



# Methodological Evaluation of Public Health Surveillance Systems in Nigeria: A Randomized Field Trial for Efficiency Gains

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## Abstract

Public health surveillance systems in Nigeria are crucial for monitoring diseases and implementing effective interventions. However, their efficiency varies significantly across different regions. A randomized field trial was conducted in four states with varying levels of surveillance system maturity. The study employed mixed-methods approaches, including quantitative surveys and qualitative interviews to assess system performance. In State X, the implementation of a real-time data transmission protocol led to a reduction in reporting delays by 30%, while State Y's enhanced training programmes resulted in an increase in accurate case reports by 25%. The randomized field trial demonstrated that strategic interventions such as improved data transmission protocols and targeted training can significantly improve the efficiency of public health surveillance systems in Nigeria. Public health authorities should prioritise the adoption of real-time data transmission technologies and ongoing staff training to optimise surveillance system performance. public health surveillance, randomized field trial, efficiency gains, Nigeria 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:** *Geographic, Sub-Saharan, Surveillance, Evaluation, Randomization, Implementation Science, Public Health Systems*

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