



university of
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department of planning and
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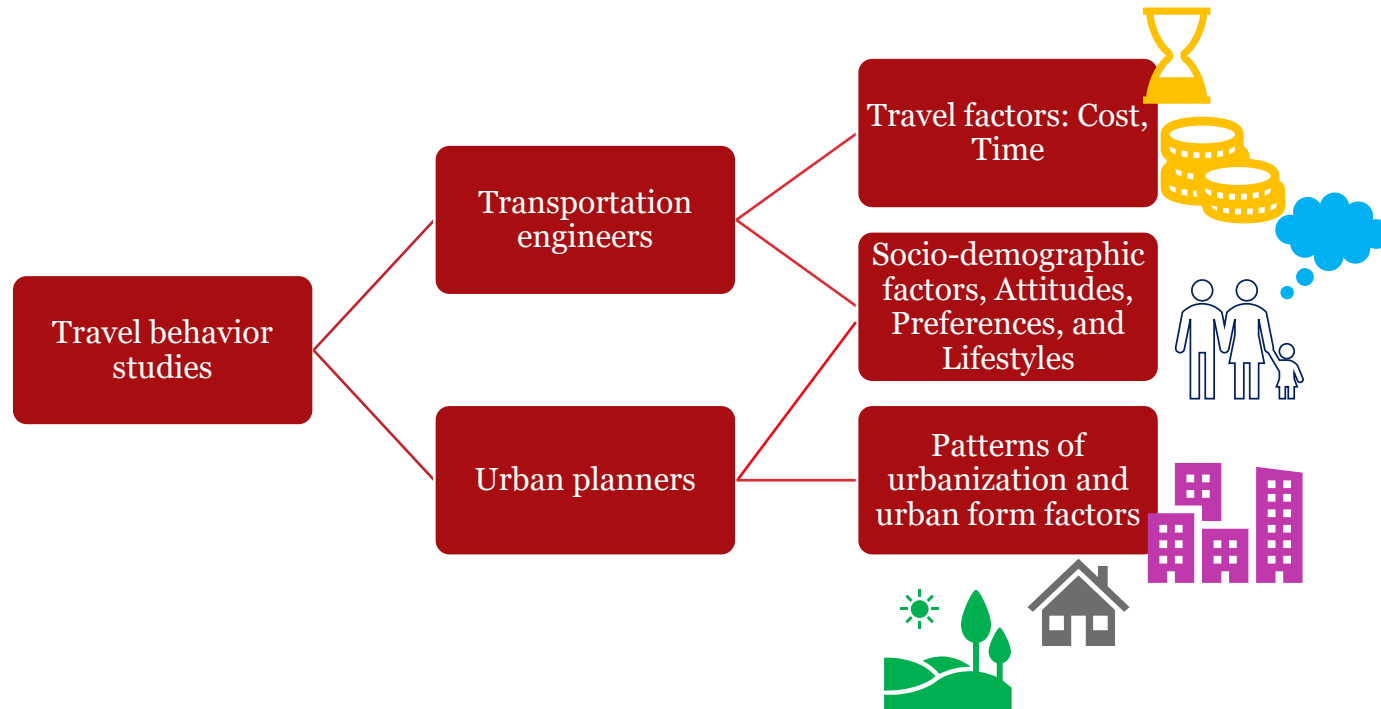
Residential relocation and travel behavior change

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Guest Lecture for Urban Experience course
 Department of Built Environment
 Aalto University

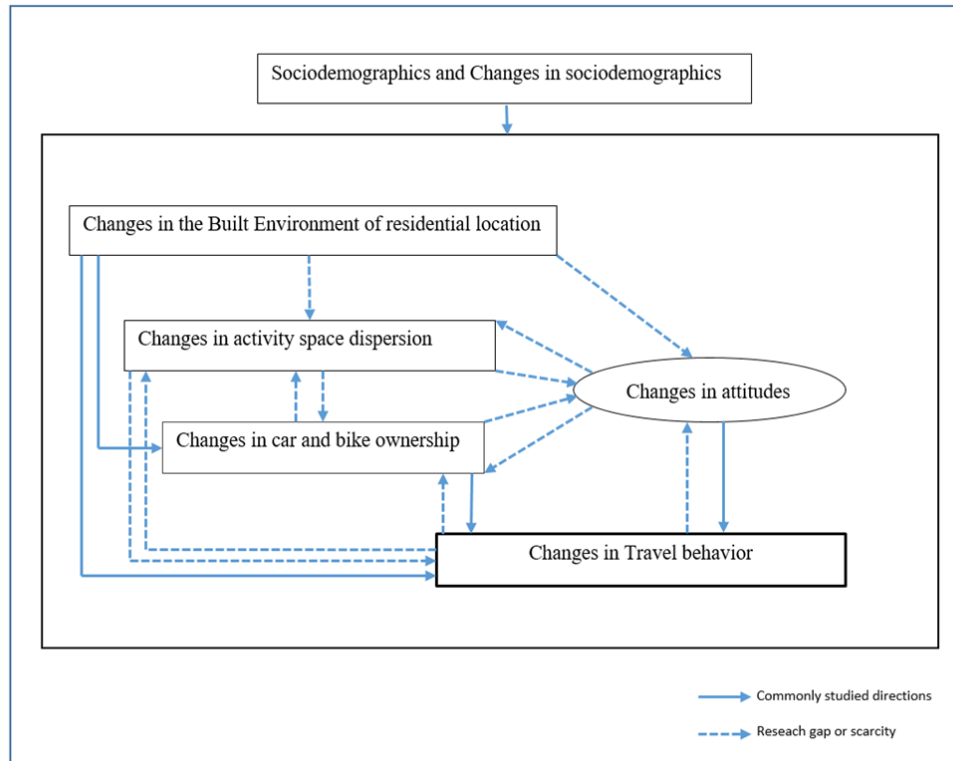
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Literature



Mostly cross-sectional data is used! Changes in these factors are not measured!

The conceptual framework



Urban Daily Life and Travel Study

1/12 Your opinions about travel

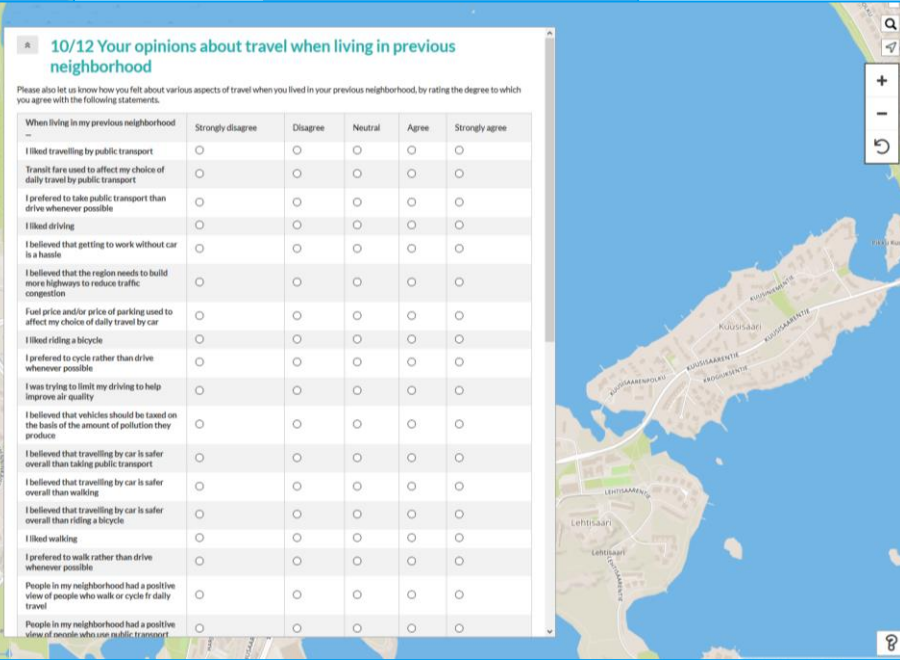
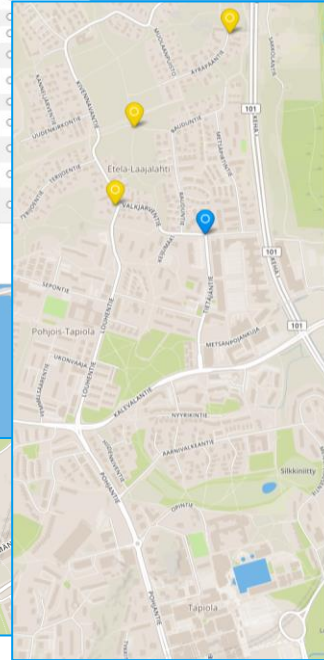
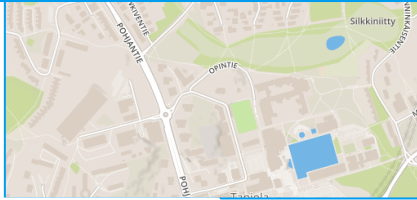
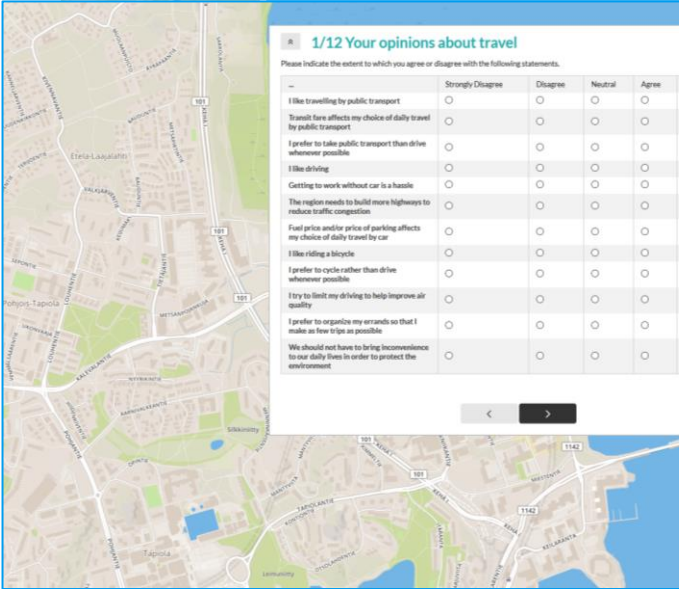
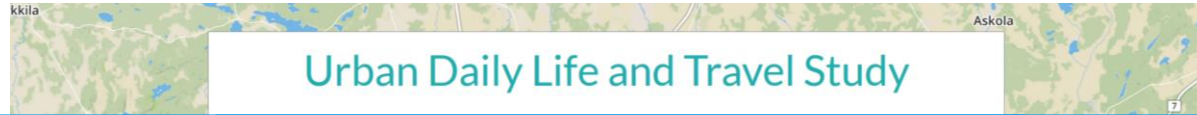
Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I like travelling by public transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transit fare affects my choice of daily travel by public transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to take public transport than drive whenever possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like driving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Getting to work without car is a hassle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The region needs to build more highways to reduce traffic congestion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fuel price and/or price of parking affects my choice of daily travel by car	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like riding a bicycle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to cycle rather than drive whenever possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to limit my driving to help improve air quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to organize my errands so that I make as few trips as possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We should not have to bring inconvenience to our daily lives in order to protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10/12 Your opinions about travel when living in previous neighborhood

Please also let us know how you felt about various aspects of travel when you lived in your previous neighborhood, by rating the degree to which you agree with the following statements.

When living in my previous neighborhood	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I liked travelling by public transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transit fare used to affect my choice of daily travel by public transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I preferred to take public transport than drive whenever possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I liked driving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believed that getting to work without car is a hassle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believed that the region needs to build more highways to reduce traffic congestion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fuel price and/or price of parking used to affect my choice of daily travel by car	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I liked riding a bicycle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I preferred to cycle rather than drive whenever possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was trying to limit my driving to help improve air quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believed that vehicles should be taxed on the basis of the amount of pollution they produce	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believed that travelling by car is safer overall than taking public transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believed that travelling by car is safer overall than walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believed that travelling by car is safer overall than riding a bicycle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I liked walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I preferred to walk rather than drive whenever possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in my neighborhood had a positive view of people who walk or cycle if daily travel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in my neighborhood had a positive view of people who use public transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Measuring variables

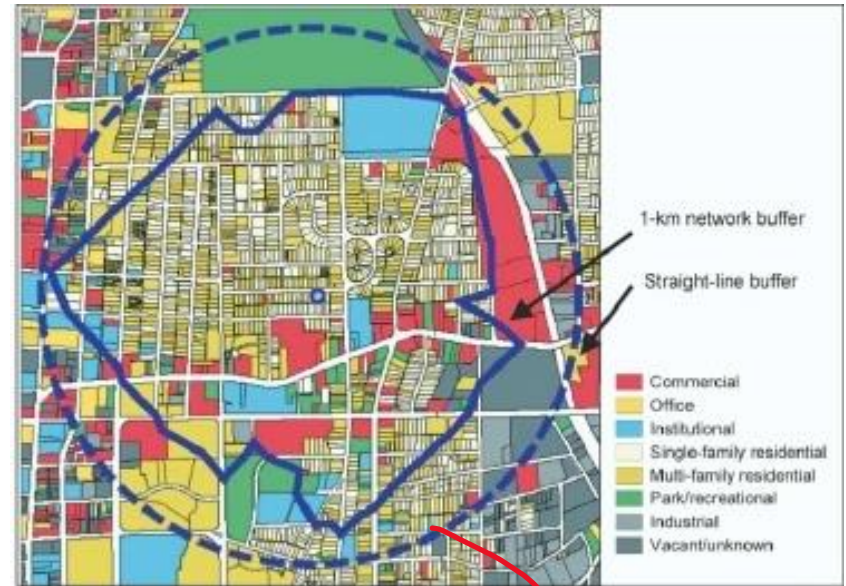
❑ Changes in the Built Environmental factors:

- Land Use Mix
- Population density
- Job density
- Distance to workplace
- Distance to non workplaces
- Move to Intensive public transport zone

❑ Changes in car and bike ownership:

- Car acquisition
- Car disposal
- Bike acquisition

❑ Changes in travel behavior: Self stated changes in the use of different modes

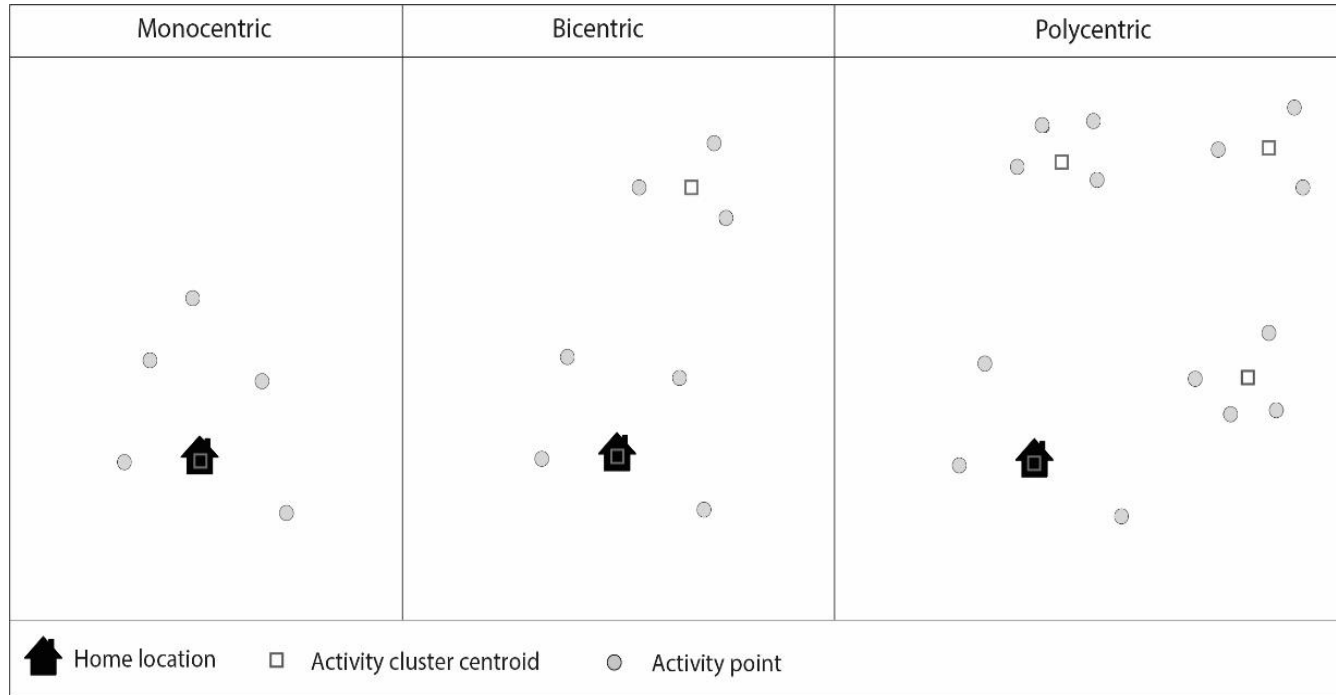


□ Changes in attitudes:

Attitude	Cronbach's Alpha	Measurement indicator	Factor loading
1. Pro-transit	0.71	I prefer to take public transport than drive whenever possible	0.676
		I like travelling by public transport	0.507
		I like driving	-0.482
		I like to be able to rest or read while travelling	0.421
		We could manage pretty well with one fewer car than we have (or with no car)	0.347
2. Pro-active travel	0.85	I prefer to cycle rather than drive whenever possible	0.946
		I prefer to walk rather than drive whenever possible	0.725
		I like riding a bicycle	0.667
3. Susceptible to peer pressure	0.83	People in my neighborhood have a positive view of people who use public transport	0.934
		People in my neighborhood have a positive view of people who walk or cycle for daily travel	0.815

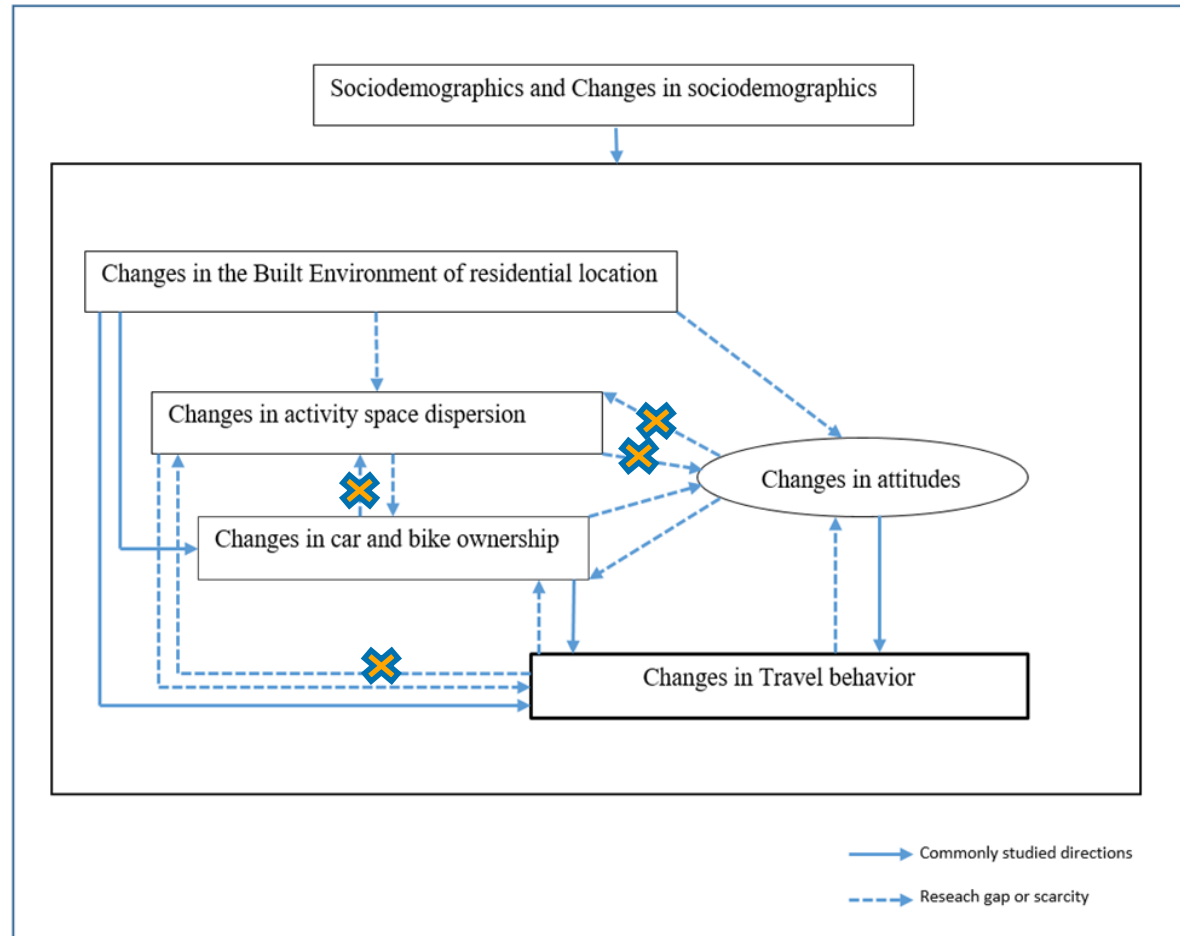
Attitude	Cronbach's Alpha	Measurement indicator	Factor loading
4. Time sensitive	0.59	I do not like to wait for another travel mode while travelling	0.593
		I like to avoid queues and congestion while travelling	0.588
		I do not like to have variation in my daily travel time	0.584
5. Car safety perception	0.79	Travelling by car is safer overall than walking	0.962
		Travelling by car is safer overall than riding a bicycle	0.670
		Travelling by car is safer overall than taking public transport	0.582
6. Confident in transit schedule awareness	0.58	The bus and/or train schedule is sometimes hard to understand	0.607
		Using text message (SMS) to get real time information about bus and train schedule could be easier than using internet for me	0.537
		I use the Internet easily to find out about the bus or train schedule	-0.534
7. cost sensitive	0.43	Fuel price and/or price of parking affects my choice of daily travel by car	0.666
		Transit fare affects my choice of daily travel by public transport	0.368
8.Environmentally aware	0.66	Changing how people travel is a great way to improve the environment	0.644
		Using electric vehicles can significantly reduce air pollution	0.579
		Vehicles should be taxed on the basis of the amount of pollution they produce	0.468
		I try to limit my driving to help improve air quality	0.363

❑ Changes in dispersion of activity space:



Results

- ❑ Reciprocal influences between changes in car and bike ownership, travel attitudes, and travel behavior
- ❑ The built environment can modify and change travel related attitudes and influence activity space dispersion, which in turn affects travel behavior



	Changes in pro-active transport attitude	Changes in pro-transit attitude	Changes in environmental accountability	Changes in susceptibility to peer pressure regarding positive role of active transport	Changes in time sensitivity	
Changes in built environment	Changes in distance to non-work related places	-0.108 ^a (-0.108 ^a)	0.00 (0.001 ^c)	0.00 (0.00)	0.00 (0.001 ^c)	
	Changes in distance to work	-0.2 ^a (-0.2 ^a)	-0.243 ^a (-0.218 ^a)	-0.219 ^a (0.199 ^a)	-0.00 (0.00)	0.121 ^b (0.129 ^b)
	Changes in land use mix	0.00 (0.00)	0.229 ^a (0.238 ^a)	0.00 (0.007 ^c)	0.109 ^a (0.109 ^a)	-0.239 ^b (-0.239 ^b)
	Changes in population density	0.00 (0.00)	0.181 ^a (0.188 ^a)	0.00 (0.006 ^c)	0.159 ^a (0.159 ^a)	0.00 (-0.015 ^c)
	Changes in Job density	0.00 (0.00)	0.00 (-0.001 ^c)	0.00 (-0.001 ^c)	0.00 (0.00)	0.00 (-0.001 ^c)
	Move to intensive public transit or pedestrian zone	0.00 (0.00)	0.00 (0.011 ^b)	0.00 (0.008 ^c)	0.00 (0.00)	0.00 (0.00)

		Changes in pro- active transport attitude	Changes in pro- transit attitude	Changes in environmental accountability	Changes in susceptibility to peer pressure regarding positive role of active transport	Changes in time sensitivity
Changes in travel behavior	Changes in walking	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.1c (-0.1 ^c)
	changes in cycling	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
	changes in transit use	0.00 (0.00)	0.203 ^a (0.211 ^a)	0.160 ^a (0.167 ^a)	0.00 (0.00)	0.00 (-0.005 ^c)

		Change in walking	Change in cycling	Change in transit use
Changes in built environment	Changes in distance to non-work related places	0.00 (-0.013 ^c)	0.00 (-0.067 ^c)	0.00 (0.003 ^c)
	Changes in distance to work	0.00 (-0.081 ^c)	0.00 (-0.104 ^b)	0.155 ^a (0.122 ^a)
	Changes in land use mix	0.00 (0.002 ^c)	0.00 (-0.031 ^c)	0.00 (0.045 ^a)
	Changes in population density	0.147 ^a (0.149 ^a)	0.00 (-0.008 ^c)	0.00 (0.035 ^a)
	Changes in Job density	0.00 (0.010 ^b)	0.00 (0.009 ^c)	0.00 (-0.005 ^c)
	Move to intensive transit zone	0.00 (0.003 ^c)	0.00 (0.00)	0.045 ^a (0.050 ^a)
Changes in centrality of activity space	Change to monocentric activity space	0.073 ^b (0.073 ^b)	0.065 ^c (0.064 ^c)	0.00 (0.00)
	Change to polycentric activity space	0.00 (0.00)	0.00 (0.00)	0.041 ^c (0.042 ^c)
Changes in car and bike ownership	Car acquisition	0.00 (-0.001 ^c)	0.00 (0.00)	-0.026 ^b (-0.027 ^b)
	Car disposal	0.00 (0.001 ^c)	0.00 (0.00)	0.023 ^b (0.024 ^b)
	Bike acquisition	0.00 (0.00)	0.101 ^a (0.101 ^a)	0.00 (0.00)
Changes in attitudes	Changes in pro-active transport attitude	0.00 (0.00)	0.518 ^a (0.518 ^a)	0.00 (0.00)
	Changes in pro-transit attitude	0.00 (0.010 ^b)	0.00 (-0.028 ^b)	0.177 ^a (0.196 ^a)
	Changes in environmental accountability	0.323 ^a (0.323 ^a)	0.00 (0.027 ^b)	0.00 (0.00)
	Changes in susceptibility to peer pressure regarding positive role of active transport	0.073 ^b (0.073 ^b)	0.00 (0.00)	0.00 (0.00)
	Changes in time sensitivity	0.00 (0.00)	0.105 ^b (0.105 ^b)	0.00 (0.00)

Any Questions?

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