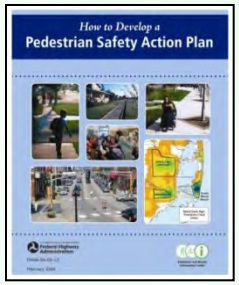
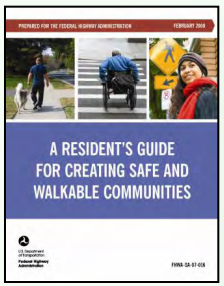
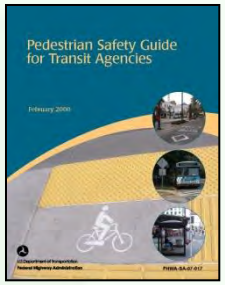
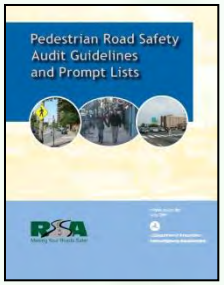
FHWA Resources for Pedestrian and Bicycle Professionals









Charlie Zegeer, UNC Highway Safety Research Center/PBIC

Libby Thomas, UNC Highway Safety Research Center

Dan Nabors, Vanasse Hangen Brustlin (VHB)

Pedestrian and Bicycle Information Center

THE UNIVERSITY OF NORTH CAROLINA
HIGHWAY SAFETY
RESEARCH CENTER

Presentation Overview

- How to Develop a Pedestrian Safety Action Plan
- Pedestrian Safety Guide & Countermeasure Selection System (PEDSAFE)
- Bicycle Safety Countermeasure Selection System (BIKESAFE)
- Pedestrian and Bicycle Crash Analysis Tool (PBCAT)
- Pedestrian Road Safety Audit Guidelines and Prompt Lists
- Pedestrian Safety Guide for Transit Agencies
- A Resident's Guide for Creating Safe and Walkable Communities

How to Develop a Pedestrian Safety Action Plan

Purpose

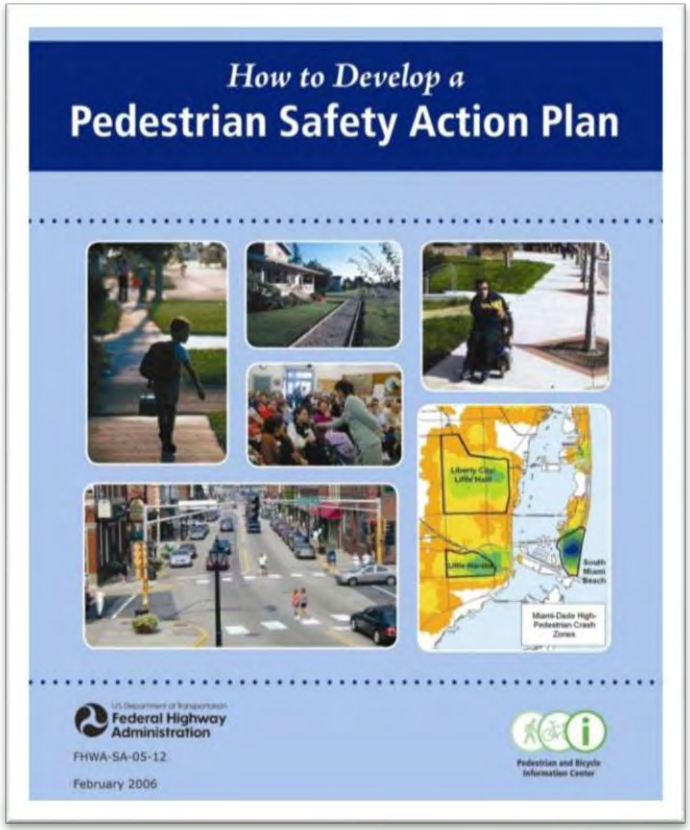
Presents an overview and framework for state and local agencies to develop and implement a PSAP

Audience

Planners, Engineers, Law Enforcement, Educators, Health Professionals and Decision Makers

Link

www.walkinginfo.org/howtoguide



Pedestrian and Bicycle Information Center

PSAP Guide Overview

- Planning and Designing for Pedestrians
- Involving Stakeholders
- Data Collection and Problem Identification
- Analysis and Prioritization
- Selecting Safety Solutions
- Providing Funding
- Resources

Planning and Designing for Pedestrians

Presents background knowledge of policy, planning, and design elements that impact pedestrian safety, including:

- Street design
- Connectivity
- Site Design
- Land Use
- Access Management

Stakeholder Involvement

Provides guidance reaching out to key stakeholder groups, such as:

- Engineers and planners
- Educators and police
- Public health officials
- Individual citizens and organizations
- Public employees, officials, and agencies
- Business owners
- Media

Public Involvement Through Meetings and Workshops

Denver, CO

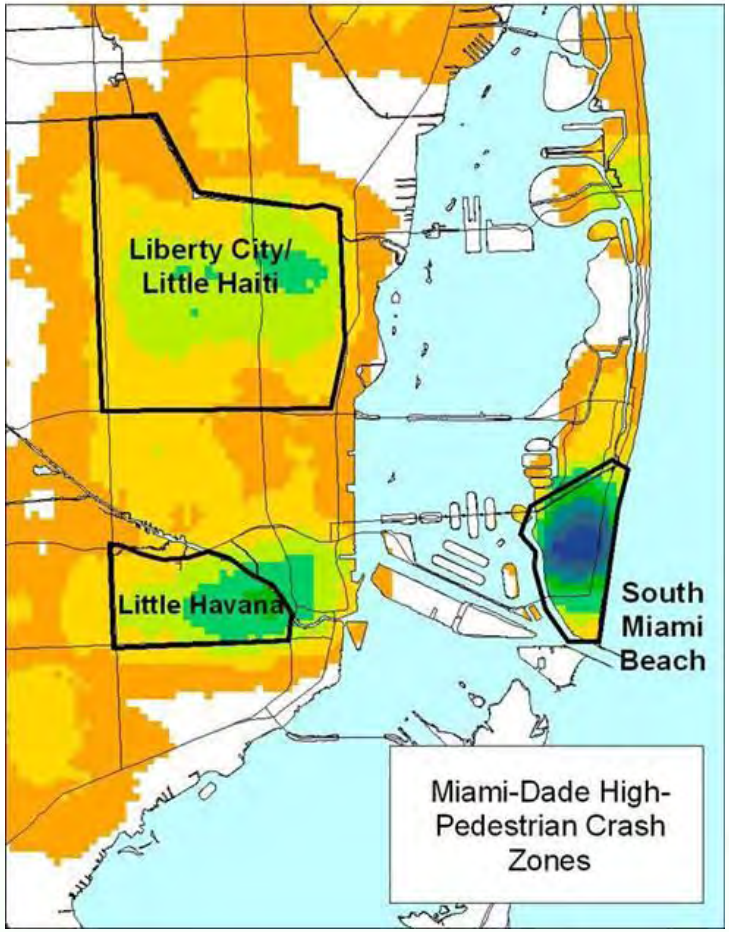
The City of Denver held two rounds of four public meetings at key points in the process of developing the Pedestrian Master Plan in order to identify all potential issues and problem locations within the pedestrian environment. A final ninth public meeting was held prior to finalization of the Pedestrian Master Plan.

During the first round of workshops, citizens were given the opportunity to comment on the general obstacles they faced in the pedestrian system and to provide information on ways to improve the infrastructure. During the second round of workshops, the public provided feedback on the proposed pedestrian routes, among other issues.

Public input was received not only from the workshops but also from email and facsimile. This input was used to develop policy and to prioritize projects. In addition to expert review and monitoring by the Advisory Team, input was also solicited from other City officials within various City departments. The plan was reviewed by several special interest groups, internal staff, the Planning Board, and the City Council prior to finalizing the Pedestrian Master Plan.

For more information, visit: http://www.denvergov.org/transportation_planning/.

Data Collection & Problem Identification



Explains how to collect crash, count, survey, facility inventory, and other types of data for identifying problem areas for pedestrians

Analyzing & Prioritizing Concerns

Introduces a process for:

- Categorizing problems
- Identifying spots, corridors, or jurisdiction-wide concerns
- Analyzing locations using audits or tools like PBCAT
- Prioritizing problems and solutions

Selecting Safety Solutions

Presents detailed information about different types of countermeasures:

Engineering

Education

Enforcement

Also includes information on partnerships, policy considerations, and program/treatment evaluation.

Funding

Assists with identification of funding sources at the State and local level, and provides an overview of the major sources of funding for transportation projects

Resources

Includes a number of additional resources, including:

- Guidance for conducting pedestrian counts/surveys
- A comprehensive list of funding sources
- Tips for evaluating a pedestrian safety plan
- Checklist for engineering and planning solutions
- How to create an effective pedestrian advisory board

For information about training opportunities based on the PSAP guide, visit www.walkinginfo.org/training

Pedestrian Safety Guide & Countermeasure Selection System (PEDSAFE)

Purpose

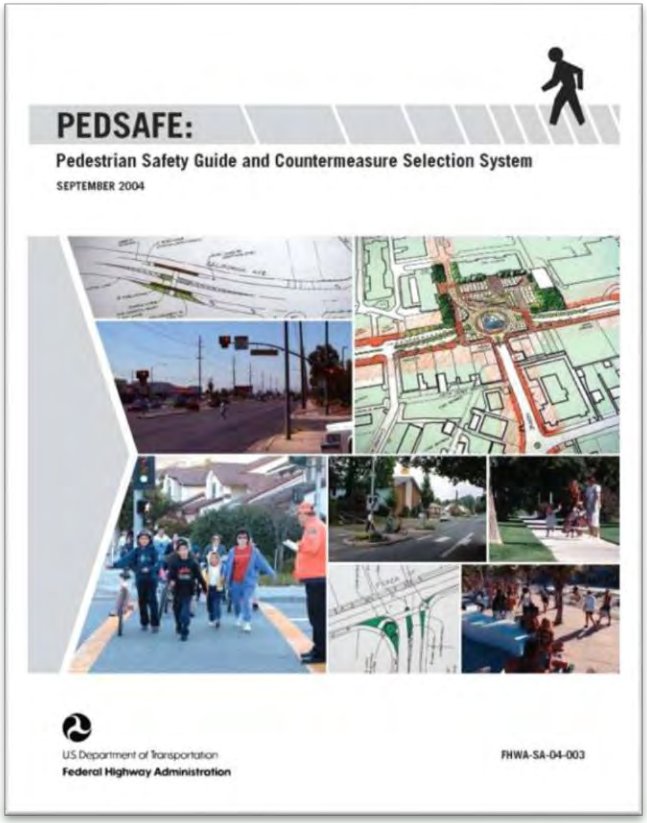
Provides information for identifying safety/mobility needs and improving conditions for pedestrians

Audience

Planners, Engineers, Safety Professionals, and Decision Makers

Link

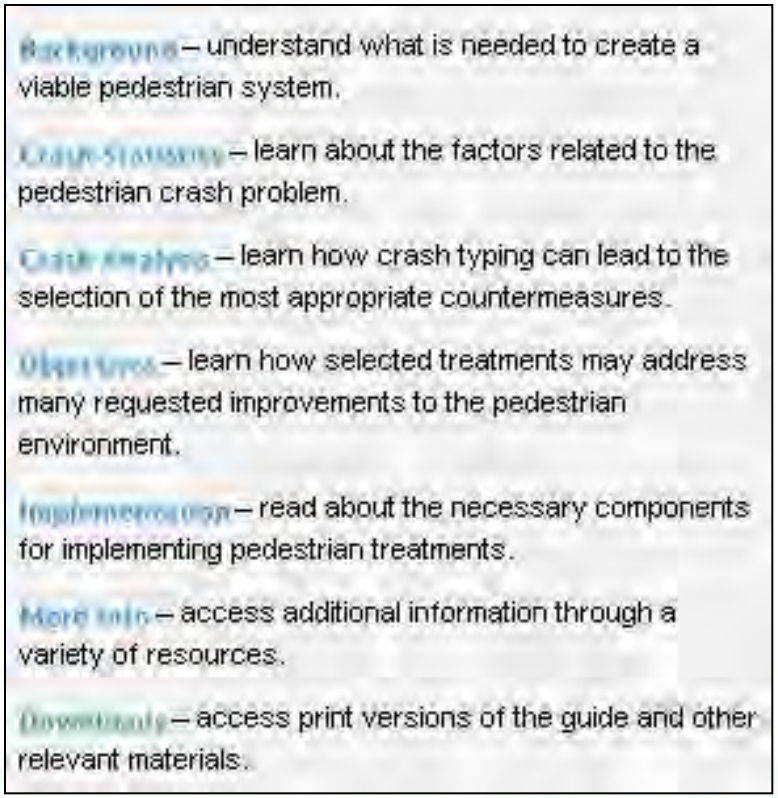
www.walkinginfo.org/pedsafe



Pedestrian and Bicycle Information Center

PEDSAFE Resources

- Provides the user with a knowledge base for addressing pedestrian safety and mobility
- Presents an analysis of pedestrian crash statistics and trends
- Explains key concepts used in the application of the PEDSAFE tools



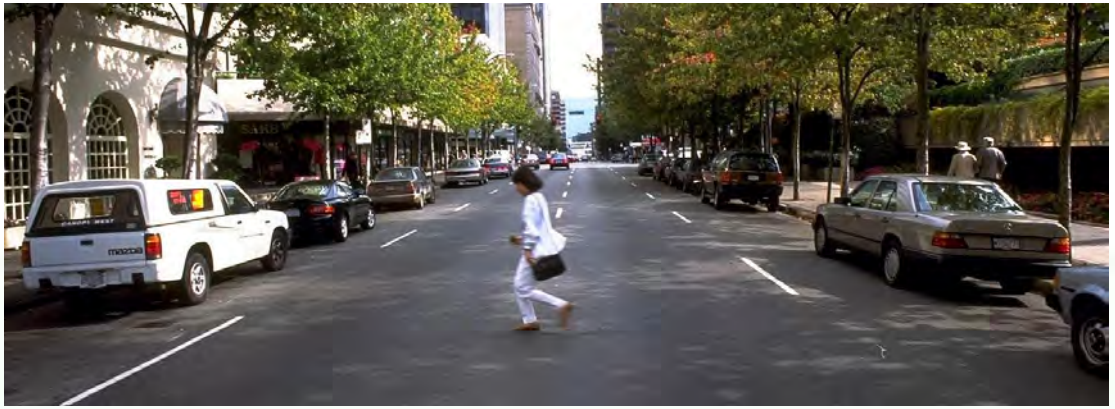
PEDSAFE Tools

Interactive tools provide the user with a list of possible engineering treatments to improve pedestrian safety and/or mobility based on user input about a specific location.

Selection Tool

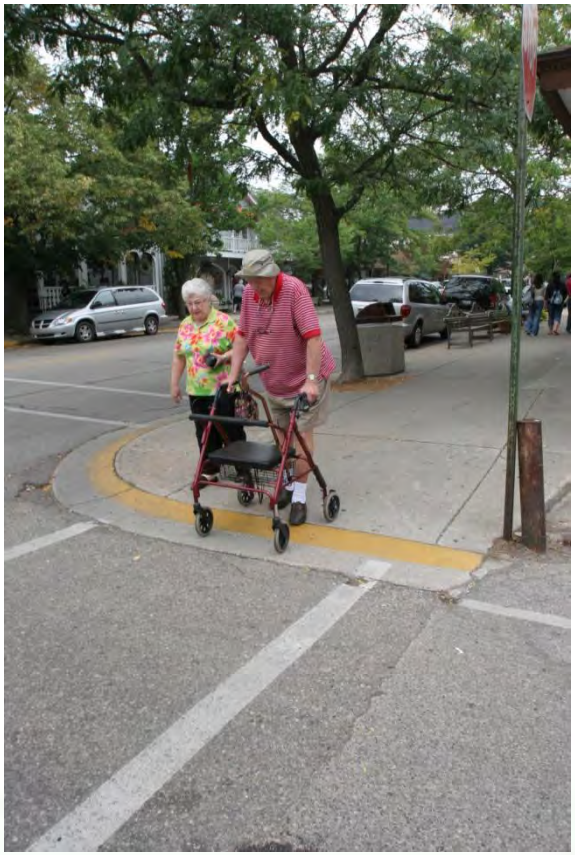
Generates a set of potential countermeasures based on site-specific information provided by the user in three steps:

1. Choose the Location
2. Describe the Site
3. Select the Goal of the Treatment



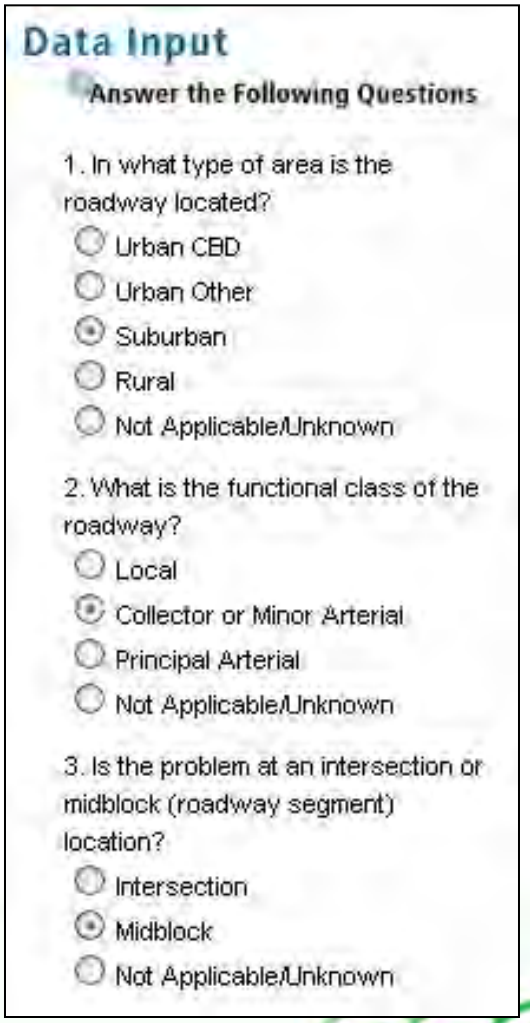
Selection Tool

Choose the Location – the user provides the name and a brief description of the roadway or intersection to be addressed.

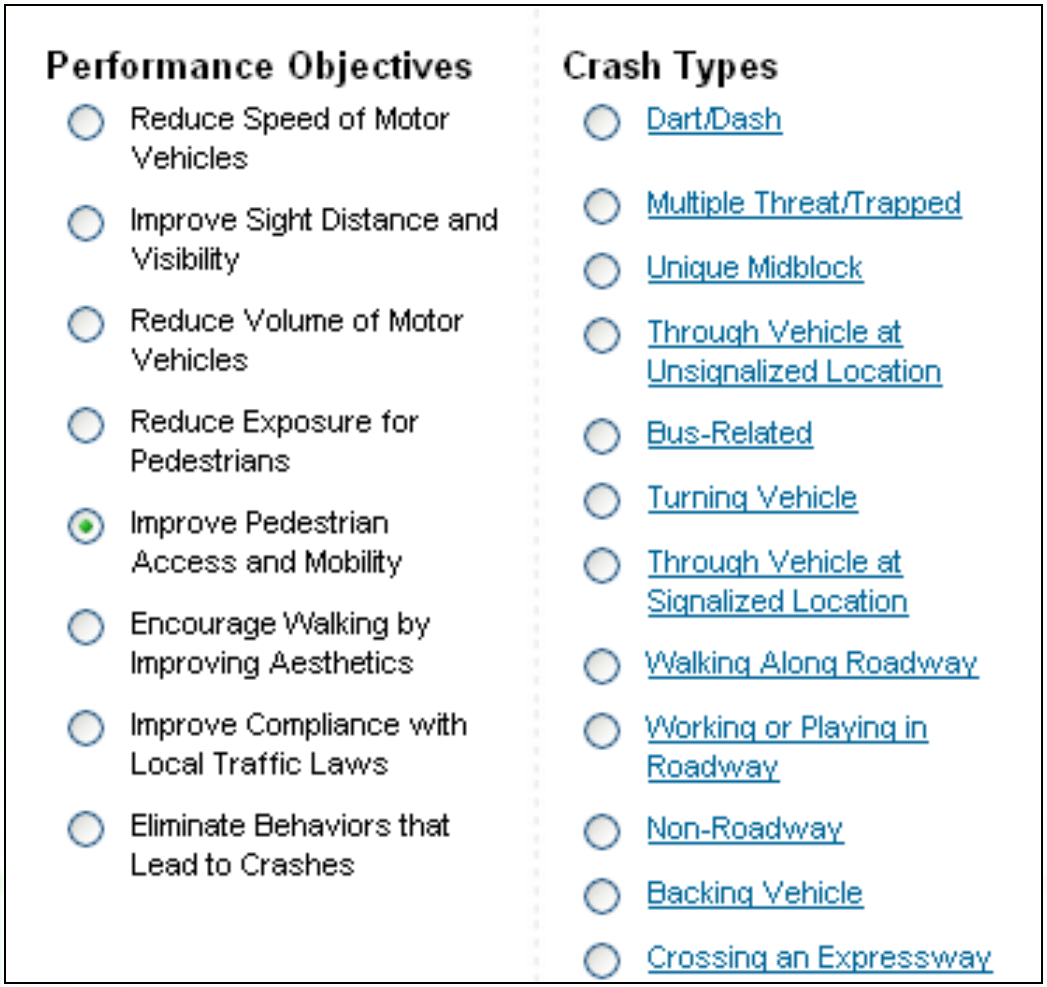


Selection Tool

Describe the Site – the user provides responses to a set of questions related to the roadway characteristics, such as ADT, speed, and number of lanes, in order to determine the pedestrian safety problem



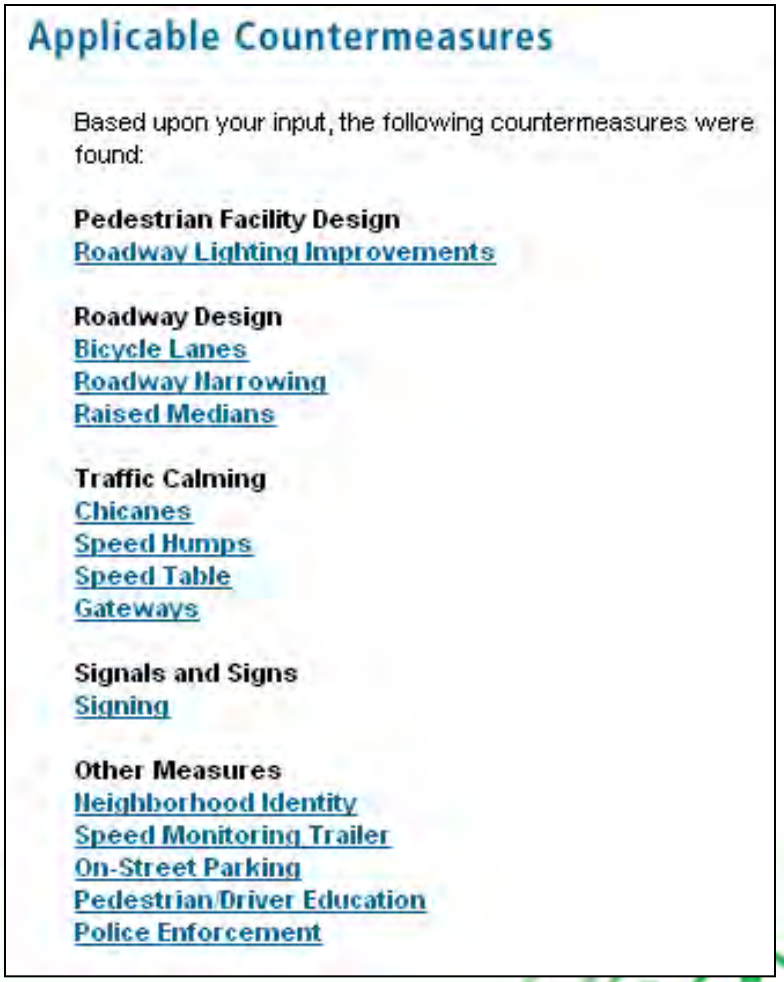
Selection Tool



Select Treatment Goal – the user selects a performance objective for the treatment, or a particular crash type to target

Selection Tool

Once all information has been provided, the tool automatically selects a number of potential countermeasures to address the problem, and provides links to more information about the design specifications, applicability, and cost of each treatment.



Countermeasures

- PEDSAFE provides details for 49 countermeasures, including a brief description, cost, purpose, considerations, and a link to relevant case studies.
- Countermeasure categories include the following:

Pedestrian Facility Design:
It is a public responsibility to provide a safe, secure, and comfortable system for all people who walk.

Roadway Design:
The goal of an appropriately designed roadway should be to safely and efficiently accommodate all modes of travel, from pedestrians to bicyclists to motorists.

Intersection Design:
The primary point of conflict and the most prevalent location for crashes between pedestrians and motor vehicles is the intersection.

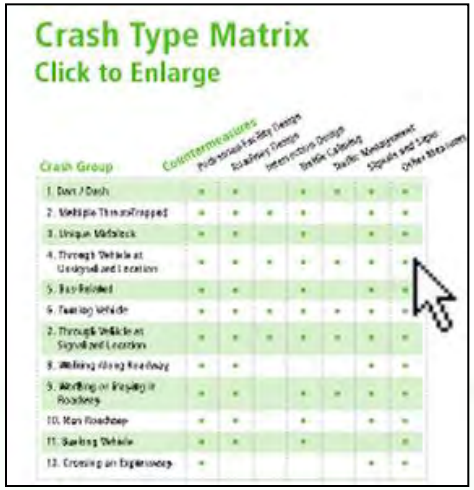
Traffic Calming:
Traffic calming is a way to design streets, using physical measures, to encourage people to drive more slowly.

Traffic Management:
Traffic management includes the use of traditional traffic control devices to manage volumes and routes of traffic.

Signals and Signs:
Traffic engineers have an arsenal of signs and signals that can be used to regulate and warn both motorists and pedestrians.

Other Measures:
Engineers must be cognizant of the capabilities and needs of all pedestrians when designing a roadway or developing an operations plan.

Interactive Matrices



The interactive matrices allow a user to select countermeasures based on the relationships between countermeasure group and:

- Performance Objectives, or
- Crash Types

The output provides a selection of specific countermeasures that address a particular objective or crash type within a certain category

Case Studies

To provide real world examples, PEDSAFE includes 70 case studies that highlight the application of various countermeasures, including a description of the specific safety issue, a discussion of the solution, and a presentation of the implementation results.

Bicycle Countermeasure Selection System (BIKESAFE)

Purpose

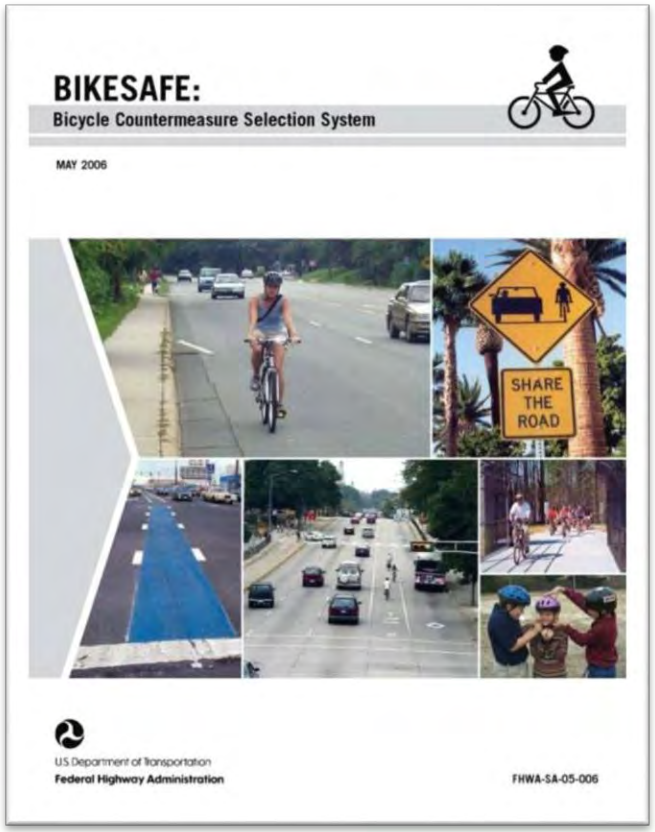
Provides problem identification and treatment selection guidance for improving bicyclist safety

Audience

Planners, Engineers, Safety Professionals, and Decision Makers

Link

www.bicyclinginfo.org/bikesafe



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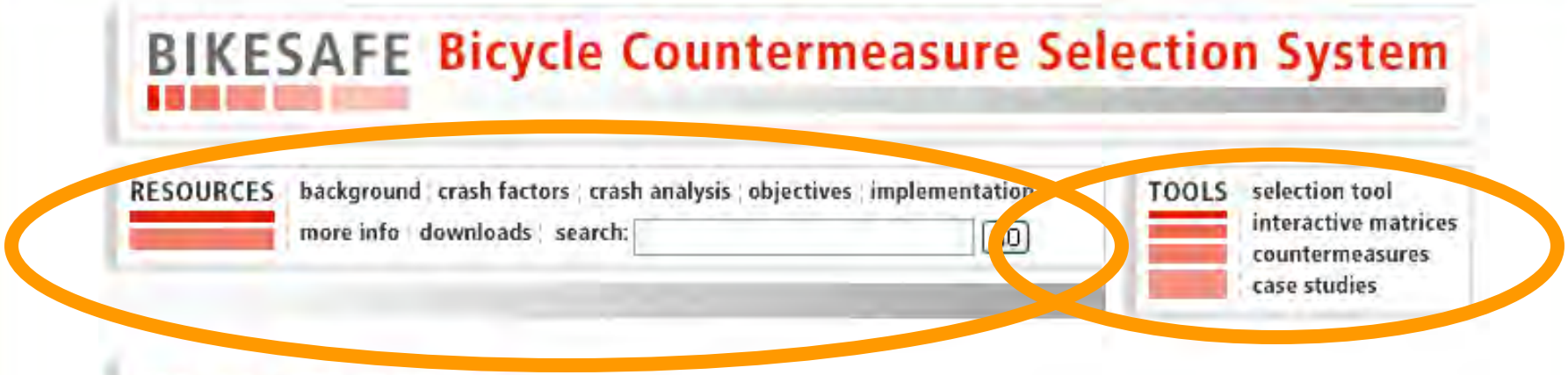
Why Use BIKESAFE

Mostly about treating existing roadways:

- Understand and address specific crash problems
- Address broader performance objectives to create safer, more accessible roadways
- Benefit from others' implementation experiences
- Learn about uses, estimated costs, considerations for countermeasures
- Tool to use as part of overall and comprehensive approach to providing safe and accessible streets



What is BIKESAFE?

The Bicycle Countermeasure Selection System (BIKESAFE) is intended to provide practitioners with the latest information available for improving the safety and mobility of those who bicycle. The information on the site falls into two categories, Resources and Tools, explained below. Learn more about BIKESAFE's contents and purpose, or go directly to any of the links above.

Resources

The resources are informational pages providing an overview of bicycling in today's transportation system, information about bicycle crash factors and analysis, and selecting and implementing bicycling improvements. Learn more about the resources sections or choose any link from the navigation bar above to get started.

Tools

The tools allow the user to select appropriate countermeasures or treatments to address specific bicycling objectives or crash problems. Start with one of these tools if you're already familiar with the issues involved in bicycle safety and mobility and want to start learning how you can make improvements in your own community.

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RESOURCES

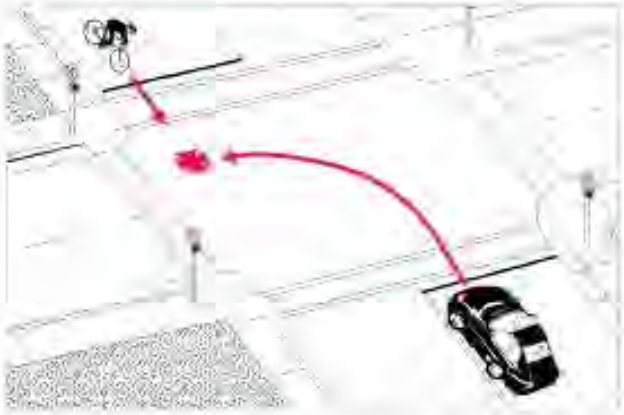
Crash Types Descriptions

7. Motorist Turned or Merged Left Into Path of Bicyclist

The motorist turns left into the path of an oncoming bicyclist or turns or merges left across the path of a bicyclist who is traveling straight in the same direction as the motorist. This crash can also involve motorists or bus or delivery vehicles pulling out of parking spaces or stops.

Possible Cause/Problem #1

The motorist turns left into the path of an oncoming bicyclist. The problem frequently occurs at signalized intersections on roads with four or more lanes, but may occur at driveways and other non-signalized junctions. The left-turning motorist is waiting for a gap in oncoming traffic and fails to look for, see, or yield to the oncoming bicyclist.



Possible Cause/Problem #2

A motorist turns or merges left across the path of a bicyclist who is traveling straight ahead in the same direction as the motorist. Many times this crash occurs at an intersection or driveway where the bicyclist is riding the wrong way against traffic or is riding the wrong way against traffic on the sidewalk. Reducing wrong-way riding would be a goal of bicyclist education and other countermeasures.

Most general countermeasures are the same for the above two types of crashes.

TOOLS

Crash Matrix

Select a Crash Group and Countermeasure Group from the matrix below by clicking on one of the dots, or view the text-only version.

Crash Group \ Countermeasure Group	Shared Roadway	On-Road Bike Facilities	Intersection Treatments	Maintenance	Traffic Calming	Trails/Shared-Use Paths	Markings, Signs, Signals	Education and Enforcement
1. Motorist failed to yield – signalized intersection	•		•		•	•	•	•
2. Motorist failed to yield – non-signalized intersection	•		•		•	•	•	•
3. Bicyclist failed to yield – signalized intersection	•		•		•	•	•	•
4. Bicyclist failed to yield – non-signalized intersection	•		•		•	•	•	•
5. Motorist drove out – midblock	•					•	•	•
6. Bicyclist rode out – midblock	•				•	•	•	•
7. Motorist turned or merged left into path of bicyclist	•	•	•		•	•	•	•
8. Motorist turned or merged right into path of bicyclist	•	•	•		•	•	•	•
9. Bicyclist turned or merged left into path of motorist	•		•	•	•	•	•	•
10. Bicyclist turned or merged right into path of motorist	•	•	•	•	•	•	•	•
11. Motorist overtaking bicyclist	•	•		•	•	•	•	•
12. Bicyclist overtaking motorist	•	•		•		•	•	•
13. Non-motor vehicle crashes	•			•		•	•	•

www.bicyclinginfo.org/bikesafe

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TOOLS

Objectives Matrix

You selected...

Objective:
Provide and maintain quality surfaces for bicyclists.

Countermeasure Group:
Maintenance

Therefore...

Applicable Countermeasures are:

- Repetitive/Short-Term Maintenance
- Hazard Identification Program
- Major Maintenance

Objective	Shared Roadway	On-Road Bike Facilities	Intersection Treatments	Maintenance	Traffic Calming	Trails/Shared-Use Paths	Markings, Signs, Signals	Education and Enforcement	Support Facilities and Programs
1. Provide safe on-street facilities/space for bicyclists.	•	•		•	•		•	•	•
2. Provide off-road paths or trails for bicyclists.				•		•	•	•	•
3. Provide and maintain quality surfaces for bicyclists.	•			•			•	•	
4. Provide safe intersections for bicyclists.	•		•		•	•	•	•	
5. Improve motorist behavior/ compliance with traffic laws.	•		•	•	•		•	•	•
6. Improve bicyclist behavior/ compliance with traffic laws.	•	•	•	•	•	•	•	•	•
7. Encourage and promote bicycling.	•	•		•		•	•	•	•

TOOLS

Countermeasures

A total of 50 engineering, education, and enforcement countermeasures are discussed in this section. The treatments and programs selected for inclusion have been proven effective at the countermeasures continue to be their choices to those included h can be found through many of th

Shared Road
The goal of a roadway shou efficiently acc travel, from bi motorists.

On-Road Bik
Various kinds as bike lanes curb lanes, m comfortable.

Intersection
Nearly half of crashes occu junctions.

Maintenance
Maintenance facilities mus routinely.

Traffic Calmi
Traffic calmin using physica people to driv

View Other Applicable Countermeasures

Hazard Identification Program

- view purpose
- view considerations
- view estimated cost
- view case studies

Roadways and off-road facilities can be made safer and more appealing to bicyclists by developing methods to identify hazards and repair needs and institutionalizing practices to address them. Different and combined approaches have been taken by communities but include developing bicyclist hazard reporting programs, hiring personnel to conduct regular inspections of bikeways, and providing for routine accommodation or scheduling and performance of regular activities such as sweeping, inspection and spot repairs, inspection and landscape maintenance, etc. Public hazard reporting programs typically involve developing a hazard identification reporting form such as a postcard and publicizing the program and procedures to report problems through bicycle shops, bike maps, bike clubs, and other venues. A staff coordinator (may be part-time) will be needed to administer the program, ensure that the problem is referred to the correct department and follow-through on resolution, including contacting the reporting person to advise them of the repair or other outcome.

Along with identifying problems, it is imperative that effective policies and procedures are in place to resolve them. Much routine maintenance might be accommodated through regular roadway maintenance (and the costs absorbed by, or at least shared within, the regular roadway maintenance budget). It is important that identification methods and maintenance procedures specify issues that are particular or more stringent for bicyclists, and that might otherwise not be detected or repaired to the necessary standard. Examples of issues that require particular attention are drain grates; cracked, uneven, or unswept surfaces — particularly of outside curb lanes, paved shoulders, or bike lanes; poor drainage; and slippery surfaces such as pavement markings, railroad crossings, utility covers, damaged pavement and others.

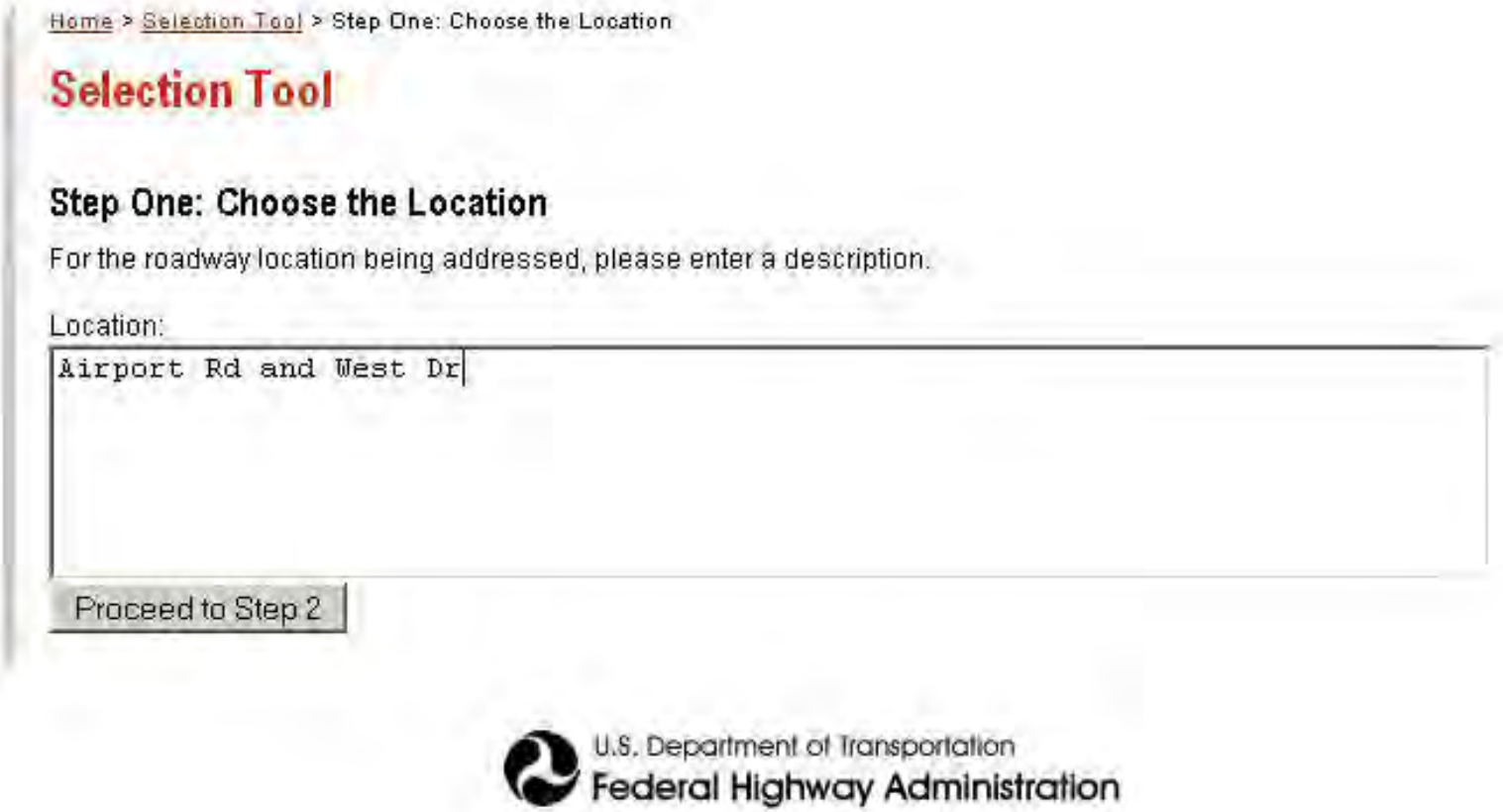
Below-grade drain grates create hazards for bicyclists.

Photo by Libby Thomas

www.bicyclinginfo.org/bikesafe

Pedestrian and Bicycle Information Center

TOOLS



www.bicyclinginfo.org/bikesafe

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Step Two: Select the Goal of the Treatment

For the roadway location being addressed, the goal of the bicycling treatment is intended to improve bicyclist safety and access by either acheiving one of the following performance objectives OR mitigating one of the following crash types:

Therefore, you must choose one of the following to begin:

Performance Objectives

- Provide safe on-street facilities/space for bicyclists
- Provide off-road paths or trails for bicyclists
- Provide and maintain quality surfaces for bicyclists
- Provide safe intersections for bicyclists
- Improve motorist behavior/compliance with traffic laws
- Improve bicyclist behavior/compliance with traffic laws
- Encourage and promote bicycling

Crash Types

- Motorist failed to yield - signalized intersection
- Motorist failed to yield - non-signalized intersection
- Bicyclist failed to yield - signalized intersection
- Bicyclist failed to yield - non-signalized intersection
- Motorist drove out - midblock
- Bicyclist rode out - midblock
- Motorist turned or merged left into path of bicyclist
- Motorist turned or merged right into path of bicyclist
- Bicyclist turned or merged left into path of motorist
- Bicyclist turned or merged right into path of motorist
- Motorist overtaking bicyclist
- Bicyclist overtaking motorist
- Non-motor vehicle crashes

Your Input:

Roadway Location:

Next Steps:

Proceed to Step 3

Select either a performance objective or a crash type

www.bicyclinginfo.org/bikesafe

Step Three: Describe the Site

Please answer the following questions.

1. Is the problem location on an off-road multi-use path (not at an intersection with a roadway) or on a roadway (or roadway/path intersection)?
- (•) Roadway
- ( ) Path
- ( ) Not Applicable/Unknown

2. In what type of area is the roadway located?
- ( ) Urban CBD
- (•) Urban - Other
- ( ) Suburban
- ( ) Rural
- ( ) Not Applicable/Unknown

3. What is the functional class of the roadway?
- ( ) Local
- ( ) Collector & Minor Arterial
- (•) Principal Arterial
- ( ) Not Applicable/Unknown

4. Is the problem location at an intersection or midblock?
- (•) Intersection
- ( ) Midblock
- ( ) Not Applicable/Unknown

5. Is vehicle volume low, medium, or high?
- ( ) Low (<10,000 ADT)
- ( ) Medium (10 - 25,000 ADT)
- (•) High (>25,000 ADT)
- ( ) Not Applicable/Unknown

6. Is vehicle prevailing speed low, medium, or high?
- ( ) Low (</= 30 mph)
- (•) Med (31 - 44 mph)
- ( ) High (>45mph)
- ( ) Not Applicable/Unknown

7. What is the number of through lanes?
- ( ) </=2
- ( ) 3 or 4
- (•) 5 or more
- ( ) Not Applicable/Unknown

8. Is a traffic signal present, being considered, or not an option?
- ( ) Present (removal not an option)
- (•) Present (removal could be an option)
- ( ) Not present (installation is not an option)
- ( ) Not present (installation possible)
- ( ) Not Applicable/Unknown

9. What are the existing on-road bicycle facilities?
- ( ) Bike Lane
- (•) Wide Curb Lane
- ( ) Paved Shoulder
- ( ) None or Other
- ( ) Not Applicable/Unknown

Your Input:

Roadway Location:

Your Crash Type:
Motorist turned or merged left into path of bicyclist

Next Steps:

Edit:

Change Your Crash Type

Start Over

Get Results

Select location characteristics.

If any unknown, countermeasures will not be excluded

Pedestrian and Bicycle Information Center

Applicable Countermeasures

Based upon your input, the following countermeasures were found:

- Shared Roadway
  - Lighting Improvements
  - Parking Treatments
  - Median/Crossing Island
  - Driveway Improvements
  - Access Management
  - Reduce Lane Number
- On-Road Bike Facilities
  - Bike Lanes
  - Paved Shoulders
  - Combination Lanes
- Intersection Treatments
  - Curb Radii Revisions
  - [illegible]
  - Sight Distance Improvements
  - Turning Restrictions
  - Merge and Weave Area Redesign
- Traffic Calming
  - Raised Intersection
- Trails/Shared-Use Paths
  - Path Intersection Treatments
  - Intersection Warning Treatments
- Mark[illegible], Signs, Signals
  - Install Signal/Optimize Timing
  - [illegible]
  - Pavement Marking Improvements
- Education and Enforcement
  - Bicyclist Education
  - Motorist Education

Your Input:

Roadway Location:

Your Crash Type:
Motorist turned or merged left into path of bicyclist

Your answers to the previous questions:

Roadway or Path: Roadway
Location: Urban - Other
Functional Class: Principal Arterial
Intersection or Midblock: Intersection
Volume: High (>25,000) ADT
Speed: Med (31 - 44 mph)
Lanes: 5 or more
Signal: Present (removal could be an option)
Bike Facilities: Wide Curb Lane

Next Steps:

Edit:

Change Your Crash Type
Change Your Answers to Site Description

Save:

Output Results to Microsoft Excel

Start Over

www.bicyclinginfo.org/bikesafe

TOOLS

Applicable Countermeasures

View Other Applicable Countermeasures

Install Signal/Optimize Timing

- view purpose
- view considerations
- view estimated cost
- view case studies

Traffic signals create gaps in traffic flow, allowing bicyclists, pedestrians, and motorists to access or cross the street. Signals are particularly important for crossing higher speed roads, multi-lane roads or highly congested intersections. National warrants from the *Manual on Uniform Traffic Control Devices* (MUTCD) are typically used for new signal installation.[1] Part 9 of the MUTCD focuses on "Traffic Calming for Bicycle Facilities." Some states have their own supplement to the MUTCD.

In downtown areas, signals are often closely spaced, sometimes at every block. A problem for bicycles is that signals are timed to accommodate typical motor vehicle speeds and flows. The motor vehicle speeds can be significantly faster than bicycle speeds. In addition, the clearance interval for motor vehicles crossing a wide intersection may not be long enough to ensure safe clearance by bicycles.

Although little research is available, timed sequencing of signals may take bicycling into account. Some cities time their downtown urban traffic signals to account for speeds of 20 to 25 km/h (12 to 16 mph), which allows bicycles to easily ride with traffic.

In locations with high volumes of
These have been popular in Euro
where bicycling accounts for appr
employed a bicycle traffic signal t
motor vehicles at a location with v
bicycle signal provides a separat
following after the intersection ha
RED" signs are also used.

Case Studies

- #5 – Valencia Street Road Diet — Creating Space for Cyclists - San Francisco, CA
- #17 – Taming the Urban Arterial - Madison, WI
- #24 – Improving Sight Distance between Cyclists and Motorists - San Francisco, CA
- #32 – Bicycle Boulevards — Bryant Street Example - Palo Alto, CA
- #34 – Path and Roadway Intersections - Portland, OR
- #38 – Bicycle Detection Program - Santa Cruz, CA
- #39 – Bicycle Signal Heads - Davis, CA
- #40 – Pedestrian/Bicycle Crosswalk Signals (Half-Signals) - Seattle, WA

Purpose

- Optimize signal timing to
  high rate of speed.
- Provide intervals in a traffic stream where bicycles can cross streets safely.

Applicable Countermeasures

View Other Applicable Countermeasures

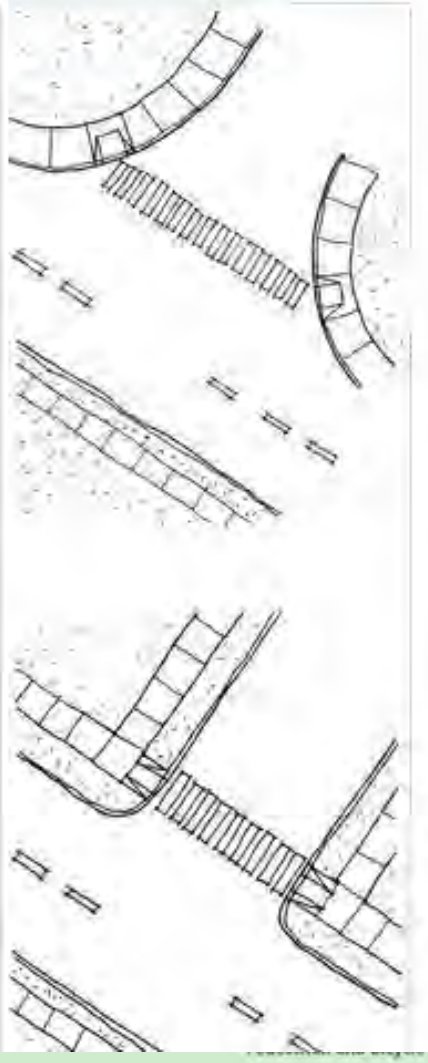
Curb Radii Revisions

- view purpose
- view considerations
- view estimated cost
- view case studies

Motor vehicles turning at a high rate of speed pose problems for bicyclists (as well as pedestrians). This is a common problem when motorists traveling on an arterial street turn onto a residential street. A typical bicycle-motor vehicle crash type, sometimes called a "right hook," occurs when a motor vehicle passes a bicycle going straight ahead and then turns right shortly after making the passing maneuver. Reducing the radii of curbs at these high speed right turns provides a remedy. Creating 90-degree intersection corners or corners with tight curb radii tend to slow motorists.

Some communities routinely reduce curb radii at locations where the routes: (1) are used by schoolchildren or the elderly, (2) are in neighborhood shopping areas with high bicycle and pedestrian volumes, and (3) are at particular intersections known to have a safety problem (see case study #20). A logical step is to evaluate the curb radii along a corridor frequented by bicyclists, along with a study of the crash types. Care must be used when revising curb radii on routes with truck and bus traffic. If a curb radius is made too small, large trucks and buses may ride over the curb or may veer out into an adjacent traffic lane to make the turn.

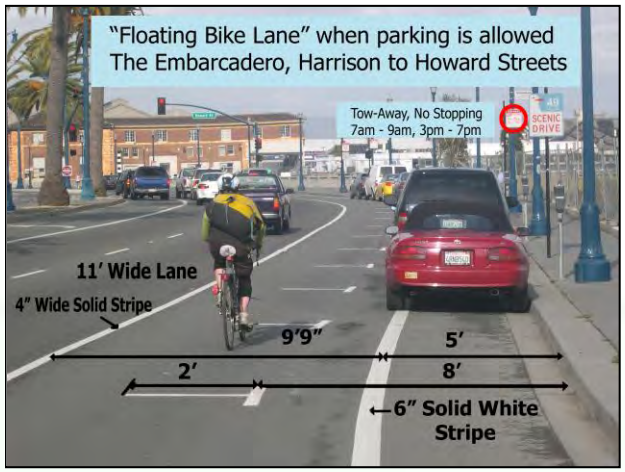
When there is parking and/or a bike lane, curb radii can be tighter, because the motor vehicles will have more room to negotiate the turn. Older cities in Europe and in the northeast United States frequently have curb radii of 0.6 to 1.5 m (2 to 5 ft) without suffering any detrimental effects. More typically, however, in new construction the appropriate turning radius is about 4.6 m (15 ft) and about 7.6 m (25 ft) for arterial streets with a substantial number of turning buses and/or trucks. Tighter turning radii are particularly important where streets intersect at a skew. While the corner characterized by an acute angle may require a slightly larger radius to accommodate the turning maneuvers, the corner with an obtuse angle should be kept very tight to prevent high-speed turns.



Case Studies

Each study includes:

- Background
- Countermeasures
- Evaluation and Results
- Recommendations
- Costs and Funding Info.
- Contact Info.



Floating Bike Lanes in Conjunction with Part-time Parking

SAN FRANCISCO, CA

Michael Sallaberry, PE, Associate Transportation Engineer, San Francisco Department of Parking and Traffic

Background

The Embarcadero is a waterfront arterial in San Francisco that replaced a freeway heavily damaged by the Loma Prieta Earthquake of 1989. The roadway varies from four to six lanes (two to three in each direction) and now handles weekday traffic volumes of 40,000-50,000 vehicles per day.

After the roadway was constructed and while the area along the waterfront continued its evolution, it was determined in some areas that there was a need for on-street parking during non-peak traffic periods. During peak periods, there would be a tow-away restriction to uncover a third travel lane in each direction. While the accommodation of bicyclists was intended along the length of the roadway, there was a problem with how to stripe or designate space for cyclists to use along the sections with part-time parking.

One option was to stripe two rows of shared lane markings along each direction of the roadway, one along the curb to show where cyclists would ride when there was no parking allowed and the other farther away from the curb when parking was allowed. This was rejected on the basis that two rows of bicycle specific markings would be confusing to road users. Also, it generally is desirable to explore options which give cyclists their own striped space on the roadway before accepting shared lane markings in narrow lanes.

Case Studies

#20 – Curb Radii/Curb Revisions

SEATTLE, WASHINGTON

Peter Lagerwey, Pedestrian & Bicycle Program Coordinator, City of Seattle

Background

When streets intersect at an obtuse angle or have a large curb radius, motorists can make turns at relatively high speeds. By contrast, 90-degree intersections and corners with tight curb radii tend to slow motorists down. The problem with obtuse angles is particularly bad when a vehicle on an arterial street turns onto a residential street. Motorists turning right at high speed may cut off bicyclists traveling straight on the arterial street. Pedestrians crossing the residential street adjacent to the arterial may not expect high-speed turning traffic, or they may have their backs facing the turning cars.

Countermeasures

The solution to this problem in Seattle has been to reduce the turning radius. Seattle routinely reduces the curb radii at locations that: a) are on routes used by school children or the elderly; b) are in neighborhood shopping areas with high pedestrian volumes; and c) are at intersections identified by the neighborhood as having a unique safety problem.

The goal is to slow down right turning motor vehicles. This solution works particularly well where motor vehicles are turning right, at an obtuse angle, from an arterial street onto a residential street.

When making curb radii revisions, consideration must be made for truck and bus traffic. A curb radius that is too tight may result in the truck or bus crossing the double yellow line or overriding the curb. This can damage the curb and pose a risk to pedestrians. However, when a truck or bus is turning onto a four-lane roadway (two lanes in each direction), it often is acceptable to turn into the second (inside) lane as long as the center double yellow line is not crossed. Such turns would not be acceptable in cases where truck traffic is very heavy or there is a double right turn.

Obtuse angle intersection allowed motorists to make high-speed turns.

- How to know what crash types are a problem in your community?
- How to determine performance priorities?

Other tools:

- How to Develop a Pedestrian Safety Action Plan
- Ped and Bike Intersection Safety Indices
- Pedestrian Road Safety Audit Guide and Prompt Lists
- PBCAT – type pedestrian and bicycle crashes

Pedestrian & Bicycle Crash Analysis Tool (PBCAT)

Purpose

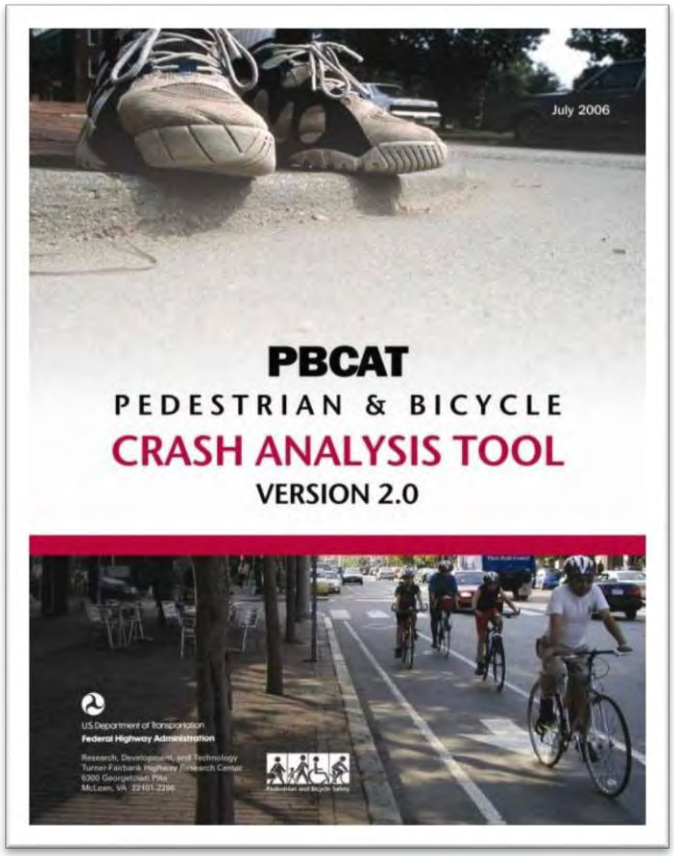
Assists with development and analysis of detailed pedestrian and bicycle crash databases

Audience

Engineers, Planners, and State/Local Coordinators

Link

www.walkinginfo.org/facts/pbcat



Pedestrian and Bicycle Information Center

Why Crash Typing?

Traditional Electronic Crash Data

- √ When (date, time of day, day of week)
- √ Where (city, street, roadway class, intersection)
- √ Who (age, gender, severity)
- ? What happened leading up to the crash

Crash Typing

- Answers “what happened”
- Details on location

Crash Typing History

- NHTSA- Crash Typologies – 1970s – led to improved countermeasures
- Pedestrian and Pedestrian Crash Types of the early 1990s
- PBCAT Version 1.0 –1999
- PBCAT v. 2 released 2006
- Over 1200 downloads of v. 2

http://www.bicyclinginfo.org/facts/pbcat/download.cfm

Home > Get Crash and Safety Facts > **Pedestrian and Bicycle Crash Analysis Tool (PBCAT)**

Pedestrian and Bicycle Crash Analysis Tool (PBCAT)

The Pedestrian and Bicycle Crash Analysis Tool (PBCAT) is a crash typing software product intended to assist state and local pedestrian/bicycle coordinators, planners and engineers with improving walking and bicycling safety through the development and analysis of a database containing details associated with crashes between motor vehicles and pedestrians or bicyclists. Version 2.1.1 is now available for download.

PBCAT v. 2

About PBCAT

What is PBCAT exactly and why would it help to reduce pedestrian crashes?

PBCAT Features

Learn about the user-friendly features that allow you to easily collect, organize and analyze data.

PBCAT Applications

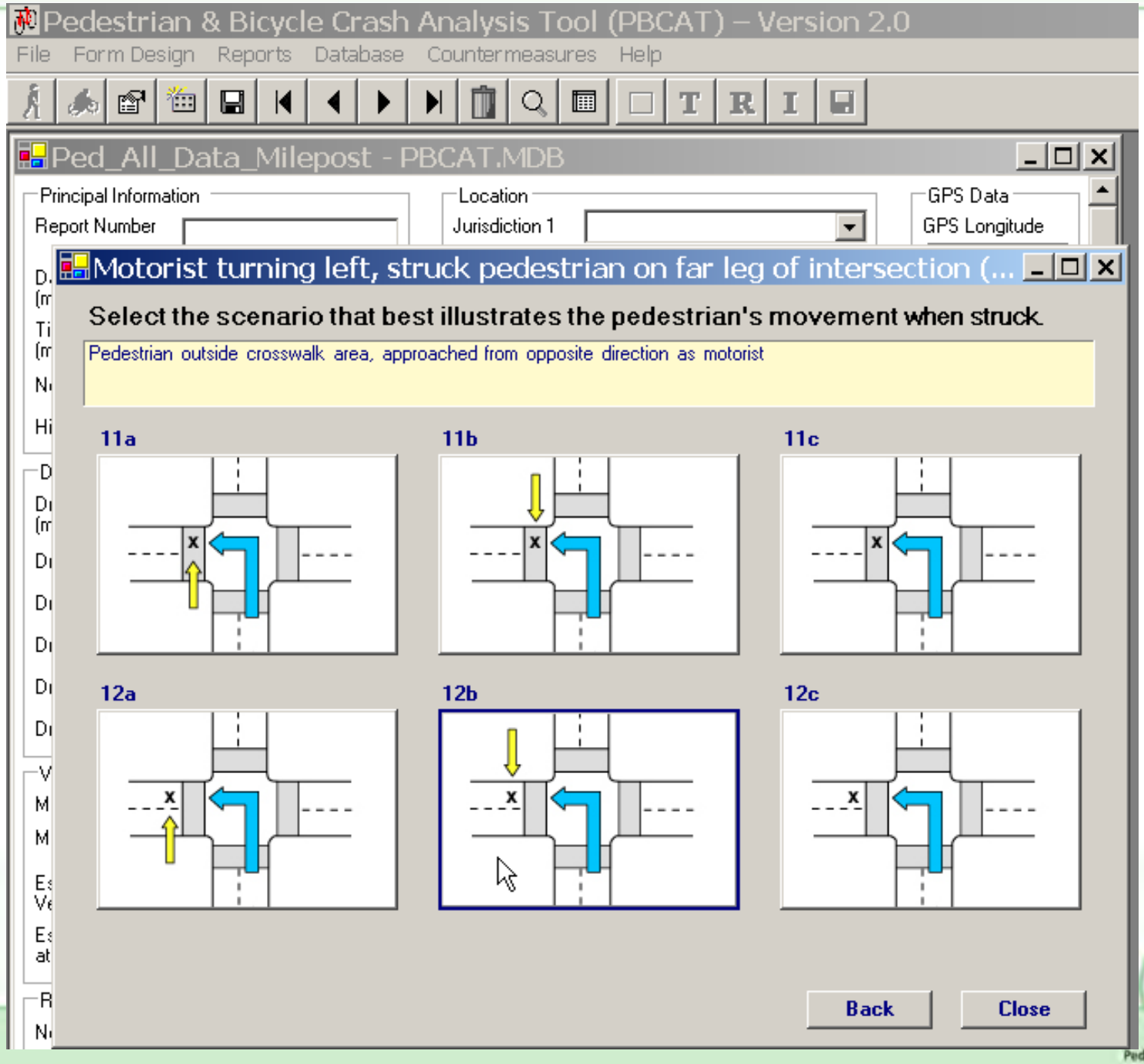
PBCAT Version 2.0

Greatly enhanced features including:

- Navigation in familiar (Windows like) user interface
- More user options and greater customization
- Countermeasure information – links directly to **PEDSAFE**/**BIKESAFE**
- Better reporting capabilities & outputs
- Options for 'group' crash typing
- Option for location/scenario detail - ped intersection crashes
- Easy export functions for merging/using data in other formats – Excel, SAS, etc.

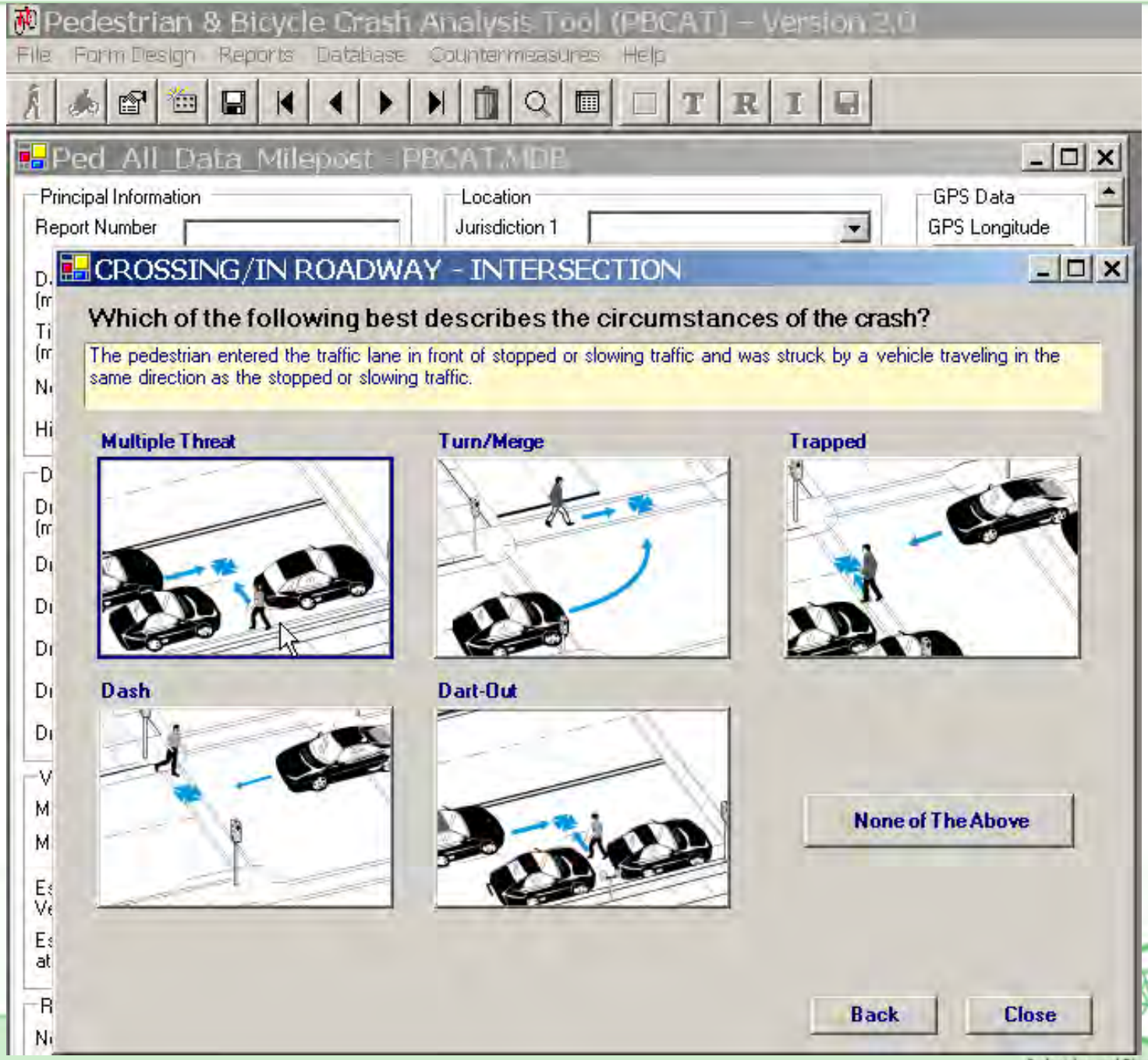
Scroll-over each choice and text describes in detail

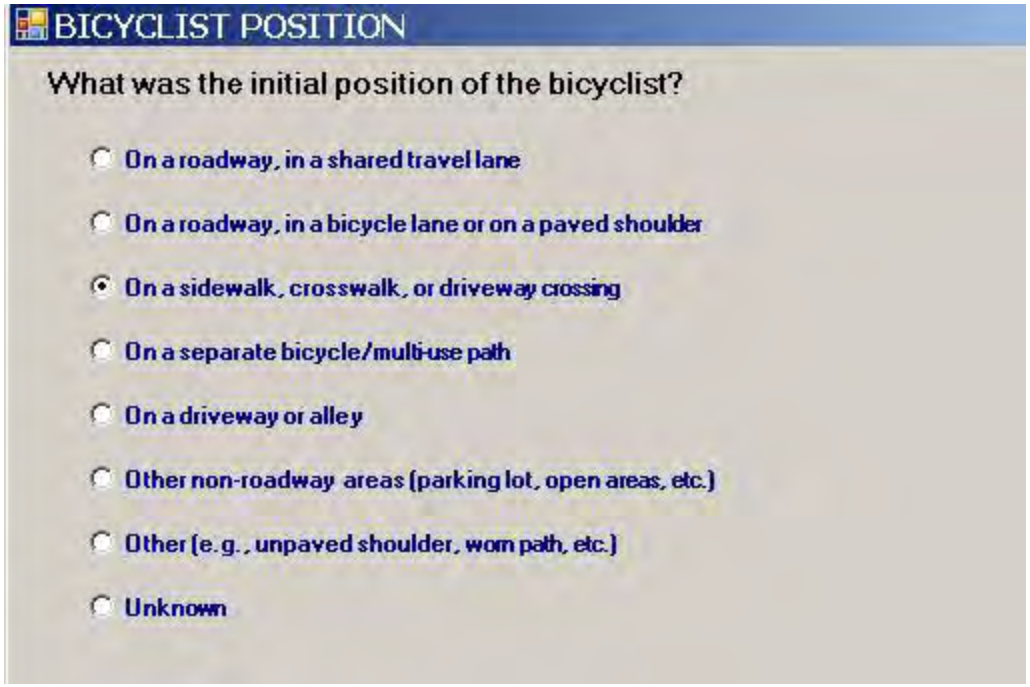
Pedestrian and Bicycle Information Center



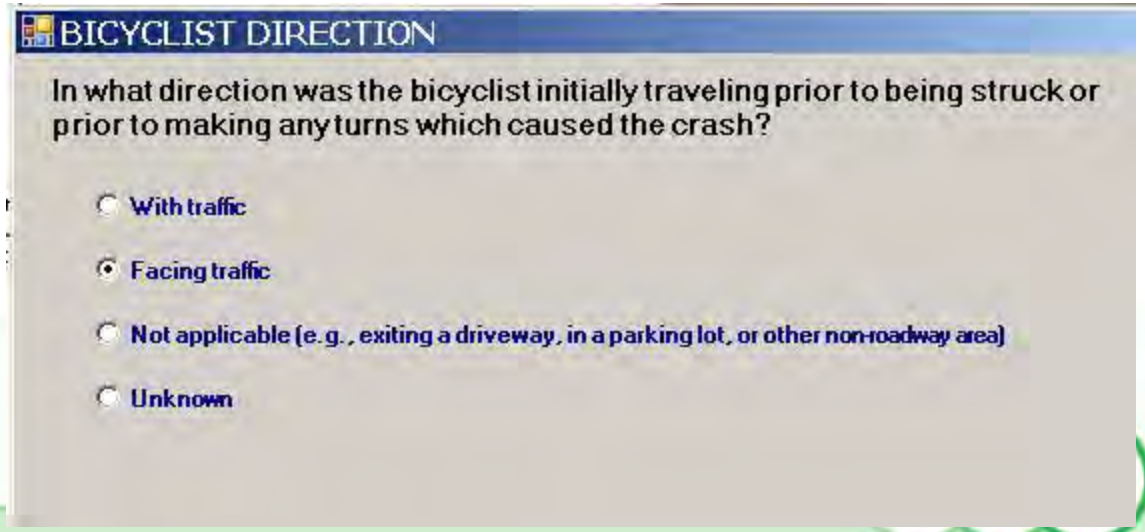
Detailed Pedestrian Intersection collision scenarios

Pedestrian and Bicycle Information Center

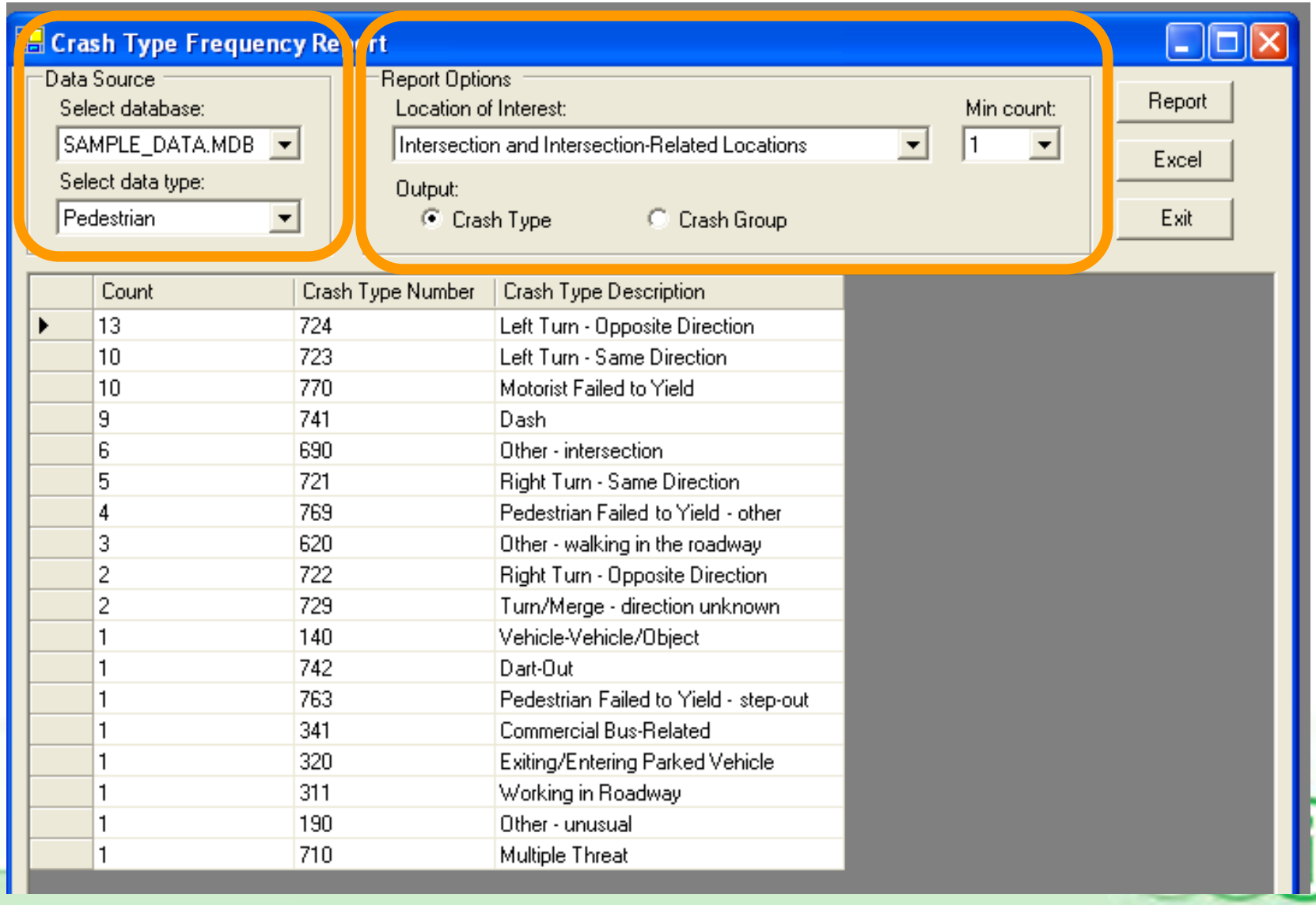

Pedestrian & Bicycle Crash Analysis Tool (PBCAT) – Version 2.0
File Form Design Reports Database Countermeasures Help
Ped_All_Data_Milepost : PBCAT.MDB
Principal Information
Report Number
Location
Jurisdiction 1
GPS Data
GPS Longitude
CROSSING/IN ROADWAY - INTERSECTION
Which of the following best describes the circumstances of the crash?
The pedestrian entered the traffic lane in front of stopped or slowing traffic and was struck by a vehicle traveling in the same direction as the stopped or slowing traffic.
Multiple Threat
Turn/Merge
Trapped
Dash
Dart-Out
None of The Above
Back
Close



General location type + Bicyclist Position, and Direction of Travel captured



Crash Types or Groups - Reports



Count	Crash Type Number	Crash Type Description
13	724	Left Turn - Opposite Direction
10	723	Left Turn - Same Direction
10	770	Motorist Failed to Yield
9	741	Dash
6	690	Other - intersection
5	721	Right Turn - Same Direction
4	769	Pedestrian Failed to Yield - other
3	620	Other - walking in the roadway
2	722	Right Turn - Opposite Direction
2	729	Turn/Merge - direction unknown
1	140	Vehicle-Vehicle/Object
1	742	Dart-Out
1	763	Pedestrian Failed to Yield - step-out
1	341	Commercial Bus-Related
1	320	Exiting/Entering Parked Vehicle
1	311	Working in Roadway
1	190	Other - unusual
1	710	Multiple Threat

Countermeasures

Countermeasures for specific crash types can be found in two web sites - PEDSAFE and BIKESAFE. These applications provide practitioners with the latest information available for improving the safety and mobility of pedestrians and bicyclists. Both systems include several interactive tools and are designed to:

- Provide information on the countermeasures available for prevention of pedestrian and bicyclist crashes and/or improving motorist and pedestrian behavior.
- Highlight the purpose, considerations and cost estimates associated with each countermeasure.
- Provide a decision process to select the most applicable countermeasures for a specific location.
- Provide links to case studies showing the various treatments and programs implemented in communities around the country.
- Provide easy access to resources such as statistics, implementation guidance, and reference materials.

Click on the buttons on the right to access the web sites.

Countermeasures are provided for 12 crash groups in PEDSAFE and 13 crash groups in BIKESAFE. Click on the Crash Type Mapping icon to access the files showing the relationship between these groups and the PBCAT crash types and groups.

PEDSAFE

BIKESAFE

Crash Type Mapping

Pedestrian

Bicyclist

Close

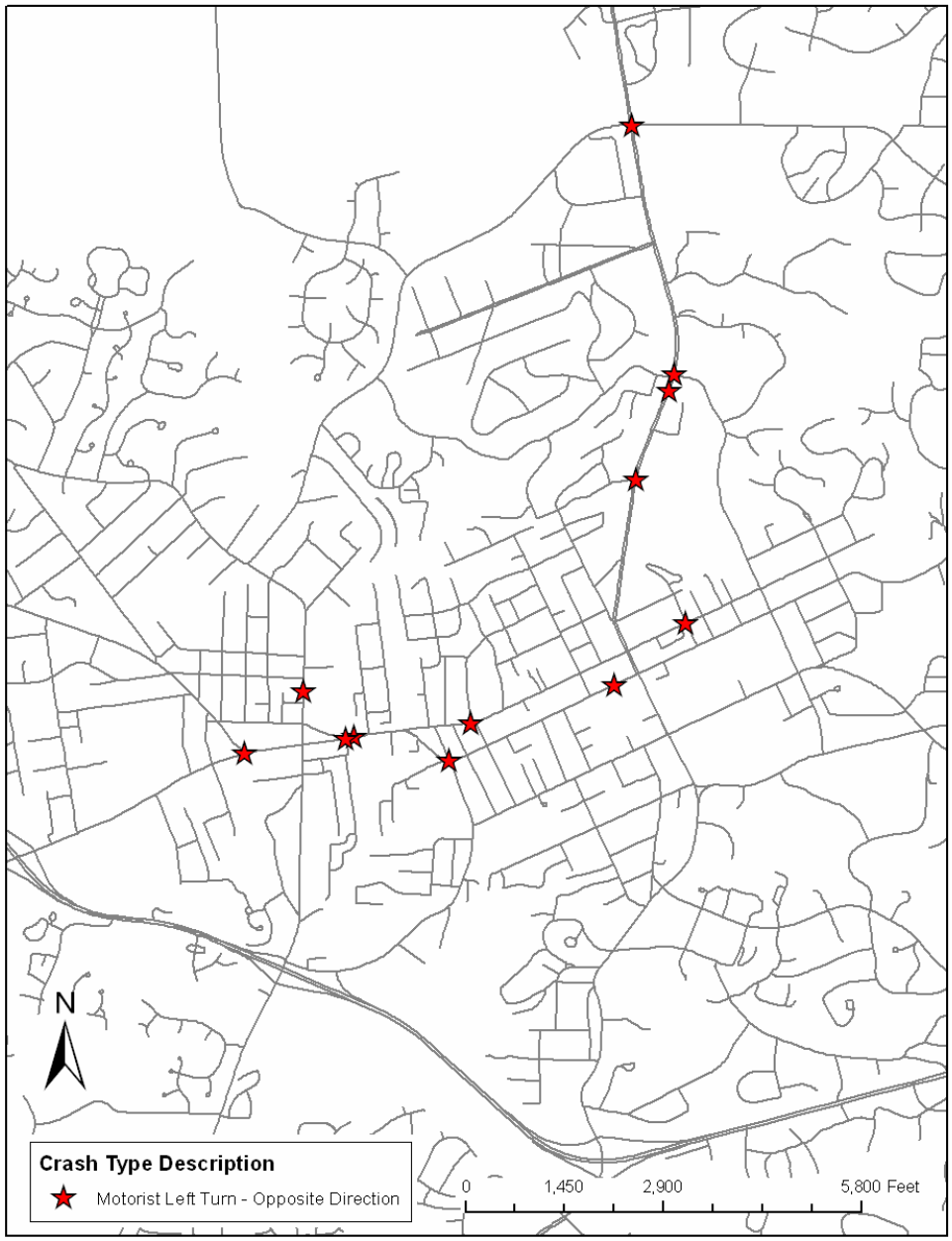
www.walkinginfo.org/facts/pbcat

Pedestrian and Bicycle Information Center

Application example – Chapel Hill, NC

- Used PBCAT, state Crash files, and GIS tools to identify high-crash locations, crash types and other crash factors
- 13% involved motorists turning left in front of on-coming (with traffic) bicyclists
- 11% motorist drive out at sign-control
- 10% motorist drive out at midblock locations
  - [top three crash types]

- Locations & crash types
- Roadway conditions
  - Signals & Phasing
  - No. lanes and configuration
  - Traffic volume and speed
  - Light conditions
  - Behaviors



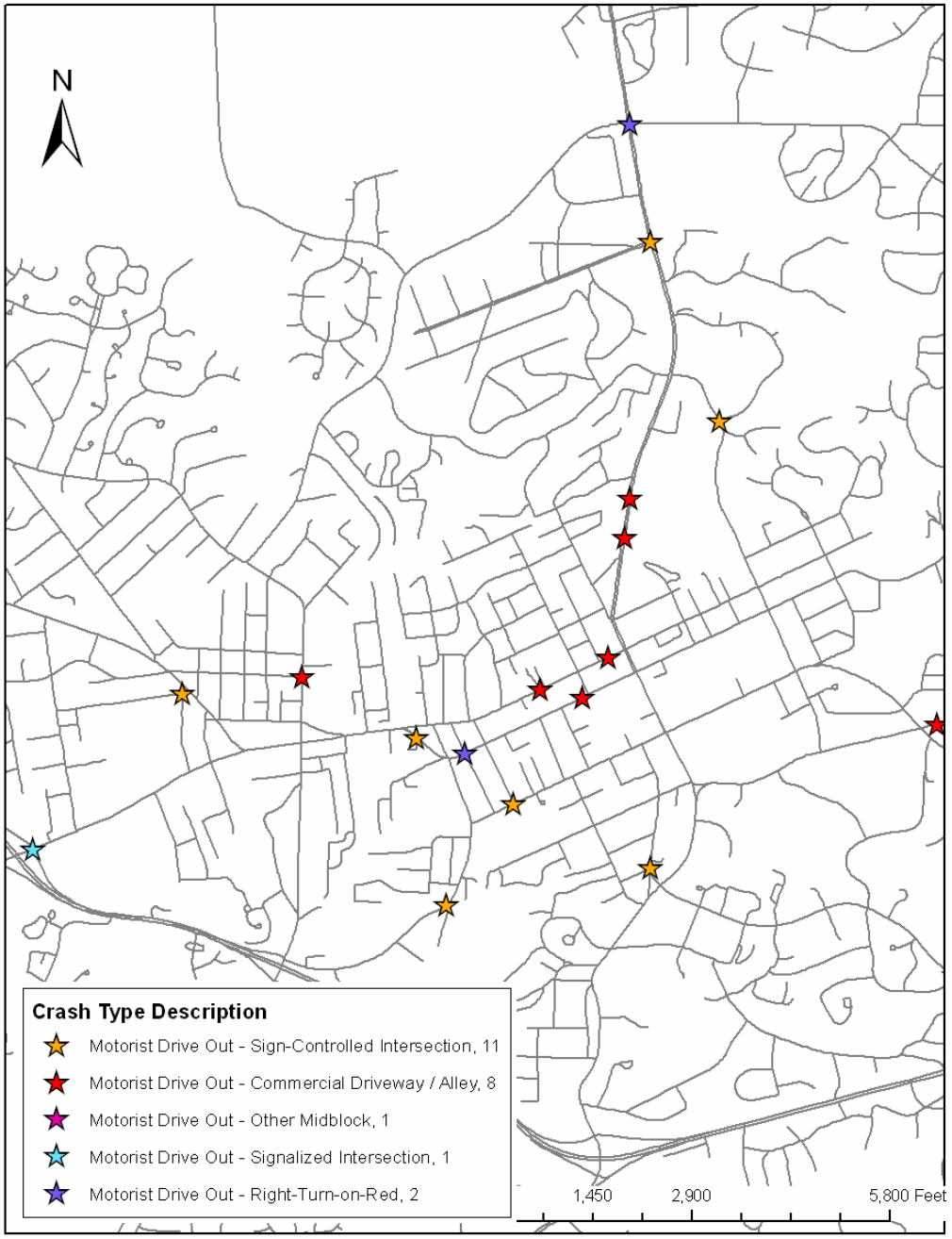
BIKESAFE – ideas on countermeasures

(RSAs) Audits of Conditions – to narrow optimal countermeasures:

- Numerous driveways and side streets with sight distance issues, wide turn radii
- High volume, 5-lane corridor with wide outside shared lanes, bus and truck traffic

Behaviors:

- > 40 mph speeds, wrong-way cycling on sidewalk



www.walkinginfo.org/facts/pbcat

Pedestrian Road Safety Audit Guidelines and Prompt Lists

Purpose

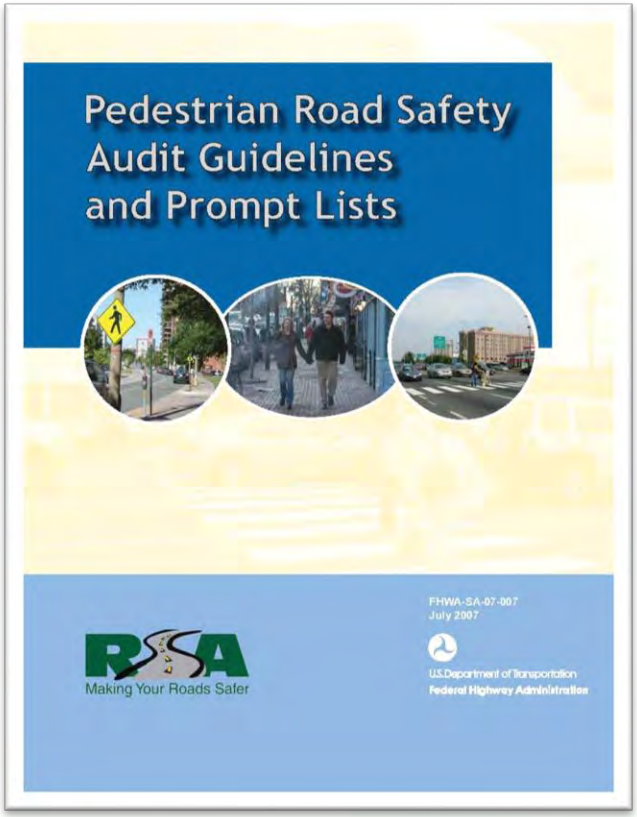
To provide a better understanding of the needs of pedestrians in the transportation system when conducting an RSA

Audience

State and Local Transportation Agencies

Link

www.walkinginfo.org/pedrsa



Pedestrian and Bicycle Information Center

What is a Road Safety Audit (RSA)?

A formal safety performance evaluation of an existing or future road or intersection by an independent, multidisciplinary team.

What is an RSA?

An RSA is a tool that:

- Considers all road users
- Considers all environmental conditions

What is an RSA?

An RSA is a tool that:

- Considers all road users
- Considers all environmental conditions

Why are Road Safety Audits Needed?

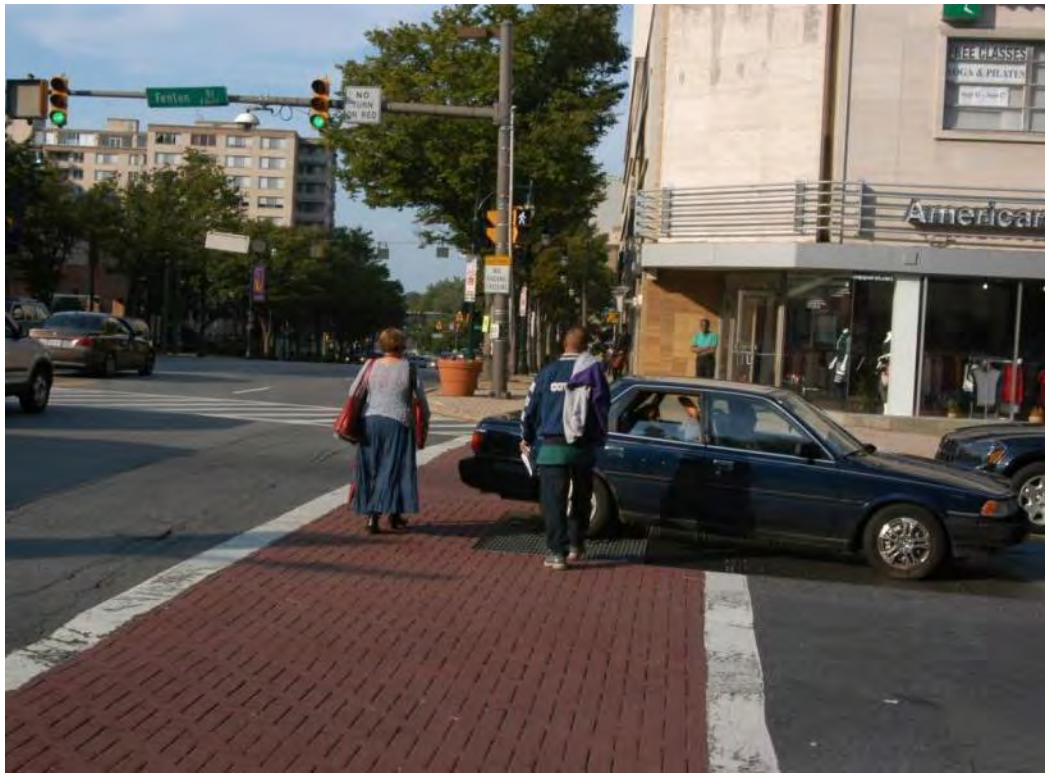
- Roadway designs need to anticipate and accommodate common errors.
- Not all road-related safety issues are identified in collision reports.
- Ensure all modes are considered.

How have our roadways been built?

Pedestrian Issues Exist in Varying Degrees

How have our roadways been built?

Pedestrian Issues Exist in Varying Degrees

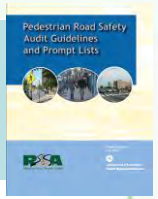


How have our roadways been built?

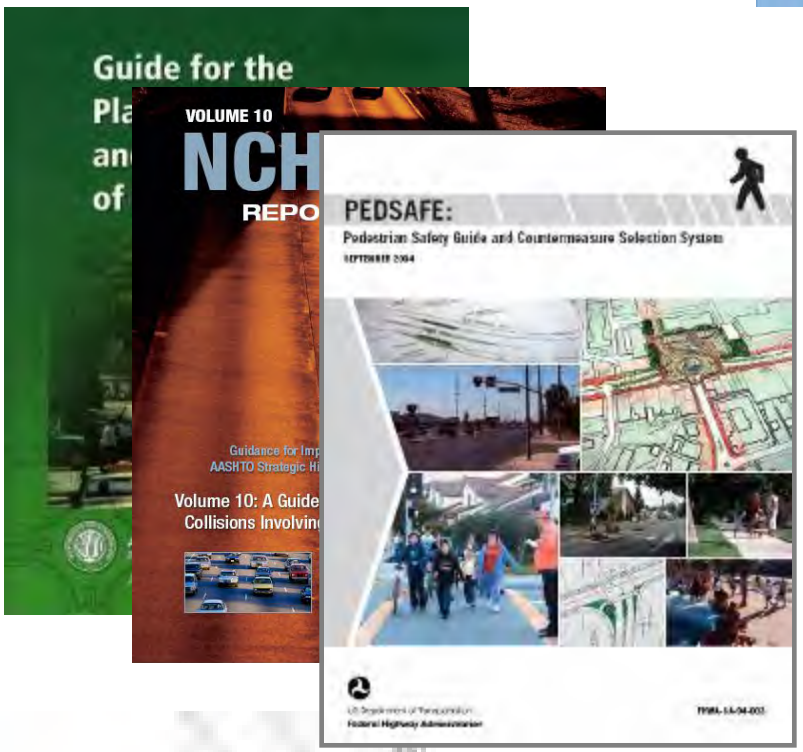
How have our roadways been built?

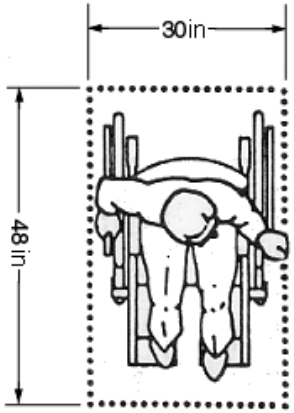
Pedestrian facilities may not consider desire lines.

PART 1: KNOWLEDGE BASE

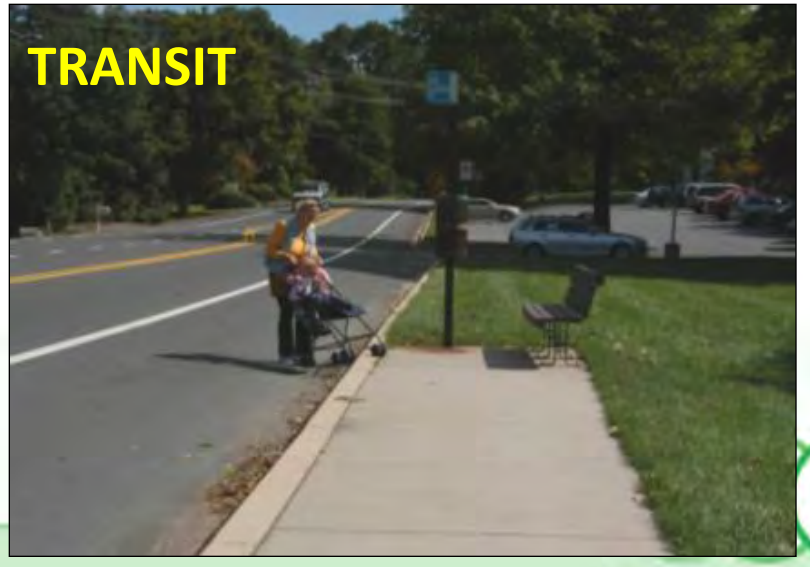


- Resources
- Pedestrian Characteristics
- Analyzing Pedestrian Crash Factors





PART 2: FIELD MANUAL



How are RSAs conducted?

Ped RSA Guidelines & Prompt Lists

Example of master prompt list for RSA Teams

Zones:

A. Streets
B. Street Crossings
C. Parking Areas / Adjacent Developments
D. Transit Areas

Subtopics:

1. Presence, Design and Placement
2. Quality, Condition, and Obstructions
3. Continuity and Connectivity
4. Lighting
5. Visibility
6. Access Management
7. Traffic Characteristics
8. Signs and Pavement Markings
9. Signals

RSA Master Prompt List

Universal Considerations (For Entire RSA Site)

I. Needs of Pedestrians: Do pedestrian facilities address the needs of all pedestrians?

II. Connectivity and Convenience of Pedestrian Facilities: Are safe, continuous, and convenient paths provided along pedestrian routes throughout the study area?

III. Traffic: Are design, posted, and operating traffic speeds compatible with pedestrian safety?

IV. Behavior: Do pedestrians or motorists regularly misuse or ignore pedestrian facilities?

V. Construction: Have the effects of construction on all pedestrians been addressed adequately?

VI. School Presence: Is the safety of children in school zones adequately considered?

Topic	Subtopic	RSA Zones			
		A. Streets	B. Street Crossings	C. Parking Areas/Adjacent Developments	D. Transit Areas
Pedestrian Facilities	1. Presence, Design, and Placement	Sidewalks, paths, ramps, and buffers	Crossing treatments, intersections	Sidewalks and paths	Seating, shelter, waiting/loading/ unloading areas
	2. Quality, Condition, and Obstructions	Sidewalks, paths, ramps, and buffers	Crossing treatments (see prompts in A)	Sidewalks and paths (see prompts in A)	Seating, shelter, waiting/loading/ unloading areas (see prompts in A)
	3. Continuity and Connectivity	Continuity/ Connectivity with other streets and crossings	Continuity/connectivity of crossing to ped network; channelization of peds to appropriate crossing points	Continuity/connectivity of pedestrian facilities through parking lots/adjacent developments	Connectivity of ped network to transit stops
	4. Lighting	Pedestrian lighting along the street	Lighting of crossing	Pedestrian level lighting in parking lots/adjacent developments (see prompts in A and B)	Lighting at and near transit stop
	5. Visibility	Visibility of all road users	Visibility of crossing/ waiting pedestrians and oncoming traffic	Visibility of pedestrians and backing/turning vehicles; visibility of pedestrian path	Visibility of pedestrians/ waiting passengers and vehicles/buses
Traffic	6. Access Management	Driveway placement and design along streets	Driveway placement next to intersections	Driveway placement and use in relation to pedestrian paths	n/a*
	7. Traffic	Volume and speed of adjacent traffic, conflicting conditions	Volume and speed of traffic approaching crossing, conflicting movements	Traffic volume and speed in parking lots and developments, conflicting conditions	Volume and speed of adjacent traffic and traffic at crossings to bus stops, conflicting conditions
Traffic Control Devices	8. Signs and Pavement Markings	Use and condition of signs, pavement markings, and route indicators	Use and condition of signs, pavement markings, and crossing indicators	Use and condition of signs, pavement markings for travel path and crossing	Use and condition of transit-related signs and pavement markings
	9. Signals	n/a*	Presence, condition, timing, and phasing of signals	n/a*	See prompts in B

Some of the topics in the matrix have listings that state "n.a." or "not applicable." This does not mean that there are no issues associated with a specific topic in a particular zone, rather there are no checks for the corresponding topic and RSA zone.

Ped RSA Guidelines & Prompt Lists

Example of detailed prompt lists for RSA Teams

Master Prompt	Detailed Prompt		RSA Stages			
			planning	design	construction	post-construction
A.1 Presence, Design, and Placement	A.1.1	Are sidewalks provided along the street?	✔	✔	✔	✔
	A.1.2	If no sidewalk is present, is there a walkable shoulder (e.g. wide enough to accommodate cyclists/pedestrians) on the road or other pathway/trail nearby?	✔	✔	✔	✔
	A.1.3	Are shoulders/sidewalks provided on both sides of bridges?	✔	✔	✔	✔
	A.1.4	Is the sidewalk width adequate for pedestrian volumes?	✔	✔	✔	✔
	A.1.5	Is there adequate separation distance between vehicular traffic and pedestrians?	✔	✔	✔	✔
	A.1.6	Are sidewalk/street boundaries discernable to people with visual impairments?		✔	✔	✔
	A.1.7	Are ramps provided as an alternative to stairs?	✔	✔	✔	✔

Ped RSA Guidelines & Prompt Lists

Example of detailed descriptions of prompt lists

master prompt

detailed prompt question

more detailed information on what to look for

examples from previous RSAs

C.2 Quality, Condition, and Obstructions

C.2.1 Do parked vehicles obstruct pedestrian paths?

Legally or illegally parked vehicles may obstruct pedestrian pathways, including marked crosswalks. Obstruction of pedestrian pathways by parked vehicles often occurs:

- Where parking supply falls short of demand, so drivers park in any available area.
- Near major building accesses, where vehicles parked for passenger pickup/drop-off or for convenience interfere with pedestrians entering and exiting the building.
- Where parking areas are too close to pedestrian facilities, with the result that vehicle overhangs intrude on pedestrian pathways.
- Where parking facilities are inconvenient, causing drivers to park in unoccupied or more convenient areas reserved for pedestrian use.

Vehicles can form obstructions to pedestrians. Statutes and regulations are required to support enforcement of policies such as no parking on sidewalks. Here an automobile dealer used the sidewalk to store excess vehicle inventory.

The RSA team should evaluate parking generators during periods of peak parking demand on an RSA of an existing facility.

RSA Example

Drivers may park where their vehicles obstruct pedestrian facilities: *Parked or waiting vehicles may partly or entirely obstruct pedestrian facilities such as sidewalks and crosswalks.* Motorists may knowingly or unknowingly block pedestrian paths. When pedestrian paths are blocked, pedestrians may take paths that put them in conflict with vehicular traffic.

Vehicle overhangs partly block a sidewalk. The sidewalk width appears to still be sufficient to accommodate a wheelchair, but some of the pedestrians walking in a group have entered the roadway at the narrowed part of the sidewalk. The RSA team may suggest placing parking stops and signs at the front of the parking space to encourage drivers to pull completely into parking spaces.

RSA Results

RSA Results

Pedestrian Safety Guide for Transit Agencies

Purpose

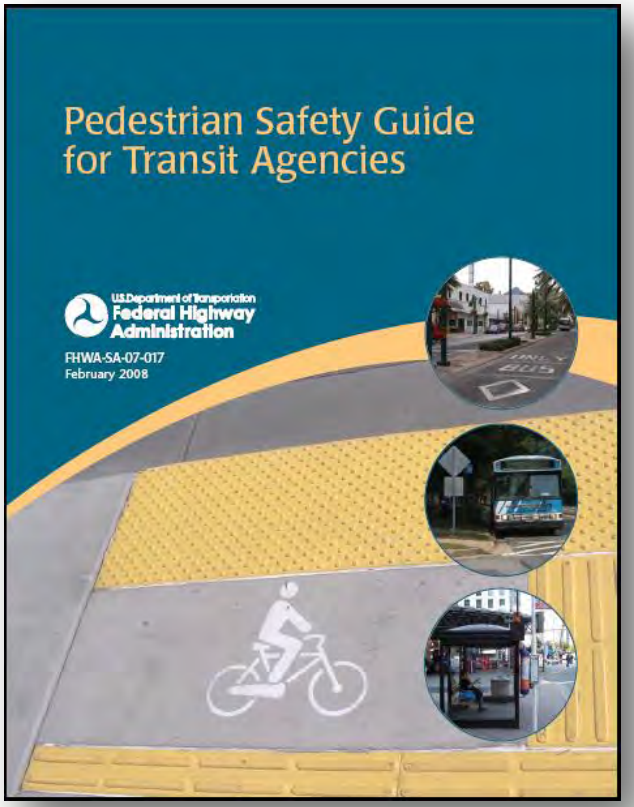
Provides transit agencies with an easy-to-use resource for improving pedestrian safety

Audience

Transit Agencies and their Partners

Link

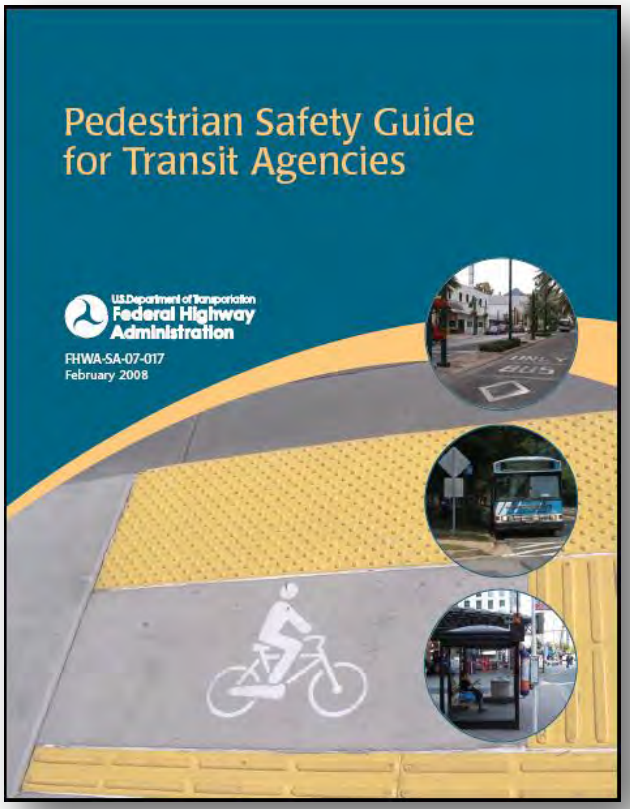
www.walkinginfo.org/transitguide



Pedestrian and Bicycle Information Center

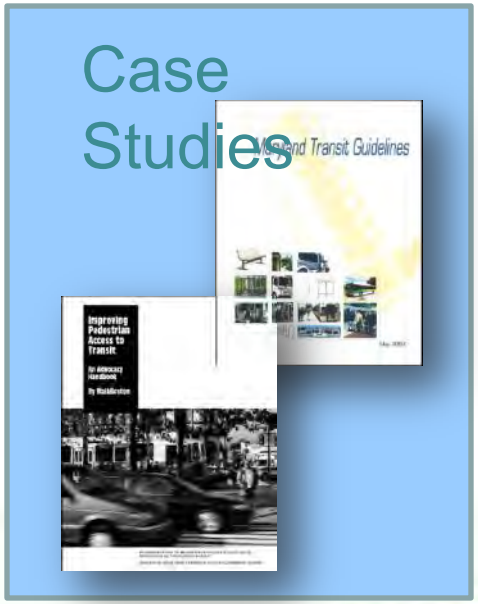
Transit Guidebook: Overview

The guide emphasizes the importance of solving pedestrian safety issues through partnerships between transit agencies and state and local transportation agencies, municipalities, and consumer interest all of whom can affect roadways and the pedestrian infrastructure.



Transit Guidebook: Content

1. Tools for identifying pedestrian safety and access issues
2. Policy and organizational approaches
3. Engineering, educational, and incentive approaches
4. Background information on pedestrian safety concepts
5. Legal issues, including key cases and rulings



Transit Guidebook

1. Tools for identifying pedestrian safety and access issues:
   - Bus Stop Assessments
   - Pedestrian Observation and Questionnaires
   - Pedestrian Crash Data Analysis

QUICK BUS STOP CHECKLIST

Route Name:	*Location:*	*Weather Conditions:*	*Stop No.:*

PART B: Landing Area Assessment

B1	Is there a landing area at least 5 feet wide and 8 feet deep adjacent to the curb/street?					Yes ☐ No ☐
B2	Where is the landing area positioned in relation to the curb/street?					
	Below street level (low ground or shoulder)	☐	Shoulder	☐	Other (specify):	
			Adjacent	☐		☐
	Sidewalk	☐	Bus Bulb	☐	Off-Road/No sidewalk	☐
B3	What is the material of the landing area?					
	Asphalt ☐	Dirt ☐	Gravel ☐		Other (specify):	
	Concrete ☐	Grass ☐	Pavers ☐			☐
B4	Are there problems with the landing area surface?					Yes ☐ No ☐
	If YES, rank resulting accessibility potential:					
		Not Accessible	Minimally Accessible	Accessible		
	Uneven	☐	☐	☐		
	Slopes up from the street	☐	☐	☐		
	Slopes down from the street	☐	☐	☐		
	Requires stepping over drain inlet	☐	☐	☐		
	Other (Specify)	☐	☐	☐		
B5	Are there any obstacles that would limit the mobility of a wheelchair (trash receptacle, newspaper boxes, landscaping, other?					Yes ☐ No ☐
	If YES, describe obstruction:					

Case Studies

Master Prompt		Detailed Prompt	RSA Stages			
			planning	design	construction	post-construction
A.1 Presence, Design, and Placement	A.1.1	Are sidewalks provided along the street?	✓	✓	✓	✓
	A.1.2	If no sidewalk is present, is there a walkable shoulder (e.g. wide enough to accommodate cyclists/pedestrians) on the road or other pathway/trail nearby?	✓	✓	✓	✓
	A.1.3	Are shoulders/sidewalks provided on both sides of bridges?	✓	✓	✓	✓
	A.1.4	Is the sidewalk width adequate for pedestrian volumes?	✓	✓	✓	✓
	A.1.5	Is there adequate separation distance between vehicular traffic and pedestrians?	✓	✓	✓	✓
	A.1.6	Are sidewalk/street boundaries discernable to people with visual impairments?		✓	✓	✓
	A.1.7	Are ramps provided as an alternative to stairs?	✓	✓	✓	✓
A.2 Quality, Conditions, and Obstructions	A.2.1	Will snow storage disrupt pedestrian access or visibility?	✓	✓	✓	✓
	A.2.2	Is the path clear from both temporary and permanent obstructions?	✓	✓	✓	✓
	A.2.3	Is the walking surface too steep?	✓	✓	✓	✓
	A.2.4	Is the walking surface adequate and well-maintained?		✓	✓	✓
A.3 Continuity and Connectivity	A.3.1	Are sidewalks/walkable shoulders continuous and on both sides of the street?	✓	✓	✓	✓
	A.3.2	Are measures needed to direct pedestrians to safe crossing points and pedestrian access ways?		✓	✓	✓
A.4 Lighting	A.4.1	Is the sidewalk adequately lit?	✓	✓	✓	✓
	A.4.2	Does street lighting improve pedestrian visibility at night?	✓	✓	✓	✓
A.5 Visibility	A.5.1	Is the visibility of pedestrians walking along the sidewalk/shoulder adequate?	✓	✓	✓	✓
A.6 Driveways	A.6.1	Are the conditions at driveways intersecting sidewalks endangering pedestrians?		✓	✓	✓
	A.6.2	Does the number of driveways make the route undesirable for pedestrian travel?	✓	✓	✓	✓

Before and After → Reverse Bulb-out

Before and After → Reverse Bulb-out

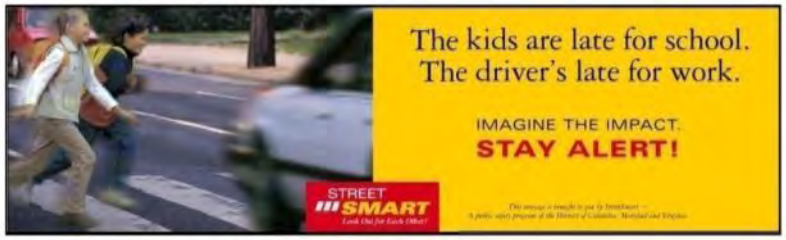
Transit Guidebook

2. Policy and organizational approaches:

- Take Internal Action
  - –Organizational improvements
  - –Update policies, etc.
- Develop Partnerships
  - –Local, Regional, & State Agencies
  - –Residents and Community Groups
  - –Development Community

Transit Guidebook

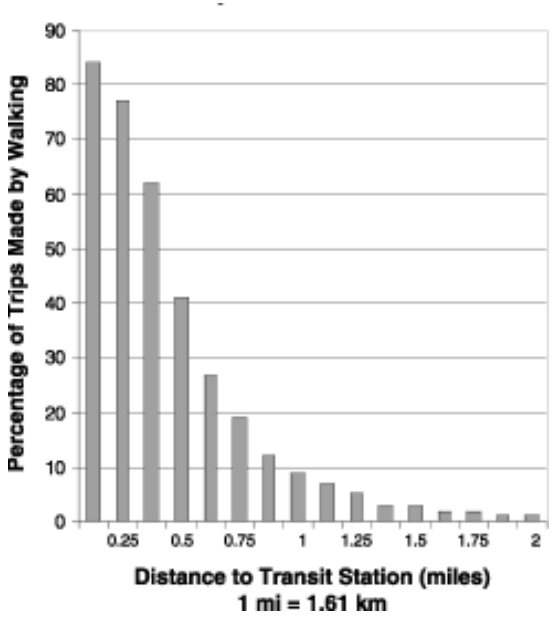
3. Engineering, education, and enforcement:
   - Engineering Actions
     - Designs
     - Traffic Control Devices
     - Rail Crossings
   - Education and Enforcement Actions
     - Programs
     - Training Topics



Posters displayed on WMATA buses as part of the StreetSmart Campaign in the Washington,DC region. Source: StreetSmart public safety program of the District of Columbia, Maryland, and Virginia.

Transit Guidebook

4. Background information on pedestrian safety concepts:
   - Walking distances to transit
   - Vehicle Speed vs. Safety
   - Pedestrian Characteristics and Behavior



5. Legal issues, including key cases and rulings:
   - Example Laws and Standards
   - Example Legal Cases

A Resident's Guide for Creating Safe and Walkable Communities

Purpose

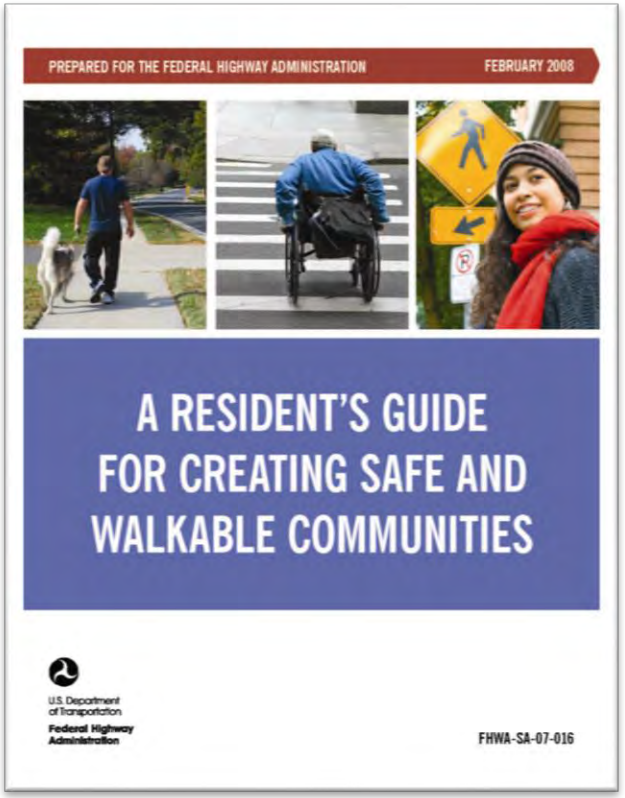
Assist residents, parents, community association members, and others in getting involved in making communities safer for pedestrians.

Audience

Persons participating at the community-level.

Link

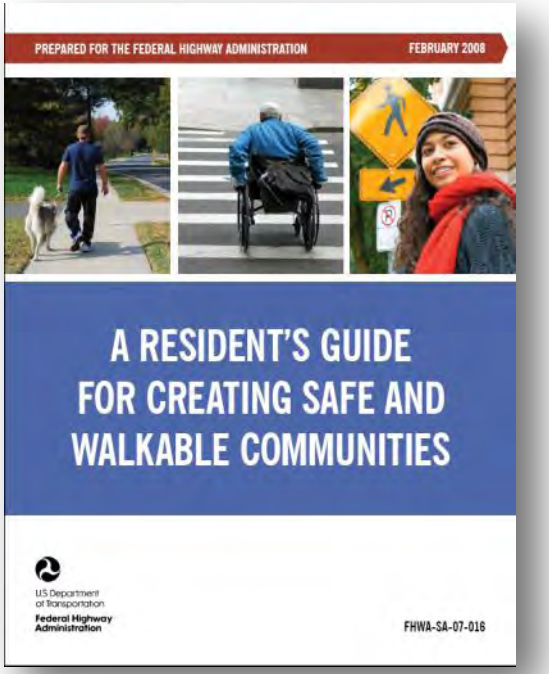
www.walkinginfo.org/residentsguide



Pedestrian and Bicycle Information Center

Community Guidebook: Overview

- Includes materials to help residents learn about traffic issues that affect pedestrians and find ways to help address these issues and promote pedestrian safety.



Community Guidebook: Content

Key topics to improve pedestrian safety:

1. How can I identify problems with walking conditions in my neighborhood?
2. Who can help me make my neighborhood a safer place to walk?
3. How can the walkability of my neighborhood be improved?
4. I need more information!
5. Resource Materials

Community Guidebook

1. How can I identify problems with walking conditions in my neighborhood?

Information on types of pedestrian issues:

- Poor accommodations
- Unsafe behaviors

Ways to assess those problems:

- Checklists
- Talk with other community members
- Find out what is being done

Community Guidebook

2. Who can help me make my neighborhood a safer place to walk?

Step 1: Determine the scale of the issue

Step 2: Build awareness and community support

Step 3: Identify the department or agency responsible for making improvements

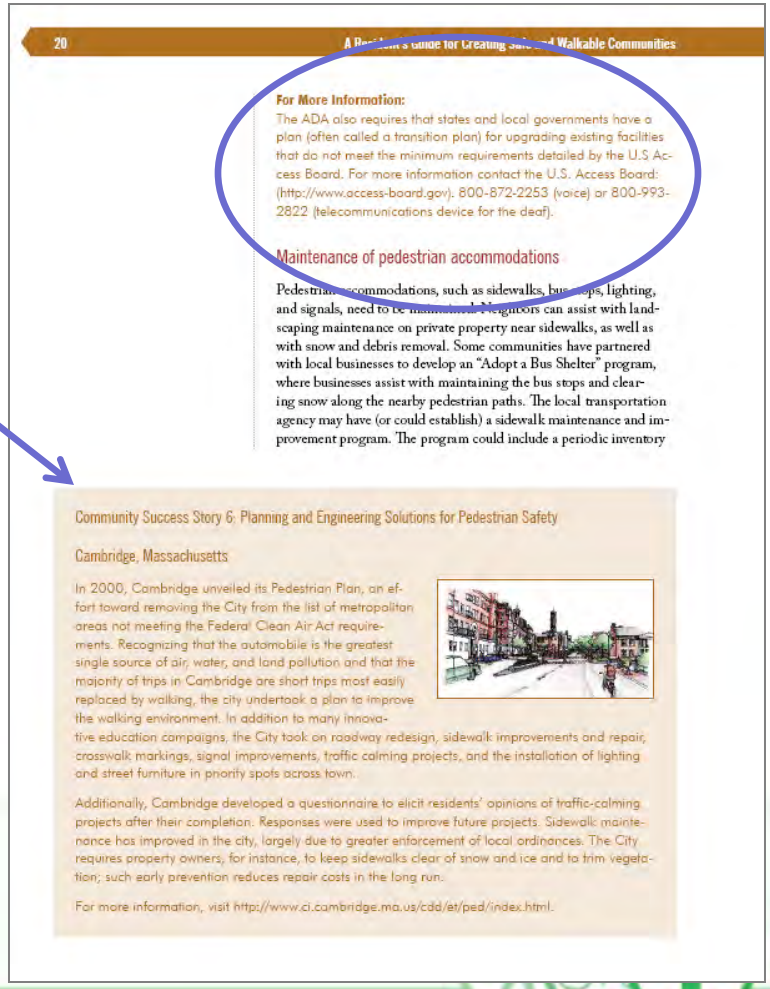
Step 4: Contact agency representatives and present your case

Case Studies

Community Guidebook

3. How can the walkability of my neighborhood be improved?

- Engineering improvements
- Education
- Enforcement
- Encourage more walking



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For More Information:

The ADA also requires that states and local governments have a plan (often called a transition plan) for upgrading existing facilities that do not meet the minimum requirements detailed by the U.S Access Board. For more information contact the U.S. Access Board: (http://www.access-board.gov). 800-872-2253 (voice) or 800-993-2822 (telecommunications device for the deaf).

Maintenance of pedestrian accommodations

Pedestrian accommodations, such as sidewalks, bus stops, lighting, and signals, need to be maintained. Neighbors can assist with landscaping maintenance on private property near sidewalks, as well as with snow and debris removal. Some communities have partnered with local businesses to develop an "Adopt a Bus Shelter" program, where businesses assist with maintaining the bus stops and clearing snow along the nearby pedestrian paths. The local transportation agency may have (or could establish) a sidewalk maintenance and improvement program. The program could include a periodic inventory

Community Success Story 6: Planning and Engineering Solutions for Pedestrian Safety

Cambridge, Massachusetts

In 2000, Cambridge unveiled its Pedestrian Plan, an effort toward removing the City from the list of metropolitan areas not meeting the Federal Clean Air Act requirements. Recognizing that the automobile is the greatest single source of air, water, and land pollution and that the majority of trips in Cambridge are short trips most easily replaced by walking, the city undertook a plan to improve the walking environment. In addition to many innovative education campaigns, the City took on roadway redesign, sidewalk improvements and repair, crosswalk markings, signal improvements, traffic calming projects, and the installation of lighting and street furniture in priority spots across town.

Additionally, Cambridge developed a questionnaire to elicit residents' opinions of traffic-calming projects after their completion. Responses were used to improve future projects. Sidewalk maintenance has improved in the city, largely due to greater enforcement of local ordinances. The City requires property owners, for instance, to keep sidewalks clear of snow and ice and to trim vegetation; such early prevention reduces repair costs in the long run.

For more information, visit http://www.ci.cambridge.ma.us/cdd/et/ped/index.html.

www.walkinginfo.org/residentsguide

Pedestrian and Bicycle Information Center

Community Guidebook

4. I need more information!
   - Key terms
   - Links and references
   - FAQs

Public right-of-way (ROW)

The strip of land on which infrastructure such as highways, railroads, or power lines are built. **The right-of-way includes the area where sidewalks are built and traffic signs are posted.** Obtaining the ROW to build a sidewalk is often a significant challenge.

Shared-use path or trail

A shared-use path (sometimes called multi-use or off-street paths or trails) can be used by pedestrians, bicyclists, inline skaters, and others. It typically is physically separated (usually on a separate right-of-way) from motor vehicular traffic by an open space or barrier.

Sidewalk Easement

A sidewalk easement is a limited right to use another's land for the purpose of constructing, altering, relocating, extending, maintaining, or using a public sidewalk. Sidewalk easements are often established in contracts between town agencies and private property owners in a cooperative effort to provide space for pedestrians.

Unmarked crosswalk

That portion of a roadway included within the extension or connection of imaginary boundary lines of sidewalks at intersections. It is legal to cross at unmarked crosswalks at intersections (unless a restriction is posted), but many drivers, pedestrians, and even law enforcement officers may not know this.

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National Coalitions and Alliances

America Walks

America Walks is a national coalition of local advocacy groups dedicated to promoting walkable communities and helping communities form advocacy groups. America Walks provides a support network for local pedestrian advocacy groups. The group offers advice about how to get started and how to be effective with public officials and engineering and design professionals.

http://www.americawalks.org/ or 617-367-1170

Thunderhead Alliance

The Thunderhead Alliance is a national coalition of state and local bicycle and pedestrian advocacy organizations. The group's mission is to create, strengthen and unite state and local bicycle and pedestrian advocacy organizations.

http://www.thunderheadalliance.org or 928-541-9841

Safe Communities

Safe Communities, a project of the National Highway Traffic Safety Administration, is a national organization dedicated to creating local community coalitions to prevent motor vehicle injuries, the leading cause of death for each age group from five through 27. As Safe Communities emphasizes, expanded partnerships with representatives of the business community, health community, and government agencies are an important step in creating community involvement to seek solutions. To find out if there is a Safe Communities Coalition in your community, contact your State Office of Traffic Safety.

http://www.nhtsa.gov/portal/site/nhtsa/menuitem.404f848a3e46fc67ba8e5f8dcba046a0 or 888-327-4236

Safe Kids

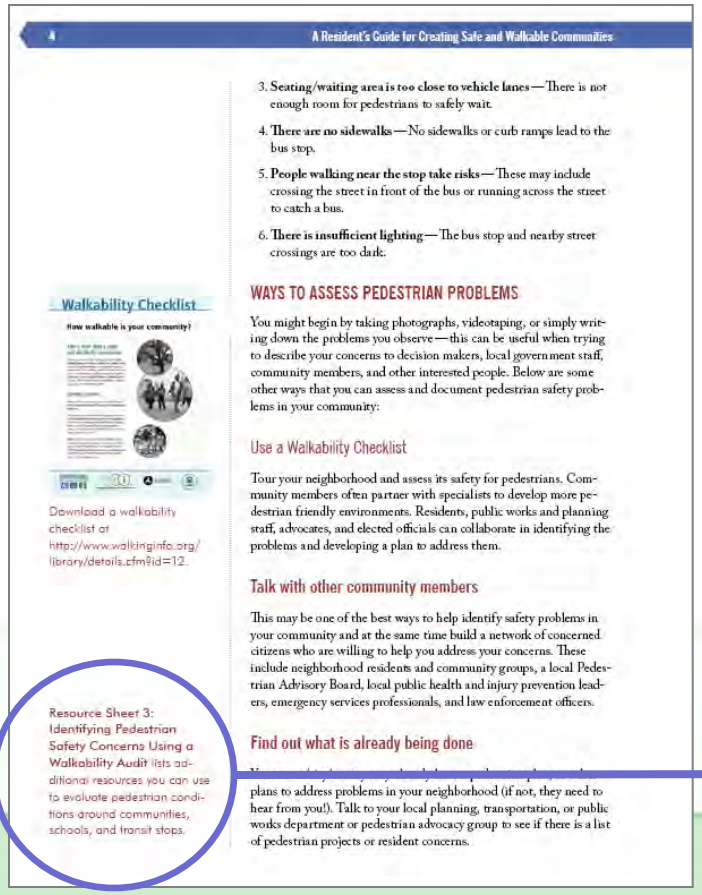
By working at a national level through grassroots community coalitions, SAFE Kids, a campaign that aims to prevent the number one killer of children—unintentional injury—educates adults and children alike, provides safety devices to families in need, works to pass and strengthen laws to empower families and communities, and to protect children ages 14 and under.

http://www.usa.safekids.org/ or 202-662-0600

Who is my state bicycle and pedestrian coordinator and what do they do?

Resource Materials

- One to two-pages
- Range of topics
- Referenced



4 A Resident's Guide for Creating Safe and Walkable Communities

3. **Seating/waiting area is too close to vehicle lanes**—There is not enough room for pedestrians to safely wait.
4. **There are no sidewalks**—No sidewalks or curb ramps lead to the bus stop.
5. **People walking near the stop take risks**—These may include crossing the street in front of the bus or running across the street to catch a bus.
6. **There is insufficient lighting**—The bus stop and nearby street crossings are too dark.

WAYS TO ASSESS PEDESTRIAN PROBLEMS

You might begin by taking photographs, videotaping, or simply writing down the problems you observe—this can be useful when trying to describe your concerns to decision makers, local government staff, community members, and other interested people. Below are some other ways that you can assess and document pedestrian safety problems in your community:

Use a Walkability Checklist

Tour your neighborhood and assess its safety for pedestrians. Community members often partner with specialists to develop more pedestrian friendly environments. Residents, public works and planning staff, advocates, and elected officials can collaborate in identifying the problems and developing a plan to address them.

Talk with other community members

This may be one of the best ways to help identify safety problems in your community and at the same time build a network of concerned citizens who are willing to help you address your concerns. These include neighborhood residents and community groups, a local Pedestrian Advisory Board, local public health and injury prevention leaders, emergency services professionals, and law enforcement officers.

Find out what is already being done

plans to address problems in your neighborhood (if not, they need to hear from you!). Talk to your local planning, transportation, or public works department or pedestrian advocacy group to see if there is a list of pedestrian projects or resident concerns.

Walkability Checklist

How walkable is your community?

Download a walkability checklist at http://www.walkinginfo.org/library/details.cfm?id=12.

Resource Sheet 3: Identifying Pedestrian Safety Concerns Using a Walkability Audit lists additional resources you can use to evaluate pedestrian conditions around communities, schools, and transit stops.

RESOURCE SHEET #3:

IDENTIFYING PEDESTRIAN SAFETY CONCERNS USING A WALKABILITY AUDIT

A **walkability audit** is an evaluation of the walking environment, used to identify concerns for pedestrians related to safety, access, comfort, and convenience.

Informal audits can be performed by any individual or community group. More formal audits (i.e., those that follow a standardized set of audit procedures) can also be conducted; these are usually performed by a multidisciplinary team of trained professionals, including engineers, planners, transportation researchers, pedestrian and bicycle specialists, and others.

The audit tools listed below can help you identify and document concerns and better advocate for change in your neighborhood.

EXAMPLE COMMUNITY AUDITS:

PBIC Walkability Checklist

- http://www.walkinginfo.org/pdf/walkingchecklist.pdf
- Evaluate a neighborhood's walkability and identify both immediate answers and long-term solutions to a neighborhood's problems.

ACES Community Assessment

- http://www.eatsmartmovemorenc.com/programs/aces/aces_commassess.pdf
- Assess the health of a community and identify ways to increase opportunities for physical activity in the community

Active Independent Aging Walkability Checklist

- http://www.falls-chutes.com/guide/english/resources/handouts/pdf/WalkabilityChecklist.pdf
- Determine the "walkability" of an area for older pedestrians.

FHWA's Pedestrian Road Safety Audit Guidelines and Prompt Lists

- http://www.walkinginfo.org/library/details.cfm?id=3955

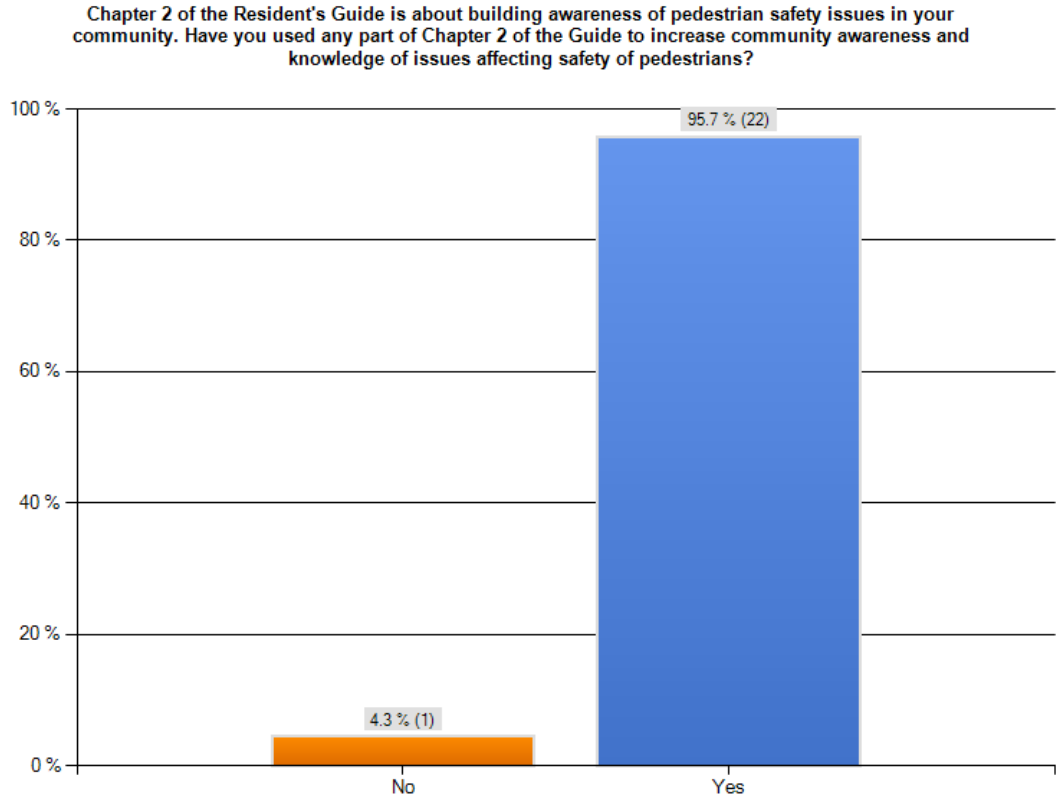
Keystone Healthy Routes Neighborhood assessment

- http://panaonline.org/programs/khz/actionkits/hrak/phase3/
- Assess the safety and walkability of neighborhoods—urban, suburban, or rural—and other locations within a community.

A RESIDENT'S GUIDE FOR CREATING SAFE AND WALKABLE COMMUNITIES 45

Resident's Guide Demo Project

- Over a dozen communities
- Provided grant to use and evaluate materials contained in the guide



More Information

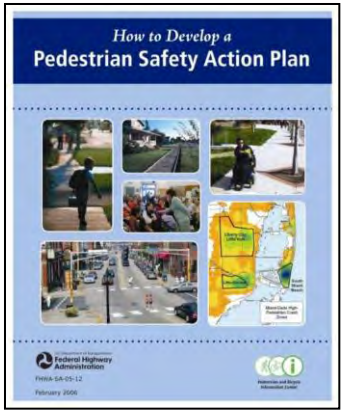
Pedestrian and Bicycle Safety
(FHWA Office of Safety)
http://safety.fhwa.dot.gov/ped_bike/

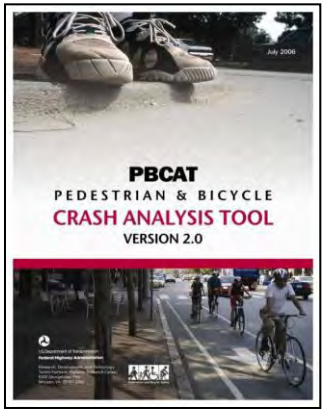
Bicycle and Pedestrian Program
(FHWA Office of Human and Natural Environment)
http://www.fhwa.dot.gov/environment/bikeped/

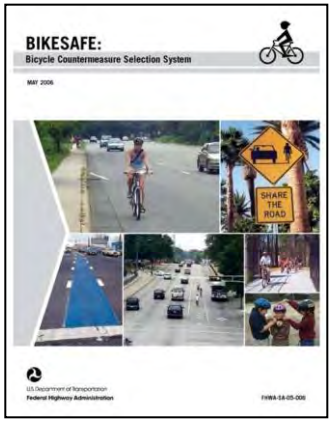
Pedestrian and Bicycle Information Center (PBIC)
http://www.walkinginfo.org
http://www.bicyclinginfo.org

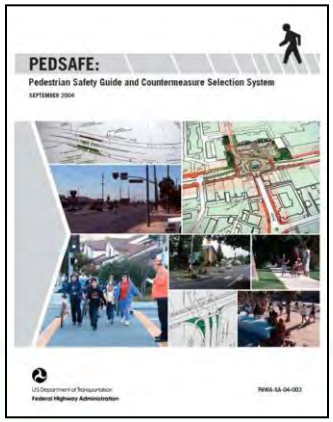
Pedestrian and Bicycle Information Center

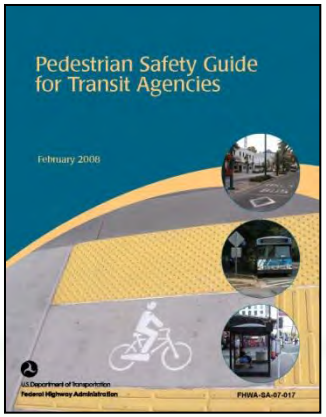
Questions?

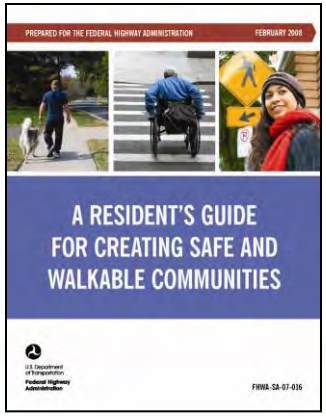


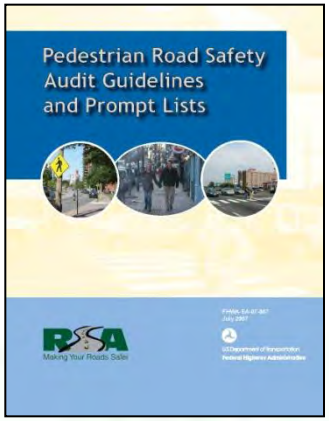












Pedestrian and Bicycle Information Center