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Transportation Research Part A

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

Are relocatees different from others? Relocatee's travel mode choice and travel equity analysis in large-scale residential areas on the periphery of megacity Shanghai, China

Jinping Guan^{a,*}, Chengzhong Xu^b^a AgeLab, Massachusetts Institute of Technology, 1 Main Street, Cambridge, MA 02142, United States^b Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

ARTICLE INFO

Keywords:

Relocatee
Travel mode choice
Travel equity
Multinomial logit models for panel data
Consumer surplus
Large-scale residential areas on the megacity periphery

ABSTRACT

Residential displacement by urban regeneration in western economies and passive relocation in eastern countries have attracted the attention of researchers. Over the past decades, Chinese megacities have undergone massive passive relocation. They are reforming their old downtown areas and demolishing substandard housing. The government relocates residents to affordable city-peripheral large-scale residential areas. These residents are called “relocatees”. So far, few studies have explored relocatee and non-relocatee on travel-mode-choice preferences and travel equity in these types of areas with adequate resident samples. To fill this gap, this study conducts a survey in five peripheral large-scale residential areas in Shanghai, uses statistical analysis of individual demographic characteristics and transportation-related decisions of relocatees and non-relocatees, and estimates travel mode choice models for three different groups (relocatee, non-relocatee, and overall samples). Consumer surplus difference is calculated as a measurement of travel equity. Results show that compared to non-relocatees, relocatees are older, poorer, and have a higher mode share of bus and lower mode share of car. Non-relocatees' value of time (¥25.23 per hour) is greater than relocatees' (¥22.62 per hour). As for travel mode preferences, for relocatees, the males tend to choose motorcycle, moped or e-bike, then bicycle. For non-relocatees, the males tend to choose motorcycle and then car. Relocatee has a ¥6.88 per person lower travel quality than non-relocatee. Megacity-periphery development and relocation process have a more negative effect on relocatee's travel than on other population, from a travel equity perspective. This study contributes to the literatures on travel behavior and equity in megacity peripheral areas in developing countries. The findings point to important implications for the peripheral area's policy.

1. Introduction

Over the past decades, Chinese cities have undergone enormous spatial restructuring because of economic growth and urban development. The nation is in the process of rapid urbanization (people are moving into the cities) while some megacities have come to suburbanization.

In the suburbanization process of Chinese megacities, residents are moving to the city periphery. Some of them have relocated willingly to the modernized housing or for lifestyle reasons (Day and Cervero, 2010). Some migrants have chosen to live on the

* Corresponding author.

E-mail address: jinping@mit.edu (J. Guan).

<https://doi.org/10.1016/j.tra.2018.03.011>

Received 26 January 2018; Accepted 7 March 2018

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periphery because of unacceptably high housing prices or the rising downtown rents. Others have been relocated to the city periphery because of the demolition of the central-city substandard housing, which plays an important role in the reform of the old downtown areas and improvement of living condition in the city center.

These residents were relocated by the city government to the affordable large-scale residential areas on the megacity's periphery. They are called "relocatees" in this paper. Over the past decade, many large-scale residential projects were developed on the periphery. Such city peripheral areas' development is a major part of the suburbanization in Chinese megacities. In Beijing, over 30 affordable peripheral housing projects were developed in the 2000s (Liang, 2002), including the famous sleepers' town TianTongYuan and HuiLongGuan. 93,000 households were relocated from the central-city substandard housing to these areas in 2001. And the plan was to relocate 340,000 households. In Shanghai, approximately 30 affordable large-scale residential areas are developed or planned on the city periphery of Shanghai (Tongji University, 2011). In Guangzhou, the city government is planning to reconstruct the old city areas, in which the demolition and relocation will cost 100 billion China Yuan. Approximately 600,000 residents will be relocated (Southern Daily, 2010).

Unlike residential displacement by urban regeneration in western economies, what is happening in the eastern countries like China is more of a passive relocation. The resident passively migrant to city-peripheral designated large-scale affordable-housing areas.

Many similar massive passive relocations are happening in developing countries' megacities. It creates a new group of population who did not choose to migrant from the city center to the peripheral area but have to settle down eventually on the city periphery. Addressing travel inequities across all areas of society is critical for thoughtful public policy. Current conditions of inequitable travel have resulted from transportation planning processes which place unfair weight on the preferences of the more advantaged members of society. As a disadvantaged group of the society, relocatees attracts researchers' attention.

From the perspective of sociology, urban studies, and travel equity, we wonder are these relocatees different from the others who move to the city periphery willingly? Do relocatees have special characteristics or different travel preferences that we should pay attention to? Should the government treat the relocatees differently and have special policies just for these people? And after the relocation, what is the travel equity condition of these relocatees compared to the other willing residents?

To provide a good knowledge of these in the peripheral areas in developing countries' megacities during the suburbanization process, this study was formed. Its objective is to understand the relocatees' characteristics, travel quality and equity, and travel-mode-choice preference's difference from the non-relocatees in the area. It supports urban transport planning and decision-making for this type of area. There are two major sections of this paper. (1) The first one introduces the characteristics' difference of relocatees and non-relocatees, focusing on individual demographic characteristics and transportation-related decisions; (2) The second one focuses on the travel-mode-choice preference's difference of relocatees and non-relocatees and their travel quality and equity.

2. Literature review

In this paper, relocatees are defined as the residents who have been relocated by the city government from high-accessibility central city to low-accessibility affordable large-scale residential areas on the megacity's periphery. This relocation happens because of the demolition of central-city substandard housings. These relocatees are a result of a unique type of 'passive' residential relocation (Wu, 2004).

Residential displacement by urban regeneration in western economies and passive relocation in the eastern countries are contentious issues (Wu, 2004). In the Western world, one famous case is the large-scale urban renewal projects in the 1960s in the United States. And it has been criticized because of the displacement imposing hardship for poor families (Gans, 1965; Wu, 2004; etc.). There has been an established literature on the residential displacement and residential mobility in the western cities. So in the section we do not dive deep into the residential displacement in western cities (for more information, please see Clark and Onaka, 1983; Cadwallader, 1992; Wu, 2004). We pay more attention to the passive relocation in eastern and developing countries.

Many Asian cities' passive relocation happened in the past decades. There are multiple studies exploring the relocatees' characteristics and welfare. It is well accepted that low-income households are affected much more by the relocation than the rest of population. Poor households' relocation reduces their welfare (Kapoor et al., 2004). In Delhi, India, forced eviction and relocation of low-income households to the periphery of the city caused people to lose livelihood opportunities (Anand & Tiwari, 2006). The same condition happened in China, compared with higher-income households, lower-income groups are disproportionately affected in relation to job-accessibility losses, disposable income and household worker composition (Day, 2009; Day and Cervero, 2010). A later study in Istanbul, Turkey, discussed that the majority of the inhabitants in the neighborhoods which undergo urban transformation have to sell their residences for extremely low prices, cannot afford to return back to the areas where they used to live; and therefore, are forced to relocate to the poorer neighborhoods on the peripheries of the city. Low-income residents in the area were excluded and isolated from the city center (Baba, 2015).

Besides income, relocatees' other demographic characteristics were studied too. Anand & Tiwari found women experienced greater transport deprivations as compared with men in the forced eviction and relocation of low-income households to the periphery of the city in Delhi, India (Anand & Tiwari, 2006). Wu found relocatees were the ones that had lower education levels in Shanghai, China (Wu, 2004). Later studies in the same city agreed to Wu's finding and added that the relocatees were on average older, had slightly lower earnings (Li and Song, 2009), and more of them owned their own houses (Shen and Wu, 2013). They were generally living in a smaller space and having fewer workers in the household than other groups of residents (Pan et al., 2010).

Other than demographic and socioeconomic characteristics of relocatees, many studies focus on travel behavior. This is because

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