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## What is the relationship between population and sample size?

For most units and areas, PRC recommends targeting 50 interviews per quarter. For some areas, that can seem like a relatively low number given the thousands of patients they care for each quarter. To understand this recommendation, it's helpful to understand the relationship between population and sample size.

Sample size is not largely dependent on the total size of the patient population being measured. There is a mathematical explanation as to why this is the case and we have materials that explain the equations involved in determining an adequate sample size. These mathematical explanations, however, are not necessarily intuitive. Here, we'll take time to focus less on the strictly mathematical and more on the underlying principles.

PRC's measurement process is based upon the concept that, if we randomly draw interviews from a population, that sample will be representative of that entire population. In fact, we need only interview a relatively small number of patients to understand how the entire group feels about their care. The concept of "randomness" here is critical. One could affect the results by cherry-picking certain people for interviews, but this would not provide us useful data. The only way to capture the full range of opinions is to make sure everyone has equal probability of making it into the sample. Through tactics like preparing weekly batches of phone numbers and calling at different times of the day, PRC ensures patients have an opportunity to participate in the survey and the sample is representative of the larger population.

The size of the population we pull a random sample from has little impact on the number of interviews we need for a representative sample. In fact, the same economies of scale that allow for a national survey or political poll to tell us what 300 million Americans think based on 1,000 interviews apply to PRC's research. The math used in random sampling survey research tells us that 50 interviews are sufficient to understand what is happening on an individual unit, regardless of the number of discharges.

This may seem odd: two units with radically different discharge volumes having the same sample size. Consider, though, that this data is simply designed to provide a snapshot of what the total unit population looks like. It needs to be big enough to provide an accurate measure and to run various analyses such as Key Drivers®, but this has more to do with the sample than it does the population. For the same reason you don't need to take twice as much blood in a draw from a 300-pound patient than you do from a 150-pound patient—you need just enough to understand the whole person and run various analyses—you don't have to adjust sample sizes to account for the differences in discharges.

The process PRC uses to take a sample is similar to the other samples we take in life—whether it is checking to see if the soup is well-seasoned or if the milk has gone bad. (How much soup do you have to taste to see if the pot is ready? Do you have to drink more milk from a gallon container than a quart container to see how it tastes?) Viewed in that context, the





relationship between sample size and population size may seem less distant and more familiar.

