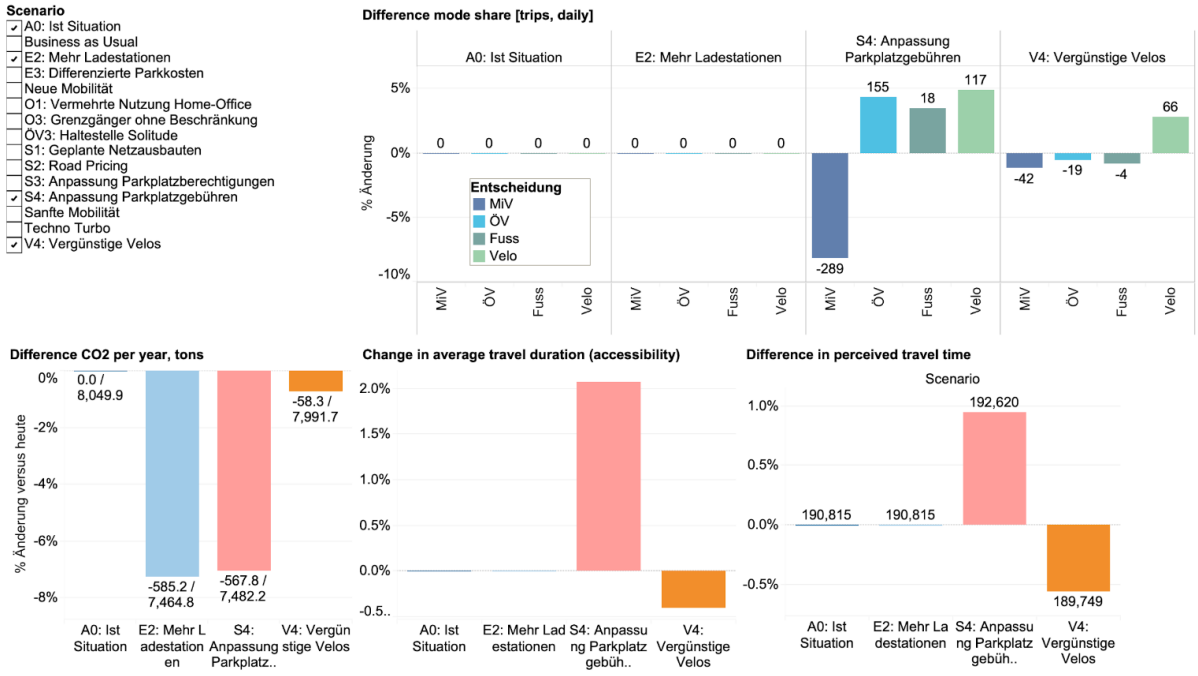

Using backcasting to support corporate mobility management

Michael van Eggermond, FHNW
Alexander Erath, FHNW

Conference Paper STRC 2021

STRC

21th Swiss Transport Research Conference
Monte Verità / Ascona, September 12 – 14, 2021

Using backcasting to support corporate mobility management

Michael van Eggermond
University of Applied Sciences and Arts Northwestern Switzerland
4132 Muttenz
T: +41 61 228 61 85
E: michael.vaneggermond@fhnw.ch

Alexander Erath
University of Applied Sciences and Arts Northwestern Switzerland
4132 Muttenz
T: +41 61 228 54 26
E: alexander.erath@fhnw.ch

July 2021

Abstract

The paper at hand describes a research project conducted in collaboration with a major employer based in Basel, Switzerland. The company employs innovative mobility policies, such as a strict parking regime, with lots only available to employees who have to travel more than 45 minutes by public transport, offers bike sharing and public transport bonuses, but would like to further reduce parking lots and desires to reduce greenhouse emissions resulting from commuting while remaining an attractive employer.

The aim of the project was the to better understand the impact of exogenous developments (e.g. new train lines, road pricing, infrastructure improvements, safer cycling routes) and endogenous mobility policies (e.g. bike sharing, parking fees, charging stations). These developments and policies were identified in a series of workshops with stakeholders. At the same, key performance indicators were formulated.

Instead of forecasting the impact of these policy measures, the project set out to describe a desirable future (e.g., less emissions, attractive employer), reason backwards from the desired situation and formulate a package of policy measures that could in this future, whilst taking into account exogenous developments. This process is also known as backcasting and has been applied in several studies (e.g. Banister et al., 2000; Barandier 2015)

To quantify the impact of the policy measures several data sets were available and newly collected. Travel times and distances for motorized private transport, walking and cycling were calculated using the Google travel time API for all employees. As Google's API only offers limited coverage for public transport in Germany and France, use was made of publicly available public transport schedules and the open-source routing engine R5. A survey was conducted among employees, resulting in over 6000 responses. Based on the survey data, choice models were estimated and applied. Exogenous and endogenous developments for over 10 policy measures were quantified using simplified assumptions, whilst taking into account the spatial differences, and used to forecast the impact of each individual measure and combinations of measures. Measures include the impact of e-bike provision, the impact of improved cycling infrastructure, new train stations and the differentiated parking fees.

The project resulted in a set of mobility policies and recommendations to monitor these mobility policies, and the methodology has been applied at other stakeholders to support sustainable mobility policies.

References

Banister, David, Jonas Akerman, Karl Dreborg, and Peter Nijkamp. 2000. *European Transport Policy and Sustainable Mobility*. London ; New York: Routledge.

Barandier, Jose Renato. 2015. "Applying the 'Backcasting' Method to Achieve Sustainable Mobility: The Case of Niteroi." *Transportation Research Procedia* 8: 5–16. https://doi.org/10.1016/j.trpro.2015.06.037.

Keywords

Forecasting, backcasting, mobility management, science to practice