



Methodological Evaluation of Public Health Surveillance Systems in Uganda Using Panel Data for Efficiency Analysis

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Abstract

Public health surveillance systems are crucial for monitoring infectious diseases in Uganda, where resource constraints may affect their efficiency. A systematic literature review of studies published between and was conducted. Studies were selected based on inclusion criteria related to public health surveillance systems, resource allocation, and efficiency analysis methods. The analysis revealed that a significant proportion (80%) of the reviewed studies used panel data for estimating system performance, indicating a trend towards more rigorous methodological approaches in recent years. This review highlights the importance of adopting robust statistical models to accurately measure efficiency gains in public health surveillance systems. Future research should explore the impact of different resource allocation strategies on system efficiency and consider integrating machine learning techniques for enhanced performance prediction. 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: *African geography, public health surveillance, panel data analysis, efficiency frontier, econometrics, resource allocation, qualitative methods*

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