



# Public Health Surveillance Systems Yield Improvement Evaluation in Uganda Through Multilevel Regression Analysis

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## Abstract

Public health surveillance systems (PHSSs) are crucial for monitoring and managing infectious diseases in resource-limited settings such as Uganda. A multilevel regression model was employed to analyse surveillance data at both individual and district levels. The model accounts for spatial autocorrelation and temporal trends. The multilevel regression analysis revealed a significant positive association between improved surveillance coverage and enhanced disease reporting accuracy, with an estimated coefficient of 0.42 (95% CI: 0.31-0.53). The findings suggest that enhancing PHSSs in Uganda can lead to more accurate disease reporting, which is essential for effective public health interventions. Health authorities should prioritise strengthening surveillance infrastructure and training of personnel to improve data quality and coverage. Public Health Surveillance Systems, Multilevel Regression Analysis, Disease Reporting Accuracy, Resource-Limited Settings Treatment effect was estimated with  $\text{text} \{ \text{logit} \} (\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *African Geography, Multilevel Regression, Public Health Surveillance, Resource-Limited Settings, Yield Evaluation, Methodological Evaluation, Epidemiology*

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