

UMTRI

RESEARCH REVIEW

• UNIVERSITY OF MICHIGAN TRANSPORTATION RESEARCH INSTITUTE • JANUARY–MARCH 2003 • VOLUME 34, NUMBER 1 •



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John Woodrooffe

New Director of Truck and Bus Safety Analysis Division

John Woodrooffe joined UMTRI as the director of the Truck and Bus Safety Analysis Division (formerly the Survey and Analysis Division) in February. In his new role, John will build on the work of his predecessor Ken Campbell, focusing on gathering crash data and cultivating research projects dependent on data use.

Woodrooffe says, "The data we have collected at UMTRI is unique and of great value. Our focus on the collection of quality data has paid off and we are now well positioned to generate challenging projects based on data use. This will be a very exciting time for the division."

Prior to joining UMTRI, John spent seven years as principal of Woodrooffe and Associates Incorporated, a consulting company involved with the safety of heavy trucks, near Ottawa, Ontario, Canada. Before that, he was head of heavy-truck-safety research of the heavy-vehicle-dynamics lab at the National Research Council of Canada. He was also deputy head of the NRC's Center for Surface Transportation. A graduate of the University of Ottawa, John says heavy-truck safety and productivity have been a lifelong passion. **RR**

Michigan Crash Facts on the Web

UMTRI's Truck and Bus Safety Analysis Division (TBSAD) develops the Michigan Traffic Crash Facts project for the Michigan State Police's Office of Highway Safety Planning. The yearly compilation and analysis of statewide crash data is a valuable tool that is distributed to government agencies, researchers, and the general public. (The project is spurred by a Michigan law that requires that state police collect and report information regarding traffic crashes.)

The Michigan Traffic Crash Facts (MTCF) data provides complete information for traffic crashes, fatalities, and injuries on Michigan roadways, most recently for calendar year 2001. Statewide data, as well as data for individual counties and their communities, is available at www.umtri.umich.edu/tdc/mtcf/crash_facts.htm. The site also provides a first look at 2002 data.

Researchers in the TBSAD Transportation Data Center (TDC) obtain data for the book from Michigan traffic-crash report forms submitted by local police departments, sheriff jurisdictions,

and the Department of State Police. Other related information is obtained from the Michigan Departments of Transportation, State, and Community Health.

TDC staff members bring their knowledge of data and highway-safety issues to the project, working with the Office of Highway Safety Planning and the Criminal Justice Information Center to interpret the data and define the content of the book. From the data, they build the ADAAS files (Automated Data Access and Analysis System, a program developed by the TDC to provide access to the crash data), define the tables that create the desired content and generate the material for the book.

Charles P. Compton oversees the project, checks for problems with the data, and resolves issues with the Criminal Justice Information Center. Mary Helen Eschman produces the documents and the website. Mary Bennett generates the tables and assists with production efforts.

Points of interest from Michigan Traffic Crash Facts for the last decade include:

- A decline in the mileage death rate from 1.6 in 1993 to 1.3 in 2002
- A significant rise in vehicle-deer crashes from 47,879 in 1993 to 63,136 in 2002
- Decreasing numbers of alcohol related crashes

UMTRI has been producing the MTCF books since 1992, when associate research scientist Fredrick Streff won the original contract. Many changes in processing the Michigan traffic-crash data occurred that year. The UD-10 reporting form was greatly revised and the MTCF book that had previously been produced by the Michigan State Police was turned over to UMTRI for development and production. Sweeping changes were made to both the overall design and the selection of data elements to be presented in the book.

An early goal for the project was to stabilize the creation process. New levels of error checking were introduced, and the computer runs that produce the data elements were enhanced and

consolidated. Reader satisfaction surveys accompanied the books. Based on input from the surveys and requests from the Office of Highway Safety Planning, changes and additions were made to the fact books.

The 1994–1998 MTCF sheets were one-to-two page summaries highlighting key subjects—an overview, general facts, trends, pedestrians, bicyclists, motorcyclists, alcohol, deer, age, occupant protection, and since 1999, heavy trucks and buses. These dynamic presentations were intended for distribution to the media.



MICHIGAN OFFICE OF HIGHWAY SAFETY PLANNING

Based on input from the Office of Highway Safety Planning, the book was expanded to two volumes in 1997: Michigan Traffic Crash Facts and Michigan Traffic Crash Facts for County/Communities. The 1998 project expanded to include tables

designed for presentation exclusively on the web. In 2000, UMTRI took over responsibility for the website that houses the MTCF archives. A master CD with bookmarks was created, which includes the fact books, fact sheets, and web content.

Future Michigan Traffic Crash Facts reports will address emerging issues in traffic safety such as an aging driving population and its implications, and the effects of the graduated driver licensing program for teen drivers. **RR**



MICHIGAN OFFICE OF HIGHWAY SAFETY PLANNING

Ride Safe Brochure Promotes Vehicle Safety for People Who Use Wheelchairs

UMTRI and UM Health System Develop Brochure of Best-Practices for Safer Travel of Wheelchair Users

In an effort to improve motor vehicle safety for wheelchair users, staff at UMTRI and the UM Health System have developed a brochure of best-practice recommendations for people who use wheelchairs as seats in motor vehicles. The guidelines—published in a *Ride Safe* brochure and online—provide step-by-step instructions on equipment selection, wheelchair securement, and proper use of seat belt systems. *Ride Safe* is targeted toward people who use wheelchairs, transportation providers, and safety advocates, and includes a resource list of organizations, publications, and manufacturers of crash-tested equipment.

The brochure was the brainchild of Lori Brinkey, a physical therapist in the UM Health System; Miriam Manary, a senior research associate in UMTRI's Biosciences Division; and Larry Schneider, a senior research scientist and head

of the Biosciences Division. They each consult with many people who use wheelchairs and with professionals who seek advice on safe transportation choices for wheelchair users.

When traveling in a motor vehicle, it is generally safest for people who use wheelchairs to transfer to a vehicle seat and use vehicle restraint (or child restraint) systems that comply with federal safety standards. However, if transferring is

not possible, such as when the wheelchair user needs the support of the wheelchair seating system, it is very important to secure the wheelchair to the vehicle and for the rider to use a crash-tested belt restraint. Yet, Manary says, "An easy-to-read, best-practice guide for transporting people in wheelchairs did not exist." She continues that Brinkey suggested "combining the UM Health System's experience in prescribing wheelchairs with UMTRI's knowledge of wheelchair restraint safety systems to develop an illustrated brochure that makes basic information on how to safely transport wheelchair users widely available."

The *Ride Safe* brochure draws on years of wheelchair transportation research and testing both at UMTRI *continued...*

COLLABORATIONS



UMTRI / STACY THOMPSON

COLLABORATIONS

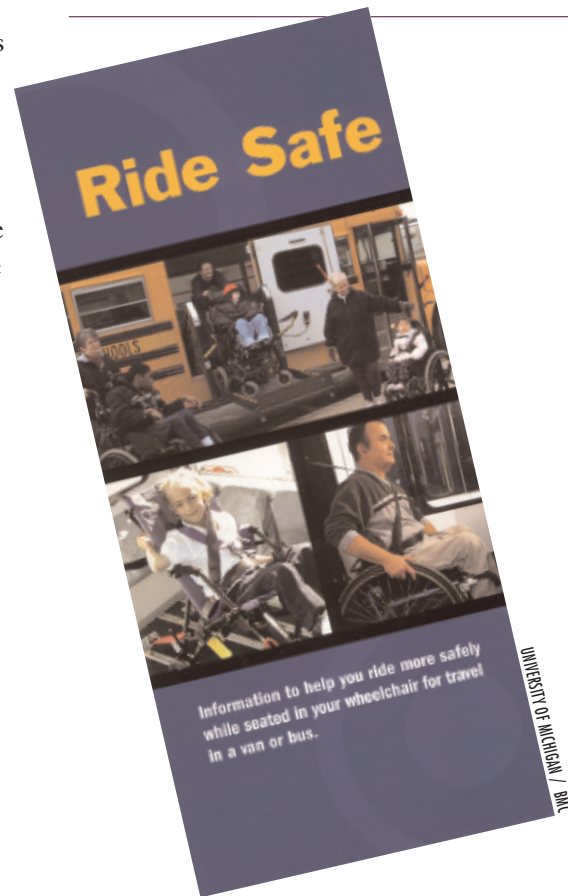
and the University of Pittsburgh. Development of the brochure and the associated website—www.travelsafer.org—was funded through a grant from the FRIENDS of the University of Michigan Hospitals, and by the UM Health System, UMTRI, and the Rehabilitation Engineering Research Center on Wheelchair Transportation Safety. The latter is a collaborative research and development program of the University of Pittsburgh and the UMTRI Biosciences Division that is funded by the National Institute for Disabilities Research and Rehabilitation. Staff members also donated considerable additional time to create the brochure. UMTRI and UM hospital staff drafted the text and provided the photographs, graphic artists in the UM Biomedical Communications Department created the artwork, and researchers from the University of Pittsburgh provided editorial input.

Manary explains that the initial plan was to print 5,000 brochures for distribution at UM wheelchair seating clinics each year and for mailing to each state's transportation director. She says, "The response was

overwhelming, and a second printing of 12,000 brochures is now underway."

To order Ride Safe brochures, email umtridocs@umich.edu, phone (734) 764-2171, or fax (734) 936-1081. **RR**

*For details, visit www.travelsafer.org
or order brochures through
umtridocs@umich.edu or (734) 764-2171*



Study Examines Truck Driver Injury

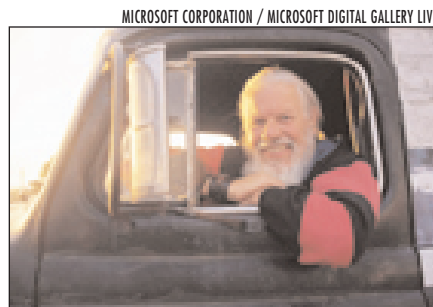
UM Environmental Health Sciences Professor Works with UMTRI's Truck and Bus Safety Division

Of all professions, truck drivers had the greatest number of injuries and illnesses causing time away from work (from all sources including truck accidents) during 1992–2001.¹ Dr. Arthur Oleinick, associate professor in the UM Environmental Health Sciences Department (part of the UM School of Public Health), is examining these injury patterns with Dan Blower, an assistant research scientist in UMTRI's Truck and Bus Safety Analysis Division. Dr. Oleinick serves as the principal investigator of the study, which is funded by a grant from the National Institute for Occupational Safety and Health (NIOSH).

Blower says, "The scientific community has relatively little information on the factors contributing to the high rate of truck driver injury. We are interested in determining how factors such as the type of trucking operations, fleet size of the motor carrier, and types of trucks operated

contribute to differences in injury rates for truck drivers. The second phase of the study will examine the factors related to differences in medical outcomes, given a compensable injury. This study brings together experts from truck transportation, industrial relations, occupational medicine/epidemiology, and biostatistics to merge and analyze data sets that have been used previously only for research in the separate fields."

The study will identify factors associated with the frequency of injuries and disability outcome, as measured by days away from work, of work-related injuries in the trucking industry. It links workers' compensation data to truck firm characteristics from



national administrative files, and to UMTRI's crash data files, and models the disability outcomes of various types of injuries.

The study originated a few years ago with then-UMTRI director, Patricia Waller, who brought together Oleinick and Blower as the primary investigators with herself, Ken Campbell, and Mike Belzer

as consultants to pursue the NIOSH grant. The current study has been working with data for the past year. Dr. Oleinick's training in both medicine and law with special expertise in occupational medicine and health law brings public health expertise to the study. The multidisciplinary project also involves Kenneth Guire, a consultant in statistical modeling, in UM's Biostatistics Department and the Center for Statistical Consultation and Research. In addition, Clarissa Liebler, Charlotte Peterson, Abhinav Vohra, Chaitanya Gandra, Sarrah Anyangwe, Mukilan Muthuswami, Brian Hartl, Janet Shen, and Nghia Nguyen have worked on the study as part of their graduate education.

The study will:

- Determine whether motor carrier and/or truck characteristics are associated with the incidence and/or outcome of a variety of workplace injuries
- Investigate whether injuries produced by vehicle crashes are associated with the same variables
- Assess the association of demographic factors, motor carrier characteristics, and medical care with duration of work

continued...

COLLABORATIONS

¹ The occupation with the next highest frequency, laborers in non-construction, had about two-thirds the number of such injuries.

disability measured by days away from work

- Evaluate the predictive value of the models obtained

To achieve these goals, researchers are modeling the occurrence of compensable workplace injuries by a number of factors including motor carrier operating characteristics, fleet size, and truck configuration.

Researchers are working with data from Ohio, because that state is one of the few sources of comprehensive centralized workers' compensation data. The study population consists of approximately 5,000 injured truck drivers over the 1997–1999 period with follow-up for medical care use through 2001. Motor carrier characteristics, fleet size, and fleet truck configuration are obtained from federal and state regulatory agencies, while crash data is obtained from the federal truck-crash reporting system supplemented by police crash reports.

Dr. Oleinick says, "The technical problems of linking large administrative databases remain formidable, even in this day of very fast computing, because of the size and complexity of the databases. For

example, information on race is not routinely collected by workers' compensation agencies because it is irrelevant to the determination of coverage, but race has been shown to influence the accessibility and provision of medical care in some settings and is therefore important for studies of outcomes. Thus, we have spent considerable time in geocoding claim information as a basis for linking to grouped data on race by block from the U.S. Census. However, because our data come from the interval 1997–1999, we have had also to analyze whether there was a change in racial composition in the census



NINIR / CECIL LOCKHARD

collar workers in the same firms to serve as controls in the outcome analysis since their schedules are far more regular, and this may facilitate greater compliance with treatment schedules."

units of interest between 1990 and 2000."

Another challenge involves identifying truck drivers among the compensation claimants from trucking firms. Dr. Oleinick continues, "Follow-back for the purposes of clarifying occupational information from the firms is not possible, so we have had to develop alternative strategies for

identifying members of this group. After training by the U.S. Bureau of Labor Statistics in coding occupation and injury characteristics from reports of injury, one of our graduate students, Clarissa Liebler, supervised the coding of these First Reports of Injury. In addition to coding from the occupation description, we have been able to identify additional truck drivers by reviewing the text of the injury report. Additional truck drivers will be identified by cross-linking to the Ohio commercial driver's license file. One positive spin-off from this approach has been the identification of a large group of blue-

Two abstracts

of work from this project will be presented orally at the National Occupational Injury Research Symposium sponsored by NIOSH this fall. **RR**

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8th International Conference on Low-Volume Roads
 June 22–25, Reno, Nevada
www4.trb.org/trb/calendar.nsf/web/lvr8

Conference of Minority Transportation Officials
 July 8–12, Washington, D.C.
www.comto.org/annual.htm

Driving Assessment 2003
 July 21–24, Park City, Utah
ppc.uiowa.edu/driving-assessment

Mid-Continent Transportation Research Symposium
 August 21–22, Ames, Iowa
www.ctre.iastate.edu/pubs/midcon2003

2003 GHSA Annual Meeting
 August 24–27, New Orleans, Louisiana
www.statehighwaysafety.org

ITE Annual Meeting
 August 24–27, Seattle, Washington
www.ite.org/AnnualMeeting

International Conference on Ecology and Transportation
 August 24–29, Lake Placid, New York
www.itre.ncsu.edu/cte/icoet

2nd ITS Brasil Annual Meeting & Exhibit
 August 25–26, Sao Paulo, Brazil
www.itsa.org

25th International Baltic Road Conference
 August 25–27, Vilnius, Lithuania
www.balticroads.org/conference/en

12th International Symposium on Advanced Display Technologies
 August 25–27, Korolev, Moscow, Russia
www.sid.org/conf/flowers03/flowers03.html

2nd Chilean ITS Congress
 August 27–29, Santiago, Chile
www.itschile.cl/its/info_cong_i.htm

National Partnership for Highway Quality Conference
 September 4, Minneapolis, Minnesota
www.nphq.org/meetings_events.cfm

Vision in Vehicles 10th International Conference
 September 7–10, Granada, Spain
ibs.derby.ac.uk/viv10/viv10.html

19th International Traffic Medicine Conference
 September 14–17, Budapest, Hungary
www.itma2003.hu

Transportation Association of Canada Annual Conference
 September 21–24, St. John's, Canada
www.tac-atc.ca/english

47th AAAM Scientific Conference
 September 22–24, Lisbon, Portugal
www.carcash.org

Progress in Automobile Lighting
 September 23–24, Darmstadt, Germany
www.lt.e-technik.tu-darmstadt.de/maine.html

The Biomechanics of Impact
 September 24–26, Lisbon, Portugal
www.ircobi.org/Conference%20Info/Program_biomech.html

Driving Simulator Conference
 October 8–10, Dearborn, Michigan
www.dsc-na.org


HFES 47th Annual Meeting
 October 13–17, Denver, Colorado
hfes.org/meetings/2003menu.html


PIARC 22nd World Road Congress
 October 19–25, Durban, South Africa
www.wrc2003.com


47th Stapp Car Crash Conference
 October 27–29, San Diego, California
www.stapp.org


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Transportation Tidbits


On March 6, 1896, Charles B. King tested his automobile on the streets of Detroit, becoming the first man to drive a car in the Motor City. 


On January 11, 1913, the world's first hardtop production car was introduced: Hudson Motor Car Company's Model 54 sedan. Earlier automobiles had open cabs, or at most convertible roofs. 

On July 11, 1916, President Woodrow Wilson signed the Federal Aid Road Act, the first act by Congress to help states build roads. At the time, roads were generally poor and susceptible to weather, and the introduction of the Model T had spurred new interest in higher road standards. By the early 1900s, motorist clubs like the American Automobile Association had backed the call for federally funded, long-distance highways. 

On February 25, 1919, Oregon imposed a 1 percent tax on gasoline. It was the first state to do so. Funds collected from the tax were used for road construction and maintenance. 

On April 6, 1934, Ford Motor Company introduced white sidewall tires as an option on its new vehicles at a cost of \$11.25 per set. 

The 1948 Tucker was the first vehicle with an adaptive (“bendable”) front headlight. It was called the “Cyclops eye” as it was located in the middle of the grill between the two regular headlights. 

The catalytic converter was adopted in most 1975 American cars and many imports as a means to fight fuel consumption. By the mid-1970s, computers also played an important role in car construction. They were used to track car materials and to schedule the construction of each car, including printing a sticker to specify the trim, optional accessories, and where the finished car was to be shipped. 

RR

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