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Stakeholder prioritizations for electric vehicle charging across time periods

Abstract Entry for ETL session at ERSS by M. van der Koogh (supervised by Z. Lukszo, E. Chappin and R. Heller (HvA))

Electric vehicles (EVs) are penetrating the market; this development has substantial potential for decreased emissions (both greenhouse gas emissions as well as local air quality), increased use and storage of sustainable energy, and increased roll-out and use of car-sharing business models. This development also raises new issues such as increased electricity demands, the lack of social acceptance of charging infrastructure, and other infrastructural challenges in the built environment. Relevant stakeholders, such as municipal workers and charge point operators, need to find alignment in their values and prioritization of relevant aspects in the EV transition.

Our study systematically investigates how 11 relevant stakeholders prioritize different indicator categories: *result indicators* (e.g., EV adoption rates or charge point profitability), *role modalities* (e.g., fast- or smart charging), and *activities* (e.g., the development of mobility-service-markets). For this analysis, we used the Best Worst method (Rezaei, 2015). These stakeholders were asked to prioritize the indicators within these categories, and do so three times, for three different time periods (now-2025, 2025-2030, and 2030-2040). We present the results from this analysis, and specify those for the time periods, for individuals, and for stakeholder groups.

The results reveal the level of importance for each indicator over time (see fig 1. and 2 for preliminary results). EV adoption is currently the top priority, while other result indicators, such as the use of sustainable energy, become more important over time. Some result indicators, such as car ownership, are valued very differently between participants(indicating a potential controversy). Similarly, the roll-out of infrastructure is the most important activity in 2025 and becomes less important over time, while the stimulation of technological development is an activity that becomes more important over time. Having a systematic overview of what aspects matter, we can feed the policy discussion around EV in the built environment.

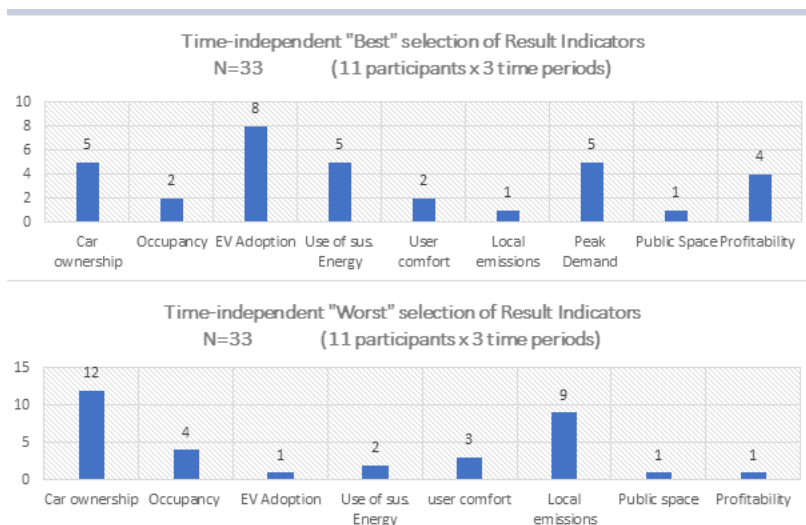


Figure 1: Time independent selection of best and worst result indicators

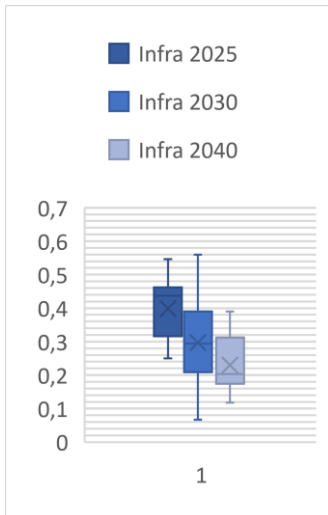


Figure 2: importance of the Activity “Roll-out of infrastructure” over time.

Rezaei, J. (2015). Best-worst multi-criteria decision-making method. *Omega*, 53, 49–57.
<https://doi.org/https://doi.org/10.1016/j.omega.2014.11.009>