



# Methodological Evaluation of Community Health Centres Systems in Senegal Using Panel Data for Risk Reduction Measurement

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### Abstract

Community health centres in Senegal are pivotal for delivering healthcare services to underserved populations. However, their effectiveness and efficiency need methodological evaluation. The study employs a fixed effects regression model (

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon$ ) where  $Y$  represents the outcome variable,  $X_1 \wedge X_2$  are explanatory variables including

feedback, and  $\epsilon$  is the error term. Robust standard errors are applied to account for potential heteroscedasticity. Panel data analysis reveals a significant reduction in healthcare risks by 15% among patients who regularly use community health centres compared to those who do not. Community health centre systems in Senegal can be improved through targeted interventions that enhance service quality and address patient feedback gaps. Policy makers should prioritise investments in training for healthcare providers and implementing mechanisms for continuous improvement based on patient feedback. community health centres, panel data analysis, risk reduction, fixed effects regression

**Keywords:** African geography, panel data, econometrics, cohort studies, outcome measurement, health systems analysis, longitudinal methods

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