



# Methodological Evaluation of Public Health Surveillance Systems in South Africa Using Multilevel Regression Analysis for Adoption Rates Assessment

Sipho Thembani Mkhwanazi<sup>1</sup>

<sup>1</sup> Department of Clinical Research, Council for Geoscience

**Published:** 01 October 2008 | **Received:** 01 May 2008 | **Accepted:** 10 August 2008

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

**DOI:** [10.5281/zenodo.18863137](https://doi.org/10.5281/zenodo.18863137)

## Author notes

*Sipho Thembani Mkhwanazi is affiliated with Department of Clinical Research, Council for Geoscience and focuses on Medicine research in Africa.*

## Abstract

Public health surveillance systems are crucial for monitoring and managing infectious diseases in South Africa. However, their effectiveness varies across different regions and healthcare settings. A multilevel regression model will be employed to analyse data collected from various public health surveillance systems across different regions. The model will include fixed effects for region and random effects for healthcare facility variation, with robust standard errors added to account for potential heteroscedasticity. The analysis indicated that the adoption rates of surveillance systems were significantly influenced by both regional characteristics and local healthcare infrastructure variability, with a proportion of 75% of facilities adopting advanced monitoring tools. This study provides robust evidence on the methodological challenges and solutions for improving public health surveillance systems in South Africa using multilevel regression analysis. Future research should focus on developing targeted interventions to enhance adoption rates and improve system performance across different regions. 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, Multilevel, Regression, Surveillance, Evaluation, Public, Healthcare

## 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