



Methodological Evaluation of Public Health Surveillance Systems in Ghana Using Panel Data Analysis for Cost-Effectiveness Assessment

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Abstract

Public health surveillance systems in Ghana are crucial for monitoring diseases such as malaria and tuberculosis (TB). However, their effectiveness varies across different regions. A systematic review was conducted to analyse existing studies on public health surveillance systems. Panel data analysis was employed to estimate costs and benefits over time, with robust standard errors accounting for potential biases. The analysis revealed significant variation in the efficiency of surveillance systems across regions, suggesting that localized improvements are necessary for optimal performance. This study provides a rigorous methodological framework for evaluating public health surveillance systems in Ghana and highlights the importance of regional adaptation to achieve cost-effectiveness. Public health officials should prioritise targeted interventions based on findings from this analysis, ensuring that resources are allocated efficiently across different regions. public health surveillance, panel data, cost-effectiveness, Ghana Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Public Health, Surveillance Systems, Ghana, Methodology, Panel Data, Cost-Effectiveness*

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