



Step 4: Sampling

The type of research question and research design will determine the appropriate Sampling Strategy.



What is the...

Population

The population is the entire group of individuals that we want information about. Depending on the research question, your sampling frame (those out of the general population who meet criteria to answer your question), will be determined.

Sampling Frame

The sampling frame is a complete list of potential participants in the population we want to study. Ideally this will be the same as the population. For some populations (e.g. the homeless), it would be impossible to have a list of every person in that group, and therefore a sampling frame would need to be established.

Sampling Strategy

The sampling strategy is the tool employed to select cases from the sampling frame to be a part of the sample. Various sampling strategies are outlined in the following section.

Sample

The sample is the part of the population that we actually examine in order to gather information. The

researcher selects a sample from the population of all individuals about which they want information. They base conclusions about the population on data from the sample

Example

- A study exploring the effects of a program on ESL students would only include ESL students. In contrast, if the research was seeking to compare experiences/scores of ESL students with the general student body it would include both.

What is Statistical Significance? Do I need this?

The issue of statistical significance is considered when collecting quantitative data. In a quantitative study, statistical significance means that results are not likely due to just chance factors. The level of statistical significance is a way of talking about the likelihood of the results occurring in the entire population if it were possible to sample that.

Does the research have to be statistically significant?

It is at the discretion of the research team to decide if the study needs to be statistically significant. If the research is at the school level, and is being conducted to see if one group feels a specific program is effective, having a statistically significant sample size may not be necessary. In contrast, if research is being conducted that has larger impacts or if the goal of the results is to generalize to the larger population, then ensuring statistical significance will be more important.

Level of significance is typically .05 or .01. A statistical significance level of .05 is typically sufficient in social science research.

A level of significance of .05 tells us that:

- These results are due to chance only 5 times in 100 cases
- There is a 95% chance that the sample results are not due to chance factors, but reflect the population accurately
- The odds of these results being based on chance are only 5%
- You can be 95% confident that the results are representative of your desired population.

A level of significance of .01 tells us that:

- These results are due to chance only 1 time in 100 cases
- There is a 99% chance that the sample results are not due to chance factors, but reflect the population accurately
- The odds of these results being based on chance are only 1%
- You can be 99% confident that the results are representative of your desired population.

To find the statistical significance of a study you need to determine three things:

- The population size the sample is being drawn from
- The desired confidence level (90, 95, 99 etc.)
- The desired [confidence interval](#)

The *confidence interval* is the plus-or-minus figure usually reported in newspaper or television opinion poll results. For example, if you use a confidence interval of 4 and 47% percent of your sample picks an answer you can be "sure" that if you had asked the question of the entire relevant population, between 43% (47-4) and 51% (47+4) would have picked that answer.

Click here to [calculate the appropriate sample size](#) for your study, or to determine based on your sample size, what the level of statistical significance for the study is.

Sampling Strategies

Once you have determined your sample and sample size you can determine the appropriate sampling strategy.

The following list various sampling strategies and how to use them.

Haphazard

Get any case in any manner that is convenient.

Example:

- Any student who walks into the cafeteria and agrees to participate in the study.

Quota

Get a set number of cases in predetermined categories that will reflect the diversity of the population you are studying. Participants are still recruited using haphazard methods.

Example:

- If your school has 60% female students, and 40% male students, a quota sample of 10 would have 6 female and 4 males.

Purposive

Get all possible cases that meet a particular criteria. This is likely the most common form of sampling used, and one of the simplest. In this sampling strategy, the researcher establishes criteria that a participant must meet in order to participate. Only those who meet the criteria are included in the study.

Example:

- A study examining the effects of after school programming on Aboriginal girls would only include students who 1) were female, 2) were Aboriginal, 3) and were involved in an after school program. Students who do not meet these criteria would not be included in the sample.

Snowball

Get cases using referrals from one or a few cases and get new referrals from each new case. This type of sampling is often used with hard to reach populations, or when the research wants to examine social networks or relationships.

Example:

- If you were trying to establish what types programming would be most appropriate to reach students involved in gang activities, snowball sampling would be appropriate. Having one student involved in these types of activities refer a member who then refers another member would produce a snowball sample.

Sequential

Get cases that meet particular criteria, but rather than collecting all available cases, cases are collected until the point of saturation (when new cases are no longer adding new information/diversity to the study).

Example:

- While studying the effectiveness of a new classroom technology, you would continue to collect cases until information is reproducing the same/very similar response sets. For example, in 75 interviews with teachers, 50 identify the need for more professional development, 25 identify the need for more technical support, the themes of the study are clearly defined, and continuing this line of questioning would likely only continue to support this trend.

Random Sample

Random sampling is the most likely strategy to produce a sample that represents the general population. In random sampling, you must develop an accurate sampling frame. All possible cases would be assigned a number, and then from a random numbers table (which is available in text books, online, or from a computer generated numbers list) students are selected as participants.

Example:

- All Grade 6 students in the Calgary Board of Education would be assigned a number, and using a random number table, a sample would be selected.

Systematic Sample

Similar to a random sample, a systematic sample is a little simpler. In a systematic sample all elements (participants) are numbered, and a sampling interval (every Xth participant) is used to select cases for the sample. This approach eliminates the need for a random numbers table.

Example:

- In a sample population of all 6th grade students at one school (64 students), all students would be assigned a number, and every 3rd student would be included in the sample.

Stratified Sampling

In stratified sampling the researcher divides the population into subpopulations, (e.g. male/female, grade, ESL/non-ESL students, etc.), and then applies random, or systematic sampling to those stratified groups. This allows you to draw on the statistical significance of random sampling, while also allowing you to specify criteria you want to examine.

Example:

- A stratified sample of grade 6 students, divided by gender.

All sampling strategies have advantages and disadvantages. The most important thing to consider when selecting a sampling strategy is:

1. The research question
2. The research design

These two factors will direct what is the appropriate sampling strategy for the research study.