MODIFIED INFORMATION MATRIX TESTS FOR DETECTING MISSPECIFICATION IN THE RANDOM EFFECTS OF GLMMS

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Generalized linear mixed models (GLMMs) are commonly applied to regress a non-Gaussian clustered structure response for hierarchical data analysis and longitudinal studies. The normality assumption of the random-effects distribution in GLMMs is practically assumed, but it may be too restrictive to reveal the major feature of data. The test statistics are proposed based on a variety of modified information matrix tests introduced by White (1982), and their limiting chi-squared distributions are derived under the null hypothesis that the distribution of random-effects is corrected specified. Simulation results are presented under various configurations of practical relevance data generating mechanism with different modified matrices, and the power performance of the proposed tests are demonstrated. Furthermore, real longitudinal case studies are employed to illustrate the applications of proposed tests.