Florida Department of Transportation Research

Development of a Resilience Index for the Florida Surface Transportation System

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Current Situation

Can you define the resilience of a road system just by its physical condition?

Currently, FDOT relies on the physical conditions of its transportation assets to determine the resilience of the road system. But they wanted to know if this was the whole picture. For instance, what is the impact of natural disasters.

If FDOT knew the system's capacity to absorb disruptions from natural disasters without losing functionality (robustness) and the recovery rate after being exposed to a disruptive event (rapidity), it would be better informed to prioritize resilience investments and create an increasingly more resilient road system.

Research Objectives

This research proposed a composite index framework using technical, socioeconomic, and environmental aspects to measure and monitor the robustness and rapidity of various aspects of a regional transportation infrastructure's resilience to wind and water-related hazards.
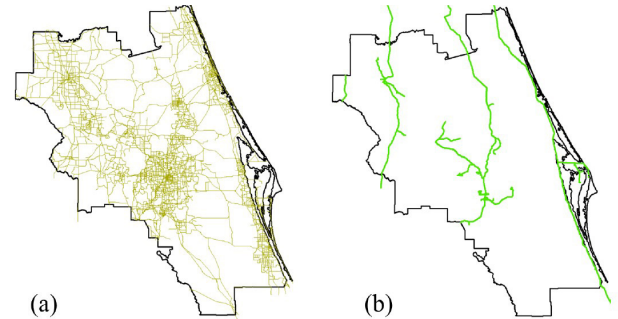
The road (a) and rail (b) networks maps for FDOT District 5.

Project Activities

Following a literature review to identify and evaluate transportation asset resilience factors, the Florida A&M University and Florida State University research team created a model of the District 5 surface transportation system that was used to test the resiliency of the system during and after simulated natural disasters.

The team then made a framework of a composite index that evaluated the resilience of the system. In the final step, the team held a workshop with District 5 district-level and state-level transportation decision makers to demonstrate the implementation of the framework.

Project Conclusions and Benefits

In addition to being capable of monitoring and evaluating regional transportation assets' resilience needs during and after a natural disaster, decision makers are more informed to prioritize resilience investments over a multi-year period.

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