

Evaluating Surveillance System Adoption in Senegal

A Difference-in-Differences Analysis of Public Health Methodologies, 2000–2026

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ABSTRACT

Background: The effective adoption of public health surveillance systems is critical for food security and disease control, yet robust methodological frameworks for evaluating their implementation are lacking. This case study addresses the gap in quantifying the impact of systematic interventions on surveillance uptake within a resource-constrained setting.

Purpose and objectives: This study aimed to evaluate the causal effect of a national integrated surveillance strategy on system adoption rates across districts. The primary objective was to measure the intervention's impact while controlling for secular trends and time-invariant heterogeneity.

Keywords: *Public health surveillance, Difference-in-differences, Health systems evaluation, Sub-Saharan Africa, Implementation research, Senegal*

Article Highlights

- Difference-in-differences analysis reveals a significant causal effect of the national strategy.
- Most substantial improvements were in data completeness and timeliness of reporting.
- The quasi-experimental design provides a credible model for impact evaluation.
- Findings support integrated, centrally coordinated surveillance with dedicated resources.

Methodological Insight

The core DiD model measured the intervention's impact while controlling for secular trends and district-level heterogeneity, using cluster-robust standard errors for inference.

This analysis offers a robust framework for evaluating health system interventions in resource-constrained settings.

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