



## Methodological Evaluation of Public Health Surveillance Systems in Nigeria Using Time-Series Forecasting Models

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### Abstract

Public health surveillance systems are essential for monitoring disease trends in Nigeria. However, their effectiveness can be improved through methodological evaluation and forecasting. The study will employ ARIMA (AutoRegressive Integrated Moving Average) model for forecasting future trends based on historical data. Uncertainty in forecasts will be assessed through robust standard errors. An initial analysis suggests that the adoption rate of public health surveillance tools among healthcare workers has been increasing by approximately 5% annually over the past five years. The ARIMA model provides a reliable method for forecasting future trends in adoption rates, offering insights into potential improvements and challenges ahead. Further research should focus on understanding factors influencing adoption rates and exploring strategies to enhance tool uptake among healthcare workers. 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:** *Sub-Saharan, African, Spatial, Epidemiology, Longitudinal, Modelling, Disease Surveillance*

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