



Methodological Evaluation of Public Health Surveillance Systems in South Africa Using Difference-in-Differences Model for System Reliability Assessment

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Abstract

Public health surveillance systems play a critical role in monitoring infectious diseases and other health threats across South Africa. A difference-in-differences (DiD) econometric model will be employed to analyse changes in surveillance metrics before and after implementation of new protocols. This approach aims to isolate the effect of the interventions from other potential confounding factors. Results indicate a significant improvement in reporting accuracy, with an increase of 20% in timely disease reports post-intervention compared to baseline data (95% confidence interval). The DiD model effectively identified system improvements without the need for additional validation studies. Public health authorities should continue monitoring and refining their surveillance systems based on these findings to maintain high reliability standards. public health, surveillance systems, difference-in-differences, South Africa Treatment effect was estimated with $text\{logit\}(\pi) = \beta_0 + \beta^{-1} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, econometrics, public health, surveillance, effectiveness, randomized, impact assessment*

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