

## **Abstract**

This study set out to examine and map the spatial variation of infant mortality in Kenya. We used data from Demographic and Health Survey (DHS) database to explore spatial variation. Generalized linear mixed model (GLMM) with Enumeration Areas (EA) specific random effects was used to assess the effects of geographical heterogeneity and other covariates. The model based Geostatistical methods were used to quantify the spatial variations of the observations using the variograms and fitted the exponential and matern parametric models to the sample variograms. Then utilizing the fitted variogram function, Trans-gaussian kriging was performed infant mortality rates based on both models and produced smooth maps. Generalized linear mixed model (GLMM) showed significant geographical heterogeneity in infant mortality. However, moran's I statistic showed spatial autocorrelation unaccounted for by GLMM. Modeling the correlation between people as a decreasing function of the spatial distance between them, Geostatistical models gave information not only on the magnitude but also on the scale of spatial variation. The socioeconomic status and infant mortality varied significantly across districts in Kenya. EA indicators better explained spatial variation of mortality when measured across a continuous space rather than within administrative areas. The resulting map broadly agreed with the previous studies on the variation of risk in the country, and further showed marked variation even at local level. High risk areas were in Nyanza regions, while low risk areas are in Central of the country. The maps provided an initial description of the geographic variation of IMR in Kenya, and might help in the choice and design of interventions, which is crucial for reducing the child mortality by two thirds by 2015.