

SAFER-SIM Accomplishments

September 30, 0222 - March 31, 2023

1. Accomplishments

1.1 Research Accomplishments

1.1.1 Peer-reviewed journal publications

Published

1. M. Nour and M.Zaki Towards formalization and monitoring of microscopic traffic parameters using temporal logic, Accepted Journal of Transportation Research Record
2. Afifah, F., Guo, Z., and Abdel-Aty. M. (2023), System-level impacts of en-route information sharing considering adaptive routing. Transportation Research Part C: Emerging Technologies, 149, 104075. (IF: 9.02)
3. Z. Wang, O. Zheng, L. Li, M. Abdel-Aty, C. Cruz-Neira and Z. Islam, "Towards Next Generation of Pedestrian and Connected Vehicle In-the-loop Research: A Digital Twin Co-Simulation Framework," in IEEE Transactions on Intelligent Vehicles, doi: 10.1109/TIV.2023.3250353.
4. Rundus, C. R. M., McGehee, D. V., & Schwarz, C. W. (2022). Analyzing Driver Foot Behavior between Regenerative and Service Braking. SAE International journal of transportation safety, 11(09-11-01-0001).
5. 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. 10.55329/LMJI8901.
6. Parker, J., Wang, M., Ojuri, B., Roberts, S. C., McDermott, J. M., & Fisher, D. L. (2023). Impact of Level 2 Automation and ADHD Symptomatology on Young Drivers' Attention Maintenance. Transportation Research Part F: Traffic Psychology and Human Behaviour, 94, 504-516.
7. Figueroa-Medina, D. Valdés, B. Colucci, N. Cardona & A. Chamorro. 2022. Analysis of Walking Speeds and Success Rates on Mid-Block Crossings using Virtual Reality Simulation. Accident Analysis and Prevention Journal. Elsevier. February 2023.
8. Song, Y., Chitturi, M. V., & Noyce, D. A. (2023). Impact of event encoding and dissimilarity measures on traffic crash characterization based on sequence of events. Accident Analysis & Prevention, 185, 107016.
9. Song, Y., Chitturi, M. V., & Noyce, D. A. (2022). Intersection two-vehicle crash scenario specification for automated vehicle safety evaluation using sequence analysis and Bayesian networks. Accident Analysis & Prevention, 176, 106814.
10. Song, Y., Chitturi, M. V., & Noyce, D. A. (2021). Automated vehicle crash sequences: Patterns and potential uses in safety testing. Accident Analysis & Prevention, 153, 106017.

Accepted for publication

1. Malik, J., Kim, N.Y., Di Napoli Parr, M., Kearney, J.K., Plumert, J.M., & Rector, K. (in press). Do simulated augmented reality overlays influence street-crossing decisions for non-mobility-impaired older and younger adult pedestrians? Human

Factors.

2. Di Napoli Parr, M., O'Neal, E.E., Zhou, S., Williams, B., Butler, K.M., Chen, A., Kearney, J.K., & Plumert, J.M. (in press). How children judge affordances when walking and bicycling across virtual roads: Does mode of locomotion matter? *Developmental Psychology*.
3. O'Neal, E. E., Wendt, L., Hamann, C., Reyes, M., Peek-Asa, C. (in press). Rates and predictors of teen crash culpability, *Journal of Safety Research*.
4. Han Bao, Xun Zhou, Cara J. Hamann, and Steven Spears. Understanding Children's Cycling Route Selection through Spatial Trajectory Data Mining". Under revision at *Transportation Research Interdisciplinary Perspectives*.
5. Mehrotra, S., Zhang, F., & Roberts, S. C. (accepted). Looking out or looking away? Exploring the impact of driving with a passenger on young drivers' eye glance behavior. *Human Factors: The Journal of the Human Factors and Ergonomics Society*.
6. Christofa, E., Ai, C., Deliali, A., Tainter, F., Cesic, L., Hannon, T., and Kostopoulou, E. 2022. Bicyclist and Motorist Behavior at Bike Boxes. *Transportation Research Record: Journal of the Transportation Research Board*. [accepted]
7. Mehrotra, S., Zhang, F., & Roberts, S. C. (accepted). Looking out or looking away? Exploring the impact of driving with a passenger on young drivers' eye glance behavior. *Human Factors: The Journal of the Human Factors and Ergonomics Society*.

Submitted

1. Subramanian, L. D., Sherony, R., Kearney, J. K., Plumert, J. M., & O'Neal E. O. How do bicyclists respond to vehicles with adaptive headlamp systems? A nighttime study in an immersive virtual environment. Manuscript submitted for publication.

1.1.2 Book chapters

Nothing to report.

1.1.3 Edited books

Nothing to report.

1.1.4 Conference papers, posters, and symposia

Presented

1. Wang, Z., Yue, L*, Abdel-Aty, M., Zhu, J., Zheng, O., & Zaki, M. Investigating the Effects of Human-Machine Interface on Cooperative Driving at Non-Signalized Intersection Using an Integrated Co-Simulation Platform, Presented at 103th Annual Meeting of the Transportation Research Board, Washington, D.C.
2. Wang, Z., Yue, L*, Abdel-Aty, M., Zhu, J., Zheng, O., & Zaki, M. Investigating the Effects of Human-Machine Interface on Cooperative Driving at Non-Signalized Intersection Using an Integrated Co-Simulation Platform, Presented at UTC SAFERSIM Symposium 10 years of Research.
3. Afifah, F.*, Guo, Z., and Abdel-Aty, M. (2022), Impacts of I2V Infrastructure Placement on CVs Safety in an Interconnected Network. Presentation at the Transportation Research Board 101th Annual Meeting, Washington D.C. and IISE Annual Conference, Seattle, WA.
4. Z. Wang, O. Zheng, L. Li, M. Abdel-Aty, C. Cruz-Neira and Z. Islam, "Towards Next

Generation of Pedestrian and Connected Vehicle In-the-loop Research: A Digital Twin Co-Simulation Framework," Presented at UTC SAFERSIM Symposium 10 years of Research.

5. O'Neal, E.E., Kim, N. Y., & Plumert, J.M. (March 2023). Parental scaffolding of children's prospective control in a dynamic perception-action task. Oral presentation at the 2023 biennial meeting of the Society for Research in Child Development, Salt Lake City, UT.
6. O'Neal, E.E., Subramanian, L.D., Noonan, M., Stoffel, J.A., Wang, J., Kim, N.Y., Kearney, J.K., & Plumert, J.M. (April 2023). How do children respond to autonomous vehicle external human-machine interface cues? Oral presentation at the 2023 annual meeting of the Society for Violence and Injury Research, Denver, CO.
7. Malik, J., O'Neal, E.E., Noonan, M., Plumert, J.M., & Kearney, J.K. (February 2023). Can augmented reality help pedestrians safely cross multiple lanes of traffic? Safer-Sim Symposium, University of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico February 2023
8. Jiang, Y., Rahimian, P., O'Neal, E.E., Parr, M., Malik, J., Subramanian, L., Kim, A., Plumert, J.M., & Kearney, J.K. (February 2023). Assistive technology for vulnerable road users. Safer-Sim Symposium, University of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico February 2023
9. Jiang, Y., Rahimian, P., O'Neal, E.E., Parr, M., Malik, J., Subramanian, L., Kim, A., Plumert, J.M., & Kearney, J.K. (February 2023). Peer influences on risky pedestrian road crossing. Safer-Sim Symposium, University of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico February 2023
10. O'Neal, E., Reyes, M., Plumert, J., and McGehee, D. Extended Evaluation of Training Programs to Accelerate Hazard Anticipation Skills in Novice Teen Drivers. Safer-Sim Symposium, University of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico February 2023
11. Gonzales, E., Roberts, S. C., & Mehrotra, S. (accepted). Curb Management Policy Insights and Recommendations for Communities of All Sizes. In Proceedings of the Transportation Research Board 101st Annual Meeting 2022.
12. Cestic, L., Christofa, E., and Knodler, M. 2023. Driver Attitudes and Behavior in the Presence of E-Scooters versus Bicyclists. SaferSimposium, University of Puerto Rico, Mayaguez, February 18-20.
13. Han, Z., Gonzales, E.J., Christofa, E., and Oke, J. 2022. Framework for Line-specific Urban Rail Transit Energy Prediction and Inference. INFORMS Annual Meeting, 16–19 October, Indianapolis, Indiana.
14. Han, Z., Gonzales, E., Christofa, E., and Oke, J., 2023. Line-specific Energy Modeling framework for Urban Rail Transit Systems: A case study of Boston. Transportation Research Board 102nd Annual Meeting, Washington DC, 8–12 January, Paper No. 23-05022.
15. Kostopoulou, E., Christofa, E., Gonzales, E., and Krevat, D. 2023. Measuring Access to Food: Application in Massachusetts, Transportation Research Board 102nd Annual Meeting, Washington DC, 8–12 January, Paper No. 23-04777.
16. Valdés, D., Figueroa-Medina, A, Perelló, C., Sierra-Betancur, C. L, Mori-Vargas, A. and Concepción-Carrasco, E., Use of Driving Simulation to Improve Safety on Innovative Intersection Designs: A Diverging Diamond Interchange Implementation.

XXII Pan American Congress on Transport and Logistics (PANAM), Guayaquil, Ecuador, 2023

17. Ramos-López, I., Valdés, D., Development of Innovative Strategies to Improve Drivers and Workers Safety in Freeway Work Zones (Title in Spanish: Desarrollo de Medidas Innovadoras para Mejorar la Seguridad de Conductores y Trabajadores en Zonas de Trabajo en Autopistas.) XXII Pan American Congress on Transport and Logistics (PANAM), Guayaquil, Ecuador, 2023
18. Figueroa-Medina, A , Valdés, D. , Cardona N., Badillo, J., Rodríguez, J., Chamorro A. and Muñoz, M., Virtual Reality Driving Simulator for User Behavior and Road Safety Research. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
19. Valdés, D., Figueroa-Medina, A, Perelló, C., Sierra-Betancur, C. L, Mori-Vargas, A. and Concepción-Carrasco, E., riving Simulation Study of the First Diverging Diamond Interchange in Puerto Rico (PR-30 & PR-189 in Gurabo). 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
20. Taveras-Canela, Y., Valdés, D. , García, R., Rojas, M., Colon, E., Martinez J., Alcohol Consumption and Driving: Study, Perception And Simulation. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
21. Valdés, D., Figueroa-Medina, A, Sierra-Betancur, C. L, Solano, A. and Concepción-Carrasco, E., Evaluation of the Effect of Drivers' Behavior for Safety on Rural Roads with Advanced Driving Assistance Systems. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
22. Valdés, D., Figueroa-Medina, A, Perelló, C., Sierra-Betancur, C. L, Mori-Vargas, A. and Concepción-Carrasco, E., Assessment of Drivers' Behavior while Interacting with E- scooters Using a Driving Simulator. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
23. Figueroa-Medina, A , Valdés, D. , Cardona N., Chamorro A., Impact of Turning Radius on Pedestrian Crossing Safety on Urban Unsignalized Intersections Using Virtual. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
24. Valdés, D., Figueroa-Medina, A, Colucci, B., Sierra-Betancur, C. L, Mori-Vargas, A. and Concepción-Carrasco, E., Evaluation of Driver Workload and Training Strategies On A Diverging Diamond Interchange. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
25. Didier Valdés, Benjamín Colucci, Alberto Figueroa-Medina, Yindhira Taveras, María Rojas, Rocío Sotomayor-Irizarry, C. Lorena Sierra. January 2021. Safety Enhancements to Reduce Speeding in School Zones using Driving Simulation. Transportation Research Board 100th Annual Meeting. Washington, D.C..
26. Alberto Figueroa-Medina, Didier Valdés, Benjamín Colucci, Natacha Cardona, and Andrés Chamorro. September 2021. Pedestrian Walking speeds and Success Rates on Mid-Block Crossing Using Virtual Reality Simulation. Abstract accepted for Road Safety and Simulation Conference 2021.
27. Benjamín Colucci, Didier Valdés, and Alberto M. Figueroa-Medina. 2021. Innovative Research that Contributes to Safety, Sustainability, and Resilience in Transportation Systems. Paper published International Journal of Natural Disasters, Accidents, and Civil Infrastructure (Revista Internacional de Desastres Naturales, Accidentes e Infraestructura Civil, RIDNAIC), Vol. 19-20, #13, pp. 211-229.
28. Alberto Figueroa-Medina, Didier Valdés, Benjamín Colucci, Natacha Cardona, and

Andrés Chamorro. March 2021. Study of Gap Acceptance and Walking Speeds of Pedestrians using Virtual Reality Simulation. Poster at SAFER-SIM Symposium 2021.

29. Alberto Figueroa-Medina, Didier Valdés, Benjamín Colucci, Natacha Cardona, and Andrés Chamorro. March 2021. Impact of Road Information Assistive Systems on Pedestrian Crossing Safety. Poster at SAFER-SIM Symposium 2021.

Accepted/Not yet presented

Nothing to report.

Submitted

1. Wang, Z., Yue, L*., Abdel-Aty, M., Zhu, J., Zheng, O., & Zaki, M. Investigating the Effects of Human-Machine Interface on Cooperative Driving at Non-Signalized Intersection Using an Integrated Co-Simulation Platform (under review by Transportation Research Part F)

1.1.5 Paper/poster awards

1. Z. Wang, O. Zheng, L. Li, M. Abdel-Aty, C. Cruz-Neira and Z. Islam, "Towards Next Generation of Pedestrian and Connected Vehicle In-the-loop Research: A Digital Twin Co-Simulation Framework," in IEEE Transactions on Intelligent Vehicles, doi: 10.1109/TIV.2023.3250353.
2. Jeehan Malik, Poster Award (3rd Place), Safer-Sim Symposium, University of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico, February, 2023.
3. 1st place, poster competition Safer-SIM Symposium, Mayaguez, Puerto Rico

1.1.6 External grants related to SAFER-SIM

Awarded

1. "Improving Novice Driver Roadway Hazard Identification Through a Parent-Focused Intervention (K99/R00)", Elizabeth O'Neal (PI) Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) April 2021 – March 2026 \$949,469
2. "How Do Children With and Without Movement Difficulties Coordinate Decisions and Actions in Dynamic Perception-Action Tasks? Jodie Plumert (PI), Joseph Kearney (Co-I), & Elizabeth O'Neal (Co-I) R01HD113545-01.
3. Shannon Roberts' proposal for an REU site was selected for funding by NSF. RIDE - Research for Inclusivity and Driving Equity, National Science Foundation Research Experiences for Undergraduates (REU) Site, \$400,000, 09/01/2022 – 08/31/2025, PI with co-PI Eleni Christofa. The objective of this grant is to immerse 10 undergraduate students in a 10 week summer research experience focused on community engaged research to improve the transportation experience for underserved communities. This grant will complement the SaferSim project by allowing an undergraduate student to continue analyzing the SaferSim data with a focus on improving underserved communities.
4. Performance Evaluation of the PR-30/PR-189 Diverging Diamond Interchange Phase 2. Constructora Santiago, Inc. and Puerto Rico Highways and Transportation Authority. Final Report. October 2022.

5. NSF funded our proposal “The Future of Trucking: Pathways to Positive Societal Outcomes” \$1.6M interdisciplinary proposal.

Submitted

1. HCC: Small: AUTOMATE - Advancing Underrepresented Groups Travel Opportunities by Mobilizing Automated Vehicle Technology for Equity, National Science Foundation, \$600,000, 01/01/2023-12/31/2026, PI. (Roberts) This proposal is focused on building interfaces for driving automated systems that are inclusive and equitable. It logically builds on the current SaferSim work that is aimed at optimizing driving automation systems.

1.2 Leadership Development Accomplishments

1.2.1 Invited presentations

1. Guo, Z. (2023). Pave the Way for Future Mobility Systems with Large-scale Transportation Electrification. Presentation at the UCF College of Engineering and Computer Science Weekly Seminar, Orlando, FL.
2. Guo, Z. (2023). Towards an Electrified Transportation Systems: Planning, Operation, and Market Design. Presentation at the Rosen College Research Colloquium, Orlando, FL.
3. Guo, Z. (2023). Optimal coordination of charging and platooning schedules for electrified freight systems. Presentation at the COTA Winter Symposium, Washington D.C.
4. O’Neal, E.E Child development and road traffic injury risk. 2022 Iowa Safe Routes to School Conferences, Des Moines, January 27, 2022.
5. Kearney, J.K., VR Research in Three Parts. Keynote presentation, University of Iowa Computing Conference, February 24, 2023.
6. “Gap Effect in Shifting Attention in Conditional Automation” International Conference on Traffic and Transport Psychology (ICTTP), Gothenburg, Sweden, 07/2022, Emily Shull
7. Reyes, M.L. (2022). Rear Seat Occupant Belt Use and Motor Vehicle Crash Injury Severity. Traffic and Safety Forum. Nov. 15. Ames, IA
8. Presentation of research findings on the project: Performance Evaluation of the PR-30/PR-189 Diverging Diamond Interchange Phase 2. November 2022. 10 participants from PRHTA, FHWA, Constructora Santiago and UPRM.
9. Presentation of SAFERSIM Research using the UPRM Pedestrian Virtual Reality Simulator and the UPRM Driver Simulators. Director of the Engineering Research and Development Center (ERDC) of the US Army Corps of Engineers, and his executive and administrative teams. Mar 28, 2023. 25 participants.
10. Didier Valdés, Benjamín Colucci, Alberto Figueroa-Medina, Yindhira Taveras, and Andrés Chamorro. Use of Driving and Virtual Reality Simulation Technologies to Visualize Transportation Safety Innovations. 100th Annual Meeting of the Transportation Research Board, Visualization Lighting Talks Lectern Session 1420, Standing Committee on Visualization in Transportation (AED-80), January 29, 2021.
11. Alberto Figueroa-Medina. Study of Gap Acceptance and Walking Speed of Pedestrians using Virtual Reality Simulation. 1st Virtual Congress of Traumatic Brain

Injury. Graduate School of Rehabilitation Counseling, University of Puerto Rico at Río Piedras, March 5, 2021.

12. Alberto Figueroa-Medina. Innovative Research Contributing to Safety, Sustainability and Resilience in Transportation Systems. 1st Virtual Summit RIDNAIC. March 16, 2021.
13. Didier Valdés, Benjamín Colucci, and Alberto Figueroa-Medina. Success Stories on Technology Transfer: UPRM Experience. Virtual SAFER-SIM Symposium, March 19, 2021.

1.2.2 Invited papers

Nothing to report.

1.2.3 Invited workshops

1. Pradhan - Expert panelist on NHTSA/UNC Workshop on novice drivers and vehicle automation.

1.2.4 Grant review panels

1. Zhaomiao Guo, NSF Civil Infrastructure System Panel in 2022 and 2023
2. Zhaomiao Guo, NSF LEAP HI Panel in 2022
3. Shannon Roberts served on an NSF proposal review panel.
4. Shannon Roberts served on an NIH proposal review panel for HCMF (Human Complex Mental Function).
5. Shannon Roberts continues to serve on a BTSCRCP panel for BTS-01: Guidance for Employer-Based Behavioral Traffic Safety Programs for Drivers in the Workplace. For the panel, she provided guidance for the contractor in terms of how drivers will respond to traffic safety programs.
6. NSF ERC Site Visit Team (Christofa)
7. NSF Cyberphysical Systems (Christofa)
8. Member of 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. Member Board of Directors (2020-2022) International Road Federation, Washington DC. (Abdel-Aty)
2. Board of Directors, National Safety Council (2021-2023) (Abdel-Aty)
3. ITF Roundtable on Artificial Intelligence in Road Traffic Crash Prevention, OECD, 2021 (Abdel-Aty)
4. Transportation Safety Committee of ASCE's Transportation & Development Institute (T&DI) (Hasan)
5. Artificial Intelligence (AI) Committee of ASCE's Transportation & Development Institute (T&DI) (Hasan)
6. Governor's Traffic Safety Board – Pedestrian Safety Initiative Committee Member (July 2022 – present) (O'Neal)
7. Scientific Committee, Driving Simulation Conference 2023 (Kearney)
8. Co-chair - Society for the Advancement of Violence and Injury Research (SAVIR) -

- Science Committee (Oct 2021 – present) (O’Neal)
9. UI Injury Prevention Research Center Executive Committee (Reyes)
 10. Iowa State Highway Safety Plan Advisory Team (Reyes)
 11. Center for Research on Families Steering Committee (Roberts)
 12. Internal Advisory Board for the Institute of Diversity Sciences (Roberts)
 13. TRR Editorial Board Task Force (Christofa)
 14. Didier Valdés, Applied Human Factors and Ergonomics (AHFE 2017-Present) Scientific Advisory Board.
 15. Didier Valdés, Executive Committee of the National Institute for Congestion Reduction (NICR), University Transportation Center (UTC). Nov. 2021 - Present.
 16. Didier Valdés, Panamerican Society for Research in Transportation and Logistics. Advisory Board. January 2023 - Present
 17. Alberto M. Figueroa-Medina, Transportation Education Council, Institute of Transportation Engineers (ITE).
 18. Alberto M. Figueroa-Medina, Transportation Safety Council, Institute of Transportation Engineers (ITE).
 19. Alberto M. Figueroa-Medina, Executive Committee of the National Institute for Congestion Reduction (NICR), University Transportation Center (UTC). Nov. 2019 - Present.
 20. Alberto M. Figueroa-Medina, Technical Committee of the Pan American Federation of Engineers Societies (UPADI), 2020-Present.
 21. Ivette Cruzado, Friend of the Standing Committee on Performance Effects of Geometric Design AKD-10 (formerly known as Operational Effects of Geometrics AHB-65), Transportation Research Board, 2013-Present.
 22. Ivette Cruzado, Coordinator of the Research Faculty for Faculty and Postdoctoral Fellows, UPRM.
 23. Ivette Cruzado, Member of the Institutional Committee for Research, UPRM.
 24. Ivette Cruzado, Co-Advisor of the Institute of Transportation Engineers, student chapter, at UPRM.
 25. Ivette Cruzado, member of the Institute of Transportation Engineers.

1.2.6 Journal editing

1. Editor-in-Chief (July 2013 – ongoing), Accident Analysis and Prevention (Abdel-Aty)
2. Associate Editor (2021- current), ASCE Journal of Transportation Part A: Systems (Abdel-Aty)
3. Handling editor (April 2021 – ongoing), Journal of Transportation Research Record (Yue)
4. TRR Handling Editor (Hasan)
5. Member of Editorial Advisory Board, Transportation Research Part C (Hasan)
6. Associate Editor, Journal of Big Data Analytics in Transportation (Hasan)
7. Associate Editor, IEEE ITS conference (Hasan)
8. Associate Editor, Highway Transportation System Security and Emergency Response, Journal of Transportation Safety and Security (JTSS) (Hasan)
9. Associate Editor ASCE Natural Hazards Review (Hasan)
10. Associate Editor Frontiers in Built Environment (Hasan)

11. TRR Handling Editor (M.Zaki)
12. Transportation Research Part F: Traffic Psychology (reviewer, Reyes)
13. Journal of Safety Research (reviewer, Reyes)
14. Ergonomics Editorial Board (Roberts)
15. Handling Editor, Transportation Research Record (Ai)
16. Paper Review Coordinator, TRB AME50 (Ai)
17. Transportation Research Record Handling Editor (Christofa)
18. Editorial Advisory Board of Transportation Research Part C: Emerging Technologies (Christofa)
19. Accident Analysis and Prevention - Guest Editor (Pradhan)
20. Transportation Research Record – Editorial Board (Pradhan)
21. Frontiers in Neuroergonomics – Editorial Board (Pradhan)
22. Journal of Law and Mobility – Contributing Editor (Pradhan)
23. Applied Human Factors and Ergonomics (AHFE), Scientific Advisory Board, 2017–Present. (Valdés)
24. 19th LACCEI International Multi-Conference for Engineering, Education, and Technology. (Valdés)
25. 102nd TRB Annual Meeting, January 2023, Washington DC. (Valdés)
26. Editorial Board Member of International Journal of Natural Disasters, Accidents and Civil Infrastructure (RIDNAIC), Scipedia, August 2020 - Present. (Valdés)
27. Highway Safety Committee Chair, Panamerican Society for Research in Transportation and Logistics, September 2022 – Present (Valdés)
28. 102nd Transportation Research Board (TRB) Annual Meeting, January 2023, Washington, DC. (Figueroa-Medina)
29. Transportation Research Record, TRB Journal. (Figueroa-Medina)
30. Accident Analysis and Prevention Journal, Elsevier. (Figueroa-Medina)
31. Dimension Journal of the College of Engineers and Surveyors of Puerto Rico, 2019 – August 2022. (Figueroa-Medina)
32. International Journal of Natural Disasters, Accidents and Civil Infrastructure (RIDNAIC), Scipedia, September 2020 - Present. (Figueroa-Medina)
33. Latin American and Caribbean Consortium of Engineering Institutions. (Cruzado)
34. International Symposium on Highway Geometric Design. (Cruzado)
35. The Open Transportation Journal. (Cruzado)
36. Journal of Transportation Engineering. (Cruzado)
37. Transportation Research Board, TRB Journal. (Cruzado)
38. Journal of Transportation Engineering (ASCE). Associate Editor. (Noyce)
39. International Journal on Sustainable Transportation. Editorial Board. (Noyce)
40. Accident Analysis and Prevention Journal. Editorial Advisory Board. (Noyce)

1.2.7 Leadership positions in professional organizations

1. Department of Civil, Environmental & Construction Engineering at the University of Central Florida, Department Chair (Abdel-Aty)
2. Faculty Advisor, ITE UCF Student Chapter (Hasan)
3. Human Factors and Ergonomics Society (HFES) Student Chapter at Iowa, President (Shull)

4. Transportation Research Board of the National Academies: Standing Committee on Vehicle User Education, Training, and Licensing (ACH60), Committee Research Chair and Member (Reyes)
5. Transportation Research Board of the National Academies: Young Driver Subcommittee (ACH60(1)), Member (Reyes)
6. Chair Elect for the Surface Transportation Technical Group of the Human Factors and Ergonomics Society (Roberts)
7. At-Large Member of the Executive Council of the Human Factors and Ergonomics Society (Roberts)
8. Paper Review Coordinator for the Transportation Research Board Committee on Human Factors of Vehicles (ACH30) (Roberts)
9. Member, TRB Committee on Geographic Information Science (AED40) (Ai)
10. Member, TRB Committee on Accessible Transportation and Mobility (AME50) (Ai)
11. TRB ACP25 Traffic Signal Systems Committee Member (Christofa)
12. TRB AME70 Transportation and Public Health Committee Member and Secretary (Christofa)
13. TRB Committee on Vehicle User Education, Training, and Licensing – Paper Coordinator (Pradhan)
14. AutoUI 2020 – Work in Progress Committee Co-chair (Pradhan)
15. Association for the Advancement of Automotive Medicine – Chair of Automated Vehicles Special Interest Group (Pradhan)
16. UTC National Center for Transportation Infrastructure Durability & Life-Extension (TriDurLE) Proposal ad-hoc reviewer (Ai)
17. Technical Committee, Pan American Federation of Engineering Associations (UPADI), 2020-Present. (Valdés)
18. Panamerican Society for Research in Transportation and Logistics. Board Member. January 2023 – Present (Valdés)
19. Executive Board of the Institute of Transportation Engineers Puerto Rico Section, 2022-Present (Figueroa-Medina)
20. Editorial Commission, Dimension Journal of the College of Engineers, and Surveyors of Puerto Rico, 2019 - June 2022 (Figueroa-Medina)
21. Pan-American Transport Systems Technical Committee, 2020 - Present. (Figueroa-Medina)
22. ACH40 Human Factors of Infrastructure Design and Operations (Marshall)
23. ACH40 Joint Subcommittee on Human Factors of In-Vehicle Systems (with ACH30) (Marshall)

1.2.8 SAFER-SIM Webinars

SAFER-SIM now 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 remain 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. The first project symposium was December 2022.

1. Didier Valdés Díaz, Assessing a two-step posted speed reduction as a potential countermeasure to improve safety in school zones using driving simulation. SAFER-

SIM Research Showcase. February 23, 2021

2. Enhancing the effectiveness of automated vehicle sensory-based alert systems (Meng Wang, University of Massachusetts-Amherst)
3. Understanding of advanced vehicle technology: The role of system exposure and perceptions of other road users (Ganesh Pai, University of Massachusetts-Amherst)
4. Analyzing the Performance of Remote-Drivers on Transit Shuttle Short Routes (Kelvin R Santiago-Chaparro, University of Wisconsin-Madison)
5. Transportation Data Analysis and Visualization Online Course Modules Development (Kelvin R Santiago-Chaparro, University of Wisconsin-Madison)
6. Dynamically Adapting Driver Assistance Systems Using Driver Monitoring Technology (Chris Schwarz, University of Iowa)
7. A Co-Simulation Study to Assess the Impacts of Connected and Autonomous Vehicles on Traffic Flow Stability during Hurricane Evacuation (Samiul Hasan, University of Central Florida)
8. Investigating the Effects of Cooperative Driving for CAVs in Different Driving Scenarios Using Multi-Driver Simulator Experiments (Zijin Wang, University of Central Florida)
9. Assess Driver Behaviour through Work Zones using Driving Simulation: Comparison between Drivers Sensitized Using Virtual Reality and General Driving Population (Carla Lopez del Puerto, University of Puerto Rico-Mayaguez)

1.2.9 Professional awards

1. Emily Shull, SAFER-SIM Excellence Award, 2023
2. Emily Shull, SAFER-SIM UTC Outstanding Student of the Year, 2023
3. Emily Shull, Human Factors and Ergonomics Society (HFES) Student Member with Honors, 2022
4. Michelle Reyes: Mary Jo Small Staff Fellowship Award (University of Iowa staff members may use to help defray costs associated with regional, national, or international meetings or workshops)
5. Shannon Roberts received the Bentzi Karsh Early-Career Service Award from the Human Factors and Ergonomics Society.
6. Andi Bill, NHTSA Public Service Award

1.3 Education and Workforce Development Accomplishments

1.3.1 Peer-reviewed journal publications w/ student authors

1. Figueroa-Medina, D. Valdés, B. Colucci, N. **Cardona** & A. **Chamorro**. 2022. Analysis of Walking Speeds and Success Rates on Mid-Block Crossings using Virtual Reality Simulation. Accident Analysis and Prevention Journal. Elsevier. February 2023.
2. M. **Nour** and M.Zaki Towards formalization and monitoring of microscopic traffic parameters using temporal logic, Accepted Journal of Transportation Research Record
3. Afifah, F., Guo, Z., and Abdel-Aty. M. (2023), System-level impacts of en-route information sharing considering adaptive routing. Transportation Research Part C: Emerging Technologies, 149, 104075. (IF: 9.02)
4. Z. **Wang**, O. Zheng, L. Li, M. Abdel-Aty, C. Cruz-Neira and Z. Islam, "Towards Next

Generation of Pedestrian and Connected Vehicle In-the-loop Research: A Digital Twin Co-Simulation Framework," in IEEE Transactions on Intelligent Vehicles, doi: 10.1109/TIV.2023.3250353.

5. **Rundus**, C. R. M., McGehee, D. V., & Schwarz, C. W. (2022). Analyzing Driver Foot Behavior between Regenerative and Service Braking. SAE International journal of transportation safety, 11(09-11-01-0001).
6. **Parker**, J., **Wang**, M., Ojuri, B., Roberts, S. C., McDermott, J. M., & Fisher, D. L. (2023). Impact of Level 2 Automation and ADHD Symptomatology on Young Drivers' Attention Maintenance. Transportation Research Part F: Traffic Psychology and Human Behaviour, 94, 504-516.
7. Song, Y., Chitturi, M. V., & Noyce, D. A. (2023). Impact of event encoding and dissimilarity measures on traffic crash characterization based on sequence of events. Accident Analysis & Prevention, 185, 107016.
8. **Song**, Y., Chitturi, M. V., & Noyce, D. A. (2022). Intersection two-vehicle crash scenario specification for automated vehicle safety evaluation using sequence analysis and Bayesian networks. Accident Analysis & Prevention, 176, 106814.
9. **Song**, Y., Chitturi, M. V., & Noyce, D. A. (2021). Automated vehicle crash sequences: Patterns and potential uses in safety testing. Accident Analysis & Prevention, 153, 106017.

1.3.2 Book chapters w/ student authors

Nothing to report.

1.3.3 Conference posters and papers w/ student authors

1. M. Nour, M.Zaki, and S. Hasan. A Co-Simulation Framework for Analyzing the Impact of Vehicular Communication on Hurricane Evacuation Safety. Poster presentation in TRB Annual Meeting, 2023.
2. **Wang**, Z., Yue, L*., Abdel-Aty, M., **Zhu**, J., **Zheng**, O., & Zaki, M. Investigating the Effects of Human-Machine Interface on Cooperative Driving at Non-Signalized Intersection Using an Integrated Co-Simulation Platform, Presented at 103th Annual Meeting of the Transportation Research Board, Washington, D.C.
3. **Wang**, Z., Yue, L*., Abdel-Aty, M., **Zhu**, J., **Zheng**, O., & Zaki, M. Investigating the Effects of Human-Machine Interface on Cooperative Driving at Non-Signalized Intersection Using an Integrated Co-Simulation Platform, Presented at UTC SAFERSIM Symposium 10 years of Research.
4. **Affah**, F.*, Guo, Z., and Abdel-Aty, M. (2022), Impacts of I2V Infrastructure Placement on CVs Safety in an Interconnected Network. Presentation at the Transportation Research Board 101th Annual Meeting, Washington D.C. and IISE Annual Conference, Seattle, WA.
5. **Z. Wang**, **O. Zheng**, L. Li, M. Abdel-Aty, C. Cruz-Neira and Z. Islam, "Towards Next Generation of Pedestrian and Connected Vehicle In-the-loop Research: A Digital Twin Co-Simulation Framework," Presented at UTC SAFERSIM Symposium 10 years of Research.
6. **O'Neal**, E.E., **Kim**, N. Y., & Plumert, J.M. (March 2023). Parental scaffolding of children's prospective control in a dynamic perception-action task. Oral presentation

at the 2023 biennial meeting of the Society for Research in Child Development, Salt Lake City, UT.

7. **O'Neal**, E.E., **Subramanian**, L.D., Noonan, M., Stoffel, J.A., **Wang**, J., **Kim**, N.Y., Kearney, J.K., & Plumert, J.M. (April 2023). How do children respond to autonomous vehicle external human-machine interface cues? Oral presentation at the 2023 annual meeting of the Society for Violence and Injury Research, Denver, CO.
8. **Malik**, J., **O'Neal**, E.E., Noonan, M., Plumert, J.M., & Kearney, J.K. (February 2023). Can augmented reality help pedestrians safely cross multiple lanes of traffic? Safer-Sim Symposium, University of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico February 2023
9. Jiang, Y., Rahimian, P., **O'Neal**, E.E., **Parr**, M., **Malik**, J., **Subramanian**, L., **Kim**, A., Plumert, J.M., & Kearney, J.K. (February 2023). Assistive technology for vulnerable road users. Safer-Sim Symposium, University of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico February 2023
10. Jiang, Y., Rahimian, P., **O'Neal**, E.E., **Parr**, M., **Malik**, J., **Subramanian**, L., **Kim**, A., Plumert, J.M., & Kearney, J.K. (February 2023). Peer influences on risky pedestrian road crossing. Safer-Sim Symposium, University of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico February 2023
11. **O'Neal**, E., Reyes, M., Plumert, J., and McGehee, D. Extended Evaluation of Training Programs to Accelerate Hazard Anticipation Skills in Novice Teen Drivers. Safer-Sim Symposium, University of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico February 2023
12. **Cesic**, L., Christofa, E., and Knodler, M. 2023. Driver Attitudes and Behavior in the Presence of E-Scooters versus Bicyclists. SaferSimposium, University of Puerto Rico, Mayaguez, February 18-20.
13. Valdés, D., Figueroa-Medina, A, **Perelló**, C., **Sierra-Betancur**, C. L, **Mori-Vargas**, A. and **Concepción-Carrasco**, E., Use of Driving Simulation to Improve Safety on Innovative Intersection Designs: A Diverging Diamond Interchange Implementation. XXII Pan American Congress on Transport and Logistics (PANAM), Guayaquil, Ecuador, 2023
14. Figueroa-Medina, A , Valdés, D. , **Cardona N.**, **Badillo**, J., **Rodríguez**, J., **Chamorro** A. and Muñoz, M., Virtual Reality Driving Simulator for User Behavior and Road Safety Research. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
15. Valdés, D., Figueroa-Medina, A, **Perelló**, C., **Sierra-Betancur**, C. L, **Mori-Vargas**, A. and **Concepción-Carrasco**, E., riving Simulation Study of the First Diverging Diamond Interchange in Puerto Rico (PR-30 & PR-189 in Gurabo). 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
16. **Taveras-Canela**, Y., Valdés, D. , García, R., Rojas, M., Colon, E., Martinez J., Alcohol Consumption and Driving: Study, Perception And Simulation. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
17. Valdés, D., Figueroa-Medina, A, **Sierra-Betancur**, C. L, **Solano**, A. and **Concepción-Carrasco**, E., Evaluation of the Effect of Drivers' Behavior for Safety on Rural Roads with Advanced Driving Assistance Systems. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
18. Valdés, D., Figueroa-Medina, A, **Perelló**, C., **Sierra-Betancur**, C. L, **Mori-Vargas**,

- A. and **Concepción-Carrasco**, E., Assessment of Drivers' Behavior while Interacting with E- scooters Using a Driving Simulator. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
19. Figueroa-Medina, A , Valdés, D. , **Cardona N.**, **Chamorro A.**, Impact of Turning Radius on Pedestrian Crossing Safety on Urban Unsignalized Intersections Using Virtual. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
 20. Valdés, D., Figueroa-Medina, A, Colucci, B., **Sierra-Betancur**, C. L, **Mori-Vargas**, A. and **Concepción-Carrasco**, E., Evaluation of Driver Workload and Training Strategies On A Diverging Diamond Interchange. 2023 SAFERSIM Symposium, Mayaguez, PR, February 2023.
 21. Didier Valdés, Benjamín Colucci, Alberto Figueroa-Medina, Yindhira **Taveras**, María Rojas, Rocío Sotomayor-Irizarry, C. Lorena **Sierra**. January 2021. Safety Enhancements to Reduce Speeding in School Zones using Driving Simulation. Transportation Research Board 100th Annual Meeting. Washington, D.C..
 22. Alberto Figueroa-Medina, Didier Valdés, Benjamín Colucci, Natacha **Cardona**, and Andrés **Chamorro**. September 2021. Pedestrian Walking speeds and Success Rates on Mid-Block Crossing Using Virtual Reality Simulation. Abstract accepted for Road Safety and Simulation Conference 2021.
 23. Alberto Figueroa-Medina, Didier Valdés, Benjamín Colucci, Natacha **Cardona**, and Andrés **Chamorro**. March 2021. Study of Gap Acceptance and Walking Speeds of Pedestrians using Virtual Reality Simulation. Poster at SAFER-SIM Symposium 2021.
 24. Alberto Figueroa-Medina, Didier Valdés, Benjamín Colucci, Natacha **Cardona**, and Andrés **Chamorro**. March 2021. Impact of Road Information Assistive Systems on Pedestrian Crossing Safety. Poster at SAFER-SIM Symposium 2021.

1.3.4 Paper/poster awards w/ student authors

1. IISE Energy Systems Track - Best Student Paper Competition (3rd place)”, with **Baghali**, S.* and Alam, M. R.*, Title: Multi-stage Charging Station and Distributed Generator Planning in Decentralized Power Distribution and Transportation Systems, Institute of Industrial and Systems Engineers (IISE) Annual Conference, 2022

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

Site	Number
University of Iowa	10
University of Wisconsin Madison	3
University of Massachusetts Amherst	5
University of Central Florida	6
University of Puerto Rico Mayaguez	8

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

Site	Number
University of Iowa	8
University of Wisconsin Madison	0
University of Massachusetts Amherst	3

University of Central Florida	1
University of Puerto Rico Mayaguez	2

1.3.7 Student attendance and presentations at the SAFER-SIM symposium

Over 30 students attended the February 2023 symposium in Mayaguez, Puerto Rico.

1.3.8 Transportation-related M.A. and PhD theses

1. Amr Abdelraouf, PhD dissertation, title “Data-Driven Intelligent Transportation System Applications on Freeways”
2. Ou Zheng, PhD dissertation, title “Development, Validation, And Integration of Ai-Driven Computer Vision Systems and Digital-Twin System for Traffic Safety Diagnostics”
3. PhD dissertation (ongoing): Transportation Electrification in Interdependent Power and Transportation Systems – Analysis, Planning, and Operation
4. PhD dissertation (ongoing): Enabling large-scale transportation electrification for connected and shared mobility systems
5. Yichen Ding graduated with PhD in Business Analytics in July 2022. Her thesis title is: “Predicting and Understanding Road User Behaviors through Big Geo-Referenced Egocentric Video Data Analytics”
6. “Maintaining Attention with Enhanced Human-Machine Interfaces in Conditionally Automated Driving”, Emily Shull, PhD Dissertation (in progress)
7. Yu (Fred) Song, 2021. Traffic Crash Patterns and Causations Based on Sequence of Events: Preparing for a Transition into Automated Transportation

1.3.9 Curriculum modules developed

1. Programming code and examples on numerical methods (e.g., linear algebra and linear regression) have been added in CGN 3405 Numerical Methods for Civil Engineering Course at UCF.
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. Volpe National Transportation Systems Center, Transportation Human Factors (Leila Cestic)

1.3.11 Presentations to student groups or classes

1. Kearney, J.K., VR Research in Three Parts. Presentation to the University of Iowa Association of Computer Machinery (ACM) student chapter, October 31, 2022.
2. “Naturalistic Driving Research” – talk given in “Global Road Safety” class within the College of Public Health at the University of Iowa – Feb. 15, 2023
3. Shannon Roberts sat on a panel focused on Women in STEM for undergraduate and graduate students.
4. Shannon Roberts gave a presentation to UMass undergraduate students in the Honors College on “Driving Automation Systems – What’s the Hype?”.
5. Shannon Roberts visited Springfield Honors Academy (High School) to discuss her research.
6. Shannon Roberts attended the Annual Meeting for the National Society of Black Engineers, as the faculty advisor for the UMass Chapter, from March 22-26, 2023. The meeting comprises the largest gathering of Black engineers, with >5000 attendees. Thirty-two students from UMass attended the Annual Meeting.
7. Demonstrations of the UPRM Pedestrian Virtual Reality Simulator and the UPRM Driver Simulators. UPRM First-year Civil Engineering Students. November 15 and 17, 2022. 30 students participated in the presentation.
8. Demonstrations of the UPRM Pedestrian Virtual Reality Simulator and the UPRM Driver Simulators. Dr. Alexis Massol, President of “Casa Pueblo” (A Community-based organization with great impact in Puerto Rico) and his team. March 30, 2023. 7 Participants
9. Yindhira Taveras. Use of Driving Simulators and Virtual Reality for Road Safety Research. Road Safety Conference. Vision Zero: Factors for the reduction of road accidents, March 13, 2021.

1.3.12 # Schools visited and # students present

1. Springfield Honors Academy, Springfield, MA: presentation to advertise the NSF REU program (~20 students)

1.3.13 # Career fairs visited and # of attendees

1. Classroom visits – 954 students
2. Project Lead the Way or Class tours – 71 students
3. STEAM Institutes – 2010 students
4. Career Caravan – 1200 students
5. Job Shadows – 7 students
6. Workshops – 61 students
7. Other – 100 students

1.3.14 Summer institutes and programs and # of students participating

1. Shannon Roberts gave a presentation on Industrial Engineering and Human Factors for ~40 high school students in the Summer Engineering Institute on July 11, 2022.
2. Shannon Roberts presented her career path during a panel for ~15 high school students in the Massenbergs Summer Institute on August 1, 2022.

1.4 Technology Transfer

1.4.1 SAFER-SIM webinars

See 1.2.8 SAFER-SIM Webinars

1.4.2 Registrations for webinars

There were 64 registrations across the four sessions of the December 2022 online symposium. Registrants represented 16 organizations that included 3 industry, 5 government, and 8 academic.

1.4.3 Views of archived webinar content

Nothing to report.

1.4.4 Press releases for SAFER-SIM related research

Nothing to report.

1.4.5 Media requests

Title	Publisher
1. Samiul Hasan gave a live interview discussing the challenges in evacuation before Hurricane Ian's landfall in Florida in September 2022.	Fox Weather
2. Shannon Roberts was quoted in a Wallet Hub article about "2023's Best & Worst States to Drive in".	Wallet Hub

1.4.6 Tours of facilities

- 3/3/2023: Tour of Hank Lab at University of Iowa; Siqui Liu (Iowa Writers' Workshop)
- 11/3/2022: Tour of Hank Lab at University of Iowa; CS:3980 Building Interactive Virtual Environments in Unity – 20 people
- 1/25/2023: Steve Brody, 1 person
- 2/10/2023: National Society of Black Engineers, 10 people
- 2/24/2023: Dr. Ruofei Duo, 1 person
- 7/2/2022: International Students, 8 people
- 10/3/2022: Injury and Violence Prevention Course, 40 people
- 10/5/2022: Friendship Force of Cedar Rapids-Iowa City, 7 people
- 10/11/2022, Discover Your University, 10 people
- 10/14/2022: Urban and Regional Planning Students, 15 people
- 11/2/2022: Discover Your University, 10 people
- 11/11/2022: Iowa State University Transportation Student Group, 15 people
- 11/29/2022: RTL Automotive Toxicology Meeting, 15 people
- 12/28/2022: Engineer for Rolls Royce, 1 person
- Shannon Roberts (along with graduate and undergraduate students) gave a tour of the driving simulator lab to prospective UMass undergraduate students during the Engineering Open House, number of people unknown

1.4.7 Website traffic

Metric	This Period	Lifetime
Total Users	Not reported	27,328
New Users	Not reported	26,698
Sessions	Not reported	50,230
Page Views	Not reported	104,676

1.4.8 Patents filed

Nothing to report.

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

1. Phase II of DDI Simulation

1.4.10 Practitioner attendance at events

- Ten (10) individuals from industry and governmental agencies registered for the December 2022 symposium.
- Keynote speaker Coral Torres, Senior Advisor at FHWA presented “Overview of Safety Strategies and Research at Federal Highway Administration.”

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

- There were 64 registrations across the four sessions of the December 2022 online symposium.
- Fifty people attended the symposium in Mayaguez, Puerto Rico February 18-20, 2023.

1.5.2 Interdisciplinary research projects within and across sites

Previously reported.

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

Previously report.

1.5.4 Collaborations with industry partners and government agencies

<i>Organization Name</i>	<i>Location</i>	<i>Contribution</i>
1. AAA Foundation for Traffic Safety	Washington D.C.	Financial support Collaborative research
2. Recreative Association of Sport Buenaventura	Mayagüez, Puerto Rico	Provided facilities at low cost to perform data collection activities for the project.

3. Mayagüez Bureau of Highway Patrol	Mayagüez, Puerto Rico	The Mayaguez Bureau of Highway Patrol provided Equipment and experienced police officers to measure BAC during the project data collection.
4. UW-Madison Global Health Institute	Madison, WI	Collaborative research
5. 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.
6. 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

35 project projects involving 30 students

1.6.2 # U/M events attended

1. Iowa State University Transportation Student Group Tour (attendees were all BIPOC)
2. National Society of Black Engineers

3. Engineering Success Conference

1.6.3 # U/M students at attended events

37 students

1.6.4 Graduating U/M student placement

1. Graduated student: Angel Mori-Vargas, MSCE Program. December 2022

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. Project Title: A Co-Simulation Study to Assess the Impacts of Connected and Autonomous Vehicles on Traffic Flow Stability during Hurricane Evacuation (Samiul Hasan, Mohamed Zaki)
 - a. Expected Impact: Through road traffic automation and connectivity developed in this project, the interactions between vehicles will be analyzed, and possible severe conflicts and consequent collisions can be avoided through proactive safety information dissemination. We expect this approach for road safety will lead to a significant reduction in crashes during emergency events like highway evacuations.
2. Project Title: Reinforcement Learning for Optimal Speed Limit Control Over Network (Walter Guo)
 - a. Expected Impact: A reduction in crash risks by dynamically selecting optimal speed limits
3. Project Title: Using Simulation to Assess and Reduce Conflicts between Drivers and Bicyclists
 - a. Expected Impact: We expect that the results of this project will inform policy to implement road infrastructure designs that reduce car-bicycle crashes. We expect our alerts will help older adults make safer and more informed street-crossing decisions.
4. Project Title: Driver Attitudes and Behavior in the Presence of E-Scooters versus Bicyclists
 - 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.

5. Project Title: Driver Behavior in the Presence of E-Scooters within Varying Infrastructure
 - a. This research is expected to set the stage for determining factors and infrastructure design affecting e-scooter safety.

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

1. Project Title: A Co-Simulation Study to Assess the Impacts of Connected and Autonomous Vehicles on Traffic Flow Stability during Hurricane Evacuation (Samiul Hasan, Mohamed Zaki)
 - a. Expected Impact: The proposed CAV approach will provide a mechanism for informing drivers about the safety conditions during evacuation scenarios and henceforth will guide them through the necessary information for better trip planning and thereby avoiding hazardous traffic.
2. Project Title: Reinforcement Learning for Optimal Speed Limit Control Over Network (Walter Guo)
 - a. Expected Impact: Alleviate traffic bottleneck due to rerouting and lane changing behavior and mitigate traffic oscillation due to information communication delay.
3. Project Title: Driver Attitudes and Behavior in the Presence of E-Scooters versus Bicyclists
 - 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.
4. Project Title: Driver Behavior in the Presence of E-Scooters within Varying Infrastructure
 - a. Reduction of traffic conflicts is expected from implementation of infrastructure treatments and control devices that improve safe traffic behavior. Improved safety for e-scooters could motivate increased e-scooter mode share which would consequently reduce congestion