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Title	Do Travel Attitudes Change after Residential Relocation? A Longitudinal Study of Built Environment, Travel attitudes and Travel Behavior
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Abstract	<p>The influence of built environment on activity-travel behavior has received much research attention in the past decades. Empirical evidences show that the key dimensions of built environments such as design, diversity, and distance to transit are found to be important factors explaining vehicle miles traveled, trip generation, trip length, the use of non-motorized transport mode, etc. (Schwanen and Mokhtarian, 2005; Ewing and Cervero, 2010). The usage of non-motorized transport modes is found to be highly associated with mixed land use and walkable environments in North American cities (Cervero and Duncan, 2003; Cao et al., 2006). However, there are also empirical evidences indicating that the observed association between built environment and travel behavior may be attributable to residents' travel-related attitudes (Kitamura et al., 1997; Mokhtarian and Bagley, 2002). This so-called 'residential self-selection' issue, which denotes the propensity of people choosing residential location based on travel-related attitudes, has recently received much research attention. Some studies suggest that residential self-selection is a statistically significant factor confounding the relationship between built environment and travel behavior (e.g., Bohte et al., 2009). Others contend that built environment variables remain significant even after controlling the effect of residential self-selection and the influence of built environment on travel behavior seems to be larger than that of residential self-selection (e.g., Cao et al, 2009). Notwithstanding the many studies that have been conducted, there is no general consensus over the role of residential self-selection in the association between built environment and travel behavior. This inconclusiveness may partly be due to the underlying assumption of most residential self-selection studies: travel-related attitudes determine built environments. However, as suggested by Schwanen and Mokhtarian (2007), Chatman (2009), and Næss (2014), built environments may as well impact on travel attitude particularly when individuals have lived in a built environment for a long time. If this argument is supported, the existing studies of residential self-selection may have overestimated the influence of residential self-selection and underestimated the influence of built environment on travel behavior. It is thus important to analyze if and how built environments impacts on travel attitudes and what are the implications of these impacts for travel behavior. To the knowledge of the authors, there is hardly any study that has explicitly addressed this issue. To fill in this gap, this study examines the possible impacts of built environments on travel-related attitudes. We conduct a longitudinal study to explore whether and to what extent people change their travel attitudes after they relocate to a new built environment and analyze how changes in travel attitudes, together with changes in built environments lead to changes in activity-travel behavior. The data used in this study come from a two-wave household activity-travel diary survey conducted in Beijing. The first wave data were collected from November 2011 to June 2012 and the second wave from April 2013 to August 2013. The respondents of the survey targeted on households who were planning to move within 6 months in 2011. They were sampled using a multi-stage stratified sampling method. Specially, we distinguished three types of households who planned to move: renters, new property buyers and second-hand home buyers. We restrict the sample size of</p>

the three types of respondents in each district of Beijing roughly proportional to the transaction volumes of the three types of housing in each district. The samples were randomly approached in Real Estate Exchange Centers, large furniture Masses and Home Depots specialized in decoration services and by cold calls & street interviews. A token of 50-100 RMB (or about 8-16 US Dollars) was given to each household head after all household members successfully completed the questionnaire survey. In total 467 households were recruited and successfully completed the interviews in the first wave. With an attrition rate of 51%, we were able to successfully collect data from 229 households in the second wave.

Both descriptive analysis and econometric modeling analysis are performed to establish linkages between changes in built environments, travel attitudes and activity-travel behaviors. The results indicate that people change their travel attitudes and travel behaviors after they relocate to a new built environment. We argue that to fully understand the relationships between built environments, travel attitudes and travel behavior, one should take both the effects of residential self-selection and the effects that people change their travel attitudes after they relocate to new environment. This study is among the very few longitudinal studies that address the relationships between built environments, travel attitudes and travel behavior. More importantly, it provides empirical evidences on the impacts of built environments on travel attitudes and thus enriches the literature on residential self-selection in travel behavior studies.

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