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Bayesian Hierarchical Model for Measuring Clinical Outcomes in Urban Primary Care Networks in Uganda: A Longitudinal Study

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Abstract

Urban primary care networks in Uganda are underpinned by complex healthcare systems that require robust evaluation methods to assess clinical outcomes. The study utilizes a Bayesian hierarchical model to analyse data collected from multiple urban primary care clinics across Uganda. This approach allows for the integration of clinic-specific variability while accounting for the overall system performance. A key finding is that the effectiveness of these networks varies significantly by clinic, with some clinics demonstrating higher clinical outcomes than others, indicating room for improvement in less effective networks. The study provides a robust framework for assessing and improving urban primary care systems in Uganda through the application of Bayesian hierarchical modelling. Based on findings, targeted interventions should be implemented to enhance clinical outcomes in clinics with lower effectiveness, using data from this model as a guide. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\ p\ X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, longitudinal analysis, Bayesian statistics, hierarchical modelling, clinical outcomes, primary care systems, Uganda*

ABSTRACT-ONLY PUBLICATION

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