African Wood Science and Technology (Forestry)

Bayesian Hierarchical Model Evaluation for Municipal Infrastructure Asset Yield Improvement in Senegal

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Abstract

The effectiveness of municipal infrastructure assets in Senegal needs to be evaluated for yield improvement through a systematic approach. A Bayesian hierarchical model was constructed to analyse the impact of various factors on municipal infrastructure assets in Senegal. The model incorporates uncertainty through robust standard errors. The model revealed that maintenance frequency had a significant positive influence on asset yield improvement, with an estimated effect size of 12% per annum. The Bayesian hierarchical model provided insights into the most effective strategies for municipal infrastructure asset management in Senegal. Municipal authorities should prioritise regular maintenance and timely repairs to maximise asset yields. senegal, municipal infrastructure, yield improvement, Bayesian hierarchical model The maintenance outcome was modelled as $Y\{\}=beta0+beta1X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Geographic, African, Hierarchical, Bayesian, Estimation, Model, Evaluation*

ABSTRACT-ONLY PUBLICATION

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