

# National Center for Transportation Systems Productivity and Management

## Program Progress Performance Report for University Transportation Centers

U.S. Department of Transportation  
Research and Innovative Technology Administration  
Federal Grant Number: DTRT12 G UTC04

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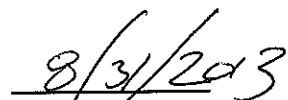
**Reporting Period Start Date:** January 1, 2013

**Reporting Period End Date:** July 30, 2013

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**Signature of Submitting Official:**

  
Michael Hunter, Ph.D.

  
Date

## Accomplishments

### What are the major goals of the program?

The National Center for Transportation Systems Productivity and Management (NCTSPM), a Tier I University Transportation Center, was founded to facilitate, coordinate and conduct research and educational programs toward the following goals:

- Conduct multi-disciplinary research on topics relevant to the relationship among transportation infrastructure (state-of-good-repair), economic competitiveness and safety
- Disseminate research results and other products of the Center to the transportation community
- Promote transportation education and professional development on topics relating to Center research topics
- Establish a central point of contact and promotion of best practices (e.g., through a web site or list serve) for materials relating to transportation systems performance and management
- Promote diversity in the workforce through active recruitment of women and minority students into degree programs
- Act as a national resource for the debates and discussions that focus on the evolving national transportation program and future directions
- Explore international cooperative activities with research entities in selected countries where similar research interests exist

### What was accomplished under these goals?

Accomplishments for the reported period are discussed below and organized by major center goal.

#### ***Conduct multi-disciplinary research on topics relevant to the relationship among transportation infrastructure (state-of-good-repair), economic competitiveness and safety***

In 2012, a total of 22 research grants were awarded for multi-disciplinary research in the areas of state-of-good-repair, safety, and economic competitiveness. These projects are currently all ongoing. A full list of NCTSPM's active research projects can be found at the end of this report. In May 2013, NCTSPM issued a Request for Proposals for new research projects aimed at expanding both the breadth and depth of these existing studies. The RFP can be seen here: <http://nctspm.gatech.edu/rfps>

#### ***Disseminate research results and other products of the Center to the transportation community***

Although most of NCTSPM's research is in progress, research results and other products are being disseminated to the transportation community as they become available. More than 75 presentations and posters were presented by the investigators and/or their students between January and July 2013 at a variety of scientific meetings. Two journal publications related to NCTSPM investigations were also accepted for publication during this period.

In addition to presentations, posters and papers, the universities in NCTSPM have also sponsored a number of events to disseminate research results. The University of Central Florida and Georgia Tech each hosted a monthly seminar series. In addition, NCTSPM sponsored or co-sponsored a variety of symposia, events and conferences, including:

- The NCTSPM reception at TRB Annual Meeting (Washington DC, January 2013)
- CATSS-NCTSPM Symposium on Traffic Safety and Simulation (Orlando, FL, February 2013)
- TransportationCamp South (Atlanta, GA, Feb 2013)
- UTC Conference for Southeastern Region (Orlando, FL, April 2013)
- UAB Sustainable Smart Cities Symposium (Birmingham, AL, April 2013)
- 2nd International Symposium on Traffic Safety at Tongji University in China (May 2013)

***Promote transportation education and professional development on topics relating to Center research topics***

NCTSPM's universities are actively promoting transportation education and professional development. The University of Alabama at Birmingham (UAB) hosted a summer enrichment program that brings minority students to campus and exposes them to current transportation issues with the intent of influencing their future career choices. These six freshman students were hosted on campus for one month to study topics related to technical writing, research methods, transportation infrastructure, transportation operations and congestion management, and environmental issues related to transportation. Each student was assigned to a faculty mentor, performed research work over the course of their stay, and presented the results of their research work. UAB also funded 6 undergraduate internships with the Alabama DOT 3<sup>rd</sup> Division office in Birmingham, the Regional Planning Commission of Birmingham, and local consulting firms. UAB has also supported student travel to a number of conferences: TRB Annual Meeting (January 2013); NCTSPM Symposium on Traffic Safety and Simulation (February 2013); UTC Conference for Southeastern Region (April 2013).

Georgia Tech's monthly seminar series brought in six guest speakers in the spring of 2013 on a variety of contemporary transportation issues. In addition, Georgia Tech hosted TransportationCamp South (Feb 2013), an event in which nearly 250 technologists, planning students, transportation professionals and others involved in transportation gathered at Georgia Tech from across the region for a day of discussions, demos, and education related to transportation in the South. In the area of K-12 education, Georgia Tech partnered with Chamblee Middle School and Forest Park High School to conduct two summer camp sessions for middle and high-school students. The first session, "Advanced App Development with Transportation Systems Engineering," for rising tenth through twelfth graders, combined transportation engineering and smart phone application development. The second session was "LEGO Robotics & Transportation Systems Engineering," for seventh through ninth graders. Instructors for the camps came from the Georgia Intern Fellowships for Teachers (GIFT) program. During the internship, the teachers collaborated with transportation researchers and developed activities for use in their classrooms.

For its part, Florida International University (FIU) supported 3 interns in 2012, involving both undergraduate and graduate students. First priorities were given to female and minority students. FIU also developed a special summer course focusing on real-world applications with experienced

instructors from the industry and held it in summer 2013. This course sought to introduce students to advanced strategies and technologies for planning and operations of transportation systems and to provide students with opportunities to interact with both academic faculty and leading industry professionals in solving real-world problems.

The University of Central Florida (UCF) hosted “Camp Connect,” a summer engineering exploration program for 8th through 10th grade students from underrepresented communities, exposing them to the many different disciplines found within civil and environmental engineering. Students participated in presentations, activities, lab tours and were given insight into what the life of a student and a professional is like in the engineering world. The program provided the students with preparation and advice for the start of their future college career by networking with students and faculty here at UCF in addition to presenting their experiences to their peers. UCF is also mentoring graduate students and in the current reporting period saw its graduates obtain jobs at universities in Wyoming and Tognji and at major consulting firms including Atkins and HNTB.

***Establish a central point of contact and promotion of best practices (e.g., through a web site or list serve) for materials relating to transportation systems performance and management***

NCTSPM hosts a website (<http://nctspm.gatech.edu/>) that provides information on the latest research and other center-related news. This serves as the central point of contact for disseminating NCTSPM’s research and best practices.

***Promote diversity in the workforce through active recruitment of women and minority students into degree programs***

The universities in NCTSPM are all actively promoting diversity in the workforce through initiatives which seek to involve minority and women students in transportation degree program. The University of Central Florida hosted a summer camp called “Camp Connect” for K-12 students, specifically underrepresented students (women, Hispanic, African American, Latino, American Indian/Alaskan native). They also recently recruited 2 female students to the transportation program. The University of Alabama held a summer enrichment program to bring minority students to campus to study transportation engineering topics. The program is run jointly with a program in the UAB Minority Health and Health Disparities Research Center, so students are exposed to a broad range of technical subjects.

At Georgia Tech, a leader in the education of female and minority students in transportation, several women received awards: one selected as a 2013 Eno Fellow, and three other female Civil Engineering students received awards from the Eisenhower Fellowship Program, worth more than \$50,000. FIU supported 3 interns in 2012. First priorities are given to female and minority students.

***Act as a national resource for the debates and discussions that focus on the evolving national transportation program and future directions***

Students, faculty and researchers from each NCTSPM university attended the TRB Annual Meeting, presenting their work and participating in TRB committee meetings.

Georgia Tech hosted TransportationCamp South (Feb 2013), an event in which nearly 250 technologists, planning students, transportation professionals and others involved in transportation gathered at Georgia Tech from across the region for a day of discussions, demos, and education related to transportation in the South.

UAB hosted the second “Sustainable Smart Cities Symposium,” on April 3, 2013 in Birmingham. The symposium featured 8 speakers who discussed topics ranging from sustainable transportation systems and smart urban freight systems to European perspectives on sustainable urban design.

***Explore international cooperative activities with research entities in selected countries where similar research interests exist***

Faculty and researchers are actively involved in international activities. The University of Central Florida has established a Memorandum of Understanding with Beijing Jiatong University and Tongji University in China and Ajou University in Korea to engage in joint research and education activities. As part of this relationship, Dr. Essam Radwan was invited to lecture at Beijing Jiatong University in May 2013. He delivered a four-day short course on traffic engineering and management to undergraduate and graduate students, as part of a newly created project for “Discipline Innovation Wisdom Base”, granted by the Ministry of Education and the State Administration of Foreign Experts Affairs in China. Members of this project will participate in International conferences hosted by BJTU, participate in workshops of the “111” Project, organize individual seminars, teach short/long term courses, utilize BJTU facilities to conduct specific research projects and result in co-publications with students and faculties at BJTU. Essam Radwan was also invited by the International Association of Management of Technology (IAMOT) to be part of a panel that presented their experience with managing university technology centers. The meeting was held in the city of Porto Alegre, Brazil and attended by consultants, university academicians, and government officials representing thirty countries. Drs. Mohamed Abdel-Aty and Essam Radwan of UCF also recently presented research at the Road Safety on 4 Continents (RS4C) Conference held in Beijing, China in May 2013. Dr. Abdel-Aty helped to organize and presented at the 2nd International Symposium on Traffic Safety, Tongji University, and also conducted 2 seminars at Central South University (CSU), China.

Vivek Ghosal from Georgia Tech presented at the Conference on Production, Logistics and Traffic: Dynamic Integration, Future Trends and Future Solutions Optimization in Darmstadt, Germany (March 2013).

Nasim Uddin at the University of Alabama-Birmingham is using UTC funds to leverage ongoing NSF collaboration on bridge weigh-in-motion with universities in Ireland and the UK. Virginia Sisiopiku is currently exploring a potential research and scholarship collaboration with the Cyprus University of Technology.

## What opportunities for training and professional development has the program provided?

Each university in NCTSPM has offered opportunities for training and professional development in the field of transportation. Students are employed to work on NCTSPM research projects and are thus trained for competitive real world employment within the industry.

The University of Central Florida is mentoring graduate students and in the current reporting period has seen students obtaining jobs at universities in Wyoming and Tognji, China and the Atkins and HNTB consulting firms. UCF also hosted a summer engineering exploration program for 8th through 10th grade students from underrepresented communities, exposing them to the many different disciplines found within civil and environmental engineering. Students participated in presentations, activities, lab tours and were given insight into what the life of a student and a professional is like in the engineering world. The program provided a method of exploration and preparation advice for the start of a college career by networking with students and faculty at UCF in addition to presenting their experiences to their peers.

The University of Alabama ran a summer enrichment program for minority students, exposing them to transportation and generating interest in it as a future career choice. Each student was assigned to a faculty mentor and performed research throughout the program. UAB also funded 6 undergraduate internship positions for the summer of 2013. Students interned with the Alabama DOT 3<sup>rd</sup> Division office in Birmingham, the Regional Planning Commission of Birmingham, and local consulting firms. UAB also hosted a one-day workforce development seminar over the summer entitled “Transportation Infrastructure and Low Impact Development” conducted for state DOT employees and offering professional development hour credits. UAB also hosted the Sustainable Smart Cities Symposium in April 2013. The symposium featured 8 speakers who discussed topics ranging from sustainable transportation systems and smart urban freight systems European perspectives on sustainable urban design. The symposium was attended by students from UAB and other NCTSPM schools. The joint Georgia Tech/UAB study titled “Bringing Freight Components into Statewide and Regional Travel Demand Forecasting” has brought strong local participation from staff at the Regional Planning Commission of Greater Birmingham. Transportation planning staff have become involved in the project and are taking opportunities to learn cutting edge techniques from NCTSPM faculty to incorporate freight demand into their planning models, something that is not currently done in Birmingham.



**NCTSPM Summer Enrichment Program students present the results of their research work (June 2013)**  
Credit: University of Alabama-Birmingham



**NCTSPM Summer Enrichment Program students inspect the UAB Hydrogen Fuel Cell Bus during final integration at Ringgold, GA (June 2013)**  
Credit: University of Alabama-Birmingham

At Georgia Tech, the monthly seminar series brought in 6 guest speakers in the spring semester. Additionally, Georgia Tech partnered with teachers from Chamblee Middle School and Forest Park High School through the Georgia Intern Fellowships for Teachers (GIFT) program. During the internship, the teachers collaborated with transportation researchers to learn about transportation topics that can be applied to activities which they develop for use in their classrooms. The teachers can not only utilize the activities that they develop for their own use, but they also bring their knowledge and activities to other teachers in the schools.

FIU supported 3 interns in 2012. The internship program involves both undergraduate and graduate students. First priorities are given to female and minority students. FIU also developed and held a special summer course focusing on real-world applications with experienced instructors from the industry in summer 2013.

### **How have the results been disseminated?**

Although most of NCTSPM's research is still currently in progress, some preliminary research results and other products have been disseminated to the transportation community. More than 75 presentations and posters were showcased between January and July 2013. 2 journal publications have been accepted for publication.

In addition to presentations, posters and papers, the universities in NCTSPM have also sponsored a number of events to disseminate research results. The University of Central Florida and Georgia Tech hosted a monthly seminar series on their campuses. NCTSPM sponsored a number of symposia and conferences, including:

- NCTSPM reception at TRB Annual Meeting (January 2013)
- CATSS-NCTSPM Symposium on Traffic Safety and Simulation (February 2013)
- TransportationCamp South (Feb 2013)
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### **What do you plan to do during the next reporting period to accomplish the goals?**

In the next reporting period, current projects will continue while new research projects and selected and put under contract. The research projects selected in 2012 will continue in 2013. Many of these projects are expected to conclude over the next 12 months. NCTSPM issued a Request for Proposals May 2013 for new research projects. The proposals are due July 12. The proposals will be reviewed during July and August, and a selection process will occur in early fall. It is expected that awards will be announced in early October 2013 and contracts awarded by the end of 2013.

UAB will host a symposium on "Sustainable Transportation Infrastructure" in November 2013. The symposium will be presented in cooperation with the Birmingham-Jefferson County Transit Authority and will cover topics related to transportation efficiency and sustainability. UAB faculty are also planning to deliver two professional development seminars in 2013 and 2014, which will be offered to transportation professionals.



UAB is working with the City of Birmingham to initiate a K-12 Transportation Program in the latter half of 2013. The program will bring students from local elementary and secondary schools to the university and to local transportation agencies to study different facets of transportation. One school will be hosted every two months.

Georgia Tech will expand its monthly speaker series to a weekly series and will enhance it by collaborating with transportation agencies (including the Georgia Department of Transportation and Atlanta Regional Commission) to encourage participation and attendance from these agencies, incorporate faculty and student joint presentations, and increase participation with student groups.

## Products

The majority of the products produced in January-July 2013 are presentations. In the period of January – July 2013, 75 of NCTSPM-sponsored research project presentations and posters have been presented. 2 journal publications have been accepted for publication.

One project has produced a web-based tool: <http://carto.gis.gatech.edu/splost/>. This tool has been created to give county, regional, and GDOT officials, legislators, other decision-makers, and planners access to comprehensive information about SPLOSTs (special-purpose local-option sales tax) both in their community and across the state. The SPLOST Clearinghouse contains a database of historic voting results from county-specific SPLOST elections since 1985. As a result, this data is now available in a dynamic interactive format, which means that relationships between key factors in SPLOST approval, such as adjacencies and geographic patterns across the state, are now clearly visible in way that was previously not possible. In addition to the web-based tool, the investigators also produced a manual, which explains how to use the tool, as well as the methodology used for completing this project. Screenshots of this tool can be seen below:

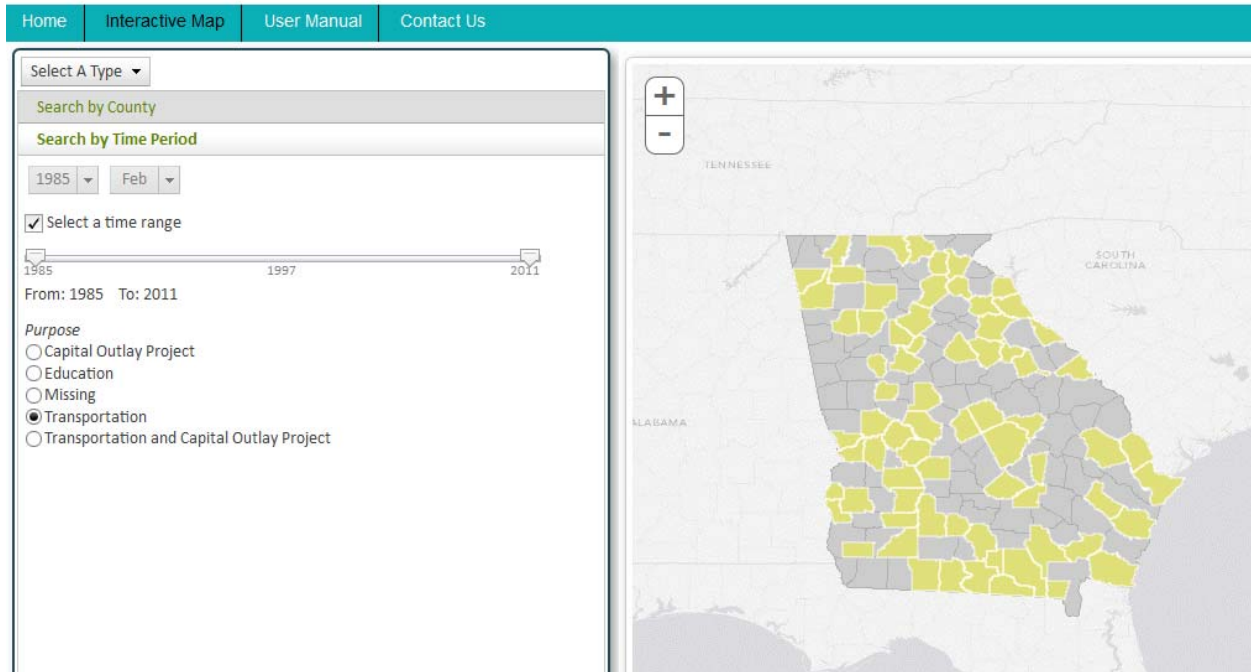


Figure 1. SPLOST Clearinghouse web-based tool: Criteria selection and map.

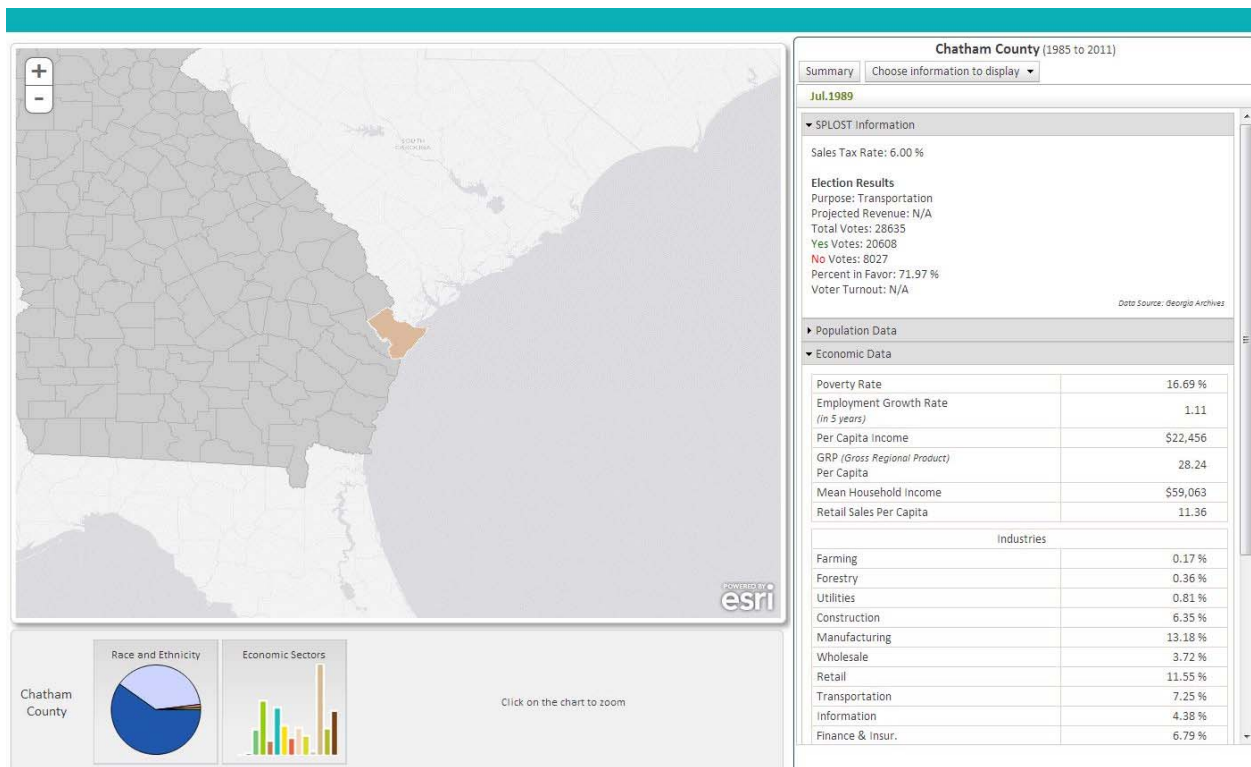


Figure 2. SPLOST Clearinghouse web-based tool: County map and profile.

UAB developed and presented the Distracted Driving Community Workshop on June 18, 2013: Alabama Attorney General Luther Strange, UAB Department of Psychology Assistant Professor and Translational Research for Injury Prevention Laboratory Director Dr. Despina Stavrinos, Ph.D., and U-Haul Executive Vice President Stuart Shoen addressed the importance of “Arrive Alive: Stop the Texts, Stop the Wrecks!” a community workshop on distracted driving.

## Participants and Other Collaborating Organizations

### NCTSPM Participants at Georgia Institute of Technology

The following individuals from Georgia Tech have worked on the NCTSPM at the programmatic level.

Name	<i>Michael Hunter, Ph.D.</i>
Program/Project Role	<i>NCTSPM Director</i>
Number of hours worked during the reporting period	<i>Approximately 525 hrs.</i>
Contribution to Program/Project	<i>Responsible for oversight and governance of the National Center for Transportation Productivity and Management</i>
Funding Support	<i>UTC, GDOT</i>
Collaborated with individual in foreign country	<i>N/A</i>
Country(ies) of foreign collaborator	<i>N/A</i>
Travelled to foreign country	<i>N/A</i>
If traveled to foreign country(ies), duration of stay	<i>N/A</i>

Name	<i>Catherine Ross, Ph.D.</i>
Program/Project Role	<i>NCTSPM Deputy Director</i>
Number of hours worked during the reporting period	<i>Approximately 160 hrs.</i>
Contribution to Program/Project	<i>Responsible for administrative oversight and faculty coordination; liaison to NCTSPM researchers.</i>
Funding Support	<i>UTC, GDOT</i>
Collaborated with individual in foreign country	<i>N/A</i>
Country(ies) of foreign collaborator	<i>N/A</i>
Travelled to foreign country	<i>N/A</i>
If traveled to foreign country(ies), duration of stay	<i>N/A</i>

Name	<i>Michael O. Rodgers, Ph.D.</i>
Program/Project Role	<i>NCTSPM Deputy Director</i>
Number of hours worked during the reporting period	<i>Oversees subcontract reporting requirements</i>

period	<i>and research products and is responsible for coordinating technology transfer activities of the center</i>
Contribution to Program/Project	<i>Approximately 250 hrs.</i>
Funding Support	<i>UTC, GDOT</i>
Collaborated with individual in foreign country	N/A
Country(ies) of foreign collaborator	N/A
Travelled to foreign country	N/A
If traveled to foreign country(ies), duration of stay	N/A

Name	<i>Randy Guensler, Ph.D.</i>
Program/Project Role	<i>Information Systems Management</i>
Number of hours worked during the reporting period	<i>Approximately 40 hrs.</i>
Contribution to Program/Project	<i>Oversees development and implementation of computer-based tools used in compiling information and reporting.</i>
Funding Support	<i>UTC, GT</i>
Collaborated with individual in foreign country	N/A
Country(ies) of foreign collaborator	N/A
Travelled to foreign country	N/A
If traveled to foreign country(ies), duration of stay	N/A

Name	<i>Mr. Kenneth Stewart</i>
Program/Project Role	<i>UTC Board Liaison</i>
Number of hours worked during the reporting period	<i>Approximately 40 hrs.</i>
Contribution to Program/Project	<i>Liaison between UTC management and Board of Advisors.</i>
Funding Support	<i>UTC, GT</i>
Collaborated with individual in foreign country	N/A
Country(ies) of foreign collaborator	N/A
Travelled to foreign country	N/A
If traveled to foreign country(ies), duration of stay	N/A

Name	<i>Ms. Audrey F. Leous</i>
Program/Project Role	<i>UTC Research Coordinator</i>
Number of hours worked during the reporting	<i>1000 hours</i>

period	
Contribution to Program/Project	<i>Responsible for administrative support of Center; coordinate with sub-grantees and contractors</i>
Funding Support	<i>UTC, CQGRD</i>
Collaborated with individual in foreign country	N/A
Country(ies) of foreign collaborator	N/A
Travelled to foreign country	N/A
If traveled to foreign country(ies), duration of stay	N/A

Name	<i>Ms. Susan Sumners</i>
Program/Project Role	<i>Assistant to Civil Engineering department</i>
Number of hours worked during the reporting period	<i>Approximately 40 hrs.</i>
Contribution to Program/Project	<i>Provides administrative support to UTC</i>
Funding Support	<i>CEE, GDOT</i>
Collaborated with individual in foreign country	N/A
Country(ies) of foreign collaborator	N/A
Travelled to foreign country	N/A
If traveled to foreign country(ies), duration of stay	N/A

## NCTSPM University Partner Representatives

These individuals have served as liaisons between NCTSPM and their institutions to organize joint efforts related to research, education, technology transfer, and workforce development. They communicate regularly with the NCTSPM Director via email and teleconference and will continue to be the Director's primary contact at each university.

### University of Alabama, Birmingham

Fouad H. Fouad, Professor and Chair, Department of Civil Construction and Environmental Engineering  
 Email: [ffouad@uab.edu](mailto:ffouad@uab.edu)

Name	<i>Fouad H. Fouad, Ph.D.</i>
Program/Project Role	<i>NCTSPM Partner Representative/University of Alabama, Birmingham</i>
Number of hours worked during the reporting period	<i>Approximately 150 hrs.</i>
Contribution to Program/Project	<i>Liaison between UTC and the University of Alabama, Birmingham</i>
Funding Support	<i>UTC, ADOT, UAB</i>

Collaborated with individual in foreign country	N/A
Country(ies) of foreign collaborator	N/A
Travelled to foreign country	N/A
If traveled to foreign country(ies), duration of stay	N/A

**Florida International University**

Dr. Albert Gan, Email: [gana@fiu.edu](mailto:gana@fiu.edu)

Name	<i>Albert Gan, Ph.D.</i>
Program/Project Role	<i>NCTSPM Partner Representative/Florida International University</i>
Number of hours worked during the reporting period	<i>Approximately 30 hrs.</i>
Contribution to Program/Project	<i>Liaison between UTC and Florida International University</i>
Funding Support	<i>UTC, FDOT, FIU</i>
Collaborated with individual in foreign country	N/A
Country(ies) of foreign collaborator	N/A
Travelled to foreign country	N/A
If traveled to foreign country(ies), duration of stay	N/A

**University of Central Florida**

Dr. Essam Radwan, Executive Director, Center for Advanced Transportation Systems Simulation  
 Email: [Ahmed.Radwan@ucf.edu](mailto:Ahmed.Radwan@ucf.edu)

Name	<i>Essam Radwan, Ph.D.</i>
Program/Project Role	<i>NCTSPM Partner Representative/University of Central Florida</i>
Number of hours worked during the reporting period	<i>Approximately 176 hrs.</i>
Contribution to Program/Project	<i>Liaison between UTC and the University of Central Florida</i>
Funding Support	<i>UTC, FDOT, UCF</i>
Collaborated with individual in foreign country	N/A
Country(ies) of foreign collaborator	N/A
Travelled to foreign country	N/A
If traveled to foreign country(ies), duration of stay	N/A

## Advisory Board and Other Collaborators

### The following are members of the NCTSPM Advisory Board:

Tread Davis – Lawyer and Board Member, Atlanta Regional Commission (Chair)  
James Balloun – Financial Investor and Former CEO (Past Chair)  
Harry L. Anderson - Senior Vice President, Global Business and Technology Services, The Coca-Cola Company  
Harold Barley – Executive Director, MetroPlan Orlando  
Mark Bartlett – FHWA Division Administrator, Alabama  
Jeffrey W. Brown – Alabama DOT Bureau Chief, Research and Development  
Shirley Franklin – Former Mayor of Atlanta  
Keith Golden – GDOT Commissioner  
Bill Johnson – Director, Port of Miami  
Michelle Livingston – Vice President for Supply Chain Distribution, The Home Depot  
Todd Long – GDOT Deputy Commissioner  
Jannine Miller – Executive Director, GRTA  
Wick Moorman – CEO, Norfolk Southern Railway  
Vidya Mysore – Manager, Systems Modeling Section at the Florida DOT  
George Overstreet – Executive Board Member of the Alabama Trucking Association, Vice President of Operations  
G. P. “Bud” Peterson – President, Georgia Tech, Ex Officio  
Daniel L. Rodgers – President, Dunn Investment Company  
Randy Stashick – Global Vice President of Engineering, UPS  
Yvette Taylor – Regional Administrator, FTA  
John Williams – Developer  
Sam Williams – President, Metro Atlanta Chamber of Commerce

### Other Partnering Organizations:

Georgia Department of Transportation (GDOT)  
Florida Department of Transportation (FDOT)  
Alabama Department of Transportation (ADOT)

### Other Collaborators:

Morehead State University  
Saint Louis University  
Georgia State University  
Georgia Southern University  
Spelman College  
Southern Polytechnic State University

## Impact

## What is the impact on the development of the principal discipline(s) of the program?

NCTSPM has successfully facilitated collaboration on transportation research across the southeast region. NCTSPM stimulated communication between the universities within the consortium, between the universities and the state DOTs, and between the transportation agencies themselves. More than half of the research projects that NCTSPM is supporting are collaborative in nature. All projects will have direct impacts to system performance and efficiency. Because the projects have not yet reached the final reporting stages, full impacts are not yet realized.

The seminars, symposia, conferences, and workshops have transferred research to practitioners, thereby improving the practice, but also enabled knowledge exchange between researchers, to improve research. For instance, the work on open data at transit agencies and TransportationCamp South have served to influence transit employees' thinking about data, just as the Smart Cities symposium influenced decision-makers on the impact of urbanization and transportation on quality of life, economy and environment. UCF's faculty's international collaboration is spreading information around the globe while also bringing new perspectives to transportation in the US. Research at FIU is influencing US signage standards. And research being conducting at each university (Mohamed Abdel-Aty's "Efficient Utilization of the Existing Its System and the Viability of a Proactive Traffic Management System for the Orlando-Orange County Expressway Authority System"; Amr Oloufa's "Automated Data Collection for Origin/Destination Studies of Freight Movement"; Kari Watkins and Hans Klein's "Information Services in Social Networked Transportation"; and Virginia Sikiopiku's "Digital Advertising Billboards and Driver Distraction") is providing insight into incorporating new technology into transportation.

## What is the impact on other disciplines?

NCTSPM's research projects are producing research results applicable to a variety of fields, including planning, public policy, and economics. The multidisciplinary research will impact:

- **EMS providers** through the results of the project, "Optimizing EMS Services through the Use of ITS Technologies," which is identifying technologies that can enhance the efficiency of EMS operations.
- **Transportation and Regional Planning** through the work of the project, "[Bringing Freight Components into Statewide and Regional Travel Demand Forecasting](#)". This project is developing models and methods for incorporating freight demand into regional planning models, something that most planning agencies do not do right now.
- **Human Factors and Safety** through the project, "Digital Billboards and Driver Distraction," which is involving faculty from the UAB medical school to evaluate driver behavior under visual distraction.



## **What is the impact on the development of transportation workforce development?**

NCTSPM is impacting workforce development through initiatives focusing on students and on transportation professionals. Employees at state DOTs are receiving direct training through the conferences, seminars and workshops that NCTSPM's universities are sponsoring.

NCTSPM's initiatives are having a significant impact on students. Graduate and undergraduate students are gaining knowledge of transportation concepts, practices and technologies through their work on research projects, education initiatives, training opportunities, internships, and attending conferences. UAB's summer enrichment program provided minority students with exposure to transportation issues as well as experience in technical writing and research methods. UAB's internship program (providing students with internships at Alabama DOT 3rd Division office in Birmingham, the Regional Planning Commission of Birmingham, and local consulting firms) gave students first-hand experience in the transportation field. GT's GIFT program trained students during the summer as well as gave teachers the tools to bring transportation-related curriculum to their home schools during the school year.

## **What is the impact on physical, institutional and information resources at the university or other partner institutions?**

At Georgia Tech, NCTSPM sponsorship of a research program has led to the development of a new driving simulator laboratory, and increased graduate student participation in NCTSPM research has led the university to increase allocated space for the transportation research program. The other partner institutions are also seeking to obtain additional physical space for research.

## **What is the impact on technology transfer?**

NCTSPM has sponsored programs that fulfill the goals of tech transfer. TransportationCamp South, the Smart Cities Symposium, and GT's GIFT program effectively convey research into action.

Dr. Amr Oloufa's research project "Automated Data Collection for Origin/Destination Studies of Freight Movement" is demonstrating practical methods for connecting cameras to gantry structures and latest imaging technologies.

Georgia Tech and UAB's "Bringing Freight Components into Statewide and Regional Travel Demand Forecasting" project is involving local planning professionals in Atlanta and Birmingham in the development and testing of freight demand models.

## **What is the impact on society beyond science and technology?**

The interdisciplinary nature of NCTSPM leads to impact outside of science and technology. The following projects serve this purpose:

- UCF and FIU’s joint project “Performance Measurements of Transportation Systems based on Fine-Grained Data Collected by AVI and AVL Systems” is improving **the image of transit** in society.
- UAB’s project on Optimizing EMS services will hopefully lead to the incorporation of more ITS technologies into **EMS response**, leading to faster response and transport times and better patient outcomes.
- The project related to freight planning will have major impacts on the **urban and regional planning agencies**, providing them with a tool to estimate freight movement that they have long been lacking.
- The project related to assessing the impacts of doubling heavy vehicle loads will, in the end, impact the **trucking and commercial freight industries**.
- The project related to safety impacts of electronic billboards may ultimately have impacts to the **advertising industry**.
- GT’s project on the SPLOST database is making it easier for policymakers to **understand voter behavior**.
- FIU’s project on reducing service interruption in linear infrastructure systems is improving **emergency medical service provision**.

## Changes/Problems

### Changes in approach and reasons for change:

None.

### Actual or anticipated problems or delays and actions or plans to resolve them:

There was a delay in getting funding accounts set up at the member universities. As a result, many of the projects were delayed by several months. Research teams are working to follow original schedules as closely as possible, however it has been necessary to modify schedules for several projects.

### Changes that have a significant impact on expenditures:

None

### Significant changes in use or care of human subjects, vertebrate animals and/or biohazards:

None

### Change of primary performance site location from that originally proposed:

None

## Special Reporting Requirements

### Specific Requirements

**Website:** Newly-designed website launched spring 2013: <http://nctspm.gatech.edu/>

**Directory of Key Personnel:** Information available on the program website: <http://nctspm.gatech.edu/nctspmstaff>

**Financial and Annual Share Reports:** The SF425 requirements will be met by separate report.

**FFATA Sub award and Executive Compensation Report:** Will be met by separate submission

**Research Project Descriptions:** Available on program website:

<http://nctspm.gatech.edu/researchprojects> The projects selected and funded by the center are provided below.

## Ongoing NCTSPM-Funded Research Projects

<b><u>Project Title</u></b>	<b><u>Lead University</u></b>	<b><u>Principal Investigator</u></b>
Integrating Safety in Developing a Variable Speed Limit System	UCF	Mohamed Abdel-Aty
Reducing Service Interruptions in Linear Infrastructure Systems (Transportation and Water/Sewer) by Synchronizing Schedules for Selected Maintenance Activities	FIU	Berrin Tansel
Performance Measurements of Transportation Systems based on Fine-Grained Data Collected by AVI and AVL Systems	FIU	Mohammed Hadi
Full-Scale Wall of Wind Testing of Variable Message Signs (VMS) Structures to Develop Drag Coefficients for AASHTO Supports Specifications	FIU	Arindam Chowdhury
Information Services in Social Networked Transportation	GT	Hans Klein
Traffic Management Centers: Challenges, Best Practices, and Future Plans	FIU	Xia Jin
Digital Advertising Billboards and Driver Distraction	UAB	Virginia Sisiopiku
Impact and Feasibility Study of Solutions for Doubling Heavy Vehicles	UAB	Nasim Uddin
Optimizing EMS Through The Use of Intelligent Transportation Systems (ITS) Technologies	UAB	Andrew Sullivan
Efficient Utilization of the Existing Its System and the Viability of a Proactive Traffic Management System for the Orlando-Orange County Expressway Authority System	UCF	Mohamed Abdel-Aty
Evidence-Based Design Applications in Transportation Asset Management	GT	Adjo Amekudzi
Bringing Freight Components into Statewide and Regional Travel Demand Forecasting	GT	David Lee
Development of Risk Management Strategies for State DOTs to Effectively Deal with Volatile Prices of Transportation Construction Materials	GT	Baabak Ashuri
Freight movement, port facilities, and economic competitiveness	GT	Catherine Ross
Economic Development and Workforce Impacts of State DOT Expenditures	GT	Danny Boston
Factors Influencing Visual Search in Complex Driving Environments	GT	Mike Hunter
Next-Generation Wireless Bridge Weigh-in-Motion (WIM) System Incorporated with Nondestructive Evaluation (NDE) Capability for Transportation Infrastructure Safety	GT	Yang Wang
Micro-Dynamics of Business Location and Growth and its Effects on the Transportation Network and Congestion in Georgia and the Southeast Region	GT	Frank Southworth

Automated Data Collection for Origin/Destination Studies of Freight Movement	UCF	Amr A. Oloufa
Enhanced Role of Activity Center Transportation Organizations in Regional Mobility	GT	Angshuman Guin
Georgia SPLOST Database and Clearinghouse for Transportation Finance	GT	Catherine Ross
GRTA/GDOT Real-Time Tracking and Choice Data	GT	Randall Guensler

### Ongoing Matching Projects

Mobile Technology Usage amongst the Transit-Riding Populace	GT	Kari Watkins
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