African Hydrology Research (Earth Science focus)

Bayesian Hierarchical Model for Evaluating Efficiency Gains in Senegalese District Hospitals Systems,

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Abstract

This study aims to evaluate efficiency gains in Senegalese district hospitals systems over a single year. Bayesian hierarchical models will be used to analyse data from district hospitals, incorporating uncertainty through robust standard errors. Efficiency gains varied across districts, with some showing significant improvements in service delivery efficiency. The findings suggest that targeted interventions could enhance hospital performance and resource allocation. Policy recommendations include focusing on areas of identified inefficiencies and promoting best practices through training programmes. Bayesian Hierarchical Models, Hospital Efficiency, District Hospitals, Senegal 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, Bayesian hierarchical models, Methodological evaluation, District hospitals, Efficiency gains, Quantitative analysis, Statistical methods*