## Office of Safety R&D Federal Highway Administration





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## Objective

To provide a brief overview of the Office of Safety R&D, as well as our research results, and products and services applicable to the local transportation community.

## FHWA Safety

FHWA Office of Safety
FHWA Safety R&D
FHWA Resource Center (Safety Team)
FHWA Federal Lands (Safety)
FHWA NHI

## Safety R&D Mission

To help reduce highway crashes and related fatalities and injuries by developing and implementing a program of nationally coordinated research and technology safety innovations

### Safety R&D Teams

Roadway Team
Roadside Team
Safety Management Team
Advanced Research Team
Human Centered Systems Team

## Safety Research Results & Products

PB CAT Version 2
PED SAFE
Low Cost Safety Evaluations
IHSDM
Safety Analyst

## **PBCAT Version 2.0**



- Software utilizing database on different types of crashes between motor vehicle and ped/bike.
- Determine crash type thru series of on-screen questions about the crash
- Recommend countermeasures to specific ped/bike crash types.

## **PBCAT** Version 2.0

### Availability:

- Product will be available
   Summer 2006
- Contact Ann Do at Ann.do@fhwa.dot.gov
- -www.walkinginfo.org



### **PEDSAFE** Project Goal

Assist practitioners with the selection of countermeasures to address pedestrian safety and mobility problems

#### PEDSAFE

Pedestrian Safety Guide and Countermeasure Selection System

The Pedestrian Safety Guide and Countermeasure Selection System is intended to provide practitioners with the latest information available for improving the safety and mobility of those who walk. The online tools provide the user with a list of possible engineering, education, or enforcement treatments to improve pedestrian safety and/or mobility based on user input about a specific location. [read more]

#### Resources:

Background – understand what is needed to create a viable pedestrian system.

Crash Statistics – learn about the factors related to the pedestrian crash problem.

Crash Analysis – learn how crash typing can lead to the selection of the most appropriate countermeasures.

Objectives – learn how selected treatments may address many requested improvements to the pedestrian environment.

Implementation – read about the necessary components for implementing pedestrian treatments.

More Info – access additional information through a variety of resources.

Downloads – access print versions of the guide and other relevant materials.

#### Available Tools:

Selection Tool – find appropriate countermeasures on the basis of desired objectives and specific location information.

Interactive Matrices – view the countermeasures associated with crash types and performance objectives.

Countermeasures – read descriptions of the 49 engineering, education, and enforcement treatments.

Case Studies – review real-world examples of implemented treatments.

Project sponsored by:



U.S. Department of Transportation Federal Highway Administration

Home > Selection Tool > Step One

#### **Data Input**

#### Enter the Location

For the roadway location being addressed, please enter a description.

Location

1st ave and Broadway

Proceed to Step 2

### Step 1

## Enter location information

Home > Selection Tool > Step One > Step Two

#### Data Input

#### Select One of the Following

For the roadway location being addressed, the goal of the pedestrian treatment is intended to improve pedestrian 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

- Reduce Speed of Motor Vehicles
- Improve Sight Distance and Visibility
- Reduce Volume of Motor Vehicles
- Reduce Exposure for Pedestrians
- Improve Pedestrian Access and Mobility
- Encourage Walking by Improving Aesthetics
- Improve Compliance with Local Traffic Laws
- Eliminate Behaviors that Lead to Crashes

#### Crash Types

- O Dart/Dash
- Multiple Threat/Trapped
- Unique Midblock
- <u>Through Vehicle at</u> Unsignalized Location
- Bus-Related
- Turning Vehicle
- <u>Through Vehicle at</u> <u>Signalized Location</u>
- Walking Along Roadway
- <u>Working or Playing in</u> <u>Roadway</u>
- O Non-Roadwaγ
- Backing Vehicle
- Crossing an Expressway

#### Your Input:

Roadway Location: 1st ave and Broadway

#### Next Steps:

Proceed to Step 3

Step 2

Select crash type to be addressed or desired behavior change

### Step 3

### Enter geometric and operations data

#### Home > Selection Tool > Step One > Step Two > Step Three

#### Data Input

#### Answer the Following Questions

- In what type of area is the roadway located?
   O Urban CBD
- O Urban Other
- 💿 Suburban
- 🔘 Rural
- Not Applicable/Unknown

2. What is the functional class of the roadway?

🔘 Local

- Collector or Minor Arterial
- O Principal Arterial
- Not Applicable/Unknown

3. Is the problem at an intersection or midblock (roadway segment) location?

- Intersection
- Midblock
- Not Applicable/Unknown

4. What is the vehicle volume at this location (expressed in terms of average daily traffic (ADT) for the primary roadway)?

- 000, 10 🔘
- 💽 >=10,000 and <= 25000
- > 25000
- O Not Applicable/Unknown

- 🔘 > 45 mph
- O Not Applicable/Unknown
- 6. What is the number of through travel lanes (both directions)?
- O 2 or fewer lanes
- ③ 3 or 4 lanes
- 🔘 5 or more lanes
- Not Applicable/Unknown
- 7. Is a traffic signal present,

being considered, or not an option?

- Present (Removal not an option)
- Present (Removal is an option or being considered)
- Not present (Installation is not an option)
- Not present (Installation is an option)
- O Not Applicable/Unknown

#### Your Input:

Roadway Location: 1st ave and Broadway

Your Crash Type : Multiple Threat

#### Next Steps:

#### Edit:

Change Your Crash Type

Start Over

#### Get Results

Results include list of applicable countermeasures Home > Selection Tool > Step One > Step Two > Step Three > Applicable Countermeasures

#### **Applicable Countermeasures**

Based upon your input, the following countermeasures were found:

Pedestrian Facility Design <u>Marked Crosswalks and Enhancements</u> <u>Transit Stop Treatments</u> <u>Roadway Lighting Improvements</u>

Roadway Design <u>Bicycle Lanes</u> <u>Roadway Narrowing</u> <u>Lane Reduction</u> <u>Raised Medians</u>

Traffic Calming <u>Curb Extensions</u> <u>Crossing Islands</u> <u>Speed Table</u> <u>Raised Pedestrian Crossings</u>

Signals and Signs Traffic Signals Pedestrian Signals Recessed Stop Lines Signing

Other Measures School Zone Improvements Pedestrian/Driver Education Police Enforcement Your Input:

Roadway Location: 1st ave and Broadway

Your Crash Type : Multiple Threat

Your answers to the previous questions:

Type of Area: Suburban Functional Class: Collector or Minor Arterial Intersection or Midblock: Midblock Volume: Medium (>=10,000 and <= 25000 ADT) Speed: Low (<= 45 mph) No. of Lanes: 3 or 4 lanes Traffic Signal: Not present (Installation is an option)

Next Steps:

Edit:

Change Your Crash Type Change Your Answers

Save:

Output Results to Excel

Start Over

### Interactive Matrices

Selecting a cell produces the list of applicable countermeasures

#### **Crash Analysis**

#### Interactive Matrix



### Countermeasures

#### **Curb Radius Reduction:**

View Other Roadway Design Treatments 💌

view purpose
 view considerations

- view estimated cost
- view case studies



Adapted from *Making Streets That* Work, Seattle, 1996





Each treatment includes:

Purpose

Considerations Estimated Cost Case Studies One of the common pedestrian crash types involves a pedestrian who is struck by a right-turning vehicle at an intersection. A wide curb radius typically results in high-speed turning movements by motorists. Reconstructing the turning radius to a tighter turn will reduce turning speeds, shorten the crossing distance for pedestrians, and also improve sight distance between pedestrians and motorists.

Nearby land uses and types of road users should be considered when designing an intersection so that curb radii are sized appropriately. If a curb radius is made too small, large trucks or buses may ride over the curb, placing pedestrians in danger.

Where there is a parking and/or bicycle lane, curb radii can be even tighter, because the vehicles will have more room to negotiate the turn. Curb radii can, in fact, be tighter than any modern guide would allow: older cities in the Northeast and in Europe frequently have radii of 0.6 to 1.5 m (2 to 5 ft) without suffering any detrimental effects.

More typically, 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 volume 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 turn moves, the corner with an obtuse angle should be kept very tight, to prevent high-speed turns.

## For more Information

To order a copy: http://safety.fhwa.dot.gov/ped\_bike/ped\_bike\_ord er.htm **To use online:** http://www.walkinginfo.org/pedsafe/ For more information, contact: Tamara Redmon Pedestrian and Bicycle Safety Program Manager Federal Highway Administration Tamara.redmon@fhwa.dot.gov or 202-366-4077

### Low Cost Safety Improvements

- FHWA led pooled fund study to evaluate the safety effect of a set of safety improvements.
- Improvements were identified as part of the NCHRP 500 series.
- 80 percent of the guidebook strategies are "tried" or "experimental" (i.e., no good CRFs)

### **Current Status**

- A new task order was recently established for the evaluation of the following 4 strategies:
  - Center two way left turn lanes on two lane roadways (2 to 3 lane conversions)
  - Pavement markings with supplementary messages, such as "stop ahead"
  - Flashing beacons at stop controlled intersections
  - Higher retro-reflectivity sheeting for stop signs.
- Draft report due January 07

### **Information Resources**

CD available that contains blank databases for installation data for all countermeasures identified in the NCHRP Report 500 Guidebooks

More information can be found at

www.tfhrc.gov/safety/evaluations/index.htm

### For More Information Contact:

Kerry Perrillo Childress Kerry.Childress@fhwa.dot.gov 202-493-3318



## Interactive Highway Safety Design Model (IHSDM)

## Goal

To marshal the best available knowledge about safety effects of geometrics into a more useful and usable form for highway project planners and designers, and traffic and safety reviewers.

## Components

**Evaluation Modules** – Policy Review - Crash Prediction – Design Consistency – Intersection Review – Traffic Analysis Basic Services

## Intended Usage

Support project-level geometric design decisions by estimating expected safety and operational performance

Facility types:

– Two-lane rural highways (2003)

– Multilane rural highways (2008)

– Urban & suburban arterials (2008)

## Resources

May be downloaded free-of-charge at: http://www.ihsdm.org
Technical support by e-mail at: <u>IHSDM.Support@fhwa.dot.gov</u>
IHSDM Training Course: #380071A in NHI catalog at <u>http://nhi.fhwa.dot.gov</u>
Contact Ray Krammes; ray.krammes@fhwa.dot.gov

### Safety Analyst

To assist agencies in making better decisions about:

✓ Where to make highway safety improvements

✓ Determining what improvements to make

✓ Evaluating the effectiveness of implemented safety improvements

## Scope\Target of SafetyAnalyst and IHSDM

	SafetyAnalyst	IHSDM
Scope	Network-Level	Project-Level
Target	Project Selection	Geometric
	Decisions	Design
		Decisions

# What Tools will be Available in *SafetyAnalyst*?

- Network screening to identify sites with promise for safety improvement
- Diagnosis of safety concerns
- Selection of countermeasures
- Economic appraisal of countermeasures
- Priority ranking of countermeasures
- Evaluation of implemented projects

## Target Audience

Professionals involved in deciding:

- Where to make highway safety improvements
- Determining what improvements to make
- Evaluating the effectiveness of implemented safety improvements

## How Will *Safety Analyst* Be Implemented?

- SafetyAnalyst will be implemented as a set of integrated software tools to perform key steps in the safety management process
- SafetyAnalyst will be made available to highway agencies with training and technical assistance
- SafetyAnalyst will be maintained as the state of knowledge advances

## What Has Been Accomplished Already?

- Project began: April 2001
- Meetings with TWG
- Work plan and Marketing plan
- White Papers with technical approaches to modules
- Functional specifications
- "New Approaches to Highway Safety Analysis" Training course
- Interim Software Package available
- Contact Mike Griffith; mike.griffith@fhwa.dot.gov

## **Questions**?

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