Transport decision-making during and after the COVID-19 pandemic crisis

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Travel during and after lockdown

Changes in demand: reduced demand (home office), shift in time and space (e.g., from public transport to car, bicycle)

▶ Advise: stay and work at home, only essential travels (Feb. 2021) \(^1\).

▶ Measures: facemask, limited capacity in public transport (only (window) seats,...)

\(^1\)https://www.rijksoverheid.nl/onderwerpen/coronavirus-covid-19/vervoer/vervoer-met-auto-taxi-personenbusje-of-touringcar
Dilemmas for authority

Which changes are temporary, which are permanent?

▶ Habits formed during lockdown (home office, mode choice)
▶ Demand not expected to return in the next years
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Decision making during and after the pandemic:

- Highly uncertain: mismatch long-term investments and future demand forecasts;
- Public tenders postponed;
- Future perception of crowding: social distancing?

Effects different in time and space:

- Overcrowding: single train lines might be overcrowded
- Temporarily insufficient capacity (i.e., 1.5m cannot be maintained when waiting for a traffic light, bus, train,...)
Research objectives

**Decision making during and after the pandemic:**
Research objectives with a focus on public transport and bicycle:

1. Model that describes distribution of demand in space and time, explicitly accounting for newly formed habits and different perceptions and/or rules traveling on crowded routes;
2. Decision making tool that *(i)* accounts for highly uncertain future, *(ii)* explicitly incorporates limited capacity, and *(iii)* anticipates behavioral choices.
Research method

1. Model that describes distribution of demand in space and time, explicitly accounting for newly formed habits and different perceptions and/or rules traveling on crowded routes; Traffic assignment model that accounts for natural variations in demand

2. Decision making tool that (i) accounts for highly uncertain future, (ii) explicitly incorporates limited capacity, and (iii) anticipates behavioral choices. Two-level framework mathematically describing interaction between measures and travel choices.
Data and Application

Data:

- Almelo traffic management system: high-resolution data from induction loop detectors, radar, cameras, to estimate arrival processes of cyclists at intersections;
- OV-chipcard data from Twente to validate assignment model.

Possible applications:

- Decision-making tool can be used by authorities and public transport operators for the ex-ante evaluation of (a set of) measures.