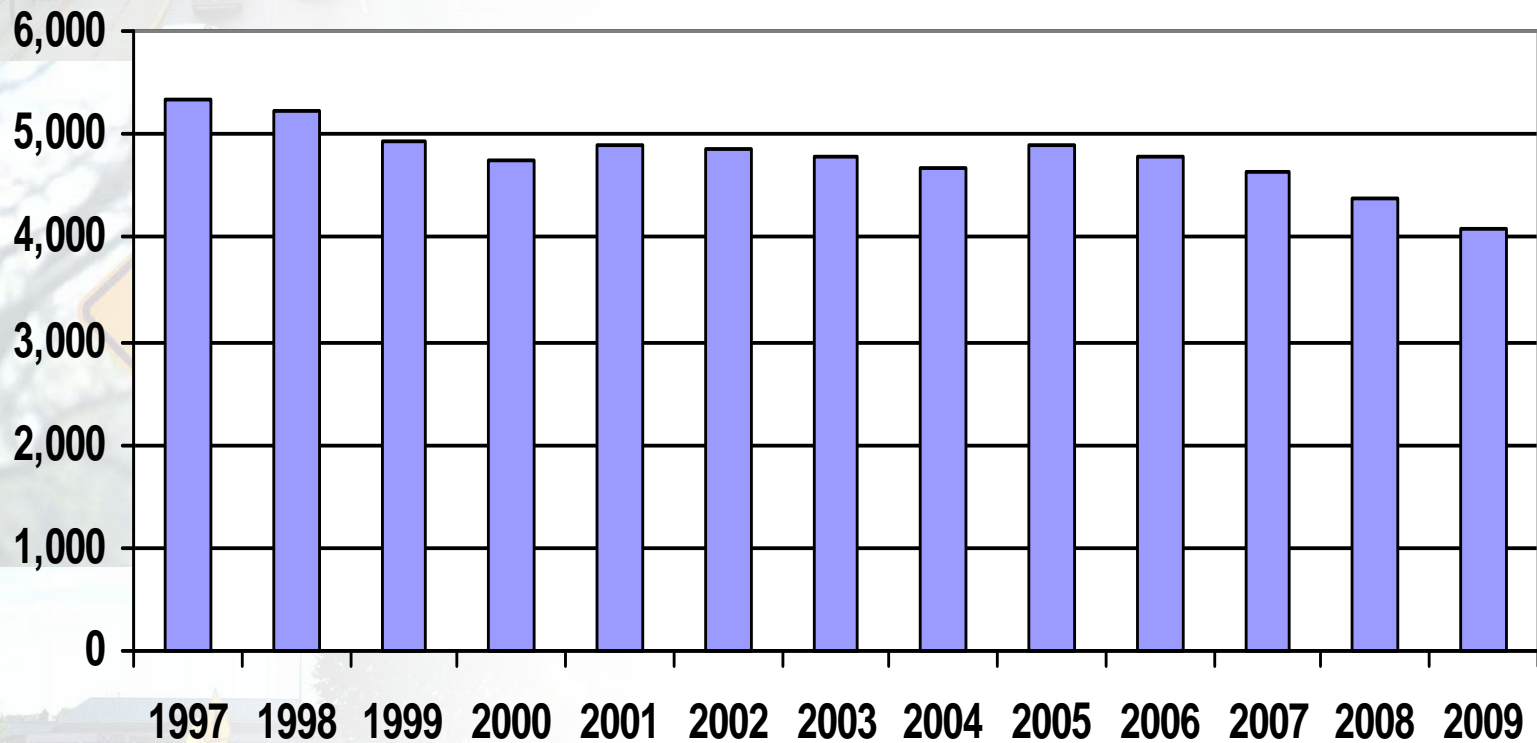




# Pedestrian Safety: A Federal Perspective

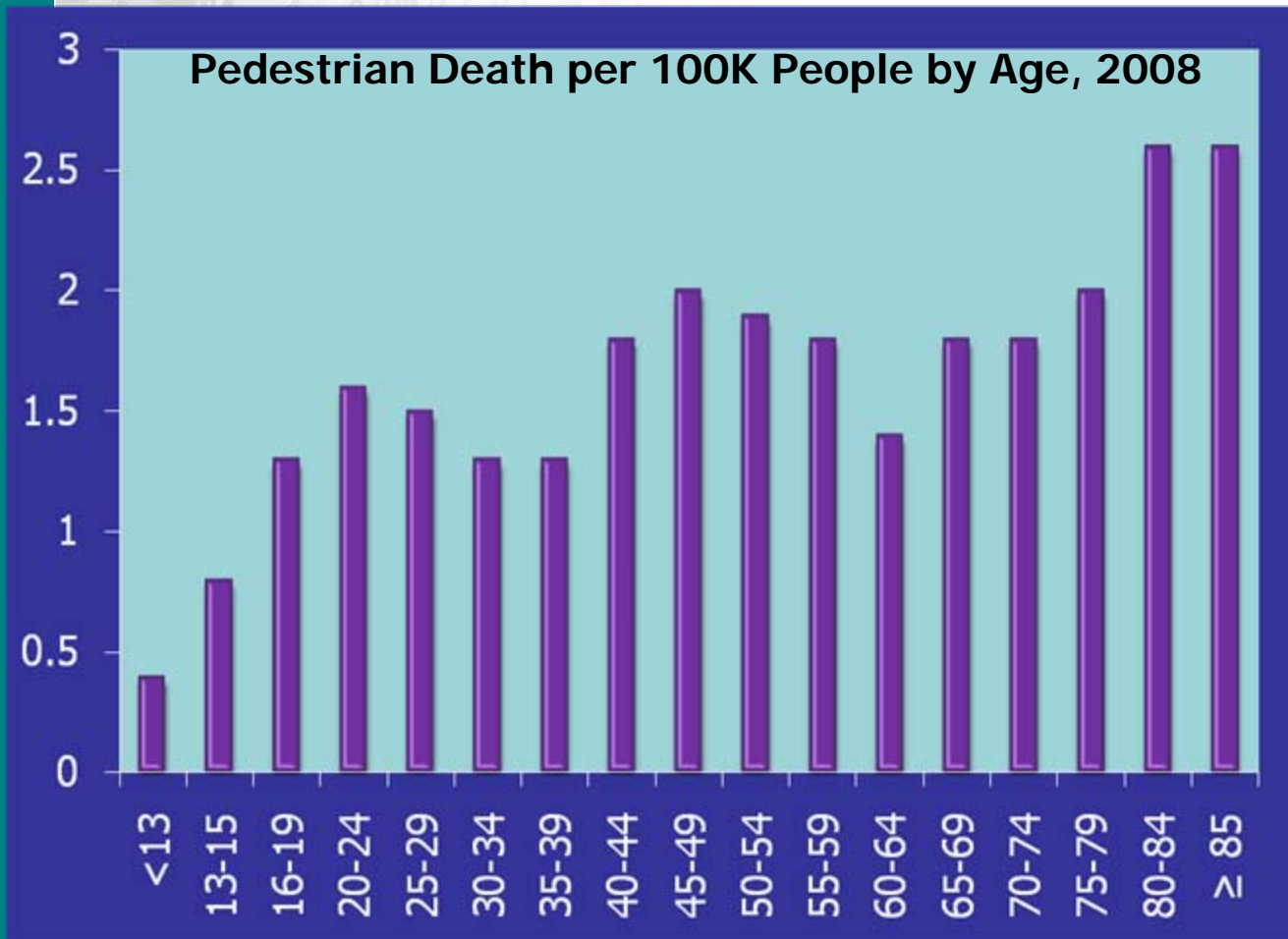
Emmett McDevitt  
Transportation Safety Engineer  
September 28, 2010

# Pedestrian Fatalities by Year in US (1997-2009)



# Pedestrian Overview in USA

- 73 percent pedestrian fatalities in urban areas.
- 77 percent at non-intersection locations.
- 60 percent Males
- 90 percent in “normal” weather conditions.
- 67 percent at night.
- ½ of all pedestrian fatal crashes happen Fri, Sat, and Sun.



• Pedestrians age 70 and older:

- Have the highest fatality rate per 100,000 population
- In 2008 accounted for 17% of all pedestrian fatalities

# The Problem - Physics



# The Problem

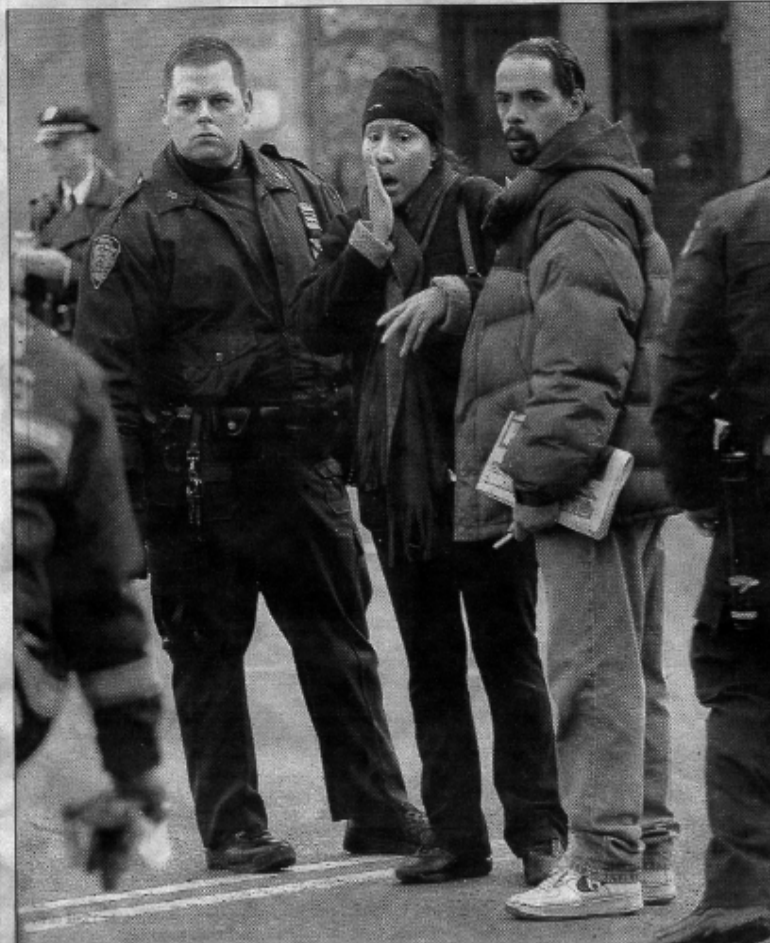
- cars occupying the same space at the same time as.....



# Pedestrians



# 2 BOYS RUN DOWN



## B'klyn best pals die under truck wheels

By ELIZABETH HAYS, TONY SCLAFANI and DAVE GOLDNER  
DAILY NEWS STAFF WRITERS

Two boys walking home from school in Brooklyn were struck and killed by a truck yesterday as they crossed a dangerous intersection less than a block from their homes, cops said.

Good Samaritans tried furiously to rescue best friends Victor Flores, 11, and Juan (Angel) Estrada, 10, after the boys were crushed under the wheels of a landscaping truck at Ninth St. and Third Ave. and dragged at least 10 feet.

But the fifth-graders — whose families came from the same town in Mexico and lived across from each other on Ninth St. — never had a chance.

"I lost my son, I feel so bad," Angel's father, Juan Estrada, 39, said last night, his face stained with tears. "And I'm angry."

After the crash, Victor's mother, Vicky, who is four months pregnant with twins, was treated for abdominal pains. And driver Jon Olson was left screaming in anguish, "I didn't see anybody!"

The tragedy unfolded around 9:30 p.m. as the

"We're devastated and our hearts go out to the families of the boys," said a relative, who refused to identify herself.

The intersection is a perilous spot. Trucks often barrel through the neighborhood, on the edge of Park Slope, near the Gowanus Expressway.

"This corner is too dangerous," said Jose Tapia, 32, Angel's uncle. "They need to put something there to protect the kids."

Heartbroken relatives recalled the dead boys as inseparable friends who often walked home together and played video games after school.

Angel's parents, Juan and Emma, came from Puebla, Mexico, with the boy's three older sisters 13 years ago.

His mother usually picked him up at school to help him negotiate the dangerous walk home. But

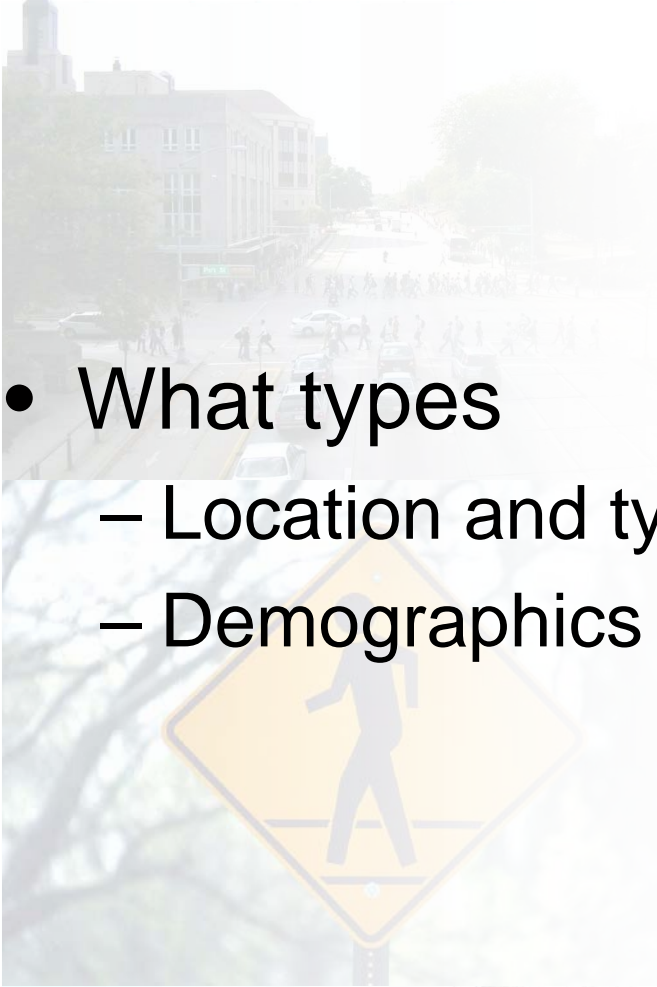


Juan (Angel) Estrada



# Data

- What types
  - Location and type of crash and severity index
  - Demographics

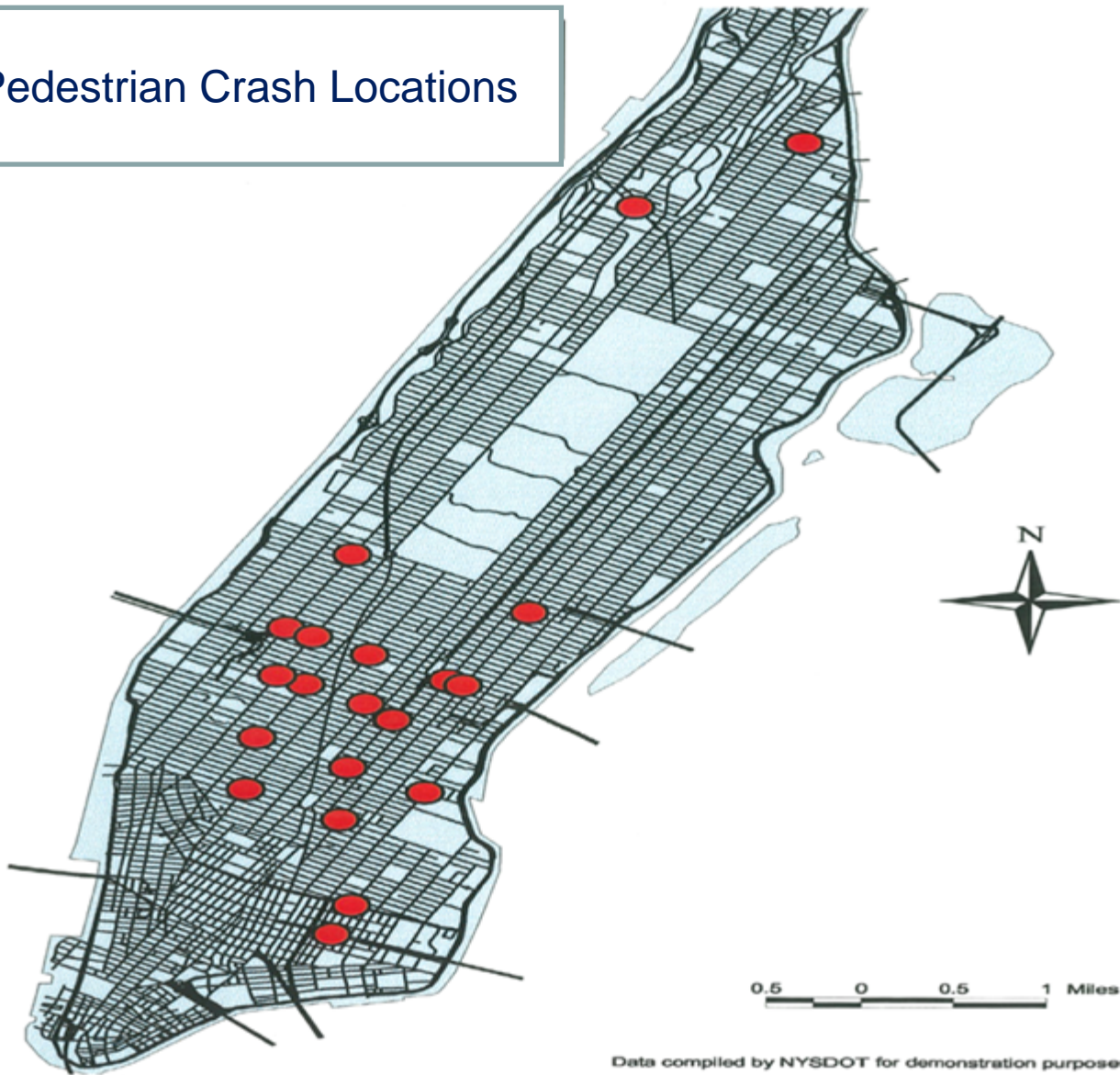


# What resources are available

- Health
- Enforcement
- Engineering
- Education
- Political Engineering and prioritization

Resources don't always align with the problems or priorities

## High Pedestrian Crash Locations



Data compiled by NYSDOT for demonstration purposes only.

# Drill Down into location information

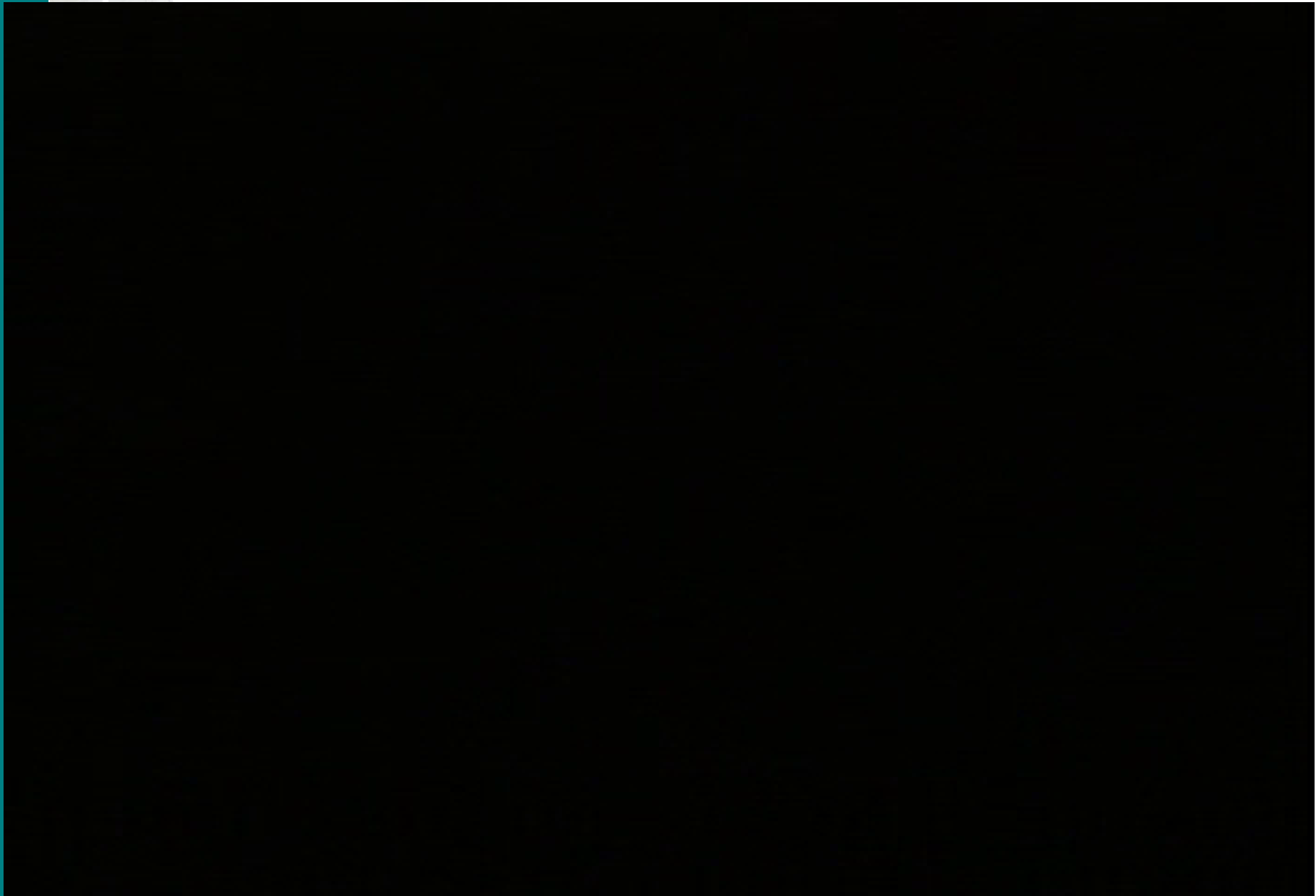


Must use engineering and enforcement to address known pedestrian crash locations, and use enforcement and public information and education for programmatic issues.

## Limited Funding for Enforcement and Education Services

- Limited Staff
- Limited Resources
- Limited Revenue





Demographics are good, but.....



Enforcement and Public Information and Education tend to be very weak.  
Evaluating effectiveness is difficult.

Enforcement can reinforce laws and regulations, and help compliment educational campaigns.



# FHWA Goals

- Reduce pedestrian fatalities
- Reduce pedestrian injuries.
- Improve pedestrian accessibility.
- **Update:** pedestrian fatalities down 12.54% since goal set in 2004.



# How Will FHWA Achieve Success?

- Concentrate efforts on the states and cities with the most pedestrian fatalities (also know as “focus states” and “focus cities”).
- Promote the use of the most promising engineering countermeasures and new technologies.
- Develop tools, resources and technology to assist states and local transportation agencies.
- Put our money where our mouth is...

In-Pavement Lighting



# Focus States Efforts

- Working with the states/cities to assist them with developing pedestrian safety action plans.
- Offering free technical assistance and training on how to design for pedestrians and how to develop a pedestrian safety action plan.

# Courses and Technical Assistance Developed

- Engineering for Pedestrian Safety (2-day).
- Developing a Pedestrian Safety Action Plan (2-day).
- Planning and Designing for Pedestrian Safety (3-day combo).
- Workshop: Developing a Pedestrian Safety Action Plan (2-day).

# VOLPE Focus States Evaluation

- Most focus locations have implemented or plan to implement countermeasures and initiatives to improve pedestrian safety.



# VOLPE Focus States Evaluation

- Focus States Program has spurred changes in policies, business processes and institutional structures focused on pedestrian safety.



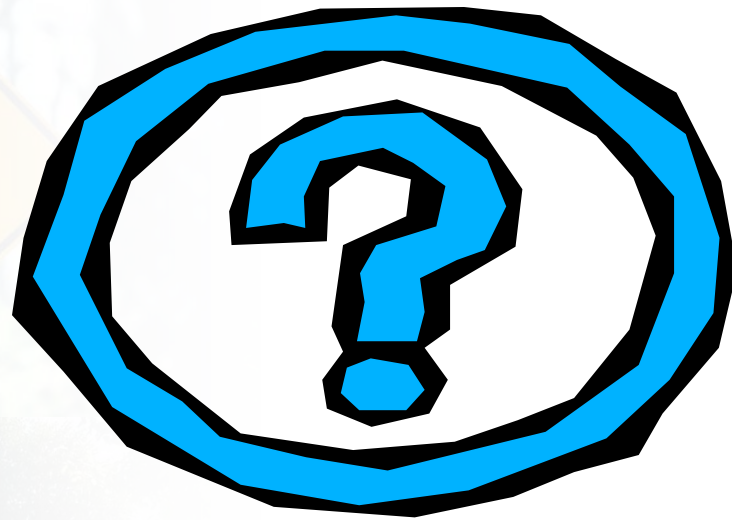
# VOLPE Focus States Evaluation

Most focus locations have/will implement countermeasures and initiatives to improve ped. Safety.

- Small and large countermeasures will be implemented.
- Practical strategies being implemented based on course content.



# Questions?

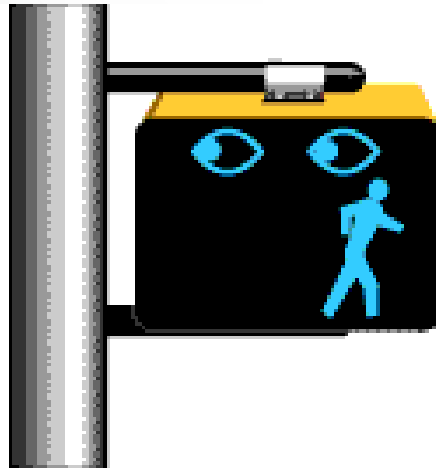


# Pedestrians

## Emerging Technologies



Count Down  
Signal



Animated Eyes  
Display

In-Pavement Lighting





# Text Messaging

- 87% say it's a "very serious threat"
- Nonetheless, 18% do it
- A dozen states have prohibitions, including NY
- AAA, Ford and wireless industry support state and local bans
- Key issues:
  - Young people love to text
  - So do their parents





# TEXT MESSAGING

lol no im nt bsy im only drving

# Automated Enforcement



## Findings

Lack of meaningful coordination/respect between DOT's and Law Enforcement.  
Must overcome personality and institutional issues.



General Findings  
Must have a champion



Authority



Charisma

# General Findings

Must Treat Pedestrians as a Form of Traffic



## Findings

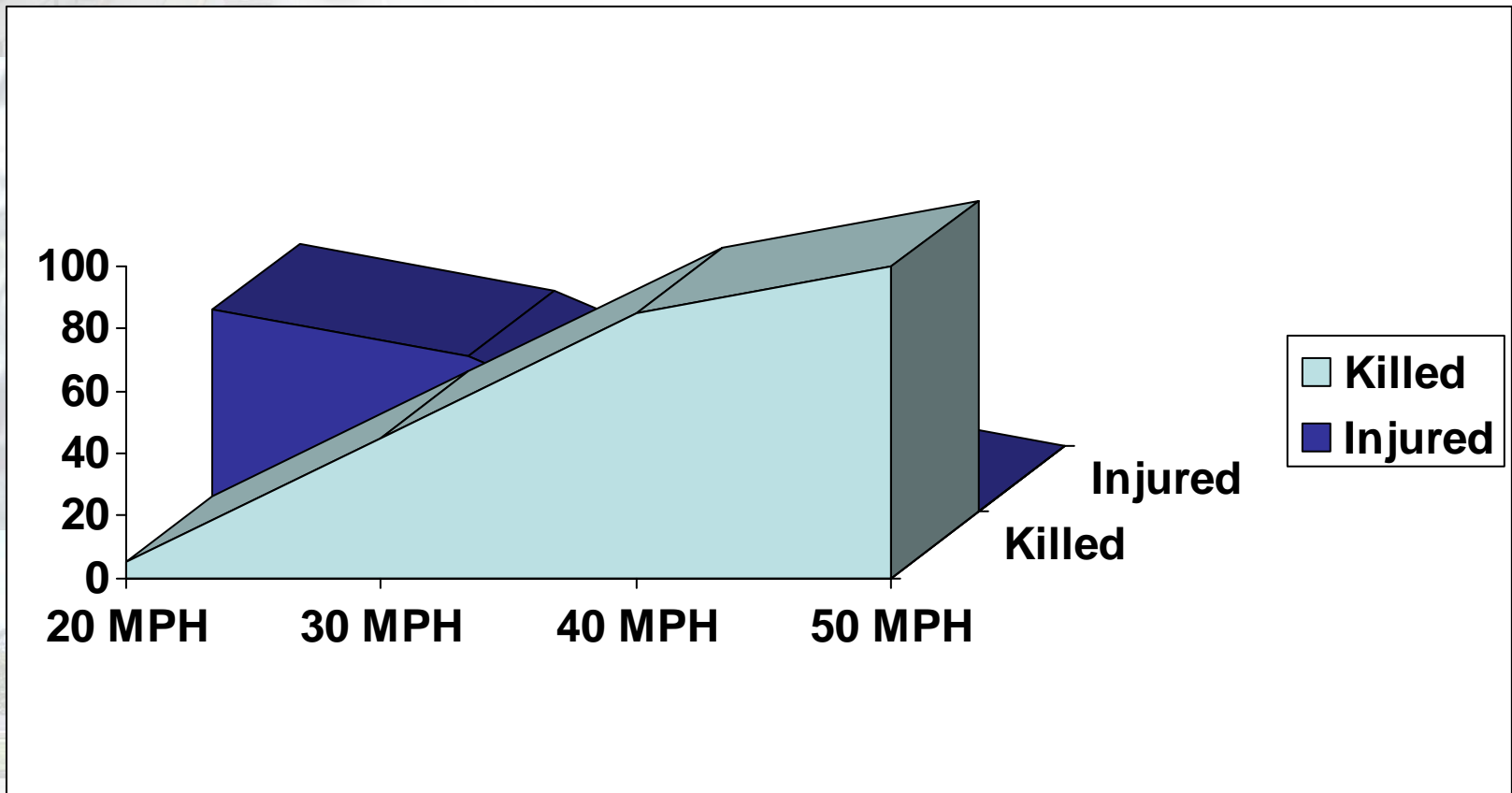
All Successful Pedestrian Programs Successfully Calm Traffic







# Speed – Injury/fatal Relationship



## Findings

Any Successful Program Uses a Cooperative, Coordinated, and Collaborative Approach to Promote the Importance of Pedestrian Programs

1. Planning and Zoning
2. Enforcement
3. Department of Public Works
4. Traffic
5. Design
6. Transit
7. Etc.

# Engineering

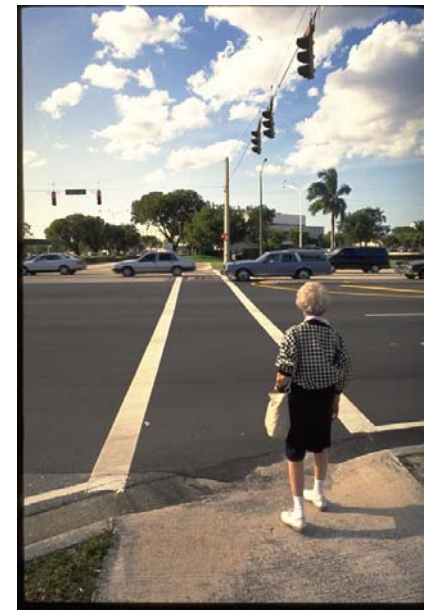
Accessibility



Obstructions /  
Sight Distance



Timing/LPI



# Engineering

- Know what and where your problems are
  - Work with hospitals to catch unreported crashes
  - GIS coding of complaints and crashes on same map



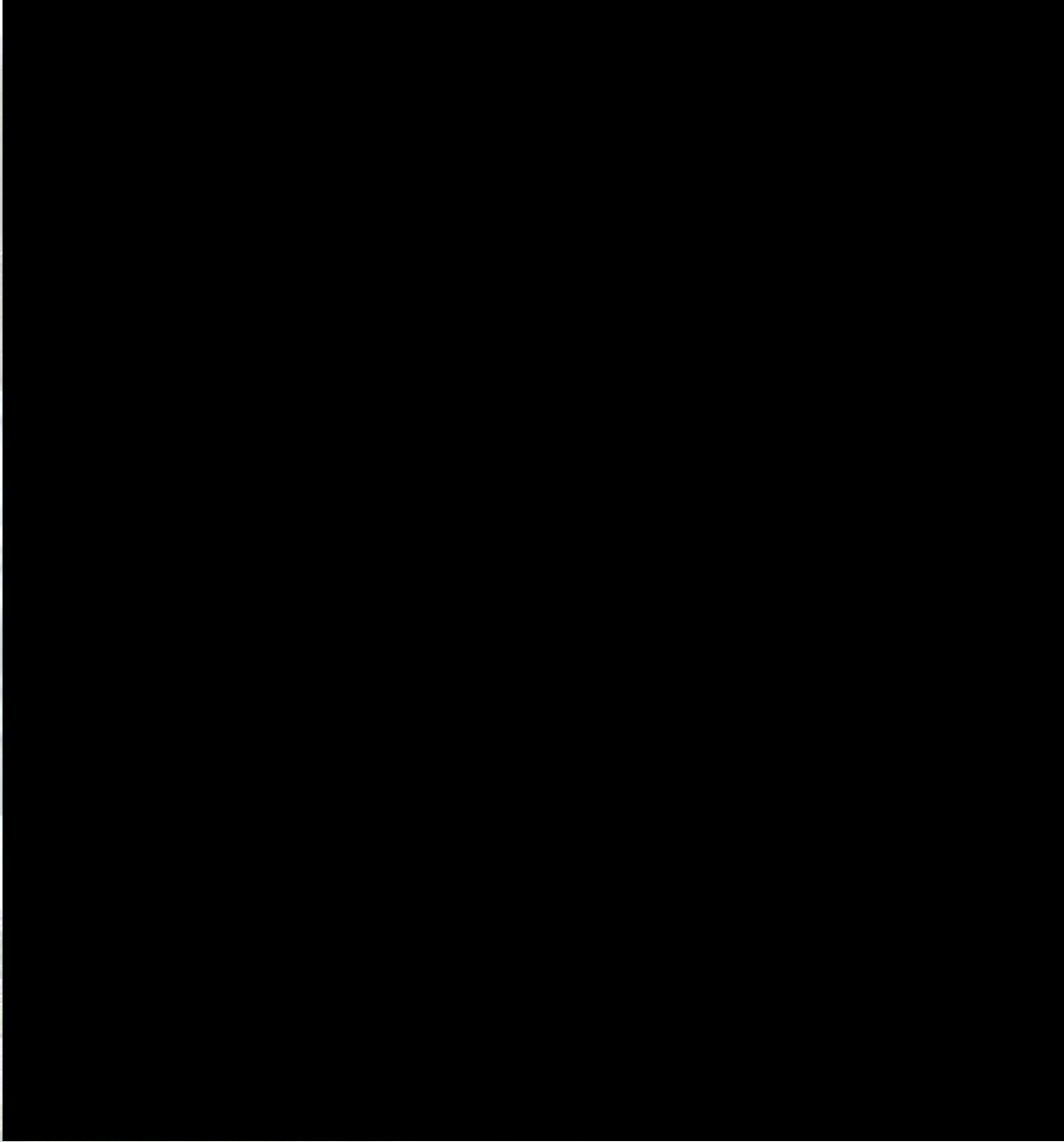
# Engineering

- Physical improvements can have BIG payoff – only affect specific areas
  - Cambridge considers ped in everything they do (ie, construction, maintenance, utility, permits)
  - ODOT – SWiP Program (Sidewalk with Preservation)
  - WZTC should accommodate peds
    - Govt, Maintenance, work permits

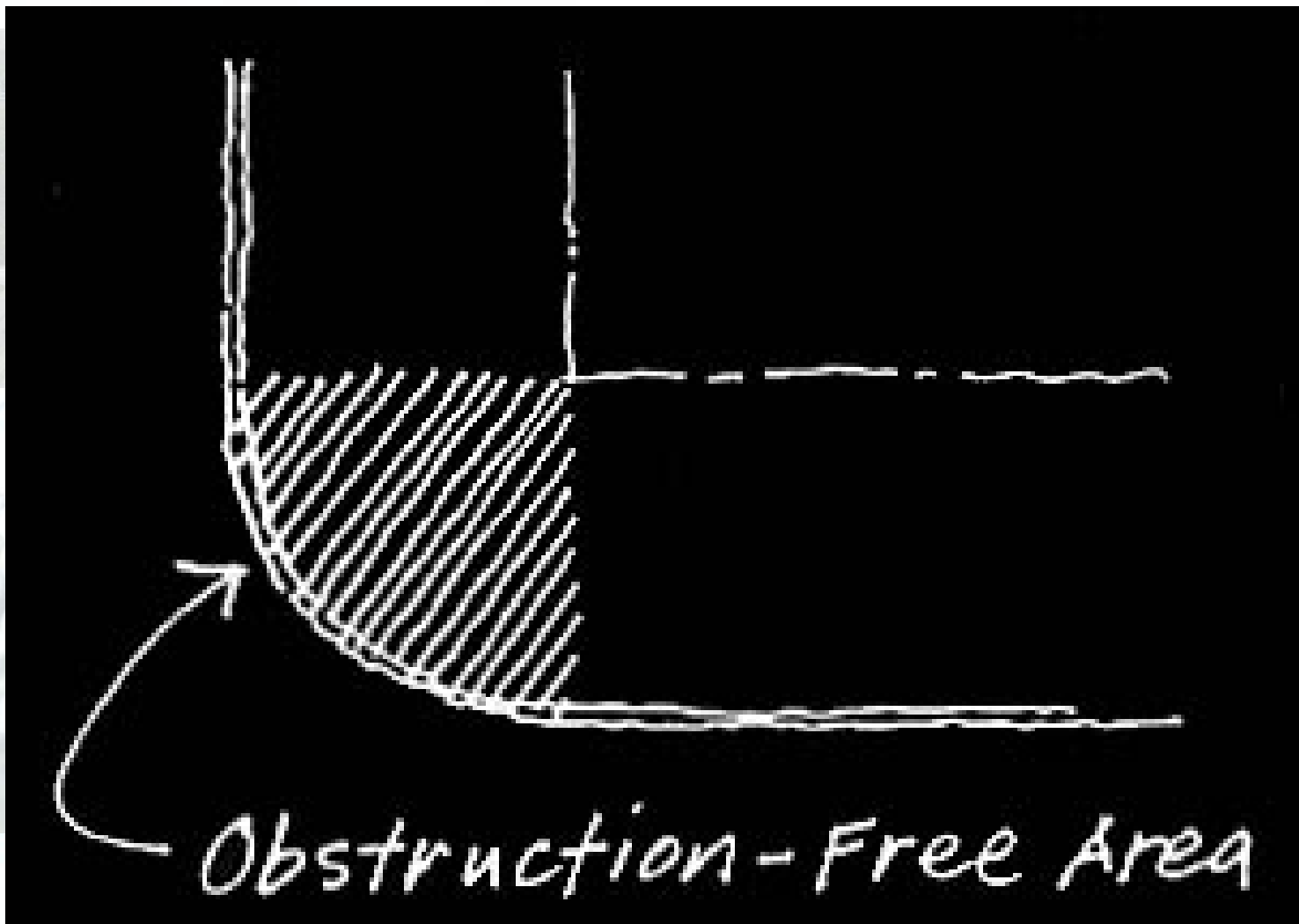
# Engineering

- Traffic Calming can work in northern climates





**An “effective  
radius”  
is created by a  
parking  
lane or bike lane**



...the space between the curb and the extension of the property lines to the curb



# Engineering

- Design and Operations must consider peds
  - Signal timing and phase length
  - Ped Phase – no RTOR
  - LPI
  - Intersection design and curb Radii
  - Road Diets



# Safety Audit: Successful Tools Engineering

---

- Pedestrian Islands  
-- 40% reduction in pedestrian accidents  
(*National*)
- Traffic Calming --  
29% average reduction in 85% speed  
(*Portland*)



# Engineering

- Maintenance Matters

- Snow and Ice Control

- Training to snow plow drivers
    - Dedicated maintenance for ped access points and major bus stops
    - Shoveling for handicapped – community service

- Design with plows sweep

- Adopt a transit stop

- TCD maintenance



# Sidewalk



# Enactment

- ISTEA/TEA-21 instrumental in improving Pedestrian safety across the country
- Safety-LU strengthens pedestrian safety and provides significant funding for capital improvements



# Enactment

- State laws and regulations differ governing speed limits, traffic laws, specifically when and where motorists must stop for pedestrians. Most is not linked directly to pedestrian safety.



# Enactment

- State sponsored land use and growth management laws/strategies often provide the foundation for local laws and ordinances





# Enactment

- Portland, ME, Cambridge, Mass and Seattle have all adopted traffic calming ordinances that promote the use of neck downs, chicanes, speed humps/bumps/tables, circles, roundabouts, road diets and other traffic calming devices.

# Enactment

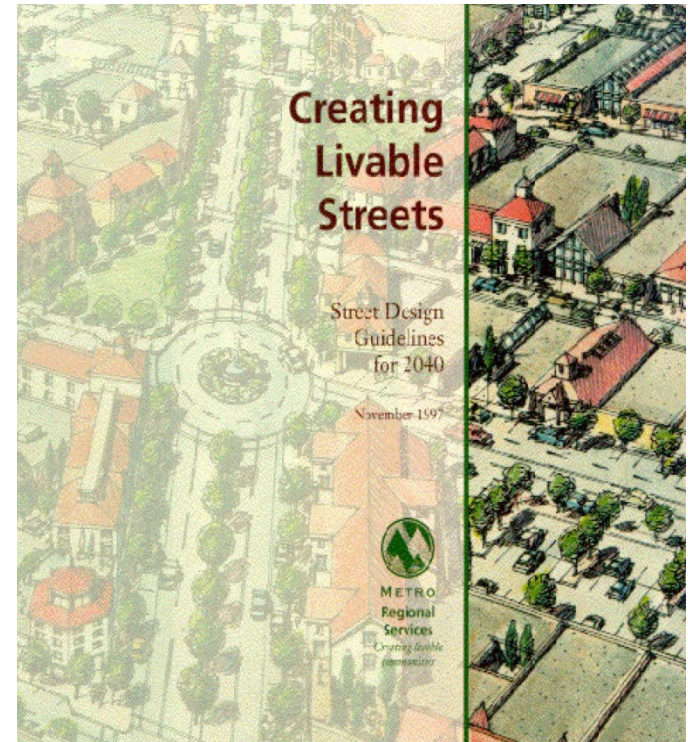
- Implementation and oversight of legislative controls must be effectively embedded in local administration. Transportation and public works agency directors, engineers and planners must buy into pedestrian programs and be empowered to implement and enforce it.

# Enactment

- State DOT-issued directives can mandate reasonable accommodations for pedestrians on all roadways where pedestrians are permitted. Many states and cities adopt street design guidelines favorable to pedestrians and must be met before funding is authorized

# Making it Happen...

- ❖ Regulatory - cities and counties must incorporate designs into local plans and codes
- ❖ 5,000 copies of Creating Livable Streets printed in 1997 & 2002 for local officials and citizens



# Education

## City of Portland Community and School Traffic Safety Partnership

*Working Together to Achieve  
Sustainable Traffic Safety  
Improvements*

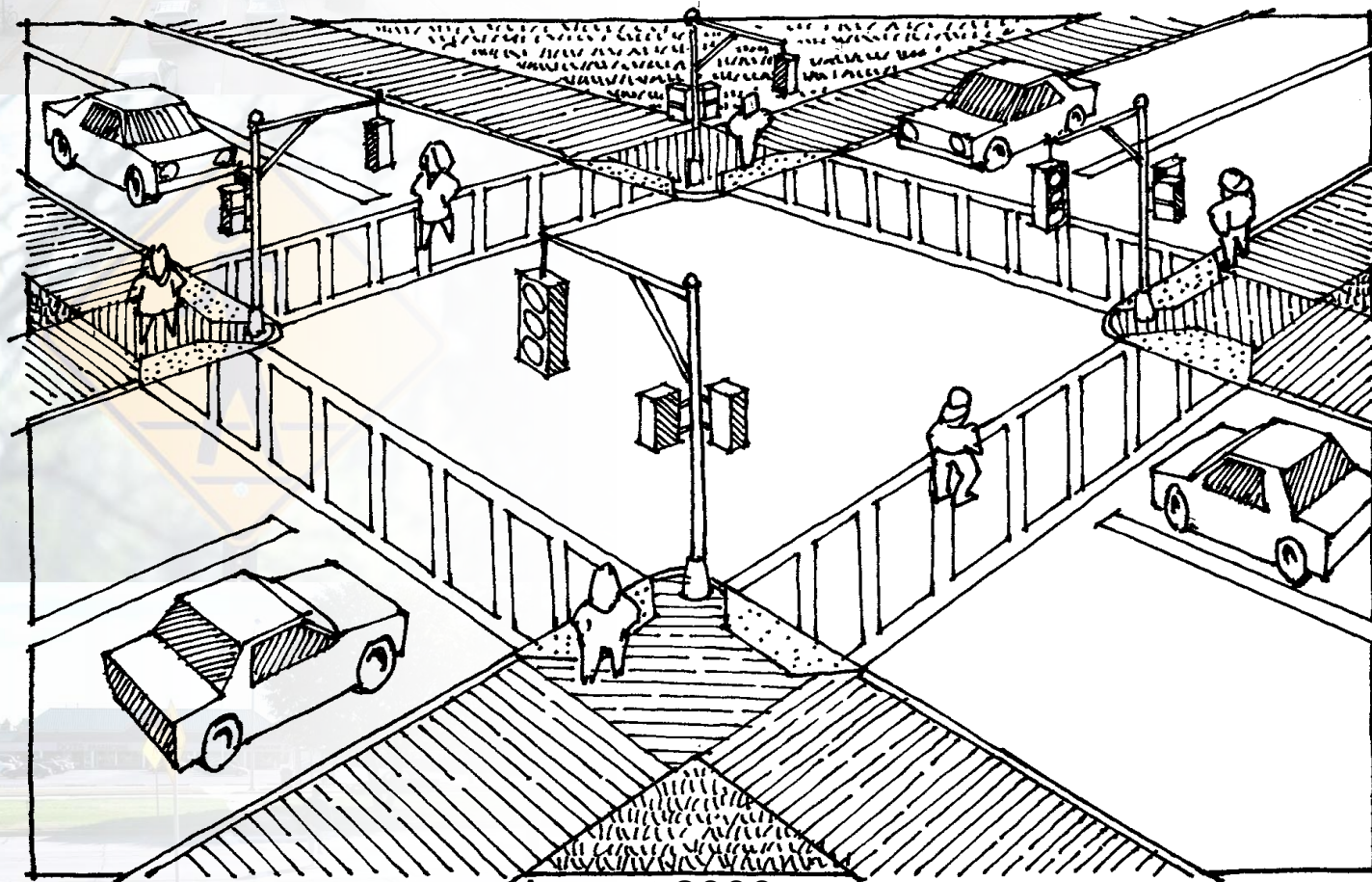


# Safe Routes to School:



# School Walking Routes

Portland Mainland Elementary and Middle Schools

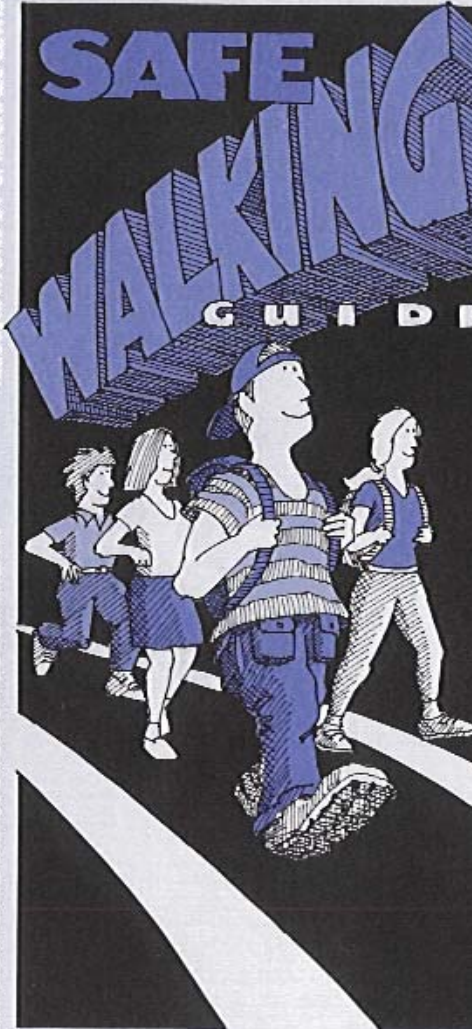


August 2000





SAFE WALKING GUIDE



KIDS AND TRANSPORTATION • 207-774-98

# Let's GO FOR A WALK

## Let's go for a walk

*Where should I walk?*

Walk on the sidewalk or path, instead of the street.

If there is not a sidewalk, walk on the left side of the street facing traffic.

*Where should I cross the street?*

Cross the street where there is a crossing guard.



**Stop**

*How should I stop?*

Stop walking when you see a crossing guard.

Look left and right to be sure there are no cars.

Listen for the sound of vehicles. If you hear a car, stop and look again.



## People to help you

*What do crossing guards do?*

Crossing guards carry a stop sign and stop the cars so you can cross the street safely.

*How should I cross with a crossing guard?*

First, stop, look, and listen.

# Tricky SITUATIONS

## Cars crossing the sidewalk

Sometimes walking on sidewalks can be tricky.

*What are some things I should watch out for?*

Look for cars crossing the sidewalk when they enter or leave driveways. They often drive across the sidewalk and might not see you.

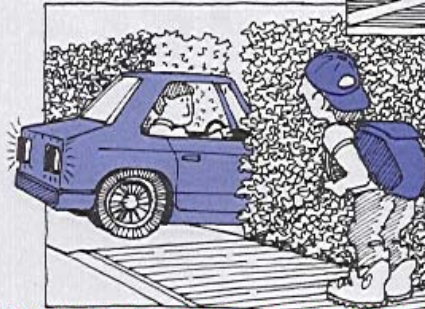
Watch the rear lights on cars. Red brake lights or white back-up lights mean the car is stopping or backing up.



## Parked cars

*What should I know about parked cars?*

Parked cars also block you from a driver's view. When drivers cannot see you, they won't slow down to let you cross. Always cross at a crosswalk or corner instead.



## Snow Banks

*What should I know about snow banks?*

Snow banks block you from a driver's view, just like parked cars. Even at a crosswalk, you have to be extra careful when there are piles of snow.



# Educating adults and kids



use educational placards with warning message to watch for turning vehicles



MUTCD Version  
(R10-3b)

# Parks and Recreation Notice to homeowners



City of Portland  
**Neighbor Helping Neighbor**



The winter season brings many challenges for us all—particularly for those individuals using our sidewalks throughout the City.

Please do your part to help emergency personnel, mail carriers and pedestrians—young and old alike—by removing ice and snow from your sidewalks and walkways as soon as possible after a storm.

Portland City ordinance requires this and more importantly, the people in your community are counting on your cooperation. Know of someone who needs some assistance with the challenges of winter? Do your part to lend a helping hand!

**Do your part to help keep your community moving.**



Portland Public Works: 874-8493  
Portland Parks & Recreation: 874-8793  
[www.portlandpublicworks.com](http://www.portlandpublicworks.com)

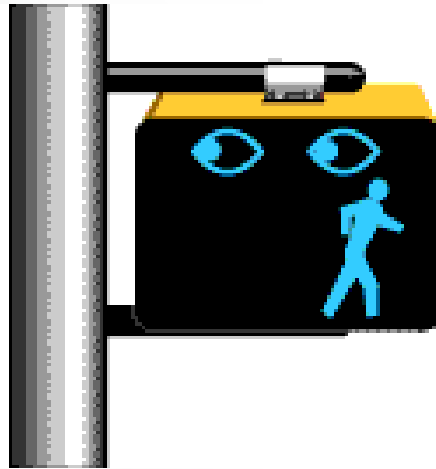
Check out [portlandpublicworks.com](http://portlandpublicworks.com) for resources to help with your winter sidewalk maintenance needs.

# Pedestrians

## Emerging Technologies



Count Down  
Signal



Animated Eyes  
Display

In-Pavement Lighting



# Safety Audit: Successful Tools Education

---

- Safe Routes to School Route Identification -- 29% Reduction in Vehicle Trips to School (*Marin County*)
- Safe Routes to School In-class Education -- 81% Increase in Kids Walking or Biking to





Crossing  
Guards

- Training
- Location

# Portland, ME



City has crosswalk committee where council members initiate crosswalk striping and address other issues such as;

- Snow removal and striping priorities, I.e., school routes, intersections, long lines, 70 miles of sidewalks,

- Mobility of disabled residents, a large number in which are in wheelchairs.

- Midblock crossing – believed to have increased due to multilane streets.

# Portland, Maine





# Portland, Maine Road



## Pedestrian Cross Bucks at Rail Crossings



## School Crossings are Given Attention



# Durham, NH

- College Town – University of New Hampshire
- Abandoned Rail Corridor to become multi-use trail was stopped by adjacent residents
- Many Advanced Traffic Calming Techniques in use in Durham



**Durham, NH  
Concrete**

**Stamped**



## Visual separation, Bike lane, and PM's for Peds



## Stamped Asphalt and Tennis Court Paint



# Durham, NH Pedestrian Bridge





## See Through Signing



# Cambridge, MA

- Zip Car
- Cambridge Walks Program
- High walk to work rate
- Approximately one pedestrian fatality per year
- Older city, built pedestrian friendly
- Peds have equal access/rights as motor vehicles



# Cambridge, MA



# Cambridge, MA



7' Parking lanes, 5' bike lanes, 10' – 11' Travel Lanes



# Cambridge, MA



# Seattle, WA

- Neighborhood Revitalization – Mixed use is the key, % of walking trips increased
- 53% of residents now live in multi family homes
- In 1984 they decided to no longer investment in projects that increase SOV
- Safe Routes to School Program,
  - Walking Route Maps for each school
  - Show preferred routes
- When dealing with consultants in RFP's, require a non-motorized “expert” in their design team
- Standard 10' and 11” lanes, even with truck traffic

# Curb Bulbs

- You must look at your cities snow removal equipment
- Can snowplow or street sweeper make this turn?
- 1<sup>st</sup> try painting the curb bulb and use it as a test





## Back-in Parking

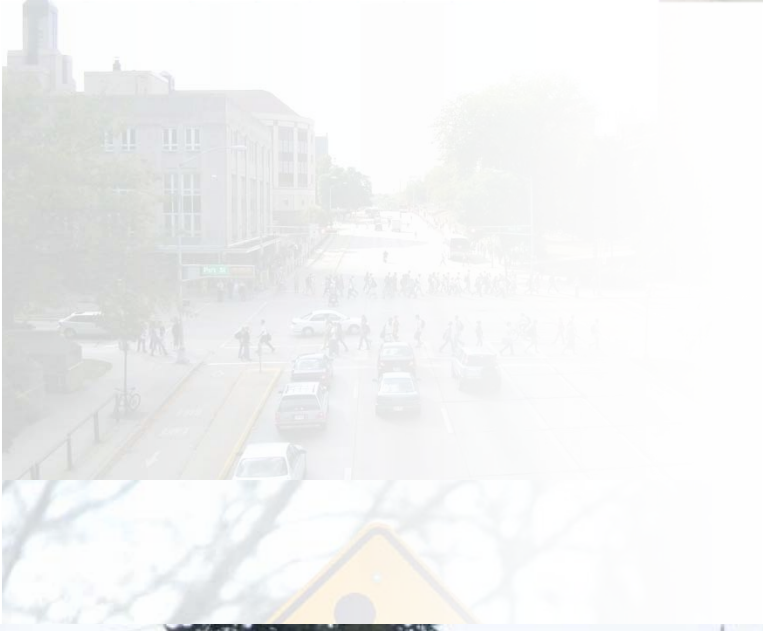


## Ped Signs in Attentional Window



## Traffic Calming – Speed versus Fatality Rate





# Seattle, WA Bicycle Lanes



# Portland, OR

- Local Study found Pedestrian Islands reduce 40% of pedestrian fatalities
- Portland (160) schools, maps for each school, walking maps, pick up / drop off map, metro maps, and bike map
- Adopt a stop – businesses or neighborhoods receive a free bus pass for changing garbage, cleaning bus stops
- City Codes
  - Sidewalks on all arterials and collectors
  - Walkways from Building to bus stops
  - No parking lot between the building and street
  - Separate ped accident report form



# Portland, Oregon

Light Rail Rapid  
Transit



# Portland, OR





# Independent Ped Crossing and Warrants



RTOR prohibition where high ped volumes exist



The background of the slide features a faded, high-angle photograph of a city street. In the foreground, a yellow diamond-shaped pedestrian crossing sign is visible, showing a silhouette of a person walking. The street has several cars and a crosswalk. Buildings and trees are visible in the background.

# FHWA Final Report

- Completion Date June 1, 2004
- Statewide Use, National Distribution



*Tight curb radius means a shorter crosswalk.*



*Wide curb radius means a longer crosswalk.*