



# Bayesian Hierarchical Model Assessment of Community Health Centre Systems in Uganda

Muwanda Omandiho<sup>1</sup>

<sup>1</sup> Department of Epidemiology, Makerere University Business School (MUBS)

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**Correspondence:** [momandiho@aol.com](mailto:momandiho@aol.com)

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## Author notes

*Muwanda Omandiho is affiliated with Department of Epidemiology, Makerere University Business School (MUBS) and focuses on Medicine research in Africa.*

## Abstract

Community health centers in Uganda have been evaluated for their effectiveness in improving healthcare outcomes. Bayesian hierarchical models were used to evaluate the efficiency of community health centre systems in Uganda. The models accounted for variability across different regions and time periods. The Bayesian hierarchical model revealed that there was a significant improvement ( $p < 0.05$ ) in healthcare yield when considering regional variations, suggesting that tailored interventions could enhance service delivery. Bayesian hierarchical modelling provided insights into the variability of community health centre performance across different regions and time points in Uganda. Further research should focus on implementing region-specific strategies to optimise the efficiency of community health centers. Community Health Centers, Bayesian Hierarchical Models, Healthcare Yield, Uganda 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:** *African geography, Bayesian inference, hierarchical modelling, methodological evaluation, quantitative analysis, statistical methodology, systematic review techniques*

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