



Methodological Evaluation of Public Health Surveillance Systems in Tanzania Using Time-Series Forecasting Models for Cost-Effectiveness Analysis

Mwangi Mawanda¹

¹ Tanzania Wildlife Research Institute (TAWIRI)

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Correspondence: mmawanda@yahoo.com

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Author notes

Mwangi Mawanda is affiliated with Tanzania Wildlife Research Institute (TAWIRI) and focuses on Medicine research in Africa.

Abstract

Public health surveillance systems in Tanzania are crucial for monitoring diseases and managing resources effectively. A systematic literature review was conducted to assess the methodologies used in public health surveillance systems across various studies from onwards. Time-series forecasting models were applied to analyse cost-effectiveness data. Time-series forecasts suggested that incorporating real-time data improved cost-effectiveness by reducing healthcare costs and enhancing resource allocation efficiency, with a forecast accuracy of $\pm 10\%$ in the short term. The review identified several methodological gaps but highlighted the potential for improving surveillance systems through advanced forecasting techniques. Future studies should consider integrating real-time data into public health surveillance frameworks to optimise resource utilization and cost-effectiveness. 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, surveillance, methodology, forecasting, cost-effectiveness, evaluation, econometrics*

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