M A S S

I N T E R C H A N G E

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SEAT BELT USAGE IN MASSACHUSETTS AMONG NATION'S LOWEST

Figure 1 Belt usage by gender and age

A summer 2004 seat belt study in Massachusetts completed by the Massachusetts Traffic Safety Research Program (MassSAFE) for the Governor's Highway Safety Bureau (GHSB) revealed a statewide usage rate of 63 percent. Nationwide this ties Massachusetts with Mississippi for the lowest reported usage rate; however it should be noted that New Hampshire last reported a usage rate of 50 percent in 2003. The national average for safety belt use was 80 percent in 2004.

To complete the study, approximately 58,000 motor vehicle drivers and passengers in over 46,000 motor vehicles at 161 locations within the Bay State were observed.

The current rate in Massachusetts of 63 percent reflects an increase of 12 percent from 2002. The rates in 2003 and 2004 were the highest ever recorded in Massachusetts. The largest factor in the increased usage was Massachusetts's participation in the national *Click It or Ticket* Campaign. This initiative involves the close coordination of high-visibility traffic enforcement, paid and earned media, and community education focused on improving belt usage.

Study highlights:

* Belt usage on highways was 70 percent compared to 59 percent for other roadway types;

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THE SAFETY EDGE

Pavement Edge Treatment

Saves Lives
Reduces Tort Liability
Reduces Maintenance Expense
Costs Less Than 1% of Pavement Resurfacing Budget

Unsafe Pavement Edges are a Serious Safety Problem

An estimated 11,000 Americans suffer injuries and 160 die each year in crashes related to unsafe pavement edges, at a cost of $1.2 billion. The true extent of the problem is difficult to assess because the role of the hazardous pavement edge in the sequence of events leading to a crash often is not documented.

What is the Definition of an Unsafe Pavement Edge?

Drop-offs of three or more inches are unsafe if the roadway edge is at a 90-degree angle to the shoulder surface.

How Do Unsafe Edges Cause Crashes?

Drivers who slip off a resurfaced road onto an unimproved shoulder are likely to lose control as they attempt to climb onto the roadway. The pavement edge creates a "scrubbing" condition that must be overcome through over-steering. As drivers over-steer to reenter the roadway, they are prone to lose control of the vehicle. Compounding the danger, the rear wheel may catch the edge of the shoulder swinging the car around. These actions may cause the car to veer into the adjacent lane, where it may collide or sideswipe oncoming cars, overturn or run off the road and crash.

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PAVEMENT EDGE HAZARDS & TORT LIABILITY

Tort liability claims resulting from pavement edge drop-offs cost highway agencies millions each year. A court awarded $6 million for injuries caused by a low, defective shoulder drop-off.

Be Part of the Solution by Specifying the "Safety Edge"

Adopting a standard contract specification requiring a 45 angle asphalt fillet along each side of the roadway in all resurfacing projects is a simple and cost-effective way to assure pavement edge safety. Solutions to the pavement edge drop-off hazard are to:

> Require a 45 angle asphalt fillet "Safety Edge" as a contract specification in all pavement resurfacing projects;

> Routinely resurface shoulders when roadways are resurfaced.

The asphalt fillet provides a safer edge and a stronger interface between the roadway and shoulder. The cost of an asphalt fillet is minimal in comparison to the total amount of a resurfacing contract, and is paid back in countless dollars saved from the reduction of fatalities, injuries, property damage and lawsuits. The fillet ties the existing shoulder into the resurfaced roadway and allows a vehicle to reenter the roadway safely. Highway agencies are able to restore the shoulder after the resurfacing project is completed.

Relative Safety of Various Edge Elevations & Shapes

The chart on page 8 shows how various edge shapes relate to safety. *continued on page 8*

TIPS FOR IMPROVING YOUR RELATIONS WITH ELECTED OFFICIALS

We frequently hear of the benefits of good communication. One important benefit for road managers is to improve relationships with elected officials. These six strategies will help keep lines of communication open between the road manager and other officials.

KEEP ELECTED OFFICIALS INFORMED

This is the first step to improve relationships with commission officials. Sheldon Morgan, Public Works Director in Gilford, NH, and Master Roads Scholar, said, "I keep [elected officials] apprised of public works operations through attending their meetings and by supplying them with monthly progress reports on various projects. Keeping them informed is the best tactic."

James Wheeler of Berlin, NH, reinforced this idea: "It's our job to properly educate elected officials so that they can make informed decisions. With that as the primary objective, we need to communicate facts with honesty, integrity, etc. Communication is the key. You may not always be able to tell them what they want to hear. However, as long as it is honest and is backed up with facts, they will respect you. Respect is what you want. An elected official can respect you and still not like you. That situation is much better than the reverse."

ACT AS A TEAM

The road manager and the elected officials are a team, working together to improve their commuity. As with any good team, compromise is essential. Team members must often negotiate to a mutually agreeable outcome. When road managers and elected officials make joint decisions, they should stand together as a team when the decision is announced. They should determine together what the message should be. Road managers should allow the commissioners to pass on good news to the citizens.

HELP ELECTED OFFICIALS LOOK COMPETENT

This is critical to the road manager's success. Road managers can help their elected officials look competent by keeping commissioners informed and by being available to answer questions. Elected officials will be more supportive if they understand what the road department is doing. Informed commission members will be more apt to vote with the road department.

Elected officials dislike surprises, particularly when they find out about road department actions from the public. They appear foolish and often blame the road supervisor, county engineer or public works director.

Road managers should not play favorites. Road department managers look competent when they support all of their commissioners in doing their jobs effectively. Any disagreements should be discussed privately.

When an elected official turns over a citizen's complaint to the road department, the road manager must treat it as important. When the complaint is resolved, the road

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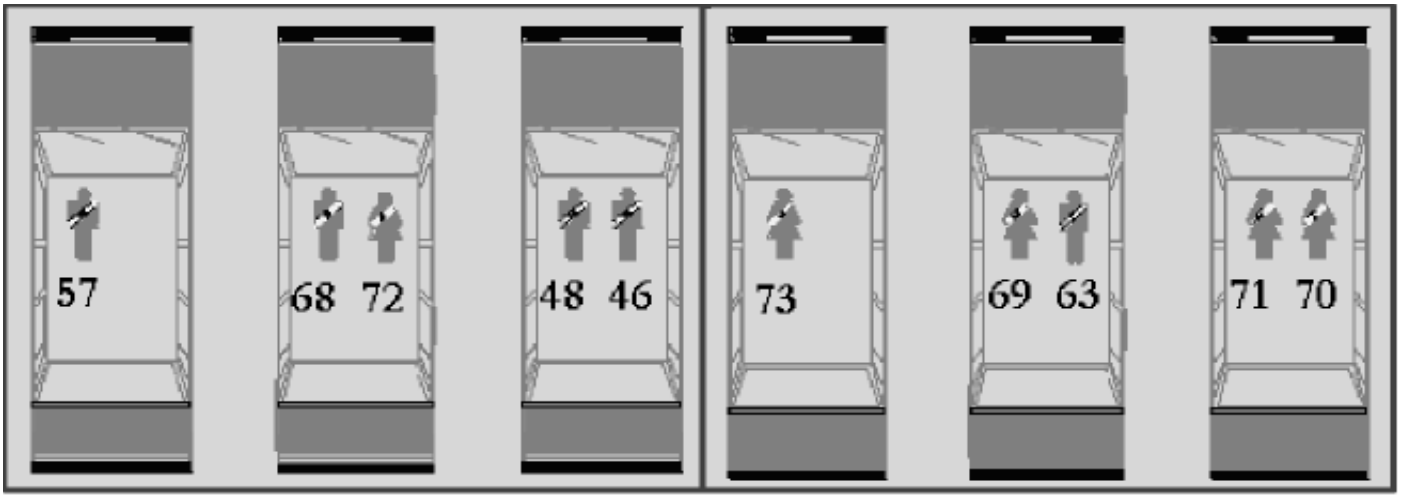

Figure 2 Belt usage by occupant configuration

* Belt usage was 64 percent for both drivers and front outboard passengers;

* Fifty-seven percent of male occupants were observed wearing seat belts compared to 73 per cent of female occupants;

* Belt usage was found to increase with age with teens at 60 percent, adults at 64 percent, and elder adults at 71 percent;

* Figure 1 shows belt usage by gender and age;

* Figure 2 presents belt usage by various configurations of front seat occupants; note how belt usage was consistent among females. For males, belt usage was highest when a female was in the vehicle (as either a driver or a front seat passenger) and lowest when two males occupied the front seats;

* Figure 3 details the breakdown of driver and passenger belt usage by vehicle type; note commercial vehicles weighing more than 26,000 pounds with 3 axles were not counted.

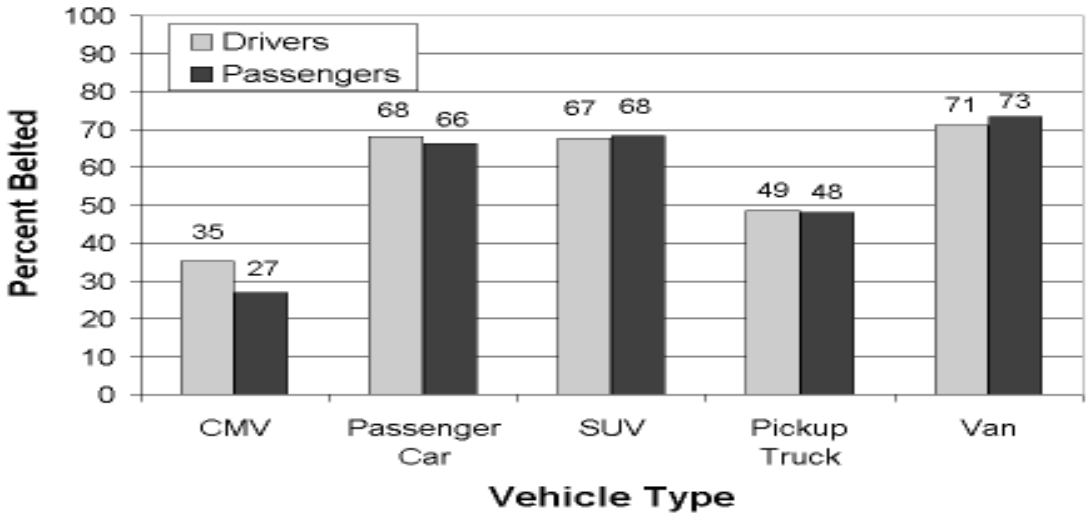

Figure 3 Belt usage by vehicle type and occupant role

For more information on safety belts in Massachusetts, including the GHSB's *Click It or Ticket* Campaign, go to:
www.mass.gov/ghsb

RICHARD C. BRODEUR IS OUR NEWEST MASTER ROAD SCHOLAR

Baystate Roads is proud to announce the tenth Master Roads Scholar from Massachusetts. Richard C. Brodeur has been employed by MassHighway for 34 years in various departments including research and materials, surveying, construction, project design and review, and maintenance. In January 2005 his title became Final Review and Procedure and Records Engineer. As a resident engineer in construction, he has overseen resurfacing, road reconstruction, and bridge, bulkhead and wharf projects. Mr. Brodeur was featured on the cover of a MassHighway newsletter about DPW success stories for his work on project design and review as well as training other engineers on the Commonwealth's bidding process.

Rick's duties include review of all contracts completed in the district to ensure that calculations are correct and that vendors are paid in compliance with the contract, special provisions and standard specifications. He also interprets specifications for resident field engineers and the district construction office when requested.

In addition to working for MassHighway, Rick Brodeur serves as the public works commissioner for the Town of Fairhaven, a position he has held for 13 years. He chaired the commission in 2002-2003 and served on various town committees such as the Livesy Park Restoration, Little Bay Bike Path, Bike Path Safety Review, Future Bike Path Planning, Cable Television Access, Middle School Field Restoration, and Mattapoisett River District Water Feasibility Study. Rick has been an active town meeting member for many years and was featured in a local newspaper as volunteer of the month for his contribution to so many committees. He is the only elected member of the Fairhaven Board of Public Works to hold a Grade 4 Operator's certificate in waste water treatment from the Massachusetts Department of Environmental Protection.

Mr. Brodeur has also shared his expertise with the North Fairhaven Improvement Assn., Fairhaven Improvement Assn., Boy Scouts, Village Militia Reenactment Group, Shriners and Masonic Lodges have benefited from his community involvement.

Rick has made it a priority to continue his education throughout his career with attendance at 70 seminars including those sponsored by the Baystate Roads Program, MassHighway Training Assistance Program, Plymouth County Conservation District, UMass Institute for Governmental Service, U.S. Department of Transportation, Massachusetts Department of Environmental Protection, U.S. Computer, and Massachusetts Organization of State Engineers and Scientists. In 1999 he was awarded a Baystate Roads Scholar certificate as a prelude to this achievement as a Master Scholar.

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manager should let the referring official take the credit. If it cannot be resolved to the citizen's satisfaction, the road manager should provide a thorough explanation.

STAY OUT OF POLITICAL CAMPAIGNS

Whether appointed or elected, road managers are municipal employees and public servants. Traditionally, government officials remain neutral in elections. Keep in mind that if the road manager's favored candidate loses, he or she may end up working for the opponent.

BE FRIENDLY WITH COMMISSIONERS

This helps to break down stereotypes of highway employees. Mike Bobinsky, former Director of Community Services in Dover, NH, said he invites city officials to special events such as Public Works Week events, lunches, retirement parties, etc. "The Council members need to see public works employees and officials in the same light as they would view the police or fire operation," he said.

DEFINE DEPARTMENT RESPONSIBILITIES

Clear department policies effectively define responsibilities. When policies are established and followed, the commissioners and public know what to expect from the highway department. If there is ever a question as to why something was done in a particular way, everyone, from a commissioner to a part-time seasonal employee, can point to a policy as a standard of operation.

BAYSTATE ROADS PUBLICATIONS

T&P-05 Communications with Your Board and Public
Cornell LTAP ***July 1988***

T&P-23 Public Involvement Techniques for Transportation Decision-Making
FHWA ***September 1996***

T&P-40 Leadership in the New Age of Public Works
APWA ***January 2004***

Fax your request to 413-545-6471

Policy development can improve relations with elected officials and the public. As a decision-making tool, policy creation allows the focus to be on an issue rather than on a particular incident or person.

Established job descriptions provide the same benefits as having written policies. The commissioners and employee know what is expected of them without any gray areas.

OTHER PRACTICAL ADVICE

Before bringing a proposal before a commission, the road manager should consider the likelihood of it passing. If the chances are slim, time should be used to lay the groundwork. For example, take commissioners into the field to see problems. If this isn't possible, take slides or a video to show the officials. Pictures can help to make a case. Invite "experts" to speak in favor of the proposal. A concerned citizen or salesperson can be a strong ally.

Highway managers should be aware of the public perception of the highway department. Richard Lee, Road Agent in New London, NH, suggests that equipment be kept clean and employees look busy. He said, "Citizens like it when you care for your equipment...it doesn't look good to allow employees to lean on shovels."

Adapted with permission from Road Business, New Hampshire Technology Transfer Center, Fall 1999.

FHWA Evaluates Safety for Visually Impaired Pedestrians at Roundabouts

Roundabouts offer significant operational and safety improvements for vehicles when compared to four-way signalized intersections and are one-solution to the Nation's growing congestion problems and unsafe conditions of intersections. Traffic planners can find it difficult, however, to design roundabouts that are safe for pedestrians. In fact, the American Disability Association has raised numerous issues concerning the safety of visually impaired pedestrians at roundabouts. For example, visually impaired pedestrians need to listen for safe gaps in traffic before crossing at a roundabout. However, gaps large enough to be detected by visually impaired pedestrians may be infrequent during periods of peak traffic and may be masked when the noise from circulating traffic is continuous.

To address some of these problems, the FHWA initiated a study at the Turner-Fairbank Highway Research Center (TFHRC) in McLean, VA, to evaluate the effectiveness of placing noise-generating rumble strips adjacent to crosswalks at roundabouts. Researchers recently conducted an initial experiment at a mock roundabout at TFHRC and a second experiment in the field at an existing double-lane roundabout in Prince George's County, MD, in October 2004. The researchers are trying to determine if rumble strips that cause an audible noise will help visually impaired pedestrians detect when a vehicle has yielded in the roundabout, leaving a gap in traffic so that the pedestrian can cross safely.

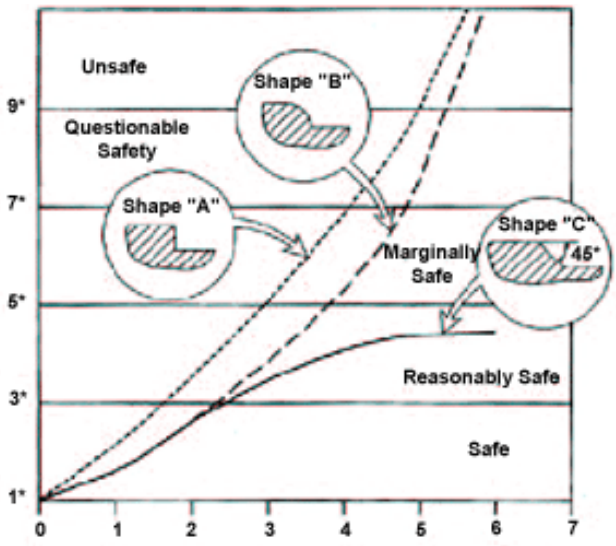
During FHWA's closed-course study of roundabouts, a visually impaired participant is shown raising her hand to indicate that two cars have yielded and that it is safe to cross.

In the closed-course experiment, visually impaired participants were asked to identify when a car had yielded in the far lane, the near lane, or in both lanes of the roundabout, first with and then without the rumble strips. During the experiment, participants generally gave three types of response. Some participants responded with a correct identification, successfully detecting two yielding vehicles, one in each lane. In this type of situation, the pedestrian can cross the street safely. Other participants gave a "false positive" response and indicated that two cars had yielded, when in actuality only one lane remained open. This response is considered the most dangerous because the potential exists for the visually impaired pedestrian to be struck by a moving vehicle. The third response was a "miss," where participants failed to detect that two vehicles--one in each lane--had yielded in the roundabout. Although a miss is not considered a safety issue, drivers encountering this situtation can become frustrated while they wait for the pedestrian to cross. A miss also can lead to an increased delay for the pedestrian who misses an opportunity to cross.

In the field study, researchers will conduct the same kind of analysis and will evaluate the feasibility of adding signs for motorists: in particular, the effectiveness of a sign that reads "State Law Yield to Pedestrians in Corsswalk." Researchers expect that its presence will improve the yielding behavior of drivers.

Although final results from both studies will not be available until 2005, preliminary results from the closed-course study indicate that visually impaired pedestrians achieve more correct identifications with the auditory rumble strips in place than without them.

Reprinted from Research & Technology Transporter, October 2004, USDOT, FHWA. For more information contact Gregory Davis at 202-493-3367
gregory.davis@fhwa.dot.gov



Longitudinal Edge Elevation Change (inches)

*These numbers are subjective severity levels.

For more detailed information about specifying & placing the "Safety Edge," contact Harry W. Taylor, FHWA, Office of Safety Design at (202) 366-2175 or Harry.Taylor@fhwa.dot.gov

in this issue...

The Baystate Roads Program, which publishes *Mass Interchange* each quarter, is a Technology Transfer (T2) Center created under the Federal Highway Administration's (FHWA) Local Technical Assistance Program (LTAP). This newsletter is prepared in cooperation with MassHighway and the United States Department of Transportation Federal Highway Administration. FHWA is joined by Mass Highway, College of Engineering at the University of Massachusetts/Amherst, and local public works departments in an effort to share and apply the best in transportation technologies.

In addition to publishing *Mass Interchange*, the Baystate Roads Program facilitates information exchange by conducting workshops, providing reports and publications and videotapes on request, and offering one-to-one technical assistance on specific roadway issues. Because the program relies on input from many sources, inquiries, articles, and ideas are encouraged.

LTAP Local Technical Assistance Program

To contact the Baystate Roads Program call (413) 545-2604 or FAX 413-545-6471.

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