

國立高雄大學統計學研究所

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Risk assessment method for longitudinal area zero-inflated data:

A case study of drug cases in Taiwan

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Abstract

In this talk, we propose a Bayesian hierarchical model to describe repeat measuring area data with excess zeros for the response. To this end, we utilize a zero-inflated Poisson regression model with a spatial random effect to describe the relationship between the occurrence rate and the explanatory variables. The temporal tendency and the spatial correlation are characterized via a modified conditional autoregressive model. Since the mixture probability plays a vital role in regulating the probability of occurrence of the zero response. We assign quantile regression models to the mixture probabilities to understand their distribution. The posterior inference will be carried out through the approximated posterior samples generated by the Markov chain Monte Carlo algorithm. Based on the approximated posterior samples, a risk-assessing method is determined for the interesting event in the study region. A real data analysis of 2018~2019 drug cases in Taiwan is conducted to illustrate the availability of the proposed approach.

Keywords: hierarchical model; drug case; zero-inflated model

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