MODELING FOR EXTRA-REGRESSION VARIABILITY IN GENERALIZED LINEAR MIXED MODELS

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In most practical instances, random effect factors contribute to the variability existing between observed and fitted values in a regression model. These extra-regression variables usually increase the residual error variance leading to a poorly fitted model. By fitting a generalized linear mixed model in the context of binomial data with the logit as a link function we model for this heterogeneity. Thus the residual error variance is reduced, components of variance are obtained for the random factors and model-adequacy is enhanced. This is accomplished by a modification of the restricted maximum likelihood optimization scheme. The modification involves the use of the inverse Fisher's information (IFI) as an alternative estimation technique for components of variance.