



Methodological Evaluation of Public Health Surveillance Systems in Senegal: Panel Data Estimation for Measuring Adoption Rates

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Abstract

Public health surveillance systems are critical for monitoring disease prevalence and guiding public policy in Senegal. The study employs panel data analysis to estimate adoption rates using logistic regression models. Uncertainty is quantified through robust standard errors. Adoption rates varied significantly between urban and rural areas (urban: 70%, rural: 45%). Public health surveillance systems in Senegal face challenges related to regional disparities, necessitating targeted interventions. Targeted training programmes should be implemented for healthcare workers in underserved regions. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, public health surveillance, panel data analysis, logistic regression, spatial econometrics, infectious diseases, cross-sectional studies*

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