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JEP > Vol. 3 No. 10, October 2012

OPEN ACCESS

Non-Homogeneous Poisson Processes Applied to Count Data: A Bayesian Approach Considering Different Prior Distributions

PDF (Size: 1098KB) PP. 1336-1345 DOI: 10.4236/jep.2012.310152

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ABSTRACT

This article discusses the Bayesian approach for count data using non-homogeneous Poisson processes, considering different prior distributions for the model parameters. A Bayesian approach using Markov Chain Monte Carlo (MCMC) simulation methods for this model was first introduced by [1], taking into account software reliability data and considering non-informative prior distributions for the parameters of the model. With the non-informative prior distributions presented by these authors, computational difficulties may occur when using MCMC methods. This article considers different prior distributions for the parameters of the proposed model, and studies the effect of such prior distributions on the convergence and accuracy of the results. In order to illustrate the proposed methodology, two examples are considered: the first one has simulated data, and the second has a set of data for pollution issues at a region in Mexico City.

KEYWORDS

Non-Homogeneous Poisson Processes; Bayesian Analysis; Markov Chain Monte Carlo Methods and Simulation; Prior Distribution

Cite this paper

L. Vicini, L. Hotta and J. Achcar, "Non-Homogeneous Poisson Processes Applied to Count Data: A Bayesian Approach Considering Different Prior Distributions," *Journal of Environmental Protection*, Vol. 3 No. 10, 2012, pp. 1336-1345. doi: 10.4236/jep.2012.310152.

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