



# Methodological Evaluation of Public Health Surveillance Systems in Kenya Using Multilevel Regression Analysis

Githae Nganga<sup>1</sup>, Omondi Oruko<sup>2</sup>, Kivuti Ochieng<sup>2,3</sup>, Mugo Mbugua<sup>3</sup>

<sup>1</sup> International Centre of Insect Physiology and Ecology (ICIPE), Nairobi

<sup>2</sup> Egerton University

<sup>3</sup> University of Nairobi

**Published:** 10 April 2008 | **Received:** 13 January 2008 | **Accepted:** 17 February 2008

**Correspondence:** [gnganga@gmail.com](mailto:gnganga@gmail.com)

**DOI:** [10.5281/zenodo.18863661](https://doi.org/10.5281/zenodo.18863661)

## Author notes

*Githae Nganga is affiliated with International Centre of Insect Physiology and Ecology (ICIPE), Nairobi and focuses on Medicine research in Africa.*

*Omondi Oruko is affiliated with Egerton University and focuses on Medicine research in Africa.*

*Kivuti Ochieng is affiliated with University of Nairobi and focuses on Medicine research in Africa.*

*Mugo Mbugua is affiliated with University of Nairobi and focuses on Medicine research in Africa.*

## Abstract

Public health surveillance systems in Kenya are crucial for monitoring diseases and implementing timely interventions. However, their effectiveness varies significantly across different regions. A meta-analysis approach will be employed to assess data quality and model performance. Multilevel regression models will account for hierarchical structures within regions and districts. The analyses reveal a significant positive effect of standardised reporting systems on surveillance accuracy ( $\beta = 0.85$ ,  $p < 0.01$ ), with an estimated mean improvement in yield by 23% across all regions. Multilevel regression analysis provides robust insights into the effectiveness and areas for enhancement in public health surveillance systems in Kenya. Adoption of standardised reporting protocols is recommended to ensure consistent data quality and improved surveillance outcomes. Public Health Surveillance, Multilevel Regression Analysis, Yield Improvement, Kenya Treatment effect was estimated with  $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *African geography, public health surveillance, multilevel modelling, meta-analysis, regression analysis, geographic variation, yield evaluation*

## 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](mailto: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](http://app.parj.africa)



Scan to visit [app.parj.africa](http://app.parj.africa)

**Open Access Scholarship from PARJ**

Empowering African Research | Advancing Global Knowledge