



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 disease prevalence and guiding public health interventions in Nigeria. However, the effectiveness of these systems is often underappreciated, leading to inconsistencies in data collection and analysis. The methodology involves gathering longitudinal data from multiple sources across different regions of Nigeria. A mixed-effects logistic regression model will be employed to estimate adoption rates, accounting for both fixed and random effects. During the study period, a significant proportion (45%) of healthcare facilities demonstrated consistent adoption of surveillance practices, with notable improvements in reporting accuracy as interventions were implemented. The mixed-effects logistic regression model provides robust estimates of adoption rates, highlighting areas where system enhancements are needed to improve data quality and public health outcomes. Adoption of the proposed methodology is recommended for future surveillance systems to ensure more reliable and consistent reporting across Nigeria's healthcare landscape. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Nigerian, Geographic, Panel, Design, Evaluation, Surveillance, Metrics

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