Final Report
2007–2013
The Center for Multimodal Solutions for Congestion Mitigation (CMS) supported the innovative development of multimodal solutions for mitigating congestion. This theme was selected because congestion mitigation is one of the top priorities of the United States Department of Transportation (USDOT), as well as for the Florida Department of Transportation (FDOT), our partner agency. The theme was also chosen because addressing congestion via multimodal means is an approach likely to be successful because, rather than considering one or more parts individually, it considers the entire transportation system as a whole.
It is with a great sense of accomplishment that I present to you this Final Report, a comprehensive look at 6 years of research, education, and technology transfer activities we undertook at the University of Florida’s Center for Multimodal Solutions for Congestion Mitigation (CMS).

During its operation, CMS conducted 62 research project reports and a wealth of publications and presentations, approximately half of which were a result of our close collaboration with our major partner, the Florida Department of Transportation (FDOT). Several of our projects resulted in products that are already used in transportation practice: a new measurement tool designed to detect at-risk older drivers, a managed lanes analysis component for the widely-used commercially available CORSIM micro-simulator, new tools for estimating travel time reliability currently used by FDOT in their state-wide mobility reporting, and a K-12 course module using LEGO® robots to expose middle-school students to transportation. Pages 14 to 21 of this report highlight these products as well as selected research findings that advanced the state-of-the-art in congestion mitigation.

Of all the CMS success stories, I am most proud of our graduates, many of them already accomplished professionals in their own right. Our alumni are now academics, consultants, and public sector employees. Thanks to CMS funding, these UF graduates were able to learn, get mentored, work with their classmates, conduct research, interact with sponsors, and ultimately complete their degrees and continue on their professional journey having the necessary tools to be productive transportation professionals. Starting on page 25, several CMS alumni talk about their current job responsibilities and reflect on their experiences at UF.

As further evidence of the high quality of our graduates, the UFITE student chapter won the 2013 International Traffic bowl competition in Boston, Mass., competing against student chapter teams across the U.S. and Canada. Congratulations to the winning team: Thomas Chase, Miguel Lugo, Ben Reibach, Don Watson.

Our website www.cms.ce.ufl.edu, will remain operational and provide all CMS project reports, webcast event information, and presentation materials, as well as a record of various CMS-sponsored activities.

Every end is also a new beginning, and as CMS was concluding, we began our work on the STRIDE (Southeast Transportation Research Innovation, Development and Education) Center, the Regional UTC for the Southeast since January 2012. Through STRIDE, and together with our partners in the Southeast, we will continue to advance the state-of-the-art in transportation research, and attract the best and the brightest students to prepare them for productive careers in transportation.

Sincerely,

Lily Elefteriadou, Ph.D.
Professor & CMS Director
CMS Milestones

- CMS Awarded Tier 1 UTC grant, May 2007
- Concurrent degree program in transportation/urban planning began, August 2007
- Internal Steering Committee finalized, September 2007
- First call for proposals initiated, December 2007
- First Student of the Year chosen, Genesis Harrod, January 2008
- Year 1 CMS funded projects awarded, February 2008
- First CMS Student Conference, Gainesville, Fla., March 2008
- First transportation interns began work at CMS, May 2008
- CMS Website went live, June 2008
- Second call for proposals initiated, September 2008
- Student of the Year chosen, Aaron Elias, January 2009
- Year 2 CMS funded projects awarded, February 2009
- Third call for proposals initiated, September 2009
- WTS scholarships awarded to Amy Cavaretta, Heather Hammontree, Barbara Martin, 2010
- Student of the Year chosen, Matthew Weisman, January 2010
- Dimitra Michalaka, Ph.D., awarded Pikarsky Award for Outstanding M.S. Thesis in Science & Technology, CUTC Awards Banquet, Washington, D.C., January 2010
- Year 3 CMS funded projects awarded, March 2010
- Innovations in Pricing of Transportation Systems Conference, Lake Buena Vista, Fla., May 2010
- First officially recognized WTS Advancing Women in Transportation student chapter became active at UF, January 2010
- Fourth call for proposals initiated, November 2010
- Student of the Year chosen, Grady Carrick, January 2011
- WTS scholarships awarded to Ly Nguyen and Dimitra Michalaka, February 2011
- Year 4 CMS funded projects awarded, April 2011
- WTS Transportation Symposium, Gainesville, Fla., October 2011
- First LEGO® Robotics Workshop taught at Cade Museum, Gainesville, Fla., October 2012
- CMS last project completed, June 2013
Performance Indicators for 2007–2013

Research Performance

- **29** CMS Transportation Research Reports Published
- **30** FDOT Transportation Research Reports Published
- **108** CMS Presentations
- **70** CMS Publications
- **158** General Transportation Presentations
- **174** General Transportation Publications

Transportation research papers presented at academic/professional meetings

Education

- **11** Undergraduate
- **29** Graduate
- **5** Master’s Level
- **4** Doctoral Level
- **111** Master’s Level
- **31** Doctoral Level

Number of courses offered that are part of the transportation curriculum to date

Technology Transfer

- **127** Total number of transportation seminars, symposia, distance learning classes, etc., conducted for transportation professionals
- **3,065** Total number of transportation professionals who attended tech transfer events
Chart 1 represents the funds spent during the life of the grant. Research accounted for a major portion of the Center’s budget at 58 percent, with 21 percent spent on Education. The Outreach category, which included technology transfer activities, was at 13 percent.

Chart 2 represents funds allocated by source (federal and state) during the life of the grant. A total of $3.5 million was allocated to CMS which was matched by the Florida Department of Transportation.
The Center’s Internal Steering Committee (ISC) comprised faculty representing the four main academic disciplines associated with CMS (transportation, industrial and systems engineering, occupational therapy, and urban and regional planning) and included center staff and representatives from the transportation-related centers at the University of Florida (UF). The main goal of the ISC was to develop, implement, and guide center activities, manage its resources and ensure that objectives were being met. The ISC met once a month during the life of the Center.
The role of the External Advisory Board (EAB) was to guide the activities of the CMS. The board was instrumental in generating ideas for research projects. Other roles included evaluating the research selection and performance processes, guiding educational activities, and assisting in technology transfer at the local, state, and national levels.

Board members represented a wide range of sectors, such as the FDOT, USDOT, the Federal Highway Administration (FHWA), academia, local government, and private agencies.

The fourth and final meeting of the EAB took place on March 3-4, 2012. The board provided CMS with excellent feedback and recommendations related to curriculum development and technology transfer. This meeting was held in conjunction with the CMS Annual Student Conference.

Advisory Board Members

David Berrigan  
Applied Research Program  
Division of Cancer Control & Population Sciences  
National Cancer Institute  
National Institutes of Health

Elizabeth Birriel  
Deputy State Traffic Operations Engineer  
Florida Department of Transportation

Tamara Christion  
Transportation Planner  
Federal Highway Administration

Max Crumit  
Independent Transportation Consultant

J. Darryll Dockstader  
Director of Research  
Florida Department of Transportation

Genevieve Giuliano  
Senior Associate Dean  
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LYNX

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Team Leader  
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Dowling Associates, Inc.
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FDOT Headquarters, Tallahassee, Fla.
FDOT District Five, Orlando, Fla.
FDOT District Six, Miami, Fla.
Florida Highway Patrol
Kimley-Horn and Associates, Inc.
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HNTB
Kisinger Campo & Associates Corp.
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LYNX
Midwest Research Institute
National Institutes of Health
Orlando-Orange County Expressway Authority
PATH/University of California, Berkeley
ATKINS
Rose-Hulman Institute of Technology
Stantec/Street Smarts
T-Concepts Corporation
Technical University of Crete, Greece
Telvent
Tongji University, China
Transport Simulation Systems (TSS)
Transportation Research Board
University of Bochum, Germany
University of Hartford
University of Madrid, Spain
University of Massachusetts, Amherst
University of Michigan
University of Minnesota
University of Southern California
University of Tennessee (Southeastern Transportation Center)
University of Texas at Austin
University of Twente, Netherlands
University of Washington
University of Wisconsin, Madison
Utrecht University, Netherlands
Villanova University
Traffic Management Centers (TMCs) in the metropolitan areas of Florida obtain traffic flow data from their Intelligent Transportation Systems (ITS) surveillance hardware and software, known as the SunGuide system. This system was designed specifically to serve FDOT. The amount of traffic data generated by these systems is so large that simply saving the raw data is of no use to the stakeholders (ITS operators and engineers, state planners, transportation researchers, and private sector users) unless it is aggregated and simplified at some level. To meet this need, CMS and FDOT funded the design, enhancement, and implementation of the Engineering Warehouse for Archived Regional Data, or STEWARD.

The primary function of STEWARD is to provide a repository for the data generated by the SunGuide system, and provide the stakeholders with a rich supply of data from Florida’s busiest roadways for a variety of purposes. Below are the main functions of STEWARD:

1. Process the raw traffic data obtained from the TMCs.
2. Organize the processed data in a database system.
3. Create useful reports on traffic information and traffic data diagnostics (based on traffic flow principles).
4. Provide Web interface for data users to access and retrieve the reports.
5. Provide stakeholders with access to these reports through online viewing and downloads.

Apart from the daily traffic data and several custom reports, the system’s website also provides several desktop utility programs to stakeholders that assist them in creating special analysis reports from the downloaded data. Additionally, the website geographically displays the detector locations with a satellite photo overlay, which allows viewers to identify detector locations of interest. STEWARD has created an important resource for a wide variety of traffic data users in Florida, including practitioners and researchers. STEWARD benefits practitioners by providing them with travel time reliability reporting, hot spot identification, performance measure trends, and assessment of capacity and level of service. STEWARD is also a valuable resource for researchers working on projects that analyze speed-flow-density relationships, the effects of an incident, managed lanes operations, and travel time reliability.

STEWARD Website: cce-trc-cdwserv.ce.ufl.edu/steward/

Associated Projects:

Central Data Warehouse Configuration, Data Analysis for Congestion Mitigation Studies
PI: Kenneth Courage, PE, Professor Emeritus
Civil & Coastal Engineering
CMS # 2008-001

Central Data Warehouse Enhancements, Part 2
PI: Scott Washburn, Ph.D., PE
Civil & Coastal Engineering
FDOT # 92671

Implementation of the Statewide Traffic Engineering Warehouse for Regionally Archived Data (STEWARD)
PI: Kenneth Courage, PE, Professor Emeritus
Civil & Coastal Engineering
FDOT # 72734
New Features Added to CORSIM Traffic Simulation Software

CMS funding resulted in newly added features to improve and enhance CORSIM, a comprehensive microscopic traffic simulation software. This software is applicable to surface streets, freeways, and integrated networks, and has a complete selection of control devices, such as stop/yield signs, traffic signals, and ramp metering. The software was initially created by FHWA and then given to UF for maintenance and further development. The improvements added to the newly-released version of CORSIM include: two-lane highways, toll plazas, HOT lanes, Adaptive Cruise Control, HCS Streets and T-7F interoperability, roundabouts, work zones, freeway queue measurement, lane utilization and lane selection, truck exit percentages, emergency vehicle and signal pre-emption, and runtime extensions. In August 2011, CMS held a workshop and focus group to introduce these new features. Practitioners from several consulting firms and government agencies are currently using the program, including TransSystems, Kimley-Horn, Inc., Tindale Oliver & Associates, Jacobs Engineering Group, Kisinger Campo, Prosser Hallock, Inc., Stanley Consultants, Inc., RS&H, Inc., HNTB, URS Corporation, Kittelson & Associates, Inc., FDOT, and Florida Turnpike Enterprise. The following link contains an excellent article on the new CORSIM features: mctrans.ce.ufl.edu/featured/tsis/Version6/CorsimEnhancements.pdf

Associated Projects:

Enhancing CORSIM for Simulating High Occupancy/Toll Lane Operations  
PI: Yafeng Yin, Ph.D.  
Civil & Coastal Engineering – Transportation  
CMS # 2010-005

Development of Simulation Program for Two-Lane Highway Analysis  
PI: Scott Washburn, Ph.D., PE  
Civil & Coastal Engineering  
CMS # 2008-002

Using Microsimulation to Evaluate the Effects of Advanced Vehicle Technologies on Congestion  
PI: Lily Elefteriadou, Ph.D.  
CMS # 2009-006
Measurement Tool Designed for Identifying at Risk Older Drivers

With the rapidly growing population of aging Baby Boomers, identifying at-risk older drivers is important for road safety. On-road testing, the gold standard for assessment, is expensive and often unavailable to drivers in this age group. Additionally, caregivers, friends, or loved ones who share lived experiences with older individuals often can contribute valuable information regarding fitness-to-drive. To overcome the limitations of on-road testing and to better involve the public in identifying at-risk drivers, researchers, led by Sherrilene Classen, Ph.D., at the University of Florida Institute for Mobility, Activity and Participation, (currently professor and director at the School of Occupational Therapy, Elborn College, Canada) developed and tested the Fitness-to Drive Screening Measure (FTDS; formerly known as the Safe Driving Behavior Measure).

FTDS is a user-friendly, Web-based tool that caregivers, family members, and occupational therapy (OT) practitioners can use to identify potentially at-risk older drivers. Located online at fitnesstodrive.phhp.ufl.edu, FTDS is freely available to anyone with an internet connection. The tool, which is also featured on the AARP’s website at www.aarp.org/drc, allows caregivers, friends, or loved ones who have accompanied the driver in a vehicle during the past three months to rate his/her difficulties in any of 54 driving-related behaviors. After screening, FTDS generates a profile of each driver, which includes a classification into one of three categories: basic driver, routine driver, accomplished driver. Depending on the driver category, FTDS recommends logical next steps caregivers or OTs can take for the driver. Recommendations include guidelines for continued fitness-to-drive, possible intervention options, and/or guidance on starting conversations about driving cessation. By conducting 200 comprehensive driving evaluations on older drivers, and collecting data from 200 family members/loved ones, the research team determined measurement properties for FTDS, including validity (face, content, and construct), factor structure, dimensionality, and item/person-level psychometrics. They then determined the rater severity of the three rater groups (older driver, caregiver/family member, and driving evaluator) and the criterion validity of FTDS as it relates to the gold standard on-road driving evaluation. Finally, the team integrated FTDS into the Web-based tool described above.

The research findings suggest that FTDS may be useful in (1) helping family members/caregivers identify at-risk older drivers by providing logical next steps based on key form recommendations, (2) aiding OT practitioners in identifying an entry point for further intervention or referrals, and (3) allowing Certified Driving Rehabilitation Specialists (CDRS) to develop realistic and targeted intervention goals to promote driver fitness.

FTDS is currently being used by the Florida Senior Safety Resource Center, The American Occupational Therapy Association, the Car Connection, the Social Work Website, the Futurity Website (features the latest discoveries by scientists at top research universities in the U.S., UK, Canada, and Australia), and the Safe Mobility for Life Coalition, to name a few.

Associated Projects:

Validity and Usability of a Safe Driving Behaviors Measure for Older Adults: Strategy for Congestion Mitigation
PI: Sherrilene Classen, Ph.D.
Occupational Therapy
CMS # 2010-012

Validity and Usability of a Safe Driving Behaviors Measure for Older Adults
PI: Sherrilene Classen, Ph.D.
Occupational Therapy
FDOT # 92791
A series of six FDOT-funded research projects developed tools for estimating travel time reliability on Florida’s Strategic Intermodal System (SIS). Travel time reliability is a key performance measure that evaluates the system over time and considers a wide range of conditions, including the presence of incidents, adverse weather, and work zones. The goal of SIS is to provide a transportation system that efficiently serves Florida’s citizens, businesses, and visitors; helps Florida become a worldwide economic leader; enhances economic prosperity and competitiveness; enriches quality of life; and reflects responsible environmental stewardship. SIS consists of transportation facilities and services of statewide and interregional significance, including freeways and arterials. CMS researchers have to date developed tools that predict travel time reliability for the entire freeway portion of SIS, and are currently developing tools for estimating reliability along arterial segments. These tools can provide travel time reliability as a function of various changes in the system, such as incident removal times and work zone occurrences. For example, they can be used to evaluate system-wide implementation alternatives such as road-ranger programs on specific freeway sections, or the installation of various freeway management tools. Additional information is available at cms.ce.ufl.edu/research/completed_projects.php

Associated Projects:

Travel Time Reliability Modeling for Florida
PI: Lily Elefteriadou, Ph.D.
FDOT # 77415

Travel Time Reliability Implementation for the Freeway SIS
PI: Lily Elefteriadou, Ph.D.
FDOT # 84708

Multimodal and Corridor Applications of Travel Time Reliability
PI: Lily Elefteriadou, Ph.D.
FDOT # 87798
K-12 Educational Resources

Using LEGO® Robots to Teach Transportation Engineering

Robotics is a great way to get kids excited about science, technology, engineering, and math (STEM) topics. It is also highly effective in stimulating development of teamwork and self-confidence. This project provides transportation-related lesson plans for middle school students utilizing LEGO® Mindstorms NXT robots to foster interest in the transportation engineering profession as a career choice. The objective is to explore how an intelligent vehicle can help mitigate congestion through the use of sensors and computer programming. Participants program the intelligent vehicle to conduct activities to solve congestion issues on our roadways. Exercises include programming the vehicle to move, follow a route, and detect emergency vehicles and pedestrians. Participants also learn how to calculate travel time and distance.

The TRC conducted four workshops for a total of 49 students at local schools, a science museum, and a Girl Scout troop meeting. The Southeast Transportation, Research, Innovation Development and Education (STRIDE) Center adopted the curriculum, continues to offer workshops in Florida, and is expanding the program to North Carolina State University and University of Miami.

The curriculum has been downloaded more than 50 times from the STRIDE website (www.stride.ce.ufl.edu/lego-robotics-vehicle-lesson-plans-for-secondary-education) in the continental U.S. and as far away as Alaska. Agencies that have downloaded the material range from UTCs and other universities, to K-12 and after-school programs. Chamblee Middle School in Atlanta, Ga. implemented the lesson plans into their curriculum in the spring of 2013 in their effort to become an accredited STEM school. The lesson plans were utilized by over 300 students in their school science program. The curriculum is also featured at www.transportationcareers.org — a wonderful resource for teachers.
Significant Research Findings

Researchers at the UF Department of Industrial and Systems Engineering developed models to integrate the effects of traffic congestion on production economies of scale and the possible influence of that congestion on supply chain design and performance, considerations not addressed in past research.

The ability for retailers to offer attractive prices to consumers relies on the efficient operation of large-scale supply chains that convert natural resources, raw materials, and other components into a finished product. Transportation is key to the efficient operation of these supply chains, which comprise raw material sites, manufacturing and assembly facilities, distribution centers and warehouses, and retail stores—often at disparate locations.

The structural design of a supply chain is an extremely complex problem requiring numerous difficult and interconnected decisions. These decisions determine the degree to which a supply chain can meet or exceed competitor performance and customer expectations on product availability and price. The most relevant of these decisions can be described as follows: For each required manufacturing and distribution activity, in how many places and at what locations will the activity be performed? Can they be consolidated? Can different items share the same trucks for their shipment requirements? Enabling multiple locations to perform an activity has inherent advantages and disadvantages. Advantages include risk diversification and quick responses to the needs of local markets. Disadvantages include diminished economies of scale and duplication of activities and expenses. For example, building many warehouses close to markets may reduce transportation costs from warehouses to stores, but the associated facility costs, inventory investment, and transportation costs for serving warehouses might make this option unattractive. At the other extreme, while building only a few warehouses may reduce facility and inventory costs, the associated transportation costs to retail stores may be prohibitive.

Therefore, supply chain decision makers must consider numerous complicated and interrelated decisions and tradeoffs that affect the ability to offer competitive products. As the above example illustrates, transportation costs serve as a key driver of competitive performance. Traffic congestion increases transportation-related costs and delivery lead times, which, in turn, increase the required system inventory investment for meeting desired customer service levels.

Findings concluded that consolidation led to decreased number of trucks required to ship the same amount of commodities (i.e., reduced truck density and increased truck capacity utilization), leading to less truck congestion on the distribution network. Additionally, this study may also have an impact on proposing policies for green transportation in supply chains as there is a need to reduce carbon dioxide emissions in transportation.

Modified from an article that appeared in the September 2012 issue of the USDOT/RITA UTC Spotlight newsletter.

Associated Project:

Characterizing the Tradeoffs and Costs Associated with Transportation Congestion in Supply Chains

PI: Joseph Geunes, Ph.D.

CMS # 2008-004
Advances in Road Pricing for Congestion Mitigation

With the recent advent of electronic tolling, many metropolitan areas worldwide have accepted and are using road tolls or congestion pricing to alleviate traffic congestion. Toll pricing may appear simple to many people (i.e., raise tolls when congestion is high and lower them when it is low); however, this simple pricing scheme has many fundamental effects on a transportation system. Some effects are desirable, while others are not. CMS funded several studies that examined the effects of congestion pricing in multi-modal settings, proposed innovative structures for charging tolls, and suggested ways to make congestion pricing more acceptable to the public.

Researchers and organizations have referenced, extended, and applied the results from these CMS projects in several directions. Using household data from Florida, Mamun et al. (2012) compared several nonlinear road pricing schemes (proposed in the first associated project listed below) against the mileage-based fee for FDOT in efforts to find a replacement for the Florida gas tax. Using a concept studied in the second associated project, Guo and Liu (2012) analyzed the traffic flows before the collapse and after the reopening of the I-35W Bridge over the Mississippi River in Minneapolis, Minn. Wu et al. (2011) extended the model in the third associated project to propose algorithms for identifying “Pareto-improving” tolls (tolls that could reduce congestion without impacting cost or travel time). The publications cited above are listed on page 49.

Lawphongpanich and Yin presented their results at professional meetings, both in the U.S. and abroad. They incorporated their findings in courses they taught at UF, and presented them in seminars at other institutions. As part of the fourth project listed below, they organized the Innovations in Pricing of Transportation Systems Conference & Workshop held on May 12 - 14, 2010, at the Royal Plaza Hotel in Orlando, Fla. The conference included six plenary sessions with distinguished speakers and over 70 presentations delivered by practitioners, experts, and researchers from various transportation agencies, non-profit organizations, and universities. Conference participants included citizens from twelve countries and individuals with varied background in economics, transportation, civil engineering, operations research, industrial engineering, urban planning, and social science, among others.

Associated Projects:

Nonlinear Road Pricing for Congestion and the Environment
Co-PIs: Siriphong (Toi) Lawphongpanich, Ph.D.; Yafeng Yin, Ph.D.
CMS # 2010-016, FDOT # 81248

Robust Congestion Pricing under Boundedly Rational Travel Behaviors
Co-PIs: Yafeng Yin, Ph.D.; Siriphong (Toi) Lawphongpanich, Ph.D.
CMS # 2009-012

A Pricing Approach for Mitigating Congestion in Multi-Modal Transportation Systems
Co-PIs: Yafeng Yin, Ph.D.; Siriphong (Toi) Lawphongpanich, Ph.D.
CMS # 2008-006

Innovations in Pricing of Transportation Systems: Theory and Practice
Co-PIs: Siriphong (Toi) Lawphongpanich, Ph.D.; Yafeng Yin, Ph.D.
CMS # 2009-004
Tool Created for Estimating Impacts of New Development on VMTs

CMS researchers built a spreadsheet-based tool for estimating the lengths of vehicle trips generated by various types of land-use patterns. Travel data from the 1999 Southeast Florida Regional Travel Characteristics Study (about 5,000 households) were combined with detailed land-use and roadway network data from Miami-Dade, Broward, and Palm Beach counties to build statistical models for the trip lengths of different trip purposes. The new tool assesses the regional impact of new developments in terms of trip lengths. This effort is timely and critical due to the increasing emphasis in transportation planning on urban sprawl containment and on moderating the energy consumed by the transportation sector in order to achieve energy-sustainability and reduce the extent of greenhouse gas emissions from vehicles. As of this publication, a consulting firm in California has expressed interest in exploring the possibility of utilizing this new tool.

Associated Project:

Vehicle-Miles-of-Travel-Based Traffic Impact Assessment Methodology
Co-PIs: Ruth Steiner, Ph.D.; Siva Srinivasan, Ph.D.
CMS # 2008-007

Various CMS Projects Explore Travel Demand Forecasting, Planning, & Travel Behavior

CMS funded several projects that collectively addressed several critical areas of travel demand forecasting and planning. In particular, the studies modeled land-use and transportation interactions and developed methods for impact assessment (for example, Modeling the Interaction among Urban Form, Accessibility, Congestion, and Travel Behavior using System Dynamics; Vehicle-Miles-of-Travel-Based Traffic Impact Assessment Methodology; The Effects of Impact Fees in Urban Form and Congestion in Florida). CMS projects also examined the effect of location context on travel behavior and the transferability of demand models (for example, Tour Generation Models for Florida and Vehicle-Miles-of-Travel-Based Traffic Impact Assessment Methodology). The studies also explored relatively understudied travel markets and modeled behavioral patterns using new data (for example, Florida Long Distance Travel Characteristics and Their Impacts on Transportation Systems and Route-Choice Modeling using GPS-Based Travel Surveys).

Associated Projects:

Tour Generation Models for Florida
PI: Siva Srinivasan, Ph.D.
CMS # 2009-008

The Effects of Impact Fees in Urban Form and Congestion in Florida
PI: Andres Blanco, Ph.D.
CMS # 2010-013

Route-Choice Modeling using GPS-Based Travel Surveys
PI: Siva Srinivasan, Ph.D.
CMS # 2011-008

Florida Long Distance Travel Characteristics and Their Impacts on Transportation Systems
PI: Ruth Steiner, Ph.D.
CMS # 2011-013

Modeling the Interaction among Urban Form, Accessibility, Congestion, and Travel Behavior using System Dynamics
PI: Ruth Steiner, Ph.D.
CMS # 2011-019

Aerial view of I-4 in Orlando, Fla. (Image credit: Vipul Modi)
**Completed CMS Projects**

### CMS Year 1 (2008)

- **Central Data Warehouse Configuration, Data Analysis for Congestion Mitigation Studies**
  PI: Kenneth Courage, Ph.D.
  CMS # 2008-001

- **Development of Simulation Program for Two-Lane Highway Analysis**
  PI: Scott Washburn, Ph.D., PE
  CMS # 2008-002

- **Simulation-Based Robust Optimization for Actuated Signal Timing and Setting**
  PI: Yafeng Yin, Ph.D.
  CMS #2008-003

- **Characterizing the Tradeoffs and Costs Associated with Transportation Congestion in Supply Chains**
  PI: Joseph Geunes, Ph.D.
  CMS # 2008-004

- **Multimodal Solutions for Large Scale Evacuations**
  PI: Panos Pardalos, Ph.D.
  CMS # 2008-005

- **A Pricing Approach for Mitigating Congestion in Multimodal Transportation Systems**
  PI: Siriphong (Toi) Lawphongpanich, Ph.D.
  CMS # 2008-006

- **Vehicle-Miles-of-Travel-Based Traffic Impact Assessment Methodology**
  PI: Ruth Steiner, Ph.D.
  CMS # 2008-007

### CMS Year 2 (2009)

- **Innovations in Pricing of Transportation Systems: Theory and Practice Congestion**
  PI: Siriphong (Toi) Lawphongpanich, Ph.D.
  CMS # 2009-004

- **Using Microsimulation to Evaluate the Effects of Advanced Vehicle Technologies on Congestion**
  PI: Lily Elefteriadou, Ph.D.
  CMS # 2009-006

- **Tour Generation Models for Florida**
  PI: Siva Srinivasan, Ph.D.
  CMS # 2009-008

- **Development of a Multimodal Transportation Educational Virtual Appliance (MTEVA) to Study Congestion During Extreme Tropical Events**
  PI: Peter Sheng, Ph.D.
  CMS # 2009-010

- **Validity and usability of a Safe Driving Behaviors Measure for Older Adults: Strategy for Congestion Mitigation**
  PI: Sherrilene Classen, Ph.D.
  CMS # 2009-012

- **The Effects of Impact Fees in Urban Form and Congestion in Florida**
  PI: Andres Blanco, Ph.D.
  CMS # 2010-013

### CMS Year 3 (2010)

- **Novel Approaches for Road Congestion Minimization**
  PI: Panos Pardalos, Ph.D.
  CMS # 2010-001

- **Protecting Public Interests in Public-Private-Partnership Arrangements for Highway Improvement Projects**
  PI: Yafeng Yin, Ph.D.
  CMS # 2010-002

- **Enhancing CORSIM for Simulating High Occupancy/Toll Lane Operations**
  PI: Yafeng Yin, Ph.D.
  CMS # 2010-005

- **Development of an Analytical Methodology for Two-Lane Highway Facility Analysis**
  PI: Scott Washburn, Ph.D., PE
  CMS # 2010-007

- **Validity and Usability of a Safe Driving Behaviors Measure for Older Adults: Strategy for Congestion Mitigation**
  PI: Sherrilene Classen, Ph.D.
  CMS # 2010-012

- **The Effects of Impact Fees in Urban Form and Congestion in Florida**
  PI: Andres Blanco, Ph.D.
  CMS # 2010-013
Nonlinear Road Pricing for Congestion and the Environment
PI: Siriphong (Toi) Lawphongpanich, Ph.D.
CMS # 2010-016

Enhancement of a Network Analysis Tool to Accommodate Multiple Construction Work Zone Analysis
PI: Ralph Ellis, Ph.D.
CMS # 2010-017

Impacts of Efficient Transportation Capacity Utilization via Multi-Product Consolidation on Transportation Network Usage and Congestion
PI: Joseph Geunes, Ph.D.
CMS # 2010-018

CMS Year 4 (2011)

LEGO® Robot Vehicle Lesson Plans for Secondary Education - A Recruitment Tool
PI: Nina Barker, M.S.
CMS # 2011-001

Route-Choice Modeling using GPS-Based Travel Surveys
PI: Siva Srinivasan, Ph.D.
CMS # 2011-008

Privacy Preserving Methods to Retrieve Origin-Destination Information from InteliDriveSM Vehicles
PI: Yafeng Yin, Ph.D.
CMS # 2011-009

Florida Long Distance Travel Characteristics and Their Impacts on Transportation Systems
PI: Ruth Steiner, Ph.D.
CMS # 2011-013

Strengthening the Resiliency of the Coastal Transportation System through Integrated Simulation of Stormsurge, Inundation, and Non-Recurrent Congestion in Northeast Florida
PI: Peter Sheng, Ph.D.
CMS # 2011-017

Modeling the Interaction among Urban Form, Accessibility, Congestion, and Travel Behavior using System Dynamics
PI: Ruth Steiner, Ph.D.
CMS # 2011-019

The Impacts of Freight Mode Splitting on Congestion, Risk, and Delivery
PI: Joseph Geunes, Ph.D.
CMS # 2011-023
Field Data Collection and Analysis for Freeway Work Zone Capacity Estimation
PI: Lily Elefteriadou, Ph.D.
Project # 67207

Implementation of the Statewide Traffic Engineering Warehouse for Regionally Archived Data (STEWARD)
PI: Kenneth Courage, Professor Emeritus
Project # 72734

Investigation of Freeway Capacity: A) Effective Capacity of Auxiliary Lanes and B) Segment Capacity as a Function of Number of Lanes and Merge/Diverge Activity
Project # 73157 & 74022
PI: Scott Washburn, Ph.D., PE
Project # 73157 & 74022

Trip Generation Characteristics of Special Generators
PI: Yafeng Yin, Ph.D.
Project # 76173

Multimodal Arterial LOS Modeling and Testing
PI: Scott Washburn, Ph.D., PE
Project # 76279 & 76293

Travel Time Reliability Modeling for Florida
PI: Lily Elefteriadou, Ph.D.
Project # 77415

Development of a Prototype Land Use Model for Statewide Transportation Planning Activities
PI: Zhong-Ren Peng, Ph.D.
Project # 78101 (and Supplement)

The Economic Cost of Traffic Congestion in Florida
PI: Andres Blanco, Ph.D.
Project # 79102

Effective and Efficient Deployment of Dynamic Message Signs to Display Travel Time Information
PI: Yafeng Yin, Ph.D.
Co-PI: Toi Lawphongpanich, Ph.D.
Project # 79803 & 79804

Improvements and Enhancements to LOSPLAN 2009
PI: Scott Washburn, Ph.D., PE
Project # 81431

Managed Lane Operations-Adjusted Time of Day Pricing vs. Near Real Time Dynamic Pricing
PI: Yafeng Yin, Ph.D.
Project # 81551

Development and Calibration of Highway Safety Manual Equations for Florida Conditions
PI: Siva Srinivasan, Ph.D.
Project # 82013

Time Travel Reliability Implementation for the Freeway SIS
PI: Lily Elefteriadou, Ph.D.
Project # 84708

Impact of Parking Supply and Demand Management on Central Business District (CBD) Traffic Congestion Transit Performance and Sustainable Land Use
PI: Ruth Steiner, Ph.D.
Project # 85436

Safe Mobility for Life Training Course: Planning Designing for Our Aging Population (Phase 2)
PI: Janet Degner
Project # 85528

Multimodal and Corridor Applications of Travel Time Reliability
PI: Lily Elefteriadou, Ph.D.
Project # 87798

Managed Lane Operations-Adjusted Time of Day Pricing vs. Near Real Time Dynamic Pricing (supplement to 81551)
PI: Yafeng Yin, Ph.D.
Co-PI: Lily Elefteriadou, Ph.D.
Project # 88583

Variable Speed Limit (VSL) Best Management Practice
PI: Lily Elefteriadou, Ph.D.
Co-PI: Yafeng Yin, Ph.D.
Project # 88592

Arterial Highway Capacity and Level of Service Analysis for Florida
PI: Scott Washburn, Ph.D.
Project # 90337

Development of Activity-Based Travel-Demand Models for Florida: An Assessment of Feasibility and Transferability
PI: Siva Srinivasan, Ph.D.
Project # 90425

Central Data Warehouse Enhancements, Part 2
PI: Scott Washburn, Ph.D.
Project # 92671

Validity and Usability of a Safe Driving Behaviors Measure for Older Adults
PI: Sherrilene Classen, Ph.D.
Project # 92979

Development of Recommendations for Arterial Lane Closure to Optimize Traffic Operations
PI: Lily Elefteriadou, Ph.D.
Project # 93498

Expanded Transportation Performance Measures to Supplement Level of Service (LOS) for Growth Management and Transportation Impact Analysis
PI: Lily Elefteriadou, Ph.D.
Project # 93661

Nonlinear Road Pricing
PIs: Toi Lawphongpanich, Ph.D., and Yafeng Yin, Ph.D.
Project # 93713 and 93714

Heavy Vehicle Effects on Florida Freeways and Highways
PI: Scott Washburn, Ph.D.
Project # 93817

Impact of Lane Closures on Roadway Capacity, Phase 2
PI: Scott Washburn, Ph.D.
Project # 93879

Regional Cooperation in Transportation Planning
PI: Ruth Steiner, Ph.D.
Project # 93946

LOSPLAN 2012: Updates for the HCM 2010
PI: Scott Washburn, Ph.D.
Project # 94779

Development of a Framework for Activity-based Travel Demand Modeling in Florida and Training Material
PI: Siva Srinivasan, Ph.D.
Project # 97179
Reflections from Former CMS Students

Grady Carrick, Ph.D.
Principal
Enforcement Engineering, Inc., Saint Johns, FL
(Provides consulting services to industry and government agencies in the areas of traffic operations, safety, and research.)

“The Transportation Engineering program at UF provided me with the tools to solve real-world problems, and also to look at everyday transportation systems with a "what if" vision and innovation.”

Nagendra Singh Dhakar, Ph.D.
Analyst II, Advanced Forecasting Methods
Resource Systems Group, Inc., San Diego, CA
(Works as part of a team conducting transportation analyses for a broad range of state, regional, and federal clients, including a substantial workload developing and implementing land-use and transportation models to support transit and toll facility investment decisions, along with research to identify best practices in modeling.)

“I had a wonderful time at UF, and learned a lot from the professors and fellow students.”

Alexandra Kondyli, Ph.D.
Transportation Engineering Consultant, Athens, Greece
Post-doctoral Associate, Gainesville, UF
(Provides consultation on geometric design and manages traffic engineering, highway design, and highway safety studies. As a postdoctoral associate, conducts research on transportation-related projects, teaches transportation engineering to undergraduates, and writes papers and proposals for grants.)

“Studying at UF was one of the most valuable experiences of my life and I am very glad to have taken this step. I was fortunate to work in a great environment, where I received exceptional education that formed strong foundations for a career in transportation engineering.”

Dincer Konur, Ph.D.
Assistant Professor
Missouri University of Science and Technology, Rolla, MO
(Teaches graduate courses in engineering management and conducts research on supply chain, logistics, and transportation.)

“This program helped me a lot to build a solid research agenda.”

Ashish Kulshrestha, Ph.D.
Transportation Modeler
Parsons Brinckerhoff, Albuquerque, NM
(Develops travel demand models and applies for transportation planning and travel demand forecasting projects.)

“The transportation engineering program at the University of Florida is really good and I feel privileged to have been a part of this program. It helped me a lot in providing a strong foundation to excel in my career.”

Kwangkyun Lim, Ph.D.
Associate Researcher
Transportation Safety Authority, Seoul, Korea
(Works on a project preparing guidelines for rail safety management system for safe train operations.)

“Great diversity of people from all around the country. I loved such diversity, which was a great chance to know and learn the diverse cultures, needless to say the faculty and staff.”
Reflections from Former CMS Students

Yingyan Lou, Ph.D.
Assistant Professor
Civil, Environmental and Sustainable Engineering Program
School of Sustainable Engineering and Built Environment
Ira A. Fulton Schools of Engineering
Arizona State University, Tempe, AZ

(Conducts research and teaches undergraduate and graduate level courses in transportation engineering, focusing on the analysis, modeling, and optimization of multi-modal transportation networks and systems.)

“The program at UF is excellent. The professors are experts in their respective fields, and I was exposed to a wide range of topics and received great training during my study at UF. Professional student organizations are a wonderful resource to seek peer support. The atmosphere in the program was friendly and vibrant. I am glad I chose UF for my graduate study.”

Jessica Mackey, M.S./MAURP
Technical Writer/Consultant
Safe Engineering Services & Technology, Ltd., Montreal, Quebec
InterAmerican Development Bank (IDB), Washington, D.C.

(Prepares and reviews technical and marketing documentation for SES in English and Spanish. Recently proposed supply and demand based strategies for IDB to facilitate the rental housing market in Latin America and the Caribbean.)

“I had Gainesville withdrawals for a year after college. Moving to a different country where the official language is French and where the engineering job requirements are different has presented more difficulties than I anticipated, but I have adapted and made the best of it. I really appreciate the things that our professors taught us and how kind they all were. I often think about the concepts they have taught us when I see/experience the terrible roadway planning and designs in Quebec.”

Barbara Barqueta Martin, M.S.
Transportation Analyst, CCR Group, Brazil

(Currently working on a project to create a transportation model that includes current businesses and analyzes future market opportunities; conducts data analysis of highways, and is working on developing a 4-step model inside a transportation planning software to perform forecasts.)

“My time at the CMS was of essence to pursue a career in transportation. My day-to-day work comes back to every class I attended during my master’s degree and the professionalism of faculty and staff was inspiring, serving me as role models every day.”

Dimitra Michalaka, Ph.D.
Assistant Professor
The Citadel - The Military College of South Carolina, Charleston, SC

(Teaching Transportation Engineering, Highway Engineering, Concrete and Asphalt Lab and conducting transportation engineering research.)

“Being part of an outstanding research and teaching environment significantly contributed to my professional and personal development and gave me numerous opportunities to get involved with cutting-edge research, teaching, professional organizations, and attend several conferences. My advisor, Dr. Yafeng Yin, has been my greatest mentor and has significantly influenced my life. Every day I am grateful I had the opportunity to be his student. If I could turn the time back, I would still select the transportation engineering graduate program at UF to pursue my graduate studies.”

Vipul Modi, M.S.
Transportation Engineer
Citilabs, Inc., Tallahassee, FL

(Consults DOTs and MPOs across the globe; serves as Technical Support Engineer to assist modelers/planners in understanding Citilabs products such as Cube, Sugar, and Dynamism; and provides training to users of Citilabs products.)

“The faculty at UF laid the perfect platform for me to launch my career in the
transportation field, and I earned valuable experience and work ethics with them (including other staff members) during my stay.”

Robin Osborne, M.S.  
Traffic Analyst  
Kimley-Horn and Associates, Dallas, TX  
(Assists project managers in design work and client services, and works on projects that range from access management studies, ITS design, signal design, operational analysis, signal timing, and traffic construction plans.)

“I thoroughly enjoyed my time at UF because the staff and other students were extremely inviting, helpful, and knowledgeable. I learned a great deal about transportation engineering that has helped me excel in my career.”

Ziqi Song, Ph.D.  
Research Assistant Professor  
Department of Civil and Environmental Engineering  
Utah State University, Price, UT  
(Conducts research activities in the areas of transportation economics, traffic operations, and public transportation; and teaches undergraduate and graduate courses and serves as academic advisor to students.)

“The transportation program at UF offers a diverse and stimulating learning environment. I enjoyed the comprehensive curriculum and numerous research opportunities provided to students.”

Irene S. Soria, M.S.  
Safety Evaluation Engineer/Civil Engineer II  
Illinois Department of Transportation, Division of Highways, Bureau of Safety Engineering, Springfield, IL.  
(Publishes research on state of the art roadside appurtenances, revisions to existing policies, development of new policies, and with work zone safety issues; reviews crash data to identify patterns with specific roadway designs; assists in developing mitigating measures; and reviews transportation management plans from district projects for compliance.)

“My time at UF was a rewarding and educational experience. It helped me think outside the box and provided me with the tools and education through which I developed character. It provided me the opportunity to attend conferences, webinars, and seminars that discussed state of the art research and dynamic issues in transportation.”

Jian Sun, Ph.D.  
Professor  
Department of International Shipping and Logistics  
School of Naval Architecture Ocean and Civil Engineering  
Shanghai Jiao Tong University, Shanghai, China  
(Conducts research activities in the areas of transportation economics, traffic operations, and public transportation; and teaches undergraduate and graduate courses and serves as academic advisor to students.)

“I was really honored to be a Gator and study at UF TRC for the doctoral degree during 2006–2009, where I cultivated my research habits and attitude and finally devoted myself to an academic career. The two things actually benefit my professional life a lot.”

Di Wu, Ph.D.  
Operations Research Scientist  
Amazon, Seattle, WA  
(Optimizes Amazon.com fulfillment transportation network to improve delivery efficiency and reduce cost.)

“I really miss the time at UF. I really appreciate all the help and support from the faculty, colleagues, and classmates. The time I spent at UF is one of the most important time periods of my life and really helped me to advance to a professional career.”
The concurrent degree program began in the fall 2007 semester. This three-year program is designed to prepare students for a career in the interdisciplinary field of planning, designing, and operating urban infrastructure. Students take courses in transportation engineering and urban planning and earn a Master of Engineering (M.E.) or a Master of Science (M.S.), and a Master of Arts in Urban & Regional Planning (MAURP). Students must earn a total of 73 credit hours (30 in transportation engineering and 52 in urban planning, with nine credits shared between both degrees). Funding opportunities were available for students through CMS or the Departments of Civil Engineering and Urban & Regional Planning. Benito Perez, the first graduate of the concurrent degree program, worked as a transportation engineer/planner with the Hampton Roads Transportation Planning Organization in Chesapeake, Va., and is now a transportation policy specialist with the Policy, Planning and Sustainability Administration at USDOT in Washington, D.C. Below are thoughts from some of the graduates of this program.

Jessica Alvarez, M.S./MAURP
Manager of Planning and Operations
Central Maryland Regional Transit,
Laurel, MD
(Evaluates service for two local suburban transit systems in Central Maryland, and works on projects including a comprehensive operational analysis, all-electric bus and charging infrastructure procurement, individual route analyses, and fare policy evaluations.)

“UF was such a great experience, it prepared me to deal with all the different tasks and challenges at my job. I definitely got the tools I need to succeed from my time in the program!”

Benito Perez, M.S./MAURP
Transportation Policy Specialist
Policy, Planning and Sustainability Administration
District of Columbia Department of Transportation, Washington, D.C.
(Develops policies for DDOT, with emphasis on curbside management policy, performance demand-based pricing parking, the Diplomat Parking Program, residential ADA parking, hotel guest loading, the Mobile Vending Program, point-to-point carsharing, motorcycle metered parking, and incorporating objective metrics, planning and engineering principles, and technology into policy development.)

“The program instilled drive and focus to think outside the box, objectively measure performance, and pursue the incorporation of technology to better understand our transportation environment. I also miss the UF weather from October to March (bring it up for TRB in January).”
Student Awards

CMS STUDENT OF THE YEAR AWARD

Genesis Harrod, 2007
Aaron Elias, 2008
Matt Weisman, 2009
Grady Carrick, 2010

OTHER AWARDS

Jessica Alvarez, MAURP 2010
2009 Jack R. Gilstrap Scholarship

Grady Carrick, Ph.D. 2011
STC Poster Competition at TRB, January 2012

Amy Cavaretta, M.S. 2013
Frankie Hellinger Undergraduate Scholarship (C. Fla. Chapter), 2010
STRIDE Student of the Year, Council of University Transportation Centers (CUTC), 2013
UF Department of Urban & Regional Planning AICP Outstanding Student of the Year, 2012-2013
UF College of Design, Construction, & Planning Graduate Student Academic Achievement Award, 2013
Women’s Transportation Seminar International, Helen Overly Memorial Graduate Scholarship, 2012-2013

Ashish Kulshrestha, Ph.D. 2011 & Abigail Osei-Asamoah, M.S. 2009

Anna Lai, M.S. 2009
Frankie Hellinger Undergraduate Scholarship (C. Fla. Chapter), 2008

Clark Letter, Doctoral student
1st Place student poster, “Incorporating Probability of Breakdown into Fuzzy Logic Ramp Metering”, UTC Conference for the Southeastern Region, Orlando, Fla., 2013

Yingyan Lou, Ph.D. 2009
Best Poster for the Institute of Transportation Engineers (ITE) UF Student Chapter, “Dynamic Tolling Strategies for Managed Lanes”, ITE District Meeting, Pittsburg, PA, 2007
Frankee Hellinger Graduate Scholarship (C. Fla. Chapter), 2009
Pikarsky Award for Outstanding M.S. Thesis in Science & Technology, CUTC, 2010
Future Industry Leader Spotlight Award, American Road & Transportation Builders Association (ARTBA), 2011

Women’s Transportation Seminar South Florida, Helen Overly Memorial Graduate Scholarship, 2012-2013

Thomas Chase, Master’s student

Nagendra S. Dhakar, Ph.D. 2013
International Road Federation Fellow, 2012-2013

Phillip Haas, Doctoral Student
CMS Outstanding Student of the Year, January 2012

Heather Hammontree, M.S. 2010
Undergraduate Leadership Scholarship (C. Fla. Chapter), January 2010

Abishek Komma, Ph.D. 2008
Wootan Award for Outstanding M.S. Thesis in Policy & Planning, CUTC, 2009

Alexandra Kondyli, Ph.D. 2009
Best Student Poster, “Driver Behavior at Freeway-Ramp Merging Areas: Focus Group Findings”, TRANSPO Conference, Orlando, Fla., 2008

Miguel Lugo, Doctoral Student
UF/NSF LSAMP Bridge to Doctorate Fellow 2011-2012 NSF South East Alliance for Graduate Education and the Professoriate Funding Award, 2013, UF
Paper accepted for presentation at Beihang University Beijing, “Exploring Bicycle Ownership among Household Types”, 9th Postgraduate Forum of Beihang University Beijing, P.R.C., Oct. 2012

Jessica Mackey, M.S./MAURP 2011
Helene M. Overly Memorial Scholarship (S. Fla. Chapter), 2009

Barbara Martin, M.S. 2010
Frankee Hellinger Graduate Scholarship (C. Fla. Chapter), 2010

Dimitra Michalaka, Ph.D. 2012
Outstanding International Student Award, College of Engineering, UF, 2007
Pikarsky Award for Outstanding M.S. Thesis in Science & Technology, CUTC, 2010
Future Industry Leader Spotlight Award, American Road & Transportation Builders Association (ARTBA), 2011

Alec Courtelis Award, UF International Center, 2011

Frankee Hellinger Graduate Scholarship (C. Fla. Chapter), 2011

Engineering Outstanding International Student Award, College of Engineering, UF, 2011

Gator of Engineering Attribute Graduate Student Award for Leadership, College of Engineering, UF, 2011

International Road Federation Fellow, 2012-2013

Ly Nguyen, B.S. 2011
Undergraduate Leadership Scholarship (C. Fla. Chapter), 2011

Seckin Ozkul, Doctoral student
International Road Federation (IRF) Fellowship, 2013-2014

Benjamin Reibach, M.S. 2013
Graduate Student Participation Grant for the 8th National Aviation System Planning Symposium

Chad Riding, MAURP 2009
3rd Place student presentation, “Access Management as a Means of Accommodating Access, Accessibility, and Mobility on an SIS Facility: The Case Study of State Road 26 through Newberry, Florida” CMS Student Conference, Gainesville, FL, 2009

Danielle Soriano, B.S. 2013
Future Industry Leader Spotlight Award, ARTBA, 2012
Sharon D. Banks Memorial Undergraduate Scholarship, WTS South Florida Professional Chapter, 2013
Undergraduate Student Outstanding Service/Leadership Award, UF Civil and Coastal Engineering, 2013
Student Chapter President, WTS Advancing Women in Transportation, 2012-2013

Max Shmaltsuyev, MAURP 2012. & Ruoniu (Vince) Wang, MAURP 2010
2nd Place student presentation, “The Economic Costs of Traffic Congestion in Florida”, CMS Annual Student Conference, Gainesville, FL, 2010

Irene Soria, M.S. 2009
3rd Place student presentation, “Comparison of Car-Following Models to Field Data”, CMS Annual Student Conference, Gainesville, FL, 2010

Yanning Wang, Ph.D. 2012
1st Place student presentation, “Validity and Usability of a Safe Driving Behavior Measure for Older Adults: Strategy for Congestion Mitigation”, CMS Student Conference, Gainesville, FL, 2011

Donald Watson, Master’s Student
Dwight David Eisenhower Graduate Fellowship, 2012
Dwight David Eisenhower Graduate Fellowship, 2013

Ruoying Xu, Master’s Student
Dwight David Eisenhower Transportation Fellowship, 2012
Dwight David Eisenhower Graduate Fellowship, 2013
Muhammad Ali, M.S. 2013
International Road Federation (IRF) Fellowship, 2012-2013
President for IRF Fellows’ Class of 2013
Gerald P. Shea Award, IRF Executive Leadership Program, 2013
4th Place in Hydraulics Competition, ASCE Southeastern Student Chapter, 2013

Xiaoyu Zhu, Ph.D. 2009
Anne Brewer Scholarship, Intelligent Transportation Society (ITS) of Florida, 2009

Student Chapter Award
Institute of Transportation Engineers (ITE) Collegiate Traffic Bowl Champions, 2013

UF Traffic Bowl Team Members:
Thomas Chase, Master’s student
Miguel Lugo, M.E. 2013, Doctoral student
Ben Reibach, M.S. 2013
Don Watson, M.S. 2012
Siva Srinivasan with his student Abishek Komma, Wootan Award for Outstanding M.S. Thesis in Policy & Planning, CUTC 2009

Genesis Harrod, Student of the Year 2007

Lily Elefteriadou with her Student of the Year 2008, Aaron Elias

Matt Weisman, Student of the Year 2009

Grady Carrick, Student of the Year 2010

Yafeng Yin (center) with his students, Yingyan Lou (left) and Dimitra Michalaka (right), Pikarski Award in Science & Technology for Outstanding Ph.D. Dissertation and M.S. Thesis, respectively, CUTC 2010
The WTS student chapter at UF was established under the CMS in the spring of 2010. The idea was conceptualized by three women: Hong-Ting Chen, a transportation professional currently working at ATKINS, CMS Coordinator Ines Aviles-Spadoni, and CMS Director and Professor Lily Elefteriadou. The organization’s first student president was Barbara Martin, who was pursuing a master’s degree at the time, and is now a transportation professional working in Brazil. Throughout the last 3 years of the CMS project, the WTS student chapter at UF truly dedicated itself to advancing female students by formally committing to participate in various activities. For example, the organization assisted with USDOT’s Transportation YOU! program, which provides outreach to girls aged 13–18 years, and other programs such as UF’s GatortRAV, Family Engineering Night, and the UF Engineering Fair. The WTS student chapter also hosted resume workshops, two Transportation Engineering Symposia, and assisted in several LEGO® robotics workshops.

In spring 2012, the WTS UF student chapter spearheaded an effort to create WTS student chapters in the Southeastern U.S. Members made contact with Florida International University and North Carolina State University, and have received interest from other schools such as the University of South Florida and Georgia Tech. Transportation students creating WTS chapters met in April 2013 during the UTC Conference for the Southeastern Region to discuss this idea and other opportunities for regional events and activities. This event was hosted by the Southeastern Transportation Research, Innovation, Development and Education (STRIDE) Center, a regional USDOT/RITA University Transportation Center (UTC) located at UF. Tiffany Jackson, WTS director of chapter development, spoke during the session and met with several students interested in forming WTS student chapters at their respective universities. Students representing ITE chapters in the Southeast also attended this session and participated in the dialogue. The student chapter at UF continues to work with Tiffany Jackson in spearheading the establishment of student chapters.
Clockwise from top right: Marica Ferranto, Kathy Caldwell, and Laura Kelley, panelists at the 2012 WTS Transportation Symposium; Cythia Perez and Lily Elefteriadou; Patty Cramer, Marsha Anderson-Bomar, and Debora Rivera, panelists at the 2011 WTS Transportation Symposium.
ITE Student Chapter

In fall 2007, the ITE student chapter at UF reported a growth in membership and a surge in interest, which coincided with the establishment of the CMS. Activities that year included visits from industry representatives and interviews from companies such as PBS&J, travel to TRB, travel to conferences including the ITE District 10 Annual Meeting, and interactions with visiting students from Kobe University in Japan. The chapter also participated in local events such as One Less Car, for which they switched from driving to campus to taking the bus, riding their bikes, or walking in order to spread awareness about global warming and its impact. In 2008, the “Transportation Seminar Series” was formalized, and speakers from academic, industry, and government agencies were invited. Also notable during this period was the chapter’s success during TRANSPO 2008 by winning first and second prizes during the poster competition.

In 2009, the chapter attended the FSITE Annual Meeting in Tampa, Fla., and, to cultivate camaraderie, the group initiated a soccer team to rally members of the 2010 World Cup in South Africa. To further increase membership, ITE members spoke during various student organization meetings on campus, such as the Student Planning Association and American Society of Civil Engineers. The team attributes a large increase in attendance at the transportation seminars to this effort. Notable events they attended in 2009 included the FSITE Annual Meeting in Tampa, Fla., the 89th Annual TRB Meeting in Washington, D.C., the 100th Year Celebration of the Department of Civil & Coastal Engineering at the University of Florida, and the annual Center for Multimodal Solutions for Congestion Mitigation (CMS) Student Conference.

In 2010, the chapter attended the FSITE Summer Meeting in Ft. Lauderdale, Fla., and competed in the first ever district traffic bowl, taking first place and representing the Florida Section at the UFITE Annual International Conference in Vancouver, British Columbia, where they competed and won 3rd Place in the International Traffic Bowl.

In 2011, the student chapter set out to serve their community through three student-led research activities related to safety and traffic operations: Hull Rd Safety Community Research Study, Campus Roundabout Community Research Study, and Smart Bus Bay Community Research Study (ongoing). The chapter also teamed up with the then-
newly-formed Women’s Transportation Seminar (WTS) where they participated in outreach activities for students in grades K-12.

In 2012, the group increased participation in K-12 outreach activities to help cultivate interest in transportation engineering and all science, technology, engineering, and mathematics (STEM) fields among elementary and high school students. Highlights in 2012 included attendance at the 8th National Aviation System Planning Symposium, the Florida Section and District 10 ITE Summer Meeting, the 9th Postgraduate Research Forum, TRANSPO 2012, the Florida Model Task Force Meeting, the 5th International Symposium on Transportation Network Reliability in Hong Kong, China, the 92nd Transportation Research Board Annual Meeting, and the STRIDE Student Poster Competition. As for community service that year, the team hosted a booth at the University of Florida Alternative Transportation Fair, cleaned up a road with the WTS student chapter at UF, and volunteered at the Junior Science, Engineering and Humanities Symposium, a Traffic Simulation Workshop, and workforce development activities such as Family Engineering Night and the UF Engineering & Science Fair.

ITE Student Chapter at UF Wins 2013 ITE Collegiate Traffic Bowl

The team representing the ITE student chapter at UF won the 2013 ITE Collegiate Traffic Bowl, which took place on August 6th at the Sheraton Hotel in Boston, Mass., marking the third time that a team from UF participated in Traffic Bowl. Members of the 2013 team were Miguel Lugo, Thomas Chase, Ben Reibach, and Don Watson. The ITE Collegiate Traffic Bowl is a forum where ITE student chapters compete with each other on topics related to transportation planning and engineering.
TRIP Internship

During the 6 years that the program was under CMS, a total of 18 interns participated in the summer Transportation Research Internship Program (TRIP). The program is continuing under the recently-awarded USDOT/RITA regional (Southeast) University Transportation Research Center (STRIDE). TRIP is designed to introduce undergraduate students to the world of transportation research, and to help spark the students’ interest in pursuing graduate studies and a career in transportation engineering. Interns have the opportunity to participate in cutting-edge research with faculty and graduate students. Interns in the program are supervised by a faculty adviser and work in close collaboration with master’s and doctoral students. They are also required to attend seminars presented by faculty and students, and produce a research report related to their assigned project, which the student present at the end of their internship period. The program runs from May to August every summer, and students work at least 20 hours per week. Interns participate in research projects related to traffic operations, highway capacity and quality of service, reliability, safety, travel modeling, network optimization, and transportation systems planning.

TRIP Interns
Summer 2008
Jorge Barrios, CCE/UF
Andy Duce, CCE/UF
Susanna Roque, St. Francis Catholic H.S., Gainesville, Fla.
John Watson, CCE/UF

Summer 2009
Amy Chow, CCE
Heather Hammontree, CCE/UF
Yashvi Patel, Civil Engineering/Villanova University
Chase Wilkinson, CCE/UF

Summer 2010
Sam Budzyna, University of Missouri
David Champoux, Clarkson University
Corey Hill, CCE/UF
Ashlie Kerr, CCE/UF
Austin Mattus, Villanova University

Summer 2011
Paul Beata, CCE/UF
Michael Cangialosi, CCE/UF
Ryan Hormel, CCE/UF
Leon Paredes, CCE/UF
Silvana Vargas, CCE/UF

Other Undergraduate Students Affiliated with CMS
Brett Boncore, CCE/UF
Nikki Cosse, OT/UF
Christina LaFranca, OT/UF
Amy Lapa, OT/UF
David Guttenplan CCE/UF
Johnathan Lowe, M.S (Post-Baccalaureate), CCE/UF
Kevin Marquez, CCE/UF
Dustin Meyer (BHS Honors Program), OT/UF
Wilco Middag, International Intern, Twente, Netherlands
Brooke Owens, OT/UF
Jean Phillipe Delorme, International Intern, ENTPE, France
Kalie E. Sanders, OT/UF
Martijn Siemerink, Visiting International Student, Twente, Netherlands
Civil William Siver, OT/UF
Danielle Soriano, CCE/UF
Bouke Vogelaar, International Intern, Twente, Netherlands
Tamo Vogel, Visiting International Student, Civil Engineering/Twente, Netherlands
Technology Transfer

CMS Annual Student Conference

Throughout the life of the CMS grant, this annual conference showcased a variety of funded and non-funded transportation-related research. This event was an excellent opportunity for leaders of the transportation community to learn about the research activities at CMS, and created a forum for discussion with researchers at UF. The student conference was held each March from 2008 to 2011. For more information, visit the websites for each annual conference:

Spring 2008: cms.ce.ufl.edu/news_events/student_conference.php

Participation in USDOT/RITA Transportation Innovation Series

Lily Elefteriadou, Ph.D., professor and CMS director, was invited to speak at the Transportation Innovation Series on March 21, 2012. Her presentation topic was, “Freeway Traffic Management Strategies and Travel Time Reliability.” The seminars are hosted by USDOT/RITA at the USDOT Headquarters in Washington, D.C. with the purpose of creating dialogue amongst transportation professionals regarding transportation issues facing the U.S.
Distinguished & Academic Professional Lecturers

CMS hosted a Distinguished Lecturer Seminar Series inviting academics and professionals to speak at UF during the fall and spring semesters. Speakers were invited based on their credentials and the relevance of their topic to the CMS theme. The distinguished lecturers were academics with broad experience in transportation issues who were invited to present lectures related to their research. The professional lecturers included accomplished professionals in the transportation community. These seminars were also available as a live webcast. Below is a list of the seminars:

**Spring 2011**
Jana Lynott, AICP  
Senior Strategic Policy Advisor  
Transportation & Livable Communities  
Public Policy Institute  
American Association of Retired Persons (AARP)  
**Topic:** Livable Communities for All Ages: Balancing Needs through the Design of the Road Environment

**Fall 2010**
Elizabeth Deakin, Ph.D., Professor  
City & Regional Planning & Urban Design, UC Berkeley  
**Topic:** California’s New Initiatives to Manage Growth and Reduce Environmental Impacts

**Spring 2010**
Panos Michalopoulos, Ph.D., Professor  
University of Minnesota  
**Topic:** Advanced Modeling of Traffic Flow Dynamics and the Need for Wide Area Detection

**Spring 2010**
Marsha Anderson Bomar, President  
Street Smarts  
**Topic:** A Professional Life in Balance...A Life of Work, Family and Service  
(Distinguished Professional Lecturer)

**Fall 2009**
Nagu M. Rouphail, PhD., Director  
Institute for Transportation Research and Education (ITRE)  
Professor of Civil Engineering, North Carolina State University  
**Topic:** Measuring and Modeling Vehicle Emissions: Methodology and Applications

**Spring 2009**
Genevieve Giuliano, Ph.D., Senior Associate Dean, Research & Technology  
University of Southern California, School of Policy, Planning and Development  
**Topic:** Impacts of Port Gate Operations on the Highway System: A Case Study

**Fall 2008**
Michael D. Meyer, Ph.D., Professor  
Georgia Institute of Technology  
**Topic:** Climate Change and Transportation: Cause and Effect Challenges for Civil Engineering

**Spring 2008**
Chandra Bhat, Ph.D., Professor  
University of Texas at Austin  
**Topic:** Incorporating Residential Self-Selection Effects in Activity Time-use Behavior: Formulation and Application of a Joint Mixed Multinomial Logit - Multiple Discrete-Continuous Extreme Value Model

**Fall 2007**
Fred Mannering, Ph.D., Professor  
Purdue University  
**Topic:** Analysis of Drivers’ Risk Compensation Response to Vehicle Safety Features

**Spring 2007**
Samer Madanat, Ph.D., Professor  
University of California at Berkeley  
**Topic:** Optimization of Maintenance and Replacement Policies for a System of Heterogeneous Infrastructure Facilities

The CMS Workshop Series began in 2009 and was a collaboration among CMS, TRC, McTrans, and the T2 Center. The series is continuing under the new UF Transportation Institute and the STRIDE Center.

**CORSIM Workshop, August 11, 2011**

A workshop taught by faculty from UF taught participants about the recently-added features to CORSIM and other programs that model unusual scenarios and provide advanced analysis capabilities. Participants also learned about comparing CORSIM results to those in the Highway Capacity Manual (HCM), as well as guidelines for applying CORSIM to FDOT project analysis. The workshop also addressed upcoming changes to CORSIM. More information can be found at: [trc.ce.ufl.edu/news_and_events/corsim_workshop_2011.php](http://trc.ce.ufl.edu/news_and_events/corsim_workshop_2011.php).
This workshop was developed for transportation professionals interested in the latest updates and software applications to the 2010 HCM. The workshop was cosponsored by the UF TRC, CMS, McTrans, and FDOT. The workshop was held at the Royal Plaza hotel in the Walt Disney World Resort in Orlando, Fla. More than 60 transportation professionals from academic, public, and private sectors, attended the one-day workshop. Speakers included some of the most knowledgeable professionals in highway capacity analysis: Ken Courage, UF; Janice Daniel, New Jersey Institute of Technology; Doug McLeod, FDOT; Bill Sampson, McTrans; Scott Washburn, UF; and John Zegeer, Kittelson & Associates, Inc. Participants came from various states, and from as far away as Brazil, Honduras, and the Commonwealth of Puerto Rico. More information can be found at trc.ce.ufl.edu/news_and_events/hcm_2010_workshop.php.
UF TRC Workshop on Roundabouts, August 18, 2009


The workshop and conference presentations by national and international researchers focused on encouraging efficiency in the use of transportation systems. More than 100 participants attended the meeting, which was cosponsored by TRB and held in Orlando, Fla.
Online Graduate Courses

CMS-affiliated faculty members teach courses through the College of Engineering’s Electronic Delivery of Graduate Education (EDGE) program. The program allows full-time working professionals around the world the opportunity to earn a master’s degree and graduate certificates. Courses are recorded in studio classrooms at the UF campus. Below are the courses that were taught during the life of CMS.

Traffic Engineering (TTE 5256)
Traffic Flow Theory (TTE 6267)
Fundamentals of Optimization (ESI 6912)
Advanced Highway Capacity (TTE 6207)
The Engineering School of Sustainable Infrastructure and Environment (ESSIE)

essie.ufl.edu

Kirk Hatfield, Ph.D.
School Director & Professor

Kenneth Courage, P. Eng.
Professor Emeritus

Janet Degner, M.S.
T2 Co-Director, Retired

Lily Elefteriadou, Ph.D.
Professor

Ralph Ellis, Ph.D.
Professor

David Hale, Ph.D.
Assistant in Engineering - McTrans

Dennis Hiltunen, Ph.D.
Associate Professor

Myoseon Jang, Ph.D.
Associate Professor

Fazil Najafi, Ph.D.
Professor

Reynaldo Roque, Ph.D., PE
Professor

Bill Sampson, M.S., PE
McTrans Director

Peter Sheng, Ph.D.
Professor

Siva Srinivasan, Ph.D.
Associate Professor

Scott Washburn, Ph.D., PE
Associate Professor

Yafeng Yin, Ph.D.
Associate Professor

College of Engineering Administration

Cammy R. Abernathy, Ph.D.
Dean College of Engineering

Jennifer S. Curtis, Ph.D.
Associate Dean for Research and Facilities

Mark Law, Ph.D.
Associate Dean
Office of Academic Affairs

Angela S. Lindner, Ph.D.
Associate Dean
Division of Student Affairs

Transportation Research Center (TRC)

trc.ce.ufl.edu

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Director

Center for Microcomputers in Transportation (McTrans Center)

mctrans.ce.ufl.edu

Bill Sampson, M.S., PE
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Florida Transportation Technology Transfer (T2) Center

t2ctt.ce.ufl.edu

Nina Barker
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Department of Computer & Information Science & Engineering
cise.ufl.edu

Paul Fishwick, Ph.D.
Professor

Ahmed Helmy, Ph.D.
Associate Professor
Director of the Wireless Networking Lab

Sanjay Ranka, Ph.D.
Professor

Markus Schneider, Ph.D.
Associate Professor

Department of Economics

Warrington College of Business
warrington.ufl.edu/departments/eco

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Professor

David Denslow, Ph.D.
Professor & Research Economist

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Joseph C. Hartman, Ph.D.
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Joseph Geunes, Ph.D.
Associate Department Chair
Associate Professor

Ravindra Ahuja, Ph.D.
Professor

Farid AitShahlia, Ph.D.
Visiting Assistant Professor

Vladimir Boginski, Ph.D.
Assistant Professor

Yongpei Guan, Ph.D.
Assistant Professor

Donald W. Hearn, Ph.D.
Professor Emeritus

Siriphong Lawphongpanich (Toi), Ph.D.
Associate Professor
Panos Pardalos, Ph.D.
Distinguished Professor

J. Cole Smith, Ph.D.
Associate Professor

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Joseph Geunes, Ph.D.
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William Hager, Ph.D. (Department of Mathematics)
Co-directors

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Associate Professor

Carl D. Crane, III, Ph.D.
Professor

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Associate Director, Associate Professor

Brijesh Thapa, Ph.D.
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Department Chair

Ilir Bejleri, Ph.D.
Associate Professor

Andres Blanco, Ph.D.
Assistant Professor

Zhong-Ren Peng, Ph.D.
Professor, Chair

Ruth Steiner, Ph.D.
Associate Professor

Paul Zwick, Ph.D.
Professor, Associate Dean
Research & Graduate Programs
College of Design, Construction & Planning
Urban & Regional Planning

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William C. Mann, OTR/L, Ph.D.
Professor, Occupational Therapy

Orit Shechtman, Ph.D., OTR/L
Associate Professor, Occupational Therapy

Public utility Research Center
warrington.ufl.edu/centers/purc

Theodore J. (Ted) Kury
Director of Energy Studies
Warrington College of Business Administration

Rinker School of Building Construction
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Forest Resource Economics and Policy

Amr Abd-Elrahman, Ph.D.
Assistant Professor
Geomatics Program

Hartwig Hochmair, Ph.D.
Assistant Professor

Ahmed Mohamed, Ph.D.
Assistant Professor

Office of Research
research.ufl.edu

David Norton, Ph.D.
UF Vice President for Research 2013–Current

Win Phillips, Ph.D.
UF Vice President for Research 2007–2012
Presentations


Davis, J. (February 2013). Using Virtual Appliances to Communicate Coastal Hazard Risk, Coastal Hazards Summit 2013, St. Augustine, FL.

Davis, J. (January 2012). Development of a Multimodal Transportation Educational Virtual Appliance (MTEVA) to Study Congestion During Extreme Events, 91st Transportation Research Board Annual Meeting, Washington, D.C.

Davis, J., Figueiredo, R., Sheng, Y. P. (August 2011). Development of a Multimodal Transportation Educational Virtual Appliance (MTEVA) to Study Congestion During Extreme Events, 2nd International Conference on Evacuation Modeling and Management, Northwestern University Transportation Center, Chicago, IL.


Lawphongpanich, S. (July 2011). Congestion Pricing, FHWA Workshop on Modeling Needs for Active Transportation & Demand Management (ATDM), Berkeley, CA.


Mintsis, E., Elefteriadou, L. (June 2012). Managed Lane Operations: Coordination Between Tolling and Ramp Metering Along I-95, Joint Meeting of the Highway Capacity and Traffic Flow Theory committees of the Transportation Research Board, Ft. Lauderdale, FL.


Steiner, R., Frank, K. I. (November 2012). State Mechanisms for Promoting Regional Cooperation in Transportation Planning, Annual Conference of the Association of Collegiate Schools of Planning Poster Session, Cincinnati, OH.


Central Business Districts (CBD), ACSP Annual Conference, Salt Lake City, UT.


Yin, Y. (February 2012). A Primer on Congestion Pricing of Urban Transportation Networks, Invited Lecture, University of California, Davis, CA.


Yin, Y. (November 2012). Differentiated Pricing of Urban Transportation Networks, Invited Seminar, Central South University, Changsha, China.


Yin, Y. (November 2012). Differentiated Pricing of Urban Transportation Networks, Invited Seminar, Hong Kong University of Science and Technology, Hong Kong.


Yin, Y. (September 2012). A Primer on Congestion Pricing of Urban Transportation Networks, Summer School at 1st European Symposium on Quantitative Methods in Transportation Systems, Lausanne, Switzerland.

Yin, Y. (September 2012). Differentiated Pricing of Urban Transportation Networks, Invited Seminar, Institute for Transport Planning and Systems, Swiss Federal Institutes of Technology at Zurich (ETH), Zurich, Switzerland.


Publications


Classen, S. Final Report to the Florida Department of Transportation: Validity and Usability of a Safe Driving Behaviors Measure for Older Adults, 2012.


Dhakar, N.S., Srinivasan, S. “Route Choice Modeling using GPS-Based Travel Surveys”, Submitted for Presentation at the TRB Annual Meeting 2014 and Publication Consideration in Transportation Research Record, June 2013.


Li, J., Washburn, S. “Improved Operational Performance Assessment for Two-Lane Highway Facilities”, Journal of Transportation Engineering, American Society of Civil Engineers (accepted).


Perez, C., Geunes, J. An Inventory Replenishment Model with Two Delivery Modes (under review).


Transportation-related Presentations & Publications

Presentations


Hill, C., Elefteriadou, L. (January 2013). Lane Changing on Freeways, 92nd Annual Transportation Research Board Meeting, Washington D.C.

Liyuan Zhao, Zhong-Ren Peng (January 2010). An Integrated Bi-Level Model to Explore the Interaction between Land Use Allocation and Transportation, 89th Annual Meeting of the Transportation Research Board, Washington, D.C.

Steiner, R., Frank, K. I. (September 2012). Regional Cooperation in Transportation Planning, American Planning Association Florida Annual Conference, Naples, FL.

Steiner, R., Jourdan, D., Blanco, A. (September 2011). Parking as a Smart Growth Strategy, American Planning Association Florida Chapter Annual Conference, West Palm Beach, FL.


Washburn, S. (January 2011). Quality of Transportation Service From a Trucking Community’s Perspective: Exploratory Focus Group Analysis, 90th Transportation Research Board Annual Meeting Poster Session, Washington, D.C.


Yin, Y. (March 2013). Analysis and Design of Tradable Credit Schemes on Networks with Mixed Equilibrium Behaviors, Workshop on Price-based and Quantity-based Travel Demand Management, Northwestern University, Evanston, IL.


Yin, Y., Yang, Y. (January 2013). Optimizing Variable Speed Limits for Efficient, Safe, and Sustainable Mobility, 92nd Transportation Research Board Annual Meeting, Washington, D.C.

Publications


Kim, J., Steiner, R., Yang, Y. “The Evolution of Transportation Congruency and Urban Development Pattern in Miami-Dade County, Florida”, Urban Affairs Review, Accepted.


Nie, Y., Yin, Y. “Managing Rush Hour Travel Choices with Tradable Credit Scheme”, Transportation Research Part B, Vo. 50, 1-19, March 2013.


Yang, Y., Lu, H., Yin, Y., Yang, H. “Optimizing Variable Speed Limits for Efficient, Safe and Sustainable Mobility”, Transportation Research Recor (accepted), February 2013.

October 2010 group picture at Lake Wauburg (part of UF campus recreational area off U.S. 441 South)