



Methodological Assessment of Public Health Surveillance Systems in Ethiopia: Estimating Clinical Outcomes Using Panel Data Analysis

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Published: 21 December 2008 | Received: 31 August 2008 | Accepted: 30 October 2008

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DOI: [10.5281/zenodo.18864935](https://doi.org/10.5281/zenodo.18864935)

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Abstract

Public health surveillance systems are crucial for monitoring disease prevalence and guiding preventive measures in Ethiopia. However, their effectiveness varies widely across different regions and over time. Panel data analysis was employed to assess the impact of various factors on disease prevalence. Robust standard errors were used to account for potential econometric issues. The analysis revealed that there is a 20% variation in reported fever incidence rates across different regions, indicating variability in surveillance accuracy. This study underscores the importance of continuous methodological review and improvement in public health surveillance systems to enhance their reliability and effectiveness. Public health officials should prioritise regular system audits and data quality checks to ensure consistent reporting and timely intervention planning. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Ethiopia, Geographic Information Systems, Spatial Analysis, Panel Data, Regression Models, Mortality Rates, Surveillance Metrics

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