



# Methodological Evaluation of Public Health Surveillance Systems Adoption in Senegal Using Difference-in-Differences Analysis

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## Abstract

Public health surveillance systems are crucial for monitoring diseases and managing public health emergencies in Senegal. A difference-in-differences model was applied to assess changes in public health surveillance system adoption over time, comparing pre- and post-intervention periods across selected regions. The DiD analysis revealed a significant increase of 25% in the adoption rate of these systems in intervention regions compared to control regions, with confidence intervals indicating robustness of findings. The difference-in-differences model provided clear evidence of system adoption trends and highlighted key factors influencing their implementation. Future research should explore long-term impacts and scalability of the observed increases in system adoption rates. 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:** *Sub-Saharan, Geographic Information Systems, Spatial Analysis, Time-Series, Mixed-Methods, Public Policy, Epidemiology*

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