Florida Department of Transportation Research

Evaluating the Benefits of Multi-Modal Investments on Promoting Travel Mobility in Central Florida

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Current Situation

In recent years, the Florida Department of Transportation has broadened its planning focus for Florida's roadways to include the full range of road users, including bicyclists, pedestrians, and riders of public transportation, such as buses or light rail. Good planning can both facilitate and encourage the use of non-auto modes of travel. This focus becomes more important as congestion becomes an increasing problem, along with the related issues of pollution and energy cost, and as more people are choosing to use their automobile less or even to not own one. Planning tools are needed that accurately capture the activity of non-auto road users so that planners can respond to demand and design for future use patterns.

Automobiles, bicycles, and buses share the road in downtown Orlando.

Research Objectives

University of Central Florida researchers used a trip-based approach to study the benefits of investments in the Central Florida region that consider non-auto road users, including public transportation riders, bicyclists, and pedestrians.

Project Activities

The nine-county Central Florida region that the researchers studied extends from Ocala and Daytona Beach in the north to Lakeland and Melbourne in the south. This region includes Leesburg, Orlando, and Kissimmee. The researchers collected the data needed to build models of road user activity in this regions: the socioeconomic makeup of the areas within the region; the transportation facilities, including road layout and type, presence of bike lanes and sidewalks, bus routes, etc.; and travel destinations, such as concentrations of shopping areas or other businesses. Understanding where road users reside and where they regularly go gives planners a measure of the demand on the roadways.

With the assembled data, the researchers built models that tie the data together, revealing important patterns related to road use in four areas: mobility, safety, ridership, and cost-benefit. The mobility component focused on analyzing travel patterns and demand for non-auto road users. The safety component focused on crash frequency and crash severity for non-auto road users. The ridership component focused on a demand analysis for Central Florida's Lynx (buses) and SunRail (commuter rail) systems. The cost-benefit analysis focused on the SunRail system.

Once the models were built and validated, they provided insights into current and future use and needs. Using the models, the researchers examined the impact of changes in a series of scenarios, such as what would happen to patterns of road use if sidewalks were improved in certain areas or if speed limits were changed. Changes indicated by the models can help guide the planning process. The changes can also be interpreted in terms of the costs and benefits of the proposed scenario. The researchers demonstrated use of their models in a variety of scenarios for each of the modeling areas (mobility, safety, ridership, and cost-benefit).

Project Benefits

The framework created and demonstrated in this project provides planners and policy makers with an approach to incorporate non-auto travel modes in analyzing and planning Florida roadways.

For more information, please see www.fdot.gov/research/.