



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

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Abstract

Public health surveillance systems are critical for monitoring disease prevalence and responding to public health threats in Tanzania. However, their effectiveness can be influenced by various factors such as resource allocation, training of personnel, and system infrastructure. The study employed a DiD regression model with robust standard errors to account for potential confounding variables. The primary dataset consisted of routine surveillance data collected from multiple health facilities across Tanzania between and , supplemented by administrative records. A significant increase in the detection rate of notifiable diseases was observed post-intervention ($p < 0.05$), suggesting improved system reliability due to enhanced training programmes for surveillance staff. The DiD model effectively highlighted improvements in surveillance systems, providing a robust framework for future evaluations and policy recommendations. Further research is recommended to explore the long-term impacts of interventions on public health surveillance effectiveness. 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: Tanzania, Public Health Surveillance, Difference-in-Differences, Methodology, Evaluation, Quantitative Methods, Geographic Information Systems

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