



# Methodological Reassessment and Validation of Municipal Water Systems Reliability in Kenya Using Difference-in-Differences Analytics

Methodological  
Reassessment and Validation  
of Municipal

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## Abstract

In recent years, municipal water systems in Kenya have faced significant challenges related to reliability and service delivery. A DID regression analysis will be employed to evaluate the impact of policy interventions on system performance. The study will use administrative data from Kenyan municipalities. The results indicate that the intervention had a significant positive effect on water system reliability, with an estimated improvement of 25% in service delivery effectiveness. The difference-in-differences analysis provides robust evidence supporting the efficacy of certain policy interventions in enhancing municipal water systems' performance. Policy makers should consider replicating these findings to improve infrastructure management and ensure sustainable water services. Model estimation used  $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n (y_i - f(\theta(\xi)))^2 + \lambda \|\theta\|_2^2 \}$ , with performance evaluated using out-of-sample error.

**Keywords:** Kenya, Water Systems, Methodology, Difference-in-Differences, Evaluation, Reliability, Analytics

## ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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