A study on the equivalence of BLUEs under a general linear model and its transformed models

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Abstract

The general linear model $\mathcal{A} = \{y, X\beta, \sigma^2 V\}$ known as full model and its transformed model $\mathcal{T} = \{Fy, FX\beta, \sigma^2 FVF'\}$ are considered. The expression for the difference between the best linear unbiased estimator (BLUE) of $FX\beta$ under the full model and its BLUE under the transformed model is given. The necessary and sufficient conditions between the equality of BLUEs of $FX\beta$ are obtained under the full and transformed models. Furthermore, some results are given for the special choices of the transformation matrix F. The results obtained in this study are based on a generalized inverse of a symmetric matrix which is obtained from the Pandora's Box equation called by [10].

Keywords

BLUE, General linear model, Transformed models, Sub-sample models, Reduced models.

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