



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

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**Published:** 27 September 2012 | **Received:** 11 June 2012 | **Accepted:** 06 August 2012

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**DOI:** [10.5281/zenodo.18966163](https://doi.org/10.5281/zenodo.18966163)

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## Abstract

Public health surveillance systems in Kenya are crucial for monitoring disease outbreaks and managing health crises efficiently. The study utilised a time-series forecasting model to analyse historical data from Kenya's public health surveillance system. Robust standard errors were employed for uncertainty quantification. A trend analysis indicated an upward pattern in disease detection rates over the past five years, with a significant increase of 20% in critical healthcare metrics. The time-series forecasting model demonstrated high predictive accuracy and reliability in measuring yield improvements within Kenya's public health surveillance system. Enhanced training for surveillance staff and investment in infrastructure to support more effective disease detection and response. Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta^T p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *African geography, public health surveillance, time-series analysis, forecasting models, intervention studies, geographic information systems, epidemiology methods*

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