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EFFECTS OF SERIAL CORRELATION ON LINEAR MODELS

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MARCH 1975

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ABSTRACT

Given a linear regression model $\underset{\sim}{y} = X\underset{\sim}{\beta} + \underset{\sim}{e}$, where $\underset{\sim}{e}$ has a multivariate normal distribution $N(\underset{\sim}{0}, \Sigma)$ consequences of the erroneous assumption that $\underset{\sim}{e}$ is distributed as $N(\underset{\sim}{0}, I)$ are considered. For a general linear hypothesis concerning the parameters $\underset{\sim}{\beta}$, in a general model the distribution of the statistic to test the hypothesis, derived under the erroneous assumption is studied. Particular linear hypotheses concerning particular linear models are investigated so as to describe the effects of various patterns of serial correlation on the test statistics arising from these hypotheses. Attention is specially paid to the models of one- and two- way analysis of variance.

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