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Investigation of E-Commerce Enabled Freight Demand and Activities in Residential Areas

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Current Situation

Online shopping has a large impact on Florida's economy. It also has a significant effect on Florida's freight systems.

Traditionally, shoppers chiefly purchased items from "brick and mortar" stores. Those stores have infrastructure that allows large freight vehicles to deliver merchandise easily using the Interstate system. This "last mile" of freight delivery is predictable and accessible for freight operators.

However, these predictable freight patterns have been disrupted with the advent of online shopping, which necessitates freight delivery directly to customers' homes.

The problem is that many existing data, tools, and models still follow the traditional paradigm where freight activities end at commercial establishments. This renders such data, tools, and models less adequate for working in the current economy.



A man loads a prototype driverless car for contactless delivery.

Research Objectives

The objectives of this research were to advance the Florida Department of Transportation's (FDOT) understanding of how demographic factors and societal trends related to e-commerce drive freight demand and to provide an approach for addressing the current last-mile component in the supply chain.

Project Activities

Following a literature review, the Florida International University research team conducted an online survey that explored major consumer behaviors, choices, and preferences, with the goal to receive 1,000 high-quality responses from each of two separate waves of surveys across a pool of 11,000 recipients.

The team analyzed the data through various modeling methods to glean the attitudes of respondents towards shopping online and in-store. The results of the model analysis from the first wave were then compared with those of the second wave.

The team conducted an impact assessment to estimate the total monthly delivery rates for specific products based on critical socio-demographic variables.

Project Conclusions and Benefits

Transportation planners can use the findings of this study to better understand the effects of e-commerce growth and delivery demands on freight and passenger trips in residential areas and so be better informed when framing effective transportation demand policies.

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