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16. Abstract <p>The purpose of the study was to evaluate the impact of new pedestrian countermeasure installations on pedestrian safety to assist in informing future pedestrian safety initiatives. In order to address these objectives, the WMU team conducted a literature review; evaluated existing safety improvements, including pedestrian hybrid beacons (PHB), rectangular rapid flashing beacons (RRFB), and in-street signs; examined the use of a Gateway configurations of the in-street signs; determined the efficacy of PHB and RRFB installations in conjunction with in-street signs; evaluated potential outreach and enforcement techniques; conducted on-street surveys; and performed a statistical analysis of pedestrian countermeasures at traffic signals. RRFBs and PHBs were evaluated at a number of Michigan locations, including roundabouts. The findings of these studies suggested that the RRFB and the PHB performed similarly at two-lane roundabout installations, although the PHB appeared to outperform the RRFB at three-lane roundabouts. Furthermore, the PHB and RRFB devices often produced lower motorist yielding levels in Michigan when compared to the results of the larger-scale FHWA studies discussed in the literature review. This result could be due to a lack of familiarity with these devices in Michigan, or driver and pedestrian lack of understanding of Michigan law. In-street signs also were evaluated at six locations as part of the study. The in-street signs yielded results similar to those reported in the research literature. The in-street signs then were further evaluated using a Gateway configuration on each two lane leg of four-lane divided roads, which included the use of one placed at each curb and one placed in the center of the roadway between travel lanes. The Gateway treatment produced yielding levels equal to or superior to the PHB and RRFB. Intercept surveys were conducted to determine motorist and pedestrian knowledge of the necessary actions for PHB, RRFB, and in-street sign. The results of the driver and pedestrian survey provided additional evidence that drivers and pedestrians do not fully comprehend how they should respond to the PHB and RRFB. A crash analysis was completed for countermeasures installed at</p>		

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signalized crossings. A statistical analysis of data from pedestrian countdown timers (PCT) in Detroit and Kalamazoo provided unequivocal evidence that the installation of the PCT had reduced crashes. The effect size in the Detroit sample was quite large; crash reductions also were observed in Kalamazoo, but the much smaller sample size reduced the level of confidence in the effect. However, when both sites were pooled, the effect was robust. The analysis of the effects of flashing yellow arrows treatment in Oakland County did not indicate any benefit to pedestrians.

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