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

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Abstract

Public health surveillance systems in Kenya are crucial for monitoring disease outbreaks and managing healthcare resources efficiently. However, their effectiveness can be improved through methodological evaluation. The study will employ time-series forecasting models such as ARIMA (AutoRegressive Integrated Moving Average) to analyse historical data on system usage and adoption. Uncertainty in model predictions will be assessed through robust standard errors. A significant proportion, estimated at 75%, of healthcare facilities showed a consistent increase in the number of reported cases over a year, indicating improved adoption rates with time-series forecasting models. The use of ARIMA models for forecasting has provided valuable insights into the evolution and effectiveness of public health surveillance systems in Kenya. Future research should consider integrating these findings to enhance system performance. Public health authorities should continue monitoring and refining their surveillance systems, incorporating feedback from this study's findings to ensure they remain effective tools for disease prevention and control. Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta}\ p\ X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African, Geographic, Surveillance, Forecasting, Evaluation, Methodology, Data Analysis*

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