



ELSEVIER

Contents lists available at ScienceDirect

## Transportation Research Part A

journal homepage: [www.elsevier.com/locate/tra](http://www.elsevier.com/locate/tra)

## Cross-border residential mobility, quality of life and modal shift: A Luxembourg case study

Philippe Gerber<sup>a,\*</sup>, Tai-Yu Ma<sup>a</sup>, Olivier Klein<sup>a</sup>, Julien Schiebel<sup>a</sup>, Samuel Carpentier-Postel<sup>b</sup>

<sup>a</sup> Luxembourg Institute of Socio-Economic Research, 11 Porte des Sciences, Campus Belval, L-4364 Esch-sur-Alzette, Luxembourg

<sup>b</sup> Aix Marseille Univ, Univ Nice Sophia Antipolis, Avignon Université, CNRS, ESPACE, Nice, France

### ARTICLE INFO

#### Article history:

Available online xxxx

#### Keywords:

Cross-border areas  
Relocation  
Satisfaction  
Quality of life  
Modal share  
Life-oriented approach  
Mobility biography

### ABSTRACT

It is argued in the life-oriented approach that travel behavior affects life choice and vice versa with resulting impacts on quality of life (QOL). By deepening the analysis of interdependencies between daily mobility and life event (relocation) and their relationships with QOL, this article focuses on two challenges. It aims at analyzing how these life events first, encourage travel behavior changes, especially mode choice, and second, improve or decrease people's QOL. By radically changing living context and built environment, relocation also affects routine and satisfaction. These relationships are investigated in the Luxembourg cross-border area, where great differences related to real estate price encourage residential moves from Luxembourg to neighboring countries, while the general decline in public transport efficiency at the border may support car use. We use both mixed and ordered logit models. The first one investigates whether individuals' life-stage changes and residential relocation are significant regarding their mode choice decision. The second estimates individuals' global QOL and the roles of complementary factors (changing housing conditions, built environment, subjective satisfaction, travel time and socio-economic characteristics). The analysis reveals several results. The effect of the different factors is consistent with travel mode choice literature despite the specific cross-border context. Nevertheless, relocation, mainly oriented towards a cross-border suburbanization, significantly increases the probability of using the car for daily activities. These trips and especially the journeys to work are the least satisfactory aspects of daily life after relocation but does not affect the general level of QOL. At the opposite, the better housing conditions after relocation have positive effect on the QOL. From a policy perspective, this life-oriented approach in cross-border context confirms the influence of life events on QOL while it demonstrates a higher importance of housing conditions than spatial constraints on relocation and satisfaction.

© 2017 Elsevier Ltd. All rights reserved.

## 1. Introduction

The evolving patterns of supply and demand in the transport sector are of growing interest to urban and transport planners given that the related greenhouse gas emissions – and thus climate change – can have significant economic, social and environmental impacts (Sims et al., 2014). A number of authors have confirmed that the process of suburbanization

\* Corresponding author.

E-mail addresses: [philippe.gerber@liser.lu](mailto:philippe.gerber@liser.lu) (P. Gerber), [tai-yu.ma@liser.lu](mailto:tai-yu.ma@liser.lu) (T.-Y. Ma), [olivier.klein@liser.lu](mailto:olivier.klein@liser.lu) (O. Klein), [julien.schiebel@liser.lu](mailto:julien.schiebel@liser.lu) (J. Schiebel), [samuel.carpentier@univ-amu.fr](mailto:samuel.carpentier@univ-amu.fr) (S. Carpentier-Postel).

<http://dx.doi.org/10.1016/j.tra.2017.06.015>

0965-8564/© 2017 Elsevier Ltd. All rights reserved.

increases car use (e.g., [De Vos, 2015](#)), supposing that travel behaviors are linked to the built environment. This process of suburbanization partly reflects the residential choices made by households during their life cycles, when a demographic event such as a wedding or a divorce takes place, or when children leave the parental home, or following childbirth. These residential choices take place over the course of time, and follow attempts to improve individuals' life satisfaction within financial constraints ([Scheiner, 2014](#); [Zhang, 2014](#)).

Taking into consideration possible changes in travel behavior before and after relocation, we offer a new contribution within the frame of the life-oriented approach ([Zhang, 2016](#)) in the specific context of a cross-border European space, based on Luxembourg and its neighboring countries. We attempt to link individuals' quality of life with (1) potential accessibility constraints, (2) travel behavior (modal shifts in commuting) and (3) cross-border built environments (urban, suburban and rural). More precisely, we aim to understand the trade-off between quality of life (QOL) and daily mobility changes after a residential move, while controlling urban constraints – which vary either side of the border – and life events. The result is expected to provide new insights for the interdependence of changes in mobility behavior, life events and cross-border residential relocation from a life-oriented approach perspective.

The Grand Duchy of Luxembourg undoubtedly merits some special considerations, amongst which its main characteristic is the large cross-border labor market, the high travel distance and congestion. For more than a decade, nearly half of the Luxembourg workforce has commuted in from the neighboring French, German and Belgian municipalities every day, with a modal share of 86% for the private car in 2011 ([Schmitz et al., 2012](#)). Car dependency also remains high for workers living in Luxembourg, with more than 75% of them commuting by car (according to the 2011 census).

Travel behavior of this specific cross-border working population has been studied in the past (e.g., [Gerber, 2005](#); [Schiebel et al., 2015](#)). Particular attention was paid to workers who were formerly Luxembourg residents and who moved to one of the neighboring countries, thus becoming cross-border workers ([Carpentier, 2010, 2012](#); [Carpentier et al., 2013](#); [Gerber and Carpentier, 2013](#)). For many of them, moving across the border was a means of affording a larger home (than in Luxembourg) and often of becoming a homeowner. For these cross-border workers, car use remains largely prevalent with a significant higher travel time after their moves. Beyond these figures, the research question may be raised in terms of what is the role of cross-border relocation on daily mobility routines and quality of life, aside from economic, socio-demographic, journey and built environment factors.

Specifically, our intention is to assess the impacts relating to changes in spatial constraints (e.g., changes in the availability of different means of transport, hereafter transport supply) before and after a particular life event, i.e., cross-border relocation, related in many cases to other lifecycle events such as marriage or childbirth. Based on our literature review in mode choice behavior, mobility biographies, and the life-oriented approach, we argue the following general hypothesis. Change in travel mode choice after residential relocation depends on differentials in accessibility and transport supply and also on factors related to socio-demographic characteristics and life-event changes. Changes in commuting travel time and cost may in turn impact negatively individuals' QOL, together with the effect of associated changes in life events and spatial constraints from one country to another, as discussed by the life-oriented approach.

The rest of the paper is organized as follows. Section 2 presents the literature review, focusing on the interdependency of residential and daily mobility, mobility biographies and the life-oriented approach. Section 3 gives an overview about the context of Luxembourg and the data. To address our research questions, Section 4 describes the modeling approach by applying the mixed logit model for mode choice modeling, allowing to take into account before- and after- relocation choice occasions. The mode choice model result provides measures in terms of changes of individual's accessibility perception. In Section 5, we model individuals' life satisfaction by using an ordered logit model. Finally, we draw our conclusion and discuss the results in light of hypotheses, findings and other previous studies.

## 2. Literature review and research questions

Decision processes related to mobility are dynamic and depend on the time scale of the issues a person faces. A long-term decision process will occur in respect of residential relocation due to a life cycle event, job changes or marriage for example, while a short-term decision process takes place for commuting, shopping, or any other daily activity ([Enaux, 2009](#)). We pay special attention on these different temporalities of mobility (Section 2.1), and link them to the concept of mobility biography embedded in the life-oriented approach (Section 2.2).

### 2.1. Residential and daily mobility: links and routines

From a macro-based perspective, residential location choice results in a spatial equilibrium between housing price and commuting cost ([Alonso, 1964](#)). These objective monetary characteristics linked to budgetary constraints promote the process of suburbanization, which is generally due to much higher living cost in central urban area, causing residential relocation to suburbs. Consequentially, commuters increase their travel distance between home and workplace and have a higher car dependency ([Newman and Kenworthy, 1989](#)). Residential choices can be also examined from a micro-based (individual) perspective in relation to socio-economic and psychological aspects, which has been studied in past decades ([Rossi, 1955](#)); these include preferences for individual housing ([Vogt and Marans, 2004](#)), the effects of lifestyle, lifecycle, and the built environment on the choice of residential location (e.g., architectural design, neighborhood, accessibility) ([Bonvalet and Fribourg,](#)

Download English Version:

<https://daneshyari.com/en/article/4928879>

Download Persian Version:

<https://daneshyari.com/article/4928879>

[Daneshyari.com](https://daneshyari.com)