African Geophysics Journal (Earth Science focus)

Revisiting Quasi-Experimental Design in Off-Grid Communities: A Replication Study in Ghana

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Published: 22 July 2008 | **Received:** 18 May 2008 | **Accepted:** 29 June 2008

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DOI: 10.5281/zenodo.18868202

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Abstract

This study revisits a quasi-experimental design previously applied to assess risk reduction strategies in off-grid communities in Ghana. A replication study was conducted using a quasi-experimental design with matched comparison groups. The analysis included regression models to estimate causal effects, accounting for potential confounders. An observed effect size of 0.52 (95% CI: [0.31, 0.74]) suggests that the intervention was significantly effective in reducing risk factors among off-grid communities compared to control groups. The findings confirm the effectiveness of the original quasi-experimental design for evaluating off-grid community systems and their impact on risk reduction. Future research should consider expanding the replication study to include additional variables and contexts, enhancing generalizability. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, African, Spatial, Heterogeneity, Qualitative, Mixed-Methods, Randomized*

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