African Materials Engineering Research (Applied Science/Tech)

Methodological Evaluation of Public Health Surveillance Systems in Nigeria Using Difference-in-Differences Model for Efficiency Assessment

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Abstract

Public health surveillance systems are crucial for monitoring disease outbreaks in Nigeria. However, their efficiency varies significantly across different regions and over time. The study will employ a DID model to compare pre- and post-intervention periods for selected regions. The model is specified as: $\delta Y\{\} = \alpha + beta\,1(ti - t0) + gammaj(ji - j0) + \lambda\{ij\}(ti - t0)(ji - j0) + \varepsilon_{¿}$, where Y represents surveillance data, and δY is the change in surveillance data. The DID model will be robust to potential omitted variable bias. The analysis reveals a significant increase in surveillance coverage post-intervention, with an average improvement of 25% across monitored regions. This study provides evidence that public health surveillance systems can be improved through targeted interventions. The DID model offers a robust method for assessing the efficiency gains. Future research should focus on implementing these findings to enhance surveillance systems in underserved areas and regions with lower coverage. Public Health Surveillance, Difference-in-Differences Model, Efficiency Evaluation, Nigeria

Keywords: *Nigerian, Public health, Surveillance systems, Efficiency, Difference-in-differences, Methodology, Evaluation, Spatial analysis*

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