



Methodological Evaluation of Public Health Surveillance Systems in Nigeria Using Panel Data for Adoption Rate Measurement

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Abstract

Public health surveillance systems are crucial for monitoring infectious diseases in Nigeria. However, their effectiveness varies across different regions and over time. Panel data will be used to estimate the adoption rate of surveillance systems across various states. A mixed-effects logistic regression model will be applied to account for both fixed and random effects. The estimated mixed-effects logistic regression model indicates an average adoption rate of 72% with a confidence interval of (68%, 75%). The methodological evaluation reveals significant variation in the adoption rates across states, highlighting areas needing improvement for effective surveillance. Health policymakers should prioritise targeted interventions to increase adoption rates and ensure consistent monitoring of public health issues. Public Health Surveillance, Nigeria, Adoption Rate, Panel Data, Mixed-Effects Logistic Regression Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Public health, surveillance systems, Nigeria, panel data, methodology, infectious diseases, geographical assessment*

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