



# Methodological Evaluation of Emergency Care Systems in South Africa Using Panel Data for Clinical Outcome Measurement

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## Abstract

Emergency care systems in South Africa are critical for patient outcomes. However, there is a need to evaluate their effectiveness and efficiency. We employed a fixed effects regression model to analyse the impact of ECUs on patient recovery times, incorporating robust standard errors for statistical inference. Panel data analysis revealed that ECUs significantly reduced average recovery times by 20% compared to non-EKU hospitals (95% confidence interval: -17.8%, -23.2%). The fixed effects model provided a robust method for evaluating the clinical outcomes of emergency care systems in South Africa. Future studies should expand this analysis to include more variables and regions to enhance generalizability. Emergency Care Systems, Panel Data Analysis, Clinical Outcomes, Fixed Effects Model Treatment effect was estimated with  $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** African, Fixed Effects, Regression, Panel Data, Evaluation, Healthcare Systems, Clinical Outcomes

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