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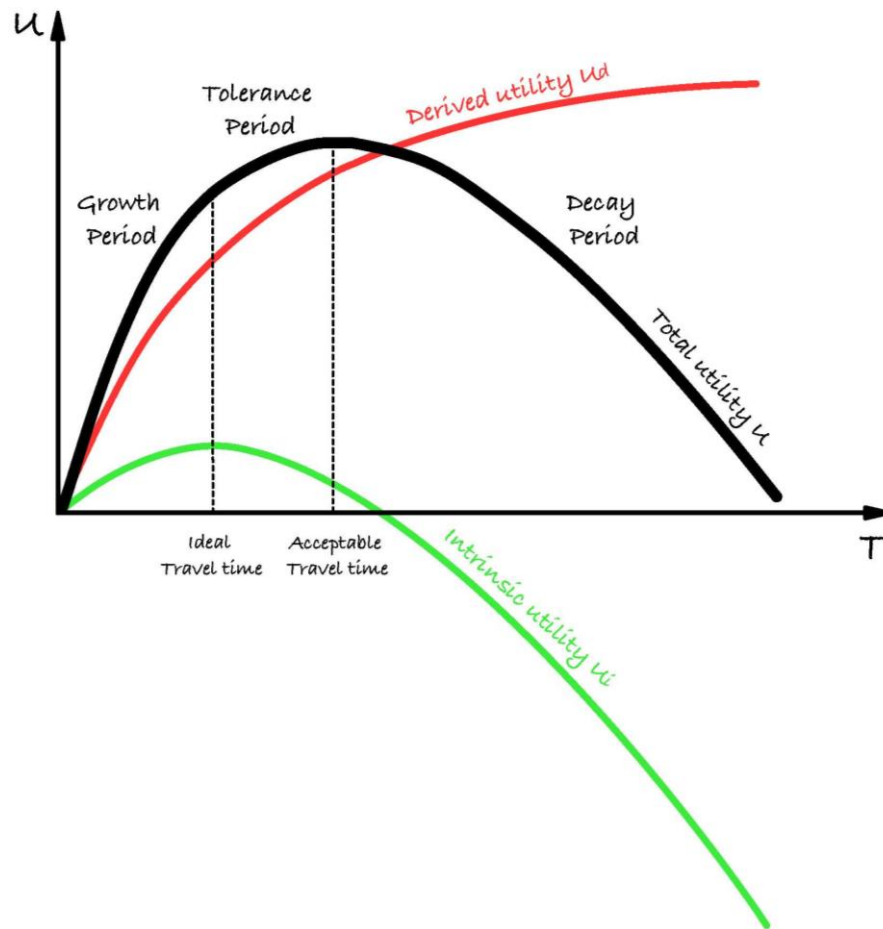
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**Exploring the acceptable travel time concept in the US and European contexts.
Results from Berkeley, CA and Delft, The Netherlands**

Introduction

In Milakis et al. (2015), we suggested that people likely consider an acceptable travel time in their travel and destination decision-making process.



Evolutionary instincts (Marchetti, 1994), **stress** (Novaco et al., 1990; Wener et al., 2003; Evans and Wener, 2006), **energy concerns** (Young and Morris, 1981), **the need to return home** (Hägerstrand, 1985), **the need to spend time on other activities** (Hupkes, 1982) and **other cognitive considerations** (see Dijst and Vidakovic, 2000; Schwanen and Dijst, 2002).

Travel time budget (TTB) (Zahavi and Ryan, 1980; Zahavi and Talvitie, 1980), **ideal travel time** (Hupkes, 1982; Mokhtarian and Salomon, 2001), **satisficing** (Simon, 1955, 1956), **consideration sets** (Wright and Barbour, 1977)

Aim

We replicate the US study in Europe (Delft, The Netherlands) aiming to:

- (a) **further test** the acceptable travel time concept in European context,
- (b) **compare** results between Delft and Berkeley to gain more insights into this theoretical concept, and
- (c) **enrich** the discussion on acceptable travel times by providing a conceptual framework for factors influencing it, based on the findings from both cities, and our analytical thinking.



Berkeley, CA



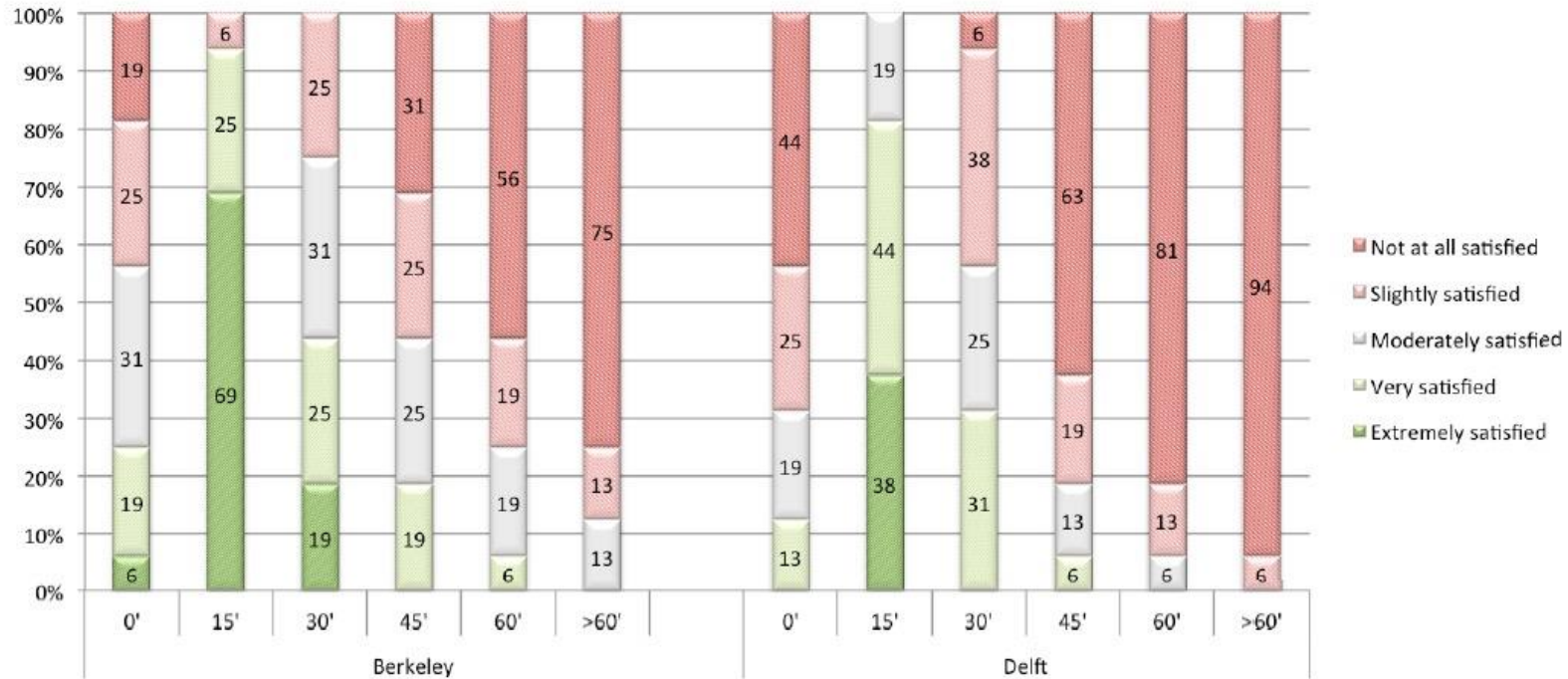
Delft, NL

Methods

- ✓ Mixed methods approach with concurrent triangulation.
- ✓ Semi-structured interview protocol based on Wengraf's (2001) pyramid model (hypothetical commute times, acceptable commute time).
- ✓ Stratified random sample (car, public transport, cycling, walking) of 32 individuals living in Berkeley, CA and Delft, NL.

Results

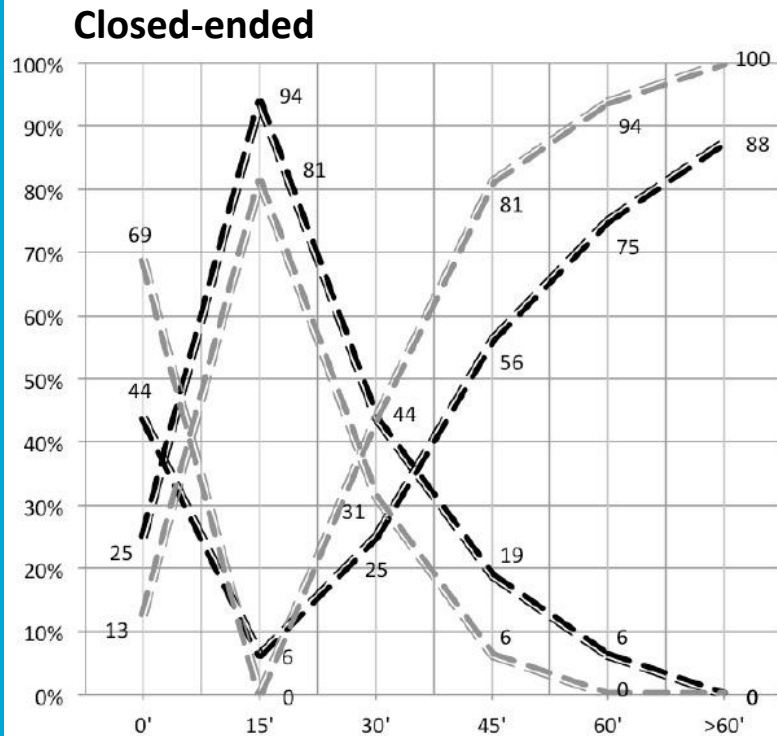
-Hypothetical commute times (closed-ended questions)



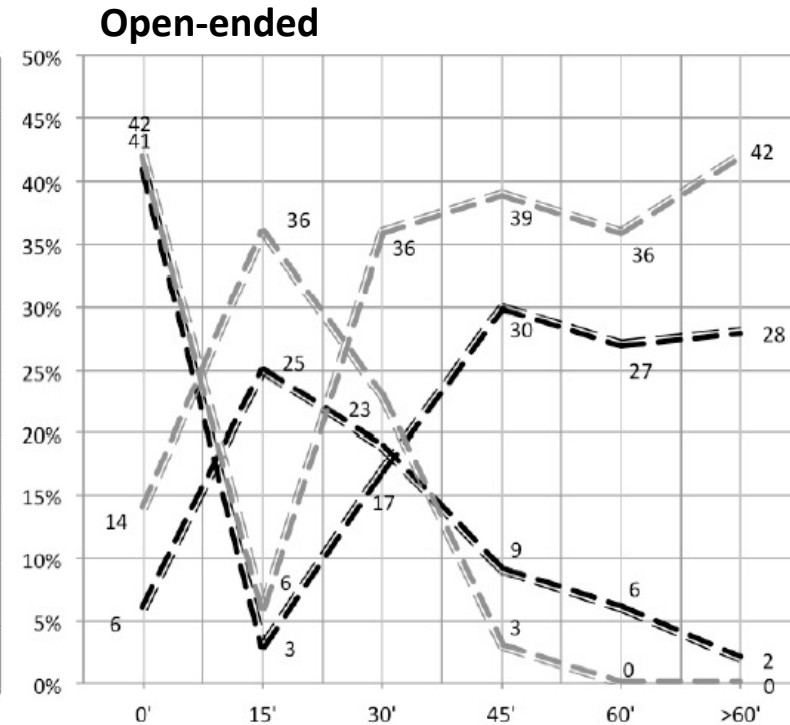
Levels of satisfaction (%) for a range of hypothetical commute times.

Results

-Hypothetical commute times (closed/open-ended questions)



Positive and negative levels of satisfaction (%) for a range of hypothetical commute times.



The average proportion of subjects with positive and negative responses (perceptions, feelings, attitudes, and experiences) for a range of hypothetical commute times.

Results

-Hypothetical commute times (open-ended questions)

		Hypothetical commute time					
		0 min	15 min	30 min			
Perceptions	Berkeley	(+) 0%	44% (8)	Quick, be able to return home, convenient, time to think	6% (1)	Time to think	
		(-) 38% (19)			44% (15)	The commute is too long, the commute breaks into my personal time, inconvenient, need to adjust my daily schedule, long time to cycle in the dark, long time to cycle in the rain, not effective use of time, too far to walk, look for other commute mode	
	Delft	(+) 31% (10)	More productive at home, more convenient at home, spend time with family at home, travel wastes energy	81% (26)	Quick, dependable, flexible, convenient, be able to return home, long enough to be away from work, not too far away, cost less energy, ideal, increase productivity in work, long enough to relax, plan my day	44% (8)	Not too far away, dependable, time to think
		(-) 38% (13)	Nonstop work at home, unproductive at home, commute clears my mind, distractions at home, no technical support at home	13% (3)	Too short commute, too long commute, too far to walk	63% (14)	Not effective use of time, too long commute, undependable, waste of time, need to adjust my daily schedule, inefficient, long time to ride in the rain, look for other commute mode
Feelings	Berkeley	(+) 0%	13% (2)	Nice	31% (5)	Relax, happy, not tiring, nice	
		(-) 25% (7)	Get out of the house, hate to work from home, feel caged at home feel home is like a vacuum, enjoy short commute	0%		19% (3)	Frustration, stressful, tiring
	Delft	(+) 0%		31% (7)	Nice, less stressful, relax	19% (4)	Enjoy, relax, nice
		(-) 38% (9)	Boring, get out of the house, feel caged home, feel alive when walking, feel freaked out at home, feel lonely at home, feel relaxed when walking	0%		31% (6)	Carsick, tiring, be in a hurry, not comfortable
Attitudes	Berkeley	(+) 25% (5)	Like work at home, like to work at home occasionally, like saving cost/time	31% (6)	Like home/work separation, like shops between home/work, like short commutes	0%	
		(-) 81% (17)	Like home/work separation, like interaction, dislike work at home, like driving, prone to move	13% (2)	Like longer commute	6% (1)	My maximum commute time
	Delft	(+) 19% (3)	Like saving cost/time, like work at home	13% (3)	Like home/work separation, like short commutes	13% (2)	Like riding my bike, like short commutes
		(-) 81% (42)	Like interaction, like go out of home, dislike work at home daily, dislike work at home, like home/work separation, like to move	6% (1)	Like longer commute	25% (5)	Do not like long commute, my maximum commute time
Experiences	Berkeley	(+) 0%	13% (5)	Being outside, exercise	38% (8)	Exercise, read, being outside, knit, watching activity inside the bus	
		(-) 19% (5)	Being outside, childhood experiences, exercise	0%		0%	
	Delft	(+) 6% (1)	Long commuting in the past	19% (4)	Exercise, reliable public transport, scenic route	19% (3)	Exercise
		(-) 13% (3)	Get fresh air, be outside	6% (1)	Bad weather	25% (5)	Sweating, more transfers public transport, unreliable public transport

Results

-Hypothetical commute times (open-ended questions)

		Hypothetical commute time					
		45 min	60 min	>60 min			
Perceptions	Berkeley	(+) 6% (1)	Time to think	0%	0%		
		(-) 63% (16)	The commute is too long , the commute breaks into my personal time, need to adjust my daily schedule, need to change driving lifestyle, commute would be hassle, look for other commute mode, low commute quality, no flexibility, safety issues, too far to walk, too much driving	56% (12)	The commute is too long , the commute breaks into my personal time, move closer to work, need to adjust my daily schedule, commute is a black hole, need to change driving lifestyle, too far to walk, too much driving, look for a new job	69% (18)	The commute is too long , the commute breaks into my personal time, cannot imagine, safety issues, move closer to work, commute is a black hole, expensive, too far to walk
		(+) 0%		0%	0%		
	Delft	(+) 0%					
		(-) 81% (34)	The commute is too long , the commute breaks into my personal time, need to adjust my daily schedule, commute time undependable, not effective use of time, too far to walk, too much driving, waste of time, inconvenient, look for other commute mode, no flexibility, too far from home (unsafe), too far to cycle, unhealthy	81% (40)	The commute is too long , the commute breaks into my personal time, cannot imagine, commute time undependable, look for other commute mode, too far to walk, not effective use of time, waste of time, need to adjust my daily schedule, inconvenient, move closer to work, ridiculous, too far from home (unsafe), too much driving, too much exercise, commute transition becomes state, unhealthy	70% (35)	The commute breaks into my personal time , the commute is too long, cannot imagine, commute time undependable, move closer to work, too much driving, waste of time, need to adjust my daily schedule, expensive, will impact my work, look for a new job, look for other commute mode, not an option, not effective use of time, ridiculous, too far from home (unsafe), commute transition becomes state
		(+) 0%					
Feelings	Berkeley	(+) 19% (4)	Nice, fun, relax, not tiring	6% (2)	Enjoy, not tiring	0%	
		(-) 25% (7)	Tiring, boring , carsick, stressful, unpleasant	31% (5)	Tiring , daunting, spoiled	19% (4)	Scared , frustration, tiring
		(+) 6% (1)	Enjoy	0%		0%	
	Delft	(+) 6% (1)	Enjoy	0%		0%	
		(-) 31% (7)	Tiring, exhausting , carsick, sleepy	25% (6)	Tiring, exhausting , carsick, faint	35% (10)	Tiring , carsick, exhausting, faint, horrible, hungry, irritating, stressful
		(+) 0%		6% (1)	Like transfers	0%	
Attitudes	Berkeley	(+) 0%		6% (1)	Like transfers	0%	
		(-) 6% (1)	My maximum commute time	13% (2)	My maximum commute time	6% (1)	Not ecological
		(+) 0%		0%		0%	
	Delft	(+) 0%		0%		0%	
		(-) 6% (1)	My maximum commute time	6% (1)	My maximum commute time	10% (2)	Do not like long commute
		(+) 13% (2)	Work while commuting, read	13% (4)	Watching activity inside the bus , talk with people on the bus, work while commuting	6% (1)	Work while commute
Experiences	Berkeley	(+) 13% (2)	Work while commuting, read	13% (4)	Watching activity inside the bus , talk with people on the bus, work while commuting	6% (1)	Work while commute
		(-) 25% (8)	Sweating , change clothes and shower, commuting consumes too much energy, cannot listen to music (ADD), cannot read (ADD), not interesting, uncomfortable bus	6% (1)	Sweating	19% (3)	Traffic, uncomfortable bus, childhood experiences
		(+) 6% (4)	Scenic route, interesting route, watch activity around me, exercise	0%		0%	
	Delft	(+) 6% (4)	Scenic route, interesting route, watch activity around me, exercise	0%		0%	
		(-) 31% (7)	Unreliable public transport , sweating, bad weather, cannot work during commute, more transfers public transport, negative experience with this commute in the past	31% (5)	Unreliable public transport, sweating, traffic	20% (5)	Unreliable public transport, sweating, traffic, cannot listen to music, cannot read
		(+) 6% (4)	Scenic route, interesting route, watch activity around me, exercise	0%		0%	

Results

-Acceptable commute time (closed-ended questions)

	Commute time (min)					
	Actual		Ideal		Acceptable	
	Berkeley	Delft	Berkeley	Delft	Berkeley	Delft
Car	19.0	21.9	16.9	13.8	36.3	33.1
Public transport	60.0	55.6	23.8	17.8	60.0	42.5
Bicycle	27.5	11.9	26.9	11.3	48.8	31.3
Walking	14.3	20.9	12.5	15.9	25.0	38.8
All modes	30.9	27.6	20.0	14.7	42.5	36.4

Actual, ideal and acceptable commute times by travel mode in Berkeley, CA and Delft, The Netherlands.

Results

-Acceptable commute time (open-ended questions)

		% of subjects	# of codes	Codes (definition of acceptable commute time)
Perceptions	Berkeley	50	15	Not too long, not breaking into my free time, not a huge chunk of the day , fine with it, manageable, not wasting my time commuting, would not look to shorten it
	Delft	44	9	Not too long, not breaking into my free time, not wasting my time commuting , manageable, not wasting my energy commuting
Feelings	Berkeley	38	7	Tired, unhappy, frustrated , not rushed, unpleasant, unsatisfied
	Delft	63	21	Not bothered, tired, anxious, frustrated, nervous, convenient , annoyed, comfortable, motion sick, no enjoyment, not irritated, out of balance, stressed
Attitudes	Berkeley	38	7	Allow myself to travel to a job , consistent with the duration of all daily activities, not my upper boundary
	Delft	38	10	Not my upper boundary, consistent with the duration of all daily activities, allow myself to travel to a job , not too expensive
Experiences	Berkeley	25	5	Past experiences with commuting
	Delft	25	4	Past experiences with commuting
Factors affecting acceptable travel time	Berkeley	38	15	Travel mode, productivity, travel experience , activities during travel, commuting frequency, driving vs riding, life stage, salary, travelling companions
	Delft	31	6	Activities during travel, commuting frequency , travelling companions, travel mode

Subjects' descriptions of acceptable commute time based on their perceptions, feelings, attitudes and life experiences.

Conclusions

(a) The results of this study confirm the validity of the acceptable travel time concept.

Variation of intrinsic utility with travel time.

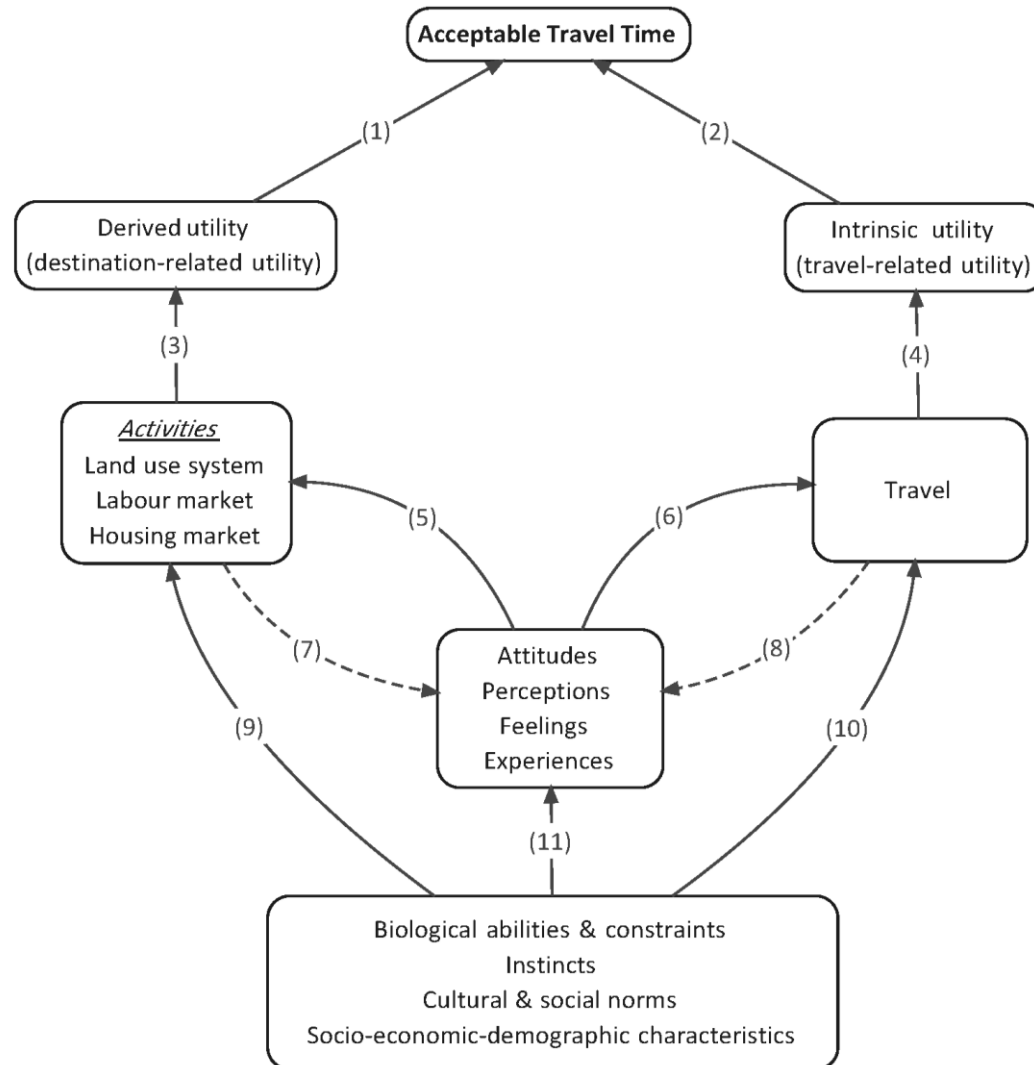
Identification and definition of an acceptable travel time.

(b) The average acceptable travel time was found lower in the case of Delft. (36.4 min vs 42.5 min in Berkeley).

Differences in congestion levels, spatial structure, job accessibility, perceptions of travel time related to country size between the two cities could explain differences in acceptable travel time.

Conclusions

(c) conceptual model for factors influencing derived and intrinsic utility, and next the acceptable travel time.



Future research on acceptable travel time

(a) Theory

Connections to behavioural economics:

- modes of thinking: system 1: fast, instinctive, emotional and system 2: slower, deliberative, logical (Kahneman, 2011).
- Reference points.

(b) Validation and influencing factors

- Large-scale stated and revealed preference surveys, (quasi) longitudinal empirical studies, mobility biographies.

(c) Application of the concept

- Land use transport models (see e.g. SILO, Moeckel, 2017).
- Assessment of transport projects (non-linear valuation of travel time).
- Urban planning.



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