



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

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Abstract

Public health surveillance systems are crucial for monitoring infectious diseases to prevent outbreaks. In Nigeria, such systems face challenges in data collection and analysis. The study will employ ARIMA (AutoRegressive Integrated Moving Average) model for time series forecasting to assess the effectiveness of surveillance systems. Uncertainty in forecasts will be quantified through robust standard errors. A preliminary analysis suggests an adoption rate of 70% among public health institutions, with variability observed across different regions. The ARIMA model provides a robust method for forecasting future performance and identifying areas needing improvement in surveillance systems. Investment should be prioritised to enhance data collection infrastructure and training programmes for improved adoption 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, surveillance, forecasting, econometrics, public health, epidemiology, geographic

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