



Ministry of Infrastructure and the
Environment

New values of time and reliability for project assessment of airport infrastructure

Pim Warffemius
Netherlands Institute for
Transport Policy Analysis

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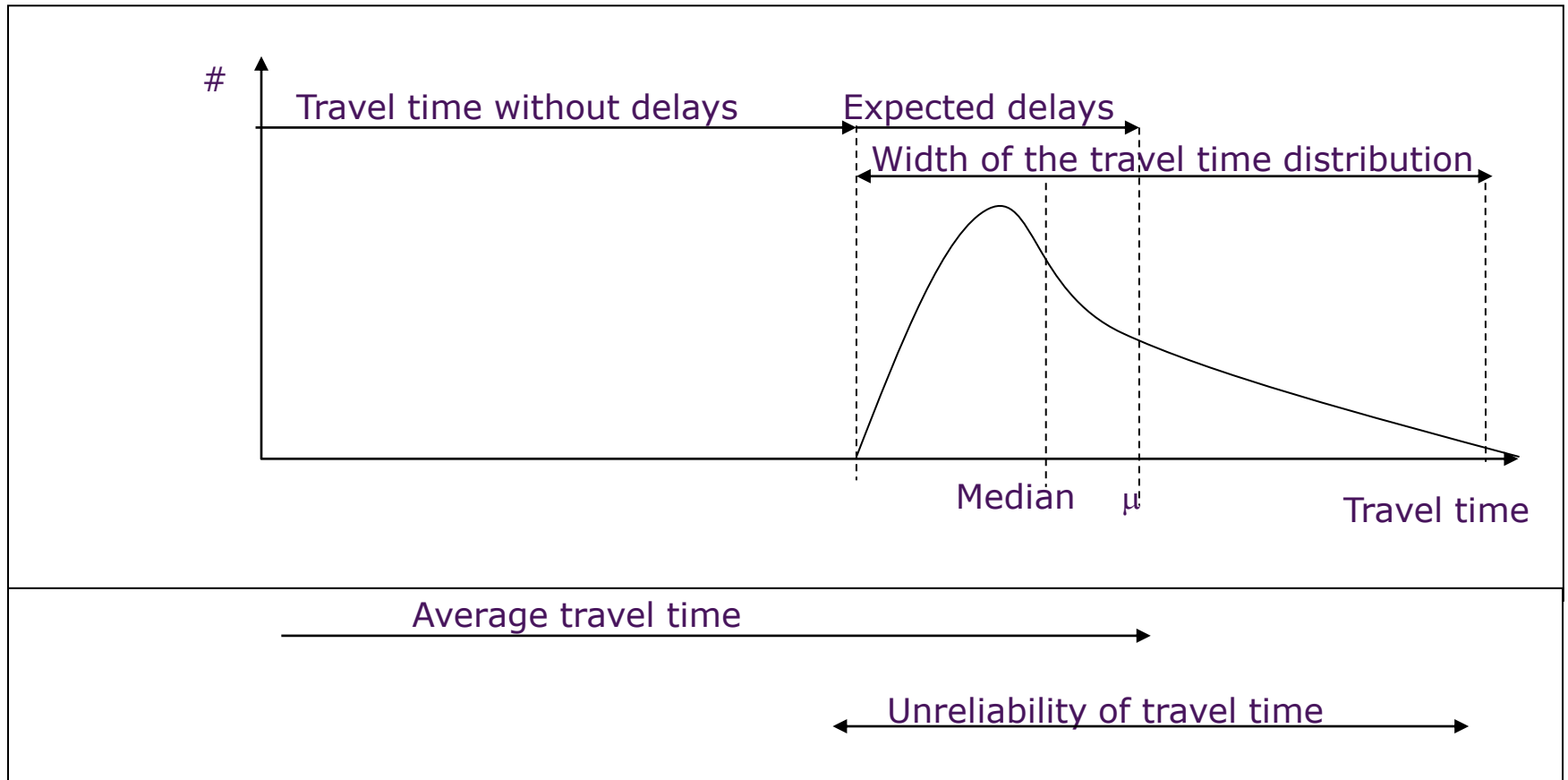


New values

- Based on empirical research in The Netherlands, carried out by a consortium led by Significance, KiM has determined new values for the following transport modes:
 - Passenger transport: car, bus, tram, metro, train, airplane, and recreational navigation
 - Freight transport: road, rail, inland waterways, sea and air
- Why new values?
 - Update of older values 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
- Passenger air transport: also for the first time values determined through empirical research



The values linked to the travel time distribution





Three SP experiments

- Freight related to an observed typical transport
- Experiment 1 is the same as the earlier “Value of Time studies” (passengers in 1988 and 1997; freight in 2004)

Attribute	Experiment 1	Experiment 2a	Experiment 2b
Travel time	X	X	X
Travel cost	X	X	X
Reliability		X	X
Arrival time		X	



Example of an SP choice alternative (experiment 2a, b)

Trip A

Departure time:
08:05 h

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

Travel time		Arrival time
55 min	→	09:00
65 min	→	09:10
65 min	→	09:10
95 min	→	09:40
145 min	→	10:30

Usual travel time: **65 min**

Costs: **€ 2,30**

Trip B

Departure time:
08:05 h

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

Travel time		Arrival time
50 min	→	08:55
60 min	→	09:05
60 min	→	09:05
90 min	→	09:35
140 min	→	10:25

Usual travel time: **60 min**

Costs: **€ 7,80**



Data collection

- Passenger transport
 - Internet survey
 - Within on-line panel: 5,700 interviews (air passengers: 530)
 - Outside on-line panel: 1,400 interviews (air passengers: 200)
- Freight transport
 - CAPI (computer assisted personal interviews)
 - 800 interviews (air freight: 60)



Results for VoT and VoR: Air passengers

Airplane (Euro/hour p. person, market prices, price level 2010)

Trip Purpose	VoT	VoR	RR
Business	85.75	56.00	0.7
Non-business	47.00	30.75	0.7
Average (*)	51.75	33.75	0.7

- VoT and VoR about total air trip including transfers, if any
- (*) weights of trip purposes are based on the minutes travelled in the base case of the stated preference survey



Results for VoT and VoR: Air freight

Air (in Euro/hour p. airplane, market prices, price level 2010)

VoT	VoR
14,950 (TR=0.72->1)	1,840 (RR= 0.12)

- VoT and VoR about total air trip including transfers, if any
- TR= Trade-off Ratio
- $VoT = TR * \text{factor costs}$
- When an infrastructure project is completed, TR grows linearly to 1 over a 10-year period



Differences between old and new VoTs (1)

Air passengers (Euro/hour p. person, market prices, price level 2010)

Trip Purpose	Old (@)	New	Difference
Business	52.00	85.75	+65%
Non-business	24.00	47.00	+96%
Average	33.24 (*)	51.75 (**)	+86%

- (@) model computation, not based on empirical data
- (*) weighting based on division trip purposes expressed as number air passengers in Schiphol survey 2010
- (**) weights of trip purposes are based on the minutes travelled in the base case of the stated preference survey



Differences between old and new VoTs (2)

Air freight (trade-off ratios average transport)

Mode	Old	New	Difference
Air	1	0.72 -> 1	- 7%

- $\text{VoT} = \text{TR} * \text{factor costs}$
- When an infrastructure project is completed, TR grows linearly to 1 over a 10-year period
- Difference is calculated based on this growth, a net present value calculation over 100 years, and a discount rate of 5.5%



Discussion issues related to the presented research

- In the future, reliability of travel times will attract more attention due to ICT developments
- Valuation method must be matched with the forecasting volumes resulting from air transport models
- Reliability should be included in traffic forecasting tools
 - Insight into behavioral responses of air passengers, air freight shippers and air freight carriers on changes in travel time reliability is needed



The research report

- The new social values of shorter and more reliable travel times for all transport modes and all technical details of the research (Significance et al., 2012) can be found on:
 - <http://www.kimnet.nl/en/publication/social-value-shorter-and-more-reliable-travel-times>