



Bayesian Hierarchical Model for Measuring Adoption Rates in Community Health Centres in Kenya: A Methodological Evaluation

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Abstract

Community health centres in Kenya play a crucial role in providing essential healthcare services. However, their effectiveness varies significantly across different regions and contexts. A Bayesian hierarchical model was employed to estimate adoption rates among various health centres. This approach allows for accounting for heterogeneity and clustering effects within geographical regions. The analysis revealed that adoption rates varied by region, with some areas showing higher uptake of interventions compared to others. This study demonstrates the utility of Bayesian hierarchical models in assessing healthcare intervention adoption at the community level. The findings highlight regional disparities and inform targeted policy development. Future research should consider expanding the model to include more variables, such as socio-economic factors, to enhance its explanatory power. Bayesian Hierarchical Model, Adoption Rates, Community Health Centres, Kenya 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, Adoption Rates, Community Health Centres, Methodological Evaluation, Quantitative Research, Geographic Variation

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