The influence of life events on transitions between travel patterns
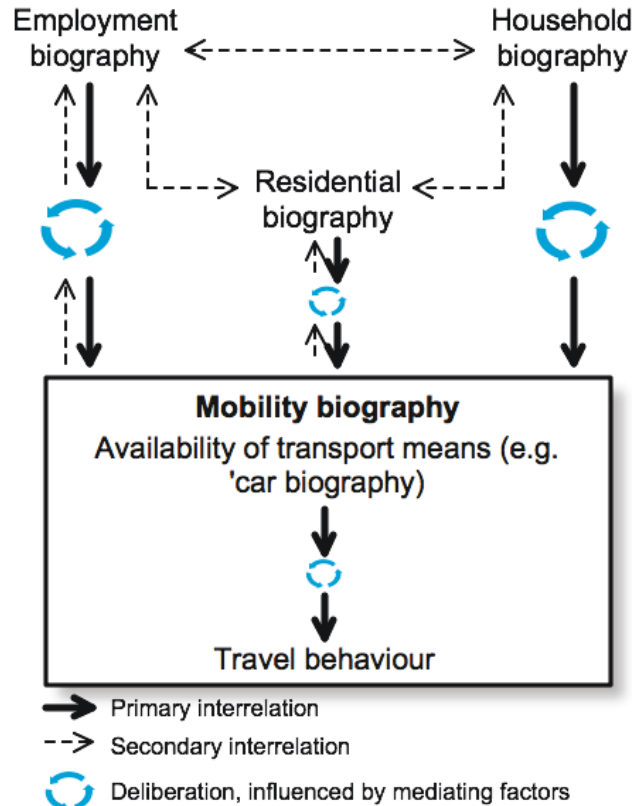
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Focus

- Revealing different travel patterns
- Transitions between travel patterns
- Influence of life events on transitions

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Mobility biographies framework

Household biography
- Change of the number of adults in the household
- Birth of a child

Employment biography
- Changing jobs
- Stop working
- Start or change of education

Residential biography
- Residential move

Adapted from Scheiner, 2007 and Clark et al., 2014

Travel pattern

- Three day travel diary
- Trip frequency with different modes defines travel pattern
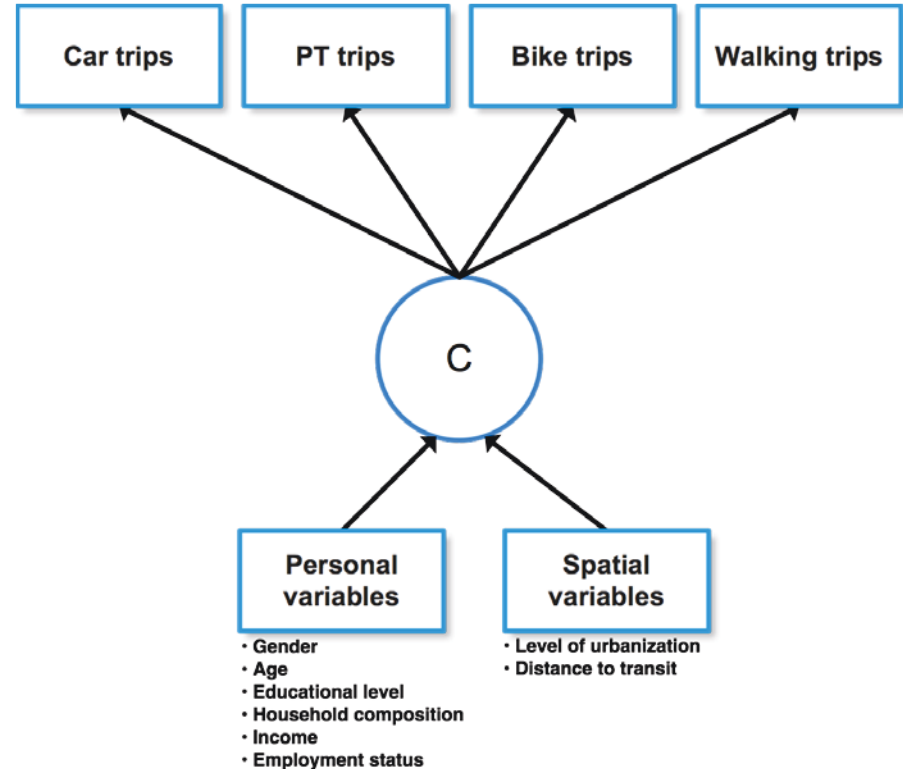
Car Public transport Bike Walking

Sample

- Respondents who completed at least 2 consecutive waves in the MPN
- 16+ years old
- Data organized as a pooled wave-pair sample
- 5,518 wave pairs

# Latent class analysis

Indicators

Latent classes
(travel patterns)

Controlling variables
(predictors)

Six travel patterns

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
Profile name	Strict car	Car and bike	Bike	Car and walk	Low mobility	PT
Class size	30%	19%	16%	13%	11%	10%
Indicators						
Trips by car	8.1	6.5	0.8	4.4	0.8	1.3
Trips by PT	0.1	0.1	0.3	0.2	0.0	3.4
Trips by bike	0.0	4.5	7.9	1.4	0.3	1.4
Trips by walking	0.5	0.6	1.3	6.3	0.2	1.5
Active covariates						
Gender						
Male	53%	45%	38%	42%	48%	45%
Female	47%	55%	62%	58%	52%	55%
Age (mean)	46.8	49.5	44.3	53.3	47.1	36.6
Educational level						
Low	21%	23%	30%	28%	34%	28%
Mid	45%	41%	35%	37%	41%	34%
High	34%	37%	35%	35%	25%	38%
Working contract						
Part-time (12-35 hours/week)	26%	31%	24%	25%	20%	19%
Fulltime (>35 hours/week)	44%	29%	19%	20%	27%	32%
No job (<12 hours/week)	30%	40%	57%	55%	53%	50%
Level of urbanization						
Urban (1500+ inhabitants/km²)	40%	40%	56%	51%	49%	66%
Sub-urban (1000-1500 inhabitants/km²)	23%	28%	23%	22%	21%	18%
Rural (less than 1000 inhabitants/km²)	36%	32%	21%	27%	30%	16%

Latent transition analysis
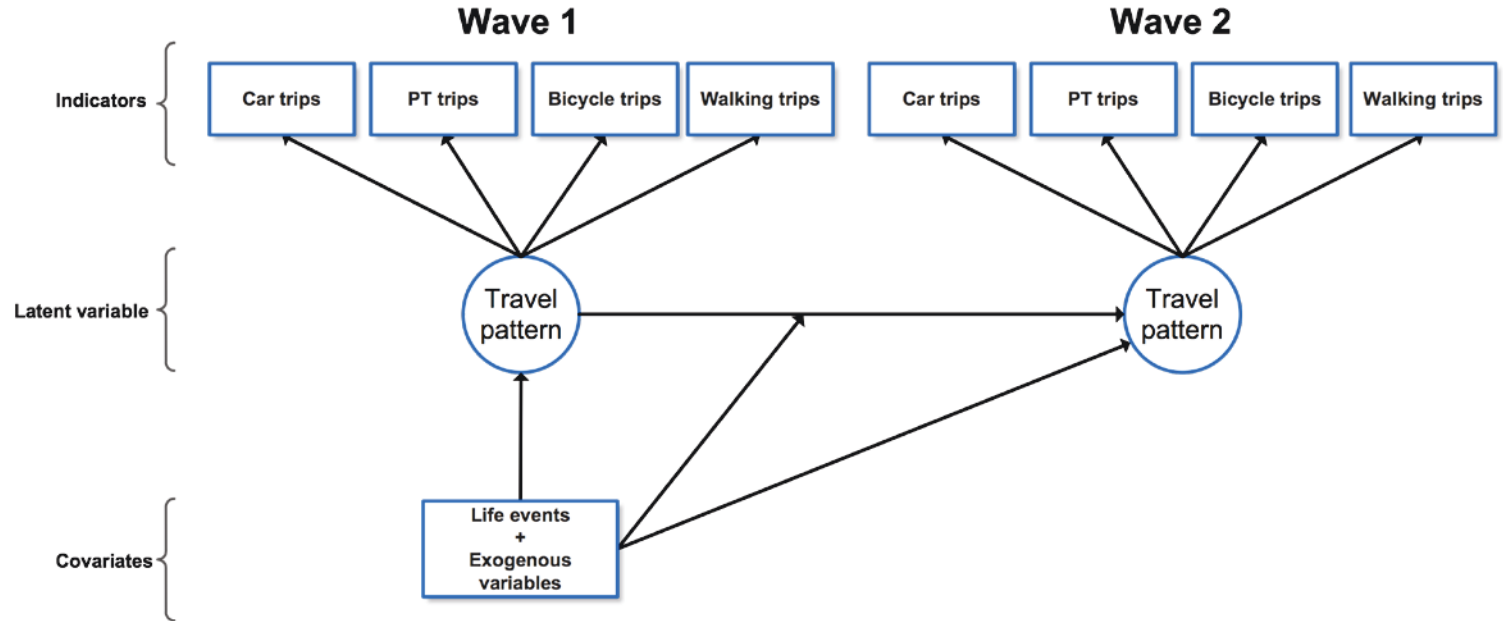
Average transition probabilities

Wave 1	Wave 2					
	SC	CB	B	CW	LM	PT
Strict car (SC)	0.70	0.13	0.00	0.05	0.09	0.02
Car and bike (CB)	0.23	0.53	0.13	0.05	0.05	0.01
Bike (B)	0.02	0.14	0.74	0.03	0.03	0.04
Car and walk (CW)	0.10	0.08	0.08	0.64	0.06	0.04
Low mobility (LM)	0.11	0.08	0.08	0.03	0.69	0.02
Public transport (PT)	0.08	0.04	0.02	0.07	0.12	0.67

General effects of life events

- Share of strict car travel pattern increases, except after stop working
- Single mode patterns less affected
- Effect depends on initial travel pattern

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Birth of a child

	SC	CB	B	CW	LM	PT
SC	0.70	0.07	0.00	0.15	0.08	0.01
CB	0.27	0.32	0.00	0.38	0.02	0.00
B	0.03	0.16	0.12	0.64	0.05	0.00
CW	0.20	0.38	0.01	0.31	0.00	0.09
LM	0.36	0.08	0.04	0.04	0.45	0.03
PT	0.17	0.00	0.02	0.29	0.30	0.21

- Share of car and walk class increases from 13% to 30%
- Share of three car classes is 82%

Residential move

	SC	CB	B	CW	LM	PT
SC	0.67	0.15	0.00	0.06	0.10	0.02
CB	0.38	0.41	0.12	0.08	0.01	0.00
B	0.03	0.16	0.73	0.02	0.02	0.05
CW	0.04	0.23	0.02	0.28	0.26	0.17
LM	0.12	0.09	0.08	0.29	0.41	0.01
PT	0.00	0.10	0.12	0.25	0.00	0.52

- Single mode classes not affected much
- Effects for other classes differs

Policy implications

- Windows of opportunity?
- More research is needed
- Intervention moments

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Future possibilities

- Repeat analysis after more waves
  - Increase reliability
  - Include more covariates

- Assess lagged effects

Questions?

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