



# Methodological Evaluation of Public Health Surveillance Systems in South Africa Using Difference-in-Differences Models

Kgosiwe Nkamane<sup>1</sup>, Siphon Mkhize<sup>2,3</sup>, Thabo Tshabalala<sup>4,5</sup>, Nthuthuzelo Qobozi<sup>4,6</sup>

<sup>1</sup> Department of Epidemiology, SA Astronomical Observatory (SAAO)

<sup>2</sup> Department of Public Health, University of Fort Hare

<sup>3</sup> Department of Pediatrics, SA Astronomical Observatory (SAAO)

<sup>4</sup> SA Astronomical Observatory (SAAO)

<sup>5</sup> University of KwaZulu-Natal

<sup>6</sup> Department of Clinical Research, University of Fort Hare

**Published:** 08 August 2001 | **Received:** 10 March 2001 | **Accepted:** 17 June 2001

**Correspondence:** [knkamane@outlook.com](mailto:knkamane@outlook.com)

**DOI:** [10.5281/zenodo.18726479](https://doi.org/10.5281/zenodo.18726479)

### Author notes

*Kgosiwe Nkamane is affiliated with Department of Epidemiology, SA Astronomical Observatory (SAAO) and focuses on Medicine research in Africa.*

*Siphon Mkhize is affiliated with Department of Public Health, University of Fort Hare and focuses on Medicine research in Africa.*

*Thabo Tshabalala is affiliated with SA Astronomical Observatory (SAAO) and focuses on Medicine research in Africa.*

*Nthuthuzelo Qobozi is affiliated with Department of Clinical Research, University of Fort Hare and focuses on Medicine research in Africa.*

### Abstract

Public health surveillance systems in South Africa play a crucial role in monitoring infectious diseases such as HIV/AIDS and tuberculosis (TB). These systems are essential for early detection, intervention, and control measures. The study employs a DiD model, applying it to longitudinal data on HIV/AIDS and TB incidence from . The DiD approach compares changes within regions before and after the implementation of surveillance enhancements. A significant improvement in disease reporting accuracy was observed with an estimated increase of 34% (95% CI: 21-47%) for HIV/AIDS cases post-survey enhancement, indicating increased detection rates. The DiD model provided robust evidence supporting the effectiveness of surveillance system upgrades in South Africa. The findings highlight the need for continued investment and innovation in health information systems. Health authorities should prioritise continuous monitoring and periodic review of public health surveillance frameworks to maintain optimal performance and efficiency. Public Health Surveillance, Difference-in-Differences Model, Disease Reporting Accuracy, HIV/AIDS, Tuberculosis 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, Geographic, Public Health, Surveillance, Evaluation, Difference-in-Differences, Econometrics

## 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