

RESEARCH REVIEW

• UNIVERSITY OF MICHIGAN TRANSPORTATION RESEARCH INSTITUTE • JULY-SEPTEMBER 2009 • VOLUME 40, NUMBER 3 •



on page 1:

Roadside Alligators and Retread Tires

Inside:

Side-Impact Test Facility	3
International Truck Conference.....	4
Powertrain Conference.....	4
Fall Driving	6
Names & Faces	7
Recent UMTRI Publications.....	8
Conferences & Events	9

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

Roadside Alligators and Retread Tires

UMTRI researchers investigate causes of truck tire debris on nation's highways

In many states, the “roadside alligator” is a commonly sighted highway hazard. The name refers to tire debris, or rubber fragments and casings (whole tires), that frequently litter highways and interstates. A new report by UMTRI researchers describes the likely causes of tire failure that result in debris and reveals important information about retread tires.

Oliver Page, assistant research scientist in the Transportation Safety Analysis Division (TSAD) and TSAD head John Woodrooffe led the research with assistance from UMTRI associate research scientist Daniel Blower and assistant research scientist Paul E. Green. The research, which appears in the current issue of *Transportation Research Record*, was sponsored by the National Highway Traffic Safety Administration (NHTSA) under a subcontract from Virginia Tech Transportation Institute.

The goal of the study was to determine whether the tire debris came from original equipment (new tires) or retreads. A retread tire is manufactured by bonding a new tread onto a used casing that is still in excellent condition.

“There’s a public perception that if it’s a retread truck tire, it’s not as good,” said Page. “That’s not true. What we were trying to do is see if retreads were overrepresented in samples collected, and if they were, whether the probable cause of failure was due to manufacture/process issues.”



OLIVER PAGE/UMTRI TRANSPORTATION SAFETY ANALYSIS DIVISION

UMTRI researchers coordinated the collection and analysis of approximately 86,000 pounds of tire debris and discarded tire casings from five sites in the United States during summer 2007.

To find out, Page and Woodrooffe coordinated the collection and analysis of approximately 86,000 pounds of tire debris and discarded tire casings from five sites in the United States during summer 2007. The sites—Gary, Indiana; Wytheville, Virginia; Gainesville, Florida; Taft, California; and Tucson, Arizona—were all located adjacent to major interstate routes with high commercial-trucking flows.

With the help of commercial haulers and the cooperation of highway maintenance workers, they collected a random sample of tire fragments and casings, totaling 1,496 items, from interstates and truck stops.

Researchers turned to a tire-failure-analysis consulting firm in Ohio to analyze the debris. The firm analyzed the individual fragments and casings and classified the probable cause of failure for each item, if known.

Overall, where tire status could be determined, original equipment accounted for 60 percent of the tire casings tested, and retreads accounted for 40 percent. Of the tire fragments analyzed, 21 percent were from original equipment, and 79 percent were from retreads.

Analysis of the debris found that road hazards, such as hitting a curb or sustaining a nail puncture, were the most common cause of tire failure for 38 percent of the fragments and 36 percent of the casings. Maintenance and operational issues accounted for 32 percent of the tire casing failures, while degradation from excessive heat was evident in 30 percent of the tire fragments examined. For both casings and fragments, tire failure due to the retread manufacturing process was under 15 percent.

continued...

Continued from page 1

“Results of our study suggest that the majority of tire debris found on the nation’s highways is not a result of manufacturing or process deficiencies,” said Page. The results have important policy implications, he added, noting that because tire debris is so visible, some states had begun initiatives to ban retreads, assuming that the retread tires accounted for the most debris.

Page and Woodrooffe presented the results of the research at the 88th meeting of the Transportation Research Board in Washington, D.C. in January 2009.

The full report, *Commercial Medium Tire Debris Study*, is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration (report number: DOT HS 811 060, and is available at <http://hdl.handle.net/2027.42/61517>.

RR

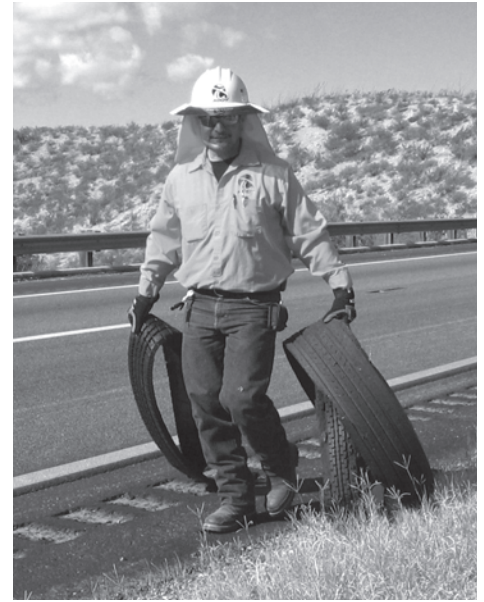
Proper Tire Maintenance Can Help Reduce Roadside Debris

Keeping commercial truck tires properly maintained and correctly inflated can help reduce roadside tire debris, according to the UMTRI tire-debris study.

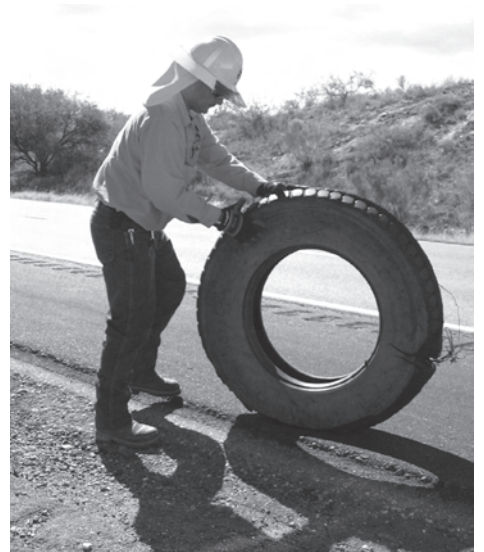
Preventive actions would combat tire failures due to maintenance and operational issues, which accounted for approximately 32 percent of failed tires collected from roadsides during the two-year study.

“In many cases truck trailers are owned by a different entity than the tractors,” said Page. “Truck drivers need to show the same attention to proper tire maintenance and inflation on all the vehicle’s tires to reduce tire failure.”

The study also found that about twenty percent of the tire debris collected from interstates came from cars and light trucks, indicating that all motor vehicle drivers can help reduce debris by keeping tires correctly inflated and maintained. RR



OVER PAGE/UMTRI TRANSPORTATION SAFETY ANALYSIS DIVISION



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UMTRI Engineers Design, Develop, and Fine-tune Dual-Sled, Side-Impact Test Facility

With support from the National Highway Traffic Safety Administration, engineers in UMTRI's Biosciences Division have designed, fabricated, and installed a new, dual-sled, side-impact test facility that offers the potential to yield important information needed to improve injury protection in side-impact crashes.

The facility's innovative design uses two moving sleds that enable researchers to accurately simulate the physical conditions that occur when the front of one vehicle strikes the side of another vehicle. Most importantly, the facility will allow UMTRI researchers to reproduce the specific impact loading by the intruding door or vehicle side wall to occupants seated on the impacted side of the struck vehicle.

"The door motion is what's important," said UMTRI assistant research scientist Jonathan Rupp. "Recreating the velocity of the door relative to a near-side occupant in the struck vehicle will allow us to quantify the response and injury tolerance of the human body in T-bone-type side impacts."

Sensors installed on each sled provide measurements of the velocity of the impacting sled and the loading applied to different regions of the door-shaped impactor when it contacts the human surrogate seated on the impacted sled. Another set of sensors on a crash-test dummy or human surrogate provides measurements of pelvic, spine, and rib accelerations.

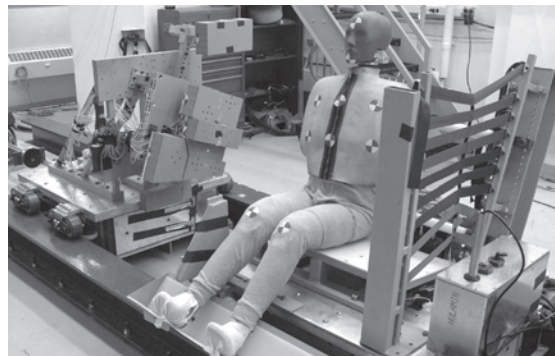
These measurements combined with door velocity histories can be compared with side-impact data from staged, side-impact, vehicle crash tests. These comparisons allow UMTRI engineers to tune the test facility to recreate the near-side occupant loading conditions that occur in side-impact crashes.

UMTRI engineer Nathaniel Madura designed

the test facility, including the complex software that controls firing of the sled, timing of lights, data acquisition equipment, and high-speed video cameras. Most of the components were fabricated and assembled by Biosciences' technical support staff led by Brian Eby. Engineer Carl Miller has been working with Madura to conduct validation testing by comparing test results with data from staged crash tests.

Following validation of the equipment and instrumentation, Biosciences' research faculty and staff will begin conducting tests that will assess the causes of injuries to near-side occupants in side impacts. Test results will be used to develop response corridors and improved criteria for injury assessment in side-impact crash-test dummies.

Ultimately, the research conducted with this new facility will contribute to reducing the risk of serious and fatal injuries to near-side occupants in side-impact collisions, which currently account for approximately one-third of all crash fatalities, according to the National Highway Traffic Safety Administration. UMTRI researchers also believe that the new test facility offers significant potential for evaluating the side-impact performance of child safety seats. **RR**



UMTRI/BIOSCIENCES DIVISION

The dual-sled design allows researchers to accurately simulate the physical conditions that occur in a side-impact crash.



JOYCE DANIELS/UMTRI

UMTRI engineers Carl Miller and Nathaniel Madura with assistant research scientist Jonathan Rupp.

International Truck Conference Covers Breadth of Topics

UMTRI hosted the International Conference on Efficient, Safe, and Sustainable Truck Transportation Systems for the Future, June 15-17, at the University of Michigan. More than 130 people attended the successful conference, which brought together the experiences of the international community in discussions related to balancing freight transportation policies that support a vibrant economy while protecting environmental and public interests.

John Woodroffe, head of UMTRI's Transportation Safety Analysis Division, served as conference chair. Collaborating sponsors included the Joint Transport Research Centre of the Organization for Economic Co-operation and Development (OECD) and the International Transport Forum. The conference highlighted aspects of international policies of freight-vehicle transportation that influence safety, efficiency, and sustainability.


Opening plenary sessions addressed the extent and future direction of both domestic and international freight transportation in the United States; benchmarking U.S. international competitiveness relative to other regions around the world; challenges to using and expanding U.S. infrastructure assets to support freight movement; and the highway freight industry's response to the imperatives of energy security, climate change, and safety.

Executive sessions featured speakers from around the world, who presented key findings of research completed over the past twenty-five years, including an update and comparison with the OECD/ITF international benchmarking of heavy truck productivity and safety.

Technical sessions covered a range of topics including advances in technologies and operational practices that reduce petroleum use and pollutant emissions; advances in heavy-truck safety technologies and safety-related operational practices; performance-based standards and innovations in operational compliance; and interaction of produc-

tive vehicles with the infrastructure and traffic.

Closing sessions gave attendees the opportunity to synthesize conference discussions into options for consideration by policy makers as they seek to balance economic productivity, the environment, safety, and infrastructure preservation.

Formal conference proceedings will be posted on the conference website. See: <http://www.umtri.umich.edu/public/tsad/magictrucks/> 



JOYCE DANIELS/UMTRI

Powertrain Conference Explores Strategies for 21st Century

Auto industry representatives from around the country gathered at the U-M Michigan League Ballroom July 15 to learn about the latest trends in powertrain technology. UMTRI's Automotive Analysis Division hosted the conference, Powertrain Strategies for the 21st Century, which focused on how new government regulations are impacting industry decisions.

New fuel economy standards, announced in May 2009, ultimately require an average U.S.-fleet fuel-economy standard of 35.5 miles per gallon by 2016. UMTRI assistant research scientist Bruce Belzowski moderated the conference and introduced speakers representing manufacturers, suppliers, academia, and government who provided key insights into how the new regulations offer both challenges and opportunities for the industry.

Walter McManus, head of UMTRI's Automotive Analysis Division, presented an analy-

sis of Corporate Average Fuel Economy (CAFE) regulations and how these regulations affect each manufacturer differently.

William Charmley of the U.S. Environmental Protection Agency discussed the complexity of the new fuel-economy regulations, which will begin with the 2012 model year. "It's very near-term for the auto industry," said Charmley, who is deputy director of the Assessment and Standards Division of the EPA's Office of Transportation and Air Quality.

Justin Ward, advanced powertrain program manager at Toyota, said that hybrid technology will be a key component of a sustainable transportation system. Ward added that the future will likely require a "marriage of technologies" to meet diverse needs.

Daniel Kapp of Ford Motor Company discussed Ford's new EcoBoost engine technology as the cornerstone of the company's near-term and mid-term strategy.

Dennis Assanis, of the U-M Department of Mechanical Engineering, provided an overview of U-M powertrain research.


Robert Czarnowski of BorgWarner described his company's efforts to support powertrain manufacturers. John Ettlie of the Rochester Institute of Technology discussed a joint National Science Foundation research project with Bruce Belzowski on powertrain innovation processes. Bryan Krulikowski of Morpace Market Research, which sponsored the conference, presented the results of the company's consumer research with regard to powertrain acceptance and consumer engagement.

Overall, the conference addressed a pivotal topic, said Dennis Minano, formerly of General Motors, who was one of about ninety people to attend the event. According to Minano, "This conference is the first that I've seen to zero in on the most significant technological change the industry will face."

Focus on the Future

The conference was part of the division's Focus on the Future conference series, designed to bring participants up to date on important topics affecting the industry and to provide expert opinions about its future direction.

The next event in the series, The Business of IT: Transforming the Organization and the Vehicle, is scheduled for September 22, 2009.

For presentations and upcoming conference information, see: www.umtri.umich.edu/divisionPage.php?pageID=47 

Plug-in Electric Vehicle Conference Planned

The Business of Plugging In, a conference on plug-in electric vehicles, will be held October 19-21, 2009 in Detroit, Michigan at the Motorcity Hotel and Conference Center.

The conference will bring together leaders from the automotive, utility, and new-technology industries as well as policymakers from the regulatory and legislative branches, financiers, educators, and researchers to address the opportunities and challenges in bringing plug-in electric vehicles to the mass market.

Key topics include new economic and business models for the entire plug-in electric vehicle value chain, from electricity generation to consumer adoption. The conference will also deal with barriers to market penetration and opportunities for addressing those barriers; investment strategies and opportunities in the emerging plug-in electric vehicle sector; vehicle, battery, and related accessory retail models; consumer attitudes and perceptions and producing a seamless customer experience when buying and owning a plug-in electric vehicle; utility technologies and strategies; incorporating clean energy solutions for power generation; vehicle charging infrastructure; battery manufacturing and economics; and federal, state and local policy

The conference will be hosted by DTE Energy, the University of Michigan, General Motors Corporation, and the Center for Automotive Research.

For conference information, see: www.pev2009.com 

Fall Driving More Hazardous Than Summer or Winter

While many believe summer is the most dangerous season on U.S. roads because motorists tend to drive faster, drink more alcohol, and drive more often for leisure, a new UMTRI report suggests otherwise.

Fatality crash rates are highest in the fall, with October at the top of the list (10.2 deaths per billion kilometers), according to the study, which appears in the August issue of the journal *Traffic Injury Prevention*.



Using the fatality data and distance-driven data from the Department of Transportation, research professor Michael Sivak, head of the Human Factors Division, calculated the fatality rate per distance driven for each month from 1994 to 2006.

He found that October, November, and December have the highest fatality rates and March the lowest (8.8 deaths per billion kilometers), followed by February and April. From March to October, rates increase each month and then decline from October to March, despite the winter weather.

“The risk of a fatality per distance driven in October is about 16 percent greater than the risk in March,” Sivak said. “Everything else being equal, inclement weather—snow and ice—should increase the risk of driving. However, because

inclement weather also leads to general reductions in speed, the net effect is not clear.”

Likewise, there are several factors more prevalent during summer that would suggest that the driving risk should be greater during those months, Sivak says.

“For example, leisure driving, which occurs more frequently on unfamiliar roads, at higher speeds, at night, and under the influence of alcohol, is riskier than commuter driving,” he said. “Although hard data are not available, leisure driving is likely to be most frequent during summer months when school is out. In addition, consumption of beer shows a strong seasonal variation, peaking in summer months.”

So why are October, November, and December more dangerous for motorists than other months of the year? One possible reason

could be the duration of darkness, which increases in the fall and is longest in late December. But Sivak says there is no single cause.

“There are several known factors with major influences on the risk of driving that show strong seasonal variations,” he said. “However, the peaks and troughs of the seasonal variations of these factors do not fully match the pattern of the overall driving risk. Thus, the driving-risk pattern is likely a consequence of joint

contributions of several factors.”

—Bernie DeGroat, *U-M News and Information Service* [RR](#)

Higher Gas Prices Help Reduce Emissions

Less driving and greater vehicle fuel economy aren’t the only byproducts of higher gas prices—lower carbon dioxide emissions is another benefit, according to UMTRI researchers.

In a new study, researchers Michael Sivak and Brandon Schoettle found that carbon dioxide emissions per driver from purchased new vehicles were lower in each month from November 2007

Continued on back page

U-M SMART Project Comes to UMTRI

PHOTO COURTESY OF SUSAN ZIELINSKI



Susan Zielinski, managing director of SMART (Sustainable Mobility and Accessibility Research and Transformation) at the University of Michigan relocated her office to UMTRI in July.

SMART is a multi-disciplinary, university-wide project that undertakes implementation-focused research, demonstration projects (currently in India, South Africa, and the United States.), education, and global learning exchange on a range of issues related to the future of transportation in city regions around the world.

Zielinski has developed and brought to her work at SMART the concepts and practice of new mobility hub networks, new mobility industry development, open source transportation, and public private innovation. SMART takes a systems approach to addressing the emerging challenges and opportunities of integrated, sustainable transportation in a rapidly urbanizing world.

Just before joining SMART, a project of U-M's Center for Advancing Research and Solutions for Society (CARSS), Zielinski spent a year as a Harvard Loeb Fellow focusing on new mobility innovation and leadership. Prior to 2004, she co-founded and directed Moving the Economy (MTE), a Toronto-based "link tank" developed to catalyze and support sustainable urban transportation innovation as well as New Mobility industry development, an integrated industry approach developed at MTE. She worked for over fifteen years in the Planning Department at the City of Toronto, developing and leading transportation and livability policies and initiatives, including cochairing the city's anti-smog strategy.

Zielinski has advised on a range of local, national, and international initiatives, including the Infrastructure Committee of the Center for the Study of the Presidency and Congress, the Canadian National Advisory Committee on Energy Efficiency (NACEE), Transport Canada's

Sustainable Development Advisory Committee, the OECD's Environmentally Sustainable Transport (EST) Project, the King of Sweden's jury of the Stockholm Partnerships for Sustainable Cities, and the European Conference of Ministers of Transport (ECMT).

She was also a long-time board member of Canada's Center for Sustainable Transportation, founding board member of the Green Tourism Association, and founder of Toronto's bicycle choir. [RR](#)

Moving Minds: The Next Transportation Infrastructure

SMART's annual summit will take place November 9-12, 2009 in Ann Arbor at the U-M Michigan League. The summit will bring researchers together with business leaders, entrepreneurs, practitioners and policy makers from around the world to focus on pilots, policy, research, and partnership networks that accelerate implementation of sustainable urban transportation and accessibility (locally and globally), and development of New Mobility business and employment opportunities.

This year's summit will give special attention to new policy frameworks and directions that advance the next transportation infrastructure and the emerging New Mobility economy; understanding the cultural, psychological, and aspirational underpinnings of our relationship to transportation (for both users and leaders); resilience in designing and operating transportation/communication systems; and innovative capacity building.

The summit aims to build on the invaluable wisdom and experience of its participants, and on SMART's ongoing work to understand and accelerate development and implementation of sustainable, systems-based solutions to mobility and accessibility in global urban regions.

For more information, visit the SMART website at www.um-smart.org [RR](#)

UMTRI NAMES & FACES

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.

Journal Articles

Bingham, C.R.; Shope, J.T.; Parow, J.E.; Raghunathan, T.E. 2009. "Crash Types: Markers of Increased Risk of Alcohol-Involved Crashes among Teen Drivers." *Journal of Studies on Alcohol and Drugs*, vol. 70, no. 4, 2009, pp. 528-535.

Green, P.A. 2009. "Legibility Index for Examining Common Viewing Situations: A New Definition Using Solid Angle." *Leukos*, vol. 5, no. 4, April 2009, pp. 279-295.

Sivak, M. 2009. "During Which Month Is It Riskiest to Drive in the United States?" *Traffic Injury Prevention*, vol. 10, no.4, August 2009, pp. 348-349.

Sivak, M. 2009. "Mechanisms Involved in the Recent Large Reductions in US Road Fatalities." *Injury Prevention*, vol. 15, no. 3, June 2009, pp. 205-206.

Sivak, M.; Tsimhoni, O. 2009. "Fuel Efficiency of Vehicles on US Roads: 1923-2006." *Energy Policy*, vol. 37, no. 8, August 2009, pp. 3168-3170.

Technical Reports

Bogard, S.; Funkhouser, D.; Sayer, J. 2009. Integrated Vehicle-Based Safety System (IVBSS): Heavy Truck Extended Pilot Test Summary Report. Report no. UMTRI-2009-12.

<http://hdl.handle.net/2027.42/62989>

The research documented in this report was sponsored by the U.S. Department of Transportation, Research and Innovative Technology Administration, ITS Joint Program Office.

Fuller, H.; Tsimhoni, O. 2009. Glance Strategies for Using an In-Vehicle Touch-Screen Monitor. Report no. UMTRI-2009-5.

The research documented in this report was sponsored by UMTRI's Industry Affiliation Program for Human Factors in Transportation Safety.

Green, P.E.; Blower, D.F. 2008. Updated Ratio of Crash Severities Reportable to the MCMIS Crash File. Report no. UMTRI-2008-52.

<http://hdl.handle.net/2027.42/61822>

The research documented in this report was sponsored by the U.S. Department of Transportation, Federal Motor Carrier Safety Administration.

Jarossi, L.; Matteson, A.; Woodrooffe, J. 2008. Buses Involved in Fatal Accidents Factbook 2006. Report no. UMTRI-2008-53. <http://hdl.handle.net/2027.42/61249>

The research documented in this report was sponsored by the U.S. Department of Transportation, Federal Motor Carrier Safety Administration.

LeBlanc, D.; Buonarosa, M.L.; Blankespoor, A.; Sayer, J. 2009. Integrated Vehicle-Based Safety Systems (IVBSS) Light Vehicle Extended Pilot Test Summary Report. Report no. UMTRI-2009-13.

<http://hdl.handle.net/2027.42/63005>

The research documented in this report was sponsored by the U.S. Department of Transportation, Research and Innovative Technology Administration, ITS Joint Program Office.

Mohan, D.; Tsimhoni, O.; Sivak, M.; Flanagan, M.J. 2009. Road Safety in India: Challenges and Opportunities. Report no. UMTRI-2009-1.

The research documented in this report was sponsored by UMTRI's Sustainable Worldwide Transportation 2020 program.

Reed, M. 2008. Intersection Kinematics: A Pilot Study of Driver Turning Behavior with Application to Pedestrian Obscuration by A-Pillars. Report no. UMTRI-2008-54.

<http://hdl.handle.net/2027.42/61347>

The research documented in this report was sponsored by UMTRI's Industry Affiliation Program for Human Factors in Transportation Safety.

Sayer, J.; LeBlanc, D.; Bogard, S.; Hagan, M.; Sardar, H.; Buonarosa, M. L.; Barnes, M. 2008. Integrated Vehicle-Based Safety Systems Field Operational Test Plan. Report no. UMTRI-2008-51.

<http://hdl.handle.net/2027.42/62108>

The research documented in this report was sponsored by the U.S. Department of Transportation, Research and Innovative Technology Administration, ITS Joint Program Office.

Schoettle, B.; Sivak, M. 2009. In-vehicle Video and Motion Sickness. Report no. UMTRI-2009-6.

The research documented in this report was sponsored by UMTRI's Industry Affiliation Program for Human Factors in Transportation Safety.

Sullivan, J.M. 2008. Visual Fatigue and the Driver. Report no. UMTRI-2008-50. <http://hdl.handle.net/2027.42/61186>

The research documented in this report was sponsored by UMTRI's Industry Affiliation Program for Human Factors in Transportation Safety.

Sullivan, J. M.; Flanagan, M. J. 2009. Relationships among Driver Age, Vehicle Cost, and Fatal Nighttime Crashes. Report no. UMTRI-2009-4.

The research documented in this report was sponsored by UMTRI's Industry Affiliation Program for Human Factors in Transportation Safety.

RR

CONFERENCES & EVENTS

International Conference on Ecology & Transportation
September 13-17, Duluth, Minnesota
www.icoet.net

Council of Supply Chain Management Professionals Global Conference
September 20-23, Chicago, Illinois
www.cscmp.org

ITS World Congress
September 21-25, Stockholm, Sweden
www.itsworldcongress.com

The Business of IT: Transforming the Organization and the Vehicle
September 22, Ann Arbor, Michigan
www.umtri.umich.edu/divisionPage.php?pageID=47

International IEEE Conference on Intelligent Transportation Systems
October 3-7, St. Louis, Missouri
www.campus.mst.edu/itsc2009

European Transport Conference
October 5-7, The Netherlands
www.etcproceedings.org/etc2009/

Biomedical Engineering Society Annual Meeting
October 7-10, Pittsburgh, Pennsylvania
www.bmes.org

Transportation Assoc. of Canada Annual Conference and Exhibit
October 18-21, Vancouver, British Columbia
www.tac-atc.ca/english/annualconference

The Business of Plugging In: A Plug-In Electric Vehicle Conference
October 19-21, Detroit, Michigan
www.pev2009.com

National Conference on Transportation Asset Management
October 19-21, Portland, Oregon
www.trb.org/calendar

AASHTO Annual Meeting
October 22-26, Palm Desert, California
www.transportation.org/meetings/181.aspx

Fourth International Conference on Women's Issues in Transportation
October 27-30, Irvine, California
www.trb.org/calendar

53rd Stapp Conference
November 2-4; Savannah, Georgia
www.stapp.org

SMART Annual Summit
November 10-13, Ann Arbor, Michigan
www.um-smart.org

Developing a Research Agenda for Transportation Infrastructure Preservation and Renewal Conference
November 12-13, Washington, D.C.
www.trb.org/calendar

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UMTRI BRIEFS

to April 2009 when compared with emissions levels of October 2007. The greatest reduction—12 percent—was achieved in July 2008. The reduction in April 2009 was 8 percent.

The cause? Improved fuel economy (from 20.2 mpg in October 2007 to 21.3 in April 2009) and a decrease in distance driven by U.S. motorists (a 3 percent drop in April 2009 compared with October 2007), the researchers say.

“Recent economic upheavals have influenced the fuel economy of new vehicles that Americans purchase and how much they drive,” said Sivak, head of the Human Factors Division. “By itself, the decrease in the amount of driving for the entire fleet of vehicles has resulted in a 3 percent reduction in carbon dioxide emissions per driver in April 2009—the latest month examined—when compared to October 2007. Furthermore, because buyers of new vehicles have tended to purchase more fuel-efficient vehicles, their contribution to the decrease in carbon dioxide emissions has been even greater.”

In prior research, Sivak and Schoettle found that since late 2007, average fuel economy of new vehicles purchased has increased substantially. Their analysis used monthly data from October

2007—the conventional starting month of the 2008 model year—through April 2009—the latest month for which the data were available.

Beginning in January 2008, fuel economy in each month was better than in the comparison month of October 2007, reaching the best level (a 7 percent improvement) in May 2008. The fuel economy in April 2009 showed an improvement of 5 percent.

In addition to lower emissions and better fuel economy, the researchers found that beginning in February 2008, the distance driven in each month was lower than in the comparison month of October 2007. The greatest reduction (7 percent) came in September 2008, while April 2009 showed a 3 percent decline.

—Bernie DeGroat, U-M News and Information Service

The full reports are available online. See: <http://deepblue.lib.umich.edu/bitstream/2027.42/63100/1/102303.pdf> and <http://deepblue.lib.umich.edu/bitstream/2027.42/63099/1/102302.pdf> 



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