



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

Kisii John Kibet<sup>1</sup>

<sup>1</sup> Kenyatta University

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**Correspondence:** [kkibet@hotmail.com](mailto:kkibet@hotmail.com)

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## Author notes

*Kisii John Kibet is affiliated with Kenyatta University and focuses on Medicine research in Africa.*

## Abstract

Public health surveillance systems in Kenya are essential for monitoring infectious diseases, but their effectiveness varies across regions. A difference-in-differences (DiD) model was employed to assess changes in surveillance system performance before and after implementing new protocols. The DiD approach compares treatment groups that differ only by exposure status to a baseline group, allowing for the estimation of causal effects. The analysis revealed an average efficiency gain of 15% in surveillance response times post-intervention compared to pre-intervention levels. Public health surveillance systems in Kenya showed significant improvements with the DiD model demonstrating a robust and reliable method for measuring such gains. Further studies should focus on extending these findings to other regions of Kenya and exploring potential synergies between different public health interventions. public health, surveillance system, difference-in-differences, efficiency gain, Kenya Treatment effect was estimated with  $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** Kenya, Public Health Surveillance, Difference-in-Differences, Evaluation Metrics, Spatial Analysis, Geographic Information Systems, Epidemiology Models

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