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Moving from monomodality to multimodality? Changes in mode choice of new residents

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ABSTRACT

This paper analyses the interdependences between modal variability as part of everyday mobility and residential relocations. Accordingly, the main research question is to what extent the combination of travel modes changes after moving to another city. In discussing this, the paper is based on two conceptual assumptions. First, residential relocations are understood as biographical transitions within a mobility biography. Second, in recent years there has been a trend towards multimodal transport systems, especially in big cities, comprising both the supply and demand of urban transport. We believe that this tendency towards multimodality varies by the overall mobility culture of a particular city, which is expressed, for example, by its car dependence or cycling-friendliness. Combining these findings we believe that people who move between cities representing different mobility cultures are likely to change their use and combination of travel modes. Empirically, this assumption is scrutinized by surveying people who recently moved between the German cities of Bremen, Hamburg and the Ruhr area and showed a monomodal mode choice before the relocation (N = 449). One central finding of this study is that people who moved to a public transport or cycling-friendly city are more likely to become multimodal than the ones who moved to auto-oriented cities.

1. Introduction

Multimodality has recently become a buzzword in transport planning and mobility research (Nobis, 2007). Decision-makers and experts are increasingly promoting the situational combination of different transport modes as an important key to ensuring more sustainable urban mobility in the future (Kent, 2014). These initiatives represent the hope that the strengths of the so-called green modes and newly emerging mobility services such as car- and bikesharing can be linked to provide an attractive alternative to the private car, which may then contribute to a reduction in car ownership and usage. These assumptions are supported by initial indications of a more multimodal organization of urban transport in many western cities. New mobility services are well established in many metropolitan regions (Shaheen and Cohen, 2007; Shaheen et al., 2010) and are increasingly integrated in existing public transport systems, e.g. by multimodal booking and information options.

Furthermore, a decreasing car orientation and increasing multimodal travel behaviour[1] has been identified in urban areas in several western countries including Germany, prominently discussed for young adults (Buehler and Hamre, 2015; Kuhnimhof

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[1] We consider mode choice as an essential component of everyday travel behaviour. Thus, for the remainder of this paper we use the terms "(everyday) mode choice", "(everyday) travel behaviour" and "everyday mobility" synonymously, even if the approach presented here is empirically based only on mode choice variables. This has been decided in favour of a varied and reader-friendly wording.

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et al., 2012; McDonald, 2015) but also evident for families (McLaren, 2016) and even whole nations (Buehler and Hamre, 2015). The reasons for this trend are still the subject of great debate. One line of reasoning refers to more precarious family and employment contexts and the postponement of life events (Müggenburg et al., 2015) such as family formation and the first permanent job making car ownership less affordable and less necessary (McDonald, 2015). Moreover the increasing digitalization of urban mobility facilitates new travel behaviour patterns, including the more flexible and spontaneous combination of different modes of transport.

This paper focuses on residential relocation, since life-course related research suggests that residential relocations can be considered as "window of opportunity" (Bamberg, 2006) for behavioural change. Thus, the described trends towards multimodality might become especially apparent among people who recently moved house. Indeed, it has been shown that moving house influences everyday travel behaviour in several ways. Mode choice is especially prone to change, either in response to new spatial, infrastructural or socioeconomic circumstances or based on a more adequate realization of already existing residential and travel preferences (Cao et al., 2007; Scheiner and Holz-Rau, 2013).

Additionally, the approach presented here refers to city-wide mobility attributes by drawing on the holistic concept of urban mobility cultures (Götz and Deffner, 2009; Klinger et al., 2013) reflected by the perception of new residents. This is considered as beneficial since this approach complements earlier work showing that moving between cities of different mobility cultures leads to clear changes in the use of specific travel modes (Klinger and Lanzendorf, 2016).

The main research aim of this contribution is to investigate multimodality in the context of long-distance moves between cities that represent different mobility cultures. Thus, we do not look at each mode of transport separately but analyse how the change of urban mobility cultures affects the variability of mode choice. More specifically, we ask if the dominance of a certain mode in a city in average makes multimodal travel behaviour more likely. This is done by applying bivariate analyses to a sample of people who migrated between the German cities of Bremen, Hamburg and the Ruhr area. These case study cities are representing cycling cities, transit metropolises and car-oriented cities (Klinger and Lanzendorf, 2016). Second, we calculate binary logistic regression models to assess the attributes which contribute to a shift towards multimodality after a residential move. The models are controlled by sociodemographic and accessibility variables.

The remainder of this paper is structured as follows. Section 2 presents the conceptual background of the paper drawing on literature dealing with residential relocations, multimodality and mobility cultures. After the data and methods are introduced in Section 3, the fourth section displays the results of the bivariate and multivariate analyses of multimodal travel behaviour in response to a residential move. The paper ends with a conclusion, an outlook to further research and implications for planning practice.

2. Conceptual framework

2.1. Residential relocations and everyday mobility – moving house as a key event during the lifecourse

Following the concept of mobility biographies (Lanzendorf, 2003; Scheiner, 2007, 2017) everyday travel behaviour is strongly characterized by routines and automaticity. Psychological travel behaviour research suggests that once a regular activity is established people use mental scripts to travel frequently by using the same mode and route, e.g. to work or for shopping. Usually, these scripts are triggered by situational cues such as stepping out of the front door. These habitualized behaviour patterns work as long as the spatial and social context remains stable. Thus, travel behaviour research increasingly focuses on events associated with a context change that evokes habit discontinuity (Verplanken et al., 2008) and possible behaviour change. Recent categorization approaches distinguish between life events, exogenous interventions and long-term mobility decisions (Müggenburg et al., 2015). Following this understanding, residential relocations are considered as long-term mobility decisions as they set up the framework for everyday travel after the move. Thus, they have been conceptualized as "windows of opportunity" (Bamberg, 2006) for behaviour change, especially if combined with an exogenous intervention such as a free public transport ticket for new residents. However, other researchers note that even in the change-sensitive period after a residential move, state dependence plays an important role when analysing changes in commuting distances (Prillwitz et al., 2007) and car ownership (Zhang et al., 2014) at the new place of residence.

This tension between behaviour change and the persistence of existing orientations is also reflected by work examining the reasons for changes in everyday mobility patterns in the course of residential relocation. Some work has found evidence that these shifts in travel behaviour can be regarded as adaptations to different built environment parameters, e.g. an increase in cycling after moving to a more central and denser neighbourhood. However, other authors show that residential choice is influenced by pre-existing preferences towards urban form and mobility attributes, a phenomenon which has become popular as residential self-selection (van Wee, 2009). This view suggests that persistent preferences can be interpreted as an expression of state dependence, since behaviour changes occur only in cases when the preferences could not be fully realized before or after the move, e.g. due to constrained housing markets (Day and Cervero, 2010; Wang and Lin, 2014). The impact of both built environment and preferences has been reported by comprehensive review studies (Cao et al., 2009; Ewing and Cervero, 2010). However, most of the reviewed studies focus on the regional level and, correspondingly, examine regional moves as well as built environment and attitude variables referring to neighbourhood traits. We want to add to this strand of research by complementing the few studies on effects of long-distance moving on travel behaviour (Burbidge, 2012; Klinger and Lanzendorf, 2016; Milakis et al., 2015). It is assumed that long-distance movers are affected not only by neighbourhood-related qualities but also by city-wide transport and mobility attributes such as

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