

Abstract for
VARIANCE ESTIMATES IN NESTED DESIGNS

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Nested designs are widely publicized and used to isolate and estimate variances with multi-stage processes. Beyond the two-stage design, there is little information on the distributions of the estimates of variance components. "Staggered" designs and "inverted" designs are presently employed to decrease the variance of the estimates of the true variances. These are successful at the upper stages of the design at the expense of increasing the variability at the lower stages. Some results are presented, mostly empirical, for designs of size 40 and eight different combinations of variances. The frequency of occurrence of negative estimates of variance components, as well as the very strongly biased results in estimation (in the cases where $H_0: \sigma_1^2 = 0$ is rejected) are emphasized.