University Transportation Centers

31st Annual Outstanding Student of the Year Awards

Presented by:

U.S. DOT's University Transportation Centers (UTC) Program and the Council of University Transportation Centers (CUTC)

Virtual Ceremony

January 8, 2022

U.S. Department of Transportation
Office of the Assistant Secretary for Research and Technology

WELCOME

Welcome to the 31st Annual University Transportation Centers (UTC) Program's Outstanding Student of the Year Awards ceremony, sponsored by the U.S. Department of Transportation (U.S. DOT) and administered by the Office of the Assistant Secretary for Research and Technology (OST-R).

Each year, outstanding students from participating UTCs are honored by U.S. DOT for their achievements and promise for future contributions to the transportation field at the annual awards banquet of the Council of University Transportation Centers. Students are selected based on their accomplishments in such areas as technical merit and research, academic performance, professionalism, and leadership. This booklet highlights their research interest, accomplishments, and goals.

University Transportation Centers Program

During the past few years, the U.S. DOT has launched several new initiatives designed to set transportation in motion toward a more connected, accessible, and sustainable future. Under the management of the U.S. DOT's Office of the Assistant Secretary for Research and Technology (OST-R), the University Transportation Centers (UTC) Program continues to bolster those efforts through advancing research on topics such as connected vehicles, pedestrian and cyclist safety, freight performance measures, and emissions reduction technologies.

Since its beginning, the mission of the UTC Program has focused on the development of advanced U.S. technology and expertise in transportation through education, research, and technology transfer at universities nationwide. The UTC Program was created by Section 314 of the Surface Transportation and Uniform Relocation Assistance Act of 1987, 49 U.S.C. §5317, with the primary purpose of conducting research.

The Intermodal Surface Transportation Equity Act (ISTEA) of 1991 reauthorized the UTC Program through fiscal year (FY) 1997, and expanded its mission to include education and technology transfer. In addition to the 10 Regional Centers, ISTEA created three "National" Centers and six University Research Institutes at universities named in ISTEA. This expansion led the U.S. DOT to adopt a strategic planning approach to program management based on a mission and set of goals that applied to all 13 centers and six institutes. The U.S. DOT extended the grants to the Regional Centers for three years, and announced its intention to reopen the program to competition, which occurred in 1994.

In 1998, the Transportation Equity Act for the 21st Century (TEA-21) reauthorized the UTC Program for an additional six years and increased the total number of centers from the original 10 to 33.

In 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) increased the number of centers to 60. In addition to the 10 Regional Centers, 10 Tier 1 funded centers were also competitively selected, and with the exception of the Title III centers, all of the UTCs were required to provide a one-for-one funding match.

The Surface Transportation Extension Act of 2011 (the Extension Act), gave discretion to redistribute the funds allocated to specific research projects and programs designated in SAFETEA-LU. In accordance with the Extension Act, the U.S. DOT competitively awarded grants to 22 UTCs in the amount of approximately $3.5 million each to 10 Tier 1 UTCs, two Tier 1 Transit-Focused UTCs, and 10 Regional UTCs, and FY 2012 funds were added following extension legislation.

In 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) continued the UTC Program, authorizing the competitive selection of 35 UTCs to receive a total of $72.5 million in funding for each of FYs 2013 to 2014, with continued funding from extension acts through FY 2015. Following a competition in 2013, grants of approximately $3 million each were awarded to five National UTCs, $2.75 million each to 10 Regional UTCs, and $1.5 million each to 20 Tier 1 UTCs.

The Fixing America's Surface Transportation (FAST) Act, signed in December 2015, was the first federal law in over a decade to provide long-term funding for surface transportation infrastructure planning and investment. The FAST Act authorized $305 billion in spending from FYs 2016 through 2020 for the maintenance of existing and establishment of new initiatives in research, education and workforce development, and the facilitation of technology transfer. To fulfill the FAST Act federal mandate, U.S. DOT hosted a grant competition that resulted in the announcement of 32 new UTCs in December 2016, and UTCs in Federal Regions 1, 2, and 3 were added in 2018.

The Consolidated Appropriations Act, 2019, authorized $15 million to establish two new National Centers focusing on congestion and infrastructure research.

The Further Consolidated Appropriations Act, 2020, authorized $5 million in funding to establish four new Tier 1 UTCs with each conducting research in one of the following topic areas:

1. Highly Automated Transportation Systems Research
2. Communications Technology and E-Commerce Effects on Travel Demand
3. Implications of Accessible Automated Vehicles and Mobility Services for People with Disabilities
4. Strategic Implications of Changing Public Transportation Travel Trends

OST-R administers the UTC Program with funding from the Federal Highway Administration.

University Transportation Centers Outstanding Students of the Year

Students are organized by primary mode of interest/study area.

MULTIMODAL

Marissa Brown
San Jose State University

Regan Buchanan
Georgia Institute of Technology

Joshua H. Davidson
University of Pennsylvania

Mitchell P. Fisher II
Auburn University

Rick Grahn
Carnegie Mellon University

Sarah Grajdura
University of California, Davis

Nadim Khairallah
University of California, Irvine

Rachael Thompson Panik
Georgia Institute of Technology

Kelly Rodgers
Portland State University

Matthew Stanley
Clemson University

Alexander Sundt
University of Michigan

Carly Venditti
Texas A&M University

Emma Vinella-Brusher
University of North Carolina at Chapel Hill

Brittany Nicole Waggener
University of New Orleans

PUBLIC TRANSIT

Zakhary Mallett
University of Southern California

Bianca Mers
Georgia Institute of Technology

Christian David Sprague
Cornell University

ROAD

Dunsin Fadojutimi
Morgan State University

Saman Farhangdoust
Florida International University

Diarmuid Gregory
University of Vermont

Kal Hart
South Dakota State University

Hana Herndon
Georgia Institute of Technology

John Higgins
University of Wyoming

Lauren Hill-Beaton
Rutgers, The State University of New Jersey

Oscar Huang
Texas A&M University

Hailee Kulich
University of Pittsburgh

Daniel F. Ortiz
Rutgers, The State University of New Jersey

Bo Qiu
University of North Carolina at Charlotte

Alexandria Rossi-Alvarez
Virginia Polytechnic Institute and State University

Riley Ruskamp
University of Nebraska–Lincoln

Kristen Sanchez
Texas A&M University

Brandt Souvenir
University of Idaho

Brian Staes
Oregon State University

Mohhammad Afsar Sujon
West Virginia University

Jorge Ugan
University of Central Florida

Marissa Brown

San Jose State University

Mineta Consortium for Transportation Mobility (MCTM)

marissa.brown@sjsu.edu

Bio

In addition to pursuing a master's degree in Transportation Management, Marissa Brown is a full-time Associate Transportation Planner for Caltrans Headquarters in Sacramento. In that position, she currently serves as a project manager for major Southern California transit agencies, the scope of which includes managing $875 million of the Southern California Optimized Rail Expansion (SCORE) program of transportation projects for the Los Angeles 2028 Summer Olympics. Marissa is an avid backpacker and active transportation enthusiast. She plans to continue to support public transportation improvements across California, and to encourage the public to use transit and active transportation to reduce greenhouse gas emissions and protect the environment.

Degree and Graduation Date (or Anticipated Date)

M.S.T.M. (Master of Science in Transportation Management) from San Jose State University, May 2022

B.S. in Sustainable Environmental Design from the University of California, Davis, 2017

Preferred Career after Graduation

After completing her M.S.T.M., Marissa intends to remain in the public sector.

Broad Research Interest Area

Transportation planning; transportation policy; infrastructure systems

Specific Research Area

Achieving reductions in vehicle miles traveled through enhanced traveler access to public transportation and improved safety and connectivity for active transportation

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Marissa's top accomplishment in 2021 was her own commitment to active transportation: She completed a thru-hike of the John Muir Trail, which spans California from Yosemite National Park to Mount Whitney. Marissa began the hike solo and traveled 227 miles in 18 days. She then used public transportation to return home.

Thesis Title and Summary

N/A

Regan Buchanan

Georgia Institute of Technology

Center for Teaching Old Models New Tricks (TOMNET)

rbuchanan33@gatech.edu

Bio

Regan Buchanan completed a bachelor's degree in International Studies and Geography at the University of North Carolina at Chapel Hill. Since August of 2020, she has been pursuing a master's degree in City and Regional Planning at Georgia Tech. She has served as a Graduate Research Assistant in both the School of City and Regional Planning and the School of Civil and Environmental Engineering. Regan has been serving the community for many years in various capacities to advance social justice in communities.

Degree and Graduation Date (or Anticipated Date)

M.C.R.P. (Master of City and Regional Planning) from the Georgia Institute of Technology, May 2022

B.S. in International Studies and Geography from the University of North Carolina at Chapel Hill, May 2017

Preferred Career after Graduation

Regan will continue in the field of multimodal transportation planning in either the private or public sector after receiving her master's degree.

Broad Research Interest Area

Transportation planning; transportation policy

Specific Research Area

Travel behavior and attitudes

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Regan designed a survey that can be used to measure risk of residential and neighborhood displacement. In March 2021 she was elected to the board of Georgia Tech's Student Planning Association as Vice President.

Thesis Title and Summary

Thesis not required. Instead, Regan is writing a research paper on car ownership patterns during and after COVID-19.

Joshua H. Davidson

University of Pennsylvania

Cooperative Mobility for Competitive Megaregions (CM^2)

jdavids@design.upenn.edu

Bio

Joshua Davidson is a doctoral candidate in the Department of City and Regional Planning at the University of Pennsylvania. Josh's research focuses on transportation equity and geography. He is currently conducting a mixed-methods study of how public transit users learn about and ultimately change their route choices, and a project that models the ways that residential displacement impacts commute time. Josh has previously published work on the equity factors facing the reverse commuting population.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in City and Regional Planning from the University of Pennsylvania, August 2023

M.C.P. in City and Regional Planning from the University of Pennsylvania, May 2017

B.A. in English with Honors from Oberlin College, May 2012

Preferred Career after Graduation

Joshua will pursue a career in academia following conferral of his Ph.D.

Broad Research Interest Area

Transportation planning; transportation policy; infrastructure systems

Specific Research Area

Transportation geography and methods

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Joshua was first author on "Spatially-Oriented Data, Methods, and Models to Plan Transit for Reverse Commuters" in the ***Transportation Justice*** special issue of ***Transportation Research Part D: Transport and Environment.***

Thesis Title and Summary

"Commute Change: The Effect of Exogenous Shocks in the Transit, Residential, and Public Health Systems on Individual-Level Commutes"

Commuting is a daily, time-intensive occurrence for many workers in the United States. Commutes are roughly 25 percent longer, on average, than they were 30 years ago. These aggregate measures mask the even more pressing issues of geographic and socioeconomic differences in the commuting environment, made clear by the disproportionate effects of commuting burdens on low-income minority populations during the pandemic. Joshua will isolate and expand on three factors that generate "shocks" in the commuting environment: 1) the effect of adding new transit services to the existing network, 2) the effect of exogenous residential change (i.e., a forced move, or displacement), and 3) the effect of a public health crisis. Using a mixed-method approach and a series of research designs that employ self-collected and administrative data at the individual level to probe the effect of these "outside shocks" on the daily commute, Joshua will measure each stage of the commute change process.

Mitchell P. Fisher II

Auburn University

Southeastern Transportation Research, Innovation, Development and Education Center (STRIDE)

mpf0003@auburn.edu

Bio

Mitch Fisher is a fourth-year Ph.D. candidate in the Department of Civil and Environmental Engineering at Auburn University. His research interests are in long-distance travel behavior, multimodal discrete choice modeling, travel survey design, and machine learning applications. Mitch has had the opportunity to work with both the Alabama Department of Transportation and state legislature on several projects aimed to better the state, including the impacts of a modernized gas tax structure. He is also heavily involved with the Air Force Association as the Montgomery, Alabama, chapter's Director of Communications for Air Force ROTC, Arnold Air Society, and Silver Wings.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering from Auburn University, May 2022

M.S. in Civil Engineering from Auburn University, August 2018

B.C.E. in Civil Engineering from Auburn University, December 2016

Preferred Career after Graduation

Mitch would like to pursue a career in consulting or the private sector after receiving his doctorate.

Broad Research Interest Area

Transportation planning; transportation policy

Specific Research Area

Long-distance travel behavior and Mobility as a Service (MaaS) in rural communities

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Mitch was awarded an Airport Cooperative Research Program (ACRP) Graduate Research Award to investigate how air travel could be influenced by personal environmental beliefs.

Thesis Title and Summary

"Evaluating Long-Distance Travel Survey Demographic, Tripmaking, and Geographic Representativeness to Improve Design and Collection"

This research aims to identify how long-distance travel surveys can be better designed to maximize travel behavior capture and respondent equity, while also minimizing the fiscal and temporal burdens associated with a traditional longitudinal survey.

Rick Grahn

Carnegie Mellon University

National University Transportation Center for Improving Mobility (Mobility21)

rickrainier@gmail.com

Bio

Rick Grahn is a doctoral candidate in Civil and Environmental Engineering and a research assistant working under Dr. Sean Qian and Dr. Chris Hendrickson in the Mobility Data Analytics Center. His research interests include shared modes and public transit, with a focus on how best to integrate new technologies to improve efficiency, accessibility, and reliability in urban and rural settings. Rick is looking forward to a career in research addressing sustainability and equity issues within the transportation system. He is a registered Professional Engineer (P.E.) in California.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil and Environmental Engineering from Carnegie Mellon University, December 2021

M.S. in Civil and Environmental Engineering from Carnegie Mellon University, December 2017

M.S. in Civil Engineering (Structural) from the University of New Mexico, May 2011

B.S. in Civil Engineering from the University of New Mexico, December 2009

Preferred Career after Graduation

After receiving his Ph.D., Rick would like to pursue a career in academia or the public sector.

Broad Research Interest Area

Transportation planning; intelligent transportation systems; transportation policy

Specific Research Area

Emerging technologies and public transit

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Rick published three papers in 2021: "Improving the Performance of First- and Last-Mile Mobility Services Through Transit Coordination, Real-Time Demand Prediction, Advanced Reservations, and Trip Prioritization" in ***Transportation Research Part C: Emerging Technologies;*** "Societal Impacts of a Complete Street Project in a Mixed Urban Corridor: Case Study in Pittsburgh" in the ASCE ***Journal of Infrastructure Systems;*** and "Are Travelers Substituting Between Transportation Network Companies (TNC) and Public Buses? A Case Study in Pittsburgh" in ***Transportation.***

Thesis Title and Summary

"Evaluating and Optimizing Shared Mobility Services to Improve Public Transit Efficiency, Accessibility, and Reliability"

This thesis evaluates the impacts of ride hailing services on travel behavior and public transit. Using a combination of surveys and data from multiple sources, we gained a deeper understanding about the factors leading to mode substitution between ride hailing and public transit. Additionally, cooperative partnerships (transit shuttles + ride hailing) were modeled and simulated in the first-mile/last-mile context. Early findings indicate that hybrid designs can leverage the strengths of both systems, leading to a more reliable and cost-effective service.

Sarah Grajdura

University of California, Davis

National Center for Sustainable Transportation (NCST)

sagrajdura@ucdavis.edu

Bio

Sarah Grajdura works on research surrounding wildfire evacuation modeling and social equity in natural disasters, using econometric analysis, agent-based modeling, and mixed quantitative-qualitative methods. Her research efforts include contributing to the development of the California Integrated Transportation Health Impact Model (ITHIM) for the California Air Resources Board. Sarah co-founded the Transportation Equity and Mobility Justice Working Group UC Davis in 2019 and contributed to planning a University of California-wide class on transportation equity in 2020.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil and Environmental Engineering from the University of California, Davis, 2022

M.S. in Applied Economics from the University of Illinois at Urbana-Champaign, 2016

B.S. in Civil and Environmental Engineering from the University of Illinois at Urbana-Champaign, 2011

Preferred Career after Graduation

Sarah will pursue a career in academia or the public sector after completing her Ph.D.

Broad Research Interest Area

Transportation planning; traffic engineering

Specific Research Area

Evacuation modeling and disaster resilience

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Sarah's top accomplishment in 2021 was having a first-author paper, "Awareness, Departure, and Preparation Time in No-Notice Wildfire Evacuations," published in ***Safety Science.*** Her research specified models to identify factors in evacuation decision making in the face of dire wildfires, inputting unique interview and survey data that she herself gathered from evacuees in Red Cross shelters just weeks after their evacuation from the 2018 Camp Fire in Northern California.

Thesis Title and Summary

"Shale Gas Development and Respiratory Health"

Hydraulic fracturing, or "fracking," has rapidly increased in areas rich in shale gas and oil from 2006 to the present. Areas that have undergone shale gas development are likely to be largely rural, with few other air pollution point sources. Fracking operations such as well drilling, gas processing, and increased truck traffic are all predicted to contribute to localized air pollution. Using the natural experiment of the New York fracking ban and areas of intensifying fracking in Northeastern Pennsylvania, this research combines oil and gas well data and state inpatient respiratory records to estimate the effect of various levels of shale gas development on respiratory admissions (a border exclusion is applied to account for air pollution spillovers). We find that the presence of fracking wells increases respiratory hospital admissions of elderly patients by 16 to 31 percent; the results are robust across different levels of fracking and border exclusions.

Nadim Khairallah

University of California, Irvine

CARMEN: Center for Automated Vehicles Research with Multimodal AssurEd Navigation

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Bio

Nadim Khairallah completed a bachelor's degree with High Distinction in Mechanical Engineering from the American University of Beirut, and is currently a Ph.D. student at the University of California, Irvine. Nadim's research focuses on designing optimal adaptive algorithms to ensure safe and accurate ground and aerial vehicle navigation. He is presently designing simultaneous tracking and navigation algorithms to exploit current and future megaconstellation low Earth orbit (LEO) satellite (e.g., Starlink) signals in GPS-challenged environments. In 2021, he mentored three undergraduate and graduate students on designing sensor fusion algorithms that were successfully deployed on ground vehicles and on high-altitude aircraft.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Mechanical and Aerospace Engineering from the University of California, Irvine, June 2025

M.S. in Mechanical and Aerospace Engineering from the University of California, Irvine, June 2022

B.E. in Mechanical Engineering with High Distinction from the American University of Beirut, June 2020

Preferred Career after Graduation

Nadim will pursue a career in the public or private sector after completing his Ph.D.

Broad Research Interest Area

Intelligent transportation systems

Specific Research Area

Positioning, navigation, and timing; connected and automated vehicles; sensor fusion

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Nadim was first author of "Ephemeris Closed-Loop Tracking of LEO Satellites with Pseudorange and Doppler Measurements," to be presented at ION ITM/PTTI 2022. He also co-authored a journal article and a magazine paper. Additionally, he is a member of the first team to demonstrate exploitation of Starlink satellites for ground vehicle navigation, an achievement featured in ***IEEE Spectrum*** and on the cover of ***Inside GNSS Magazine.***

Thesis Title and Summary

"Simultaneous Tracking and Navigation with Megaconstellation LEO Satellites: Models, Implementation, and Performance"

Future megaconstellation LEO satellites (e.g., Starlink, OneWeb, etc.) will provide virtually a blanket cover around the globe, bringing forth abundant and powerful signals, which are diverse in frequency and in direction. If exploited properly, these signals could allow ground, aerial, and maritime vehicles to navigate safely and efficiently in environments where GPS signals are challenged. This thesis focuses on dynamical modeling, sensor fusion implementation, and performance characterization of LEO-based navigation systems.

Rachael Thompson Panik

Georgia Institute of Technology

Center for Transportation Equity, Decisions and Dollars (CTEDD)

rthompson82@gatech.edu

Bio

Rachael Thompson Panik is a Ph.D. student at the Georgia Institute of Technology in the Department of Civil and Environmental Engineering. Rachael is from northeast Alabama but now lives in Atlanta, Georgia. She holds degrees in Civil Engineering and Urban Planning. Before pursuing her Ph.D., she worked as a consultant, designing and planning safe infrastructure for pedestrians and bicyclists. Rachael is now a member of Dr. Kari Edison Watkins' Urban Transportation Information Lab, where she studies vulnerable road user safety, human factors, and the exposure-risk relationship.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Transportation Systems Engineering from Georgia Institute of Technology, May 2024

M.C.R.P. (Master of City and Regional Planning) from Clemson University, May 2018

B.S. in Civil Engineering from the University of Alabama at Birmingham, May 2016

Preferred Career after Graduation

Rachael will pursue a career in academia after finishing her Ph.D.

Broad Research Interest Area

Transportation planning; transportation policy; traffic engineering

Specific Research Area

Bicycle/pedestrian safety, human factors, crash/collision risk mitigation

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Rachael passed her qualifying exams for the doctorate, and was named CTEDD 2021 Student of the Year.

Thesis Title and Summary

"Creating a Situation-Aware Sensing Environment for Cyclists: An Innovative and Cost-Effective Smartphone-Based Approach"

Rachael's dissertation will assess bicyclist and pedestrian risk through the lenses of human factors (bicycle-vehicle crash typology, risk factors, etc.) and exposure (risk assessments informed by estimates of bicyclist and pedestrian activity in various roadway contexts). She hopes her dissertation will be a starting point for future research on systemic safety for all kinds of travelers.

Kelly Rodgers

Portland State University

National Institute for Transportation and Communities (NITC)

kelly@thinkstreetsmart.org

Bio

Kelly Rodgers has 20 years of city planning experience in the public, private, and nonprofit sectors, working in sustainable transportation, green infrastructure, and community design. She is currently a Ph.D. candidate in Urban Studies, investigating the use and influence of health indicators in transportation planning. Kelly is also the Executive Director of Streetsmart, a nonprofit organization that helps civic leaders embed health, climate, and equity into transportation. She is a member of the Transportation Research Board Committee on Transportation and Public Health and the Vice-Chair of the ITE Transportation and Health Standing Committee. In addition, she serves on the inaugural advisory board of the American Public Health Association's Center for Climate, Health, and Equity.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Urban Studies from Portland State University, June 2022

M.A. in Landscape Architecture from the University of British Columbia, 2007

B.A. in Urban and Regional Planning from Miami University, 1995

Preferred Career after Graduation

Upon completion of her Ph.D., Kelly will begin the next stage of her career in either academia or consulting, or work for a nonprofit organization.

Broad Research Interest Area

Transportation planning; transportation policy

Specific Research Area

Evidence-based policy; travel and the built environment

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Kelly co-authored the paper "The 2019 Conference on Health and Active Transportation: Research Needs and Opportunities," published in the ***International Journal of Environmental Research and Public Health.*** She continues to serve as Executive Director of Streetsmart, a nonprofit organization she developed that integrates climate change, public health, and equity into transportation. Streetsmart's easy-to-use online platform uses systematic reviews to identify recommended strategies for positive change and pairs each strategy with implementation guidance. Streetsmart bridges research and practice by translating research into actionable insights for practitioners.

Thesis Title and Summary

"The Use and Influence of Health Indicators in Municipal Transportation Plans"

Research on the relationship between health and transportation has increased substantially in the past 20 years. Amidst the growing emphasis on the use of indicators for transportation plans and projects in general, researchers and practitioners have called for the use of health indicators in transportation planning. The underlying hope is that new procedures, such as measuring and tracking indicators, can turn policy goals into practice. However, it is unclear if these indicators, if used, have any influence on transportation decisions. Much of the research on indicators is focused on their development and use, rather than their influence. This first part of the dissertation research will involve an inventory of municipal health indicators, addressing a knowledge gap in the type, extent, and use of health indicators. The research will then undertake a case study of the transportation plans of five cities, reviewing key transportation plan documents and interviewing actors involved in the development of those plans, in order to identify which factors (indicator, user, organizational, and political) best explain use and influence.

Matthew Stanley

Clemson University

Center for Connected Multimodal Mobility (C^2M^2)

mrstanl@clemson.edu

Bio

Matthew Stanley, from Trinity, North Carolina, received his bachelor's degree in Pure Mathematics from Anderson University (South Carolina). Now a graduate student in Civil Engineering at Clemson University, Matthew is concentrating his studies in Transportation Systems. Matthew was a Geomatics graduate teaching assistant during his entire tenure at Clemson. Matthew taught students different applications of geographic information systems (GIS), global positioning systems (GPS), digital terrain models (DTM), and surveying through different lab procedures that bolstered lecture concepts. His research pertains to fatal crash data analysis and identifying contributing factors in fatal crashes.

Degree and Graduation Date (or Anticipated Date)

M.S. in Civil Engineering from Clemson University, December 2021

B.S. in Mathematics from Anderson University (SC), December 2019

Preferred Career after Graduation

Private sector or consulting

Broad Research Interest Area

Infrastructure systems; traffic engineering

Specific Research Area

Fatal crash analysis

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Matthew's top accomplishment in 2021 was accepting his first full-time job as Traffic Operations Associate in Charlotte, North Carolina, with Ramey Kemp & Associates. He was also a member of the Clemson ITE Traffic Bowl team, which won the Southern District ITE Traffic Bowl.

Thesis Title and Summary

"Chasing Target Zero: Contributing Factors of Fatal Crashes in South Carolina"

This thesis takes a closer look at fatal crash contributing factors in fatal crashes in South Carolina, and their differences from non-fatal crashes. Using Venn diagram comparisons and odds ratio statistical analysis, these fatal and non-fatal crash contributing factors were quantified and analyzed to determine differences between fatal and non-fatal crashes. Based on these methods, it has been determined that environmental factors have an increased role in the fatal crash environment, with non-motorists having disproportionate odds of being involved in fatal crashes. Furthermore, the differences between fatal crash and non-fatal-crash contributing factors quantified in this thesis will serve as a stepping stone to further research to help chase Target Zero, a safety initiative striving to eliminate fatalities on South Carolina roadways.

Alexander Sundt

University of Michigan

Center for Connected Automated Transportation (CCAT)

asundt@umich.edu

Bio

Alexander Sundt completed a bachelor's degree in Civil Engineering in 2018 at the University of California, Berkeley, and is currently a Ph.D. student at the University of Michigan–Ann Arbor. He received recognition in 2020 as a National Science Foundation Graduate Research Fellowship Honorable Mention. Alex works on research regarding ride-hailing systems, specifically ride-pooling in conjunction with CCAT. He also interns at DiDi Labs, working on deep reinforcement learning for ride-hailing optimization. Alex is very active in student organizations and is currently the President of the Michigan Transportation Student Organization (MiTSO), which hosts events to broaden interest in transportation.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering, from the University of Michigan–Ann Arbor, May 2023

B.S. in Civil Engineering from the University of California, Berkeley, May 2018

Preferred Career after Graduation

Alex will seek a career in the private sector after completing his Ph.D.

Broad Research Interest Area

Intelligent transportation systems

Specific Research Area

Emerging mobility systems for mixed-use applications

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Alex's top accomplishment for the year was completed research that explored the optimization of the ride-pooling assignment methodology, which derived performance guarantees on optimal assignment for mixed fleets with both autonomous and human-driven vehicles. His work culminated in the publication of a co-authored paper "Efficient Algorithms for Stochastic Ride-pooling Assignment with Mixed Fleets," in ***Transportation Science.***

Thesis Title and Summary

"Improving the Efficiency of Ride-Hailing Systems Using Ride-Pooling"

Ride-hailing systems have recently been found to increase congestion in many cities. An agent-based platform has been developed that simulates and tests ride-hailing assignment heuristics and their effect on important metrics of average occupancy and system efficiency. This work will investigate ways to increase these metrics by prioritizing ride-pooling.

Carly Venditti

Texas A&M University

National Institute for Congestion Reduction (NICR)

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Bio

Carly Venditti is a second-year Master of Urban Planning student at Texas A&M University, focusing on housing and community development. Her previous professional experience includes time with a community development corporation in Waterbury, Connecticut, as well as a full year of community outreach experience with a regional planning agency in southeastern Massachusetts. Carly aims to work specifically with cities struggling with post-industrial development issues or in an urban policy think-tank setting. In her free time, Carly enjoys bouldering, listening to music, and playing with her dog, Bowie.

Degree and Graduation Date (or Anticipated Date)

M.U.P. (Master of Urban Planning) from Texas A&M University, May 2022

B.A. in Political Science and Hispanic Studies from Wheaton College (MA), May 2020

Preferred Career after Graduation

Carly will seek a career in the public sector.

Broad Research Interest Area

Transportation planning; transportation policy

Specific Research Area

Housing, equity/access

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Carly was a contributing author to Texas Transportation Institute's forthcoming white paper, "The Keys to Estimating Mobility in Urban Areas 3rd Edition – 2021 Applying Definitions and Measures that Everyone Understands." Additionally, she became a trained expert in non-motorized data management and quality review. Carly also founded a planning theory reading group (available for course credit) in the Urban Planning department to discuss radical planning techniques geared toward inclusive and participatory societal transformation.

Thesis Title and Summary

N/A

Emma Vinella-Brusher

University of North Carolina at Chapel Hill

Collaborative Sciences Center for Road Safety (CSCRS)

evb@unc.edu

Bio

Emma Vinella-Brusher is earning a dual master's degree at UNC Chapel Hill from the Gillings School of Global Public Health and the Department of City and Regional Planning. Originally from Oakland, California, Emma received her B.A. in Environmental Studies at Carleton College. She then spent four years at the U.S. DOT Volpe Center, during which she led the Transportation Equity and Sustainability programs and contributed to projects related to disaster recovery, public lands, resilience, and multimodality. Emma is currently a researcher with the UNC McDonald Group and Highway Safety Research Center, with the goal of reducing transportation barriers to food, healthcare, greenspace, and other vital goods and services.

Degree and Graduation Date (or Anticipated Date)

M.P.H./M.C.R.P in Public Health and City and Regional Planning from the University of North Carolina at Chapel Hill, May 2023

B.A. in Environmental Studies from Carleton College, 2016

Preferred Career after Graduation

Emma is seeking a career in the public sector after completing her UNC studies.

Broad Research Interest Area

Transportation planning

Specific Research Area

Transportation barriers to food and healthcare access

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Emma secured a fully funded graduate research position with the UNC McDonald Group, focusing on addressing transportation barriers to healthcare.

Thesis Title and Summary

"Reckoning with Food Apartheid: A Case Study of Four U.S. Cities"

In recent years, food justice activists and scholars have pushed to move away from the use of "food desert," a misleading term that implies a naturally occurring phenomenon, and towards "food apartheid," which better reflects the intentionality and racially discriminatory approaches that have led to inequitable access to food. Both historical and current policies and practices, such as redlining, racial covenants, predatory lending, displacement, and segregation, have led to disparate health outcomes for communities of color who are unable to access basic needed goods and services. This paper uses quantitative, qualitative, and spatial methods to analyze the steps that four major U.S. cities (Oakland, Chicago, Atlanta, and Boston) have taken to address and even reverse the racialized nature of disparities in food access and health outcomes for communities of color.

Brittany Nicole Waggener

University of New Orleans

Maritime Transportation Research and Education Center (MarTREC)

brittanywaggener@gmail.com

Bio

Brittany Waggener has completed research on short sea shipping, updates to multinational agreements related to tariffs, the Louisiana State Rail Plan, and the development of LNG facilities in southern U.S. ports through her position at the University of New Orleans (UNO) Transportation Institute. She is currently working on projects related to tariff rate adjustments for Plaquemines Parish and chassis supply issues in the United States. In the future, Brittany intends on focusing on research, but may return to teaching as well.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Urban Studies from the University of New Orleans, December 2022

J.D. from the Cumberland School of Law at Samford University, 2011

B.S. in Political Science from Tennessee Technological University, May 2008

Preferred Career after Graduation

After completing her studies, Brittany wants to pursue a career in academia.

Broad Research Interest Area

Infrastructure systems

Specific Research Area

Vital infrastructure reconstruction

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

Brittany counts as her top academic accomplishment of 2021 the successful defense of her dissertation proposal to her committee. Outside of academics, she considers having survived cancer during the COVID-19 pandemic to be her top accomplishment.

Thesis Title and Summary

"Reconstructing Wren's City of London Churches and the Shaping of National Identity 1941–1969"

After the German air raids on the city of London ended in early 1941, Britain had the dual task of deciding how to rebuild damaged or destroyed areas while increasing military efforts overseas. The air raids indiscriminately affected homes, places of business, industrial areas, government buildings, and places of worship. This damage was particularly meaningful in the city of London with the assault upon infrastructure designed by Sir Christopher Wren after the Great Fire of 1666. This research focuses on the relationship between reconstruction efforts for Wren-designed infrastructure and the shaping of British national identity during and after the Second World War.

Zakhary Mallett

University of Southern California (USC)

Pacific Southwest Region University Transportation Center (PSR)

zmallett@usc.edu

Bio

Zakhary Mallett's research measures the extent to which contemporary transportation and land use issues—sprawl, congestion, pollution, access equity, etc.—are explained by transport subsidy patterns. Growing up transit dependent, Zakhary desired a career through which he could improve transit's competitiveness with the automobile. He became the youngest person ever elected to the Bay Area Rapid Transit (BART) District Board of Directors. Both his graduate school and elected office experience impressed on him two things: that transit's mode-share challenges are more systemic than rooted in transit itself, and that he could best contribute to solving such challenges through research and teaching.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Urban Planning and Development from the University of Southern California, 2022

M.C.P. (Master of City Planning) from the University of California, Berkeley, 2012

B.A. in Urban Studies from Stanford University, 2009

Preferred Career after Graduation

Zakhary will pursue a career in academia after receiving his Ph.D.

Broad Research Interest Area

Transportation planning; transportation policy

Specific Research Area

Transportation finance; the transportation-land use connect; urban economics; disruptive transportation technologies

Primary Mode(s)

Public transit

Top Accomplishment in 2021

In 2021, Zakhary successfully defended his dissertation proposal, the first paper from which was accepted for presentation and publication consideration at the Transportation Research Board 2022 Annual Meeting. He is also the California Transportation Foundation's 2021 Graduate Scholarship awardee and a Dwight David Eisenhower Transportation Fellowship Program Graduate Fellowship recipient for the second time in two years.

Thesis Title and Summary

"Equity and Demand Implications of Rail Transit Fare Policies"

This research evaluates the geographic (spatial) and time-of-day (temporal) variability of rail transit costs, the variability in which these costs are recovered by fares paid by riders who travel at different times and locations, and whether these patterns generate socioeconomic disparities. The objective is to measure the spatial, temporal, and socioeconomic incidence of rail transit subsidies. The research also simulates what the demand response would be to adjusting fares to achieve a common (equitable) cost recovery across time and space. Whereas past research has focused mostly on bus transit and measured equity in terms of the fare per mile different riders pay, this research evaluates rail transit and uses highly disaggregate data to account for cost-per-rider variability across the network in ways no past research has done. Two rail transit systems, the Bay Area Rapid Transit District and the Metropolitan Atlanta Rapid Transit Authority, are studied.

Bianca Mers

Georgia Institute of Technology

Transit-Serving Communities Optimally, Responsively, and Efficiently (T-SCORE) Center

Bmers3@gatech.edu

Bio

Bianca Mers is passionate about creating more just and livable places. Her current research focuses on public transit, but she is more broadly interested in land use/transportation interactions and transportation accessibility. She embraces collaborative and interdisciplinary approaches to problem solving. Her goal is to produce practical and accessible research that will empower decision makers, local officials, and individuals to better their communities. Bianca is from Marietta, GA; she enjoys reading, all things food related, and gardening. Her favorite mode of transportation is walking.

Degree and Graduation Date (or Anticipated Date)

M.C.R.P. (Master of City and Regional Planning) from the Georgia Institute of Technology, May 2022

B.A. in International Relations with Honors from the University of Delaware, May 2020

Preferred Career after Graduation

Bianca plans to pursue a Ph.D. and then seek a career in academia or consulting.

Broad Research Interest Area

Transportation planning; transportation policy

Specific Research Area

Transit ridership and equity

Primary Mode(s)

Public transit

Top Accomplishment in 2021

Bianca's top accomplishment in 2021 was being elected as the Region 2 Representative for the Student Representatives Council of the American Planning Association. During her two-year term, she will be able to amplify student voices and advocate for positive changes in the education of planners.

Thesis Title and Summary

Not yet initiated.

Christian David Sprague

Cornell University

Center for Transportation, Environment, and Community Health (CTECH)

cds275@cornell.edu

Bio

A fourth-year Ph.D. candidate, Christian Sprague uses frameworks developed in Systems Engineering to analyze market inefficiencies that affect accessibility to K-12 education. His work is interdisciplinary and policy relevant. This is true in particular of his recent, CTECH sponsored research examining segregated access to educational opportunities, and the role of public school transportation infrastructure in limiting that access. His investigational methods rely on a range of computational and analytical skills to evaluate pressing issues of structural inequality that are the result of market design and policy oversights. Christian's work shows a clear commitment to improving infrastructure for the public good.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Systems Engineering from Cornell University, 2022

M.S. in Systems Engineering from Cornell University, 2021

M.S. in Economics from Boise State University, 2018

B.S. in Applied Mathematics from Boise State University, 2016

B.A. in Economics from Boise State University, 2016

Preferred Career after Graduation

Christian will seek a career in consulting or the public sector after receiving his Ph.D.

Broad Research Interest Area

Transportation planning; transportation policy; infrastructure systems

Specific Research Area

Education policy and economics; human behavior; accessibility

Primary Mode(s)

Public transit

Top Accomplishment in 2021

The Cornell Center for Social Sciences awarded Christian a prestigious one-year Data Science Fellowship for his exceptional abilities in computation and analysis, and for his research agenda. As a Fellow, Christian will work in a high-performance computing environment and provide consulting and mentoring to the private sector.

Thesis Title and Summary

"Convenience is King: School Choice, Student Outcomes, and the Role of Education Policy"

This dissertation investigates the effects of inconvenient school access on inequalities in educational opportunity, school segregation, and student travel demands. In the modern era of school choice, policies that affect the ease in which schools are made accessible can dramatically alter household enrollment behavior. School district boundary lines, constrained busing service areas, stringent transfer policies, and limited placement all throttle the convenience of school access and enrollment. Therefore, depending on the policy arrangement, policymakers can encourage or discourage households from certain schooling options. This dissertation argues that, from the perspective of perfect accessibility, such policies form an implicit "inconvenience tax" that affects the ability of households to select schools. As policy arrangements vary across geography, a resident may incur an exorbitant burden when selecting a certain enrollment option, whereas their neighbor may incur little to none for the same school. By understanding this uneven spatial distribution, this research explores how household preferences and the built environment mediate these policy-influenced educational disparities, especially for socioeconomically disadvantaged households seeking access to high-quality schools.

Dunsin Fadojutimi

Morgan State University

Urban Mobility & Equity Center (UMEC)

dufad1@morgan.edu

Bio

Dunsin Fadojutimi, a senior Electrical Engineering student, is passionate about developing sustainable solutions to decarbonize the transportation sector in industrialized countries and increase access to clean electricity in developing nations. Through the National Science Foundation's Louis Stokes Alliances for Minority Participation (LSAMP) program, she participated in a project evaluating the wastewater treatment processes of the Commonwealth of Pennsylvania and the Republic of Trinidad and Tobago; the study compared water quality data with World Health Organization (WHO) standards and used Six Sigma Total Quality Management (TQM) as a basis for recommending process improvements. Dunsin is Vice President at Morgan State of the Maryland Epsilon Chapter of the national Tau Beta Pi Engineering Honor Society. She served as Region II Vice-Chair for the National Society of Black Engineers (NSBE) from 2018–2020, and is involved with the NSBE Energy Special Interest Group in increasing the visibility of alternative career pathways. Dunsin is also president of the Gamma Chapter of Zeta Phi Beta Sorority, Incorporated, organizing events and community service engagements with its members.

Degree and Graduation Date (or Anticipated Date)

B.S. in Electrical Engineering from Morgan State University, May 2021

Preferred Career after Graduation

Dunsin will seek a Ph.D. and then pursue employment in the private sector.

Broad Research Interest Area

Intelligent transportation systems

Specific Research Area

Connected and automated vehicles

Primary Mode(s)

Road

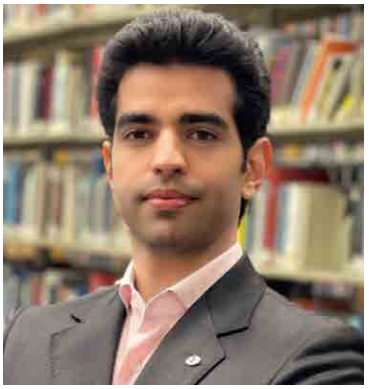
Top Accomplishment in 2021

Through UMEC, Dunsin participated in research in spring 2021 under Dr. Eazaz Sadeghvaziri and Dr. Mansoureh Jeihani. The aim of the project was to create a proof of concept for a robot guide dog, providing an innovative transportation service for people with visual impairments in keeping with the UN Sustainable Development goals of reduced inequities and sustainable cities and communities. Dunsin was responsible for testing a Bluetooth-connected app using Arduino programming. The team presented a prototype at the American Association for the Advancement of Science (AAAS) 2021 HBCU Making & Innovation Showcase, winning second place in competition.

Thesis Title and Summary

Not required for bachelor's degree.

Saman Farhangdoust



Florida International University

Accelerated Bridge Construction University Transportation Center (ABC-UTC)

Sfarh006@fiu.edu

Bio

Saman Farhangdoust is pursuing the goal of using his interdisciplinary knowledge to advance the Smart City concept and make a lasting impact on society. He enjoys venturing into new disciplines to combine cutting-edge technologies and develop novel solutions to today's structural safety problems. His research spans structural engineering, structural-health monitoring, metamaterials, energy harvesting, and nondestructive evaluation. These research activities have led to the publication of more than 40 journal articles and conference proceedings to date. As a graduate student at FIU, Saman has contributed to a number of infrastructure projects funded by ABC-UTC and the Florida Department of Transportation (FDOT). Outside of his research at FIU, Saman has developed advanced energy harvesting and structural health monitoring concepts in collaboration with Boeing Research and Technology in a mentoring program, resulting in several U.S. patent applications. Saman is considered a talented young researcher who has made valuable multidisciplinary contributions at an international level. He has served as a conference co-chair at the SPE Smart Structures+NDE Symposium; been appointed as a conference track organizer and session chair at the ASME–QNDE Conference; and was elected by the Structural Engineering Institute's Graduate Student Chapters Leadership Council as Public Relations Officer.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering (Structural Engineering) from Florida International University, 2021

M.S. in Civil Engineering from Florida International University, 2020

M.Sc. in Mechanical Engineering from Iran University of Science and Technology, 2014

B.Sc. in Mechanical Engineering (Solid Mechanics) from Khayyam University, 2011

Preferred Career after Graduation

Upon completion of his Ph.D., Saman will pursue a career in academia or the public sector.

Broad Research Interest Area

Infrastructure systems; intelligent transportation systems

Specific Research Area

Smart and resilient infrastructure systems

Primary Mode(s)

Road

Top Accomplishment in 2021

Saman received the FIU Dissertation Year Fellowship Award for spring and summer 2021. FIU further recognized Saman with the 2021 Outstanding Student Life Award and the Outstanding Graduate Scholar Award.

Thesis Title and Summary

"Epoxy GFRP-Dowel Splice for Prestressed Precast Concrete Pile"

Saman's dissertation research was funded by FDOT to develop new designs and drawings for corrosion-resistant dowel pile splices (e.g., fiber-reinforced polymer [FRP] composites) to be added to future editions of FDOT Standard Plans and Construction Specifications. His dissertation work will help increase the resilience of the U.S. coastal infrastructure against natural and man-made hazards.

Diarmuid Gregory

University of Vermont

Transportation Infrastructure Durability Center (TIDC)

diarmuid.gregory@gmail.com

Bio

Diarmuid Gregory is a master's degree student in Mechanical Engineering at the University of Vermont (UVM), where he also completed his undergraduate degree. Diarmuid is happy to have been able to extend his time at UVM and pursue a master's degree, working on interesting and innovative projects with an exciting and brilliant research group. He sees a lot of potential for future work and broad transportation impact from his thesis. Moving to Denver, Colorado, in the coming weeks, he hopes to continue working on things he loves in the transportation or energy industries with great people around him.

Degree and Graduation Date (or Anticipated Date)

M.S. in Mechanical Engineering from the University of Vermont, December 2021

B.S. in Mechanical Engineering from the University of Vermont, May 2020

Preferred Career after Graduation

Diarmuid is seeking a private-sector career, either in design or in R&D in renewable energy harvesting or grid-scale energy storage.

Broad Research Interest Area

Infrastructure systems

Specific Research Area

Durability; energy harvesting

Primary Mode(s)

Road

Top Accomplishment in 2021

Diarmuid received the UVM Tau Beta Pi Outwater Award for skill, tact, and initiative as president of the UVM chapter of Tau Beta Pi, The Engineering Honor Society.

Thesis Title and Summary

"Chitosan-Based Shrinking Fibers for Post-Cure Stressing to Increase Durability of Concrete"

In situ shrinking fibers take the benefits of incumbent passive fibers a step farther by reducing cracking and voids more and inducing a pre-compression which further increases tensile strength. Shrinking fibers were made from biodegradable chitosan powder, which uses Portland cement's high pH to activate and shrink in concrete soon after curing. Certain chitosan shrinking fiber specimens showed significant improvement in freeze-thaw resistance.

Kal Hart

South Dakota State University

National Center for Transportation Infrastructure Durability & Life-Extension (TriDurLE)

Kalhart83@gmail.com

Bio

Kal Hart finished his bachelor's degree in Civil and Environmental Engineering in 2019 at South Dakota State University and has remained at SDSU to continue his graduate education. Kal was a two-year starter on the SDSU football team, and was able to intern with Gage Brothers Concrete Products of Sioux Falls, South Dakota, in the summer of 2018. This internship enabled him to get hands-on experience in the field of precast/prestressed concrete and served to build a relationship with Gage Brothers, which is now a cosponsor on Kal's graduate research project.

Degree and Graduation Date (or Anticipated Date)

M.S. in Civil and Environmental Engineering from South Dakota State University, May 2022

B.S. in Civil and Environmental Engineering from South Dakota State University, December 2019

Preferred Career after Graduation

Kal will seek a career in the private sector.

Broad Research Interest Area

Materials

Specific Research Area

Repairable precast bridge bents for extreme events

Primary Mode(s)

Road

Top Accomplishment in 2021

Kal was awarded the Dennis R. Mertz PCI Bridge Research Fellowship to study a new repairable concrete bridge column detailing. One half-scale column has successfully been tested and repaired before further testing while two additional columns await construction.

Thesis Title and Summary

"Repairable Precast Bridge Bents for Seismic Events"

Current seismic bridge codes provide ductility through yielding of longitudinal reinforcement as well as concrete crushing and spalling. While this damage allows for adequate displacement of the bridge, it often leads to a requirement to demolish the structure. Utilizing accelerated bridge construction (ABC) connections, advanced materials, and exposed buckling restrained reinforcement (BRR) may allow for reduced damage in concrete bridge columns, as well as for replacement and repair of longitudinal rebar after an earthquake.

Hana Herndon

Georgia Institute of Technology

Inspecting and Preserving Infrastructure through Robotic Exploration (INSPIRE)

hnherndon@gatech.edu

Bio

Hana Herndon earned a B.S. in Civil Engineering with Highest Honors from Georgia Tech in 2021. Her undergraduate studies focused on transportation systems and structural engineering. Now pursuing a master's degree in the School of Civil and Environmental Engineering, Hana's graduate research interests include structural health monitoring, structural resilience, and risk analysis. Because she is interested in the educational development of engineers, Hana has served on the CEE Undergraduate Student Advisory Council and Strategic Planning Core Team.

Degree and Graduation Date (or Anticipated Date)

M.S. in Civil Engineering from the Georgia Institute of Technology, December 2022

B.S. in Civil Engineering from the Georgia Institute of Technology, May 2021

Preferred Career after Graduation

Hana plans to continue her studies for a Ph.D., and will seek a career in academia.

Broad Research Interest Area

Infrastructure systems; intelligent transportation systems

Specific Research Area

Machine learning and computer vision approaches for assessing bridge degradation and structural reliability

Primary Mode(s)

Road

Top Accomplishment in 2021

Hana was selected as a National Science Foundation Revolutionizing Engineering Departments (RED) Graduate Fellow, working to revolutionize civil engineering education through the integration of novel data analytics methods and approaches to solve global grand challenges, particularly problems related to increasing infrastructure resilience.

Thesis Title and Summary

Not required for M.S.

John Higgins

University of Wyoming

Mountains-Plains Consortium

Jhiggin7@uwyo.edu

Bio

John Higgins is a graduate research assistant in Civil Engineering at the University of Wyoming, working under Dr. Jennifer Tanner at the High Bay Research Facility to produce high-performance concrete mix designs for use in bridge decks. He previously obtained his B.S. in Civil Engineering from the University of Wyoming.

Degree and Graduation Date (or Anticipated Date)

M.S. in Civil Engineering from the University of Wyoming, May 2022

B.S. in Civil Engineering from the University of Wyoming, May 2020

Preferred Career after Graduation

John will seek a career in the private sector after completing his graduate studies.

Broad Research Interest Area

Infrastructure systems; materials

Specific Research Area

Infrastructure systems; materials; roadway construction

Primary Mode(s)

Road

Top Accomplishment in 2021

John's biggest accomplishment was working in New York to inspect bridges for the New York State Department of Transportation.

Thesis Title and Summary

N/A

Lauren Hill-Beaton

Rutgers, The State University of New Jersey

Center for Advanced Infrastructure and Transportation (CAIT)

laurenhb2123@gmail.com

Bio

As an undergraduate student, Lauren Hill-Beaton discovered that she enjoyed creating maps using Python programming. It was not until graduate school that she was able to further this passion by learning and exploring GIS. During that time, she took on a project in which she analyzed how road infrastructure in the U.S. Virgin Islands could potentially be impacted by sea level rise and a 100-year storm scenario.

Degree and Graduation Date (or Anticipated Date)

M.S. in Atmospheric Science from Rutgers University, January 2022

B.S. in Meteorology from Rutgers University, May 2018

Preferred Career after Graduation

Lauren is considering a career in consulting or the public or private sector following completion of her master's degree.

Broad Research Interest Area

Transportation planning; infrastructure systems

Specific Research Area

Climate change impacts on road infrastructure

Primary Mode(s)

Road

Top Accomplishment in 2021

Lauren successfully created a vertical profile of the Western Pacific double intertropical convergence zone (ITCZ).

Thesis Title and Summary

"Identifying and Interpreting Double Intertropical Convergence Zone Occurrence in the Western Pacific"

In this study, Lauren analyzed double ITCZ structures in the Western Pacific using Tropical Rainfall Measuring Mission (trmm) and ERA5 (fifth-generation European Centre for Medium-Range Weather Forecasts [ECMWF]) data. She applied a modified method used in a previous study (Lietzke et al. 2001), prescribing average rainfall amounts at specified latitudes. From this, she was able to identify a temporal scale and establish a climatology.

Oscar Huang

Texas A&M University

Transportation Consortium of
South-Central States (Tran-SET)

ohuang2@tamu.edu

Bio

Oscar Huang completed his B.S. in Materials Science and Engineering from the University of California, Merced, in 2017 and is now pursuing his Ph.D. at Texas A&M University. His research involves applying a green alternative material known as geopolymer to various transportation infrastructure applications, such as soil stabilization, corrosion protection for steel rebars, and binder for concrete.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Materials Science and Engineering from Texas A&M University, August 2022

B.S. in Materials Science and Engineering with Honors from the University of California, Merced, May 2017

Preferred Career after Graduation

After completing his Ph.D., Oscar would like to pursue a career in the public or private sector.

Broad Research Interest Area

Materials

Specific Research Area

Geopolymer, mortars and concretes, rebar corrosion, soil stabilization

Primary Mode(s)

Road

Top Accomplishment in 2021

For the academic year of 2020-2021, Oscar was chosen for the research teams of three ongoing Tran-SET projects: "Evaluation of Sustainable and Environmentally Friendly Stabilization of Cohesionless Sandy Soil for Transportation Infrastructure" (Tran-SET 20GTTAMU21); "Evaluation of Alternative Sources of Supplementary Cementitious Materials (SCMs) for Concrete Materials in Transportation Infrastructure" (Tran-SET 20CLSU07); and "Multifunctional Corrosion Control System as a Sustainable Approach for Reinforced Concrete Elements" (Tran-SET 20CTAMU22). He plans to submit at least three first-authored papers for journal publications by the end of 2021.

Thesis Title and Summary

"Geopolymer for Eco-Friendly Transportation Infrastructure Applications"

Geopolymer has been considered to be a prime candidate to replace ordinary Portland cement in a variety of transportation infrastructure applications because it has similar properties but a lower carbon footprint. This thesis evaluates the feasibility of using geopolymer in a variety of applications, such as binder for concrete, inhibition of chloride-induced corrosion in steel rebar, and soil stabilization.

Hailee Kulich

University of Pittsburgh

Automated Vehicle Services for People with Disabilities–Involved Responsive Engineering (ASPIRE) Center

hrk6@pitt.edu

Bio

Hailee Kulich is a graduate student researcher at the Human Engineering Research Laboratories and University of Pittsburgh working under Drs. Rory Cooper and Alicia Koontz. Hailee received her bachelor's degree in Bioengineering from the University of Pittsburgh in 2016. Her current research interests include the development of new assistive technologies, including intelligent transportation systems, wheelchair biomechanics, and ergonomics. At present, Hailee is working with a team developing a clinical tool to evaluate the quality of assisted wheelchair transfers performed by informal caregivers, with a goal of developing better training, educational interventions, and assistive technologies for those individuals.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Rehabilitation Science and Technology from the University of Pittsburgh, summer 2022

B.S.E. (Bachelor of Science in Bioengineering) from the University of Pittsburgh, 2016

Preferred Career after Graduation

Hailee intends to pursue a career in academia after receiving her Ph.D.

Broad Research Interest Area

Intelligent transportation systems

Specific Research Area

Accessibility of vehicles and transportation systems

Primary Mode(s)

Road

Top Accomplishment in 2021

Hailee is an integral member of the team studying journey mapping for older adults and people with disabilities, and has helped with the development of survey tools for voice of the consumer. Her work on wheelchair transfers is very important because transfer capability determines the types of transportation that people can use. She has been a leader in building bridges to the communities ASPIRE engages with.

Thesis Title and Summary

"Development of the Caregiver Assisted Transfer Technique Instrument"

Informal, or unpaid, caregivers play an essential role in assisting individuals with disabilities, including assisting with tasks like wheelchair transfers. Caregivers who assist with these tasks are at high risk of developing musculoskeletal injury and pain. Because the current standard of care provides little training to caregivers of individuals requiring transfer assistance, there is a need to develop an objective way to evaluate proper transfer technique. Recently, in a collaborative effort, a tool called the Caregiver Assisted Transfer Technique Instrument (CATT) was developed. The goal of this thesis is to develop and evaluate the preliminary psychometric properties of the CATT. The CATT will be used in both clinical and nonclinical settings to identify specific issues with or deficits in transfer technique, identify areas to target educational interventions, and serve as a guide when developing new assistive technologies related to transfer assistance.

Daniel F. Ortiz

Rutgers, The State University of New Jersey

Connected Cities for Smart Mobility toward Accessible and Resilient Transportation (C2SMART)

daniel.92.1997@gmail.com

Bio

Daniel Ortiz completed a bachelor's degree in Civil Engineering in January 2021 at Rutgers, The State University of New Jersey, and is now a graduate student there, pursuing a master's degree in Structural Engineering. Daniel worked closely on the installation of novel sensor technologies including distributed fiber optic (DFO) sensors and wireless sensor nodes for structural health monitoring (SHM) along the corridor of the Brooklyn-Queens Expressway (BQE) in New York City for structure resiliency. Daniel also contributed to the development of advanced cementitious materials, including ferrocement and ultrahigh-performance concrete (UHPC) to improve the service life of the infrastructure.

Degree and Graduation Date (or Anticipated Date)

M.S. in Civil Engineering from Rutgers University, January 2022

B.S. in Civil Engineering from Rutgers University, January 2021

Preferred Career after Graduation

After completing his master's degree, Daniel intends to pursue a Ph.D.

Broad Research Interest Area

Infrastructure systems; materials

Specific Research Area

UHPC; prestressed concrete; carbon fiber reinforced polymer (CFRP) tendons; resiliency

Primary Mode(s)

Road

Top Accomplishment in 2021

Daniel was a presenter on a virtual panel titled "Early Age Bond Characteristics of Ferrocement-Concrete Interface under Thermal Curing" during the 13th International Symposium on Ferrocement and Thin Fiber Reinforced Inorganic Matrices in June 2021. Daniel also assisted in research on the use of fiber optic sensors for the measurement of cracks in post-tensioned concrete beams.

Thesis Title and Summary

"Flexural Behavior of Prestressed UHPC Beams with Hybrid (Steel-CFRP) Tendons"

The aim of this research is to quantify the flexural performance of prestressed and post-tensioned members utilizing materials such as UHPC, steel, or carbon fiber tendons to improve infrastructure resiliency and its service life. Failure modes were analyzed with the use of tilt sensors, strain gauges, and fiber optic sensors.

Bo Qiu

University of North Carolina at Charlotte

Center for Advanced Multimodal Mobility and Solutions and Education (CAMMSE)

bqiu@uncc.edu

Bio

Bo Qiu received his M.S. in Mathematics in 2017 at the University of North Carolina at Charlotte (UNCC) and is currently a Ph.D. candidate there in the Department of Civil and Environmental Engineering. His research, supported by CAMMSE, has focused on travel time forecasting using a dynamic information fusion model based on machine learning approaches.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Infrastructure and Environmental Systems (INES) from the University of North Carolina at Charlotte, December 2021

M.S. in Applied Mathematics from the University of North Carolina at Charlotte, May 2017

B.S. in Civil Engineering from Beihang University, July 2005

Preferred Career after Graduation

Bo will seek a career in the private sector after he receives his Ph.D.

Broad Research Interest Area

Infrastructure systems; intelligent transportation systems

Specific Research Area

Travel time forecasting and safety data analysis

Primary Mode(s)

Road

Top Accomplishment in 2021

Bo is first author of three papers published in 2021. One is on safety: "Mixed Logit Models for Examining Pedestrian Injury Severities at Intersection and Non-Intersection Locations," published in the ***Journal of Transportation Safety & Security.*** The other two describe using machine learning methods to forecast travel time: "Machine Learning Based Short-Term Travel Time Prediction: Numerical Results and Comparative Analyses," published in ***Sustainability;*** and "Travel Time Forecasting on a Freeway Corridor: A Dynamic Information Fusion Model Based on the Random Forests Approach," published in ***Smart and Resilient Transportation.***

Thesis Title and Summary

"Travel Time Forecasting on a Freeway Corridor: A Dynamic Information Fusion Model Based on the Machine Learning Approach"

To improve the accuracy and interpretability of travel time prediction (TTP) models, random forest method and long short-term memory neural network methods are applied to short-term TTP in this study. Furthermore, the attention mechanism is implemented by developing the neural network to capture the inner relationship within the traffic data. The proposed TTP method can overcome the performance issue through long temporal dependency and memory, achieving its superior capability for travel time prediction particularly when the prediction horizons are longer than 15 minutes (e.g., 30 min, 45 min, 60 min).

Alexandria Rossi-Alvarez

Virginia Polytechnic Institute and State University (Virginia Tech)

Safety Through Disruption (Safe-D): Goal Zero

arossi-alvarez@vtti.vt.edu

Bio

Alexandria Rossi-Alvarez completed an accelerated five-year course of study in the Department of Human Factors and Systems at Embry-Riddle Aeronautical University (ERAU), earning a B.S. in Human Factors Psychology and an M.S. in Human Factors. At Virginia Tech, Alexandria led a team to develop a technology for injury reduction (PREPARES); it alerts a driver who has turned to look to the side or behind them of an impending rear-end crash, causing them to turn their bodies back to standard sitting position milliseconds before impact. For this work, her team won the title for the North American Region in the Student Safety Technology Design Competition (SSTDC) of the Enhanced Safety of Vehicles (ESV) 26th International Technical Conference in April 2019, and went on to capture the international title for the 2019 Collegiate SSTDC.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Industrial and Systems Engineering from Virginia Polytechnic Institute and State University, May 2022

M.S. in Human Factors from Embry-Riddle Aeronautical University, December 2013

B.S. in Human Factors Psychology from Embry-Riddle Aeronautical University, May 2012

Preferred Career after Graduation

After completing her Ph.D., Alexandria will seek a career in the public or private sector.

Broad Research Interest Area

Intelligent transportation systems

Specific Research Area

Connected and automated vehicles

Primary Mode(s)

Multimodal

Top Accomplishment in 2021

In April 2021, Alexandria presented the first phase of her dissertation research on highly automated vehicle (HAV) external communications, which she is conducting at Virginia Transportation Technology Institute (VTTI), to the International Organization for Standardization Working Group and interested original equipment manufacturers (OEMs). Due to the pandemic, she made the presentation virtually. Alexandria will receive funding from Safe-D UTC and the Toyota Collaborative Safety Research Center (CSRC) for the second phase of her research in recognition of the quality of her work.

Thesis Title and Summary

"Impact of Highly Automated Vehicle External Communication on Other Road User Behavior"

With the integration of SAE Level 4 automated vehicles, the development of external communication systems by numerous stakeholders is underway. This study examines how highly automated vehicles can best communicate with vulnerable road users about the vehicles' intentions (e.g., turning, stopping, and yielding). Most research on HAV external communication has been conducted using one HAV. However, it is vital to understand how the external communication to pedestrians of intended vehicle movements is affected when there are multiple HAVs in the same environment.

Riley Ruskamp

University of Nebraska–Lincoln

Mid-America Transportation Center (MATC)

riley.ruskamp@huskers.unl.edu

Bio

Riley Ruskamp is currently pursuing a master's degree in Civil Engineering with an emphasis in structural engineering. During his collegiate studies, he interned at several engineering firms, and served as captain of the concrete canoe team that qualified for the 2018 national competition. He has been involved with the American Society of Civil Engineers (ASCE). Riley is currently working as a graduate research assistant at the Midwest Roadside Safety Facility (MwRSF), where he has contributed to research projects focused on portable concrete barriers and breakaway luminaire supports, including projects funded by the National Cooperative Highway Research Program.

Degree and Graduation Date (or Anticipated Date)

M.S. in Civil Engineering from the University of Nebraska–Lincoln, May 2022

B.S. in Civil Engineering from the University of Nebraska–Lincoln, May 2020

Preferred Career after Graduation

After completing his master's degree, Riley would like a career in the public or private sector.

Broad Research Interest Area

Materials

Specific Research Area

Finite element analysis in roadside safety

Primary Mode(s)

Road

Top Accomplishment in 2021

Riley's paper, "Development, Crash Testing, and Evaluation of Portable Concrete Barriers Gap-Spanning Hardware," was selected for publication and presentation at the 2022 TRB Annual Meeting. He will present a non-proprietary design for shielding longitudinal gaps between adjacent installations of portable concrete barrier systems.

Thesis Title and Summary

"Evaluation of Next-Generation Non-Proprietary Portable Concrete Barrier Design Concepts"

Most current non-proprietary portable barrier systems in use on our nation's highways consist of safety shape portable concrete barriers (PCBs) with simple pinned connections. These current designs allow for high lateral barrier deflections upon vehicle impact, and the sloped face of the barrier encourages unstable vehicle behavior upon impact, which can result in rollover. The objective of this thesis is to develop a next-generation, non-proprietary, high-performance, crashworthy PCB system with reduced free-standing barrier deflections, as well as increased vehicle stability as compared to existing, widely used PCB systems. Several PCB design concepts are evaluated using LS DYNA finite element simulation. Barrier movement and vehicle stability resulting from impacts are compared to the traditional safety-shape PCB to identify potential modifications and recommend a final design for full-scale crash testing.

Kristen Sanchez

Texas A&M University

Center for Advancing Research in Transportation Emissions, Energy, and Health (CARTEEH)

kristensanchez19@tamu.edu

Bio

Kristen Sanchez is a second year Master of Public Health student at Texas A&M University's School of Public Health and a graduate assistant researcher at the Center for Advancing Research in Transportation Emissions, Energy, and Health (CARTEEH). Her work has a strong focus on the transportation and health full chain that links traffic emissions to health impacts. Her current work includes leading the CARTEEH project "Urban Policy Interventions to Reduce Traffic Emissions and Traffic-Related Air Pollution: A Systematic Evidence Map."

Degree and Graduation Date (or Anticipated Date)

M.P.H. (Master of Public Health) in Epidemiology from Texas A&M University, May 2022

B.S.P.H. (Bachelor of Science in Public Health) from Texas A&M University, December 2018

Preferred Career after Graduation

Kristen is open to building a career in the public or private sector, or in consulting.

Broad Research Interest Area

Transportation policy

Specific Research Area

Transportation, air quality, and health

Primary Mode(s)

Road

Top Accomplishment in 2021

Kristen is the lead author of the paper "Urban Policy Interventions to Reduce Traffic Emissions and Traffic-Related Air Pollution: Protocol for a Systematic Evidence Map," which was accepted for a traditional oral presentation at the 2021 Annual Conference of the International Society for Environmental Epidemiology (ISEE).

Thesis Title and Summary

Not required for M.P.H.

Brandt Souvenir

University of Idaho

Center for Safety Equity in Transportation (CSET)

souv2931@vandals.uidaho.edu

Bio

Brandt Souvenir completed a bachelor's degree in Civil Engineering in 2020 at the University of Idaho. He is currently a master's degree student in Civil Engineering with a focus on transportation engineering at the University of Idaho. He worked as an engineering intern (part-time) while being a full-time undergraduate student. Brandt is involved in racing bicycles and raced in the 2019 cyclocross collegiate nationals and the North American Enduro Cup. He enjoys kayaking, fishing, backpacking, and snowboarding. Upon graduation, he looks forward to traveling and exploring while discovering where his career will lead him.

Degree and Graduation Date (or Anticipated Date)

M.S. in Civil Engineering (Transportation Engineering) from the University of Idaho, December 2021

B.S. in Civil Engineering from the University of Idaho, May 2020

Preferred Career after Graduation

Brandt will seek a career in the public sector.

Broad Research Interest Area

Transportation planning

Specific Research Area

Risks associated with school transportation

Primary Mode(s)

Road

Top Accomplishment in 2021

Brandt's biggest accomplishment was overcoming COVID-19 limitations in order to successfully interview over 30 professionals throughout the country via Zoom on school travel and risk, and to then assess how conditions have evolved over the last two decades.

Thesis Title and Summary

"Examining Present-Day School Travel Risks"

The purpose of this research is to explore school travel risk in all modes, and to determine how travel demand, behavior, and needs have changed in the last two decades since the release of Special Report 269. To achieve this purpose, experts in the field of school transportation were interviewed. Data from the Fatality Analysis Reporting System was analyzed for school bus fatalities and all urban and rural school travel crashes.

Brian Staes

Oregon State University

Pacific Northwest Transportation Consortium (PacTrans)

staesb@oregonstate.edu

Bio

Brian Staes, M.S., E.I., is a Ph.D. candidate under the direction of Dr. Robert L. Bertini and Dr. Haizhong Wang at Oregon State University. He graduated from Florida Gulf Coast University with a bachelor's degree in Civil Engineering in 2018. Post-graduation, Brian worked at the University of South Florida's Center for Urban Transportation Research (CUTR) while pursuing his master's degree in Civil Engineering there. He is the former vice president for the University of South Florida student chapter of the Institute of Transportation Engineers (ITE).

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering from Oregon State University, May 2022

M.S. in Civil Engineering from the University of South Florida, May 2020

B.S. in Civil Engineering from Florida Gulf Coast University, May 2018

Preferred Career after Graduation

Upon conferral of his Ph.D., Brian will seek a career in academia or the public sector.

Broad Research Interest Area

Transportation policy; intelligent transportation systems; traffic engineering

Specific Research Area

Understanding the traffic flow theory behind extensive and heavy gridlock on freeways for urban congestion relief, and integration of traffic flow theory principles into multidisciplinary evacuation modeling.

Primary Mode(s)

Road

Top Accomplishment in 2021

Brian's research resulted in the publication of "Analyzing Transportation Network Performance During Emergency Evacuations: Evidence from Hurricane Irma" in ***Transportation Research Part D: Transport and Environment.*** His master's thesis became a first-authored academic journal article, "Examining Freeway Bottleneck Features During a Mass Evacuation," in ***Transportation Research Record: Journal of the Transportation Research Board.*** Brian was also a contributing author of "Insights Gained by Incorporating Continuous Vehicle Length Data into Empirical Freeway Bottleneck Diagnosis," presented at the Transportation Research Board 100th Annual Meeting.

Thesis Title and Summary

"Diagnosis of Freeway Bottlenecks During the Mass Evacuation for Hurricane Irma on Florida's Turnpike Mainline"

Prevailing traffic conditions were examined for a severe bottleneck, not active during normal operations, that occurred on northbound SR-91 at the off-ramp to a service plaza during the mass evacuation before Hurricane Irma in September 2017. Radar detector count, occupancy, and speed data polling at one-minute intervals were collected from the Regional Integrated Transportation Information System (RITIS). Analysis revealed three distinct periods, totalling 27.5 hours, in which the bottleneck was active. These findings shed light on the implications of not including historical events such as this in future evacuation planning, traffic management and operations, design, and modeling.

Mohhammad Afsar Sujon

West Virginia University

Center for Integrated Asset Management for MultiModal Transportation Infrastructure Systems (CIAMTIS)

mas0130@mix.wvu.edu

Bio

Mohhammad Afsar Sujon is a third-year Ph.D. student in the Wadsworth Department of Civil and Environmental Engineering, working under Dr. Fei Dai in the Integrated Construction Informatics Laboratory (ICIL). His current research focuses on utilizing machine learning and computer vision techniques with applications of big data for cost-effective transportation infrastructure asset management. He has worked on several projects, developing cost-effective weigh-in-motion (WIM) systems, applying computer vision for developing virtual WIM systems, and social media data mining for traffic safety applications. Mohhammad has a proven track record of academic publications in top-tier journals and at conferences.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering from West Virginia University, August 2022

M.S. in Advanced Computational and Civil Engineering Structural Studies (ACCESS) from the Dresden University of Technology, Germany, November 2016

B.S. in Civil Engineering from Bangladesh University of Engineering and Technology (BUET), February 2013

Preferred Career after Graduation

Mohhammad is considering a career in the public or private sector after receiving his doctorate.

Broad Research Interest Area

Transportation planning; transportation policy; infrastructure systems; intelligent transportation systems; traffic engineering

Specific Research Area

Applications of big data by utilizing machine learning and computer vision techniques for cost-effective transportation infrastructure asset management

Primary Mode(s)

Road

Top Accomplishment in 2021

In 2021, Mohhammad's research was published as two papers: "Social Media Mining for Understanding Traffic Safety Culture in Washington," in ***Journal of Computing in Civil Engineering;*** and "Application of Weigh-In-Motion Technologies for Pavement and Bridge Response Monitoring: State-of-the-Art Review," in ***Automation in Construction.*** Additionally, Mohhammad's paper on virtual WIM applications was accepted for the CI & CRC Joint Conference 2022.

Thesis Title and Summary

"Virtual Weigh-In-Motion Data-Driven Pavement Performance Prediction Models for Optimizing Pavement Inspection Schedule"

Pavement performance prediction models will be developed to leverage the application of the data collected from the virtual WIM system, which consists of WIM scales coupled with traffic surveillance videos. Machine-learning-based models will be developed and used to minimize the costs related to periodic pavement maintenance and smooth operations by optimizing the pavement inspection schedule.

Jorge Ugan

University of Central Florida

Safety Research Using Simulation (SAFER-SIM)

jorgeugan@knights.ucf.edu

Bio

Jorge Ugan holds a B.S. in Civil Engineering from the University of Central Florida (UCF) and is currently completing a Civil Engineering master's degree while pursuing the Transportation Systems Engineering track, and will enter the Ph.D. program at UCF. Working in Dr. Mohamed Abdel-Aty's UCF Smart and Safe Transportation (UCF-SST) Lab, his research focuses on traffic safety, bicycle and pedestrian safety, driving simulation, roadway design, and crowdsourcing analytics. Currently, Jorge is leading a driving simulator study to access the effects of various speed management countermeasures on driving behavior. He plans to continue his research and pursue a Ph.D.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering from the University of Central Florida, August 2023

M.S. in Civil Engineering from the University of Central Florida, December 2021

B.S.C.E. in Civil Engineering from the University of Central Florida, August 2020

Preferred Career after Graduation

After obtaining his Ph.D., Jorge plans to pursue a career in consulting.

Broad Research Interest Area

Transportation planning; traffic engineering; transportation policy

Specific Research Area

Transportation human factors and safety

Primary Mode(s)

Road

Top Accomplishment in 2021

In addition to being selected as Outstanding Student of the Year by SAFER-SIM, Jorge was awarded the University of Central Florida Presidential Doctoral Fellowship in Civil Engineering. In addition, he was first author of "Effect of Various Speed Management Strategies on Bicycle Crashes for Urban Roads in Central Florida," published in ***Transportation Research Record, the Journal of the Transportation Research Board,*** and was a contributing author of two additional papers.

Thesis Title and Summary

"Effect of Various Speed Management Strategies on Bicycle Crashes for Urban Roads in Central Florida"

This thesis develops a Bayesian joint model to identify the relation between bicycle crash frequency and the factors related to speed management strategies. The model initially uses crowdsourced bicycle data, which was adjusted using video detection data through a Tobit model. The model then uses the adjusted crowdsourced bicycle exposure data to analyze bicycle crashes on urban arterials in Central Florida. Other factors, such as vehicle traffic data, roadway information, sociodemographic characteristics, and land use data, were also considered in the model. The results suggest that the adjusted crowdsourced bicycle data could be used as the exposure for bicycle crash analysis. It is expected that the results could help engineers develop effective strategies to enhance safety for bicyclists.

U.S. Department of Transportation
Office of the Assistant Secretary for Research and Technology