

RESEARCH REVIEW

• UNIVERSITY OF MICHIGAN TRANSPORTATION RESEARCH INSTITUTE • APRIL-JUNE 2008 • VOLUME 39, NUMBER 2 •



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Proper Seatbelt Use by Pregnant Women Helps Save Fetuses in Crashes



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UMTRI RESEARCH REVIEW

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UMTRI's Strategic Intent

To be the leader in transportation systems research integrating vehicles, people, and infrastructure to achieve a highway transportation system where:

- Fatalities and injuries are eliminated
- People and goods flow efficiently
- Reliance on nonrenewable energy is reduced

Proper seatbelt use by pregnant women would save 200 fetuses a year

An estimated 370 fetuses die as a result of car crashes each year in the United States. A recent UMTRI study found that approximately 200 fetuses could be saved each year with proper seatbelt buckling each time a pregnant woman travels in an automobile.

Kathleen DeSantis Klinich, assistant research scientist in UMTRI's Biosciences Division, and Mark D. Pearlman, M.D., vice-chair in the Department of Obstetrics and Gynecology at the University of Michigan (U-M) Health System and the S. Jan Behrman Professor of Reproductive Medicine, worked on the study with colleagues in the U-M Department of Emergency Medicine and the U-M College of Engineering. These include Carol Flannagan and Jonathan D. Rupp of UMTRI, Mark Sochor of UMTRI and the U-M Department of Emergency Medicine, and Larry Schneider of UMTRI and the U-M Department of Biomedical Engineering.

The research debunks a long-standing myth that wearing a seatbelt is not safe for pregnant women. Pearlman says, "Some women are very concerned because the lap belt overlies their fetus. This study shows that the opposite is

true, that seatbelts clearly help to protect the fetus. It's very clear, based on this study, that pregnant women should buckle



up every single time they're in a vehicle."

The proper technique is for the lap belt to be low, under the belly, and for the shoulder belt to be crossing in the center of the chest. Klinich says, "Given that all cars in America have seatbelts, the potential benefits of these findings are significant."

The study, the first of its kind, performed detailed crash analysis, including accurate estimates of the

The proper technique is for the lap belt to be low, under the belly, and for the shoulder belt to be crossing in the center of the chest.



PHOTOS: UMTRI PHOTO SERVICES / SCOTT GALVIN

crash severity, restraint usage, and pregnancy outcome. The researchers studied data from 57 automobile crashes involving pregnant women. Among the six improperly restrained women in these crashes, three (50 percent) experienced fetal death or major fetal complications. Among the 10 unbelted women, eight (80 percent) of the instances resulted in fetal death or major complications. Among the properly restrained women, 29 percent of instances resulted in fetal death or complications.

The study also found that:

- About 6 to 7 percent of women are involved in a car crash during their pregnancy. That translates to about 170,000 car crashes a year involving pregnant women.
- Pregnant women who are in car crashes resulting in serious fetal adverse outcomes are unbelted 62 percent of the time.

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Dr. Mark Pearlman and Kathleen Klinich (right) collaborated on this study.

- The proper use of seatbelts by pregnant women would prevent approximately 84 percent of serious adverse outcomes affecting fetuses (injuries and deaths) due to car crashes.
- If all women simply wore their seatbelts during pregnancy, approximately 200 fetal lives would be saved. (This doesn't include prevention of an unknown number of preterm births and placental abruptions with potential for long-term disability.)
- There are more fetal deaths due to car impacts than there are child deaths due to bicycle accidents, or child deaths due to car accidents in the first year of life.

Other research published by Pearlman shows that women whose prenatal care provider says anything at all about seatbelt use during prenatal visits are much more likely to wear their seatbelts (92 percent if the physician or nurse mentions it versus 71 percent if it was not mentioned). Therefore, Pearlman encourages health care providers to remind all of their pregnant patients about the importance of using seatbelts.

Financial support for the research described in the paper was provided by General Motors, pursuant to an agreement between GM and the U.S. Department of Transportation, by the Alliance of Automobile Manufacturers which sponsors UMTRI's in-depth crash investigation program, and by

the National Highway Traffic Safety Administration, which sponsors the Crash Injury Research and Engineering Network (CIREN) program.

The results of the study appear in *American Journal of Obstetrics & Gynecology*, Vol. 198, Issue 4, April 2008. The title of the article is "Fetal Outcome in Motor-Vehicle Crashes: Effects of Crash Characteristics and Maternal Restraint." **RR**

UMTRI Receives Grant to Study Plug-in Hybrid Electric Vehicles

UMTRI will participate in a \$5-million program awarded to DTE Energy to study plug-in hybrid electric vehicles (PHEVs) as part of the Michigan Energy Efficiency Grant. Other program partners include General Motors, the Pacific Northwest National Laboratory, NextEnergy, and several University of Michigan units led by the Michigan Memorial Phoenix Energy Institute (MMPEI): the School of Natural Resources and Environment, the College of Engineering, and the Ross School of Business. The Michigan Public Service Commission (MPSC) approved the grant as part of a nearly \$6.5 million grant project to support environmental initiatives throughout the state.

UMTRI will use the Michigan Energy Efficiency Grant funding to study PHEVs and their interaction with the state's electricity grid. By providing a cost-effective, practical solution that substantially improves automotive fuel economy and emissions without the limited range of a pure electric vehicle, PHEVs have the potential to simultaneously redefine the vehicle and transform our use of the electric utility system. PHEVs do not require massive upfront investments because the existing electric infrastructure can likely be made to support relatively quick, widespread adoption.

The MPSC smart grid pilot program will study vehicle-to-grid systems of transferring electricity during peak load times, analyze the environmental effects of using PHEVs, and study how the vehicles would impact the electric system's peak usage and capacity requirements.

UMTRI's roles in the two-year PHEV project include:

- Conducting a pilot project survey to gauge consumer experience with PHEVs (for example, to determine how important available charging is to PHEVs being viewed as convenient and hassle-free to fuel, whether participants are realizing reduced vehicle operating costs, etc.).
- Conducting another survey to assess the acceptance and use

ILLUSTRATION: STEPHEN BRAUNWISS / ENERGISTOCKS.COM

What Is a PHEV?

A plug-in hybrid electric vehicle (PHEV) is a hybrid vehicle with batteries that can be recharged by plugging into an electric power source. A PHEV combines features of conventional hybrid electric vehicles and battery electric vehicles, possessing both an internal combustion engine and batteries for power. A PHEV can be filled at a gas station or charged from any 120-volt outlet. When powered by electricity, PHEVs function as an electric vehicle with a gas-tank backup.



potential of PHEVs—how do people perceive their value? Do customers attain financial and “peace of mind” value from PHEV capabilities?

- Assessing, along with the U-M School of Natural Resources and Environment, environmental impacts of PHEVs compared with conventionally powered vehicles, including pollutants, life-cycle energy, and fossil carbon emissions associated with the products.

Todd Anuskiewicz, UMTRI business development manager, says “The main goals of the project are to bolster economic development in Michigan, assess the environmental impacts of PHEVs, and understand how the widespread adoption of PHEV technology impacts both Detroit Edison and the broader Michigan electric system. The team will leverage its combined expertise and experience in PHEV technology to focus on near-term technologies and applications that will bridge the gap between first-generation PHEVs and the current electric utility system. We hope to create commercial opportunities with a seamless customer experience from day one, to help accelerate adoption of PHEVs and position Michigan businesses for success in an emerging PHEV market.”

Peter Sweatman, director of UMTRI says, “This grant is an excellent opportunity for research to find out more about PHEVs, and UMTRI is excited to be part of the University of Michigan PHEV collaboration. PHEVs represent a huge transformation in the way vehicles are powered. Not only do PHEVs move away from an all-mechanical drivetrain, but the energy source is diversified to include electricity, reducing the role of carbon-based liquid fuel. Currently the cost of electricity to power a vehicle is equivalent to 40 to 70 cents per gallon. Hopefully, PHEVs will reduce the demand for gasoline and contribute to a reduction in the nation's oil-dependence. Through the leadership of MMPEI, the University is able to focus an unparalleled breadth of scholarship on PHEVs.”

In a recent paper, John L. Sullivan of UMTRI's Transportation Systems Group and Craig Stephan of the Argonne National Laboratory investigated some of the benefits of PHEVs over their spark-ignited counterparts.

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The authors found that the spare U.S. electricity-generating capacity is sufficient to support up to 34 percent of the nation's light-duty vehicle fleet, depending on how such vehicles are driven (all-electric-mode city driving versus other forms of driving). This, of course, implies a significant petroleum displacement and as such represents an important energy security benefit. Further, if the electricity to power PHEVs comes from the current U.S. grid under average conditions, emissions of carbon dioxide are reduced by 59 percent. If the electricity comes from new technology natural gas, the reduction in carbon dioxide emissions is 72 percent.

UMTRI /
SHEKHAR ERINNINGON



The article, "Environmental and Energy Implications of Plug-In Hybrid-Electric Vehicles," was written when both Sullivan and Stephan were

working for Ford. It was published in the *Environmental Science & Technology*, volume 42, number 4, pp. 1185-1190.

UMTRI Approved to Extend IVBSS Program to Help Drivers Avoid Crashes

In late April, UMTRI was approved for Phase II funding by the U.S. DOT to test technologies that help passenger-car and commercial-truck drivers avoid crashes. The National Highway Traffic Safety Administration (NHTSA) and the Federal Motor Carrier Safety Administration (FMCSA) are conducting the initiative, funded as part of the Research and Innovative Technology Administration's (RITA) Intelligent Transportation Systems (ITS) Joint Program Office.

UMTRI, along with partners Visteon Corp., Eaton Corp., Honda

R & D Americas, Inc., Cognex Corp., International Truck and Engine Corporation, Con-way Freight, Battelle, and the Michigan Department of Transportation, is developing and testing a prototype integrated crash warning system, the Integrated Vehicle-Based Safety System (IVBSS). IVBSS will warn drivers when they are about to leave the roadway, are in danger of colliding with another vehicle while attempting a lane change, or are at risk of colliding with the vehicle ahead. It will use information gathered by inertial, video, and radar sensors, plus

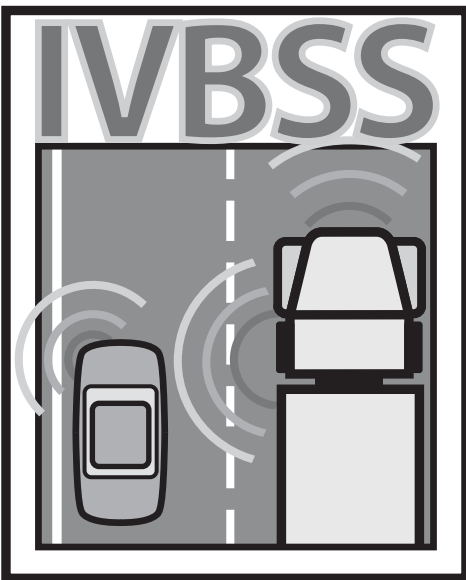
a global positioning system, to warn drivers of potentially dangerous situations to prevent or lessen the impact of crashes.

IVBSS is a \$32.3 million program with \$25.2 million in federal funding and \$7.1 million in cost share from the partners. The program is divided into two phases. Recently completed Phase I involved IVBSS design and development. Passenger-car and heavy-truck prototypes were completed and tested, verification testing was performed, and the driver-vehicle interface designs completed.

What's New for Phase II

The newly approved Phase II will include a field operational test of the integrated systems in both passenger cars and commercial heavy trucks. A fleet of 16 IVBSS-equipped passenger cars will be tested with over 100 participants over a one-year period. A fleet of ten IVBSS-equipped heavy trucks will operate as part of the Con-way Freight fleet over a ten-month period. The RITA Volpe National Transportation Systems Center, acting as the independent evaluator, will objectively evaluate IVBSS system benefits and driver acceptance.

"We are very pleased to have this opportunity to collaborate with government and industry leaders in transportation safety, and appreciate that the U.S. DOT approved the second phase. This approval serves as an acknowledgement of just how hard the IVBSS team members have worked thus far to develop truly innovative and effective technologies to help resolve the crash problem we face in the U.S. and abroad," says UMTRI researcher Jim Sayer, the project director. "This research further builds upon UMTRI's strength in naturalistic measurement of the driving process and the development of driver assistance systems."



"Receiving Phase II funding for a contract of this size, involving the breadth of industrial partners and an unprecedented scope in effort, is a reaffirmation of UMTRI's position as the premier place to do research on driving safety," says UMTRI director Peter Sweatman. "We are grateful for the outstanding partners we have on this program, as well as the leadership and dedication provided by the U.S. DOT."

IVBSS Annual Meeting

On April 10–11, the U.S. DOT hosted a public meeting to provide its annual progress report on the IVBSS program to members of the vehicle safety research community and other interested parties. The meeting took place at the Eagle Crest Conference Center in Ypsilanti, Michigan.

At this fourth public meeting of the IVBSS program, U.S. DOT and IVBSS team members discussed the results from the second program year through the end of Phase I, and highlighted upcoming activities for Phase II, including the planning and conduct of the light-vehicle and heavy-truck field operational tests.

- **Scott Bogard**, lead engineer in research in UMTRI's Engineering Research Division, along with project partners from the Volpe National Transportation Systems Center and Visteon, discussed light-vehicle and heavy-truck verification testing.
- **Paul A. Green**, research professor, and John M. Sullivan, assistant research scientist, both of UMTRI's Human Factors Division, discussed human factors and driver-vehicle interface development.

- **Dave LeBlanc**, assistant research scientist in UMTRI's Engineering Research Division, discussed data acquisition, field-test data analysis, and IVBSS displays planned for the ITS World Congress in New York City in November.
- **Jim Sayer**, assistant research scientist in UMTRI's Human Factors Division and IVBSS project director, provided an overview of Phase I of IVBSS as well as field-operational-test planning for Phase II.
- Representatives from the **National Institute of Standards and Technology (NIST)** discussed the independent measurement system developed and used to collect data during the verification testing process.
- Staff from the **Volpe National Transportation Systems Center** discussed results from test-track and on-road verification testing.
- Representatives of project partners Eaton and Con-way Freight highlighted their activities on the project.

The meeting also featured outdoor static vehicle displays and computer-based demonstrations of analytical tools developed during the first phase of the IVBSS program. **RR**

M-CASTL Hosts Transportation Research and Education Conference

The Michigan Center for Advancing Safe Transportation throughout the Lifespan (M-CASTL) held its first annual Transportation Research and Education Conference on May 6 at the University of Michigan (U-M) Union in Ann Arbor. The day-long conference drew in a diverse group of researchers and professionals with an interest in safety and mobility. David W. Eby, director of M-CASTL and head of UMTRI's Social and Behavioral Analysis Division, and Peter Sweatman, director of UMTRI, welcomed guests and introduced panelists and M-CASTL team members.

Two keynote speakers were featured at the conference. Dr. Bruce Simons-Morton, chief of the Prevention Research Branch at the National Institute of Child Health and Human Development, presented "The Novice Young Driver Problem: Research on Causes and Solutions" and Dr. Jacqui Smith, co-investigator of the Health and Retirement Study at the U-M Institute for Social Research, presented "Functional Diversity: A Fundamental Characteristic of Aging."

Panel discussions on issues related to young drivers included "Young Driver Distraction and Drowsiness," moderated by Daniel Keating of the U-M Center for Human Growth and Development and "Technology to Improve Driving for Young and Older Drivers," moderated by Frank Cardimen of the Transportation Improvement Association of Oakland County. Panelists included Todd Arnedt of the U-M Department of Psychiatry, Gary Bubar of AAA Michigan, and keynote speaker Simons-Morton, as well as Ray Bingham, Paul A. Green, Ralph



Keynote speakers, Dr. Bruce Simons-Morton (above) and Dr. Jacqui Smith (at top of page), discussed issues relating both to young and older drivers.

PHOTOS: UMTRI / SHEKHAR ERKINSON



Robinson, Jim Sayer, and Jennifer Zakrajsek of UMTRI.

Panel discussions on issues most relevant

to older drivers included "Driving and Dementia," moderated by Jeffrey Halter of U-M Geriatric Medicine and "Transitioning from Driving to Non-Driving Options," moderated by Frank Ascione of U-M Pharmacy. Panelists included Stephen Aronson and Bruno Giordani of the U-M Department of Psychiatry, Cathleen Connell and J. Scott Roberts of the U-M School of Public Health, M-CASTL director David Eby, Lidia Kostyniuk of UMTRI, Jonathan Levine of the U-M Urban and Regional Planning Program, and Joseph Pellerito of Wayne State University.

The conference was sponsored by AAA of Michigan; Access Mobility Center; Association for Driver Rehabilitation Specialists; Advantage Mobility Outfitters; Driving Evaluation, Education, and Research Center; Munson Medical Center; and UMTRI.

For more information and to view presentations from the conference, see <http://m-castl.org/node/24>.

UMTRI Researchers Share Their Findings

UMTRI researchers shared their latest findings at several recent conferences.

SAE World Congress

The SAE World Congress took place in April at the Cobo Center in Detroit. Several UMTRI researchers presented papers, chaired technical sessions, and attended meetings:

- **Mike Flannagan**, research associate professor in UMTRI's Human Factors Division, cochaired the technical session "Human Factors in Driver Vision and Lighting."
- **Tim Gordon**, head of UMTRI's Engineering Research Division, coauthored a paper with Jing Zhou, graduate student

research assistant in the University of Michigan (U-M) Department of Mechanical Engineering, and Huei Peng, director of U-M's Automotive Engineering Program. Zhou presented the paper "Characterization of the Lateral Control Performance by Human Drivers on Highways."

- **Steve Karamihas**, senior research associate in UMTRI's Engineering Research Division, was appointed the new chairman of the SAE Vehicle Dynamics Standards Committee.
- **Q. Brad Liu**, assistant research scientist in UMTRI's Engineering Research Division presented "Off-Terrain Vehicle Dynamics Simulation Based on Slip-Shifted On-Road Tire Handling Model: Principle and Implementation." The paper was coauthored by Youngwon Hahn, research fellow in the U-M Department of Mechanical Engineering; Gregory Hulbert, U-M professor of mechanical engineering; Zheng-Dong Ma, U-M associate research scientist in mechanical engineering; and Jonah Lee, professor of theoretical and experimental solid mechanics and finite element methods at the University of Alaska Fairbanks.
- **Brandon Schoettle**, research associate in UMTRI's Human Factors Division, presented the paper "Market-Weighted Trends in the Design Attributes of Headlamps in the U.S.," which was coauthored by UMTRI Human Factors colleagues Michael Sivak, division head, and Naoko Takenobu, visiting research engineer.
- **Mark Sochor**, assistant professor of emergency medicine in the U-M Health System and assistant research scientist in UMTRI's Biosciences Division, presented the paper "Traumautopsy: A Unique Crash Reconstruction Method for Determining Injury Patterns in Fatal Motor Vehicle Crashes."

Lifesavers Conference

Several UMTRI staff members gave presentation at the 2008 Lifesavers Conference in mid April in Portland, Oregon:

- Ray Bingham, research associate professor in UMTRI's Social and Behavioral Analysis (SBA) Division, presented results from the statewide booster seat evaluations that SBA completed in collaboration with the Michigan Department of Community Health.
- Kathy Klinich, assistant research scientist in UMTRI's Biosciences Division, chaired the session New Booster Seat Research and presented "Advancing Occupant Protection for Older Children."
- Lidia Kostyniuk, research scientist in UMTRI's SBA Division presented, "Motorcycle Crash Trends in Michigan, 1997-2006."
- Jean Shope, research professor in UMTRI's SBA Division, presented "Understanding Adolescent Development and How It Impacts Teen Drivers."
- Jonathon Vivoda, research associate in UMTRI's SBA Division, presented "The Effect of Daytime Media and Enforcement on Nighttime Safety Belt Use."

Inside China Conference

The University of Michigan recently hosted a conference that highlighted the complex and rapid changes occurring in the Chinese auto industry. UMTRI speakers at "Inside China: Understanding China's Current and Future Automotive Industry" were:

- **Bruce Belzowski**, assistant research scientist in UMTRI's Automotive Analysis Division, who welcomed attendees and provided an industry overview
- **Michael Sivak**, head of UMTRI's Human Factors Division, who presented "Road Safety in China: Challenges and Opportunities"
- **Walter McManaus**, head of UMTRI's Automotive Analysis Division, who presented "Attitudes and Demographics of Chinese Vehicle Buyers" **RR**

SafetyNet Conference 2008
 April 17–18, Campidoglio, Italy
www.erso.eu

**Facilities Management Workshop:
 Connecting Transportation and
 Mother Nature**
 April 27–29, Orlando, Florida
www.ibtta.org

**Symposium on Biotechnology for Fuels
 and Chemicals**
 May 4–7, New Orleans, Louisiana
www.simhq.org/meetings/30symp

Alternative Fuels and Vehicles Conference
 May 11–14, Las Vegas, Nevada
www.afvi.org/NationalConference2008

ITS Canada Conference and Meeting
 June 1–4, Montreal, Canada
www.itscanada.ca/niagara2007

**Community Transportation
 Association Meeting**
 June 1–6, New Orleans, Louisiana
www.ctaa.org

ARC-CSI Crash Conference
 June 2–5, Las Vegas, Nevada
www.crashconferences.com/arccsi

European ITS Congress
 June 4–6, Geneva, Switzerland
www.itsineurope.com

IEEE Intelligent Vehicle Symposium
 June 4–6, Eindhoven, The Netherlands
www.iv2008.nl

**Canadian Multidisciplinary
 Road Safety Conference**
 June 8–11, Whistler, Canada
www.carsp.ca/cmrs.c.htm

Via Nordica Road Congress
 June 9–11, Helsinki, Finland
www.vianordica2008.fi

International RILEM Conference
 June 16–18, Chicago, Illinois
www.ict.uiuc.edu/RILEM

Digital Human Modeling Conference
 June 17–18, Pittsburgh, Pennsylvania
www.sae.org/events/dhm

**International Symposium on Snow Removal
 and Ice Control Technology**
 June 17–19, Indianapolis, Indiana
www.trb.org/Conferences/

**International Symposium for Heavy Vehicle
 Weights and Dimensions**
 June 18–22, University Park, Pennsylvania
www.outreach.psu.edu/C&I/9ishvwd

Transportation Management Conference
 June 22–27, Orlando, Florida
www.transportation.org/meetings/162.aspx

**International Conference on
 Managing Pavement Assets**
 June 24–28, Calgary, Canada
www.icmpa2008.com

Third European Road Congress
 June 25, Brussels, Belgium
www.europeanroadcongress.com

RESNA 2008 Annual Conference
 June 26–30, Arlington, Virginia
www.resna.org/Conference/Conference.php

**World Forum on
 Sustainable Mobility and Governance**
 July 6–8, Nantes, France
www.governance-mobility.org/en

**Bio-Fuels Specifications and
 Performance Symposium**
 July 7–9, Paris, France
www.sae.org/events/training/symposia/biofuels [RR](#)

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Journal Articles

St. Louis, R.M.; Parow, J.E.; Eby, D.W.; Bingham, C.R.; Hockanson, H.; Greenspan, A.I. 2008. "Evaluation of Community-Based Programs to Increase Booster Seat Use." *Accident Analysis & Prevention*, vol. 40, no. 1 (Jan. 2008), pp. 295–302.

Stephan C.; Sullivan, J.L. 2008. "Environmental and Energy Implications of Plug-in Hybrid Electric Vehicles." *Environmental Science & Technology*, vol. 42, no. 4 (Feb. 15, 2008), pp. 1185–1190.

Vivoda, J.M.; Eby, D.W.; St. Louis, R.M.; Kostyniuk, L.P. 2008. "Cellular Phone Use while Driving at Night." *Traffic Injury Prevention*, vol. 9, no. 1 (Feb. 2008), pp. 37–41.

Technical Reports

Blower, D.; Matteson, A. 2007. *Evaluation of 2005 Connecticut Crash Data Reported to the Motor Carrier Management Information System Crash File*. Report No. UMTRI-2007-40.
<http://hdl.handle.net/2027.42/57185>
The research documented in this report was sponsored by the Federal Motor Carrier Safety Administration.

Blower, D.; Matteson, A. 2007. *Evaluation of 2006 Pennsylvania Crash Data Reported to Motor Carrier Management Information System Crash File*. Report No. UMTRI-2007-37.
<http://hdl.handle.net/2027.42/57181>
The research documented in this report was sponsored by the Federal Motor Carrier Safety Administration.

Dion, F.; Liang, Z. 2007. *Assessment of the Effectiveness of Proposed "Keep Right Pass Left—It's the Law" Signs on Two Lane Rural Freeways*. Report No. UMTRI-2007-45.
<http://hdl.handle.net/2027.42/57737>
The research documented in this report was sponsored by the Michigan Department of Transportation.

Green, P.; Tsimhoni, O.; Oberholtzer, J.; Buonarosa, M.L.; Devonshire, J.; Schweitzer, J.; Baragar, E.; Sayer, J. 2007. *Integrated Vehicle-Based Safety Systems (IVBSS): Human Factors and Driver-Vehicle Interface (DVI) Summary Report*. Report No. UMTRI-2007-43.
<http://hdl.handle.net/2027.42/58189>

The research documented in this report was sponsored by the USDOT's Intelligent Transportation Systems Joint Program Office.

Green, P. E.; Matteson, A. 2007. *Evaluation of 2005 Alabama Crash Data Reported to the Motor Carrier Management Information System Crash File*. Report No. UMTRI-2007-39.
<http://hdl.handle.net/2027.42/57186>
The research documented in this report was sponsored by the Federal Motor Carrier Safety Administration.

Green, P. E.; Matteson, A. 2007. *Evaluation of 2005 Indiana Crash Data Reported to the Motor Carrier Management Information System Crash File*. Report No. UMTRI-2007-36.
<http://hdl.handle.net/2027.42/57184>
The research documented in this report was sponsored by the Federal Motor Carrier Safety Administration.

Jarossi, L.; Matteson, A.; Woodrooffe, J. 2007. *Trucks Involved in Fatal Accidents Factbook 2004*. Report No. UMTRI-2007-35.
<http://hdl.handle.net/2027.42/57265>
The research documented in this report was sponsored by the Federal Motor Carrier Safety Administration.

McManus, W. 2007. *The Impact of Attribute-Based Corporate Average Fuel Economy (CAFE) Standards: Preliminary Findings*. Report No. UMTRI-2007-31.
<http://hdl.handle.net/2027.42/55396>
The research documented in this report was sponsored by The Energy Foundation.

Vivoda, J.M.; St. Louis, R.M.; Eby, D.W.; Kostyniuk, L.P. 2007. *An Evaluation of the 2007 "Click It or Ticket" Safety Belt Mobilization in Florida*. Report No. UMTRI-2007-30.
<http://hdl.handle.net/2027.42/55475>
The research documented in this report was sponsored by the Tallahassee Community College and the Florida Department of Transportation.
RR

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TIDBITS TRANSPORTATION

- On June 26, 1906, the first French Grand Prix took place in Le Mans. Ferenc Szisz of Hungary, driving a 90 hp Renault, won the race. The race covered 1,200 kilometers over two days, and was run under rules that would become a standard in Grand Prix racing. The Automobile Club of France stipulated that all cars were to weigh no more than 1,000 kg. Three cars could be entered by each manufacturer, with each car operated by a two-man crew. The rules encouraged the entry of light-weight cars with absurdly large engines. Szisz's covered the 768 miles of rural dirt roads at an average speed of 63 mph. The leading cars were all hitting close to 100 mph.
- On April 8, 1910, the Los Angeles Motordome opened near Playa Del Rey, California. It was the first speedway with a board track, which was made of wood and ran a circumference of 5,281 feet. Drivers could reach speeds up to 100 mph on this track. Board tracks used the same engineering technology as smaller wood tracks used for bicycle racing in France. By 1931, there were 24 board tracks in operation in the U.S., but they began to decline during the Depression due to the expensive upkeep.
- On May 15, 1918, Nantucket Island reversed its twelve-year ban on automobiles, becoming the last community in Massachusetts to do so. Nantucket Island was becoming an exclusive tourist attraction, and the residents did not want automobiles overrunning their island. Eventually, as automobiles became more common, fears about their safety decreased. Today, there is a year-long waiting list for the car ferry. 🌸
- The first police radio system, connecting headquarters to patrol cars and patrol cars to one another, was installed in Eastchester Township, New York, on May 8, 1933. The radio transmitter at police headquarters was 20 watts, and two patrol cars had transmitters of 4.5 volts each.
- On April 3, 1996, the Museum of Modern Art in New York City added a Jaguar E-Type to its permanent exhibit. Jaguar Motors released the E-Type in 1961 just four years after a fire destroyed the company's production facilities. 🚗

Source:

This Day in Automotive History, www.historychannel.com/tdih

🌸 <http://www.nantucket.net/links/facts.php>



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