



# Methodological Assessment of Public Health Surveillance Systems in South Africa: A Randomized Field Trial on Adoption Rates

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## Abstract

Public health surveillance systems in South Africa are crucial for monitoring infectious diseases such as HIV/AIDS and tuberculosis (TB). However, their effectiveness can vary significantly across different regions. A randomized field trial was conducted to evaluate the adoption rates of public health surveillance systems. Participants were randomly assigned to different regions with varying levels of access to healthcare resources. The trial revealed that in areas with better infrastructure and higher population density, there was a significant increase ( $p < 0.05$ ) in the adoption rate of surveillance systems compared to less resource-rich regions. These findings highlight the importance of considering regional disparities when implementing public health surveillance systems, particularly in ensuring equitable access and functionality across South Africa. Public health authorities should prioritise investments in infrastructure and healthcare resources in underserved areas to improve the adoption rates and overall effectiveness of surveillance systems. 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:** African context, public health surveillance, randomized controlled trial, outcome evaluation, data quality assessment, geographic information systems, spatial analysis

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