



Methodological Evaluation of Public Health Surveillance Systems in Nigeria Using Difference-in-Differences Model to Measure System Reliability

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Published: 20 December 2002 | **Received:** 27 August 2002 | **Accepted:** 19 November 2002

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DOI: [10.5281/zenodo.18739619](https://doi.org/10.5281/zenodo.18739619)

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Abstract

Public health surveillance systems are essential for monitoring diseases and managing public health emergencies in Nigeria. A DID model was employed to assess system performance across different regions, accounting for potential confounders such as economic and demographic factors. The analysis revealed significant variations in system reliability between urban and rural areas, with an estimated difference-in-differences score of -15% (95% CI: -20% to -10%). The DID model effectively highlighted disparities in the surveillance systems' performance. Policy makers should prioritise system improvements in less reliable regions, particularly focusing on rural areas. Public health surveillance, Difference-in-Differences (DID), Nigeria, System Reliability Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^{-1} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Nigerian, Geographic, Public Health, Surveillance, Evaluation, Impact, Analysis

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