



Bayesian Hierarchical Model Evaluation of Community Health Centre Systems in Kenya

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Abstract

Community health centres in Kenya have been evaluated for their effectiveness in improving healthcare outcomes. A Bayesian hierarchical model was applied to assess yield improvement across different regions, accounting for variability within and between centres. The model revealed significant variation in service delivery effectiveness among health centres (e.g., an average increase of 15% in patient satisfaction scores). The use of Bayesian hierarchical models provided a nuanced understanding of system performance, highlighting areas for improvement. Tailored interventions should be developed based on regional specificities to enhance service delivery effectiveness. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^{-1} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, Bayesian methods, hierarchical models, intervention studies, quantile regression, spatial analysis, yield assessment*

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