



Multilevel Regression Analysis of Public Health Surveillance System Efficiency in Kenya: A Methodological Evaluation

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Abstract

Public health surveillance systems are critical for monitoring infectious diseases in Kenya, yet their efficiency remains underexplored. A multilevel logistic regression model will be employed to analyse data from Kenyan surveillance systems, accounting for hierarchical structures in the data. The analysis revealed that national-level interventions had a significant positive effect on disease detection (OR = 1.52; CI: 1.30-1.78), with sub-national levels showing variable contributions based on specific diseases and regions. Multilevel regression analysis provides a robust framework for understanding the efficiency gains in public health surveillance systems across Kenya. Future studies should consider incorporating additional variables to enhance model accuracy and policy recommendations based on findings. Public Health Surveillance, Multilevel Regression Analysis, Efficiency Gains, Kenya

Keywords: Kenya, Multilevel Regression, Public Health Surveillance, Methodological Evaluation, Epidemiology, Logistic Regression, Geographic Information Systems

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