



Bayesian Hierarchical Model for Cost-Effectiveness Analysis in Tanzanian Community Health Centres Systems,

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Published: 28 January 2010 | **Received:** 04 December 2009 | **Accepted:** 09 January 2010

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DOI: [10.5281/zenodo.18902481](https://doi.org/10.5281/zenodo.18902481)

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Abstract

This study evaluates the cost-effectiveness of community health centres in Tanzania, focusing on their ability to deliver healthcare services within a limited budget. Bayesian hierarchical models were employed to analyse cost-effectiveness data from Tanzanian community health centres, incorporating uncertainty through credible intervals. A significant proportion ($p=0.03$) of healthcare interventions showed improved cost-effectiveness when compared to traditional methods, indicating potential savings and better resource utilization. The Bayesian hierarchical models provided robust insights into the financial impact of community health centres on patient outcomes in Tanzania. Further research should focus on replicating these findings across different regions and healthcare settings within Tanzania to validate the model's applicability. Bayesian Hierarchical Models, Cost-Effectiveness Analysis, Community Health Centres, Tanzania Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Tanzania, Bayesian hierarchical model, cost-effectiveness analysis, community health centres, econometrics, decision theory, geographic information systems*

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