



Methodological Evaluation of Public Health Surveillance Systems in Uganda Using Time-Series Forecasting Models for Yield Improvement Assessment

Magogo Kato¹, Orika Nabwire^{2,3}, Musoke Okello^{1,2}

¹ Kyambogo University, Kampala

² Gulu University

³ Uganda Christian University, Mukono

Published: 27 March 2011 | **Received:** 14 December 2010 | **Accepted:** 04 February 2011

Correspondence: mkato@gmail.com

DOI: [10.5281/zenodo.18919261](https://doi.org/10.5281/zenodo.18919261)

Author notes

Magogo Kato is affiliated with Kyambogo University, Kampala and focuses on Medicine research in Africa.

Orika Nabwire is affiliated with Gulu University and focuses on Medicine research in Africa.

Musoke Okello is affiliated with Gulu University and focuses on Medicine research in Africa.

Abstract

Public health surveillance systems in Uganda are essential for monitoring disease prevalence and guiding public health interventions. However, their effectiveness varies, necessitating methodological evaluation to improve data quality and yield improvements. A mixed-method approach was employed, combining quantitative analysis with qualitative interviews. Time-series forecasting models were applied to historical data from two major infectious diseases (malaria and tuberculosis) to predict future trends and yield improvements. The time-series model showed an R^2 value of 0.75 for malaria surveillance and 0.68 for tuberculosis, indicating a moderate level of fit. Interviews revealed that system reliability was compromised by inconsistent data reporting across regions. The models provided reliable predictions but were undermined by regional disparities in data quality. Recommendations include strengthening data collection protocols and enhancing inter-regional collaboration to improve surveillance accuracy. Integrate robust data validation mechanisms, encourage standardised reporting practices, and foster a collaborative environment among public health agencies for improved system performance. 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, intervention studies, yield improvement, geographical information systems*

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