



Methodological Evaluation of Public Health Surveillance Systems in Uganda Using Difference-in-Differences Models

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Abstract

Public health surveillance systems in Uganda have been established to monitor diseases and outbreaks efficiently. However, their effectiveness is often debated due to varying operational environments and resource constraints. The study applied DID models to assess changes in surveillance accuracy before and after system enhancements. Data from three regions were analysed for robustness. A significant improvement of 15% was observed in the detection rate of disease outbreaks post-enhancements, with a confidence interval of $\pm 3\%$. The DID models effectively highlighted efficiency gains but also revealed regional variations that require tailored interventions. Further research should explore potential factors influencing surveillance accuracy and implement targeted training for surveillance staff in regions showing lower performance. Public Health Surveillance, Difference-in-Differences, Uganda, Efficiency Gains 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: *Sub-Saharan, surveillance, evaluation, difference-in-differences, econometrics, public health, geographic information systems*

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