



Methodological Evaluation of Public Health Surveillance Systems in South Africa Using Quasi-Experimental Design to Measure Efficiency Gains

Themba Khumalo^{1,2}, Nokuthula Sithole³, Sifiso Maseko²

¹ Department of Public Health, Agricultural Research Council (ARC)

² Nelson Mandela University

³ Agricultural Research Council (ARC)

Published: 09 August 2007 | **Received:** 24 February 2007 | **Accepted:** 12 June 2007

Correspondence: tkhumalo@aol.com

DOI: [10.5281/zenodo.18841336](https://doi.org/10.5281/zenodo.18841336)

Author notes

Themba Khumalo is affiliated with Department of Public Health, Agricultural Research Council (ARC) and focuses on Medicine research in Africa.

Nokuthula Sithole is affiliated with Agricultural Research Council (ARC) and focuses on Medicine research in Africa.

Sifiso Maseko is affiliated with Nelson Mandela University and focuses on Medicine research in Africa.

Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of public health surveillance systems in South Africa: quasi-experimental design for measuring efficiency gains in South Africa. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A mixed-methods design was used, combining survey and interview data collected over the study period. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of public health surveillance systems in South Africa: quasi-experimental design for measuring efficiency gains, South Africa, Africa, Medicine, original research This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, spatial analysis, mixed-methods, efficiency, econometrics, GIS, public health*

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