



# ITS for Intersection Safety

In the United States, around one-quarter of traffic fatalities and half of all traffic injuries occur at intersections each year. Intelligent Transportation System (ITS) technologies are a key part of achieving USDOT's vision of zero deaths and serious injuries on our nation's roadways.<sup>1</sup>

## Year 2020 Intersection-Related Traffic Fatalities<sup>1</sup>

3,537



Fatalities at Signalized Intersections

7,089



Fatalities at Unsignalized Intersections

1,674



Pedestrian Fatalities at Intersections

355

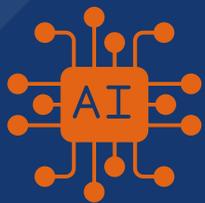


Bicyclist Fatalities at Intersections

## BENEFITS

1

**Pedestrian Countdown Signals (PCS)** display a real-time countdown of the remaining time for the flashing "DON'T WALK" and "WALK" pedestrian crossing intervals. In a study in Charlotte, NC and Philadelphia, PA, PCS were estimated to reduce crashes at intersections by 8%, resulting in an expected annual benefit of \$12,900.



**An AI-based Traffic Management System** developed by the Nevada DOT is used to reduce the frequency of traffic crashes, particularly at high-risk intersections. Reporting shows the system contributed to a 17% reduction in primary crashes at intersections in Las Vegas.

2

3

**Intersection Conflict Warning Systems (ICWS)** detect vehicles and alert motorists about conflicts when approaching intersections. A pooled fund study in Minnesota, Missouri, and North Carolina reported significant crash reductions after ICWS. On average, crashes were reduced 27% at 2-lane at 2-lane intersections and 17% at 4-lane at 2-lane intersections.

## COSTS

From the pooled fund study, North Carolina DOT evaluated ICWS installation costs over 15 years. The costs ranged from \$9,000 to \$142,500, in 2014 dollars, depending on type of ICWS, which approaches were installed, and intersection type.

## LESSONS LEARNED

Based on the ICWS pooled fund study, deployers suggested placing warning signs according to MUTCD guidelines for better driver response time. Also, keeping prototype systems operational 24/7 is a challenge due to staffing gaps and technical and maintenance issues.

The featured benefits, costs, and lessons learned are based on ITS project evaluations contained in the ITS Databases at: [www.itsknowledgeresources.its.dot.gov](http://www.itsknowledgeresources.its.dot.gov). **Click on each example to learn more.**