GOMPERTZ GROWTH CURVES ASSUMING STABLE DISTRIBUTIONS: AN APPLICATION TO INTRAUTERINE GROWTH FOR PRETERM INFANTS

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- ***ABSTRACT****: In this paper we consider the use of Bayesian methods to analyze some standard existing growth models, a class of nonlinear regression models. For the nonlinear modeling we assume usual normal errors and also stable distributions for the response variable. We also study some robustness aspects of nonlinear regression models to the presence of outliers or discordant observations considering the use of stable distributions for the response in place of the usual normality assumption. It is well known that, in general, there is no closed form for the probability density function of stable distributions. However, under a Bayesian approach, the use of a latent or auxiliary random variable gives some simplification to obtain any posterior distribution when related to stable distributions. To show the usefulness of the computational aspects, the methodology is applied to an example related to the intrauterine growth curves for preterm infants. Posterior summaries of interest are obtained using MCMC (Markov Chain Monte Carlo) methods and the OpenBugs software.*
- *KEYWORDS: Stable distribution; Bayesian analysis; nonlinear regression models; MCMC methods; OpenBugs software.*

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