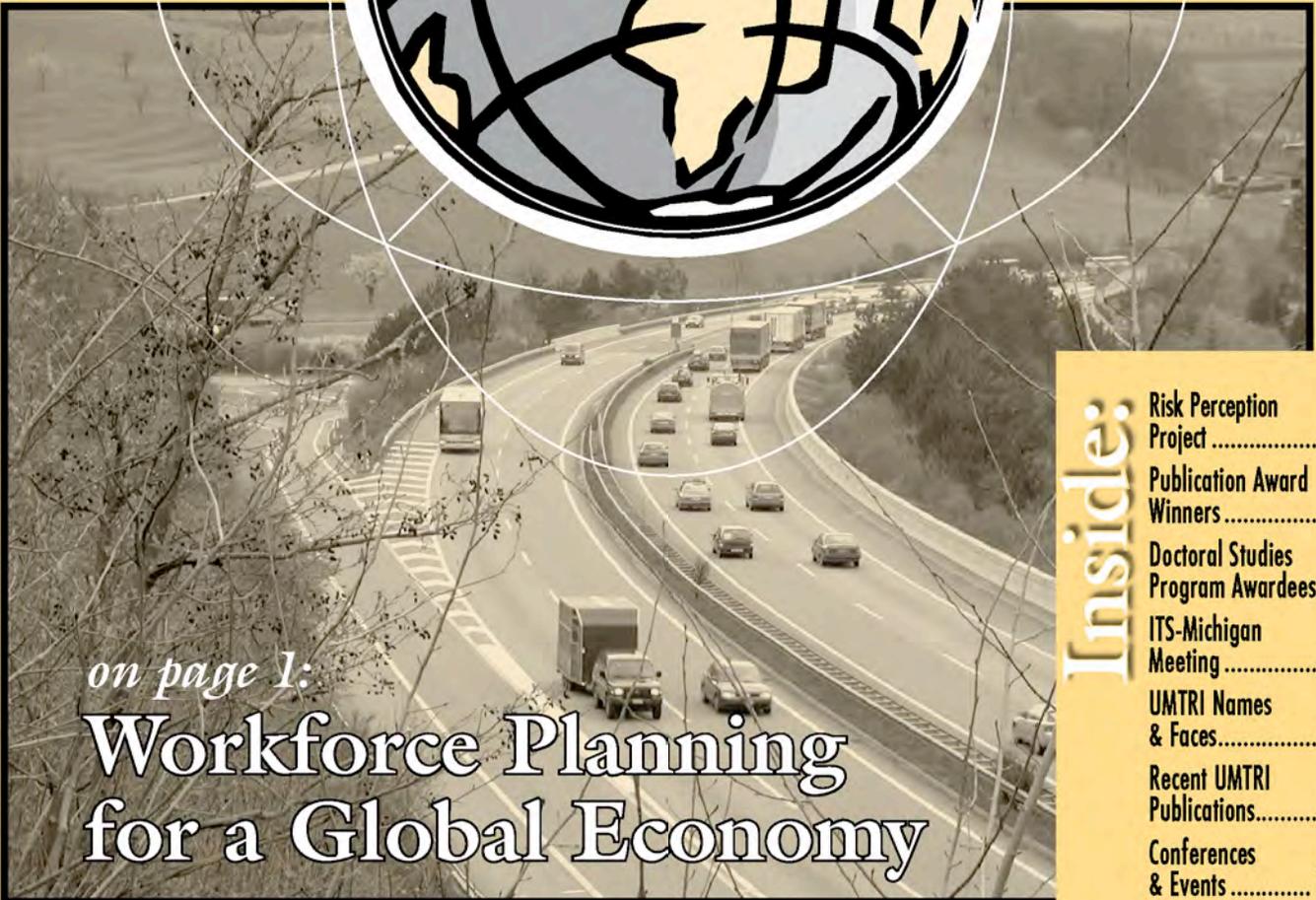
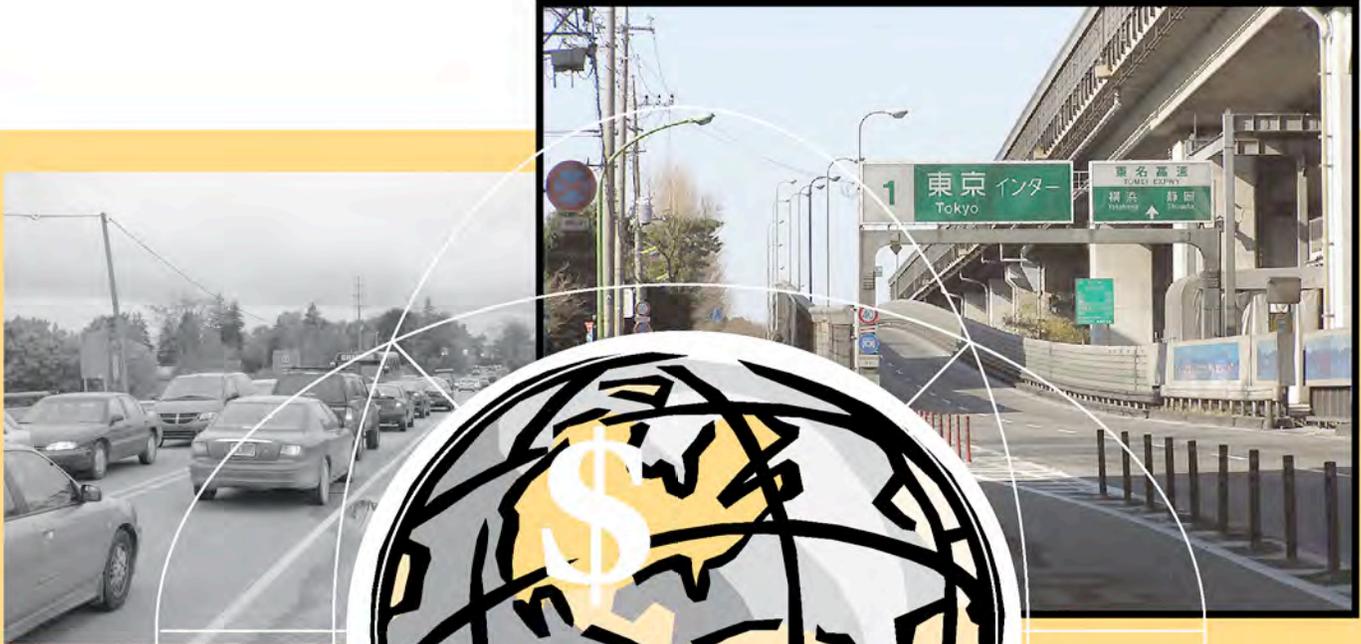


UMTRI

RESEARCH REVIEW

• UNIVERSITY OF MICHIGAN TRANSPORTATION RESEARCH INSTITUTE • JULY–SEPTEMBER 2006 • VOLUME 37, NUMBER 3 •



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**Workforce Planning
for a Global Economy**

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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

Workforce Planning for a Global Economy



PHOTO CREDIT: PHELOUELEDE / JOHANNIS FEURBACHER

How Automotive Suppliers Manage Global Human Resources Challenges



As Tier 1 automotive suppliers continue to globalize at a dramatic rate, they face unprecedented human resources (HR) challenges. Over the last 10 years, these suppliers have experienced tremendous global expansion, conducting about 40 percent of their activities outside their home regions. To meet their customers' growing demands, Tier 1 suppliers must effectively manage their capital and human resources in a never-ending quest to reduce costs.

UMTRI and Watson Wyatt World wide recently released a report that investigates how suppliers are handling these challenges. The report, *Workforce Planning for a Global Economy*, was coauthored by Bruce Belzowski, Richard Senter, Jr., Michael S. Flynn, and Maitreya Kathleen Sims of UMTRI and Jamie Hale, Kevin Kenney, Vicki Kozlowski, Steven Nyce, Sylvester Schieber, and Philip Ullom of Watson Wyatt Worldwide.

The researchers interviewed 20 executives at 14 major Tier 1 suppliers with an average of 42 percent of

sales outside their home region and a combined total of 85 significant market entries in the last five years. "HR is a major challenge, and solution, to globalizing an organization," says Bruce Belzowski, assistant research scientist in UMTRI's Automotive Analysis Division. "Recruiting, retaining, and deploying the right people to supervise and staff operations is difficult. Yet, HR can give companies a long-term competitive advantage. Offering HR a 'seat at the table' before globalization decisions are made can ensure fewer negative surprises and a smoother entry into new markets. Results show that successful global firms plan for, recruit, retain, and deploy the right number of skilled and motivated employees, and integrate their operations to attain the unity that global success requires."

Workforce Planning



Workforce planning requires projecting human-capital needs and estimating the workforce available by recruiting new employees or transferring current employees, whether managers, engineers, or production employees. However, some firms report that workforce planning is most developed for executives and senior managers, because

budget constraints limit studies and workforce planning exercises directed at production workers.

When looking for workers in the offshore country, the quality of employees' skills is more important than the sheer number of people available. It is important to consider educational levels, skill levels, and the costs of providing training. Lower employee-wage rates may be balanced by the need to provide more training in automotive skills, while higher training costs may be balanced by higher employee retention.

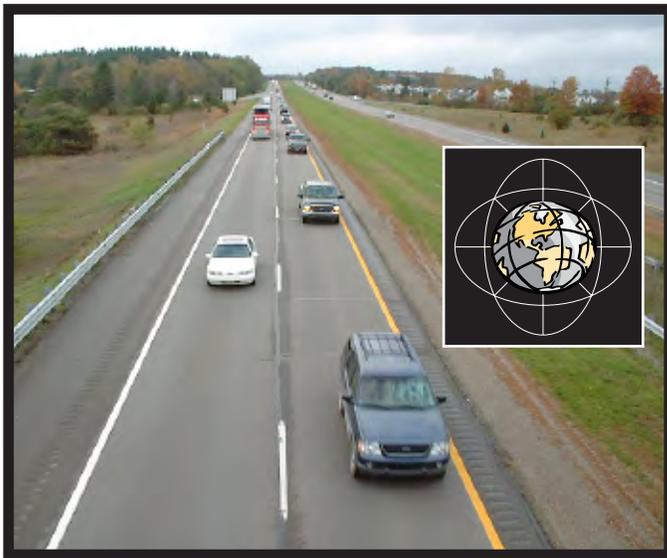
Executives report that they must also take the strategies of competitors into account in workforce planning as they will often be targeting the same, sometimes limited, labor pools.

The use of metrics to measure future needs varies across functions and geographies. Almost all respondents use head counts to project human-capital needs, although new employee categories might need to be added, if, for example, the employer is sending current personnel overseas.

The authors recommend the following practices for successful workforce planning:

- Coordinate headquarters and satellite locations to reduce

continued...



Recruitment

Difficulties can arise in staffing due to the differences between labor markets and employment relationships in satellite countries versus those in the home countries.

Finding local talent is often difficult for suppliers that are new to the area and whose reputations do not precede

them. Localized HR improves selection and retention, but it may be difficult for a centralized HR unit to support local HR goals. Likewise, it can be difficult finding willing candidates with suitable skills and competencies to place in overseas assignments. Despite this, placing people from the home office in foreign markets helps globalize a company's view. One executive says, "Sending senior managers overseas sensitizes them to the market. Customers force us to behave globally. It's an important supplier differentiator."

Expatriates need to be groomed for the next generation of leadership. An executive notes, "Because of the rapid globalization of the industry, we have technology and money, but not the human resources." Singles are the most likely expatriate candidates, as relocation packages are not as generous as in the past. Expatriates may be assigned to supervise the new location or train a local HR manager, or placed as part of a company's executive development strategy. But these young expatriates may not have the experience necessary to execute these tasks.

Expatriates must deal with cultural differences in compensation structures, hours of work, work habits, and local labor practices. For example, an American moving to Japan might encounter a higher cost of living and lower wages, whereas a Japanese

executive moving to the United States will face lower wages relative to the wages of subordinates.

As global automotive suppliers are projected to experience substantial growth outside their home countries, recruiting and retaining local people as managers may also be necessary. Local managers are often responsible for hiring local employees, helping to establish relationships with local Tier 2 suppliers, and being the voice of their companies. However, this wide range of experience adds to the difficulty of recruitment, and makes the manager a target for "poaching" by competitors and customers.

Best practices for successful recruitment include:

- Understand competitor offerings in compensation and benefits.
- Examine employee skills, not just their credentials.
- Understand local labor markets (e.g. how people are trained, how tasks combine into occupations, and how workers are assigned duties).
- Track talent sources, success, and retention rates, and think creatively about possible new sources.
- Use referrals from current employees.
- Use technology to create employee databases.
- Streamline recruiting by defining the processes, roles, and accountability for both HR staff and hiring managers

Retention

Bountiful supplies of willing, loyal, sufficiently skills, and very inexpensive labor is an illusion. Local employees who are recruited and trained will leave for higher paying jobs



duplication of effort and to meld the global perspective of corporate staff with the on-the-ground knowledge of local management.

- Estimate availability of local production workers; skilled workers, in particular, may be scarce and susceptible to offers from competitors.
- Invest in development for local managers at offshore sites, as few will be available through recruitment.
- Invest in technical skill development. In some offshore locations, even degreed engineers may require substantial training, especially for company-specific needs.
- Link expansion of satellite facilities to available expatriates. Make forecasts to compare the costs of providing expatriates with hiring and developing local talent.
- Apply rigorous analytics to critical jobs such as combining business forecasts with statistical analyses of workforce behavior plans (e.g., turnover, retirement, and new hires).

in manufacturing, and training budgets are exceeded as more people than expected leave. One executive said, “Employees in China change jobs every two to three years. Wage rates have risen quickly, so there is a need to stay competitive in the changing market.” Competitive compensation, job security, and career opportunities are critical for retaining local employees in satellite locations. As one executive notes, “You want to react to what people need, before they start chasing other jobs and upping their market price. You need to win their hearts, not their minds.”

The HR department of globalizing suppliers can help construct a global compensation framework, although its implementation will have to be somewhat local. The greater the internal mobility of personnel across national boundaries, the more consistent a supplier must be in its approach to compensation. Providing job stability and security in a satellite location increases retention, as does enhancing employees’ skills, especially if career progression is clear and attainable. But companies must be aware that overpromising and underdelivering on employment promises establishes a reputation in a country that can be hard to overcome.

Best practices for successful retention include:

- Focus on job security and stability; plan expansion realistically to avoid later needing to abandon or scale back operations.
- Clarify local managers’ career paths, including on-site promotions and possible assignments to the firm’s other facilities.
- Carefully plan expatriate assignments and use them to build the manager’s duties and accomplishments.
- Ensure competitive reward packages.

- Emphasize leadership development; strong leaders aid in employee retention and are especially important when a company enters a location where it is unknown or unproven.
- Understand the workforce by determining what drives them and will encourage them to stay.
- Use multiple, ongoing retention methods from rewards to communication for effective performance management and development.

Deployment



As a supplier globalizes, it must become qualitatively different; it must learn to operate in a variety of labor markets, each with somewhat different principles. Supporting new locations with appropriate HR is important. However, HR offices are underused in determining managers’ offshore assignments. They typically deal only with salary, benefits, and the logistics of moving a manager to another nation and back. A more effective approach is to engage the HR offices in tracking executives’ offshore assignments, and to direct them to ensure that upcoming cohorts of managers get appropriate expatriate experiences.

Interviewees emphasized smart deployment of managers to help solve the problem of managerial succession. Many of these suppliers depend on internal development and recruitment for most of their top management. Thus, evaluating the firm’s own managers attracts considerable attention, partly to replace departing managers. As one respondent reported, “We’ve looked at the retirement attrition rate. We need 50 percent more senior management in the next seven years.”

Computer systems that maintain internal profiles of the skills and competencies of a company’s workforce are increasingly available to help companies plan the deployment of large and varied workforces across many work sites, domestic and foreign.

Best practices for successful deployment include:

- Send managers overseas. Interviewees feel offshore assignments are important both for a manager’s career and for the company to develop an executive cadre.
- Target foreign assignments (e.g., understanding how cultural differences impact customers is particularly important for managers in manufacturing, engineering, sales, and purchasing).
- Involve global HR offices in offshore assignments. HR’s macro perspective helps ensure that talent is deployed effectively.
- Coordinate global and local HR departments to provide commonality and establish mutual awareness of the necessary variations in HR practices at all corporate sites.
- Apply a consistent HR philosophy so all branches adhere to a unified set of principles for reward programs and practices.
- Use technology to understand employee skill sets worldwide (including demographics, competencies, skills, certifications, and experience).

For more information about UMTRI’s Automotive Analysis Division and its research, see www.umtri.umich.edu/aad/. 

UMTRI to Lead NHTSA Project to Study Risk Perception

UMTRI was awarded a nearly \$1 million discretionary cooperative agreement from the National Highway Traffic Safety Administration to study the mechanisms underlying risk perception in relation to improving traffic safety. The project will be directed by David W. Eby, head of UMTRI's Social and Behavioral Analysis (SBA) Division, and comanaged by Paul A. Green of the Human Factors Division and Lisa Molnar of SBA.

The five-year research program will examine how people perceive risks and develop strategies to positively influence traffic safety, with a particular focus on increasing safety belt use. The overall goal of the project is to develop testable strategies, based on basic and applied research, for influencing risk perception in order to improve traffic safety. Specific objectives include:

- To better understand the mechanisms underlying risk perception by conducting a systematic review and synthesis of the literature
- To better understand the actual roles that risk perceptions play in people's decision

behavior by conducting a comprehensive literature review and multiple small-scale experiments and studies

- To identify and explore approaches to influencing risk perception, particularly those applicable to part-time belt users, by conducting multiple small-scale experiments and studies
- To explore how approaches can best be implemented to improve traffic safety, in particular to increase

belt use among part-time users, by conducting multiple small-scale experiments and studies

- To facilitate the translation of these research findings into practical program applications by developing appropriate products for traffic safety professionals and testing them to ensure that they are useful and easy to use

The project will be guided by an oversight committee composed of four University of Michigan (U-M) faculty collaborators: J. Frank Yates, professor of psychology and of marketing and business administration; Stephen Pollock, professor of industrial and operations engineering; Alfred Franzblau, associate research scientist in U-M's Center for Ergonomics, associate professor of emergency medicine, and professor of environmental health sciences; and Lee A. Green, associate professor in the U-M Department of Family Medicine.

The project will also receive input and direction from an external advisory committee. Members represent various government agencies and include Michael Prince, division director of the Michigan Department of State Police; Linda Scarpetta, manager of the Injury and Violence Prevention Section of the Michigan Department of Community Health; Heather Hockanson, chair of the Occupant Protection Action Team of the Governor's Traffic Safety Advisory Committee; Kim Lariviere of the Michigan Department of Transportation, Traffic and Safety Division; and Dwight Sinila of the Michigan Department of Education.

The first year of the project will involve preparatory activities necessary for the conduct of the actual studies and experiments. The second and third years will involve conducting studies and experiments to explore how to best influence risk perception, and reporting these results. The fourth year will explore how the mechanisms for influencing risk perception examined in years two and three should be implemented. The final year will involve the completion of any needed studies and the development and testing of products for improving traffic safety. Watch future editions of *UMTRI Research Review* for updates as the study progresses.



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NHTSA recently awarded UMTRI a nearly \$1 million discretionary cooperative agreement to study the mechanisms underlying risk perception in relation to improving traffic safety. The goal of the project is to move motor vehicle occupants from part-time to full-time use of safety belts.



UMTRI / SHEKHIAH ERRINGTON

UMTRI publication award winners for 2006 include (left to right): John Woodrooffe, Ray Bingham, Dan Blower, Paul E. Green, Larry Schneider, and Matt Reed. Not pictured: Jean Shope, Anne Matteson, and Sheila Ebert-Hamilton.

UMTRI Announces Publication Winners

The 2006 UMTRI Best Publication Award winners were recently announced. The winners are chosen each year by UMTRI's steering committee to recognize excellence in articles published in academic journals. The best publication winners are C. Raymond Bingham, research associate professor, Jean Shope, research professor and associate director of UMTRI, and Xianli Tang, research associate, of UMTRI's Social and Behavioral Analysis Division. Their winning article, "Drinking Behavior from High School to Young Adulthood: Differences by College Education," was published in volume 29, number 12 of *Alcoholism: Clinical and Experimental Research* (available online at <http://tinyurl.com/jlzp4>).

Two journal articles also received research excellence awards:

- "Determination of Events Leading to Sport Utility Vehicle Rollover" by Daniel Blower, associate research scientist, John Woodrooffe, division head, Paul E. Green, assistant research scientist, Anne Matteson, research area specialist, and Michael Shrank, research area specialist, all of UMTRI's Transportation Safety Analysis Division. The article appeared in issue 1908 of the *Transportation Research Record: Journal of the Transportation Research Board*.
- "Development of ATD Installation Procedures

Based on Rear-Seat Occupant Postures" by Matt Reed, associate research scientist, Sheila Ebert-Hamilton, research area specialist, and Larry Schneider, division head of the Biosciences Division. The article appeared in volume 49 of the *Stapp Car Crash Journal*.

The awards were presented on September 18 at an UMTRI celebration.

Winners Awarded in Doctoral Studies Program

UMTRI and the University of Michigan (U-M) Office of the Vice President for Research recently set up the Doctoral Studies Program (DSP) to support students who conduct their dissertation research at UMTRI. The program funds a research project that is a collaboration among U-M doctoral students in a transportation-related discipline, University faculty, and UMTRI researchers. UMTRI recently announced the first set of DSP awardees.

Joseph Grengs, assistant professor, and Xiaoguang Wang, student, in U-M's College of Architecture and Urban Planning will be working with Lidia Kostyniuk, research scientist in UMTRI's

continued...

Doctoral Studies Program awardees (left to right): UMTRI collaborator Omer Tsimhoni, student Changxu Wu, UMTRI collaborator Lidia Kostyniuk, professor Joseph Grengs, and student Xiaoguang Wang. Not pictured: professors Yili Liu and Jun Zhang.



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Doctoral Studies Program awardees (left to right): professor Huei Peng, student Sean Yang, and UMTRI collaborators Tim Gordon and Dave LeBlanc.



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Social and Behavioral Analysis Division. They will investigate the effects of urban form and road configuration on automobile driving. The study will combine UMTRI's naturalistic driving data with GIS data on urban form, density, and roadway features, and attempt to explain changes in vehicle miles of travel.

Huei Peng, professor, and Sean Yang, student, of the U-M Department of Mechanical Engineering will collaborate with Tim Gordon, research professor and division head, and Dave LeBlanc, assistant research scientist, of UMTRI's Engineering Research Division. They will develop a longitudinal driver decision-control model for the development of humanized collision-warning and collision-avoidance algorithms. This project will also use UMTRI's naturalistic data to create a human decision-control model and apply it to the control of vehicle longitudinal motion. The validated model will be used to design a collision-avoidance

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UMTRI hosted the summer meeting of ITS-Michigan in late August. In addition to hearing a series of speakers, attendees enjoyed tours of Michigan Stadium and the UMTRI facilities.

system that will be evaluated in the UMTRI driving simulator.

Yili Liu, associate professor in U-M's Department of Industrial and Operations Engineering, Jun Zhang, associate professor in U-M's Department of Psychology, and Changxu Wu, student in U-M's Department of Industrial and Operations Engineering, will work with Omer Tsimhoni, assistant research scientist in UMTRI's Human Factors Division. They will develop a driver model to manage information from in-vehicle systems and to reduce driver workload.

For more information on UMTRI's Doctoral Studies Program, see www.umtri.umich.edu/education.php.

UMTRI Hosts ITS Michigan Summer Meeting

In late August, UMTRI hosted the summer meeting of ITS-Michigan. The meeting showcased ITS developments in southeast Michigan. Michigan is a national leader in the deployment of intelligent transportation systems, and is the focal point for vehicle infrastructure integration (VII), where the auto industry and highway managers are coming together to provide high performance communication between vehicles and from vehicles to the infrastructure. ITS-Michigan provides a unique forum for the makers, users, and beneficiaries of ITS technologies.

Peter Sweatman, director of UMTRI and vice president of ITS-Michigan, welcomed attendees and introduced the speakers:

- Jim Sayer, assistant research scientist in UMTRI's Human Factors Division, spoke on UMTRI's involvement in the design and evaluation of vehicle-based systems for driver assistance.
- Les Sipowski, senior project manager for the City of Ann Arbor, spoke on ITS for enhancing traffic signal timing in Ann Arbor.
- Barbara MacDonald, information technology manager for the Ann Arbor Transit



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Authority (AATA), discussed use of ITS technology in AATA operations.

- Stewart Wang, associate chair of the Department of Surgery at the U-M Medical School, spoke on technology to revolutionize emergency response to highway crashes.
- David Miller, executive director, and Jason Bidwell, bus operations supervisor, of U-M Parking and Transportation Services and Christopher Ruf, professor, and Prashanth Pandian, student project lead, of U-M's College of Engineering. They discussed U-M's GPS bus tracking program, the

Magic Bus. (The next issue of *UMTRI Research Review* will highlight this project.)

The speakers also participated in a panel discussion, addressing comments and questions from audience members.

Attendees then enjoyed a tour of Michigan Stadium and the UMTRI facilities. At UMTRI, Larry Schneider, head of UMTRI's Biosciences Division, led a tour of the impact test sled facility; Chris Winkler, research scientist in the Engineering Research Division, presented ITS facilities at UMTRI; and Jason Schweitzer, researcher, led a tour of UMTRI's driving simulator. **RR**

Michael Sivak Wins Lauer Safety Award

Michael Sivak, head of UMTRI's Human Factors Division, has received the 2006 A.R. Lauer Safety Award. The award recognizes a person for outstanding contributions to human factors aspects in the broad area of safety. This includes human factors work that has led to reduced accidents and injuries in such areas as industry, aviation, surface transportation, and consumer products. The award will be presented at the Human Factors and Ergonomic Society's annual meeting on October 17 in San Francisco.

Sivak has worked at the University since 1976 and has led UMTRI's Human Factors Division since 1993. His research on visual perception and human factors related to driving is known for its high scientific quality, practical importance, and global influence on transportation safety.

Sivak's research has contributed to important breakthroughs, including the center high-mounted stop lamp, which is becoming a worldwide standard and has significantly reduced rear-end accidents. He also led an international effort to harmonize the design of headlamps, attempting to combine the best aspects of headlamp designs in Europe and the United States. He is a coinventor of a patent for a fast-onset brake-lamp system.

In addition, Sivak has made important contributions to our understanding of driving-related

perceptual problems of the elderly and remediation of perceptual deficits in drivers suffering from brain damage, cross-cultural differences in risk-taking, the relative risks of flying and driving, and the role of aggression in traffic accidents.

In 1987, he created a very productive mechanism for the support of basic and applied research—the Industry Affiliation Program for Human Factors in Transportation Safety—which is currently supported by forty domestic and foreign companies. (See www.umtri.umich.edu/url.php?4 for details.) In addition to producing more than two hundred technical reports and refereed publications, the program has brought several international visiting scholars to Michigan, enhancing the quality of work done at UMTRI and boosting the University's international reputation. This year, he founded Strategic Worldwide Transportation 2020, a research consortium to reduce traffic fatalities worldwide (for details on this program, see www.umtri.umich.edu/url.php?8).

Frequently invited to give keynote addresses at international conferences, Sivak also serves as a reviewer for *Applied Ergonomics*, *Archives of Physical Medicine and Rehabilitation*, *Ergonomics*, *Human Factors*, *Journal of Gerontology*, and *Transportation Research*. He has also served on the editorial boards of *Accident Analysis and Prevention* and *Transportation Human Factors*. In 2001, he won the University of Michigan Distinguished Research Scientist Award.

continued...

Jean Shope Invited to Australia

Jean T. Shope, a research professor and the associate director of UMTRI, has been invited to the Centre for Accident Research and Road Safety-Queensland (CARRS-Q) at Australia's Queensland University of Technology in Brisbane. She will serve as an adjunct professor from mid-September through the end of 2006, assisting graduate students in their research and giving several talks and seminars. Her endeavors will include the following:

- Presenting the keynote speech at the annual Australasian Road Safety Research, Education, and Policing Conference in Surfers Paradise on October 25–27
- Presenting at the International Traffic Medicine Associations Twentieth World Congress in Melbourne on October 16–18

- Attending the Australian Road Research Bureau (ARRB) Conference in Canberra on October 29–November 2
 - Participating and providing leadership in the Injury and Prevention Consortium, Australia (IPCA) project
- Providing expertise and leadership in the development of graduated driver licensing work being undertaken at CARRS-Q
- Collaborating on projects with Queensland Transport researchers

CARRS-Q was established in 1996 as a joint venture initiative of the Motor Accident Insurance Commission and Queensland University of Technology. It is one of the few nationally recognized, university-based research centers of its kind in Australia and is a vital player in the international pursuit of road safety. **RR**

Transportation Tidbits

- On August 10, 1897, C. Harrington Moore and Frederick R. Simms founded the first automobile club, the Automobile Club of Great Britain and Ireland (later renamed the Royal Automobile Club). It served as a social club for people interested in motoring and motor racing. Auto clubs later evolved into service clubs that could provide emergency road service, travel planning, and insurance.
- Attorney Newell S. Wright registered the Cadillac crest as a trademark on August 18, 1905.
- General Motors was chartered by millionaire William C. Durant on September 16, 1908. After making the Buick Motor Company America's top-selling car company, Durant filed for incorporation in New Jersey to create the General Motors Company. The event went

unnoticed by the media, and in the next sixteen months, Durant acquired various additional companies. Eventually, he succeeded in making General Motors the nation's leading automobile producer. **✪**

- On September 12, 1912, plans for the transcontinental Coast-to-Coast Rock Highway—3,000 miles of gravel road stretching from New York to San Francisco—were unveiled. The highway was the brainchild of Carl G. Fisher and James A. Allison who wanted it built in time for the 1915 Panama-Pacific Exposition in San Francisco. The highway was eventually built, using federal funds, as a paved road called the Lincoln Highway. It was the predecessor to Route 66. **RR**

SOURCES:

All from *This Day in Automotive History*, www.historychannel.com/tdih, except **✪**, which is from *This Date In Michigan History*, www.michiganhistorymag.com/date/

Please contact the UMTRI library at (734) 764-2171 or umtridocs@umich.edu to inquire about the availability of the publications listed here.

Book Chapter

Eby, D.W.; Kantowitz, B.H. 2006. "Human Factors and Ergonomics in Motor Vehicle Transportation." 32 p. In: Salvendy, Gavriel, ed. *Handbook of Human Factors and Ergonomics*. Hoboken, John Wiley and Sons, 2006, pp. 1538–1569.

Conference Papers

Bingham, C.R.; Shope, J.T.; Tang, X. 2005. "Drinking Behavior from High School to Young Adulthood: Differences by College Education." 11 p. *Alcoholism: Clinical and Experimental Research*, vol. 29, no. 12 (Dec. 2005), pp. 2170–2180.

The research documented in this paper was sponsored by the National Institute on Alcohol Abuse and Alcoholism.

Gadgil, S.; Green, P.A. 2005. "How Much Clearance Drivers Want While Parking: Data to Guide the Design of Parking Assistance Systems." 5 p. In: *Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting*. Santa Monica, Human Factors and Ergonomics Society, 2005, pp. 1935–1939.

The research documented in this paper was sponsored by the Nissan Motor Company.

Green, P.A. 2004. *Driver Distraction, Telematics Design, and Workload Managers: Safety Issues and Solutions*. International Congress on Transportation Electronics: Convergence 2004, Detroit. Published by Society of Automotive Engineers, Warrendale, PA. 16 p. Report No. 2004-21-0022.

The research documented in this paper was sponsored by the Nissan Motor Company.

Kantowitz, B.H. 2005. "Best European Highway Safety Practices: The AASHTO-FHWA Human Factors Scan Tour." 5 p. In: *Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting*. Santa Monica, Human Factors and Ergonomics Society, 2005, pp. 1970–1974.

Reed, M.P.; Chaffin, D.B.; Faraway, J. 2005. "Critical Features in Human Motion Simulation for Ergonomic Analysis." 4 p. In: *Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting*. Santa Monica, Human Factors and Ergonomics Society, 2005, pp. 1196–1199.

Journal Articles

Sivak, M.; Schoettle, B.; Flannagan, M.J.; Minoda, T. 2006. "Effectiveness of Clear-Lens Turn Signals in Direct Sunlight." 11 p. *Leukos*, vol. 2, no. 3 (Jan. 2006), pp. 199–209. Sponsor: Michigan University, Ann Arbor.

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

Sivak, M.; Schoettle, B.; Minoda, T.; Flannagan, M.J. 2006. "Short-Wavelength Content of LED Headlamps and Discomfort Glare." 10 p. *Leukos*, vol. 2, no. 3 (Jan. 2006), pp. 145–154.

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

Technical Reports

Luoma, J.; Sivak, M. 2006. *Characteristics and Availability of Fatal Road-Crash Databases Worldwide*. 22 pp. Report No. UMTRI-2006-14.

The research documented in this report was sponsored by UMTRI's Strategic Worldwide Transportation 2020 Consortium and Valtion Teknillinen Tutkimuskeskus, Espoo (Finland). 

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Conference (*invitation only*)
September 27–29, Toronto, Canada
www.sae.org/events/naip

Public Participation GIS Conference
September 27–28, Vancouver, Canada
<http://urisa.org/conferences/ppgis2006>

Transport Tracking 2006
October 5–6, Gothenburg, Sweden
www.telematicsupdate.com/cvt

Symposium on Networks for Mobility
October 5–6, Stuttgart, Germany
www.uni-stuttgart.de/fovus/symposium

IEEE's Systems, Man, and Cybernetics
October 8–11, Taipei, Taiwan
<http://ins.cn.nctu.edu.tw/smc2006>

Sixth European Congress on ITS
October 8–12, Hannover, Germany
www.itsineurope.com

World Congress on ITS
October 8–12, London, England
www.itsworldcongress.com

Put the Brakes on Fatalities Day
October 10, Nationwide
www.brakesonfatalities.org

Biomedical Engineering Society
Annual Meeting
October 11–14, Chicago, Illinois
www.bme.northwestern.edu/bmes2006

Association for the Advancement of
Automotive Medicine Scientific Conference
October 15–18, Chicago, Illinois
www.carcrash.org

Human Factors and Ergonomics Society
Annual Meeting
October 16–20, San Francisco, California
<http://hfes.org>

World Congress of the International Traffic
Medicine Association
October 16–18, Melbourne, Australia
www.trafficmedicine.org

National Parking Association Annual Meeting
October 15–18, Washington, D.C.
www.npapark.org/03_expo_01.html

Convergence 2006
October 16–18, Detroit, Michigan
www.sae.org/events/convergence

National Conference on Rural Public and In-
tercity Bus Transportation
October 22–25, Stevenson, Washington
www.trb.org/calendar/event.asp?id=238

FISITA World Automotive Congress
October 22–27, Yokohama, Japan
www.fisita2006.com

Visualization in Transportation
October 23–26, Denver, Colorado
www.trb.org/conferences/visualization

Long-Life Concrete Pavements
October 25–27, Chicago, Illinois
www.fhwa.dot.gov/pavement/concrete

Automotive Testing Expo
October 25–27, Detroit, Michigan
www.testing-expousa.com

Twenty-Second ARRB Conference
October 29 – November 2, Canberra, Australia
<http://arrb.com.au> 



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