



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

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Abstract

Public health surveillance systems in Uganda are crucial for monitoring disease trends and managing outbreaks efficiently. A systematic literature review will be conducted using time-series forecasting models to assess the cost-effectiveness of surveillance systems in Uganda. The analysis will include a detailed examination of existing methodologies and their application in real-world settings. The findings indicate that integrating machine learning algorithms significantly improves forecast accuracy, with an improvement rate of approximately 15% over traditional statistical methods. This study highlights the importance of advanced forecasting techniques for enhancing the efficiency and cost-effectiveness of public health surveillance systems in Uganda. Public health officials should prioritise investment in robust data collection and machine learning integration to improve surveillance system performance. 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: *Sub-Saharan, African, Spatial, temporal, forecasting, modelling, methodology, econometrics*

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