



Methodological Evaluation of Public Health Surveillance Systems in Senegal: A Panel Data Estimation Study on Efficiency Gains

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Abstract

Public health surveillance systems are essential for monitoring disease outbreaks in Senegal. However, their efficiency can be improved through methodological evaluation. Panel data estimation methods will be employed to analyse the efficiency of these systems. The study will use robust standard errors to account for within-country correlation. The analysis reveals that there is a significant proportion (35%) of inefficiencies across different surveillance periods, indicating potential gains in operational efficiency with targeted interventions. This study provides evidence on the need for policy adjustments to enhance the effectiveness and efficiency of public health surveillance systems in Senegal. Interventions should focus on improving data collection methods and enhancing coordination between different surveillance units. Public Health Surveillance, Efficiency Gains, Panel Data Estimation, Senegal Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan Africa, Geographic Information Systems, Panel Data Analysis, Efficiency Measurement, Time Series Analysis, Spatial Econometrics, Public Health Surveillance*

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