



Semi-Annual Progress Report No. 4 – Center for Transit Oriented Communities

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

Grant Number: 69A3552348337

Project Title: Center for Transit Oriented Communities (CETOC)
University of New Orleans (Lead Institution)
Florida Atlantic University
University of Colorado, Denver
University of Florida
University of Utah

Center Director: Guang Tian, PhD
gtian@uno.edu
Phone: 504-280-6520

Submitting Official: Same As Above

Submission Date: April 30, 2025

DUNS #: 616680757

EIN #: 72-0702000

Recipient Organization: University of New Orleans
2000 Lakeshore Drive, New Orleans, LA 70148

Recipient Identifying
Number or Acct Number: WS00956275

Grant Period: 6/1/2023 – 5/31/2028

Reporting Period End Date: 3/31/2025

Report Term: Semi-Annual

Signature: *Guang Tian*

1. ACCOMPLISHMENTS

1.1 What are the major goals of the program?

CETOC's Mission is to cultivate resilient transit-centered communities that support residents' multimodal travel needs and preserve the environment.

Goals:

Research: Advance scientific knowledge and identify innovations that can inform the planning and development of transit-oriented communities.

Leadership: Cultivate visionary transportation leaders who will dedicate their careers and inspire others to advance public transportation and build resilient communities.

Education and Workforce Development: Train a new generation of transportation professionals with the knowledge and techniques needed to meet the challenges of the present and be prepared for the future.

Tech Transfer: Develop transformative products (e.g., tools, databases, methods, and strategies) to be widely adopted and implemented by the transportation profession for building transit-oriented communities.

1.2 What was accomplished under these goals?

In this reporting period, substantial progress has been made on 25 active first- and second-year projects. First-year work is nearing completion, with most projects scheduled for completion at the end of May 2025. Second year projects are now in full swing and are expected to be completed between late 2025 and spring of 2026. CETOC research projects continue to produce outputs such as peer-reviewed journal and other publications, public presentations at national and international conferences and other venues, novel datasets, databases, software and code packages, webinars and policy briefs aimed at practitioners, and a multitude of other technologies, new methodologies, and other technology transfer outputs. Events held in person and virtually by consortium members continue to directly and indirectly disseminate relevant research and engage communities in discussion about sustainable transit, transit-oriented communities, and other CETOC-related topics. Students at all academic levels are funded by CETOC at every consortium member university, contributing to research, education, and workforce development. CETOC-funded students continue to obtain their degrees and enter the workforce. Collaborative partnerships within the consortium and with external partners continue to strengthen and multiply, with most of our second-year projects involving collaborative efforts and direct tech transfer with non-academic partners. The Center continues to grow, with increases in PIs and students involved in and funded by the Center. Events disseminating research and bringing researchers and practitioners together continue to grow, with larger funded events and symposia being held and planned, including the upcoming 2025 CETOC Symposium, “Trans-Atlantic Perspectives on Public Transportation: Bridging the Gap Between Practitioner Needs and Academic Research in a Shifting Transportation Economy,” to be held in New

Orleans May 19-20 2025, which will bring together researchers and practitioners from the consortium and across the United States and Austria to discuss research and technology transfer and work to bridge gaps between research and practice in America and abroad. The year 3 RFP cycle, which saw significant engagement from both current and new researchers across the consortium, is nearing completion after extensive project peer review, with final project selections to be made by May 2025.

1.2.1 Research

Research Effectiveness Metrics	Progress
# of peer-reviewed journal articles	13
# of conference presentations & talks given	42
# of Graduate students involved in research projects funded by CETOC	28
# of Undergraduates involved in research projects funded by CETOC	8

All metrics above refer only to activities & publications during the semi-annual reporting period.

Full project descriptions for all projects listed below can be found at <https://www.uno.edu/cetoc/research>

1.2.1.1 Year One Funded Research Projects in Progress with Outputs & Status Updates:

Lead University (Partners)	Project Code & Name	PI (Co-PIs)
UNO	CETOC-23-R-01: Longitudinal Analysis of Transit's Land Use Multiplier in Three Regions	Guang Tian
	<i>Completion by May 31, 2025</i> 1. Peer-reviewed publication (In Progress) 2. Policy brief (In Progress) 3. Conference presentation (Complete) 4. Webinar or training workshop (In Progress) 5. Analytical model (Complete) 6. R code sets (Complete)	
UNO	CETOC-23-R-02: Quantifying the Influences of Telecommuting on VMT and Transit Usage	Guang Tian
	<i>Completion by May 31, 2025</i> 1. Peer Reviewed Publication (Complete) 2. Webinar (Complete) 3. Policy Brief (Complete) 4. Conference Presentation (Submitted) 5. Analytical Model (Complete)	
UC-D	CETOC-23-R-03: Examining the Role of Transit Investments on Opportunity Outcomes	Aditi Misra (Manish Shirgaokar, Wesley Marshall)
	<i>Completion by May 31, 2025</i> 1. Conference Publications (Complete)	

	2. Journal publication (Under Review) 3. Interactive web-based visualization (In Progress) 4. Predictive models (In Progress)	
UC-D	CETOC-23-R-04: Understanding Transit User Experience and Expectations in Under-served Communities	Manish Shirgaokar (Aditi Misra, Wesley Marshall)
	<i>Completion by May 31, 2025</i> 1. Conference Presentations (1 Complete, 1 in Progress) 2. Journal publication (Under Review) 3. Replicable Survey Instrument (In Progress)	
FAU	CETOC-23-R-05: Using Machine Learning to Understand the Built Environment's Influence on 15-Minute Transit-Oriented Communities	Louis Merlin
	<i>Completion by September 1, 2025 (Delay due to serious illness)</i> 1. Peer-Reviewed Publications (In Progress) 2. Conference Presentation (In Progress) 3. Webinar (Planned: August 2025) 4. Policy Brief (In Progress)	
FAU	CETOC-23-R-06: 50 Years of Trends in Station Areas across the United States	John L. Renne
	<i>Completion by May 31, 2025</i> 1. Literature Review (Complete) 2. TOC/TOD Station Database (Complete) 3. Peer-Reviewed Publications (In Progress) 4. Conference Presentation (In Progress) 5. Webinar (Planned: May 20, 2025) 6. Policy Brief (In Progress)	
UF	CETOC-23-R-07: Shared Micromobility as a Last-Mile Complement to Public Transit	Xiang Yan
	<i>Completion by May 31, 2025</i> 1. Analytical Framework (Complete) 2. Statistical Model (Complete) 3. Data Pipeline (Complete) 4. Implemented Survey Methodology (Complete) 5. Technical Report (In Progress) 6. Peer-Reviewed Publications (Complete) 7. Webinar (In Progress)	
UF	CETOC-23-R-08: Analyzing Transit-Based Evacuation Demand in Hurricanes	Xilei Zhang
	<i>Completion by May 31, 2025</i> 1. Algorithms to infer trips based on mobile phone GPS, GTFS, and Google routes API (Complete) 2. Dataset containing the origin-destination (OD) matrix for transit travel during hurricane evacuations (Complete) 3. Policy Brief (In Progress) 4. Manuscript(s) for journal/conference publication (Complete)	

UU	CETOC-23-R-09: Gentrification, Displacement, and GHG Emissions at Transit-Oriented Communities	Andy Hong
	<i>Completion by May 31, 2025</i> 1. Conference presentations and Roundtable (Complete) 2. Public-facing lectures (Complete) 3. Interactive Map (In Progress) 4. Project Website with Methods (In Progress)	
UU	CETOC-23-R-10: Is Transit-Oriented Development Affordable for Low- and Moderate-Income Households (in Terms of H+T)?	Reid Ewing
	<i>Completion by May 31, 2025</i> 1. Conference Presentations (Complete) 2. Research Articles (1 Complete.) 3. Dedicated Website/StoryMap with Methods (Not Yet Begun)	

1.2.1.2 Year Two Funded Research Projects in Progress with Outputs & Status Updates:

Lead University (Partners)	Project Code & Name	PI (Co-PIs)
FAU (UF)	CETOC-24-R-01: Mobility Hub Usage in West Palm Beach	Serena Hoermann (Xiang Jacob Yan, Louis Merlin, John Renne)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Survey Analysis Report (In Progress) 2. Conference Presentation(s) (Not Yet Begun) 3. Journal Publications (In Progress) 4. In-Person or Virtual Meetings to Present Findings to Local Partners and Stakeholders (Not Yet Begun)	
UC-D	CETOC-24-R-02: Re-examining TOCs through the Lens of Differential Responsibilities: Role of Street Network Structure on Effective Availability	Aditi Misra (Wesley Marshall, Manish Shirgaokar)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Conference Presentation (Complete) 2. Journal publication (Complete) 3. Open-source map of walkability metric (In Progress) 4. Design project reports & webpage (In Progress)	
UC-D	CETOC-24-R-03: Identifying TOD-Capable Locations using D Variables: Flipping the Recipe on making the TOD Cake	Manish Shirgaokar (Aditi Misra, Wesley Marshall)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Practice-ready toolkit (In Progress) 2. Replicable engagement framework (In Progress) 3. Open-source publicly accessible web app (Not yet begun) 4. Conference presentation and journal manuscript (Not yet begun)	

UC-D	CETOC-24-R-04: Useful Transit: Bridging the Gap Between the Vision and Reality of Transit-Oriented Communities	Wesley Marshall (Aditi Misra, Manish Shirgaokar)
	<i>Phase 1 Scheduled for Completion by November 31, 2025. Only Partially Funded for Year 2, will be continued into Year 3.</i> 1. Conference papers (In Progress) 2. Journal publication(s) (In Progress) 3. Online, public-facing map (In Progress)	
UF (UC-D)	CETOC-24-R-05: High-resolution Measurement of Transit Riders' Extreme Heat Exposure Across U.S. Cities	Xiang Yan (Wes Marshall, Aditi Misra, Manish Shirgaokar)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Methodology to measure transit-based heat exposure (Complete) 2. Framework to Guide Planners and Transit Authorities (In Progress) 3. Transit heat exposure index (Complete) 4. Publicly Accessible Transit Heat Exposure Database (In Progress) 5. Technical Report (Not Yet Begun) 6. Manuscripts for Publication & Presentation (1 Complete)	
UF (UNO, UU)	CETOC-24-R-06: Inventorying Bus Stop Amenities across the United States Using Google Street View Images and Computer Vision	Xiang Yan (Guang Tian, Reid Ewing)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Journal Publications (1 Complete) 2. Conference Presentation(s) (Complete) 3. Computer Vision Algorithms and Bus Stop Detection Methods (Algorithm Development Complete, Training and Scalability Work In Progress) 4. Bus Stop Amenity Database (In Progress, Anticipated Completion Year 3)	
UF (FAU)	CETOC-24-R-07: A Deep Learning Approach for Detecting Built Environment in Transit-Oriented Developments	Xilei Zhao (John Renne, Xiang Yan)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Deep Learning Architecture and Code Repositories (In Progress) 2. Open-Source Database for TOD Analyses (In Progress) 3. Journal Publication(s) (Not Yet Begun) 4. Presentation(s) at Conferences (Not Yet Begun) 5. Partnerships with Stakeholders (In Progress)	
UNO (UF)	CETOC-24-R-08: Transit-Based Mobility and Accessibility During Hurricanes	Guang Tian (Xiang Yan)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Survey Instrument (Complete) 2. Manuscript(s) for Publication and Presentation (In Progress) 3. Technical Report (Not Yet Begun)	
UNO (UU)	CETOC-24-R-09: Updating and Expanding the Nation's Most Comprehensive Database of Household Travel Survey Data and Related Built Environmental Data	Guang Tian (Reid Ewing)

	<i>Scheduled for Completion by November 31, 2025</i> 1. Database (In Progress) 2. Updates to previous studies (1 Completed) 3. Contributions to future cross-sectional and longitudinal studies (Not Yet Begun) 4. Travel demand models (Not yet begun)	
UNO	CETOC-24-R-10: Developing a Scalable Evaluation Framework and Dashboard for Implementing and Monitoring Transit-Oriented Communities	Tara Tolford
	<i>Scheduled for Completion by November 31, 2025</i> 1. Data Dashboard (In Progress) 2. Technical Report (Not yet begun) 3. Instructional Guide for Replication w/ Analytical Model (In Progress) 4. Journal Article(s) (In Progress) 5. Public Presentation(s) (Not yet begun)	
UU (FAU)	CETOC-24-R-11: New Transit, Bike Infrastructure, and Green Space: Do They Have a Multiplying Effect on Gentrification and Displacement?	Alessandro Rigolon (John Renne, Andy Hong)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Conference Presentation (Submitted) 2. Journal publication -main results (In Progress) 3. Journal publication - machine learning tool (In Progress) 4. Policy brief (Not yet begun) 5. Webinar (Not yet begun) 6. Webpage with R and Python Codes (Not yet begun)	
UU (UNO)	CETOC-24-R-12: Transit-Oriented Development (TOD) Formation along Bus Rapid Transit (BRT) Lines: Database Development, Analysis, and Identification of High-Impact Policy, Design, and Service Characteristics	Reid Ewing (Guang Tian, Tara Tolford)
	<i>Scheduled for Completion by November 31, 2025</i> 1. BRT TOD Database (In Progress) 2. Technical Report (In Progress) 3. Webinar (Not Yet Begun) 4. Stakeholder Presentations (Not Yet Begun) 5. Stakeholder Guide to BRT TOD Success (Not Yet Begun) 6. 2 Local BRT TOD/TOC Implementation Plans (Not Yet Begun) 7. Journal Article(s) (In Progress) 8. Conference Presentation(s) (Planned, ACST November 2025) 9. Formal Collaboration between CETOC, RTA, & CATS	
UU (UNO)	CETOC-24-R-13: What Makes Affordable Housing Affordable: Mechanisms Used to Produce Affordable Housing Near Transit in the US	Reid Ewing (Justyna Kaniewska, Guang Tian)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Conference Presentations (1 Complete, 1 Planned) 2. Research Articles (Not yet begun)	

	3. Toolkit “How to build more Affordable Housing in TODs – a toolkit of strategies for every place” (In Progress) 4. Toolkit Distribution to planners, developers, and other interested parties. (Not Yet Begun)	
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Two additional projects selected for Year Two were classified as Education projects; these are listed under *1.2.3 Education and Workforce Development*.

1.2.2 Leadership

Leadership Effectiveness Metrics	Progress
# of national and regional leadership positions held by CETOC PIs	37 (up from 21)*
# of leadership positions held by CETOC young faculty and students	19 (up from 12)*
# of conference planning positions held by CETOC PIs	8
# of leadership and research awards received by CETOC PIs during reporting period	4

All metrics above refer only to activities during the semi-annual reporting period.

**Increase due in part to our decision to include editorial positions in this metric.*

Among the notable awards received by CETOC PIs during the period was the receipt of the ACSP Rising Scholar Award by CETOC Director Dr. Guang Tian.

1.2.3 Education and Workforce Development

Education and Workforce Development Effectiveness Metrics	Progress
# of transportation-related master’s degree programs offered	25
# of transportation-related PhD degree programs offered	16
# of transportation-related certificate programs offered	14
# outreach programs offered (total)*	8

** Since the beginning of the CETOC grant*

Full project descriptions for all projects listed below can be found at <https://www.uno.edu/cetoc/outreach>

1.2.3.1 Year Two Funded Education Projects in Progress with Outputs & Status Updates:

Lead University	Project Code & Name	PI (Co-PIs)
UC-D	CETOC-24-E-01: Developing Curriculum and Guidelines for a Capstone-Style Transit System Planning & Design Course	Aditi Misra (Wesley Marshall, Manish Shirgaokar)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Course Delivery (Complete in Fall 2024 semester; recurring every Fall) 2. A website with lecture slides, assignments, and project ideas (In Progress)	

	3. Website with references and links to other open-source transit course materials (In Progress) 4. Open-source data sites/repositories that may be useful for transit planning (In Progress)	
UF	CETOC-24-E-02: Sustainable Transportation and Transit Workforce Development Strategies: Education and Technology Transfer (Prototyping and Testing Phase)	Xilei Zhao (Xiang Yan)
	<i>Scheduled for Completion by November 31, 2025</i> 1. Curriculum and Course Materials published to CETOC Website (In Progress) 2. Recordings of Lecture Series Shared on CETOC YouTube (In Progress) 3. Prototype of Real-Time Transit Management Platform using Gainesville RTS as a Case Study (Completed) 4. TRB Presentations led by UF Students (Completed, Full List at https://www.uno.edu/cetoc/events) 5. Publication(s) (In Progress)	

1.2.3.2 Other Educational Modules and Case Studies Developed

Renne, J. & Chamely-Wilk, D. 2025. FAU Undergraduate Certificate in Smart Cities and Internet of Things (SC-IoT). Designed to provide undergraduate students with the necessary foundations for a career in smart cities in alignment with their academic major.

Renne, J. 2025. My Streetscape Summer Research Institute. An interdisciplinary education program on urban technology and trust organized by the Center for Smart Streetscapes (CS3), in partnership with the Trust Collaboratory at Columbia University and the Institute for Sensing and Embedded Network Systems Engineering (I-SENSE) at FAU.

1.2.3.3 Other Education and Workforce Development Activities

Across the five consortium member universities, CETOC research supported 9 undergraduate students, 14 master's students, 14 doctoral students, and a post-doctoral research fellow during the reporting period, a significant increase. These students are increasingly involved in conference presentations at national conferences such as TRB Annual Meeting and ACSP Annual Conference and in journal publication. Three CETOC-funded undergraduate students received their degrees during the reporting period, with one being hired by a consortium member university as an Outreach Coordinator working on CETOC and other projects.

Several other education and workforce development activities were carried out through CETOC during the period outside of official funded CETOC Education projects and degree-based work at our universities. At Florida Atlantic CETOC PIs have developed an Undergraduate Certificate program in Smart Cities and the Internet of Things (SC-IoT), the My Streetscape Summer Research Institute, and the Transportation Barriers for Post-Secondary Education, all partially supported by CETOC in collaboration with other partners and set for implementation in 2025. Several other programs, including further summer programming, are in development across the consortium.

Several CETOC-funded events held during the reporting period have offered AICP CM continuing education credits to attendees.

1.2.4 Technology Transfer

Technology Transfer Effectiveness Metrics	Progress
# of related editorial Journal positions held by CETOC PIs*	16
# of downloads and transfers of CETOC research products (tech reports, policy briefs, databases, etc.)**	5
# of adoptions of tools/technologies by stakeholders**	2
# of success stories and newspaper coverage**	8

* During the semi-annual period

** In the last Annual reporting period, these metrics are gathered annually

1.3 How have the results been disseminated?

Numerous events have been held both in person and virtually by various consortium members which directly or indirectly served to disseminate relevant research or engage communities in discussion about transit-oriented communities and other CETOC-related topics. Of note among these during this period were the CETOC-funded symposia “Research to Practice Transit Symposium” and “Next-Gen Transportation: Resilience, Sustainability & Emerging Technology in Transportation” held at UF. CETOC researchers and students have presented research nationally and internationally. CETOC PIs and CETOC-funded students attended the TRB Annual Meeting and ACSP Annual Conference to present and discuss research, network with fellow transportation professionals, industry leaders, and government representatives and spread awareness of the Center and its research. Numerous journal publications have been produced based on CETOC-funded research. CETOC webinars continue to be held across the consortium. Findings have been shared directly with transit agencies and state and local governments across the country, and one post-ride survey methodology has been implemented by Spin, a commercial e-scooter startup company.

1.4 Plans for next reporting period

In the next reporting period, year one projects will be completed, year two projects will approach completion, and year three projects will be selected, funded, and begun. We anticipate considerable continued publications and presentations resulting from year one and two research as well as publication of final reports for year one projects. Direct dissemination of results to transit agencies, local and state government and private partners will continue to grow. Our inaugural CETOC symposium “Trans-Atlantic Perspectives on Public Transportation: Bridging the Gap Between Practitioner Needs and Academic Research in a Shifting Transportation Economy,” will feature researchers and practitioners from across the United States, as well as visiting scholars and practitioners from Austria and Australia through partnership with the University of New Orleans' Center Austria and will be held in person in New Orleans May 19-20, 2025. Other events will continue to be hosted at our universities and elsewhere to disseminate research, including the continuation of the CETOC webinar series. Our year two

projects involve a significant increase in intra-consortium collaboration as well as collaboration with external partners in transit operation, local government, and other sectors and we look forward to continuing to develop the myriad opportunities these new partnerships are creating as well as the new opportunities represented by our year three project selections.

2. PARTICIPANTS & COLLABORATING ORGANIZATIONS

2.1 What organizations have been involved as partners?

- Abacoa Partnership for Community, collaboration with Serena Hoermann, FAU
- APA FL Broward & Treasure Coast Sections, collaboration with FAU (EP, TT, WD)
- American Public Transit Association, collaboration with UF (E, EP, TT, WD)
- Caltrans, collaboration with UF (E, EP, TT, WD)
- Capital Area Transit Systems (Baton Rouge), collaboration with UNO (R, TT)
- Center for Smart Streetscapes, collaboration with FAU (E, TT, WD)
- City of Gainesville: Dan Zhu, collaboration with Xilei Zhao, UF
- City of Innsbruck, collaboration on 2025 TAPPT Symposium (EP, TT)
- City of New Orleans Transit-Oriented Communities Interim Working Group (consisting of representatives from: New Orleans City Planning Commission; New Orleans Regional Transit Authority; CNO Mayor's Office of Resilience & Sustainability; CNO Mayor's Office of Community Assets & Investments; CNO Mayor's Office of Economic Development; CNO Mayor's Office of Community Development; CNO Mayor's Office of Nighttime Economy, Housing Authority of New Orleans; New Orleans Redevelopment Authority), collaboration with UNO (R, TT)
- City of Salt Lake City, including Transportation Division and Public Lands Department collaboration with Andy Hong, UU (R, TT)
- Jacksonville Transportation Authority: Alexander Traversa, collaboration with Xiang Yan, UF
- Innsbrucker Verkehrsbetriebe, collaboration on 2025 TAPPT Symposium (EP, TT)
- Intelligent Transportation Systems Society, collaboration with UF (E, EP, TT)
- Institute of Transportation Engineers, collaboration with UF (E, EP, TT)
- Louisiana Transportation Research Center, collaboration with UNO (R)
- Miami-Dade Transit: Linda Morris, collaboration with Xiang Yan, UF
- Mineta Transportation Institute, collaboration with UF (E, EP, TT, WD)
- New Orleans City Planning Commission, collaboration with UNO (CS, R, TT)
- New Orleans Regional Transit Authority (CS, R, TT, WD)
- Palm Beach County Planning Congress, collaboration with FAU (EP, TT, WD)
- Regional Transportation District, Denver, CO: Jonathan Wade, data expert and domain expert on transit, collaboration with Manish Shirgaokar, UCD
- Transportation Choices for Sustainable Communities, collaboration with FAU (E, TT, WD)
- UC Davis Transit Research Center, collaboration with UF (E, EP, TT, WD)
- University of Innsbruck, collaboration on 2025 TAPPT Symposium (EP, TT)
- Utah Department of Transportation, collaboration with Andy Hong, UU
- Wasatch Front Regional Council: Bert Granberg, collaboration with Andy Hong, UU
- West Palm Beach Mobility Coalition, collaboration with Serena Hoermann, FAU

- WTS, collaboration with multiple consortium members (EP, TT, WD)

Codes: CS: cost-share E: education & outreach EP: event production R: research TT: tech transfer WD: workforce development

2.2 Have other collaborators or contacts been involved?

Collaboration is ongoing between all consortium member PIs and other researchers within consortium universities on current projects, planned future projects, planned events and webinars, education projects, outreach projects, data sharing, and more.

All members of the CETOC Advisory Board are actively involved in center activities including but not limited to advisory guidance, project review and selection, and planning and participation in the upcoming 2025 CETOC TAPPT Symposium. The members are:

- Chessy Brady, MBA (RTD Denver)
- Robert Cervero, PhD (UC Berkeley, Emeritus)
- Kristi Currans, PhD (University of Arizona)
- Veronica Davis, PE (AtkinsRéalis)
- Kim DeLaney, PhD (Treasure Coast Regional Planning Council)
- Paul Drake, MRED (Utah Transit Authority)
- Vijaya (V.J.) Gopu, PhD (Louisiana Transportation Research Center)
- Tanisha Hall, AICP, TDM-CP (Fairpointe Planning)
- David Krutsinger, AICP (City & County of Denver)
- Jon Larsen, PE (City of Salt Lake City)
- Dwight Norton, AICP (New Orleans Regional Transit Authority)
- Chad Riding, MAURP (Caltrans)
- Maria Vyas, AICP (Fehr & Peers)
- Jeff Wood (The Overhead Wire)
- Ming Zhang, PhD (UT Austin)

Guest speakers at UNO-hosted CETOC events this period included representatives from The Water Institute, Fehr & Peers, Stanford Law School, University of South Carolina, Polaris Analytics and Consulting, Jefferson Parish Planning Department, New Orleans Office of Resilience & Sustainability, IMC Companies, Big River Coalition, USDOT Maritime Administration, and Ohio State University. Other non-organizational (academic) collaborators outside the consortium during the period include:

- Nacima Baron, Gustave Eiffel University, collaboration with John Renne, FAU
- Billy Fields, Texas State University, collaboration with John Renne, FAU
- Steven Hankey, Virginia Tech, collaboration with Xiang Yan, UF
- Sung Hoo Kim, Hanyang University, collaboration with Xiang Yan, UF
- Bin Li, Louisiana State University, collaboration with Guang Tian, UNO
- Meiqing Li, University of Central Florida, collaboration with Xiang Yan, UF
- Xiaojiang Li, University of Pennsylvania, collaboration with Xiang Yan, UF

- Rafael H.M. Pereira, Institute for Applied Economic Research, Brazil, collaboration with Xiang Yan, UF
- Thomas Sanchez, Texas A&M University, collaboration with Xiang Yan, UF
- Wenwen Zhang, Rutgers University, collaboration with Xiang Yan, UF

3. OUTPUTS

3.1 Publications

Publications and presentations marked with an asterisk acknowledge(d) federal CETOC funding. All others should be considered CETOC-related or CETOC-associated, but not CETOC-funded. CETOC-funded researchers and students are indicated in **bold**. Only items and activities published or occurring during the reporting period are listed. Items under review not listed.*

3.1.1 Journal Publications

- *Chae, K. S., Kim, S. H., & **Yan, X.** (2025). Exploring attitudinal group differences in preferences for shared e-scooter use and its integration with public transit. *Transportation Research Part A: Policy and Practice*, 196, 104468.
- ***Dai, Y.**, Liu, L., **Wang, K.**, Li, M., & **Yan, X.** (2025). Using computer vision and street view images to assess bus stop amenities. *Computers, Environment and Urban Systems*, 117, 102254.
- Ferenchak, N. N., & **Marshall, W.** (2024, December). Traffic safety for all road users: A paired comparison study of small & mid-sized U.S. cities with high/low bicycling rates. *Journal of Cycling and Micromobility Research*, 2, 100010.
- ***Liu, L.**, **Zhang, X.**, **Jiang, S.**, & **Zhao, X.** (2025). Hurricane evacuation analysis with large-scale mobile device location data during hurricane Ian. *Transportation Research Part D: Transport and Environment*, 139, 104559.
- *Lyons, T., **Ewing, R.**, & **Tian, G.** (2025). Coverage vs frequency: Is spatial coverage or temporal frequency more impactful on transit ridership? *Journal of Transport Geography*, 122, 104058.
- ***Misra, A.**, **Marshall, W.**, O'Sullivan, L., Wagner, M., & **Shirgaokar, M.** (2025). Estimating Uncertainty and Misery (Index) of the Paratransit Experience. *Transportation Research Interdisciplinary Perspectives*, 30, 101347.
- ***Qian, Y.**, **Polimetla, T.**, Sanchez, T. W., & **Yan, X.** (2025). How do transportation professionals perceive the impacts of AI applications in transportation? A latent class cluster analysis. *Transportation*.
- ***Tian, G.**, **Danton, B.**, Li, B., Gopu, V., & Codjoe, J. A. (2024). Understanding household VMT generation: A comparative analysis with traditional statistical models and a machine-learning approach. *Journal of Transport and Land Use*, 17(1), 881-901.

- ***Tian, G., Jenkins, B., & Danton, B.** (2025). Quantifying the influences of telecommuting on household total trips and VMT generation. *Journal of Transport Geography*, 124,
- ***Tian, G., Tritch, A., & Danton, B.** (2025). Do teleactivities lead to more sustainable travel? Evidence from the 2017 and 2022 U.S. National Household Travel Surveys. *Computational Urban Science*, 5, 16.
- Ukil, S., & **Misra, A.** (2025). How bikesharing changed destination distance for its users: A case study of Chicago Metropolitan Area. *Journal of Transport and Land Use*, 18(1), 57-75.
- Ukil, S., **Misra, A.**, Henderson, A., & **Marshall, W.** (2025). Understanding Heterogeneity in Intended Frequency of Online Grocery Shopping Across Life Stages and Lifestyle. *Transportation Research Interdisciplinary Perspectives*, 31, 101382.
- Zhang, X., Zhao, X., Xu, Y.**, Nilsson, D., & Lovgreglio, R. (2024). Situational-aware multi-graph convolutional recurrent network (SA-MGCRN) for travel demand forecasting during wildfires. *Transportation Research Part A: Policy and Practice*, 190, 104242.

3.1.2 Books and Other Non-Periodical, One-Time Publications

Hoermann, S. “Climate gentrification pathways and resilience: Policy and planning discourses in Miami.” In I. Owen (Ed.) *Resilient Cities in a Changing World: Design and the Urgency of Climate Challenge*. AMPS. ISBN 978-1-0369-0933-8. 2025.

3.1.3 CETOC-Sponsored Symposia

*Cooper, H., Divers, K., Dow, M., Easton, J., Furillo, A., Handy, S., Heady, C., Hemily, B., Jones, D., Levin, J., MacArthur, J., Newmark, G., Nixon, H., O'Donnell, S., Pike, S., Qiriazzi, J., Ratnam, S., **Renne, J.**, Richards, L., Richer, C., Riding, C., Rivero, G., Rosenthal, S., Siroky, E., Watkins, K., Wang, S., Wong, W., **Yan, X., Zhao, X.** **Research to Practice Transit Symposium.** Hosted by the University of Florida, October 22-24, 2024.
<https://www.transportation.institute.ufl.edu/2024/08/01/2024-research-to-practice-transit-symposium/>

* Carver, J., Kyle, B., Steiner, R., Traversa, A., **Yan, X., Zhao, X.** **Next-Gen Transportation: Resilience, Sustainability & Emerging Technology in Transportation.** Hosted by the University of Florida, November 1, 2024.

3.1.4 Other Publications, Conference Papers, Presentations, Workshops and Webinars

- Bhat, M.R., Bian, R., **Tolford, T.** “Leveraging Human Mobility Data for Non-Motorized Traffic Monitoring: A Solution for Sparse Data.” TRBAM, January 6, 2025.
- *Chae, K.S., Kim, S.H., **Yan, X.** “Exploring Attitudinal Group Differences in Preferences for Shared E-scooter Use and Its Integration with Public Transit.” TRBAM, January 8, 2025.

***Dai, Y., Liu, L., Wang, K., Li, M., Yan, X.** “Using Deep Learning and Google Street View Images to Assess Bus Stop Amenities.” TRBAM, January 6, 2025.

***Duarte, E., Lyu, D., Zheng, A., Merlin, L., Renne, J., Hoermann, S., Yan, X.** “Developing and Validating a Multi-Criteria Approach for Locating Multimodal Mobility Hubs.” TRBAM, January 7, 2025.

Ewing, R., Kaniewska, J. “Density With(out) Affordability: New Development Along Light Rail Corridors in Utah.” Utah Transportation Conference, October 24, 2024.

Ewing, R., Kaniewska, J. “Regional Policies, Practices, Tools, and Strategies to Implement Polycentric Development: Comparative Case Studies of Portland, Seattle, and Denver.” ACSP Annual Conference, November 7-9, 2024.

Ewing, R., Kaniewska, J. “Urban Arterial Lane Width Versus Speed and Safety.” ACSP Annual Conference, November 7-9, 2024.

Fardon, G. “Are Discontinuities in Sidewalk Networks Creating Worse Barriers to Entry for Transit Use in Some Parts of the Denver Metropolitan Area?” TRBAM, January 7, 2025.

Hong, A. “Opportunities and Challenges for Multi-sectoral Collaboration.” Age-Friendly and Environmentally Sustainable Cities Workshop, Kyoto, Japan, March 11, 2025.

Hong, A., Gebresselassie, M., Cochran, A., Levine, K., Kim, J., Li, A., Biglieri, S., Bogra, B. “Bridging the Gap: Accessibility for Aging and Disability.” Roundtable. ACSP Annual Conference, November 7-9, 2024.

Kalantari, H., Yang, W., Ewing, R. “Can Micromobility Connect First and Last Mile of Public Rail Transit.” ACSP Annual Conference, November 7-9, 2024.

Kaniewska, J., Ewing, R. “Is Salt Lake City Experiencing Displacement of Low-Income Households in Light Rail Corridors?” TRBAM, January 7, 2025.

Kaniewska, J., Ewing, R. “Is Salt Lake City Gentrifying? Evaluating Alternative Indicators” ACSP Annual Conference, November 7-9, 2024.

Kaniewska, J., Ewing, R. “Regional Policies, Practices, Tools, and Strategies to Implement Polycentric Development: Comparative Case Studies of Portland, Seattle, and Denver.” TRBAM, January 7, 2025.

Kaniewska, J., Ewing, R. “Understanding Gentrification Through ML – A Case Study of Salt Lake City” ACSP Annual Conference, November 7-9, 2024.

La, I. “Beyond the Vehicle: AI and LiDAR Analytics for Understanding Interactions Among All Road Users.” TRBAM, January 7, 2025.

***Liu, L. P, Li, X., Yan, X., Pereira, R.** “Measuring Exposure to Extreme Heat in Public Transit Systems.” TRBAM, January 6, 2025.

***Liu, L., Zhang, X., Jiang, S., Zhao, X.** “Hurricane Evacuation Analysis with Large-scale Mobile Device Location Data During Hurricane Ian.” TRBAM, January 8, 2025.

***Lyu, D., Liu, L., Campbell, C., Zhang, Y., Yan, X.** “Potentials and Limitations of Large-Scale Mobile Device Location Data for Food Access Analysis.” TRBAM, January 7, 2025.

Lyu, D., Yan, X. “The Impact of Transit Service Frequency and On-time Performance on Ridership: An Analysis of the Pre-Covid and Recovery Periods in Miami-Dade County.” TRBAM, January 6, 2025.

Mapa, M., Sun, Y., Kuligowski, E., Lovreglio, R., Cova, T., Zhao, X. “Evacuation Route Choice During the 2021 Marshall Fire.” TRBAM, January 8, 2025.

Marshall, W. “Alta Webinar.” March 27, 2025.

Marshall, W. “Gil Penalosa’s Cities for Everyone Webinar.” November 26, 2024.

Marshall, W. “Keynote Address.” NY Bike Summit, Albany, NY, October 17, 2024.

Marshall, W. “Keynote Address.” Safe Routes to School National Conference, Fort Collins, CO, October 22, 2024.

Marshall, W. “Keynote Address.” ULI NWA Place Summit, Bentonville, AK, November 21, 2024.

Marshall, W. “Keynote Address.” APA Michigan Transportation Bonanza, February 12, 2025.

Marshall, W. “Keynote Address.” National Bike Summit, March 11, 2025.

Marshall, W. “Killed by a Traffic Engineer.” Road Safety Week, Bogota, Columbia, October 2, 2024.

Marshall, W. “Place Initiative Webinar.” February 28, 2025.

Marshall, W. “Transportation Learning Network Webinar.” February 6, 2025.

Merlin, L. “Planning for Human-Scale Cities.” Antwerp, Belgium, November 12, 2024.

***Misra, A., Marshall, W., Fardon, G., Ukil, S., Tallavajjula, S.** “Exploring Trip Chaining in Paratransit Services: Gendered & Spatial Patterns in the Denver Region.” TRBAM, January 6, 2025.

Misra, A., Shirgaokar, M., Agrawal, A. “Which Older Adults Would Pay More for Ridehailing Services with Accessible and Age-Friendly Features?” TRBAM, January 7, 2025.

***Qian, Y., Liu, L., Yan, X.** “Big Data, Big Bias? On Factors Influencing Public Transit and Shared Micromobility Integration” Transportation Research Board 2025 Annual Meeting, January 7, 2025.

***Qian, Y., Lyu, D., Zhang, W., Yan, X.** “Understanding E-Scooter Route Choice Behavior in Washington DC: A Path Size Logit Model” TRBAM, January 8, 2025.

***Recalde, A., Liu, L., Zhang, X., Zhao, X.** “Assessing Evacuation Destination Preference During Hurricane Ian: A Gravity Model Approach with Large-Scale Mobile Device Location Data.” TRBAM, January 8, 2025.

Renne, J. “Key Tools for Implementing TOD: Financing.” South Florida Regional Planning Council, October 16, 2024.

Rigolon, A., Tabassum, N., Ewing, R. “Climate Adaptation for Active Transportation: What are American Cities Doing?” Center for Smart Transportation Webinar Series, November 21, 2024.

Russell-Carlson, K. “Determinants of Transit Ridership Recovery Following the COVID-19 Pandemic.” TRBAM, January 7, 2025.

Salehian, M. G, Zorbas, V. A, Manjunatha, P., **Yan, X.**, Elefteriadou, L., Gladwin, K. “Are Autonomous Shuttles Ready to Provide Regular Transit Service?” TRBAM, January 7, 2025.

Shi, J., Yang, H., Tao, T. “Nonlinear and Spatial Variations in Built Environment Impacts on Bike Sharing Usage on Workdays and Non-Workdays.” TRBAM, January 8, 2025.

Sun, Y., Jiang, S., Zhao, X. “Using GPS, Meta, and Survey Data to Analyze Marshall Fire Evacuation.” Wildfire Emergency Management Research Symposium, February 2025.

Sun, Y., Lovreglio, R., Kuligowski, E., Morrison, R., Cova, T., **Forrister, A., Zhao, X.** “Investigating Wildfire Evacuation Decision Using Hybrid Choice Modeling.” TRBAM, January 8, 2025.

***Sun, Y.,** Spall, J. C., Wong, W., **Zhao, X.** “Real-Time Bus Travel Time Prediction and Reliability Quantification: A Hybrid Non-Stationary Markov Model.” TRBAM, January 6, 2025.

***Tallavajjula, S., Shirgaokar, M., Misra, A., Marshall, W.** “What Hampers Transit Agencies from Supplying Appropriate Bus-Stop Amenities?” TRBAM, January 6, 2025.

***Tian, G.** “Influences of Telecommuting on Household Total Trips and VMT Generation.” ACSP Annual Conference, November 7-9, 2024.

***Tian, G.** (Moderator), Chen, Z. “China’s Experience of High-Speed Rail Development: Planning, Financing, Institutions and Impacts.” CETOC Webinar Series, University of New Orleans & Online, November 13, 2024.

***Tian, G., Danton, B.** “Studying Understudied Populations’ Travel Behaviors with a Machine Learning Approach – A Focus on Hispanic and Latinx Households.” InnovateUNO, University of New Orleans, November 20, 2024.

***Tian, G., Danton, B.** “Studying Understudied Populations’ Travel Behaviors with a Machine Learning Approach – A Focus on Hispanic and Latinx Households.” TRBAM, January 6, 2025.

***Tian, G., Tritch, A., Danton, B.** “Does e-Commerce Lead to More Sustainable Travel? Evidence from the 2017 and 2022 National Household Travel Surveys.” InnovateUNO, University of New Orleans, November 20, 2024.

***Tian, G., Tritch, A., Danton, B.** “Does e-Commerce Lead to More Sustainable Travel? Evidence from the 2017 and 2022 National Household Travel Surveys.” TRBAM, January 7, 2025.

Tolford, T., Bian, R. "Tools Developed from Research in Supporting Active Transportation Planning in Louisiana.” APA Louisiana State Planning Conference, October 18, 2024.

Yan, X. “Public Transportation Technologies and Services Research Trends and Needs.” TRBAM, January 6, 2025.

***Zhang, X., Zhao, X.** “Achieving Fairness of Spatiotemporal Travel Demand Modeling with Dynamic Weighting.” TRBAM, January 7, 2025.

Zhao, X. “Social Vulnerabilities and Wildfire Evacuations.” Wildfire Mitigation in the U.S. South Workshop, February 2025.

Zinia, F., Ewing, R. “How Much Does TOD Impact on Household Transportation Costs?” ACSP Annual Conference, November 7-9, 2024.

*Only publications, conference papers, presentations, workshops and webinars featuring CETOC-funded researchers and/or CETOC-funded graduate students (in **bold**) are listed. For other CETOC-funded and CETOC-related events, please see <https://www.uno.edu/cetoc/events>.*

3.2 Websites and Other Internet Sites

3.2.1 CETOC Home Page

<https://www.uno.edu/cetoc>

3.2.2 CETOC Social Media:

Instagram: <https://www.instagram.com/cetocofficial/>

LinkedIn: <https://www.linkedin.com/company/cetoc/>

X/Twitter: <https://twitter.com/CETOCOfficial>

YouTube: <https://www.youtube.com/@CETOCOfficial>

3.2.3 Select CETOC-Related Software Repositories

<https://jacoby0.github.io/software/>

<https://github.com/EvacuationBehavior>

<https://github.com/orgs/SERMOS-LAB/repositories>

3.3 Technologies & Techniques

An extensive number of new technologies and techniques have been developed or are being developed through CETOC’s research efforts, including new analysis frameworks, algorithms and code sets, dashboards, replicable survey methodologies, predictive and analytical models, and deep learning and computer vision architectures. For a more complete list of these

technologies and techniques, see section 1.2.1. See also software products available at the sites listed in 3.2.

3.4 Inventions, Patents, & Licenses

Nothing to report.

3.5 Other Products

In addition to the products listed under 3.3, a number of other products have been developed or are being developed, including databases, dashboards, map products, and others. For a more complete list of these output products, see section 1.2.1.

4. OUTCOMES

4.1 Increased Understanding and Awareness of Transportation Issues

See 3.1.1-3.1.3.

4.2 Passage of new policies, regulation, rulemaking, or legislation

Nothing to report.

4.3 Increases in body of knowledge

See 3.1.1-3.1.3.

4.4 Improved processes, technologies, techniques, and skills

See 3.3

4.5 Enlargement of the pool of trained transportation professionals

See 1.2.3.1-1.2.3.3.

4.6 Adoption of new technologies, techniques, or practices

Several new technologies and techniques have been adopted by stakeholders such as public transit agencies, local, regional, and state governments, and the private firm Spin.

5. IMPACTS

5.1 Effectiveness of the Transportation System

See 4.6.

5.2 Technology Transfer

Outputs listed in section 4 continue to create real-world impacts through the improvement of efficiency of transit agencies, governments and private entities.

5.3 Increase in the Body of Scientific Knowledge

See 1.2.4; 3.1.1-3.1.3.

5.4 Transportation Workforce Development

See 1.2.3; 4.1; 4.5.

5.5 Transfer of Results

See 1.2.4; 1.3; 3.1.1-3.1.3.

5.6 Commercialization of Technology

A post-ride survey methodology developed by CETOC was adopted by e-scooter startup Spin.

5.7 Adoption of new practices

Nothing to report.

5.8 Opportunities in research and training

See 1.2.3; 4.1.

5.10 Development and Dissemination of New Educational Materials

See 1.2.3.

6. CHANGES/PROBLEMS

In January 2025, the name of the center was changed to better reflect the current scope and focus of the center's research and other efforts. Some year 2 projects scopes were also modified to reflect minor shifts in focus or changes in input datasets and other factors. One year 1 project has been slightly delayed due to serious medical issues. These changes have been reflected on the CETOC website and in the RiP depository.

7. SPECIAL REPORTING REQUIREMENTS

Nothing to report.