



Bayesian Hierarchical Model Assessment in District Hospitals Systems of Kenya

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Abstract

District hospitals in Kenya have faced challenges in improving their service delivery systems over a decade. Bayesian hierarchical modelling was employed to analyse data from district hospitals in Kenya, aiming to identify areas of system inefficiency and propose targeted interventions. A significant proportion (35%) of the variance in service delivery efficiency across districts could be attributed to local hospital-specific factors, indicating a need for tailored strategies. The Bayesian hierarchical model demonstrated its effectiveness in identifying key drivers of system performance variability, providing actionable insights for district hospitals. District health authorities are advised to implement targeted interventions based on the identified local factors and to enhance interdistrict collaboration. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Kenya, Bayesian Hierarchical Model, District Hospitals, Methodology, Evaluation, Quantitative Methods, Spatial Analysis

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