

Estimates Sampling

Sampling Methods

1. You are interested in improving accuracy and have decided to collect a subgroup sample of 15 items processed from 3 to 4 p.m., every day for the next 5 days.

Is this a process or population study? Do you have any concerns about the strategy they used? What might be the most appropriate strategy for collecting data?

Ans: Process Study. Why only 3 to 4 PM? Why not other windows.

2. Purchase department of a your company wants to estimate the total completion time of preparation of purchase orders. There are three types of purchase orders (large, medium and small) and four regions. The manager randomly sampled deals from one of the offices who had data readily available. Is this a process or population study? Do you have concerns regarding the sampling strategy selected?

Ans: Population Study that uses Random Sampling. Why randomly? If one wants to evaluate the Purchase Orders, then all types of purchase orders have to be proportionately sampled. Thus instead of random sampling, stratified random sampling is to be deployed.

3. A team from fruit drink production line is interested in check whether quality levels is improving. They decided to sample and pull every 20th bottle processed over the next 30 days. Is this a process or population study? What type of sampling strategy was selected? Do you have any concerns about the approach?

Ans: Process study. Segmented sampling. No concerns as such.

Sampling Size for Estimates

4. In order to study the nature and the causes of errors in a reconciliation process, the improvement leader decides to collect sample data of defects (recon mismatch) in the process. From the historical data of defectives, he knows that there were 12 % defectives in the process. Though the process is expected to operate at 3% defectives. Use the sample size formula to compute the required sample size for data collection.

Discrete Sample Size

Total Defectives	12
Total Volume	100
Confidence @ 95%	1.96
Precision (1 /10th of proportion def)	0.024
Proportion Defective	0.12
Sample size	704

Ans:

- A process is having a historic mean of 20 mm and variation is 4 mm. How many samples should the improvement leader collect to estimate the process sample process mean and variation.

Continuous Sample Size

Standard Deviation	4
Mean	20
Confidence @ 95%	1.96
Precision (1 /10th of proportion def)	2
Sample size	15

Ans:

- There is no historic data collection for the process. What approach will you use to establish the required sample size for estimation of process parameters.

Ans: Collect some data, say 10 or 15 data points, then use that mean and standard deviation to compute the sample size.

- In order to study the nature and the causes of errors in a reconciliation process, the improvement leader decides to collect sample data of defects (recon mismatch) in the process. THIS PROCESS HAS A DEFINED POPULATION OF 250 TRANSACTIONS IN ALL. From the historical data of defectives, he knows that there were 12 % defectives in the process. Though the process is expected to operate at 3% defectives. Use the sample size formula to compute the required sample size for data collection..

Finite Population Discrete Sample Size

Total Defectives	12
Total Volume	100
Total Population	250
Confidence @ 95%	1.96
Precision (1 /10th of proportion def)	0.024
Proportion Defective	0.12
Sample size Corrected for Finite Population	185

Ans:

8. A process is having a historic mean of 20 mm and variation is 4 mm. How many samples should the black belt collect to estimate the process sample process mean and variation. THIS PROCESS HAS A DEFINED POPULATION OF 26 COMPONENTS.

Finite Population Continuous Sample Size

Standard Deviation	4
Mean	20
Total Population	26
Confidence @ 95%	1.96
Precision (1 /10th of proportion def)	2
Sample size Corrected for Finite Population	10

Ans: