

Bias Of Mean Estimator:In this case Its calculated as difference of mean of 1000 randomly sampled data from Normal distribution and mean of the distribution which is 5.

Variance of Mean Estimator: Its mean of squared sum of difference of mean of each subset (each having 10 elements)with the mean of 1000 randomly selected elements.

$$M = \frac{1}{1000} \sum_{i=1}^{1000} a_i$$
$$m_j = \frac{1}{10} \sum_{i=1}^{10} a_i \quad \forall j \in [1, 10]$$
$$\frac{1}{100} \sum_{i=1}^{100} (m_i - M)^2$$

Similarly we define the Bias and Variance of Variance estimators

Following are the values:

bias mean estimator=0.0415988985011

variance of mean estimator= 0.40448324339

bias of variance estimator= 2.15437499947

variance of variance estimator= 2.63220930669