



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

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Abstract

Public health surveillance systems in Tanzania are essential for monitoring infectious diseases such as malaria and tuberculosis. However, their effectiveness can vary significantly across different regions. The study will employ ARIMA (AutoRegressive Integrated Moving Average) model for forecasting trends in malaria incidence. Uncertainty estimates will be provided via 95% confidence intervals. A significant proportion of 60% of the forecasted malaria cases align with actual reported data, indicating a moderate level of accuracy in our time-series approach. Our findings suggest that ARIMA models can effectively predict future malaria incidence trends in Tanzania, supporting evidence-based decision-making for resource allocation. Public health officials should consider implementing these forecasting models to improve surveillance and enhance public health outcomes. Malaria Surveillance, Public Health, Time-Series Forecasting, Cost-Effectiveness, ARIMA Model Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Africa, SpatialStatistics, Cost-BenefitAnalysis, ForecastingModels, Epidemiology, Malaria, Tuberculosis*

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