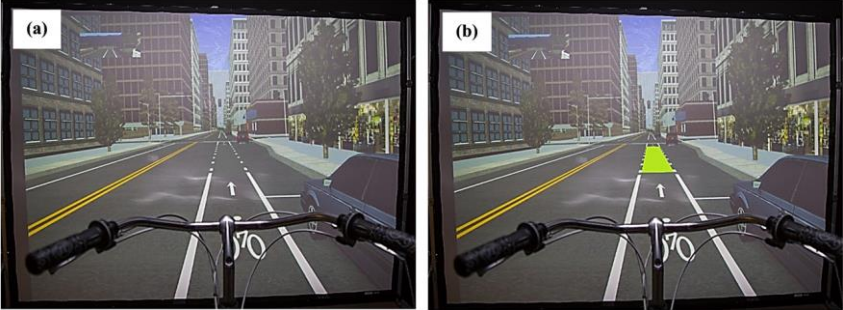


| UTC Project Information | |
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| Project Title | Improved Safety and Efficiency of Protected/Permitted Right Turns for Bicycles in the Pacific Northwest |
| University | Oregon State University |
| Principal Investigator | David Hurwitz |
| PI Contact Information | david.hurwitz@oregonstate.edu |
| Funding Source(s) and Amounts Provided (by each agency or organization) | University of Washington PacTrans \$21,222 Oregon State University \$21,222 |
| Total Project Cost | \$42,444 |
| Agency ID or Contract Number | DTRT13-G-UTC40 |
| Start and End Dates | September 16, 2015– September 15, 2016 |
| Brief Description of Research Project | <p>Conflict between bicycles and right-turning vehicles on the approach to signalized intersections is a critical safety concern. To understand the operational implications of protected-permitted right-turn signal indications in conjunction with pavement markings on bicyclist performance, a full-scale bicycling simulator experiment was performed. Velocity and lateral position of bicyclists were evaluated during conflicts between bicycles and right-turning vehicles. A mixed factorial design was considered. Two within-subject factors were analyzed: the signal indication for right-turning vehicles with five levels (circular red, circular green, solid red arrow, solid green arrow, and flashing yellow arrow), and the pavement markings in the conflict area with two levels (white lane markings with no supplemental pavement color and white lane markings with solid green pavement applied in the conflict area). Additionally, the influence of gender as a between-subject variable was considered. Forty-eight participants (24 female) completed the experiment. Signal indications and pavement markings had statistically significant effects on bicyclist velocity and lateral position, but these effects varied at different factor levels. Additionally, during the conflicts, male participants were found to have higher velocity than female participants. This difference was not influenced by engineering treatments. The results provide guidance to transportation professionals about how traffic control devices could be applied to conflict areas on the approach to signalized intersections.</p> |

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| <p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p> | <p>The findings of the present study suggest that influence of PPRT phasing on bicyclist performance is contingent upon the type of pavement markings applied to the conflict area. Table 6 presents changes in bicyclist behavior as the result of a concurrent change in signal indication or pavement markings.</p>  |
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| <p>Impacts/Benefits of Implementation (actual, or anticipated)</p> | <p>Anticipated:</p> <ul style="list-style-type: none"> • These findings could be used by transportation engineering practitioners to incorporate bicyclists' needs better in their design. |
| <p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project Website | <p>Peer Reviewed Journal Article:</p> <p>https://journals.sagepub.com/doi/full/10.1177/0361198119837231</p> |