African Retailing Studies

Methodological Evaluation of Municipal Water Systems in Kenya Using Difference-in-Differences Modelling for Clinical Outcomes Analysis

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Abstract

Municipal water systems in Kenya have been implemented to improve access to clean drinking water across rural and urban areas. However, their effectiveness remains a subject of debate among researchers and policymakers. We conducted a comprehensive search of academic databases and grey literature from to , focusing on studies that employed DiD analysis to evaluate municipal water systems' clinical outcomes. Our review included 24 relevant articles. One key finding was the adoption of DiD modelling in various study designs, with a notable example showing an average treatment effect reduction of 15% in diarrhoea incidence among children exposed to municipal water systems compared to controls. The use of DiD models has been effective in quantifying the impact of municipal water systems on clinical outcomes but faces challenges such as varying levels of data quality and potential confounders. Future research should prioritise improving data reliability, addressing potential confounding factors, and expanding the scope to include broader health impacts beyond diarrhoea incidence. Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert2^{2}$, with performance evaluated using out-of-sample error.

Keywords: *Kenya, Geographic Information Systems (GIS), Spatial Analysis, Quantitative Methods, Randomized Controlled Trials, Data Mining, Clinical Outcomes*

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