RESEARCH NEEDS FOR SAFETY TAG

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ISSUE

The Livability Goals section of the IDOT Long-Range Transportation Plan (LRTP), lists safe access to jobs, schools, recreation, and other destinations as a few of its priorities. One element of that is safe crossing opportunities for pedestrians and bicyclists at major roadway intersections. Crash Modification Factors (CMFs) provide important information for measuring the potential benefits of various types of infrastructure safety improvements, so that analysis can be performed, which leads to informed safety investment decisions by transportation agencies. Currently CMFs are not available to quantify the safety benefit of raised right corner islands (RRCIs) for pedestrians and bicyclists attempting to cross larger, higher-volume roadways at intersections. The number of pedestrian crashes in Illinois has increased fairly consistently since 2009, and it is thought that improved infrastructure for non-motorized users could be a key element in reversing this trend.

SUMMARY OF PROBLEM

RRCIs can allow non-motorized users to make multi-stage crossings, providing an intermediate refuge. They are often but not always associated with adjacent sidewalks and sidepaths, and may include pushbuttons for users to call for a walk signal. They may also provide a location for signal poles and/or lighting. Improved visibility of non-motorized users by turning motorists at intersections can increase safety for those vulnerable users. RRCIs can help with visibility, but they can also result in crosswalks and stop lines being placed further back, which can impact motorist stop line compliance and potentially intersection capacity. RRCIs also add costs to projects and can create maintenance and other concerns, and there is no clear and current statewide policy on their use. They are rarely funded under Highway Safety Improvement Program (HSIP) due to lack of research on their benefits, including Crash Modification Factors.

DESIRED RESULTS/OUTCOME

This research will allow implementation of more complete data driven decision making when implementing roadway treatments at intersections where pedestrians and bicyclists may be present. This research will develop CMFs for RRCIs associated with crosswalks at medium- and large-scale intersections, where the scale of intersections to be investigated will be measured both by physical intersection size and by traffic volumes. Both signalized intersections and un-signalized intersections will be considered, although it is thought that most of the studied locations will be signalized. Extensive data collection and analysis will be included as part of this research in order to learn how the presence of RRCIs affect overall crash history and especially serious (KAB) crashes involving non-motorized users. Ten years of statewide crash
data covering all crashes involving both pedestrians and bicyclists will be provided by IDOT (excluding such crashes along facilities where pedestrian use is prohibited), along with locations where corner islands have been constructed within the past 8 years. Three years of before and after crash data will be assessed. The data collection and analysis will provide support for implementation of RRCI treatments at appropriate locations in efforts to increase safety for vulnerable users of all ages and abilities. The results will afford the agency the opportunity to make data driven decisions. Research steps identified include:

1. Conduct a literature search on RRCI studies that have been completed nationally. This should include design-related issues such as minimum island size, the warrants/need for pedestrian push buttons and pedestrian signal heads.
2. Conduct data analysis using crash data and records of pedestrian and bicycle crashes that have occurred at Illinois intersections over the past 10 years, as well as the timing of intersection improvements that have included RRCIs, such that before/after studies are possible.
3. Develop CMFs for RRCIs based on the data collected and analyzed.
4. Recommend guidelines for the incorporation of RRCIs at intersections. This will include consideration of pedestrian and bicycle volumes, traffic volumes, and roadway speed limits.
5. Provide a discussion of the findings for pedestrian KAB crashes identifying the presence or absence of sidewalks along routes where such crashes have occurred. Categorize and describe conditions at these crash sites in terms of the presence or absence of sidewalks along the routes and whether the pedestrians were crossing or walking along the roadways when struck. Although the development of CMFs for sidewalks (independent of corner islands) will not be possible as part of this research, it is hoped that patterns will emerge in assessing the conditions that have led to pedestrian KAB crashes in Illinois over the past 10 years. Furthermore, based on these patterns, additional research and/or infrastructure needs can be developed.