

What is sampling?

A piece of research that involves collecting the views of every member of a defined population is known as a census. However, it is not usually practical, possible or necessary to contact everyone. This is why sampling is used. Sampling involves selecting a smaller sub-group of people to represent the population you are interested in. There are two basic methods of sampling – probability and non-probability sampling.

Probability sampling

Probability sampling (also known as random sampling) is when every member of a particular population has an equal chance of being selected. A suitable sampling frame (or list of every member of the population) is needed before you start. Probability sampling is often preferred when undertaking quantitative research since it is most likely to produce a representative sample which allows conclusions about the whole population to be drawn.

There are three main probability sampling techniques:

- **Simple random sampling**
All members of the population are listed and numbered. A sample of randomly generated numbers is drawn from the list.
- **Systematic sampling**
All members of the population are listed and numbered. A random starting point is selected and members of the population are selected at equal intervals after this point. (NB: this 'sampling interval' is usually the total number of members divided by the total size of the sample required). When using this technique it is important to make sure that your original list is not ranked or classified in any way as this will bias your sample.
- **Stratified sampling**
The population is divided into clearly identifiable and non-overlapping groups or strata (e.g. wards). A random sample is then taken from each group.

Using a probability sampling technique for your survey allows you to calculate the sampling error for your results.

① For more information on this see the guideline on 'Analysing and reporting quantitative data'

Non-probability sampling

With non-probability sampling, members of the population do not have a known chance of being selected. This type of sampling is sometimes known as judgement or purposive sampling. The most commonly used techniques are:

- **Quota sampling**
As with stratified sampling, quota sampling involves dividing the population of interest into sub-groups, for example BME communities, age groups. The difference is that once quotas are set for each sub-group, the actual selection is down to judgement. Quota samples can produce extremely accurate results for quantitative research, providing the quotas are carefully set and controlled. Quotas can also be used in qualitative research to ensure that all the sub-groups of interest are covered.
- **Convenience sampling**
Members of the sample are selected based on their availability to take part.

- **Snowball sampling**

This is where members of a population whose views have already been collected are used to identify other suitable subjects to take part in the study. This technique runs the risk of bias but is particularly useful for qualitative research studies focusing on 'hard to reach' groups.

Remember that if you choose a non-probability sampling technique it is not valid to calculate the sampling error for your results at the reporting stage.

How large does the sample need to be?

Sample sizes vary according to the type of study involved, and qualitative research samples are generally much smaller than those required for quantitative research. In quantitative research it is the absolute size of the sample that is important and not the percentage of the total population. It is possible to estimate the required sample size for a given level of reliability in your results (see <http://www.surveysystem.com/sscalc.htm> for an easy to use 'calculator'), but as a general guide, around 200 responses are usually sufficient. However, if you want to analyse your data according to any sub-groups (e.g. ward, or gender) it is important to make sure there are enough people within each group.

Response rate

In order to work out how many people you will need to contact to ensure your sample size is adequate, you need to think about the expected response rate. For example, if you expect a 25% response rate and have estimated that you need 250 responses for the appropriate levels of confidence in your results, you will need to send out 1000 surveys to your target population.

Bias

Finally, be aware of any sources of bias that may be introduced to your sample and may affect the results. For example, daytime telephone surveys exclude a large proportion of the working population, postal questionnaires favour those who are more literate and samples based on the electoral register exclude those who have not registered to vote.

Further sources of information on sampling

- [http://en.wikipedia.org/wiki/Sampling_\(statistics\)](http://en.wikipedia.org/wiki/Sampling_(statistics))
- Chisnall, P (2001) *Marketing Research* (6th edition), McGraw- Hill. Chapter 3 - introduction to sampling and Chapter 4 – types of sampling.
- Kalton, G (1984) *Introduction to survey sampling*, Sage – New York.

What next?

If you would like to know more about this topic or any other aspect of research or consultation, please contact us:

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