



## SAPR 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.

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## 1. Accomplishments

### 1.1 What are the major goals and objectives of the program?

As of this final reporting period, CSCRS has accomplished the goals originally laid out in CSCRS's [Strategic Roadmap](#).

### 1.2 What was accomplished under these goals?

Selected highlights for this final performance period include:

- CSCRS Director Laura Sandt [testified about the road safety crisis](#) before a U.S. Senate Commerce Subcommittee on May 21, 2024.
- Hosted the fourth annual [NC Vision Zero Leadership Team Institute](#) in June 2024 in Chapel Hill, NC.
- Wrapped up activities for the [2024 Safe Mobility Conference](#), co-hosted with CSCRS partner AAA Foundation for Traffic Safety (AAAFTS), including creating conference proceedings.
- Concluded work on all CSCRS research projects.
- Generated CSCRS research-related peer-reviewed publications and presentations.
- Taught transportation safety-related university courses and engaged K-12, undergraduate, graduate, and doctoral students in CSCRS research, education, and professional development projects.

The bulleted sections below describe the accomplishments according to specific goals and objectives of CSCRS.

#### Goal 1:

To support Goal 1—ensuring that Safe Systems and systems science principles and approaches are shared, understood, and adopted by traffic safety professionals—we performed activities related to the following objectives:

**Objective 1-1:** Conduct research to generate a model(s) for what a Safe Systems approach, enhanced with systems science tools, can look like now and in the future and identify promising policies/practices that can be adopted to reduce fatalities and serious injuries.

All work on research projects that meet this objective is complete.

**Objective 1-2:** Lead training, outreach, and professional development related to Safe Systems approach and related policies and practices.

Key examples:

- CSCRS hosted the fourth annual [NC Vision Zero Leadership Team Institute](#) in June 2024 in Chapel Hill, NC. The event was spearheaded by the UNC Injury Prevention Research Center (IPRC).
- We wrapped up activities for the [2024 Safe Mobility Conference](#), co-hosted with AAAFTS, including creating conference proceedings.
- Asad Khattak, University of Tennessee, Knoxville (UTK), presented at the Inaugural USDOT Future of Transportation Summit in Washington, DC, in August 2024 on the topic “Investigating Vulnerable Road User Safety in Disadvantaged Communities-Application of the Safe Systems Approach.”

**Objective 1-3:** Integrate Safe Systems principles into other road safety/public health/planning initiatives.

CSCRS's UNC team of the Highway Safety Research Center (UNC HSRC), UNC IPRC, and the Department of City and Regional Planning (UNC DCRP) continued its leadership of the Road to Zero Coalition's Safe System Working Group. During this reporting period the team worked on position papers focused on reframing the Safe System approach and speed safety cameras.

**Objective 1-4:** Facilitate states and cities in implementing a Safe Systems approach in different contexts, utilizing the tools and research from CSCRS.

CSCRS engaged with multiple agencies, particularly in consortium member states and cities, to determine the needs of state and local governments in implementing Safe Systems. CSCRS has representatives on the North Carolina Executive Committee for Highway Safety; work on this committee has included creating white papers for the NC Strategic Highway Safety Plan.

For additional specific projects bridging research to local practice, see Objective 2-3.

**Goal 2:**

To support Goal 2—ensuring that cutting-edge research, tools, data, and resources compatible with a Safe Systems approach are developed and utilized—we performed activities related to the following objectives:

**Objective 2-1:** Perform road safety research that explores core safety issues and transformational changes (from technology, ride-sharing services, etc.) and integrates public health concepts and methods.

The project R36: Laying the Groundwork for a National Pedestrian Injury Surveillance System ended due because of changes to external circumstances.

All work on other research projects that meet this objective is complete.

**Objective 2-2:** Develop research-driven tools, resources, and data sets to support problem identification and understanding.

All work on research projects that meet this objective is complete.

**Objective 2-3:** Translate research knowledge to support the development of comprehensive programs, policies, and practices that are proven to reduce fatalities and severe injuries.

All work on research projects that meet this objective is complete.

**Objective 2-4:** Broadly disseminate research products and findings, with emphasis on reaching new and non-traditional audiences.

Objective 1-2 covered efforts to disseminate research, specifically relating to systems-oriented projects. Key sessions and workshops at the NC Vision Zero Leadership Team Institute that address these topics:

- “Vision Zero and Safe Systems foundational elements”
- “Why equity matters in transportation safety”
- “Panel: Building a Traffic Safety Culture”
- “Integrating backcasting and participatory planning in VZ at any stage”

Table 1 highlights additional presentations made in this reporting period:

*Table 1: Select CSCRS outreach highlights*

Bhagat-Conway, M. W., Compiano, A., and Ivie, E. I. (2024, April 18) Automated identification of missing links in the Charlotte pedestrian network [Conference presentation]. Podium session at the North Carolina Association of Metropolitan Planning Organizations Conference, New Bern, NC, USA.
Keefe, E. M. (2024, April 7). A novel Vision Zero leadership training model [Conference presentation]. Lifesavers 2024, Denver, CO, United States.

Hassmiller Lich, K., Naumann, R. & Keefe, E. M. (2024, April 15). Using Systems Tools to Support Collaborative Research Agenda Setting and On-the-Ground Planning and Implementation [Conference presentation]. SAVIR 2024, Chapel Hill, NC, United States.
Keefe, E. M. (2024, April 23). Vision Zero: A growing movement in North Carolina [Conference presentation]. NC Traffic Safety Conference 2024, Greenville, NC, United States.
Bhagat-Conway, M. W. (2024, July 20) Baby's first four-step model [Conference presentation]. Podium session at the Institute of Transportation Engineers Transportation Educators Workshop, Philadelphia, PA, USA.
Pullen-Seufert, N. (2024, August 20) A Public health approach to road safety: The NC Vision Zero Collaborative [Conference presentation]. Safe States 2024, Portland, OR, United States.
Harmon, K. (2024, October 2). Using incident data sources to identify gender disparities in transportation safety outcomes. In A. Ryan (Chair), Gender inclusive transportation [Webinar]. Transportation Research Board. <a href="https://www.nationalacademies.org/event/949_10-2024_trb-webinar-gender-inclusive-transportation-safety">https://www.nationalacademies.org/event/949_10-2024_trb-webinar-gender-inclusive-transportation-safety</a> . 215 attendees (slides submitted to TRB Sep 25, 2024)

### Goal 3:

To support Goal 3—to ensure that a growing body of students and future leaders are engaged and well-trained in road safety principles, Safe Systems approaches, and systems science methods—we performed activities related to the following objectives:

**Objective 3-1:** Develop and deliver courses at consortium member universities that integrate CSCRS concepts.

Examples from spring 2024 to fall 2024 that include these UTK courses:

- In Spring 2024, Dr. Khattak taught a graduate engineering course on Intelligent Transport Systems.
- In Spring 2024, Dr. Cherry taught the Transportation Geometric Design course with 32 students enrolled (in-person & distance education).
- In Fall 2024, Dr. Khattak taught the Transportation Safety course with 11 students enrolled (in-person & distance education).
- In Fall 2024, Dr. Cherry taught the Transportation Engineering II course with 46 students enrolled.

**Objective 3-2:** Engage students through student-directed activities and professional opportunities.

Table 2 describes key student engagement offered during this reporting period.

Table 2: Select CSCRS student engagement activities

UNC DCRP	Jen Farris' MP, Evaluation of North Carolina's statewide vision zero collaborative support model (supervised by Tab Combs).
	Laurina Bird's MP, Defining transportation burden: identifying environmental justice communities across North Carolina Metropolitan Planning Organizations (supervised by Tab Combs).
	Dwiti Bagadia's MP, Understanding social notions of transit stops (supervised by Matt Palm).
	Serena Kaur's MP, Equity in motion: assessing the implications of vehicle taxation on transportation accessibility in Orange County, NC (supervised by Matt Palm).
	Rachel Auerbach's MP, Promoting active transportation inside state DOTs: lessons from statewide bike-ped coordinators on making change (supervised by Matt Palm).
	Asher Eskind's MP, Finding suitable locations for bicycle and scooter parking facilities in San Francisco (supervised by Matt Palm).
	Sijia Wang's MP, Effects of bus rapid transit on surrounding neighborhoods: case study of Pittsburg's west busway (supervised by Matt Bhagat-Conway).

UNC IPRC	One graduate student worked with Dr. Evenson on their master's paper which became a publication (Greer et al., 2024).
	UNC Public Health Capstone team (4 students) selected to complete a project to develop a set of infographics to explain the Safe Systems approach.
UTK	Four graduate students worked with Dr. Khattak (faculty in Civil & Env. Eng.).
	One PhD student (Nastaran Moradloo) working with Dr. Khattak won the Tennessee Section Institute of Transportation Engineer's (TSITE) T. Darcy Sullivan Scholarship Award.
	One PhD student (Zeinab Bayati) working with Dr. Khattak won the Tennessee Section Institute of Transportation Engineer's (TSITE) John R. Harper Memorial Scholarship Award.
	One graduate student and one UG intern worked with Dr. Subhadeep Chakraborty.

**Objective 3-3:** Develop mentorship and internship opportunities for students to engage in critical thinking about road safety issues from a variety of perspectives and connect with traditional and non-traditional partners.

CSCRS continued to update its [Jobs Board](#) of student and post-graduation opportunities, and share such opportunities with the whole consortium.

**Objective 3-4:** Provide exposure to road safety principles in K-12 settings, to enhance early interest in traffic safety.

- UNC HSRC researchers representing a variety of safety disciplines traveled to the campus of the North Carolina Agricultural and Technical State University (N.C. A&T) in July 2024 to [mentor high school students](#) participating in the Summer High School Transportation Institute. This program, which prepares high school students for transportation careers, is the oldest National Summer Transportation Institute in the country.
- On April 9, 2024, CSCRS researchers [met with local Smith Middle School](#) students to engage in a hands-on road safety activity and active discussion.
- CSCRS prepared for participation in the Durham Public Schools Acceler8 Career Exploration Day in October 2024 during this period.

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

Myriad teaching, training, and learning opportunities have been highlighted in this report (see Table 1).

### 1.4 How have the results been disseminated?

Results have been disseminated in accordance with the CSCRS [Technology Transfer Plan](#). Consortium members coordinated to co-promote CSCRS news/updates on their websites, in newsletters, and on social media.

CSCRS staff completed updating project descriptions, titles, and end dates on the [CSCRS website](#) and in the TRB Research in Progress (RiP) Database, tagged as UTC research. Project-related publications and presentations from this reporting period are listed in the Products section.

### 1.5 What do you plan to do during the next reporting period?

The CSCRS grant period has ended.

## 2. Participants and Collaborating Organizations

### 2.1 What organizations have been involved as partners?

The following organizations have been involved as CSCRS partners during the course of the grant:

*Table 3: Select CSCRS collaborator and sponsor organizations*

<b>Business</b>
Accenture (Collaborative Support)
AT&T Fleet Complete, Atlanta, GA (Financial Support)
Bird, Inc. (Collaborative Support)
PhD Posters, Durham, NC (Financial Support)
Rovélo Creative, Toronto, Canada (Collaborative Support)
SoftServe, Inc., Austin, TX (Collaborative Support)
Toyota Motor North America, Saline, MI (Financial Support)
Uber, San Francisco, CA (Financial Support)
VHB, Watertown, MA (Financial Support)
Volkswagen Group of America, Herndon, VA (Collaborative Support)
<b>Foundation</b>
AAA Foundation for Traffic Safety, Washington, DC (Collaborative Support)
de Beaumont Foundation, Bethesda, MD (Collaborative Support)
Health Foundation of South Florida, Miami, FL (Collaborative Support)
John D. and Catherine T. MacArthur Foundation, Chicago, IL (Financial Support)
<b>Local Government</b>
City of Deerfield Beach, FL (Collaborative Support)
Town of Chapel Hill Staff, Chapel Hill, NC (Collaborative Support)
<b>Other Non-Profit</b>
American Institute of Architects, Miami, FL (Collaborative Support)
America Walks, Portland, OR (Collaborative Support)
American Planning Association, Chicago, IL, and Washington, DC (Collaborative Support)
American Public Health Association, Washington, DC (Collaborative Support)
Association of Pedestrian and Bicycle Professionals, Lexington, KY (Collaborative Support)
Broward Metropolitan Planning Organization, Fort Lauderdale, FL (Collaborative Support)
Dream in Green, Miami, FL (Collaborative Support)
Greater Nashville Regional Council, Nashville, TN (Collaborative Support)
Institute of Transportation Engineers, Washington, DC (Collaborative Support)
Insurance Institute for Highway Safety, Vehicle Research Center, Ruckersville, VA (Collaborative Support)
The Miami Center for Architecture and Design, Miami, FL (Collaborative Support)
Miami-Dade Transportation Planning Organization, Miami, FL (Collaborative Support)
Mobility Lab, Arlington, VA (Collaborative Support)
National Association of City Transportation Officials, New York, NY (Collaborative Support)
National Cooperative Highway Research Program, Washington, DC (Financial Support)
National Indian Justice Center, Santa Rosa, CA (Collaborative Support)
National Local Technical Assistance Program Association, US (Collaborative Support)
North Carolina Center for Automotive Research, Garysburg, NC (Collaborative Support)
Palm Beach Transportation Planning Agency, West Palm Beach, FL (Collaborative Support)
Palm Beach Planning Congress, Palm Beach, FL (Collaborative Support)
The Road to Zero Coalition/The National Safety Council, Itasca, IL (Financial and Collaborative Support)
Transportation Research Board Standing Committee on Pedestrians, Washington, DC (Collaborative Support)
Safe States, Atlanta, GA (Collaborative Support)
Transportation Research Board Standing Committee on Transportation Safety Management, Washington, DC (Collaborative Support)
Urban Impact Lab, Miami FL (Collaborative Support)
Vision Zero Network, San Francisco, CA (Collaborative Support)
WTS International, Washington, DC (Collaborative Support)
<b>School District</b>
Knox County School District, Knoxville, TN (Collaborative Support)

<b>State Government</b>
California Emergency Medical Systems Authority (Collaborative Support, Data Request)
California Center for Medical Outcomes, California Department of Public Health, Sacramento, CA (Collaborative Support, Data Request)
Florida Department of Transportation (Collaborative Support)
North Carolina Division of Public Health, Raleigh, NC (Collaborative Support)
North Carolina Department of Transportation, Raleigh, NC (Financial Support)
North Carolina Governor’s Highway Safety Program, Raleigh, NC (Collaborative and Financial Support)
North Carolina Turnpike Authority, Raleigh, NC (Collaborative Support)
Tennessee Department of Transportation, Nashville, TN (Matching Request and Data)
Tennessee Department of Safety and Homeland Security, Nashville, TN (Data Request)
Tennessee Department of Health, Nashville, TN (Data Request)
Tennessee Technology Access Program, Nashville, TN (Collaborative Support)
<b>U.S. Agency</b>
National Science Foundation, Washington, DC (Sponsor of Projects)
Centers for Disease Control and Prevention, Atlanta, GA (Collaborative Support)
<b>U.S. Facility</b>
Oak Ridge National Laboratory, Oak Ridge, TN (Collaborative Support)
<b>U.S. Government</b>
U.S. Department of Energy, Washington, DC (Collaborative Support)
U.S. Department of Transportation, Washington, DC (Sponsor of Projects and Collaborative Support)
<b>University</b>
Duke Initiative for Science & Society Science Policy Tracking Program, Durham, NC (Financial Support)
East Tennessee State University, Johnson City, TN (Collaborative Support)
Johns Hopkins Center for Injury Research & Policy, Baltimore, MD (Collaborative Support)
North Carolina A&T State University, Greensboro, NC (Collaborative Support)
North Carolina Central University, Durham, NC (Collaborative Support)
North Carolina State University Institute for Transportation Research and Education, Raleigh, NC (Collaborative Support)
Planning Society @ FAU, Boca Raton, FL (Collaborative Support)
Queensland University of Technology (CARRS-Q) (Collaborative Support)
Renaissance Computing Institute, Chapel Hill, NC (Collaborative Support)
San Diego State University, San Diego, CA (Collaborative Support)
Tennessee Technological University, Cookeville, TN (Collaborative Support)
University of Aveiro (Collaborative Support)
University of Miami (Collaborative Support)
The University of New Mexico, Albuquerque, NM (Collaborative Support)
University of Tennessee, Chattanooga, TN (Collaborative Support)
University of Wisconsin-Milwaukee, Milwaukee, WI (Collaborative Support)
Various Jiaotong Universities in China (Collaborative Support)

## 2.2 Have other collaborators or contacts been involved?

Nothing to report beyond the table above.

## 3. Outputs

CSCRS included two performance measures related to outputs in its Technology Transfer Plan:

- Organize and hold conferences and/or other events through 2023 and 2024.
- Author annual journal manuscripts, publications, articles, posts, media stories, etc.

Sections 3.1-3.3 present the considerable number of outputs related to CSCRS research and tech transfer.



### 3.1 Publications, conference papers, and presentations

The following are select highlights of publications produced by CSCRS team members:

Table 4: Select CSCRS publications

Peer-Reviewed Publications
Adeel, M., Khattak, A. J., Mishra, S., & Thapa, D. (2024). Enhancing work zone crash severity analysis: The role of synthetic minority oversampling technique in balancing minority categories. <i>Accident Analysis and Prevention</i> , 208, 107794. <a href="https://doi.org/10.1016/j.aap.2024.107794">https://doi.org/10.1016/j.aap.2024.107794</a>
Ahmad, N., Khattak, A. J., & Bozdogan, H. (2024). Understanding the role of driver behaviors and performance in safety-critical events: Application of machine learning. <i>Journal of Transportation Safety &amp; Security</i> , 1–40. <a href="https://doi.org/10.1080/19439962.2024.2368113">https://doi.org/10.1080/19439962.2024.2368113</a>
Beck, J., & Chakraborty, S. (2024). Fully embedded time series generative adversarial networks. <i>Neural Computing and Applications</i> , 36(24), 14885–14894. <a href="https://doi.org/10.1007/s00521-024-09825-5">https://doi.org/10.1007/s00521-024-09825-5</a>
Beck, J., Huff, S., & Chakraborty, S. (2024). Diagnosing and predicting autonomous vehicle operational safety using multiple simulation modalities and a virtual environment. <i>ArXiv</i> . <a href="https://doi.org/10.48550/arxiv.2405.07981">https://doi.org/10.48550/arxiv.2405.07981</a>
Chauhan, R. S., Bhagat-Conway, M., Magassy, T. B., Corcoran, N., Rahimi, E., Dirks, A., Pendyala, R. M., Mohammadian, A., Derrible, S., & Salon, D. (2024). COVID Future panel survey: A unique public dataset documenting how U.S. residents’ travel-related choices changed during the COVID-19 pandemic. <i>Transportation</i> . <a href="https://doi.org/10.1007/s11116-024-10479-4">https://doi.org/10.1007/s11116-024-10479-4</a>
Evenson, K. R., Kintigh, J. M., Neuroth, L. M., LaJeunesse, S., & Naumann, R. B. (2024). Public health involvement in United States’ Vision Zero initiatives: A mixed-methods study. <i>Journal of Public Health Management and Practice</i> , 30(4), 567–577. <a href="https://doi.org/10.1097/PHH.0000000000001988">https://doi.org/10.1097/PHH.0000000000001988</a>
Greer, S., Combs, T., Naumann, R. B., Keefe, E., LaJeunesse, S., & Evenson, K. R. (2024). Community and multisector partner engagement in US Vision Zero plan development. <i>Injury Prevention</i> . <a href="https://doi.org/10.1136/ip-2023-045148">https://doi.org/10.1136/ip-2023-045148</a>
Jing, S., Zhao, Y., Zhao, X., Hui, F., & Khattak, A. J. (2024). An efficient high-risk lane-changing scenario edge cases generation method for autonomous vehicle safety testing. <i>IEEE Transactions on Intelligent Vehicles</i> , 1–13. <a href="https://doi.org/10.1109/TIV.2024.3414828">https://doi.org/10.1109/TIV.2024.3414828</a>
Keefe, E. M., Naumann, R. B., Evenson, K. R., LaJeunesse, S., Heiny, S., & Lich, K. H. (2024). Using an adapted community readiness assessment to inform Vision Zero and safe systems action. <i>Transportation Research Interdisciplinary Perspectives</i> , 23, 100992. <a href="https://doi.org/10.1016/j.trip.2023.100992">https://doi.org/10.1016/j.trip.2023.100992</a>
Khattak, Z. H., Li, W., Karnowski, T., & Khattak, A. J. (2024). The role of driver head pose dynamics and instantaneous driving in safety critical events: Application of computer vision in naturalistic driving. <i>Accident Analysis and Prevention</i> , 200, 107545. <a href="https://doi.org/10.1016/j.aap.2024.107545">https://doi.org/10.1016/j.aap.2024.107545</a>
Moradloo, N., Mahdinia, I., & Khattak, A. (2024). Charging into the future: Unraveling the factors shaping electric vehicle adoption and addressing heterogeneity. <i>SAE International Journal of Sustainable Transportation, Energy, Environment, &amp; Policy</i> , 6(1). <a href="https://doi.org/10.4271/13-06-01-0005">https://doi.org/10.4271/13-06-01-0005</a>
Moradloo, N., Mahdinia, I., & Khattak, A. J. (2024). Safety in higher level automated vehicles: Investigating edge cases in crashes of vehicles equipped with automated driving systems. <i>Accident Analysis and Prevention</i> , 203, 107607. <a href="https://doi.org/10.1016/j.aap.2024.107607">https://doi.org/10.1016/j.aap.2024.107607</a>
Nelson, Z., Graves, R. & Chakraborty, S. (Under review). Integrating real-time prediction and enhanced dyna-q learning for improved intersection performance under varied traffic conditions. <i>Transportation Science</i> .
Palm, M., Nakshi, P., Yousefzadeh Barri, E., Farber, S., & Widener, M. (2024). Uncovering suppressed travel: A scoping review of surveys measuring unmet transportation need. <i>Travel Behaviour and Society</i> , 36, 100784. <a href="https://doi.org/10.1016/j.tbs.2024.100784">https://doi.org/10.1016/j.tbs.2024.100784</a>

Schado, T., Shay, E., Thapa, B., & Combs, T. S. (2024). Preparing for connected and automated vehicles: Insights from North Carolina transportation professionals. <i>Sustainability</i> , 16(20), 8747. <a href="https://doi.org/10.3390/su16208747">https://doi.org/10.3390/su16208747</a>
Taylor, N. L., Fliss, M. D., Schiro, S. E., & Harmon, K. J. (2024). Comparative analysis of injury identification using KABCO and ISS in linked North Carolina trauma registry and crash data. <i>Traffic Injury Prevention</i> , 1–7. <a href="https://doi.org/10.1080/15389588.2024.2361052">https://doi.org/10.1080/15389588.2024.2361052</a>
Taylor, N.L., Harmon, K. J., Kumfer, W. (Under review). Identification and selection of potential behavioral interventions to address traffic safety problems in Appalachia. <i>The Journal of Rural Health</i> .
Tiznado Aitken, I., Palm, M., & Farber, S. (2024). Exploring the interplay of transportation, time poverty, and activity participation. <i>Transportation Research Interdisciplinary Perspectives</i> , 26, 101175. <a href="https://doi.org/10.1016/j.trip.2024.101175">https://doi.org/10.1016/j.trip.2024.101175</a>
Tiznado-Aitken, I., Palm, M., & Farber, S. (2024). Segmenting transit ridership: From crisis to opportunity. <i>Transportation Research Part A: Policy and Practice</i> , 190, 104239. <a href="https://doi.org/10.1016/j.tra.2024.104239">https://doi.org/10.1016/j.tra.2024.104239</a>
Usman, S. M., Khattak, A. J., Chakraborty, S., Mahdinia, I., & Tavassoli, R. (2024). Detection of distracted driving through the analysis of real-time driver, vehicle, and roadway volatilities. <i>Journal of Transportation Safety &amp; Security</i> , 1–22. <a href="https://doi.org/10.1080/19439962.2024.2341393">https://doi.org/10.1080/19439962.2024.2341393</a>

### 3.2 Policy papers

As mentioned earlier, the Road to Zero Coalition’s Safe System Working Group worked on position papers focused on reframing the Safe System approach and speed safety cameras.

### 3.3 Website(s) or other Internet site(s)

- The UTK team provided multiple training resources at the sites [ctr.utk.edu](http://ctr.utk.edu) and [tesp.utk.edu/ite/](http://tesp.utk.edu/ite/).
- Other CSCRS resources were updated with new data and information during this period:
  - [Vision Zero Plan Guide repository](#)
  - [Micromodes.org](http://Micromodes.org)

### 3.4 New methodologies, technologies, or techniques

None to report for this period.

### 3.5 Inventions, patent applications, and/or licenses

None to report for this period.

### 3.6 Other products

None to report for this period.

## 4. Outcomes

CSCRS included two performance measures related to outcomes in its Technology Transfer Plan:

- Average annual number of opportunities/instances to share transportation safety expertise at conferences, professional meetings and through media. (Please see publications listed in Section 3.1 and media described in Section 4.1.)
- Annual number of adoptions, use or reference to CSCRS products, or influence on national or state research agendas (see Section 4.6).

### 4.1 Increased understanding and awareness of transportation issues

CSCRS researchers engaged with a variety of media outlets. Key examples:

- Laura Sandt talked to *The Economist* for ["Americans' love affair with big cars is killing them,"](#) August 31, 2024.
- Seth LaJeunesse, UNC HSRC, was featured in a number of outlets:
  - ["Traffic deaths topped 40,000 last year as NHTSA looks to reduce distracted driving,"](#) NBC News, April 4, 2024
  - ["One City's Quest to Rein in Reckless Driving"](#) *Governing*, April 16, 2024
  - [UNC Endeavors profile](#), June 19, 2024
- Katie Harmon, UNC HSRC, talked to *The News & Observer* for ["What NC laws and experts say about cannabis-impaired driving,"](#) July 24, 2024.
- Eric Dumbaugh, Florida Atlantic University (FAU), was interviewed for multiple media outlets – examples:
  - ["None of 9 killed in SUV wreck were using 'Safety Equipment,' crash report says. What does Florida law require?"](#) WPTV, August 6, 2024
  - ["Always have your head on a swivel': Experts share tips for driving safely in Boca Raton,"](#) *University Press*, August 28, 2024

#### 4.2 Passage of new policies, regulation, rulemaking, or legislation

CSCRS has engaged in several activities in this area:

As mentioned earlier, On May 21, 2024, Laura Sandt testified before the U.S. Senate Committee on Commerce, Science, and Transportation Subcommittee on Surface Transportation, Maritime, Freight, and Ports in a hearing titled ["Examining the Roadway Safety Crisis and Highlighting Community Solutions."](#) The hearing was intended to examine the causes of the roadway safety crisis, including unique risks to pedestrians, bicyclists, and motorcyclists, and how Congress can support a holistic approach to roadway safety.

In her oral testimony, Dr. Sandt stated, "It is tragic to see that the roadway fatality rate in the U.S. has been steadily increasing since 2010, moving in the opposite direction of other high-income nations. Traffic injuries require more than 2.1 million emergency department visits each year, and create significant burdens for families, health care providers, employers, and the broader community. Our economy and our public health depend on people and families arriving safely at their jobs and schools and returning safely to their homes and communities each day."

Also, FHWA continued the [Vision Zero Community Pairing Program](#), modeled after CSCRS's work in partnership with the Governor's Highway Safety Program.

#### 4.3 Increases in the body of knowledge

Already mentioned are two key activities during this period designed to further CSCRS's Safe System knowledge:

- Hosted the fourth annual [NC Vision Zero Leadership Team Institute](#) in June 2024 in Chapel Hill, NC.
- Wrapped up activities for the [2024 Safe Mobility Conference](#) including creating conference proceedings.

#### 4.4 Improved processes, technologies, techniques, and skills in addressing transportation issues

None to report for this period.

#### 4.5 Enlargement of the pool of trained transportation professionals

During this reporting period, the results of these efforts are shown with several CSCRS researchers showcasing their impressive expertise in multiple ways (see Objective 3-2 for more info).

#### 4.6 Adoption of new technologies, techniques, or practices

None to report for this period.

## 5. Impacts

CSCRS included two performance measures related to impacts in its Technology Transfer Plan:

- Annual instances integrating CSCRS research results into agency or stakeholder practices that demonstrate use of research results in practice (see Section 5.1).
- Annual instances integrating CSCRS research results into organizational/workforce capacity building that demonstrate use of research results in capacity building activities conducted by local, regional, state, or national level agencies (see Section 5.2).

### 5.1 Impact on the effectiveness of the transportation system

Since 2016 our team has been applying public health principles and systems science in our work to equip current and future transportation professionals and stakeholders with more effective tools to solve complex safety challenges. This multidisciplinary work advances Safe Systems concepts — such as accounting for human vulnerabilities and human behavior to proactively limit the chance of fatal injury — through research, education, workforce development, and technology transfer.

### 5.2 Impact on the adoption of new practices, or instances where research outcomes have led to the initiation of a start-up company

Laura Sandt’s congressional testimony seemed like a fitting thing to do as CSCRS completes its grant as a University Transportation Center funded under the Fast Act.

Also, UTK received a grant from the Tennessee Department of Economic and Community Development (TNECD) through the Transportation Network Growth Opportunity (TNGO) initiative. The grant supports the development of the Platform for Automotive Cybersecurity Testing (PACT) to enhance cybersecurity testing in the automotive industry.

### 5.3 Impact on the body of scientific knowledge

Using the numerous and varied methods listed previously, CSCRS contributed to the body of knowledge surrounding Safe Systems and systems-science approaches to road safety. As mentioned, Asad Khattak, UTK, presented at the Inaugural USDOT Future of Transportation Summit in Washington, DC, in August 2024 on the topic “Investigating Vulnerable Road User Safety in Disadvantaged Communities-Application of the Safe Systems Approach.”

Other evidence of our impact on the body of scientific knowledge can be found through other honors and appointments that recognize our expertise and provide opportunities to influence scientific discourse. Key examples:

- Sandt has served on the following committees or technical advisory groups:
  - NCDOT Executive Committee for Highway Safety
  - NCDOT Fully Automated Vehicle Task Force
  - NCDOT State Freight Advisory Committee
  - Chapel Hill, NC, Vision Zero Executive Committee
  - FHWA *Safe System Approach for the Urban Core* project Technical Panel
  - FHWA *National Complete Streets Assessment* Project Technical Review Panel
- Eric Dumbaugh, FAU, has served in roles for the following groups:
  - World Health Organization's Powered Two-Wheeler (PTW) Technical Advisory Group
  - Academic Advisory Group for the UN's 4th Ministerial Conference on Road Safety
  - Broward MPO working group developing a safety framework for a "smart corridor" pilot project

- Katie Harmon, UNC HSRC, has been involved in the following endeavors:
  - Serving as a review editor for the *Journal of Safety Research* and *Frontiers in Public Health*
  - Member of the NC Traffic Records Coordinating Committee
- Nancy Lefler, UNC HSRC, has served as co-chair of the NC Traffic Records Coordinating Committee.
- Asad Khattak, UTK, continued serving as a Board Member of TennSMART, a consortium of transportation CEOs, research institutions, and government officials. Dr. Khattak’s leadership positions also include:
  - Editor-in-chief of the *Journal of Intelligent Transportation Systems*
  - Associate editor of the *International Journal of Sustainable Transportation*
  - Member of TRB’s Standing Committee on Traveler Behavior and Values
  - Special adviser to the *Journal of Transportation Safety & Security*
  - Advisory board member of *Analytic Methods in Accident Research*
- Chris Cherry, UTK, leadership activities include:
  - Leading a [consortium of international researchers](#) on micromobility research, including safety research.
  - Member of the following committees:
    - City of Knoxville Vision Zero Working Group
    - SAE’s Powered Micromobility Committee
  - Editor positions for:
    - *Transportation Research Part D: Transport and Environment*
    - *Journal of Cycling and Micromobility Research*
    - *International Journal of Sustainable Transportation*
- Candace Brakewood, UTK, is an associate editor of the *Journal of Public Transportation*.

## 5.4 Impact on transportation workforce development

Over the years that CSCRS has been in existence, we continually reached new audiences through a variety of workforce development activities including conferences, webinar series, presentations, and more. We have worked with hundreds of students, from K-12 to doctoral level, to inspire new generations of transportation safety professionals to think ahead to a Safe System for transportation.

## 6. Changes/Problems

### 6.1 Changes in approach and reasons for change

As mentioned earlier, the project R36: Laying the Groundwork for a National Pedestrian Injury Surveillance System ended because of changes to external circumstances.

As was reported in the April 2022 SAPR, project R41: Bike-sharing as a safety intervention: Evidence from nine large US cities, which was to have involved partnering with Johns Hopkins University, was unable to proceed because of unforeseen external circumstances. No funds were expended on this effort.

### 6.2 Actual or anticipated problems or delays

Nothing to report.

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

Nothing to report.

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

Nothing to report.

## 7. Special Reporting Requirements

Nothing to report. This entire report is available on the [CSCRS website](#).