



Bayesian Hierarchical Model for Evaluating Cost-Effectiveness of Community Health Centres in South Africa

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Abstract

Community health centers (CHCs) play a crucial role in healthcare delivery in South Africa, particularly for underserved populations. A Bayesian hierarchical model was employed to analyse data from multiple CHCs across different regions in South Africa, accounting for variability in costs and effectiveness measures. The analysis revealed that the average cost per effective intervention at CHCs is 50 (95% *credible interval*: 45-\$60), highlighting the efficiency of these centers compared to other healthcare settings. This study provides robust evidence on the economic viability and effectiveness of CHCs in South Africa, informing future policy decisions and resource allocation strategies. Further research should explore the scalability of our model across different geographical regions and patient populations.

Keywords: *South Africa, Community Health Centres, Hierarchical Models, Bayesian Statistics, Cost-Effectiveness Analysis, Evaluation Methodology, Quantitative Research*

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