



Multilevel Regression Analysis for Measuring Adoption Rates in Public Health Surveillance Systems in Kenya: A Methodological Evaluation

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Abstract

Public health surveillance systems are critical for monitoring infectious diseases in Kenya. However, implementation rates vary across different regions and sectors. A multilevel logistic regression model was employed to analyse data from a survey conducted among healthcare providers. The model accounts for both individual and organisational factors influencing system uptake. The study found that the proportion of healthcare facilities adopting public health surveillance systems ranged from 20% in rural areas to 80% in urban settings, with significant differences observed between sectors (e.g., primary care vs. tertiary care). Multilevel regression analysis provided a nuanced understanding of factors affecting adoption rates and highlighted the need for tailored interventions. Health policymakers should consider sector-specific strategies to increase system uptake in underserved areas, leveraging multilevel models for future research. public health surveillance systems, multilevel logistic regression, healthcare providers, adoption rates Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, multilevel, regression, surveillance, adoption, public health, evaluation*

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