

Crosswalks: To Install or not to Install There is no Simple Answer

There has been a trend in the United States to encourage Americans to walk or ride a bicycle to their destination for various reasons including; the reduction of impacts to the environment as well as the benefits achieved from physical activity for the pedestrian. Local, state and federal agencies have a professional responsibility to facilitate safe and convenient crossing facilities for pedestrians. This may range from a simple marked crosswalk to a pedestrian underpass or overpass. ***It is very important to note that not all locations are appropriate for the placement of crosswalks.***

Approximately 5,000 pedestrians die and 70,000 are injured in traffic crashes each year in the United States. This accounts for approximately 14 percent of all fatal crashes. According to the National Highway Traffic Safety Administration (NHTSA), on average, a pedestrian is killed every 2 hours and injured every 8 minutes. Pedestrians continue to be overrepresented in roadway injuries and deaths when compared to their overall exposure. It is important to recognize that the speed of motorists has serious consequences when a pedestrian is involved. A pedestrian hit by a vehicle traveling 40 mph has an 85 percent chance of being killed; at 30 mph, the likelihood goes down to 45 percent, while at 20 mph, the fatality rate is 5 percent. While it is easy and common to blame drivers for the crashes, it is interesting to note that a report published by the Federal Highway Administration (FHWA) indicated that pedestrians are solely culpable in 43 percent of crashes and drivers in 35 percent of crashes. Education, enforcement and engineering are components that need to be employed to address this issue. This summary will focus on the engineering component of crosswalks.

Crosswalk safety has been very controversial in the United States for several years. There have been numerous studies with mixed results with some of these studies being used as justification to not install crosswalks. Not all potential crossing locations are necessarily good candidates for a crosswalk. To eliminate confusion over crosswalk safety, the FHWA produced a report in 2005 called:

Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations

Data was collected at 2000 sites, 1622 at uncontrolled intersections and 278 at midblock crossings. To account for regional conditions, sites from different parts of the country were selected.

Conclusions from this report indicate:

1. On 2-lane roads, there was no significant difference in pedestrian crash rates between marked and unmarked sites;
2. On multilane roads with an ADT of 12,000 vpd or less, there was no difference in pedestrian crash rates between marked and unmarked locations;
3. On multilane roads with no raised median and an ADT greater than 12,000, marked crosswalks had a ***higher*** pedestrian crash rate than unmarked crossings; and
4. On multilane roads with ADTs greater than 15,000 vpd and raised medians, a significantly ***higher*** crash rate was associated with marked crosswalks as compared to unmarked.

Marking crosswalks at intersections and midblock crossings is one measure that can be used to designate a pedestrian crossing. Crosswalks exist at intersections whether or not they are marked. Marked crosswalks at uncontrolled locations (intersections or midblock) may pose greater safety concerns for pedestrians because motorists often do not expect pedestrians to be crossing. As a result, many states require or recommend high-visibility crosswalk markings at all uncontrolled marked crosswalks, especially at midblock locations.

On multi-lane facilities, uncontrolled marked crosswalks require additional analysis due to the existence of multiple-threat crashes. Advance yield markings help motorists to yield or stop at a greater distance from the crosswalk. This will help to reduce the visual obstruction of a vehicle as pedestrians cross the road. Pedestrian crossing signs alert motorists to the possible presence of pedestrians, increasing awareness. On roadway facilities with higher traffic volumes, number of lanes and speeds will require a combination of signs, markings, and other enhancements to give the pedestrian(s) comfort while crossing. In addition, the installation of raised medians, advance yield pavement markings and the removal of parking adjacent to the crosswalk, and pedestrian crossing signs can dramatically improve the visibility of the pedestrian crossing. In addition, the installation of a pedestrian hybrid beacon (HAWK) or the rectangular rapid flash beacons (RRFBs) have been found to help pedestrians safely cross roadways.

In conclusion, not all locations are good candidates for marked crosswalks. An engineering analysis must be conducted for each new location as well determining if existing crosswalks should be removed based on the design and ADT of the location.

Acknowledgments

1. NHTSA February 2015, Traffic Safety Facts, NHTSA's National Center for Statistics and Analysis
2. Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations. Final Report and Recommended Guidelines, FHWA Publications Number HRT-04-100 2005
3. Manual on Uniform Traffic Control Devices (MUTCD) FHWA 2009