

# The National Intersection Safety Problem

Intersection safety is a national priority for numerous highway-safety organizations. Driving near and through intersections is one of the most complex conditions drivers will encounter.

In 2000, more than 2.8 million intersection-related crashes occurred, representing 44 percent of all reported crashes. About 8,500 fatalities (23 percent of total fatalities) and almost one million crashes with injuries occurred at or within an intersection. The cost to society for intersection-related crashes is approximately \$40 billion a year.<sup>1</sup>

## Identifying the Problem

Intersections are areas of highways and streets that produce conflicts among vehicles and pedestrians because of entering and crossing movements.

Reducing fatalities and injuries can be accomplished through a combination of efforts, including the careful use of good road design, traffic engineering, comprehensive traffic safety laws and regulations, consistent enforcement efforts, sustained education of drivers and pedestrians, and a willingness among drivers and pedestrians to obey traffic safety laws.

Despite improved intersection design and more sophisticated applications of traffic engineering measures, the annual toll of human loss due to motor vehicle crashes has not substantially changed in more than 25 years.

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## Crash Types

**Rear end.** Seventy-five percent of all rear-end crashes involve a vehicle that is either stopping or has already stopped. More than half of these kinds of crashes occur at or near intersections. Both human and property damage losses from rear-end crashes cost the United States billions of dollars each year in medical expenses, lost productive time and numerous property insurance claims. NHTSA estimates that the injury costs alone for rear-end crashes exceed \$5 billion per year.

**Side impact.** Each year, more than one-third of all deaths to vehicle occupants occur in side-impact crashes. These are the most serious kind of collisions, which occur most frequently at intersections.

**The elderly.** Elderly drivers do not deal with complex traffic situations as well as younger drivers do, which is particularly evident in multiple-vehicle

crashes at intersections. People 65 years and older have a higher probability of causing a fatal crash at an intersection, and about one-half of these fatal crashes involved drivers who were 80 years and older. Older drivers are more likely to receive traffic citations for failing to yield, turning improperly, and running stop signs and red lights.

**Pedestrians.** Intersections are disproportionately responsible for pedestrian deaths and injuries. Almost 50 percent of combined fatal and non-fatal injuries to pedestrians occur at or near intersections. Pedestrian casualties from vehicle impacts are strongly concentrated in densely populated urban areas where more than two-thirds of pedestrian injuries occur.

## Intersection Safety Problems: A Complex Public Health Issue

Intersection safety is a complex public health issue that cannot always be solved by making changes in signs and signals, but can be helped by a national comprehensive effort of

improved intersection vehicle and pedestrian safety management.

The following actions address ways to achieve substantial reductions in annual crash figures.

1. Alter key features of the physical design of a highway or street.
2. Analyze the reasons for traffic conflicts at intersections.





- The American Association of State Highway and Transportation Officials (AASHTO) Strategic Highway Safety Plan includes 22 key emphasis areas, one of which is improving the design and operation of highway intersections. The AASHTO Strategic Plan is a comprehensive plan that brings together engineering, enforcement, education and emergency response management.
- The Institute of Transportation Engineers (ITE) has developed a Safety Action Plan that includes intersection crashes as an element of the plan. ITE has identified 10 strategies that call for, among other things, the promotion of best practices and new technologies for improving intersection safety.

- Engage in innovative and strategic thinking. Engineers must delicately balance the requirement for efficient traffic movement and congestion reduction and, at the same time, the need to protect vehicle occupants and pedestrians from the consequences of dangerous vehicle maneuvers and unwise pedestrian behavior.
- Provide sustained and consistent law enforcement efforts.
- All levels of government must play a central role by providing:
  - Improved funding, and
  - Cooperation with highway and vehicle engineers, health care authorities, law enforcement, national safety organizations, and local citizen safety groups.

The following are some organizations that have strategic plans to improve intersection safety:

- The Federal Highway Administration (FHWA) has identified intersection safety as one of four safety priority areas in the agency's performance plan.

**Key Year 2000 National Highway and Traffic Safety Administration (NHTSA) statistics are as follows:**

	Number	Percent Total
Total fatality crashes	37,409	
Total intersection-related fatality crashes	8,474	22.6
Total injury crashes	2,070,000	
Total intersection-related injury crashes	995,000	48.1
Total property-damage-only (PDO) crashes	4,286,000	
Total PDO intersection-related crashes	1,804,000	42.1
All crashes	6,394,000	
Total intersection-related crashes	2,807,000	43.9
Total fatalities	41,821	
Total intersection-related injured persons	1,596,128	

<sup>1</sup> Federal Highway Administration, National Agenda for Intersection Safety, May 2002.