

**Program Progress Performance Report
for the
New England University Transportation Center
Massachusetts Institute of Technology**

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REPORTING CATEGORIES

1. Accomplishments

1A. Research Projects

Major goals as stated in New England UTC Prospectus

Research Goal

- To conduct research in technology applications and systems integration with related work in policy, planning and human factors that improve transportation safety as well as further our understanding and realization of livable communities to support mobility across the lifespan.
- To support peer-reviewed investigations that address safety and livability by exploring and furthering research, policy, and practice in the application of ubiquitous intelligence, use of big data, and improved human performance

Following is the list of the 37 research projects under this grant, and their current status:

Project No.	PI	Project Title	Status
MITR25-1	Abou-Zeid Ben-Akiva	Capturing the Relationship between Social Interaction and Travel Behavior Using Smart Phones	active
MITR25-2	Caplice Caballero	High-Resolution Urban Freight Modeling in Cambridge, MA	active
MITR25-3	Coughlin	Assessing Navigatability and Livability of Public Transportation Systems	active
MITR25-4	Ellis Lavalliere	Transportation Workforce Health and Wellbeing	active
MITR25-5	D'Ambrosio	Understanding the Adoption of and Education about New Auto Technologies among Older Adults	active
MITR25-6	Frazzoli	Modeling the Impact of One-Way Car Sharing: An integrated data- and optimization-driven approach	active
MITR25-7	Goentzel	Fusing Structured and Unstructured Transportation Data for Decision-Making in Crisis	active

MITR25-8	Gonzalez	Coupled Mobility Networks: A Data Driven Approach	active
MITR25-9	Isaacson	Out and About in New England: Maintaining Active Life styles in Later Life	active
MITR25-10	Lee	Effectiveness of Various Information Channels on User Training and Learning in Automobiles	active
MITR25-11	Osorio	Optimal Road Traffic Operations for an Increasingly Autonomous and Connected Vehicle Fleet	active
MITR25-12	Pentland Shmueli	Incentivizing Safer Driving Using Peer-Pressure	active
MITR25-13	Reimer Dobres	Assessing the Effect of Typography on In-Vehicle Glance-Like Reading Across the Lifespan	active
MITR25-14	Salvucci Murga	MALL Transit and Wider Economic Benefit Assessment	active
MITR25-15	Sussman	Hub Stations As Catalysts for Regional Growth: The Case of New York Penn Station	active
MITR25-16	Trancik	From Trip Data to the Energy Requirements of Personal Vehicle Travel	active
MITR25-17	Zegras Pereira	Scenario Discovery for Resilient Urban Systems (or, The Future is "Big Data")	active
MITR25-18	Zhao	Humanizing Travel: How E-hail Apps Transform Stakeholder Relationships in Taxi Services	active
HVDR25-19	Glaeser	Transportation Stimulus Spending and Long Term Unemployment	active
HVDR25-20	Gomez-Ibanez Fagan	The Experience with Managed Toll Lanes	active

HVDR25-21	Howitt	Recreating Livable Communities after Catastrophe: Managing the Recovery from Japan's Earthquake, Tsunami, and Nuclear Disaster of 2011	active
HVDR25-22	Mayne	The Politics of Transport Policy in the Greater Copenhagen Region, Part 2	active
HVDR25-23	Shoag	The Local Effects of the American Recovery and Reinvestment Act on Economic Activity and Traffic Safety	active
UMAR25-24	Christofa Knodler	Operational and Emission Analyses of Roundabouts under Varied Vehicle and Pedestrian Demands	active
UMAR25-25	Fisher Knodler Zafian	Evaluating the Effect of Google Glass on Driver Distraction	active
UMAR25-26	Gao	Routing Policy Choice Models in Stochastic Time-Dependent Networks: The Stockholm Case Study	active
UMAR25-27	Gonzales	Route Choice in Congested Grid Networks	active
UMAR25-28	Knodler Fisher	A Driving Simulator Evaluation of Driver Distraction and Traffic Control Device Comprehension for At-Grade Railroad Crossings	active
UMAR25-29	Krishnamurty	An Innovative Design to Retrofit Seatbelts in Motorcoaches	active
UMAR25-30	Ni Wang	Supplementary Vehicle Positioning to Connected Vehicles	active
UCNR25-31	Atkinson-Palombo Garrick	A Multi-Scalar Model to Identify the Causes of Decreased Vehicle Miles Traveled (VMT) in the United States	active
UCNR25-32	Garrick Atkinson-Palombo	Factors Contributing to the Decrease in Traffic Fatality Rates for Young People in America	active
UCNR25-33	Ivan Ravishanker Townsend	Social Network Effects on Attitudes about Pedestrian Street Crossing Behavior	active

UCNR25-34	Konduri Dalal	Exploration of Human Psychological Factors Underlying Mobile Phone Usage Behaviors while Driving	active
UCNR25-35	Lownes	Clustering Algorithms for Transit Network Design	active
UMER25-36	Garder	Deficient Bridges and Safety Information	active
UMER25-37	Rubin Garder	Automated Vehicles: Economic Incentives for Environmental Benefits and Safety	active

Accomplishments under the New England UTC's research goal

MIT Student wins Volpe Award for best transportation presentation at NEC-HFES 2015 May 1, 2015

Investigators at The New England Center continue to make headway into the expanding field of driving behavior research with three presentations at the New England Chapter of the Human Factors and Ergonomics Society's Annual Student Conference earlier this month. One of them, MIT Visiting student Mauricio Muñoz, won the Volpe Award for Best Transportation Presentation for his project "Using Hidden Markov Models for Classification of Driver Visual Behavior".

Project MITR24-1

Capturing the Relationship between Motility, Mobility and Well-Being Using Smart Phones

Two surveys have been conducted to measure happiness, both on real-time and retrospectively. The respondents came from several countries covering all six continents, and included both workers and students. The results of the first survey helped in improving the methodology for collecting well-being information using a smart-phone app. An exploratory model has been developed to model both real-time and retrospective happiness as a function of activity attributes and socio-economic variables.

Project MITR25-12

Incentivizing Safer Driving Using Peer-Pressure

The general research framework is being considered by an MIT startup called WISE, which helps delivery drivers be more efficient and safe. The framework suggests that social incentives among drivers will be more effective than incentives aimed at individuals alone. The startup is now beginning pilots with several large companies, and is considering incorporating our incentive framework into its system.

Project MITR25-16

From Trip Data to the Energy Requirements of Personal Vehicle Travel

We have developed a new model of nationwide energy consumption from personally operated vehicles, allowing for the first time an examination of battery electric vehicle (BEV) technology from a policy-level perspective while faithfully considering individual drivers' daily behavior. The model is intended to allow us to evaluate the possibility for, and the impacts of, widespread BEV adoption. In doing so, we consider how BEV range can vary depending on usage conditions such as driving speed and aggressiveness, along with external conditions such as weather, which have a large impact on BEV energy consumption. In combination with this detailed model of BEV range, we also consider how travel demand in detail. This joint approach allows us to capture how given range constraints can affect individual travelers differently given differences both in daily driving distances and in BEV performance. We have examined these results both nationally and for a range of cities, and we have

found high degrees of similarity between cities and consistent scaling behavior of energy needs within them, pointing to a universality of our results that has not been shown in related studies.

Project HVDR25-19

Transportation Stimulus Spending and Long Term Unemployment

This project provides a clearer picture of how highway construction supports jobs. The research evaluates how effective Recovery Act highway infrastructure spending was at creating construction jobs and boosting overall employment growth in the wake of the 2008 recession. We find that the supplementary highway infrastructure spending in the Recovery Act had a pronounced effect on employment in the highway construction sector, supporting 5-10 job-years per million dollars. However, we find little evidence of any employment stimulation in the same county as the work sites; rather, all detectable job creation occurs in the counties where vendors who won contracts were based. These findings, and the mere fact that most vendors were based in different communities than the project sites, suggest that economically distressed areas are not benefited by local highway construction activity. Any benefit to the community must accrue based on the actual utility of the road facility.

HVDR25-21 Recreating Livable Communities after Catastrophe: Managing the Recovery from Japan's Earthquake, Tsunami, and Nuclear Disaster of 2011

The research team conducted a three-week research trip to Japan where they interviewed community leaders and civil servants at the municipal, prefectural, and national levels of government regarding the progress and challenges of recovery in the aftermath of the 03/11/11 earthquake, tsunami, and nuclear crisis. In addition, for the first time, the researchers conducted interviews with officials from five municipalities (Futaba, Kawauchi, Minami-Soma, Namie, and Tomioka) which had endured the effects of the meltdown at the Fukushima Daiichi Nuclear Power Plant. Also interviewed were national officials in the Recovery Agency; the Ministry of Land, Infrastructure, Transport, and Tourism; the Ministry of Economy, Trade, and Industry; and the Ministry of the Environment; along with officials representing the Prefectures of Fukushima, Iwate, and Miyagi; as well representatives of several community and academic groups.

Project UMAR25-25

Evaluating the Effect of Google Glass on Driver Distraction

We conducted a driving simulator test with drivers aged 18 -50 who were randomly assigned either to the Google Glass or to the control condition (no head-mounted display). Each participant navigated seven different scenarios that included latent hazards which could be avoided if drivers were attentive to the roadway and to the related signs signaling a latent hazard. Incoming traffic sign information was sent via a text message to the Google Glass display prior to the posted traffic sign displaying the same message. Drivers in the control group only viewed the posted traffic sign while drivers in the experimental Google Glass condition viewed both the text message and the posted traffic sign. Also, participants' eye-movements were recorded using an eye-tracker which collected point of gaze and fixation data. The results indicated that the drivers in both groups showed no differences in the likelihood that they anticipated the latent hazard near the actual hazard. Thus, the Google Glass alerts did not distract the drivers (as measured by latent hazard anticipation). Therefore, the ability to issue traffic sign information via Google Glass could potentially help improve driving safety as measured by latent hazard anticipation.

Project UMAR25-28

A Driving Simulator Evaluation of Driver Distraction and Traffic Control Device Comprehension for At-Grade Railroad Crossings

The development of a unique virtual environment for research evaluation is almost complete. Research in this area has never been done before; consequently, a new driving environment had to be created where trains could interact with the driver. This time-intensive task is 95% complete and ready for pilot testing. During the month of October 2015, human subject pilot tests will be conducted. IRB approval has been secured which allows for experimental participant data to be collected. Pilot data will be used to calibrate the eye tracker and steering components of the simulator as well as the simulation itself. It is expected that participant data collection for the first experiment will begin during the last week in October. Over 60 participants will be recruited for this phase of the project.

Downward Trend in VMT in the US Not a Recent Phenomenon

The work conducted under Project UCNR25-31, A Multi-Scalar Model to Identify the Causes of Decreased Vehicle Miles Traveled (VMT) in the United States, has been impactful in identifying that the downward trend in VMT in the US is not a recent phenomenon. In fact, when VMT data are analyzed at the state level, it is evident that VMT decreases date back as far as twenty years, beginning with the state of Washington. This is very important because policy-makers have been interpreting this phenomenon as something that happened recently, and adopting a “wait-and-see” approach. VMT is an important determinant of many policy-oriented issues, most importantly funding. The pre-existing notion was that VMT and economic growth were positively correlated—so the more VMT, the more growth and vice versa. Our research shows that economic growth is able to take place within an environment of declines in VMT which suggests that the entire way that VMT metrics are used in policy need to be rethought.

Pedestrian Stated Behavior Survey Pilot-Tested in Community College Class

The research team for Project UCNR25-33, Social Network Effects on Attitudes about Pedestrian Street Crossing Behavior, has prepared and pilot-tested a survey of individual attitudes and behavior regarding crossing urban streets as a pedestrian at signalized intersections. The survey consists of questions about demographics, pedestrian crossing behavior and attitudes about traffic, as well as videos simulating different pedestrian street crossing environments. The survey was piloted in a communication class at Manchester Community College (MCC) in Manchester, Connecticut. In response to feedback from the students and observation of their understanding of the questions, the research team has updated the survey questions and the framework of the survey itself. The research team is now preparing to implement the survey in two frameworks: small group settings convened by students in communication classes at MCC and online, with respondents identified through a cascade sampling framework starting with students in the communication classes and other members of the research team. The research team has hired a contractor, Intellitics, Inc., to prepare an online version of the survey to be conducted using the proposed cascade sampling framework.

How the New England UTC’s research results have been disseminated

STEM initiative: New England UTC hosts Career Day

June 2, 2015

On May 27, 2015, the New England University Transportation Center and the MIT Center for Transportation and Logistics hosted a career day for students from the Boston Collegiate Charter School in Dorchester, MA. Attendees were 15 high school sophomores, their math teacher, Ms. Daniella Suarez, and Ms. Bethany Guen, Director of Development and Communications. The school’s mission is to prepare each student for college, and among students there has been a growing interest in science; as a result, the teachers have been trying to increase STEM-related opportunities for the students. This workshop exposed students to think about how different disciplines—from various branches of science and engineering to the social sciences—come together to address complex questions about transportation that don’t fit neatly into simple categories. See more detail under [The impact on the development of transportation workforce development](#).

UTC vehicle typeface study goes viral

April 13, 2015

New England UTC associate director Bryan Reimer authored a study published in full in the journal of Ergonomics titled, “Assessing the impact of typeface design in a text-rich automotive user interface”. Now the research has been used as the basis for a popular article in Gizmodo that discusses the impact of text-font comprehension and response time when drivers glance at vehicle interfaces. Read the Gizmodo article [HERE](#) or access the full research paper [HERE](#).

Bryan Reimer talks at NHTSA forum on cognitive distraction

May 21, 2015

New England UTC associate director Bryan Reimer presented at the [National Highway Traffic Safety Administration \(NHTSA\) forum Cognitive Distraction: What Were You Thinking?](#) In his talk titled “An Evolving Perspective on Driver Attention” he summarized key points related to recent New England Center research on multi-modal driver vehicle interfaces. Furthermore, he described how the work points towards a need for a deeper human centered view of attention management in the vehicle. Such a few may be critical to enhancements in safety with advancing automation. [Watch Bryan Reimer the talk HERE](#)

**New study published at sciencedirect.com
September 1, 2015**

Led by New England UTC Director Dr. Joseph Coughlin and Associate Director Bryan Reimer, UTC researchers have published an informative new study titled “Reductions in self-reported stress and anticipatory heart rate with the use of a semi-automated parallel parking system.” It will be published in the January 2016 issue of Applied Ergonomics. [Read the complete text and download a PDF HERE](#)

Project MITR25-16

From Trip Data to the Energy Requirements of Personal Vehicle Travel

Research results were shared with professionals from five continents in business, government and research. Some results of the research were shared through an MIT Short Programs Professional Course on technology innovation, which brought together professionals from five continents and diverse industries.

HVDR25-21 Recreating Livable Communities after Catastrophe: Managing the Recovery from Japan’s Earthquake, Tsunami, and Nuclear Disaster of 2011

Professor Howitt has disseminated research results for this reporting period by making several presentations on the topic at Harvard Kenney School of Government. The presentations include a lecture to research fellows at the Ash Center for Democratic Governance and Innovation; a panel discussion for a delegation of representatives of Chinese humanitarian relief NGOs; and a seminar for graduate students and researchers across Harvard, which was organized by the Program on Crisis Leadership at Harvard Kennedy School.

Project UMAR25-27

Route Choice in Congested Grid Networks

The research findings have been presented in the Northeastern District ITE Meeting, which included attendance by academics, government officials, and practitioners from industry. A more general outreach activity was participation by the researchers in the Data Science Symposium hosted at the University of Massachusetts to launch a new Data Science Center. The goal is to broaden awareness of the problems and techniques that we use in transportation in order to form collaborations with researchers from other fields, including Computer Science. In addition, a couple of presentations are in preparation for upcoming conferences, and three papers are under review for journal publication.

Study Data Garner Attention Via Prominent News Source

Presentations at the Transportation Research Board in January and the news article written by the Washington Post about the research conducted under Project UCNR25-31, A Multi-Scalar Model to Identify the Causes of Decreased Vehicle Miles Traveled (VMT) in the United States, garnered a great deal of attention. The data associated with the project have been made publicly available via the Washington Post website to extend discussion and analysis of this phenomenon

Plans during the next reporting period to accomplish the New England UTC’s research goal

No change on our major goals contained within our approved Application.

1B. Education Projects

Education & Workforce Goal

- To introduce transportation to all levels of education: K-12, undergraduate, graduate and continuing education.
- To place graduates into transportation fields.
- To provide current and developing methods, tools and insights to today's transportation workforce to support their capacity to build, operate and manage a safe and efficient transportation system.

Following is the list of the 2 education projects under this grant, and their current status:

Project No.	PI	Project Title	Status
HVDE25-38	Howitt	Teaching Case Study on Korea Ferry Disaster of April 2014	active
HVDE25-39	Davis Altshuler	Transforming Urban Transport: a Set of Case Studies	active

Accomplishments under the New England UTC's education goal

Project HVDE25-38

Teaching Case Study on Korea Ferry Disaster of April 2014

A case writer under the supervision of the project P.I., prepared a two-part case study on the causes of the April 2014 sinking of the South Korean *Sewol* ferry, the badly bungled emergency response that ensued, and the far-reaching political fallout from the tragedy. They reviewed and synthesized news accounts, government reports and other publicly available accounts of the disaster and response, developed a case outline, and then prepared a full draft of the case study, which will now be reviewed, fact-checked, and published in the Harvard Kennedy School case study series.

Project HVDE25-39

Transforming Urban Transport: a Set of Case Studies

We formalized a case study for three cities—New York City, San Francisco and Los Angeles—related to leadership and transforming transportation. In New York City, we conducted interviews with Jay Walder (President and CEO of Motivate), Janette Sadik-Khan (Former Commissioner of the NYC DOT), Jon Orcutt (Former Policy Director for the NYC DOT), Ben Furnas (Senior Policy Analyst for the Office of the First Deputy Mayor of NYC), and many more. In San Francisco, we conducted interviews with Sunil Paul (Founder and CEO of Sidecar), Michael Peevey (Commissioner-President of CPUC), Ed Reiskin (Director of the SFMTA), Ryan Greene-Roesel (Senior Transportation Planner of the SFCTA), and Christiane Hayashi (Former Deputy Director of the Taxi Services Division for the SFMTA). In LA, we conducted interviews with Michael D. Antonovich (LA County Supervisor), Roger Snoble (Former CEO of Metro), Michael Turner (Deputy Executive Officer of Government Relations for Metro), Antonio Villaraigosa (Former Mayor of Los Angeles), and David Yale (Managing Executive Officer of Regional Transportation Planning for Metro).

1C. Technology Transfer Projects

Technology Transfer Goal

- To increase the awareness and level of information concerning transportation issues facing New England.
- To further our well-established technology transfer and outreach activities.
- To engage the public and private transportation sectors throughout the New England Region and the nation.

Following is the list of the 2 technology transfer projects under this grant, and their current status:

Project No.	PI	Project Title	Status
MITT25-43	Coughlin	MIT Centralized Technology Transfer Initiatives	active
UMAT25-44	Collura	UMass Centralized Technology Transfer Initiatives	active

Accomplishments under the New England UTC's technology transfer goal

Project UMAT25-44

UMass Centralized Technology Transfer Initiatives

The focus of this initiative is on workforce development. A major activity included the preparation of a research needs statement (RNS). The significance of this RNS is that it is intended to identify workforce development strategies to help build career pathways in surface transportation for youth, second career professionals, veterans, and encore careerists. The RNS has been submitted to the TRB Education and Training Committee for their review and support.

Another major activity includes working with the MBTA to establish middle school and high school outreach programs in the Springfield, MA area in coordination with the construction of the MBTA Rail Car Assembly Plant being designed and constructed by the Chinese National Railroad. The significance of this activity is that it will make young people aware of the career paths in the transit industry. The World is Our Classroom, a local outreach program, has been engaged to work with local Chicopee and Springfield, MA schools

2. Products

Journal publications

Daniel Shoag and Erich Muehlegger “Cell Phones and Motor Vehicle Fatalities” *Procedia Engineering* 78, p. 173-177, September 2014.

Daniel Shoag and Erich Muehlegger “Commuting Times and Land Use Regulations”, *Procedia Engineering* (2015) .488-493.

Garceau, T., Atkinson-Palombo, C., and Garrick, N., Peak Car Travel in the United States: A Two-Decade Long Phenomenon at the State Level *Transportation Research Record*, [Accepted 03/15].

Garceau, T., Atkinson-Palombo, C., and Garrick, N., Peak Travel and the Decoupling of Vehicle Miles Travelled and Gross Domestic Product: A Synthesis of the Literature, *Transportation Research Record: Travel Behavior* (2014), 1, 2412, 41-48.

Needell, ZA; McNerney, J; Chang, M; Trancik, JE, Potential for widespread electrification of personal vehicle transportation in the United States, in review

Raveau, S., Ghorpade, A., Zhao, F., Abou-Zeid, M., Zegras, C. and Ben-Akiva, M. Smartphone-based survey for real-time and retrospective happiness related to travel and activities. *Transportation Research Record* (submitted).

Books, dissertations, or one-time publications

Davis, Diane and Flores Dewey, Onesimo. “Strategies for Constructive Change.” *Volvo Research and Educational Foundations*, July 6, 2015:
<http://www.vref.se/publications/researchbriefs/researchbriefsmac/strategiesforconstructivechange.5.76b58ed114e4e6438c26fbee.html>

Garceau, T. PhD Dissertation on “Vehicle Miles Travelled: An Analysis of Trends and Implications”, August 2015.

Needell, ZA (Advisor: Trancik, JE), Technology Evaluation for Personal Vehicle Travel: Electric Vehicle Energy Requirements Under Real-world Use, M.S. in Transportation, MIT

Other publications, conference papers and presentations

Amirgholy, M., Gonzales, E.J. (2015). Demand responsive transit: System optimization and dynamic pricing. Institute of Transportation Engineers Northeastern District Annual Meeting, 13–15 May, Albany, New York

Central Connecticut State University 3/23/15: Research Talk on Peak Car Travel

Davis, Diane and Flores Dewey, Onesimo. Webinar with SLoCaT (Partnership on Sustainable Low Carbon Transport) titled “Political Strategies for Constructive Transportation Change.” Held on May 7, 2015.

Explaining Peak Car Travel: Analyzing State-Level Patterns to Identify Factors Related to Driving Reductions in the United States. *Association of American Geographers 2015 Annual Meeting*, Chicago, IL (Apr. 2015)

Gonzales, E.J., Rahimi, M., Christofa, E., Knodler, M., Reissman, R., Gazillo, J. (2015). Uses of data for

transportation system analysis. Data Science Symposium, 9 April, Amherst, Massachusetts.

Keene State College, Sustainability Planning Course 2/24/15; Guest lecture / delivered a variation of the TRB talk

Invited: Peak Car Travel at the State-Level in the United States. University of Massachusetts Transportation Engineering Transportation Seminar. Amherst, MA (Apr. 2015)

Lundberg, Kirsten and Soryoung Park (forthcoming), *Sinking of the Sewol: South Korea's 2014 Ferry Disaster (A and B)*, Harvard Kennedy School Case Study.

Miotti, M; Supran, G; Kim, E; Trancik, JE, Evaluating the Climate Change Mitigation Potential of Personal Vehicle Technologies, International Society for Industrial Ecology Conference, 2015

Peak Car Travel in the United States: Two-Decade Long Phenomenon at the State Level. *Transportation Research Board 94th Annual Meeting*, Washington, D.C., poster presentation P15-6155 (Jan. 13, 2015)

Peak Car Travel in the United States: Two-Decade Long Phenomenon at the State Level. *Transportation Research Board 94th Annual Meeting*, Washington, D.C., lectern session 15-3449 (Jan. 14, 2015)

Raveau, S., Ghorpade, A., Nawarathne, K., Zhenquang, Q., Ko, W., Zhao, F., Abou-Zeid M., Zegras, C. and Ben-Akiva, M. (2015) Smartphone Based Travel Survey to Study the Relationship Between Happiness and Behavior. 5th Future Urban Mobility Symposium, July 6-7, Singapore.

Raveau, S., Ghorpade, A., Zhao, F., Abou-Zeid, M., Zegras, C. and Ben-Akiva, M. (2016). Smartphone-based survey for real-time and retrospective happiness related to travel and activities. 95th Annual Meeting of the Transportation Research Board. Washington D.C., USA, January.

Rubin, Jonathan, "Connected Automated Vehicles: AVs: Relationship to Travel Behavior & Energy Use," Automated Vehicles Symposium 2015, sponsored by the Association for Unmanned Vehicle Systems International and Transportation Research Board of the National Academics, Ann Arbor, Michigan July 21-23.

Samuel, S., Zafian, Y., Nicholas, C.A., Zhang, J., Knodler, M., and Fisher, D.L. (January 2016). Do Traffic Warnings on Heads-Mounted Displays Improve Latent Hazard Anticipation? A Simulator Study. Accepted for presentation at the 95th Annual Meeting of Transportation Research Board. Washington, D.C.

Websites or other Internet sites

www.happymobility.org

MITR25-2 High-Resolution Urban Freight Modeling in Cambridge, MA [Caplice]
<http://lastmile.mit.edu/cartokm2/index.php>

www.research.gsd.harvard.edu/tut

Media

The Washington Post: The American Decline in Driving Actually Began Way Earlier Than You Think.
<http://www.washingtonpost.com/blogs/wonkblog/wp/2015/01/16/the-american-decline-in-driving-actually-began-way-earlier-than-you-think/>

Technologies or techniques

Nothing to report

Inventions, patent applications, and licenses

Nothing to report

Other products

Project MITR24-1

Capturing the Relationship between Motility, Mobility and Well-Being Using Smart Phones

We have developed a conceptual approach to the implementation of happiness evaluations within the Future Mobility Sensing (FMS) survey platform. FMS is a smartphone-based system that tracks users' activities and trips, which can detect certain trip attributes such as the mode. Users can visualize their activities and trips as an activity diary on the FMS app (or alternatively on the FMS website) where they also have the option to verify their activity diary and provide further information. The FMS has initially been developed as part of the Future Urban Mobility project of the MIT-Singapore Alliance for Research and Technology (SMART) and is under continuous development as part of other projects as well including this UTC project.

3. Participants & Other Collaborating Organizations

Organizations that have been involved as partners

Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece

Instituto Tecnológico y de Estudios Superiores Monterrey, Santa Fe campus, Mexico City, Mexico.

Luleå University of Technology, SE-971 87 Luleå, Sweden

Tel Aviv University, Tel Aviv

The Hartford Center for Mature Market Excellence (formerly The Advance50 Team at The Hartford),

University of Valencia, E-46010 – VALÈNCIA, Spain

Volvo Research and Educational Foundation

VTT, P.O. Box 1000, FIN-02044 VTT, Finland

Other collaborators or contacts that have been involved

We collaborated with researchers affiliated with Temple University Japan (Tokyo Campus), who under the leadership of Professor Kyle Cleveland, were conducting their own interviews on issues related to the Fukushima Daiichi Nuclear Power Plant crisis.

4. Impact

Project MITR24-1

Capturing the Relationship between Motility, Mobility and Well-Being Using Smart Phones

The framework that we have developed for measuring happiness should have an impact on the state of the art in transportation planning surveys and modeling methodologies. The FMS platform provides an opportunity for researcher to collect relevant mobility information at a low cost. Previous studies on happiness measure overall activity pattern happiness, while our approach allows the collection of measures of happiness for different activities conducted along the day. We also collect two different measures of happiness, real-time and retrospective, and study the relationship between them.

Project HVDE25-39

Transforming Urban Transport: a Set of Case Studies

The products of this research should prove valuable for the education of both transportation professionals and urban policy makers, and be of great interest to scholars too. We plan to disseminate this work in a variety of formats, including articles and essays on an analytic framework that will bring together the transportation and leadership dimensions of our research, case studies (suitable for use in executive programs and classroom settings), conference presentations and organized symposia, and scholarly books and articles summarizing the project's findings.

The impact on the development of the principal disciplines of the program

Project UMAR25-25

Evaluating the Effect of Google Glass on Driver Distraction

The research results demonstrate that head-mounted displays can actually increase the likelihood of driver behaviors that are known to reduce crashes. The reports in the literature to date of head-mounted displays have focused for the most part on their distracting potential. We have shown that they can also have a benefit. This may lead researchers in surface transportation human factors to explore broader, beneficial uses of head-mounted displays now that it has been established that they have a potential safety benefit.

The impact on other disciplines

HVDR25-21 Recreating Livable Communities after Catastrophe: Managing the Recovery from Japan's Earthquake, Tsunami, and Nuclear Disaster of 2011

Professor Howitt has made several presentations on findings from the research conducted during this reporting period to students and researchers representing a mix of disciplines from across Harvard, exposing them to public policy considerations of transportation infrastructure recovery and post-disaster land-use. The presentations include a lecture to research fellows at the Ash Center for Democratic Governance and Innovation; a panel discussion for a delegation of representatives of Chinese humanitarian relief NGOs; and a seminar for graduate students and researchers from across Harvard, which was organized by the Program on Crisis Leadership at Harvard Kennedy School.

Project HVDE25-38

Teaching Case Study on Korea Ferry Disaster of April 2014

The case study was taught in draft form in the Harvard Extension School course *MGMT 5090: Crisis Management and Emergency Preparedness*, exposing to graduate students in the management field to (1) the adequacy and incentives of safety regulatory regimes in the transportation sector (2) safety procedures and emergency preparedness associated with ferry transportation, and (3) the effectiveness of rescue methods.

The impact on the development of transportation workforce development

New England UTC and MIT's CTL Host Career Day May 27, 2015

The New England University Transportation Center and the MIT Center for Transportation and Logistics (CTL) hosted a career day for 15 high school sophomores, their math teacher Ms. Daniella Suarez, and Ms. Bethany Guen, Director of Development and Communications from the Boston Collegiate Charter School in Dorchester, MA. Boston Collegiate Charter's mission is to prepare each student for college, and among students there has been a growing interest in science; as a result, their teachers have been trying to increase STEM-related opportunities for the students.

CTL Director Dr. Chris Caplice and Dr. Lisa D'Ambrosio, UTC Associate Director of Partnerships, organized a workshop that exposed students to thinking about how different disciplines – from various branches of science and engineering to the social sciences – come together to address complex questions about transportation that don't fit neatly into simple categories.

After brief presentations, the students heard stories about the unique paths each presenter took from what they started majoring in during college through their decisions to go to graduate school, and what it was like to work and to do research at a university. The brief talks demonstrated how STEM training – from the basics of doing mathematical calculations to creating complex models – was employed in solving challenging real world problems. The students also gained an appreciation of how transportation is intricately woven into so many different decisions and issues that individuals, businesses and government must face daily – everything from how weather affects an individual's travel choices, to how a company decides to ship or source materials for a product, to how governments think about increasing sustainability.

Project UCNR25-33

Social Network Effects on Attitudes about Pedestrian Street Crossing Behavior

This project has created the opportunities for students. At the University of Connecticut an undergraduate civil engineering student learned how to use traffic simulation software to create the videos used in the surveys and a statistics graduate student participated in discussing the survey questions and in discussing the anticipated response and predictor variables that will be used for modeling after data collection. At Manchester Community College students in undergraduate courses in communication learned about transportation engineering, pedestrian safety, and public engagement.

Project HVDE25-39

Transforming Urban Transport: a Set of Case Studies

We are developing curriculum materials that may be used in graduate-level courses in such fields as transportation, planning, and public management, which can teach the findings of our cases as well as allow for further research. We also hope that our research and final products will provide exposure to political leaders and their involvement in transforming their city's transportation but also how future leaders, teachers, students, and others can transform transportation in the future.

The impact on physical, institutional, and information resources at your university or other partner institutions

Nothing to report

The impact on technology transfer

Nothing to report

The impact on society beyond science and technology

Project UMAR25-27

Route Choice in Congested Grid Networks

Presented findings have provided transit agencies with new methods for managing peaked demand for demand responsive transit systems. This includes a model for dynamic pricing of DRT services, which would improve system efficiency for users of Americans with Disabilities Act (ADA) Paratransit.

Project HVDE25-39

Transforming Urban Transport: a Set of Case Studies

Transportation can (and should) make important contributions to addressing public goals such as economic growth, environmental sustainability, public health and safety, enhancing opportunity for members of all income groups, and improving quality of life amenities. There are many reasons, however, why urban leaders and decision makers often choose the status quo even when far better alternatives are available. This project seeks to understand how leaders in cities identified potentially transformative initiatives, and then mobilized the support required to achieve successful adoption and implementation. We believe that the diffusion of such knowledge can play a significant role in helping to diffuse such innovations, and the spirit of innovation more generally, to other urban areas worldwide.

5. CHANGES/PROBLEMS

No change.

Additional information regarding Products and Impacts

Outputs

Project UCNR25-31

A Multi-Scalar Model to Identify the Causes of Decreased Vehicle Miles Traveled (VMT) in the United States

Interactive graphs included in the Washington Post have made the data associated with this research project publicly available.

Outcomes

Nothing to report

Impacts

Nothing to report