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Bayesian Hierarchical Model Evaluation of Community Health Centre Systems in Uganda

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Abstract

The current health systems in Uganda are underperforming, leading to significant disparities in community access to healthcare services. A Bayesian hierarchical model was applied to analyse data from CHCs across different regions of Uganda. The model accounts for both within-centre variability and region differences, providing robust estimates of service yield improvements. The analysis revealed that the average yield improvement in healthcare services could be improved by up to 20% with targeted interventions in resource-limited settings. This study provides a novel method for evaluating CHC systems and highlights the importance of regional-specific strategies for enhancing service delivery efficiency. Health policymakers should prioritise resources towards regions identified as having the lowest yield improvement, based on our model's findings. Additionally, continuous monitoring and adaptive management are recommended to sustain improvements. Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta}\ p\ X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Uganda, Bayesian, Hierarchical, Model, Evaluation, Health, Centres*

ABSTRACT-ONLY PUBLICATION

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