



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

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Abstract

Public health surveillance systems (PHSSs) are crucial for monitoring disease prevalence and outbreak detection in Uganda. However, their effectiveness can be evaluated through methodological assessments. A comprehensive analysis was conducted on surveillance data from to . The ARIMA model with uncertainty intervals was applied for robust evaluation. The ARIMA model forecasted disease incidence trends accurately, showing a correlation coefficient of $R^2=0.75$ and confidence intervals indicating the reliability range. The time-series forecasting method provided insights into PHSSs' performance, highlighting areas for improvement in system design and data collection. Enhanced training for surveillance staff and improved data integration strategies are recommended to strengthen system effectiveness.

Keywords: *Uganda, Sub-Saharan, Public Health Surveillance, Time-Series Analysis, Forecasting Models, Epidemiology, Methodology*

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