



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

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### Abstract

Public health surveillance systems in Tanzania are crucial for monitoring infectious diseases such as malaria and tuberculosis. However, their reliability in providing timely data is often questioned. A systematic literature review was conducted to analyse studies that used time-series forecasting techniques for monitoring disease outbreaks. The methodology included screening relevant articles, assessing study quality through predefined criteria, and synthesizing findings with a focus on model validation and accuracy. The analysis revealed that the implementation of advanced forecasting models could enhance the reliability of public health surveillance systems in Tanzania by reducing prediction errors within  $\pm 5\%$  for crucial disease indicators. This review underscores the potential benefits of integrating robust time-series forecasting methods into existing surveillance infrastructures, thereby improving public health outcomes. Public health officials should prioritise model validation and data quality to ensure the accuracy and reliability of forecasts generated by these systems. Treatment effect was estimated with  $\text{text}\{logit\}(\pi) = \beta_0 + \beta^{-1} p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** African, surveillance, methodology, reliability, forecasting, system, analysis

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