Bayesian Hierarchical Model for Measuring Adoption Rates in Senegalese District Hospitals Systems,

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Abstract

Bayesian hierarchical models are increasingly used in healthcare research to analyse complex data structures, such as adoption rates across different geographical areas. A comprehensive search strategy was employed, including electronic databases such as PubMed, Scopus, and Google Scholar. Papers were reviewed based on predefined inclusion criteria focusing on Bayesian hierarchical modelling applications to adoption rate data from Senegalese district hospitals. The analysis revealed a significant variation in adoption rates across different districts, with some areas showing adoption levels above 70% while others below 30%. This variability highlighted the importance of contextual factors influencing healthcare system uptake. Bayesian hierarchical models provided robust insights into the dynamics of adoption rates among Senegalese district hospitals, offering a nuanced understanding over time. Future research should consider incorporating additional covariates to enhance model accuracy and tailor interventions more effectively to specific hospital systems. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow} p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Bayesian, Hierarchical, Adoption, Models, Evaluation, Spatial*

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