



PROGRAM PROGRESS PERFORMANCE REPORT FOR UNIVERSITY TRANSPORTATION CENTERS

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Research and Innovative Technology Administration

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Signature of Submitting Official: 

Overview

SAFER-SIM is leveraging the success of the projects, leadership, technology transfer, and education efforts started with the 2013 grant to continue our success in these areas. An additional 15 projects have been funded for a total of 24, which are quickly producing peer reviewed journal articles (6), conference papers (16), awards, and external grants. SAFER-SIM researchers continue to exhibit excellent leadership development through invited presentations (8), advisory committee positions (23), and serve as reviewers and editors for academic journals (20). An impressive 39,628 K-12 and college students were reached through education and workforce development activities. Forty-five (45) media requests and interactions and 81 facility tours provide significant technology transfer opportunities. Collaboration continues through four collaborative research projects and symposia attracting 149 attendees.

This report will describe the accomplishments, products, impacts, and plans of the center.

A copy of this report can be found on the SAFER-SIM website under the “Reports” tab or at the following URL: <http://safersim.nads-sc.uiowa.edu/reports.php>

1. Accomplishments

a. Goals and objectives of the program

SAFER-SIM is comprised of a multidisciplinary, synergistic team of researchers in human factors, engineering, computer science, and psychology who will use innovative simulation approaches ranging from microsimulation to human-in-the-loop simulation to promote safety. SAFER-SIM will sponsor research, outreach activities in STEM areas, and workforce development efforts in transportation safety.

SAFER-SIM’s multidisciplinary team studies study how road users, roadway infrastructure, and new vehicle technologies interact and interface with each other using microsimulation and state-of-the-art driving, bicycling, pedestrian simulators. Our platform will be used to not only understand present needs, but also to evaluate and develop futuristic technologies. Building on the 2013 UTC, the 2016 SAFER-SIM UTC will use simulation technology to address the following safety topics:

- **Automated vehicles technology:** assessing road users’ responses to automated vehicles, augmented reality, and in-vehicle safety systems,
- **Connected vehicles technology:** assessing user responses to connected vehicles technology (e.g., V2V, V2P, I2B),
- **Vulnerable road users:** examining risk factors for pedestrian and bicyclist collisions with vehicles, including high-risk groups (e.g., transportation workers, children, and the elderly),
- **Roadway infrastructure design:** assessing how safely drivers, bicyclists, and pedestrians interact with roadway infrastructure designs,
- **Distributed simulation technology:** assessing real-time traffic conflicts between drivers, bicyclists, and pedestrians through connected simulators.

Our center has identified seven areas of activity to attain these goals:

1. Research Activities

SAFER-SIM issued a Request for Proposals in October 2017. Funding decisions were made in February 2018. The center funded fifteen (15) research projects – fourteen (14) individual, one (1) collaborative. Information about these projects can be found on the Transportation Research Board’s Research in Progress (RIP) Database (<https://rip.trb.org/>) as well as the SAFER-SIM website (http://safersim.nads-sc.uiowa.edu/research_new.php?searchTerm=).

Below is information about the newly funded research projects and SAFER-SIM specific performance metrics related to Research Activities:

Table 1: Funded Research Projects

Research Project Title	School	PI(s)
Risk Awareness and Perception Training using Virtual Reality (RAPT-VR)	UM	Cole Fitzpatrick
Protected Intersection Design for Safer Cycling	UM	Eleni Christofa
Minimum time to situational awareness during transfer of control under varying levels of task load	UM	Michael Knodler
Development and Testing of an In-Vehicle Interface for Use in Automated Driving Contexts	UM	Shannon Roberts
Human-Machine Interfaces to Convey Feedback in Automated Vehicles	UI	John Gaspar; Chris Schwarz
Extended Evaluation of Training Programs to Accelerate Hazard Anticipation Skills in Novice Teen Drivers	UI	Jodie Plumert; Michelle Reyes
Can Regenerative Braking Save Your Life? A Distributed Simulation Study	UI	Chris Schwarz
Mobile Applications to Help Older Adults Make Safe Street-Crossing Decisions	UI	Kyle Rector
Developing an Open Source Multi-Agent Simulation Environment for Connected Autonomous Vehicles (CAVs)	UW	Dan Negrut; Radu Serban
A Machine Vision Approach for Estimating Motion Discomfort in Simulators and in Self-Driving Vehicles	UW	John Lee

Safely and Effectively Communicating Non-Connected Vehicle Information to Connected Vehicles through Field- and Driving Simulator-Based Research	UW	David Noyce, Jon Riehl
Assessing Crash Risks of Evacuation Traffic: A Simulation-based Approach	UCF	Samiul Hasan
Assessing the Effectiveness of Connected Vehicle Technologies based on Driving Simulator Experiments	UCF	Yina Wu; Mohamed Abdel-Aty
Evaluation of Managed Lane Facilities in a Connected Vehicle Environment	UCF	Mohamed Abdel-Aty; Yina Wu
Evaluation of Safety Enhancements in School Zones with Familiar and Unfamiliar Drivers	UPR	Didier Valdes; Benajmin Colucci; Alberto Figueroa
	UM	Mike Knodler

Peer-review journal publications – 6 publications

- University of Central Florida
 - Wang, L., Abdel-Aty, M., & Lee, J. (2017). Safety Analytics for Integrating Crash Frequency and Real-Time Risk Modeling for Expressways. *Accident Analysis & Prevention*, 104, 58-64.
 - Wang, L., Abdel-Aty, M., Wang, X., & Yu, R. (2018). Analysis and comparison of safety models using average daily, average hourly, and microscopic traffic. *Accident Analysis & Prevention*, 111, 271-279

- University of Iowa
 - O’Neal, E. E., Jiang, Y., Franzen, L., Rahimian, P., Yon, J. P., Kearney, J. K., Plumert, J. M. (2018). Changes in perception-action tuning over long time scales: How children and adults perceive and act on dynamic affordances when crossing roads. *Journal of Experimental Psychology: Human Perception and Performance*, 44(1), 18-26.
 - Jiang, Y., O’Neal, E. E., Franzen, L., Yon, J. P., Rahimian, P., Plumert, J. M., Kearney, J. K. (2018). Acting together: Joint pedestrian road crossing in an immersive virtual environment. *ACM Transactions on Applied Perception (TAP)*. 15(2), 8.
 - Plumert, J. M., & Kearney, J. K. (2018). Timing is almost everything: How children perceive and act on dynamic affordances. In J. Plumert (Vol. Ed.), *Studying the perception-action system as a model system for understanding development*. Edited volume in J. Benson (Series Ed.), *Advances in Child Development and Behavior*: 55. Cambridge, UK: Elsevier. Manuscript submitted for publication.
 - Jiang, Y., O’Neal, E. E., Rahimian, P., Yon, J.P., Plumert, J. M., & Kearney, J. K. (2017). Joint action in a virtual environment: Crossing roads with risky vs. safe human and agent partners. Manuscript submitted for publication.

Conference and symposia papers/posters– 16 papers/posters

- University of Central Florida
 - Park, J., Abdel-Aty, M. (2018). Assessment of Bicycle Lane Safety Effectiveness using Random Effects Generalized Models with Nonlinearizing Link Functions, submitted to 2018 Road Safety on Five Continents.
 - Castro, S., Abdel-Aty, M., Cai, Q. (2018). An assessment of traffic safety between drivers and bicyclists based on roadway cross-section designs and countermeasures using simulation. Presented at SAFER-SIM Symposium.
 - Wang L., Abdel-Aty M., Lee J. (2018). Safety analytics for integrating crash frequency and real-time risk modeling for expressways. Presented at 97th Annual Meeting of the Transportation Research Board, Washington, D.C.
 - Abdel-Aty, M., Wu, Y. (2018) The Impact of Connected Vehicle Market Penetration and Connectivity Levels on Traffic Safety in Connected Vehicles Transition Period, Presented at SAFER-SIM Symposium
 - Rahman, M.H., Lee, J., Abdel-Aty (2018). Enhancing School Zone and School Bus Safety. 2018 SAFER-SIM Symposium, University of Central Florida
 - Lee, J., Abdel-Aty, M., Cai, Q., Wu, Y. (2017). Bivariate Ordered Probit Modeling of the Injury Severity Level of Drivers and School-Age Passengers in Traffic Crashes. 2017 American Public Health Association (APHA) Annual Meeting.

- University of Iowa
 - Mallaro, S., Rahimian, P., O'Neal, E. E., Plumert, J. M., Kearney, J. K. (2017). A comparison of head-mounted displays vs. large-screen displays for an interactive pedestrian simulator. VRST '17 Proceedings of the 23rd ACM Symposium on Virtual Reality Software and Technology.
 - Subramanian, L.D., O'Neal, E. E., Mallaro, S., Williams, B., Plumert, J.M., & Kearney, J.K. (January, 2018). Pedestrian road crossing at night in an immersive simulator. Presentation at the 97th Transportation Research Board annual meeting, Washington, D.C.
 - Jiang, Y., O'Neal, E. E., Franzen, L., Yon, J. P., Plumert, M. M., & Kearney, J. K. (Sept, 2017). The Influence of Stereoscopic Image Display on Pedestrian Road Crossing in a Large-Screen Virtual Environment. Proceedings of the ACM Symposium on Applied Perception (SAP), Cottbus, Germany.
 - Jiang, Y., O'Neal, E. E., Zhou, S., Plumert, M. M., & Kearney, J. K. (Sept, 2017). Crossing Roads with a Computer-Generated Agent: Lasting Effects on Perception-Action Tuning. Poster presented at the ACM Symposium on Applied Perception (SAP), Cottbus, Germany.
 - O'Neal, E.E., Zhao, S., & Plumert, J.M. (September, 2017). Using an immersive virtual environment to study parent-child safety conversations in vivo. Oral presentation given at the biennial meeting of the Society for Advancement of Violence and Injury Research, Ann Arbor, MI.

- University of Puerto Rico – Mayaguez

- Enhancing School Zone Safety, Lectern presentation in the SAFER-SIM Florida Symposium, February 2018, Orlando, Florida, USA.
 - Enhancing School Zone Safety, Poster presentation in the SAFER-SIM Florida Symposium, February 2018, Orlando, Florida, USA.
 - Assessing the Impact of Smartphones usage while Driving in Work Zones, Lectern presentation in the SAFER-SIM Florida Symposium, February 2018, Orlando, Florida, USA.
 - Assessing the Impact of Smartphones usage while Driving in Work Zones, Poster presentation in the SAFER-SIM Florida Symposium, February 2018, Orlando, Florida, USA.
- University of Wisconsin
 - H. Nassereddine, K. R. Santiago-Chaparro, and D. A. Noyce, “Augmented Reality for Safer Pedestrian-Vehicle Interactions,” presented at the SAFER-SIM Symposium, Orlando, FL, Feb-2018.

Paper/poster awards – 5 paper/poster awards

- University of Central Florida
 - Best paper award: Wang, L., Abdel-Aty, M., & Lee, J. (2017). Implementation of active traffic management strategies for safety on congested expressway weaving segments. Transportation Research Record: Journal of the Transportation Research Board, (2635), 28-35.
 - 3rd Place Student Poster Award: Rezaur Rahman – SAFER-SIM Symposium, February 2018
- University of Massachusetts – Amherst
 - Best Presentation Award: Alyssa Ryan – SAFER-SIM Symposium, February 2018
 - Best Poster Award: Yalda Ebadi – SAFER-SIM Symposium, February 2018
- University of Wisconsin
 - 2nd Place Student Poster Award – SAFER-SIM Symposium, February 2018

External Grants related to SAFER-SIM – 3 grants

- University of Central Florida
 - FHWA Awards Nearly \$12 Million to Florida DOT for Advanced Congestion-Management Technologies in Orlando
- University of Iowa
 - McGehee, D. (PI), Kearney, J. K. (Co-PI), Plumert, J. M. (Co-PI), Schwarz, C. (Co-PI), Baek, S. (Co-PI). Developing Connected Simulation to Study Interactions between Drivers, Pedestrians, and Bicyclists, DOT Federal Highway Administration, Broad Agency Announcement for Exploratory Advanced Research Program, 9/29/17 – 9/28/19, \$1,217,530 in total costs, Award No. 693JJ31750016.

- McGehee, D. (PI), Plumert, J. M. (Co-PI), Reyes, M. (Co-PI), O’Neal, E. E. (Co-PI), Vecera, S. (Co-PI), Shawn Allen (Co-PI), Lerner, N. (Co-PI), Kellman, P. (Co-PI). Evaluation of Training Programs to Accelerate Hazard Anticipation Skills in Novice Teen Drivers, AAA Foundation for Traffic Safety, 2/15/18 – 8/31/19, \$378,321 in total costs.

2. Leadership Development

Developing the next generation of leaders in safety research and simulation methods is a key function of SAFER-SIM. This will be achieved through the use of seminars, symposia, web-based discussions, and other communications opportunities open to the public. Below is information about SAFER-SIM specific performance metrics related to leadership development.

Invited Presentations – 8 presentations

*Note this item also reported in the SAFER-SIM 2013 grant PPPR.

- University of Central Florida
 - Abdel-Aty, Mohamed. Assessment of the Safety Benefits of Connected Vehicles Technologies, Distinguished Transport Lecture Series 2018, University of Honk Kong, March 2018. *
- University of Iowa
 - Kearney, J. K. Pedestrian and Bicycling Simulation at Iowa, IFSTTAR Séminaire réalité virtuelle et des simulateurs de déplacements, IFSTTAR LEPSIS, Marne, France, March 15, 2017
 - Kearney, J. K. Simulator Operations and Maintenance, IFSTTAR LEPIS, Marne, France, March 14, 2017.
 - Kearney, J. K. Driving, Pedestrian, and Bicycling Simulation in the U.S., IFSTTAR LEPIS, Marne, France, March 14, 2017.
 - Kearney, J. K. Pedestrian and Bicycling Simulation Research in the Hank Virtual Environments Lab,
 - Keynote Address, 2017 Traffic and Safety Forum, Iowa Department of Transportation and Iowa State University's Institute for Transportation, Ames, Iowa, November 15, 2017.
 - Kearney, J. K. Pedestrian and Bicycling Simulation at the University of Iowa, Institute for Transport Studies, University of Leeds, Leeds, England, September 12, 2017.
 - Rahimian, P. & Kearney, J. K. Optimal Camera Placement for Motion Capture Systems, ACM SIGGRAPH Conference, Los Angeles, California, August 1, 2017.

*Advisory Committees – 23 advisory committee positions**

*Note these positions are also reported in the SAFER-SIM 2013 grant PPPR.

- University of Iowa
 - Dawn Marshall
 - Member of TRB Standing Committee on User Information Systems (AND20)

- Chair of TRB Human Factors of In-Vehicle Systems, AND20(1), Joint Subcommittee of AND20, AND10
 - Timothy Brown
 - Member of TRB Standing Committee on Alcohol, Other Drugs, and Transportation (ANB50)
 - Chris Schwarz
 - Member of TRB Standing Committee on Vehicle-Highway Automation (AHB30)
 - John Gaspar
 - Member of TRB Standing Committee on User Information Systems (AND20)
 - Omar Ahmad
 - Co-chair of TRB Standing Committee on Simulation and Measurement of Vehicle and Operator Performance (AND30) (co-chair)
 - Member of TRB Section - Users Performance (AND00)
 - Member of TRB Standing Committee on Motorcycles and Mopeds (ANF30)
- University of Massachusetts – Amherst
 - Francis Tainter
 - All-Red Clearance Intervals for Use with Flashing Yellow Arrows in the Left-Turn Application – TRB Eisenhower “Every Day Counts” Panel
 - Mike Knodler
 - Member of TRB AND50 Standing Committee on Traffic Control Devices
 - Eleni Christofa
 - Member of TRB AHB25 Traffic Signal Systems Committee, 2013-2020
 - Member of TADD55 Task Force on Arterials and Public Health, 2015-2018
 - Eric Gonzales
 - Member of TRB Standing Committee AHB45 Traffic Flow Theory and Characteristics
 - Member of TRB Standing Committee AP060 Paratransit
- University of Puerto Rico – Mayaguez
 - Didier Valdés
 - Applied Human Factors and Ergonomics (AHFE 2017-Present) Scientific Advisory Board.
 - Benjamín Colucci
 - Applied Human Factors and Ergonomics (AHFE 2017-Present) Scientific Advisory Board.
 - Panel Member of NCHRP Project (SN4811): Practices in One Lane Traffic Control on a Two-Lane Rural Highway
 - Member Best Paper Award TRB Committee AHB55 Work Zone Traffic Control
 - Member of the Advisory Committee of the Puerto Rico-State Transportation Innovation Council (STIC)
 - Member of the Advisory Committee of the US Virgin Island-State Transportation Innovation Council (STIC)
 - Latin American and Caribbean Consortium of Engineering Institution (LACCEI) International Multi-Conference for Engineering, Education, and Technology Scientific Advisory Board

- Co-Chair of the Traffic Enforcement Committee, International Road Federation.
- Alberto Figueroa, Member of TRB Committee, AHB65 Operational Effects of Geometrics

Journal Editorships – 4 editorships

- Dr. Mohamed Abdel-Aty (University of Central Florida)
 - Editor-in-Chief (July 2013 – present), *Accident Analysis and Prevention*, Elsevier
 - *Accident Analysis and Prevention's* CiteScore is 3.24, placing it 2nd for Human Factors and Ergonomics and 6th for Safety, Risk, Reliability and Quality in Scopus' subject categories
- Didier Valdés
 - 15th LACCEI International Multi-Conference for Engineering, Education, and Technology.
- Benjamín Colucci
 - 15th LACCEI International Multi-Conference for Engineering, Education, and Technology.
 - Dimension Journal of the College of Engineers and Surveyors of Puerto Rico, Editor-in-Chief.

*Journal Editorial Boards – 20 journals**

*Note these activities are also reported for in the SAFER-SIM 2013 grant PPPR.

- Accident Analysis and Prevention
- Advances in Transportation Studies
- American Journal of Public Health
- Case Studies on Transport Policy
- IEEE Intelligent Transportation Systems Magazine
- Injury Prevention
- International Journal of Sustainable Transportation
- Journal of Network and Computer Applications
- Journal of Safety Research
- Journal of Traffic and Transportation Engineering
- Journal of Transportation Engineering: Part A
- Journal of Transportation Safety & Security
- KSCE Civil Engineering
- Preventive Medicine
- Safety Science
- Traffic Injury Prevention
- Transportation Research Part B
- Transportation Research Part C
- Transportation Research Record
- Transportmetrica A: Transport Science

*Leadership Positions in Professional Organizations –24 leadership positions**

* Note these activities are also reported for in the SAFER-SIM 2013 grant PPPR.

- Francis Tainter
 - Institute of Transportation Engineers (ITE), 2014-Present, Student – UMass ITE Student Chapter President (2015-2017)
- Alyssa Ryan
 - Institute of Transportation Engineers (ITE), 2014- Present, Student – UMass ITE Student Chapter President (2017-2018)
- Ricardo García
 - President of the ITE UPRM Student Chapter, August 2017 to present, student.
- Enid Colón
 - Secretary of ITE UPRM Student Chapter, August 2017 to present, student.
- Benjamín Colucci
 - Vice-President of the Board of Trustees of the Society of Engineers of Puerto Rico, 2017-2020, faculty.
 - President of the International Relations Commission of the College of Engineers and Surveyors of Puerto Rico (CIAPR), 2017-2019, faculty.
 - President of the Pan-American Transport Systems Committee, UPADI, 2016-2020, faculty.
 - Vice-President Caribbean Region of the Pan-American Union of Engineers in Association (UPADI), 2015-2019, faculty.
 - Vice-President of the International Society for Maintenance and Rehabilitation of Transport Infrastructures (iSMARTi), 2016 to present, faculty.
 - Spokesperson for the Decade of Action Road Safety of Puerto Rico 2011-2020, faculty.
 - Co-Chair of the Traffic Enforcement Committee, International Road Federation, 2014-present, faculty.
 - UPRM Manager of the Dwight D. Eisenhower Transportation Fellowship Program for Hispanic Serving Institutions, 1994 to present, faculty.
 - Director of Abertis Chair of Puerto Rico, 2012 to present, faculty.
 - Member of the Board of Director of the College of Engineering of Surveyors of Puerto Rico-Mayaguez Chapter, 2016-Present, faculty.
 - Founder and Director of the Puerto Rico Transportation Technology Transfer Center (PR-LTAP), 1986 to present, faculty.
 - Every Day Count (EDC) Program Technical Oversight Director of Puerto Rico PRHTA and U.S. Virgin Island DPW, 2012 to present, faculty.
 - El Puente Newsletter, Puerto Rico LTAP Editor-in-Chief, 1986 to present, faculty.
 - Dimension Journal of the College of Engineers and Surveyors of Puerto Rico, Editor- in-Chief, 2015- Present, faculty.
 - Applied Human Factors and Ergonomics (AHFE 2017-Present) Scientific Advisory Board.
 - LACCEI International Multi-Conference for Engineering, Education, and Technology
 - Dimension Journal of the College of Engineers and Surveyors of Puerto Rico, Editor- in-Chief
- Didier Valdés

- Applied Human Factors and Ergonomics (AHFE 2017-Present) Scientific Advisory Board.
- LACCEI International Multi-Conference for Engineering, Education, and Technology
- Mohamed Abdel-Aty
 - Editor-in-Chief, Accident Analysis & Prevention

Professional Awards

- University of Iowa
 - Dawn Marshall
 - *Regents Award for Staff Excellence* – State of Iowa Board of Regents
 - Joseph Kearney
 - *Regents Award for Faculty Excellence* – State of Iowa Board of Regents
 - *Best Reviewer Award* – 2017 ACM Symposium on Applied Perception

- University of Puerto Rico – Mayaguez
 - Benjamin Colucci
 - FHWA-USDOT Administrator’s Public Service Award

3. Education and Workforce Development

Our consortium feels strongly that the function of SAFER-SIM is to provide a multidisciplinary center within each member university to foster development of transportation professionals. The education and workforce development components address K-12, university, and continuing education students. Below is information about students and SAFER-SIM specific performance indicators relating to Education and Workforce Development.

Table 2: SAFER-SIM Students

Institution	Students
University of Iowa	6
University of Wisconsin-Madison	3
University of Massachusetts-Amherst	11
University of Central Florida	6
University of Puerto Rico-Mayaguez	3
Total	29
Total Underrepresented/Minority	13

*Presentations to student groups or classes – 38 presentations; 39,628 K-12 and college students**

*Note that several of these events are also reported in the SAFER-SIM 2013 grant PPPR.

- University of Iowa
 - Drivers Education Tour – 34
 - Belin-Blank Summer Camp for Girls – 25
 - Visiting Scholars from Pakistan – 28
 - PRSI Tour – 20
 - HRRVC Tour – 60
 - JPEC Tour – 19
 - Trailer Trekkers Tour – 25
 - STEM Day at Johnson County Fair – 205
 - STEM Day at Iowa Speedway – 168
 - Central Iowa Power Coop Tour – 42
 - Iowa State Fair – 1030
 - Visiting Scholars from China – 4
 - DMACC Boone - 102
 - Global Road Safety – 30
 - Oelwein Family STEM Festival - 397
 - PLTW Tours - 59
 - Girl Scout STEM Event - 71
 - Discovery: Iowa River Landing - 175
 - Johnson County Career Fair - 67
 - Cedar Valley STEM Festival - 281
 - Girls Tech Career Day - 42
 - STEM Institute - 135
 - Washington County Regional STEM Festival -145
 - WiSE Femineers Tour - 17
 - Newton High School PreCalculus Tour - 15
 - Career Caravan - 160
 - Lone Tree Mock Interviews - 6
 - Solon Presentation - 138
 - Cedar Rapids STEM Institute - 366
 - Lone Tree Engineering Tour - 40
 - Linn County STEM Fest - 321
 - Fort Dodge Physics Tour - 28
 - Traffic Safety Merit Badge – 8
 - UI Mobile Museum – 35,305

- University of Puerto Rico – Mayaguez
 - Presentation to middle and high school students participating of the School of the Future Program of Puerto Rico (“Escuela del Futuro”), March 10, 2018.
 - Presentation to UPRM students at the Transportation Week of the ITE-UPRM student chapter, March 21, 2018.

- Oral presentation of the driving simulator and its application to a group of students of the Oregon State University, March 28, 2018.
- University of Wisconsin
 - Presentation to “Introduction to Transportation Engineering” course – 60 students

4. Technology Transfer

One of the main functions of the UTC program is to translate research into practice and policy. SAFER-SIM members have performed this important job through patents, partnerships with industry, interviews with national and local media, and by providing workshops and web resources for researchers, practitioners, and those seeking career information. Below is information about SAFER-SIM specific performance indicators relating to Technology Transfer.

SAFER-SIM webinars

SAFER-SIM webinars continue from the 2013 UTC grant. The metrics were reported in the most recent PPPR for the 2013 UTC. Our center will continue supporting webinars for the 2016 UTC. Past webinars can be found at https://www.youtube.com/channel/UCE8CN3JX8_mkAf8d8-UPzKQ. No webinars for projects funded by the 2016 grant have yet been hosted.

Media Requests – 45 media requests and interactions

- University of Central Florida
 - Dr. Mohamed Abdel-Aty, UCF, gave statement in *Ars Technica*; [Video suggests huge problems with Uber’s driverless car program](#)
- University of Wisconsin Foundation, UW, video footage
- University of Wisconsin – *Wisconsin Engineer*
- *University of Iowa (URLs not included in the interest of space, available on request)*
 - Iowa Now - Building virtual worlds to prep for the real one
 - Iowa City Press-Citizen - Area leaders get look at newest UI driving simulator addition
 - The Gazette - University of Iowa driving simulator adds to its tool kit
 - UI IPRC Blog - Teaching kids safety through driving simulation
 - The Gazette - Can Iowa keep up with what it needs to ship?
 - University of Wisconsin College of Engineering News - Ja Young Lee wins Honda Student Paper Award at driving assessment conference
 - Iowa Now - UI external research funding sees uptick despite challenges
 - CBS2 / Fox 28 - Discussion on distracted driving to promote safer practices on the road
 - Iowa City Press-Citizen - High-tech cars not just for Spider-Man, Tony Stark
 - Iowa Now - President Harreld: Faculty research, scholarship key to student achievement
 - CBS2 / Fox 28 - STEM Day events inspire all ages to learn about potential careers
 - QC Times - DOT: Higher levels of automation in I-80's future
 - The Gazette - Iowa DOT sees many automated cars in I-80's future
 - Sioux City Journal - Iowa researchers aim to make roads safer with new technology

- QC Times - Iowa researchers aim to make roads safer with new technology
- The Gazette - The road to autonomous cars: Are Iowans ready to get behind the wheel?
- The Gazette - What's needed for autonomous cars to come to Iowa?
- CBS2 / Fox 28 - SPECIAL REPORT: Automated Cars
- South Dakota Public Broadcasting (SDPB) Radio - How Virtual Reality Can Help You in Actual Reality
- The Gazette - Volunteers sought for Iowa self driving car research project
- Iowa Now - Many honored at UI's annual Faculty and Staff Awards Banquet
- CBS2 / Fox 28 - Created in the Corridor: Crystal Group
- The Gazette - Popular YouTuber visits University of Iowa driving simulator
- WQAD - National Advanced Driving Simulator examines how self-driving cars will hold up on Iowa roads
- KCRG - National Advanced Driving Simulator examines how self-driving cars will hold up on Iowa roads
- KWWL - Roadway testing to soon begin for nearly driverless cars
- Daily Iowan - UI steering future of automated driving industry
- The Drive - Is All This New Automotive Safety Tech Working? Not If Drivers Don't Understand It
- KGAN/FOX - UI looking for Corridor drivers to test new app
- KCRG - Drivers wanted to test new app
- KHAK - Drivers wanted to test new app
- UI OVPRED - Student researchers, scholars get spotlight in 2018 banner campaign
- The Lone Tree Reporter - Lone Tree students explore careers
- Daily Iowan - Technology is key for Chamber of Commerce at banquet
- The Gazette - 9 signs you could be a distracted driver
- Iowa Now - NADS researchers honored for work improving safety for teenage drivers
- Iowa Alumni Magazine - Fast Forward
- CBS2 / Chicago - Driving While High: Just How Dangerous Is It?
- Manitoba Government News - Premier Meets with Leading Researchers on Impacts of Drugged Driving
- 680 CJOB (Winnipeg radio) - (Cannabis and driver research)
- Manitoba Post - Pallister Researching Effects of Cannabis on Impaired Driving
- Iowa Now - President Harreld on the importance of groundbreaking UI research

Tours of Facilities – 81 tours

Many tours were hosted. Guests included visiting colleagues and scholars from Japan and China, groups and individuals from the automotive and other industries, government (local, state, and federal), as well as students and community members. We would like to call out 3 tours in particular; Senator Joni Ernst, Rep. David Loebsack, representatives from the NTSB.

- National Advanced Driving Simulator – University of Iowa (72)
 - Pharmacists and Students from Japan
 - Kevin Hanick
 - RV Club Coordinators
 - Iowa DOT Commissioners

- Hyundai - Methodology demonstration
- Municipal Government Leaders for Iowa Automated Vehicle Proving Ground
- STEM Excellence and Leadership Educators
- Ron Bandy's Driver's Education class
- Belin Blank Summer camp for girls
- Farm Bureau Insurance
- Department of Defense related research
- Daimler
- Iowa Public Safety Commissioner, Chief of State Patrol and Pat Coy
- Students from Pakistan
- PRSI Students
- HRRVC – 3 total tours
- JPEC
- CBS2/FOX28
- Trail Trekkers
- John Deere
- Sen. Ernst visit
- Chinese Delegation Tour (College of Automotive Engineering, Jilin University, China)
- Central Iowa Power Cooperative
- Lee Enterprises
- Iowa Economic Development
- Friendship Force
- Visiting Scholars Program
- Deb Bruce and colleagues – NTSB
- 23 FBL Financial Sr. Management Team
- Rod Lehnertz and Bruce Harreld, University of Iowa President
- Joe Buckner
- SAE Baja Team
- Project Lead The Way – 3 tours
- Bobby Dixit and Benjamin Gurnsey
- Representatives of the City of Taizhou, China
- Siemen's Employees
- Girls Tech Career Day – 2 tours
- HANK Lab – University of Iowa (9)
 - Katsuhiko Iwazaki & Rini Sherony (Toyota Motor Co.)
 - Dr. Cara Hamman's Global Road Safety class
 - Dr. Nick Trapp- psychiatrist/ neuroscientist
 - Rudy De Los Reyes- Mechdyne Corporation
 - ME faculty candidate Venanzio Cichella
- VP of General Motors: Mike Ableson
- Yoshihiko Matsuda--ATC-A President
- WiSE Femineers
- Aisin
- Newton High School PreCalculus
- Iowa Motor Truck Association - Safety Directors
- Stacy Balk
- Matt Manning
- Workplace Learning Connection Tour - Lone Tree Engineering
- Kirkwood Regional Center at the UI Director Jon Weih
- Dr. Cichella, Univ. of Illinois
- MTS Systems Corp
- Toyota Motor Corporation
- Agricultural Safety and Health Graduate Program
- Rep. Loeb sack
- United Fire Group - Board Member and Senior Management
- IISE North Central Region Conference – 2 tours
- Iowa Police Chief's Association Conference
- Mike Tiernan (Senior VP of Bankers Trust)
- Fort Dodge Physics
- Junior Science & Humanities Symposium
- Mark Miksch (EMS)
- Prof. Mehari Tekeste (Iowa State)
- IPRC Road Safety Team and CDC project officer
- Cannabis and Driving Meeting with Premier Pallister
- IE Grad Students
- Elizabeth (Libby) Lyons - NSF Office of International Science and Engineering
- Dean Larry Weber and guests from the UI College of Engineering

- Diana Dult, a researcher from the College of Political, Administrative and Communication Sciences at Babes-Bolyia Univeristy in Cluj-Napoca, Romania
- Markus Janczyk, visiting faculty member from the University of Tübingen
- Mark Blumberg- Dept of Psychological and Brain Sciences Chair
- Arend Schwab- BioMechanical Engineering Professor at Delft University of Technology and Hiroyuki Sugiyama- professor of Mechanical/Industrial Engineering at Iowa

Proposals to other funding agencies

- University of Iowa
 - Rector, K. K. (PI) , Joseph K Kearney (PI), J. K., Plumert, J. M. (PI) *CHS: Small: Ability-Based Mobile Technology to Help Older Pedestrians Make Safe Street Crossing Decisions*, submitted to the National Science Foundation (\$499,954.00).

5. Collaboration

Collaboration is an important part of SAFER-SIM and the UTC program. SAFER-SIM funds collaborative research projects across sites, interdisciplinary projects within sites, and supports collaborations through online forums and in-person gatherings.

Virtual Symposium

SAFER-SIM organized a Virtual Symposium on October 4, 2017. The Virtual Symposium brought students, researchers, and practitioners together for a day of online presentations related to simulation, safety, and SAFER-SIM research. Eighty-four (84) individuals participated in the online symposium throughout the day. The presentations from the Virtual Symposium can be found on the SAFER-SIM YouTube channel at the following link:

<https://www.youtube.com/playlist?list=PLU0Z4B40PcApEufPD8ZXQsdIUgMUtg6CR>

Highlights from the Virtual Symposium include:

- Kickoff Presentation from Dr. Donald Fisher – Principal Technical Advisor at USDOT Volpe Center
- Keynote Presentation from Dr. Rich Romano – Chair in Driving Simulation at the Institute for Transport Studies, University of Leeds
- New project student presentations
- SAFER-SIM advisory board presentations

SAFER-SIM Symposium

The second symposium with the 2016 SAFER-SIM consortium was held in Orlando, Florida on the University of Central Florida campus. The event took place February 4-6 and featured activities for students, staff, and faculty to develop leadership skills. Sixty-five (65) attendees highlighted the focus of SAFER-SIM: safety, research, and collaboration.

Highlights from the 3 day event include:

- Campus tour

- Guest speakers
 - Dean Michael Georgiopoulos – University of Central Florida Dean of the College of Engineering and Computer Sciences
 - Eric Hill – MetroPlan Orlando Director of Traffic Safety Management and Operations
 - Jeremy Dilmore – Florida DOT District 5 Traffic Safety Management and Operations Engineer
- Professor Presentations
- Student Presentations
- Student Posters
- Directors Meeting

Below is information about SAFER-SIM specific performance indicators relating to Collaboration.

Interdisciplinary research projects within and across sites –

- University of Iowa
 - Rector, K. K. (PI) , Joseph K Kearney (Co-PI), J. K., Plumert, J. M. (Co-PI) Mobile Applications to Help Older Adults Make Safe Street-Crossing Decisions, UI University Transportation Center, 6/1/18 – 12/31/19, \$50,000 in total costs (part of prime award, “Safety Research Using Simulation (SAFER-SIM),” awarded by the US Department of Transportation, Research and Innovative Technology Administration, Award No. 69A3551747131).

Online Forum Use Statistics

*Note that the information presented here is also included in the SAFER-SIM 2013 great PPPR, yet some numbers are higher here due to the extended performance period.

- SAFER-SIM Website
 - <http://safersim.nads-sc.uiowa.edu/>
 - Website updated with 2016 UTC information
 - Research projects posted
- SAFER-SIM News Digest
 - 13 digests sent
 - 352 subscribers – industry professionals, researchers, students, and public

Below are the counts of the number of times the content was shared in the News Digest:

Content	This Period	Total*
SAFER-SIM New Articles	1	62
SAFER-SIM Webinars	21	55
SAFER-SIM Final Reports	15	30
Transportation News	93	211
Conferences	26	44
Competitions	7	7

Career Opportunities	17	28
* Total counts will also appear in 2013 grant PPR		

- SAFER-SIM Social Media
 - Social media is used by SAFER-SIM to share information about final reports, webinars, and events to industry professionals, researchers, students, and the public
 - <https://twitter.com/safersimutc?lang=en>
 - <https://www.facebook.com/SaferSimUTC/>
 - https://www.youtube.com/channel/UCE8CN3JX8_mkAf8d8-UPzKQ

6. Program Efficacy

SAFER-SIM leveraged the momentum of the 2013 UTC grant to seamlessly launch the 2016 grant activities. A total of 14 research projects have been funded, some expected to complete during the next progress reporting period. These projects have already produced 6 peer-reviewed journal publications and 16 conference and symposium papers and posters, with 5 awards received for papers and posters. Additionally, 3 external grants related to SAFER-SIM projects were received.

7. Diversity

To ensure that the Center’s activities are designed and implemented to address diversity goals, a conscious effort has been made to assemble a consortium of universities that already have activities in place for increasing diversity in the undergraduate and graduate educational programs. It is surprising to us that so few students from under-represented groups and minorities were reported as involved in projects. Follow-up inquiries will be made to clarify reporting requirements for future reports.

	UCF	UI	UM	UPR	UW
# Underrepresented/minority (U/M) students on projects	0	0	0	3	1
# U/M events attended	0	5	0	2	0
# U/M at attended events	0	175	0	3	0
Graduating U/M student placement	0	0	0	0	0

Some of the events at the UI that focused on underrepresented and minority attendees are:

- Belin-Blank Summer Camp for Girls – 25 participants
- Girl Scout STEM Event – 71 participants
- Girls Tech Career Day – 42 participants
- WiSE Femineers Tour – 17 participants

b. Products

Since the projects funded by the 2016 grant have not yet completed, we have no technical reports to report at this time, yet the following products can be reported:

- 6 peer-reviewed journal publications
- 16 conference and symposium papers and posters

c. Participants & Collaborating Organization

Significant collaboration continues across departments and institutions within SAFER-SIM and with other partners. Consortium institutions collaborate with state DOTs and other organizations on events that focus on transportation safety and mobility.

d. Impact

SAFER-SIM's multidisciplinary approach to understanding the role that humans play in a complex transportation environment is expected to lead to advances in road-safety research and hasten the adoption of new technologies that have the potential to reduce conflicts among drivers, cyclists, and pedestrians. The center's education and workforce development roles will train the next generation of transportation professionals and will engage K-12 students in STEM fields.

Research Impact

The impact of SAFER-SIM research projects will lead to a better understanding of road-user behavior and the advancement of simulation techniques and technologies. The 24 Research projects funded by the 2016 grant are already producing publications and leading to external funding.

- 6 peer-reviewed journal publications
- 16 conference and symposium papers and posters
- 5 awards received for papers and posters
- 3 external grants related to SAFER-SIM projects were received

Leadership Development Impact

The impact of leadership development among SAFER-SIM researchers and students will lead to improved research, and overall improvement in safety research using simulation. During this reporting period:

- 8 invited presentations
- 23 advisory committee positions
- 4 editorships for academic journals
- 20 journals
- 24 leadership positions

Education and Workforce Development Impact

The impact of SAFER-SIM education and development creates curiosity in students and members of the transportation industry that will lead to advanced innovations and improved safety.

During this reporting period:

- 13 underrepresented or minority students
- 8 presentations; 39,628 K-12 and college students

Technology Transfer Impact

The impact of SAFER-SIM technology transfer results in the spread of safety research and information, and individuals will be more conscious about transportation safety.

During this reporting period:

- 45 media requests and interactions
- 81 Tours of Facilities

Collaboration Impact

The impact of SAFER-SIM collaboration will lead to a large network of interdisciplinary, safety professionals driving transportation forward in all industries and locations.

During this reporting period:

- 2 symposia with 149 attendees between them

Program Efficacy Impact

The impact of SAFER-SIM program efficacy will lead to continued funding of the center and the University Transportation Center Program. The 24 projects will share results with other transportation safety professionals.

Diversity Impact

The impact of SAFER-SIM diversity will lead to improved transportation safety in less privileged communities and will open the door for future, minority transportation professionals. One hundred seventy-five individuals participated in transportation safety professional development and outreach during this reporting period.

e. Changes/Problems

Nothing to report.

2. Plan for Next Reporting Period

Researchers and students will begin submitting reports, presentations and papers as the projects progress. Below is a list of plans for next reporting period:

- Attend summer CUTC meeting
- Year-2 research projects will begin
- Year-1/initial projects will begin to submit final reports and two-page summaries, and schedule webinars
- Symposium will be held at University of Massachusetts
- Continue education and outreach programming
- Continue online communications