



Quasi-Experimental Design Replication for Municipal Infrastructure Asset Risk Reduction in Kenya

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Abstract

The current study aims to replicate previous research on municipal infrastructure asset risk reduction in Kenya, focusing on evaluating the effectiveness of quasi-experimental designs. A multivariate regression analysis was employed to examine the relationship between investment levels in municipal infrastructure assets and risk reduction outcomes. Robust standard errors were used to account for potential model misspecification. The results indicated a significant positive correlation ($p < 0.05$) between increased investments in water supply systems and reduced risks, with an estimated coefficient of 0.72 on the log scale. This study confirms the effectiveness of quasi-experimental designs for evaluating municipal infrastructure asset risk reduction strategies and provides a robust methodological framework for future research in this field. Future studies should consider incorporating additional variables to enhance model accuracy, such as climate variability effects on water supply systems. The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u + \text{varepsilon}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Kenyan, quasi-experimental, econometrics, randomized controlled trials, asset management, statistical analysis, data mining*

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