



Bayesian Hierarchical Model for Evaluating Efficiency Gains in District Hospitals Systems in Uganda: A Methodological Study

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Abstract

Efficient healthcare systems are crucial for delivering quality care in resource-limited settings such as Uganda's district hospitals. A Bayesian hierarchical model will be employed to assess efficiency across multiple districts, accounting for variability in system performance. Efficiency improvements were observed with an estimated mean gain of 15% in resource utilization among participating hospitals. The Bayesian hierarchical model effectively identifies and quantifies efficiency gains within Ugandan district hospital systems. Continuous monitoring and iterative improvement strategies should be implemented to sustain these efficiencies. Bayesian Hierarchical Model, Efficiency Gains, District Hospitals, Uganda Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: District Hospitals, Uganda, Bayesian Hierarchical Models, Methodology, Efficiency Measurement, Resource-Limited Settings, Quantitative Methods

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