



# Methodological Evaluation of Regional Monitoring Networks in Senegal Using Difference-in-Differences for Risk Reduction Measurement

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## Abstract

This study focuses on evaluating regional monitoring networks in Senegal, aiming to assess their effectiveness in reducing risks within the country's media and communication sectors. The study employs a difference-in-differences (DiD) econometric approach, leveraging pre- and post-intervention data from Senegal's regional monitoring networks to estimate the causal effects of network implementation on risk reduction outcomes. A specific proportion—approximately 20%—of monitored risks showed significant reductions after the introduction of the regional monitoring systems, indicating a positive impact on risk management. The DiD model demonstrates that the regional monitoring networks contribute to effective risk reduction in Senegal's media and communication sectors, offering robust evidence for policy recommendations. Based on these findings, it is recommended that further investments be directed towards expanding and improving existing regional monitoring systems to enhance their impact on risk management. Model estimation used  $\hat{\theta} = \operatorname{argmin} \{ \theta \} \sum_i \ell(y_i, f(\theta(\xi))) + \lambda \|\theta\|_2^2$ , with performance evaluated using out-of-sample error.

**Keywords:** *Sub-Saharan, Africa, Monitoring, Networks, Systems, Difference-in-Differences, Randomized Control Trials, Geospatial Analysis*

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