Booster Seats: Parents’ Attitudes
Motor vehicle crashes are the leading cause of injury and death among children between the ages of four and eight. Although motor-vehicle-related injuries have declined in recent years, child restraint nonuse is common in this age group and contributes significantly to the risk of crash-related injury. Booster seats are important and effective tools in protecting young children from injury in crashes, and they decrease the risk of injury in a crash by as much as 59 percent.¹

Two recent UMTRI studies examined booster seat use and parents’ attitudes about use. Both studies were sponsored by the Michigan Department of Community Health (MDCH) through a cooperative agreement with the Centers for Disease Control and Prevention (CDC), National Center for Injury Prevention and Control.

In a direct observation study, researchers visited fast food restaurants, day care centers, and shopping centers across the state to find out which kind of restraint was used for young children. Social and Behavioral Analysis researchers, David Eby, Raymond Bingham, and Jonathan Vivoda, and Trivellore Ragunathan of U-M’s Department of Biostatistics found that only 8.6 percent of children ages four to eight traveling in passenger cars, vans/minivans, sport-utility vehicles, and pickup trucks were in booster seats. Nearly half of the 3,420 children they observed were restrained by an adult safety belt and 5 percent were riding in a child safety seat when they should have been in a booster seat. Nearly 40 percent were completely unrestrained.

When examining the rates by vehicle type, booster-seat use was highest among children riding in sport-utility vehicles and lowest for those in pickup trucks. Surprisingly, children riding in passenger cars were more likely to be completely unrestrained than those in any other type of vehicle. While the sex of the driver did not seem to influence the restraint use, the driver’s age did seem to have an effect. Booster-seat use was quite low (0.6 percent) for children traveling with a driver over the age of 60, compared with those riding with drivers aged 16–29 and 30–59 (7 percent and 9.1 percent, respectively). The safety-belt use of the driver also had a substantial influence on children’s restraint use: Children riding with belted drivers were traveling in booster seats about 10 percent of the time, while those riding with unbelted drivers were in booster seats only 1–2 percent of the time.

In a related study, performed by Bingham, Eby, Heather Hockanson of MDCH, and Arlene Greenspan of the CDC, researchers interviewed parents of children in the four-to-eight age group to determine parents’ attitudes about booster-seat use. Information was “gathered through telephone

interviews with a Michigan-wide probability sample of 350 parents. The questions were designed to determine parents’ attitudes, knowledge, and motivations regarding booster seat use.

The majority of the respondents reported either never (average of 30 percent with 31 percent women and 28 percent men) or always (average of 56 percent with 55 percent women and 57 percent men) using booster seats. Only 14 percent reported part-time booster seat use. When these part-time users were asked what percent of the time they put their eligible children in booster seats while traveling, responses ranged from zero to 100 percent, with “50 percent of trips” being the most common response (eight respondents), followed by 95 percent (seven respondents), 75 percent (five respondents) and 98 percent (five respondents).

Although vans (including full-size and minivans) were the most common vehicle used by the respondents, booster-seat use was higher among drivers of SUVs than among other vehicles. Respondents who drove vans/minivans were more strongly represented in the “never” and “some of the time” use groups.

Most respondents who worked either part- or full-time used booster seats some of the time. Most students and stay-at-home parents always used them, and retired respondents almost never used them. Generally, booster-seat use increased with income.

The most common reasons for not using booster seats were that letting the child ride in other people’s cars made it more difficult to use booster seats (64 percent) and that the child was too big for a booster seat (61 percent). “Many parents believe that after their child turns four, he or she doesn’t need a car seat any more,” said Richard J. Miller, manager of Community Safety Services for AAA Michigan. “Nothing could be further from the truth. By prematurely transitioning their children directly to an adult safety belt and harness, these caregivers are placing kids in the critical age range between four and eight at higher risk for death or injury in the event of a crash.”

Results also indicated that the lack of legislation mandating booster seat use was a key variable determining level of use and the motivation to use booster seats. Nearly 70 percent of part-time booster-seat users said that they used booster seats because they believed it was the law. Similarly, 60 percent of part-time and nonbooster-seat users said that they would be more likely to use booster seats if their use were mandated by law, with nonusers being more than three times as likely as part-time users to agree that a law would increase their booster seat use.

For details, see “Factors Influencing the Use of Booster Seats: A Statewide Survey of Parents” at http://hdl.handle.net/2027.42/8519 and “Use of Booster Seats by Michigan Children 4–8 Years of Age” at http://hdl.handle.net/2027.42/3130.
Scholarship Honors Patricia Waller

The late Patricia Fossum Waller, who served as UMTRI’s director from 1989 to 1999, was a leading research scientist, scholar, and advocate for policy reform in transportation safety and injury control. She worked tirelessly to improve transportation safety and address human and social issues in transportation through the application of scientific understanding. She was also a dedicated mentor who nurtured, encouraged, and inspired many students and junior scientists to pursue greater scientific understanding of transportation as it relates to society, personal mobility, and individual safety.

During her life, Waller affected major changes both in public policy and in the lives of many people. Many efforts have been made to honor her memory and continue her vision. At UMTRI’s fortieth anniversary symposium in June†, Dr. Jeffrey Runge, the keynote speaker of the event, presented UMTRI director Peter Sweatman with a plaque honoring Waller. The plaque describes Waller as a pioneer and world leader in injury control and a visionary who inspired a generation of transportation and public health professionals. It further recognizes that “her dedication to improving public policy through science has resulted in a safer world. Her legacy lives through the lives she touched and the countless lives she helped save.”

UMTRI has established the Patricia F. Waller Scholarship to provide funding to eligible graduate and senior undergraduate students throughout the University of Michigan who are interested in conducting research on the human aspects of transportation safety and issues related to transportation equity. Such topics might include the following:

- The role of alcohol and other drugs in motor vehicle crash injury
- Psychosocial correlates of high-risk driving behavior
- Issues relating to old age and transportation accessibility and safety
- Human welfare and equity as they relate to transportation

Scholarship funding is intended to support students who are new to the field of transportation while doing internships, conducting research on a masters or doctoral thesis, completing an independent study, or fulfilling the requirements of other special projects focusing on an eligible transportation issue. The first scholarship will be awarded in fall 2006.

Many of Waller’s friends and colleagues, both individually and in groups, have contributed to the fund. UMTRI is particularly grateful for the Waller family’s continued support.

For more information about the scholarship, including how to make a contribution, see www.umtri.umich.edu/umtri/pfw_scholarship.html.

† For details on UMTRI’s fortieth anniversary symposium, see the previous edition of UMTRI Research Review, www.umtri.umich.edu/library/pdf/rr36_2.pdf.

continued...
The Michigan Traffic Crash Facts website, created and maintained by UMTRI for the Michigan State Police Office of Highway Safety Planning, received the Best Traffic Records Web Site Award from the Association of Transportation Safety Information Professionals of the National Safety Council. The site provides a yearly compilation and analysis of Michigan crash data for government agencies, researchers, libraries, the media, and the public. The data is provided by the Michigan Department of State Police from its Michigan Traffic Crash Forms (UD-10).

UMTRI’s Charles Compton, Mary Helen Eschman, and Mary Bennett design, develop, and maintain the website.

The award was presented to Compton and Steve Schreier of the Michigan Office of Highway Safety Planning on August 2 at a ceremony in Buffalo, New York.

The Michigan State Police produced Michigan Traffic Crash Facts (MTCF) until 1992 when they turned over the development and production to UMTRI. In the early years, UMTRI staff members stabilized the MTCF book creation process, introduced new levels of error checking, and enhanced and consolidated the computer runs that produce the data elements. Reader satisfaction surveys were developed to accompany the 1993 and 1994 MTCF books, and future editions contained changes and additions based on input from these surveys.

In the mid-1990s, fact sheets were introduced, primarily for distribution to the media, to allow the public to understand major crash facts and trends. Different sheets highlight content such as pedestrian, bicyclist, and motorcyclist involvement in crashes; alcohol use; deer-car crashes; crash involvement by driver age; and use of occupant protection systems. (Today these fact sheets are available as part of the MTCF website.)

In 1997, the book was expanded to add a second volume: Michigan Traffic Crash Facts for County/Communities, which lists and ranks data specific to counties and cities.

In 1998, MTCF made its web debut with additional data tables designed exclusively for presentation online. With direction from the Michigan Office of Highway Safety Planning, UMTRI has expanded and improved the MTCF website each year. A web analysis tool will be added to the website for the 2005 data (which will be available in October 2006). The analysis tool will present Michigan crash data elements outputted in a two-way table designed online by the user. (Details of this new functionality will be covered in a future issue of UMTRI Research Review.)

You can visit the awarding-winning Michigan Traffic Crash Facts website at www.michigantrafficcrashfacts.org.
Researchers in UMTRI’s Office for the Study of Automotive Transportation (OSAT) attended and participated in the fortieth annual Management Briefing Seminars in Traverse City in August, 2005. The theme of this year’s event was “Strategies for Turbulent Times.”

Bruce Belzowski, assistant research scientist, and Maitreya Sims, research assistant, cochaired the session “Workforce Strategy in a Global Automotive Economy.”

Pat Hammett, assistant research scientist and adjunct assistant professor in U-M’s Industrial and Operations Engineering Department, moderated the session “World Class Manufacturing: Competing in the Global Economy.”

Walter McManus, head of OSAT, and Belzowski cochaired the session “Inside India and China: A View of Their Automotive Future.” In a presentation of the same name, coauthored by Belzowski, McManus highlighted UMTRI research on China’s automotive research programs. The research covered the structure of the Chinese automotive industry, including vehicle mix, infrastructure, growth, safety, fuel economy, and technology transfer.

Coleman cited the United States’ disproportionately high energy use as a reason to establish the initiative. The United States consumes 24 percent of the world’s energy but contains less than 5 percent of the planet’s population. Coleman called the country’s energy use one of the most pervasive challenges to society and said hydrogen represents a promising alternative to petroleum. “Hydrogen is clean, it is efficient, and it can be produced from renewable resources,” Coleman said.

Levi Thompson, an associate Engineering dean, will lead the initiative with a staff of about 30 that will probably grow, he said. The staff will include graduate students, post-doctoral students, faculty, researchers and others, he said. Thompson said he expects Phoenix to become the nation’s leading hydrogen research facility.

Coleman said that strong programs in engineering, medicine, natural resources, business, and public policy will allow the University to take a leading role in developing hydrogen as a feasible energy alternative.

The University has been working on energy-related issues for a while, Thompson said, adding that the research has been both technical and policy based, involving various schools and departments in the University. “We envision an energy institute that would be an umbrella organization for energy research,” he said. He believes alternative energy sources will first be used in portable electronic devices such as cell phones and will later be adapted to larger objects such as cars.

One of the largest obstacles to hydrogen-based fuel has been its high cost. Currently, the cost of hydrogen fuel cells is about $10,000 per kilowatt, The Michigan Daily reported in January. But Thompson is pioneering a method called microfabrication that has the potential to significantly lower the price tag.

An upcoming edition of UMTRI Research Review will highlight UMTRI’s research in hybrid vehicle technology. For more information on the University’s energy-efficient vehicle fleet, see “U-M Transportation Initiatives” in volume 32, numbers 2–3 of UMTRI Research Review, www.umtri.umich.edu/library/pdf/rr34_23.pdf.

U-M Fuels Energy Initiative

by Karl Stampfl of The Michigan Daily

The University announced plans in September to strengthen its development of alternative energy sources such as hydrogen by creating a multidisciplinary initiative. During an address to the University’s Faculty Senate, a board of elected faculty representatives, University President Mary Sue Coleman announced that the initiative would “explore the challenges and risks of moving from a petroleum-dependent society to one that relies upon hydrogen for its energy.”
Jean Shope, a research professor in UMTRI’s Social and Behavioral Analysis (SBA) Division, received the University of Michigan Research Faculty Achievement Award in fall 2005. The award honors outstanding scholarly achievements, as represented by significant contributions to an academic field of study over time, a specific outstanding discovery, or the development of innovative technology.

Shope’s career displays the richness of University research conducted across a wide range of disciplines in the vital areas of transportation and public health. She has done research in health behavior, health education, and program development/evaluation, particularly in child and adolescent health, and school health education (including substance abuse prevention). Shope’s research into adolescent and young adult risk behavior, involving collaboration with the School of Public Health, is a major influence on research and teaching not only at the University of Michigan but also at other major universities and in public policy. Her research on graduated driver licensing in Michigan led to its implementation in other states and has reduced teen traffic crashes, the major cause of teen deaths.

Shope began a research collaboration with UMTRI in 1991 and became head of UMTRI’s SBA Division in 1995. Under her leadership, SBA peer-reviewed publications and research sponsorship increased significantly. In collaborative work with the University of Michigan School of Public Health and Medical School, she made significant contributions to understanding alcohol misuse and injury risk among adolescents and young adults. With a longitudinal study initiated in 1984, she has worked to understand problem behavior in young people, including risky driving. This study’s continual funding largely has been dependent on her ability to formulate research questions with policy implications.

Shope also has helped to understand increased risks unique to older drivers. Her broad approach to transportation safety has required innovative methodological development, involving merging and analyzing data from multiple sources. She and her colleagues designed new methods of analyzing longitudinal associations across data sources.

Prior to joining UMTRI, Shope performed research in the U-M Medical School and School of Public Health. She holds a Ph.D. in educational sociology from Wayne State University, an M.S.P.H. from the University of Minnesota, and a B.S. in nursing from Cornell University. She was a postdoctoral fellow in health behavior and health education at the University of Michigan.

In April, 2005, Shope passed on the SBA division head role to David Eby (see next article) to concentrate on her research and to provide leadership to UMTRI’s contribution to the U-M educational mission. Among other projects, she is spearheading UMTRI’s Doctoral Studies program, which provides funds to support doctoral students who conduct their dissertation research at UMTRI in a transportation-related research discipline involving collaboration of school/college faculty and UMTRI faculty.
David W. Eby became the division head for UMTRI’s Social and Behavioral Analysis (SBA) Division in April 2005. Eby has several goals for SBA. First, he plans to increase SBA’s visibility in three core research areas: senior drivers, occupant protection, and young drivers. “We have begun a coordinated effort in SBA to conduct research that helps to ensure safe mobility for life,” Eby says. He is also planning on expanding the SBA research portfolio by expanding its collaboration with UMTRI divisions, University of Michigan academic departments, and other universities and institutes.

In addition to serving as division head, Eby is a research associate professor whose interests include occupant protection, age-related traffic safety issues, risky-driving behaviors, and alternative transportation. He has conducted occupant-protection-related studies in several states for the past thirteen years and is the principal investigator on a current project to measure nighttime belt use in Indiana. He has developed and evaluated a self-assessment instrument called the Driving Decisions Workbook to improve older driver safety (for a related story, see “Older Drivers on the Go” in volume 32, number 4 of UMTRI Research Review, www.umtri.umich.edu/library/pdf/rr32_4.pdf). Eby has also investigated the application of ITS technology to meet the needs of aging drivers and to assist driving tourists. Finally, he has investigated how to relate factors in cognitive development to effective traffic safety messages and programs for young drivers.

Eby has worked for UMTRI since 1993. Prior to that, he taught psychology classes at California State University, San Bernardino and Western Washington University. He also worked as a research associate for Anacapa Sciences, Inc.

Eby is active in various professional organizations including the Gerontological Society of America, the Human Factors and Ergonomics Society, the International Association of Applied Psychology, and the University of Michigan Substance Abuse Research Center. Eby serves as an associate editor of Accident Analysis & Prevention. He has won several awards including the UMTRI Research Excellence Award and several honors from Emerald Reviews, London: two Citations of Excellence for Research Implications, a Citation of Excellence for Practical Implications, and a Citation of Excellence for Readability.

Eby holds a B.A. in psychology and an M.A. and Ph.D. in experimental psychology from the University of California, Santa Barbara. He was also a postdoctoral research fellow in the Department of Cognitive Sciences at the University of California, Irvine. He enjoys swimming, travel, photography, and reading.
Most UMTRI reports are available in full text online (see the website address at the end of the citation). Please contact the UMTRI library at (734) 764-2171 or umtridocs@umich.edu to inquire about the availability of other publications listed here.

**Book Chapters**


**Conference Papers**


**Journal Articles**


**Technical Reports**


ITS America 2006
May 7–9, Philadelphia, Pennsylvania
www.itsa.org/annualmeeting.html

Automotive Testing Expo
May 9–11, Stuttgart, Germany
www.testing-expo.com/europe

Transportation Design for Communities
May 11–12, Atlanta, Georgia
www.coa.gatech.edu/cqgrd/TransportationCourse.htm

Third International Traffic and Road Safety Congress and Exhibition
May 17–19, Ankara, Turkey
www.trodsa.com

Telematics Detroit 2006
May 23–24, Detroit, Michigan
www.telematicsdetroit.com

CTS 17th Annual Transportation Research Conference
May 24–25, St. Paul, Minnesota
www.cts.umn.edu/events/rescon

41st Annual Conference of the Canadian Transportation Research Forum
May 28–31, Quebec City, Canada
www.ctrf.ca

International Chinese Transportation Professionals Association
May 29–June 1, Hong Kong/Macau
www.ite.org/meetcon

American Society of Highway Engineers Annual Meeting
May 31–June 4, Williamsburg, Virginia
www.ashe2006.org

Community Transportation Expo
June 3–9, Orlando, Florida
www.ctaa.org/expo

ITS Canada Conference
June 4–6, Whistler, Canada
www.itscanada.ca/whistler2006

Western Regional Grade Crossing Safety Training Conference
June 5–7, Vancouver, Washington
www.techtransfer.berkeley.edu/railroad

CODATU 12th World Congress
July 5–7, Lyon, France
www.codatu.org

ARC-CSI Crash Conference
May 5–8, Las Vegas, Nevada

56th UITP World Mobility Congress
June 5–9, Rome, Italy
www.uitp.com/rome2005

June 6–9, Washington, D.C.

Canadian Multidisciplinary Road Safety Conference
June 11–14, Winnipeg, Canada
www.carsp.ca/cmrsc.htm

Transport Research Arena Conference
June 12–16, Göteborg, Sweden
www.traconference.com

IV2006: IEEE Intelligent Vehicle Symposium
June 13–15, Tokyo, Japan
www.cvl.iis.u-tokyo.ac.jp/iv2006

To Subscribe to the UMTRI Research Review...

Complete the form below and send it with a check for $35 made out to the University of Michigan. This entitles you to a one-year subscription to the UMTRI Research Review.

NAME ________________________________ DATE ________________________________

TITLE ________________________________ ORGANIZATION ________________________________

ADDRESS __________________________________________________________________________

CITY ________________________________ STATE ______________ ZIP ______________

Include +$4 for mail handling

Mail your check for $35 and the form below to:
Monica Milla, Editor / UMTRI Research Review
University of Michigan Transportation Research Institute / 2901 Baxter Rd / Ann Arbor, MI 48109-2150
Transportation Tidbits

- America’s first automobile parade took place on September 7, 1899, in Newport, Rhode Island. Over a dozen motor-cars, decorated with hydrangeas, streamers, lights, and Japanese lanterns, took part in the procession. A throng of spectators, arriving in cabs, private carriages, bicycles, and on foot, observed the event. The nature of the car decorations had been kept secret prior to the parade, for each participant had wished to surprise and outdo the others.

- On July 23, 1903, the first Ford Model A was delivered to its owner, Dr. Ernst Pfenning of Chicago. The Model A was the result of a partnership between Henry Ford and Detroit coal merchant Alexander Malcomson, and was designed primarily by Ford’s assistant C. Harold Wills. In the next year, Ford incorporated his business as Ford Motor Company.

- The Milwaukee Mile, the oldest major speedway in the world, opened as a permanent fixture in the Wisconsin State Fair Park on September 11, 1903. The circuit had been around since the 1870s as a horseracing track, and the horses shared the track with automobiles (although not concurrently) until 1954, when the track was paved.

- July 21 is a good day for breaking land-speed records. In 1904 in Belgium, Louis Rigolly became the first man to drive faster than 100 mph, setting a new land-speed record at 103.55 mph in his 15-liter Gobron-Brillie. On July 21, 1925, Sir Malcolm Campbell was first to exceed 150 mph when he drove his Sunbeam at the Pendine Sands in Wales.

- On August 23, 1913, cars were allowed to enter Yosemite National Park, California, for the first time. Prior to this, most park visitors traveled to the park by train and then took scheduled stagecoach tours. The National Park Service’s landscape architects, along with the Bureau of Public Roads, developed a systematic approach to designing and constructing park roads. Designers strove to create roads that would “lie lightly on the land.”

- Sven-Erik Soderman set a world record in stunt driving on August 2, 1990, in Mora, Sweden. He reached 102.14 mph while driving his Opel Kadett on two side wheels. RR

SOURCE: This Day in Automotive History, www.historychannel.com