



# Methodological Evaluation of Public Health Surveillance Systems in Rwanda: Quasi-Experimental Design for System Reliability Assessment Over Time

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## Abstract

Public health surveillance systems in Rwanda are crucial for monitoring diseases and managing outbreaks effectively. A longitudinal study employing mixed-methods approach with quantitative data analysis. The study will use a multi-stage sampling strategy to collect data from healthcare facilities and community surveys. Over the course of three years, surveillance system reliability improved by 15% in terms of timely reporting accuracy (92% vs. 77%), although variability still exists among different regions. The quasi-experimental design demonstrated robustness in assessing system reliability over time but highlighted persistent regional disparities that require targeted interventions. Implement a centralized training programme for surveillance staff and establish standardised protocols to enhance reporting accuracy across the country. public health, surveillance systems, longitudinal study, reliability assessment, Rwanda Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Geographic, Public health, Surveillance, Reliability, Quasi-experimental, Methodology, Africa*

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