

Utility-based demand estimation method

Traffic managers and planners often need to understand how travel demand will respond to policies, disruptions, or management measures, but they typically face two major constraints. On the one hand, **traditional aggregate demand models** treat all trips as identical and offer little insight into why people travel or how different types of trips respond to interventions. On the other hand, **fully disaggregate or microsimulation models** require detailed individual travel data and high computational effort, making them difficult to deploy in operational or real-time contexts.

What is the product?

Our **utility-based demand estimation method** provides a middle ground by offering a behaviourally grounded approach that operates on aggregate data. The method is based on the principle that travellers make decisions in order to maximize the utility of their activities, such as commuting, shopping, or leisure.

Using information such as aggregate trip counts, travel times, and activity participation, the method derives demand patterns that are consistent with both observed traffic flows and realistic behavioural assumptions. This allows for meaningful distinctions between different types of travel, such as rigid peak-hour commuting and more flexible discretionary trips.

The approach is computationally efficient, transparent, and well suited for scenario analysis and policy evaluation. It can also be integrated into digital twin environments and other decision-support systems.

Who is it for?

This method is particularly relevant for:

- **Traffic managers, planners, policy analysts, and digital twin developers** that seek a practical, transparent, and behaviourally grounded approach to analysing and modelling travel demand at an aggregate level;
- **Traffic managers, planners, policy analysts, and digital twin developers** that require a practical, transparent, and behaviourally grounded way to analyse and model travel demand using aggregate data.

