

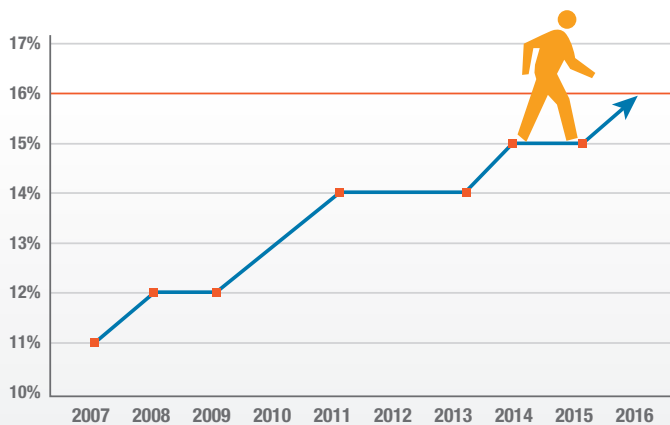
## Systemic application of cost-effective countermeasures with known safety benefits can help reduce pedestrian fatalities at both uncontrolled and signalized crossing locations.

According to the National Highway Traffic Safety Administration (NHTSA), 2016 witnessed the most pedestrian fatalities since 1990, accounting for approximately 16 percent of all roadway fatalities (5,987). In 2016, 72% of pedestrian fatalities occurred away from intersections (e.g., mid-block locations) and approximately 26% occurred at intersections. Cost-effective countermeasures can be systemically applied to reduce these crashes and save lives.

### PEDESTRIAN SAFETY COUNTERMEASURES

Uncontrolled crossing locations and signalized intersections often give priority to vehicles and may hinder the safety of pedestrians. At signalized intersections equipped with pedestrian signals, conflicts with turning vehicles may occur when pedestrians see a walk signal and vehicles see a left turn signal. By focusing on all pedestrian crossing locations, urban and rural, and taking a systemic approach, agencies can comprehensively address a significant national safety problem and improve quality of life for pedestrians of all ages and abilities.

### 2016 witnessed the most pedestrian fatalities since 1990.



NHTSA data from 2007-2016 shows an increase in pedestrian deaths as a percent of total motor vehicle deaths. Source: NHTSA



Mid-block pedestrian crossing location with Rectangular Rapid-Flashing Beacons (RRFB).

Photo courtesy VHB

The following countermeasures promoted by STEP can improve pedestrian safety when used in the appropriate roadway context:

**Rectangular rapid-flashing beacons (RRFB)** are active (user-actuated) or passive (automated detection) amber LEDs that use an irregular flash pattern at mid-block or uncontrolled crossing locations. They significantly increase driver yielding behavior.

**Leading pedestrian intervals (LPI)** at signalized intersections allow pedestrians to walk, usually 3 to 4 seconds, before vehicles get a green signal to turn left or right. The LPI increases visibility, reduces conflicts, and improves yielding.

**Crosswalk visibility enhancements**, such as crosswalk lighting and enhanced signage and markings, help drivers detect pedestrians—particularly at night.

**Raised crosswalks** can serve as a traffic calming measure and reduce vehicle speeds.

**Pedestrian crossing/refuge islands** allow pedestrians a safer place to stop at the midpoint of the roadway before crossing the remaining distance. This is particularly helpful for pedestrians with limited mobility.



Crosswalk visibility enhancements such as high-visibility markings and in-street signs help make crosswalks and pedestrians more visible.

**Pedestrian hybrid beacons (PHBs)** provide positive stop control for higher-speed, multilane roadways with high vehicular volumes. The PHB is an intermediate option between a flashing beacon and a full pedestrian signal.

**Road Diets** can reduce vehicle speeds and the number of lanes pedestrians cross, and they can create space to add new pedestrian facilities such as pedestrian crossing/refuge islands.

## BENEFITS

- ▶ **Improved Safety.** Countermeasures are available that offer proven solutions for reducing pedestrian fatalities at uncontrolled and signalized crossing locations.
- ▶ **Targeted Investment.** By focusing on pedestrian crossing locations, agencies can address a significant national safety problem.
- ▶ **Enhanced Quality of Life.** Improving crossing opportunities boosts quality of life for pedestrians of all ages and abilities.

Building on the 4 'E' approach (engineering, enforcement, education, and emergency medical services) within each State, communities can deploy proven, cost-effective countermeasures to improve pedestrian safety.

## STATE OF THE PRACTICE

Communities across the Nation are benefiting from using these countermeasures. In New York City, the effects of this treatment were dramatic. Where LPIs were installed, the overall number of pedestrians and bicyclists killed or severely injured dropped 37 percent. LPI use in Florida also yielded positive results, including reducing the percentage of vehicle-pedestrian conflicts between 25 and 100 percent at different intersections. The RRFB has greatly increased driver yielding rates in several communities, and a recent study demonstrated that it can reduce pedestrian crashes.

## RESOURCES

FHWA EDC-5 Safe Transportation for Every Pedestrian (STEP) [https://www.fhwa.dot.gov/innovation/everydaycounts/edc\\_5/step2.cfm](https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/step2.cfm)

FHWA STEP Program  
[https://safety.fhwa.dot.gov/ped\\_bike/step](https://safety.fhwa.dot.gov/ped_bike/step)

FHWA Proven Safety Countermeasures  
<https://safety.fhwa.dot.gov/provencountermeasures>

Pedestrian and Bicycle Information Center  
<http://www.pedbikeinfo.org>



U.S. Department of Transportation  
Federal Highway Administration

For additional information, please contact:

**Becky Crowe**  
FHWA Office of Safety  
(804) 775-3381  
[Rebecca.Crowe@dot.gov](mailto:Rebecca.Crowe@dot.gov)

**Peter Eun**  
FHWA Resource Center  
(360) 753-9551  
[Peter.Eun@dot.gov](mailto:Peter.Eun@dot.gov)