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Eliminating the Right Hook: Safer Intersections for Bikes

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ELIMINATING THE RIGHT HOOK: SAFER INTERSECTIONS FOR BIKES

Bicycling and walking, especially in urban areas, can be a means to alleviate congestion, lower emission levels and improve personal health. Intersections are locations where a variety of travel modes converge, thus increasing the potential for conflicts.

Many bicycle-vehicle crashes occur at intersections. A common crash type involving bicycles at intersections is the “right-hook,” where a right-turning vehicle collides with a through bicyclist. Intersections are also a source of increased stress for many bicyclists where the interactions with cars are more pronounced. Geometric treatments such as pavement markings, bike boxes, colored lanes, and shared right-turn lane designs have been implemented in attempts to alleviate the problem, but this is the first study to examine signal control strategies.

Recommended signal timing treatments to prevent right hook crashes include:

- Bicycle-specific signals
- Exclusive bicycle phases
- Leading bike intervals

While exclusive phasing eliminates the bicycle-vehicle conflict by separating the phases and restricting turns, the trade-off is a decrease in efficiency at the intersection with increased delays for all users. An emerging operational treatment at intersections is to provide a split leading bicycle interval, with concurrent green for bicycles, pedestrian walk, and through vehicles while restricting or delaying the right turn for vehicles. After a certain time, the restriction on turns is lifted. The same treatment could be used for pedestrians and offers advantages over the traditional leading bike and pedestrian intervals in that there is no lost time for through vehicles.

This project investigated how to alleviate bicycle-vehicle conflicts at intersections through signal control strategies; a novel approach using advanced technology which could help to improve transportation safety and efficiency for all road users.

PROJECT TITLE

Addressing Bicycle-Vehicle Conflicts with Alternate Signal Control Strategies (#2017-897)

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