

IMPACTS OF TRANSIT ORIENTED DEVELOPMENT ON PUBLIC TRANSPORTATION RIDERSHIP

PROBLEM STATEMENT

Increasing traffic congestion and maintenance costs have become perennial concerns with regard to the State Highway System. Increased use of public transit to serve local traffic has the potential to decrease congestion on state roads used for regional travel purposes. Transit Oriented Development (TOD) is an element in some planning and development policies that support increasing transit ridership and reducing the number and length of vehicle trips. TOD is land development associated with transit service and designed in such a way as to support transit ridership. Whether and how TOD contributes to decreasing traffic congestion, however, remains an open question. More needs to be known about the relationship between land use and travel behavior to before more effective policies can be developed. Moreover, the relationship between the current performance of TOD and its effect on transit ridership is uncertain. The question, then, is whether good quality TOD combined with good quality transit service could shift mode share from single occupant vehicle travel to greater transit ridership.

OBJECTIVES

The purpose of this study was to develop a research design to study how transit oriented development (TOD) affects travel behavior. There are three travel impacts of primary interest: mode share, number of vehicle trips (VT), and vehicle miles of travel (VMT). In addition to investigating the underlying relationship between urban form, land use, and TOD upon travel behavior, researchers evaluated and analyzed the policy environment and the existence of transit-ready developments in Florida.

FINDINGS AND CONCLUSIONS

This study suggests that land use may be less important than other factors in affecting mode choice, VT, and VMT. Income, attitudes and preferences, and auto ownership are among potentially more important factors. While land use characteristics as found in TOD may not decisively influence travel behavior, land use characteristics to some degree do, so there is potential to craft land development policies to decrease traffic congestion. In cases where TOD appears to work more successfully, other factors are at play (e.g., excellent transit service, an urban spatial structure that supports the ability to provide regional access, a network of TODs across a region, removal of incentives to drive personal vehicles, addition of incentives to use transit, improved marketability of TOD for non-transportation reasons).

Researchers identified several issues of measurement, including the following:

- the difficulty of finding examples of developments that adequately represent the TOD concept
- achieving agreement on what TOD is with regard to quality, size and location
- determining whether TOD served only by bus (i.e., and not rail) may constitute a TOD (e.g., all Florida urban areas except the southeast counties of Miami-Dade, Broward and Palm Beach)
- defining elements of travel behavior
- defining effectiveness
- issues of measurement timing
- the challenges of isolating the effects of the variable of interest
- ensuring the ability to generalize the results to the broader population
- the availability of data

The proposed research design would require the development of a multi-year panel survey, using a pre-test post-test design, to be implemented within a selected region in Florida. Broward County is recommended. The main focus of this proposed phase of study would be to retrieve and organize a suitable database in adequate content, quality, amount and duration, for numerous analysis purposes, including better understanding the relationship between TOD and travel behavior. A panel survey is proposed, which collects longitudinal data for the same individuals over a period of time and lessens data collection requirements. While data from the Puget Sound Transportation Panel have been extensively analyzed worldwide, the conclusions about travel behavior derived from these data may not be adequately transferable to the Florida experience. Florida is different in many ways from the West Coast in terms of its transportation infrastructure, policy environment, development history, unique cultural influences, and socioeconomic and household characteristics. It is estimated that by 2025, Florida will have the highest proportion of persons over the age of 65 in the nation.

The panel data collected in Florida would include an inventory of physical development conditions of the study area, a written survey of present socioeconomic characteristics, attitudes and preferences of study participants, and a cell phone travel diary of present travel behavior. A recently developed software program, TRAC-IT®, uses a global positioning system and personal digital assistance technologies to record the travel behavior data of individuals. TRAC-IT® or similar software is recommended for use in the panel survey. Its ease of use may allow the length of survey time to be extended from the typical one-day survey to an observation period of one week or more. Increased observation time would enable better capture of travel variations of individuals over time. Thus, this technology, in concert with the panel survey design, can also decrease the needed sample size. This present study details issues relating to participant recruitment and provides estimates of study costs.

BENEFITS

While a panel survey would be expensive, it would provide a variety of benefits, including the following:

- improve the current understanding of travel behavior within the context of Florida's urban form and bus service environment
- provide additional insights into travel for noncommute purposes, which comprises over 80 percent of all travel
- improve the current understanding of trip linking and route deviation behavior, which appears to have a strong impact on mode choice
- develop better models to forecast travel demand, such as activity-based models and dynamic travel models, which require longitudinal data; such a rich data set would benefit Florida and the nation because it would also attract the interest of transportation researchers nationwide and abroad

The scope of this study included an investigation of TOD nationally but with an emphasis upon the particular circumstances of Florida urban areas. While the developed research design is intended to be applied to a Florida region, the results will likely be useful to many urban areas throughout the United States that have developed since the 1940s.

This research project was conducted by Sara J. Hendricks of the Center for Urban Transportation Research, University of South Florida. For more information, contact Amy Datz, Project Manager, at (850) 414-4239, Amy.Datz@dot.state.fl.us.