African Dermatology Studies

Bayesian Hierarchical Model for Measuring Adoption Rates in District Hospitals Systems of Rwanda: A Methodological Evaluation

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Abstract

Rwanda's healthcare system aims to improve access to quality medical services across all districts. However, there is a need for robust methods to evaluate adoption rates of new interventions in district hospitals. A Bayesian hierarchical model was employed to analyse data collected from district hospitals, aiming to estimate adoption rates of various medical interventions across different regions. The model accounts for variability between districts while accounting for regional differences and temporal trends. The analysis revealed significant variation in the adoption rates of diagnostic tests among districts, with some areas showing substantial underutilization compared to others. This study provides a methodological framework for evaluating healthcare interventions using Bayesian hierarchical models, highlighting specific challenges and opportunities in Rwanda's district hospital systems. Future research should consider implementing these methods across more regions to validate findings and inform policy decisions aimed at improving health service delivery. Bayesian Hierarchical Model, Adoption Rates, District Hospitals, Rwanda Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow}\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Africa, Healthcare, Systems, Evaluation, Methodology, Bayesian*

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