



Methodological Evaluation of Public Health Surveillance Systems in Senegal Using a Difference-in-Differences Approach to Assess Adoption Rates

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Abstract

Public health surveillance systems are crucial for monitoring infectious diseases in developing countries like Senegal. Despite their importance, adoption rates of these systems can vary significantly across different regions and sectors. The analysis employs a Difference-in-Differences approach, leveraging pre- and post-intervention data from various regions in Senegal. The DiD model accounts for potential confounders by comparing changes within and between treatment groups over time. Senegalese public health surveillance systems showed an adoption rate increase of approximately 30% after a nationwide intervention, although this trend varied across different sectors and regions. The Difference-in-Differences model provides robust evidence for the effectiveness of the intervention in increasing system adoption rates. Future research could explore additional factors influencing adoption rates. Policy makers should prioritise the integration of surveillance systems to enhance disease prevention and control efforts, particularly in underserved regions. Senegal, public health surveillance, Difference-in-Differences, adoption rate, infectious diseases 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, Geographic Information Systems, Spatial Analysis, Epidemiology, Quantitative Methods, Health Informatics, Surveillance Models*

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