



# Forecasting Clinical Outcomes in Rwanda’s Public Health Surveillance Systems Using Time-Series Models

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## Abstract

Rwanda’s public health surveillance systems are crucial for monitoring and managing clinical outcomes in various diseases. Time-series forecasting models were employed to analyse data from Rwanda’s public health surveillance systems, with a focus on measuring trends and patterns over time. A significant proportion (85%) of forecasted cases aligned with actual reported cases within the uncertainty interval of  $\pm 10\%$ . The time-series models effectively predicted clinical outcomes in Rwanda’s public health surveillance systems, demonstrating their potential for improving disease management and resource allocation. Public health officials should consider implementing these forecasting tools to enhance real-time monitoring and planning. 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:** *African geography, Public health surveillance, Time-series analysis, Forecasting models, Epidemiology, Statistical methods, Clinical outcomes assessment*

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