

Celebrating the

25th

Anniversary

Research Showcase

Dwight David Eisenhower Transportation Fellowship Program



January
7 to 11 | 2018



U.S. Department of Transportation
Federal Highway Administration

**Celebrating the 25th Anniversary
Research Showcase
Dwight David Eisenhower
Transportation Fellowship Program**

A Grant for Education
A Career for Life



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WELCOME!

Remember the “I Like Ike” slogan memorialized in the campaign ad penned by Irving Berlin? If President Eisenhower were here today, he might be willing to change those words to commemorate the transportation fellowship program that bears his name. We can almost hear him say, “I like this community. I value this community. I am part of this community.”

This year marks the 25th Anniversary of the Research Showcase featured during the Transportation Research Board (TRB) Annual Meeting in which we will honor the past and present fellows of the Dwight David Eisenhower Transportation Fellowship Program (DDETFP). This program builds on President Eisenhower’s strong leadership and the historic steps he took to inspire a nation and the world. Three achievements seem especially noteworthy as we reflect on the program’s success. Boldly, President Eisenhower launched America’s Interstate Highway System through the Federal-Aid Highway Act of 1956, signed the Civil Rights Act of 1957, and championed the National Defense Education Act in 1958. These trailblazing programs paved the way for future progress, conveying a foundational belief and faith *in connecting all people, in respecting all people, and in educating all people.*

This is the essence of the DDETFP: to connect, respect, and educate. This program draws strength from its deep research roots. It integrates a strong educational foundation with an impactful workforce development perspective, extending its branches to develop, train, and retain an innovative and diverse transportation workforce.

Let’s connect President Eisenhower’s vision to modern day and future transportation innovation. Let’s connect our DDETFP Fellows with each other and explore further research synergies within transportation domains. Let’s connect our universities and institutions with minds that can support and grow them. Let’s connect research to practical field applications. Let’s connect people to technologies that save lives. Let’s better connect different transportation modes to achieve improved performance and efficiency. And let’s connect learning to better living.

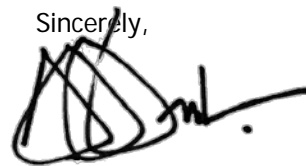
Let’s respect the academic institutions that provide these opportunities, and especially undergraduate and graduate fellowships. These fellowships foster new perspectives and insightful ideas, broader and deeper networking, and better building of our transportation systems and communities to be as inclusive and excellent as President Eisenhower envisioned them to be.

Let’s educate our eager minds to find new paths forward. Let’s educate our fellows in shared learning and opportunities. Let’s educate our colleagues on the incredible research that students are conducting and the practical applications such research cultivates. Let’s educate to create an expert, diversely-skilled transportation workforce that turns ideas into reality and opportunities into better transportation systems that flourish and sustain our communities.

I welcome students, researchers, industry practitioners and leaders, participating institutions, and colleagues and friends lending your support and encouragement as we come together again this year to congratulate the more than 200 deserving award fellows of this program. In addition to saluting the impressive achievements of these DDETFP Fellows, we will hear from prior fellows who have assumed leadership roles as we continue President Eisenhower’s inspired and collaborative vision to strengthen the future of our cross-modal transportation system.

I look forward to seeing you at the DDETFP Research Showcases, Poster Sessions, and Closing Ceremony during the TRB Annual Meeting.

Sincerely,



Tony Furst
Chief Innovation Officer
Office of Innovative Program Delivery

25th Annual Research Showcase
Dwight David Eisenhower Transportation Fellowship Program

EVENTS

Visit the DDETFP booth 333 Sunday through Tuesday in the Exhibit Hall.

Sunday, January 7

Innovative Doctoral Research

Walter E. Washington Convention Center, Room 146C

9:00 am – 12:00 pm

Listen to the transportation research findings of doctoral students.

Monday, January 8

Poster Session Part I

Walter E. Washington Convention Center, Hall E

1:30 pm – 3:15 pm

An opportunity to explore the topics undergraduate and graduate students are researching in institutions across the country.

Tuesday, January 9

Research Showcase

Walter E. Washington Convention Center, Room 202B

8:00 am – 12:00 pm

Listen to the transportation research findings of graduate students in the areas of safety and innovation.

Poster Session Part II

Walter E. Washington Convention Center, Hall E

1:30 pm – 3:15 pm

A second session to explore the topics undergraduate and graduate students are researching in institutions across the country.

Research Showcase Closing Ceremony and Networking Reception

Walter E. Washington Convention Center, Room 146C

6:00 pm – 8:00 pm

Come celebrate the DDETFP's success, recognize accomplishments of former fellows and partners, and engage with the broader community to strengthen collaboration and pave the way for the program's future impact on the transportation workforce.

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Reflecting on the DDETFP



From its initial support of graduate research fellowships in 1983, to the current program's inception in the Intermodal Surface Transportation Efficiency Act of 1991, the DDETFP has awarded over \$50 million to the brightest minds in the transportation industry. From this investment, whether supported through FHWA's grants or through the partnership with the TRB Minority Student Fellows Program, fellows have pushed for innovative change in multimodal areas from highway infrastructure to aviation to maritime, making the industry more effective and efficient. Fellows pursue careers in academia, private industry, and public service, becoming leaders across the nation.

IMPACT OF DDETFP

25

Years of showcasing student transportation research

35

Years of supporting students in transportation-related disciplines

3,751

DDETFP merit-based awards *and* counting

Over \$50M

In DDETFP grant funding awarded

We thank past DDETFP Program Managers for their commitment and years of service to the program:

Ilene D. Payne from 1984 to 2004
Gwen M. Sutton from 2005 to 2008

Henry C. Murdaugh from 2009 to 2013
Fawn Thompson from 2014 to 2017

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**INNOVATIVE DOCTORAL TRANSPORTATION
RESEARCH SHOWCASE**

Sunday, January 7, 2018
Walter E. Washington Convention Center, Room 146C
9:00 am – 12:00 pm

Welcome and Opening Remarks **9:00 am – 9:20 am**

Tony Furst – Chief Innovation Officer, Office of Innovative Program Delivery, FHWA

Virginia Tsu – Director, Center for Transportation Workforce Development, FHWA

Ewa Flom – Program Manager, Universities and Grants Programs, FHWA

Reflections on DDETFP **9:20 am – 9:30 am**

Dawn Tucker-Thomas, 1996 Fellow, Grants Manager, Office of the Secretary of Transportation, USDOT

Panel I **9:30 am – 10:30 am**

Moderator: Dr. Benjamin Colucci-Ríos, Professor, University of Puerto Rico - Mayaguez

Rachel Chiquoine – University of Delaware

Patient Travel Behaviors During a Public Health Biological Event Requiring Points of Dispensing

Matthew Vechione – University of Texas, El Paso

Comparisons of Mandatory and Discretionary Lane Changing Behavior on Freeways

Greg Griffin – University of Texas at Austin

Opportunities and Limits of Crowdsourcing for the Geography and Planning of Bicycle Transportation

Reflections on DDETFP **10:45 am – 11:00 am**

Christopher Pangilinan, 2004 Fellow, Program Director, Technology and Rider Engagement

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Panel II

11:00 am – 12:00 pm

Moderator: Dr. Willie Brown, Assistant Professor, University of Maryland Eastern Shore

Michael Hyland – Northwestern University

Shared-use Autonomous Vehicle Mobility Services: Operational Control Algorithms, and Impact on Urban Transit Systems

Kristin Kersavage – Pennsylvania State University

Designing and Evaluating Roadway Safety Using Speed Metrics and Crash Severity and Frequency

Sadie Smith – University of Arkansas, Fayetteville

Quantifying Workability, Compactability, and Cohesion Gain of Asphalt Emulsion Cold In-Place Recycling



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POSTER SESSION PART I

Monday, January 8, 2018

Walter E. Washington Convention Center, Hall E

1:30 pm – 3:15 pm

Andrew Young – Kansas State University – Masters
Green Apple Bikes, Rolling Out Equitable Mobility

Ayeisha Collymore – University of Turabo – Doctoral
Entrepreneurship Orientation and Innovation in the Transportation Industry: A Comparative Study of Two Countries

Carrillo Yuliana – California State University, Fullerton – Undergraduate
Influence on Transportation Due to Compacted Clay Slopes Subjected to Rainfall

Christopher Hartman – University of Maryland Eastern Shore – Doctoral
Maintaining the Safety of Agriculture Aviators in the Drones Era

Elias Nava – Butte-Glenn Community College District – Associates
Changing Our Current Highway Infrastructure by Retrofitting Smart Roads for Smart Cars

Gabriella Buono-Ortiz – University of Puerto Rico, Mayaguez – Undergraduate
The Impacts of Scouring in Bridges at River Mouth

Herta Montoya – University of Texas, San Antonio – Undergraduate
Assessing the Impacts and Flood Defenses to Climate Change Induced Super Storms

Jaya Washington – Savannah State University – Undergraduate
Sustainable Infrastructure Mixtures with Alternative Cementitious Binder Enhancing Interphase Transition Zone (ITZ) Properties

John Miller – Northwestern University – Doctoral
Hyperpath-based Dynamic Truckload Pickup and Delivery Problem with Bidding

Josephine Hazelton – California State University, Stanislaus – Masters
Gender Equity in Transportation Planning: Transportation Administrators' Pursuit of Gender Equity and Recommendations for Best Practices

Juliana Hybner – Virginia State University – Undergraduate
Mining Robot

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Kendra Stuart – Florida A&M University – Undergraduate
Cost Benefit Analysis of Bullet Trains in the United States

Levon Mikaelian – Florida State University -Doctoral
Assessing the Jobs Accessibility Impacts of MARTA Service in Clayton County, Georgia and Their Possible Income Segregation Implications

Maggie Langston – University of Arkansas – Masters
Corrosion-tolerant Pre-stressed CFRP Fatigue Retrofits for Improved Waterway Lock Reliability

Joaquin Borraro – Napa Valley Community College District – Associates
An Assessment on Implementing an Intelligent Transportation System

Maureen Sullivan – University of Illinois at Chicago – Masters
Increasing the Accessibility of Transportation Network Companies for Individuals with Disabilities

Queondra Hendrix – Tuskegee University – Undergraduate
Impact of Thermal Cycling on Mechanical Properties and Fracture Behavior of Carbon Fiber Composite Materials

Benjamin McManus – University of Alabama at Birmingham – Doctoral
The Impact of Stress and Sleep on Driving Safety in Medical Resident



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Research Showcase

Tuesday, January 9, 2018
Walter E. Washington Convention Center, Room 202B
8:00 am – 12:00 pm

Welcome and Opening Remarks **8:00 am – 8:15 am**

Virginia Tsu – Director, Center for Transportation Workforce Development, FHWA

Ewa Flom – Program Manager, Universities and Grants Programs, FHWA

Reflections on DDETFP **8:15 am – 8:30 am**

Hillary Isebrands, 2004 – 2006 Fellow, Team Leader, Safety & Design, FHWA

Every Day Counts **8:30 am – 9:15 am**

Moderator: Jeffrey Zaharewicz, Senior Advisor, Center for Accelerating Innovation, FHWA

Francis Tainter– University of Massachusetts Amherst– Masters

All-Red Clearance Intervals for Use in the Left-Turn Application of Flashing Yellow Arrows

Lauren Gardner – Georgia Institute of Technology – Masters

Data-Driven Pavement Maintenance and Rehabilitation Strategies for State Route Prioritization Policy

Nicholas Ferenchak – University of Colorado, Denver – Doctoral

Suppressed Child Pedestrian and Bicycle Trips as an Indicator of Safety: Adopting a Proactive Safety Approach in Denver

Reflections on DDETFP **9:15 am – 9:30 am**

Gregory Murrill, 1990 Fellow, Maryland Division Administrator, FHWA

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Innovative Research **9:30 am – 10:15 am**

Moderator: Carolina Burnier, 2006 Fellow, Principal Transportation Engineer, Noblis

Raymond Gerte – University of Connecticut – Masters

Is There a Limit to Adoption of Dynamic Ridesharing Systems? Evidence from Analysis of Uber Demand Data from New York City

Daniel Walls – Georgia Institute of Technology – Masters

Assessing the Feasibility of Autonomous Transit Vehicles as a First/Last Mile Public Transportation Solution

Fangyu Wu – University of Illinois at Urbana-Champaign – Masters

Hybrid Microscopic Traffic Modeling Using a Classic Car Following Model and a Corrective Neural Noise Model

Reflections on DDETFP **10:30 am – 10:45 am**

Beth Alicandri, 1984 Fellow, Associate Administrator for Safety, FHWA

Safety **10:45 am – 11:30 am**

Moderator: Monique Evans, Director, Office of Safety R&D, FHWA

Steven Stapleton – Michigan State University – Doctoral

Safety Performance Functions for Rural Two-Lane County Road Segments

Jacob Warner – Iowa State University – Masters

A Longitudinal Analysis of the Relationship between Maximum Speed Limits and Traffic Fatalities on High-Speed Rural Highways

Katherine Brunk – Clemson University – Masters

Safety Impacts of Adaptive Signal Technology

Group Photo **11:30 am – 12:00 pm**

All 2017 DDETFP Fellows and Campus Program Managers

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Poster Session Part II

Tuesday, January 9, 2018

Walter E. Washington Convention Center, Hall E

1:30 pm – 3:15 pm

Michael Deschenes – University of Arkansas – Doctoral
Development of a Velocity Model for Ground Motion Response Analysis in Northeast Arkansas

David Soto Padin – Portland State University – Masters
Exploring the Relationship Between Bicycle-Transit Integration and Transit Ridership

Ian Butler-Severson – University of New Orleans – Masters
Liquefied Natural Gas (LNG): Export Competition in a Well-supplied, Flow Shifting Global Economy

Jamey Volker – University of California, Davis – Doctoral
LOS vs. VMT in California's Environmental Review: A Los Angeles Case Study

Noah Augustine – University of Massachusetts, Boston – Masters
The Fairmount Line: A Case Study of Transit Distribution Decision Making and Equity

Rachel Foss – Kansas State University – Masters
The Modern Demand for Strategically Communicated Information: Research Plan for Improving the Long-Range Transportation Plan

Rinu Samuel – University of Texas, Arlington – Doctoral
Geopolymer Stabilization of Pavements and Roads

Scott Middleton – Massachusetts Institute of Technology – Masters
Social Prejudice in Ride-hailing and Ridesharing: Discrimination, Regulation, and Design

Tandré Jean-Paul Oey – California State University, Los Angeles – Doctoral
Predicting and Controlling the Dissolution of Silicate Glasses: Implications for Mitigating Alkali-Silica Reaction (ASR) in Concrete

Travis Glick – Portland State University – Doctoral
Before and After Evaluation of Transportation Infrastructure Improvements Using High-Resolution Transit Data

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Vannesa Kello – University of Connecticut – Masters
Road Safety in the Netherlands – A Historic Analysis of Fatality Trends and Dutch Practices

Victor Garcia – University of Texas, El Paso – Doctoral
Developing Guidelines and Test Program for Designing Balanced Asphalt Concrete Mixtures

Paige Hall – Southern University and A&M College – Undergraduate
Causes of Road Failure of Elton C. Harrison Drive and Renovation Solutions

Javid Amir – City College of New York – Undergraduate
Shared Life Tracks Mobile Application: Tracking Lifestyle of the Population

Antonio Reyna – University of Texas, Rio Grande Valley – Masters
Salinity Transport Model for Prevention of Highway Bridge Concrete Pier Chemical Erosion

Chelsea Dyess – Georgia Institute of Technology – Masters
The Creation of a Sidewalk Mobility and Accessibility Score Using Sidewalk Quality Data

Mauricio Valenzuela – University of Texas, El Paso – Masters
Evaluation of Additives for Superpave Dense-Graded Mix Designs



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Closing Ceremony and Networking Reception

Tuesday, January 9, 2018

Walter E. Washington Convention Center, Room 146C

6:00 pm – 8:00 pm

Keynote by Brandye L. Hendrickson, FHWA Acting Administrator

Remarks by TRB Leadership *(invited)*

Followed by

Presentation of FHWA Administrator's Public Service Awards

Presentation of DDETFP Awards

Certificate Distribution

25th Annual Research Showcase

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2017 Campus Program Managers

Thank you for administering local competitions.

Your commitment to students, transportation education, and research makes a difference!

Historically Black Colleges and Universities

•Mrs. Vareva Harris	Benedict College
•Dr. Ellis Lawrence	Elizabeth City State University
•Dr. Doreen Kobelo	Florida A&M University
•Dr. Celeste Chavis	Morgan State University
•Mrs. Deborah Underwood	North Carolina A&T State University
•Dr. Judy Perkins	Prairie View A&M University
•Dr. Roxana Jahanbakhsh Javid	Savannah State University
•Mr. Joshua Joseph	Southern University and A&M College
•Mr. Khosro Godazi	Texas Southern University
•Dr. Alfred Tcherbi-Narteh	Tuskegee University
•Dr. Willie Brown	University of Maryland Eastern Shore
•Dr. Ali Ansari	Virginia State University
•Dr. Kenneth Brown	Winston-Salem State University

Hispanic Serving Institutions

•Dr. Mehran Mazari	California State University, Los Angeles
•Mr. Sergio Guerra	California State University, Fullerton
•Dr. Alison Conway	City College of New York
•Ms. Monica Lopez	Regents of New Mexico State University
•Dr. Bo Zou	University of Illinois, Chicago
•Dr. Benjamin Colucci-Rios	University of Puerto Rico, Mayaguez
•Mr. Laureano Hoyos	University of Texas, Arlington
•Dr. Imad Abdallah	University of Texas, El Paso
•Dr. Jungseok Ho	University of Texas, Rio Grande Valley
•Ms. Amy Ossola-Phillips	University of Texas, San Antonio
•Dr. Nelson Gomez	University of Turabo

Community Colleges

•Ms. Nena Anguiano	Butte-Glenn Community College District
•Dr. Armando Rivera-Figueroa	East Los Angeles College
•Mr. Consuelo Gonzalez	Kern Community College District
•Dr. Amanda Xu	Mendocino-Lake Community College District
•Mr. Rene Rubio	Napa Valley Community College District
•Ms. Cheryl Freeman	Olive-Harvey College

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**Thank you for supporting the 2017 DDETFP Fellows
and helping to build the future transportation workforce!**

Arizona State University • Bakersfield-Kern • Benedict College • Butte-Glenn Community College District • California State University, Fullerton • California State University, Los Angeles • California State University, Stanislaus • Carnegie Mellon University • City College of New York • Clemson University • Cornell University • East Los Angeles College • Elizabeth City State University • Florida A&M University • Florida State University • George Mason University • Georgia Institute of Technology • Iowa State University • Kansas State University • Kern Community College • Institute of Technology • Community College University • Morgan State Valley Community College University • North Carolina Northwestern University • Pennsylvania State State University • Prairie Regents of New Mexico Rochester Institute of State University • Southern College • Texas A&M Southern University • University of Alabama, University of Arizona • University of Arkansas • University of Arkansas, Fayetteville • University of California, Berkley • University of California, Davis • University of California, Los Angeles • University of Colorado, Denver • University of Connecticut • University of Delaware • University of Florida • University of Illinois at Urbana - Champaign • University of Illinois, Chicago • University of Kentucky • University of Maryland Eastern Shore • University of Massachusetts, Amherst • University of Massachusetts, Boston • University of Memphis • University of Minnesota • University of New Orleans • University of North Carolina, Chapel Hill • University of Puerto Rico, Mayaguez • University of South Carolina-Columbia • University of Texas, Arlington • University of Texas, Austin • University of Texas, El Paso • University of Texas, Rio Grande • University of Texas, San Antonio • University of Turabo • University of Wisconsin, Madison • Vanderbilt University • Virginia State University • Winston-Salem State University



**FHWA supports and congratulates the
2017-2018 TRB Minority Student Fellows Program cohort!**

Amber Bryant, Tennessee State University

Diana Cabrera, University of Texas, El Paso

Karayan Cole, Jackson State University

Jennifer Cortina, University of Texas Rio Grande Valley

Hector Cruz, California State University, Los Angeles

Dewayne Danner, Tennessee State University

Melissa Escalante, University of Texas, El Paso

Jaclyn Garcia, California State Polytechnic University, Pomona

Monica Gonzalez, Florida International University

Arndreya Howard, Prairie View A&M University

Rachel Ibrahim-Watkins, California State University, Los Angeles

Liliana Iniguez, California State University, Long Beach

Ayanna Lynn, Jackson State University

Stephen Montano, University of New Mexico

Luisa Morales, University of Texas, El Paso

Tiana Norris, Morgan State University

Ruben Ortega, North Carolina A&T State University

Handy Phyll, Morgan State University

Jermaine Potts, Texas Southern University

Jose Salas, City College of New York

Alexis Walton, Tennessee State University



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**A special note of appreciation for
the years of commitment to the DDETFP!**

10
YEARS

University of Arkansas, Fayetteville
Clemson University
Jackson State University
Kentucky State University
North Carolina State University
Northwestern University
Philander Smith College
Portland State University
Purdue University
Rutgers, The State University of New Jersey
University of California, Davis
University of Michigan, Ann Arbor
University of Tennessee, Knoxville
University of Wisconsin, Madison
Virginia Polytechnic Institute & State University
Washington State University
Winston-Salem State University

15
YEARS

Alabama A&M University
Benedict College
Hampton University
Howard University
Massachusetts Institute of Technology
South Carolina State University
Southern University A&M College
Tennessee State University
Texas A&M University-Kingsville
Texas Southern University
University of California, Los Angeles
University of Illinois, Urbana-Champaign
University of Maryland, College Park

20
YEARS

California State University, Los Angeles
Florida A&M University
Iowa State University
Morgan State University
North Carolina A&T State University
Prairie View A&M University
University of California, Berkeley
University of Puerto Rico, Mayaguez
University of Texas, El Paso
University of Texas, San Antonio
Virginia State University

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U.S. Department of Transportation
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Federal Highway Administration
Office of Innovative Program Delivery
Center for Transportation Workforce
Development

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