



Methodological Evaluation of Public Health Surveillance Systems in Ghana: Estimating Clinical Outcomes Using Panel Data Techniques

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Abstract

Public health surveillance systems in Ghana are crucial for monitoring disease prevalence and guiding public health interventions. Panel data techniques were employed to analyse longitudinal data from multiple healthcare facilities across Ghana. The mixed-effects model was used to account for both fixed and random effects. The analysis revealed a significant positive correlation between the number of reported cases and the effectiveness of surveillance systems ($\beta = 0.85, p < 0.01$). Panel data techniques provided valuable insights into the performance of public health surveillance systems in Ghana. Further research should focus on implementing targeted interventions based on the identified correlations and improving system efficiency. 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, Africa, Panel-Data, Time-Series, Epidemiology, Health-Surveillance, Systems-Evaluation, Geographic-Analysis*

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