

**Project title**

Passenger Usages of the Intermodal Transportation System: An Analysis of the 2009 National Household Travel Survey Data

**Principal investigator**

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**Start date:** July 1, 2012

**Completion date:** August 15, 2013

**NCITEC funds:** \$32,729

**Matching funds:** \$32,729

**Project description**

The research on intermodal transportation is vast. However, most of the efforts have been on the freight side. The research on intermodal passenger transportation is much less—largely due to the lack of a comprehensive dataset for effectively studying it. It is essential to understand passenger usages of the intermodal transportation system because passengers are the biggest users of transportation systems and passenger benefits are one of the important factors, if not the most important factor, in transportation planning and decision making. The gap between the importance of the research and the lack of the research might be filled partially by analyzing the recently released 2009 National Household Travel Survey (NHTS) data, which provide comprehensive information on travel behaviors and patterns in the United States for a sample of 125,000 households. The NHTS data from 2001, 1995, 1990, 1983, 1977, and 1969 have generated thousands of studies falling into the fields of traffic safety, congestion, environment, energy consumption, demographics, bike and pedestrian studies, transit planning, policy and mobility, and others. More importantly, the 2009 NHTS data provide the intermodal usages by passengers for the first time. The relevant information includes the purpose of a trip (going home, going to work, for social reasons, for shopping, for meals, and others), modes used in the trip (car, bus, subway, airplane, walking, and others), and time spent in each mode.

The proposed research aims to analyze the comprehensive 2009 NHTS data for understanding passenger usages of intermodal transportation. The research will be conducted within the framework of time geography theory, which has been increasingly used for studying the spatial and temporal patterns of passenger travel behaviors and patterns. Specifically, the scope of this research covers 1) comparing the modes and time spent on each trip purpose, 2) examining the demographic and economic impacts on the selection of trip mode combinations and explore the spatial variations of the impacts (“economic competitiveness”), and 3) recommending strategies for optimizing intermodal transportation systems to better facilitate passenger travel and propose resilience enhancement strategies for intermodal transportation in evacuating urban areas and providing relief services to communities affected by disasters (“safety”). The findings of the research will be used to extend time geography theory and provide suggestions for passenger intermodal transportation planning. To the best knowledge of the Principal Investigator, this proposed research is the first attempt to comprehensively understand passenger usages of the intermodal transportation system.