


Data collection / Simulation

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Publication date:

2017-04

Permanent link:

<https://doi.org/10.3929/ethz-b-000130422>

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Preferred citation style

Axhausen, K.W. (2017) Data collection / Simulation, presentation at NSF Workshop “Advancing the science of transportation demand modelling”, Berkeley, April 2017.

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Data collection / Simulation

KW Axhausen

IVT

ETH

Zürich

April 2017

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Acknowledgments

B Schmid for the update of the response rate analysis

M Hohenfellner/F Ciari for the MATSim video

A Loder, A Schreiber, T Rutherford for the integrated aggregate model

A Loder and L Ambühl for the 3d MFD

Example: Surveys

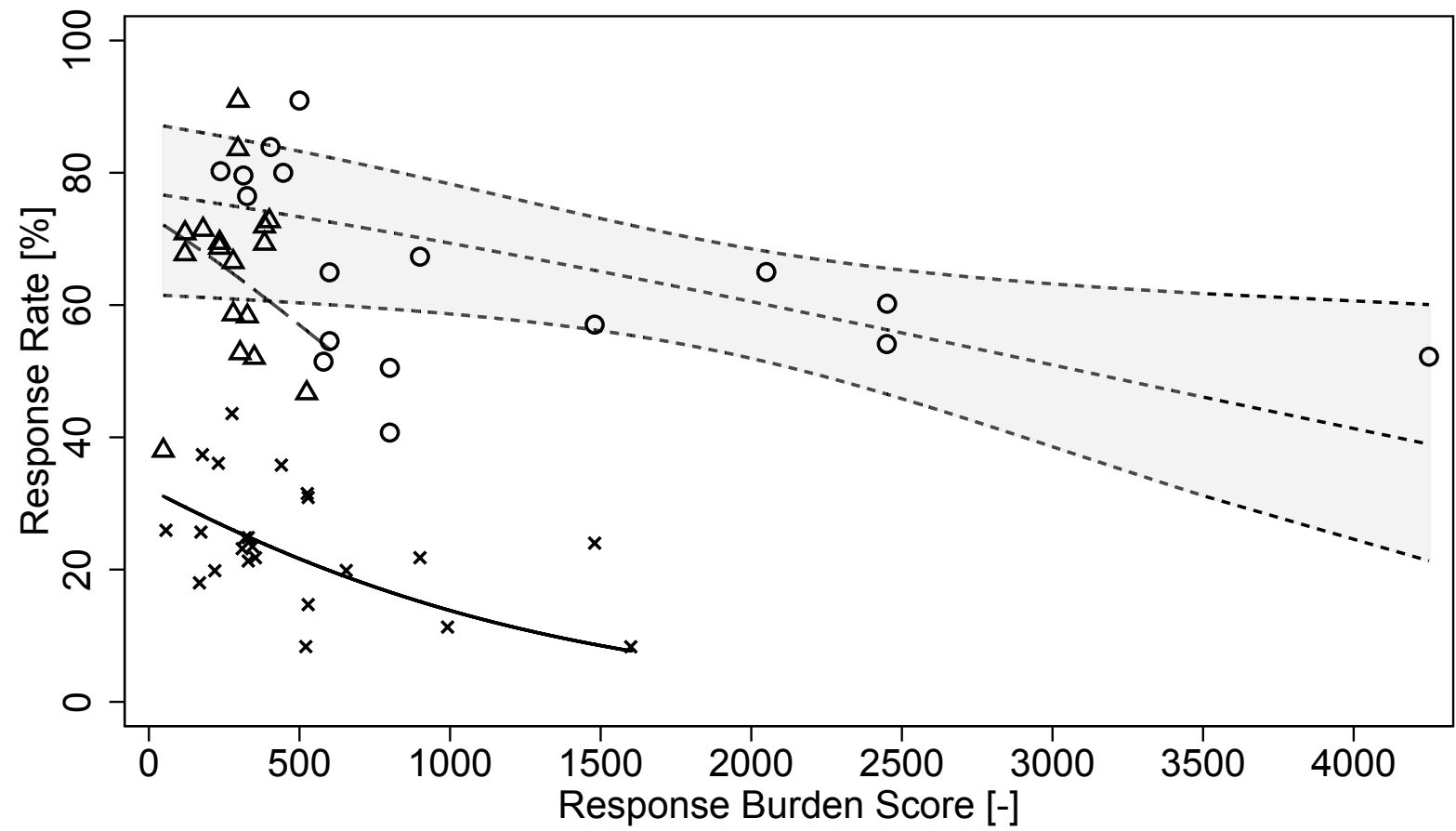
Some survey issues

- Selection of the sampling frame
- Self-selection into survey
 - Recruitment rates
 - Response rates
- Soft refusal
 - Being 'immobile'
 - Not reporting whole tours
 - Grouping activities together
 - Missing stages

Soft refusal: ORANGE versus national travel diary

Data	Tracked Interval	Surveyed Persons	Mobile Persons	Mobile Share	Selected for analysis
CDR	30 days	1'388'941	814'381	58.6%	79'874
ENTD	28 days	18'632	4'796	25.7%	4'796
ENTD	91 days	18'632	8'743	46.9%	8'743

Response rate versus response burden @IVT



○ Prior recruitment and incentive	----- Fit and 95 % CI
△ Prior recruitment, no incentive	— — — Fit
× No prior recruitment, no incentive	———— Fit

Are passive data the solution?

Omissions and issues in passive data

- Locations
 - Lack of precision (GPS, GSM, Wifi profiles)
 - Not known (Loop detectors, 'social network data', credit card data)
- Sample composition and bias
 - Imputed socio-demographics only (e.g. via the list of apps for example)
 - Unknown and partial (telco data)
- Precision and completeness
 - Uncalibrated (loop detectors and other counters)
 - Lack of coverage (GSM providers, GPS switched off)
- Lack of (automatic) panel data, unless your operators don't care about privacy

So

- We have no ground truth, and certainly not by the groups of interest
- We have to be more humble (latent construct)
- More focus on change and panel (or SC) data and experiments (e.g. SF Park, AKTA)

therefore

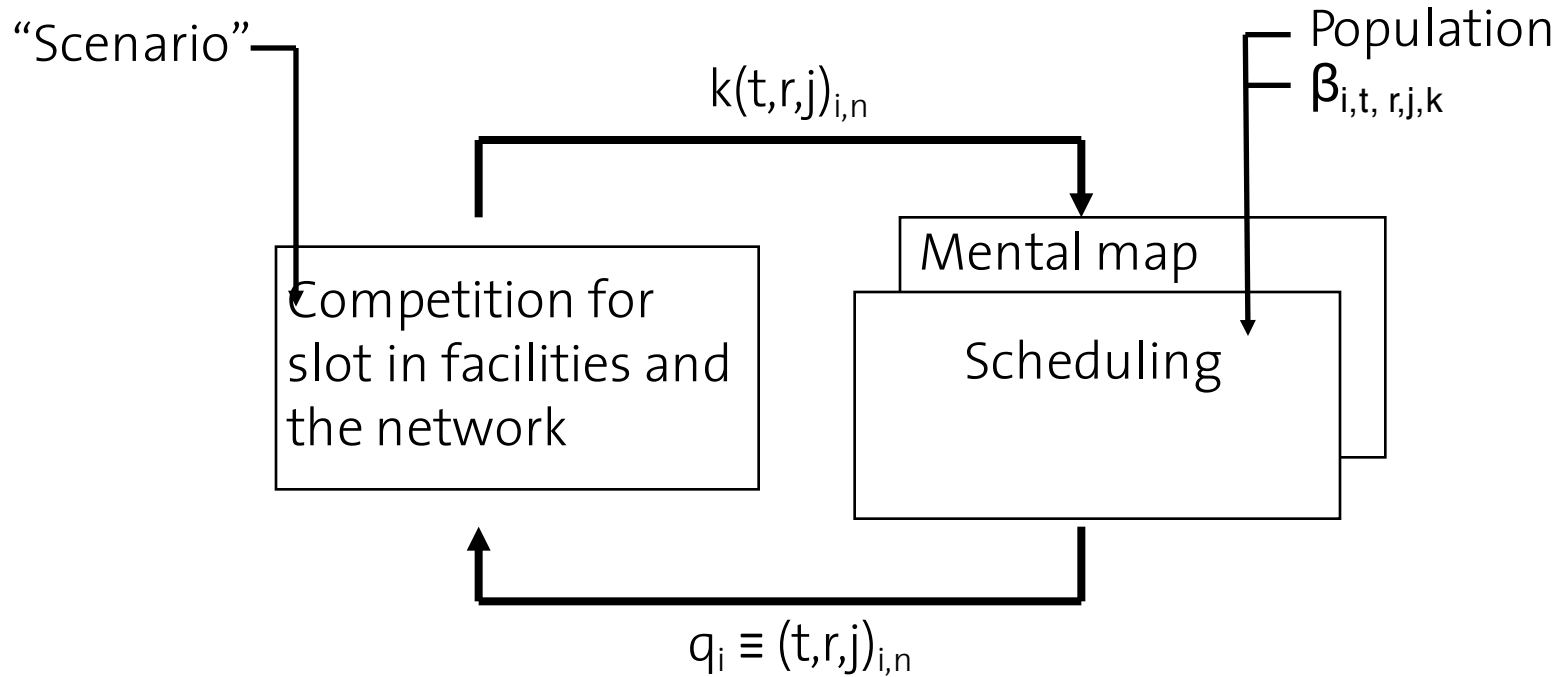
- We should share the enriched data and the data sources and tools for the enrichment (e.g. networks, software)
- We should rerun the models in the forecast year with the den current data
- We should properly archive the data
 - ‘Data paper’ for *Transportation*

Simulation

Time horizons of transport planning

	System	Person
Long term	<i>slots</i> Regulation	Home and work locations Mobility tool ownership Social networks
Medium term	Services Prices Awareness	Personal projects
Short term	Operations	Scheduling

Generic model structure



Current progress: MATSim Switzerland



Activity scheduling dimensions

Number and type of activities (and secondary activities)

Sequence of activities

- Start and duration of activity
- Composition of the group undertaking the activity
- Expenditure/income and its division
- Location of the activity
- Movement between sequential locations
 - Location of access and egress from the mean of transport
 - Parking type
 - Vehicle/means of transport
 - Route/service
 - Group travelling together
 - Expenditure division

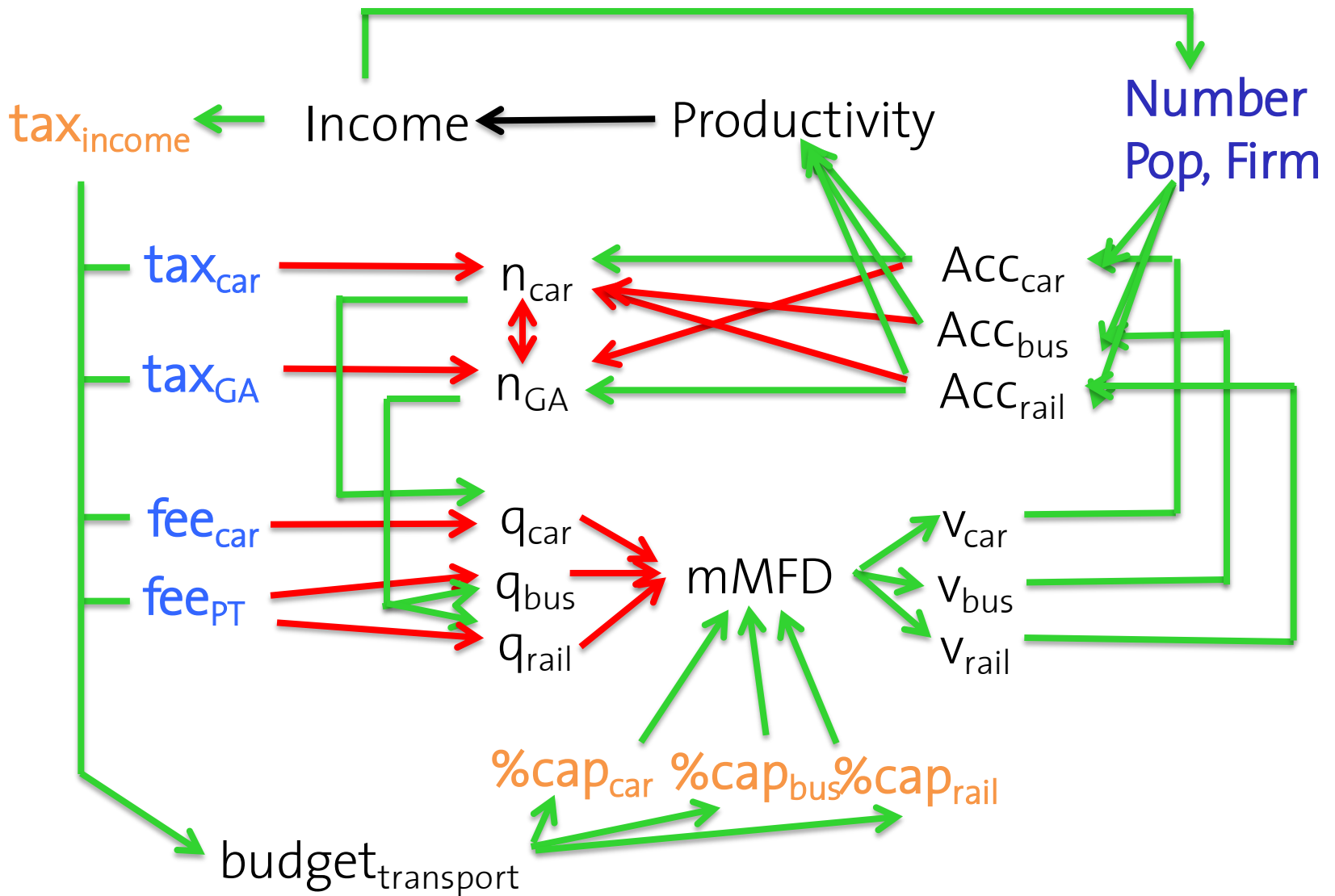
Activity scheduling dimensions – now in MATSim

Number and type of activities (and secondary activities)
Sequence of activities

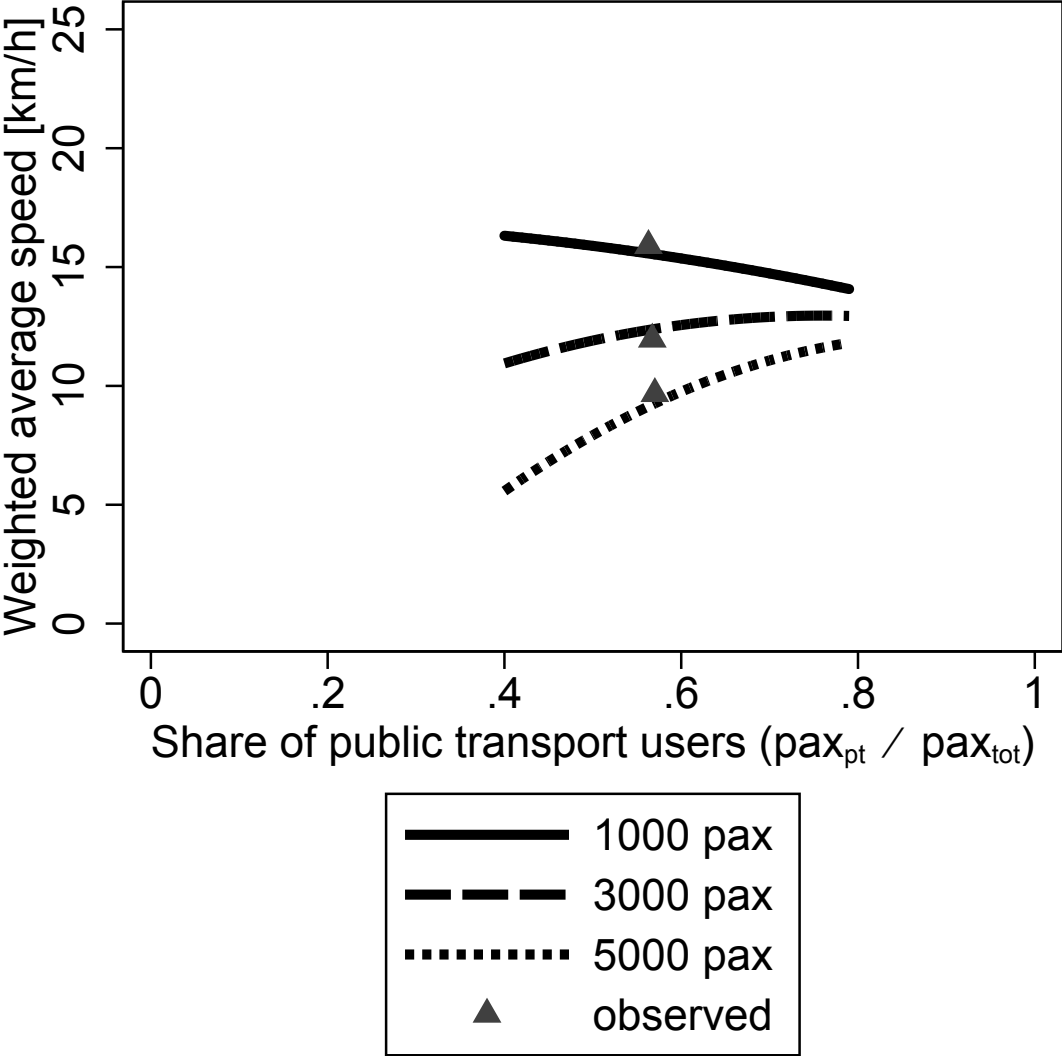
- Start and duration of activity
- Composition of the group undertaking the activity
- Expenditure/income and its division
- Location of the activity
 - Movement between sequential locations
 - Location of access and egress from the mean of transport
 - (Parking type)
 - Vehicle/means of transport
 - Route/service
 - Group travelling together
 - Expenditure division

But do we need this?

Or would this be enough ?



3d MFD (Zürich, loops) City centre



Loder et al., 2017

Questions ?

www.matsim.org

www.ivt.ethz.ch

www.futurecities.ethz.ch

www.senozon.com

Questions ?

The Multi-Agent Transport Simulation MATSim

edited by
Andreas Horni, Kai Nagel, Kay W. Axhausen

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graph LR; A[initial demand] --> B[mobsim]; B --> C[scoring]; C --> D[analyses]; C --> E[replanning]; E --> B;
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MATSim
Multi-Agent Transport Simulation