
Sample Size Considerations

Sample size is one of the most important decisions you can make in your research study design. PRC generally recommends a minimum sample size of 50 patient interviews per patient group per quarter or 200 per year since a sample that is too small will result in data that, when factoring in the error rate, is limited or even useless at a practical level. A sample that is larger than necessary simply wastes precious resources.

How PRC Analyzes the Data for You

The data PRC gathers from your patient research serves a number of purposes, some of which entail complex statistical analyses. First, it provides you with a valid “snapshot” measure of patient perceptions at any given point in time. Second, it allows for comparison of that snapshot score with other scores, such as previous time periods, other units or service areas, hospital-wide scores, and PRC’s Norms. Third, it allows PRC to determine your Key Drivers, or the specific aspects of patient care that are most important in driving overall patient satisfaction for that particular group. Finally, it allows us to determine how and why patients answer certain items differently. Not surprisingly, as the demands increase for the use of the data, the complexity of the statistics increases, as does the need for an appropriate sample size.

Several popular statistical tests – t-tests, stepwise multiple regression and discriminant analysis – are used in the analysis of your data, all of which benefit from a robust sample size. The t-test, a common test for significance in a patient satisfaction study, allows for comparison of a unit mean (average) score to an overall hospital score, a normative score, or a score from a previous time period. This determines if the current score is truly different rather than just a random fluctuation within the range of sampling error. The second test – stepwise multiple regression – determines those specific aspects of care, also known as Key Drivers, that drive your patients’ satisfaction. Finally, discriminant analysis identifies variables (survey items), that best discriminate between groups. For example, by analyzing the differences between patients that responded with Excellent vs. Very Good on Overall Quality of Care we can determine what we need to do to move the Very Good group into the Excellent group.

The Relationship between Patient Volume and Sample Size

When discussing matters of sampling, the most difficult thing for people to understand is the relationship between patient volume and the size of sample needed to achieve an acceptable error rate. After a certain volume, the number in your sample becomes less important than the quality of your sampling techniques (making sure you are getting the best random representation of your total volume).



In short, the larger your volume, the smaller your sample size can be (relative to the total volume) and still maintain your confidence level and precision when reporting scores. (Keep in mind that this is not the same thing as the confidence levels discussed above; those are related to the power of the significance testing, and here we are discussing the confidence level of your actual scores.) This, unfortunately, means that as your patient volume shrinks, your sample size does not shrink at the same rate. The table below illustrates this point; notice how the percentage of patients that you need to interview increases as your patient volume decreases:

Patient	Sample	Sample Size
Volume	Size	as % of Vol
20,000	97	0.49
10,000	96	0.96
5,000	95	1.90
1,000	89	8.90
500	81	16.20

Sample sizes calculated with +/-10 error rate at the 95% confidence level for all volumes.

The benefit of doing more than 50 interviews in any given area is a decrease in the error rate, but again, the error rate will decrease the same amount for your 20,000-patient department as it will for your 5,000-patient department. (Remember that the graph on the previous page illustrates the diminishing returns for the power analysis.)

Options for Creating Your Sample Plan

How do we most effectively distribute interviews across a system of patients? Three variables are necessary for creating a sample plan: the number of patient groups you want to analyze individually, the frequency of receiving



summary reports of the data for those individual patient groups, and the number of interviews that will be included in each of those summary reports. As stated above, PRC generally recommends a minimum sample size of 50 patient interviews per patient group per quarter, or 200 per year. We feel strongly that reporting on fewer than 50 interviews is not useful to your organization, especially the managers and directors who will receive those reports. With fewer than 50 interviews, it takes a sizable change in the scores before a change will be recognized as statistically significant. Without seeing significant changes in their scores, especially if they are working hard to make improvements, managers and directors can become very frustrated with the measurement process.

Regarding the number of patient groups, this is a decision that your system will make. Some clients make this decision based on patient volumes, some base their decision on accreditation requirements, some just open it up to department or unit heads to “sign up” for inclusion in the study.

The greatest flexibility in this equation, then, is found in changing the frequency of the summary reports. PRC produces summary reports that show significance testing results and changes over time. Keep in mind, however, that with our PRCEasyView.com website, you may view the results from patient interviews at any time along the way, so the most current patient satisfaction data is always available to you. Most clients find it useful to look at summary reports on a quarterly basis, however it is also possible to receive reports on a semi-annual schedule. In this scenario, we would distribute the 50 interviews over a 6-month period, instead of the 3-month period. This option means fewer interviews on a quarterly basis, but still retains the desired sample size for conducting significance tests. Other clients have found this option well suited for the smaller units and departments within their organizations. If this option is viable, we would recommend semi-annual reporting for the 4 departments with fewer than 2,000 patients per quarter.

As you make the final decisions regarding your sample plan, please keep in mind:

- A sample size of 50 is required for providing useful significance testing. This is true regardless of the size of your total population. (All scores tested for significance are tested at the 95 percent confidence level.)
- Sample size is not arithmetically related to patient volume; you can have the same confidence in the results of 50 interviews for a 5,000-patient area as you can in the results of 50 interviews for a 20,000 patient area.
- Shifting some areas to a semi-annual reporting schedule will allow more interviews to be used quarterly for adding areas to the sample plan or segmenting larger areas into subgroups for sampling and reporting.

