



NCTR

NATIONAL CENTER for
TRANSIT RESEARCH

**Program Progress Performance Report
for University Transportation Centers
National Center for Transit Research (NCTR)
University of South Florida
a Tier I Transit Focused University Transportation Center**

Grant Number DTRT12-G-UTC22

DUNS and EIN #: DUNS 06-968-7242, EIN 59-3102112 -F5 (Tampa Campus)

Submitted to: Amy Stearns, University Program Specialist
Office of Research, Development and Technology
Research and Innovative Technology Administration
U.S. Department of Transportation
Mail Code RDT-30

1200 New Jersey Ave, SE, Room E33, Washington, DC 20590-0001
(202) 366-4957, fax (202) 366-3671. amy.stearns@dot.gov

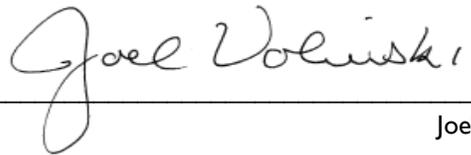
Submitted by: Joel Volinski, NCTR Program Director
National Center for Transit Research
Center for Urban Transportation Research, USF
4202 E. Fowler Avenue, CUT100, Tampa, FL 33620-5375
(813) 974-9847, fax (813) 974-5168, volinski@cutr.usf.edu

Submitted on: July 29, 2016

Grant Period: January 1, 2012– September 30, 2016

Reporting Period: January 1, 2016 – June 30, 2016, 6-Month Progress Report

Signature of Submitting Official: _____



Joel Volinski, NCTR Program Director

Accomplishments

What are the major goals and objectives of the program?

The major goals of the National Center for Transit Research are:

- To select and conduct research intended to make public transit and alternative means of transportation safe, efficient, effective, desirable, and secure. This will be done by receiving input from the Federal Transit Administration, the Florida Department of Transportation, the Illinois Department of Transportation, the North Dakota Department of Transportation, the Illinois Department of Transportation, the NCTR Advisory Board, and transit professionals from throughout Florida and the nation. Research will be subjected to peer review.
- To contribute to the education and preparation of the next generation of transportation professionals and to workforce development initiatives that will help attract, retain, and train employees in the fields of public transportation in particular.
- To disseminate the results of research as broadly as possible to fulfill the goal of making public transportation and alternative forms of transportation safe, efficient, effective, desirable, and secure. In addition, NCTR will continue to invest in projects that result in new patents and licenses that advance the quality of transportation services while creating new technology and employment opportunities.

What was accomplished under these goals?

During the six month reporting period (January 1, 2016 – June 30, 2016) all consortium partners have completed or have very nearly completed all of the federally funded research projects they lead or participate in as summarized below. Provided first is a list of federally funded projects that have either been completed prior to this reporting period or are in various stages of completion.

2013 Rural Transit Fact Book – NDSU - A final report was completed July 2013.

Improving Veteran Mobility in Small Urban & Rural Areas – NDSU- This project was completed in February 2014.

Cost-Benefit Analysis of Rural and Small Urban Transit – NDSU – This report was completed July 2014.

Evaluating the State of Mobility Management and Human Service Transportation Coordination – NDSU
In collaboration with USF and UIC (based on FTA proposal), the project was completed in October 2014.

Workforce Development and Succession Planning to Prepare the Rural Transit Industry for the Future
The objective of this study is to address the perceived recruitment, staff development, and succession problems in the rural public paratransit industry. Study is complete except for final review, editing, and printing. Study results and findings have already been presented via webinar in June.

Intercity Transit Services Demand in North Dakota

The intent of this study is to develop a model for estimating demand for intercity bus services in rural and small urban areas. To do so, a stated preference survey was conducted in North Dakota and a mode choice model was developed. This project was completed and the report will be published as part of a

larger report when the project entitled “Rural Intercity Bus Service: Phase II” is completed in August 2016.

Estimating Ridership of Demand-Response Transit Services

The objective of this study is to develop a model for estimating ridership for rural, general public demand-response transit. A draft report has been completed and is under review.

Rural Intercity Bus Demand: Phase II

This study incorporates a previously estimated mode choice model into a North Dakota statewide travel demand model to identify corridors in the state with the greatest demand for intercity bus service and to estimate the effects of service changes and external factors on intercity bus demand. The study also examines the impacts of traveler attitudes on mode choice. Data collection has been completed and GIS models have been developed. Initial mode shares have been estimated. Progress was made on all phases and the final report will be complete by August 2016.

Low-cost Ride-Quality Characterizations for Transit

The “Low-cost Ride-Quality Characterizations for Transit “ research project uses a smartphone-based technology and passenger surveys to assess ride quality for transit riders on select roadway segments in the West Fargo and Fargo downtown areas. The researchers are collaborating with MATBUS (the local public transportation agency) to facilitate the data collection and surveys. The final report is in the review and refinement process and will be completed by August 2016.

National Transit Network Level of Service Data and Analysis – USF as lead with assistance from UIC (based on FTA proposal) – The following tasks have been completed: Evaluate the state of GTFS data utilization; develop a schema for maintaining a National GTFS dataset; and develop GTFS based measures on mobility and accessibility. The remaining tasks include: Conduct a National GTFS Based Mobility Evaluation; Conduct a National GTFS Temporal Based Accessibility Evaluation; and Recommendation for the establishment of a National Transit Service Database. Completion is expected in August 2016.

Texas Transportation Institute Annual Congestion Study: Measuring Transit’s Impact – USF - The methodology report and analysis developed by USF were completed and that document is published and has been shared with Texas A&M.

Developing Guidelines for Incorporating Managing Demand into WSDOT Planning and Programming: Transportation Demand Management Guidance for Corridor Planning Studies – USF - The Washington State Department of Transportation (WSDOT) regional planning programs address current and forecasted deficiencies of State highways through the conduct of corridor studies. This Guidance for the conduct of corridor planning studies is the product of a comprehensive evaluation of how to incorporate the consideration of Transportation Demand Management strategies into several business areas of the Washington State Department of Transportation (WSDOT). The Moving Washington approach recognizes the importance of using all the tools in the toolbox to cost effectively achieve the state transportation policy goals. This Guidance describes a recommended approach to TDM strategies as part of least-cost planning for improving mobility. The Guidance asserts that all three methods: (1) managing travel demand, (2) optimizing traffic flow, and (3) accommodating travel demand by increasing capacity, should be used concurrently. This approach will advance the integration of TDM into the selected solutions aimed at reducing traffic congestion, providing mobility choices, enhancing transportation affordability, and meeting the State of Washington’s goals for reducing air pollution and

greenhouse gas (GHG) emissions and improving community livability. This Guidance recommends use of a systematic process for identifying mobility needs, assessing existing TDM programs and resources, and evaluating potential TDM solutions against chosen performance metrics. The final report was published in February 2016.

Evaluation of Automated Technology for Transit – 2016 Update (April 2016) - In January 2015, NCTR published a report summarizing the state of public transportation vehicle automation entitled “Evaluation of Automated Vehicle Technology for Transit.” This 2016 update presents the latest information on this topic. Europe has been at the forefront of testing shared autonomous vehicles. The European Union is funding demonstrations and showcases of small autonomous shuttle buses in 10 cities across Europe under a program called CityMobil2. Two French companies, EasyMile and NAVYA, have emerged as commercial autonomous shuttle bus manufacturers. EasyMile provided the shuttles for the CityMobil2 project and also launched a separate demonstration in the Netherlands under the name WEPod. It has also signed an agreement with the Contra Costa Transportation Authority in California to test the shuttles in a commercial office park. NAVYA recently signed its first agreement with the Swiss public transportation company CarPostal to run autonomous shuttles in the Swiss city of Sion. In Minnesota, the Minnesota Valley Transit Authority has received funding from the Federal Transit Administration (FTA) to equip 11 of its buses with an updated version of the driver assist system it uses for bus on shoulder operations.

Funding for the creation and operation of the following centers and clearinghouses hosted at USF was initially provided through the Transit Focused UTC grant, but all activities during this reporting period were supported by the subsequent UTC Livability grant awarded to USF:

- National Transit Safety Research and Assistance Center
- Advanced Transit Energy Portal (ATEP)
- National Transportation Demand Management and Telework Clearinghouse
- GIS in Transit Clearinghouse

Development of Training Manuals for Transit Planning and Scheduling – FIU – The final report will be completed in August 2016.

Transit Service Reliability: Analyzing Automatic Vehicle Location (AVL) Data for On Time Performance and to Identify Conditions Leading to Service Degradation – FIU as the lead with assistance from USF (based on FTA proposal) - The main objective of this work is to conduct research on the use of AVL data for improving transit service reliability. The final report will be published in August 2016.

State of Good Repair Performance Measures: Assessing Asset Condition, Age, and Performance Data – FIU - The main objective of this scope of work is to develop a web-based software application that transit agencies can use for the collection, storage, querying, analysis, and reporting of transit assets. The idea is to develop a system in which different departments at the transit agencies can access the system for entering data, analyzing, or for retrieving information. Therefore, this tool can assist transit agencies in evaluating and assessing transit asset data with regard to age, condition, and performance against established performance targets as well as an approach for project prioritization based on existing data and asset rehabilitation/replacement alternatives. The final report will be published in August 2016.

Transit Value Capture Coordination: Case Studies, Best Practices, and Recommendations – UIC – This study was completed in July, 2015.

Adapting Transit to Climate Change Impacts – UIC as the lead with assistance from USF (based on FTA proposal) - The final regression model was completed to analyze the association between the extreme weather and the number of CTA ridership. The project team has worked with transit agencies in Boston, Utah, and Florida as case studies and has completed a final draft report. The project will be completed in August 2016 .

An Online Tool for Computing and Presenting Regional Accessibility Measures (UIC) - This project led to development of an online tool that allows users to gauge accessibility to Chicago neighborhoods, suburbs, or other parts of the metropolitan area using different modes of transportation accessed at <http://urbanaccessibility.com>.

Optimal Rail Service Planning in a Passenger-Freight Shared Corridor (UIC) - This research resulted in a paper that led to development of a two-level hyper graph model to address optimal use of shared passenger and freight rail corridors. The paper is entitled: "Integrated Modeling of High Performance Passenger and Freight Train Operation Planning on Shared Use Rail Corridors: A Focus on the US Context."

Examining Pedestrian Behavior at Railroad Crossings (UIC) – The final report will be published in August 2016. The report was sent to CTA for review and the research team is in the process of meeting with CTA to address any concerns. The report will provide the CTA and urban planners with greater insight on ways to improve safety for cyclists and pedestrians at rapid transit train grade crossings.

CPS Travel Training Evaluation Project (UIC)

Researchers are studying how to encourage physically challenged Chicago public school children to use existing forms of public transportation on fixed rapid transit and bus routes over paratransit options. To date researchers have completed an integrated evaluation framework and are analyzing the data. A report is anticipated to be produced in July 2016.

Many other projects have either been completed or are being completed using matching funds from the Departments of Transportation of the consortium members. All research projects will be completed by August 2016. The Clearinghouse activities will be ongoing throughout the term of the grant. Provided below is a list of the projects funded by the Florida Department of Transportation (FDOT) that have been undertaken **at USF** as match to the grant. The clearinghouse activities are now being funded through the USF UTC Livability grant and are therefore described in the PPPR prepared for that grant:

1. **Improving the Cost Effectiveness of Financial Incentives in Managing TDM** – This project was completed in October 2013.
2. **Analysis of Transit Contracting Models and Proper Incentives for Long-term Success** - This research project was completed and accepted by FDOT in November 2013.

3. **Improved Traffic Control Measures to Prevent Incorrect Turns at Highway-Rail Grade Crossings**
This project was completed in December 2013.
4. **Impacts of Dialysis Transportation on Florida's Coordinated Public Transportation Programs -**
FDOT accepted the final report in April 2014.
5. **Bus Operator Safety Critical Issues Examination and Model Practices -** This project was completed and enthusiastically accepted by FDOT in January 2014.
6. **Evaluation of Rear-end Bus Collisions and Identifying Possible Solutions and Assessing the Effectiveness of Bus Pull-out Bays in Reducing Collisions –** This project was completed in March 2014.
7. **Best Practices in Enhancing Transit in Multimodal Transportation Elements –** This report was completed and accepted by the Florida Department of Transportation in June 2014.
8. **Investigation, Quantification, and Recommendations - Performance of Alternately-fueled Buses –** This project was completed in August 2014.
9. **Florida Transit Safety Network –** This program, which provides thousands of hours of safety training each year, is now funded through the Livability grant and described in that PPPR.
10. **Technology Application Among Florida Community Transportation Providers –** The final report was completed in October, 2015.
11. **Impact of Transportation Demand Management (TDM) Elements on Managed Lanes Toll Prices -** The final report was produced in December 2015.
12. **Smart Parking Guidance System Demonstration -** This project was funded in part by the USF Student Green Energy Fund (SGEF). The SGEF Council voted to redirect the efforts of the project to the development of a mobile app that NCTR faculty and students have worked on to provide real time information about bike sharing and the location of campus bicycle amenities, HART and Bull Runner real time location, car sharing, and other information. The mobile app of the USF SGEF Bikeshare (Share-A-Bull) project was developed to completion in January 2016.
13. **Improving Access to Transit through Crowd Sourced Information -** The purpose of this research is to facilitate the ongoing collection of information about potential areas of multimodal service and infrastructure improvements from the public that can be easily shared with transit agencies, departments of transportation, and city and county governments. This research will enable the capture of various types of data from actual users of public transportation via a real-time transit information system. Using this data, transit agencies, departments of transportation, and city and county governments will be able to better target improvements to bike and pedestrian infrastructure for access to transit based on actual transit use and issues reported by the general public. The project will be completed by August 2016.

FIU is engaged in the following research projects undertaken with local match:

1. **Informed Traveler Program and Applications – FIU** - \$265,261 - The University City Prosperity Project addresses transportation mobility and safety problems facing Miami-Dade County and the Southeast Florida Region. One of the major components of this project was the development of a first phase of the Informed Traveler Program and Applications (ITPA). ITPA will provide personalized, timely information and advice regarding the most efficient and cost effective travel paths for consumers in advance of their travel decision points. The program's software will be predictive in nature, allowing users to make better travel decisions before they decide whether or not to get in their private vehicles. The Work Plan Development for Phase I for the Informed Traveler Program and Applications task was completed in late 2014. The project will be completed by September, 2016.
2. **Analysis of Movable Bus Stop Boarding and Alighting Areas – FIU** - This project was completed in May 2013.
3. **Guidelines for Bus Transit Stops in Highway Construction Zones – FIU** - The project was completed in December 2014.

The following projects have been undertaken by UIC with matching funds from the Illinois DOT. These projects provide a full 100% cash match to the federal grant projects being implemented by UIC:

1. **Igo Car Sharing: Feasibility of Charging Stations for Hybrid Cars** –This project was completed in 2014.
2. **Modeling of Transit Mode Choice in Greater Chicago** -The research was completed in June 2015.
3. **Transportation Needs Assessment** - A report, "Planning Transportation to Meet the Needs of an Aging Illinois: An Assessment," was completed in the first quarter of 2015.
4. **Green Hospitals** - This research identified opportunities for reducing transportation-related environmental impacts in the healthcare sector and promote sustainable transportation activities. It is intended to provide healthcare organizations with information needed to initiate or expand ride sharing, van pooling and public transit options for staff. A report entitled: "Exploring Commuting-Related Environmental Impacts in the Healthcare Sector" also resulted in a journal article that was published in the Journal of Occupational and Environmental Medicine (February 2016).
5. **Pedestrian Facilities** - The research resulted in a ranking process and method to measure proposed pedestrian and cyclist projects in order to increase their effectiveness within the community and make the best use of available funds. A report, "Development of an Analytical Framework to Rank Pedestrian and Cyclist Projects," was completed in October 2015. An article was written about this work in Next City (May 25, 2016).
6. **Nature Express** – This project will identify transit strategies to connect low-income individuals, disadvantaged families and people of color to Cook County Forest Preserves in a meaningful way. PIs have finished a draft report for the project. Preliminary findings have been shared with the Forest Preserves of Cook County to help with the Long Range Plan development for Cook

County. The findings of this project are likely to provide the basis for gauging accessibility issues for disadvantaged population groups living in Cook County to Forest Preserves in the County.

7. **Regional Transit Service Integration** – This project reviews options for transit policy in the greater Chicago area, including whether public transit agencies should be redefined as Regional Mobility Agencies. Review and summary of current regional transit service challenges. (completed). Review of the changing world of transit and mobility in the Chicago area, including public transit service innovations and emerging technology and rideshare services. (underway). Research on good ideas from other places that might be beneficial in filling gaps in service if implemented in Chicago (underway). Completion expected in August 2016.
8. **Study of Integrated Corridor Management/Mobility Case Studies in Greater Chicago Area** - Research is still in progress and is expected to be completed by August 2016. This study will attempt to increase interconnectivity between various transit modes to attract more new riders off existing roads, reduce travel times for existing riders, and create more travel opportunities for all commuters and travelers.

North Dakota State University has worked on the following match projects:

- **Regional Transit Coordination Pilot Project** - This NDDOT SPR Project looks at coordination/mobility managers and better coordinating regions – two specific regions in North Dakota served as the pilots. The project was completed in December 2014.
- **Identifying and Satisfying the Mobility Needs of North Dakota’s Transit System** - The objective of this study was to determine the financial needs of the state transit providers. The final report was produced in April 2015.

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

NCTR continued providing training during the six month period in the areas of transit, leadership, and commuter assistance programs, though USF’s activities were funded through the NCTR Livability UTC grant and is being reported on through the PPPR for that grant to avoid double counting. NDSU trained 669 people and had 718.25 contact hours of training between January 1, 2016 and June 30, 2016 conducted in 8 different states utilizing funds from this transit-focused grant:

Course	Delivery Dates	Location	Number of Attendees
Developing a Method for Assessing National Demand-Response Transit Level of Service	1/11/2016	Washington, DC	55

Ranjit Godavarthy presented presented findings during a .30 hour session from research on national transit demand response at the 95th Annual TRB Meeting in Washington, DC.

Course	Delivery	Location	Number of Attendees
--------	----------	----------	---------------------

	Dates		
Ethics in the Workplace	1/18/2016	Fargo, ND	250

Rob Lynch presented 250 hours of training for Ethics in the Workplace during a Crop Insurance Conference in Fargo, ND.

Course	Delivery Dates	Location	Number of Attendees
John C. Maxwell's Everyone Communicates, Few Connect	1/27/2016	North Dakota State University	6

Jill Hough presented 12 hours of training for John C. Maxwell's Everyone Communicates, Few Connect to North Dakota State faculty In Fargo, North Dakota.

Course	Delivery Dates	Location	Number of Attendees
Emergency Management – Collaborations	February 2/24/2016	Boise, ID	20

Rob Lynch presented 20 hours of training for Emergency Management – Collaborations during the CTAI conference in Boise, ID.

Course	Delivery Dates	Location	Number of Attendees
Cost Effective Training	3/29/2016	Lajolla, CA	24

Rob Lynch presented 30 hours of training for Cost Effective Training during the CalACT conference in Lajolla, CA.

Course	Delivery Dates	Location	Number of Attendees
Ethics in the Workplace	3/29/2016	Lajolla, CA	21

Rob Lynch presented 26.25 hours of training for Ethics in the Workplace during the CalACT conference in Lajolla, CA.

Course	Delivery Dates	Location	Number of Attendees
Local Government and Public Transportation	4/12/2016	Fairbanks, AK	21

Rob Lynch presented 26.25 hours of training for Local Government and Public Transportation during the ACT conference in Fairbanks, AK.

Course	Delivery Dates	Location	Number of Attendees
Financial Management	4/12/2016	Fairbanks, AK	17

Rob Lynch presented 21.25 hours of training for Financial Management during the ACT conference in Fairbanks, AK.

Course	Delivery Dates	Location	Number of Attendees
Performance Matters	4/13/2016	Fairbanks, AK	18

Rob Lynch presented 22.25 hours of training for Performance Matters during the ACT conference in Fairbanks, AK.

Course	Delivery Dates	Location	Number of Attendees
Estimating Demand for Rural Intercity Bus Services	5/4/2016	Toronto, Canada	30

Jeremy Mattson presented findings during a .30 hour session from research on estimating demand for rural intercity bus services at the Transportation Research Forum annual meeting in Toronto, Canada.

Course	Delivery Dates	Location	Number of Attendees
Financial Management	5/12/2016	Pueblo, CO	21

Rob Lynch presented 147 hours of training for Financial Management during the CASTA conference in Pueblo, CO.

Course	Delivery Dates	Location	Number of Attendees
Workforce Development Survey	6/9/2016	Various (webinar)	75

Del Peterson presented 18.75 hours of training for the workforce development survey during the Transportation Learning Network webinar in Fargo, ND.

Course	Delivery Dates	Location	Number of Attendees
Cost Allocation	6/15/2016	Sheridan, WY	38

Rob Lynch presented 47.5 hours of training for Cost Allocation during the WYTRANS conference in Sheridan, WY.

Course	Delivery Dates	Location	Number of Attendees
Fundraising and Local Match	6/15/2016	Sheridan, WY	16

Rob Lynch presented 20 hours of training for Fundraising and Local Match during the WYTRANS conference in Sheridan, WY.

Course	Delivery Dates	Location	Number of Attendees
Transit Management Plans	6/15/2016	Sheridan, WY	18

Rob Lynch presented 22.5 hours of training for Transit Management Plans during the WYTRANS conference in Sheridan, WY.

Course	Delivery Dates	Location	Number of Attendees
Performance Measurement	6/22/2016	Stillwater, OK	5

Rob Lynch presented 7.5 hours of training for Performance Measurement during the OTA conference in Stillwater, OK.

Course	Delivery Dates	Location	Number of Attendees
Financial Management A	6/23/2016	Stillwater, OK	10

Rob Lynch presented 15 hours of training for Financial Management A during the OTA conference in Stillwater, OK.

Course	Delivery Dates	Location	Number of Attendees
Financial Management B	6/23/2016	Stillwater, OK	8

Rob Lynch presented 12 hours of training for Financial Management B during the OTA conference in Stillwater, OK.

Course	Delivery Dates	Location	Number of Attendees
Elected Officials	6/24/2016	Stillwater, OK	16

Rob Lynch served on a panel for 20 hours of training on elected officials during the OTA conference in Stillwater, OK.

- Dr. Jill Hough of NDSU completed the development of a **national transit course** that will be able to be delivered by any transportation faculty at universities around the country. This course was offered for the first time in the spring semester of 2016 at NDSU and is being evaluated.
- NDSU faculty made 4 different presentations at 3 different venues throughout the country as well as one webinar. A total of 208 professionals attended these presentations for a total of 606 contact hours.

- The scopes for virtually every research project noted in this report incorporated **student research assistants** to help prepare them for careers in transportation.
- **The NCTR Scholars program** was initiated the fall of 2013, providing students who have career aspirations in public transportation to obtain a Masters degree in Civil Engineering with an emphasis on public transportation. Matthew Kessler continues his course work while three other scholars continue their program (Ibrahim Hinds, Katrina Corcoran, and Austin Dibble) in this reporting period.
- USF hosted 6 **free webcasts** in its bi-weekly series in subject areas related to the transit-focused NCTR theme. An average of approximately 50 people viewed each webcast live, while the recorded versions are generally viewed by even more people as their schedules allow:
 - Strategies to Prevent, Reduce, and Mitigate Bus Collisions
 - Multimodal Transportation Planning Best Practices and Model Element
 - Emerging Technologies Fulfilling First and Last Mile Needs
 - Testing Equivalence of Measurements and Application to Certifying APC Data for NTD
 - Methodology for Linking Greenways and Trails with Public Transit in Florida
 - Surprising Drug Trends in 2016
- **Florida Transit Operator Trainer Training Program** – The accomplishments of this program, which includes thousands of hours of training and was started through the Transit Focused grant, are now reported through the Livability grant which has continued funding this program.
- **Transit Manager Certificate Program** - The accomplishments of this program, which includes thousands of hours of training, and was started through the Transit Focused grant, are now reported through the Livability grant which has continued funding of this program.
- **Florida Statewide Transit Training and Technical Assistance Program** - The accomplishments of this program which were formerly reported through the Transit Focused grant are now reported through the Livability grant PPPR.

Florida Commuter Choice Training Program – CUTR at USF provides training and instruction annually on Commuter Choice related topics primarily using a combination of live instruction, net conferences, and/or asynchronous distance learning methods (e.g., self-paced online courses). This project is now reported as part of the activities funded through the NCTR Livability grant.

How have the results been disseminated? If so, in what ways?

PIs for all projects have established peer reviewers who are most likely to be interested in the results and in a position to implement findings. PIs have also been instructed to identify opportunities to share results of research through webinars, conferences, and direct notification to lists of professionals that have been identified in advance of conducting the research. USF's webcasts are free to all participants and can be viewed in real time, or viewed as a recording at the viewer's convenience. This grant is winding down and there are fewer presentations since most of the research is completed. During this six month reporting period, consortium members made 14 presentations at state and national professional conferences and through webinars.

USF's TDM program has developed a knowledge base (KB) to reduce the inquiry burden on Clearinghouse staff by providing an intelligent self-service option by providing information on hundreds of frequently asked questions as well as case studies and examples. This approach provides a means to reduce the total number of basic inquiries or repeat requests that require personal attention. It also allows staff to respond quickly to inquiries drawing on the information in the KB. The objective is to be more cost-effective and to handle more interactions by providing lower cost transactions with the KB's self-service feature.

Trade Shows

SURTC attended three trade shows from January, 2016 – June, 2016: (1) the CalAct Spring Conference in Lajolla, CA, March 27-31; (2) the 2016 APTA Bus and Paratransit Conference in Charlotte, NC, May 17-18; and (3) 2016 CTAA Expo in Portland, OR, May 24-26. At these trade shows, SURTC maintained an education and outreach display booth where it: (1) distributed summaries of recent research and displayed information about available training opportunities; (2) gave attendees the opportunity to sign up for the SURTC Blog which provides real-time research and training updates; and (3) exhibited information detailing the *Advanced Transit Professional* non-credit certificate program (completion of Transit I and Transit II).

SURTC Blog

SURTC continues to maintain and use its weblog that was launched September 2009. The blog keeps readers up-to-date on SURTC's research, training, and outreach efforts as well as news and information on developments in small urban and rural transit.

What do you plan to do during the next reporting period to accomplish the goals and objectives?

- During the next three months all of the research projects that have been approved as part of the grant will be completed. The end date of the grant is September 30, 2016.
- NCTR will energetically share the results of the research projects with sponsors and with all other parties that can benefit from the findings through every technology transfer avenue available. Webinars featuring results from these projects will be held every two weeks, and opportunities to present findings at professional transportation conferences will also be pursued.
- Final drafts of all research projects will be peer reviewed.
- The ongoing training programs will continue in the next three months based on input received from operating agencies requests, though they are now recorded as part of the Livability Grant.
- The evaluation of the national public transit course developed and taught by NDSU will be completed and changes to the course will be made as necessary.
- Two new students for the NCTR Scholars program will be selected and placed with faculty members as graduate research assistants, and they will be given the opportunities to attend TRB and the FPTA Annual conferences.
- The NCTR website will be updated to include the completed research reports from all four consortium members.

- A new editorial board will be constituted for the Journal of Public Transportation to bring additional energy and input and provide guidance to NCTR. Efforts will also be made to modify the composition of the NCTR Advisory Board due to retirements.

Products

Publications

Two editions of the Journal of Public Transportation (Volume 19, issues #1 and #2) were produced during this progress report period featuring a total of 18 papers. The Journal is now produced in electronic format only, saving the project approximately \$30,000 per year which has been reprogrammed into additional reviews and other projects under NCTR. The Editor continued to contact potential new members for the Journal's Editorial Board to determine their interest in serving, though the Board was not yet reconstituted. The Journal is now receiving over 20 papers a month from all over the world for consideration for publishing (approximately 38 papers are published annually). The list of professional reviewers now numbers over 170. The Journal Activities are now being funded through the UTC Livability Grant and all statistics associated with it are reported in the PPPR for that grant.

The following reports were published and/or completed by members of the NCTR Consortium in the six month reporting period:

Incorporating Managing Demand into Washington State DOT Planning and Programming (February 2016) – USF – see page 2 of this PPPR Report.

Evaluation of Automated Technology for Transit – 2016 Update (April 2016) – See page 3 of this PPPR report.

Intercity Transit Demand (NDSU)- This study creates an intercity bus network model for the Upper Midwest that will be used to estimate boardings at each stop and ridership on each link in the network and the impacts of possible service changes and population changes on ridership. This project was completed. The report will be published as part of a larger report when Rural Intercity Bus Service: Phase II is completed in August 2016.

Green Hospitals - This research also resulted in a journal article that was published in the Journal of Occupational and Environmental Medicine (February 2016).

Pedestrian Facilities - A report, "Development of an Analytical Framework to Rank Pedestrian and Cyclist Projects," was completed in October 2015 and an article was written about this work in Next City (May 25, 2016).

Websites

The website for NCTR (www.nctr.usf.edu) has been in place since 1999 and remains very active. NCTR is rated #1 for "transit research" results on Google, #2 on Bing and #2 on Yahoo search engines. It includes information on the center's history, key personnel, research activities, links to all reports and webinars, the various programs and clearinghouses hosted by NCTR, all volumes of the Journal of Public

Transportation, and a section on career opportunities in transit. It includes links to the websites of all consortium partners (<http://www.surtec.org/>; <http://lctr.eng.fiu.edu/>; <http://www.utc.uic.edu/>). Those websites also include information on key personnel, active research, downloadable reports, student participation in their programs, and webinars that can be viewed. The NCTR website will continue to be updated to include all projects completed by consortium members and the projects yet to be undertaken through the federal grant and matching funds. However, all reporting of statistics for the website is now being done through the UTC Livability grant since that is the funding source for its activities.

A number of other websites initially funded through NCTR Transit Focused grant have been established, but are now being supported by the Livability grant. The PPPR for the Livability grant should be reviewed to see the level of activity on each.

Technologies or Techniques

The network model used to estimate boardings for the intercity bus network is new and will be published in August 2016.

New tools also were developed for WSDOT as part of the project entitled “Incorporating Managing Demand into Washington State DOT Planning and Programming”, including a creative thinking exercise and the Mobility Gap Analysis Tool, a spreadsheet addition to WSDOT’s Highway Segment Analysis Program. The Mobility Gap Analysis Tool enable quick calculation of the volume of traffic needed to restore highway function to 70 percent of posted speed limit, or maximum throughput.

An Online Tool for Computing and Presenting Regional Accessibility Measures (UIC) - This research led to development of an online tool that allows users to gauge accessibility to Chicago neighborhoods, suburbs, or other parts of the metropolitan area using different modes of transportation. The tool measures accessibility by summing up the number of opportunities that can be reached from each location by different modes. A report was produced entitled: "Mapping Metropolitan Chicago's Accessibility." The product was the Metropolitan Chicago Accessibility Explorer – accessed at <http://urbanaccessibility.com>

Inventions, Patent Applications, and/or Licenses

NCTR research has resulted in 16 patents in the past five years, all of which are related to the research funded through NCTR. The University of South Florida ranked 10th among universities worldwide for U.S. patents granted in 2015.

Other Products

Nothing to report for this reporting period.

Participants and Collaborating Organizations

What organizations have been involved as partners?

The National Center for Transit Research (NCTR), through its transit-focused grant, is a consortium/partnership of four universities as follows:

- University of South Florida located in Tampa, Florida, featuring the National Center for Transit Research (NCTR), a Tier I UTC that is part of the Center for Urban Transportation Research.
- North Dakota State University located in Fargo, North Dakota, featuring the Small Urban & Rural Transit Center (SURTC).
- University of Illinois at Chicago located in Chicago, Illinois, featuring the Urban Transportation Center (UTC) in the College of Urban Planning and Public Affairs.
- Florida International University located in Miami, Florida, featuring the Lehman Center for Transportation Research (LCTR).

As described earlier in this report, the four universities are collaborating on four different projects, lending their expertise toward completing research reports. Collaboration with other parties has been quite extensive as noted below:

1. **The Federal Transit Administration** – The FTA has been the source of federal funds for the program as well as a source of ideas for research projects. FTA staff have served as peer reviewers of the projects. NCTR faculty conduct evaluations for BRT projects funded by FTA.
2. **State Departments of Transportation** – FDOT has been a vital partner in the development, selection, and funding of the majority of the research conducted by USF and FIU researchers. It also provides project managers for each project to oversee the completion of each project done by USF and FIU. Similar arrangements have been made with the Illinois and North Dakota Departments of Transportation. **IDOT** is providing a full cash match to UIC’s portion of the grant, while **NDDOT** is providing approximately one-third cash match.
3. **The Florida Public Transportation Association** – FPTA, in conjunction with FDOT, is collaborating on a number of training projects through the engagement of various public transit networks (e.g., Transit Operations Network, Planning Network, Maintenance Network, Marketing Network, and Safety Network) to serve as advisors and peer reviewers of research projects. Several Florida transit agencies are also providing vital information for some of the research projects.
4. **The Washington State Department of Transportation** provided full cash match funding for the project entitled “Incorporating Managing Demand into Washington State DOT Planning and Programming.”
5. **The Florida Commission for the Transportation Disadvantaged** served as the project managers of the projects entitled “Impacts of Dialysis Transportation on Florida’s Coordinated Public Transportation Programs” and “Technology Application Among Florida Community Transportation Providers”.
6. Consortium members have worked closely with the **American Public Transportation Association** on the Higher Education Subcommittee of the Human Resources Committee (Dr. Jill Hough of NDSU is the Chair of that subcommittee); with the Research and Development Committee on making a closer connection between UTC transit research results and APTA members (NCTR Director Joel Volinski is Chair of the University Liaison subcommittee); with the Alternative Fuels

Committee in providing information for NCTR's Advanced Transit Energy Portal; and with the Bus Safety Committee.

7. USF collaborated with the **Mineta Transportation Institute** to provide two case studies for a report dealing with best practices in improving access to transit services for disabled people.
8. NCTR Director Joel Volinski was asked to participate as part of the Problem Statement Screening Panel in August 2016 to help ensure no projects selected for TCRP would duplicate ongoing research.
9. NCTR Director Joel Volinski participated as a member of the Executive Board of the National Institute for Transportation and Communities in June 2016 to select research projects funded through NITC. He served as President of the **Council of University Transportation Centers**, including serving as host to the CUTC Annual Awards Banquet to start the TRB meeting in January 2016. Dr. Jill Hough of NDSU was elected President of CUTC at the Annual Summer meeting held at the University of Southern California in June 2016.
10. CUTR's Transportation Program Evaluation and Economic Analysis program, partially funded through NCTR projects dealing with alternative fuels, staffs a statewide legislatively created committee to make recommendations on cleaner transportation fuels to the governor and state legislature; works with FDOT on an ongoing project to evaluate the performance of alternatively fueled buses; assists FTA with its transit electrification research plan and other fuel-related research; serves as staff to the Tampa Bay Clean Cities Coalition.

Many organizations have lent their considerable experience and expertise to NCTR by agreeing to have representatives serve on the NCTR Advisory Board. Included among them are:

Lou Sanders – American Public Transportation Association; David Spacek, Public Transportation Office – Illinois Department of Transportation; Tim Garling, Director, Broward County Mass Transit Division; Ed Coven, Manager, Public Transportation Office, Florida Department of Transportation; Darryll Dockstader, Manager, Research Office, Florida Department of Transportation; Bill McCloud, Senior Vice President, Transdev Corporation; Jon Martz, Vice President, Van Pool Services, Inc.; Joe Calabrese, GM/CEO, Greater Cleveland Regional Transit Authority; Michael Baltes, Director – Office of Technology, Federal Transit Administration; Dr. Minnie Fells Johnson, Chair, Project for Public Spaces; Perry Maull, Director – Indiana University Bus Services

Have other collaborators or contacts been involved?

Most of the significant collaboration has been described in previous sections. It should be noted that consortium members collaborated on four projects listed in the federal projects. NCTR completed two case studies on a federally funded project headed by the Mineta Transportation Institute that identifies ways to improve access to transit stops for people with disabilities. AARP contacted SURTC and a conference call was held with them to discuss the demand response level of service project. NDSU also provided input for them on performance metrics.

Impact

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

As noted earlier, FDOT accepted the report entitled “**Improved Traffic Control Measures to Prevent Incorrect Turns at Highway-Rail Grade Crossings.**” With the information collected through this study, FDOT has awarded another contract to USF to continue work on this subject through the deployment and testing of the remedies that were identified in the initial study in as many as six locations throughout the state.

The project entitled “**Investigation, Quantification, and Recommendations - Performance of Alternatively-fueled Buses**” was completed and the Advanced Transit Energy Portal continued to provide information on the pros and cons of alternative fuels. During this time frame, three transit agencies in Florida, aided to some extent by the information developed by NCTR, decided to switch to compressed natural gas.

The most important outcome/potential outcomes of the report entitled “**Bus Operator Safety Critical Issues Examination and Model Practices**” are those activities underway and planned to modify Florida state law and individual transit agency policies and procedures related to training (which includes assault prevention) and criminal history background checks. Activities include:

- Florida Operators Network (FON) and the Florida Transit Safety Network (FTSN) have established “Minimum Fixed-Route Bus Operator Training Guidelines” that have been distributed statewide - this research study contributed to the completion of this process, recognizing the importance of transit operator training in how they can help de-escalate situations to contribute to the reduction of incidents.
- FON and FTSN are establishing “Minimum Fixed-Route Bus Operator Annual Refresher Training Guidelines” (which will include assault avoidance/defusing volatile situations module).
- FDOT will begin rule change processes in the immediate future. Potential modifications to Chapter 14-90, Florida Administrative Code, governing “Equipment and Operation Standards for Bus Transit Systems” will likely include minimum training standards and the requirement of Florida’s transit agencies to perform Level 1 Criminal History Background Checks for new bus operator hires and could also include rechecks on a specific rotation (every 2 years as an example).

What is the impact on other disciplines?

FDOT has funded a series of training workshops on the results of the research associated with the project entitled “Multimodal Transportation Best Practices and Model Elements.” Through the workshops, the FDOT project manager and NCTR are soliciting feedback from participants on use of the report and also will be identifying potential locations for pilot application of the model elements. A goal of the pilot applications will be to provide additional guidance and further refine the research results.

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

The results of the various training programs conducted by USF and NDSU were documented in the section entitled “**What opportunities for training and professional development has the program provided?**”

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

All of the consortium partners represent well established universities with long standing research programs. The grant has not resulted in any significant capital improvements, but it has provided the funds to permit research faculty to manage things such as listservs and webinar series that provide a wealth of information to the thousands that participate at no cost to the participants.

What is the impact on technology transfer?

NCTR has been a leader in providing webinars that are free and can be watched on a live or recorded basis. This helps to minimize expense to those who participate since they can do so from their offices or other remote locations. Over 400 people have watched the webinars during the six month reporting period. NCTR has also been a leader in the management of listservs that allow flexible and frequent communication among transportation professionals on a variety of subjects. Some decisions cannot wait many months or years for research to be completed, but the listservs allow participants to share current information and provide mutual assistance by providing all participants with the best information available. All statistics associated with NCTR's listservs, websites, and webinars are now reported through the PPPR for Livability UTC grant.

What is the impact on society beyond science and technology?

The "Best Workplaces for Commuters" designation acknowledges employers who have excelled at implementing green commuter programs. These programs include ridesharing, transit benefits, biking/walking/teleworking, flexible work schedules and other transportation demand management strategies designed to decrease traffic congestion and improve traffic related air pollution levels. By offering these commuter benefits, the recognized employers are committing to regional pollution reduction, greater economical savings related to commuting costs and lessening employee stress caused by single occupant vehicle travel to and from work. Over 320 workplaces (many of the largest companies in the country) throughout the country have earned the designation as a Best Workplace for Commuters.

Go Hillsborough is an initiative of the Transportation for Economic Development Policy Leadership Group, which includes all seven Hillsborough County Commissioners; the mayors of Plant City, Tampa and Temple Terrace; and the chair of the HART board. NNTA is a transportation management initiative of public and private members. USF's TDM Team provides technical support to NNTA. This group helps to identify and implement solutions to transportation challenges in the north Tampa area.

Dr. Steve Polzin, Director of Mobility Policy Research at NCTR/CUTR, served as a member of the Committee for Study of Innovative Urban Mobility Services by the Transportation Research Board (TRB) Executive Committee. This ad hoc committee examined the growth of new on-demand and peer-to-peer mobility services and exploring the implications these services have for consumers and existing transportation services. The study, which was released in early 2016, identifies policy, regulatory, and other issues that policy makers will need to consider as they regulate these services, including the

existing regulatory structure for taxi, limousine, and transit services. Priority areas of research to inform public policy decisions were also identified.

Sean Barbeau, Phil Winters, and Nevine Georggi coordinated efforts with USF Division of Patents and Licensing to find potential licensees for several of their patents. Their technology (including a patent) to help mobile phone users alert first response teams of emergency situations was licensed to the company EmergenSee (<http://emergensee.com/>). This technology, noted earlier and developed through UTC funding, will help save lives for those who need immediate care due to accidents on our highways. (<http://www.bizjournals.com/tampabay/news/2014/07/09/new-tech-at-usf-helps-alert-response-teams-during.html>)

The **Tampa Bay Clean Cities Coalition (TBCCC)** promotes the use of advanced transportation fuels and technologies in the Tampa Bay region. CUTR is a partner along with the Environmental Protection Commission of Hillsborough County and TECO Energy. This group continues to identify opportunities to implement greener technologies, improving the air quality in the Tampa Bay area.

A great deal of the research and training completed provided by NCTR results in more efficient and safer public transportation. This results in the provision of more and better transit service, providing alternative mobility for people open to non-SOV transportation. NCTR's TDM program is dedicated to finding ways to help reduce Single Occupant Vehicle use, and/or to redistribute or reduce the amount of times it is used. These efforts result in less congestion on our highways resulting in safer conditions.

Changes/Problems

Changes in approach and reasons for change

Nothing to report

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

A number of research projects have been granted no-cost time extensions, but all projects are scheduled to be completed by the end date of the grant, September 30, 2016.

Changes that have a significant impact on expenditures

Nothing to report.

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

Nothing to report.

Change of primary performance site location from the originally proposed

Nothing to report.

Additional information regarding Products and Impacts

Outputs

Nothing more to report

Outcomes

Nothing more to report.

Impacts

Nothing more to report

Special Reporting Requirements

Nothing to report.

