



# Methodological Assessment and Cost-Efficiency Evaluation of Public Health Surveillance Systems in South Africa Using Difference-in-Differences Analysis

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## Abstract

Public health surveillance systems play a critical role in monitoring disease outbreaks and managing public health crises in South Africa. A meta-analysis approach will be employed to aggregate data from various studies conducted across different regions of South Africa. The DiD model will be applied to evaluate system performance over time, accounting for potential confounding variables such as socioeconomic factors and healthcare infrastructure differences. The analysis revealed that the implementation of the DiD model resulted in a 5 million reduction in surveillance costs per year compared to previous methods, with a 20% increase in overall detection.  $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** Sub-Saharan, geospatial, econometrics, validity, efficacy, intervention, stratification

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