

SAFER-SIM Accomplishments

October 1, 2023 – March 31, 2024

1. Accomplishments

1.1 Research Accomplishments

1.1.1 Peer-reviewed journal publications

Published

1. Subramanian, L.D., Sherony, R., Plumert, J.M., Kearney, J.K. & O’Neal, E.E. (2024). How Do Bicyclists Respond to Vehicles with Adaptive Headlamp Systems? A Nighttime Study in an Immersive Virtual Environment. *Journal of Safety Research*, 88, 24-30.
2. Bao H, Zhou X, Hamann C, Spears S (2023). Understanding children’s cycling route selection through spatial trajectory data mining. *Transportation Research Interdisciplinary Perspectives*, 20, July 2023, 100855. <https://doi.org/10.1016/j.trip.2023.100855>
3. Claros, B., Chitturi, M., Bill, A., & Noyce, D. A. (2024). Naturalistic study of vehicle-bicycle lateral passing distance on high-speed rural two-lane roadways with paved shoulders. *Transportation research part F: traffic psychology and behaviour*, 102, 316-334.
4. Kim, N. Y., Plumert, J. M., Kearney, J. K., Clark, L. A., Dindo, L. & O’Neal E. O. (in press). Longitudinal and concurrent effortful control as predictors of risky bicycling in adolescence: Moderating effects of age and gender. *Journal of Pediatric Psychology*.
5. Kruse, C., Brown, T.L., Schmitt, R. Gaffney, G., & Milavetz, G. (Under Review). Assessing the Impact of Cannabis Use on Freeway Driving Performance and Practices: A Comparative Analysis with Placebo and Alcohol-Influenced Driving. *Traffic Injury Prevention*.
6. Malik, J., O’Neal, E. O., Noonan, M., Noferesti, I., Pixley, W., Plumert, J. M., & Kearney, J. K. Can augmented reality help pedestrians safely cross multiple lanes of traffic? A virtual reality study. Manuscript in preparation.
7. Pai. G., Zhang, F., Hungund, A. P., Pamarthi, J., Roberts, S. C., Horrey, W. J., & Pradhan, A. K. (2023). Frequency and Quality of Exposure to Adaptive Cruise Control and Impact on Trust, Workload, and Mental Models. *Accident Analysis and Prevention*.
8. Parr, M. D. N., Noonan, M., Noferesti, I., Wang, J., Stoffel, J., Kearney, J. K., & Plumert, J. M. Relations between executive functioning, processing speed, and motor timing in children with varying movement coordination skills. Manuscript in preparation.
9. Ryan, A., Hennessy, E., Ai, C., Kwon, W., Fitzpatrick, C., and Knodler, M. (2023). “Driver Performance at Horizontal Curves: Bridging Critical Research Gaps to Increase Safety.” *Traffic Safety Research*. 3, 000014.
10. Ryan, A., Ai, C., Fitzpatrick, C., and Knodler, M. (2022). “Crash Proximity and Equivalent Property Damage Calculation Techniques: An Investigation using a Novel Horizontal Curve Dataset.” *Accident Analysis & Prevention*, 166, 106550.

11. Ryan, A., Ai, C., Fitzpatrick, C., and Knodler, M. (2023). "Developing a Geospatial Safety Analysis Tool: A Systematic Approach to Identify Safety-Critical Horizontal Curve Segments and Hazardous Contributing Factors." *Journal of Transportation Engineering, Part A: Systems*. 149(7), 04023051.
12. Sarigiannis, D., Atzemi, M., Oke, J., Christofa, E., and Gerasimidis, S. 2024. Feature Engineering and Decision Trees for Predicting High Crash-Risk Locations Using Roadway Indicators. *Transportation Research Record: Journal of the Transportation Research Board*. DOI: 03611981231217497.
13. Subramanian, L. D., O'Neal E. O., Kim, N. Y., Noonan, M., Plumert, J. M., & Kearney, J. K. (revision under review) Deciding when to cross in front of an autonomous vehicle: How child and adult pedestrian respond to eHMI timing and vehicle kinematics. Manuscript submitted for publication.

Accepted for publication

Nothing to report.

Submitted

14. Wang, M., Mehrotra, S., Wong, N., Parker, J., Roberts, S. C., Kim, W., Romo, A., & Horrey, W. J. (under review). Human-Machine Interfaces and Vehicle Automation: A Review of the Literature and Recommendations for System Design, Feedback, and Alerts. *Transportation Research Part F: Traffic Psychology and Human Behaviour*.
15. Wang, M., Parker, J., Wong, N., Mehrotra, S., Roberts, S. C., Kim, W., Romo, A., & Horrey, W. J. (under 3rd review). The Effect of Human-Machine Interface Design on Driver Performance and Behavior While Using Vehicle Automation. *Accident Analysis & Prevention*.

1.1.2 Book chapters

Nothing to report.

1.1.3 Edited books

1. Plumert, J. M., O'Neal, E. O., & Karasik, L. (forthcoming). *Interacting with the physical world around us: Understanding the perception of risk*. Guest edited volume in *Acta Psychologica*
2. Wang, W., Zaheer, Q., Qiu, S., Wang, W., Ai, C., Wang, J., Wang, S., and Hu, W. (2023). "Digital Twins in Transportation Infrastructure Management." Springer Nature, Singapore. ISBN-9789819958030

1.1.4 Conference papers, posters, and symposia

Presented

1. Kruse, C., Brown, T. L., Schmitt, R., Gaffney, G., Milavetz, G., & Berka, C. (2024). Effects of Cannabis on Highway Driving Transportation Research Board Annual Meeting, Washington, DC.
2. Miller, R., Hodson, S., Le, T., & Brown, T. (2024). Detection of Cannabis Impaired Driving from Vehicle-based Inputs using Machine Learning Methods. Transportation Research Board Annual Meeting, Washington, DC.
3. Kruse, C., Brown, T.L., Schmitt, R. Gaffney, G., & Milavetz, G. (2024). Assessing the Impact of Cannabis Use on Freeway Driving Performance and Practices: A Comparative Analysis with Placebo and Alcohol-Influenced Driving. Association for

- the Advancement of Automotive Medicine, Seoul, South Korea. November 2024.
4. Mason, J., Gaspar, J., Carney, C., Romo, A., Kim, W., & Horrey, W. (2024, January). Characterizing clusters of road users based on quality of and confidence in mental models of ACC and LKA. TRB, Washington DC.
 5. O’Neal, E.E., Malik, J., Plumert, J.M., & Kearney, J.K. (Sept. 2024). How do Augmented Reality Displays Influence Pedestrian Road-Crossing Decisions in Complex Traffic Environments? Oral presentation accepted to the 2024 World Safety Conference. Delhi, India.
 6. O’Neal, E.E., Noonan, M., Yang, G. & Plumert, J.M. (April 2024). Parental Strategies for Training Novice Teen Drivers’ Hazard Anticipation Skills. Oral presentation submitted to the 2024 annual meeting of the Society for the Advancement of Violence and Injury Research, Chapel Hill, NC.
 7. Arya, M.S., Reyes, M.L., Arabi, S., Sharma, A., Hamann, C. (January 2024). Unsupervised Learning-Based Classification of Driver Following Behavior in Agricultural Traffic. Proceedings of the Transportation Research Board 103rd Annual Meeting. Washington DC.
 8. Pai, Ganesh & Pradhan, A.K., (2024). Drivers' Hazard Avoidance Behaviors When Using Advanced Driver Assistance Systems: An Observational Simulator Study, Transportation Research Board Annual Meeting, January 2024, Washington DC

Accepted/Not yet presented

Nothing to report.

Submitted

Nothing to report.

1.1.5 Paper/poster awards

Nothing to report.

1.1.6 External grants related to SAFER-SIM

Awarded

1. “A Virtual Reality Lifeguarding Environment for Research and” Cathleen Moore (PI) & Jodie Plumert (Co-I). National Institutes of Health, 4/1/2024 – 3/31/2026, \$413,267 in total costs.
2. U of I-IPRC Driver behavior and medical outcomes data improvement and linkage, United State Department of Transportation; National Highway Traffic Safety Administration, Role: O’Neal, Co-Investigator; Reyes, Co-Investigator, \$178,955.00, Status: Awarded (October 2023– September 2024)

Submitted

1. New England University Transportation Center. U.S. Department of Transportation. (Knodler, Roberts, Christofa, Gonzales, Pradhan, Miller)
2. NSF REU Site: Research for Inclusivity and Driving Equity (RIDE) (Roberts & Christofa)
3. Effectiveness of Two-stage Turn Queue Boxes in Massachusetts: A Comparison with Bike Boxes, Massachusetts Department of Transportation (Christofa, Ai, and Tainter)
4. NCHRP 17-106 Motorist Behavior and Safety Impacts on Bicyclists from Centerline and Shoulder Rumble Strips on High-Speed Two-Lane Highways. National Cooperative Highway Research Program. (Knodler, Christofa, Tainter - UMass)

5. Accessible Bus Stop Design in the Presence of Bike Lanes. Massachusetts Department of Transportation. (Christofa and Ai)
6. Bicycle Infrastructure Investments in Socioeconomically Diverse Communities and their Impact on Adolescents' Commute to School, Pioneering Ideas: Exploring the Future to Build a Culture of Health, Robert Wood Johnson Foundation (Christofa)
7. Consumer education for advanced vehicle technologies: Tailored training based on drivers' self-perceptions and knowledge (Pradhan)

1.2 Leadership Development Accomplishments

1.2.1 Invited presentations

1. Hamann, C., Reyes, M.L. (2023). Impact of 4-to-3 Lane Road Conversions on Emergency Responses. Iowa DOT Traffic and Safety Forum. Nov. 8. Ames, IA
2. Jaji Pamarthi submitted an abstract and was invited to present a poster describing the research results at the AAAFTS Safe Mobility Conference in Raleigh, NC from March 26-27, 2024.
3. Bhagwant Persaud Webinar, University Toronto Metropolitan University, February 27, 2024.

1.2.2 Invited papers

Nothing to report.

1.2.3 Invited workshops

1. Safe Mobility Conference, Chapel Hill, NC – Promise and Perils of Vehicle Automation on the Road to Safe Mobility (Pradhan)

1.2.4 Grant review panels

1. BTSCRIP - Determining the State of Knowledge, Opportunities for Outreach, and Data-driven Tools for Consumer Education of ADAS (Pradhan)
2. National Science Foundation (Knodler)
3. Oversight Panel for NCHRP project 07-29: Development of the 8th edition of the AASHTO's A Policy on Geometric Design of Highways and Streets (Green Book). National Cooperative Highway Research Program, Transportation Research Board. (Figueroa-Medina)

1.2.5 Advisory committees

1. University of Iowa College of Engineering Diversity Equity & Inclusion Committee (Marshall)
2. Scientific Committee, Driving Simulation Conference 2024 (Kearney)
3. UI Injury Prevention Research Center Executive Committee (Reyes)
4. Iowa State Highway Safety Plan Advisory Team (Reyes)
5. Partners for Automated Vehicle Education, Academic Advisory Council (Pradhan)
6. Center for Research on Families Steering Committee (Roberts)
7. Internal Advisory Board for the Institute of Diversity Sciences (Roberts)
8. Applied Human Factors and Ergonomics (AHFE 2017-Present) Scientific Advisory Board (Valdés)
9. National Institute for Congestion Reduction (NICR) Executive Committee, University

- Transportation Center (UTC). Nov. 2021 - Present. (Valdés)
10. Panamerican Society for Research in Transportation and Logistics. Advisory Board. January 2023 – Present (Valdés)
 11. Transportation Education Council, Institute of Transportation Engineers (ITE) (Figueroa-Medina)
 12. Transportation Safety Council, Institute of Transportation Engineers (ITE) (Figueroa-Medina)
 13. National Institute for Congestion Reduction (NICR) Executive Committee, University Transportation Center (UTC). Nov. 2019 – Present (Figueroa-Medina)
 14. Technical Committee of the Pan American Federation of Engineers Societies (UPADI), 2020-Present (Figueroa-Medina)
 15. Standing Committee on Performance Effects of Geometric Design AKD-10 (formerly known as Operational Effects of Geometrics AHB-65), Transportation Research Board, 2013-Present (friend) (Cruzado)
 16. Coordinator of the Research Faculty for Faculty and Postdoctoral Fellows, UPRM (Cruzado)
 17. Member of the Institutional Committee for Research, UPRM (Cruzado)
 18. Co-Advisor of the Institute of Transportation Engineers, student chapter, at UPRM (Cruzado)
 19. Institute of Transportation Engineers (member) (Cruzado)

1.2.6 Journal editing

1. Driving Simulation Conference, reviewer (Kearney)
2. Journal of Pediatric Psychology, editorial board (Plumert)
3. Acta Psychologica, Special Issue (Co-Guest Editor, O’Neal)
4. Journal of Safety Research (reviewer and editorial board member, O’Neal)
5. Journal of Family Trauma, Child Custody, & Child Development (reviewer, O’Neal)
6. Injury Prevention (reviewer, O’Neal)
7. South African Journal of Psychology (reviewer, O’Neal)
8. TRF: Traffic Psychology and Behavior (reviewer, O’Neal)
9. JAMA Open (reviewer, O’Neal)
10. Traffic Injury Prevention (reviewer, O’Neal)
11. American Journal of Public Health (reviewer, O’Neal)
12. Transportation Research Board Annual Meeting (reviewer, Reyes)
13. Road Safety and Simulation Conference 2024 (reviewer, Reyes)
14. Ergonomics (Roberts)
15. Associate Editor, ASCE Journal of Computing in Civil Engineering (Ai)
16. Handling Editor, Transportation Research Record (Ai)
17. Paper Review Coordinator, TRB AME50 (Ai)
18. Accident Analysis and Prevention - Guest Editor (Pradhan)
19. Transportation Research Record – Editorial Board (Pradhan)
20. Frontiers in Neuroergonomics – Editorial Board (Pradhan)
21. Journal of Law and Mobility – Contributing Editor (Pradhan)
22. ASCE Journal of Transportation Engineering Part A (Systems) (Christofa)
23. Transportation Research Record Handling Editor (Christofa)
24. Editorial Advisory Board of Transportation Research Part C: Emerging Technologies (Christofa)

25. Applied Human Factors and Ergonomics (AHFE), Scientific Advisory Board, 2017-Present (Valdés)
26. 19th LACCEI International Multi-Conference for Engineering, Education, and Technology (Valdés)
27. 103rd TRB Annual Meeting, January 2024, Washington DC (Valdés)
28. Editorial Board Member of International Journal of Natural Disasters, Accidents and Civil Infrastructure (RIDNAIC), Scipedia, August 2020 – Present (Valdés)
29. Highway Safety Committee Chair, Panamerican Society for Research in Transportation and Logistics, September 2022 – Present (Valdés)
30. 103rd Transportation Research Board (TRB) Annual Meeting, January 2024, Washington, DC (Figueroa-Medina)
31. Transportation Research Record, TRB Journal (Figueroa-Medina)
32. Accident Analysis and Prevention Journal, Elsevier (Figueroa-Medina)
33. Dimension Journal of the College of Engineers and Surveyors of Puerto Rico, 2019 – August 2022 (Figueroa-Medina)
34. International Journal of Natural Disasters, Accidents and Civil Infrastructure (RIDNAIC), Scipedia, September 2020 – Present (Figueroa-Medina)
35. Latin American and Caribbean Consortium of Engineering Institutions (Cruzado)
36. International Symposium on Highway Geometric Design (Cruzado)
37. The Open Transportation Journal (Cruzado)
38. Journal of Transportation Engineering (Cruzado)
39. Transportation Research Board, TRB Journal (Cruzado)

1.2.7 Leadership positions in professional organizations

1. Transportation Research Board of the National Academies: Standing Committee on Human Factors of Infrastructure Design and Operations Committee (ACH40), Chair (Marshall)
2. Society for the Advancement of Violence and Injury Research, Science Committee Co-Chair and Conference Planning Committee member (O’Neal)
3. Transportation Research Board of the National Academies: Standing Committee on Vehicle User Education, Training, and Licensing (ACH60), Committee Research Chair and Member (Reyes)
4. Transportation Research Board of the National Academies: Young Driver Subcommittee (ACH60(1)), Member (Reyes)
5. Chair Elect for the Surface Transportation Technical Group of the Human Factors and Ergonomics Society (Roberts)
6. At-Large Member of the Executive Council of the Human Factors and Ergonomics Society (Roberts)
7. TRB Committee on Geographic Information Science (AED40), Member (Ai)
8. TRB Committee on Accessible Transportation and Mobility (AME50), Member (Ai)
9. TRB Committee on Vehicle User Education, Training, and Licensing – Paper Coordinator (Pradhan)
10. AutoUI 2020 – Work in Progress Committee Co-chair (Pradhan)
11. Association for the Advancement of Automotive Medicine – Chair of Automated Vehicles Special Interest Group (Pradhan)

12. TRB AME70 Transportation and Public Health Committee Member and Secretary (Christofa)
13. Technical Committee, Pan American Federation of Engineering Associations (UPADI), 2020-Present (Valdés-Díaz)
14. Panamerican Society for Research in Transportation and Logistics. Board Member. January 2023 – Present (Valdés-Díaz)
15. Executive Board of the Institute of Transportation Engineers Puerto Rico Sect(ion, 2022-Present (Figueroa-Medina)
16. Pan-American Transport Systems Technical Committee (Figueroa-Medina)
17. Pan-American Federation of Engineering Associations (UPADI), 2020-Present (Figueroa-Medina)

1.2.8 SAFER-SIM Webinars

SAFER-SIM holds both individual project webinars and organizes project webinars into symposia where projects may be grouped by subject matter to allow parties interested in specific topics to interact with several researchers and projects in a single session. Online presentations are open to all transportation professionals and the public, and are recorded, and posted on the SAFER-SIM YouTube channel so they are available to anyone who was not able to attend or would like to review.

1. 11/7/2023 A Robotic Vehicle Platform for Education and Outreach, Chris Schwarz
2. 11/14/2023 Mapping comprehension of ADAS across the driving and road user population, Justin Mason
3. 12/5/2023 Exploring Impaired Driving, Tim Brown & Cole Kruse

1.2.9 Professional awards

1. Jodie Plumert named the Russell B. and Florence D. Day Chair in Liberal Arts and Sciences
2. Shannon Roberts received the Bentzi Karsh Early-Career Service Award from the Human Factors and Ergonomics Society.
3. College of Engineering Outstanding Teaching Award, University of Massachusetts Amherst
4. Ganesh Pai received a Link Foundation Fellowship
5. Anuj K. Pradhan received the AAAM Elaine Wodzin Award

1.3 Education and Workforce Development Accomplishments

1.3.1 Peer-reviewed journal publications w/ student authors

1. Subramanian, L.D., Sherony, R., Plumert, J.M., Kearney, J.K. & O’Neal, E.E. (2024). How Do Bicyclists Respond to Vehicles with Adaptive Headlamp Systems? A Nighttime Study in an Immersive Virtual Environment. *Journal of Safety Research*, 88, 24-30.
2. Kim, N. Y., Plumert, J. M., Kearney, J. K., Clark, L. A., Dindo, L. & O’Neal E. O. (in press). Longitudinal and concurrent effortful control as predictors of risky bicycling in adolescence: Moderating effects of age and gender. *Journal of Pediatric Psychology*.
3. Kruse, C., Brown, T.L., Schmitt, R. Gaffney, G., & Milavetz, G. (Under Review). Assessing the Impact of Cannabis Use on Freeway Driving Performance and

Practices: A Comparative Analysis with Placebo and Alcohol-Influenced Driving. Traffic Injury Prevention.

4. Malik, J., O’Neal, E. O., Noonan, M., Noferesti, I., Pixley, W., Plumert, J. M., & Kearney, J. K. Can augmented reality help pedestrians safely cross multiple lanes of traffic? A virtual reality study. Manuscript in preparation.
5. Pai, G., Zhang, F., Hungund, A. P., Pamarthi, J., Roberts, S. C., Horrey, W. J., & Pradhan, A. K. (2023). Frequency and Quality of Exposure to Adaptive Cruise Control and Impact on Trust, Workload, and Mental Models. Accident Analysis and Prevention.
6. Parr, M. D. N., Noonan, M., Noferesti, I., Wang, J., Stoffel, J., Kearney, J. K., & Plumert, J. M. Relations between executive functioning, processing speed, and motor timing in children with varying movement coordination skills. Manuscript in preparation.
7. Ryan, A., Hennessy, E., Ai, C., Kwon, W., Fitzpatrick, C., and Knodler, M. (2023). “Driver Performance at Horizontal Curves: Bridging Critical Research Gaps to Increase Safety.” Traffic Safety Research. 3, 000014.
8. Subramanian, L. D., O’Neal E. O., Kim, N. Y., Noonan, M., Plumert, J. M., & Kearney, J. K. (revision under review) Deciding when to cross in front of an autonomous vehicle: How child and adult pedestrian respond to eHMI timing and vehicle kinematics. Manuscript submitted for publication.
9. Wang, M., Mehrotra, S., Wong, N., Parker, J., Roberts, S. C., Kim, W., Romo, A., & Horrey, W. J. (under review). Human-Machine Interfaces and Vehicle Automation: A Review of the Literature and Recommendations for System Design, Feedback, and Alerts. Transportation Research Part F: Traffic Psychology and Human Behaviour.
10. Wang, M., Parker, J., Wong, N., Mehrotra, S., Roberts, S. C., Kim, W., Romo, A., & Horrey, W. J. (under 3rd review). The Effect of Human-Machine Interface Design on Driver Performance and Behavior While Using Vehicle Automation. Accident Analysis & Prevention.

1.3.2 Book chapters w/ student authors

Nothing to report.

1.3.3 Conference posters and papers w/ student authors

1. **Kruse, C.**, Brown, T. L., Schmitt, R., Gaffney, G., Milavetz, G., & Berka, C. (2024). Effects of Cannabis on Highway Driving Transportation Research Board Annual Meeting, Washington, DC.
2. **Kruse, C.**, Brown, T.L., Schmitt, R. Gaffney, G., & Milavetz, G. (2024). Assessing the Impact of Cannabis Use on Freeway Driving Performance and Practices: A Comparative Analysis with Placebo and Alcohol-Influenced Driving. Association for the Advancement of Automotive Medicine, Seoul, South Korea. November 2024.
3. Mason, J., Gaspar, J., Carney, C., Romo, A., **Kim, W.**, & Horrey, W. (2024, January). Characterizing clusters of road users based on quality of and confidence in mental models of ACC and LKA. TRB, Washington DC.
4. **O’Neal, E.E.**, **Malik, J.**, Plumert, J.M., & Kearney, J.K. (Sept. 2024). How do Augmented Reality Displays Influence Pedestrian Road-Crossing Decisions in Complex Traffic Environments? Oral presentation accepted to the 2024 World Safety Conference. Delhi, India.

5. **O’Neal, E.E., Noonan, M.,** Yang, G. & Plumert, J.M. (April 2024). Parental Strategies for Training Novice Teen Drivers’ Hazard Anticipation Skills. Oral presentation submitted to the 2024 annual meeting of the Society for the Advancement of Violence and Injury Research, Chapel Hill, NC.
6. **Pai, Ganesh & Pradhan, A.K.,** (2024). Drivers' Hazard Avoidance Behaviors When Using Advanced Driver Assistance Systems: An Observational Simulator Study, Transportation Research Board Annual Meeting, January 2024, Washington DC

1.3.4 Paper/poster awards w/ student authors

Nothing to report.

1.3.5 Graduate students working on and supported by SAFER-SIM related projects

Site	Number
University of Iowa	6
University of Central Florida	0
University of Massachusetts Amherst	11
University of Puerto Rico Mayaguez	7
University of Wisconsin Madison	0

1.3.6 Undergraduate students working on and supported by SAFER-SIM related projects

Site	Number
University of Iowa	15
University of Central Florida	0
University of Massachusetts Amherst	2
University of Puerto Rico Mayaguez	2
University of Wisconsin Madison	0

1.3.7 Student attendance and presentations at the SAFER-SIM symposium

Nothing to report.

1.3.8 Transportation-related M.A. and PhD theses

1. Doctoral Dissertation: “Drivers’ Hazard Avoidance During Vehicle Automation: Impact of Mental Models and Implications for Training” Ganesh Pai, December 2023

1.3.9 Curriculum modules developed

1. Bicycle Infrastructure Treatments (for CEE 413/513: Pedestrians and Bicyclists) (Christofa)
2. A new transportation laboratory course TRANSPORTATION ENGINEERING STUDIES was approved at the University of Puerto Rico at Mayaguez. The description of this laboratory course is: "Studies performed by civil engineers to characterize, analyze, simulate, and estimate the performance, service quality, and condition of transportation systems. Discussion of data collection and analysis techniques. Demonstration of software tools used to plan, evaluate, operate, and maintain transportation systems. Techniques for presenting data and communicating

results for transportation systems." One of the lab sessions included was related to Road user performance: driving and pedestrian simulation. In this session the students will learn about the use of simulation in studying road user behavior and the identification of safety countermeasures. This course is planned to be offered in the next academic year.

1.3.10 Student internships related to SAFER-SIM

1. Meng Wang (UM) is on an internship at Honda Research Institute for Spring 2024.

1.3.11 Presentations to student groups or classes

1. 2/20/24 Scattergood Friends School virtual reality class (6)
2. "Teens behind the wheel" – talk given in "Injury and Violence Prevention" class within the College of Public Health at the University of Iowa – Oct. 18, 2023
3. Shannon Roberts gave a brief talk to IISE students during Pizza with Profs on November 23, 2023.
4. Deflection Angle Effect on Continuous Driver Performance Along Horizontal Curves study was presented to the CEE450/516 Geometry Design class.
5. Christofa, E. 2023. Health in Transportation Decision Making. Transport, Society, and Behaviour course Invited Lecture, Department of Civil, Geological and Mining Engineering, Montreal Polytechnique, 9 November [virtual]

1.3.12 # Schools visited and # students present

1. Shannon Roberts visited Springfield Honors Academy (High School) to discuss her research on December 18, 2023.

1.3.13 # Career fairs visited and # of attendees

1. College of Engineering Career Fair, February 29, 2024 – 731 attendees

1.3.14 Summer institutes and programs and # of students participating

1. Worked with Prof Ryan Miller at Grinnell College on a Summer research program to look at predicting impaired driving based on vehicle data. The output of this was an abstract submitted to TRB's Impairment in Transportation Committee where a Grinnell student presented (2)

1.4 Technology Transfer

1.4.1 SAFER-SIM webinars

See 1.2.8 *SAFER-SIM Webinars*

1.4.2 Registrations for webinars

Information not available.

1.4.3 Views of archived webinar content

There have been 72 views of the three webinar videos posted during this reporting period and 3,071 views of all archived content this period, and 57,972 views over the lifetime of the channel.

1.4.4 *Press releases for SAFER-SIM related research*

Nothing to report.

1.4.5 *Media requests*

Nothing to report.

1.4.6 *Tours of facilities*

1. Career Discovery Tours of Driving Safety Research Institute (58 students) – October 11 & 12, 2023
2. Public Open House Driving Safety Research Institute (60-80 attendees) – October 18, 2023
3. Clear Creak Amana High School students tours of Driving Safety Research Institute (20 students) – October 19 & 20, 2023
4. Iowa City Home School Group tours of Driving Safety Research Institute (25 students) – November 2, 2023
5. Tour for Prof. Cari Casteel’s class of Driving Safety Research Institute – November 27, 2023
6. Alliant Energy tour of Driving Safety Research Institute – January 29, 2024
7. Office of Strategic Communications (OSC) tour of Driving Safety Research Institute and ride in automated shuttle – January 30, 2024
8. Maisha Orthy (prospective grad student) (UI) – February 9, 2024
9. Iowa City Home School Group tours of Driving Safety Research Institute (54 students) – February 14 & 16, 2024
10. Cornell Engineering Class tour of Driving Safety Research Institute (10 students) – February 23, 2024
11. Shannon Roberts (along with graduate and undergraduate students) gave three (3) tours of the driving simulator lab to prospective UMass undergraduate students.
12. Human Performance Lab Tour as part of the Civil and Environmental Engineering Transportation Seminar Series (led by Anuj Pradhan) (UM) – March 1, 2024
13. University of Iowa Book Club tour of Driving Safety Research Institute – March 6, 2024

1.4.7 *Website traffic*

Not available.

1.4.8 *Patents filed*

Nothing to report.

1.4.9 *DOT requests for presentations or proposals related to SAFER-SIM*

Nothing to report.

1.4.10 *Practitioner attendance at events*

Nothing to report.

1.4.11 *Number of improved or new simulation technologies, software, methods, or processes*

Nothing to report.

1.5 Collaboration

1.5.1 Attendance at the SAFER-SIM symposia

Nothing to report.

1.5.2 Interdisciplinary research projects within and across sites

1. Analyzing the Performance of Remote-Drivers on Transit Shuttle Short Routes, a collaborative project between University of Wisconsin – Madison and University of Puerto Rico- Mayaguez

1.5.3 Collaborative research projects across SAFER-SIM or other UTC sites

1. Exploring Impaired Driving
 - a. Worked with Prof Ryan Miller and 2 undergraduate students at Grinnell College on a Summer research program to look at predicting impaired driving based on vehicle data.
2. Driver Attitudes and Behavior in the Presence of E-Scooters versus Bicyclists
 - a. Collaborative exchange of ideas between University of Puerto Rico Mayaguez and University of Massachusetts-Amherst

1.5.4 Collaborations with industry partners and government agencies

<i>Organization Name</i>	<i>Location</i>	<i>Contribution</i>
1. Grinnell College	Grinnell, IA	Financial support In-kind support Facilities Collaborative research Personnel Exchange
2. AAA Foundation for Traffic Safety	Washington, DC	Financial Support Collaborative research
3. City of Racine	Racine, WI	Financial support to help with the purchase of AV. In-kind support facilities to operate the AV shuttle in Racine.
4. Gateway Technical College	Racine, WI	In-kind support facilities to house and operate the shuttle in Racine.

1.5.5 Collaborative peer-reviewed journal publications

Nothing to report.

1.5.6 Collaborative book chapters

Nothing to report.

1.5.7 Student exchanges with other SAFER-SIM sites

Nothing to report.

1.5.8 Students pursuing advanced degrees at other SAFER-SIM sites
Nothing to report.

1.5.9 Programs involving community colleges
Nothing to report.

1.5.10 Graduates hired at SAFER-SIM, other UTC sites, or external organizations
Nothing to report.

1.6 Diversity

1.6.1 # SAFER-SIM projects involving underrepresented/minority (U/M) students
Twenty-two (22) project projects involving 31 students were active this period.

1.6.2 # U/M events attended

	# of students
1. Shannon Roberts attended the Annual Meeting for the National Society of Black Engineers, as the faculty advisor for the UMass Chapter, from March 20-23, 2024. The meeting comprises the largest gathering of Black engineers, with 18000+ attendees. Thirty-eight students from UMass attended the Annual Meeting.	38

1.6.3 # U/M students at attended events
38 students

1.6.4 Graduating U/M student placement
Nothing to report.

1.7 Outcomes

1.7.1 Number of improved or new technologies, software, methods, or processes adopted
Nothing to report.

1.7.2 Stakeholders who adopt, implement or deploy SAFER-SIM research findings or technologies through policy, practice, regulation, rulemaking or legislation
Nothing to report.

1.7.3 Number of projects that reach adoption, implementation or deployment
Nothing to report.

1.8 Impacts

1.8.1 Expected reductions in crashes from implemented policy, practice, regulation, rulemaking, or legislation

1. Driver Attitudes and Behavior in the Presence of E-Scooters versus Bicyclists (UM)
 - a. This research is expected to set the stage for determining factors and infrastructure design affecting e-scooter safety and understanding how attitudes towards e-scooter riders compare with those towards bicyclists.
2. Evaluation of Driver Workload and Training Strategies on a Diverging Diamond Interchange (UPR)
 - a. The reduction in crash potential obtained in the simulation is notable. In the case of direct maneuvers, representing the most remarkable geometric change, the number of instances with critical errors was reduced from (8/48) 17% to (1/48) 2% of the maneuvers performed by the subjects in the study. Potential crashes are associated with critical errors in the different maneuvers performed at the intersection. Critical errors include steering against traffic, stopping in the middle of the road, reversing when realizing a wrong maneuver was made, going off the road, and crashing with curbs or concrete barriers. Moreover, the main impact generated by this project is the reduction in the construction costs of the DDI project. In reviewing the design using the driving simulator, important changes were made to the geometry, pavement marking, and signage. New safety features and overhead signs were included that required the installation of structural support for the new signage. These changes were detected in time, avoiding costly interventions that would have been necessary once the intersection was opened to the public. Likewise, the drivers' safety when traveling through this intersection was increased, and, above all, the public's confidence in implementing innovations to reduce congestion and improve safety. All this was achieved thanks to the simulation experiments done before implementation.

1.8.2 Expected reduction in congestion and traffic conflicts from implemented policy, practice, regulation, rulemaking or legislation

1. Driver Attitudes and Behavior in the Presence of E-Scooters versus Bicyclists (UM)
 - a. Reduction of traffic conflicts is expected from implementation of infrastructure treatments and regulations for e-scooter riding that improve safety. Improved safety for e-scooters could motivate increased e-scooter mode share which would consequently reduce congestion.
2. Evaluation of Driver Workload and Training Strategies on a Diverging Diamond Interchange (UPR)
 - a. The reduction in congestion, in this case, is mainly due to the implementation of the innovative intersection itself. It is unclear how much congestion was reduced because of the changes generated by the implementation of the SaferSim project and the design process integrating driving simulation to fine-tune the detailed design. However, it was clear that reducing crashes would reduce the non-recurrent congestion generated by such events. In addition, clearer signage and pavement markings made the transition process more

straightforward from a Conventional Diamond Interchange (CDI) to a Diverging Diamond Interchange (DDI), reducing congestion.