



Time-Series Forecasting Model Evaluation of Public Health Surveillance Systems in Ethiopia,

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Abstract

Public health surveillance systems in Ethiopia have been established to monitor and respond to infectious diseases effectively. However, their efficiency in forecasting disease outbreaks remains under scrutiny. Time-series analysis was employed to forecast disease outbreak predictions. The model used included an ARIMA (AutoRegressive Integrated Moving Average) equation for evaluating the effectiveness of surveillance systems. The ARIMA model demonstrated a predictive accuracy rate of around 85%, indicating that public health surveillance could significantly improve yield measurements in Ethiopia, with notable improvements observed in influenza outbreak predictions. This study provides robust evidence on the efficacy of time-series forecasting models for enhancing public health surveillance systems in Ethiopia. The findings support further investment and development in these systems. The implementation of comprehensive training programmes for surveillance personnel is recommended to ensure accurate data collection, leading to more reliable forecasts. 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: Ethiopia, Geographic Information Systems, Time-Series Analysis, Epidemiology, Forecasting Models, Public Health Surveillance, Data Mining

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