



# Methodological Evaluation of Public Health Surveillance Systems in Nigeria Using Difference-in-Differences Model

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## Abstract

Public health surveillance systems are critical for monitoring infectious diseases in Nigeria. However, their effectiveness is often under-researched and poorly understood. A DiD model was applied to analyse data from public health surveillance records in Nigeria, comparing pre- and post-intervention periods. The specific dataset includes monthly counts of notifiable diseases before and after implementation of new reporting protocols. The DiD analysis revealed a statistically significant increase ( $p < 0.05$ ) in the number of reported cases from an average of 120 per month to 180 per month post-intervention, indicating improved surveillance yield. The difference-in-differences model demonstrates its utility for evaluating public health surveillance systems' efficacy and suggests that timely intervention can enhance disease detection and control. Public health authorities should prioritise continuous monitoring and system updates to maintain high surveillance yields and ensure effective disease management. public health, surveillance systems, DiD model, infectious diseases, Nigeria 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:** *Nigerian, Public health, Surveillance, Methodology, Evaluation, Difference-in-Differences, Epidemiology*

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