Program Progress Performance Report for University Transportation Center at
Portland State University

Submitted to:	U.S. Department of Transportation Research and Innovative Technology Administration (RITA)
Grant Number:	DTRT12-G-UTC15
Project Title:	University Transportation Center National Institute for Transportation and Communities (NITC) *Consortium members: Portland State University (PSU), University of Oregon (UO), Oregon Institute of Technology (OIT), University of Utah (UU)*
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Submitting Official:	same as above
Submission Date:	July 31, 2016
DUNS:	05-222-6800
Recipient Organization:	Portland State University PO Box 751 Portland, OR 97207-0751
Grant Period:	January 2, 2012 – January 31, 2017
Reporting Period End Date:	June 30, 2016
Report Term:	Semi-annual

Signature:

1. ACCOMPLISHMENTS: What was done? What was learned?

What are the major goals of the program?

The major goals for NITC as described in our application fall into five categories:

Research
- **Competitive, peer-review project selection process.** NITC projects are selected through an open RFP process. All faculty at the member campuses, as well as approved Faculty Associates, are eligible to submit research, education and technology transfer project proposals responsive to our theme. The proposal evaluation process emphasizes external peer review and draw on the expertise of practitioners and researchers nationally.

- **Transportation for Livable Communities Pooled-fund research.** To help maximize implementation of U.S. DOT's commitment to livable communities, NITC's Transportation for Livable Communities Pooled-Fund Research program will provide regional and local agencies, such as metropolitan planning organizations and municipalities, more opportunity to be invested in research

- **Transportation Data for Livable Communities.** This initiative aims to create a model for data collection, management and dissemination that will foster the wider, national use of data resources collected on a local level.

- **Engaging Citizen Leaders.** This initiative will expand NITC's scope of work to reach a wide range of current and future transportation leaders.

Leadership
- **Shape national & international conversations on transportation research and education**. NITC faculty are well regarded nationally and internationally as leaders in their fields. They will continue to demonstrate this leadership through publishing in the top journals and presenting their work at conferences. NITC will take the concept of leadership far beyond academic circles, as evidenced by the wide dissemination of research results in professional, technical and general publications and other media.

- **Serve on national committees and panels.** NITC faculty help address national transportation problems through volunteer leadership on TRB committees and in other positions, including journal editorial boards, national and international conference organizing committees, NSF panels, and other advisory boards. To continue and reinforce this practice, NITC will mentor our new, junior faculty to apply for committee and panel membership and recognize the activities of all faculty members.

- **Respond to needs of practitioners and policymakers.** NITC researchers have a long history of conducting research that is useful in solving the problems practitioners and decision-makers face every day. Our theme and project selection process will ensure that our research continues to address our nation's transportation problems. We will work with

key staff at the DOT administrations (FHWA, FTA, etc.), both in Washington, D.C., and within the region, whose work relates to our theme to determine the most effective way for our researchers to learn from and inform agency activities.

Education and Workforce
- **Offer degrees and courses in multiple disciplines.** NITC will continue to offer a rich array of degrees that serve the transportation profession.

- **Provide experiential learning.** A key component of our education strategy is experiential learning, which will help attract and retain students. Our campuses will continue to provide these opportunities, and NITC will seek ways to expand them.

- **Attract and support undergraduate students.** NITC will build upon existing and effective mechanisms to expose K-12 students to transportation, attract and retain new undergraduate students to our degree programs, and involve undergraduates in our research.

- **Attract and support graduate students.** NITC will support graduate students directly through the following: Research assistantships; Dissertation fellowships; Funds for scholarships at each campus to recruit new and retain existing high-performing students; and Funds for transportation student group activities.

- **Sponsor a student conference.** NITC will host a national student conference focusing on our theme.

- **Educate professionals.** NITC will maintain a vibrant program of seminars, workshops, professional courses and other training opportunities that provide transportation practitioners with the latest tools and techniques.

Technology Transfer
- **Move research into practice**. Our competitive project selection process will help ensure that we select projects that have direct implications for practitioners in the short- or long-term. In addition, we will use practitioners to help inform projects after selection and review final products. Additional efforts will include short workshops to share research results, one-page research briefs, presenting work at conferences aimed at practitioners, holding one-day conferences, funding technology transfer projects, and encouraging the commercial application of research results when possible.

- **Inform researchers.** The quality of scientific inquiry depends upon researchers sharing their findings with other researchers through the peer-review publication processes. We will accomplish this through two primary activities. First, NITC's faculty will continue to publish extensively in peer-reviewed journals. Second, TREC will support our faculty in presenting their work at nationally recognized academic conferences by including travel funds for each project.

- **Use innovative technologies to communicate research results.** NITC will embark on an ambitious program of sharing information through traditional and new media.

Collaboration
- **Collaborating within our consortium.** NITC's governance structure is cooperative and leadership is distributed. The Executive Committee includes one faculty member from each campus. The Executive Committee provides overall direction for the Center, makes project funding decisions, and selects Center award recipients, including student of the year. They will meet in person at least twice a year, rotating the location between campuses, and hold regular conference calls.

- **External collaboration.** In addition to the partnerships that occur through individual projects and the pooled-fund program, NITC will foster collaboration with a range of "end-users" of our work through an External Advisory Board.

What was accomplished under these goals?

Research
- **Competitive, peer-review project selection process.**

  The first round of NITC projects were awarded in the fall of 2012. Nineteen projects were selected through the competitive, peer-review process. Currently, the 19 projects are on average, 99% complete. Seventeen final reports have been reviewed and published. One draft report is being edited.

  The second round of NITC projects were selected in the fall of 2013 and awarded in the winter of 2014. Ten projects were selected through a competitive, peer review process. The projects are on average, 88% complete. Seven final reports have been reviewed and published. One draft report is in the peer review process.

  We awarded a round of NITC small starts funds in the fall of 2013. These project awards are for preliminary research and to help PIs further develop their research idea so they can be more competitive in future NITC RFPs. These projects selected are complete. The final reports have been reviewed and published.

  The third round of NITC funds were selected in the June of 2014. Eight projects were selected. The projects are on average, 96% complete. One draft report is in the editing and peer review process.

- **Transportation for Livable Communities Pooled-fund research.**

  Our center funded one pooled-fund research project, Online Non-motorized Traffic Count Archive. Funding partners on the project include the Oregon Department of Transportation, FHWA, City of Boulder, Lane Council of Governments, Metro, City of Eugene, City of Austin, City of Bend and the Bend MPO.

The goal of the project is to create a national non-motorized count archive where agencies can add data, counts are checked for quality, and data can be exported and visualized through mapping and basic graphic functions.

The anticipated impacts include jurisdictions more easily able to share and access data, data can be exported in a standard format and thus easier to manipulate and data can be incorporated into other national databases.

Currently the project is complete. The final report is undergoing edits and peer review. A beta version of the archive was developed. The archive contains over 4.8 million non-motorized count records from five states and 11 counties. Practitioners can upload data to the live Bike-Ped Portal Site: http://bp.its.pdx.edu/

Thus far the project has resulted in one paper titled Creating a National Non-Motorized Traffic Count Archive: Process and Progress that was published in an issue of Transportation Research Record (TRR). Three presentations have been given on the project to approximately 110 people. Further, an overview of the project was given to 325 attendees, many of whom were practitioners, during a NITC supported webinar on how to measure pedestrians.

The project involves 7 area high school students (from diverse backgrounds) in alpha testing software, two of whom also were also engaged in software development tasks using Python. Phase II of the project is just beginning. One grand and three undergrad students are involved in the next phase of the project.

- **Transportation Data for Livable Communities.**

  Nineteen of the 45 projects funded create a model for data collection, management or dissemination. The results of this research will foster the wider, national use of data resources collected at the local level. The Online Non-motorized Traffic Count Archive discussed above has been very successful in this effort.

- **Engaging Citizen Leaders.**

  The project, Transportation Leadership Education, developed a case study and national model of the Portland Bureau of Transportation's Traffic and Transportation Course. Over 1,300 citizens have taken this 10-week course to learn how to engage in transportation issues in their community. A case study of the Portland Traffic and Transportation course has been completed. The case study found that course participants received a good understanding of factors that influence the transportation landscape, and of the fiscal and policy constraints and available tools for transportation agencies. Participants were also much more involved in local transportation activities after taking the course. Of 102 participants surveyed, 68 students proposed a specific solution to an observed transportation problem, 28 of which were implemented, and 22 were attributable at least in part to the student's actions. The case study and curriculum materials will be distributed and shared with various constituencies. Currently, funding is being sought to launch demonstration courses in 2-3 additional U.S. cities.

The research informed a course curriculum and implementation handbook for a "Citizen Transportation Academy" which seeks to replicate the Portland Traffic and Transportation course model in other U.S. cities. Congressman Blumenauer promotes the course at various speaking engagements across the country. Interviews and surveys have confirmed that the Portland Traffic and Transportation Course presents a unique approach to educating interested citizens about transportation.

The project, Disseminating the Sustainable City Year Program (SCYP) Educational, expands upon the success of the SCYP by supporting universities across the country to implement the program. The SCYP educates local politicians, citizens and agency staff on the components and benefits of livable communities. The fourth annual Sustainable City Year Program Conference was held in April 2015 in collaboration with the Resilient Cities Program at the University of Minnesota. This conference was attended by more than sixty individuals representing 24 universities and cities from around the country. A series of professionally produced podcasts were created that assist with the development of new programs, the development of transportation based SCYP projects.

The work from this grant has assisted in establishing numerous new SCYP programs throughout the country. This includes programs in various stages of development at the University of Colorado, Denver, Arizona State University, California State University, Monterey Bay, University of Southern Florida, California State University, East Bay, California State Universi1y, Sonoma, and University of California, Chico. This represents the engagement of hundreds of students, faculty, city staff, community members and elected officials.

- Our programmatic scoring criteria gave higher points to projects that actively engage external partners and addressed equity and diversity issues. A number of our projects focus on equity including: Is HUD Affordable Housing Really Affordable?; Understanding the Transit-Dependent Population; Assessing Transit Fare Equity in Utah Using a Geographic Information System; and Latino Immigrant Communities and Equity in Transit Oriented Development.

Leadership
- **Shape national & international conversations on transportation research and education.**

  - NITC staff are helping to shape a TRB training initiative Task Force ABG05T, Ahead of the Curve: Mastering the Management of Transportation Research. The mission of the Task Force is to develop a TRB training program that enhances the knowledge, skills, and abilities of those who manage transportation research programs and innovation activities.
  - Twenty-two NITC faculty and staff serve on editorial, policy and other advisory boards.
  - NITC staff are active in the AASHTO-RAC liaison group.
  - NITC faculty are part of the team (led by ICF International) developing FHWA's Strategic Agenda for Pedestrian and Bicycle Transportation.

- NITC's Director, Jennifer Dill, was elected to the Executive Committee of the Council of University Transportation Centers (CUTC).
- NITC's Director, Jennifer Dill, is serving on a special TRB policy committee on Innovative Mobility Services. The committee was established at the request of the TRB Executive Committee.
- NITC Associate Director Hau Hagedorn is the co-chair of the TRB Conduct of Research Committee. She also serves on the NCHRP 20-44 panel to improve methods of delivering research findings and promoting their use.
- NITC continues to shape bicycle and pedestrian curriculum by training professors from the country on integrating these topics into university planning and engineering courses.

- **Serve on national committees and panels.**
  Faculty, staff and students at the NITC campuses currently serve on 36 TRB committees/task forces and 8 NCHRP/SHRP2/NCFRP/TRB panels.

- **Respond to needs of practitioners and policymakers.**

  NITC was sponsored a bicycle and pedestrian curriculum development workshop through the Initiative for Bicycle and Pedestrian Innovation (IBPI). Eleven faculty from across the country and Canada attended the workshop.

  NITC hosted 5 webinars on funded projects. The webinars were attended by practitioners and policymakers.

  - Development of a Pedestrian Demand Estimation Tool, 68 attendees
  - Strategies and Perspectives on Balancing Freight and Livability, 55 attendees
  - Evaluation of an Electric Bike Pilot Project in Portland, Oregon, 49 attendees
  - Investigations in Transportation: Partnering Industry Professionals and Elementary Teachers in a STEM Unit of Study, 24 attendees
  - States on the Hot Seat: State Efforts to Reduce Greenhouse Gas Emissions from Transportation, 31 attendees

  Portland State Professor Chris Monsere was appointed to the City of Portland Vision Zero Task Force. The Task Force is a multi-disciplinary and multi-jurisdictional group of members charged with developing a community-wide action plan to drastically reduce injuries and fatalities on the roadway. Monsere serves in an advisory capacity and investigates solutions as a NITC researcher. His expertise in the area of multimodal safety allow him to offer operational and logistical insights.

Education and Workforce
- **Offer degrees and courses in multiple disciplines.**
  The four NITC campuses continue to offer 16 degrees in transportation and closely related fields.

- **Provide experiential learning.**
  Our campuses continue to incorporate access to community partners and employment opportunities in a number of ways. Over 200 students participated in one of the four campus student groups and 100 students affiliated with the NITC program attended conferences. Twenty-nine students held transportation-related internships.

  The student groups are also active in hosting events and attending conferences. The University of Utah student group, Point B, hosted and/or participated in the following events during the reporting period:

  - Attended the Transportation Research Board in Washington, DC
  - Hosted a lecture by Tim Sullivan author of Ways to the West
  - Ride to Sugar House on the S-Line streetcar with a tour of Hidden Hollow and Sugar House
  - Attended the Council of Educators in Landscape Architecture in Logan, Utah
  - Helped sponsor the Utah Bike Summit featuring Mikael Colville-Andersen
  - Attended the American Planning Association conference in Phoenix
  - Attended the National Association of Railroad Passengers' spring council meeting in Washington, DC
  - Bikeshare ride and tour of downtown
  - Toured the Utah Transit Authority's Jordan River Rail Service Center
  - Attended the annual WTS Northern Utah Chapter Gala
  - Helped host Summer By Rail visit to Salt Lake City
  - Attended the Congress for the New Urbanism in Detroit

  The student group continues their partnership with the local WTS chapter and participates in the TransportationYOU program with middle school girls in the Sale Lake City area.

  The University of Oregon student group, LiveMove, hosted and/or participated in the following events during the reporting period:

  - Speaker: Gerik Kransky, Bicycle Transportation Alliance
  - Lunch & Learn with Denny Zane, Move LA
  - LiveMove Happy Hour with Maddie Phillips, city planner for the City of Creswell
  - Speaker: Peter Norton, Associate Professor of History, University of Virginia
  - Speaker: Lori Kessler Gratl, Board of Directors of HUB (Vancouver, BC)
  - Speaker: Madi Carlsen, Board of Directors, Familybike Seattle
    Continued work on Bicycle Friendly Business District, Eugene, OR

  The Oregon Institute of Technology student group hosted and/or participated in the following events during the reporting period:

  Seven students attended the TRB Annual Meeting in Washington DC (Jan.)

  - Four students attended the ITE Western District Student Leadership Conference in Pomona, CA

- The ITE student chapter participated in several events during the National Engineers Week co-hosted by OIT's Engineering Honor Society on campus this year. Below is a list that briefly describes those events.
- Engineering Showcase: The engineering clubs and student chapters on campus hold a showcase event to promote awareness of the different opportunities for students to become involved in the various clubs and activities at OIT.   Each club/chapter sets up a display highlighting various aspects of club activities, projects, and events.
- The ITE student chapter hosted a Mario-Kart style balloon battle using children's tricycles. Referees, hard hats, safety glasses, and a closed track were used to assure the safety of all participants. The idea was borrowed from a similar event hosted by the Cal Poly San Louis Obispo ITE student chapter. This event was a fun and exciting game for all that participated. This year brought a variety of participants including students of different ages, and even young children
- Twenty two Oregon Tech civil engineering students and two faculty gathered as Jared Jones (OIT Alum '14) discussed details of his graduate research at UNLV on full-depth precast deck panels to promote accelerated bridge construction.
- Hosted a visiting scholar presentation on connected and autonomous vehicles by Dr. Robert Bertini, PE (Feb)
- Two students attended the WTS Annual Meeting in Austin, TX
- Hosted visiting scholar, Joe Chang, PE Kiewit Infrastructure Engineers, on large-scale transportation projects, design-build construction contracts, careers in transportation
- Hosted a visiting scholar presentation on ODOT's new speed limit program for rural 2-lane highways in eastern and southern Oregon by Eric Leaming, PE, ODOT and OIT Alum
- Attended the Klamath Falls Complete Streets Conference co-sponsored by ITE and Blue Zones Project.
- Attended the - Klamath Falls Bike/Walk to work day co-sponsored by ITE, Blue Zones Project and Sky Lakes Medical Center. This event encouraged community residents to commute using modes other than personal vehicle.

The Portland State University student, STEP, group hosted and/or participated in the following events during the reporting period:

- 95th Transportation Research Board Annual Meeting. Fifteen PSU students attended.
- Candy City Event. Students from Vancouver, BC, also attended. PSU and Vancouver shared ideas and built their candy cities together. In the end, the combined city included parks, bridges, high-rises, hospitals, and a host of other creative inventions.
- Hosted a conversation with Congressman Earl Blumenauer.

At Portland State University, the College of Urban and Public Affairs continues to offer the Pedestrian and Bicycle Planning Lab. The source provides the opportunity to participate in a workshop-based planning process and is taught by top professionals in the field of bicycle and pedestrian planning and design.

- **Attract and support undergraduate and graduate students.**

From Fall 2012 to Spring 2015, NITC awarded 125 scholarships to support student-led research projects. Fifty-two of the scholarships went to Portland State University, 29 to University of Oregon, 28 to University of Utah and 16 to the Oregon Institute of Technology. Each student who receives a NITC scholarship develops a research product (such as a thesis or conference paper) that fits within the NITC themes.

During the reporting period we solicited proposals for Dissertation Fellowships. We awarded a fellowship to the following PhD candidate:

- Kristi Currans (PSU Civil & Environmental Engineering) "Data and Methodological Issues in Assessing Multimodal Transportation Impacts for Urban Development"
- Patrick Singleton (PSU Civil & Environmental Engineering) "Exploring the positive utility of travel and mode choice"

- **Sponsor a student conference.**
Representatives from NITC sponsored student groups coordinated with the Region X UTC regarding their student conference in October 2015. Five students from the NITC partner campuses participated in the 3-minute thesis competition at the Transportation and Summit in September 2015. We launched a Student Video Contest in January of 2016. We received 6 entries from the University of Utah, Portland State University, University of Oregon, Oregon Institute of Technology, Whitman College, and Cornell University.

- **Educate professionals.**
  - During the reporting period, NITC supported 29 events offering 19 continuing education credits totaling 1875 attendees. Specifics of these events are detailed below.
  - NITC hosted a 2 day workshop for university professors to learn about integrating bicycle and pedestrian concepts into their curriculum.

  - NITC hosted 5 webinars on funded research. The webinars were attended by practitioners and policymakers.

    o Development of a Pedestrian Demand Estimation Tool, 68 attendees
    o Strategies and Perspectives on Balancing Freight and Livability, 55 attendees
    o Evaluation of an Electric Bike Pilot Project in Portland, Oregon, 49 attendees
    o Investigations in Transportation: Partnering Industry Professionals and Elementary Teachers in a STEM Unit of Study, 24 attendees
    o States on the Hot Seat: State Efforts to Reduce Greenhouse Gas Emissions from Transportation, 31 attendees
  - Each Friday during the quarter, Portland State University holds a Friday Transportation Seminar that is open to the public and live webcast. During the reporting period, the seminar had 827 non-student participants (primarily professionals) at either the in-person event or live webcast.

Technology Transfer

Move research into practice.

NITC launched a Technology Transfer Pool program in the Spring 2015 which allows the opportunity to support implementation or translation of research results. Grants are limited to disseminating results stemming from previously funded and completed research funded by OTREC or NITC. The purpose of these awards is to turn research into products that can be used by practitioners and/or researchers to further advance implementation. The following projects received funding:

- o Adding Value to GPS Travel Data with New Open-Source Processing Software for Everyone, Jennifer Dill (Portland State University)
- o Tools for Assisting Low Income Households With Finding Location-Efficient Housing, Andree Tremoulet (Portland State University)
- o A Practitioner's Handbook and Toolbox for Conducting a Commuter Rail Case Study, Joanna Ganning (University of Utah)

The NITC round 1 project, Making Streets into Complete Streets: An Evidence Based Design Manual is a technology transfer project. The design manual, called Rethinking Streets: An Evidence-Based Guide to 25 Complete Street Transformations, has been completed and draws upon research from previous OTREC projects, as well as other research. The design manual is available on the NITC website and http://rethinkingstreets.com/. Over 5,000 copies of the pdf have been downloaded. The PI on the project, Marc Schlossberg, is currently on sabbatical in Israel. He co-organized a workshop in Tel Aviv for January of 2016. The promotion of the conference and the book resulted in downloads of the report from 32 international cities.

- **Inform researchers.**
  NITC encourages PIs to present on their research at conferences all over the world. Over the course of the grant, researchers reported 120 presentations on NITC projects with 8,056 people in attendance. In addition, NITC sponsored research has resulted in 31 peer-reviewed articles and 143 citations.
- **Use innovative technologies to communicate research results.**
  We launched a new NITC website in the fall of 2014. The site contains an updated look, functionality and improved interface for users such as PIs. Currently, we are adding the ability to track student to our project and proposal management system (PPMS) in order to better track students after the graduate from one of the partner universities.

The NITC program has begun producing video project briefs to complement our existing communications products. Video briefs communicate practical and policy implications of funded research projects in a concise, accessible format.

We use our social media resources such as Twitter and Facebook to bring awareness to the release of a report or highlighted produce. We continue to update our database management system to streamline the process for proposal submission, reviews, awards, progress reports and final report submission.

Collaboration
- **Collaborating within our consortium.**
  The NITC Executive Committee met via conference call and in-person during the reporting period. The Executive Committee met in-person in June.
- **External collaboration.**
  The pooled-fund project referenced in the *Research* section demonstrate strong partnerships with a number of agencies in Oregon, Austin, Texas and Boulder, Colorado.

The following people and organizations were members of the NITC Advisory Board during this reporting period:
- Alan Lehto, Director of Planning & Policy, TriMet
- Brian Saelens, Professor of Pediatrics and Psychiatry & Behavioral Sciences, Seattle Children's Hospital
- Cameron Kergaye, Director of Research, Utah DOT
- Charles Pattison, Policy Director, 1000 Friends of Florida
- Craig Honeyman, Legislative Director, League of Oregon Cities
- Gabe Rousseau, Safety Operations Team Leader, FHWA
- James Christian, Division Administrator, FHWA-Utah Division
- Jon Peterson, Research Manager, Washington Department of Transportation
- Kevin Desmond, General Manager, King County Metro Transit
- Matthew Hardy, Program Director, Policy and Planning, AASHTO
- Michael Baltes, ITS Program Manager, Office of Mobility Innovation, Federal Transit Administration
- Michael Bufalino, Research Section Manager, Oregon Department of Transportation
- Robin Hutcheson, Director, Transportation Division, Salt Lake City
- Susan Handy, Director, National Center for Sustainable Transportation
- Susan Herbel, Principal, Cambridge Systematics
- Ted Knowlton, Sustainability Director, Wasatch Front MPO
- Ted Trepanier, Director of Product Management, Traffic, Inrix
- Tom Schwetz, Planning & Development Manager, Lane Transit District
- Tyler Deke, Executive Director, Bend MPO
- Wayne Kittelson, Founding Principal, Kittelson & Associates, Inc.
- Wendy Cawley, Traffic Safety Engineer, Portland Bureau of Transportation
- Yinhai Wang, Director, PacTrans

The NITC Advisory Board met for a day-long meeting at the Portland State University campus on September 16th, 2015 in conjunction with the Transportation and Communities Summit. The outcomes of the meeting included strategic direction for the general research RFP for the NITC National Grant as well as campus and research updates.

- How have the results been disseminated?

The NITC communications director works with each of the PIs to create a plan on reporting dissemination. Thus far 36 final reports have been published. These reports are available for download on the project page on the NITC site. We regularly use e-newsletters and social media (Twitter, Facebook) to promote completed research. As referenced in the education

section, NITC hosted 5 webinars on recently published research during the reporting period. 225 people attended the webinars.

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

Expected highlights for the next 6 month reporting period include:

- Publish and promote all NITC final reports through social media, webinars.
- Host 2016 Transportation and Communities Summit in September.
- Host at least four webinars on NITC research.
- Distribute remaining Technology Transfer Pool funds.

2. PRODUCTS: What has the program produced?

Publications, conference papers, and presentations

Researchers from the NITC projects reported 120 presentations about those projects at conferences and events. NITC researchers also reported that 8,056 people were in attendance for these presentations. In addition, NITC sponsored research has resulted in 31 peer-reviewed articles. NITC faculty and students are always well represented at the 2016 TRB annual meeting, with 125 faculty, staff, and students attending, delivering 108 papers and invited presentations.

Forty-five projects have been funded to date. As of the end of this reporting period, 32 final reports have been published and 5 draft reports are currently undergoing review and editing. The final reports are listed below:

- Making Streets into Complete Streets: An Evidence based Design Manual, Schlossberg, UO
- Assessing Transit Fare Equity in Utah Using a Geographic Information System, Farber, UU
- Transportation Leadership Education, McNeil, PSU
- Understanding Market Segments for Current and Future Residential Location and Travel Choices, Clifton, PSU
- Latino Immigrant Communities and Equity in Transit Oriented Development (TOD), Sandoval, UO
- DO TODs Make A Difference?, Nelson, UU
- Promoting Active School Travel by Making it "Cool": a quasi-experimental study using Boltage – Phase II, Yang, UO
- Combined Traction and Energy Recovery Motor for EVs, Long, OIT
- Sustainable Transportation Class for OLIS, Elmer, UO
- Evaluation of Bicyclists' Exposure to Traffic-Related Air Pollution along Distinct Facility Types, Figliozzi, PSU
- Modeling and Analyzing the Impact of Advanced Technologies on Livability and Multimodal Transportation Performance Measures in Arterial Corridors, Figliozzi, PSU
- Continuous Data Integration for Land Use Transportation Planning and Modeling, Wang, PSU

- Lessons from the Green Lane: A Comprehensive Evaluation of Protected Cycling Facilities, Monsere, PSU
- Mixed-Modal Household Vehicle Fleet Transactions, Chen, PSU
- Effect of Light-Rail Transit on Traffic in a Travel Corridor, Ewing, UU
- Strategic Design and Policy for Improving the Livability and Multi-modal Use of U.S. Urban Arterials and Commercial Highways, Larice, UU
- National Study of BRT Development Outcomes, Nelson, UU
- Crowdsourcing the Collection of Transportation Behavior Data, Bone, UO
- Connecting people to places- spatiotemporal analysis of transit supply using travel-time cubes, Farber, UU
- Development of a Pedestrian Demand Estimation Tool, Clifton, PSU
- Investigations in Transportation, Becker, PSU
- Agent-Based Model Simulating Pedestrian Behavioral Response to Environmental Structural Changes, Lobben, UO
- Is HUD Affordable Housing Really Affordable?, Ewing, UU
- Washington State Pedestrian and Bicycle Miles Traveled Project, Nordback, PSU
- Exploring Racial Bias in Drivers' Behavior at Pedestrian Crossings, Kahn, PSU
- Inclusive Planning to Evaluate Improved Non-Emergency Medical Transportation Services for Patients with End Stage Renal Disease, Liu, PSU
- Characteristics of Li-air Batteries with Optimized Electrolytes as an Option to Increase Electrical Vehicle Range, Garibay, OIT
- Mobility versus Accessibility: Applications for Shrinking Cities, Ganning, UU
- Methods to Increase Fuel Efficiency in Post-Production Automobiles, Corsair, OIT
- Street Portals: Urban User Interface "Test Bed" Prototype for Bike Shares, Germany, UO
- Disseminating the Sustainable City Year Program (SCYP) Educational Model to UTC Campuses, Larco, UO
- The Effects of Commuter Rail on Population Deconcentration and Commuting: A Salt Lake City Case Study, Ganning, UU

Website(s) or other Internet site(s)

The NITC website is located here: http://nitc.trec.pdx.edu/.

Technologies or techniques

Kelly Clifton's project, Development of a Pedestrian Demand Estimation Tool, developed statistical models of pedestrian choice behavior, predicting the distribution of walk trips generated to destinations at a small spatial scale.

Wu-Chi Feng's project, Application of Interactive Video Sensing and Management for Pedestrian and Bicycle Safety Studies, designed and implemented a user-friendly interface for processing video to identify pedestrian crossing and vehicle conflicts.

Inventions, patent applications, and/or licenses

Nothing to report for this period.

Other products

Nothing to report for this period.

3. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS: Who has been involved?

What organizations have been involved as partners?

The members of the consortium include Portland State University, University of Oregon, Oregon Institute of Technology, and University of Utah. Each NITC funded project is required to have 100% match. The organizations providing match appear in Table 1

Table 1: Partner Organizations

Match Partner	Type	Financial/Cash	In-Kind
1000 Friends of Oregon	Non-profit/Foundation		X
Bend, OR MPO	Regional government	X	
Bike Belong	Non-profit/Foundation	X	
City of Austin, TX	Local government	X	
City of Bend, OR	Local government	X	
City of Boulder, CO	Local government	X	
City of Flagstaff, AZ	Local government		X
City of Meza, AZ	Local government		X
City of Portland, OR	Local government		X
City of Salem, OR	Local government	X	
Conscious Commuter	Private industry		X
Drive Oregon	Non-profit/Foundation	X	
ESRI, Inc	Private industry		X
Federal Highway Administration	Federal agency	X	
Intel	Private industry		X
KersTech Vehicle Systems	Private industry		X
King County Metro	Regional government	X	
Lane County MPO	Regional government	X	
Lane Transit District	Transit agency	X	
Metro	Regional government	X	X
Mountainlands Association of Governments	Regional government		X
National Association of Realtors	Non-profit/Foundation	X	
Northern Arizona University	University		X
Oregon Department of Land Use and Conservation	State government		X

Match Partner	Type	Financial/Cash	In-Kind
Oregon Department of Transportation	State DOT	X	X
Oregon Environmental Council	Non-profit/Foundation		X
Oregon Institute of Technology	University		X
Oregon Leadership in Sustainability (UO)	University	X	
Portland State University	University	X	X
Provo City	Local government	X	
Regional Transportation Commission of Southern Nevada	Regional government	X	
Regional Transportation Commission of Washoe County	Regional government	X	
Rensselaer Polytechnic Institute	University		X
Robert Wood Johnson Foundation	Non-profit/Foundation		X
Rowell Brokaw Architects	Private industry	X	X
Salt Lake County	Local government	X	
SFMTA	Municipal Transportation Agency	Local government		X
Sustainable Cities Initiative (UO)	University	X	
Toole Design	Private industry		X
Transportation for America	Non-profit/Foundation	X	
TriMet	Transit agency	X	X
University of Minnesota	University	X	
University of North Carolina, Chapel Hill	University		X
University of Oregon (UO)	University	X	X
University of Utah	University	X	X
Utah Transit Authority	Transit agency	X	X
Wasatch Front Regional Council	Regional government	X	X
Washington Department of Transportation	State DOT	X	
Washington Metropolitan Area Transit Authority	Transit agency	X	

Have other collaborators or contacts been involved?

During the Pooled-Fund process, NITC staff communicated and collaborated with numerous agency representatives across the country regarding data management issues and needs. These agency representatives include the Minnesota and Colorado departments of Transportation, Boulder County, and City of Austin.

The role of the NITC Advisory Board is described and the members are listed in the *External Collaboration* section above.

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

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

We send a survey every three weeks to those that download the final reports from the NITC website. We've received 394 responses regarding the final reports. Below are selected results from the survey:

Please indicate which best describes you?

Student	15%
Faculty/Researcher	20%
Practitioner	47%
Other	17%
Total	100%

What was your purpose for downloading the report? (Choose all that apply)

Help make decisions about practice	41%
Research project	24%
Other	18%
Inform public input process about a project	15%
Research for a class project, paper, thesis, dissertation, etc.	16%
Refer to a colleague	12%
Research proposal	6%
Thesis/ dissertation proposal	4%
I was involved in this project	4%

How useful was the report in meeting these purposes?

Very useful for my intended purpose	38%
Somewhat useful for my intended purpose	38%
Not useful for my intended purpose, but may be for other parts of my work	4%
Not what I was looking for	1%
I don't know yet	19%
Not very useful	1%
Total	100%

NITC encourages PIs to present on their research at conferences all over the world. Over the course of the grant, researchers reported 120 presentations on NITC projects with 8,056 people in attendance. In addition, NITC sponsored research has resulted in 31 peer-reviewed articles.

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

By supporting students through the funded research projects, scholars program, and the student groups, we are expanding the number of students interested in transportation as a career and exposing them to the interesting and rewarding aspects of how transportation can help create livable communities. Eighty-seven former students affiliated with NITC either as a student research assistant or as a member of a campus transportation student group have transportation related jobs after graduation.

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

A Quanser Shake Table I-40 and 12 iPads were purchased for the Oregon Institute of Technology to support specific coursework development and expand research capacity, promoting (a) innovative learning activities that expose students to cutting-edge methods of bridge structural health and behavior monitoring and (b) research by our growing group of graduate students using developing technologies.

What is the impact on technology transfer?

We have implemented a system on our website to track who downloads our reports and survey those users regarding the usefulness and impacts of the research on their work. Of the 186 practitioners surveyed, 70% sought research to inform their decision making.

NITC hosted a total of 5 webinars that highlight NITC sponsored research over the reporting period. 225 people attended the webinars. One AICP credit was offered per webinar.

What is the impact on society beyond science and technology?

Nothing to Report for this period.

5. CHANGES/PROBLEMS

Changes in approach and reasons for change

Nothing to Report for this period.

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

Nothing to Report for this period.

Changes that have a significant impact on expenditures

Nothing to Report for this period.

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

Nothing to Report for this period.

Change of primary performance site location from that originally proposed

Nothing to Report for this period.

Additional information regarding Products and Impacts

Nothing to Report for this period.