Time-Series Forecasting Model for Measuring Adoption Rates in Public Health Surveillance Systems in Rwanda: A Methodological Evaluation

Kizito Mukashya[1,2]**, Ndayishimiye Nkubateve**[3,4]**, Gabriel Nyirabugyi**[1]

[1] University of Rwanda

[2] Department of Surgery, Rwanda Environment Management Authority (REMA)

[3] Department of Pediatrics, Rwanda Environment Management Authority (REMA)

[4] African Leadership University (ALU), Kigali

Author notes

Kizito Mukashya is affiliated with University of Rwanda and focuses on Medicine research in Africa.
Ndayishimiye Nkubateve is affiliated with Department of Pediatrics, Rwanda Environment Management Authority (REMA) and focuses on Medicine research in Africa.
Gabriel Nyirabugyi is affiliated with University of Rwanda and focuses on Medicine research in Africa.

Abstract

Public health surveillance systems in Rwanda aim to monitor disease outbreaks and track adoption rates of new health interventions. A time-series forecasting model was developed using autoregressive integrated moving average (ARIMA) methodology to predict future adoption trends based on historical data from Rwanda's surveillance system. The ARIMA model demonstrated a significant predictive accuracy with an R^2 value of 0.85, indicating that the model could forecast adoption rates with moderate reliability. The time-series forecasting model proved effective in measuring and predicting adoption rates within Rwanda's public health surveillance systems. Further research should be conducted to validate these findings across different health interventions and contexts. Public Health Surveillance, Adoption Rates, Time-Series Forecasting, ARIMA Model Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \vec{\beta}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ REQUEST FULL PAPER

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa

Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge