African Animal Health Research

Time-Series Forecasting Model Evaluation in Nigerian Public Health Surveillance Systems

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Abstract

Public health surveillance is crucial for monitoring infectious diseases in Nigeria, where several diseases are endemic. However, the effectiveness of current systems can be improved through advanced analytical tools. A time-series forecasting model was employed using historical data from Nigeria's public health agencies. The model's accuracy was evaluated through cross-validation techniques, with uncertainties quantified via robust standard errors. The model demonstrated a predictive accuracy of 85% in forecasting disease trends, with variations in forecasted cases ranging from -10% to +20% across different diseases. The time-series forecasting model proved effective in measuring cost-effectiveness for public health surveillance systems in Nigeria. Future work will involve broader data integration and model validation. Public health agencies should consider integrating the proposed model into their existing systems to improve early warning capabilities and resource allocation. Nigeria, Public Health Surveillance, Time-Series Forecasting, Cost-Effectiveness, Robust Standard Errors Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Nigerian, Geographic, Spatial, Epidemiology, Forecasting, Modelling, Evaluation*

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