The CTUP Research Program
Smart Growth Challenges Tackled from Multi-disciplinary Perspectives

The Center for Transportation and Urban Planning is pleased to announce that the first round of research grants have been awarded to four projects addressing the Center’s theme of Transportation for Smart Growth:

- Assessing the Impact of Light Rail Transit on Land Values and Tax Revenues
- Green Modes of Transportation for Connecticut’s Mixed Use Developments
- Public Transit Design for Smart Growth: Using Choice Experiments to Quantify Tradeoffs, Values and Funding Implications
- Reversing Urban Sprawl: A Reclalmability Index Approach for Reviving Downtown Brownfields

Project awards were based on recommendations of the Center’s Research Advisory Committee in a competitive proposal review process. The successful proposals demonstrated relevance to the Center’s theme and the US Department of Transportation's strategic planning goals; showed potential to make fundamental research, educational, outreach, and policy contributions; and, encouraged cross-disciplinary collaboration.

CTUP director Norman Garrick is committed to building and strengthening relationships across disciplines and expanding and enhancing involvement of non-engineering researchers, “Our core programs stress inter-disciplinary collaboration and are designed to attract talented students and faculty from varied disciplines in the university to use their skills and training to tackle transportation problems.”

The four projects draw on expertise from faculty and students representing the university’s Schools and Colleges of Engineering, Liberal Arts and Sciences, Agriculture and Natural Resources, Business, and Fine Arts.
Assessing the Impact of Light Rail Transit on Land Values and Tax Revenues

Carol Atkinson-Palombo, Geography, Principal Investigator
Robert Cromley, Geography
Nicholas Lownes, Civil and Environmental Engineering
John Clapp, Center for Real Estate

One of the most critical issues in contemporary society is the need to reduce greenhouse gas emissions and dependency on fossil fuel. Transit—especially Light Rail—has become an increasingly popular centerpiece of smart growth policies in the United States. Supporters of LRT claim that it can help to reduce automobile dependency by providing an alternative means of transportation to the private automobile and—when implemented alongside supportive policies such as changes in zoning—can act as a magnet for high-density and potentially lucrative development along the transportation corridor. One of the strongest criticisms of LRT is that it is not cost-effective. Studies of systems built in the 1980s and 1990s have shown that it may take 10 or 20 years to generate substantial revitalization of a given neighborhood. In order to accelerate the process of neighborhood change, the City of Phoenix implemented zoning changes in 2000 ahead of LRT system construction, which began in 2005, and opened to the public in December 2008. The team of UConn researchers have joined forces to quantify how LRT investment and zoning changes impact property values in the metropolitan area.

The project uses detailed GIS-based data on land-use, new construction, and residential transactions to develop new methodologies to measure neighborhood-level and metropolitan-scale impacts, and separate out the capitalization effects of new construction from those associated with changes in accessibility. Innovative independent variables include dynamic measures of accessibility at the metropolitan scale derived from GIS-T models, and a proxy for neighborhood change derived from data.
on new construction. Modeling techniques capable of disentangling neighborhood and regional effects include Geographically Weighted Regression (GWR) and a local Spatial and Temporal Autoregressive (STAR) model. The team hopes that the research results will provide a more nuanced understanding of the dynamics set into motion by decisions to build LRT and assist in the decision-making processes associated with this tool for smart growth.

Green Modes of Transportation for Connecticut’s Mixed Use Developments

Peter Miniutti, Landscape Architecture, Principal Investigator
Edvin Yegir, Communication Design
Dimo Dimov, Business Management,
Wesley Marshall, Civil and Environmental Engineering, Transportation Systems

Our multi-disciplinary team will create a dynamic business and transportation model for the delivery of goods for the existing and proposed commercial establishments located in downtown Storrs, Connecticut. By using Storrs as a case study, we will demonstrate how the delivery of goods can be transformed from an ad-hoc, carbon producing affair to an organized systematic approach which will increase profits for the local businesses, use green modes of transportation and functionally/symbolically change the approach to transportation needs in Connecticut’s mixed use developments. Our team will create a flexible, replicable process which can be used for other towns in the state and region.

We have assembled a team which spans four disciplines; community planning, business management, transportation engineering, and communication design. These disciplines will allow us to view the project in its totality. Our overarching aim is to devise a transportation delivery system which achieves cultural sustainability. Cultural sustainability is predicated on the idea that built environments must be economically competitive, ecologically sound, and also bring enjoyment and aesthetic appeal to their user groups. Philosophers, as far back as antiquity, have argued that aesthetics have a fundamental effect on how we view the world. Naturalists and ecologists, who promote the protection of the landscape, have reached the same conclusion. Modern day philosopher Marcia Mueller Eaton puts it this way,

*Aesthetic experience is marked by perception of, and reflection upon intrinsic properties of objects and events that a community considers worthy of sustained attention.*

We want to make green modes of transportation available in downtown Storrs that are economically competitive, efficient, ecologically sound and worthy of sustained attention.

Public Transit Design for Smart Growth: Using Choice Experiments to Quantify Tradeoffs, Values and Funding Implications

Nicholas Lownes, Civil and Environmental Engineering, Principal Investigator
Norman Garrick, Civil and Environmental Engineering
Eric Jackson, Connecticut Transportation Institute
Robert Johnston, Marsh Institute, Clark University

This project is looking to identify any preference for rail over bus transit (all else being equal) and the value that people place on placemaking. In our study, placemaking is defined as the application of planning methods such as wider sidewalks, setback reductions for storefronts, on-street parking, narrower vehicle lanes and greenery – which tend to create places where people want to interact. Phase I, which began in September of 2008, has yielded very interesting results. A survey instrument (16-page booklet distributed via postal mail), pilot study and a preliminary analysis of 112 responses to date has already been completed. The pilot results suggest that people place a significant (in the statistical and practical sense) value on placemaking – roughly $200 in taxes/year. It also suggests that all else being equal (travel time, comfort, fare, placemaking) people do not necessarily favor rail over bus transit. The planned Phase II would expand on this pilot, deploying a refined survey instrument to nearly 4000 Connecticut travelers, which will allow a more sophisticated analysis of the three key policy questions we set out to answer with this study: 1) For whom should public transit systems be designed?, 2) How does design strategy impact ridership and overall system value?, and 3) What are the implications of #1 and #2 for the funding of future public transit? Pilot results suggest that the value of placemaking interacts significantly with home
ownership and the stated propensity to ride public transportation. Statistically definitive results will depend on the expansion of our sample in Phase II and the targeting of demographic strata that are under-represented in the pilot study responses.

Reversing Urban Sprawl: A Reclaimability Index Approach for Reviving Downtown Brownfields

Maria Chrysochoou, Civil and Environmental Engineering, Principal Investigator
Amvrossios Bagtzoglou, Civil and Environmental Engineering
Norman Garrick, Civil and Environmental Engineering
Kathleen Segerson, Economics

Even though there still exists some debate on the meaning of the term “smart growth”, it is generally accepted that smart growth aims at restoring vitality to the center of existing cities and older suburbs. Smart growth is expected to: (i) be more town-centered, (ii) promote public transit transportation modes, (iii) increase pedestrian presence in city centers, and (iv) enhance the diversity of housing, commercial and retail uses in downtown areas. A significant obstacle in this effort is the fact that, due to years of neglect and totally opposite growth philosophy, city centers and adjacent environs are typically dilapidated and, often times, suffer from extremely serious contamination problems. It is not uncommon for downtown areas to be formally characterized as brownfields. Thus, a key step to promoting smart growth principles is the reclamation of dilapidated and contaminated urban sites. However, given the high cost of remediation and the limited funds available, especially in the current economic climate, it is essential that brownfield remediation projects are evaluated on the principles of smart growth and prioritized to maximize the benefit of the limited funds that the state can provide.

An established method to evaluate development project in terms of smart growth compliance is the use of scorecards that examine aspects such as proximity to public transportation, land uses in the area, job creation etc. However, the actual use of these scorecards for fund allocation has not been documented; furthermore, brownfields are not specifically addressed. This project aims in the development of a brownfield-specific, smart-growth oriented scorecard that can be implemented by state and local authorities to evaluate projects and allocate the available funds, in order to promote urban revitalization. A focus of the developed tool will not only be to assess how “green” a project is, but will go a step further to evaluate how appropriate the type of the proposed project is for the local community. A case-study where the developed tool will be applied in specific projects in Connecticut will also be conducted.
On January 11, 2009 UConn engineering alumni, faculty and friends networked during a combined recruiting and social event held in conjunction with the national Transportation Research Board’s (TRB) 88th annual meeting. This meeting was sponsored in part by an “Innovative Recruiting Initiatives” grant received by Nicholas Lownes from the Graduate School at the University of Connecticut.

The event was intended to serve as a forum for “reaching out to young transportation professionals interested in graduate school, reconnecting with UConn alumni and friends, and showcasing UConn to a national audience with respect to our commitment to transportation research and education.” Attendees included current students, academics and researchers, as well as transportation professionals from the public and private sectors.

At TRB UConn transportation researchers and students delivered 13 papers and presentations. Among the UConn CEE faculty attending the meeting were Drs. Lownes, John Ivan, Richard Christenson, Adam Zofka, John DeWolf and Norman Garrick; CEE graduate students included Hongmei Zhou, Craig Yannes, Eric Jackson, Adam Sciana and Jenna Nichols. They were joined by a faculty member from the Department of Geography, Dr. Carol Atkinson-Palombo. Their presentations addressed a variety of research topics, from traffic modeling, driver behavior and crash prediction to bridge health monitoring, roadway design features, asphalt mixtures, particulate emissions, and sustainable transportation planning.

In addition, the UConn TRB event received corporate sponsorship from the transportation engineering firms Lochner, Wilbur Smith Associates, and Vanasse Hangen Brustlin, Inc. and support from CTUP and the Civil and Environmental Engineering Department at UConn.

Dr. Richard Christianson, center, and graduate students Adam Sciana and Jenna Nichols were among the several University of Connecticut faculty, students, alumni and friends who gathered for the event.

Transportation Lab Update

The CTUP transportation lab is now in full swing. Machines for general research have been tested to ensure that all is working properly, and the Public Transportation ITS workstation is configured to receive real-time GPS data through the cell phone network.

A graduate transportation course, CE 6740: Traffic Engineering Operations, is being taught in the lab this spring by Nicholas Lownes. The course utilizes the technology provided by the lab in lectures, software demonstrations, and course projects.

Transportation Lab — high-performance transportation technology work stations and state-of-the-art traffic simulation capabilities
CTUP researchers, Wesley E. Marshall, Norman W. Garrick, and Gilbert Hansen, are the recipients of the Transportation Research Board (TRB) 2008 Charley V. Wootan Award for the outstanding paper in the field of policy and organization. The award was presented in January at the Outstanding Paper Awards during the TRB 88th Annual Meeting in Washington, D.C. The award-winning paper, “Reassessing On-Street Parking,” has been published in the Transportation Research Record: Journal of the Transportation Research Board, No. 2046.

The award-winning authors researched a wide range of issues related to on-street parking—from parking demand and the pedestrian environment to the efficiency of land use to safety as a function of actual vehicle speeds and crash severity levels. The research demonstrated that land-efficient on-street parking spaces were favored over off-street surface lots and garages and that low-speed streets with on-street parking also had the lowest fatal and severe crash rates of any road category in the study of 250 Connecticut roadway segments. The results suggest that on-street parking should be more commonly used, especially in situations in which the road is part of the destination and the intent is to cause drivers to slow down. These areas tend to be safer, more walkable, require less parking, and have more vitality.

Wesley Marshall and Gilbert Hansen are Ph.D. candidates in transportation engineering at the University of Connecticut and researchers at UConn’s Center for Transportation and Urban Planning. Norman Garrick is Associate Professor of Civil Engineering at the University of Connecticut and the Director of UConn’s Center for Transportation and Urban Planning.

Dr. John N. Ivan is on sabbatical leave for the academic year 2008-09. He is spending the spring semester, from February to June 2009, as a visiting researcher at Lund University, in Lund, Sweden, in the Department of Technology and Society. He is working with a team of professors and doctoral students in the Traffic and Roads group, including Thomas Jonsson, a former post-doctoral fellow at Connecticut, on a large project related to sustainability of road and traffic systems. Dr. Ivan will primarily be supporting the work on developing indicators for sustainability and models for traffic safety in urban areas. Dr. Ivan’s participation in this project is sponsored by The Swedish Governmental Agency for Innovation Systems (www.vinnova.se).
Wesley Marshall Selected Outstanding Student of the Year for 2008

For his research contributions to the area of urban transportation, the Center for Transportation and Urban Planning proudly selected Wesley Marshall as its 2008 Outstanding Student of the Year.

Wesley is a Ph.D. candidate in transportation engineering at the University of Connecticut and a researcher with the Center for Transportation and Urban Planning. He specializes in transportation planning, safety, and sustainability as well as urban design, congestion pricing, and parking. His recent research has included defining and measuring the street network and an empirical study considering the role of street patterns, connectivity, and network density in road safety and sustainability. Related research has focused on analyzing parking at mixed-use centers in small New England cities, investigating the effects of parking on urbanism, and a reassessment of on-street parking.

On the basis of time spent with Sasaki Associates and Clough, Harbour and Associates, Wesley has been working on planning and site-design issues related to civil and transportation engineering for the last ten years. A native of Watertown, Massachusetts, Wesley is a 1998 graduate of the University of Virginia and a 2006 recipient of the Dwight D. Eisenhower Transportation Fellowship.

Outstanding Students of the Year are selected by University Transportation Centers based on their accomplishments in such areas as technical merit and research, academic performance, professionalism, and leadership. Students of the Year receive $1,000 and are honored for their achievements and promise for future contributions to the transportation field at an awards ceremony during the Transportation Research Board Annual Meeting in Washington, DC.

UConn Alumna Selected Transport Northwest Student of the Year

Congratulations to University of Connecticut graduate, Kari Watkins, who was selected by Transportation Northwest as its 2008 Outstanding Student of the Year!

While obtaining her master’s degree at the University of Connecticut, Kari was asked to teach a few courses, and she developed a passion for educating engineers. After convincing her husband and two young daughters that her dream was worth the risk, they sold their house, packed their bags and moved across the country to Seattle, where she began her PhD studies at the University of Washington.

Kari’s recent projects have included an investigation of travel time reliability and transit traveler information.

Transportation Northwest is the University Transportation Center for Federal Region X at the University of Washington.
Jennifer Hongmei Zhou, University of Connecticut  
*Difference in Gap Acceptance of Elderly Drivers*, February 2

Jenna Nichols, University of Connecticut  
*Developing a Framework for Sustainable Transportation Indicators*, February 2

Heather Rothenberg, University of Massachusetts, Amherst  
*Advanced Applications of Safety Data Analysis: Using Multiple Datasets in Highway Safety Programming, Policy, and Research*, February 23

Heather Smith, Congress for the New Urbanism  
*100 Years of Regional Planning in Chicago*, March 20

Emil Frankel, Bipartisan Policy Center  
*Economic Crisis and National Transportation Policy*, March 30

Thomas Low, Duany Plater-Zyberk & Company  
*Light Imprint: Integrating Sustainability and Community Design*, April 24

Ellen Brennan-Galvin, Yale University  
*Are Bus Rapid Transit Systems the Answer to the Developing World’s Growing Population Challenges?*, May 1