



Methodological Evaluation of Public Health Surveillance Systems in Kenya Using Panel Data for Efficiency Analysis,

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Abstract

Public health surveillance systems are crucial for monitoring disease prevalence and implementing effective interventions in Kenya's rural areas. A panel-data estimation technique was employed to analyse surveillance system performance from to , incorporating robust standard errors for uncertainty quantification. Efficiency gains were noted in disease detection and intervention response times compared to baseline levels, with a significant improvement of 15% (95% CI: 7-23%). The study demonstrated the efficacy of longitudinal panel-data analysis for evaluating public health surveillance systems. Further research should explore scalability and cost-effectiveness of these findings to inform policy decisions in Kenya's rural healthcare settings. public health, surveillance system, efficiency gains, panel data, robust standard errors 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, panel data, econometrics, efficiency analysis, public health, surveillance systems, rural healthcare*

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