Sampling

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Key Terms

Cluster sampling	Quota sampling	Snowball sampling
Convenience sample	Random sampling	Statistical power
Data saturation/saturation	Refusal rate	Stratified sample
Maximum variation sampling	Representation	Theoretical construct sampling
Network sampling	Response rate	Typical instance sampling
Nonrandom sampling	Sample size	Unit of analysis
Proportional stratified sample	Sampling frame	Volunteer sample
Purposive samples	Simple random sample	

Chapter Objectives

1. To understand how we select the participants we include in our research
2. To know how to design the sample for a research study that is valid and representative
3. To be able to critique how representative a given sample is

How Important Is Sampling?

We cannot overstate how important sampling is to the quality, validity, and credibility of your research study. You may have the best study design, do the best possible job in writing a survey instrument or study protocol, do an outstanding job in coding or statistical analysis; but if all your effort is based on a poor sample, you are simply wasting your time. Proper sampling insures that you are appropriately representing whomever you say you're representing (we'll talk more about this in a minute). By the way, this is called *external validity*—are your findings valid among the population you're studying? (We'll discuss this in more detail in Chapter 9.) For now, just know that *whom* you study is just as important as *how* you study them.

This chapter will give you an overview of the theory behind sampling, and will help you tie different types of sampling to different metatheories and research paradigms. We'll also talk about the basic concepts behind appropriate sampling, and then we'll teach you how sampling is done in both quantitative and qualitative research. We'll also discuss issues such as sample size and statistical power.

Sampling Theory

Generalizability and Representation

generalizability
Ensuring that a researcher's findings will apply to other people and situations that a study's sample supposedly represents.

First, let's explain a basic concept behind research design. In research, a *sample* of people is chosen to be included in the study as participants. This *sample* is expected to be *representative* of the entire *population* under study. Because you have chosen a *representative sample*, you can find out information about the *population* without having to actually interview the entire *population*.

Maybe you're asking what's wrong with interviewing the entire population. Do you know what it is called when you actually interview an entire population? It's a *census*. It's so difficult to do that, that the federal government only does it once every ten years. Few researchers can afford to take a census of their entire population. And, it's not necessary.

Unless you have an extremely small population, you would want to research a sample of your population. However, there is a trade-off in researching only a sample of your population; how well does that sample represent your population? Since you are not going to include everyone, the people you do include act as spokespersons for everyone else. In quantitative research, especially, this issue of representation is quite salient, as each study participant potentially represents the ideas or opinions of thousands of people. And in quantitative research, you are measuring and making predictions about those measurements, projecting them to your population. Obviously, if you are going to make predictions about your population based on the research you do of your sample, you want your sample to *accurately* represent your population in a measurable way. Representation is important in qualitative research also, by the way, but in a different way. We'll discuss that shortly.

So, let's talk about representation—how much of a problem is this? Wouldn't any group of people from your population represent your population? And how large should this group be? Five percent of the population? Fifty percent?

Let's look at an example. When your author Christine Davis was growing up, my parents had fairly conservative beliefs, while my sisters and I had fairly liberal beliefs. Suppose you wanted to survey us to determine how we felt about 10:00 PM Friday night curfews. And suppose you said my parents should represent our family—after all, they are the parents.

If you interviewed my parents, you would be talking to 40 percent of our family. Surely this is a large enough sample to be representative, right? Wrong!

If you had sampled my parents about their attitudes toward the curfew, you would probably have gotten 100 percent responses in favor of the curfew. Is this representative of the population? Let's take a census and compare:

- Mom—For
- Dad—For
- Cris—Against
- Kathy—Against
- Kelly—Against

The results of the census show that, in the population, only 40 percent were for the curfew, and 60 percent were against it.

Then why did the sample show such a big difference from the census? Why wasn't interviewing 40 percent of the population enough?

It might have been, *if* it had been a representative sample.

In both quantitative and qualitative research, in order to derive a representative sample, there are several steps you would take.

You would first define your population. Your population may be as broad as all adults over the age of 18, but you still need to state the definition. More likely, your population will have some parameters, such as Communication Studies undergraduates at your university (that's a pretty narrow definition), or all young adults between the ages of 18 and 24 (that's a fairly broad definition). If you're a rhetorical scholar, perhaps you study African-American oratory. That's pretty wide open. In order to conduct a research project, you would need to define which orators, which years, which speeches you plan to study, and so on. Perhaps you're an ethnographer, and you want to understand how a particular mental health treatment team interacts (see Davis, 2006), or how a specific street gang communicates (see Siegel & Conquergood, 1990). That mental health team or street gang would be your population, but then your sampling would be more concerned with representing their meetings or interactions. For example, you might want to observe student activities on campus; and in this case, you're not sampling people, you're sampling observations (times of day, weeks, months, year, variety of locations, etc.). For example, you wouldn't only observe the library on Saturday morning during summer session—this likely is not representative of all student activities, and will likely produce very different data than observing the student center at lunchtime during fall semester. To be representative, you'd want to observe both, and probably more (more times, places, etc.).

Sampling Frame

sampling frame
A realistic version of your population; the ones you can identify and access.

Once you have defined your population, you have to determine how you will access them. The ones you have access to are called your **sampling frame**. For example, if your population consists of all Communication Studies undergraduates at your university, you might define your sampling frame as all Communication Studies majors currently enrolled in classes. This will capture most of your population, but not all. The sampling frame can be thought of as the realistic version of your population—the ones you can identify and access. Perhaps you want to study newspaper accounts of a particular event. You might define your sampling frame as the news stories available through the Lexis-Nexis database. If you're studying that medical team or street gang, your sampling frame might be the meetings or interactions you have access to.

Unit of Analysis or Sampling Units

unit of analysis
Sampling units.

Your next step will be to define your **unit of analysis** or sampling units. Most of the time, your unit of analysis will be individuals—individual students in our example above. Sometimes, however, your unit of analysis will be something other than individuals. For example, if you are studying couples communication, your unit of analysis may be marital (or relational) dyads. If you are studying patient-provider communication, your unit of analysis may be patient-provider dyads. If you are studying group communication, your unit of analysis may be meetings, or groups themselves. Other units of analysis or sampling units might consist of sites, activities or events, times, or artifacts (documents, diaries, or texts).

Sampling in Quantitative Research

Sampling Methods

You have now identified your population by defining it, by identifying your sampling frame, and by defining your unit of analysis. Now you need to determine what sampling method you will use to represent your population. The sampling method you choose depends a lot on your study objectives, hypothesis, or research questions. Let's define the different types of samples used in quantitative research.

Random Sampling. In quantitative research, in order to ensure that you have a representative sample, you sample *randomly*. This means that each person in the population (or, really, your sampling frame) has an equal chance of being interviewed as each other person. The laws of statistics and probability insure that, if you have a true random sample, it will be representative of your population. **Random sampling** is typically used by research in the positivist paradigm, because it helps insure the objective reality being measured is being measured accurately. By the way, random samples are also called probability samples, because, based on probability theory, there is a probability (that you can measure) that the sample represents the population. Therefore, nonrandom samples are also called nonprobability samples.

random sampling
A sample in which everyone in your sampling frame has an equal chance of being included in the study.

Das, Kerkhof, and Kuiper (2008) used a fairly random sample for their study of the effectiveness of alternative fundraising messages. Here's how they described their sampling procedure:

> Passersby in the vicinity of the university campus of a large city were asked if they were willing to participate in a survey about the work of the Leprosy Foundation. Upon agreeing, participants were asked to read one of eight fundraising messages. . . . (p. 166)

What do you think makes this a random sample? What could the researchers have done to make it even more representative?

Simple random sample. The first sampling method, therefore, is called a simple random sample. Professional researchers (such as market researchers) who have more sophisticated technology do this by creating computer-generated random telephone numbers. A computer generates random seven-digit combinations of numbers, and these numbers are called. This allows an equal chance that people with unlisted numbers will be called, as well as those with listed numbers. You can approximate this method yourself. Get a list of your sampling frame, perhaps a telephone book, or a list of every Communication major, or a course registration list. Pick every fifth name (or tenth, or twentieth, depending on the sample size you desire). Make sure you call people from the beginning of the book, the middle of the book, and the end of the book. You don't want Jonathan Abernathy to have a greater chance of being called than Benny Zimmerman. Another alternative is to generate a list of random numbers through your computer (e.g., Excel has a function to do this). Number your sampling frame, giving the first name on the list a number of one, and so on. If you want a sample size of 100, generate a list of 100 random numbers. Choose the 100 people from your sampling frame who correspond to the random numbers.

simple random sample
A basic sampling method where a group of subjects (sample) are selected for study from a larger group (population), and each member of the population has an equal chance of being chosen at any point during the sampling process.

Here's an example of how this works in real-life research. Mannion (2008) studied the effects of caring for people with Alzheimer's disease on informal caregivers. She used a:

> . . . random representative group of caregivers registered with the Alzheimer Society of Ireland, Galway, or the Western Alzheimer's Foundation. The sampling frame was the list of caregivers registered with these organizations. The technique for the study was simple random sampling, which involved an employee from both voluntary organizations randomly selecting numbers from the list of registered caregivers until the required number of subjects was chosen. (p. 33)

Stratified sample. Sometimes you want more detail by subgroup than simple random sampling provides. Let's say you're not just interested in Communication Studies students in general, but you want to be able to compare students in Interpersonal Communication classes with students in Public Speaking classes, and students in Mass Media classes. You would take a **stratified sample**. Interpersonal Communication students would be one stratum, Public Speaking students would be another stratum, and Mass Media students would be a third stratum. In this case, rather than sampling 100 students randomly, you might randomly sample 33 students in the first stratum, 33 in the second stratum, and 33 in the third stratum.

stratified sample
A type of sampling that uses a technique in which different subcategories of the sample are identified and then randomly selected.

In a content analysis of newspaper radio schedules from 1930 to 1939 in three major Canadian cities, to determine what percentage of the programming originated from the United States as opposed to Canada, MacLennan (2005) used a stratified random sample—taking three weeks' programming from each year. She had ten strata—each year was a stratum, and the strata had equal sample sizes (three weeks' programming in each).

Proportional stratified sample. Let's say you want to represent students from Interpersonal Communication, Public Speaking, and Mass Media, but you want to represent them proportionally to their occurrence in the population. For example, perhaps 40 percent of your students are Interpersonal Communication students, while 45 percent are Public Speaking students, and 15 percent are Mass Media students. In this case, you would take a **proportional stratified sample**. Since 40 percent of the students are Interpersonal Communication students, then 40 percent of your sample (out of your sample of 100, or 40 students) would be Interpersonal Communication students; 45 percent (or 45 out of 100) would be Public Speaking students; and 15 percent (or 15 out of 100) would be Mass Media students.

proportional stratified sample
A type of sampling that uses a technique in which different subcategories of the sample are identified and then selected proportionate to their occurrence in the population.

For example, in order to study the optimal channel distribution (theaters, home video, video on demand) of movies and media, Hennig-Thurau, Henning, Sattler, Eggers, and Houston (2007) used a proportional stratified random sample to represent movie consumers in three major movie markets: the United States, Japan, and Germany. They drew three random samples of a total of 5,094 consumers in the United States (n = 1,701), Japan (n = 1,802) and Germany (n = 1,591), with the sample from each country proportionate to that country's overall population.

Cluster sampling. What if you can't get a sampling frame for your entire population? Let's say that you have defined your population as Communication Studies majors, but you can't access a list of all majors. You can, however, get several instructors to give you access to their class rosters. You could conduct what's called **cluster sampling**. In cluster sampling, you identify clusters, or groups (subsets of your population), that you think are representative of the entire population; and sample randomly within each cluster, letting each cluster represent the population. In the example, you could use Dr. Smith's Public Speaking class as one cluster, and Dr. Jones' Interpersonal Communication class as another cluster. The trade-off for this method is obvious—if you cannot ensure that the clusters truly represent the population, you do not have a representative sample.

cluster sampling
A type of sampling method in which clusters, or groups (subsets of a population), are identified that are representative of the entire population, and are then sampled randomly within each cluster, letting each cluster represent the population.

Hilari and Northcott (2006) used cluster sampling to understand the role of social support on communication difficulties (called *aphasia*) after a stroke. Their clusters were three different speech therapy and rehabilitation sites, and they sampled randomly within each cluster.

Sarrafzadegan et al. (2009) evaluated the effects of a lifestyle intervention on diet, physical activity, and smoking in communities in Iran. They used cluster sampling in which they targeted three counties, and randomly sampled within each county. The counties each served as a cluster.

Nonrandom Sampling. Sometimes for logistical or convenience reasons, quantitative researchers use **nonrandom sampling** techniques. The most commonly used nonrandom samples in quantitative research are: convenience samples, volunteer samples, and snowball samples. While nonrandom sampling might be used by researchers with a positivist bent, they are used with an acknowledgment of the accuracy they're giving up by not using a random sample. Researchers from an interpretivist metatheoretical bent might be more comfortable with samples that are representative in ways that are different from orderly, fixed, predictable measurements.

nonrandom sampling
Sample that is not generalizable to the population; sample that is not a random sample.

Convenience sample. A **convenience sample** is, simply, a group of people that is convenient to access—a Communication Studies class, for example, or patients of a particular doctor or medical clinic, or employees of a particular organization.

convenience sample
A group of people that is convenient to access.

Samp and Haunani Solomon (2005) sampled 106 dating couples to analyze their dyadic communication before and after they received certain types of problematic messages. This is clearly an experimental design (see Chapter 11), a very positivist method, yet the authors used a convenience sample of students solicited from "undergraduate communication courses at a large Midwestern university" (p. 30). Students were given extra credit or $10 to participate. Samp and Solomon's analysis does not discuss the limitations of their sample choice, but we can think of several. First, their sample is only representative of those 106 dyads. It's not necessarily representative of all communication students in that university, because students who participated may be different than students who didn't. Even if that wasn't an issue, it's also only representative of couples with the same demographics as the people in their sample—18 to 31 years old, and in relationships from 1 to 70 months. What other limitations to the sample can you think of? Nonetheless, it's published in a key communication journal (*Communication Monographs*), and this method of sampling is common in academic studies.

Volunteer sample. A **volunteer sample** is similar to convenience sampling—it consists of people who are willing to volunteer for a study, perhaps people who respond to a flyer you send out or post. Wilson, Morgan, Hayes, Bylund, and Herman (2004), for example, used a volunteer sample in a study to categorize mothers' child abuse potential based on observation of playtime interactions between mothers and children. They posted flyers advertising the study at two social service agencies, and when clients indicated an interest in participating, the researchers contacted them.

volunteer sample
Consists of people who are willing to volunteer for a study.

Snowball sampling. **Snowball sampling** is the method of asking study participants to make referrals to other potential participants, who in turn make referrals to other participants, and so on.

snowball sampling
This sampling method asks study participants to make referrals to other potential participants, who in turn make referrals to other participants, and so on.

Doerfel and Taylor (2004), for example, conducted a social network analysis (analysis of social networks) of Croatian organizations to understand how organizations and media in Croatia work together. They used snowball sampling to identify organizations to include in their sample. In their paper, they state:

> Organizations for inclusion . . . were identified through interviews with USAID, IREX Pro-Media (1999), Soros, and the British Fund. These international donors identified active organizations in the 2000 parliamentary campaign that were also continuing to work on civil-society projects. (p. 381)

We think this was a very appropriate use of the nonrandom sample. Do you agree? Why?

network sampling
Using social networks to locate or recruit study participants.

Network sampling is using social or other networks (workplace, organizations, support groups, etc.) to locate and recruit participants.

Smith et al. (2008) sampled agricultural workers to assess brochures designed to inform them about the threat of hearing loss in their profession. They recruited participants through "seminars sponsored by the Michigan Farm Bureau . . . [and] through a pesticide certification meeting and by contacting the landscape departments of large organizations and local firms" (p. 204). This was network sampling—the networks being the Michigan Farm Bureau, the pesticide meeting, and the organizations and firms.

Advantages and disadvantages. The advantages to nonrandom samples are obvious—they are easier (and often less expensive) to obtain than random samples, so research projects can be facilitated. The dangers to such samples are many, however. Research that gives a great deal of information about a nonrepresentative sample can be useless or at least misleading. It's important to know who or what your sample is representative OF, and limit your conclusions to that population. Use of all samples must be done with the full knowledge of the limitations of the study.

Response Rate and Refusal Rate

response rate
The proportion of people actually included in a sample, relative to the number of people that were attempted to be included.

refusal rate
The number of people that refuse participation in a study.

Another factor in determining how representative your sample is of your population is the **response rate**. The response rate is the proportion of people actually included in your sample, relative to the number of people you attempted to include. In other words, it's the number of people who agreed to participate, versus the number of people who refused participation (called the **refusal rate**). The higher the response rate, the better, and you generally want your response rate to be 60 percent or better. The problem with low response rates is that, if a lot of people are refusing to take part in your study, people who agree may be different in some way than people who refuse. Perhaps people who agree have an ax to grind, or perhaps one (or both) of the groups have some sort of biased opinion. With a low response rate, you can't be sure that your sample is representative of your population. There are several things you can do about low response rates. The first set of suggestions involve ways to improve your response rate: offer an incentive of some kind to get more people to agree to participate; follow up with people who refuse to participate to ask them again, hoping they'll change their mind the second time you ask; make your study easy to participate in (shorter surveys, for example), so they'll be less likely to refuse. The second suggestion is to determine if people who refused to participate have similar attitudes or characteristics than people who agreed. The only way to do this is to recontact a sample of those who refused and try to get them to answer a few questions from the original survey, so that you can compare their responses with people who completed the entire study.

Sample Size and Power

Now that you know who to talk to, how many of them do you talk to? How many is enough to represent your population?

Let's do an experiment. You can do this yourself. Take a jar of marbles—some are black and some are white. You want to know how many black marbles are in this jar. You don't want to take the time to count them, so you take a sample.

Let's also say that you can draw out random handfuls of marbles.

In the first handful, you pull out five marbles—two of them are black (40%). You put them back and shake up the jar. Now, you pull out ten marbles—five of them are black (50%). You put them back and shake up the jar. Now, you pull out twenty marbles—eleven are black (55%).

Each time you increase your sample size, the number of black marbles you find in your sample is closer to what the actual number really is in your population. (Because you counted the marbles before you started the experiment, you know that 60% of the marbles are black).

The larger sample you take, the more representative that sample is of the population. This is the "Law of Large Numbers."

So, you might wonder, what is large enough? That depends on what you want to do with the information after you get it.

Let's define two more terms: *confidence levels* and *margins of error*. You may have heard a television newscaster quote a political poll and say it had a 5 percent margin of error at a 95 percent confidence level. Statisticians talk about confidence levels of 80 percent, 90 percent, and 95 percent.

A confidence level of 95 percent means that, if you take 100 handfuls of marbles, 95 of those times you will come up with the same number of black marbles that are actually in the jar, within a margin of error, which we will define in a minute.

In other words, there is a 95 percent probability that your answer is pretty close to correct.

How close you are to correct is the margin of error. If you have a 5 percent margin of error, that means that your answer is within –5 or +5 percentage points of the true answer in the population.

In the case of your marbles, if you have a 5 percent margin of error, that means you count out between 55 percent and 65 percent black marbles.

If we tell you that at a 95 percent confidence level and a 5 percent margin of error, there are 60 percent black marbles in the jar, we are telling you that there is a 95 percent probability that there are between 55 percent and 65 percent black marbles in the jar.

Using a more real-life example, if we tell you that at a 95 percent confidence level and a 5 percent margin of error, your advertisement has 80 percent consumer recall, we are telling you that there is a 95 percent probability that your advertisement has consumer recall somewhere from 75 percent to 85 percent.

If you're right 95 percent of the time, that's not bad odds, is it? What confidence level you choose to use depends on what you are going to do with the information. For example, if your doctor is choosing a medicine to treat you for cancer, you surely want your doctor to choose a drug that was tested with a pretty high confidence level—99 percent, preferably (100% is impossible). If you are making a go/no-go decision on spending your life savings to

open a business, you would probably want a fairly high confidence level. Other decisions only warrant an 80 percent confidence level—being right 80 percent of the time isn't always bad. In social science research, like the quantitative research Communication Studies scholars conduct, most studies are conducted at the threshold of 95 percent confidence level with a desired margin of error at ±5 percent.

So, you may ask: What does all this have to do with sample size? There are many factors that enter into the statistics of sample size, and they have to do primarily with the statistical power you want for your study. We'll talk a lot more about this in later chapters when we discuss statistics; but for now, you need to understand what statistical power has to do with **sample size**. **Statistical power** is defined as the probability your research will identify a statistical effect when it occurs. You want your sample size to be large enough to give your study the ability to do just that—to detect a statistical effect when it actually occurs. Statistical power is determined by a combination of sample size, confidence level, margin of error, and the data itself resulting from the research. The sensitivity of your research to identify this statistical effect can be increased by increasing your sample size. In other words, the larger your sample, the more statistical power your study has. However, there's a limit as to how large you can make your sample. For cost and other practical considerations, you want your sample to be just large enough to have the statistical power you need. To determine what that is, you conduct an *a priori* power analysis; and to do this, you need to know your desired confidence level, your desired margin of error, and the data proportions you expect to find in your study. Since you often won't know the data results you expect ahead of time, researchers use a rule of thumb to calculate power and sample size. This rule of thumb assumes the largest sample size necessary to detect effect size. The chart below gives what that sample size rule of thumb would be for each of several combinations of confidence level and margin of error. For example, if you are conducting a study and plan to set a confidence level of 95 percent, and want to be able to detect differences at an error factor of ±5 percent, you would want to have a sample size of 400. If you are content with detecting differences at an error factor of ±8 percent, you can lower your sample size to 150.

sample size
The number of data sources that are selected from a total population.

statistical power
The probability that research will identify a statistical effect when it occurs.

	At a confidence level of:			
	80%	90%	95%	99%
With an error factor of:	**Your sample size should be:**			
±5%	160	275	400	665
8%	64	100	150	260
±10%	40	70	100	170

For you math lovers in the class (yes, we know there are a few!), the formula for determining these sample sizes is:

$$n = \frac{(s^2)\ pq}{B^2}$$

In this formula, p and q are the two proportions (percentages) you'll be conducting your study to determine. Thus, this really contains circular reasoning, since you need to know what those proportions will be to determine your sample size, but you don't know what they are until you conduct your study. You can be more precise in determining sample size if you base these numbers on a pilot study or on previous research. However, for the purposes of the chart above, we used the most conservative estimate of proportions—we estimated that the proportions would end up being 50–50. B refers to the error factor (±5%, etc.), and s refers to the number of standard deviations from the mean your confidence intervals are. We haven't discussed this yet and won't until we get into statistics later, but for now know that:

A confidence level of	Is this many standard deviations from the mean
80	1.28
90	1.645
95	1.96
99	2.58

So, if you want to determine the sample size for an error factor of 5 percent, a confidence level of 95 percent, and proportions that are 50–50, your formula would be:

$$n = \frac{(1.96^2)(.5)(.5)}{.05^2}$$

If you do the math, it comes to 384. We round to 400.

We said previously that there are many factors that enter into deciding the sample size. Strangely enough, the size of the population is not one of the factors that makes a big difference in the necessary sample size. Generally speaking, the size of your population is irrelevant to your desired sample size.

The only time the population size is important is if it is extremely small—so small that your sample size would be 5 percent or more of your population size (or when your population is less than 20 times larger than your sample). Then, there is a statistical correction for a small population. However, even this correction doesn't make much of a difference.

Again, for you math lovers, here's the formula for the correction:

$$\sqrt{1 - \frac{n}{N}}$$

You may remember from your statistics class that small n refers to your sample size and large N refers to your population size. So, let's say the earlier formula said you should have a sample size of 400, but your population size is only 4,000. If you apply those numbers to this formula for the small population correction, you'll end up with .95, which is the correction you should make to the sample size. Thus, .95 * 400 (the original sample size) is 380—and that's the sample size correction you would make.

You may have noticed that you can't use this formula if your population is smaller than your sample size, because you'll be trying to get the square root of a negative number and you can't do that. That's okay. First of all, if your population is that small, you may want to reconsider your desired confidence level and error factor, conduct a census, redefine your population, or consider a qualitative or case study method. Otherwise, you may feel better to note that Hamburg (1970), in his classic statistics textbook, states that "so long as the population is large relative to the sample, sampling precision becomes a function of sample size alone and does not depend on the relative proportion of the population sampled" (p. 290). In other words, it's what we said earlier—the size of your population is somewhat irrelevant to your desired sample size. Hamburg also notes that in the early days of statistics, researchers just arbitrarily sampled a percentage of their population—10 percent, for example. We don't generally recommend that, but you'll have to make some concession if your population is that small.

You may be saying to yourself it doesn't make sense that population size is irrelevant to your desired sample size. Well, it really does. The reason for this is that all populations, regardless of their size, fall into what is called a *normal distribution.*

This means that, in any population, 95 percent of the responses will cluster around the average response, with a certain variability.

This is true if the population is 100 people or one million people. Since the sample is attempting to represent this cluster of responses, it doesn't matter how large the population is. We are only interested in sampling enough people to represent the curve of responses, regardless of the size of the population.

Sampling in Qualitative Research

Sampling Methods

In qualitative research, you are also sampling to represent the population. However, you don't want to represent the population numerically or in a way that you can predict numbers or proportions. You want to represent the sample behaviorally, or in a way that you can describe or understand the population. While quantitative research typically involves large samples so you can make accurate predictions mathematically (little information about a lot of people), qualitative research typically involves small samples that you study in-depth (a lot of information about a few people). Qualitative researchers frequently also use convenience and volunteer samples, snowball and network sampling, but they also use other types of sampling methods.

purposive samples
Samples chosen for a particular purpose.

Purposive Sampling. Qualitative samples are often **purposive samples**—samples chosen for a particular purpose. For example, in healthcare research, you might want to conduct a focus group among residents of a battered women's shelter who have been receiving services for at least six months, so you would specifically choose people who meet that purpose or criteria. You might purposely choose people because they can serve as *informants*—people who can give you inside information about the group you're studying.

Karen Tracy (2007), for example, used a purposive sample in her case study of crisis communication in school board meetings. She studied meetings from one school board, but her unit of analysis was not school boards, it was meetings. Therefore, we need to see how she chose the meetings to analyze. She did not analyze all the meetings, but she analyzed three specific meetings, chosen because they "were the center of public attention" (p. 438). She also analyzed documents downloaded from the school board's Web site, as well as all relevant stories in the local newspapers during the time period under study. She determined relevance of documents and news stories based on how whether or not they discussed the crisis issue.

Martin (2004) also observed meetings—workplace meetings—to investigate the use of humor among women in middle management positions. She conducted research at one field site (a zoo), and sampled women who fit the desired characteristics (they were middle managers). She also studied the people who report to them and their male peers as informants. Her paper clearly states the limitations of this sampling method:

> It is important to realize that the findings from this study are limited to the site and informants from which they are derived. For example, the behaviors exhibited by managers at The Zoo cannot be assumed to apply to non-white women, who may confront additional or very different constraints around humor usage and who may face entirely different forms of organizational paradox. (p. 153)

Yet, even though the findings may not be generalizable in a positivist sense, how might an interpretivist feel about the representativeness of the sample?

Quota Sampling. Perhaps you want to talk to people who have been receiving services at the battered women's shelter for less than six months, and people who have been receiving services for more than six months. You might conduct five in-depth interviews among people who meet each of those criteria. If you did this, you would be doing **quota sampling**—assigning quotas of interviews/focus groups to different groups. You'll notice that quota sampling is similar to stratified sampling, but stratified sampling is a random sampling method while quota sampling is conducted with nonrandom samples.

quota sampling
A nonprobability (nonrandom) sampling technique that sets quotas for key categories to identify how many members of the sample should be put into those categories.

For example, Duke and Ames (2008) conducted a study to understand unplanned pregnancies among women enlisted in the U.S. Navy. They conducted fifty-two in-depth interviews at seven naval facilities. They used quota sampling, and in order to adequately represent the different viewpoints involved, they assigned quotas by gender, occupation (sailors versus other personnel), and location.

Maximum Variation Sampling. Qualitative researchers also use several other sampling methods to ensure that their samples represent their populations in ways that meet their study objectives. **Maximum variation sampling** is a method that selects study participants to find examples that represent a wide range of characteristics that are present in the population and are of interest to the research. This sampling method is based on the "law of requisite variety," which says that any research study should represent the variety of characteristics present in the population. If you're studying street gang interactions, you might want to observe a range of different types of meetings or interactions.

maximum variation sampling
A sampling method that selects study participants that represent a wide range of characteristics that are present in the population and are of interest to the research.

Tracy (2004), for example, observed and interviewed correctional officers and staff to analyze organizational discourse. She "studied both male and female officers who worked 8 and 12-hour shifts and who represented a variety of ethnic backgrounds but were primarily white, black, and Hispanic" (p. 126). Assuming these characteristics represent the range of characteristics at the correctional facility, she used maximum variation sampling.

theoretical construct sampling
The selection of study participants who have characteristics representing theories on which a study is based.

Theoretical Construct Sampling. **Theoretical construct sampling** selects study participants who have characteristics that represent theories on which the study is based. For example, a researcher might wish to study medical teams through the lens of systems theory, and might select such teams based on their systemic properties (e.g., teams that interact with each other a great deal).

Klossner (2008) conducted a study to understand socialization among students in an athletic training program. She used theoretical sampling, specifically recruiting second-year students because they were in the middle of their educational experience, and she theorized that they would be at the third phase of professional socialization and their point of enrollment would enable them to have reciprocal social interaction.

typical instance sampling
Consists of sampling units who have characteristics typical of a population.

extreme instance sample
Consists of sampling units who have characteristics quite different from the rest of a population.

Typical and Extreme Instance Sampling. **Typical instance sampling** would consist of sampling units (e.g., participants or meetings) who have characteristics typical of the population (e.g., a typical meeting), while *extreme instance sampling* would consist of sampling units who have characteristics quite different from the rest of the population (e.g., unusual interactions).

Davis (2009), in her ethnographic study of a hospice interdisciplinary team, sampled typical interactions between team members by attending various normal team meetings and healthcare visits.

Manatu-Rupert (2000), for example, used extreme instance sampling when she conducted a textual analysis of the depiction of black women in films by African-American and non-African-American filmmakers. She analyzed two films—Spike Lee's *She's Gotta Have It* and *Lethal Weapon*—chosen for their controversial representation of black women.

Sample Size and Data Saturation

Determining sample sizes for qualitative research is quite different than for quantitative research. Remember, again, you're not trying to measure or predict anything with qualitative samples; you're trying to understand, explain, or describe. For that reason, qualitative researchers are more concerned with the *level of depth* of information than the number of participants about whom they're getting the information. Qualitative researchers sample until they reach what is called **data saturation**—until no new information emerges. Researchers typically begin with a planned sample size (maybe ten to twenty-five interviews, maybe monthly meetings over twelve months, maybe six to twelve months of field observations), then adjust this size as they collect the data, adjusting the size up if they determine they need more information, and adjusting down if they determine they are reaching saturation earlier than expected.

data saturation
Sampling until no new information emerges.

Guest, Bunce, and Johnson (2006) conducted a project about social desirability bias in health research among women from two West African countries, in which they attempted to determine the ideal sample size required for saturation to occur. Their study yielded thematic saturation at twelve interviews; but this may or may not hold for other dissimilar studies. Recommended sample sizes vary depending on the type of qualitative research conducted. These variations will be discussed in more detail in Chapter 14.

So What?

Whether you're conducting qualitative or quantitative research, whether you're approaching your research from a positivist or an interpretivist paradigm, your sample will be representative of something, and as a good researcher, it's your job to make sure it's representative of what you intend to study. Sampling procedures range from random, parametric samples that are representative of the population in a measurable, predictive sense; to nonrandom, nonparametric samples that are representative of theories, behaviors, descriptions, or viewpoints. We'll talk in Chapter 9 about issues of validity, reliability, and credibility; but for now, know that a study is not valid, reliable, or credible if it doesn't represent whomever or whatever it's supposed to represent.

Glossary

Cluster sampling
A type of sampling method in which clusters, or groups (subsets of a population), are identified that are representative of the entire population, and are then sampled randomly within each cluster, letting each cluster represent the population.

Convenience sample
A group of people that is convenient to access.

Data saturation
Sampling until no new information emerges.

Extreme instance sample
Consists of sampling units who have characteristics quite different from the rest of a population.

Generalizability
Ensuring that a researcher's findings will apply to other people and situations that a study's sample supposedly represents.

Maximum variation sampling
A sampling method that selects study participants that represent a wide range of characteristics that are present in the population and are of interest to the research.

Network sampling
Using social networks to locate or recruit study participants.

Nonrandom sampling
Sample that is not generalizable to the population; sample that is not a random sample.

Proportional stratified sample
A type of sampling that uses a technique in which different subcategories of the sample are identified and then selected proportionate to their occurrence in the population.

Purposive samples
Samples chosen for a particular purpose.

Quota sampling
A nonprobability (nonrandom) sampling technique that sets quotas for key categories to identify how many members of the sample should be put into those categories.

Random sampling
A sample in which everyone in your sampling frame has an equal chance of being included in the study.

Refusal rate
The number of people that refuse participation in a study.

Response rate
The proportion of people actually included in a sample, relative to the number of people that were attempted to be included.

Sample size
The number of data sources that are selected from a total population.

Sampling frame
A realistic version of your population; the ones you can identify and access.

Simple random sample
A basic sampling method where a group of subjects (sample) are selected for study from a larger group (population), and each member of the population has an equal chance of being chosen at any point during the sampling process.

Snowball sampling
This sampling method asks study participants to make referrals to other potential participants, who in turn make referrals to other participants, and so on.

Statistical power
The probability that research will identify a statistical effect when it occurs.

Stratified sample
A type of sampling that uses a technique in which different subcategories of the sample are identified and then randomly selected.

Theoretical construct sampling
The selection of study participants who have characteristics representing theories on which a study is based.

Typical instance sampling
Consists of sampling units who have characteristics typical of a population.

Unit of analysis
Sampling units.

Volunteer sample
Consists of people who are willing to volunteer for a study.

References

Das, E., Kerkhof, P., & Kuiper, J. (2008). Improving the effectiveness of fundraising messages: The impact of charity goal attainment, message framing, and evidence of persuasion. *Journal of Applied Communication Research, 36*(2), 161–175.

Davis, C. S. (2006). Sylvia's story: Narrative, storytelling, and power in a children's community mental health system of care. *Qualitative Inquiry, 12*(6), 1–24.

Davis, C. S. (2009). *Death: The beginning of a relationship*. Cresskill, NJ: Hampton Press.

Doerfel, M. L., & Taylor, M. (2004). Network dynamics of interorganizational cooperation: The Croatian Civil Society movement. *Communication Monographs, 71*(4), 373–394.

Duke, M., & Ames, G. (2008). Challenges of contraceptive use and pregnancy prevention among women in the U.S. Navy. *Journal of Qualitative Health Research, 18*, 244–253.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods, 18*(1), 59–82.

Hamburg, M. (1970). Statistical analysis for decision making. New York: Harcourt, Brace, & World.

Hennig-Thurau, T., Henning, V., Sattler, H., Eggers, F., & Houston, M. B. (2007). The last picture show? Timing and order of movie distribution channels. *Journal of Marketing, 71*, 63–83.

Hilari, K., & Northcott, S. (2006). Social support in people with chronic aphasia. *Aphasiology, 20*(1), 17–36.

Klossner, J. (2008). The role of legitimation in the professional socialization of second-year undergraduate athletic training students. *Journal of Athletic Training, 43*(4), 379–385.

MacLennan, A. F. (2005). American network broadcasting, the CBC, and Canadian radio stations during the 1930s: A content analysis. *Journal of Radio Studies, 12*(1), 85–103.

Manatu-Rupert, N. (2000). The filmic conception of the black female. *Qualitative Research Reports in Communication, 1*(3), 45–50.

Martin, D. M. (2004). Humor in middle management: Women negotiating the paradoxes of organizational life. *Journal of Applied Communication Research, 32*(2), 147–170.

Samp, J. A., & Haunani Solomon, D. (2005). Toward a theoretical account of goal characteristics in micro-level message features. *Communication Monographs, 72*(1), 22–45.

Sarrafzadegan, N., Kelishadi, R., Esmaillzadeh, A., Mohammadifard, N., Rabei, K., Roohafza, H., Azadbakht, L., Bahonar, A., Sadri, G., Amani, A., Heidari, S., Malekafzali, H. (2009). Do lifestyle interventions work in developing countries? Findings from the Isfahan Healthy Heart Program in the Islamic Republic of Iran. *Bulletin of the World Health Organization, 87*, 39–50.

Siegel, T. (Producer), & Conquergood, D. (Director). (1990). [DVD]. *The heart broken in half*. Portland, OR: Collective Eye.

Smith, S. W., Rosenman, K. D., Kotowski, M. R., Glazer, E., McFeters, C., Keesecker, N. M., & Law, A. (2008). Using the EPPM to create and evaluate the effectiveness of brochures to increase the use of hearing protection in farmers and landscape workers. *Journal of Applied Communication Research, 36*(2), 200–218.

Tracy, K. (2007). The discourse of crisis in public meetings: Case study of a school district's multimillion dollar error. *Journal of Applied Communication Research, 35*(4), 418–441.

Tracy, S. J. (2004). Dialectic, contradiction, or double bind? Analyzing and theorizing employee reactions to organizational tension. *Journal of Applied Communication Research, 32*(2), 119–146.

Wilson, S. R., Morgan, W. M., Hayes, J., Bylund, C., & Herman, A. (2004). *Communication Monographs, 71*(4), 395–421.