

## A decision support tool to include performance, investment and risk assessment in pavement preservation planning

### Summary

Pavement management systems are essential for the decision-making regarding preservation planning. Current performance-based approaches are mostly focused on the pavement condition achieved, thus not providing a complete assessment of the real impacts that changing circumstances might have on the long-term. The success of a preservation plan should be evaluated, considering not only the pavement condition achieved but also the return of the investment and the incurred risks. The effect of uncertainty has been explored in the past few years, but it is not yet entirely recognized as a decision criterion.

This thesis is focused on a risk-based approach that considers the overall network condition, the financial circumstances and the impact of failing the established goals due to inherent risks. It is intended to prove that it is possible to reduce the opportunity cost and improve the pavement preservation strategy results by reducing the plan vulnerability to financial sources of risk.

### Keywords

Pavement preservation planning, risk management, decision-support tools, multi-criteria analysis.



A multi-criteria decision-making problem for pavement preservation planning.



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