Methodological Assessment and Cost-Efficiency Analysis of Public Health Surveillance Systems in Uganda Utilising Difference-in-Differences Models

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Abstract

Public health surveillance systems are essential for monitoring infectious diseases in Uganda, where they play a critical role in disease prevention and control. The methodology employed includes an assessment of existing data sets and application of difference-in-differences (DID) statistical model to analyse changes over time in surveillance system performance. A key finding is that DID models can effectively isolate the impact of policy interventions by comparing treated and control groups, though there were variations in implementation across different districts. The effectiveness of public health surveillance systems in Uganda can be enhanced through improved data collection and standardised application of DID models for cost-effectiveness analysis. Future research should focus on the scalability of DID methods to other diseases and regions, as well as the integration of real-time data into surveillance processes. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow} p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, surveillance, econometric, randomized controlled trial, impact evaluation, cost-benefit, geographical* 🏥

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