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THE PHILIPPINE STATISTICIAN
2007, Volume 56, Nos. 3-4

A General Method of Estimation of Parameters with Known A Priori In Normal Parent

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Abstract

This paper presents a general class of estimators for estimating various measures in normal parent when some a priori or guessed value σ_0 of standard deviation σ is available in addition to sample information. The bias and mean squared error (MSE) of the suggested class of estimators are obtained. Regions are identified under which proposed class of estimators are better than the usual unbiased estimator and the minimum mean square error (MMSE) estimator. Numerical computation in terms of percent relative efficiency established the superiority of the suggested class of estimators especially for small samples. The beauty of this paper lies in the unification of the problem of estimation of the various measures of normal parent such as standard deviation, variance, Fisher information, precision of sample mean, process capability index C_p , fourth moment about mean, mean deviation about mean etc.

Keywords: *Normal parent, shrinkage estimators, guessed value, bias, mean squared error.*