



Methodological Evaluation of Quasi-Experimental Design in Municipal Water Systems in Ghana,

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Abstract

Municipal water systems in Ghana have seen significant improvements over time, but there is a need for robust evaluation methods to ensure sustainability. A longitudinal study employing mixed-methods, including surveys and hydrological data analysis, was conducted to assess system performance over time. In one of the studied systems, there was a 15% increase in water yield measured over two years with robust standard errors. The quasi-experimental design proved effective in detecting yield improvements, but further research is needed for broader applicability and reliability across different regions. Future studies should expand the geographical scope to include more municipalities and incorporate additional variables such as population growth and climate change impacts. municipal water systems, quasi-experimental design, yield improvement, Ghana, hydrological data The empirical specification follows $Y = \beta_{0+\beta} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Geographic, longitudinal, Ghana, evaluation, methodology, yield, impact assessment*

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