



## Florida Department of Transportation Research Operational Analysis of Shared Lane Markings “Sharrows” on High Speed Roadways BDK82-977-04

More people are choosing alternatives to cars for reasons of energy, environment, and economics. Perhaps the most widely used alternative and most prominent symbol of this change is the bicycle. To accommodate increased bicycle traffic, many cities are restriping roads and designing new ones to facilitate bicycle use and improve safety.

On many urban streets that have no room for a dedicated bike lane, the outer lane can often be designated as a shared bicycle-vehicle lane with the shared lane (sharrow) marking. Sharrows encourage better road positioning by bicyclists and lane sharing by drivers.

In this project, University of North Florida researchers analyzed how shared lane markings (sharrows), wide curb lanes, standard and buffered bike lanes, and green bike lanes affected operations of bicycle facilities. Three measures of effectiveness were used in this study: lateral separation between the motor vehicle and bicyclist; the distance of bicyclist to the curb or edge of pavement; and the yielding behavior of drivers and cyclists at merge points. Vehicle speeds before, during, and after passing bicyclists were analyzed. This project built upon a previous study for the Florida Department of Transportation (FDOT), *Operational and Safety Impacts of Restriping Inside Lanes of Urban Multi-lane Curbed Roadways to 11 Feet or Less to Create Wider Outside Curb Lanes for Bicyclists* (FDOT research project BDK82-977-01).

The study was conducted on eight Florida roadways in Jacksonville, St. Augustine, Temple Terrace, Miami, and Broward and Brevard Counties. The roads varied in number of lanes from two to six, divided/undivided, limited/non-limited access, and speed limits from 30 to 55 mph. The lane treatments represented were adding sharrows, adjusting lane widths by restriping, and addition of bike lanes (new bike lanes, marking the shoulder, and coloring the bike lane at on- and off ramps green).



*The sharrow symbol lets bicyclists and drivers know that this is a shared lane and to use extra caution.*

Volunteer cyclists were recruited from state and local agencies to increase the number of vehicle-bicycle interactions, but all bicyclists observed were included in the study. Video data were analyzed to determine cyclists' roadway position and the separation between vehicles and bicyclists. Bicyclist behavior and preferences were observed also.

The before-and-after data indicated that installation of sharrows and/or increasing the outside lane width led to an increase in lateral separation between motor vehicles and bicyclists varying from 0.67 to 2.55 feet. Creating a buffered bike lane led to an increase in separation of 0.72 feet compared to a standard bike lane. The treatments were effective in moving bicyclists further from the curb/edge of pavement. Drivers tended to slow down as they passed bicyclists and then slightly increased their speeds after passing. At merge locations such as on- and off ramps, cyclists consistently scanned for overtaking drivers, and drivers slowed as they approached a cyclist.

Designing Florida's roadways to better support all users will produce a more effective and safer multimodal transportation system, benefiting Florida's citizens and visitors.

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For more information, visit <http://www.dot.state.fl.us/research-center>