



Bayesian Hierarchical Model for Measuring Adoption Rates in Community Health Centres Systems in Tanzania,

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Abstract

The study aims to evaluate adoption rates of community health centers in Tanzania by employing a Bayesian hierarchical model. A Bayesian hierarchical model was developed to analyse adoption rates in community health centers. The model accounts for spatial heterogeneity and incorporates uncertainty through robust standard errors. The Bayesian hierarchical model revealed a significant variation in adoption rates across regions, with some areas showing adoption rates as high as 75%. The study provides insights into the effectiveness of community health centre systems in Tanzania, highlighting the importance of targeted interventions to improve service uptake. Future research should focus on identifying factors that influence adoption rates and developing strategies to enhance service provision across all regions. Bayesian hierarchical model, community health centers, adoption rate, Tanzania, spatial heterogeneity 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: Tanzania, Bayesian hierarchical model, adoption rates, community health centres, methodological evaluation, statistical modelling, geographic analysis

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