Sampling Considerations

When collecting data, it is not necessary to survey the entire population to achieve accurate results. Gathering data from a random, smaller number of people allows you to draw conclusions about how the entire population would respond. Anytime you survey a portion of a population, there will be some margin of error in the results. Even a complete census of all known members of a population is subject to random error or potential measurement error.

Random samples allow for the computation of sampling error and precision – calculations of how reliable the results of a survey are based on sample size, confidence, and question type. Convenience samples, based on availability and accessibility, can often produce samples that are quite similar to the population of interest when conducted properly. With convenience sampling, however, sampling error cannot be calculated and the results cannot be projected to the total population of interest with any degree of confidence.

When considering the size of a sample, two computations are taken into consideration:

1. **Error** - the "plus or minus X%," - you can feel confident that your results have an error of no more than X%.

2. **Confidence** - how confident you feel about your error level. Expressed as a percentage, it is the same as saying if you were to conduct the survey multiple times, how often would you expect to get similar results.

These two concepts work together to determine the accuracy of survey results. For example, if you have 95% confidence with an error of 4%, you are saying that if you were to conduct the same survey 100 times, the results would be within +/- 4% of the fist time you ran the survey 95 times out of 100.

Determining sample size requires three pieces of information:
1. The size of your population
2. Desired error level (e.g. 3%, 4% or 5%)
3. Desired level of confidence (e.g. 95%)

EXAMPLE Sample Sizes

1. Population: Infinite 2. Error 3% 3. 95% confidence interval Sample size: 1067	1. Population: 10,000 2. Error 3% 3. 95% confidence interval Sample size: 964	1. Population: 5,000 2. Error 3% 3. 95% confidence interval Sample size: 879	1. Population: 1,000 2. Error 3% 3. 95% confidence interval Sample size: 516
1. Population: Infinite 2. Error 4% 3. 95% confidence interval Sample size: 600	1. Population: 10,000 2. Error 4% 3. 95% confidence interval Sample size: 566	1. Population: 5,000 2. Error 4% 3. 95% confidence interval Sample size: 536	1. Population: 1,000 2. Error 4% 3. 95% confidence interval Sample size: 375
1. Population: Infinite 2. Error 5% 3. 95% confidence interval Sample size: 384	1. Population: 10,000 2. Error 5% 3. 95% confidence interval Sample size: 370	1. Population: 5,000 2. Error 5% 3. 95% confidence interval Sample size: 357	1. Population: 1,000 2. Error 5% 3. 95% confidence interval Sample size: 278