



Methodological Evaluation of Community Health Centre Systems in South Africa Using Difference-in-Differences for System Reliability Assessment

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Abstract

Community health centres (CHCs) in South Africa are pivotal for providing primary healthcare services to underserved populations. However, their reliability and effectiveness vary across regions. A DiD model was applied to assess the impact of various interventions and demographic changes on service delivery at CHCs. The analysis included data from to , focusing on three regions in South Africa. The DiD model revealed significant improvements in service coverage (85% increase) in Region A compared to the control group, with a confidence interval of $\pm 6\%$. The DiD method provided robust evidence of system reliability enhancements after interventions were introduced. However, challenges such as resource allocation remain. Further studies should explore long-term sustainability and the impact on patient outcomes in diverse settings. 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, Randomization, Stratification, Evaluation, Community, Infrastructure, Health Systems, Geographic Analysis, Service Delivery, Primary Care

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