Methodological Evaluation of Municipal Water Systems Adoption Rates in Ghana Using Difference-in-Differences Models

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Abstract

The adoption of municipal water systems in Ghana has been a subject of interest for researchers aiming to understand how these services impact rural populations. The study employs DiD regression analysis to examine changes in access to municipal water systems over time, comparing pre- and post-intervention periods for different socio-economic groups within the study area. A notable trend observed was an increase of 20% in adoption rates among communities with improved infrastructure compared to those without, highlighting the critical role of physical improvements in driving uptake. The DiD models effectively capture the impact of municipal water system investments on rural populations, providing robust estimates for policymakers aiming to enhance service delivery in underserved regions. Policymakers should prioritise investment in infrastructure and targeted community engagement strategies to accelerate adoption rates and improve overall service accessibility. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, econometric, sanitation, ruralization, intervention, spatial, poverty*

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