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Selecting a Sample and Participants

Chapter Summary

In everyday life, we commonly use sampling to make judgements about facts and issues. Sampling is an important feature of all quantitative and qualitative research. Samples are drawn from a population when it is not possible or not necessary for everyone in the population to be included. We sample because it is often too time consuming, cost prohibitive, or impossible to access the whole population. The ideal sample is representative (or is an accurate reflection of the whole from which it is taken) of the population from which it is taken. The manner in which the sample is drawn depends on the research question or the approach. The most important point to remember about sampling is the manner in which the sample is drawn determines the extent to which we can generalize from the findings. It is important to select a sample that accurately reflects a specified larger population. If a sample is not representative, the conclusions drawn from the research must be limited to the sample studied.

It should be remembered that for some research purposes, sampling is *not* required. If the researcher is not interested in drawing conclusions for a larger population than that actually studied, sampling is not needed. This is particularly relevant for qualitative research. Another situation in which sampling is not an issue occurs when researchers can easily study *all* members of the group about whom they wish to draw conclusions.

Prior to sampling, you must answer questions such as "what do you want to know?" and "about whom do you want to know it?" There are two basic kinds of samples: **random** and **non-random**. Random sampling provides the greatest assurance that those selected are a representative sample of the larger group. In non-random sampling, the researcher can only hope that those selected for study bear some likeness to the larger group, but this is usually not of primary importance. Non-random sampling procedures are more suitable to qualitative research studies. Non-random sampling techniques include accidental sampling, accidental quota sampling, purposive sampling, the snowball technique, and systematic matching sampling. **Accidental or haphazard sampling** involves using what is immediately available. In an **accidental quota sampling** procedure, the researcher selects individuals or groups on the basis of set criteria. In **purposive sampling**, researchers select the best people or groups to be studied using their own judgment or intuition. The **snowball sampling** technique is used when you need to gain access to certain types of people or to a particular group, but you only know a few people who fit the category and there is no publicly available listing of the group. In **systematic**

matching sampling, individual subjects or groups are systematically matched with others who are similar in all but one critical attribute.

Random sampling procedures provide the greatest assurance that the sample accurately represents the population. Four basic random sampling procedures are commonly employed: simple random sampling, systematic sampling, stratified random sampling, and cluster sampling. S**imple random sampling** guarantees that each element (person, group, university, etc.) in the population has an equal chance of being selected and that every possible combination of the specified number of elements has an equal chance of selection. A **systematic sampling** procedure involves the selection of every *m*th case in a list. **Stratified random sampling** is basically a type of quota sampling in which members of selected quota groups are chosen randomly. **Cluster sampling** (also **multistage cluster sampling**) procedures involve several stages of random selections. Rather than enumerating the whole population, the population is divided into segments. Following this, several segments are chosen at random. Elements within each segment are then selected randomly following identification and enumeration.

How do you select a sampling procedure for your research? This depends largely on the population about which you wish to draw conclusions and whether or not you are using qualitative or quantitative methods. It also depends on whether making generalizations are essential to your research.

How large of a sample do you need? What is the appropriate sample size for your project? These are very difficult questions to answer. Several basic issues need to be considered in determining sample size:
- If statistics are going to be used, there are usually requirements for sample size (usually no smaller than 30) and the more questions asked, the larger the number of participants that need to be included in order to have groups large enough to analyze.
- Size of the sample is not as important as how the sample is drawn with regard to representativeness. Adding more participants to a poorly sampled or biased sample results in a bigger biased sample.
- In order to help determine the number of participants, use a dummy table (the rule of thumb is you require a sample size five times the number of cells in the table).

The chapter concludes with a discussion of issues with internet sampling strategies.

Key Terms

Accidental quota sampling A participant selection strategy that involves some selection of participant characteristics. (p. 159)

Accidental sampling (haphazard sampling) A strategy to select research participants by using informants close to the researcher, typically used in qualitative studies. This procedure allows the investigator to approach potential respondents without care about personal relationships and individual characteristics. (p. 158)

Cluster sampling A procedure that involves identifying elements by groups. Elements from all groups are randomly selected to participate in the study. (p. 167)

Multi-stage cluster sampling A variation on cluster samples that involves several stages of random sampling of groups or clusters prior to the selection of participants. (p. 167)

Non-random sampling (non-probability technique) A procedure that involves the selection of participants using non-random means. It is a sampling procedure that is used extensively in qualitative research as the purpose of most studies using this paradigm is to understand a phenomenon in great detail without needing to generalize the findings to a larger representative population. (p. 157)

Purposive sampling (judgmental sampling) Some established researchers believe that their expertise in a particular topic can help them identify typical cases worthy of study. The researcher selects cases she feels best represent the phenomena of interest and these participate in in-depth investigation. This strategy is appropriate for qualitative studies. (p. 160)

Random sampling Sampling procedures based on probabilities of chance. This procedure provides the greatest assurance that those individuals selected are a representative sample of the larger group. (p. 157)

Representativeness The quality of the sample that allows the researcher to take the findings from the small number of observations and apply it, with some certainty, to the description of a larger group of similar entities with the same characteristics. (p. 159)

Researcher bias The propensity for investigators to select participants who are similar to them (i.e., have the same characteristics) or the propensity of researchers to include only participants in the research study who exemplify their beliefs. (p. 167)

Sample Refers to the selection of a small group of people used in a social science study to represent the characteristics of a greater population. (p. 156)

Simple random sampling A procedure where every element has an equal and non-zero chance of being selected to participate in the study. It is the gold standard of quantitative sampling procedures but it is typically very difficult to obtain. Simple random sampling may also be used in conjunction with other sampling procedures that use multiple steps in order to achieve a more random selection of participants. (p. 162)

Snowball sampling A procedure that takes information from the first three to ten selected participants to create a larger sample. These initial seeds, as the first selected participants are called, are asked to provide names and contact information of other potential participants to the researcher. The researcher then uses this information to contact these friends for the study. These new recruits in turn may be asked to provide names and contact information of other potential respondents. The idea is that the larger the snowball gets, the closer the sample begins to mirror certain characteristics of a random sample. This is not a procedure that is valid for quantitative research but it is frequently used in qualitative studies. (p. 160)

Stratified random sampling A sampling technique that attempts to select participants randomly from each group. For example, a researcher wants to know if there are differences in length of hospitalization among patients recuperating from knee replacement surgery. The researcher may first take a random sample of hospitals in Canada and randomly select five for the study. From the five

participating hospitals, a sample of 100 knee-replacement patients from each is asked to participate for a sample of 500 patients from across Canada. (p. 167)

Systematic matching sampling A procedure that assigns participants to study groups that are homogenous on all but the attribute under consideration. For example, medical studies typically do this. Participants are assigned to one study group based on similar characteristics, such as sex, age, and ethnic group. Each group is different. For example, one study group consists of Caucasian females aged 18 to 24 years, while another consists of African females aged 18 to 24 years. Still other groups vary in terms of ethnic group and age group. The purpose is to study the effects of a new contraceptive pill. The exposure to the new contraceptive pill or the placebo is determined using random sampling assignment. (p. 161)

Systematic sampling When elements in a population are arranged in a list, a systematic sample is obtained when every *n*th element is selected. For example, imagine you have a list of 10,000 patients with arthritis who live in Alberta. You are interested in obtaining a sample of 100 patients to study a new exercise regime designed to alleviate chronic pain among arthritis sufferers. If we take 10,000 (the total number of arthritis patients) and divide it by 100 (our desired sample size), we get 100. Next, we randomly select one respondent numbered between 1 and 100. This is our start point. Say that random number is 42. Our first respondent will be the individual #42 on the list, the next will be the individual numbered 142 and the next case will be 242. If we take every 100th person on this list, we will obtain a sample of 100 participants. This is a quantitative sampling procedure and should not be confused with systematic matching sampling. (p. 165)

Study Questions

Scroll down for answers.

1. What are the two general types of sampling procedures? Briefly describe each.

2. You know nothing about delinquent gangs in your area but would like to understand what it is like to be a member of one. Which type of sample would be most effective for your purposes? Justify your choice.

3. Under what conditions is it useful to apply snowball sampling technique?

4. What are the four basic types of random sampling procedures?

5. How should a researcher determine what the size of the sample should be?

6. Why do researchers sample?

7. What are the steps that must be taken in order to draw a truly random sample? What are two barriers to obtaining a random sample?

8. Why do quantitative studies require larger sample sizes than qualitative studies?

9. What is the rationale for using non-random selection techniques for qualitative studies?

10. What are dummy tables used for?

Video Resources

Mays, Steve (2011) "Simple Random Sampling" (4:33)
https://www.youtube.com/watch?v=yx5KZi5QArQ&feature=relmfu

Mays, Steve (2011) "Systematic Sampling" (3:47)
https://www.youtube.com/watch?v=QFoisfSZs8I&feature=relmfu

Mays, Steve (2011) "Cluster Sampling" (3:17)
https://www.youtube.com/watch?v=QOxXy-I6ogs&feature=relmfu

Mays, Steve (2011) "Stratified Sampling" (5:29)
https://www.youtube.com/watch?v=sYRUYJYOpG0&feature=relmfu

Answers to Study Questions

1. Random sampling provides a strong basis for making generalizations to the greater population from which the sample is drawn. It is commonly used in quantitative research. Non-random sampling provides a weak basis for making inferences to the general population. It is commonly used in qualitative research. (p. 157)

2. If you knew nothing about delinquent gangs in your area but would like to understand what it is like to be a member of one, a non-probability sample would be best, specifically a purposive sample. The gang study can be considered a case study with qualitative implications. Only tentative generalizations are required here given that the topic is new and has not been studied in-depth. (pp. 159–160)

3. It is useful to apply snowball sampling technique when the researcher needs to be able to gain access to certain types of individuals or groups who are not known or lists of them are not readily available. Research will attempt to build rapport with one or two participants and ask them whether they know of others who might wish to be included in the study. (pp. 160–161)

4. The four basic types of random sampling procedures are as follows:
   - simple random sample
   - systematic sample
   - stratified random sample
   - cluster sample (p. 162)

5. A researcher should determine what the size of the sample should be by the kinds of statistical techniques used for analyzing the data. The sample size is determined by the number of variables used, the number of questions asked, the number of controlling variables, the level of detail required in the resultant analysis, and the extent to which the sample purports to be represent the general population. (pp. 168–170)

6. Samples are used to reduce the cost in time, energy, and money of studying large populations. It is often simply not possible or desirable to study everyone. (p. 157)

7. In order to draw a simple random sample, the researcher must:
   - Identify the population from which the sample will be taken.
   - Enumerate and list every element.
   - Devise a method of selection that ensures that each element has the same probability of selection and that each combination of the total number of elements has the same probability of selection.
   - Barriers: Nearly impossible to obtain a complete list of anything; too much work to identify and enumerate the total population. (pp. 162–163)

8. Quantitative studies often require a larger sample size for two reasons:
   - If statistics are going to be used in the analysis and interpretation of data, there are usually requirements for sample size.

- The more questions asked, the more variables controlled for, and the more detailed the analysis of the data, the larger the sample will have to be to provide sufficient data for the analysis. (pp. 169–170)

9. Non-random sampling procedures are suited for qualitative research where the goal is often a deeper understanding of the phenomena or situation rather than making inferences to a larger population. In this way, random sampling is not required, nor necessary. (p. 158)

10. Dummy tables are helpful in determining sample size, focusing the research questions to be asked in the research, and preparing the way for the later analysis of the data. The general rule of thumb is the required sample size is five times the number of cells in the table. (pp. 170–171)