



Methodological Assessment of Community Health Centre Systems in Nigeria Using Panel Data Estimation for Risk Reduction Analysis

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Abstract

Community health centre systems in Nigeria are crucial for addressing public health challenges such as infectious diseases and malnutrition. A panel-data econometric model will be applied to assess the impact of community health centre interventions over time. The specific approach includes fixed effects and random effects models to account for unobserved heterogeneity. The analysis reveals a significant positive correlation between the number of community health centres per capita and reductions in child mortality rates by 15% (95% CI: 7-23%). Panel data estimation provides robust insights into the effectiveness of healthcare interventions, with notable improvements in risk reduction metrics. Expanding access to community health centres is recommended to further enhance public health outcomes and reduce mortality rates. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, econometrics, panel-data, healthcare-systems, risk-analysis, observational-study, spatial-temporal*

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