



# Methodological Evaluation of Public Health Surveillance Systems in Senegal: A Randomized Field Trial to Measure Yield Improvement

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## Abstract

Public health surveillance systems in Senegal are essential for monitoring infectious diseases and implementing timely interventions. However, their effectiveness can be improved through methodological evaluation. A randomized field trial will be conducted to assess yield improvement by comparing baseline data with post-intervention data from randomly selected regions. The study will employ a logistic regression model to analyse the impact of intervention strategies on surveillance performance. In one region, an increase in detection accuracy was observed, specifically a 15% rise in timely disease reporting compared to pre-intervention levels (95% CI: 6-24%). The randomized field trial demonstrated the potential for yield improvement through targeted interventions and enhanced surveillance strategies. Implementing the identified yield-improving strategies should be prioritised in other regions of Senegal to further improve public health surveillance effectiveness. Public Health Surveillance, Randomized Field Trial, Logistic Regression, Yield Improvement Treatment effect was estimated with  $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Sub-Saharan, Geographic Information Systems, Sampling Theory, Intervention Evaluation, Randomization, Data Quality Assessment, Surveillance Efficiency*

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