

Annual Report FY 08

UTCM












*University Transportation Center for Mobility*



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A report of activities of the  
 University Transportation Center for Mobility  
 Funded by USDOT, Research & Innovative Technology Administration  
 University Transportation Centers Program  
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IMPROVING THE *quality* OF LIFE BY ENHANCING *mobility*

## UTCM FOCUS AREAS

- Coast-to-coast, border-to-border mobility
- Rural public transportation
- Congestion management and mitigation
- Innovative financing

## INNOVATIONS IN RESEARCH, EDUCATION, TECHNOLOGY TRANSFER



**A** crystal ball would have come in handy two years ago.

At the time, I was developing the strategic plan for what would become the UTCM. While the various modes of USDOT and TxDOT had strategic plans with research priorities, there was no way to know for sure what pressing transportation issues might emerge throughout the duration of SAFETEA-LU.

The difficult task faced by all of us 60-odd UTC Directors was to adopt themes and research agendas that would be relevant, useful, and timely... and to predict what those issues might be four years in advance. A tall order to be sure, so I sought the advice of many smart, visionary people within state and federal transportation agencies, the transportation industry and Texas Transportation Institute. In the course of those discussions several themes began to emerge which were clearly aligned with research priorities. These themes evolved into UTCM's Research Focus Areas.

Two years later, it seems that these Research Focus Areas identified in the strategic planning process are indeed the hot topics of the day. One area in particular, Innovative Finance, has become the subject of intense debate at the local, state, and national level. Although the crisis in transportation infrastructure maintenance is well-known in transportation circles, it took the tragic collapse of the I-35W Mississippi Bridge in Minneapolis for the severity of the issue to be fully grasped by the public. The decreasing quality of life in our cities due to congestion is well-documented in TTI's Urban Mobility Report, and the American public is growing impatient with the increasing loss of personal time stuck in traffic. Now that such problems are better understood by the public, decision-makers are gearing up for the difficult discourse needed to determine how to pay for maintenance of our existing transportation infrastructure and overdue expansions.

The problem is further complicated by the rise in gas prices: the corresponding reduction in gas use by the public is causing the traditional method of transportation finance, the gas tax, to decline just as the necessity of funding transportation improvements is being accepted. Thus decision-makers have a critical need for unbiased, well-researched information on mobility barriers and alternative ways to finance transportation projects. And the UTCM is meeting this need through timely research and technology transfer:

- Development of the web site "A Guide to Transportation Funding Options." ([utcm.tamu.edu/tfo](http://utcm.tamu.edu/tfo)) This web site is designed to serve as a non-biased resource for decision-makers, providing simple and clear definitions and examples of both traditional and innovative funding options available for transportation infrastructure projects (see story, p. 10).

## DIRECTOR'S MESSAGE



- Enhancement of the Urban Mobility Report (UMR), which has been produced by TTI for over 20 years. It is widely referenced and is considered to be the definitive measurement of congestion in America. Under UTCM sponsorship, the UMR data collection and analysis has been enhanced, the impact of transit and freight movement has been added, and the economic implications of congestion have been included. These enhancements will result in better information for decision-makers as they address ongoing transportation challenges with increasingly scarce funding sources (see story, p. 9).
- Support of the research project, "Mileage-Based User Fee Pilot Project: Rural/Small Urban Area Application in Northeast Texas." This project seeks to determine the appropriateness of mileage-based user fees for accomplishing regional goals and objectives for mobility and long term financial sustainability (see project summary, p. 20).

The need for better information in transportation financing is as clear as the glass in a crystal ball. The UTCM will continue to help those in Texas and beyond get the useful, unbiased information they need to make informed decisions.

Predictably yours,

*Melissa S Tooley*

Melissa S. Tooley  
Director, University Transportation Center for Mobility





## UTCM STUDENT ACTIVITIES

### Inaugural UTCM Fellows Begin Studies at Texas A&M University



**Ben Sperry**

PhD Student in Civil Engineering  
Texas A&M University

Direct support of promising students is an exciting part of UTCM's education directive. UTCM may support graduate students in transportation-related programs by various means including fellowships, scholarships, stand-alone assistantships, and tuition and/or fee awards.

This year, the UTCM worked closely with the Zachry Department of Civil Engineering at Texas A&M to assist in the recruiting of two promising PhD students, Mr. Ben Sperry and Ms. Susan Paulus. As the first UTCM Fellows, each student receives a two year stipend that supplements their graduate assistantship.

#### Ben Sperry

A native of Springfield, Illinois, Ben Sperry is pursuing a PhD in Civil Engineering at Texas A&M University. In addition to a multi-year UTCM fellowship, he holds an assistantship in the Multimodal Freight Transportation Programs of the Texas Transportation Institute. Ben earned a Master of Science in Civil Engineering from Texas A&M University and a B.S. in Civil Engineering and Engineering Management from the University of Evansville, Indiana. His past work experience includes participation in the Southwest University Transportation Center (SWUTC) Undergraduate Transportation Scholars Program and an internship position with the Evansville Metropolitan Planning Organization. Ben's research interests include multimodal freight and passenger transport, the link between travel behavior and the built environment and transportation economics.

#### Susan Paulus

Susan C. Paulus graduated from the University of Wisconsin in May with dual degrees: Bachelor of Science in Civil Engineering and Bachelor of Business Administration in Productions and Operations Management. Suzie entered Texas A&M in Fall 2008 as a UTCM Fellow to pursue a PhD in Engineering. When she began her course work, her goal was to start her own engineering firm. But attending the TRB annual meeting this year opened her eyes to her love of research which she shared with TRB participants and her professors. Now her goals after graduate school include becoming a professor and researcher. With only eight percent of engineering faculty being female, Suzie hopes to be a role model for women in engineering, and she looks forward to encouraging women to pursue degrees in technical disciplines.

The UTCM is pleased to enhance the development of the transportation and mobility workforce through the training and support of outstanding students. Inaugural UTCM Fellows Ben and Suzie have set the standard for excellence in our student support programs.

This program involved the collaborative efforts of:



## UTCM STUDENT ACTIVITIES

### Student Receives the First Graduate Certificate in Transportation Planning

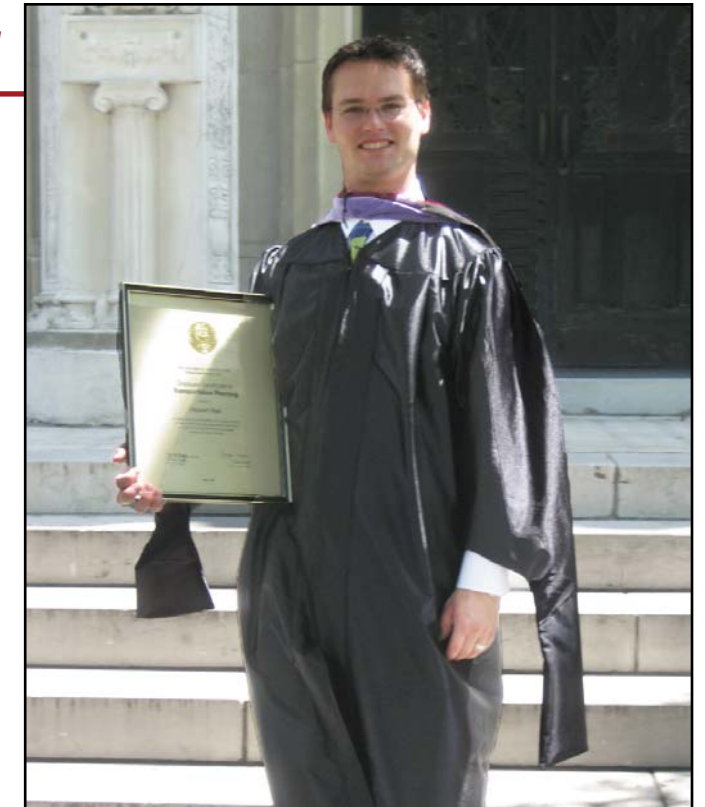
In May 2008, Mr. Rob Rae received a unique Masters in Urban Planning degree from Texas A&M University: his diploma was accompanied by the first ever Transportation Planning Certificate. The Transportation Certification Program was developed as a UTCM project (see p. 24) under the direction of Dr. Forster Ndubisi, Professor and Head of Landscape Architecture and Urban Planning in the College of Architecture at Texas A&M. The certification in transportation planning provided Rob an additional focus area of course work during his two-year MUP program.

In the certificate program, Rob completed 18 credit hours in transportation-related courses designed to increase students' understanding of the role of transportation in contemporary society. Students receive tailored instruction in three specialty areas: Multimodal Systems Planning, Transportation and Urban Design, and Transportation Planning and Public Policy.

"I am grateful for my experience at Texas A&M and I find great value in the certificate that I received," says Rob. "Upon graduation I accepted a great job in Dallas with Kimley-Horn and Associates in their transportation planning group. The knowledge I gained from the courses required for the transportation certificate have greatly benefited me as I transitioned from education to employment."

The certificate has application to a wide variety of disciplines, including public health, public policy, parks and recreation, architecture and engineering. Ndubisi notes, "By offering this certificate, many more students can expand their career options to include transportation applications."

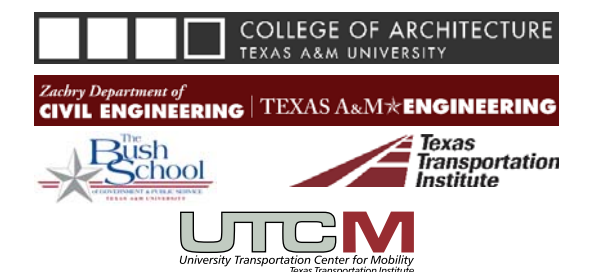
Six more students are slated to graduate with the Transportation Certificate in Fall 2008 and at least six will follow in Spring 2009. The program has also been formally approved by Texas A&M University, so these graduates will receive not only a separate certificate, but a notation of the certification on their A&M diplomas.



**Rob Rae**

Masters in Urban Planning Graduate, May 2008  
Texas A&M University  
Recipient of the first graduate certificate in Transportation Planning

This program involved the collaborative efforts of:







**K. Meghan Wieters**

PhD Candidate in Urban Regional Science and UTCM Outstanding Student of the Year, 2007

**UTCM Selects Its Inaugural Outstanding Student of the Year: K. Meghan Wieters**

“Overseeing the selection of the Outstanding Student of the Year is one of the very best things about being a UTC Director,” says UTCM Director Melissa Tooley. “And our first candidate, Meghan Wieters, sets a wonderfully high standard for our Center.” Indeed, the PhD Candidate in Urban Regional Science at Texas A&M has held research assistantships from both TTI and the Southwest Region UTC (SWUTC). She holds a Master’s in Community and Regional Planning from the University of Texas and has professional experience as Principal Planner for the City of Austin. Meghan has also developed and taught undergraduate courses at A&M and has been the recipient of numerous awards, including SWUTC’s Transportation PhD Student of the Year in 2005. “What’s more,” said Tooley, “Meghan is a brilliant, organized young woman with an easy manner and a determined attitude.”

**TRB: A Student’s Perspective** by K. Meghan Wieters, AICP

*I have heard the stories about the Annual TRB meeting – the thousands of people there, the years where participants trudged through the snow to get to the various hotels and the hundreds of sessions. I had heard the stories, but I never had the opportunity to go; that is, until I received TRB travel expenses as part of the award for the first UTCM Outstanding Student of the Year. Receiving this award was thrilling because now I got to experience these stories firsthand!*

*The banquet at which the SOYs received their awards was full of major leaders in the field. I had my picture taken with Former Secretary of Transportation Norman Y. Mineta and shook hands with Congressman James L. Oberstar. I attended primarily pedestrian-oriented sessions, hearing lively debate on whether the display of a countdown should or should not be in the MUTCD. Following the discussions on how Washington D.C. (DDOT) implemented the pedestrian countdown signal, I was able to walk around parts of D.C. to experience the countdown signals for myself. And despite being a bit colder than I am used to, I had a great time in our nation’s capital.*

*Offering travel assistance as part of the SOY award affords a great opportunity for students to go to this important conference – ideally before we have to present a paper or poster there. The experience certainly enlightened me as to how large the event is, how to plan the sessions I wanted to attend, and to consider what research I might present at TRB in future years.*

*Thank you for this great opportunity.*



2007 UTC Program Students of the Year



Director of CUTC Rod Diridon, RITA Administrator Paul Brubaker, UTCM SOY Meghan Wieters, Former Secretary of Transportation Norman Mineta



**STI Scholars Program Launched at Prairie View A&M University**

Summer Transportation Institute (STI) programs across the nation expose bright young high school students to careers in transportation. Now, the STI Scholars program, developed by a team headed by UTCM researcher Dr. Raghava Kommalapati of Prairie View A&M University (see p. 27), adds a second-year experience to the PVAMU STI program, further cementing the career interests of returning students.

STI Scholars LaSasha Walker of Humble, TX and Adam Earls of Cypress, TX were teamed with two Prairie View A&M undergraduate mentors, while they also served as mentors to first-year STI students. During their two week program, they participated in higher level testing, observation and presentations including research on RFID technology under the direction of Dr. Erick Jones of the University of Nebraska-Lincoln.

**STI Scholars Activity Report**  
by LaSasha Walker and Adam Earls

*The Summer Transportation Institute (STI) goal is to expose high school students to college life, and to engineering and transportation as a major field of study. In this advanced project, as second year STI students, we became involved in engineering research projects using an emerging technology, Radio Frequency Identification (RFID).*

*Under the careful guidance of Dr. Erick Jones, a world renowned researcher in RFID technologies at the University of Nebraska-Lincoln, we were exposed to the RFID technology through faculty presentation, lectures, videos and experimentation. In addition, Prairie View A&M undergraduate students Quinton Rodgers and Nadine Ford provided day-to-day knowledge and guidance about college life and classroom experiences.*

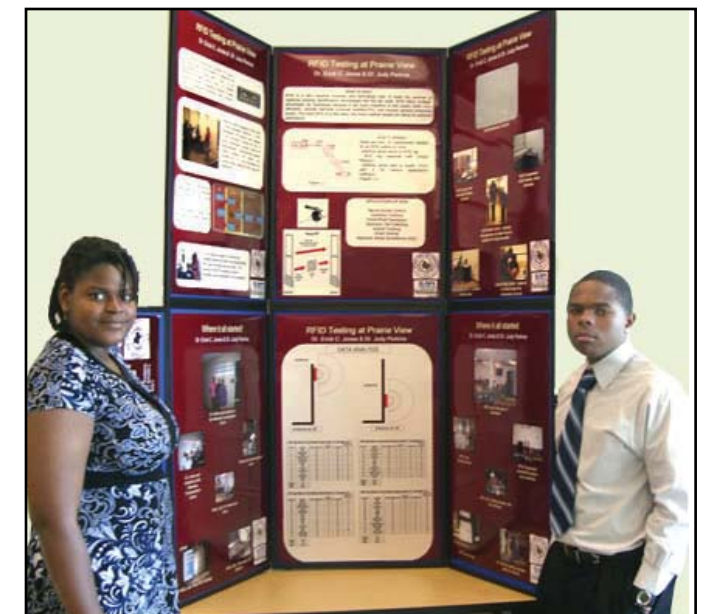
*The design methodology implemented was designed by Dr. Jones’ RFID lab.*

*In this study our goal was to identify the greatest distance at which the programmable RFID tags can read and play music.*



**Adam Earls and LaSasha Walker**

STI Scholars at Prairie View A&M University



Walker and Earls display the poster they made detailing their RFID research as part of the STI Scholars program at PVAMU.

This program involved the collaborative efforts of:







# UTCM TECHNOLOGY TRANSFER ACTIVITIES

## RITA Administrator Paul Brubaker visits TTI, UTCM and SWUTC



Paul Brubaker, RITA Administrator, addresses TTI, SWUTC and UTCM staff during a two-day site visit and tour of facilities in College Station, TX.

President Bush appointee Paul Brubaker, Administrator of the USDOT Research and Innovative Technology Administration (RITA), told Texas Transportation Institute (TTI) employees, "The world is going to look very, very different in ten years."

Brubaker was referring to the nation's growing and shifting population, the price of oil and the challenge of financing infrastructure projects. As RITA Administrator, Brubaker is responsible for coordinating DOT's \$1 billion research budget and is charged with advancing technologies that will improve the U.S. transportation system.

Brubaker's December, 2007 visit to TTI was his first since being sworn in as RITA Administrator last summer. Former RITA Associate Administrator for Research, Development and Technology Dr. Jan Brecht-Clark accompanied him on the tour. Brecht-Clark was responsible for the University Transportation Centers program, which includes TTI's two UTCs, the Southwest Region University Transportation Center (SWUTC) and the University Transportation Center for Mobility (UTCM).

Brubaker and Brecht-Clark were presented overviews of SWUTC and UTCM and toured TTI's TransLink® Laboratory, the Materials and Pavements Lab and TTI's research and testing facilities at the Riverside campus.

"Dr. Jan Brecht-Clark and I found the briefings and exchanges very useful to understanding the major contributions TTI is making to improve the safety and performance of our national transportation infrastructure. Moreover, TTI is performing a great service to the nation and the state of Texas by training the next generation of national, state and local transportation leaders," Brubaker said. "The commitment and passion of the Aggie community to creating a world-class transportation research facility at A&M was evident from all of the people we met with."

leaders," Brubaker said. "The commitment and passion of the Aggie community to creating a world-class transportation research facility at A&M was evident from all of the people we met with."

**"TTI is performing a great service to the nation and the state of Texas by training the next generation of national, state and local transportation leaders."**

**Paul Brubaker  
RITA Administrator**

# UTCM TECHNOLOGY TRANSFER ACTIVITIES

## Annual Urban Mobility Study Is Widely Sought for Data on Worsening U.S. Traffic Congestion



**Timothy J. Lomax, PhD, PE**  
Research Engineer  
Mobility Analysis Program  
Texas Transportation Institute

Congestion is a big deal. And when you're stuck in bumper-to-bumper traffic, it's the only deal. Texas Transportation Institute (TTI) estimates that congestion is costing Americans more than \$78 billion a year, 105 million weeks of vacation and enough wasted fuel to fill 58 fully-loaded supertankers.

TTI has studied congestion trends since 1982, and on September 18, 2007, the 2007 Urban Mobility Report was released to a media audience anxious to report on our nation's ever-increasing congestion problem. TTI mobility analysts Tim Lomax and David Schrank were interviewed by approximately 140 newspapers, radio and network television stations.

**UMR '07 by the Numbers**  
**>200 interviews given to media**  
**140 media outlets covering UMR release**  
**23 presentations given to policy makers**  
**Cost of congestion per US traveler:**  
**\$710**  
**1 week of vacation**  
**26 gallons of fuel**

The Urban Mobility Report, funded in part by the UTCM (see p. 30), is an enormous undertaking for its authors. "When you see a report on ABC, it represents years of data collection and weeks of work preparing to inform the public," Lomax said.

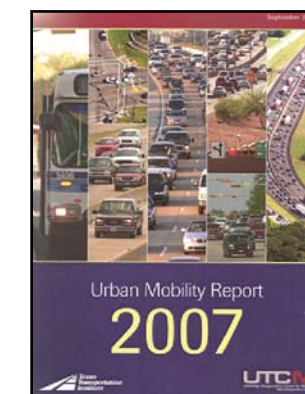
Lomax participated in a Washington, D.C. news conference sponsored by ARTBA and APTA announcing details of the report's findings. Most of the network television news groups interviewed him for their evening broadcasts, and Schrank was interviewed live on CNN. Additionally, the report is widely referenced by policymakers and politicians searching for solutions to the nations complex congestion problems.

Researchers spent two years revising the methodology to provide more—and higher quality—data on which to base the 2007 study. The result is the most detailed picture yet of a problem that is growing worse in all 437 of the nation's urban areas. "Congestion is such a complex issue," Lomax said. "The better the data we use to define the problem, the more successful we will be in addressing its root causes."

Lomax utilized UTCM funding to expand estimates of the effect of congestion to all 437 U.S. urban areas. The study also provides detailed information for 85 specific urban areas. Report data is accessible on the internet at <http://www.mobility.tamu.edu>.



**David L. Schrank, PhD**  
Associate Research Scientist  
Mobility Analysis Program  
Texas Transportation Institute





**Tina Geiselbrecht**

Associate Transportation Researcher  
System Planning, Policy and Environment  
Research Group, Texas Transportation  
Institute

**New Web Site Explores Transportation  
Funding Options**

As our nation's transportation demand continues to grow due to population increases and an expanded economy, elected officials at all levels of government are faced with difficult decisions regarding mechanisms to adequately fund the maintenance and expansion of the nation's transportation systems.

Where does a policy maker go for concise information on the options for funding transportation infrastructure improvements?

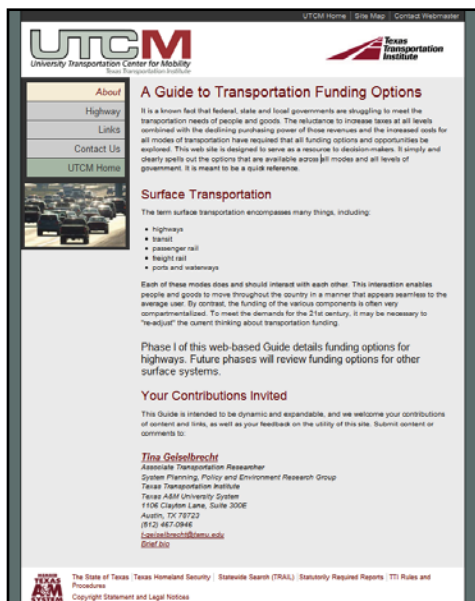
Thanks to Tina Geiselbrecht, such a resource now exists on the world wide web. With funding from the UTCM (see p. 26) and assistance from Tobey Lindsey at Texas Transportation Institute and Martha Raney Taylor at the UTCM, Geiselbrecht has produced a concise, user-friendly web site called a Guide to Transportation Funding Options, or TFO, for leaders and policy makers. TFO describes the array of transportation funding options that are or may be available for use throughout the country.

"The TFO site outlines each funding option and, where possible, offers links to projects that are utilizing a particular type of funding," says Geiselbrecht. Located within the UTCM web site, the TFO web site is accessible on the UTCM home page, <http://utcm.tamu.edu>. Phase 1 of the project includes funding for highways, and subsequent phases will focus on additional modes of surface transportation.

Another UTCM project under the direction of Linda Cherrington, Program Manager of the Transit Mobility Program in TTI's Houston Office, will provide significant information in late 2008 for the TFO's coverage of mass transit funding options (see p. 27). For more information, visit the TFO web site at <http://utcm.tamu.edu/tfo>.

**"The TFO web site provides policy makers with concise summaries, examples, data and links on current and proposed options for funding transportation infrastructure improvements."**

**Tina Geiselbrecht  
TFO Project PI**



<http://utcm.tamu.edu/tfo>

**UTCM's Mobility Colloquium Series Fosters  
Interdisciplinary Interactions**

One of UTCM's most visible means of fostering interdisciplinary collaboration and technology transfer is the Mobility Colloquium, launched in the fall of 2007. This casual lunchtime series has hosted speakers from a variety of transportation and related disciplines such as architecture, agriculture and public policy. Students and researchers are encouraged to attend to network with interdisciplinary colleagues. Lively Q&A follows each presentation. In FY07, six colloquia were presented, with an average attendance of 40 both in person and via videoconferencing units in TTI's remote offices throughout Texas. Colloquia topics were:



Melissa Tooley presents the first  
Mobility colloquium

**09.10.2007**

**"The ABCs of UTCM: Who We  
Are and How to Get Funded"**

Melissa S. Tooley, PhD, PE, Director, UTCM

Dr. Tooley offered an introduction to the new UTC at TTI. Tooley reviewed the center's four focus areas and discussed the center's Request for Preliminary Proposals that had just been released. She entertained questions from participants on the UTCM funding process.

**11.12.2007**

**"Designing for Context: Enhancing Safety and Mobility  
through Urban Design"**

Eric Dumbaugh, PhD, Assistant Professor, Department of Landscape Architecture and Urban Planning, Texas A&M University

In a high energy, fast-paced presentation, Dr. Dumbaugh offered current research perspectives on urban planning to increase mobility, safety and functionality in urban environments, including strategic planning of roads and retail areas. He noted that conventional approaches – more lanes, bigger retail centers with greater amounts of parking in front of retail spaces – can lead to increased difficulty managing traffic, pedestrians and land use. Dumbaugh reviewed several case studies in which urban planning solutions contrary to the norm have yielded positive results.

(cont. on p. 12)



Eric Dumbaugh explains how innovative solutions to urban planning have increased mobility and safety in several case studies.



# UTCM TECHNOLOGY TRANSFER ACTIVITIES

## UTCM's Mobility Colloquia (cont. from p. 11)



01.28.2008

### "Communicating the Value of Your Research: How to Convince Your Mom That You Contribute to Society"

Johanna Zmud, PhD, President, NuStats, Austin, TX

Timothy J. Lomax, PhD, Research Engineer, Mobility Analysis Program, Texas Transportation Institute

With a tongue-in-cheek title, Zmud and Lomax presented the results of a National Cooperative Highway Research Program (NCHRP) project designed to help researchers focus on the value of their research, not just the findings.

"We want to help ensure that the hard work of researchers actually gets noticed for the value it has," Lomax said. "The first step, we think, is to understand which audiences might value the research. The next step is to know how to communicate that message to the right audience."

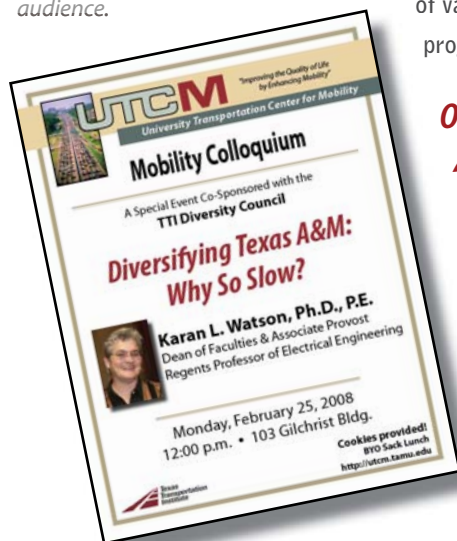
Zmud detailed a wide range of case studies over the last two decades that were successfully received by their target audiences. "The common element to creating the widespread perception of value was having an effective strategy for communicating results, and building that into the project," Zmud said.

**"The common element to creating the widespread perception of value was having an effective strategy for communicating results, and building that into the project."**

**Johanna Zmud, PhD  
President, NuStats**



Lomax and Zmud present their colloquium to a rapt audience.



02.25.08

### "Diversity at Texas A&M: Why So Slow?"

(Co-sponsored by TTI's Diversity Council)

Karan L. Watson, PhD, PE, Dean of Faculties and Associate Provost, and Regents Professor of Electrical Engineering, Texas A&M University

In honor of Black History Month, the UTCM and the TTI Diversity Council co-sponsored the Mobility Colloquium on diversification efforts of Texas A&M University.

Watson, who served as the Interim Vice President and Associate Provost of Diversi-

ty in 2006, noted the slow progress of Texas A&M's efforts in diversifying its students and faculty. She cited low percentages of minorities at TAMU compared to that of college-ready high school graduates in Texas. Watson encouraged everyone to look within and ask what they are doing to improve diversity efforts. "It would be better for us to be seen as the institution that got past our own history," said Watson.

Said UTCM Director Melissa Tooley, "This kind of dialogue will help TTI and TAMU prepare for the workforce of the future."

04.14.2008

### "SMILE! You're on Traffic Light Camera: Applying Stated Choice Modeling to Transportation"

Douglass Shaw, PhD, Professor, Department of Agricultural Economics and Recreation, Parks and Tourism Sciences, Texas A&M University

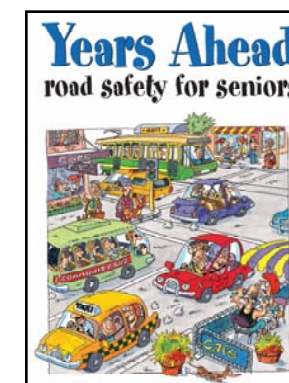
A survey technique long used by new product marketers to determine, for example, what type of shampoo consumers might buy, Stated Choice Modeling (SCM) has a direct application in transportation projects. Dr. Douglass Shaw noted, "Stated Choice Modeling has some advantages in transportation, especially because it gives respondents the chance to choose from several alternatives that don't yet actually exist." For example, SCM can help determine what factors might be important in establishing new transportation routes or in making improvements to existing ones.

Shaw reviewed how Texas A&M graduate students are applying SCM to a local hot topic among Aggies: the newly installed red light cameras in areas surrounding the Texas A&M campus. The project uses SCM to assess the effect of current and future camera installations on driver behavior and pedestrian safety.

07.14.2008

### "Older Road User Safety and Mobility in Australia and Japan"

Susan T. Chrysler, PhD, Senior Research Scientist and Manager, Human Factors Group, Center for Transportation Safety, Texas Transportation Institute



Australian educational pamphlet

What can Japanese and Australians teach us about traffic safety for older Americans?

Chrysler's presentation detailed a recent FHWA International Scan Tour to Japan and Australia, focusing on each country's efforts to make traveling safer for older drivers, transit users and pedestrians.

In examining each country's safety programs, infrastructure improvements, land use planning and transit operations, Chrysler found that both countries have implemented a wide variety of safety measures with an aging population in mind, including speed control, pedestrian improvements and educating older road users and their families.



Sue Chrysler recounted findings from her recent FHWA Scan Tour to Australia and Japan.





# UTCM RESEARCH HIGHLIGHTS

## Guidebook to Offer Strategies for Improving Dispatch Productivity in Demand-Response Transit Systems



**Suzie Edrington**

Research Specialist  
System Planning, Policy and Environment  
Research Group  
Texas Transportation Institute

Increasingly, seniors are choosing to retire to rural areas. Aging citizens often have fixed incomes and physical or cognitive disabilities impairing their ability to drive. Public transit for these individuals offers independence and allows them to stay involved in the community.

Transit agencies that serve low density, rural service areas or people with disabilities provide demand-response service. Passengers schedule services in advance using a reservation system to arrange service. But this service costs at least five times more per passenger trip than a fixed-route service.

While demand is increasing, so are costs for fuel and insurance, and yet budgets are shrinking. Therefore, transit agencies need ways to control costs while improving productivity.

"As much as 40% of scheduled service is changed on the day of service due to user cancellations, no-shows and service interruptions," says Suzie Edrington, of TTI's Houston office. Since the dispatch function manages these day-of-service changes, effective dispatching improves productivity and lowers costs.

"Providers need guidance in improving their dispatch services," says Edrington. With funding from the UTCM, Edrington and her team, including Jeff Arndt, Research Scientist at TTI-Houston's Transit Mobility Program and Texas A&M graduate student Angie Lehnert, are conducting research (see p. 23) to produce a guidebook to help transit providers emphasize effective dispatch services.

"We have just completed the first phase of the research," reports Edrington. "After surveying 42 transit agencies providing demand response services in rural or small urban areas across Texas, we selected five Texas transit providers

**"With just three percent improvement in service productivity, the average rural demand-response system would save about \$65,000 a year."**

**Suzie Edrington  
Project PI**

that represent a cross-section of the technologies used and the service levels provided. Now we will conduct case studies of their dispatch operations."

Edrington and her team will use results from the case studies to design keys to making demand-response dispatch successful: setting dispatch goals and objectives, staffing according to those goals and objectives, developing policies and procedures for effective operations, communicating "team" responsibilities, and designing and tracking performance measures. The guidebook will outline ways to implement these keys.



Capitol Metro (Austin, TX) dispatcher managing an ADA demand-response system



Graduate assistant Angie Lehnert collected data from 42 transit agencies across Texas that provide demand-response services.

Just how much difference can effective management of demand-response transit services make? "With just three percent improvement in service productivity, the average rural demand-response system would save about \$65,000 a year," says Edrington.

The guidebook, entitled "Dispatching Demand-Response – Guidebook to Increasing Productivity and Saving Money" will be offered to public transportation coordinators and operators starting January 2009.





**Pilot Study to Determine Feasibility of Providing Demand-Response Transit to Texas Colonias**



**Luca Quadrifoglio, PhD**

Assistant Professor  
Zachry Department of Civil Engineering  
Texas A&M University

How do you provide transportation services to sparsely populated, sprawling communities of mostly disadvantaged residents? That is the question being addressed by a UTCM research team led by Dr. Luca Quadrifoglio, Assistant Professor in the Transportation Division of the Zachry Department of Civil Engineering at Texas A&M University and an Associate Research Engineer in TTI's Operations and Design Division, Signs and Markings Program.

Texas regions sharing a border with Mexico have experienced tremendous population growth in recent decades, resulting in a collection of some 1,800 communities or colonias. Most of the 400,000 residents of the *colonias* struggle to maintain acceptable living conditions and basic services, including transportation: what transit services do exist are limited and inadequate. The *colonias'* transportation problems are compounded by poverty, making it impossible for most residents to afford private vehicles. "This leaves the majority of people with an immediate need for any kind of transportation service," said

Quadrifoglio. Moreover, relatively low demand density means that traditional fixed route transit services are not cost effective. "It represents a broken system that is not serving the needs of the community," said Quadrifoglio.

The good news is that recent innovative and flexible transit concepts intended to respond to the transportation needs of low density areas have been analyzed by researchers and practitioners, and the *colonias* represent a unique opportunity to test these new ideas.

That's where Dr. Quadrifoglio's pilot study comes in. Using a representative *colonia*, El Cenizo, near

Laredo, TX, his research team is assessing the current transportation services being offered in the community as well as demand for services. They will then build a model to simulate flexible transit solutions in the area.

In addition to Dr. Quadrifoglio, the research team includes TTI Senior Research Scientist Linda Cherrington and two Texas A&M graduate students, Shailesh

**"The project will deliver a completed model simulating flexible transit options that hopefully can be implemented in a future trial in the colonias."**

**Luca Quadrifoglio, PhD  
Colonias Project PI**

Chandra from India and Chung-Wei Shen from Taiwan. The project is jointly supported by the Southwest Region University Transportation Center (SWUTC) and UTCM (see p. 29).

"In the first six months, we were able to develop the survey questionnaire, and we are now distributing it to El Cenizo residents," says Dr. Quadrifoglio. In order to provide the best match of services to the area, it is important that the survey identify how possible solutions might be received. "While designing [the survey]," said Quadrifoglio, "we focused on understanding the current mobility patterns in the area and especially on gathering a sense of how well the residents would respond to a new flexible transit service."

Questionnaires will be delivered door-to-door by a team of 10 *promotoras*, actual *colonia* residents working for Texas A&M's Center for Housing and Urban Development (CHUD) in the College of Architecture. "I recently visited the area and met with the *promotoras*. They are experienced at collecting data from their fellow residents and have proven to be the best at gathering valid data from this group," said Quadrifoglio. "They will go door to door interviewing members of each household within El Cenizo." Quadrifoglio expects to collect 250 completed surveys in this way.

Concurrently, the team is preparing models to simulate proposed transit service operations and investigate the optimal configuration. Demand data will be updated based on results of the survey. Said Dr. Quadrifoglio, "The project will deliver a completed model simulating flexible transit options that hopefully can be implemented in a future trial in the *colonias*."



Residence in a Webb County, TX colonia





## UTCM RESEARCH PROJECTS



### Timothy J. Lomax, PhD, PE

Research Engineer

Mobility Analysis Program  
Texas Transportation Institute

Shawn M. Turner, PE  
David L. Schrank, PhD  
William L. Eisele, PhD, PE  
David R. Ellis, PhD

Mobility Analysis Program  
Texas Transportation Institute

UTCM Project #08-16-08 · RiP.trb.org Database #15491

### Improving Mobility Data and Benefit Estimation Procedures

**Project dates:** January 1, 2008 - November 30, 2008

**Award:** \$150,000

For more than 20 years, TTI has produced urban congestion and mobility data that is regularly used to discuss the transportation challenges facing cities and the nation. The 2008 Urban Mobility Report will include detailed mobility data for 90 urban regions, as well as estimates of the congestion problem in all U.S. urban regions. The effect of potential solutions on the urban traffic congestion problem, including arterial street access management, traffic signal improvements, incident management, ramp metering, public transportation systems and high-occupancy vehicle lanes, will also be included. Improvements will also be made to the methods used to assess the economic effects of mobility improvements. A separate technical memorandum will identify the usefulness of more detailed travel time information sources that may become widely available in the next few years.

UTCM Project #08-01-13 · RiP.trb.org Database #15492

### A New Systems Approach to Risk Reduction and Hazard Mitigation of Transportation Infrastructure Networks Subject to Multiple Hazards

**Project dates:** January 1, 2008 - December 31, 2008

**Award:** \$95,888

Integrity, robustness, reliability, and resiliency of infrastructure networks are vital to the economy, security and well-being of U.S. citizens. Faced with threats caused by natural and man-made hazards, transportation infrastructure network management must be directed towards: (1) understanding the network performance as a system; (2) modeling the dynamic interaction between the network and the external and internal demands; and (3) defining hazard management strategies to optimize resource allocation. The objective of the project is to develop a robust model of the performance of infrastructure transportation network systems that can be used to design efficient risk management strategies to ensure acceptable systems performance (e.g., in terms



### Mauricio Sanchez-Silva, PhD

Visiting Research Associate

Zachry Department of Civil Engineering  
Texas A&M University



### David V. Rosowsky, PhD, PE

Head & A.P. & Florence Wiley Chair  
Zachry Department of Civil Engineering  
Texas A&M University

of expected damage or recovery times) when subject to the action of individual, simultaneous, or sequential hazards. This proposed research will explore the performance of infrastructure networks using a systems approach. This approach is different from most existing modeling techniques in that networks will not be modeled as a collection of separate elements, but rather as a whole. This project will develop new analytical methods built on a hierarchical structure of the system. The focus will be not only on the components but also on their interaction and dependencies. This will be used as the basis to characterize and model the emergent properties of the entire system. The proposed model will be supported on systems theory and will use mathematical tools such as graph theory, decision trees, agent-based simulation and network flow modeling to better capture the internal relationships of network components and to take into account the spatial and temporal characteristics. Time-dependent models will be used for studying the life-cycle performance (mechanical and operational) of the system and to optimize strategies that maximize the objective performance function (e.g., cost or efficiency of the response) for different time windows.

UTCM Project #08-05-04 · RiP.trb.org Database #15490

### Estimating the Benefits of Managed Lanes

**Project dates:** January 1, 2008 - February 28, 2009

**Award:** \$80,000

Managed Lanes (ML) offer travelers the option of congestion-free travel in corridors where general purpose lanes are congested. To ensure MLs do not become congested (and often to help pay for the construction of the lanes) travelers have to pay a toll to use MLs. This toll varies by time of day or by congestion level, increasing as demand for the lane increases. Thus travelers must make a decision, often on the spot, between a tolled, free-flow trip, or an untolled congested trip. This decision is a difficult one for transportation planners to predict. The decision varies by traveler and the same traveler can easily make a different decision on any given trip due to the constraints of that trip. The majority of patrons on the few MLs in operation use the MLs only occasionally. For example, if a traveler is running late for a meeting, that one trip in uncongested traffic may become valuable enough to the traveler to pay for the use of the ML. Since the ability to predict and value these infrequent uses does not exist, the true value, and therefore benefits, of MLs is unknown. This project will survey Houston's Katy Freeway travelers, posing several versions of a stated preference survey just before the opening of the new Katy MLs. Analysis of survey responses will reveal what improvements can be made to stated preference surveys that will more accurately predict the traveler's true willingness to pay for the MLs and therefore gauge the true value of MLs.



### Mark Burris, PhD

Associate Professor

Zachry Department of Civil Engineering  
Texas A&M University

### Douglass Shaw, PhD

Professor

Department of Agricultural Economics  
Texas A&M University





### Methodology and Guidelines for Regulating Traffic Flows under Air Quality Constraints in Metropolitan Areas



#### Yunlong Zhang, PhD

Assistant Professor

Zachry Department of Civil Engineering  
Texas A&M University

**Project dates:** January 1, 2008 - August 31, 2009

**Award:** \$76,756

This project will develop a methodology to couple a new pollutant dispersion model with a traffic assignment process to contain air pollution while maximizing mobility. The overall objective of the air quality modeling part of the project is to develop a model to predict the air quality at receptor sites in metropolitan areas using traffic data from a coupled traffic model and real time meteorological data. Most of the air dispersion models in use do not have a full description of the physical and chemical processes to describe the formation and transformation of pollutants in the metropolitan areas relating to traffic flow and thus cannot provide all the information necessary for traffic planning and regulating. Using the reactive dispersion air quality model developed in this project, traffic assignment processes can be conducted taking air quality into account as a form of constraint that limits the pollutants under certain acceptable levels in parts of the transportation network. This consideration will be an added constraint in addition to the roadway segment capacity constraint in the assignment process. Air quality can also be considered as an additional objective function while assigning traffic flow in the metropolitan transportation network.



#### Qi Ying, PhD

Assistant Professor

Zachry Department of Civil Engineering  
Texas A&M University

### Mileage-Based User Fee Pilot Project: Rural/Small Urban Area Application in Northeast Texas



#### Ginger Goodin, PE

Research Engineer

System Planning, Policy and Environment  
Research Group, Texas Transportation Institute

**Project dates:** February 1, 2008 - November 30, 2008

**Award:** \$80,000

This project will determine the appropriateness of mileage-based user fees for accomplishing regional goals and objectives for mobility and long term financial sustainability. This will involve correlating fees collected with roadway maintenance, operations, and expansion expenditures; determining "actual" value of roadway miles traveled (reducing the need for formula estimates); and building the case for a citizen-validated ballot measure for transitioning to a new finance framework. While the overarching goal of this project is to investigate a fuel-tax alternative, a deliberate program definition must first be developed in this initial phase. This will include establishing in detail what will be studied through the course of the project, who will study it and how it will be studied.



#### Eric Lindquist, PhD

Associate Research Scientist

George Bush School of Government & Public Service  
Texas A&M University

### Expansion of the Border Crossing Information System



#### Juan Villa

Research Scientist

System Planning, Policy and Environment  
Research Group  
Texas Transportation Institute

**Project dates:** February 1, 2008 - January 31, 2009

**Award:** \$60,584

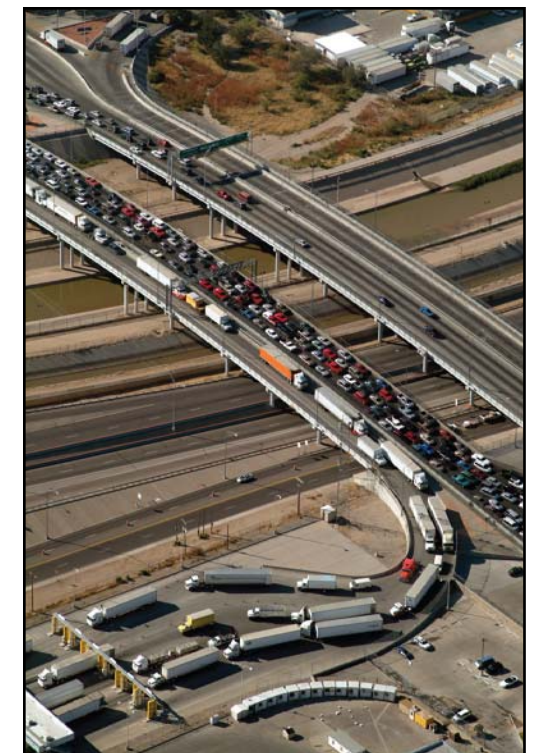


Ciudad Juarez border crossing to El Paso, TX.

There is no reliable system in place to measure and report border crossing times to either commercial trade or travelers planning to cross the U.S.–Mexico border. This research project, in combination with three other already funded and ongoing projects, will provide a prototype of such

a system. The result will be a real-time international border crossing travel time information system prototype, not unlike the information available to major city travelers from local traffic management centers in cities like Houston or Dallas. In addition to real-time information, the project will serve as a valuable data source for three other valuable activities: 1) estimating the economic impact of border crossing delay and potential improvements, 2) validating dynamic cross-border traffic assignment models, and 3) long range transportation planning.

This project will design the mechanisms to automatically capture border crossing times for commercial vehicles and convert those results to user-friendly formats that can be shared with stakeholders involved in the U.S.–Mexico international border crossing process for operations, planning and research purposes. In order to maximize the effective use of the information, the project will begin with a comprehensive survey of stakeholder information needs, focused primarily on commercial crossing users. TTI researchers will define the methodology to capture the information for commercial-vehicle crossing time. The best way to present the information to potential users will be identified and the systems required to share the information with key stakeholders will be developed and tested during this project.



Ciudad Juarez border crossing to El Paso, TX showing commercial and non-commercial lanes.





UTCM Project #08-15-14 · RiP.trb.org Database #17079

**Biofuels Energy Policy and Grain Transportation Flows: Implications for Inland Waterways and Short Sea Shipping**

**Project dates:** April 1, 2008 - August 31, 2009  
**Award:** \$70,773

The proposed project will (1) estimate the effect of expanded United States ethanol/biodiesel production (biofuels energy policy) on domestic and international grain flows and patterns (2) evaluate the effect of U.S. biofuels energy policy on Mississippi/Illinois Rivers grain traffic and its impact on lock congestion in the lower reaches of these rivers, and (3) examine the economic potential for reducing U.S. highway and rail congestion with short sea shipping opportunities. The primary deliverable of this project will be an updated and expanded spatial equilibrium model of world grain economy. The updated model will reflect recent changes in dynamics of grain production, consumption and transportation in reaction to explosive growth of the biofuel market in the U.S. and possibly incorporate the transportation dimension associated with other commodities. An improved and modified spatial equilibrium model will be extremely useful for addressing a variety of questions with respect to transportation infrastructure, traffic congestion, and international trade issues.

**Dmitry Vedenov, PhD**

Assistant Professor

Department of Agricultural Economics  
 Texas A&M University

**Sharada Vadali, PhD**

Economics, Trade and Logistics Program, TTI

**Gabriel Power, PhD**

**Stephen Fuller, PhD**

Department of Agricultural Economics, TAMU

**Mark Burris, PhD**

Zachry Department of Civil Engineering, TAMU



UTCM Project #08-17-09 · RiP.trb.org Database #15600

**Addressing Rural Mobility and Economic Development under SAFETEA-LU's Coordinated Planning and Human Services Framework**

**Project dates:** May 1, 2008 - August 31, 2009  
**Award:** \$100,000

In response to changes in Federal requirements for rural transit planning, the Texas State Legislature and the Texas Department of Transportation have recently developed coordinated transit and human services plans for 24 planning regions in the State of Texas. This study will evaluate both the processes that have been adopted throughout the state, as well as the types of outcomes that have emerged. Having engaged in perhaps the most comprehensive approach to meeting the revised federal requirements in the United States, the Texas experience in developing coordinated transit and human service plans should prove particularly useful for identifying opportunities, barriers, and best practices to coordinated rural transit planning, and thus for filling a major gap in the available professional guidance.

**June Martin, PhD, PE**

Lecturer, Department of Landscape Architecture and Urban Planning  
 Assistant Director, Center for Housing and Urban Development  
 Texas A&M University

**Cecilia Giusti, PhD**

**Eric W. Dumbaugh, PhD**

Department of Landscape Architecture and Urban Planning, TAMU

**Linda Cherrington**

System Planning, Policy and Environment Research Group, TTI - Galveston

UTCM Project #08-24-05 · RiP.trb.org Database #15601

**Improved Demand-Response Productivity and Service Quality through Dispatch Strategies**

**Project dates:** June 1, 2008 - January 31, 2009  
**Award:** \$45,000

The ability of transit agencies to staff dispatch effectively and use technology to their full advantage is critical in responding proactively as service changes occur and in making sound routing decisions. Sound routing decisions result in improved productivity and cost effective service delivery. This project will focus on demand-response staffing, use of technology, managing the dispatch operation and challenges rural providers face in dispatching service (see story, p. 14). Researchers will conduct case studies of a cross-section of demand-response rural and small urban transit providers' operations and their use of technology. A final report and guidebook entitled "Dispatching Demand-Response – Guidebook to Increasing Productivity and Saving Money," will include setting dispatch goals and objectives, staffing according to goals and objectives, developing policies and procedures for effective operations, communicating "team" responsibilities, establishing and tracking performance measures, and identifying challenges in providing effective dispatching in rural areas.



**Suzie Edrington**

Research Specialist

System Planning, Policy and Environment Research Group  
 Texas Transportation Institute

**Jeffrey Arndt, PhD, PE**

Research Scientist

System Planning, Policy and Environment Research Group  
 Texas Transportation Institute



UTCM Project #08-04-12 · RiP.trb.org Database #15599

**Valuation of Buyout Options in Comprehensive Development Agreements**

**Project dates:** September 1, 2008 - October 31, 2009  
**Award:** \$85,272

The goal of this project is to investigate the feasibility of and to develop an economic valuation model for buyout options in Comprehensive Development Agreements (CDAs). A CDA is a form of public-private partnership in which the right to collect revenues from toll roads is leased to a private entity in exchange for providing local and state governments with a quick influx of cash and/or additional infrastructure. Uncertainty associated with such long-term leases is of substantial public concern. In particular, there is a sentiment that leasing governments may not be sufficiently compensated for forfeited development opportunities and the possibility of lost revenue due to higher than expected growth during the lease period. An under-studied aspect of CDAs is the feasibility and economic value of an option for the government to buy back the leased infrastructure at a future date prior to lease expiration. Such an option would give the public sector additional control over the future use of leased facilities.



**Gabriel Power, Ph.D.**

Assistant Professor

Department of Agricultural Economics  
 Texas A&M University

**Mark Burris, PhD**

Zachry Department of Civil Engineering, TAMU

**Sharada Vadali, PhD**

Economics, Trade and Logistics Program, TTI

**Dmitry Vedenov, PhD**

Department of Agricultural Economics, TAMU



# UTCM EDUCATION PROJECTS

UTCM Project #08-27-02 · RiP.trb.org Database #15572

## Development and Teaching of a Special Topics Course on Intelligent Transportation Systems



### Kevin Balke, PhD, PE

Center Director and Research Engineer

TransLink® Research Center  
Texas Transportation Institute

**Project dates:** January 1, 2008 - December 31, 2008

**Award:** \$47,421

With Intelligent Transportation Systems (ITS), engineers and system integrators blend emerging detection/surveillance, communications, computer technologies, and transportation management and control concepts to improve the safety and mobility of the surface transportation system. Individuals responsible for developing, deploying, and managing ITS projects need a solid foundation not only in transportation engineering concepts and principles, but also systems engineering, communications, and technology. The purpose of this project is to develop and teach, at least once, a special topics course on the planning, design, and implementation of ITS projects for transportation management. This course is envisioned to be a graduate level survey course in which students will be provided with the basic knowledge and concepts needed to plan, design, and implement an ITS project that can be deployed in the field. The topics to be included in the course include the following: 1) an overview of ITS technologies and applications for advanced transportation management, 2) the application of system engineering concepts in the planning and design of advanced ITS projects, 3) techniques and strategies for managing and deploying ITS projects, 4) designs and application of advanced telecommunication techniques for ITS deployments, and 5) techniques and tools for evaluating ITS projects and technologies.



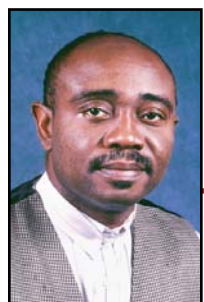
### Gene Hawkins, PhD, PE

Associate Professor

Zachry Department of Civil Engineering  
Texas A&M University

UTCM Project #08-21-10 · RiP.trb.org Database #15568

## Developing an Interdisciplinary Certificate Program in Transportation Planning



### Forster O. Ndubisi, PhD, ASLA

Professor and Head

Department of Landscape Architecture and Urban Planning  
Texas A&M University

**Project dates:** January 1, 2008 - August 31, 2009

**Award:** \$101,824

The purpose of this project is to develop and implement a graduate certificate in transportation planning (see story, p. 5). Texas A&M University (TAMU) currently offers instruction in transportation through its Masters of Urban Planning (MUP) and Civil Engineering (CE) programs; however, there is a need for specialized instruction tailored to meeting the emerging needs of the transporta-

tion industry. The Certificate in Transportation Planning program fills this need by providing students with a substantive base of knowledge needed to be broadly successful in the transportation profession, as well as with specialized instruction tailored to building student skills and capabilities in three critical areas: Transportation Systems Planning, Transportation and Urban Design, and Transportation Policy. The certificate will be developed by the Department of Landscape Architecture and Urban Planning (LAUP) in the College of Architecture, in partnership with the Texas Transportation Institute (TTI), the Department of Civil Engineering, and the Bush School of Government and Public Service. It will be used as a vehicle to forge lasting partnerships between the participating departments and programs. This program will be open to any graduate student at TAMU with an interest in transportation.

UTCM Project #08-14-03 · RiP.trb.org Database #15569

## Making Mobility Improvements a Community Asset

**Project dates:** January 1, 2008 - August 31, 2009

**Award:** \$154,629

The vast majority of major mobility improvements are desired by communities in which they are made, but major projects are often opposed by vocal opponents local to the projects. This opposition causes delays, rework, increased costs, and sometimes a tarnished image for the sponsoring agency. While environmental analyses were added to the project development process to respond to many of the objections, opposition (and delays and extra costs) continues, especially for major projects. Context sensitive solutions (CSS) grew out of a national symposium (Thinking Beyond the Pavement) to develop an approach to help make major mobility improvements more compatible, more supportive, and more acceptable to communities. Use of the CSS approach – involving stakeholders in project development from the beginning – was included in SAFETEA-LU as a policy. However, implementation at the state level has been inconsistent and a 2007 audit of states showed that only nine states (plus the District of Columbia) have largely established a CSS integrated into their ongoing processes while 15 states, including Texas, have yet to make a real start. This project will develop and disseminate knowledge, experiences, reasons to use and benefits of CSS through university courses and technology transfer to assist agencies to start using CSS to facilitate community acceptance of mobility improvement projects.

### Eric W. Dumbaugh, PhD

Assistant Professor

Department of Landscape Architecture and Urban Planning  
Texas A&M University



### Brian S. Bochner, PE

Senior Research Engineer

System Planning, Policy and Environment Research Group  
Texas Transportation Institute

### Dominique Lord, PhD, PEng

Zachry Department of Civil Engineering, TAMU

### Eric W. Dumbaugh, PhD

Department of Landscape Architecture and Urban Planning, TAMU

### Beverly J. Storey

System Planning, Policy and Environment Research Group, TTI





# UTCM TECHNOLOGY TRANSFER PROJECTS

UTCM Project #08-00-18 • RiP.trb.org Database #14848  
**A Guide to Transportation Funding Options**



## Tina Geiselbrecht

Associate Transportation Researcher  
System Planning, Policy and Environment  
Research Group  
Texas Transportation Institute - Austin

**Project dates:** October 8, 2007 - April 30, 2008  
**Award:** \$20,000

As our nation's transportation demand continues to grow due to population increases and an expanded economy, elected officials at all levels of government are faced with difficult decisions regarding mechanisms to adequately fund the maintenance and expansion of transportation systems. This project will produce a concise, user-friendly web site for leaders and policy-makers that describes the array of transportation funding options that are or may be available for use throughout the country. The site will describe each funding option, where it is being used, if applicable, and the known pros and cons of each option (see story, p. 10).



## John Overman

Associate Research Scientist  
System Planning, Policy and Environment  
Research Group  
Texas Transportation Institute - Arlington

UTCM Project #08-26-11 • RiP.trb.org Database #15570  
**Regional Coordination Workshop**

**Project dates:** January 1, 2008 - August 31, 2008  
**Award:** \$72,820

There is a demonstrated need for outreach, education, training and technology transfer to public transportation providers, rural transit districts, mobility managers, councils of governments and staff involved in regional human service transit coordination. This project will address those needs by providing training and technology transfer based on recent research efforts at various institutions to improve regional coordination and transit services. The Regional Coordination Workshop will serve as the venue to deliver the workshops in themed learning tracks. High priority workshop topics include: partnership development, performance measures, marketing techniques, public involvement, transit finance, asset management, fleet maintenance, and information technology applications.

**Linda Cherrington**  
**Jeffrey Arndt, PhD, PE**  
**Suzie Edrington**

**Ryan Taylor**  
**Laura Higgins**  
System Planning, Policy and Environment  
Research Group, TTI

**Carol Lewis**  
**Gwen Goodin**  
Texas Southern University

UTCM Project #08-00-19 • RiP.trb.org Database #15598  
**Research Various Funding Methods Used Across  
the United States for Mass Transit**



## Linda Cherrington

Program Manager and Research Scientist  
System Planning, Policy and Environment  
Research Group  
Texas Transportation Institute - Galveston

**Project dates:** March 1, 2008 - August 31, 2008  
**Award:** \$50,000

One of the challenges facing Texas is the identification of adequate funding for mobility projects. During the 80th Texas Legislative Session, several proposals were made to address transit/rail funding. The chairman of the Texas Senate Committee on Transportation and Homeland Security has requested that the Texas Transportation Institute update previous research on national examples for funding regional transit and provide information on additional funding mechanisms for mass transit, with a focus on rail transit. The research will be presented as a white paper on national examples for funding regional transit, an executive summary to highlight findings, and a PowerPoint presentation. The research will assist members of the Senate Committee to consider and make decisions for funding mass transit in Texas.

## Katie Turnbull

Associate Agency Director and  
Research Scientist  
System Planning, Policy and  
Environment Research Group  
Texas Transportation Institute



UTCM Project #08-45-07 • RiP.trb.org Database #15602  
**Promoting Workforce Development for the  
Transportation Profession Through a  
Multi-University/Agency Partnership**

**Project dates:** May 1, 2008 - August 31, 2009  
**Award:** \$118,029

The objective of this partnership is to produce high quality transportation professionals from underrepresented groups. The partnership augments the existing Federal Highway Administration sponsored Summer Transportation Institute (STI) program between local high schools and PVAMU by improving recruiting efforts, tracking STI graduates and adding a second-year STI experience called STI Scholars. STI Scholars will experience a more challenging curriculum, conduct research with professionals at TTI, and both receive and give mentoring. Project deliverables consist of (i) expanded curriculum for the STI program, (ii) a database tracking former students (iii) a database of counselors and teachers for networking and recruiting (iv) a streamlined academic pathway, (v) curriculum for STI Scholars program, (vi) implementation of STI Scholars program (see story, p. 7) and (vii) network of corporations and foundations for fundraising for long term sustainability of the program. The model developed in this project can be extended to other STI programs across the nation.



## Raghava Kommalapati, PhD, PE

Associate Professor  
Department of Civil and Environmental  
Engineering  
Prairie View A&M University

**Judy Perkins, PhD**  
Department of Civil and Environmental  
Engineering  
Prairie View A&M University

**Deborah L. Jasek**  
Center for Professional Development, TTI  
**William R. Stockton, PhD, PE**  
Associate Agency Director, TTI  
**Robert J. Benz**  
Research & Implementation, TTI - Dallas

UTCM Project #08-37-16 • RiP.trb.org Database #15571

### Freeway Bottleneck Removals: Workshop Enhancement and Technology Transfer



#### Carol Walters, PE

Program Manager / Senior Research Engineer  
System Planning, Policy and Environment  
Research Group  
Texas Transportation Institute - Arlington

**Project dates:** September 1, 2008 - May 31, 2009

**Award:** \$78,000

As transportation improvement projects become increasingly costly and complex and as funding sources lag behind needs in highly urbanized areas, it becomes critical that existing freeway systems be fine-tuned to maximize capacity, particularly through use of lower-cost improvements to decrease bottlenecks during peak periods. This subject is gaining national attention, partly because bottleneck locations are highly visible; failure to fix them has political as well as congestion costs. The Federal Highway Administration (FHWA) is advancing on this front both in research and outreach efforts. The proposed research team has developed a workshop using experience in Texas and this workshop has been delivered three times in the Dallas area to enthusiastic classes of TxDOT and other engineers. Follow-up interviews indicate a positive impact on reduction of bottlenecks in Dallas. This project improves the workshop and makes it available to a wider audience by: 1) gathering further data on implemented bottleneck removals both in Texas and throughout the US to add to the database, 2) improving the workshop delivery through better graphics, video, and other professional enhancements, and 3) increasing outreach to transportation faculty and students by development of a web site and course module. The long term implications of this work are elevated awareness of the extremely high benefits relative to costs of this type of project and development of professional capacity to recognize opportunities and to analyze and select appropriate measures for successful bottleneck removal projects.



#### Poonam Wiles

Research Engineer  
System Planning, Policy and  
Environment Research Group  
TTI - Arlington



#### Scott Cooner

Program Manager and  
Research Engineer  
System Planning, Policy and  
Environment Research Group  
TTI - Arlington

UTCM Project #08-41-01 • RiP.trb.org Database #15603

### Developing a Methodological Framework to Value Public Sector's Risk Exposure in PPP Agreements



#### Rafael Aldrete-Sanchez, PhD, PE

Research Engineer  
Research and Implementation  
Texas Transportation Institute - El Paso

**Project dates:** September 1, 2008 - August 31, 2010

**Award:** \$99,979

Transportation agencies worldwide and across the United States are increasingly using (or considering) Public Private Partnerships (PPPs) as a mechanism to finance and deliver badly needed transportation infrastructure. The key premises behind the increased use of PPPs as project delivery mechanisms are the interdependent concepts of Value for Money (VfM) and the optimum alloca-

tion of project risks to the partner most capable to manage them. Internationally, countries with relatively longer experience in PPPs have devised different ways to measure risks, and a handful of other countries have developed well documented methodologies to assess VfM. However, the structured integration of these two interrelated concepts has not been fully documented. In the US, transportation agencies (including those in Texas) currently lack a well documented approach to consistently evaluate and account for the financial risk exposure of the public sector in a PPP and therefore a methodology to incorporate its effect in the delivery of VfM. This project will develop a methodological framework, based on U.S. and international best practices, to evaluate the financial risk exposure of the public sector when delivering transportation infrastructure through PPP agreements in the context of VfM in the U.S.

#### Ivan Damnjanovic, PhD

Assistant Professor  
Zachry Department of Civil  
Engineering  
Texas A&M University



## UTCM FY07 ONGOING PROJECTS

### Transit Services for Sprawling Areas with Relatively Low Demand Density:

#### A Pilot Study in the Texas Border's Colonias (see related article, p. 16)

**Researcher:** Luca Quadrifoglio, PhD, Assistant Professor, Zachry Department of Civil Engineering, Texas A&M U.

**Project dates:** September 1, 2007 - January 15, 2009 • **Award:** \$75,000

UTCM Project #07-02 • RiP.trb.org Database #14221

### Transportation Planning, Policy & Climate Change: Making the Long Term Connection

**Research Team:** Eric Lindquist, PhD and Arnold Vedlitz, PhD, George Bush School of Government & Public Service, Texas A&M University

**Project dates:** September 1, 2007 - August 31, 2009 • **Award:** \$50,000

UTCM Project #07-03 • RiP.trb.org Database #14396

### Impact of Reconstruction Strategies on System's Performance Measures:

#### Maximizing Safety and Mobility While Minimizing Life-Cycle Costs

**Research Team:** Ivan Damnjanovic, PhD, Zachry Department of Civil Engineering, Texas A&M University  
Andrew J. Wimsatt, PhD, Materials and Pavement Division, Texas Transportation Institute  
Sergiy I. Butenko PhD, Department of Industrial and Systems Engineering, Texas A&M University

**Project dates:** September 1, 2007 - October 31, 2008 • **Award:** \$60,000

UTCM Project #07-04 • RiP.trb.org Database #14397

### Graduate Certificate in Transportation Planning

**Researcher:** Forster O. Ndubisi, PhD, ASLA, Dept. of Landscape Architecture & Urban Planning, Texas A&M U.

**Project dates:** September 1, 2007 - September 15, 2008 • **Award:** \$60,000

UTCM Project #07-06 • RiP.trb.org Database #14399





## UTCM FY07 ONGOING PROJECTS (cont. from p. 29)

### Improving Intermodal Connectivity in Rural Areas to Enhance Transportation Efficiency and Reduce Metro/Port/Border Congestion: A Case Study

Research Team: **Stephen Fuller, PhD, John L. Park, PhD and John R. Robinson, PhD**, Department of Agricultural Economics, Texas A&M University

Project dates: September 1, 2007 - August 31, 2009 • Award: \$60,000

UTCM Project #07-07 • RiP.trb.org Database #14288



## UTCM PROJECTS COMPLETED IN FY08

### Enhanced Urban Mobility Report (see related article, p. 9)

Research Team: **Timothy J. Lomax, PhD, PE, and David L. Schrank, PhD**, Mobility Analysis Program, TTI

Project dates: May 1, 2007 - September 30, 2007 • Award: \$50,000

UTCM Project #07-01 • RiP.trb.org Database #13690

### Partnering to Promote Workforce Development for the Transportation Profession (see related article, p. 7)

Research Team: **Raghava Kommalapati, PhD, PE and Judy Perkins, PhD**, Department of Civil and Environmental Engineering, Prairie View A&M University

**William R. Stockton, PhD**, Associate Agency Director, TTI

**Robert J. Benz**, Research and Implementation, TTI

**Deborah L. Jasek**, Center for Professional Development, TTI

Project dates: September 1, 2007 - June 30, 2008 • Award: \$40,000

UTCM Project #07-05 • RiP.trb.org Database #14398

### A Guide to Transportation Funding Options (see related article, p. 10)

Researcher: **Tina Geiselbrecht**, System Planning, Policy and Environment Research Group, TTI - Austin

Project dates: October 8, 2007 - April 30, 2008 • Award: \$20,000

UTCM Project #08-00-18 • RiP.trb.org Database #14848

### Regional Coordination Workshop

Research Team: **John Overman, Linda Cherrington, Jeffrey Arndt, PhD, PE, Suzie Edrington, Ryan Taylor,**

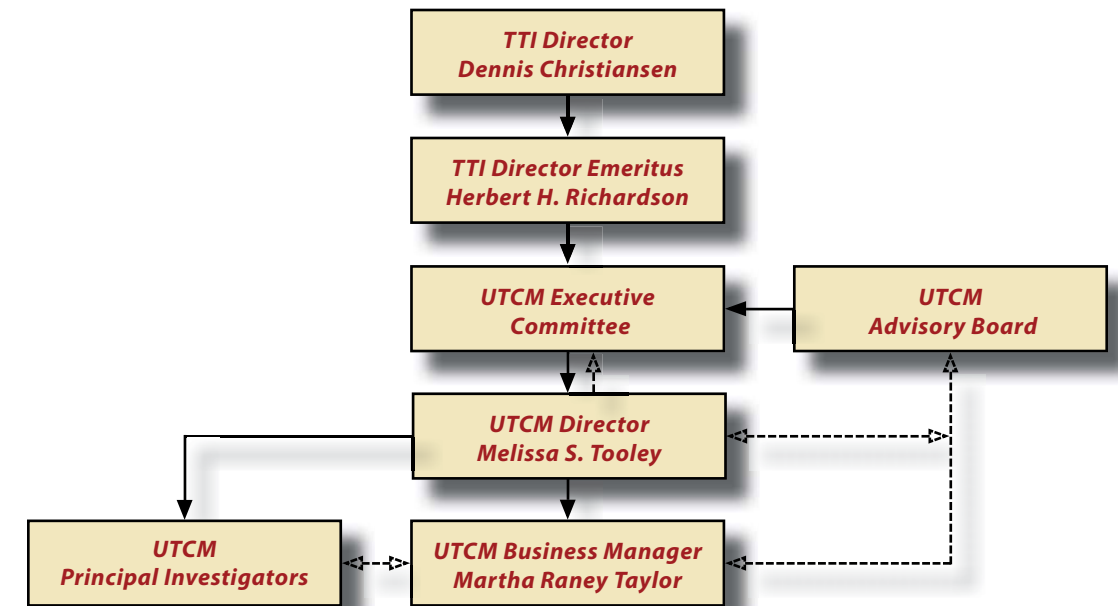
**Laura Higgins**, System Planning, Policy and Environment Research Group, TTI

**Carol Lewis, Gwen Goodin**, Texas Southern University

Project dates: January 1, 2008 - August 31, 2008 • Award: \$72,820

UTCM Project #08-26-11 • RiP.trb.org Database #15570

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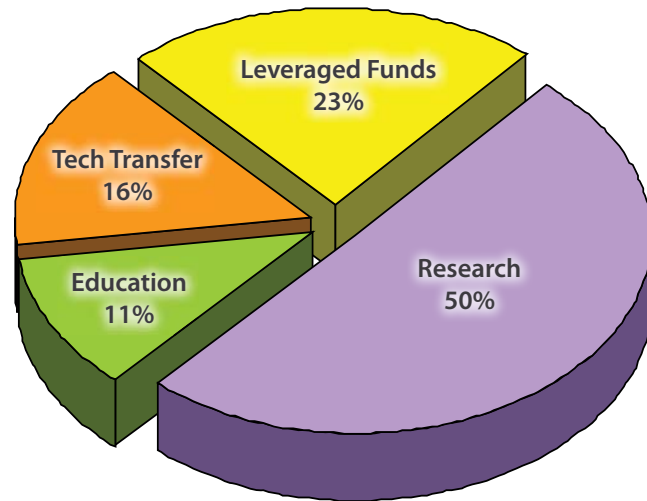
Mobility and Infrastructure, USDOT



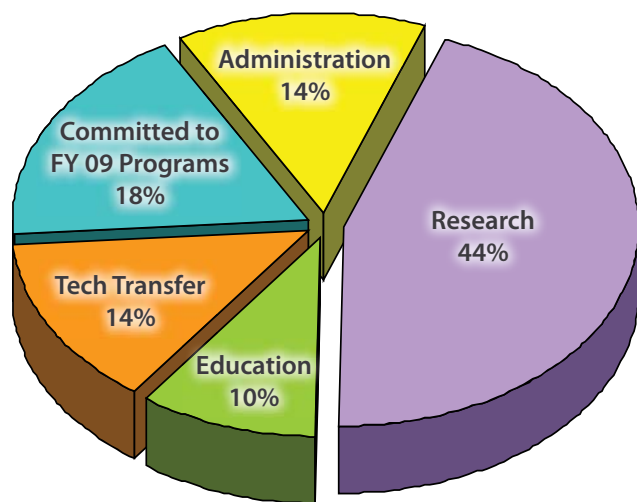


# UTCM FINANCIAL REPORT

### FY08 UTC Funds & Leveraged Funds Committed to UTCM Projects



### FY08 UTC Funds Committed



# UTCM

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