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Announcements**Laurie McGinnis named CTS director**

Laurie McGinnis has been appointed CTS director following a comprehensive national search process. McGinnis, who served as CTS acting director since the departure of Robert Johns in September, has been with the Center for 18 years. During that time, she has worked closely with CTS stakeholders, faculty and staff, funding organizations, and the Center's advisory committees. "As director of CTS, Ms. McGinnis will provide leadership, direction, and vision in achieving the mission of the Center," University officials said.

[More about Laurie McGinnis](#) ▶

Call for Papers: World Symposium on Transport and Land Use Research

The inaugural meeting of the World Symposium on Transport and Land Use Research (WSTLUR) will be held in Whistler, British Columbia, July 28–30, 2011. The conference will bring together academics and practitioners at the intersection of economics, planning, and engineering in the fields of transport and land use. The [Call for Papers](#), seeking original and interdisciplinary research addressing the interaction of transport and land use, is open for submission until December 31, 2010.

Contributing partners for the symposium are CTS, the [Georgia Transportation Institute](#), the [University of California Transportation Center](#), the [UC Davis Sustainable Transportation Center](#), the Center for Transportation and Livable Systems, and the [University of Vermont Transportation Research Center](#).

[More about the World Symposium on Transport and Land Use Research](#) ▶

Policy & Planning**Research links transitway development to higher commercial property values**

The Hiawatha light-rail line connecting downtown Minneapolis to the southern suburbs has increased the values of nearby commercial and industrial real estate, according to a new study by the [University of Minnesota's Transitway Impacts Research Program](#). The findings by assistant



photo by Matt Miranda

professor **Xinyu (Jason) Cao** of the Hubert H. Humphrey Institute of Public Affairs and graduate student **Kate Ko** of the Department of Applied Economics complement previously published research by Center for Urban and Regional Affairs director Edward Goetz that identified positive impacts on residential property values along the Hiawatha LRT corridor.

Cao and Ko examined data on property values along the line between 2000 and 2008 (the Hiawatha Line entered service in 2004). The researchers used a linear hedonic pricing model to isolate the value-added impact of proximity to light-rail stations while controlling for a variety of other factors that are known to influence property values.

The results of this analysis indicate that a positive effect on property values extends up to 1,400 meters from the LRT stations. This distance is far greater than that reported by previous studies of property value changes near light-rail lines.

The researchers note that their results should be interpreted cautiously given the limitations of their methodology. The study is unable to predict the net economic effect of the light-rail line across the entire region. In addition, the economic effects of the LRT line may differ in different areas it serves.

Transitways are a major component of the 2030 Transportation Policy Plan developed by the Metropolitan Council to guide transportation planning in the Twin Cities region. The plan envisions the development of several new transit corridors in addition to the Hiawatha LRT line and the Northstar Commuter Rail line, which runs northwest of the metro area. Understanding the economic impacts of current and future transitways is imperative for planners and policymakers, who expect a positive return on the investment in transitway development in the form of greater property tax revenues as property values increase.

The Transitway Impacts Research Program (TIRP) was launched in 2006 and has grown to include a mix of funding partners and program supporters, including Anoka County, Center for Transportation Studies, Center for Urban and Regional Affairs, Central Corridor Funders Collaborative, City of Minneapolis, City of St. Paul, Dakota County, Federal Transit Administration, Hennepin County, Humphrey Institute of Public Affairs State and Local Policy Program, Itasca Project, Metro Transit, Metropolitan Council, Minnesota Department of Transportation, Ramsey County, University Metropolitan Consortium, and Washington County.

In addition to examining changes in property values, TIRP research has studied the effects of the Hiawatha Line on access to employment and residential locations, as well as the characteristics of LRT users.

Impacts of the Hiawatha Light Rail Line on Commercial and Industrial Property Values in Minneapolis (CTS 10-05; report #4 in the Transitway Impacts Research Program series) and a corresponding research brief (PDF) are available on the CTS Web site.

Intelligent Transportation Systems

ITS America attendees hop on Bus 2.0



Peter Appel, Polly Trottenberg, and Peter Rogoff, all with the USDOT, rode the MVTA bus in Houston

A group of researchers from the ITS Institute's Intelligent Vehicles Laboratory (IV Lab) traveled to the ITS America Annual Meeting and Exposition, held May 3–5 in Houston, to demonstrate their driver-assistive technologies for bus rapid transit (BRT) applications.

IV Lab director **Craig Shankwitz**, IV Lab staff members **Bryan Newstrom** and **Erin Kurshoff**, and **Mike Abegg** from the Minnesota Valley Transit Authority (MVTA) showcased the driver-assistive system developed by the IV Lab for use in MVTA buses.

On Tuesday, May 4, the team gave a demonstration to U.S. Department of Transportation administrators and staff, including **Peter Appel**, administrator of the Research and Innovative Technology Administration (RITA); **Peter Rogoff**, administrator of the Federal Transit Administration (FTA); **Anne Ferro**, Federal Motor Carrier Safety administrator; **Polly Trottenberg**, assistant secretary for transportation policy; **Brian Farber**, associate administrator for communications and congressional affairs; **Gail Lyssy**, FTA Region VI director of program management and oversight; and **John Augustine**, deputy director of the ITS Joint Program Office, RITA. Also attending was **Paul Feenstra**,

ITS America's vice president of government affairs.

The driver-assistive system, a project begun at the IV Lab in 2000, combines augmented reality, high-accuracy lane-level digital mapping, collision warning/avoidance, and haptic feedback technologies to help drivers operate in the narrow bus-only shoulder lanes. The system helps the driver maintain the placement of the bus in the lane and also, by utilizing a head-up display (HUD), projects information about lane boundaries and other vehicles into the driver's field of view. This technology allows a BRT vehicle to operate at higher speeds while still maintaining the safety of the bus, its passengers, and other drivers on the roadway.

The expo demonstration featured an MVTA bus equipped with the driver-assistive system and a monitor showing video captured by a camera on the driver's forehead. On board, the team used an extra seat and steering wheel to let passengers view the HUD technology as well as experience the different modes of feedback the IV system provides to the driver. For example, passengers could feel haptic steering wheel resistance and seat vibrations on the right or left, triggered when the guidance system detects the bus deviating to the right or left.

The demos took place on roads and road shoulders near the George R. Brown Convention Center in Houston. The IV Lab research team worked closely with representatives from the Metropolitan Transit Authority of Harris County, Houston, to map the lanes and arrange police escorts during the demonstrations.

The BRT demos were covered by Houston Public Radio (HPR) Station KUHF 88.7 reporter Melissa Galvez as part of a story about the ITS expo. Galvez rode in the MVTA bus and spoke with Mike Abegg about the bus and its technology. Her coverage of the demo is available on the HPR Web site.

To learn more about this driver-assistive technology and how it is being deployed in Minnesota buses, visit the Bus 2.0 Web site.

[Listen to Houston Public Radio report](#) ▶

[Learn more about the ITS Institute's driver-assistive systems research](#) ▶

Transportation Safety

Life-saving impacts of safety laws calculated



New research from the [University of Minnesota's Center for Excellence in Rural Safety \(CERS\)](#) highlights the potential benefits of traffic safety legislation. Former CERS director of transportation safety engineering **Keith Knapp** led a team of researchers that used the Rural Safety Policy Improvement Index (RSPII) developed in an earlier research project to understand the effects of a variety of rural safety measures.

Every year, thousands of people die in vehicle crashes on our nation's rural roadways. In the majority of those crashes, human behaviors or choices contribute to those deaths—choices like driving while intoxicated, riding a motorcycle without a helmet, and speeding.

To curb potentially deadly driving behaviors, legislators in many states have considered legislatively based safety improvement measures (LSIMs). Some of these measures include graduated vehicle licensing for young drivers, universal motorcycle helmet laws, sobriety checkpoints, mandatory ignition interlocks, primary seat-belt laws, and automated speed enforcement. But how many rural road crash fatalities could be avoided if these measures were enacted and effectively enforced or applied? That's exactly what researchers at CERS set out to discover.

The CERS research team used the rural safety policy improvement index (RSPII) framework they documented in an earlier CERS research report and National Cooperative Highway Research Program (NCHRP) Report 622 as the basis for this project.

Their six-step RSPII process involves defining the potential safety impact of each LSIM, determining the applicable target group, identifying states that could benefit from the enactment of each LSIM, calculating the rural portion of the target group within the selected states, applying the potential safety impact to the rural portion of the target group, and presenting the results.

The researchers applied the RSPII framework to six different LSIMs to calculate potential rural fatality reductions. They found each of the LSIMs has the potential to prevent hundreds of rural highway crash fatalities each year across the nation:

- ◆ Primary enforcement of seat belt use: 209 fatalities
- ◆ Universal motorcycle helmet use: 299 fatalities
- ◆ Sobriety checkpoints: 322 fatalities
- ◆ Graduated driver-licensing program upgrades: 120 fatalities
- ◆ Mandatory ignition interlocks: 268 fatalities
- ◆ Automated speed enforcement: 699 fatalities

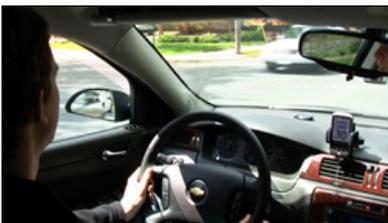
"The results from the application of the RSPII framework show that the nationwide implementation of the LSIMs considered could result in a relatively substantial reduction in rural roadway crash fatalities," Knapp said.

These fatality reduction results are estimates (due to crash data inaccuracies and some generalizations). They also cannot be summed for a total impact. The researchers recommend they be used to initiate discussions about rural roadway safety and the application of the RSPII framework within individual states for more accurate estimates to potentially aid in policy decision making.

CERS, established by the 2005 federal transportation act, is a joint program between the Humphrey Institute and CTS, and is sponsored by the Federal Highway Administration.

[Application of a Rural Safety Policy Improvement Index \(RSPII\) Framework: Phase II](#) (CTS 10-07) is available on the CTS and CERS Web sites.

Teen Driver Support System provides real-time feedback about driving behavior



The [ITS Institute](#), with support from the [Minnesota Department of Transportation](#), has developed a new version of the Teen Driver Support System (TDSS), a GPS-enabled smart phone mounted on the dashboard to provide the driver real-time visual and audio feedback about driving performance. According to its developers, the TDSS is intended as a tool for parents to encourage teens to build safe driving habits in their early years on the road.

The TDSS provides real-time, in-vehicle feedback to the teen about his or her driving behavior and helps parents monitor certain known risk factors. The system does not allow incoming or outgoing phone calls or texting while the teen is driving.

Feedback to the teen driver includes warnings about speeding, excessive maneuvers (e.g., hard braking, cornering), and stop sign violations. The TDSS prototype also monitors seat belt use and detects the presence of unauthorized passengers as defined in graduated driver's licensing (GDL) provisions—two known factors that increase the risk of fatalities among teen drivers. The TDSS can also be programmed to monitor driving during the GDL curfew (midnight to 5 a.m. in Minnesota) or a curfew set by parents. The in-vehicle, real-time feedback provided to the teen driver differentiates the TDSS from many of the teen monitoring devices currently on the market.

Because the TDSS is programmed in a cell phone, it is capable of providing near real-time feedback to parents about a teen's driving behavior. For example, if a teen receives feedback that he or she is speeding but fails to reduce the vehicle's speed after being warned, the TDSS will automatically send a text message to the teen's parents to inform them of the speeding behavior. Feedback to the teen informs her or him about the unsafe driving and gives the teen an opportunity to change the behavior before parents are notified. This near real-time feedback to parents allows them an opportunity to talk with their teen about the unsafe behavior soon after it occurs. This is in contrast to other teen systems that typically provide feedback once a week or once a month, long after the risky behavior has occurred. Parents also have access to a summary report via a secure Web site where they can monitor their teen's behavior over time.

[Watch video about the Teen Driver Support System](#) ▶

[Read the Teen Driver Fact Sheet](#) ▶

Transportation and the Environment

Research analyzes soil chemical concentration trends

In the early part of this decade, the [Minnesota Department of Transportation \(Mn/DOT\)](#) conducted soil surveys throughout the Twin Cities metro area and the state of Minnesota to better understand the chemical characteristics of the soil in particular locations. The Metro 2001 Soil Survey specifically looked at how chemicals in the soil change with the distance from major highways. The Statewide 2003 Soil Survey explored the patterns of chemical clustering based on statewide geomorphologic units and the source of glacial sediments.

Since each soil sample in both surveys measures concentrations of 45 different elements, it is difficult to analyze the data using standard statistical techniques. To assist Mn/DOT in analyzing and reporting the data from the surveys, **Vladimir Cherkassky** and research assistant **Sauptik Dhar** of the Department of Electrical and Computer Engineering applied nonlinear statistical learning techniques to the data to develop statistically meaningful and interpretable models.

The researchers applied a machine learning technique called Self Organizing Map (SOM) to enable the presentation of high-dimensional soil data in a 2D format, which allowed for both analysis and visual interpretation of the soil chemical concentration trends. The data were clustered into 45-dimensional data samples, with each sample representing 45 inorganic contaminants collected at different locations, thus revealing how different sites were related based on their soil characteristics or concentration of particular elements.

In the case of the 2001 metro-area survey data, the analysis was geared toward understanding how the concentration of soil elements changes with distance from major highways. Results indicated that samples collected near roads have similar soil characteristics, samples collected far away from roads have similar soil characteristics, and that background samples were similar to samples collected far away from roads. Samples collected near roads had high concentration values in elements lead, tungsten, zinc, and copper. These results could be helpful to determine the suitability of certain materials for usage as roadway bed or fill-in materials.

The analysis of the statewide soil data collected in 2003 was completed in order to explore the pattern of clustering based on the geomorphologic units and the source of glacial sediments. In particular, the team observed a pattern of clustering in areas where the soil characteristic was exclusively determined by the rock-forming elements aluminum, iron, magnesium, calcium, sodium, potassium, and manganese. Soil samples collected from northeastern Minnesota were found to have a higher concentration value of elements chromium, copper, arsenic, nickel, and tungsten, in contrast to samples collected elsewhere in the state.

A final report on the project, [Statistical Analysis of the Soil Chemical Survey Data](#) (Mn/DOT 2010-22), is available from the CTS Web site.

Transit, Bicycling, and Walking

TCRP research publications available online

The federal Transit Cooperative Research Program (TCRP), administered by the Transportation Research Board, provides practical transit research to address technical and operational issues. TCRP emphasizes putting research results into the hands of organizations and individuals that can use them to solve problems.

Recent TCRP publications include:

- ◆ [A Guide for Planning and Operating Flexible Public Transportation Services](#) (TCRP Report 140)
- ◆ [Effective Use of Citizen Advisory Committees for Transit Planning Operations](#) (TCRP Synthesis 85)
- ◆ [Current Practices in Greenhouse Gas Emissions Savings from Transit](#) (TCRP Synthesis 84)
- ◆ [Transit Fare Arrangements for Public Employees](#) (TCRP Synthesis 82)
- ◆ [Methods for Forecasting Demand and Quantifying Need for Rural Passenger Transportation](#) (TCRP Web-Only Document 49)
- ◆ [Ground-Borne Noise and Vibration in Buildings Caused by Rail Transit](#) (TCRP Web-Only Document 48)

Upcoming Events

Fall 2010 Transportation Seminar Series

CTS and the Intelligent Transportation Systems (ITS) Institute invite transportation professionals and students to join University of Minnesota researchers and guests for presentations offered this fall. The seminars are open to anyone interested in learning more about current transportation research at the University of Minnesota. There is no cost to attend, and registration is not required. Each seminar qualifies for one Professional Development Hour (PDH).

The CTS Seminar Series combines the following seminars:

- ◆ [CTS Research Seminars](#), held as part of CTS research council meetings
- ◆ [Advanced Transportation Technologies Seminars](#), sponsored by the Intelligent Transportation Systems (ITS) Institute each fall semester

Beginning September 9, seminars will be held on Thursday afternoons from 3:30 p.m. to 4:30 p.m. CDT, in 1130 Mechanical Engineering. Most seminars are broadcast live online, and they are also recorded for later viewing. Beginning in 2009, most seminars are also available on [iTunesU](#) (iTunes required to view).

For more information, visit the [CTS Seminar Series Web page](#) or contact Shawn Haag, haag0025@umn.edu, 612-625-5608.

[More about the CTS Seminar Series](#) ▶

Register now for 2010 Toward Zero Deaths conference

This conference provides a forum for sharing information on best practices in engineering, enforcement, education, and emergency medical and trauma care and for identifying new approaches to reducing the number of traffic fatalities and life-changing injuries on Minnesota roads.

The conference is sponsored by the Minnesota Departments of [Public Safety](#) and [Transportation](#) and the [Minnesota Toward Zero Deaths Program](#). The conference is hosted by the Center for Transportation Studies and is facilitated by the College of Continuing Education.

[More information and online registration](#) are available on the [TZD Web site](#).

Additional Upcoming Events

August 27 and September 3

[CTS and the ITS Institute at the Minnesota State Fair](#), St. Paul, MN

October 7-8

[7th Annual AirTAP Fall Forum](#), Alexandria, MN

October 25-26

[Minnesota Toward Zero Deaths \(TZD\) Annual Conference](#), Crowne Plaza Riverfront Hotel, St. Paul, MN