African Energy Economics (Economics/Energy crossover)

# Methodological Assessment of Regional Monitoring Networks in Ethiopia: Panel Data Estimation for Measuring Clinical Outcomes

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## Abstract

Clinical outcomes in Ethiopia's healthcare sector are monitored through regional monitoring networks (RMONs). These systems aim to improve patient care and reduce health disparities across regions. Panel data analysis was employed using a fixed effects model with robust standard errors to account for potential omitted variable bias. The study utilised cross-sectional survey data from 10 RMONs covering various regions of Ethiopia. A significant positive relationship between the number of healthcare facilities and clinical outcomes was observed, indicating that more accessible health services lead to better patient care ($p < 0.05$). The findings suggest that improving access to healthcare is crucial for enhancing clinical outcomes in Ethiopia. Policy makers should prioritise the expansion of RMONs and investment in infrastructure, particularly in underserved regions, to achieve equitable health care delivery. The empirical specification follows $Y = \vec{\beta_{0+\beta}} \, p \, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *Ethiopia, Panel Data, Regression Analysis, Spatial Statistics, Health Metrics, Geographic Information Systems, Quantitative Research*

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