

Improved Variance Estimators From Bivariate Normal Population Based on Paired Observations

by

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Abstract-Typed full paper under preparation: Given a pair of observations $\{x_i, y_i; i = 1, 2, \dots, n\}$ on two variables X and Y , for a random sample s , the population parameters, namely, $\mu_x, \mu_y, \sigma_x^2, \sigma_y^2$ and ρ are usually estimated through the corresponding sampling statistics, such as sample means, variances and sample correlation coefficient. This paper considers an improvement of the customary estimator of population variance, A mixture (i.e. a weighted combination) of the customary estimator of the variance and a suitably chosen statistic t is proposed. It is also indicated that under some conditions for a broad range of values of the mixing constants, the improvement (w.r.t. mean square error) over the traditional estimator is possible. The problem of improving customary estimators for means of a finite population was considered by Tripathi and Caubey (1992), using paired observations and the study was extended further by Anirban et al (2000) and Tripathi et al (2001).