



Methodological Evaluation of District Hospital Systems in Senegal Using Panel Data Analysis for System Reliability Assessment

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Abstract

This study evaluates the reliability of district hospital systems in Senegal by analysing panel data from to . Panel data analysis was employed to evaluate the district hospital systems in Senegal over a five-year period. Econometric techniques were used to estimate model parameters, accounting for potential endogeneity and omitted variable bias. A significant proportion (35%) of patients experienced delays exceeding two hours at outpatient clinics, highlighting inefficiencies that necessitate systemic reform. The study concludes that while system reliability varied by district, common issues such as delayed patient care suggest a need for coordinated policy interventions to improve service delivery. Implementing a standardised referral protocol and enhancing training programmes for healthcare workers are recommended to reduce delays and improve overall hospital performance. Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta^{-1} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Africa, Panel-Data, Multilevel-Modelling, System-Evaluation, Reliability-Study, Health-Systems, Geographic-Mapping*

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