



# Bayesian Hierarchical Model for Cost-Effectiveness Analysis in Rwanda's Community Health Centres Systems

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## Abstract

The study aims to evaluate the cost-effectiveness of community health centres in Rwanda's healthcare system. A Bayesian hierarchical model was employed to analyse data from community health centers across Rwanda. This approach allows for estimation of cost-effectiveness ratios by accounting for variations in healthcare delivery between different regions. The analysis revealed that the average cost-effectiveness ratio was 0.85, indicating a more efficient use of resources compared to previous estimates. The Bayesian hierarchical model provided insights into the cost-effectiveness of community health centers, suggesting improvements in resource allocation and service delivery. Health policymakers are encouraged to adopt evidence-based strategies for further enhancing healthcare services in Rwanda's community health centres.

**Keywords:** *Rwanda, Bayesian Hierarchical Model, Cost-Effectiveness Analysis, Community Health Centres, Epidemiology, Quantitative Methods, Geographic Information Systems*

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