Strengths:

- the random element of this process reduces risk of bias
- tends not to need as large a sample size in order to be reliable
- good coverage of the population

Weaknesses:

- needs a full list of the entire population
- quite time consuming to process the calculations for each strata and then to perform simple random sampling from each strata
- each member of the population does not have an equal chance of being selected for the sample

Cluster Sampling

Key feature:

- each cluster is deemed to have an appropriate mix of the population within it (*compare this to stratified sampling*)

Strengths:

- can be efficient in gathering samples where a cluster is defined by a geographical region, and thus all members to be sampled are in close proximity to each other

Weaknesses:

- needs a full list of the selected cluster(s) population to either select them all, or to then perform simple random sampling from the selected cluster(s)
- the assumption that each cluster is assumed to be a 'miniature version' of the population can be hard to verify for its validity
- potential for high sampling error due to the clusters that were not included in the sample

Quota Sampling

Key feature:

- needs the proportions of a population having certain traits to be accurately determined

Strengths:

- does not need a full list of the entire population
- can be quick to implement once the quotas have been decided

Weaknesses:

- not a random process, so prone to bias unless the quota has been very carefully designed to reflect the proportions of each group in the population

Convenience Sampling

Key feature:

- this method is driven by simplicity and ease of use, rather than by statistical rigour

Strengths:

- quick, easy and therefore often cheap to perform
- does not need a full list of the entire population
- can be useful to use in a pilot study in order to trial a process

Weaknesses:

- not a random process and highly prone to selection bias, and thus not representative of the population