Florida Department of Transportation Research

Geospatial Model for Identifying Transportation Service Availability Gaps for Florida's Vulnerable Populations

November 2018

Project Number
BDV31-977-67

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Current Situation

Generally, the transportation options for Florida's vulnerable populations are limited. People with low mobility, such as older adults or individuals with disabilities, or individuals with limited economic means often face challenges with their daily transportation needs. To address these issues, policy makers need a comprehensive view to identify transportation options, access, and gaps to help meet the mobility needs of vulnerable populations.

Facilitating transportation for vulnerable populations requires identification of where gaps exist for specific types of users in the transportation system.

Research Objectives

University of Florida researchers developed a GIS model which identifies transportation gaps for vulnerable populations.

Project Activities

The researchers examined the literature for methods of determining spatial accessibility to transportation resources. They found that one of the most widely used approaches is the gravity model, a model that balances accessibility of a destination against barriers to reaching it. Gravity models interact well with other models that account for aspects of behavior, such as the reasons that people are traveling to certain destinations and how they choose to get there.

To develop the model, the researchers examined transportation resources and vulnerable populations in Alachua County. Data were collected on where members of vulnerable populations live (origins), destinations they are likely to access, methods of transportation that connect origins and destinations, and barriers to access. This produces a lengthy list of possible connections that the model then scores. The model then identified spatial gaps, defined as areas of low transportation supply and high trip demand.

The model also needed to be flexible, applicable to other populations in other geographies. To test flexibility and applicability, the researchers applied the model to three scenarios in Orange County that combined specific users with selected service types. The first scenario tested fixed route service for housing units without a vehicle. Services gaps were found in five census block groups containing 1,276 (4.7%) housing units in the county. The second scenario tested flexible route service for individuals with disabilities. It found gaps in 10 census block groups containing 6,992 (11.4%) persons with disabilities. The third scenario tested door-to-door service for older adults, revealing gaps in 18 census block groups containing 19,923 (16.3%) older adults.

Application of the model to the Orange County scenarios demonstrated its flexibility and the opportunity to identify transportation gaps for specific populations, transportation methods, and geographic areas. Researchers envision creating a framework that connects the gap map model and existing transportation provider databases to provide "gap maps" on FindaRideFlorida.org. Results of this project will help inform agencies and non-governmental groups about where efforts might best be focused.

Project Benefits

Better identification of the transportation gaps for vulnerable populations can focus efforts to assist these populations and provide better access to medical care, shopping, and work.

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