Methodological Assessment of District Hospital Systems in South Africa: Panel Data Estimation for Adoption Rates Analysis

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Abstract

District hospitals in South Africa play a crucial role in providing healthcare services to underserved populations. However, their operational efficiency and resource allocation vary significantly across different districts. A mixed-method approach was employed, integrating quantitative panel-data econometric techniques with qualitative interviews. The dataset includes longitudinal patient records and administrative health information system (HIS) data from ten districts over a five-year period. The analysis revealed that the adoption rate for antiretroviral therapy (ART) in district hospitals varied significantly, ranging from 70% to 95%, with some districts showing lower adherence rates due to resource limitations and patient education gaps. This study underscores the importance of tailored interventions to improve ART adoption rates and highlights the need for continuous monitoring and support mechanisms within district hospital systems. Healthcare policymakers should prioritise funding, staff training, and community engagement strategies in underserved districts to enhance healthcare service delivery and patient outcomes. district hospitals, South Africa, panel data analysis, adoption rates, antiretroviral therapy Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow} p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, Spatial, Econometrics, Healthcare, Systems, Geography, Panel*

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