



Bayesian Hierarchical Model for Evaluating Yield Improvement in Rwanda's District Hospital Systems

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Abstract

The healthcare landscape in Rwanda's district hospitals is characterized by varying levels of service delivery quality. A Bayesian hierarchical model was employed to analyse data from multiple district hospitals across Rwanda. This approach allowed for the integration of local and national health indicators while accounting for variability between districts. The model revealed significant variation in yield improvement across different regions, with some districts showing substantial gains in patient outcomes compared to baseline measures. Bayesian hierarchical modelling provided a nuanced understanding of district hospital performance improvements in Rwanda, highlighting the importance of localized interventions and data-driven decision-making. District health managers should leverage regional insights from this analysis to tailor strategies for enhancing service delivery efficiency and quality. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^{-1} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Sub-Saharan, Hierarchical, Bayesian, Evaluation, Methodology, Quantitative*

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