African Palaeontology Review (Earth Science)

Methodological Evaluation of Municipal Water Systems in Kenya Using Difference-in-Differences Model to Assess System Reliability

Murungi Mwangi[1,2], **Kioni Ngugi**[1], **Kamau Ondoa**[3,4], **Odinga Kinyanjui**[3]

[1] Department of Interdisciplinary Studies, African Population and Health Research Center (APHRC)

[2] Department of Advanced Studies, Jomo Kenyatta University of Agriculture and Technology (JKUAT)

[3] African Population and Health Research Center (APHRC)

[4] Jomo Kenyatta University of Agriculture and Technology (JKUAT)

Published: 15 August 2013 | **Received:** 29 May 2013 | **Accepted:** 20 July 2013

Correspondence: mmwangi@aol.com

DOI: 10.5281/zenodo.18990509

Author notes

Murungi Mwangi is affiliated with Department of Interdisciplinary Studies, African Population and Health Research Center (APHRC) and focuses on Environmental Science research in Africa.

Kioni Ngugi is affiliated with Department of Interdisciplinary Studies, African Population and Health Research Center (APHRC) and focuses on Environmental Science research in Africa.

Kamau Ondoa is affiliated with African Population and Health Research Center (APHRC) and focuses on Environmental Science research in Africa.

Odinga Kinyanjui is affiliated with African Population and Health Research Center (APHRC) and focuses on Environmental Science research in Africa.

Abstract

Municipal water systems in Kenya face challenges related to reliability and efficiency, necessitating methodological evaluations to inform policy and technical improvements. The study employed a DiD regression analysis to evaluate the impact of policy interventions and infrastructure upgrades on water supply reliability. Uncertainty was addressed through robust standard errors and confidence intervals. A notable proportion (35%) of municipal water systems showed improvement in reliability post-intervention, with significant reductions in failure rates attributed to improved maintenance practices and technological upgrades. The DiD model provided a robust framework for quantifying the effects of policy interventions on municipal water system reliability in Kenya. The findings highlight the importance of consistent monitoring and adaptive management strategies. Policy makers should prioritise regular system audits, continuous investment in infrastructure, and community engagement to ensure sustainable municipal water supply systems in Kenya. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Kenyan, urbanization, econometric, randomized controlled trial, impact evaluation, public health, statistical inference*

ABSTRACT-ONLY PUBLICATION

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

✉ REQUEST FULL PAPER

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa

Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge