African Digital Libraries Quarterly (LIS focus)

Methodological Evaluation of Off-Grid Communities Systems in Ethiopia Using Difference-in-Differences for Clinical Outcome Measurement

Mulu Gebru[1,2], **Fasil Mesfin**[3], **Yared Abebe**[4], **Amanuel Assefa**[5]

[1] Gondar University

[2] Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa

[3] Department of Data Science, Addis Ababa University

[4] Addis Ababa University

[5] Jimma University

Published: 27 August 2011 | **Received:** 17 June 2011 | **Accepted:** 17 July 2011

Correspondence: mgebru@outlook.com

DOI: 10.5281/zenodo.18931438

Author notes

Mulu Gebru is affiliated with Gondar University and focuses on Computer Science research in Africa.
Fasil Mesfin is affiliated with Department of Data Science, Addis Ababa University and focuses on Computer Science research in Africa.
Yared Abebe is affiliated with Addis Ababa University and focuses on Computer Science research in Africa.
Amanuel Assefa is affiliated with Jimma University and focuses on Computer Science research in Africa.

Abstract

The digital divide persists in off-grid communities across Africa, where access to reliable electricity is limited, impacting healthcare outcomes. We employed a DiD approach to assess changes in health indicators before and after the implementation of off-grid energy solutions, comparing pre-intervention with post-intervention periods within treatment and control groups. An analysis revealed an increase in vaccination coverage by 25% among children under five years old in treated communities compared to controls, indicating a significant positive impact on health metrics. The DiD model demonstrated the potential of off-grid systems to improve healthcare delivery in resource-limited settings. Further research should explore long-term impacts and scalability of these interventions. Off-Grid Systems, Difference-in-Differences, Clinical Outcomes, Digital Divide, Ethiopia Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *African geography, off-grid systems, clinical outcomes, difference-in-differences, econometric methods, randomized controlled trials, resource-limited settings*