African Transportation Engineering

Infrastructure Impact on Urban Child Health: A Study of Water Supply Projects in Malawi

Mangwala Simbokwe[1,2], **Zulu Dlamini**[3,4], **Chirwa Malipatso**[3]

[1] Mzuzu University

[2] Department of Mechanical Engineering, University of Malawi

[3] Malawi University of Science and Technology (MUST)

[4] University of Malawi

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Correspondence: msimbokwe@yahoo.com

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Author notes

Mangwala Simbokwe is affiliated with Mzuzu University and focuses on Engineering research in Africa.
Zulu Dlamini is affiliated with Malawi University of Science and Technology (MUST) and focuses on Engineering research in Africa.
Chirwa Malipatso is affiliated with Malawi University of Science and Technology (MUST) and focuses on Engineering research in Africa.

Abstract

This study addresses a current research gap in Engineering concerning Study on the Effectiveness of Water Supply Infrastructure Projects on Child Health Outcomes Across Malawi's Urban Centers in Malawi. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Study on the Effectiveness of Water Supply Infrastructure Projects on Child Health Outcomes Across Malawi's Urban Centers, Malawi, Africa, Engineering, working paper This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. The maintenance outcome was modelled as $Y\{\}=beta\,0+beta\,1\,X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Urbanization, Sub-Saharan Africa, GIS, Water Quality Index, Epidemiology, Public Health Engineering, Community Participation*

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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