



Ministry of Infrastructure and the  
Environment

# New values of time and reliability for infrastructure project assessment in The Netherlands

Pim Warffemius  
KiM Netherlands Institute for  
Transport Policy Analysis

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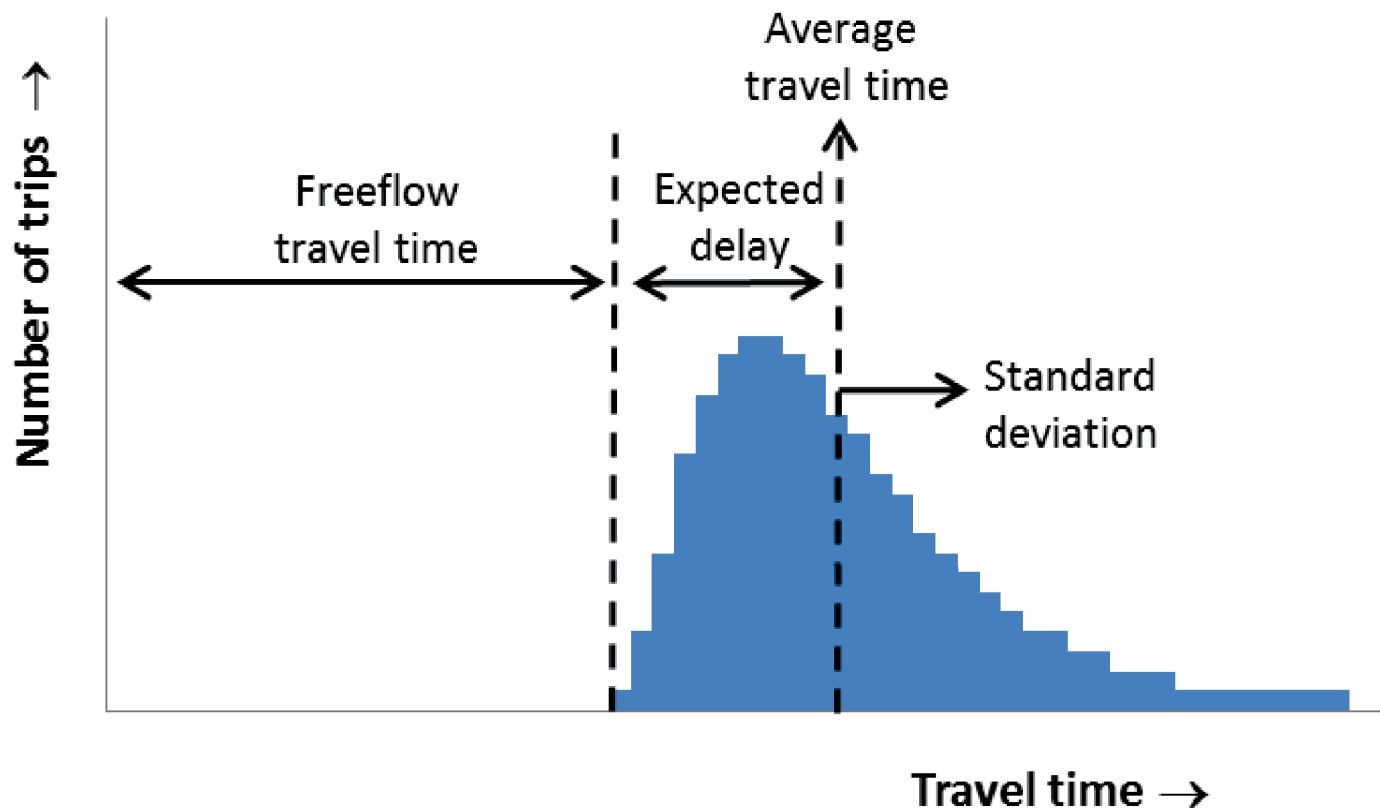


## New VOTs and VORs

- Based on empirical research in The Netherlands, carried out by a consortium led by Significance, KiM has determined new values for:
  - Passenger transport car, bus, tram, metro, train, airplane, and recreational navigation
  - Freight transport road, rail, inland waterways, sea and air
- Why new values?
  - Update necessary: travel behavior changes over time
    - Passenger transport: last empirical study conducted in 1997
    - Freight transport: last empirical study conducted in 2004
- Reliability: for the first time values based on empirical research
  - Replace old expert meeting based values



# Reliability is measured by the standard deviation





## How are the values determined?

- Stated-preference surveys
  - Passenger transport: choice between two trips
  - Freight transport: choice between two transports
  - Variations around recent trip/transport
- Two experiments
  - Experiment 1: two attributes
    - variable travel time / travel costs
    - same as the earlier “Value of Time studies” (passengers in 1988 and 1997; freight in 2004)
  - Experiment 2: four attributes
    - Travel time
    - Travel costs
    - Reliability
    - Arrival time



- Experiment 1:

**Trip A**

*Usual travel time:*  
**45 min.**

*Travel costs:*  
**€ 6.00**

**Trip B**

*Usual travel time:*  
**40 min.**

*Travel costs:*  
**€ 7.00**

- Experiment 2:

**Trip A**

*Departure time:*  
**07:55**

You have an equal chance of the following 5 travel times and therefore of arriving at the following times:

<i>Travel time:</i>		<i>Arrival time:</i>
<b>35 min.</b>	→	<b>08:30</b>
<b>45 min.</b>	→	<b>08:40</b>
<b>45 min.</b>	→	<b>08:40</b>
<b>75 min.</b>	→	<b>09:10</b>
<b>125 min.</b>	→	<b>10:00</b>

*Usual travel time:*  
**45 min.**

*Travel costs:*  
**€ 6.00**

**Trip B**

*Departure time:*  
**07:45**

You have an equal chance of the following 5 travel times and therefore of arriving at the following times:

<i>Travel time:</i>		<i>Arrival time:</i>
<b>40 min.</b>	→	<b>08:25</b>
<b>50 min.</b>	→	<b>08:35</b>
<b>50 min.</b>	→	<b>08:35</b>
<b>70 min.</b>	→	<b>08:55</b>
<b>90 min.</b>	→	<b>09:15</b>

*Usual travel time:*  
**50 min.**

*Travel costs:*  
**€ 5.50**



## Data collection

- Passenger transport
  - Internet survey
  - Within on-line panel: 5,700 interviews
  - Outside on-line panel: 1,400 interviews
- Freight transport
  - CAPI (computer assisted personal interviews)
  - 800 interviews
- Lesson learned: SP using members on-line panel leads to substantially lower VoTs due to self selection bias



# Results

- Final models:
  - Freight transport: logWTP-space models (road) and relative models (other modes)
  - Passenger transport: new approach -> Panel Latent Class models
- Final outcome of the study consists of recommended VoTs and VoRs for use in cost-benefit analysis (CBA) of transport projects in The Netherlands
- All results and technical details can be found on:  
<http://www.kimnet.nl/en/publication/social-value-shorter-and-more-reliable-travel-times>
  - Policy report (KiM, 2013, in English)
  - Technical report (Significance et al., 2013, in English)
  - Peer-reviewed papers in progress



## Discussion issues

- Reliability should be included in traffic forecasting tools
  - Insight into behavioral responses to changes in travel time reliability is needed
  - Benefits =  $p \times q$ : both should be measured consistently
    - In the Netherlands, both  $p$  and  $q$  are measured in terms of standard deviation of the travel time distribution
- Expectation: travel time benefits will go down due to ICT developments, reliability benefits will become more important
- VOTs and VORs should **not** be measured using internet panels