

Multimodality in the Swiss New Normal (SNN)

Daniel Heimgartner¹, Aurore Sallard¹, Dr. Miloš Balać², Prof. Kay W. Axhausen¹

¹Institute for Transport Planning and Systems, ETH Zurich, CH, ²Center for Sustainable Future Mobility, ETH Zurich, CH

1 Introduction

The Covid-19 pandemic triggered a massive, forced experiment in remote work as lockdowns kept many employees home. This abrupt shift accelerated the adoption of working from home by nearly 40 years. To what extent does this unprecedented transformation shape the equilibrium of transportation?

This research project aims to contribute to a better understanding of home office preferences and of their impact on mobility tool ownership at the individual level. These models are integrated into a synthetic population, which helps us investigate the potential for working from home to flatten traffic peaks and commuter flows. To tackle this question transport simulations representing the city of Zurich are used.

2 A SP survey to model home office preferences

- A 3-stage stated-preference survey conducted in German-speaking Switzerland:
 - Background information about the respondents;
 - Sticks and carrots: Can hybrid work arrangements explain telework frequency variation?
 - Does mobility tool ownership depend on home office?
- Estimation of econometric models explaining home office access and frequency as well as mobility tool ownership.
 - Gap between *free choice* model and *observed situation*: on average, 2.31 vs 1.65 days/week of home office.
 - Work arrangements do not matter so much! A wedge of 0.6 days/week cannot be explained.

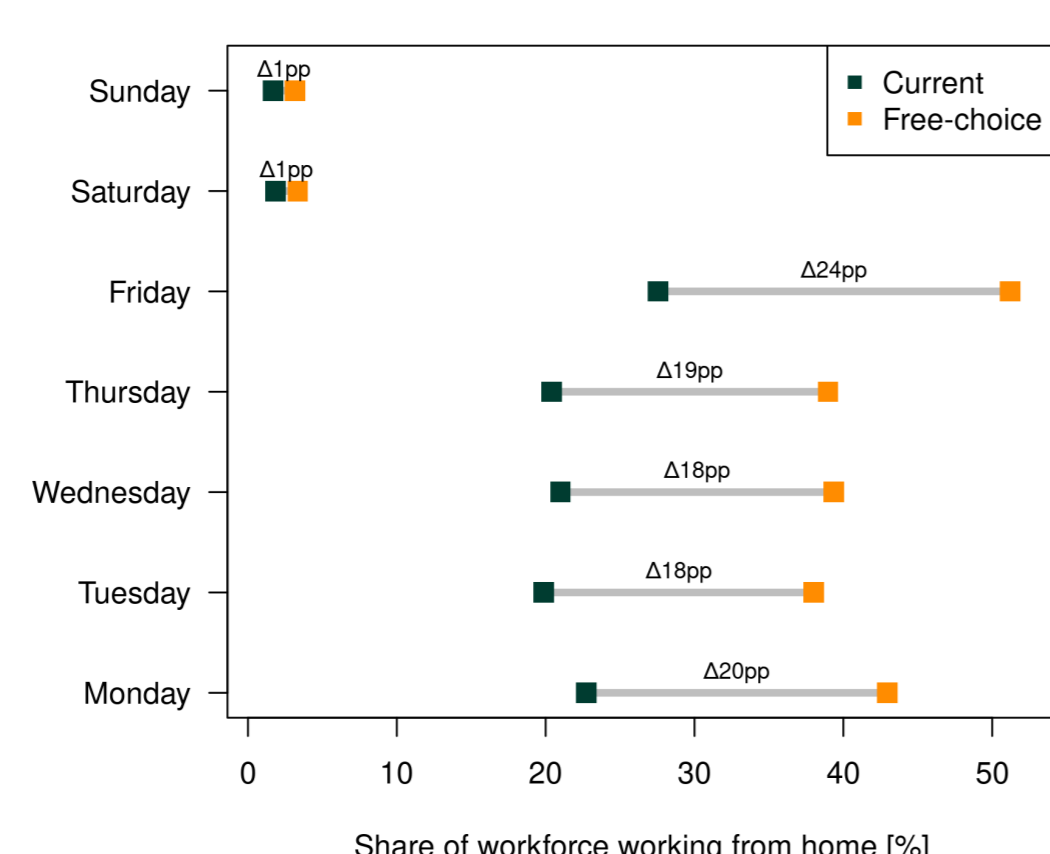


Fig. 1: Share of working population in home office by day of the week, comparison of *free choice* model and *observed situation*.

- Home office has barely an impact on mobility tool ownership. Only PT subscriptions show small but significant treatment effects (GA travelcard shares drop by 3.1 percentage points and Regional travelcard shares by 4.7 percentage points if aggregate home office supply increases by one day).

4 Conclusion

- **Modeling home office preferences:** the proposed hybrid work arrangement characteristics do not matter that much. Hard constraints from the employer might play a more important role.
- **Impacts on mobility tool ownership:** increased home office frequencies make some workers cancel their subscription to public transportation. However, the elasticities are not that dramatic.
- **Consequences for travel demand:** home office leads to less travel, mainly during the peak hour. It leads to improved traffic conditions for motorists with less congestion on the main commuting axes.

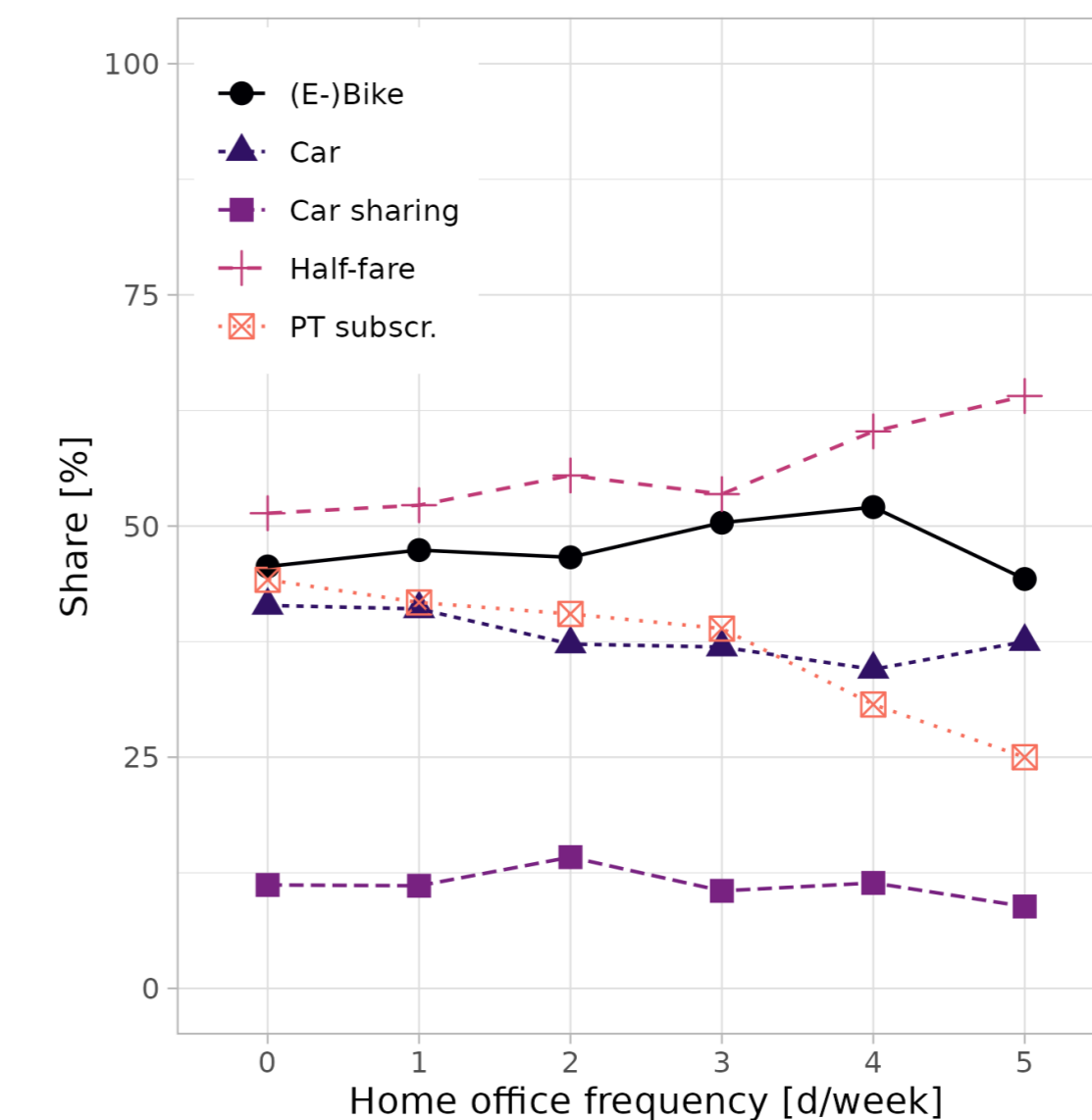
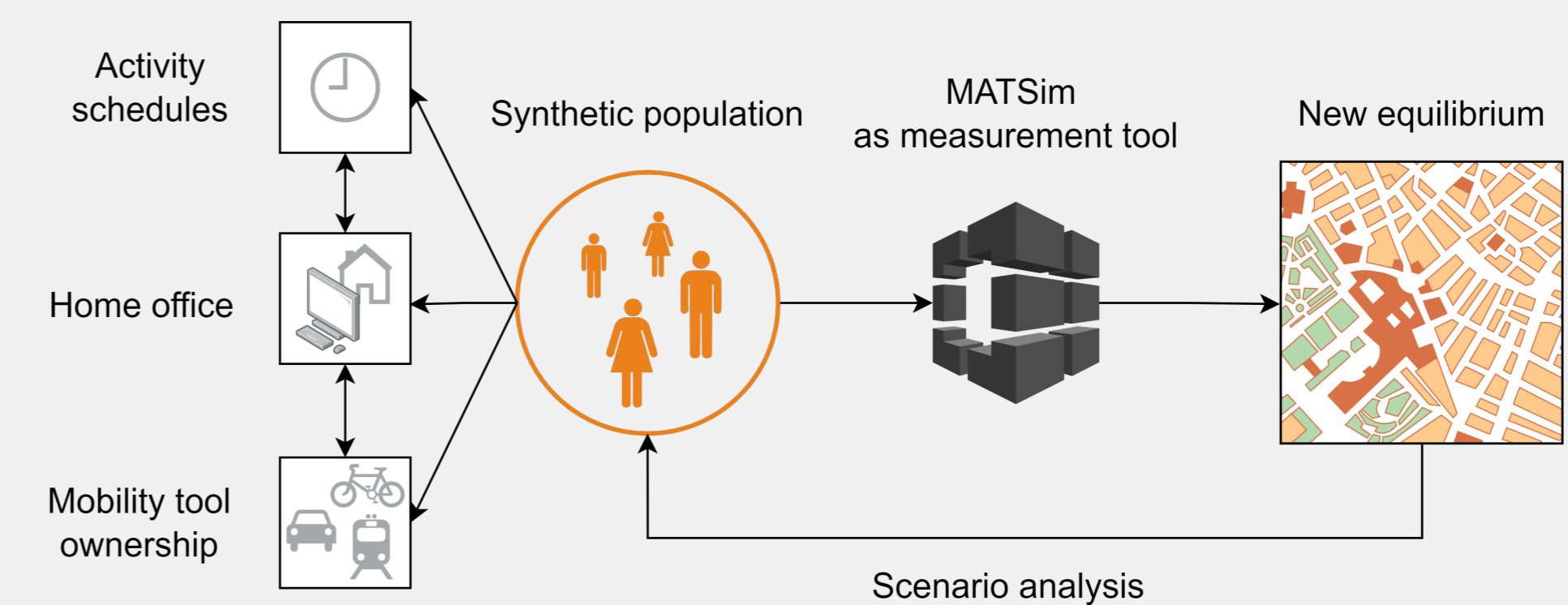


Fig. 2: Impact of home office frequency on mobility tool ownership.

3 MATSim transport simulations

- Process overview:



- Strategies to adapt the activity schedules:

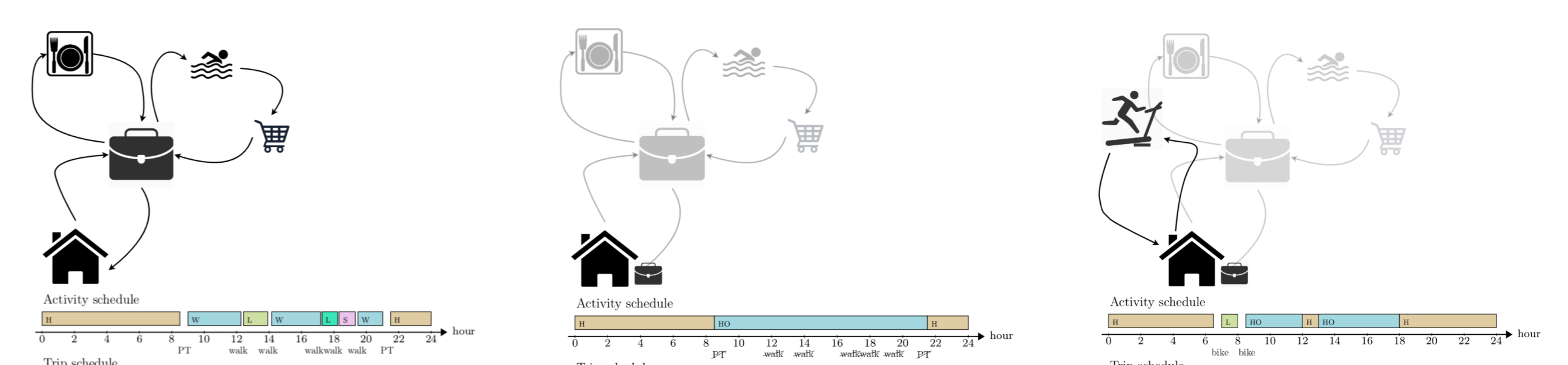


Fig. 3: Initial plan, modified with the first (*lockdown*) and the second (*TimeUse+*) strategy.

- Simulation results:

- Mode shares are unchanged
- Strong reduction in the number of trips and travelled distance, especially for commute trips.

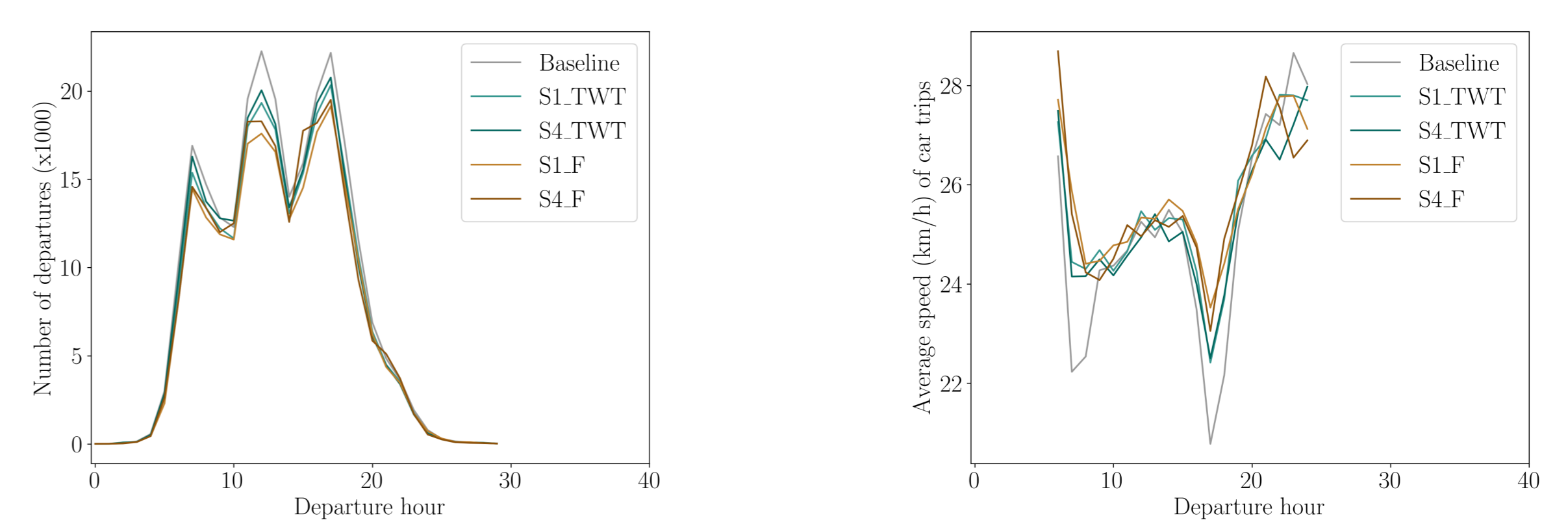


Fig. 4: Number of departures and evolution of car speeds throughout the day.