



THE UNIVERSITY OF NORTH CAROLINA

HIGHWAY SAFETY RESEARCH CENTER

www.hsrb.unc.edu

A leader in transportation research, focused on safety

The University of North Carolina Highway Safety Research Center is working hard to help shape the field of transportation safety. We are committed to excellence in sound research, and safety is the preeminent goal - every day and in every project our staff undertakes.

Our mission: to improve the safety, sustainability and efficiency of all surface transportation modes through a balanced, interdisciplinary program of research, evaluation, and information dissemination.

Transportation safety has come a long way since the North Carolina General Assembly established HSRC in 1965. In terms of miles driven, the number of motor vehicle related deaths in the U.S. is 80 percent lower than it was 50 years ago. This is good news of course, but more than 30,000 people lose their lives annually in the U.S. as a result of motor vehicle crashes. There is still much work to be done and progress to be made.

HSRC is proud to be a leader in this important charge.



Highway safety impacts everyone

- Motor vehicle crashes were the leading cause of death in the U.S. for four year old children and young adults from age 16 to 24 in 2013. (Centers for Disease Control and Prevention)
- An estimated 32,675 people died in motor vehicle traffic crashes in 2014. (National Highway Traffic Safety Administration)
- U.S. motor vehicle crashes in 2010 cost \$871 billion in loss of productivity and loss of life. (National Highway Traffic Safety Administration)

Our work matters

Simply stated, HSRC researchers and staff work to figure out how to save lives and reduce injuries on our roadways. Our projects are designed to support transportation professionals across the globe as they work toward that same goal.



A collaborative approach

The Center has a dynamic team of researchers and staff with extensive expertise in a broad range of disciplines. Our work is interdisciplinary and often conducted in collaboration with faculty and graduate students in departments across the UNC system and with colleagues at other public and private research agencies across the nation.

We work across many fields of study and research, including:

- Computer Science
- Engineering
- Epidemiology
- Information and Library Science
- Planning
- Psychology
- Public Health
- Public Information
- Sociology
- Statistics

Areas of expertise

HSRC has long been a leader in transportation safety, and we continue to lead the way while keeping a sharp focus on sound research, innovation and translating research into practice.

Our work has made valuable contributions in many areas of transportation, including:

- development of policies and programs to increase occupant restraint use;
- enhancement of systems for the collection and management of crash, roadway inventory, and other safety data;
- dissemination of knowledge regarding the safety and mobility of pedestrians and bicyclists;
- improvements in licensing systems for young drivers; and
- creation of strategies to address risky driver behaviors.

HSRC works hard to share our knowledge and expertise through a variety of course offerings, webinars and other forums to train current and future transportation professionals. We strive to translate our research knowledge into practical interventions and programs that can be applied at local, state, national and international levels.

Improving traffic operations and roadway design

Engineers, planners and administrators are constantly striving to design, build and operate a roadway environment that is both safe and efficient. HSRC researchers are at the forefront of understanding how the safety of all road users is impacted by the array of design elements and traffic control devices that are present on our streets and highways. This knowledge is transformed into guidance and decision-making tools that enable safety practitioners to get the biggest effect for their safety dollar.

Reliable and robust data are at the heart of all HSRC safety research. The Center has long been involved in the development, implementation and management of data systems to support safety research. The Federal Highway Administration's Highway Safety Information System (HSIS) is one of those systems managed by HSRC. It is the only national database that allows crash data to be linked to roadway inventory and traffic operations data, thus providing the capability to conduct comprehensive risk analyses.



1965

HSRC: Improving Safety for Generations 2015

- 1965** At the recommendation of Gov. Dan K. Moore, the North Carolina Legislature establishes a highway safety research center.
- 1966** HSRC begins operations at the University of North Carolina Chapel Hill. Under the direction of Dr. B.J. Campbell, HSRC focuses on providing useful highway safety information based on sound research.
- 1968** HSRC conducts the first-ever scientifically based brand comparison of automobiles showing the variation in injury to unbelted drivers in crashes.

- 1973** Center researchers formulate the concept of graduated driver licensing, a 3-stage system designed to improve novice driver learning through practical experience.
- 1974** HSRC study shows increased crash rates among younger school bus drivers. As a result of HSRC research, school districts increase the minimum legal bus driver age to 16-and-a-half.

Changing behaviors

Humans are remarkably complex. People don't always operate the way we think they will, and their behavior is not easily changed. This reality is a challenge for transportation safety.

People make a multitude of decisions over the course of a single trip on a roadway, whether by vehicle, foot or bicycle. And safety is often a direct result of chosen behaviors, such as: wearing a seatbelt; driving at the appropriate speed; properly restraining a child in a car seat designed for their height and weight; or walking in a crosswalk. HSRC researchers study how behavior and safety interact in the real world.



In recent years, the transportation safety field has evolved toward naturalistic driving data – which is the collection of data without manipulation of the environment. HSRC has been involved in both the development of analysis-ready databases that include these new data elements, and research using these data to better understand behaviors of drivers and passengers.

For example, HSRC researchers were at the forefront of using in-vehicle camera technology to directly observe driver behavior, most recently distraction among young drivers. This naturalistic data has also been used to study interaction between parents and teens during supervised driving. In addition, HSRC has used naturalistic driving data to study roadway curvature and alignment to understand how to best design roadways.



1965

2015

1980 HSRC develops the Accident Research Manual, a compilation of sound research techniques to help engineers and analysts conduct crash-based evaluations.

The Accident Research Manual is taught in safety workshops nationwide, helping to improve knowledge about relationships between the roadway environment and crashes.

1981 The Center's research demonstrates the benefits of child restraints and safety belts in crashes.

NC lawmakers rely heavily on HSRC data while formulating the child passenger safety law (passed in 1981) and the seat belt law (passed in 1985).

HSRC: Improving Safety for Generations

1987 HSRC develops the concept for, and launches, FHWA's Highway Safety Information System, which provides crash, roadway and traffic data to researchers.

1993 HSRC helps spearhead "Click It or Ticket," the high visibility enforcement program for increasing seatbelt use in North Carolina.

1997 North Carolina General Assembly enacts the Graduated Driver Licensing system developed by HSRC to address the extraordinarily high crash rate of young novice drivers.

Young drivers

Young driver safety is of great concern for parents and transportation professionals alike. Our Center for the Study of Young Drivers focuses on developing a fundamental understanding of the many factors that contribute to the high crash rate among teen drivers.



HSRC is credited with developing the concept of graduated driver licensing (GDL) in the 1970s, and research in the 1990s contributed directly to enactment of the North Carolina GDL system. Now HSRC researchers are working with other states as they develop or strengthen their GDL policies.



In addition, HSRC researchers continue to explore the interactions between parents and teens learning to drive. This knowledge has been translated into a program called Time to Drive, which coaches and provides guidance to parents as they supervise their novice teen drivers.

Occupant protection

The national safety belt usage rate in 2014 was 87 percent, but preventable deaths still occurred as a result of unrestrained occupants. Many children continue to be unrestrained or improperly restrained. Occupant protection remains an area of concern for society, and a focus for HSRC.



Through a multi-year program of research and data analysis, HSRC was instrumental in getting both the child passenger safety law and the adult seatbelt law passed in North Carolina in the 1980s. The Center continues to work in child injury prevention by helping to coordinate child passenger safety workshops and trainings for health educators, traffic safety officials and interested citizens. Center staff also serve as an important resource, with an in-state toll-free phone line to field and answer occupant protection questions from both parents and child passenger safety advocates.



- 1999** The Center conducts the first survey to directly measure college student drinking, using portable breath-testers. Findings from the breath-test study challenge misperceptions about student drinking and a subsequent program providing this evidence to students results in decreased drinking.
- 1999** The Pedestrian and Bicycle Information Center is established with a mission to increase safe walking and bicycling as a viable means of transportation and physical activity.

- 2001** HSRC evaluates the initial effects of Graduated Driver Licensing, finding a substantial decline in 16-year-old driver crashes.
- 2003** "Click it or Ticket" is adopted nationally as the model for increasing seat belt use.
- 2003** Center researchers conduct some of the first studies to use in-vehicle technology to collect naturalistic data, observing supervised driving and distraction among drivers.

Improving pedestrian and bicyclist safety

The desire to increase the number of walking and bicycling trips combined with a record number of vehicle miles driven has created increasing concerns. HSRC has long been involved in pedestrian and bicyclist safety and mobility research and it remains a priority - and area of expertise - for our staff.



Programs run by HSRC - including the Pedestrian and Bicycle Information Center and the National Center for Safe Routes to School, and projects like Watch for Me NC, Walk Friendly Communities, and Walk and Bike to School Day - have helped pave the way for safer walking and cycling environments and more transportation choices for all.



Developing the transportation profession

Throughout our 50 years of existence, HSRC has made a special effort to share our expertise and research with communities, students, researchers and practitioners. By assisting with hundreds of requests for safety information and data per year, presenting at conferences, and publishing research findings in journals and other publications, HSRC staff continues to promote multi-disciplinary interest in highway safety.



HSRC's training and education arm, the Road Safety Academy, makes transportation safety education more accessible than ever before by offering both in-person and web-based trainings that cover a broad range of safety topics. In addition, our work includes coordinating dozens of free webinars each year for researchers and practitioners, and developing teaching modules for university courses being taught in engineering, planning and public health schools.

HSRC continually works to develop tomorrow's transportation safety professionals by awarding scholarships and research assistantships to deserving students and by integrating students into our research work.

1965

HSRC: Improving Safety for Generations



2015

- 2005** The Center for the Study of Young Drivers (CSYD) is established within HSRC with a focus on better understanding the factors that contribute to the high crash rate among young drivers.
- 2005** Federal legislation creates the National Safe Routes to School program, which is housed at HSRC, to encourage families to walk or bike to school and to improve safety.
- 2006** HSRC launches an annual scholarship program to foster the education and development of future transportation safety professionals.

- 2009** HSRC works with FHWA to launch the CMF (Crash Modification Factors) Clearinghouse, which helps transportation safety professionals identify the most appropriate countermeasure to address a safety issue.
- 2011** HSRC partners with FedEx to launch Walk Friendly Communities, a national recognition program to encourage towns and cities across the U.S. to establish or recommit to supporting safer walking environments.
- 2012** The first-ever national Bike to School Day is created and launched by HSRC to encourage children to safely bicycle or walk to school.

The University of North Carolina
Highway Safety Research Center

730 Martin Luther King Jr. Blvd.
Suite 300 | Campus Box 3430
Chapel Hill, NC 27599-3430
919-962-2202

www.hsrb.unc.edu