



Methodological Evaluation of Public Health Surveillance Systems in Ghana Using Difference-in-Differences Model for Cost-Effectiveness Assessment

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Abstract

Public health surveillance systems are crucial for monitoring diseases and implementing effective control measures in Ghana. The study employed a difference-in-differences approach to assess the impact of surveillance system enhancements on disease incidence over time. The DID model was used to estimate the causal effect of these interventions, accounting for potential confounders such as socio-economic factors and seasonal variations in disease prevalence. A preliminary analysis suggests that the DID model has identified a significant reduction ($p < 0.05$) in reported cases of infectious diseases following system improvements. The difference-in-differences method demonstrated robust results, indicating cost-effective surveillance enhancements in reducing disease incidence. Public health authorities should prioritise continued investment and refinement of surveillance systems to sustain these benefits. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^* p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, intervention study, econometrics, surveillance, geographic information systems, spatial analysis, cost-benefit analysis*

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