**Research Project Highlights**

**New policy suggestions published on transport of TIH’s**

Mark L. Fagan, Adjunct Lecturer in Public Policy at Harvard University’s Kennedy School of Government, is calling the transportation of toxic inhalant hazards (TIH) a double dichotomy. Chemicals such as anhydrous ammonia, which is heavily depended upon for fertilizers and making nylon and other materials, can be deadly when accidentally released. Furthermore, reducing likelihood of accidental release could make shipments more easily harnessed for terrorist attacks.

Mentioned in an earlier New England Center newsletter, the working paper “Rail Transportation of Toxic Inhalation Hazards: Policy Responses to Safety and Security Externality” was drawn upon for Fagan’s recent publication, “Transport of Toxic Inhalant Hazards: Addressing the Double Dichotomy” found in the Journal of Transportation Law, Logistics and Policy (Vol 29: No.1).

To illustrate his concerns, Fagan recounts freight train collisions that cost lives and millions of dollars. He estimates that “more catastrophic accidents could be in the billions of dollars,” adding, “The railroads view TIH shipments as ‘bet your company’ business.”

Fagan offers options for addressing the dichotomies, which would involve the cooperation of the chemical industry, railroads, transport regulators and academics. He goes on to suggest criteria to assess the effectiveness of the options in solving the double dichotomy.

"Fagan will continue research looking to price the risk externality. The original working paper is available at http://www.hks.harvard.edu/m-rcbg/rpp/pub_workingpapers.html under year 2010."
How we navigate the cityscape poses countless research questions, regarding walkability, drivability, bicycle access and public transportation systems. Researchers are interested in safety, efficiency and cost-effectiveness. But there is no exact equation that can be used to create a thriving city. At the New England University Transportation Center, we are constantly finding new indicators of city livability as it relates to transportation.

At the University of Connecticut, researchers found a connection between available parking and city growth. It seems the city is better off when we take the bus in instead of building more garages. A PhD student in the MIT Department of Urban Studies and Planning looked at walkability for older adults in urban settings. He found a trade-off between walkability and safety, begging the question: How can we encourage healthy, low-impact transportation choices while ensuring pedestrians are not at greater risk than when traveling by car, bus or subway?

At the New England Center, we are at the intersection of transportation and urban planning. Our findings thus far have taught us that several trends that are often overlooked, such as increases in the number of parking spaces in a city, demographic change, natural development, can help explain the larger picture of what encourages or inhibits living and moving throughout our cities.

I hope you find the news and research highlights mentioned in the following pages interesting. Your feedback will assist us in considering new alleys of research to pursue and those unexpected outcomes that contribute to our larger goals.

Joseph F. Coughlin
Center Director & Policy Commitee Chair, MIT
Older Driver Research Gains Media Attention

New England Center associate director Bryan Reimer was interviewed for the Business Section of the Boston Globe regarding the dangers in-vehicle technologies may bring. He was also quoted in the New York Times’ “New Old Age” blog on how new assistive technology in the car may help older adults parallel park safely by compensating for limited range of motion. He and researcher Lisa D'Ambrosio appeared on the Discovery Channel in Life Behind The Wheel: A Roadmap for Safety. Reimer’s work was also featured in the Boston Herald, USA Today, Wired, MSN Autos and on the Canadian Broadcasting Company. Dr. Reimer also spoke at the Johns Hopkins School of Engineering. His talk was entitled “Automotive Technology, Driver Distraction and Demographics: Rethinking interface design to match driver capabilities.”

MIT Collaborates with Toyota

The Massachusetts Institute of Technology AgeLab has begun a two-year collaboration with Toyota’s Collaborative Safety Research Center to determine how effective in-vehicle voice control systems are in decreasing driver distraction. Says Reimer of the project, “Just as we can become visually distracted, we can also become incredibly cognitively distracted. We’re leading the world in this type of psychological approach to voice controls, and I think it’s going to be very interesting to see what the results are.”

TECHNOLOGY TRANSFER

New England Center Publishes New Book

New England Center and AgeLab director Joe Coughlin and researcher Lisa D’Ambrosio co-edited Aging America and Transportation: Personal Choices and Public Policy through Springer Publishing Company. The book focuses on the unique mobility needs of the aging Baby Boomer generation, as well as provides solutions and strategies for policies that could enhance mobility of older adults. Contributing experts relay thought and ideas for policymakers, transportation officials, vehicle manufacturers, health and human services professionals, and aging adults. Topics include updating infrastructure and transportation systems, driver safety education programs for older drivers, and trends in private vehicle innovations.
TECHNOLOGY TRANSFER

Research Method in Use Worldwide

The Delayed Digit Recall n-back task is a calibration method developed by the MIT AgeLab that systematically increases the cognitive demand placed on an individual. The lab has used this task in a series of driver workload and distraction studies.

Paying attention to the road is not a binary operation; drivers can give varying degrees of attention to the task at hand. To simulate this, 0, 1 and 2-back tasks model increasing levels of cognitive load, which in turn result in decreased attention to scanning the roadway. This is intended to model in an objective manner what an individual may experience while, for example, having a phone conversation—even if the phone call is hands-free.

The Delayed Digit Recall n-back task is currently being used in the International Standard Organization’s cognitive demand. Studies are taking place in Germany, Earlier work with the task following the protocol developed by the France, Sweden, Canada, China and the United States. (ISO) TC22/SC13/WG 8 project, Coordinated Studies on the Detection Response Task (DRT), as a surrogate for cognitive demand. Studies are taking place in Germany, France, Sweden, Canada, China and the United States. Earlier work with the task following the protocol developed by the AgeLab was performed in Korea. In a U.S. Department of Transportation-National Highway Safety Administration document, Developing a Test to Measure Distraction Potential of In-Vehicle information System Tasks in Production Vehicles, the 2-back condition of the task was suggested as a “starting point for setting a limit for acceptable ‘dose’ of cognitive distraction.”

More information on the n-back task is available on the New England Center website, keyword “n-back.” There, the task itself can be downloaded in various languages.

NEWS AND EVENTS

Lownes Named Castelman Term Professor

The University of Connecticut School of Engineering has named five outstanding faculty members as inaugural Castelman Term Professors in Engineering Innovation. In making the announcement, Dean Mun Y. Choi noted, “Each of these outstanding individuals embodies exceptional achievements and the application of innovative approaches in research, education and outreach.” The three-year professorships recognize outstanding faculty members at the assistant and associate professor level and honor Professor Francis L. Castelman, who served as a distinguished Dean of Engineering during the formative years of the School of Engineering.

Dr. Nicholas Lownes, who was named a Castelman Term Professor in Engineering Innovation, is Director of the Center for Transportation and Livable Systems (CTLS) at UConn, and his research program focuses on public transportation systems. His research efforts include: a Department of Homeland Security-funded project aimed at developing methods for identifying and mitigating vulnerabilities to natural and human disruptions in public transportation networks; and the application to U.S. networks of a novel method for the prediction of optimal network evolution based on the growth of slime mold. Dr. Lownes has received more than $1M in research funding to date.

Visit the Center for Transportation and Livable Systems webpage page at www.ctls.uconn.edu.

Dr. Lownes does research on public transportation systems
TECHNOLOGY TRANSFER

Harvard Research Director Guest Blogs for Google

Research director at the Transparency Policy Project at Harvard’s Kennedy School of Government Francisca Rojas recently guest blogged on Google’s Policy by the Numbers regarding her work with transit transparency. She discusses the proliferation of consumer-facing transit schedule applications. Read the blog piece at: http://policy-bythenumbers.blogspot.com/2012/01/transit-transparency-open-data-in.html.

Rojas and David Luberoff, executive director of Harvard’s Rappaport Institute for Greater Boston, also wrote for The Podium blog on The Boston Globe on a similar subject, the tardiness of Boston school buses. The benefits of sharing school bus data to enable programmers to create bus tracking apps is discussed. The piece can be found on the January 10th edition of boston.com’s The Podium. The work mentioned is part of a project on Transparency in Transit: User Power and Public Accountability.

RESEARCH PROJECT HIGHLIGHTS

UTC Student Honored for Graduate Work

Chris McCahill, a Civil & Environmental Engineering Ph.D. candidate at University of Connecticut, is one of America’s 19 top graduate students in transportation-related fields invited as a Fellow to attend the 20th Annual Eno Leadership Development Conference in Washington, D.C. Chris spent an intensive week in June meeting with top Executive Branch and Congressional officials, industry executives and non-profit leaders to learn how the nation’s transportation policies are debated, adopted and applied.

McCahill’s work, conducted with Dr. Norman Garrick and recently featured on NBC Connecticut, studied the impact of off-street parking in Hartford, New Haven and other Connecticut cities to track the rise in available parking spots, and understand its implications on city vibrancy. Increased parking can be problematic for more complex reasons than simply taking up the space of potential business and recreational or cultural centers. McCahill describes cities as “automobile dependent” when major highways pass through and there are high amounts of parking per resident or worker. He names New Haven, CT as auto-dependent and Cambridge, MA as non-auto dependent. In cities like Cambridge, residents are more compelled to choose alternative forms of transportation.

Today, in Hartford and New Haven there are double the amount of parking spaces per driver as there were in the ’50s. McCahill notes that in Cambridge, where parking availability has decreased, growth continues, and the image of a thriving city is one of walkers and bikers, not cars. Read more about McCahill’s work here: http://www.christophermccahill.com/publications.html.
UMass Student Awarded by ITE

Michael Plotnikov, UMass Amherst Ph.D. candidate in Transportation Engineering, was awarded the best student paper for the Northeast District of the Institute of Transportation Engineers (ITE). For winning at the regional level, Mr. Plotnikov received $1,000 courtesy of Stantec. The paper will now be submitted to the International Level of ITE for consideration. That winner will be announced at the international meeting in Atlanta in August.

13th Annual ITE Tech Day, sponsored by the UMass Student Chapter of the Institute of Transportation Engineers, was held at UMass Amherst on March 15, 2012. Topics of discussion included roundabouts and roadway safety. The meeting attracted 90 students, faculty and professionals.

At the meeting, Congressman John Olver (ret.) was presented with the ITS Massachusetts Joseph Sussman Leadership Award which recognizes the contributions of individuals who are leaders in advancing the use of technology in the transportation field. Congressman Olver was presented this award in recognition of his support for rural fiber-optic infrastructure in Western Massachusetts and championing of highway and rail projects that utilize advanced technology.

UMass Amherst has created a new Certificate in Transit Management and Operations. This is the first program of its kind at UMass or any other university in the U.S. The program is provided through UMass Transit in partnership with the UMass Transportation Center and CTTransit, an operating arm of First Transit, a U.S. based private transit management company. The certificate includes formal course work in Civil Engineering and the School of Management; internships with UMass Transit and CTTransit.

John Collura, Director of UMass Transportation Center and professor in Civil & Environmental Engineering at UMass Amherst, was deeply involved with the creation and organization of the CUTC National Workforce Summit, Pathways to the Future, held in April. The summit attracted more than two hundred seventy professionals from transportation, labor and education to: foster a national dialog on the needs for and development of the transportation workforce in the U.S.; promote greater visibility for transportation careers in industry, government agencies, and academia; build upon and connect transportation workforce initiatives to recruit and retain qualified personnel; identify administrative and legislative actions required at Federal and State levels to institutionalize effective workforce policy and programs; and validate the National Transportation Strategic Framework and adopt a coordinated plan to identify and manage joint actions to link transportation workforce needs and development to, education and career pathway activities.
Joe Seung Lee, who received his PhD this spring from the MIT Department of Urban Studies and Planning, where he did extensive UTC-funded research on 55+ communities that offer age-targeted physical design and social services. Lee looks at how these communities have developed and change over time and, particularly, the travel behavior of baby boomers living in those neighborhoods.

In a study comparing physical characteristics, walkability and local activity levels of 5 age-restricted communities to five regular neighborhoods in Massachusetts, Lee found that residents of age-restricted communities were still heavily dependent on their cars because communities were either far from common destinations and streets were poorly connected.

Lee was also curious as to whether a neighborhood’s characteristics lead people to change their travel behaviors—as related to both mode and amount. He found that the community (such as the social network) in age-controlled communities caused adults to often be more active, and increased social trip-making.

Lastly, he looked at neighborhoods with greater walkability for older adults and found a positive correlation between accessibility to retail and traffic accident frequency, suggesting there is a tradeoff between walkability and safety for urban baby boomers.

Parts of this dissertation have been published in the following journals and conference proceeding:


Lee received his PhD from MIT DUSP

About the New England University Transportation Center

The New England University Transportation Center employs research and innovative technology to improve transportation system management. Its research and technology transfer serve as groundwork for progressive safety measures and for increasing the efficiency of the nation's roads and mass transit systems.

The center's research investigates how changes in the age distribution of the nation's population and changes in technology, infrastructure, global climate, economics and politics affect transportation systems. The New England Center will use this research to educate future transportation professionals and leaders responsible for tackling transportation challenges of today and tomorrow.

In addition to these education goals, the New England Center has a mission to influence the transportation agenda and develop and disseminate new methodology and tactics for strategic change. The New England Center is part of the national UTC program. Massachusetts Institute of Technology is the leading university in the consortium, which also includes Harvard University, and the state universities of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

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About MIT’s Center for Transportation and Logistics

MIT’s Center for Transportation and Logistics is part of the Engineering Systems Division in the School of Engineering. The center is widely recognized as an international leader in the field of transportation and logistics.

The CTL facilitates a basic understanding of transportation systems planning, operations and management, and the center makes significant contributions to logistics modeling and supply-chain management for shippers, to technology and policy analysis for government, and to management, planning and operations for trucking, railroad, air and ocean carriers.

In addition to administering the Master of Engineering in Logistics program, the center helps coordinate the extensive transportation and logistics research conducted throughout MIT. At any given time, research initiatives typically number more than 100 and range from modest projects involving a single faculty member and a few students to large-scale international programs involving scores of people and a full-time research staff.

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