



## Use case #4: Assessing the Effects of Traffic Management and Transportation Policies

### In short

Using AI, we investigate how to develop a more robust understanding of the effects of traffic management and transportation policies.

### Who

TU Delft, Arane, d-fine, Deloitte, Technolution, WeLabs, Witteveen+Bos, NDW, and Rijkswaterstaat

### When

2026-2028

### Background

Assessing the effects of traffic management measures and transportation policies is essential, but methodologically challenging. The traffic and mobility system is highly dynamic, non-linear, and influenced by many external factors such as weather, incidents, infrastructure constraints, and behavioural changes. Moreover, interventions rarely occur in isolation, making it difficult to attribute observed changes in traffic performance to specific measures.

Current approaches—such as statistical analyses, model-based studies, and before–after comparisons—are useful in specific contexts but have important limitations. They are sensitive to external influences, rely on implicit assumptions about causality, and offer limited ways to account for context and system-wide interactions. At the same time, the growing availability of traffic and mobility data, combined with advances in AI, creates new opportunities to rethink how effect studies are conducted.

## **Objective**

The objective of this use case is to explore how AI-based causal and counterfactual inference methods can contribute to a more robust and explicit understanding of the effects of traffic management measures and transportation policies. The focus is on identifying under which conditions these approaches provide added value compared to currently used methods, and how they can be applied across different types of measures, data sources, and spatial and temporal scales.

The use case will examine measures that are relevant in current or near-term practice, such as infrastructure-based interventions, traffic control measures (e.g. speed regimes and capacity management), and advisory or control strategies aimed at road users.

Initial applications include assessing the impact of Automatic Incident Detection (AID) on road safety and analysing the effects of planned road pricing for freight transport. Based on these cases, the scope may be extended to other domains.

## **Approach**

The use case is set up as a structured learning process in which causal and counterfactual inference methods are applied alongside established approaches such as model-based studies and before–after analyses. This comparison is used to better understand differences in assumptions, data requirements, robustness, and interpretability. The aim is to identify when and how different methods provide meaningful insights in practice.

Instead of selecting a single preferred method, the use case explores a range of inference approaches and evaluates their suitability for different types of effect studies. This is guided by explicit, context-dependent criteria, allowing for a

more nuanced understanding of which methods are informative, reliable, and applicable in specific situations.