For North Carolina, Implementation of Superstreets Means Travel Time Improvement, Reduction in Collisions, and Fewer Injuries and Fatalities

Increasing traffic delays at intersections are a common problem faced by Departments of Transportation (DOTs) across the nation. North Carolina is making strides in tackling delays in suburban, high-volume arterial areas through the implementation of “superstreets,” also known as restricted crossing U-turns (RCUTs). These arterial surface roads can move high-traffic volumes with less delay by re-routing left-hand turns and crossing maneuvers coming from the side streets. Instead, at an RCUT, drivers make a right turn onto the major highway and then make a U-turn through a median.

While this may seem time-consuming, studies show it can result in significant time savings. At signalized intersections, the overall time savings efficiencies are due to the ability of the major highway to have a greater percentage of green time to allow the heavy through volumes of traffic to proceed. At unsignalized intersections, traffic from the minor street may actually save time since drivers are not stuck waiting for the long traffic gaps needed to go across the bus thoroughfare or make the left-hand turn. North Carolina has deployed the superstreet concept at intersections across the state, including a corridor of signalized intersections along U.S. Route 17 near Wilmington.

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<th>BENEFITS OF SUPERSTREETS</th>
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<td><strong>Safety</strong></td>
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<td>Fewer conflict points: 14 compared to 32 conflict points for conventional intersections</td>
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<td>Reduced likelihood of crashes: 46 percent fewer crashes and 63 percent fewer resulting injuries and fatalities</td>
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<td>Fewer threats to crossing pedestrians</td>
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Researchers at North Carolina State University conducted the largest-ever study of superstreets and their impacts, and found that the superstreet traffic design “results in significantly faster travel times, and leads to a drastic reduction in automobile collisions and injuries.” Although the superstreet concept has been around for more than 20 years, the NC State study is the largest analysis ever performed of the impact of superstreets in real traffic conditions.

The operational analysis involved calibrating and validating VISSIM models of three existing superstreets in the State, and comparing that with results from models of equivalent conventional sites. The superstreet outperformed the conventional design at each location studied, reducing the overall travel time per vehicle traveling through the intersection. The study also found an average of 46 percent fewer reported automobile collisions and 63 percent fewer collisions that resulted in injury or fatality, when compared to similar intersections that use conventional traffic designs.

The US-23/74 superstreet in Haywood County was studied for 12 years: 6 years before the superstreet installation and 6 years after. There was a 16.8 percent reduction in total collisions, including a 41.1 percent reduction in fatal injury collisions, when comparing the second six-year period to the first. Additionally, the NC State study presented significant performance and operational results, and showed a 20 percent overall reduction in travel times. Because of this direct positive impact on travel, DOTs are able to wait longer to make more significant changes to the intersections, resulting in cost savings. The travel time savings and extra capacity at higher volumes can buy an agency more years of acceptable operation. The study also showed that superstreets result in lower vehicle emissions due to the reduction in congestion and prolonged vehicle idling.

ADDITIONAL RESOURCES


For additional information, please contact:

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