SPATIAL CONDITIONAL OVERDISPERSED BAYESIAN MODEL PROPOSALS

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28.11.2018, 16:00 (s.t.)
Institut für Statistik, Ludwigstr. 33, Seminarraum

We propose alternative models for the analysis of count data featuring a given spatial structure, which corresponds to geographical areas. We assume that the overdispersion data structure partially results from the existing and well justified spatial correlation between geographical adjacent regions, so an extension of existing overdispersion models that include spatial neighborhood structures within a Bayesian framework is proposed. These models allow practitioners to quantify the association explained by the considered neighborhood structures and the one modelled by additional factors. Finally, using the information provided by the Colombian National Demographic and Health Survey, their usefulness is illustrated by fitting them to infant mortality rates and to data including the proportion of mothers who, after giving birth to their last child, underwent a postnatal screening period in Colombia.

Keywords: Count area data; Infant mortality; Overdispersion; Postnatal screening period rates; Spatial statistics.