



Bayesian Hierarchical Model Assessment of Community Health Centre Systems in Nigerian Settings: A Yield Improvement Evaluation

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Abstract

Community health centres (CHCs) play a crucial role in healthcare delivery in Nigeria, but their efficiency and effectiveness are often under scrutiny. A Bayesian hierarchical model was employed to analyse data from Nigerian CHCs, aiming to quantify yield improvements over time. The analysis revealed that yield in one-third (30%) of CHCs showed significant growth, indicating potential for systemic enhancement through targeted interventions. The use of the Bayesian hierarchical model provided nuanced insights into CHC performance, facilitating evidence-based policy recommendations. Policy makers should prioritise investment and training programmes to capitalize on identified yield improvement areas in CHCs. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, Bayesian hierarchical models, Community health centres, Methodological evaluation, Nigeria, Quantitative analysis, Yield improvement assessment*

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