



THE UNIVERSITY OF NORTH CAROLINA
HIGHWAY SAFETY RESEARCH CENTER
SAFETY • MOBILITY • INFORMATION

Annual Highlights

2001-2002

What is the UNC Highway
Safety Research Center
all about?

People

Our work at the UNC Highway Safety Research Center is not about seat belts or airbags. It's not about rural roads, city streets, or even highways.

Our work is about people. It's about conducting research and helping develop practical interventions aimed at making transportation safe and accessible for every traveler. Our research affects anyone who travels whether on foot, or by car, truck, school bus, motorcycle, bicycle or boat.



Occupant Restraints
Page 3



Graduated Driver Licensing
Page 4



Older Drivers
Page 6



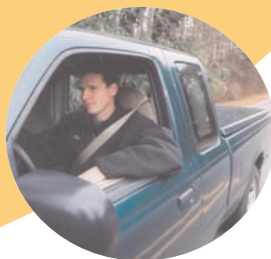
Distracted Drivers
Page 7



Alcohol-Related Studies
Page 9



Truck Safety
Page 10



Roadway and Traffic Safety
Page 11



Pedestrian and Bicycle Safety
Page 12



HSRC Director
Dr. Doug Robertson

What has the Center **accomplished** this year?

Since being established by the North Carolina Legislature in 1965, the UNC Highway Safety Research Center (HSRC) has been conducting interdisciplinary research and developing practical interventions aimed at reducing deaths, injuries, and related societal costs of roadway crashes in North Carolina and the nation. This year, HSRC staff worked on approximately 80 projects funded by a variety of private, federal, state, or local organizations.

HSRC's greatest asset is the knowledge and expertise of its staff. Many of the Center's researchers serve as chairs or as members of a variety of national and state transportation-related committees. HSRC researchers are continually asked to present at professional conferences. This year, research staff made more than 35 presentations at national and international conferences. In addition, research staff presented at numerous state and local conferences and meetings.

Overall, the Center brings in nearly eight competitive research dollars for every dollar that the state of North Carolina invests in us through the University.

The Center's revenues for fiscal year 2002 was \$4.2 million. The funding can be broken down as follows:

- 48 percent from federal sources
- 33 percent from state sources
- 12 percent from state appropriated sources
- 8 percent from private sources.

The public and the media continue to seek out the expertise of the Center and its research staff. Center staff responded to several hundred calls and emails from television, newspaper, magazine, radio, and Internet reporters, as well as the general public. The Center also maintains approximately a dozen web sites, which currently average more than 35,000 visitors a month.

In the next few pages, we will take you through just a few of the HSRC's many areas of research. In the back of this report, you will find a complete listing of research published by the Center in the past year. We also invite you to visit the main HSRC web site at <http://www.hsrc.unc.edu> to learn more about the Center and the important work going on within its doors.

Learn more about the Center →

What should adults do to try to keep **child** **passengers** safe?

The first child passenger safety law went into effect in North Carolina in 1982. Since then, restraint use for children covered by the law has increased from approximately 35 percent to 80 percent, according to observational surveys conducted by HSRC.



HSRC has worked closely with state and local agencies to increase the proper use of child safety seats and seat belts and to address emerging safety problems such as the danger airbags can pose to children. In addition, the Center has been involved in developing, supporting, and evaluating legislation that has upgraded North Carolina's child and adult occupant restraint laws. HSRC also collaborates with the state on educational material and training programs.

The combined results of these efforts throughout North Carolina have been shown to be very effective in protecting our children. For example, the rate of fatal and serious injuries to children through age 15 in motor-vehicle crashes has dropped from 1.71 in 1991 to 0.82 in 1999. These impressive improvements can be attributed to enhancements to North Carolina's child passenger safety law, strong enforcement, information and education programs that offer "hands-on" assistance, and the concern and love of parents and care-givers.

There is still more to be done, however. HSRC is continuing to work with state and local programs to prevent premature "graduation" to seat belts. Although, the most common option for children weighing 40 to about 60 pounds is the booster seat, recent HSRC surveys show that among restrained children weighing 40 to 60 pounds, just 16 percent are in booster seats. Over half of children this size are in seat belts, with many wearing them incorrectly.

In 2001, HSRC held focus groups with parents to discuss why they do or do not use booster seats. HSRC will be conducting an educational campaign about the importance of booster seats in Greenville, North Carolina in the summer of 2002.

In addition to offering in-depth information regarding child passenger safety on its web site, HSRC continues to participate in clinics to teach parents and other citizens on how to correctly install child passenger safety seats and use seat belts for larger children. ♦



What impact does graduated driver licensing have on crash rates for teen drivers?

North Carolina Graduated Driver Licensing System

- GDL Level 1:**
Must be supervised by adult
12 months
- GDL Level 2:**
Night driving (9 p.m. to 5 a.m.)
must be supervised
6 months
- GDL Level 3:**
No restrictions

Motor vehicle crashes are the most common cause of death among teenagers in the United States, according to the National Center for Injury Prevention and Control. The crash risk is highest among the youngest drivers. Inexperience and impulsive actions contribute to the greater crash propensity among beginning drivers.

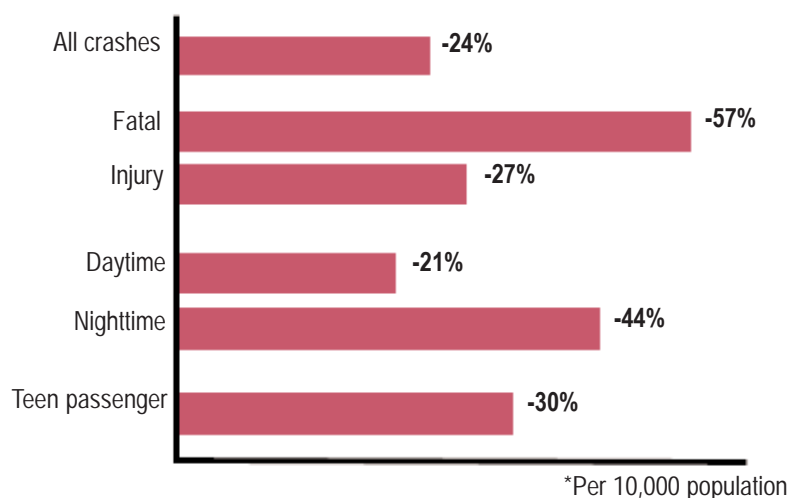
A study published by HSRC researchers in the Oct. 3, 2001, issue of *The Journal of the American Medical Association* examined the initial effects of graduated driver licensing, or GDL, on crashes involving 16-year-old North Carolina drivers. HSRC helped develop North Carolina's GDL system, which is a three-phase, experience-based program that went into effect December 1, 1997.

The study compared crash rates from 1996, before 16-year-olds were licensed under the GDL system, and crash rates from 1999, when the new system was in place.

The study found that the number of crashes involving 16-year-old drivers in North Carolina decreased dramatically from 1996 to 1999, including a 57 percent drop in fatal crashes.

A related HSRC study found that fatal and serious injury crashes were between 18 percent and 21 percent more likely in the more rural counties than in the most urban North Carolina counties during 1999. Nonetheless, the new

Change in 16 Year-Old North Carolina Driver Crash Rates* After GDL (1999 vs. 1996)





study found that crashes among 16-year-old drivers declined similarly regardless of degree of county urbanization – good news for those rural counties where crash risks are higher.

Findings from another study conducted at HSRC indicate that parents and teens alike endorse GDL. In telephone interviews with 600 families, more than 95 percent of North Carolina parents either "highly approved" or "somewhat approved" of GDL, and 80 percent of the state's 16- and 17-year-olds gave the same assessment. In an issue of interest to states still considering a GDL program, the study found that parents and teens from most rural areas support GDL just as strongly as those from urban and suburban locations.

Study authors said that in consideration of the clear benefits of GDL demonstrated in North Carolina and elsewhere, physicians in states without GDL systems, or where there is a relatively weak GDL program, should consider advising both their teen patients and parents of teens to follow the principles of a model GDL program.

HSRC continues to work with educators, driver licensing personnel, and parents to improve and further evaluate North Carolina's GDL system. HSRC's work in the area of young drivers has influenced several other states as they implement their own GDL programs. Since 1997, 34 states have enacted GDL systems designed to reduce crash rates among novice drivers. ♦



What can be done to make the **transportation** system **safer** for **older** **drivers?**



America is aging. Our older population will double over the next 30 years. By the year 2030, one in five Americans will be age 65 or older. The current transportation system is oriented primarily toward drivers of personal vehicles and does little to address the safety and mobility needs of an aging population.

HSRC researchers believe that a revolution in transportation is needed to provide older adults with the assistance they need to continue to drive as long as they can safely do so. Alternative transportation options need to be made available to older adults when they are no longer able to or no longer want to drive.

This year, HSRC researchers contributed to “Guidelines and Recommendations to Accommodate Older Drivers and Pedestrians” and the “Highway Design Handbook for Older Drivers and Pedestrians.” Published by the Federal Highway Administration, these documents offer transportation engineers a condensed source of practical information that links older road user characteristics to highway design, operational, and traffic engineering practices.

HSRC researchers also conducted a study, funded by General Motors Corporation under agreement with the U.S. Department of Transportation, that examined factors contributing to the premature reduction or cessation of driving by older adults and ways to help older drivers make responsible decisions about whether to continue or stop driving. The study involved focus groups with older adults and family members along with a national telephone survey of older current and former drivers.

Results from the study suggest that on-road driving evaluations conducted by trained professionals at local driving schools may be a potential useful intervention for helping older adults make more responsible decisions about whether to continue or stop driving. ♦

“The transportation system offers safe mobility to all persons, and allows older persons to remain independent. ... The medical and social service communities, motor vehicle administrators, and caregivers work together to enable safe driving as late in life as possible, and to offer other convenient transportation options when driving and walking are not feasible. ... **All enjoy safe mobility for life.**”

— The Eno Transportation Foundation, 2001



What distracts drivers?

In the first phase of a major study for the AAA Foundation for Traffic Safety, HSRC's Dr. Jane Stutts examined all forms of distractions to drivers, including children, radios, food and beverage consumption, cell phones, and occurrences outside the vehicle. The initial report found that cell phone use is just one of numerous non-driving activities that can lead to crashes.

By analyzing five years of data (1995-1999) from the National Highway Traffic Safety Administration's Crashworthiness Data System, researchers found that 15 percent of drivers in the study were not paying attention and just over half of these (8.3 percent) were distracted by something inside or outside the vehicle. When drivers with unknown attention status were removed from the data, the percentage of distracted drivers rose from 8.3 to 12.9 percent.

The specific sources of distraction among those drivers who were judged to be distracted at the time of the crash are shown, in order of frequency, in the chart below. However, Stutts cautions that people should understand the purpose of this particular analysis and the limitations of the data before using the data from the study.

The first phase of the study was intended to provide input for future data collection. In 36 percent of the crashes looked at, the driver's attention status was unknown, which means that all distractions in general were under-reported. It's likely that some distractions, like cell-phone use, were under-reported more than others, Stutts said.

HSRC is currently working on the second phase of the study. Along with the distraction data, researchers want to collect exposure data that reveal how often people engage in certain behaviors. ♦

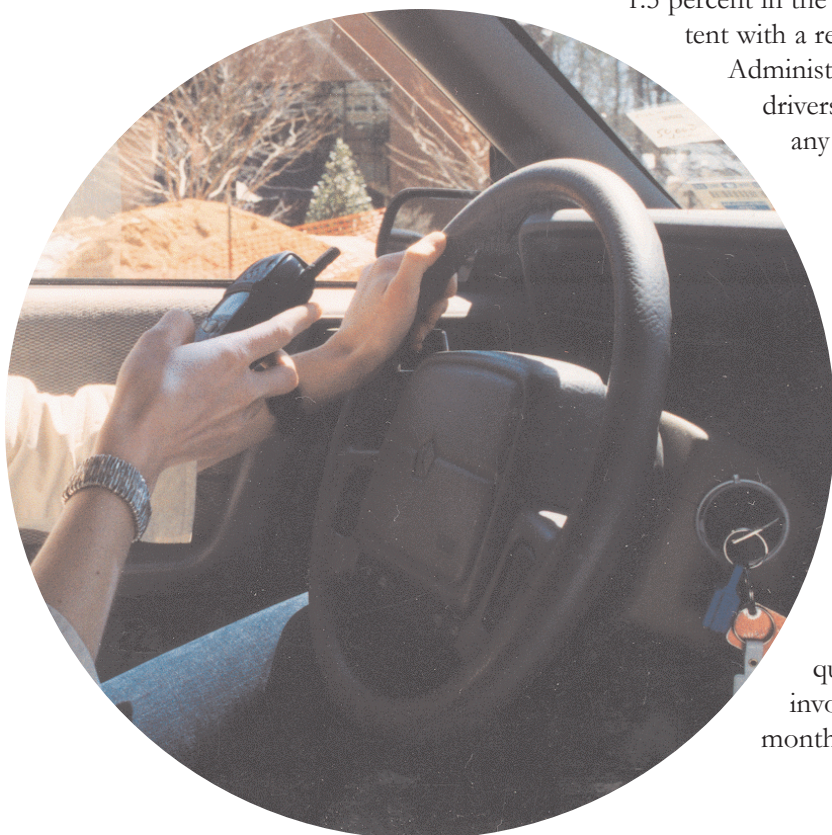
SPECIFIC DISTRACTION	PERCENT OF DISTRACTED DRIVERS
Outside person, object or event	29.4
Adjusting radio, cassette, CD	11.4
Other occupant in vehicle	10.9
Moving object in vehicle	4.3
Other device/object brought into vehicle	4.3
Adjusting vehicle/climate control	2.8
Eating or drinking	1.7
Using/dialing a cell phone	1.5
Smoking related	0.9
Other distraction	25.6
Unknown distraction	8.6

How many people are using cell phones while driving?

As the popularity of cell phones continues to grow, so do the prospects for legislation surrounding their use while driving. But how dangerous is it to drive and use a cell phone? How many people are talking on cell phones while driving and how many crashes are cell-phone related? That is what researchers at HSRC are working to find out.

To explore the issue, Dr. Donald Reinfurt, former deputy director of HSRC, and his colleagues conducted an observational study of cell phone use among North Carolina drivers. The study was conducted with the support of the N.C. Governor's Highway Safety Program and the cooperation of Col. Richard Holden, commander of the N.C. State Highway Patrol.

HSRC researchers found that at any given time, 3.1 percent of people on the roads in North Carolina, are talking on cell phones while driving. The Piedmont area had the highest cell phone use while driving - 4.1 percent. The prevalence rate was 2.2 percent in the mountains and 1.5 percent in the coastal plain. These numbers are consistent with a recent National Highway Traffic Safety Administration study that showed 3 percent of drivers nationally are talking on cell phones at any given time.



In a small pilot study involving the North Carolina State Highway Patrol, about 1 in 600 crashes in the study appeared to involve the use of a cell phone while driving.

HSRC researchers continue to explore this issue. A statewide telephone survey is planned for summer 2002.

Researchers will also be working with the North Carolina State Highway Patrol to collect more detailed data on the frequency and characteristics of crashes involving cell phones statewide over a two-month period. ♦

What are the risks of **drinking** alcohol while **boating**?



Recreational boat passengers are just as likely as operators to die as a result of drinking alcohol, according to a recent study of boating deaths in North Carolina and Maryland. One reason the study revealed was that passengers who have been drinking often topple overboard and drown.

Researchers at HSRC and Johns Hopkins University say their results indicate that efforts to reduce boating deaths that target only operators fail to protect many boaters at risk. Different approaches that will address all boat occupants are needed.

"Crashing into other boats or piers causes only about 20 percent of deaths," said Dr. Robert D. Foss, research scientist at HSRC and one of the authors of the study. "Frequently, people who have been drinking fall in the water and drown even if a boat is not moving."

A report on the study appeared in the Dec. 19, 2001, issue of the *Journal of the American Medical Association*. The population-based, case-control study involved reviewing 221 boating deaths recorded in North Carolina and Maryland medical examiner files between 1990 and 1998 and comparing them with a probability sample of 3,943 boaters from both states. Victims studied were all over age 18.

Even with a blood alcohol content (BAC) of only .01 percent, the risk to operators and passengers increased 30 percent over people with no alcohol in their blood, Foss said. The risk of death was more than 52 times greater when victims showed a blood alcohol content of .25 percent. About 80 percent of boating fatalities result from drowning.

Besides analyzing medical examiner data, investigators spent three summers interviewing and obtaining breath measurements from boaters across North Carolina and Maryland as part of their research.

The National Institute on Alcohol Abuse and Alcoholism supported the research. About 750 recreational boaters died in the United States in 2000. Studies have linked approximately one-third of such deaths to alcohol use. ♦

The study showed that even a blood alcohol content (BAC) of only .01 percent, the risk to operators and passengers increased 30 percent over people with no alcohol in their blood.

How can we improve truck safety

in North Carolina?

In 1998, North Carolina ranked fourth in the nation in terms of the number of fatal crashes involving large commercial trucks. In order to gain a better understanding of the state's truck crash problem and to help with the development and evaluation of programs to address that problem, the state's Motor Carrier Safety Assistance Program (MCSAP) with the help of the North Carolina Governor's Highway Safety Program (GHSP), sought analysis and program evaluation support from HSRC. Center staff worked closely with MCSAP personnel in the analysis of existing data and in the joint development of program goals, objectives, and strategies which were clearly spelled out in the state's Commercial Vehicle Safety Plan (CVSP).

The Federal Motor Carrier Safety Administration (FMCSA) has established a 10-year strategic goal that calls for states to achieve a 50 percent reduction in fatal truck-involved crashes by the beginning of year 2010. Currently, North Carolina is ahead of schedule in terms of the progress made toward meeting the goal.

HSRC analyzes North Carolina's truck crash data each year. Between 1998 and 1999, there was a significant increase statewide in roadside driver and vehicle inspections. Associated with this increase in inspection activity has been a decline in fatal truck-involved crashes statewide. The decline has continued since 1999 despite an increase in the number of truck miles traveled in North Carolina and a slight increase in the overall number of truck-involved crashes.

HSRC continues to work on the application of Geographic Information Systems (GIS) methods as a means of providing truck safety personnel with a more effective visual interface to the spatial characteristics of truck crashes in the state. Using GIS tools, HSRC has found that the areas of the state with the highest probability of fatal truck-involved crashes are not the same as those having the highest overall number of truck-involved crashes. This data has caused MCSAP to re-evaluate the criteria by which enforcement resources are "targeted."

HSRC is also working closely with MCSAP to increase the utilization of carrier safety information reported on the FMCSA Analysis and Information Online web site. ♦





How are data obtained for **roadway design** and **traffic safety research**?

Highway engineers and administrators are continually faced with decisions concerning the design and operation of the highway system. An important part of the decision-making process is the potential impact on the safety of the highway users. Informed decision-making requires an understanding of how safety is affected by the geometric design of the roadway, the selection and placement of roadside hardware, the use of traffic control measures, the size and performance capabilities of the vehicles, and the needs and abilities of the users. This understanding can be developed through sound analysis of information about accidents, roadway geometrics, traffic control devices, traffic volume data, and the location of hardware and obstacles on the roadside. These data must be present in computerized files and easily linked so that data can be rapidly assembled and prepared for analysis.

Funded by the Federal Highway Administration and developed and managed by HSRC, the Highway Safety Information System (HSIS) is the only national database that incorporates and links crash data with roadway inventory and traffic data so that safety effects of roadway design can be studied. HSIS currently uses data collected by eight states - California, Illinois, Maine, Michigan, Minnesota, North Carolina, Utah and Washington. Data from Ohio will become part of HSIS in 2002.

The expansion, maintenance and use of HSIS remains an important continuing project at HSRC. Using linkable files on crashes, roadway inventory, traffic volumes and other roadway descriptors, project staff provide data for over thirty research efforts each year. Studies using HSIS data are conducted by researchers from the Federal Highway Administration, various universities, states and private research agencies, and HSRC staff. The data are also used by students in the Department of City and Regional Planning at the University of North Carolina at Chapel Hill in a graduate-level course on transportation safety.

Recent research efforts using HSIS data have involved the safety effectiveness of decreasing the number of lanes in high pedestrian/bicycle area ("street diets"), effects on safety research of changing police reporting practices, and location-related aspects of collisions involving cars and large trucks. ♦

Recognition:

HSIS took top honors in the Best Practices in Traffic Records competition at the National Safety Council's International Traffic Records Forum in July 2001.

How can we communicate the importance of **pedestrian safety** on a **college campus**?

In April 2002, HSRC kicked off a pedestrian safety awareness campaign that aims to make the University of North Carolina at Chapel Hill campus a safer place to walk and bicycle.

Developed by HSRC and the UNC Department of Public Safety, the "Yield to Heels" campaign focuses on three messages for drivers and pedestrians: Be Aware. Be Safe. Be Considerate.

To kick off the campaign, volunteers wearing "Yield to Heels" T-shirts were stationed at four crosswalks around the campus on April 24. Volunteers distributed information fliers about the campaign along with discounts from local merchants.

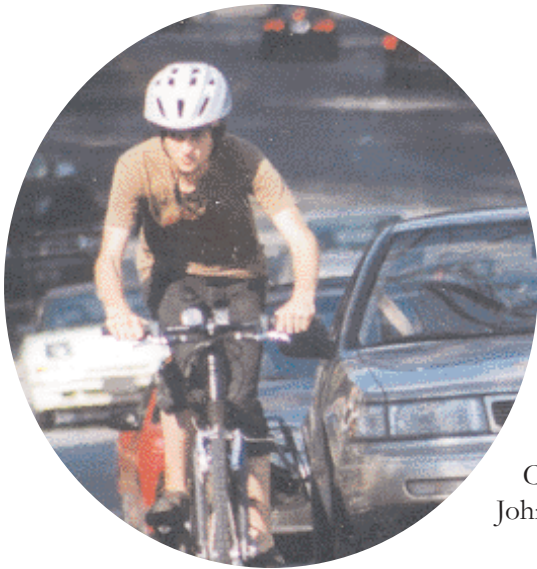
The campaign is planned to run through at least the fall of 2002 and also includes posters, advertising and public service announcements.

In conjunction with the pedestrian safety campaign, officers from the UNC Department of Public Safety's traffic and pedestrian safety unit used traffic radar equipment to monitor campus streets for speeding motorists. The three-member unit was established within the Department of Public Safety in July 2001 thanks to a grant from the North Carolina Governor's Highway Safety Program. From July 2001 to January 2002, the unit issued more than 90 citations to motorists for failure to yield to pedestrians in marked crosswalks, 66 speeding citations (mainly in areas with a high volume of pedestrians) and 70 citations for other violations. The unit also has conducted 79 pedestrian safety programs in residence halls, fraternities and sororities since July 2001.

In 1999, a UNC student was struck by a car as he crossed a campus street at a marked crosswalk. He later died from injuries caused by the accident. Following this tragedy, a 14-member pedestrian safety committee, which includes HSRC researchers, was formed to advise the university regarding pedestrian safety issues. Since its formation, the committee's work has resulted in several engineering improvements, including pedestrian crossing warning signs at all campus crosswalks and sidewalk additions near the entrances to UNC Hospitals. ♦



How can we build **communities** that are **safe** for **walking** and **bicycling**?



In July 2001, the Pedestrian and Bicycle Information Center (PBIC) officially became a center within the UNC Highway Safety Research Center. The mission of the PBIC is to improve the quality of life in communities through the increase of safe walking and bicycling as means of transportation and physical activity. Originally funded by the U.S. Department of Transportation, the PBIC secured additional funding from the Centers for Disease Control and Prevention and the Robert Wood Johnson Foundation in 2001.

The PBIC serves as an information clearinghouse for anyone interested in pedestrian and bicycle issues. One of the primary means of disseminating information to practitioners is through web sites developed and managed by the PBIC. In 2001, visits to these sites more than doubled. The main PBIC web site for walking-related information can be found at www.walkinginfo.org. The main web site for bicycling information is www.bicyclinginfo.org.

This year, the PBIC also published a number of reports and studies aimed to help communities create pedestrian and bicycle friendly environments. In the fall of 2001, the PBIC released the “Pedestrian Facilities User Guide.” Created, as part of a Federal Highway Administration study, the guide contains useful information regarding how to create walking environments, the main causes of pedestrian crashes and ways to counter them, and engineering improvements that can be made to improve the quality of life for all citizens.

In May of 2002, the PBIC released the “Bikeability Checklist.” The simple, seven-question checklist is designed to help officials and citizens rate how friendly their communities are for bicycling, identify problem areas, and find short- and long-term solutions that will improve each community’s score. The tool is sponsored by the National Highway Traffic Safety Administration. The PBIC created a “Walkability Checklist” in 2001 that allows officials and citizens to rate how easy and safe it is to walk in their communities.

Check out the following web sites to learn more about what PBIC does:

www.walkinginfo.org
www.bicyclinginfo.org
www.walktoschool.org
www.iwalktoschool.org
www.pedbikeimages.org

The PBIC recently completed a study that analyzed five years of pedestrian crashes at 1,000 marked crosswalks and 1,000 matched unmarked comparison sites. All of the sites had no traffic signals nor stop signs on the approaches. Detailed data were collected on traffic volume, pedestrian exposure, number of lanes, median type, speed limit, and other site variables.



The study results revealed that on two-lane roads, the presence of a marked crosswalk alone at an uncontrolled location was associated with no difference in pedestrian crash rate, compared to an unmarked crosswalk. Further, on multi-lane roads with traffic volumes above about 12,000 vehicles per day, having a marked crosswalk alone (without other substantial improvements) was associated with a higher pedestrian crash rate (after controlling for other site factors) compared to an unmarked crosswalk. The study recommends that more substantial improvements be made to provide for safer pedestrian crossings on certain roads, such as adding traffic signals with pedestrian signals, providing raised medians, speed-reducing measures, and others.

Online Digital Image Library

In April 2002, the PBIC launched a digital image library that contains a searchable collection of more than 2,200 walking- and bicycling-related photographs. The image library, which is located online at <http://www.pedbikeimages.org>, allows visitors to download photos free of charge for use in noncommercial projects. The Center developed the library in collaboration with Walkable Communities Inc. and the Institute of Transportation Engineers (ITE).

In addition to photographs of people walking and bicycling, the image library also includes pictures of traffic calming devices, engineering improvements in communities that create safe and attractive walking environments, and neighborhoods that have been designed to be conducive for walking and bicycling.

Walk to School Day and International Walk to School Day

On October 2, 2001, children, parents, teachers and community leaders in 49 states joined nearly 3 million walkers around the world to celebrate International Walk to School Day. The event has inspired many communities around the globe to make their streets more pedestrian friendly and get their residents more active.



International Walk to School Day in the United States is sponsored by the Partnership for a Walkable America (PWA). The Pedestrian and Bicycle Information Center is a founding member of the PWA and maintains both the international and U.S. Walk to School Day web sites, as well as coordinates online registration for the annual event.

To find out more about Walk to School Day in the United States, go to www.walktoschool.org. For information about International Walk to School Day, go to www.iwalktoschool.org. ♦

Recognition:
 In June 2002, the International Walk to School Day initiative in the United Kingdom won a Stockholm Partnerships Award for innovative solutions for sustainable development in metropolitan areas.

Want to know more?
Here's a listing of
research
published in
2001 and 2002.

"Educating Young Drivers in North Carolina: A Review of Current Practices." Jane C. Stutts and Libby J. Thomas. University of North Carolina Highway Safety Research Center, 2002. Report prepared for the North Carolina Governor's Highway Safety Program.

"The Effects of 'Road Diets' on Traffic Crashes and Injuries." H.F. Huang. In Transportation Challenge: Meeting Our Customers' Expectations, 2002 Spring Conference and Exhibit Compendium of Technical Papers. Washington, D.C. : Institute of Transportation Engineers, 2002. ITE item no. CD-016.

"Pedestrian Facilities Users Guide." C. V. Zegeer, C. Seiderman, P. Lagerwey, M. Cynecki, M. Ronkin, and R. Schneider. McLean, VA ; Federal Highway Administration, 2001. Report no. FHWA-RD-01-102.

"Cell Phone Use While Driving in North Carolina." Donald W. Reinfurt, Herman F. Huang, John R. Feaganes, and William W. Hunter. Chapel Hill, NC : University of North Carolina Highway Safety Research Center, 2001. Prepared for the North Carolina Governor's Highway Safety Program.

"Commercial Vehicle Safety in North Carolina." Prepared by R. G. Hughes and E.A. Rodgman. Chapel Hill, NC : University of North Carolina Highway Safety Research Center and the North Carolina Center for Geographic Information and Analysis.

"Designing for Pedestrians." C. V. Zegeer and C. B. Seiderman. In Compendium of Technical Papers, Institute of Transportation Engineers 2001 Annual Meeting and Exhibit. Washington, D.C. : Institute of Transportation Engineers, 2001.

"Drinking and Recreational Boating Fatalities: a Population-based Case-control Study." G.S. Smith, P.M. Keyl, J.A. Hadley, C.L. Bartley, R.D. Foss, W.G. Tolbert, and A.J. McKnight. Journal of the American Medical Association; Vol. 286, No. 23, Dec. 19, 2001. pp. 2974-2980.

"Effects of Traffic Calming Measures on Pedestrian and Motorist Behavior." H. F. Huang and M. J. Cynecki. McLean, VA: Federal Highway Administration, Turner Fairbank Highway Research Center, 2001. Report No. FHWA-RD-00-104.

"Effects of Work Zone Presence on Injury and Non-injury Crashes" A. J. Khattak, A.I.J. Khattak and F. M. Council. Accident Analysis and Prevention. Vol. 34 (1). pp.19-29.

"Evaluation of Automated Pedestrian Detection at Signalized Intersections." R.G. Hughes, H. F. Huang, C. V. Zegeer, and M. Cynecki. McLean, VA: Federal Highway Administration, Turner Fairbank Highway Research Center, 2001. Report No. FHWA-RD-00-097.

"Evaluation of the Effects of North Carolina's 0.08% BAC Law." R. D. Foss, J. R. Stewart and D. W. Reinfurt. Accident Analysis and Prevention. Vol. 33, No. 4, 2001. pp. 507-517.

"Guidelines and Recommendations to Accommodate Older Drivers and Pedestrians." L. Staplin, K. Lococo, S. Byington, and D. L. Harkey. McLean, VA ; Federal Highway Administration, 2001. Report no. FHWA-RD-01-051.

"Highway Design Handbook for Older Drivers and Pedestrians." L. Staplin, K. Lococo, S. Byington, and D. L. Harkey. McLean, VA ; Federal Highway Administration, 2001. Report no. FHWA-RD-01-103.

"Highway Speed Limits: A Judicial Perspective." H. D. Robertson and D.L. Warren. In Compendium of Technical Papers, Institute of Transportation Engineers 2001 Annual Meeting and Exhibit. Washington, D.C. : Institute of Transportation Engineers, 2001.

Identification of Severe Crash Factors and Countermeasures in North Carolina. Final Report. H.F. Huang, R.J. Schneider, C.V. Zegeer, A.J. Khattak, V.J. Amerlynck, and J.K. Lacy. Chapel Hill, NC : University of North Carolina Highway Safety Research Center, 2001. Prepared for the North Carolina Department of Transportation. 2001.

Implementation of GIS-Based Highway Safety Analyses: Bridging the Gap. R. C. Smith, D. L. Harkey, and B. Harris. McLean, VA: Federal Highway Administration, Turner Fairbank Highway Research Center, 2001. Report no. FHWA-RD-01-039.

"Increasing Seat Belt Use in North Carolina." A.F. Williams, J.K. Wells and D. W. Reinfurt. In Public Health Communication: Evidence for Behavior Change. R.C. Hornik, editor. Mahwah, NJ: Lawrence Erlbaum Associates, Inc., 2001. ISBN: 0-8058-3176-2.

"Initial Effect of Graduated Driver Licensing on 16 year-old Driver Crashes in North Carolina." R.D. Foss, J. R. Feaganes, and E.A. Rodgman. Journal of the American Medical Association. Vol. 286, No. 213, October 3, 2001. p. 1588-1592.

"Light Rail Service: Pedestrian and Vehicular Safety. Transit Cooperative Research Program Report No. 69." H.W. Korve, B. D. Ogden, J. T. Siques, D.M. Manssel, H.A. Richards, S. Gilbert, E. Boni, M. Butchko, J.C. Stutts, and R.G. Hughes. Washington, DC: Transportation Research Board, 2001. pp 32-39.

"Method of Improving Pedestrian Safety Proactively with Geographic Information Systems. Example from a College Campus." R. J. Schneider, A. J. Khattak, and C. V. Zegeer. In 2001 TRB Distinguished Lecture and Bicycle and Pedestrian Research: Transportation Research Record No. 1773. Washington, DC: Transportation Research Board, 2001. pp. 97-107.

"Motorcycle Helmet Crash Cost in North Carolina." J. Kevin Lacy. Chapel Hill, N.C. : University of North Carolina Highway Safety Research Center, 2001.

"The North Carolina Graduated Driver Licensing System: Urban - Rural Differences." R. D. Foss. Chapel Hill, N.C. : University of North Carolina Highway Safety Research Center, 2001. Prepared for the U.S. National Highway Traffic Safety Administration.

"The Premature Reduction and Cessation of Driving by Older Men and Women." J.C. Stutts, J.W. Wilkins, D.W. Reinfurt, E.A. Rodgman, and S. Van Heusen-Causey. University of North Carolina Highway Safety Research Center, 2001. Prepared for the General Motors Corporation and the National Highway Traffic Safety Administration.

"Relationship of Parent Driving Records to the Driving Records of their Children." S. A. Ferguson, A. A. Williams, J. F. Chapline, D. A. Reinfurt, and D. M. De Leonardis. Accident Analysis and Prevention. Vol. 33, No. 2, 2001. pp. 229-234.

"Review of the Impacts of a Towaway Reporting Threshold on a Highway Safety Program." HSIS Summary Report. J. K. Lacy, C.V. Zegeer, and R. Schneider. Washington, D.C. : Federal Highway Administration, 2001.

"The Role of Driver Distraction in Traffic Crashes." J.C. Stutts, D. W. Reinfurt, L.W. Staplin, and E.A. Rodgman. Washington, D.C.: AAA Foundation for Traffic Safety, 2001.

Publications

"Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations. Analysis of Pedestrian Crashes in 30 Cities." C.V. Zegeer, J. R. Stewart, H. Huang, and P. Lagerwey. In 2001 TRB Distinguished Lecture and Bicycle and Pedestrian Research: Transportation Research Record No. 1773. Washington, DC: Transportation Research Board, 2001. pp. 56-68.

"Setting Priorities for Reducing Utility Pole Crashes." C.V.Zegeer. In Utility Safety. Mobilized for Action and State, City and Utility Initiatives for Roadway Safety. Transportation Research Circular E-C030. Washington, DC: Transportation Research Board, 2001. pp 9-31.

"A Study of Farm Vehicle Crashes in North Carolina." J. Kevin Lacy, William W. Hunter, and Herman Huang. Chapel Hill, N.C. : University of North Carolina Highway Safety Research Center, 2001. Prepared for the North Carolina Governor's Highway Safety Program.

"Three-Strand Cable Median Barrier in North Carolina: In-Service Evaluation." W.W. Hunter, J.R. Stewart, K.A. Eccles, H.F. Huang, F.M. Council, and D.L. Harkey. In Transportation Research Record No. 1743, Hydrology, Hydraulics, and Water Quality; Roadside Safety Features. Washington, DC: Transportation Research Board, 2000. pp 97-103.

"Use of Protective Equipment by In-line Skaters: An Observational Study." D.J. Beirness, R. D. Foss, and K.J. Desmond. Injury Prevention. Vol. 7, No. 11, 2001. pp. 51-55.

Access to the full text of many of the research publications listed above is available at HSRC's web site at: <http://www.hsrc.unc.edu/publications/publications1.htm>. For questions about HSRC research publications, e-mail HSRC's librarian, Mary Ellen Tucker, at metucker@email.unc.edu

Looking for an expert on a specific topic? Here are just a few of the topics HSRC researchers have expertise in. Call HSRC at (919) 962-2202 to talk to any of the experts listed below.

<u>Topic</u>	<u>Contact</u>
Air bags	Bill Hall
Alcohol	Dr. Rob Foss
Bicycles	William Hunter
Car seats	Bill Hall
Cell phones	Dr. Jane Stutts
Crash data & statistics	Eric Rodgman
Driver education	Dr. Rob Foss
Driver license data & statistics	Eric Rodgman
Fatigued drivers	Dr. Jane Stutts
Older Drivers	Dr. Jane Stutts
Pedestrians: Educational	Lauren Marchetti
Pedestrians: Engineering	Charlie Zegeer
Roadside safety	Bill Hunter
Roadway design	David Harkey
School buses	Bill Hall
Seat belts	Bill Hall
Signs, signals and markings	David Harkey
Trucks	Dr. Ronald Hughes
Virtual/Simulation technology	Dr. Ronald Hughes
Young Drivers	Dr. Rob Foss
Walk to School Day programs	Sara Latta



HSRC Staff

Director: Dr. Douglas Robertson

Associate Directors: David Harkey
William Hunter
Beverly Orr
Charlie Zegeer

Alphabetical List of Staff:

Dr. Forrest Council	Thomas Meadows
Dr. John Feaganes	Jeana Nickerson
Dr. Rob Foss	Beverly Orr
Arthur Goodwin	Teresa Parks
Bill Hall	Dr. Douglas Robertson
Charles Hamlett	Eric Rodgman
Katherine Hanburger	Dr. Jane Stutts
David Harkey	Donna Suttles
Daniel Harper	Dwayne Tharpe
Harvey Hou	Libby Thomas
Dr. Herman Huang	Mary Ellen Tucker
Dr. Ronald Hughes	Christian Valiulis
William Hunter	Shannon Walters
Peggy James	Carolyn Williams
Sara Latta	Charles Zegeer
Lauren Marchetti	5 Graduate Students
Carol Martell	7 Undergraduate Students
Paulette McKoy	

Contact us at:

UNC Highway Safety Research Center
730 Airport Road, Suite 300
CB # 3430
Chapel Hill, NC 27599
Phone: (919) 962-2202
Fax: (919) 962-8710
<http://www.hsrc.unc.edu>



The University of North Carolina
Highway Safety Research Center
730 Airport Road, Suite 300
Campus Box 3430
Chapel Hill, N.C. 27599-3430
<http://www.hsrc.unc.edu>