EXISTENCE OF BAYESIAN ESTIMATES FOR THE POLYCHOTOMOUS QUANTAL RESPONSE MODELS

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Abstract. This paper investigates the existence of Bayesian estimates for polychotomous quantal response models using a uniform improper prior distribution on the regression parameters. Necessary and sufficient conditions for the propriety of the posterior distribution with a general link function are established. In addition, the sufficient conditions for the existence of the posterior moments and the posterior moment generating function are obtained. It is also found that the propriety guarantees the existence of the maximum likelihood estimate.

Key words and phrases: Improper prior, logit model, log-log model, posterior distribution, probit model.