



Methodological Evaluation of District Hospitals Systems in South Africa Using Quasi-Experimental Design to Assess System Reliability

Siyanda Mngeni¹

¹ Tshwane University of Technology (TUT)

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Correspondence: smngeni@hotmail.com

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Author notes

Siyanda Mngeni is affiliated with Tshwane University of Technology (TUT) and focuses on Medicine research in Africa.

Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of district hospitals systems in South Africa: quasi-experimental design for measuring system reliability in South Africa. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of district hospitals systems in South Africa: quasi-experimental design for measuring system reliability, South Africa, Africa, Medicine, case study This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, Quasi-experimental, Healthcare, Systems, Evaluation, Reliability*

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