



# Methodological Assessment of Quasi-Experimental Designs in Off-Grid Communities in South Africa,

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## Abstract

This scoping review examines quasi-experimental designs used in studies of off-grid communities in South Africa to assess adoption rates. A systematic search strategy was employed to identify relevant studies. Studies were assessed based on their design quality and adherence to quasi-experimental principles. One study demonstrated a significant increase ( $p < 0.05$ ) in adoption rates among communities that received targeted interventions compared to control groups. Quasi-experimental designs are effective for measuring adoption rates in off-grid communities, but variability exists across studies due to differences in intervention and community characteristics. Future research should use standardised quasi-experimental methods to enhance comparability and robustness of results. The empirical specification follows  $Y = \beta_{0+\beta} X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *African geography, quasi-experimental design, randomized controlled trials, impact evaluation, community engagement, rural development, statistical analysis*

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