



Methodological Evaluation of Public Health Surveillance Systems in Ethiopia: Quasi-Experimental Design for Efficiency Measurement

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Published: 25 August 2011 | **Received:** 22 April 2011 | **Accepted:** 03 July 2011

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DOI: [10.5281/zenodo.18927194](https://doi.org/10.5281/zenodo.18927194)

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Abstract

Public health surveillance systems are crucial for monitoring infectious diseases in low- to middle-income countries like Ethiopia. These systems aim to detect and respond to outbreaks efficiently. A quasi-experimental design was employed to assess the performance of surveillance systems. Key variables included case notification rates and response times. Case notification rates showed an average increase of 30% after implementing improved reporting guidelines, with significant reductions in response time by up to 15%. The quasi-experimental design demonstrated the potential for methodological improvements to enhance surveillance system efficiency. Standardised reporting protocols should be implemented to ensure consistent data collection and analysis across different regions in Ethiopia. Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Ethiopia, Geographic Information Systems, Quasi-experimental Design, Evaluation Metrics, Public Health Surveillance, Data Quality Assessment, Spatial Analysis

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