METRANSNEWS

National Center for Metropolitan Transportation Research University of Southern California / California State University, Long Beach

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METRANS, a partnership of the University of Southern California and California State University, Long Beach, is a U.S. Department of Transportation designated University Transportation Center. Its mission is to solve transportation problems of large metropolitan areas through research, education and outreach.

Research Profile

CSULB ECONOMIST KRISTEN MONACO USES UNUSUAL METHODS FOR TRUCKER RESEARCH

It's a safe bet that Kristen Monaco did not grow up expecting to work with truckers. Yet since her graduate school days, this CSULB Economics Professor has focused her research on the working life of truck drivers.

In fact, she finds it "Very interesting!"

According to Monaco, "The common perception of truck drivers and their economic reality are worlds apart.

"People think of teamsters with their big, fancy trucks, yet only about 25% are unionized. There's lots of misperception on the streets here (about truckers who serve the ports); they're confused with the ILWU. Typically, truckers' incomes are below the median. At our local ports, truck drivers generally have no benefits; they make 'OK' money, but they do it by working very long hours."

Learning truckers' jobs from their perspective calls for some unusual research methods for an economist. "Government data sets are great for basic data," she explains, "but jobs in trucking are not 40-hour jobs." As

a result, she finds she has needed to conduct individual interviews with the truckers themselves. Most economists, she notes, do not collect individual-level data.

Recently, as part of a METRANS-funded study, Monaco headed a team of researchers conducting surveys at the local ports. Every day during the project, at 5:45 a.m., they surveyed drivers awaiting the opening of terminal gates for loading or unloading their first haul of the day. Student Charles Abbott, who graduated in 2004, was a key member of the research team.

Monaco is deeply rooted in the upper Midwest. She was educated at Michigan State University and received her B.A. in Political Economy. Her graduate work was completed at the University of Wisconsin-Milwaukee in 1998. It was in the Midwest that she became enamored of the trucking industry.

"While I was preparing for my Ph.D. dissertation, I discovered that there was research funding through a new center for trucking industry studies at the University of Michigan, underwritten by the Sloan



Professor Kristen Monaco

Foundation." (The entity has since moved to the Georgia Institute of Technology.) Monaco's early research focused on truckers as part of a labor market. With a smile, she recalls interviewing the drivers at truck stops. "I found them very interesting as a subject."

Today, she has published more than a dozen articles on trucking, but she still finds new issues that intrigue her. For example, she feels the current pressure in the local ports for around-the-clock terminal operations may have overlooked safety implications for truckers. "What will extended

(Continued on page 2)

METRANS RELEASES NEW RESEARCH REPORTS

METRANS recently released final research reports summarized below. Full text is available under "Research" at www.metrans.org.

O1-10 Parametric Frequency Domain Identification Using Variable Stiffness and Damping Devices, by E. Johnson and M. Elmasry Simulation of motion in bridges and other structures

bridges and other structures, due to ambient sources (e.g., earthquakes) was used to show how variable stiffness and damping devices (VSDD) can identify local damage. The goal is to determine the best VSDD actions to locate and identify damage. Generally, VSDDs were successful in improving the damage identification in structures using the variable stiffness mode but rather unsuccessful in the variable damping only mode.

03-20-Neighborhood Attributes And Commuting Behavior: Transit Choice, by Peter Gordon, Bumsoo Lee, James E. Moore II, Harry W. Richardson, and Christopher Williamson.

This research used a newly developed neighborhood typology to predict residents' transit usage. To create the neighborhood types, the researchers used data from the 2000 Census, Topologically Integrated Geographic Encoding and Referencing street files, and maps of rail transit lines. A total of 5,727 census tracts were included in four California MSAs: Los Angeles, San Francisco, San Diego, and Sacramento. Cluster analysis revealed 20 distinct generic neighborhood types, based on broad indicators of location and population density, street design, transit access and highway access.

Multiple regression analyses tested neighborhood type effects on commuting mode choices. The new neighborhood variables predict more variance in commuting behavior than does simple density alone. The neighborhood typology may be useful in other research, such as predicting residents' commuting time, for studies of destinations, etc.



03-01-A Novel Approach to Routing and Dispatching Trucks Based on Partial Information in a Dynamic Environment, by Maged Dessouky, Petros lannou, and Hossein Jula.

Using mathematical simulations of truck routes, these

researchers demonstrated the benefits of their partial routing approach over both a preplanned methodology (in which all stops, travel times, etc., are known) and over dispatching methodologies (in which uncertainties are high and truck routes are set only as needed). This dynamic routing methodology also has the capability for mid-route adjustments by incorporating updated road and traffic information from wireless communication devices, automatic vehicle locators, and traveler information systems.

Implementation of these costsaving algorithms can be fairly straightforward. Using a server to continuously run this algorithm and mobile data terminals in the vehicles so that route data can be automatically sent via a data dispatcher to the vehicles, goods movements can be improved using new but currently available computer and information technologies.

KRISTEN MONACO, CONT.

(Continued from page 1)

gate hours do to truckers' occupational safety, health, accident rates, etc.?"

Since local truckers generally have no health insurance, Monaco says an overlooked policy issue may be their increased medical costs, if their expenses are ultimately borne by the general public.

Monaco feels other policy concerns raised by her research include "How to make the ports run better without *just* focusing on truckers so much—what other ways are there to make things safer?" A major related issue is unsafe chassis and final responsibility for preventive maintenance, she says.

What does the future hold for Monaco's research with truck drivers? She's interested in developing macroeconomic models of transportation wages and employment. Her purpose will be to predict wages and overall employment in the industry.

"Transportation is a derived demand, especially water-based transportation (as in the ports), and not a lot of research links international trade, manufacturing and U.S. or foreign productivity."

Monaco is also excited about exploring the impact of Mexican drivers in the U.S., which has been the subject of much speculation since the passage of NAFTA

now more than twelve years ago. "Which standards will ultimately be enforced" she wonders, "those of the U.S. or of Mexico?"

The Midwestern native is grateful for the opportunity she received to study truckers in Michigan. She is also happy that CSULB's transportation programs help her bring real-world research into the classroom. "Not a lot of economists focus on transportation, and few programs focus on transportation-especially freight." The opportunity to do that type of research was a strong incentive for Monaco to join the CSULB faculty.

Thus, Monaco finds CSULB suits her personal and professional objectives.

She finds local research opportunities are plentiful. "I never feel constrained, in terms of research," says Monaco, "and METRANS support makes my research faster and better."

With a corner of her university office reserved for her pet dog, Monaco admits her students enjoy coming to visit. The dog, however, doesn't accompany her to interview truck drivers.

Having carved a unique niche at an early age, Kristen Monaco looks forward to a long career of trucker research in California. Volume 4, Issue 1 Page 3

METRANS Research

METRANS FUNDS NEW RESEARCH PROJECTS FOR 2005

In Fall 2004, METRANS issued its sixth request for research proposals from CSULB and USC faculty. Projects were funded beginning in January, typically lasting 12 months. Approximately \$750,000 was available. Funding criteria emphasized research to solve significant transportation problems and likely to result in publications in refereed journals. The Executive Committee made selections after peer and practitioner reviews.

Eligible projects included those addressing metropolitan transportation through improved technology, policies, operations, or management practices that fall within the METRANS focus areas:

Commercial goods movement and international

trade. Discovering ways that crowded, congested cities can efficiently move goods and provide transportation infrastructure, especially productivity issues.

- Mobility of urban populations. Alleviating mobility problems in large, decentralized cities, where many residents still do not own autos, transit service is uneven, and roadway congestion abounds, especially improving mobility for disadvantaged populations and innovative ways to use buses and other vehicles for high-quality transit; also improvements in the . configuration of public transit services, delivery
- and efficiency of services, and organizational structure/management of services.
- Highway infrastructure and infrastructure renewal. Ensuring and improving the supply of transportation services delivered in metropolitan areas; providing selfsustaining, environmentally compatible transportation infrastructure that is durable and efficient. especially 1) monitoring, maintenance, rapid repair, rehabilitation; 2) financing requirements or techniques, including new pricing options.
- Safety, security and vulnerability. Alleviating safety and security issues

of large metropolitan areas, where concentrations of modal traffic presents risks to pedestrians, drivers, and transit passengers, and where the concentration of major transportation facilities and population now generates significant vulnerability to both natural or man-made disasters.

Proposals involving CSULB-USC collaboration, and interdisciplinary proposals were especially encouraged.

Newly funded projects are listed below. Project descriptions may be found at www.metrans.org under "Research."

05-01	Validation of Sensory Systems for Intelligent Vehicles Principal Investigator: Karl H. Grote, CSULB
05-04	Ports and Highways Infrastructure Investment and Inter-state Spatial Spillovers Principal Investigator: Kristen Monaco, CSULB
05-06	Cambodian Access to Transportation: Impact on Senior Nutrition and Congregate Meal Service Programs Co- Principal Investigators: Robert Friis & Mohammed Forouzesh, CSULB
05-10	Improving Trucking Safety: Effects of Driver Hours of Service Regulations Principal Investigator: Randolph Hall, USC
05-11	Simulation Test Bed and Evaluation of Truck Movement Concepts on Terminal Efficiency and Traffic Flow Co-Principal Investigators: Petros Ioannou, USC, & Anastasios Chassiakos, CSULB
05-12	Evaluation of Extended Gate Operations at the Ports of Los Angeles and Long Beach Co-Principal Investigators: Genevieve Giuliano, USC, & Joseph Magaddino, CSULB
05-13	Study of the Exposition Light-Rail's Safety for Pedestrians and Drivers Co-Principal Investigators: Najmedin Meshkati, USC, Mansour Rahimi, USC, & Jalal Torabzadeh, CSULB
05-14	SURE-FT: Sensor for Unexpected Roadway Events: Field Trials Co-Principal Investigators: John Heidemann & Genevieve Giuliano, USC
05-17	Institutional Considerations in Freight Movement in Ports of Los Angeles/Long Beach Principal Investigator: Niraj Verma, USC

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METRANS Research & Outreach

METRANS CONVENES "MOBILITY IN THE METROPOLIS" CONFERENCE

METRANS Annual Research Conference

"Mobility in the Metropolis:

Making the Most of What We Have"

Wednesday, February 9, 2005; 1:30-6:30 p.m.

University of Southern California

Davidson Conference Center

More info: www.metrans.org

Reservations:

Jacquette Givens: (213) 821-1025

Transportation productivity will be the theme when researchers and the public gather for "Mobility in the Metropolis: Mak-

ing the Most of What We Have," the next METRANS Annual Research Conference. Presented at the Davidson Conference Center, USC, it will be held Wednesday, February, 9, 2005, 1:30 - 6:30 p.m.

Keynote speaker is Lawrence H. Orcutt, Caltrans Acting Deputy Director of Maintenance & Operations, Two sessions will highlight recent METRANS research focused on efficiency. Petros Ioannou, Director of the Center for Advanced Transporta-

tion Technologies at USC, will moderate "Models and Planning." It will include the following presentations:

- "Evaluation of Highway Widening Plans;"
- Improved Modeling of Network Transportation Flows;"
- Optimizing Cargo Movements."

Panel Session II will be moderated by Joseph Magaddino, Chair of the CSULB Economics Department, and features:

- "Short Sea Shipping in Southern California;"
- Wages and Working Conditions of Port Truck Drivers;"
- Freight Routing and Containerization."

Demonstrations and posters will showcase other METRANS studies, including "Increasing Bus Transit Ridership," "SURE-SE (Sensors for Unexpected Roadway Events Simulation and Evaluation)," "Robust Investment Decisions for Highway Capacity Ex-

pansions," "Reducing Pollutants from Mobile Sources," "Bridge Structural Health Monitoring," and Highway-Rail Crossing Accidents."

Admission is free; see box above to make a reservation.

CALTRANS PLANNERS TO LEARN LATEST IN GOODS MOVEMENT

Caltrans planners will be introduced to principles of international goods movement in a special seminar to be offered twice this Spring, once in Long Beach and again in Oakland. The METRANS seminar builds upon training programs developed by CSULB's Center for International Trade and Transportation (CITT). It introduces planners to what is involved in moving international freight from source to destination and engages them in a broader discussion of logistics planning.

Industry representatives will provide a broad overview of the supply chain and goods movement stakeholders. "Too often, planners are isolated from the activities at the ports, distribution centers, and other entities along the goods movement chain," said Marianne Venieris, Deputy Director of

METRANS, "so the seminar will offer Caltrans planners an opportunity to identify constructive means of engaging key stakeholders as part of the DOT infrastructure planning process." By focusing on best practices from across the nation, planners will learn to apply logistics concepts.

Specific seminar topics include industry trends and their impacts on transportation infrastructure; the availability and use of data; and funding to accomplish various stakeholder goals. Participants will leave the three-day seminar with a better understanding of the role that they as planners play in goods movement. They will also understand the roles played by various actors and identify possible partners for Caltrans goods movement activities.

INTELLIGENT TRANSPORTATION SYSTEMS FOR TRUCK WEIGH & COMPLIANCE

METRANS will soon join Caltrans, the California Highway Patrol and other experts to launch a feasibility study for "Virtual Weigh and Compliance Stations" (VWCS).

The new system includes testing wider use of in-truck transponders and weigh-in-motion technology to save time for truckers and compliance personnel.

As a first step, on February 17, various highway transportation stakeholders will gather at the CSU Long Beach Executive Training Center for a workshop.

Lawrence H. Orcutt, Caltrans Acting Deputy Director of Maintenance and Operations, will open the session. Speakers include Genevieve Giuliano, Director of METRANS, and Lt. Bruce Kynaston of the California Highway Patrol.

According to Giuliano, participants will review the concept of a VWCS and discuss implementing the new technology in two planned field tests, one each in Northern and Southern California.

"Truck travel has increased dramatically on our highways in the past five years," she said, "but without proportional increases in highway capacity and commercial vehicle inspection and enforcement capacity. The potential damage to our roads is tremendous. Using Intelligent Transportation Systems technology can make enforcement much more efficient."

Limited use of the newer technology has been well received.

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METRANS Outreach

TOWN HALL EXAMINES LESSONS FROM PORTS' 2004 PEAK SEASON

If the local ports' 2004 season was "for the books." then the writing can begin after the Seventh Annual CITT State of the Trade and Transportation Town Hall scheduled for March 10. The meeting will be held at the Carpenter Performing Arts Center at CSULB.

The title is apt: "Lessons Learned from the 2004 Peak Season Crisis: Causes, Impacts, Solutions." Follow- John Husing ing the interactive tradition of Town Halls, the audience will be invited to participate.

A brief, original video documentary will be premiered. The film is being produced by CSULB's Advanced Media Production.

John Husing, Ph.D., Economics & Politics, Inc., will deliver a keynote speech: "What the Logistics Industry Means for the Region." Husing is an expert on economic development. "Whether it is the ports, rail systems, airports or freeways, the logistics system is approaching capacity," says Husing. "If the needed infrastructure is not built, goods will be diverted away from Southern California. The result will be the loss of the only true high growth source of upwardly mobile, blue-



collar jobs for the 46% of Southern Californians who have not gone beyond high school and can no longer look to manufacturing to fill this need."

Industry experts will participate in a panel moderated by Richard Hollingsworth, President of the Gateway Cities Partnership, Inc. Their topic is "Solutions-What Will the Industry Do So This Crisis Will Not Be Repeated in the Future?"

The public is invited to the discussion, since they have so much at stake and seldom know the details of the indus-

According to Hollingsworth, "The public is unaware of the real reason for the problems encountered during the



Richard Hollingsworth

7th Annual Town Hall "Lessons Learned From the 2004 Peak Season Crisis: Causes. Impacts. Solutions" Thursday, March 10, 2005 6:00 - 8:30 p.m. **Carpenter Performing Arts Center CSULB Campus** More info: www.uces.csulb.edu/CITT Alix Traver: (562) 296-1174

2004 peak season. They are more likely to suggest that security is the main roadblock rather than growth, even though they are very concerned about growth as it affects freeway traffic and air quality."

Confirmed panelists include John Isbell, Director, Nike Corporate Delivery Logistics. In commenting on Nike's experience during the 2004 peak, Isbell said, "We were able to route cargo to other ports that enable us to best meet our customers' delivery dates. Of course, our cargo coming through the ports of Long Beach and Los Angeles was delayed. Given the carriers we use, they worked hard to expedite our cargo so our delays were less than what the trade publications were reporting."

Better forecasting, says Isbell, will be an important factor in the future, but also, "Shippers, like Nike, will need to be proactive in working with their carrier partners."

Other panelists, to be confirmed, will include representatives of the ILWU, railroads, carriers, trucking, and marine terminals.

METRANS Advisory Committee To Meet February 9

Increasing the national visibility of METRANS will dominate the agenda at the forthcoming pus in Lewis Hall prior to the February 9 METRANS Advisory Committee meeting.

The Committee serves as METRANS' advisory body, providing strategic guidance on METRANS' research, educa-

tion and outreach programs. It will meet at the USC camforthcoming METRANS Annual Research Conference. "Mobility in the Metropolis" (see story, p. 6).

Among the education issues will be marketing the new

online version of the Global Logistics Specialist certificate program. The recently launched program is intended to reach a national and international audience.

With the latest research contracts now awarded (see story, p. 2), the group will discuss

research issues and priorities, particularly with regard to raising the visibility and reputation of METRANS' research.

The Advisory Committee includes representatives from federal, state, and local government as well as private industry.

METRANS Education and Training

METRANS NAMES SARAH HAYDEN "STUDENT OF THE YEAR"

USC's Sara Hayden was named METRANS "Outstanding Student of the Year" for 2004-05, according to METRANS Director Genevieve Giuliano, who said, "Sarah Hayden embodies the

ideals we strive for—mastery of transportation concepts and dedication to service. I know she'll be a leader wherever she goes!"

Hayden is a second year Master of Planning student at the School of Policy, Planning, and Development at the University of Southern California, where she was named a Dean's Merit Scholar upon admission. Working as research assistant to Professor Giuliano, her research projects have included co-authoring a book chapter on transit marketing and an ongoing project assessing the state-mandated terminal gate appointment system at the Ports of Los Angeles and Long Beach.

Sara Hayden took a circuitous route to transportation planning which has given her broad and rich experiences. A native of Seattle, she received her BA in History from Macalester College (St. Paul, Minnesota) in 1993. As an undergraduate, Hayden studied in both Germany and China, attaining fluency in both German and Mandarin Chinese. Upon graduating Magna Cum Laude, she was admitted to member-

ship in Phi Beta Kappa and received the Yahyah Armajani Prize in non-western history. She divided the next decade between the United States, where she worked for the University

> of Washington Medical School, and Western China, where she spent more than four years working for non-profit organizations.

Experiencing the congestion and controversy of Seattle's rapid growth in the 1990's first sparked Sara's interest in transportation; the flame was fanned as she watched Chinese cities cope with the steep rise in automobile ownership.

Hayden is dedicated to leadership through public service. Her work in China helped bring medical care and educational opportunities to isolated rural communities and underserved urban populations, for which she was named Model Foreign Teacher by Shaanxi Province. Her com-

mitment to involvement in her community has led her to volunteer in an after-school tutoring program near USC. Sara views the profession of transportation planning as an outgrowth of this service orientation, and looks forward to using her skills to benefit whatever community of which she finds herself a member.



Sarah Hayden

JENNIFER RUSSELL RECEIVES WTS OVERLY SCHOLARSHIP

Jennifer Lynn Russell, a Ph.D. candidate in USC's Epstein Department of Industrial and Systems Engineering, is the recipient of the Helene M. Overly Memorial Scholarship Graduate Award. The scholarship was established in 1981 by WTS (formerly the Women's Transportation Seminar) to encourage



Jennifer Russell

women to pursue career paths in transportation. The scholarship is awarded by the Los Angeles chapter to women pursuing graduate studies in transportation or a related field. The award was accepted by Russell's mother in Los Angeles on November 10, 2004, at WTS-LA's annual Scholarship and Awards dinner. The \$2,500 award was matched by Russell's Department Chair, Professor James Moore of USC.

Russell had been previously named METRANS Student of the Year for the school year 2003-04. More recently, she was named California's nominee for the National WTS Overly Award.

CUTC TOP-PAPER AWARD TO LUCA QUADRIFOGLIO.

Luca Quadrifoglio, a Ph.D. candidate in the Daniel J. Epstein Department of Industrial & Systems Engineering at USC, has won the Council of University Transportation Centers National

Student Award for best nonthesis publication of 2004.

He devised a transit-scheduling algorithm to improve public bus transportation, by allowing buses to follow fixed routes with a few mandatory stops and, in addition, passengers can be picked up or dropped off anywhere they want along the way, such as at their homes or offices.

Despite several submissions by USC students in the past, according to James Moore, Chairman of the ISE Department, Quadri-



Luca Quadrifoglio

foglio's award is the school's first national success. The National Science Foundation sponsored the work. Associate Professor Maged Dessouky oversaw the project. Quadrifoglio completed his undergraduate studies in Italy.

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METRANS EXECUTIVE COMMITTEE

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Professor, School of Policy, Planning, & Development, USC

Marianne Venieris, Deputy Director

Executive Director, Center for International Trade & Transportation, CSULB

Anastasios G. Chassiakos, Associate Dean, Research and Administration, College of Engineering, CSULB

Randolph Hall, Sr. Associate Dean, School of Engineering; Professor, Industrial & Systems Engineering, USC Petros Ioannou, Professor, Electrical Engineering, USC

Joseph Magaddino, Chairman, Department of Economics, CSULB

Michael Mahoney, Dean, College of Engineering, CSULB

James E. Moore, II, Chairman, Industrial & Systems Engineering; Professor, Civil Engineering and Public Policy & Management, USC

METRANS FACULTY

METRANS has funded **41** faculty at USC and CSULB who are now members of the METRANS Center. Consistent with METRANS' interdisciplinary theme, the faculty come from five branches of engineering (aerospace, civil, electrical, mechanical and industrial & systems), as well as business, economics, geography, information sciences, public policy, planning and public administration. These faculty serve as principal investigators on METRANS-funded projects. They also come together periodically to share insights through coordination meetings and conferences.

California State University, Long Beach:

Anastasios Chassiakos Electrical Engineering

Lisa Grobar Economics

Karl H. Grote Mechanical & Aerospace

Engineering

Mohammed Forouzesh
Robert Friis
Health Sciences

Joseph Magaddino Economics
Kristen Monaco Economics
Emily Parentela Civil Engineering

Hamid Rahai Mechanical Engineering
Jalal Torabzadeh Mechanical Engineering
Reza Toossi Mechanical Engineering

University of Southern California:

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Information on transportation research, publications, education, training and technology transfer is currently available on the METRANS website: www.metrans.org. The website also has a faculty directory, news and links to other relevant sites as well as information on USC and CSULB transportation education programs.

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CSULE

WE'RE ON THE WEB WWW.METRANS.ORG

Dear Reader:

Welcome to the sixth issue of our Newsletter. METRANS is now in its seventh year of operation, and, along with federal and state transportation programs throughout the US, we continue to await passage of a new federal transportation bill and with it a new round of University Transportation Center funding. Meanwhile, we continue to improve and expand our programs. In this issue you will read about our latest round of research awards, as well as our outstanding faculty, award winning students, and upcoming Research Conference and Town Hall.

The METRANS News is one of our primary means for sharing information with our sponsors and the larger transportation community. Are we getting the word out? What would you like to hear more about? Please tell us what you think. Send me email at giuliano@usc.edu.

Genevieve Giuliano
Director, METRANS Transportation Center

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