African Information Science Research (LIS focus)

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

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Abstract

Public health surveillance systems are critical for monitoring infectious diseases in South Africa. These systems often rely on reporting from healthcare facilities and clinics, which can be unreliable due to various factors such as underreporting or delays. A DID model was applied to analyse changes in reported infectious disease cases before and after implementing new reporting protocols. Data from multiple healthcare facilities were collected over two years, with a focus on influenza-like illness (ILI) reports as a proxy for surveillance accuracy. The analysis revealed a significant reduction in variability in ILI reports post-intervention, indicating improved reliability of the public health surveillance system. This study provides evidence that systematic interventions can enhance the reliability of public health surveillance systems. The DID model effectively captured changes over time and across different facilities. Policy recommendations include further implementation of robust reporting protocols and continuous monitoring to ensure consistent data quality. Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, surveillance, reliability, econometrics, randomized, impact, intervention*

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