

DOCTORAL THESIS

The links among the built environment, travel attitudes, and travel behavior: a household-based perspective

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ABSTRACT

A clear understanding on the impact of the built environment on travel behavior is crucial for land use and transport planning. However, previous land use-transport studies are largely constrained to a single individual in the household and a single long-term choice (i.e. residential location). The individual was commonly used as the unit of analysis, while both long-term location/mobility choices (residential location, work location and car ownership) and daily travel behaviors could be household level decisions. Besides, previous land use-transport research usually assumed the residential location as a decision that independent with the work location, while these two location choices may be associated with each other. Ignoring intra-household interactions in travel decisions and the interdependencies between different long-term choices would lead to an incomplete understanding on the land use-transport relationship.

This thesis fills these research gaps by providing a new household perspective to rethink and reexamine the relationships among the built environment, travel attitudes, and travel behavior. It extends the “individual-based” analytical framework of land use-transport research to a broader “household-based” one. Specifically, this proposed analytical framework takes the household as the basic unit of analysis, and considers interactions among different household members as well as different long-term choices. This research challenges the underlying assumptions of existing land use-transport research, and has the potential to guide the research design and model specification of future travel behavior studies.

Three empirical studies were conducted to examine the proposed household-based research framework. Data was derived from a household activity-travel diary survey in 2016 in Beijing, China. The results of empirical studies indicate that:

- Self-selection exists in different long-term choices, including residential location, work location, commuting distance and car ownership;

- Travel attitudes of different household members play different roles in self-selections regarding these long-term choices;
- The partner's travel attitudes affect an individual's long-term choices and travel behaviors simultaneously, thereby could be additional sources of the self-selection effect;
- The built environment has indirect impacts on the male head's travel behaviors through the female head's travel choices;
- Besides, residential location has indirect impacts on travel behavior through the work location choice, and vice versa.

In general, this dissertation confirms the significance and necessity of investigating the impact of the built environment on travel behavior from a household-based perspective. Findings in this dissertation contribute to a better understanding on the process and mechanism of household members' long-term and short-term travel choices, and further both the direct and indirect impacts of the built environment on travel behavior.

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