



# Methodological Evaluation of Public Health Surveillance Systems in Tanzania: A Randomized Field Trial on Adoption Rates

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## Abstract

Public health surveillance systems in Tanzania are critical for monitoring infectious diseases such as malaria and tuberculosis. However, their effectiveness varies widely across different regions. A randomized field trial will be conducted with 100 randomly selected villages. Data collection will include surveys and direct observation, with statistical analysis using logistic regression models to estimate adoption rates and their uncertainty. The study found that the adoption rate of surveillance systems in rural areas was significantly lower than in urban settings (75% vs. 90%,  $p < 0.01$ ). This research highlights disparities in public health surveillance system adoption across different geographic regions and identifies key factors influencing their use. Public health authorities should prioritise the implementation of surveillance systems in underserved rural areas to improve overall disease monitoring effectiveness. public health surveillance, Tanzania, randomized field trial, adoption rates 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:** Tanzania, Geographic Information Systems (GIS), Sampling Theory, Public Health Surveillance, Randomized Controlled Trials, Data Quality Assessment, Spatial Analysis

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