



# Bayesian Hierarchical Model Evaluation of Urban Primary Care Networks in Tanzania

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## Abstract

This study focuses on evaluating urban primary care networks in Tanzania by applying a Bayesian hierarchical model to assess clinical outcomes. A Bayesian hierarchical model was developed to analyse the data collected from urban primary care centers. The model accounts for spatial heterogeneity and varying levels of precision across different geographical areas within Tanzania. The analysis revealed a significant improvement in treatment efficacy, with an estimated increase of 15% in patient compliance rates over time. The Bayesian hierarchical model provided robust insights into the performance of urban primary care networks, demonstrating its utility for evaluating and improving healthcare systems. The findings suggest that targeted interventions could further enhance clinical outcomes by addressing specific issues identified through this modelling approach. Treatment effect was estimated with  $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Tanzania, Primary Care Networks, Bayesian Hierarchical Model, Spatial Analysis, Outcome Assessment, Methodology, Epidemiology*

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