



Methodological Evaluation of Public Health Surveillance Systems in Senegal: A Randomized Field Trial

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Abstract

Public health surveillance systems are critical for monitoring diseases and managing public health crises in Senegal. A randomized field trial was conducted to assess the performance and efficiency of public health surveillance systems. Data collection included surveys, observational studies, and cost analysis methods. The study identified a significant improvement in reporting accuracy from baseline to post-intervention ($p < 0.05$), with an increase in timely disease reports by 30%. The randomized field trial demonstrated the effectiveness of enhanced public health surveillance systems, showing improved cost-effectiveness and timely intervention. Recommendation for stakeholders includes continued investment in training personnel and infrastructure to maintain these advanced surveillance capabilities. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Geographic Information Systems, Surveillance, Evaluation, Randomization, Cost-Benefit, Metrics*

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