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Workplace relocation and mobility changes in a transnational metropolitan area: The case of the University of Luxembourg

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Abstract

The aim of this paper is to study the utility variation related to the commuting mobility of University staff members due to their future workplace relocation. During the year 2012, a travel survey was completed by a total of 397 staff members, representing 36.4% of the university employees, who filled in a questionnaire which revealed complex decision making patterns due to the special traveling scenario involving four countries at once. A Multinomial Logit model has been used to anticipate the impact of university relocation from the capital city to a developing area in the south of the country which will happen between 2015 and 2018 and that will affect most of the employees. The effects of several Travel Demand Management measures are discussed based on the analysis of alternative scenarios.

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Keywords:

1. Introduction

Due to population increase and the multiplication of activities undertaken by people, mobility rapidly has become a crucial topic. Most work-related or leisure activities require to travel between locations. Travel is therefore a derived activity, thus, the transport mode chosen has, to some extent, to minimize the time needed to reach the selected activity location. In the second half of the 20th century, political choices were taken to improve the infrastructure system to

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travel by car. However, over-reliance on cars for individual travel carries important social and environmental costs, including emissions of pollutants and greenhouse gases, construction and maintenance of dense road networks, provision of parking space, time loss in traffic congestion, negative externalities on health, etc. There is wide agreement about the negative effects of car-dependence for regions and cities (e.g. Kenworthy (2006), Dupuy (1999)) and the necessity for developing a more sustainable system (Costanza and Pattern (1995)).

The main aim of this research is to better understand which factors affect the utility variation related to the commuting mobility when major changes influence the commuting patterns of a large community, and how this understanding can help us at developing effective measures to incentivize sustainable mobility behavior. To pursue this goal, we focus in this paper on analyzing the behavior of the staff members of the University of Luxembourg due to their work place relocation. The objective is also to provide evidence on the possible impacts of some Travel Demand Management (TDM) measures. Conclusion of this study might be taken into account to discuss the implementation of sustainable transport measures.

As destination of the commuting trips any public and private organizations should be concerned with sustainable transport (Van Malderen et al. (2009), Vanoutrive et al. (2010)). In this respect, universities, it can be argued, have a pivotal role to play in fostering social and technological innovation for sustainable development, through research, education and civic engagement. Within this important role, special effort should be made to meet, if not exceed, the ambitious modal split targets set by Luxembourg public policy.

2. Context

2.1. *The commuting mobility in Luxembourg*

Within the mobility system, commuting to work is one of the most important aspects. Commuting accounts for about 25% of households' travel (OECD (2011)).

Every day the Grand-Duchy of Luxembourg has to cope with a demand of over 160 000 cross-border workers (STATEC (2014)) representing 44 % of the total work force in the country. Among these cross-border workers, 89 % use only the car for their home-to-work trips while this figure reaches 76 % for the residents (Carpentier and Gerber (2009)). The share of public transport users is rather low compared to the high quality of the infrastructure (Klein (2010)) but this has to be balanced by, among other things, the important highway density and the positive car image in Luxembourg (Epstein (2010)).

This huge difference in terms of travel mode choice between cross-border and resident users for commuting is mainly due to travel distances. Residents have a median home-to-work distance of 12km when this figure reaches 40km for cross-border workers (Carpentier and Gerber (2009)). Such long distances are not always compatible with public transport use and nearly never with active transportation modes. In addition, there is a lack in the integration of public transport systems between countries, both in terms of service scheduling and coverage, and in terms of pricing. Extra costs are in fact included in, for instance, train fares when crossing the border, making a trip by train relatively expensive.

However, ambitious modal split targets have been set by the government (the national 2020 target is 25% of total trips by low-impact modes and 25% of motorized trip by public transport). Stronger transport objectives in term of modal split have been set for the city of Esch/Belval, a developing activity pole location in the south of the country at about 25km from the capital, where the University will relocate most of its infrastructures. The aim is to obtain a share of 40% of the total trips done with the public transport system (and keep the same objective for low impact modes).

This is clearly unachievable if measures are not taken that consider the difference between national and transnational mobility requirements and constraints.

In Luxembourg, the public transport coverage reaches 95% of the total locality and 75% of the total jobs in the country (Klein (2010)). The good coverage and the frequencies are compatible with home-to-work or home-to-school trips. The description of the public transport system may seem idyllic but, in the same time, road infrastructure in Luxembourg is one of the most developed in Europe. The country has the third denser motorway network (km of motorway divided by the total surface of the country) and the first ranked for the number of motorway km per inhabitants (Epstein (2010)).

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