U.S. Department of Transportation
Office of the Assistant Secretary for Research and Technology
University Transportation Centers Program

Program Progress Performance Report for University Transportation Centers

National Center for Transit Research (NCTR)

Tier 1 Livability University Transportation Center
University of South Florida
Texas A&M University • University of Illinois at Chicago • Florida International University

Grant Number: DTRT13-G-UTC56

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1. ACCOMPLISHMENTS: What was done? What was learned?
The information provided in this section allows assessment as to whether satisfactory progress has been made during the reporting period.

This PPPR for NCTR's Livability UTC grant, covering the period from April 1, 2018 to September 30, 2018, represents the tenth semi-annual report. Substantial work has been done with the resources the grant provides as reported below.

A. *What are the major goals of the program?*

The goal of the NCTR program is to conduct research leveraging the strengths of its members in all forms of public transportation, transportation demand management (TDM), and active transportation. Public transportation and transportation demand management (TDM) make livable communities possible; indeed, we regard these transportation modes as prerequisites to communities being safe, livable, and more equitable. The NCTR consortium includes a multidisciplinary team with extensive experience in transportation research and UTC participation, enabled by dedicated full-time research faculty. Our research addresses U.S. DOT's goal of supporting Livable Communities as well as environmental sustainability and safety. Research performance metrics are shown in Table 1. Our research addresses many of the objectives of the U.S. DOT Strategic Plan section on Livable Communities:

- To help improve the performance of, and passenger experience with, public transportation to help increase ridership and mode share.
- To reduce motorized trips by developing tools and policies to improve facilities for pedestrians and other non-motorized modes of travel.
- To improve access to transportation for people with disabilities, older adults, and low-income populations.
- To improve the relationship between land use and transportation and develop multimodal networks to serve communities.
- To promote market-based strategies and information technologies to manage demand on congested roadways.

The research activities conducted by NCTR are undertaken through collaboration among the four universities, with student research assistants involved in almost every project undertaken.

Table 1: Performance Metrics for Research

Measure	Methods/Sources for Tracking
NCTR papers and research reports published	All reports posted to NCTR website; papers monitored quarterly
Presentations of NCTR research results at professional academic and industry association conferences	Quarterly PI reports on presentations
NCTR reports downloaded from NCTR websites	Google Analytics and Scholar Commons reports
Students participating in NCTR research projects	PIs required to maintain statistics
NCTR awards and distinctions received	Faculty reporting of awards/distinctions
NCTR citations in other professional papers/media	Google Scholar/Publish or Perish software

Number of patents issued based on NCTR research projects	U.S. Patent Office, USF Technology Transfer Office
Policies/practices changed as a result of NCTR research	Responses to inquiries from NCTR website

NCTR measures its leadership through the number of national professional committees that our consortium members lead, the number of significant roles our research faculty play in forums designed to identify transit research needs, the number of professional development workshops and conferences for which we develop programs, the number of presentations and papers published, and the research agendas prepared in consultation with FTA and state DOTs. Faculty members maintain documentation of these activities, shown in the table below:

- Lisa Staes, Chair, TRB Task Force on Transit Safety and Security
- Lisa Staes, Chair, APTA Bus Safety Committee
- Lisa Staes, Member, APTA Safety Coordinating Council
- Lisa Staes, Member, APTA Rail Safety Committee
- Lisa Staes, Member, APTA Research and Technology Committee
- Philip L. Winters, Emeritus, TRB Committee on Transportation Demand Management
- Philip L. Winters, Member, Transportation Planning Council Executive Committee, Institute of Transportation Engineers
- Philip L. Winters, Vice President, TDM Institute
- Philip L. Winters, Member, Public Policy Committee, Association for Commuter Transportation
- Philip L. Winters, Member, Authorization Task Force, Association for Commuter Transportation
- Philip L. Winters, Member, Job Analysis Panel, Association for Commuter Transportation
- Philip L. Winters, Subject Matter Expert, TDM Certification Committee, Association for Commuter Transportation
- Victoria Perk, Vice-Chair, TRB Committee AP015, Transit Capacity and Quality of Service
- Kristine Williams, Member, TRB Eminent Domain and Land Use Committee
- Kristine Williams, Emeritus Member, TRB Access Management Committee
- Pei-Sung Lin, Member, Technical Committee, ICTPA
- Pei-Sung Lin, Member, Transportation Systems Management & Operations, ITE
- Pei-Sung Lin, Director, Florida LTAP Center
- Sean Barbeau, Member, Board of Directors, OneBusAway Open-source Project
- Sean Barbeau, Member, Steering Committee, OpenTripPlanner Open-source Project
- Sean Barbeau, Member, Hillsborough County MPO, ITS Committee
- Sean Barbeau, Member, Transit Wiki Advisory Group
- Sean Barbeau, Member, APTA Research & Technology Committee
- Jennifer Flynn, Secretary, TRB Committee AP040, Automated Transit Systems
- Julie Bond, Association of Pedestrian and Bicycle Professionals, Chair, Tampa Bay Region
- Alex Sipiora, Co-coordinator, Tampa Bay Clean Cities Coalition
- Jodi Godfrey, Member, TRB Task Force on Transit Safety and Security
- Jodi Godfrey, Treasurer, Tampa Bay Institute of Transportation Engineers
- Jodi Godfrey, Member, Institute of Transportation Engineers STEM subcommittee
- Jodi Godfrey, Member, Institute of Transportation Engineers Women in ITE Task Force
- Robert L. Bertini, Chair, TRB Operations Section
- Robert L. Bertini, Member of IEEE ITS Society Board of Governors

- Robert L. Bertini, Editor-in-Chief, *Journal of Public Transportation,* 2017–Present.
- Robert L. Bertini, "Future of Transportation Research," Session Moderator with Larry Burns, Francesc Robuste, Michael Zhang and Samer Madanat, Special Symposium Honoring Prof. Carlos Daganzo's 70th Birthday, UC Berkeley, June 21, 2018
- Robert L. Bertini, Leadership Committee Member, Florida Automated Vehicles Summit, 2017–Present
- Robert L. Bertini, Operations and Preservation Group (AH000), Member 2014–2020

NCTR faculty provide multiple training opportunities for practicing professionals, as described later is this PPPR. Another significant workforce development initiative funded through the grant is the NCTR Graduate Assistant Research Program (NCTR Scholars). NCTR has funded a targeted recruitment campaign aimed at attracting domestic students who are interested in pursuing a master's degree in Civil and Environmental Engineering with a focus on public transportation. The goals for workforce development and education are shown in Table 2.

Table 2: Performance Metrics for Education

Measure	Methods/Sources for Tracking
Number of students who graduate from transportation-related programs or worked on NCTR projects and placement in industry	Reports from respective universities sent to NCTR Director at completion of each semester
Number of students to serve as interns or technical assistants to transit agencies within proximity of consortium members	Reports from respective universities sent to NCTR Director at completion of each semester
Number of students who participate in public transit courses	Reports from respective universities sent to NCTR Director at completion of each semester
Number of people participating in training programs offered by consortium, contact hours, and how they have responded to training program customer satisfaction surveys	Attendance to be recorded at all training sessions; evaluations of all training programs; information forwarded to NCTR for compilation
Number of transportation-related courses offered that were taught by faculty and/or teaching assistants associated with NCTR	Reports from respective universities sent to NCTR Director at completion of each semester
Number of students participating in transportation-related projects funded by grant	Reports from respective universities sent to NCTR Director at completion of each semester
Number of graduate students supported by grant	Reports from respective universities sent to NCTR Director at completion of each semester
Number of students supported by grant who received degrees	Reports from respective universities sent to NCTR Director at completion of each semester
Number of attendees at MOSI Exhibit	Visits recorded through interactive exhibit

With regard to technology transfer, the goals include:

- Assertive management of a number of clearinghouse and information centers including the National TDM and Telework Clearinghouse, the National Transit Safety Research and Assistance Center, the GIS in Transit Clearinghouse, the Advanced Energy Transit Portal, and a new program named the Integrated Mobility Clearinghouse dedicated to collecting information on the experience public transit agencies are having in efforts to coordinate with transportation network companies and provide "mobility on demand".

- The continued digital publishing of the *Journal of Public Transportation* and establishing the new *Journal of Transportation Demand Management Research*
- The development of patents and licenses for location aware software applications that help all users to better navigate their transportation system and services
- The management of numerous Listservs that allow for the easy and free exchange of information among over 10,000 professionals and students in the nation and the world
- The sponsoring of bi-weekly webinars featuring the results of research from not only NCTR members, but other UTCs as well
- The development and management of a bi-annual GIS in Transit Conference co-sponsored by TRB and private sector companies held in Washington, D.C.
- Presentations of completed research at various state and national professional forums

B. ***What was accomplished under these goals?***

This NCTR Livability grant was originally awarded on September 30, 2013, and the current approved grant end date will be September 30, 2019. Projects have been established for USF, Texas A&M, FIU, and UIC. The set of 11 final projects under this grant are all underway, with substantial progress to be reported. These include 9 projects funded using UTC funds, and two projects funded as match by FDOT. See Table 3.

Table 3: Continuing NCTR Projects for 2018–2019

No.	Title	PI
N5	Campus Automated Shuttle Service Deployment Initiative	Lin
N8	Florida's Public Transit and Women's Safety – Real and Perceived Concerns	Perk
N9	Improving the Quality and Cost Effectiveness of Multimodal Travel Behavior Data Collection	Barbeau
N10	Improving Transportation Access to Health Care Services	Williams
N11	Increasing the Desirability of Transit and All Other Travel Choices via Best Workplaces for Commuters	Winters
N12	Media Framing of Fatal Bicycle Crashes in Hillsborough County: A Critical Discourse Analysis	Bond
N14	Public Transit in America	Godfrey
N15	Smartphone Based Connected Bicycle Prototype Development for Sustainable Multimodal Transportation System	Kourtellis
	Transportation Webcast Series	Lewis
F1	Enhancing Cybersecurity in Public Transportation	Barbeau
F2	Understanding Ridership Trends in Transit	Polzin

Two ongoing projects are nearing completion:

F1	Safe and Accessible Pedestrian Facilities Inventory Model (SAPFIM)	Cevallos
I1	Regional Transit Service Integration	Sriraj

Student of the Year

The NCTR Student of the Year has been selected; Nicole Tremblay is a student in the USF Master of Urban & Regional Planning (MURP) program who has been working as a graduate research assistant at

the Center for Urban Transportation Research (CUTR). Nicole will be presented with this designation at the annual CUTR Transportation Achievement Awards Event on November 1, 2018, and at the Council of University Transportation Centers (CUTC) banquet in Washington, D.C., on January 12, 2019.

Journal of Public Transportation

Publication of the *Journal of Public Transportation* is now in its 21st year, supported by various UTC grants and during this reporting period by the UTC Livability Grant, as another successful knowledge sharing/technology transfer project. Dr. Robert Bertini serves as Editor-in-Chief. During this period we added digital copies of several historic issues, so that now 100% of the history of the journal is now available online. Four new sponsors have been secured to continue the journal for the next five years, and we are grateful to these four UTC partners for their support:

- Upper Great Plains Transportation Institute, North Dakota State University
- Mineta Transportation Institute, San Jose State University
- Center for Transportation Equity, Decisions and Dollars, University of Texas at Arlington
- Teaching Old Models New Tricks, Arizona State University

Volume 21, Number 2 of the *Journal of Public Transportation* is in production during this reporting period, with four of the papers published so far:

- Immigration, Income, and Public Transit Perceptions: Findings from an Intercept Survey
  Jesus M. Barajas, Asha Weinstein Agrawal, and Daniel G. Chatman
- Understanding Transit System Performance Using AVL-APC Data: An Analytics Platform with Case Studies for the Pittsburgh Region
  Xidong Pi, Mark Egge, Jackson Whitmore, Amy Silbermann, and Zhen Sean Qian
- Fare Policy and Vertical Equity: The Trade-off between Affordability and Cost Recovery
  Xavier J. Harmony
- Exploring Transit's Contribution to Livability in Rural Communities: Case Studies of the North Dakota Cities of Valley City and Dickinson
  Ranjit Godavarthy and Jeremy Mattson

Over this reporting period, with the addition of the earliest issues to the repository, 589 papers were downloaded a total of 37,118 times from 165 countries. The following table lists the top 10 papers over this reporting period:

Title	Downloads
To Predict with Confidence, Plan for Freedom	3120
Bike-sharing: History, Impacts, Models of Provision, and Future	1963
Is It Time for a Public Transit Renaissance?: Navigating Travel Behavior, Technology, and Business Model Shifts in a Brave New World	1044
Lies, Damned Lies, AVs, Shared Mobility, and Urban Transit Futures	865
Service Quality Attributes Affecting Customer Satisfaction for Bus Transit	761
Full Issue 19(4)	759
Can Public Transportation Compete with Automated and Connected Cars?	612
Does the Future of Mobility Depend on Public Transportation?	514

Not If, but When: Autonomous Driving and the Future of Transit	495
Just Around the Corner: The Future of U.S. Public Transportation	472

As with most journals, the Journal of Public Transportation is published online. Google Scholar indicates that JPT has been cited more than 9,000 times. Since 2015 a total of 203,842 downloads have been recorded. As of 2018 all past issues of JPT are now posted on the USF Scholar Commons site, in an open access format, available to anyone, anywhere, free. We are refreshing the journal with a new editorial board and aim to continue to improve the impact factor and visibility of the journal.

NCTR also started publishing a new journal entitled the *Journal of Transportation Demand Management Research*. NCTR is expecting to publish the initial volume of the journal later in 2018. A member of the NCTR Advisory Board has volunteered to serve as the editor of this new journal. This will have a similar format to the JPT and the intent is to produce semi-annual issues with at least four papers each.

Clearinghouses and Technical Assistance

The following summarizes the level of activity for the public transportation related listservs hosted by NCTR.

LISTSERV	ADD	AUTODEL	DELETE	POST	SIGN-OFF	CURRENT TOTAL
ACCESS MANAGEMENT	5	0	0	0	0	184
BEST WORKPLACES FOR COMMUTERS	6	9	0	5	5	511
BUS FLEET MAINTENANCE (BFM-GENERAL)	11	13	1	98	5	352
BIKEWALK	0	0	1	0	0	14
BUS RAPID TRANSIT (BRT)	2	0	0	0	0	632
BWC-CHAMPIONS	0	7	0	5	0	136
FIXEDGUIDEWAY	2	0	0	0	0	31
FLORIDA OPERATIONS NETWORK (FTSON)	34	16	3	240	8	261
FLORIDA TRANSIT MARKETING NETWORK	5	15	3	40	5	181
FLORIDA TRANSIT PLANNING NETWORK	10	13	2	57	5	308
LARGE EMPLOYERS	1	0	0	1	0	45
LOCATION AWARE	0	0	0	0	1	76
NEW NORTH TRANSPORTATION ALLIANCE (NNTA-BOARD)	14	0	7	9	0	62
PARKING	1	0	0	0	1	106
SUBSTANCE ABUSE MANAGEMENT	15	3	1	26	0	399
TELEWORK	3	13	0	4	1	399
TRANSIT GIS	4	11	0	2	2	894
TRANSPORTATION DEMAND MANAGEMENT	155	81	2	361	70	1962
	268	**181**	**20**	**848**	**103**	**6553**

- ADD records track list add operations (that is, those who are manually added by the list owner, but not those who subscribe themselves to the list).
- AUTODEL records track users who have been autodeleted from the list. If Auto-Delete is not enabled for the list, there will not be any AUTODEL entries.
- DELETE records track list delete operations (that is, those who are manually deleted by the list owner, but not those who unsubscribe themselves from the list).
- POST records track all successful postings to the list.
- SIGNOFF records track list unsubscribe operations (that is, those who unsubscribe themselves from the list, but not those who are manually deleted by the list owner).

Online TDM Knowledge Base

We discontinued using Oracle's customer relationship management database service that housed National TDM and Telework Clearinghouse's online TDM knowledge base (KB) as a budget cutting action. The community will continued to be served by the listservs and the Best Workplaces for Commuters website.

On-Demand Short-term Technical Support and Limited On-site Technical Assistance

The National TDM and Telework Clearinghouse also engages in a multitude of technical support activities, including interactions with the Association for Commuter Transportation and participants in the Best Workplace for Commuter program, requests for assistance from commuter assistance programs, transit agencies, state departments of transportation, regional planning councils, the media, and others on a range of topics from bike programs, to effective TDM strategies, effective carpool programs, and transit marketing techniques. Best Workplaces for Commuters Best Workplace for Commuters™ (BWC) provides qualified employers with national recognition for offering outstanding commuter benefits, such as free or low cost bus passes. Employers that meet the national standard of excellence in commuter benefits are eligible to be designated a Best Workplace for Commuters. Best Workplace for Commuters is a program designed to encourage sustainable transportation innovation. In January 2018, NCTR announced the 2018 list of Best Workplaces for Commuters (238 members from 32 states) is shown on the BWC website at www.bestworkplaces.org

Social Media

@CUTRUSF Twitter has 600 followers. CUTR has begun using Facebook Live to broadcast weekly graduate seminar series at USF and guest speakers.

TDM Professional Development and Organizational Learning

Training

NCTR's TDM program contributes significantly to professional development for practitioners in the field of commuter assistance programs. The courses taught provide highly useful information that can be applied by program managers in their attempts to help reduce congestion and pollution, and in the process, improve livability of communities. Courses cover subjects such as bicycle and pedestrian issues, parking management, changing travel behavior by time and place, trends and conditions affecting transportation, TDM societal costs and benefits, commuter tax benefits, how to market TDM to employers, travel choices and public health, and creating vanpool and carpool programs. In the past six months the Commuter Choice Certificate attracted a total of 159 attendees. The courses were recorded

and received additional 423 views. Therefore, we estimate there have been approximately 611 contact hours of training. One contact-hour represents one person who attends a 1-hour session.

Program	Participants	Contact Hours
Commuter Choice Certufucate	306	879
Technical Assistance and Training Program	520	2623
Transit Maintenance AARC	87	1958
Transit Operator Trainer Program	18	288

Finally, NCTR and CUTR produce the CUTR Transportation Webcast series (webinars) on a bi-weekly basis that features the results of transit research and program technical assistance. The Webcast series has undergone a new "branding" effort with a better outreach and advertising strategy (enhanced website and social media outreach). An average of 40 people attend the webinars on a live basis, and a bit more view the webinar on a recorded basis. Hence, an additional 700 transportation professionals were able to increase their knowledge of various transportation issues through the webinars offered by CUTR/NCTR.

CUTR Transportation Webcast Series

The following seventeen webinars were conducted this reporting period, as part of the CUTR Transportation Webcast Series. Webinars are interactive such that participants can ask questions and they are also archived for permanent future access.

Date	Title	Speakers
4/12/18	Understanding the Effects of Demographic and Socio-Economic Factors on Public Transit Ridership Trends	Kurt Lehmann, CUTR
4/18/18	Lies, Damned Lies, AV's, Shared Mobility, and Urban Transit Futures	Graham Currie, Director, Public Transport Research Group (PTRG), Monash University, Australia
4/26/18	To Predict with Confidence, Plan for Freedom	Jarrett Walker, Jarrett Walker + Associates
5/9/18	Performance-Based Management and Operations of Transportation Systems: Curriculum Concepts	John Halkias, Jocelyn Bauer, Mike Smith, Stephanie Ivey, Robert Bertini, Mohamed Hadi
5/10/18	Airport Clean Vehicle Policies and Practices	Austin Sipiora and Alex Kolpakov, CUTR
5/15/18	Does the Future of Mobility Depend on Public Transportation? & Can Public Transportation Compete with Automated and Connected Cars?	Kari Watkins, Ph.D., Georgia Institute of Technology; and Ralph Buehler, Ph.D., Virginia Tech
5/24/18	Road Rage: Countering Vehicular Weaponization Through Urban Transportation Design Strategies	Gerard Wellman, Ph.D., and Josephine Hazelton, California State University - Stanislaus
6/7/18	WalkWise Florida	Jason Jackman, Center for Urban Transportation Research
6/21/18	Transit in the 2000s: Where Does It Stand and Where Is It Headed?	Michael Manville, Brian D. Taylor, and Evelyn Blumenberg; UCLA Luskin School of Public Affairs
7/12/18	Overview of the Transit Capacity and Quality of Service Manual, 3rd Edition	Alan R. Danaher, WSP

7/26/18	Is It Time for a Public Transit Renaissance: Navigating Travel Behavior, Technology, and Business Model Shifts in a Brave New World	Susan Shaheen and Adam Cohen, University of California, Berkeley
8/2/18	Autonomous Vehicles: An Empirical Assessment of Consumers' Perceptions, Intended Adoption, and Impacts on Household Vehicle Ownership	Nikhil Menon, Ph.D., CUTR
8/16/18	Operations and Planning for Connected Autonomous Vehicles: From Trajectory Control to Capacity Analysis	Xiaopeng (Shaw) Li, College of Engineering, USF
8/28/18	StarMetro's Pilot of a Mobile Fare Payment App	Sean Barbeau, Ph.D. and Sara Hendricks, CUTR; and Kelly Robertson, BowStern
8/30/18	Motorcycle Safety Programs Using Public Health Approach	Siwon Jang, Ph.D., CUTR
9/13/18	The Role of Public Transportation during a State of Emergency Declaration due to Natural Disasters	Jodi Godfrey, and Roberta Yegidis, CUTR
9/27/18	Media Framing of Fatal Bicyclist Crashes in Hillsborough County: A Critical Discourse Analysis	Julie Bond and Erin Scheffels, Ph.D., CUTR

CUTR Transportation Seminar Series

CUTR co-sponsors a weekly transportation seminar, held every Friday during the academic year at 12:00 noon, and streamed live on Facebook Live. In addition to the 40+ in person participants, the seminars presented during this reporting period reached a total of 2,500 people via 944 unique views. The streams are archived for permanent access.

Date	Speaker	Title	Unique Views	People Reached
4/13/18	Elise Miller-Hooks, Visiting Scholar, George Mason University	Multi-Hazard Resilience Quantification in Transportation Systems and the Societal Functions They Support	133	327
4/19/18	Robert Peskin, AECOM	Planning for Major Projects: AECOM Financial Sketch Planning Model	120	298
4/20/18	Lisa Waters, Florida Airports Council	Florida Aviation	94	275
8/31/18	Chad Polk and Robert Paquin, Jacobs	Systematic approach to traffic safety	158	413
9/7/18	Junfeng Zhang and Rong Hu, Nanjing University of Aeronautics and Astronautics (NUAA)	Aviation	105	316
9/14/18	Cong Chen, CUTR	Applications of Bayesian Methods in Traffic Crash Driver Injury Severity Analysis and Prediction	190	457
9/21/18	Jean Duncan, City of Tampa	Multimodal Projects, Smart City Initiatives and Leadership	144	373
10/12/18	Jeff Kramer, USF/CUTR	Transportation Funding		
10/19/18	Ran Tao, USF/Geography	GIS Applications in Transportation		
			944	**2459**

USF Transportation Courses

USF offers a wide array of transportation courses for undergraduates, graduates and working professionals. Most courses are available in online formats, making the curriculum accessible to individuals who are not able to come to the Tampa campus. Here is a list of the courses offered during Spring 2018, Summer 2018 and Fall 2018.

Transportation Courses	Number	2018 Spr	2018 Sum	2018 Fall
Graduate Courses				
Public Transportation	TTE 6651			
Transportation and Land Use	TTE 6655	X		
Traffic System Engineering	TTE 5205			X
Transportation Planning	TTE 5501			X
Transportation Safety	TTE 6315	X		
Traffic Flow Theory/ITS	CGN 6933			X
Transportation and Infrastructure Network Analysis	CGN 6933	X		
Pavement Design	TTE 6835			X
Asphalt and Asphalt Mixes	TTE 6833	X		
Infrastructure Systems Management	TTE 5305			X
Pavement Management Systems	TTE 6837			
Statistics and Econometrics Method I	CGN6933			X
Statistics and Econometrics Method II	CGN6933	X		
Discrete Choice Models of Behavior	TTE 6505			
Travel Demand Modeling	TTE 6507			X
Trans Economics	CGN6933			
Air Transportation	TTE 5620	X		
Airport/Port Operations and Management	CGN 6933			
Sustainable Transportation	CGN 6933	X		
Sustainable Urban Mobility				
Graduate Transportation Seminar	TTE 6930	X		X
Advanced Geometric Design of Highways	CGN 6933			X
Computer Applications in Traffic Engineering	CGN 6933	X		
Undergraduate Courses				
Transportation and Society	TTE 4006			X
Capstone Trans/Geotech	CEG 4850	X		

Trans I	**TTE 4004**	**X**		**X**
Trans II	**TTE 4004**	**X**		
Geotech/Trans Lab	**CEG 4011L**		**X**	**X**

Transportation Engineering Graduates

Some of our most important successes are reflected in our graduation of transportation students. Here are the Spring 2018 and Summer 2018 transportation engineering graduates from USF:

First Name	Last Name	Degree	Program
Spring 2018			
Dharmin Hiteshbhai	Kukadia	MCE	Transportation Engineering
Divyakant	Tahlyan	MSCE	Transportation Engineering
Kurt	Lehmann	MSCE	Transportation Engineering
Mohammad	Alharthai	MCE	Transportation Engineering
Summer 2018			
Amir	Ghiasi	PhD	Transportation Engineering
Shihab	Uddin	MCE	Transportation Engineering
Parvathy	Vinod Sheela	MCE	Transportation Engineering
Eren	Yuksel	MSCE	Transportation Engineering

C. *How have the results been disseminated?*

Results are disseminated through publications, presentations, newsletters, social media, web postings, and through teaching and training. As examples of NCTR dissemination, the TDM Knowledge Base provides thousands of answers to questions asked by members of the TDM Listserv. The *Journal of Public Transportation* was published containing 12 papers. Notifications of the availability of the new issue was sent via the appropriate Listservs maintained by NCTR/CUTR, reaching over 2,600 transportation professionals. Papers from the Journal were downloaded 27,000 times. Research reports are posted to the NCTR website and posted in TRID. NCTR maintains an alerting service to almost 2,000 subscribers who ask to be advised when a new report is available.

D. *What do you plan to do during the next reporting period to accomplish the goals?*

We plan to continue working on our 11 new projects, which are all very exciting and will help position NCTR/CUTR for the future. We plan to complete the other past/ongoing projects and document their impacts. Most of the new projects are contributing toward the new USF/CUTR Connected Automated Testbed, which is an evolving living laboratory on the USF campus, in partnership with the City of Tampa, Hillsborough County, HART, the Florida Department of Transportation and other partners.

The *Journal of Public Transportation* will publish a regular issue in the second quarter of 2018 and will continue to produce two additional special issues later in 2018, focusing on Transit Automation and Transit Safety and Security. In January 2019 the regular unsolicited journal process will resume. Continuing efforts are underway to solicit additional funding for the journal. The new *Journal for Transportation Demand Management* is nearing its first published issue which is expected to be available in the next reporting period.

We plan to continue implementing the activities that are funded through the grant, most particularly the research projects, including students on every project. Additional webinars (two per month) will be conducted featuring the results of NCTR research, as well as other research presentations that can be made by other UTCs. The FIU project is nearing completion—the Final Report is currently being finished. The UIC project is also nearing completion.

Work on creating the transit exhibit at the Museum of Science and Industry is on a hiatus as the museum is experiencing severe financial strains and is now anticipating moving from its current location near USF to a location in downtown Tampa.

An NCTR Student of the Year for 2018 will be selected in Fall 2018 and the selected student will be assisted with making plans to attend the TRB Annual Meeting and the CUTC Annual Awards Banquet in January 2019.

2. PRODUCTS: What has the program produced?
Publications are the characteristic product of research projects funded by the UTC Program. OST-R may evaluate what the publications demonstrate about the excellence and significance of the research and the efficacy with which the results are being communicated to colleagues, potential users, and the public, not the number of publications. Many research projects (though not all) develop significant products other than publications. OST-R may assess and report both publications and other products to Congress, communities of interest, and the public.

A. *Publications, conference papers, and presentations*

During this reporting period the following numbers and types of publications, conference papers and presentations were completed by NCTR faculty members:

- Conference Presentation: 15
- Conference Publication: 3
- Invited Lecture: 2
- Newsletter: 1
- Journal Article: 1
- Meeting Presentation: 5
- Moderator Presentation: 1
- Presentation: 3
- Publication: 3
- Training Worshop: 1
- Webinar Presentation: 3

Type	Title
Conference Presentation	Bertini, R.L. "Moving to the Future—Building on the Past," Plenary Session, International Conference on Automated People Movers & Automated Transit Systems, American Society of Civil Engineers, Tampa, FL, April 30, 2018.
Conference Presentation	Polzin, Steve, “Travel Trends 2009 Versus 2017” Plenary session discussant, 2018 National Household Travel Survey Workshop, TRB/FHWA, Washington DC., August 8, 9, 2018,

Conference Presentation	Polzin, Steve, "Making Transit Great Again", Keynote Speech, 2018 FPTA/FDOT/CUTR Professional Development Workshop in Transit Safety and Operations Summit, June 6, 2018.
Conference Presentation	Polzin, Steve, "The Unintended Consequences of Automation on the Public Transportation Industry", ASCE, International Conference on Automated People Movers and Automated Transit Systems, Session 5C, Tampa Florida, May 2, 2018.
Conference Presentation	Bertini, R.L., *Niels, T., Bogenberger, K., and *Kristeleit, T. "Global Perspectives on the Past, Present and Future of Active Traffic Management: Focus on Ramp Control Implementations," 25th ITS World Congress, Copenhagen, Denmark, September 18, 2018.
Conference Presentation	Bertini, R.L. and Wang, H. "Preparing a Connected Vehicle Roadmap for Optimal System Deployment Scenarios: Case Study of the State of Oregon, USA," 25th ITS World Congress, Copenhagen, Denmark, September 19, 2018.
Conference Presentation	Bertini, R.L., "Smart & Electric Cities," Roadmap 11, Portland, OR, June 19, 2018.
Conference Presentation	Bertini, R.L. "Incorporating TSMO Into Professional Training and University Curricula," Florida Section of the Institute of Transportation Engineers Summer Meeting, Ponte Vedra, FL, June 14, 2018.
Conference Presentation	Bertini, R.L. "Incorporating Transportation Innovations in University Curricula: A 25-year (gulp) Perspective," Third Transportation Engineering Education Workshop, Auburn University, May 22, 2018.
Conference presentation	Barbeau, Sean, "Dual-frequency GNSS and Galileo on Android Devices," 2018 ION GNSS+, Institute of Navigation (ION), Miami, Florida, 09/27/2018
Conference presentation	Winters, Philip, "Establishing ACT's Priorities for Transportation Authorization," 2018 Association for Commuter Transportation International Conference, Association for Commuter Transportation, Anaheim, CA, ,07/30/2018
Conference presentation	Winters, Philip, Applicability Of An Existing Segmentation Technique To TDM Social Marketing Campaigns In The US," 2018 USF Social Marketing Conference, University of South Florida, Clearwater, FL, 06/30/2018
Conference presentation	Barbeau, Sean, "StarMetro's Pilot of Token Transit," 2018 FPTA/FDOT/CUTR Professional Development Workshop, FPTA/FDOT/CUTR, Tampa, Florida, 06/06/2018
Conference presentation	Winters, Philip, "Update on Commuting Benefits and Tax Cuts and Jobs Act of 2017," 2018 Florida Commuter Transportation Summit, Florida Department of Transportation, Tallahassee,FL, 05/09/2018
Conference presentation and Conference proceedings	Menon, Nikhil, Abdul Pinjari and Fred Mannering, "Understanding the Influence of Consumers' Perceptions Towards Automated Vehicles on their Intended Adoption: A Cluster Analysis Approach," Automated Vehicle Symposium 2018, San Francisco, CA, 07/11/2018
Conference Publication	Bertini, R.L., *Niels, T., Bogenberger, K., and *Kristeleit, T. "Global Perspectives on the Past, Present and Future of Active Traffic Management: Focus on Ramp Control Implementations," 25th ITS World Congress, Copenhagen, Denmark, September 17–21, 2018.

Conference Publication	Bertini, R.L. and Wang, H. "Preparing a Connected Vehicle Roadmap for Optimal System Deployment Scenarios: Case Study of the State of Oregon, USA," 25th ITS World Congress, Copenhagen, Denmark, September 17–21, 2018.
Invited Lecture	Robert Bertini, "Applying a Theory of "And" for a Safe, Sane and Sustainable Transportation Technology Future," Arizona Transportation Research Institute Lecture Series, University of Arizona, October 5, 2018.
Invited Lecture	Robert Bertini, "Changing the Future of Transportation: Connected and Automated Vehicles," NITC Visiting Scholar Guest Lecture, CE 354 Traffic Engineering, Oregon Institute of Technology, May 30, 2018
Newsletter	Barbeau, Sean, Robert Bertini and Vik Bhide, "Tampa Bay Smart Cities Alliance," ITE Spotlite, ITE, 06/06/2018
Journal Article	Barbeau, Sean, "Closing the Loop: Improving Multimodal Transportation Through Crowdsourced Information", Transportation Research Record, Journal of the Transportation Research Board, https://doi.org/10.1177/0361198118791388, 08/25/2018
Meeting Presentation	Polzin, Steve, "Smart Cities and Autonomous Vehicles - Impacts on Airports," Panel Discussion, Florida Airports Council Annual Conference, Tampa, FL, July 17, 2018.
Meeting presentation	Winters, Philip, "Best Workplaces for Commuters - Changing How America Commutes," Commuter Services of Pennsylvania, Commuter Services of Pennsylvania Partners, Harrisburg, PA, 06/15/2018
Meeting presentation	Barbeau, Sean, "OneBusAway – An example of open-source project governance," OpenTripPlanner Merge Workshop, TriMet / Federal Transit Administration, Tampa, Florida, 06/12/2018
Meeting presentation	Barbeau, Sean, "Open-source Transit Project Governance Example – OneBusAway," TriMet Mobility On Demand Sandbox Roadmap Workshop, TriMet / Federal Transit Administration, Portland, Oregon, 06/12/2018
Meeting presentation	Barbeau, Sean, "Open Source Transit Software White Paper," TriMet Mobility On Demand Sandbox Workshop II, TriMet / Federal Transit Administration, Portland, Oregon, 04/18/2018
Moderator of presentation	Winters, Philip, "One Size Doesn't Fit All: New Mobility Approaches for Your Workplace or Campus," 2018 Association for Commuter Transportation International Conference, Association for Commuter Transportation, Anaheim, CA, 07/31/2018
Presentation	Robert Bertini, "Introduction to Public Transportation," Guest Lecture, TTE 4003 Transportation and Society, University of South Florida, October 17, 2018.
Presentation	Robert Bertini, "The Future of Transportation Technology," Guest Lectures, URP 6930 Adaptive Transportation Planning, University of South Florida, September 6, 2018.
Presentation	Robert Bertini, "Changing the Future of Transportation: Connected and Automated Vehicles," Guest Lecture (Skype), CE 423 Intelligent Transportation Systems, California Polytechnic State University San Luis Obispo, June 1, 2018
Publication	Qing Maio, Dr. Eric Welch, P.S. Sriraj, Fengxin Zhang. "What Drives Public Transit Organizations in the United States to Adapt to Extreme Weather Events?", Journal of Environmental Management, 2018, Pages 252 to 260. Accepted

Publication	Bertini, R.L., Wang, H., and *Carstens, K. "Preparing Oregon for Connected-Vehicle Deployment: Connected-Vehicle Application Prioritization Process." *Transportation Research Record: Journal of the Transportation Research Board*, Vol. 2615, pp. 1–10, 2017. DOI 10.3141/2615-01
Publication	Tufte, K., Datta, K., Jindal, A., Maier, D., and Bertini, R.L. "Challenges and Opportunities in Transportation Data." In: *Proceedings of the 1st ACM/EIGSCC Symposium on Smart Cities and Communities (SCC2018)*, Portland, OR, USA, 2018.
Training workshop	Winters, Philip, "Leading Creative Thinking in Your Organization,2018 Community Transportation Association of America Expo," Community Transportation Association of America, Pittsburgh, PA, 06/11/2018
Webinar Presentation	Bond, Julie, "Media Framing of Fatal Bicycle Crashes in Hillsborough County: A Critical Discourse Analysis," CUTR Webinar, CUTR, Tampa, FL, 09/27/2018
Webinar Presentation	Barbeau, Sean, "StarMetro's Pilot of Token Transi," CUTR webinar, CUTR, 08/28/2018
Webinar Presentation	Barbeau, Sean, "Meeting & Exceeding Mobility User Expectations with Real-Time Transit Information," National Institute for Transportation and Communities (NITC) webinar, NITC,08/09/2018

B. *Website(s) or other Internet site(s)*

Website	Current Period	Previous Period	Change	Current Period	Previous Period	Change
	Page Views			Users		
National Center for Transit Research www.nctr.usf.edu	59,808	64,044	-6.6%	26,532	27,909	-4.9%
Best Workplaces for Commuters www.bestworkplaces.org	41,729	48,460	-13.9%	11,615	11,110	+4.6%
Center for Urban Transportation Research www.cutr.usf.edu	59,573	51,872	+14.9%	15,163	11,582	+30.9%
National Transit Safety Research and Technical Assistance Center www.transitsafetycenter.org	5,700	6,693	-10.9%	1,636	1,512	+8.2%
Florida Transit Safety and Operations Network www.floridatsn.org	5,983	4,359	+37.3%	2,971	1,775	+67.4%
Advanced Transit Energy Portal https://advancedtransitenergy.org/	2	198	-99%	2	187	-99.0%
Transit GIS Clearinghouse https://transitgis.org/	2645	1,637	+61.6%	1,130	867	+30.3%

The NCTR (nctr.usf.edu) website is highly visited by people seeking information on public transit and other modes of non-Single Occupant Vehicle transportation. During this six month period there were about 60,000 page views (a decrease of 6% from the previous six months), 27,000 distinct users (a

decrease of 5%). When people query "transit research," NCTR's website is the top listing on Google, Bing, and Yahoo! search engines.

The Best Workplaces for Commuters website saw 42,000 page views and 12,000 distinct users during this period (+5%). The CUTR website had 60,000 page views (+15%) and 15,000 distinct users (+30%). The National Transit Safety Research and Technical Assistance Center website reports having 1,600 visitors during this reporting period. The site serves as both a resource for the industry, as well as for CUTR's FTA Transit Standards Working Group, an independent stakeholder body that provides input and support to CUTR's project team for FTA's Safety Standards Strategic Plan and standards development activities. In addition to managing the NCTR Transit Safety Center website, the program manager, as a member of TRB's Task Force for Transit Safety and Security, developed and is maintaining a website for the Task Force (www.trbtss.org).

The Florida Transit Safety and Operations Network also has a website that attracted 3,0000 users. The Advanced Transit Energy Portal website was visited by 2 users during this reporting period, and the Transit GIS Clearinghouse was visited by 1,100 users. The table below summarizes this period's analytics for the NCTR-sponsored websites.

C. Technologies or techniques

The @CUTRUSF Twitter account has 716 followers.

D. Inventions, patent applications, and/or licenses

No patents were issued based on NCTR research during this period. However, USF remains in the top 15 universities worldwide for receiving patents with 16 granted for work funded through NCTR.

E. Other products

OneBusAway is an open source platform for real time transit information. NCTR did not create the software but continues to contribute to its improvements and to helping disseminate its availability. This software enables a low cost provision of real time information. It is growing in popularity and used by over 400,000 transit passengers in 10 different cities including New York.

3. PARTICIPANTS & COLLABORATING ORGANIZATIONS: Who has been involved?
OST-R needs to know who has worked on the project to gauge and report performance in promoting partnerships and collaborations.

A. *What organizations have been involved as partners?*

NCTR works with many organizations including the Florida Department of Transportation, the City of Tampa, Hillsborough County, most transit agencies in the State of Florida and many agencies, firms and organizations around the Tampa Bay Area, the State of Florida and the U.S.

B. *Have other collaborators or contacts been involved?*

NCTR has worked closely with the Association for Commuter Transportation to plan and produce webinars that are hosted by NCTR faculty and to plan their conference programs. The Florida Public Transportation Association works closely with NCTR faculty in the development and production of the

Annual Professional Development Workforce conference that will be held on the USF campus in June 2018.

NCTR works closely with the Florida Department of Transportation and the Florida Public Transportation Association to administer training programs for bus operators, maintenance technicians, planners, and trainers. All three also work together in providing administrative assistance to the Florida Transit Safety Network, the Florida Transit Planners Network, the Florida Transit Maintenance Network, and the Florida Transit Marketing Network. FDOT provides the funding and oversees the programs that are administered by NCTR faculty at USF.

Hillsborough Community College (HCC) coordinates with the Transit Maintenance Analysis and Resource Center (TMAARC) program that provides transit technicians with quality training and information to facilitate their advancement in the public transit arena. Participants learn skills to keep up with the rapidly changing bus technology, and can also earn an AA degree from HCC in the process of earning program credits.

NCTR and the Hillsborough Area Regional Transit Authority (HART) work cooperatively to institute and improve the OneBusAway software to provide transit users with real time information on the arrival time of the next bus at any bus stop. Other transit agencies in Florida have expressed interest in using this software after seeing the success in Tampa.

USF/CUTR/NCTR faculty and students are now involved with three new UTCs, including ones led by the University of Texas at Arlington (CTEDD), Cornell University (CTECH), and Arizona State University (TOMNET).

More than two hundred public and private employers from across the country, participate in the Best Workplace for Commuters program and share best practices with all members. Certification maintenance credits (CM) are awarded to members of the American Planning Association (APA) with the American Institute of Certified Planners (AICP) professional credential for completing MCTR TDM courses. CM credits increases participation by providing the incentive for planners to attend the training. AICP planners must obtain 32 hours of CM credits every two years.

Several agencies have worked with FIU for its project on pedestrian facility inventory including FDOT District #6, the FHWA Florida Division, and the Broward County MPO. The National Transit Safety Research and Technical Assistance Center works closely with U.S. DOT's Transportation Safety Institute when putting curriculum together for safety training courses, and also work together to certify transit personnel to become safety instructors.

The NCTR Advisory Board is comprised of professionals from TRB, APTA, FPTA, FTA, FDOT, private transit management companies, and private consultants.

4. **IMPACT:** What is the impact of the program? How has it contributed to transportation education, research and technology transfer?

Over the years, this base of knowledge, techniques, people, and infrastructure is drawn upon again and again for application to commercial technology and the economy, to health and safety, to cost-efficient environmental protection, to the solution of social problems, to numerous other aspects of the public welfare, and to other fields of endeavor. DOT uses this information to assess how the research and education programs:

- increase the body of knowledge and techniques;
- enlarge the pool of people trained to develop that knowledge and techniques or put it to use; and,
- improve the physical, institutional, and information resources that enable those people to get their training and perform their functions.

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

NCTR partners have had a long history of transit research and education, which, in addition to their successful track record of producing first rate research, providing leadership in the industry, and graduating students who contribute to the transportation field, was no doubt part of the reason it was selected for the UTC grant. Consequently, the grant does not necessarily contribute to the *development* of the disciplines of the program, but the resources of the grant allow NCTR to remain an important resource to the public transit industry and the public.

B. What is the impact on other disciplines?

NCTR, with its 40-member full time research faculty, has long been populated with a variety of disciplines including but not limited to civil engineering, urban planning, computer science, geography, public administration, economics, mathematics, and anthropology. In addition, NCTR faculty have worked with other disciplines at member universities when their talents can add to the value of a research project. As noted in the previous question, the UTC grant does not necessarily impact other disciplines, but it does allow the faculty with such multiple disciplines to be able to apply their skills to a variety of transportation challenges.

C. *What is the impact on the development of transportation workforce development?*

NCTR, in partnership with the Florida Department of Transportation, the Florida Public Transportation Association, the Association for Commuter Transportation and TRB provide training to practicing professionals at a variety of levels. In addition to the training received at the venues noted above, NCTR faculty made 32 other presentations at state, regional, and national professional conferences. NCTR and CUTR continue produce webinars on a bi-weekly basis and weekly transportation seminars that feature the results of transit research and program technical assistance.

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

Nothing to report.

E. *What is the impact on technology transfer?*

The publication of the special issue of the *Journal of Public Transportation* was supported with funds from this grant. Individual articles and full text issues were downloaded over 27,000 times. The grant also supports the administration and maintenance of the various Listservs that allow the exchange of information among over 10,000 transportation professionals in the areas of transportation demand

management, safety, etc., resulting in an incredible amount of transfer of knowledge among practicing professionals, university researchers, and students.

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

Efforts to encourage the use of transit and alternative and active modes of transportation should result in the reduction of congestion, energy consumption and emissions. The information collected and shared helps transit agencies to be more efficient and safe in their provision of service, while information on alternative fuels helps reduce the costs of transit as well as its carbon footprint, resulting in cleaner air and a step toward slowing global warming. NCTR training enables practitioners in the field to perform their functions more efficiently and effectively, resulting in better quality of service to the public.

5. CHANGES/PROBLEMS

1. Changes in approach and reasons for change

Nothing to report, no changes to this point.

2. Actual or anticipated problems or delays and actions or plans to resolve them

Nothing to report. Grant end date has been extended until September 30, 2019.

3. Changes that have a significant impact on expenditures

Nothing to report.

4. Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards

Nothing to report, and no anticipation of the need to report in the future since no projects will be dealing with these subjects.

5. Change of primary performance site location from that originally proposed

Nothing to report.

Additional information regarding Products and Impacts
UTCs are encouraged to consider identifying program results by outputs, outcomes or impacts as suggested by the examples below. Impacts should be linked to National goals expressed in the Secretary's Strategic Goals.

We are excited about the array of new projects that started or were selected during this reporting period. These projects will provide significant impacts and will position CUTR well for the future to compete for research projects at the state and national levels. The impacts of the training offered through the TDM program and other transit safety programs will result in less congestion, reduced pollution, fewer accidents, and equipment that can be kept in service for the maximum amount of years, thereby reducing capital costs for transit systems.

6. SPECIAL REPORTING REQUIREMENTS

Nothing to report.