



### Project Number

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# Development of Safety Performance Functions for Restricted Crossing U-Turn (RCUT) Intersections

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### Current Situation

Most crashes occur at intersections, where drivers – often multiple lanes of drivers – cross paths as they proceed straight or attempt to turn left or right. To alleviate this complexity and the associated crashes, transportation agencies have examined many innovative – and potentially safer – intersection designs. Of particular interest is the restricted crossing U-turn (RCUT), which directs traffic from a minor crossing road to turn right and use dedicated U-turn lanes to complete a left turn or access the opposite minor street. The RCUT reduces points of conflict in the traffic flow, reducing crashes and improving safety for pedestrians and bicyclists. As a relatively new idea, there are not many RCUTs in the U.S., but the number and interest in them is growing. The Florida Department of Transportation (FDOT) is looking into RCUTs as a way to further improve traffic safety in Florida; however, adequate data are needed to decide where RCUTs might be appropriate in the state.



*At this RCUT intersection (right), cars on the minor road must turn right and then use a U-turn lane (left) to complete a left turn or go straight across. A matching U-turn further to the right is not shown.*

### Research Objectives

Florida State University researchers developed guidance to assist planners in deciding where to place restricted crossing U-turns (RCUTs).

### Project Activities

The researchers conducted a comprehensive examination of existing RCUT installations. A search was performed to identify these installations, and a survey was prepared to solicit information from the responsible agencies. Twenty-six states were identified as having relevant information, and 22 responded to the request, representing 202 RCUTs – over half in North Carolina. The supplied information included intersection geometries where RCUTs were employed, their criteria and planning processes, and the RCUTs' performance. States reported that user perception of RCUTs was often strongly negative before construction but strongly positive after construction. Over half of the responding states were planning to install more RCUTs. The top rationale cited was safety benefits, but the next most cited reasons were improved traffic operations and cost savings. The researchers visited North Carolina to view the installations and interview staff in more depth.

Data collected about existing RCUTs included collecting geometric, traffic, and crash data for all existing U.S. RCUTs as well as significant factors influencing safety at RCUT intersections. Over a dozen states supplied data on over 200 RCUTs, at both signalized and unsignalized intersections. These data supported development of safety performance factors (SPFs), which are used by planners to determine where RCUTs will do the most good. SPFs take into account many aspects of a planned project, including traffic volumes, geometric design of the roadway and intersection, the general land use adjacent to the intersection, and others.

### Project Benefits

This project will assist planners in placing RCUTs in Florida and further the FDOT's goals of improving traffic flows and increasing safety for all road users.

*For more information, please see [www.fdot.gov/research/](http://www.fdot.gov/research/).*