Methodological Evaluation of Public Health Surveillance Systems in South Africa Using Panel Data for Adoption Rate Measurement

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Abstract

Public health surveillance systems are crucial for monitoring disease outbreaks and managing public health crises efficiently. A mixed-method approach was employed, combining quantitative panel-data estimation with qualitative insights from interviews. The study utilised Generalized Method of Moments (GMM) for estimating adoption rates, acknowledging potential measurement errors within the surveillance systems. Panel data revealed that healthcare providers in rural areas were less likely to adopt electronic health record systems compared to urban settings, indicating geographical disparities in system implementation. The findings suggest a need for targeted interventions and policy support to enhance adoption rates across all regions of South Africa. Investment should be prioritised in infrastructure development and technical training programmes, particularly in underserved rural areas. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\dashv}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, panel-data, econometrics, diffusion-of-innovations, health-systems-research, spatial-analysis, qualitative-methodology*

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