



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

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Abstract

Public health surveillance systems are crucial for monitoring infectious diseases in Kenya, but their efficiency has not been rigorously evaluated. A systematic review and meta-analysis were conducted to assess the performance of public health surveillance systems across different regions of Kenya. The difference-in-differences model was applied to analyse changes over time within each region compared to a control group. Within one region, an estimated 20% reduction in disease detection times was observed post-intervention, with robust standard errors indicating confidence in the results. The difference-in-differences model provided insights into the effectiveness of surveillance systems and highlighted potential areas for system optimization. Enhancements to data collection methods and training programmes are recommended based on findings from this analysis. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Public Health Surveillance, Kenya, Meta-Analysis, Difference-in-Differences, Methodology, Evaluation, Geographic Analysis*

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