Transportation Research Part D 36 (2015) 53–64

Contents lists available at ScienceDirect

Transportation Research Part D

journal homepage: www.elsevier.com/locate/trd

Integrated Transport System of the South-Moravian Region and its impact on rural development

Milada Šťastná *, Antonín Vaishar [1], Kateřina Stonawská [2]

Mendel University in Brno, Department of Applied and Landscape Ecology, Zemědělská 1, 61300 Brno, Czech Republic

ARTICLE INFO

Article history:
Available online 11 March 2015

Keywords:
Public transport
Rural areas
Demographic development
South-Moravian Region

ABSTRACT

It is generally presupposed that the infrastructure and availability of services of general interest (like schools, medical care, social services and also public transport) impact on present demographic development in rural areas, namely depopulation and aging. Such services affect the quality of life of local people and sometimes they perform a vital necessity. It is possible to say that the absence of the mentioned services should be compensated by an effective system of public transport. In other case, especially those people who are not able to use individual cars due to the age, health, legal conditions or financial situation are bequeathed on an assistance of the family or neighbors or they stay cut off and excluded. This paper is aimed at the verification of the presupposition in the case of the South-Moravian Region – NUTS 3 region occupying the south-eastern part of the Czech Republic, bordering with Austria and Slovakia. The research method lies in analysis of the frequency, travel time and fare of public transport system and its comparison with demographic development in rural areas, especially in the peripheral ones. The results are discussed in view of the system of central places in the region and present urbanization processes like suburbanization, counterurbanization and reurbanization.

Motivation and research questions

Services of general interest are hypothetically very important for keeping rural population – especially in peripheral areas. Social services like schools or medical care depend on geographical efficiency of their location. It means that they are situated on the places where sufficient number of "customers" occurs. From it follows that only larger rural settlements dispose with such services. With decreasing population number, services which fall below the limit level of customers are cancelled. In such a situation following questions appear: Is there sufficiently powerful system of a public transport which is able to carry the customers to the basic services as schools, hospitals, etc.? How the efficiency of such a transport system impacts on the demographic development in peripheral rural areas? Public transport is investigated especially because pupils, seniors, disabled people and members of lower social classes are often not able to use individual cars and they depend on the assistance of the family or neighbors. In an extreme case, such people could be isolated or even excluded from the society. Besides, following questions arise: Are there some other options that would allow the recent physical transport partly substitute with the electronic communication? Would it be realistic?

* Corresponding author. Tel.: +420 606 580 412; fax: +420 54513 2459.
E-mail addresses: stastna@mendelu.cz (M. Šťastná), antonin.vaishar@mendelu.cz (A. Vaishar), katerina.stonawska@mendelu.cz (K. Stonawská).
[1] Tel.: +420 545 132 461; fax: +420 54513 2459.
[2] Tel.: +420 545 132 481; fax: +420 54513 2459.

http://dx.doi.org/10.1016/j.trd.2015.02.012
1361-9209/

Current knowledge about the relationship between transport disadvantage and activity space size is limited to urban areas, and as a result, very little is known about this link in a rural context (Kamruzzaman and Hine, 2012). Rural transport is mostly perceived as a problem of accessibility (Nutley, 2001). It seems to be preliminary connected with the car (Gray et al. (2008). Especially in America the car manifests rural way of life, but also in the post-war Europe the car has displaced public transport from the countryside, especially in the West. Such a way brings problems like increasing pollutions from car operation, traffic jams and lately also increasing prices of fuel. That is why new ways of rural transportation are searched.

The frequency of public transport is impacted by more factors: level of motorization, subsidies of central and/or regional bodies, quality of the transportation, prices in comparison with using private vehicles, etc. (Fig. 1).

With the development of individual motorization, public transport has lost a big part of its importance. Many people use the car not only because of necessity but rather for their comfort, independency and representation. Number of passengers has substantially decreased and dense network of public transport ceased to be financially efficient. The frequency or even existence of connections decreased step by step. It led to further transition to individual vehicles which started to be necessary. The circle has been closed. On the other side, the role of public transport might increase with insufficient parking for cars in workplaces (Badland et al., 2010). Here is no doubt that the attention of local and regional bodies are paid to the transport to work places (Wright et al., 2009). In such sense the public transport creates work opportunities and self-fulfillment for people living in rural areas (Bocarejo and Oviedo, 2012). By such a way it helps in overcoming social inequities. It is very important but the employed people usually have also other possibilities how to get to their destinations. Children, teenagers, seniors, women with small children, handicapped persons also need to travel for education, services, medical care etc. and their possibilities to travel by individual vehicles is much more limited (Nutley and Thomas, 1992). Especially these people are threatened by exclusion. What Jones et al. (2013) show in London is more truth in the countryside. Fischer (2009) notes the level of motorization (especially old inhabitants) among main factors for the differentiation of the countryside. So, not only transport to work but also transport in less busy hours is important.

Generally, public transport depends on a wide spectrum of characteristics. Paulley et al. (2006) investigated the fare elasticity, the quality of service and the car ownership. But the same authors mentioned also other factors like impacts of reliability, vehicle characteristics, the waiting environment, interchange, personal security and marketing and awareness campaigns. Just these factors can be at least partly solved by Integrated Transport Systems. Of course, rural public transport is economically less gainful. Tomson and Roos (2009) came to the conclusion that public bus transport in rural periphery has to be subsidized. Regional authorities in some countries use to fill the gaps with various systems of "intelligent transport systems" allowing flexible transport services (e.g. Velaga et al., 2012). Some authors call for wider area network planning, greater co-operation between service providers (e.g. in the form of partnerships) and improved understanding of passenger requirements (Brake and Nelson, 2007). Schiefelbusch (2012) introduces also the concept of travel experience as the indicator of general quality of the service.

Original idea to establish an Integrated Transport System came from Germany, Switzerland and Austria. The first integrated system of public transport (Hamburger Verkehrsverband) has been established in Hamburg in 1965, whereas the innovative fare system has been introduced in Basel in 1984 (Schley, 2001). The experience shows that introducing such systems gave returned a part of travellers from cars to public transport vehicles (Puchler and Kurth, 1995).

This study is focusing on already established system which operates in the southern Moravia. Public transport has been mostly investigated as urban or suburban one – i.e. as a means of concentric connection the metropolis with its hinterlands. Schwanen et al. (2001) argue that de-concentration of urban land-use leads to more intensive use of individual cars. Public transport in worse accessible sparsely inhabited peripheral rural areas tends to be less analyzed. Last references in international literature are dated mostly in 1970s. It is apparently due to the economic ineffectiveness as there is none or very limited transport and it is hardly anything to analyze. Our methodological approach is based on an analysis how the public transport impacts on rural periphery, especially in marginal settlements with depopulation tendencies. As the analysis of references shows, the problem of public transport accessibility in peripheral rural areas is widely discussed mainly within the Czech scientific literature. In the Czech Republic, commuting for work is very usual since the first half of the last century as Kubeš and Kraft (2011), Květoň et al. (2012), Marada and Hudeček (2006), Ouředníček et al. (2011) and others. Systems of public transport had been very well developed and kept (in terms of quantity and frequency of connections, and the fare – not so much in the quality) during the socialist period there. The question is whether the relative favorable situation has survived. Taczanowski (2012) compared Czech and Polish railways and stated that the decrease of the Polish rail transport was much more significant comparing to Czech one. Moreover, this decrease was stopped in the Czech Republic in 2005 and the rail transport combined with busses plays a relatively important role in the national public transport.

Clark and Unwin (1981) found that some substitution of journeys to information and advice agencies is possible, but the increased penetration and use of IT media is likely to raise the level of visits for social purposes. An overall increase in the demand for rural travel seems likely. Neither Solomon (1984) is optimistic concerning this substitution. Of course, in the time when the mentioned paper was written, telephone was the main telecommunication source in the countryside. Later Grimes (2000) came to the conclusion that the role of teleworking for remote areas has been over-evaluated. He sees the dissemination of IT technologies as a preliminary suburban phenomenon. Only a small number of high-skilled professionals are able to use teleworking on the periphery. He expresses two hypotheses about the reason: later coverage of the peripheral areas by the IT technology and lower educational level there. On the other side, Vitola and Baltina (2013) are of the opinion for Latvia, that teleworking may serve as an instrument for regional development by attracting people to rural areas or at least keeping people from moving to metropolitan areas. Finally, Helminen and Ristimäki (2007) found that teleworking reduced