



Program Progress Performance Report for University Transportation Centers

This is a semi-annual report of program progress and performance for the Collaborative Sciences Center for Road Safety, a national UTC focused on safety based at the University of North Carolina at Chapel Hill.

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1. Accomplishments

Major Goals and Objectives of CSCRS

Creating a comprehensive and sustainable road safety systems model requires a paradigm shift in the way we think about human vulnerabilities and human behavior in the transportation system. The primary goal of the [Collaborative Sciences Center for Road Safety](#) (CSCRS) is to accelerate progress in reducing transport injuries and fatalities by utilizing a systems approach to bring perspectives from planning, engineering, public health, data science and robotics to the road safety field. CSCRS will accomplish this goal through research, education, workforce development, professional development and leadership efforts.

The objectives in each of these areas include:

- **Research:** Conduct fundamental and applied research that will result in tools and resources that increase adoption of programs, policies and practices that are proven to reduce crashes and prevent injuries.
- **Education and Workforce Development:** Train a multi-disciplinary workforce that develops and implements conceptually sound, scientifically grounded programs and policies to improve travel safety.
- **Professional Development*:** Develop and distribute resources and tools through multiple communication mechanisms that engage a diverse audience to effectively and fully transfer the research knowledge into practical interventions that improve the transportation safety system. (**Note: CSCRS uses the term professional development when referring to activities traditionally referred to in the transportation world as technology transfer. Additional detail is provided in Section 5. Changes/Problems.*)
- **Leadership:** Lead and foster a transformational safe systems approach to road safety. Establish CSCRS team members as national experts on the safe systems approach to road safety.

CSCRS will meet these objectives by focusing on the following four areas:

1. **Risk Assessment:** Dramatic improvements in road safety require better understanding of road user perceptions and reactions to risk, particularly as personal and vehicle technology evolves.
2. **Integrated Systems Approach:** Continued reduction of injuries and fatalities requires multi-disciplinary strategies utilizing a model that acknowledges the complexity of relationships between individual, technology, built environment, institutional and policy levels.
3. **Safety Data, Technology, and Methods:** Comprehensive research requires insight from big data science, which includes sophisticated management and analytical approaches to link and analyze medical, EMS, and police data, as well as technology data from vehicles and infrastructure systems.
4. **Transportation Workforce Culture:** Further decreases in injuries and fatalities require broadening the set of professionals who understand the importance of road safety and identifying effective training strategies and tools for all practitioners.

A key factor in the success of CSCRS's efforts will be the ability to anticipate and respond to future challenges and opportunities as technology becomes more fully integrated into the transportation system.

The CSCRS will advance the body of knowledge in transportation by engaging both traditional and non-traditional partners and improving how safety issues are addressed to provide meaningful impact and increased safety across U.S. roadways.

Accomplishments Under These Goals

CSCRS worked towards advancing these goals through the following activities in the PPR 1 reporting period (11/30/16 - 5/30/2017):

Administration and Management

- Planned a CSCRS event at the 2017 TRB annual meeting to bring together CSCRS consortium staff.
- Launched a temporary CSCRS webpage on January 19, 2017. Further developed content and functionality to enhance the website and launched the comprehensive CSCRS website on February 28, 2017, www.roadsafety.unc.edu.
- Developed the master CSCRS Data Management Plan and submitted it to USDOT on February 27, 2017. USDOT approved the plan on May 19, 2017.
- Established and held regular consortium member meetings the second Wednesday of every month to discuss and coordinate all UTC-related business.
- Recruited members for a diverse, high-level CSCRS Advisory Board, www.roadsafety.unc.edu/about/advisory.
- Created templates and initial processes for consortium members to propose and conduct CSCRS activities including – research project proposals, work plans, individual project data management plans and education and professional development activities.
- Launched Facebook and Twitter profiles to increase visibility for the Center's work and connect with other professionals and organizations in the transportation safety field. Made regular posts to both social media feeds, highlighting CSCRS news (e.g., Quick Start projects), dispatches from industry events, consortium team members' accomplishments and more.
- Held in-person kickoff meeting with USDOT and consortium members (some remotely) on May 17, 2017.
- Began planning for August 2017 in-person Executive Committee Meeting to be held at UNC campus in Chapel Hill, NC.
- Began planning for August 2017 Advisory Board Meeting to be held at UNC campus in Chapel Hill, NC.
- Held additional one-on-one calls with consortium team as needed to discuss various activities.
- Coordinated with consortium members' communications teams to share news and content and co-promote updates on social media.

Research

- The initial CSCRS proposal contained a number of proposed research activities that could begin within Year 1 of the award. Each of these Quick Start projects fell within one of the research focus areas (described on page 2) and was developed to support a systems approach to road safety. After award, CSCRS worked with the consortium members to further refine the initial Quick Start projects, including formalizing individual project work plans and data management plans.
- Full project descriptions are available on the CSCRS website, www.roadsafety.unc.edu/research/projects, and in the Transportation Research Board (TRB) [Research in Progress \(RiP\) Database](#), tagged as UTC research.
- Of the proposals received, CSCRS selected eight Quick Start projects for more than \$1.4M in funded research. A summary of the accomplishments for each project thus far is provided below.

R1: Structures of Stakeholder Relationships in Making Road Safety Decisions

PIs: Seth LaJeunesse, UNC Highway Safety Research Center (HSRC); Steve Marshall, UNC Gillings School of Public Health and UNC Injury Prevention Research Center

Co-Investigator: Offer Grembek, University of California, Berkeley (UCB)

Primary CSCRS focus areas: Integrated Systems Approach; Transportation Workforce Culture

- Designed a practitioner questionnaire to identify the individuals, organizations and municipalities that professionals in public health, law enforcement, planning, engineering, and emergency management look to or monitor with respect to their work on reducing roadway fatalities and injuries.
- Began developing a means of analyzing the contents of cities' Vision Zero plans, progress reports, and programs, as well as each city's State Strategic Highway Safety Plan.

R2: An Enhanced Systemic Approach to Safety

PI: Offer Grembek, UCB

Co-Investigator: Libby Thomas, HSRC

Primary CSCRS focus area: Integrated Systems Approach

- Began reviewing existing literature on state and local department of transportation systemic approaches to analyze road safety issues (one element of a systems approach to safety), as well as available programs and funding streams that encourage systemic improvements.

R3: Safe Systems Synthesis & Summit Phase 1

PI: Eric Dumbaugh, Florida Atlantic University (FAU)

Co-Investigator: David Harkey, HSRC

Primary CSCRS focus area: Integrated Systems Approach

- Began a review of the literature on safe systems and the identification of participants for the forthcoming summit.
- Worked with NC Governor's Highway Safety Program (NC GHSP) to develop companion project for a safe systems summit to be held in North Carolina, expanding on the outcomes of the CSCRS project.
- Participated in multiple Road to Zero (RTZ) Coalition meetings to discuss the training and education requirements of the safe systems approach for transportation professionals. The RTZ initiative is being led by the National Safety Council and sponsored by the USDOT.

R4: Completing the Picture of Traffic Injuries: Understanding Data Needs and Opportunities for Road Safety

PI: Chris Cherry, University of Tennessee, Knoxville (UTK)

Co-Investigators: Eric Dumbaugh, FAU; Offer Grembek, UCB; and Laura Sandt, HSRC

Primary CSCRS focus areas: Risk Assessment; Safety Data, Technology, and Methods

- Identified potential data sources that could be used to enhance understanding of traffic risks and injury outcomes and began working to obtain and compile various data types from multiple sources. Began analysis of available data.
- Began compiling literature related to data linkage methods and studies that have utilized linked data sources to assess safety issues.

- Shared and discussed findings to date from a companion project, *Linking Motor Vehicle Crash Data to Health Outcome Data in North Carolina* (sponsored by NC GHSP)
- Began Institutional Review Board process to access EMS, trauma, emergency department and hospitalization data in Tennessee.
- Collaborative abstract submitted and accepted to International Cycling Safety Conference, Davis, CA, September 2017, *Better data integration to create a complete picture for cycling safety.*

R5: Identifying the Safety Information Needs of Major Cities in the U.S.

PI: Eric Dumbaugh, FAU

Co-Investigator: Arthur Goodwin, HSRC

Primary CSCRS focus area: Transportation Workforce Culture

- Conducted a preliminary scoping of the survey instrument.
- Conducted a conference call with National Association of City Transportation Officials (NACTO) representatives to identify focus group topics and participants.

R6: Advanced Analytics for Vulnerable Road User Scenarios

PI: Noreen McDonald, UNC-CH Department of City and Regional Planning (DCRP)

Co-Investigator: Asad Khattak, UTK

Primary CSCRS focus area: Risk Assessment; Safety Data, Technology, and Methods

- Refined project research questions and work plan, and began literature review on highly automated vehicles (HAV) and pedestrian safety.
- Explored bicyclist and pedestrian behavioral issues related to the design and evaluation of connected and automated vehicles (CAVs), focusing on vehicle to pedestrian (V2P) communication.
- Investigated pedestrian and bicyclist behaviors in vehicle collisions, crashes and near misses in naturalistic driving environments.

R7: Development and Evaluation of Vehicle to Pedestrian (V2P) Safety Interventions

PIs: Missy Cummings and Michael Clamann, Duke University

Co-Investigator: Noreen McDonald, DCRP; and Laura Sandt, HSRC

Primary CSCRS focus area: Safety Data, Technology, and Methods

- Reviewed literature to identify pedestrian crash scenarios best suited for V2P interventions. Review to date includes Fatality Analysis Reporting System (FARS) database, previous analyses of vehicle-pedestrian crashes and previous evaluations of V2P technologies.
- Began work on audio detection, image recognition and communications technologies to support development of the mobile app to warn pedestrians of oncoming vehicles.

R8: A Comprehensive System to Support Parents of New Teen Drivers

PI: Arthur Goodwin, UNC HSRC

Primary CSCRS focus area: Integrated Systems Approach

- Contacted key agencies in North Carolina (e.g., driver education, Child Fatality Task Force) about participating in a stakeholders meeting.
- Began development of several guidance materials for parents, including a driver education debriefing form and materials that could be distributed through DMV offices.

- Solicited proposals for education and professional development activities from consortium members.
- Reviewed proposals and worked with consortium members to further refine activities to support the overall goals of the center. This included identifying center-wide activities vs. university-specific activities, and beginning to develop a strategic plan for these activities.
- Specific CSCRS-funded education activities include supporting university degree programs and courses, seminar series, CSCRS Student Scholars, student travel awards, student symposia and K-12 focused activities.
- Participated in the *Third Annual Summit of University Transportation Centers for Safety: Working in partnership to address real-world transportation problems* in Washington, DC, to moderate a session, represent CSCRS, and to begin initial evaluation of a national event as a part of CSCRS activities.
- Consortium members began developing selection processes and application materials for student fellowships, grants, and travel opportunities.
- Completed administrative effort to list a new course: *UNC Plan 890: Planning and Designing Complete, Safe, and Equitable Streets* (to be taught spring 2018) and began efforts to secure and coordinate with course instructors.
- Began exploring on-campus partnership for K-12 activities at UCB, with a focus on developing K-5 road safety modules that can be provided to teachers.
- Supported eight students from the UTK Institute of Transportation Engineers (ITE) chapter to travel and present at the Regional Southern District ITE Conference. They presented technical research and competed in the regional Traffic Bowl Competition.
- Supported one staff member from UCB's SafeTREC to travel and present multimodal safety research at TRB.
- Supported the UTK Transportation Speaker Series & Webinars during spring 2017.
- Applied for new UTK Women's Transportation Seminar Student Chapter, with 11 founding student members. UTK's Chris Cherry is serving as the Chapter Advisor.
- Supported Duke Robotics Student Symposium, which coincided with National Robotics Week. The Symposium was an opportunity for robotics students from a variety of backgrounds to showcase their work and network with regional peers. This year's agenda included a kickoff presentation by Amazon Robotics followed by TED-style talks from Triangle area professors in the morning, and talks by students from around the southeast in the afternoon.

Leadership

Participated in several activities showcasing CSCRS consortium members as leaders in highway safety. Some examples of presentations that incorporated CSCRS themes and research topics are highlighted below:

- David Harkey was the opening plenary speaker and panel moderator at the 2017 Lifesavers Conference in Charlotte, NC, March 2017. *Reversing the Numbers: An Expert Panel Discussion.*
- Asad Khattak spoke at the TRB, National Academies, on Application of Big Data for Safety Improvement in Washington, D.C., January 2017.
- Laura Sandt was a plenary speaker at the UTC Spotlight Conference in Washington, DC (Nov/Dec 2016). *Developing and Evaluating Population-Level Interventions Aimed at Behavior Change to Reduce Ped/Bike Crashes.*

- Michael Clamann gave presentations on *Autonomous Vehicle Displays and Pedestrian Safety* at the UTC Spotlight Conference in Washington, DC and at the Lifesavers Conference in Charlotte, NC.

Dissemination of Results

- Developed comprehensive content for the CSCRS website, particularly as related to the newly awarded research projects that are underway.
- Developed and disseminated the first issue of the Center's newsletter, *CSCRS Crossroads*, to more than 1,350 contacts on May 4, 2017. Content included background information on UTCs, CSCRS team members and an interview with a CSCRS associate director. Archive available here: www.roadsafety.unc.edu/newsletters/newsletter-archive.
- Coordinated with consortium member communications teams to co-promote CSCRS news/updates on their websites, in newsletters and on social media (e.g., UCB/SafeTREC involvement in CSCRS research projects was included in SafeTREC's newsletter, on the website and on its social media platforms).
- Posted 35 times on the CSCRS Twitter feed, reaching approximately 57 followers since the account was created in February. Posts covered CSCRS news, dispatches from industry events, consortium team members' accomplishments and activities and more.
- Posted 26 times on the CSCRS Facebook page, reaching approximately 18 followers since the page was created in February. Posts covered CSCRS news, dispatches from industry events, consortium team members' accomplishments and activities and more.

Activities During Next Reporting Period

The following sections provide a description of activities CSCRS plans to complete during the next reporting period (6/1/17 - 11/30/2017) to accomplish the goals and objectives.

Administration and Management

- Attend the Council of the University Transportation Centers (CUTC) Annual Summer Meeting, June 19-21, 2017 in Buffalo, and join the organization.
- Plan and facilitate the CSCRS Executive Committee business meeting August 10-11, 2017.
- Plan and facilitate the CSCRS Advisory Board meeting August 17, 2017.
- Develop a plan for stakeholder engagement and invite representatives from key agencies to participate in a CSCRS Stakeholder board.
- Provide content for OST-R UTC newsletter to be published in October 2017.
- Refine year two selection process and criteria and provide opportunities for consortium members to collaborate on project ideas in advance of a call for research.
- Develop and issue a call for research projects and education and professional development activities. Administer a peer-review process to evaluate proposals and work with consortium team members to refine and select year two activities.
- Develop tools to support project management and reporting, including a handbook for PIs with relevant guidance and forms in one place.
- Continue exploring functionality needs for an online CSCRS project management system.
- Plan a CSCRS event at the 2018 TRB annual meeting for CSCRS consortium staff and students.

Research

R1: Structures of Stakeholder Relationships in Making Road Safety Decisions

- Administer practitioner questionnaire via Qualtrics, compile and write up results, and submit report for publication.
- Finish coding cities' and their states' Vision Zero plans, Strategic Highway Safety Plans, progress reports and programs.
- Draft a descriptive report related to the findings of the content analysis and submit for publication.
- Develop interview and focus group protocols for visits with cities most often referenced by professional colleagues.
- Visit high-performing cities most often referenced by professional colleagues and carry out organizational network analysis.

R2: An Enhanced Systemic Approach to Safety

- Complete the review of systemic analysis approaches and systemic policies.
- Explore and define the minimal data needed to construct a systemic matrix.
- Develop a memo that specifies data needs for creating a systemic crash matrix.
- Collect the necessary data elements across two or more states.
- Review and modify to the project data management plan.
- Develop a method for defining the systemic matrix structure across modes.
- Populate crash matrices.

R3: Safe Systems Synthesis & Summit Phase 1

- Complete collection of literature on Safe Systems and annotated literature review.
- Begin draft of thematic literature review.
- Establish date and facilities for 2018 Summit. Identify and invite summit participants.
- Initiate work on the NC GHSP companion project.

R4: Completing the Picture of Traffic Injuries: Understanding Data Needs and Opportunities for Road Safety

- Develop a map of data sources and linkage needs to support safety analysis.
- Finalize data collection and data architecture systems for five pilot data linkage efforts, in coordination with companion efforts.
- Complete data analysis and summarize preliminary findings.

R5: Identifying the Safety Information Needs of Major Cities in the U.S.

- Finalize and execute survey of city transportation officials.
- Organize focus group with select transportation leaders.

R6: Advanced Analytics for Vulnerable Road User Scenarios

- Develop journal-article manuscript on pedestrian safety impacts of near-term automated vehicle systems.
- Finalize the data to be used in the project using FARS, National Data & Surveying Services (NDS) and other data sources.
- Expand the spatial analysis using FARS data focused on establishing systematic taxonomy of pre-crash behaviors and errors of pedestrians and bicyclists in crash and/or near miss situations.

- Conduct in-depth qualitative and quantitative analysis of pedestrian-bicyclist involved crashes/near-misses using NDS data.
- Apply advanced machine learning based text analysis and statistical methods.

R7: Development and Evaluation of Vehicle to Pedestrian (V2P) Safety Interventions

- Develop V2P prototype app to warn distracted pedestrians of approaching vehicles and assist with safe crossing decisions.
- Design and begin execution of experiment to test the V2P prototype app.

R8: A Comprehensive System to Support Parents of New Teen Drivers

- Convene a stakeholders meeting of key agencies in North Carolina, including driver education, DMV, and the Child Fatality Task Force.
- Continue development of guidance for parents of new drivers including a driver education debriefing form, materials that could be distributed through DMV offices, and other tools for parents.
- Begin updating the “Time to Drive” smartphone app to the latest iOS.

Education/Workforce Development and Professional Development

- Plan and facilitate a CSCRS webinar series, to focus on a systems approach to safety and other CSCRS themes and research topics.
- Begin planning for a spring 2018 Annual CSCRS Summit to engage staff, researchers, students, and regional practitioners and decision makers in discussions about CSCRS related themes and research findings.
- Plan and facilitate a fall seminar series at UNC to bring together researchers and students from varied disciplines (including planning, public health, engineering and robotics) to discuss safety issues and a safe systems approach.
- Implement student scholarship programs and award student fellowships across consortium partner campuses. This will include a Ph.D. level Innovations Fellowship at UCB as well as awards to masters students to conduct literature reviews or masters project related research; up to five scholars will be selected at UT-K and up to three scholars will be selected from UNC.
- Evaluate potential improvements to student fellowship applications requirements and revise accordingly for 2018 applications.
- Support student and staff travel to the Automated Vehicle Symposium, International Cycling Safety Conference, TRB Annual Meeting and other safety-related conferences.
- Incorporate a systems approach to safety into the UCB Traffic Safety and Injury Control graduate course. Similarly, begin planning the UNC graduate course on *UNC Plan 890: Planning and Designing Complete, Safe, and Equitable Streets* (to be taught spring 2018), and integrating systems safety concepts.
- Determine how to proceed with outreach to and involvement with Regional Network Coordinating Organizations as a potential new public health audience for transportation safety efforts.
- As part of efforts to analyze the content of cities’ Vision Zero plans and progress reports, provide feedback to the cities regarding how they can engage diverse professional and stakeholder groups in identifying, prioritizing and evaluating the efficacy of safety countermeasures.

- Conduct audit of existing K-12 activities on which CSCRS activities could build and augment. Continue to explore and expand K-12 opportunities across consortium member campuses. For example, determine whether the opportunity to develop K-5 road safety modules is feasible at UCB.
- Launch WTS UTK student chapter.
- Launch a weekly traffic seminar series at UTK, broadcasting seminars to CSCRS audiences.
- Begin development of a crash investigation scene camp for middle school students, to be offered by UTK staff.

Leadership

- Submit papers on a variety of topics relevant to CSCRS goals to leading national conferences and meetings (e.g., TRB).
- Participate in conference panel discussions about autonomous vehicles (e.g., ITS Carolinas in Charlotte, NC, in September 2017 and the Automated Vehicle Summit in July 2017).
- Facilitate site visits to showcase Duke Research in the Humans and Autonomy Lab (HAL) and discussion of current autonomous vehicle research and relevant state policy (e.g., North Carolina DOT and members of the board of the Intelligent Transportation Society of America Carolinas).

2. Products

The following sections summarize the products that have resulted from CSCRS or companion projects during the reporting period.

Publications, Conference Papers and Presentations

Peer Reviewed Journal Publications

- Budhrajaa, B., Stimpson, A. & Cummings, M. (2017). *A data-driven approach to the design of communication displays between autonomous vehicles and pedestrians*. Manuscript submitted for publication.
- Crayton, T. & Meier, B.M. (in press). Autonomous vehicles: Developing a public health research agenda to frame the future of transportation policy, *Journal of Transport & Health*.
- Kamrani, M., Wali, B., & Khattak, A.J. (in press). Can data generated by connected vehicles enhance safety? Proactive approach to intersection safety management. *Transportation Research Record: Journal of Transportation Research Board*.
- Wali, B., Khattak, A.J., & Bozdogan, H. (2017). *How is driving volatility related to intersection safety in a connected vehicles environment?* Manuscript submitted for publication.

Books or Other Non-Periodical, One-Time Publications

- Boakye, K. (in preparation). Evaluation of increased targeted enforcement and community-based outreach and education programs to increase nighttime seatbelt use in East Tennessee. (Unpublished doctoral dissertation). University of Tennessee, Knoxville.

Other Publications, Conference Papers and Presentations

- Black, T., Swartz, J. & Fremaux, T. (2017). *Vision zero and beyond: A simple yet powerful data strategy for evaluating potential engineering solutions*. Presented at the Transportation Research Board 96th Annual Meeting.

- Clamann, M. (2017, March). *Autonomous vehicles and human behaviors*. Presented at the Lifesavers National Conference on Highway Safety Priorities, Charlotte, North Carolina.
- Clamann, M. (2017, May). *Arrival of the robot car*. Presented at Moogfest, Durham, North Carolina.
- Clamann, M. (2017, May). *Did it see me? Display design for autonomous vehicles*. Presented at the Urban Street Symposium, Raleigh, North Carolina.
- Cummings, M. (2017, April). Building Powerful Women meeting, Cary, North Carolina.
- Cummings, M. (2017, March-April). The brave new world of driverless cars. *TR News*, No. 308, 34-37.
- Cummings, M. (2017, May). *Public transportation statewide strategic plan*. Workshop panelist.
- Cummings, M. (2017, May). *SMART Series: Autonomous Vehicles - Driving the Future of the Research Triangle Region*. Panel discussion.
- Dumbaugh, E. (2017, May). *The future of urban transportation: A roadmap to the 21st century*. Presented at the 25th Annual Congress for the New Urbanism, Seattle, Washington.
- Goodwin, A. (2017, March). *Light the fire: How to reach and engage parents of novice drivers*. Presented at the Lifesavers Annual Conference, Charlotte, North Carolina.
- Goodwin, A. (2017, April). *Improving teen driver safety through parents of new teen drivers*. Presented at the North Carolina Driver and Traffic Safety Education Association Annual Conference, Clemmons, North Carolina.
- Grembek, O. Injury Surveillance Workgroup 8 (ISW8). *Consensus Recommendations for Pedestrian Injury Surveillance*. Atlanta (GA): Safe States Alliance, 2017.
- Harkey, D. (2017, April). *Rebuilding our infrastructure with technology for improved safety*. Panel moderator at the Third Annual Summit of University Transportation Centers for Safety, Washington, D.C.
- Harkey, D. (2017, March). *Reversing the numbers, an expert panel discussion*. Panel moderator at the Lifesavers National Conference on Highway Safety Priorities, Charlotte, North Carolina.
- Khattak, A. (2017, January). *Application of Big Data for Safety Improvement*. TRB, National Academies. Washington, D.C.
- LaJeunesse, S. (2017, January 8). *Theory and Evidence-Based Means of Addressing Speeds and other Risky Behaviors* [PowerPoint slides]. Paper presented at the 96th Transportation Research Board Annual Meeting.
- LaJeunesse, S. & Heiny, S. (2016, December 2). *Vision Zero with a Youth Lens: A Positive Deviance Study of Pedestrian and Bicyclist Safety Outcomes* [PowerPoint slides]. Paper presented at the 10th University Transportation Center Spotlight Conference Pedestrian and Bicycle Safety.
- McDonald, N. (2017, May). *Millennials and driving: What are the trends and what does it mean for transport needs?* Presented at the WTS Annual Conference, New York, New York.
- Nordback, K., Gibson, G., Kothuri, S., Ferenchak, N., & Marshall, W. (2016, December). *Motorist-cyclist crash data needs for safety analysis*. Paper presented at the University Transportation Center Spotlight Conference, Washington, D.C.
- Ragland, D. (2017, March). *Data-driven approaches to road safety*. Panel discussion.

- Sandt, L. (November/December 2016). *Developing and Evaluating Population-Level Interventions Aimed at Behavior Change to Reduce Ped/Bike Crashes*. UTC Spotlight Conference, Washington, D.C.
- Sandt, L. (2017, January). *Quality Volume Data for Bicycling and Walking: Data User Perspectives*. Transportation Research Board Annual Meeting, Washington, D.C.
- Sandt, L. (2017, March). *Saving (Pedestrian and Bicyclist) Lives and Engaging the Public: A 12 Step Program*. Lifesavers Annual Conference, Charlotte, North Carolina.
- Sandt, L. (2017, January). *The Role of Hospital and Police Crash Data in Understanding Pedestrian Crash Incidence: A Comparison of Data Sources*. Transportation Research Board Annual Meeting, Washington, D.C.

Websites, Social Media and Other Internet Resources

- CSCRS website: www.roadsafety.unc.edu. Contains updated information about CSCRS's plans and activities related to creating a comprehensive, sustainable road safety systems model.
- Facebook: www.facebook.com/CSCRSinfo. Created to increase visibility for the center's work.
- Twitter: twitter.com/CSCRSinfo. Similar to the Facebook page, created to spread the word about CSCRS.

Technologies or Techniques

Nothing to report.

Inventions, Patent Applications and/or Licenses

Nothing to report.

Other Products

Nothing to report.

3. Participants & Collaborating Organizations

Partner Organizations

The table below provides a summary of the organizations that have been involved as partners.

Name	Type	Location	Contribution/Involvement
American Public Health Association	Other Non-Profit	Washington, DC	Collaborative Support
Association of Pedestrian and Bicycle Professionals	Other Non-Profit	Lexington, KY	Collaborative Support
California Department of Transportation	State Government	Sacramento, CA	Collaborative Support
John D. and Catherine T. MacArthur Foundation	Foundation	Chicago, IL	Financial Support
Knox County Schools	School District	Knoxville, TN	Collaborative Support

National Association of City Transportation Officials	Other Non-Profit	New York, NY	Collaborative Support
National Cooperative Highway Research Program	Other Non-Profit	Washington, DC	Financial Support
National Science Foundation	U.S. Agency	Washington, DC	Sponsor of Projects
North Carolina Governor's Highway Safety Program	State Government	Raleigh, NC	Collaborative Support
Oak Ridge National Laboratory	U.S. Facility	Oak Ridge, TN	Collaborative Support
Renaissance Computing Institute	University	Chapel Hill, NC	Collaborative Support
Tennessee Department of Transportation	State Government	Nashville, TN	Matching Request & Data
US Dept. of Energy	U.S. Government	Washington, DC	Sponsor of Projects
Tennessee Dept. of Safety & Homeland Security	State Government	Nashville, TN	Data Request
Tennessee Department of Health	State Government	Nashville, TN	Data Request
Various Jiaotong Universities in China	Universities	Beijing, Nanjing, China	Collaborative Support & Personnel Exchanges

Other Collaborators or Contacts

Nothing to report.

4. Impact

Impact on the Development of the Principle Discipline(s) of the Program

The systems approach to addressing road safety issues is a relatively new concept in safety management and the development and implementation of interventions. The primary impact on the principle disciplines of the program will be increasing the awareness of what is meant by a systems approach and moving towards its adoption by agencies as a new (for the U.S.) and credible approach to address the epidemic of road fatalities and injuries.

Although there is not yet much to report on impact in these first six months of the project, all consortium members are already working to figure out how to engage both traditional transportation professionals and non-traditional professionals who may not see road safety as their primary focus in the multi-disciplinary, safe systems approach to highway safety.

As a first step, many of our initial projects and activities are analyzing and exploring how best to approach the issue within existing organizational infrastructures. We have already had success in getting transportation agencies to buy in to the approach. For example, CSCRS has had a direct impact on generating interest in a safe systems approach. FAU is working with Florida DOT and other Florida agencies to develop a safe systems summit in the state and educate

collaborators on the safe systems principles. Similarly, HSRC is working with the NC GHSP to assess how a safe systems approach could be utilized in North Carolina. UCB SafeTREC will build on research conducted for the California DOT (Caltrans) to identify and address systemic concerns related to pedestrian and bicycle safety with the goal of reducing pedestrian fatalities and injuries in California.

Impact on Other Disciplines

CSCRS aims to engage disciplines beyond the traditional engineering community. The initial impact of CSCRS in this reporting period is to begin the conversations with others to increase their awareness of traffic safety and educate them on their potential roles they can play. Of note in this first six months of the project is work that is underway to determine how the Regional Network Coordinating Organizations, a national network of public health practitioners, can be involved with CSCRS efforts and activities. Another noteworthy effort is a new Special Topics course to be offered at UNC-CH to planning and/or public health students, which will focus on methods to develop safe, equitable, multimodal transportation systems.

Impact on the Development of Transportation Workforce Development

We are beginning to integrate the safe systems, multidisciplinary approach to transportation safety into all transportation courses taught at CSCRS consortium member campuses. Plus, we are working to determine which other courses – public health, epidemiology, etc. – should include transportation as issues within those disciplines. Again, not much actual impact to report in the first six months, but efforts are underway.

CSCRS leadership has presented at various conferences, e.g., David Harkey presented the plenary session at LifeSavers 2017, and included CSCRS-centric messages whenever possible concerning the need to expand our disciplinary thinking and multi-faceted approaches to solving the road safety epidemic. We are challenging ourselves and our colleagues to think of transportation safety in a different way – through the lens of the safe system – and are quickly becoming the go-to for this topic area across the country. As the activities described above are held and implemented, we anticipate additional impact and performance metrics that can be included in future CSCRS reports.

Impact on Physical, Institutional, and Information Resources at the University or Other Partner Institutions

In addition to what has already been stated, CSCRS's focus on collaboration has helped us building stronger ties between the different departments within individual and our collective consortium member universities. This grant will only be successful if we can cross disciplines in our research and outreach efforts and learn about what's working across campuses. We have begun that process of removing the silos and walls in this first six months of the project and look forward to more success in this area in the future.

Impact on Technology Transfer

Nothing to report.

Impact on Society Beyond Science and Technology

Nothing to report.

5. Changes/Problems

The initial CSCRS proposal used the terminology technology transfer to refer to activities that transfer knowledge and skills from CSCRS to a broader audience. While this term is understood for traditional transportation audiences, it is not commonly used among the various disciplines and target audiences (e.g., public health practitioners) CSCRS is reaching out to engage in a systems approach to safety. Therefore, on the website and for reporting purposes, CSCRS will use the term professional development when referring to previously designated technology transfer activities.

Additional Information Regarding Products and Impacts

Nothing additional to report beyond what has already been provided in this report.

6. Special Reporting Requirements

Nothing to report.

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This entire report is available on the CSCRS website at www.roadsafety.unc.edu/about/reporting.