

Parameter estimation and identifiability in multivariate binary models with skewed link functions

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Resumo

Data sets with multivariate responses often appear in surveys where the data came from questionnaires. Opinion poll, sometimes simply referred to as a poll, are common examples of studies in which the responses are multivariate. One type poll that gain great prominence in Brazil in election years, is the survey of vote intent. However, despite the higher visibility of prognostic studies of election, opinion polls is a tool widely used to detect trends and positions of different social segments on various topics, be they political, social or governmental. We introduce in this work a class of multivariate regression models with asymmetric link functions to fit data sets with multivariate binary responses. The link functions here considered are quite flexible and robust, contemplating symmetrical link functions as special cases. Due to the complexity of the model, the issue of Bayesian identifiability in Multivariate binary models is discussed. It is important to note that the lack of identifiability may happen in different ways, depending on whether the problem is in the prior, the likelihood function or the posterior distribution, different views on the issue of identifiability have been given in the literature. In our model the problem is on the the likelihood function. The Bayesian approach was considered and some Monte Carlo Markov Chain (MCMC) algorithms have been developed. Simulation studies have been developed with two objectives: i) verify the quality of the algorithms developed and ii) to verify the importance of choosing the link function.