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Multilevel Regression Analysis for Evaluating Cost-Effectiveness of Public Health Surveillance Systems in Ghana,

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Abstract

Public health surveillance systems in Ghana have been established to monitor and respond to infectious diseases effectively. However, their cost-effectiveness remains a subject of debate. A longitudinal study employing multilevel logistic regression models to analyse data from surveillance records and financial reports. Uncertainty in estimates is quantified using robust standard errors. The analysis revealed that the cost-effectiveness varied significantly by geographical region, with urban areas showing a higher return on investment compared to rural settings ($p < 0.05$). Multilevel regression analysis successfully elucidated the factors affecting the cost-effectiveness of public health surveillance systems in Ghana. Targeted interventions should be developed for underserved regions, focusing on enhancing infrastructure and resource allocation to improve overall efficiency. Public Health Surveillance, Cost-Effectiveness Analysis, Multilevel Regression, Ghana Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Multilevel, Regression, Analysis, Public, Health, Surveillance*

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