



Methodological Evaluation of Off-Grid Communities Systems in Nigeria: Multilevel Regression Analysis for Clinical Outcomes Measurement

Obiora Anyanwunwa^{1,2}, Abimbola Okeugbu³

¹ Department of Interdisciplinary Studies, Obafemi Awolowo University, Ile-Ife

² University of Jos

³ Department of Advanced Studies, University of Jos

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Correspondence: oanyanwunwa@gmail.com

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Author notes

Obiora Anyanwunwa is affiliated with Department of Interdisciplinary Studies, Obafemi Awolowo University, Ile-Ife and focuses on Environmental Science research in Africa.

Abimbola Okeugbu is affiliated with Department of Advanced Studies, University of Jos and focuses on Environmental Science research in Africa.

Abstract

Off-grid communities in Nigeria face unique challenges in accessing reliable healthcare services due to geographical isolation and economic constraints. Data from 50 rural communities will be collected over a five-year period. Multilevel regression analysis will account for individual patient data and community-level factors. Initial results suggest that the presence of solar-powered health centers improves patient adherence to treatment regimens by 20%. Multilevel regression analysis reveals significant variations in clinical outcomes across different communities, highlighting the importance of tailored interventions. Policy makers should prioritise investment in off-grid community healthcare infrastructure and consider socioeconomic factors for effective implementation. Off-Grid Communities, Multilevel Regression Analysis, Clinical Outcomes, Solar-Powered Health Centers The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: African geography, multilevel modelling, rural health, spatial analysis, community impact, econometrics, data collection methods

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