In addition to our regular overview of center activities, this issue of Upwardly Mobile focuses on UTCM’s transit programs.

Rural demographic trends indicate a growth in the population share for those over age 65, coupled with a decrease in population density in many rural areas. At the same time, the 2010 Census has shown there is substantial population growth in some rural counties, particularly in counties surrounding major metropolitan areas. Both demographic trends suggest an increase in demand for rural transit services. Yet resources to provide rural transit are limited.

The UTCM is actively engaged in research, education and technology transfer to assist rural transit providers in improving service efficiency and effectiveness within limited resources. UTCM transit research is addressing basic problems, leading to efficient public transit systems for rural populations, including disadvantaged, aging and disabled persons as well as increased efficiency of services in small urban areas. UTCM’s transit education programs are developing innovative courses and practical training to recruit and train the public transportation workforce. And UTCM’s technology transfer is leading the way in disseminating data, technology and research results to policy-makers, transit agencies, and planners, while providing networking, training and development to help the workforce implement new technologies.

More information on each of the projects listed in this issue, including final reports on completed projects, may be found on the UTCM website, utcm.tamu.edu.

Improved Demand-Response Productivity and Service Quality Through Dispatch Strategies
Suzie Edrington - $45,000
The ability of transit agencies to staff dispatch effectively and use technology to its 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. A modest 3% improvement in service productivity would save the average rural demand response transit agency approximately $65,000 annually. This project focused on improving productivity while maintaining service quality. Researchers collected data from 42 demand response rural and small urban transit agencies regarding operations and use of technology. Case studies of five representative agencies focused on: 1) dispatcher goals and objectives, 2) dispatch-driver policies and procedures, 3) team responsibilities and expectations, and 4) reports and material collection. The resulting guidebook describes the impact of maximizing productivity, development of policies and procedures that affect productivity, service delivery strategies that impact productivity, dispatch performance measurement, an assessment tool for productivity elements of dispatch, and steps to implement a productive dispatch operation. The guidebook is available via the UTCM website, http://utcm.tamu.edu. (cont. on p. 4)
A successful Transit Management Certificate Program can provide the leadership training needed for the current generation of public transportation managers in rural and small urban areas in Texas and the academic preparation needed to attract career professionals into the industry in the future. This project is undertaking the following tasks: (1) Review the Transit Management Certificate Program; (2) together with academic advisors, determine opportunities to expand the certificate program to other Texas A&M affiliated universities or community colleges that may be more geographically accessible to rural and small urban transit.

A Special Topics Course on Intelligent Transportation Systems for the Zachry Department of Civil Engineering of Texas A&M University

Kevin Balké - $64,260 ($74,421+$16,839)*

Intelligent Transportation Systems (ITS) blend emerging detection/surveillance, communications, and computer technologies with transportation management and control concepts to improve the safety and mobility of the surface transportation system, including transit. 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. This project developed a special topics graduate-level survey course on the planning, design, and implementation of ITS projects for transportation management. This course teaches the concepts to plan, design, and implement an ITS project that can be deployed in the field. Course topics include: an overview of ITS technologies and applications for advanced transportation management; the application of system engineering concepts in the planning and design of advanced ITS projects; techniques and strategies for managing and deploying ITS projects; design and application of advanced telecommunications technologies for ITS deployments; and techniques and tools for evaluating ITS projects and technologies. The curriculum includes a review of the nine federal ITS initiatives, including the transit initiative Mobility Services for All Americans.

* Total project value (UTCM funds + leveraged funds)
Transit Services for Sprawling Areas with Relatively Low Demand Density: A Pilot Study in the Texas Border’s Colonias
Luca Quadrofiglio - $76,100 ($75,000 + $1,100)*

The colonias along the Texas-Mexico border are one of the most rapidly growing areas in Texas. Because of the relatively low income of the residents and an inadequate availability of transportation services, the need for basic social activities for the colonias cannot be properly met. The objectives of this study are to have a better comprehension of the status quo of these communities, to examine the potential demand for an improved transit service, and to evaluate the capacity and optimum service time interval of a new demand-responsive transit “feeder” service within one representative colonia, El Cenizo. The authors present a comprehensive analysis of the results of a survey conducted through a questionnaire to evaluate the existing travel patterns and the potential demand for a feeder service. The results from the subsequent simulation analysis showed that a single shuttle would be able to comfortably serve 130 passengers/day and that the optimal headway between consecutive departures from the terminal should be able to comfortably serve 150 passengers/day and that the optimal patterns and the potential demand for a feeder service. The results from this study are to have a better comprehension of the status quo of these communities.

Nationwide Examples of State and Local Funds for Mass Transit
Linda Cherrington - $50,000

One of the transportation challenges facing Texas is the identification of adequate funding for mobility projects. The chairman of the Texas Senate Committee on Transportation and Homeland Security requested the Texas Transportation Institute to update previous research on national examples for funding regional transit and to provide additional information on regional rail projects. The research is presented in this paper document—nationwide examples for funding mass transit and regional rail. The research findings provide background information for members of the Texas Senate Committee as they consider and make decisions for funding mass transit in Texas.

Multiple Depot Vehicle Routing with Applications to Paratransit and Rural Transportation
Swaroop Darbha - $11,963 ($80,000 + $31,963)*

This project considers a basic problem that is commonly encountered in transportation: given a set of vehicles, possibly starting from different depots, and set of locations where passengers need to be picked up, find a route for each vehicle such that each location is served by some vehicle and the total cost of serving the location is a minimum among all possible allocations and sequencing of locations to the vehicles. It is required that the vehicles return to the depots after servicing the locations. In this project, we are developing algorithms to feasibly address this problem in real time with constraints on how far the found solution is from the optimal solution. Results will form the basis for tackling more complicated problems, such as demand responsive routing of vehicles, which is common in paratransit and rural transportation applications.

Impacts of Funding and Allocation Changes on Rural Transit in Texas
Suzie Edrington - $75,000 ($65,000 + $10,000)*

Funding among Texas rural transportation districts has undergone rapid and significant change over the past five years. First, under SAFETEA-LU, the FTA committed to increased rural funding. At the same time, TxDOT implemented a revised “needs plus performance” based method for distributing both federal and state rural funds among providers. The method resulted in a significant redistribution of funding among providers; some were programmed to lose half of their FY2004 funding level, while others were slated for increases exceeding 300%. The 2010 national census will introduce another point of discontinuity in funding as population and land area, the two “needs” factors in the current funding allocation formula, will be assigned to either enlarging or emerging urbanized areas in several rural areas. Modification to the funding allocation formula is almost certain at that point. This project will provide rural transit operators, TxDOT and elected officials with the results of the increased investment and redistribution of rural transit funds over the last five years. This information will be critical when considering future state funding levels and funding allocation formula changes.

Evaluating the Use of Transfers for Improving Rural Public Transportation Systems
Luca Quadrofiglio - $122,690 ($80,000 + $42,690)*

Due to widely dispersed population density in large suburban/rural areas, conventional fixed route transit services hardly satisfy the travel needs of residents of these areas. Demand responsive transit (DRT) systems have flexible routes and schedules that can provide curb-to-curb/door-to-door services to better meet the needs of rural areas. However, rural DRT services are still extremely costly to operate. In this project we consider a variation of the regular demand responsive transit system which adopts the practice of transfers to reduce operating costs. This project evaluates the effectiveness of different transfer policies by developing a simulation model of several plausible scenarios, based on data from Houston METRO and other rural transit agencies across Texas. This study will provide decision makers and DRT agencies with information for innovative operating practices to improve the performance and cost efficiency of rural public transportation systems.

Examining Long Distance Express Buses as an Extension of and Feeder to Passenger Rail Systems
Laura Higgins - $82,000

One of the mobility challenges facing Texas and other high-population states in the coming years is the rising travel demand along major intercity travel corridors. Increased passenger rail service may help to absorb some of the travel demand from crowded highway and air travel corridors, but service is cost-prohibitive to develop over very long distances. This project explored the potential of using express intercity bus service as an alternative to and an extension of passenger rail service, thus providing a similar type of higher-speed, limited-stop service over long distances with lower development costs than rail. (See Spotlight on Research, right.)
Facilitating Creation of Rural Transit System Technology User Groups
Suzie Edrington - $45,487 ($36,000+$9,487)*

Mobile Data Computer (inside) installed on a bus

Technology to support rural and small urban transit companies has advanced in recent years, incorporating automated dispatch/scheduling software, mobile data computers (MDCs) and automated vehicle location (AVL) systems. However, costs as well as staff expertise required to run these systems sometimes delay their implementation. Two major pieces of federal legislation have helped address the cost issue, providing transit agencies financial assistance for capital purchases—the 2005 Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), and the 2009 American Rehabilitation and Recovery Act (ARRA). Many of the agencies in Texas have been able to purchase some or all of the technologies with help from SAFETEA-LU and ARRA, but they may not know how to put it to best use, or how best to support their staff in the transition from manual to electronic systems. This project is helping Texas’ rural and small transit agencies gain expertise to exploit these technologies. Researchers completed an inventory of the specific technologies used in by agencies across Texas and shared this information with the transit directors. The research team then hosted a panel discussion on technology implementation at the TDOT’s semi-annual Transit Providers Meeting in the summer of 2010. Since then, building on the UTCM’s Transit Leadership project, transit agencies have established informal peer groups to exchange experiences in implementing technology.

Regional Coordination Workshop
John Overman - $77,820 ($72,820+$5,000)**

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 addresses 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 served as the venue to deliver the workshops in themed learning tracks. High priority workshop topics include: partnership development, marketing techniques, public involvement, and information technology applications. The Regional Coordination Workshop was held on July 23 and 24, 2008 at the Omni Austin Hotel at Southpark in Austin, Texas and attended by 172 participants from a variety of agencies and organizations involved in regional human service transit coordination. Regional Coordination Workshop materials and presentations can be found on the Regional Service Planning (www.regionalserviceplanning.org).

Transit Leadership Initiative
Linda Cherrington - $52,000 ($27,000+$25,000)*

The purpose of this project is to research and develop a leadership development program that addresses the needs of rural and small urban transit managers at each stage of a career along a continuum. The continuum begins with new employees just entering the industry who need professional development. This project provides these new employees exposure to the industry and focuses on transit manager internship opportunities. The continuum extends to senior staff members who are anticipating retirement and require leadership development to focus on leaving a legacy, succession planning, and mentoring. This project provides the necessary foundation to define all elements of the leadership program with support from industry participants. This project will then identify a sponsor for implementation. The project goal is to establish a leadership development program that has value to the industry and can be sustainable. This project involves the collaborative efforts of Texas Transportation Institute’s Transit Mobility Program and the Texas Department of Transportation, Public Transportation Division (TDOT-PTTD).

A Guide to Transportation Funding Options
Tina Geiselbrecht - Phase 1: $20,000; Phase 2: $32,300

Down the Road: Technology Transfer Events

SPOTLIGHT ON TECHNOLOGY TRANSFER
Cherrington Invited to Present Blue Ribbon Lecture in RITA’s Transportation Innovation Series

UTCM Researcher Linda Cherrington has been invited to present a Blue Ribbon Lecture in the DOT Research and Innovative Technology Administration (RITA) Transportation Innovation Series. The presentation, entitled “Challenges and Opportunities for Rural Transit in America,” will be held on August 17, 2011 at the US DOT Headquarters in Washington, DC.

As rural transit increases in importance due to changes in demographic trends, resources to provide services as well as to research service improvements remain limited. Therefore, rural transit providers are called upon to plan strategically to improve service efficiency and effectiveness.

The purpose of the presentation for the RITA Transportation Innovation Series will be to draw from the broad experience of UTCM researchers to provide a strategic look at the challenges and opportunities for rural transit in America.

Linda Cherrington is Program Manager of the Transit Mobility Program at the Texas Transportation Institute. Since 2003, Ms. Cherrington has been a moving force behind the Texas initiatives to improve performance for rural and small urban transit and to advance the concepts of regional transportation and livable communities in urban, suburban, exurban, and rural areas. Current research, projects and initiatives will be highlighted and future research needs will be discussed. The two-day conference will include keynote speakers, plenary sessions, breakout sessions, and poster presentations on topics related to performance measures for transportation and livable communities. The conference will help advance research in the field of livability performance measures and help state departments of transportation, metropolitan planning organizations, transit agencies, and other groups to develop and use appropriate performance measures that address transportation and livability goals.

Registration for these events is available on the UTCM website, http://utcm.tamu.edu.
January 22, 2011
Suzie Edrington is named UTCM Outstanding Student of the Year at the annual Council of University Transportation Centers (CUTC) Awards Banquet. Suzie is an Assistant Research Scientist with TTI’s Transit Mobility Program and a December 2010 graduate of the Masters of Urban Planning Program at Texas A&M University.

January 23-27, 2011
Ten presentations on UTCM research are made at the 90th Annual Meeting of the Transportation Research Board (TRB) in Washington, DC. Additionally, two UTCM researchers preside over sessions relating to their UTCM research.

February 4, 2011
The University of California - Berkeley Institute of Transportation Studies invites UTCM Researcher Dr. Luca Quadrifoglio to present a lecture entitled “The Zoning Paratransit System with Transfers: Formulation, Optimization and Heuristic.”

February 18, 2011
RITA Administrator Peter Appel visits the Texas Transportation Institute and its two UTCs: the UTCM and the Southwest Region University Transportation Center (SWUTC). (See related article, p. 7).

February 28, 2011
Four UTCM projects conclude, including one research project, one education project and two technology transfer initiatives. One final report on a research project is published.

March 5, 2011
Creekview High School in Carrollton, TX hosts TDS Fest, a Teens in the Driver Seat® event celebrating the accomplishment of driving down the teen crash fatality rate in Texas while remembering those who have lost their lives in this epidemic. The event is coordinated by UTCM Researcher Russell Henk and teens on the UTCM-sponsored Teens in the Driver Seat® Teen Advisory Board.

March 31, 2011
One new UTCM research project commences, and one research project concludes. Final reports for three UTCM research projects are published.

April 21, 2011
Martha Raney Taylor attends a benefit luncheon for the Civil and Environmental Engineering Department at Prairie View A&M University. The event, “Meeting the Infrastructure Needs of the Houston Area for Growth and Prosperity,” features three Houston officials: City Director of Public Works Dan Krueger, City Airport System Chief Development Officer Eric Potts, and Port of Houston Authority Executive Director Alec Dreyer. Proceeds aid the department and provide scholarships.

May 21, 2011
Texas A&M Civil Engineering master’s student Wei Lu receives a UTCM travel grant to present a poster on his UTCM-supported research at the 2011 Industrial Engineering Research Conference in Reno, NV. The title of his presentation is “Multi-Vehicle MAST Service: Formulation and Comparison with a Single-Vehicle Case.”

May 31, 2011
Four UTCM research projects conclude, including two research projects, one educational initiative and one technology transfer initiative. One final report on a research project is published.

The University Transportation Center for Mobility™
Texas Transportation Institute (TTI) • The Texas A&M University System
3135 TAMU • College Station, TX 77843-3135
979.845.2538 • http://utcm.tamu.edu
Melissa S. Tooley, PhD, PE, Center Director • Martha Raney Taylor, Editor