

SAMPLING

Introduction

Sampling is a process of selecting a representative part of a population in order to estimate the organization's performance, without collecting data for its entire population. Using a statistically valid sample, an organization can measure its performance in an effective and efficient manner. Sampling is a particularly useful technique for performance measures that require primary data collection from a source such as the personnel file. Sampling should not be used unless the organization has a large number of cases in the measure population because a fairly large number of sample cases is needed to achieve a representative sample of the population of interest.

To obtain statistically valid sample data, the sample size should be carefully determined and the sample cases should be randomly selected in such a way that the individual cases in the population have an equal chance of being selected. Only when the sample data truly represent the whole population can the sample-based performance measure data be meaningful and useful.

Health Care Staffing Services (HCSS) firms must meet the following sampling requirements:

HCSS-1 Do Not Return – Clinical, and HCSS-2 Do Not Return – Professional:

- NO SAMPLING
- 100% of Do Not Return occurrences per month are considered for these measures.

HCSS-3 Personnel File Audit: SAMPLING ALLOWED

Sample Size Requirements

HCSS firms selecting sample cases for the performance measure should ensure that their measure population(s) and sample size(s) meet the following conditions:

- Active clinical staff: must have worked during the reporting month.
- Clinical staff: staff involved in the provision or direction of patient care as part of their assigned duties (see Data Dictionary, Page 4-6).
- The sampling methodology is as follows:

Monthly Sample Size Based on Population Size	
# of Active Clinical Staff	Sample Size
1 - 9	100%
10 - 49	10 personnel files
50 - 99	20%
> 100	20 personnel files

Sample Size Examples

- A HCSS has 8 active clinical staff for the reporting month. The sample size will be all 8 personnel files (100%).
- A HCSS has 43 active clinical staff for the reporting month. The sample size will be 10 personnel files.
- A HCSS has 85 active clinical staff for the reporting month. The sample size will be 17 personnel files (20% of 85).
- A HCSS has 235 active clinical staff for the reporting month. The sample size will be 20 personnel files.

Sampling Approaches

Organizations that choose sampling must use simple random sampling or systematic random sampling.

Large corporations and multi-branch firms with greater than 100 active clinical staff may randomly select a minimum of 20 files for review each month from the total number of active clinical staff at all branches, or select a sample based on the size of each branch site.

Simple random sampling - selecting a sample size (n) from a population of size (N) in such a way that every possible sample of size n has the same chance of being selected.

Example:

For an HCSS with a population size of 240 active clinical staff per month, the sample size would be 20. To select a random sample of 20 files:

Simple random sampling:

- 1) Generate random numbers for individual files from a random number function using a statistical software package or computer programming language.
- 2) Sort data by the random numbers either in an increasing or decreasing order.
- 3) Select the first 20 personnel as the random sample.
- 4) Files should not be re-audited in subsequent months until all files have been audited one time.

Systematic random sampling - selecting every k^{th} record from a population of size N in such a way that a sample size of n is obtained, where $k \leq N/n$. The first sample record (i.e., the starting point) must be randomly selected before taking every k^{th} record. This is two step process:

- a) Select the starting point; and
- b) Then select every k^{th} record thereafter until the selection of the sample size is completed.

Example:

For a HCSS with a population size of 240 active clinical staff per month, the sample size would be 20. To select a random sample of 20 personnel files:

- 1) Determine the population size (total # of active clinical staff = 240) for the month;
- 2) Determine the sample size using the above table (20 personnel files);
- 3) Divide the population size by the sample size and take the quotient (i.e., the integer as the sampling interval k . The sampling interval $k = 240/20 = 12$. Thus, every 12th personnel file will be selected from the measure population until 20 files are selected.)
- 4) To ensure that each file has an equal chance of being selected, the "starting point" must be randomly determined before selecting every 12th file. Therefore a simple approach to determine where to start would be to write the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 on separate pieces of paper and place the numbers in a container and pull one piece of paper. For example if you draw the number 3, start with the 3rd file on your list and select every 12th file after that until you reach 20 files.
- 5) Files should not be re-audited in subsequent months until all files have been audited one time.