

VACANCY: Distribution of trips in Gravity models

INTRODUCTION

Transport models are important decision tools on strategic, tactical and operational level to determine the impact of measures and to forecast the future usage of the mobility system. They model the travel choices of travelers such as destination and mode choice. In a gravity model, destination and mode choice are modeled by so-called distribution functions, which provide probabilities for all destination and mode alternatives, independently of the choices made during previous trips. These probabilities depend on travel distance, travel time and / or cost . Although gravity models are a simplification of reality, they are used extensively in practice, because they are relatively simple and provide good results for most mobility patterns.

PROBLEM DESCRIPTION

The coefficients of distribution functions are usually calibrated by survey data such as the Dutch National Travel Survey (ODiN). There is however not one distribution function for the whole country. Coefficients may be different for different urbanisation levels and different personal characteristics (e.g., educational level or whether one has access to a car). In practice, coefficients are therefore estimated for many different classes. However, it is not known which classes should be separated or combined. The use of too many classes can lead to calibration issues due to lack of enough data within classes.

RESULT / OBJECTIVE

Finding the optimal set of classes for which distribution functions can be estimated on a given set of ODiN data.

ASSIGNMENT

To achieve the objective, the assignment can be split into the following parts:

Dat.mobility BV is part of Goudappel Groep.

Snipperlingsdijk 4
7417 BJ Deventer
The Netherlands

P.O. Box 161
7400 AD Deventer
The Netherlands

+31(0) 570 666 222
info@datmobility.nl
www.datmobility.nl

VAT NL 0062 45 079 B01
CC. 2710 3813
IBAN NL59 INGB 0701 2168 08

- Gathering of distribution function classes that are used at the moment, and which of those are probably most relevant based on a literature study.
- Data analyses of National Travel Survey data to estimate distribution functions and to explore which classes have similar or (significantly) different distribution functions.
- Determine an 'optimal' set of classes for which distribution functions can be estimated. We are looking for a procedure in which this optimization can be done for any set of data based on the following criteria: 1) most of the variation between distribution functions is captured, 2) the number of classes is as small as possible, 3) there are enough ODiN cases per class to estimate robust distribution functions.

INFORMATION

When interested in this internship assignment please contact Tom Thomas: tthomas@dat.nl. More information on Goudappel and Dat.mobility can be found via www.goudappel.nl and www.dat.nl.