

Multimodality in the Swiss New Normal (SNN)

Other Conference Item

Author(s):

[Heimgartner, Daniel](#) ; [Sallard, Aurore](#) ; [Balac, Milos](#) ; [Axhausen, Kay W.](#) 

Publication date:

2024-05-29

Permanent link:

<https://doi.org/10.3929/ethz-b-000675215>

Rights / license:

[In Copyright - Non-Commercial Use Permitted](#)

Preferred citation style for this presentation

Heimgartner, D., A. Sallard, M. Balać and K. W. Axhausen (2024) Multimodality in the Swiss New Normal (SNN), presented at the *CSFM Symposium 2024*, Zurich, Switzerland.

Multimodality in the Swiss New Normal (SNN)

CSFM Symposium 2024

D. Heimgartner, A. Sallard, M. Balać and K. W. Axhausen

IVT
ETH
Zürich

May 2024

👉 Who does sometimes work from home?

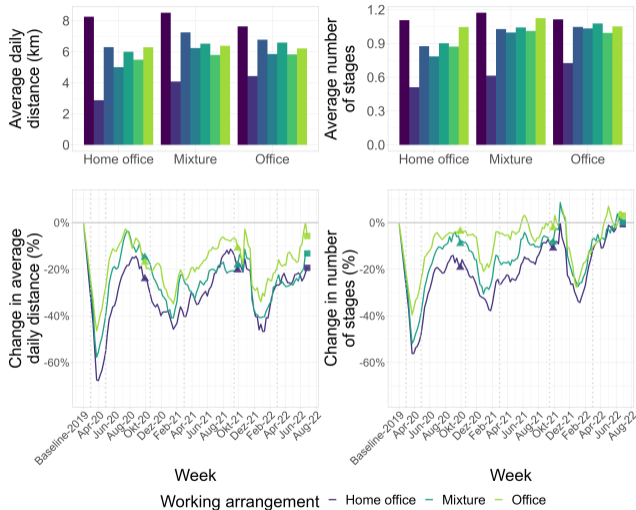
👉 Who changed the mobility tool ownership because of home office?

👉 Who travels less on a home office day?

👉 Who thinks that there is less congestion during commuting peak hours than before the pandemic?

Motivation

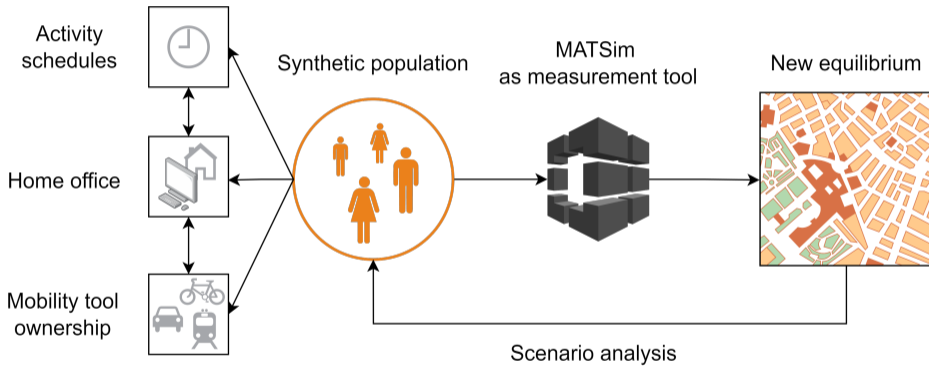
The COVID-pandemic has fueled home office adoption



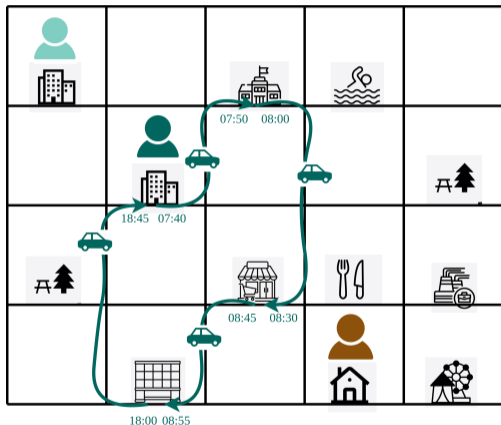
- 👉 Investigate the changes expected to be observed on the transport system in Zurich in a new normal characterized by a high adoption of home office (various KPIs possible).
- 👉 Could home office be used as a policy lever (i.e. to combat traffic's negative effects, such as GHG emissions)?

Methodology

General framework



Synthetic travel demand generation



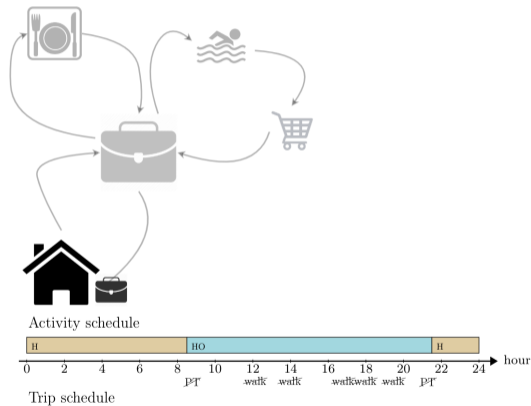
- ▶ The STATPOP dataset is complete but sparse.
- ▶ We enrich it using several data sources.
- ▶ No reliable home office information
⇒ own surveys ($N = 10'441$).
 - 👉 Switzerland (Zurich) has a unique home office potential!
 - 👉 Around 70% of the workforce could in principle work (partially) from home (50% do so).
 - 👉 Monday and Friday most popular weekdays.
- ▶ Econometric models for the MATSim integration:
 - ▶ WFH: work from home model
 - ▶ MTO: mobility tool ownership models

Output at this stage: Synthetic population, with activities, trips and locations (MZMV), and consistent WFH and MTO attributes (Models).

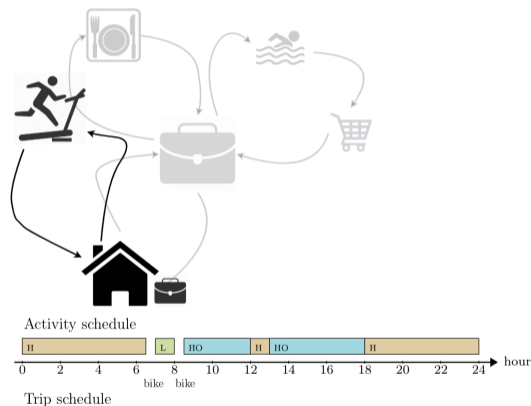
👉 But these attributes are likely to affect when, where and why people move!

Strategies to update the mobility patterns of teleworkers

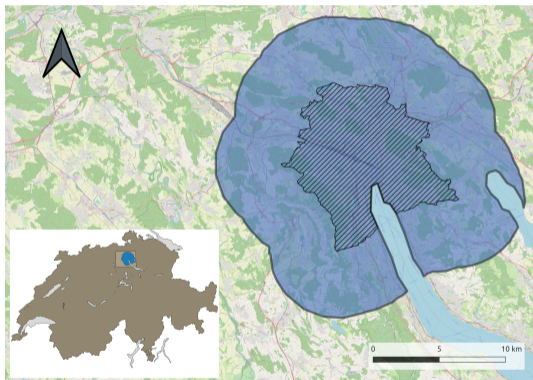
Strategy 1: Cancelling of trips



Strategy 4: Matching with TimeUse+ activity chains



The simulation environment

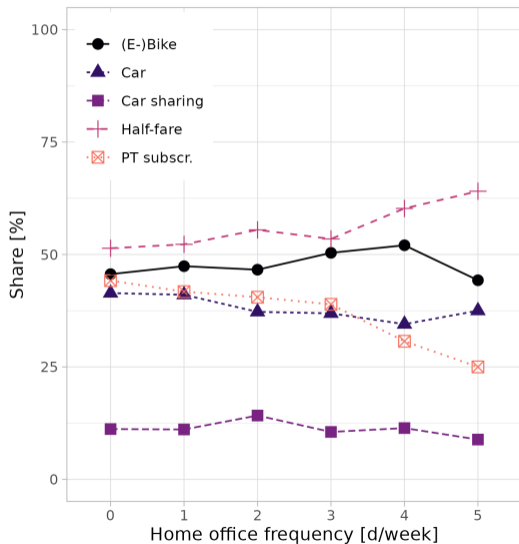


5 scenarios run:

- ▶ **Baseline** (no telework simulated) - an average of all working days
- ▶ **Strategy 1:** Friday vs. Tuesday-Wednesday-Thursday
- ▶ **Strategy 4:** Friday vs. Tuesday-Wednesday-Thursday

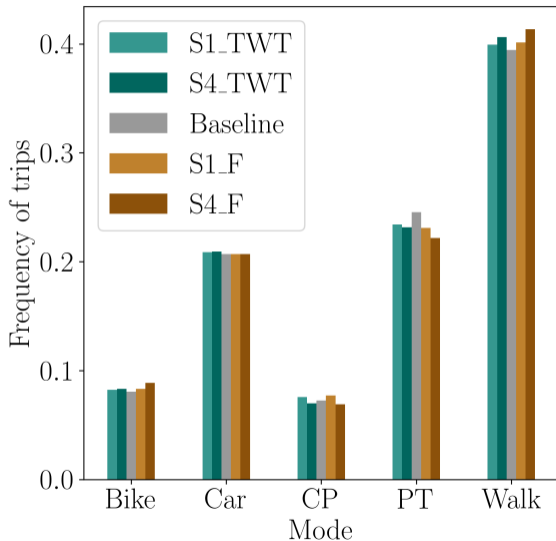
Results

Home office and mobility tool ownership



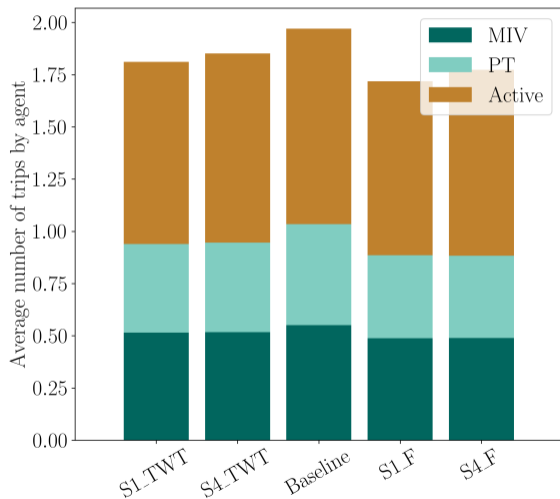
- ▶ The figures show average home office treatment effects (SP).
- 👍 Only PT subscriptions show small but significant treatment effects. [around 3pp drop in market share per marginal day]

Mode shares do not change



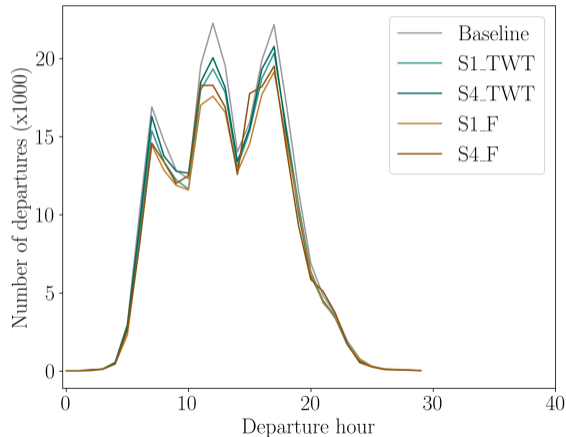
- ▶ Labels: “strategy_weekday(s)”
 - ▶ S1: strategy 1, S4: strategy 4.
 - ▶ TWT: tuesday-wednesday-thursday;
 - ▶ F: Friday.
- ▶ Relative mode preferences are surprisingly stable and persistent (rebound after COVID).

No rebound effects



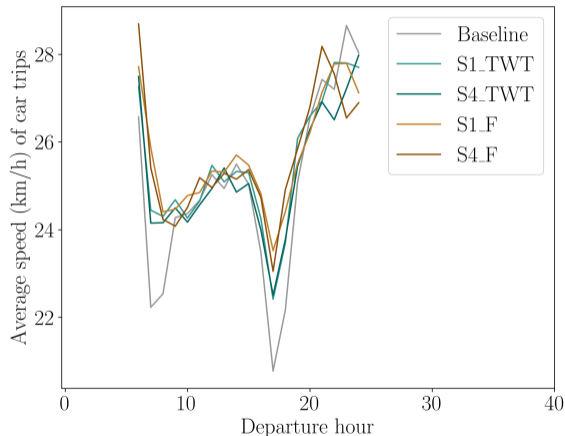
- ▶ The chosen strategy barely affects the outcomes, contrary to the simulated day(s).
- ▶ Tuesday to Thursday: with HO, decrease of the number of trips of around 7%. On Friday: 11% less trips performed.
- ▶ Travel distance drops by around 11% in mid-of-the-week days and by around 16.5% on Fridays.
- ▶ Most affected mode: public transportation (\Rightarrow often used by commuters).
- ▶ For commute trips: decrease of 20% of the demand from Tuesday to Thursday, decrease of around 31% on Fridays.

Peak hour phenomenon: Number of trips per hour throughout the day



- ▶ Once again, the strategy has a minimal impact on the results.
- ▶ Outside of peak hours: almost no change compared to the baseline scenario.
- ▶ Morning peak: -19% from Tuesday to Thursday, -30% on Friday.
- ▶ Noon peak: -22% from Tuesday to Thursday, -34% on Friday.
- ▶ Evening peak: -18% from Tuesday to Thursday, -30% on Friday.

Less congestion during peak hours [skip]



- ▶ Focus on car speeds: velocity of other modes (public transport, active modes) independent from traffic conditions.
- ▶ Outside of morning and evening peak hours: comparable car speeds across scenarios.
- ▶ Average car speeds in mid-of-the-week scenarios: around 2 km/h above baseline levels; in Friday scenarios: almost 3 km/h above baseline.
- ▶ For commute trips: average car speed stable at 25.5 km/h from 7 AM to 2PM. Evening peak hours: from Tuesday to Thursday, average car speed 2.4 km/h above baseline; Friday scenario: 4 km/h speed increase.

Conclusion

- ▶ Increased home office makes some people cancel their PT subscriptions.
 - ▶ However, the elasticities are not that dramatic.
 - ▶ Stable mode shares might be part of the explanation.
- ▶ Home office leads to less travel.

👍 No rebound effects!

- ▶ Home office is mainly a peak hour phenomenon.
- ▶ Improved traffic conditions for motorists: Less congestion on main commuting axes.

👍 Peak volumes/max capacity define the infrastructure!

- 👍 Home office can be an effective policy lever to improve network conditions and attenuate any negative traffic-induced externality.
- 👍 As it does not distort mode preferences, the infrastructure does not need to be readjusted.



Swiss New Normal

 daniel.heimgartner@ivt.baug.ethz.ch