

Electric carsharing for a sustainable future mobility – Potential in urban and rural areas

Introduction

Mobility services including carsharing with electric vehicles (EVs) and their integration in the existing transport chains are believed to be a key factor for a sustainable, climate and environmentally friendly future mobility. Research and practical experience suggest the positive effects of (electric) carsharing such as the reduction in car ownership or vehicle-kilometres travelled, contributing for example to lower greenhouse gas emissions, less congestion, better air quality, and more public spaces (Steininger et al. 1996; Burkhardt/Millard-Ball 2006; Martin et al. 2010; Shaheen/Cohen 2013).

While the positive outcomes of carsharing with conventional as well as electric cars and their integration and connectivity to other transport modes have been evaluated intensively in urban areas (Hinkeldein et al. 2012; Wappelhörst et al. 2013), less attention has been paid to their potential and effects in rural areas and the transferability of successful schemes from larger to smaller cities. To close this lack of research station-based electric carsharing is compared for different structured areas to give indications of transferability.

Objective

To decrease car traffic and to stimulate sustainable transport use, the potential of e-carsharing was evaluated in a larger and smaller city demonstrated by e-Flinkster, the e-carsharing of Deutsche Bahn:

- The project „Berlin elektroMobil“ (short BeMobility) in the city of Berlin starting out with 50 EVs at fixed stations within the Berlin S-Bahn circle covering an area where about 1 million of the 3.5 million citizens of Berlin live (project duration 2009–2011).
- The project „e-GAP intermodal“ in Garmisch-Partenkirchen where about 26,000 inhabitants live. Initially, 5 EVs were placed at the main station (project duration 2013–2015).



Research questions and methodology

Research questions

- Can integrated electric mobility services like e-carsharing that work in urban contexts be transferred to rural contexts?
- How do use intentions and attitudes towards innovative mobility offers such as e-carsharing differ between people living in urban or rural contexts?
- Are there certain user groups that are more open towards new mobility services and how different are their proportional shares between the two different structured regions?

Methodology

To evaluate the potential of e-Flinkster in an urban and a rural context from the user's perspective prior to the first use and to figure out certain mobility typologies, who are particularly open towards new mobility services like e-carsharing a mix of quantitative and qualitative methods was used:

- Within the project BeMobility a computer-assisted web interviewing (CAWI) was conducted from November until December 2010.
- In e-GAP intermodal also an online survey (CAWI) was carried out starting in July 2013 over period of four months. In addition, qualitative interviews were undertaken in August and September 2013 at the main station in Garmisch-Partenkirchen.
- Also, a representative survey in the cities of Berlin, Hamburg, Munich and Frankfurt based on telephone interviews was conducted in 2012.

Target group

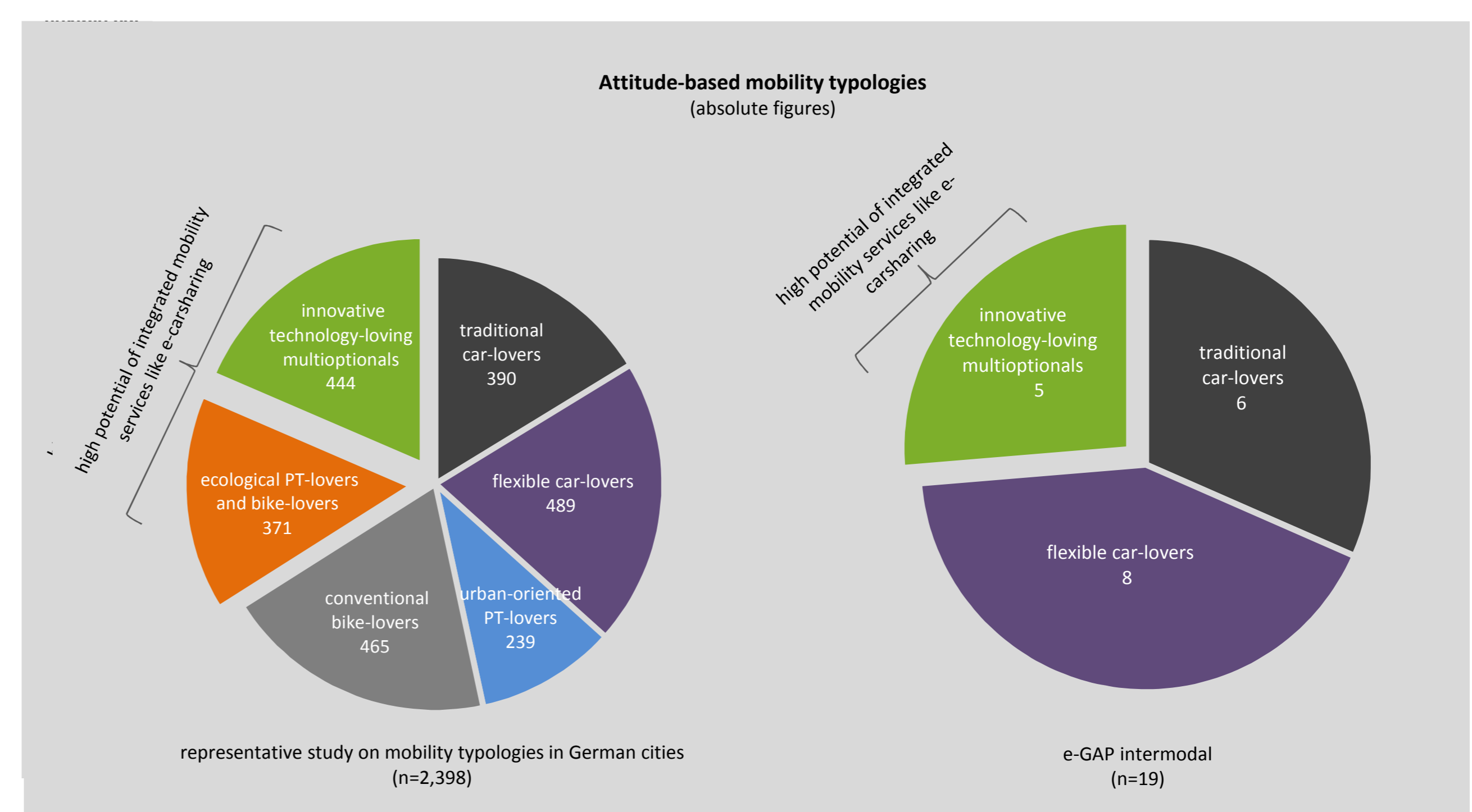
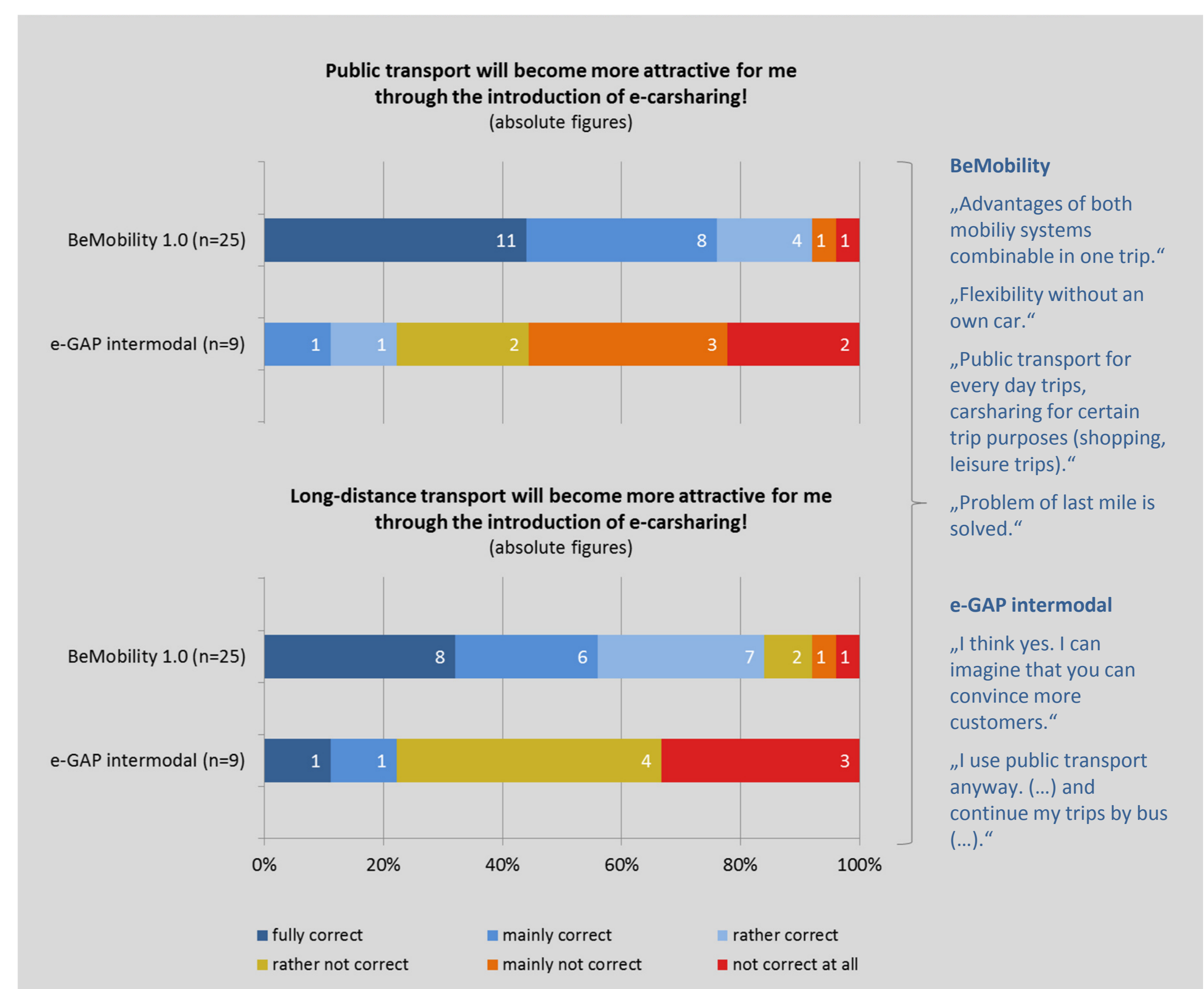
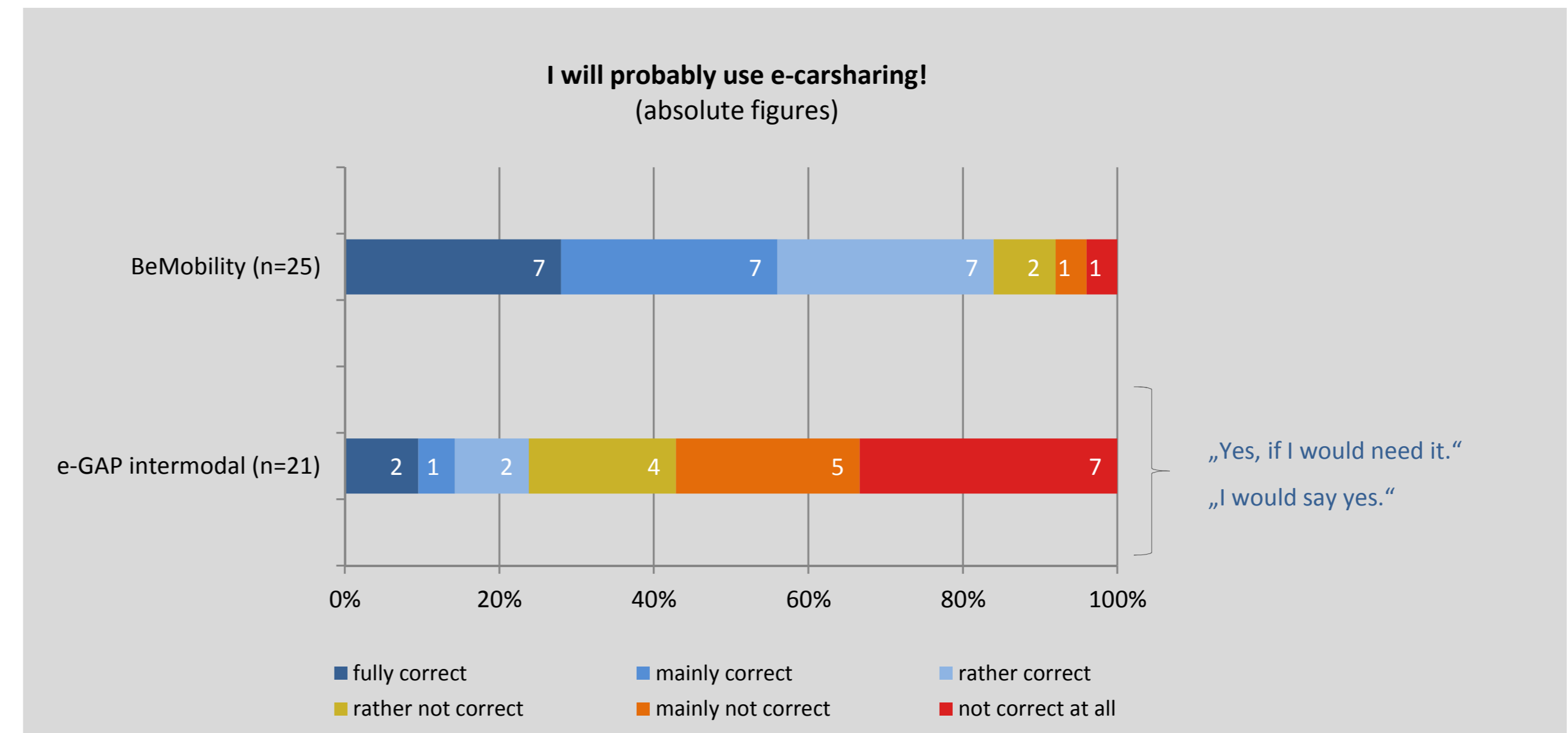
The presented results concentrate on the responses of local people in order to figure out if the economic viability of new mobility services like e-carsharing can be ensured by merely approaching residents despite the living context.

In Garmisch-Partenkirchen, 23 local people answered the questionnaire and 5 locals participated in the qualitative interviews. In Berlin, 25 people took part in the online survey. For the representative survey on mobility typologies altogether 2,398 persons could be interviewed.

References

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Results



Conclusions

- The results show a higher acceptance (in terms of use intention and the possible integration in the public transportation system) of electric carsharing of people living in urban rather than rural areas. Thus, carsharing with electric cars might not fit the mobility routines of people living in rural regions.
 - More attention should be raised i.e. through information or campaigns in order to increase the acceptance of e-carsharing for multi-modal trip chains.
- Car-affinity is particularly high in rural areas. However, there is a certain group of people who seem to be particularly open to new mobility services similar to urban areas.
 - These groups should be approached in a more differentiated way focusing on ecological and practical advantages of intermodal trips or the innovative aspects of e-carsharing.
- Altogether, the results show that new mobility offers that work in urban contexts cannot be easily transferred to rural areas. Thus, a claim for transferability is not possible.
 - Tailor-made mobility concepts should be developed that fit the mobility routines of people living in different structured regions in order to guarantee the economic viability of innovative mobility offers like e-carsharing.