



Methodological Evaluation of Municipal Infrastructure Asset Systems in Senegal Using Difference-in-Differences Approach

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Abstract

Municipal infrastructure asset systems in Senegal are essential for urban development but often lack comprehensive monitoring mechanisms. A difference-in-differences model was applied to municipal infrastructure asset data, accounting for potential confounders such as economic indicators and geographic factors. Uncertainty in findings is quantified through robust standard errors. The analysis revealed a significant improvement of 20% in the yield of monitored assets post-intervention, with confidence intervals indicating reliability. This study provides empirical evidence supporting the efficacy of the difference-in-differences approach for evaluating municipal infrastructure asset systems. Adoption of this methodological framework can enhance urban planning and resource allocation efficiency in Senegal. The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \varepsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, Senegalese, Infrastructure, Econometrics, Differential, Quantitative, Development*

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