



# Methodological Assessment and Clinical Outcome Evaluation of Rural Clinics in Senegal Using Difference-in-Differences Models

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## Abstract

Rural clinics in Senegal face challenges related to resource allocation and service delivery, which can impact patient outcomes. The study employed a difference-in-differences approach to analyse pre- and post-intervention data from Senegalese rural clinics, focusing on patient health records for a chronic condition. Statistical analysis included robust standard errors and confidence intervals to account for potential confounders. There was an observed increase of approximately 15% in the proportion of patients achieving clinical improvement after implementing new intervention strategies at participating clinics, with significant differences detected between pre- and post-intervention periods ( $p < 0.05$ ). The difference-in-differences model demonstrated a positive impact on patient outcomes following clinic interventions. Future studies should aim to replicate these findings in diverse settings and consider the sustainability of implemented interventions. Rural clinics, Senegal, Difference-in-Differences (DD), Clinical Outcomes Treatment effect was estimated with  $text\{logit\}(\pi) = \beta_0 + \beta^T p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Sub-Saharan, rural health systems, econometrics, difference-in-differences, cluster analysis, spatial econometrics, randomized controlled trials*

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