CHAPTER 9
Making Walking and Street Crossing Safer

KEY TOPICS

- designing for pedestrian accommodation
- pedestrian awareness

GOALS

- Use existing resources and programs to promote pedestrian safety for all ages, with special emphasis on children and elderly pedestrians.
- Use and supplement existing resources and programs available to assist local communities in design and operation decisions that affect pedestrians.
- Include pedestrian accessibility and safety in planning, design, construction, and maintenance of roadways.
- Improve pedestrian accommodation as part of state highway improvement projects.

BACKGROUND

People walk for recreation, exercise, and necessity. Almost all travel for work, shopping, recreation, and school at least begins and ends with walking. Pedestrians and motorists do not always comply with statutes governing the use of public highways, and different age groups of both pedestrians and drivers contribute to the conflicts between them by not understanding the risk and responsibility of this interaction.

Supplemental Crosswalk Identification Device

As our streets and highway systems developed for the motorist, walking was oftentimes not given enough consideration, resulting in conflicts between the motorist and the pedestrian.

Two areas—roadway design, and pedestrian and motorist awareness and behavior—should be addressed in improving safety for pedestrians.

Roadway Design

In many urban and rural locations and commercial, industrial, retail, and residential areas it is important to have sidewalk continuity. Many shopping centers do not provide sidewalks from street intersections to the buildings, and often walkways are not defined across entry points or in the parking lots. Residential areas may have deteriorated sidewalks, or no sidewalks,

forcing pedestrians to walk in the street or on the grass. These are considered high-risk conditions, particularly where inadequate space exists for sidewalks or sidewalks are not provided and the streets do not safely accommodate both pedestrian and vehicle traffic. Park and recreation systems also need well-defined walkways for recreational walking.

Planning for new construction should include pedestrian safety elements. Where the pedestrian traffic is frequent and high in volume, it may be necessary to separate pedestrians from vehicles with overpasses or underpasses. It is important to recognize that a state highway through a community can also carry a high volume of pedestrians and that pedestrian accommodations can be improved within the corridor as part of the highway improvement project.

The Iowa Department of Transportation (Iowa DOT) now considers the need for pedestrian accommodation as a part of every urban state highway improvement project. Currently, sidewalk construction within cities is the responsibility of the local jurisdiction.

Many communities have made significant progress in these areas and can serve as examples of what can be done in other communities. Numerous programs and resources are also available to accomplish this and make walking and street crossing safer. The Federal Highway Administration (FHWA) and Iowa DOT have a number of programs and design references to assist communities when designing new or improving existing pedestrian facilities.

Pedestrian and Motorist Awareness and Behavior

Pedestrian actions contributing to fatalities include not crossing at crosswalks, walking in an improper position on the roadway, running onto the roadway from between parked cars, and walking while impaired by drugs or alcohol.

Vehicle driver actions/conditions contributing to pedestrian fatalities include failure to yield, obscured vision, inattention or distraction, speeding, and driving while impaired.

Improving both pedestrians' and motor vehicle drivers' awareness of high-risk conditions and behaviors are equally important parts of addressing pedestrian safety. A wide range of government and private organizations have developed public awareness and education campaigns to address these concerns.

National and local crash data can be used to analyze which high-risk groups of pedestrians and motorists should be targeted for awareness and education. These data show certain age groups, locations, times, and behaviors that contribute to pedestrian and motor vehicle crashes.

NATIONWIDE

National Facts

The National Highway Traffic Safety Administration (NHTSA) reported the following data for 1999 (*Traffic Safety Facts—Pedestrians*):

- Over 4,906 pedestrians were killed in traffic crashes.
- There were 85,000 pedestrians injured in traffic crashes.
- 22% of all children ages 0–4 killed in traffic crashes were pedestrians.
- 24% of all children ages 5–9 killed in traffic crashes were pedestrians.
- 19% of all traffic fatalities under age 16 were pedestrians.
- 17% of all traffic fatalities over age 70 were pedestrians.
- The different age groups of both pedestrians and drivers contribute to the conflicts between them. Young children and adults over age 70 are especially at risk.
- 70% of the pedestrian fatalities were male. The male pedestrian fatality rate per 100,000 population was 2.59—more than double the rate for females (1.05 per 100,000 population).
- The male pedestrian injury rate per 100,000 population was 38, compared with 25 for females.
- Most pedestrian fatalities occurred in urban areas (69%), at non-intersection locations (79%), in normal weather conditions (90%), and in daylight (65%).

An FHWA study identified that the most frequent type of crash involving impaired pedestrians occurred when pedestrians attempted to cross traffic,

not when they were walking along the roadway. The study indicates that the majority of these crashes occurred in urban areas during daylight hours.

Alcohol involvement—either for the driver or for the pedestrian—was reported in 47% of the traffic crashes that resulted in pedestrian fatalities. Approximately 31% of all pedestrians involved were impaired with alcohol compared to only 12% of vehicle drivers. Proposed projects initiated by the FHWA are directed toward providing countermeasures to this type of crash. These countermeasures can be evaluated and modified as necessary to be applied in Iowa. Some of the countermeasures would include public awareness programs and the distribution of material identifying the dangers of walking while impaired, much like the public information on impaired driving.

IOWA

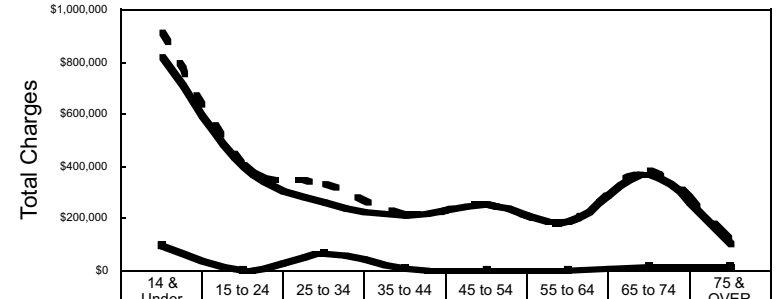
Iowa Facts

The Iowa Governor's Traffic Safety Bureau (Iowa GTSB) reported the following data from the Iowa DOT or NHTSA (*Pedestrian/Bicycle Fact Sheet*):

- 22 pedestrians were killed in Iowa traffic crashes in 2000.
- Iowa averages over 700 traffic-related pedestrian injuries each year.
- An average of 28 pedestrians have been killed annually during the 1990s in Iowa.
- Over one-half of all pedestrian fatalities in Iowa since 1984 have been under 20 or over 65 years of age.

See figure of hospital costs of crashes involving pedestrians by age for the period of 1996–1998.

Iowa Hospital Costs of Crashes Involving Pedestrians by Age 1996–1998*



	14 & Under	15 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	75 & OVER
Urban	$821,311	$399,249	$263,341	$207,438	$253,787	$186,255	$366,478	$99,904
Rural	$91,616	$3,090	$67,899	$7,853	$0	$0	$16,771	$14,422
Total	$912,927	$402,338	$331,240	$215,291	$253,787	$186,255	$383,248	$114,326

*Based on 6,004 crash records linked to hospital discharge records in the Crash Outcome Evaluation System (CODES).

POTENTIAL STRATEGIES

Legislation, Policy, and Enforcement

- Comply with the Americans with Disabilities Act (ADA). The ADA requires that sidewalks accommodate the handicapped, prompting many improvements in communities. Some elements of this include elimination of curbs at intersections—this helps all levels of pedestrians, particularly the disabled and the elderly. Wider, more visible, and raised crosswalks may be provided, as well as pedestrian refuge islands on busy streets.
- Encourage local jurisdictions to enhance zoning ordinances to improve pedestrian safety.
- Encourage municipal planning organizations (MPOs) and regional planning associations (RPAs) to offer standards and assistance in planning to local jurisdictions addressing pedestrian safety concerns.
- Promote the use of the Iowa DOT's *Bicycle and Pedestrian Accommodation Guidance* to provide consistent and adequate pedestrian facilities.
- Encourage uniformity and clarity of the pedestrian/motorist right-of-way at signalized intersections.
- Encourage cities to adopt ordinances and/or tax abatement programs to provide adequate pedestrian facilities as part of residential, commercial, and industrial development plans.
- Encourage cities to evaluate areas in their communities that have experienced pedestrian safety problems. Information can be gathered through surveys, investigations, and studies and could identify a specific problem or a group of problems. (Data analysis tools and assistance are available from Iowa Safety Management System [Iowa SMS] entities.)

Education and Public Awareness

- Promote pedestrian safety for all ages of pedestrians with emphasis on children and the elderly.
- Promote the use of safety clothing and reflective material for walkers and promote safer "at dusk and dawn" walking (U.S. Department of Defense on-base standards model).
- Fund public awareness programs describing the statistics and risks of impaired walking.
- Provide analysis outcomes on crash clusters and problem identification to appropriate officials for appropriate changes in transportation design.

- Support programs to provide safe walking routes for school children and accommodate these children in safe crossings at heavily traveled streets (Florida Safe Schools Program model).
- Sponsor a Walk Our Children to School Day each year to increase awareness of improvements in pedestrian accommodation needed or implemented locally.
- Make bright orange flags available to pedestrians at intersections to increase visibility to motorists (Utah model: urban application).
- Promote motorist and pedestrian awareness of rural road hazards for pedestrians and motorists encountering them.

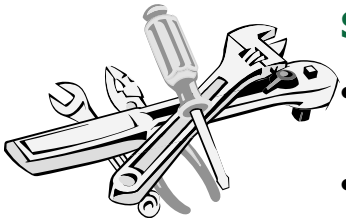
Design and Technology

- Use and supplement existing resources and programs directed toward reducing the conflict between impaired pedestrian and driver.
- Encourage local officials and citizens to assess pedestrian safety in their community and make use of pedestrian safety countermeasures relevant to the problems identified.
- Include appropriate access management strategies to improve pedestrian accommodation.
- Develop and implement programs to make intersections and crosswalks more pedestrian friendly and reduce the conflict between motorist and pedestrian.
- Implement programs to establish sidewalk continuity in developed areas and to plan, construct, and maintain designated hard-surfaced walking areas in parks and recreational areas.
- Emphasize pedestrian accommodation, accessibility, and safety in the planning, design, construction, and maintenance of residential, retail, service, and manufacturing facilities.
- Encourage Iowa cities to provide uniform walk/don't walk signal indicators at signalized intersections, and clarity of the pedestrian or motorist right-of-way at signalized intersections.
- Encourage installation of wider sidewalks and bicycle paths in developed areas to accommodate both bicyclists and pedestrians.
- Encourage pedestrian accommodation as part of all highway improvement projects.
- Install supplemental crosswalk identification devices at selected crosswalks (e.g., "state law: yield to pedestrians in crosswalk" signing).
- Consider using "countdown" timing lights that tell walkers how long they have to get across the street before the light changes (Seattle pilot study).

- Use traffic-calming techniques to accommodate both pedestrians and motorists (e.g., four-lane to three-lane conversions).
- Increase pedestrian (and bicycle) accommodation within state highway improvement projects.
- Encourage cities to plan pedestrian accommodation programs to separate pedestrian and vehicle traffic and to reduce congestion such as skywalks between buildings and parking facilities, park and ride, or park and walk.
- Evaluate walk signal timing and visibility for older pedestrians who may not see as well or walk as quickly as the general public.
- Review the use of symbols (e.g., a person or hand) versus words on traffic control devices to reduce confusion.
- Pilot or study the effectiveness of new products that target specific pedestrian visibility and traffic issues (e.g., a "green cross" system designed to increase the visibility of school crossing guards, slow down traffic going through these areas, and reduce the frequency of crosswalk intrusions when children are present) (see Successes and Strategies Implemented section in this chapter).
- Replace school crossing signs with fluorescent yellow-green signing (see Successes and Strategies Implemented section in this chapter).

Other Initiatives

- Encourage communities to use the Walkable America community assessment program to target safety issues through a checklist on pedestrian safety that rates the condition of sidewalks, driver behavior, and the ease of crossing streets.
- Encourage communities to complete pedestrian school route studies.



SUCCESSES AND STRATEGIES IMPLEMENTED

- The Iowa DOT adopted the *Bicycle and Pedestrian Accommodation Guidance* in 1999 to address some of these issues.
- The American Automobile Association (AAA) has had programs for school children for many years (e.g., the School Safety Patrol).
- The Iowa DOT uses a Bicycle and Pedestrian Advisory Committee.
- In the summer of 1999, the Iowa DOT replaced 2,025 school signs and bicycle crossing signs on the state highway system with new fluorescent yellow-green. In 2000, additional funding was secured to begin replacement for Iowa cities and counties. As of February 28, 2001, 4,807 signs have been supplied, and the department is seeking funding for the additional 4,632 signs requested by cities and counties.

- Pedestrian safety programs have been developed by coalitions of agencies and groups that are concerned with pedestrian safety, including the AAA and U.S. Department of Transportation. The AAA Pedestrian Protection Program, for instance, is designed to stimulate community concern and involvement in pedestrian safety.
- The Iowa DOT's Traffic Engineering Assistance Program (TEAP) is offering pedestrian safety analysis assistance to local communities focusing on safe school routes.

NOTE

The potential strategies in this chapter do not represent specific recommendations of the Iowa SMS Coordination Committee or any agency, group, or individual represented in Iowa SMS. The strategies represent a range of alternatives for legislators, department or agency directors, local governments, and citizen groups to consider when they elect to address a specific highway safety concern.

This toolbox is a living document that will continue to provide information, direction, and ideas for highway safety decision makers. Any strategies selected for implementation by Iowa SMS or any other entity will require further development through identifying potential partners, entities impacted, potential funding, steps for implementation, evaluation, and other pertinent tasks.

RESOURCES

Information in this chapter is drawn from many individuals and sources. Known sources, as well as other pertinent information sources, are listed here. **Contributors:** Kathy Ridnour (primary), Nancy Burns, Joyce Emery, Mary Harlan, Lisa Lutz, George McVicker, and Bob Studer.

American Association of State Highway and Transportation Officials
Strategic Highway Safety Plan (Sept. 1997):
A comprehensive plan to substantially reduce vehicle-related fatalities and injuries on the nation's highways.
safetyplan.tamu.edu/plan/toc.asp

Centers for Disease Control and Prevention
Pedestrian Injury Prevention Fact Sheet:
www.cdc.gov/ncipc/factsheets/pedes.htm

Federal Highway Administration
www.fhwa.dot.gov/
FHWA Pedestrian Safety:
safety.fhwa.dot.gov/fourthlevel/ped.htm
A Walkable Community—Your Town, USA, Brochure
Safer Journey—Interactive Pedestrian Safety Awareness:

CD-ROM.
Pedestrian/Bicycle Safety Resource Set:
CD-ROM.
safety.fhwa.dot.gov/programs/ped_bike.htm

Iowa Department of Transportation
Iowa Trails 2000:
www.dot.state.ia.us/trails/
Bicycle and Pedestrian Accommodation Guidance:
www.dot.stat.ia.us/trails/appendixc.html
Traffic Engineering Assistance Program (TEAP)
2001–2005 Iowa Transportation Improvement Program:
www.dot.state.ia.us/fiveyear.htm

Iowa Governor's Traffic Safety Bureau
www.state.ia.us/government/dps/gtsb/index.htm
Pedestrian/Bicycle Fact Sheet (Jan. 2001):
www.state.ia.us/government/dps/gtsb/gtsft_6.htm

Iowa Safety Management System
www.IowaSMS.org
Iowa Strategic Highway Safety Plan (Aug. 1999):
www.iowasms.org/pdfs/ishsp.pdf

Institute of Transportation Engineers
Alternative Treatments for At-Grade Pedestrian Crossings
Design and Safety of Pedestrian Facilities

National Center for Bicycling and Walking
www.bikewalk.org/references_&_resources.htm

National Highway Traffic Safety Administration
www.nhtsa.dot.gov
Traffic Safety Facts—Children (1999):
www.nhtsa.dot.gov/people/ncsa/pdf/child99.pdf
Traffic Safety Facts—Pedestrians (1999):
www.nhtsa.dot.gov/people/ncsa/pdf/newPed99.pdf
Pedestrian Safety Programs:
www.nhtsa.dot.gov/people/injury/pedbimot/ped/index.html

National SAFE KIDS Campaign
www.safekids.org

Pedestrian and Bicycle Information Center
www.walkinginfo.org

Perils for Pedestrians
www.pedestrians.org

Walk Our Children to School Day
www.walktoschool-usa.org

This toolbox is a living document. Last updated November 2001.