



# Bayesian Hierarchical Model Assessment of Off-Grid Communities' Clinical Outcomes in Nigeria

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**Published:** 21 January 2013 | **Received:** 01 September 2012 | **Accepted:** 27 December 2012

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**DOI:** [10.5281/zenodo.18992860](https://doi.org/10.5281/zenodo.18992860)

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## Abstract

Clinical outcomes in off-grid communities in Nigeria have been challenging to monitor due to limited access to healthcare facilities and data collection mechanisms. A Bayesian hierarchical model was utilised to analyse clinical data from multiple off-grid communities. This approach accounts for variability within and between communities by incorporating spatial dependence and varying effects across different areas. The analysis revealed significant heterogeneity in clinical outcomes among the studied communities, with some showing marked improvement compared to others. This study provides robust evidence on the effectiveness of health interventions tailored to specific off-grid contexts within Nigeria. Further research should focus on implementing and evaluating targeted healthcare initiatives in these regions. Bayesian hierarchical model, clinical outcomes, off-grid communities, Nigeria The empirical specification follows  $Y = \beta_{0+\beta}^{-1} p X + varepsilon$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** Sub-Saharan, Bayesian, Hierarchical, Spatial, Evaluation, Data, Modelling

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