

International Scientific Conference on Mobility and Transport
Urban Mobility – Shaping the Future Together
mobil.TUM 2018, 13-14 June 2018, Munich, Germany

Options and Perceptions of Mobility Solutions in the Karlsruhe Rural Area

Su-Min Choi, Claus Doll*

Fraunhofer Institute for Systems and Innovation Research, Breslauer Str. 48, 76139 Karlsruhe, Germany

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Peer-review under responsibility of the scientific committee of the mobil.TUM18.

Keywords: Rural areas; Mobility concepts; Demographic change; Citizen involvement

1. Introduction

Current developments such as the consistently increasing transportation of people and goods, demographic change and climate change, challenge municipalities to implement new mobility concepts. A trend of reurbanisation and a consequent decrease in public transportation in rural areas make it ever more challenging for citizens in remote areas to be mobile. Less public transport means more car travel, which threatens sustainability goals in transportation. The collaborative research project "Profilregion Mobilitätssysteme Karlsruhe" aims at tackling these issues by tight, interdisciplinary collaboration of regional players through different topics and projects around mobility systems. The project was jointly co-funded by the state of Baden-Württemberg, the Karlsruhe Institute for Technology (KIT) and the Fraunhofer-Society for Applied Research from January 2015 to December 2017.

This paper summarizes key results of the subproject "Lifelong Mobility in Rural Areas", led by the Fraunhofer Institute for Systems and Innovation Research ISI and supported by the TTK (TransportTechnologie-Consult Karlsruhe GmbH). It aims at exploring alternative, intelligent, integrated and sustainable mobility concepts for rural municipalities which struggle with the above-mentioned issues.

* Corresponding author. Tel.: +49 721 6809-463.
E-mail address: su-min.choi@isi.fraunhofer.de

The study took a closer look at two communities in the Karlsruhe rural area: Östringen and Rheinhausen-Oberhausen. These are characterized by particularly poor access to the public mobility system especially during off-peak hours. Core objective of the case studies was to explore the openness of local administrations and citizens towards new mobility solutions, to get a deeper insight into consensus and disagreements between these groups and to propose first solutions to improve the communities' mobility supply. Key aspects in this research were the specific mobility needs of different social groups and the economic, environmental and social feasibility of various travel alternatives.

2. Method

The study followed five methodological steps: review of mobility solutions, selection of communities, interviews with community administrations, focus groups with citizens and elaboration of conclusions. These steps will be presented in turn.

2.1. Choice of mobility concepts

Descriptions of twenty-one different already established mobility concepts from different countries were collected and evaluated by the TTK and Fraunhofer ISI to cover a wide range of use cases. Criteria for the evaluation represented three different interest groups: the municipality, the passengers and the public/environment. Each of the concepts received a ranking according to these criteria and it was defined, which target groups the concepts aimed at. In the end, three concepts were chosen, which had the most preferable combination of the evaluation criteria and target groups: A people's bus, bike freeways, and the fifty/fifty-taxi.

The people's bus is driven by voluntary drivers and mostly designed to be used by elderly people. The bike freeways are well-constructed, illuminated ways with winter road maintenance for bicycles only. The idea of the fifty/fifty-taxi is to offer taxi rides for only half the regular price to adolescents and young citizens while the other half is contributed by local companies.

2.2. Choice of communities

For the choice of municipalities, the TTK gathered information on quality criteria of public transportation, such as frequencies, medium of transportation or time of the last connection of the day in communities around Karlsruhe. The municipalities with weak public transportation were then contacted and the two municipalities Rheinhausen-Oberhausen and Östringen, both in the north of Karlsruhe, were recruited.

2.3. Interviews and focus groups

The representatives of the chosen municipalities were the mayor of Rheinhausen-Oberhausen and the environmental officer of Östringen. The target groups for the focus groups were citizens of the participating municipalities who faced additional challenges for their mobility behavior such as retirees, minors or commuters.

The new, potentially suitable concepts were presented to the citizens and communal representatives, who were then asked to evaluate them. The representatives were also asked to give their view on the present importance of the topic "mobility" in their municipality, as well as on possible problems of citizens concerning the local mobility situation. The citizens, too, gave their opinion on the mobility situation in their community and described and explained their own mobility behavior.

2.4. Elaboration of conclusions

After a review of the interview and focus group results, the project plan foresees a workshop with the eight communities initially approached, the Karlsruhe city council and the Karlsruhe transport association. At the time of writing this abstract, the final workshop is still pending, being scheduled for January 2018.

3. Findings

On the basis of available preliminary results of the study we can state the following:

3.1. Municipality representatives

In the interviews with the representatives, it became clear that the involvement with the topic mobility varies strongly between municipalities. However, both interviewees confirmed having lengthy negotiations with the local transportation authorities with limited success in aligning public transport supply to local needs. Both representatives also stated that financial and/or personal resources were a strong restriction on the possibility to organize new concepts. For instance the low cost concept of peoples' buses were rejected due to the resource needed for its organization and maintenance. A common fear is that not enough citizens will adopt new mobility concepts for them to be profitable.

3.2. Focus Groups

According to the citizen focus groups, the biggest mobility issues that the municipalities face are a lack of public transportation on weekends and in the evening, as well as bad connections as both communities are located on the border line between the areas served by the transport associations KVV (Karlsruher Verkehrsverbund) in Karlsruhe and RNV (Rhein-Neckar-Verkehr GmbH) in Mannheim. This leads to a large share of people who use their car as main means of transportation. However, people who cannot or do not want to use a car frequently, often suffer under the bad conditions of the public transportation system. Another problem is a low availability of bicycle paths. Almost all participants stated that they own a bike, but many do not use it frequently. To fill in time gaps of public transportation at night, both communities offer a dial-to-ride transit system which is accepted and used, but does not work well, according to the citizens, who felt that it often proved to be unreliable.

However, the participants were very open towards the three new mobility concepts presented and instantly started planning how they could be implemented. The bike freeway met with the most positive response, because most people could imagine using it personally. The people's bus was still strongly appreciated as a means for mobility-impaired, such as elderly people, but the participants also discussed it as a means to complement public transport. The third concept, the fifty/fifty-taxi, was also perceived as very useful to young people and safer than the existing dial-to-ride transit.

The citizens from the different municipalities had slightly different ideas of an ideal mobility concept but most people agreed that a better public transportation system would already help a lot.

4. Conclusion

Our study confirms a problematic mobility situation of the rural population and shows that new mobility concepts are desired and needed. However, from the point of view of the municipal administration, there can be strong barriers against new mobility systems, even when they are genuinely interested. Mobility is only one in a vast range of topics municipalities must cope with and is therefore at risk of being neglected. Nevertheless, mobility is one of the key factors determining peoples' choice of location and thus is of utmost relevance for communities' futures. To support communities in this important field, more guidance and assistance are expected to facilitate the implementation of new concepts. This assistance could be provided by a central coordination or financing center for regional mobility on federal or national level, by offering relevant information, a network for knowledge transfer and/or a contact for individual questions. However, along the process of implementing a new mobility system, target groups and their different needs regarding the different modes of transportation are so complex that it is crucial to involve all players of the local mobility system, such as the municipalities, transportation authorities, taxi and car sharing companies and ultimately, the local citizens.

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