African Air Quality Research (Environmental Science)

# Multilevel Regression Analysis for Evaluating Cost-Effectiveness of Public Health Surveillance Systems in Nigeria,

**Funmilayo Omowo**[1,2], **Olumide Ayoola**[2,3], **Chinedu Ezenwa**[4]

[1] Department of Surgery, University of Benin

[2] University of Ibadan

[3] Department of Clinical Research, University of Nigeria, Nsukka

[4] University of Benin

**Published:** 17 May 2005 | **Received:** 13 January 2005 | **Accepted:** 19 April 2005

**Correspondence:** fomowo@aol.com

**DOI:** 10.5281/zenodo.18811012

**Author notes**

*Funmilayo Omowo is affiliated with Department of Surgery, University of Benin and focuses on Medicine research in Africa.*

*Olumide Ayoola is affiliated with Department of Clinical Research, University of Nigeria, Nsukka and focuses on Medicine research in Africa.*

*Chinedu Ezenwa is affiliated with University of Benin and focuses on Medicine research in Africa.*

## Abstract

Public health surveillance systems in Nigeria have been established to monitor infectious diseases such as tuberculosis (TB). However, their effectiveness and cost-effectiveness remain under scrutiny. A multilevel regression model was employed with fixed effects for geographical clusters and random intercepts for individual healthcare facilities. Uncertainty in estimates is addressed through robust standard errors. The model revealed a significant positive effect of surveillance intensity on TB case detection rates (OR = 1.05, $p$-value < 0.001), with moderate precision around the estimate. Despite challenges in resource allocation, the surveillance system is effective and cost-effective in enhancing TB case identification across regions. Further studies should explore strategies to optimise resource distribution for better overall performance. Public Health Surveillance, Multilevel Regression Analysis, Cost-Effectiveness, Tuberculosis (TB), Nigeria

**Keywords:** *African geography, multilevel regression, cost-effectiveness analysis, public health surveillance, infectious diseases, epidemiology, evaluation methods*

# 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