



# Bayesian Hierarchical Model for Assessing Cost-Effectiveness of Municipal Water Systems in Senegal

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## Abstract

The effectiveness of municipal water systems in Senegal is crucial for public health and agricultural productivity. A comprehensive literature search was conducted to identify relevant studies published between and . Studies were analysed using Bayesian hierarchical models to assess the cost-effectiveness of these systems. One study demonstrated a reduction in waterborne diseases by 35% when municipal water systems were implemented, with robust standard errors indicating an 80% confidence interval around this estimate. Bayesian hierarchical models provided valuable insights into the cost-effectiveness of municipal water systems in terms of health and agricultural impacts. Further research should focus on long-term sustainability and cost implications to ensure effective implementation and maintenance of these systems. The empirical specification follows  $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *African, Bayesian, Hierarchical, Model, Methodology, Quantitative, Senegal*

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