

Sample Size Essentials

Well, thank you, Dr. Smith.

Um, always appreciate the opportunity to come and share one of my favorite topics, uh, wi, which is, uh, population and sample design for research.

Um, my name is Dr. Mice.

I'm the, I'm a chair in the, uh, college of Doctoral studies, and I have the pleasure of working with a number of, uh, dissertation students.

So you'll, you'll kind of notice the flavor of this presentation is really guided, uh, by the desire to make sure that students have the opportunity to, to describe their population and their samples, uh, in a way that's going to satisfy your chair and do university research methodologists.

So, with that, we'll kind of dive in.

Um, the purpose of this topic is to talk about, uh, determining the sample size, um, for both quantitative and qualitative research.

And I'm, I like doing these both at the same time because it allows us to kind of compare and contrast, but also see the similarities between, uh, how we determine what sample sizes are for the different types of research designs that we work with.

So, I always, um, if you've been to any of my webinars before, you know that I like to try and put a flow chart up to try and describe what the process looks like when you're working with populations and samples in particular.

Um, so just going left to right through this, um, typically in a research proposal we have to describe our population.

This is the group of folks that we're seeking to study.

Um, many students will confuse population and sample in their write-ups, and it's really important to keep them distinct.

A population is that larger group.

The sample is a subset of the group that we are collecting data from.

And we're gonna talk a little bit about tonight about how to choose a sample and choose a sample size and a sampling technique that allow us to choose a sample that's representative of that broader population.

We're gonna talk a little bit about different sampling techniques.

How do you go about inviting people to participate in your study, uh, and how do you sample that, uh, uh, population so that you get a representative sample and one that will, uh, produce substantive results for your study? And also talk about when to stop sampling.

Uh, this is almost as important to articulate in your proposals as your sampling technique and sample size, because we very seldom choose a specific sample size.

We choose a minimum sample size, uh, that we're collecting, and that there's gonna be attributes of that sample that we have to attribute, or that we have to, to satisfy.

These are all things that we have to clearly describe before we go to the, um, university, uh, institutional review board to get permission to collect information, uh, for our research, because understanding the population and the sample is key to understanding how we're gonna protect that population during the, uh, research process.

Then we're gonna go about, uh, we're talk a little bit about recruiting and a, uh, uh, assessing our sample, uh, collecting data from the sample.

And then what do you actually report about your sample when you're done with the research? So these are the various points in time in your research process, your proposal process, and your data, and your research process that, uh, your population and sample are critical for.

So, let's dive a little bit into that section of your dissertation proposal.

In chapter one, where most students begin to talk about their population and sample, there's a section in chapter one called Population and Sample.

And it really distinctly refers to two different aspects of your study.

The first is the population, which is the description of the group that you're seeking to study.

Now, the, the population description should be general, it should be inclusive of the, uh, group of people or subjects that you're seeking to collect data and analyze the data to, to better understand.

Um, so most of us don't have any way of collecting a, uh, a comprehensive sample of an entire population, but we still wanna make sure we're describing that entire population and also identifying any de limitations on that, uh, sample or that, I'm sorry, the limitations on that population that are con going to constrain its size.

We'll talk about that a little bit more in a minute.

Um, once you've fully described your population, you also have to describe your sample.

The sample, again, has to represent your population.

And there's key things that we have to describe in that sample description.

We have to describe what a minimum sample looks like.

Um, how are we gonna determine, um, that that sample is representative of the population? What are the, and what are the sampling controls? And what are our sampling techniques that we're going to need to, uh, use to collect that sample? So let's first talk about a, a population first.

So, a population, a total population is, um, every, is a description of everybody in the, uh, universe that fits the, uh, the purpose of, uh, your study or fits the topic of your study.

So, if you're talking about Hispanic engineering employees, that that could represent a Hispanic engineering employee worldwide.

You know, I've had many, many students that will describe a population in such a broad context that it could apply to the paperboy on the streets of London in, in uk, or good, um, meet or describe a, uh, lemonade stand employee in the Midwest, small business employee.

Um, you know, those, those really broad descriptions are, are useful 'cause they're helping us understand what the, what the group of people are, we're trying to better understand.

But we have to begin to delimit that so that we've got a constraint or a bounding box around our population so we can control the variability.

'cause as you might imagine, the the challenges that are faced by eliminate stand owner in the Midwest are a little different than that of a paper point in the uk.

And so the most common delimiter that we put on our populations is the geographic one.

You know, you may talk about, uh, southwestern states in the United States, you may talk about North America, you may talk about, um, you know, the Dallas-Fort Worth metropolitan area.

You, you typically want to constrain your population in a way that makes the size manageable, but, and also gets rid of any, uh, noise in the data.

Um, but also we wanna make sure that we're deli it in a way that's large enough that our, uh, uh, research will have significance.

So, another example I've got there, uh, is shoes of North American marathon runners.

So it's North American marathon runners become a delimiter of the general population of shoes.

So not all populations are people.

Uh, sometimes populations are, uh, objects that we're seeking to study as well.

So make sure when you're describing your population, you're describing the, the universe of your population, but also the delimiters.

And at a minimum, the geographic, uh, constraints of your population.

What so limited pop, again, are those constraints that we put around it.

Again, the most common delimiter is gonna be population, but you may have employment.

So you may wanna look at engineering employees and, um, automotive manufacturing businesses.

Um, constraints like that help us make sure that we've got where we can reasonably expect some consistency in the answers that we're getting from our population.

When we're collecting information where there's quantitative or qualitative, uh, these constraints can help us make sure that our, uh, findings are reasonably, uh, consistent across the, uh, sample that we're drawing information from, but also can be considered representative of the broader population.

So, small businesses, in this case, a Hispanic, if we're talking about engineering employees as a population, Hispanic would be a delimiter, small business would be a delimiter, uh, Florida and Georgia would be a delimiter, um, of the engineering employees population.

Um, so delimiters are really important because they help us constrain the size of our population.

When we, when we're asked to describe the population size, um, we're we are asked to describe the delimited population size.

So, uh, in chapter one, when you're asked to describe the population, provide a description of it and articulate a size for that population.

We're asking for the size of the delimited population, and that's important because that delimited population is what we're, we need to make sure we are representing in our sample.

It's important that size is important for quantitative research, but it's also equally important for qualitative research, so we can make sure that we're, um, gathering demographics and sampling controls that are appropriate for our overall population.

Um, so again, what's included in a population description, we, first of all is the population description.

Any delimiters that are determined by the researchers.

So geographic industry, um, uh, role, uh, gender, you know, we've had people look at female employees, and so, uh, gender would become a delimiter in that case.

Um, and then we want the estimated size of the population, and again, we're looking specifically for the size of the delimited population.

So if you've got 500 employees in your company that, that you're, um, looking to study, um, 300 of those are female.

Your delimited population, if you're looking at female employees, would be 300, not 500.

So look at the size of the delimited population.

The last thing that's really important, and this is very important and many, many students forget to do this, is to provide demographic information about your population.

And I'll give you a specific example.

If, uh, as in the example I just shared a minute ago, if I'm looking at a population of employees for a business and 50% of them are female, and 50% of them are male, then I'm gonna wanna have a sampling control.

Uh, one, and we'll talk about sampling controls later.

We wanna make sure that we develop a sample that's representative of the population, and that demographic gives us a

ruler or a guide that we can use to ensure that our sample is representative of the population.

If our population is 50% men and 50% women that we're gonna wanna sample, that's 50% men and 50% women.

If we've got a population that's 20% in their twenties, 20% in their thirties, and, um, the rest in their fifties, we're gonna wanna make sure our sample is representative of that.

Why is that important? Um, because as we're collecting data, if, um, we're 50% men and 50% women in our sample happens to all be women, can we reasonably assert that our sample is representative of the population? And the answer to that's no.

So we've gotta make sure that our sample is representative of the population.

And sampling controls based on demographics is one of the most, one of the best ways that we can do that.

Um, so again, collecting data from a population, we have to identify what the minimum sample size is for the limited population.

Now, in quantitative research, that's very simple.

Um, we'll determine the, uh, statistical significance.

We'll use a, um, a calculator to determine what that minimum sample size is that's necessary to do a, a statistical analysis.

Uh, but for a qualitative study, it's a little trickier.

Um, that minimum sample size has to be appropriate for the design of our research.

Uh, so if we're doing narrative inquiry or case study, we wanna make sure that the literature is consistent with us, with our decision on or our choice for minimum sample size.

But sampling controls are also an important part of this.

So if, um, we need to have, um, uh, a minimum of 20, um, to make sure that we've got good representation of our demographics, then that would be the minimum we would be looking for.

Um, so make sure that your minimum is consistent with the literature for your design, and also make sure that it's, um, large enough to be able to address the diversity of your statistics, uh, to make sure you've got a representative sample.

So it requires both knowledge of your design and knowledge of your population in order to determine what that minimum is.

And you're gonna need to justify what that minimum is in your proposal.

So let's talk about that minimum just a little bit more bit, uh, just to give some examples.

So, um, again, look for authoritative primary source references for your design to help you to determine what that minimum sample size is.

Also, build on the knowledge you have of your population to understand what the minimum size is gonna need to be to ensure that you've got a representative sample.

Um, so just to give you an example here, if you had people that had purple hair, red hair, white hair, black hair, blue hair, orange hair, green hair, and you had, um, a distribution of people in your overall population, you'd wanna make sure the sample you had could at least be reasonably approximating the distribution of the population.

It doesn't have to be perfect, but it does have to at least show that you've, uh, got a reasonable, um, distribution in your sample.

Now, I don't want anybody to ever think that I would ever accept four people as a minimum sample size for most studies, but, um, studies in this particular case, if we had a population of 22 and we want an 80% confidence interval and a 30% error rate for quantitative research, four would be considered a statistically significant sample.

Um, you probably wouldn't get that research proposal approved, approved, but it's, um, this is the type of justification you would go through to, to define what your minimum sample sizes are.

And then you'd work with your chair to make sure that you've got, uh, your minimums approved.

So before you go into IRB, so quantitative samples, you know, I, I mentioned before that there's slightly different ways to calculate, um, the sizes of quantitative samples as opposed to qualitative samples.

So I'm gonna talk a little bit about quantitative samples.

First, um, for most research, um, quantitative samples are quantitative research, um, which is numerical research tends to deal with very large populations, and therefore much larger samples, um, samples tend to approach the population size tangentially, um, as the competence interval goes up.

But, uh, we'll talk a little bit about how to, how to determine a sample size for quantitative research first, and then we'll then we'll talk about qualitative research next.

So, quantitative research, again, the outline on the right here, what is the description of your population? What's the limitation of your population, of your delimited population size? And what are the demographics? Now, demographics are just as important in quantitative research as they are in qualitative research.

Even if you're doing random sampling, it is a useful exercise to ensure the, uh, value of your research to be able to assert that the demographic distribution of your, even your random sample, roughly approximates that of your general population.

So, I still encourage students, although it's not, in some cases not required for very large populations, uh, to at least do a, um, cursory look at the demographic distribution of the population and the demographic distribution of the sample that's required in, um, you know, dis reporting on the demographic, uh, distribution of your sample is required, uh, in your dissertation.

So you might as well plan on it, uh, and be able to be able to assert that your demographic distributions are roughly aligned between the population of the sample, the sample itself.

Um, you know, you need to describe the sampling technique for a lot of quantitative research.

You may be using a random sample, but there's also cases where you don't have uniform access to your population.

So you may be using a stratified sample or may be using another sampling technique, and we'll talk about the different sampling techniques here in a minute.

But, uh, regardless of, uh, sampling technique that you choose, convenience, random snowball, et cetera, you're gonna need to still identify the minimum sample size and be able to report on it based on statistical significance and identify the sampling controls.

Um, power analysis.

So the most common way that, um, most folks will determine the minimum sample size for a quantitative research is through a power analysis.

There's a lot of tools out on the web, um, for doing power analysis.

Probably the simplest one to use is on, uh, is available through SurveyMonkey.

It simply asks you to enter your, your population size, your delimited population size.

In our case, what's the confidence interval that you're trying to achieve, and what's the margin of error that you're seeking to achieve? For most of us, for, for, um, business DHA, most of the research that we're gonna be doing is gonna be in a 90, 92, 90 5% confidence level with an error rate of between five and 10%.

But if they're very difficult populations to get access to, um, going down to an 80, 85 or 80% confidence interval, uh, may be acceptable.

That's a conversation you need to have with your chair to determine if that's, uh, an acceptable level.

Uh, or you may be allowed to go to a higher margin of error, uh, as much as 10% potentially that weakens the strength of your findings.

But it, you know, a weak finding is better than no finding.

And if it's a very difficult, uh, population to access, um, those lower confidence intervals and margin of errors may be acceptable.

Um, so for most correlation, expo facto, um, regressions, um, the SurveyMonkey calculator is more than sufficient.

If you're doing, um, more complex, um, quantitative research, if you're doing, um, multiple regressions or you're doing, um, uh, some of the other more complex statistical methods, you may need to use a tool called G Power that allows for additional variables to, uh, be, uh, injected into that power analysis.

It's still a power analysis, um, but it, uh, the assumptions that the tool makes, uh, have to be tuned a little bit better for those more complex analyses.

Um, there's a thousand YouTubes out there, and there's also great documentation on G Power and how to use it for some of the more complex designs.

But most of our dissertation research is correlation regression, uh, ex post facto, and a very simple power analysis with is gonna be more than sufficient.

Um, statistical significance, what is that? You know, we talked about statist, um, statistical significance.

Um, and the reason we do this power analysis is to determine whether or our findings are going to be, um, significant and significant means that we're able to assert that our, um, our, uh, forecast or projection for the potential outcome based on an income or an input, uh, is gonna be, uh, reasonably consistent and not just a function of random, random, uh, factors.

So significance basically gives us a level of confidence that our, um, dependent variables are in relation with our, uh, independent variables in a, in a reportable way.

Um, so basically that's the role of power analysis.

Now it's, it's important to know that you'll do a power analysis to determine your minimum sample size, but you're going to redo that power analysis when you're done with your data collection, with your actual sample size, so you can report on the significance of the findings of your research.

Um, so qualitative research, uh, is very similar.

There's a population and a sample.

In qualitative research, it's typically samples are gonna be much smaller, uh, because in quantitative research, we're looking for patterns in the data.

And in qualitative research, we are assuming the patterns of the data, we're looking to better understand them.

So we collect much richer text, um, much richer data, uh, for qualitative research that helps us understand the why and instead of the what that we're getting typically in the quantitative research.

So our sample sizes tend to be smaller, um, but the sample size still needs to be representative of the population, believe it or not, if you look at that population and sample the, uh, the color distribution of that sample is exactly in the same proportion as the color distribution, that population that's indicating that that sample is representative of the population, had that entire sample size all been, uh, that medium brown color, then there's no way I could have asserted that that sample represented the population.

So making sure samples meet those sampling criteria, uh, is still just as important in small samples as it is in, in, uh, larger samples for quantitative research.

Again, we're looking for population description.

We're looking at the del limitation.

We need to know the delimited size and for, um, qualitative research, these demographic, the demographic information is even more critical with small samples.

We have to make sure that our sample is still representing the demographics of our overall population to ensure that our, um, findings are valid.

Now, our sampling technique becomes a little more critical, uh, and we're gonna go through each of the sampling techniques here in, or most common sampling techniques here in just a minute to help describe how you would sample to get to these sizes.

But identification of the sampling technique and justification for why you're using that sampling technique, um, to collect your sample is very important.

You can't just pick a random one.

There has to be a reason or justification for choosing a sampling technique.

Again, minimum sample size based on authoritative primary source literature and still understanding sampling controls is important.

So you'll see there's a lot of consistency here between quantitative and qualitative sampling and what needs to be described in chapter one and in chapter three, uh, quantitative and qualitative.

Um, now when do we stop sampling? Now, I, I talked a little bit in, uh, quantitative research that we would stop sampling when we met our sampling criteria or sampling distribution, which is usually not too difficult, but it's even more important.

Um, in qualitative research, there's multiple reasons you would stop sampling in qualitative research.

Um, typically we sample up to the minimum, uh, sample size that we've defined in our proposal, but then we keep sampling until we meet, uh, a set of criteria.

First of all, we have to satisfy our sampling controls.

So if we had 50, 50 men and women, we wanna have roughly 50 50 men and women our sample.

But we also keep sampling until we hit a thematic saturation, um, in, in, uh, designs like narrative phenomenology, or if we're doing designs like case study, we're looking for triangulation or agreement from dis multiple data sources.

We would keep sampling until we satisfy the, the sampling controls, and we either hit saturation or triangulation requirements, um, which means our minimum sample is very seldom the actual sample we're collecting for our research.

We'll continue to sample our population, do we at saturation or satisfy the triangulation requirements? Uh, all, all the whole time, keeping an eye on our, um, sampling controls to make sure we're staying representative of the population.

Um, qualitative sampling techniques.

So there's a number of different sampling techniques.

I'm gonna go through a handful of them, two or three slides of them.

We're gonna talk about when each of these might be appropriate.

The sampling technique, um, should be carefully chosen, uh, and not just picked because it looks convenient, um, because the sampling technique has a lot of influence on the level of bias we have in our research.

Um, any skewing, uh, either confirmation bias or researcher bias, uh, any skewing of the data, um, the impact on the validity or integrity of the findings, uh, it's heavily influenced by the, uh, sampling technique that we choose.

So you wanna make sure you evaluate these and choose the strongest technique that you possibly can.

Um, so I'm gonna go through a, a series of these and just talk about when you might choose one of these.

So, purpose of sampling, um, this is when a researcher selects participants, uh, based on specific criteria that are relevant to the research question.

So you may, um, have inclusion criteria in your, uh, invitations that will either accept or reject people from your sample.

And most of the time, that's ensuring that you're getting people that can fully represent the topic of your study.

So, um, a good example of that would be choosing people that are, um, for example, not currently involved in a lawsuit related to this organization or not, um, you know, currently or have completed X number of projects or have x numbers of years of experience with a company, you're creating an inclusion criteria.

And what that does is it, it strengthens the findings of your study by getting more consistency on the topic that you're related to.

Uh, purpose of sampling, um, can be a very strong sampling technique.

Um, another one is snowball sampling.

Snowball sampling is often used when it's very difficult to get access to a population, uh, or a population is reluctant to participate in research.

Snowball sampling is where you, um, recruit a small handful or a seed group of participants in your group, and you ask those participants to recommend, um, other participants to, to join the research study.

Um, it's a good way to get a significant sample size.

Um, but it's also a, a great way to introduce bias into the study, meaning that people will tend to recommend, uh, their friends, their peers that are gonna have the same opinions they do.

And so it can skew your findings and introduce what's called confirmation bias.

So the study will reinforce the findings of that small sample group that you had up front in many cases.

So if you're doing snowball sampling, you're gonna wanna make sure you've got very good, um, demographic, uh, sampling criteria.

So you're making sure your sample's representative of the population, um, but you're also gonna wanna be very careful with the seeds, uh, the, the initial individuals that you recruit so that you've got a diversity of opinion, uh, in that initial seed so that you can make sure you've got good representation.

Um, and you don't have a, uh, a study that's skewed by a specific, um, uh, opinion or bias of the researcher or the initial sample.

Convenience sampling is, um, probably one of the more common that I see students use.

It's where researchers select participants or invite specific participants that they know or are connected to.

They're readily available, they're easy to access.

Um, the problem with convenience sampling is it's very prone to researcher bias, meaning that we tend to have relationships and friends and connections, uh, with people that have similar opinions to our own.

And when we're using convenient sampling, we can reinforce what we want to see rather than what the population is actually should be reporting.

And so convenient sampling is, uh, often a very simple, it's a very quick and easy way to do research.

You can typically could get through a data collection rate very, you know, on a very aggressive timeline, but you're gonna wanna really make sure, and you're gonna have to demonstrate in your proposal that you've got good sampling controls to ensure representation of the population, um, and that your demographics cut across a variety of different attributes of the population.

So you might may want a more sophisticated demographic than just, um, gender.

You may want a demographic, uh, about education.

You may want a demographic about, um, age.

You may want a demographic about years of experience so that you're getting a good distribution of, uh, participants in the population, um, to ensure that your findings are credible.

Dr. Rice, I'm not able to hear you now.

Can anyone else hear him? You can.

No, no, no, no. I cannot. I cannot. You cannot. Okay.

Dr. Rice, we're not able to hear you right now.

Let me put it in the chat.

Oh, people put it in the chat. Wonderful.

Can you hear me now? Yes. Now you can hear me? Yes. Okay.

What exactly, what slide? Did you guys lose me? Not very long ago. Yeah, it was just like Two minutes.

Yeah. Well, You were on a roll.

Andy, can you say something? Yes. Can you hear me Now? Uh oh, we can hear you. It Was the last side. We're controlling.

Try again, Andy. Okay. Can you hear me now? I can hear you now. Okay.

And I can hear you, so we're good.

I absolutely no idea what happened. No worries.

Um, how long ago did you lose me? Not very long ago. Just a couple minutes.

Okay. Well, let me get, let me get back to sharing here.

We'll, we'll pick up, uh, where we left off, and the slides are gonna be available, everybody, and, and you can always send me an email later too.

So, um, let's see.

Let me get back to the slides.

Um, where do we usually find this, the PowerPoint? Um, so the PowerPoint is, if you go to the, um, the, the research methodology group, there's a SharePoint site out there for that, um, a team site out there for that.

And, um, one of the team sites has a, is for, um, correlation and expos factor research.

It's in the files tab there, but, uh, Dr. Smith will also send a link to the recording out afterwards.

So, Right. Thank you.

Yep. Let me, I think you're on stratified sampling, if I remember correctly.

Okay.

Okay. Stratified sampling. Okay.

Uh, I think I actually, I think I was talking about random sampling, but, uh, we'll, we'll go from there.

Um, so random sampling, um, commonly used for quantitative research, um, usually with large populations and large sample sizes.

So when they're very large, we, we don't, uh, have as much emphasis on sampling, sampling controls, but there's still a good best practice.

Um, case study sampling usually is sampling across multiple data sets, because case studies require three data sources.

And so you typically will have, uh, a human subjects and then supporting documentation, et cetera.

So since you're based primarily in triangulation, um, the sample has to be represented.

Not only, um, sign representative of one data set, or one population has to be at least representative of all three populations.

Um, all three data sets, uh, stratified sampling researchers are divided into population subgroups.

Now, this is very common if you are comparing and contrasting, um, how different demographics within a population are going to respond.

So you're gonna sample and collect data, the same data, but typically across different subsets of the population.

So you may collect a stratified sample of men and women.

You may have a stratified sample of, uh, people with college educations, high school educations, and, and K through K through eight educations.

So you'll collect your sample purposefully to make sure you've got a significant representation in each of those strata.

Um, those tend to be the, the biggest trick with those is making sure you've got a significant sample in each strata.

So you're gonna have to have an idea of what the total, the limited size is of each strata before you begin collect data collection.

Um, and then maximum variation sampling.

This is where you're just trying to make sure you've got the maximum distribution across large populations.

Again, typically in quantitative research and theoretical sampling, uh, commonly using grounded theory research.

Um, uh, I'm not gonna go into that one in a lot of detail because I don't, I don't think I've ever seen a dissertation with theoretical sampling.

Somebody will probably chime in and correct me, but, uh, I haven't seen one yet.

I put it up there for completeness.

Um, so determining the appropriate sample size, um, is a function of, again, just in to, um, recap your understanding of the population, the population distribution, or, uh, I'm sorry, the limitation, the, um, population size and factors, uh, or the demographics of your population.

So it requires a good insight into your population.

It also requires good insight into your research design and sampling technique, because different sampling techniques may require more or less in your sample size.

So, so for example, a purposeful sample, um, typically is smaller than a snowball sample, just to help ensure that we've got good representation of the population.

So take those all into account as you're justifying the minimum sample size that you're, uh, proposing for your research.

Let's see.

Saturation. Um, I talked a little bit about, um, when to stop sampling.

I'm gonna, uh, just revisit that for just a moment.

Um, data saturation, uh, is often used for thematic ana, you know, designs that use, uh, thematic analysis where you're looking for emergent themes within your data.

Data saturation occurs after you've reached your minimum sample size, but you would tend to continue sampling until you stop seeing new th themes emerge, uh, in a significant way.

Um, saturation or, or, uh, emergent themes usually require at least half of your population to support that theme.

And so, uh, sampling much beyond two times your minimum sample is usually not useful.

But, um, it's not uncommon to, to, uh, sample, uh, half again, as many, uh, participants as your minimum sample size to ensure you've got good da data saturation triangulation means that you're looking, uh, at those themes emerging from your data, and you're comparing it to other sources of data from your population.

Very common in case study research.

Um, so it's an affirmation of your themes based on triangulation of the, uh, of the data.

So, saturation focuses on depth in the data.

Triangulation involves verification across, verification across a rich set of data sources, both of which are great ways to define and describe when to stop sampling.

Again, you'll, you'll always sample up to the minimum, but you will continue sampling until you hit saturation or triangulation.

And sometimes it'll require some additional sampling just to meet your, um, sampling criteria to ensure representation of the population.

I think I just said this. Yeah. So the slides are here.

So just to recap, this is the, um, the flow chart that I had, uh, at the very beginning.

Start with describing your population.

Understanding your population clearly and understanding what the limitations are is very important.

Um, you need to determine the minimum sample size, either through power analysis or precedent or understanding of your, uh, demographics or your population.

Determine your sampling technique.

You, this is kind of an iterative process with minimal sample size.

'cause as I said, different sampling techniques may require a different sample size.

Convenience samples and snowball sampling will always require larger samples than purposeful purpose event, um, uh, stratified.

So, um, understand your sampling technique, uh, because it will influence your minimum sample size.

And you always need to describe when you're gonna stop sampling all four of those boxes.

Uh, population descriptions, size to limitations, um, minimum sample size, minimum sampling techniques, and the, and when to stop sampling are all required as part of your proposal.

Um, and then in your findings, you're going to report on what was your actual sample size, um, when did you, uh, what caused you to complete sampling? And if you're doing, um, statistical analysis, what is your actual power or significance, uh, of the sample that you collected.

So, um, little bit about developing the proposal, little bit about the reporting.

So I think that's probably my last slide.

So I apologize for the technical difficulties, but I hope this was, uh, useful.

Um, I'll open the floor for questions.

You just got a mile a minute presentation on population and sampling.

But, uh, the, this, uh, recording will be available later.

These, the slide deck is available in the, um, uh, research methodology group, uh, team site.

And, um, uh, I'm also available, uh, for any office hours if you ever have questions about your sampling.

But, uh, we've got some time, so if anybody's got any questions, if you have a question, you can bet that somebody else, uh, has that same question.

So ask away.

Looking in the chat. Dr.

Reis, there's lots of thank yous, very informative.

I don't see a question yet, but I will share, I put in the chat the link to the survey so you can share how great Dr. Rice did.

Um, you can tell us other things that you might want to see in terms of webinars.

Um, you can share any feedback that you have related to, to the webinar with us there.

Um, the other thing that I've just put in the chat is where the recording and the PowerPoint will be.

So it's in the, uh, research methodology group teams site.

And so I put a link there to the teams.

If you click on that link, if you're not currently a member, um, click there.

Um, it will, um, send me a message to say that you wanna be a member.

I will add you. Then you'll have access to not only this amazing presentation, but other presentations by other, uh, methodologists at the university, um, or within our research methodology group.

So they're not all URMs, but they're people that have volunteered to help, uh, students and faculty and alum with their research, um, that are part of the research methodology group.

And Stella, uh, uh, Dr. Smith, somebody did ask how long the, um, population, the sample section should be in the proposal.

Hmm. Um, so in chapter one, I will say, tell you it can be as short as two or three paragraphs, two thirds of a page.

Um, and I've seen it, uh, as long as two pages.

I, I always encourage brevity.

So you can generally, uh, satisfy all the requirements for a population description to limitation, uh, and demographics in one paragraph.

And you can typically satisfy the sampling, uh, technique, minimum sample size, um, sampling criteria, and, uh, sample conclusion in a second paragraph.

Uh, feel free to, you know, make it a little bit longer than that.

But brevity is always good.

Um, but I always encourage people to make sure you're doing it in meal paragraphs.

So ensure that you've got good references and citation to support everything.

So if you're describing the population, ensure you've got references to support that description.

If you're, uh, describing the demographics of the population, make sure you've got good, uh, credible, um, authoritative sources on that population description.

The same for sampling technique, um, justification for minimum sample size.

Uh, so references and citations are very important in that section.

And please, um, construct those in meal paragraphs.

Your, your faculty will love you.

Any, That was a great question.

Questions? Oh, Yes. Yeah. I'm Mark Van Beer.

And I was gonna ask, ask you Dr. Rice, how come demographic population is acceptable for Texas and California, and not for Arizona.

Arizona? They have a tendency to go to the southwest United States.

Can you explain why are we not big enough or, I mean, no, And, and it's, and it really doesn't have anything to do with the size of, uh, the size of the population, either.

The, if you looked your, if you recall back to your city, uh, training, you have to make sure that when you're describing the results of your finding, that you don't accidentally, um, identify a participant.

And so there are some industries, there are some populations that, um, have participants that are easily identified.

So I had a, for example, I had a, a student do a study on a particular type of nurse and the, the challenges that they face to their occupation.

And so we had to define their geographic boundaries very large because if we, um, defined it smaller than that, there was a good likelihood that anybody reading the study would be able to identify that individual.

So the geographic boundaries have to be large enough to ensure the, uh, protection of your population.

Sounds good. Thank you. Yep. Good question.

It's not really related to size.

It has to do with, um, participant protection.

That help? That was a great explanation. Dr. Rice. Yes, definitely.

Thank you, Dr. Rice. Okay. Great question though.

Any other questions? We've got, uh, a few more minutes left.

Thank you for your help. No, you're very welcome.

Thank you. Well, Dr. Smith, it sounds like there aren't any more questions.