Spatial odds ratio of disease in epidemiological studies with ordinal responses: a methodology using package VGAM.

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Keywords: Spatial Statistics, Biostatistics, Modeling

Logistic regression models are frequently used in epidemiological studies based on scales or outcomes that may have ordinal responses to analyze data, but without incorporating spatial distribution of disease, some for not having access to techniques that can make this adjustment. Some studies are still classified in binary form to use more accessible tools. To solve this, Generalized Additive Models to ordinal responses - proportional odds model, continuation-ratio model, adjacent-category logistic model - are extended to obtain the spatial odds ratio and map it through them using package VGAM in R-2.7 for Linux. As an illustration, data from an incidence study of occupational accidents were adjusted with an ordinal response variable ‘gravity of the accident' in three categories: serious, moderate and light. The analysis has found areas of increased risk for occupational accidents that varied depending on the level of comparison obtained in different fitted models. Some areas had twice the risk compared to the average of the region studied when comparing serious accident with moderate. In parametric analysis were found risk and protection factors. This brings the ability to analyze data by generalized additive models with attachments for epidemiological studies with ordinal response where the spatial odds ratio has to be analyzed.