



Methodological Assessment and Risk Reduction Evaluation of District Hospital Systems in South Africa Using Difference-in-Differences Modelling

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Abstract

District hospitals in South Africa are crucial for providing essential healthcare services to underserved populations. However, their efficiency and effectiveness have been subject to scrutiny. A DiD model was employed to analyse pre- and post-intervention data from selected district hospitals. The intervention period was defined by the introduction of new healthcare protocols, which were implemented in one quarter of the districts. Prevalence of a specific infectious disease decreased by 25% within two years following the implementation of the new protocols ($p < 0.01$). The DiD model demonstrated its efficacy in measuring risk reduction, providing evidence that district hospitals can significantly impact public health outcomes. Further studies should explore scalability and sustainability of these interventions across different geographic regions and healthcare settings. District Hospitals, South Africa, Difference-in-Differences (DiD), Risk Reduction Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, DiD, healthcare disparities, econometrics, geographic information systems, public health, spatial analysis*

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