



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

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Abstract

Public health surveillance systems are crucial for monitoring and managing infectious diseases in developing countries like Ethiopia. A mixed-method approach combining quantitative and qualitative data will be employed. Panel data analysis will be conducted to estimate cost-effectiveness ratios (CERs) for different surveillance interventions. The preliminary findings suggest that the current system underinvests in early warning systems, particularly in rural areas where disease transmission is higher. This study aims to provide evidence-based recommendations for improving public health surveillance in Ethiopia by optimising resource allocation based on cost-effectiveness analysis. Policy makers should prioritise investments in digital infrastructure and training programmes to enhance the early detection of infectious diseases. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, public health surveillance, panel data analysis, cost-effectiveness, econometrics, intervention studies, geographic information systems*

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