

Methodological Evaluation and Panel-Data Estimation of Public Health Surveillance System Yield in Nigeria, 2000–2026

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ABSTRACT

Background: Public health surveillance systems are critical for early disease detection and response, yet their operational yield—the proportion of true cases identified—is often inadequately measured. In many settings, including Nigeria, evaluations have been hampered by fragmented data and a lack of longitudinal analytical frameworks.

Purpose and objectives: This case study aimed to methodologically evaluate the yield of integrated disease surveillance in Nigeria and to estimate longitudinal improvements using a panel-data econometric approach. The objective was to quantify the effect of systematic investments in surveillance infrastructure on case detection rates.

Keywords: *Public health surveillance, Nigeria, Panel data, Methodological evaluation, Disease detection, Sub-Saharan Africa, Operational yield*

Article Highlights

- Panel-data econometric approach quantifies longitudinal improvements in surveillance yield.
- Two-way fixed effects model reveals significant positive association between integrated support and case detection.
- Methodology operationalises yield as the ratio of confirmed to suspected cases reported.
- Findings advocate for sustained investment in core surveillance infrastructure and data quality.

Core Analytical Framework

The study employs a two-way fixed effects model on a balanced panel dataset to estimate the effect of systematic investments on surveillance yield, clustering robust standard errors at the state level.

This study provides a robust longitudinal framework for evaluating public health surveillance performance.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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