

VACANCY: Improving Public Transport Modelling

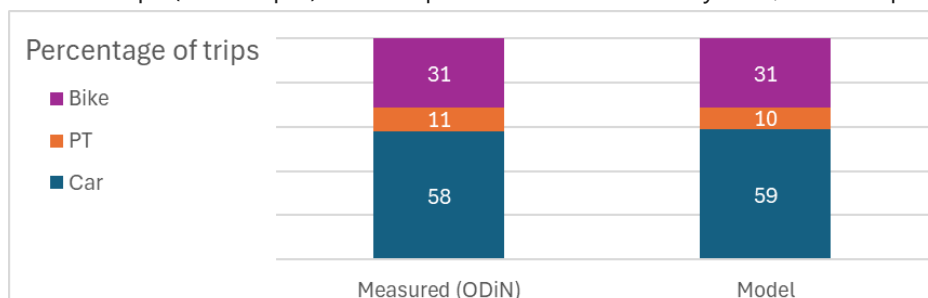
INTRODUCTION

Traffic and transport models are used as tools for supporting policy making decisions. Our multi modal traffic models predict the amount of people making a trip by car, public transport or bike. They are first validated and calibrated on a base year assuring that they approach the measured data as close as possible. After that, predictions can be made for future year scenario's. Of growing importance within our traffic models is the modelling of public transport. Compared to car or bike trips it is a very different way of travelling with no ownership of the transport mode. So it is not possible to directly use this transportation mode from your home or work. First an access of egress trip has to be made to the starting point of the public transport trip (e.g. a station or bus stop). This introduces a lot of different options, difficulties and choices which have to be incorporated into our traffic model. It is important that our traffic models stay up to date with current travel behaviour in order to remain a good tool for supporting policy making decisions. To this end we want to research how we can further improve the public transport modelling in our traffic models.

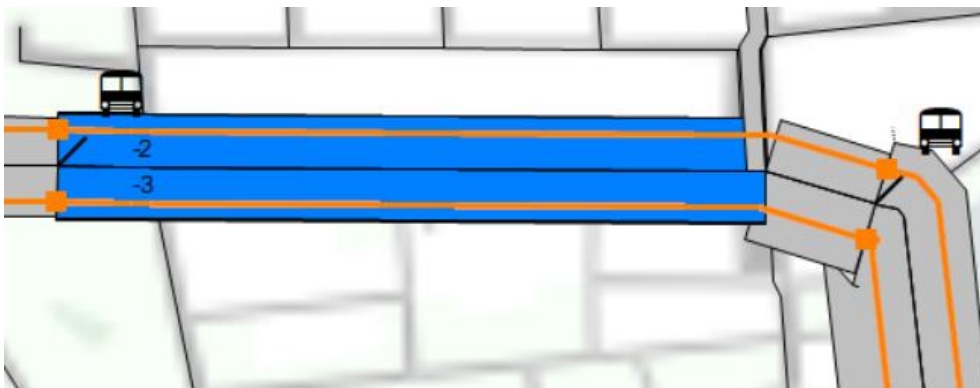
PROBLEM DESCRIPTION

Most traffic models are validated based on overall objectives:

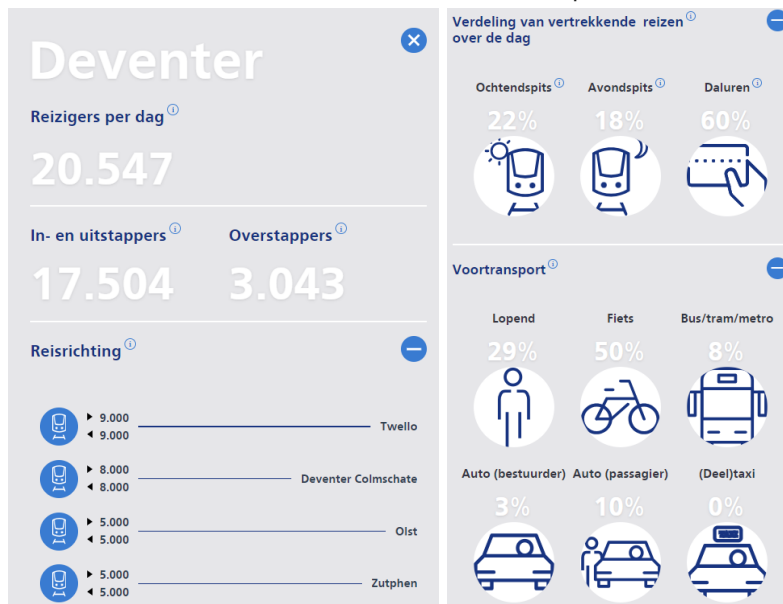
- the total number of public transport trips compared to the number of car and bike trips (modal split) for all trips to and from the study area, for example:



- the number of passengers on specific locations in the public transport network, for example the percentage of difference between the measured and modelled number of passenger in all buses on a specific road between two bus stops:



But this does not validate how many passengers board on these stops and what mode they used to reach that stop. Nor does it validate where the passengers go to. While this information is more and more available. The NS for example provides this information for their train stations, for example:



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And similar data could be extracted from OV-chipcard data for other forms of public transport like buses.

The main problem we want to tackle in this research is how to incorporate the boarding and alighting data into the validation of our traffic models and how to ensure that our traffic model better matches this data.

RESULT / OBJECTIVE

The goal of this assignment is to further improve the public transport modelling in our traffic models, to look how this is modelled in the current traffic models and determine which parts need improving. The following parts should be among the researched parts:

- Our current public transport models start with one OD-matrix which is divided into four access-egress OD-matrices (e.g. bike-pt-bike, bike-pt-walk, walk-pt-bike and walk-pt-walk). The algorithm which divides the OD-matrix could be improved.
- This algorithm could also be extended to contain more types of access-egress modes (e.g. car or car passenger).
- How to improve the match on passenger counts both on the network but also on the number of passengers boarding and alighting at the specific stop.

ASSIGNMENT

The assignment can be fulfilled in different ways, depending on the study programme of the student and the chosen scope, but will probably include at least the following components:

1. Research methods and/or develop a method to model the choice for an access-egress mode in order to split the OD-matrix. With this component we would also take whether it is possible to incorporate more access-egress modes besides walking and bike such as car or taxi for example.
2. Research the current public transport network attributes and assignment algorithm settings and determine whether they can be improved.
3. Show the merits of the new method by applying the prototype to a case study.

INFORMATION

When interested in this assignment, please contact Bastiaan Possel (bpossel@goudappel.nl). More information on Goudappel can be found via www.goudappel.nl.

REFERENCES

Dashboard NS, Reizigersgedrag 2023,
<https://dashboards.nsjaarverslag.nl/reizigersgedrag>