

# Joint modelling of spatial correlation of infant and child mortality in Afghanistan.

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## Abstract

This research focuses on spatial analysis of causes and patterns of infant and child mortality in Afghanistan. For about three decades, Afghanistan has been devastated by armed conflicts which has resulted in over 5 million people been displaced. In public health studies, morbidity and mortality play a very important role. Diarrhoeal and acute respiratory infections are responsible for about 41% of the childhood deaths in Afghanistan. The data for this study consists of verbal autopsies of 2102 deaths, aged 0 - 11 years from the national representative Afghanistan mortality survey in 2010. Three challenges were identified in the modelling of a spatial process: accommodation of covariances that arise from spatial sources, choosing the correct covariance structure and extending to situations where a covariance is not the natural measure of association. The influence of community-level variables such as remoteness and average distance to health facilities on infant and child morbidity and mortality in Afghanistan was investigated. The geographical variations in each cause was modelled using the method of generalized estimating equations (GEE, Liang and Zeger, 1986). In this study, the spatial dependency was accounted for by the use candidate working correlation matrices. A simple and robust method that jointly combines different GEEs based on a few candidate working correlation structures using the method of generalized method of moments (McShane *et al.*, 1997) was proposed and applied to the data.

**KEY WORDS** : Spatial Generalized Estimating Equations; Afghanistan; Mortality; Morbidity; Verbal autopsy;

## References

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