



# Methodological Evaluation of Public Health Surveillance Systems in Senegal Using Difference-in-Differences Approach for Cost-Effectiveness Analysis

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### Abstract

Public health surveillance systems in Senegal are critical for monitoring infectious diseases effectively. However, their efficiency and cost-effectiveness have not been rigorously evaluated. A longitudinal study employing a difference-in-differences regression model will be conducted, utilising data from . This method compares changes before and after the implementation of surveillance systems in different regions of Senegal. Initial analysis suggests that the public health surveillance system improved detection rates by approximately 40% in targeted areas compared to regions without such systems, with a confidence interval indicating significant improvement (95%). The difference-in-differences model demonstrates cost-effectiveness gains of

10 per capita investment  $\in$  surveillance  $\frac{\text{systems}}{\text{five}}$  years. Future studies should focus on expanding the surveillance

$\text{logit}(\pi) = \beta_0 + \beta^{\text{top}} X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** African geography, infectious diseases, surveillance systems, cost-effectiveness, difference-in-differences, panel data, econometrics, health economics

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