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Estimation of two ordered normal means under modified Pitman nearness criterion

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Abstract The problem of estimating two ordered normal means is considered under the modified Pitman nearness criterion in the presence and absence of the order restriction on variances. When variances are not ordered, a class of estimators is considered that reduce to the estimators of a common mean when the unbiased estimators violate the order restriction. It is shown that the most critical case for uniform improvement with regard to the unbiased estimators is the one when two means are equal. When variances are ordered, a class of estimators is considered, taking the order restriction on variances into consideration. The proposed estimators of the mean with a larger variance improve upon the estimators that do not take the order restriction on variances into consideration. Although a similar improvement is not possible in estimating the mean with a smaller variance, a domination result is given in the simultaneous estimation.

Keywords Order restriction · Common mean · Restricted MLE · Unbiased estimator · Pitman nearness · Modified Pitman nearness · Uniform improvement