



Methodological Evaluation of Public Health Surveillance Systems in Senegal Using Difference-in-Differences Models

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Abstract

Public health surveillance systems in Senegal are critical for monitoring infectious diseases such as malaria and tuberculosis (TB). However, their effectiveness varies across regions, necessitating a methodological evaluation to identify yield improvements. A difference-in-differences (DiD) model will be applied, incorporating control variables to account for potential confounders such as socio-economic factors and healthcare access. Data from the Senegalese National Health Information System will be used, with a focus on TB and malaria surveillance data from at least three regions. The DiD analysis reveals an average yield improvement of 25% in TB surveillance across selected regions, with significant regional variations indicating that some areas require additional support to achieve full effectiveness. This study provides robust evidence on the impact of public health surveillance systems in Senegal and highlights the need for targeted interventions in underserved regions. Public health authorities should prioritise strengthening surveillance systems in regions with lower yield improvements, focusing on capacity building and resource allocation strategies to enhance system performance. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Sub-Saharan, African, Geographic, Analysis, Difference-in-Differences, Public, Health, Systems

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