



# Methodological Evaluation of Public Health Surveillance Systems in Kenya Using Multilevel Regression Analysis to Measure Clinical Outcomes

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## Abstract

Public health surveillance systems in Kenya are crucial for monitoring disease prevalence and guiding interventions. However, their effectiveness varies across different regions. A multilevel regression model was employed to analyse data from Kenyan healthcare facilities at both district and national levels, accounting for hierarchical structure and potential confounders. The analysis revealed significant variability in clinical outcomes across districts, suggesting the need for tailored interventions. Multilevel regression analysis provided insights into the impact of surveillance systems on clinical outcomes, enhancing their utility for policy-making. Public health authorities should prioritise data collection and quality assurance to improve system effectiveness. public health surveillance, multilevel regression, clinical outcomes, Kenya Treatment effect was estimated with  $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** Kenya, Surveillance Systems, Multilevel Analysis, Public Health, Regression, Geographic Variation, Outcome Measures

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