



Bayesian Hierarchical Model for Measuring Adoption Rates in Ghanaian District Hospitals System

Kofi Agyeiwa^{1,2}, Faustina Adarkwa³

¹ University of Ghana, Legon

² Department of Surgery, University for Development Studies (UDS)

³ University for Development Studies (UDS)

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Correspondence: kagyeiwa@outlook.com

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Author notes

Kofi Agyeiwa is affiliated with University of Ghana, Legon and focuses on Medicine research in Africa.

Faustina Adarkwa is affiliated with University for Development Studies (UDS) and focuses on Medicine research in Africa.

Abstract

Bayesian hierarchical models are increasingly used to analyse complex data structures in various fields, including public health and medical systems. A Bayesian hierarchical model was employed to estimate adoption rates across different districts. The model accounts for spatial heterogeneity and varying levels of technology implementation. The analysis revealed significant differences in adoption rates between urban and rural areas, with an average adoption rate of 45% across all hospitals. This study provides insights into the effectiveness of new healthcare technologies in Ghanaian district hospitals, highlighting disparities by region. Further research should focus on strategies to increase technology adoption rates, particularly in rural areas where uptake is lower. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Ghanaian, hierarchical, Bayesian, modelling, adoption, evaluation*

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