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Off-grid Community Systems in Ghana: A Time-Series Forecasting Model for Clinical Outcomes Evaluation

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Abstract

Off-grid communities in Ghana face challenges related to electricity supply, which can affect healthcare delivery and patient outcomes. A time-series forecasting model was developed incorporating ARIMA with robust standard errors for uncertainty assessment. The forecasted trend indicated an increasing healthcare access rate over the next five years, suggesting improved patient outcomes in off-grid areas. The novel ARIMA model provided a reliable method to predict healthcare access and its impact on clinical outcomes in Ghanaian off-grid communities. Further research should validate this model across diverse geographical settings to ensure its applicability and reliability. Off-Grid Communities, Time-Series Forecasting, Healthcare Access, ARIMA Model The empirical specification follows $Y = \vec{\beta_{0+\beta}} \, p \, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Ghana, Off-Grid Communities, Time-Series Analysis, ARIMA Models, Epidemiology, Methodological Evaluation, Forecasting Techniques*

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