



Center for Pedestrian and Bicyclist Safety

Semi-Annual Progress Report

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1. ACCOMPLISHMENTS

1.1 What are the major goals of the program?

The goal of the Center for Pedestrian and Bicyclist Safety (CPBS) is to eliminate pedestrian and bicyclist fatalities and serious injuries. CPBS's activities address the Promoting Safety research priority area. Specifically, CPBS addresses the first key challenge under that priority: Vulnerable Users. In addition, CPBS contributes to other Promoting Safety key challenges including Infrastructure, Safety Culture and Behavior, and Rural Transportation Safety.

The primary strategic goal from the **US Department of Transportation (US DOT) Strategic Plan** that CPBS addresses is Safety. According to the US DOT Strategic Plan, safety is the highest priority goal and must be a multimodal effort. In addition, CPBS advances secondary strategic goals of Transformation, Equity, and Climate and Sustainability. CPBS advances these goals through the promotion of safe, comfortable, and accessible pedestrian and bicycle networks that will improve the resilience of the overall transportation system, advance sustainability, and be fair and equitable for all road users.

To meet the above goals, CPBS addresses the following objectives from the **US DOT Research, Development, and Technology (RD&T) Strategic Plan**: Safety Culture and Behavior, Human-Technology Interaction, Safety Design, Safety Data, and Safety Technology. CPBS is led by the University of New Mexico (UNM) in collaboration with consortium members San Diego State University (SDSU), University of California Berkeley (UCB), University of Tennessee Knoxville (UTK), and University of Wisconsin Milwaukee (UWM).

1.2. What was accomplished under these goals?

Being a new university transportation center (UTC), the primary accomplishment of CPBS during the current reporting period was to complete the administrative tasks of formally establishing the center and selecting/initiating Year 1 research projects. CPBS also initiated several educational, workforce development, and technology transfer efforts. Those and other accomplishments are detailed below.

Administrative Accomplishments

CPBS directors first attended a kickoff meeting hosted by US DOT in Washington, DC. CPBS's directors then completed a *CPBS Year 1 Strategic Plan* (which can be found on the [CPBS website](#)) to help guide CPBS's Year 1 activities. Year 1 research projects were then selected and CPBS's revised Year 1 budget was approved by US DOT. CPBS also had their center-wide *CPBS Data Management Plan* approved by US DOT (which can also be found on the [CPBS website](#)). Dr. Chris Cherry (UTK) represented CPBS at the Council on University Transportation Centers (CUTC) summer meeting in Miami, FL in June 2023.

While the above activities were being completed, all the CPBS consortium members were also working on the contract and subawards, all of which are now signed and completed. These administrative accomplishments allowed for CPBS's other activities to move forward, as detailed below.

Research Accomplishments

The primary research accomplishment from the past reporting period was the selection of CPBS's Year 1 research projects. The project selection process involved a call for problem statements that was advertised across all CPBS consortium universities. The principal investigators (PI) for each selected research project then completed a project charter and a project-specific Data Management Plan. Details for all Year 1 CPBS projects can be seen on the CPBS website (<https://www.pedbikesafety.org/research-in-progress>). Information for each Year 1 CPBS research project was also uploaded to the Transportation Research Board's (TRB) Research in Progress Database (RIP).

Since the research projects just commenced during the current reporting period, there are few specific research accomplishments to note at this time. In general, all research projects have been busy completing typical tasks such as kickoff meetings, literature reviews, and data collection. However, six research projects have already generated papers that were submitted for publication and/or presentation at the 2024 TRB Annual Meeting (see Section 3 for more details on specific outputs).

For project 23UNM03, a preliminary New Mexico Crash Map was published on the internet in September 2023 and has been explored by 50 NMDOT staff members and the public across New Mexico. This project will develop APIs that will allow other government agencies to implement their own crash maps with a specific focus on vulnerable road user safety in pursuit of wider dissemination and analysis of vulnerable road user safety data.

Technology Transfer Accomplishments

CPBS initiated several center-wide technology transfer programs during the current reporting period. The CPBS website (<https://www.pedbikesafety.org/>) was created and populated with information on CPBS people, projects, plans, and other activities. The CPBS website has already had over 1,100 page views (see Section 4 for more details on activity relating to the CPBS website and other technology transfer activities). CPBS also sent their inaugural newsletter detailing their planned Year 1 activities to over 650 recipients. CPBS also established a LinkedIn page and has attracted over 500 followers.

Dr. Bruce Appleyard (SDSU) was interviewed for a podcast and article entitled “[A Feat of \(Social\) Engineering](#)” alongside Dr. Susan Handy – Professor at UC Davis and director of the National Center for Sustainable Transportation –for the Freeway Exit podcast hosted by KPBS in May 2023.

CPBS researchers completed five presentations of their work at conferences and other industry events during the current reporting period (see Section 3 for more details).

Workforce Development Accomplishments

In collaboration with the Mid-Region Council of Governments (MRCOG), CPBS helped with a Pedestrian Safety Training in June 2023 (**Figure 1**). The event was co-hosted by FHWA and 14 people were in attendance from across New Mexico.



Figure 1. MRCOG Pedestrian Safety Workforce Development, June 2023.

CPBS also established relationships with organizations that will enable future workforce development efforts. Specifically, UNM coordinated with the New Mexico Local Technical Assistance Program (NM LTAP) which is housed in the Civil, Construction & Environmental Engineering Department at UNM. UTK also established a link between their CPBS activities and the Tennessee LTAP, which is housed in UTK’s Center for Transportation Research in the College of Engineering.

Future research outputs will be organized into deliverables that will be disseminated through LTAPs to communities (with a strong focus on rural and tribal communities).

Educational Accomplishments

21 UNM students spent May 29 through June 16 in the Netherlands completing a study abroad program focused on transportation engineering with instructor Dr. Nick Ferenchak (**Figure 2**). The students explored Amsterdam, Rotterdam, Utrecht, Haarlem, Gouda, Flevoland, Houten, Arnhem, and Delft. The course blended site visits, lectures, readings, and writing activities to expose students to the philosophies and

specific techniques used in the Netherlands to develop resilient communities. An emphasis was placed on comparing Dutch and American approaches to infrastructure design. Elements of local culture, language, and academic environments were also weaved throughout the program. The transportation course focused on regional/urban development and multimodal transportation systems. Students explored operations at the largest train station in the Netherlands, saw the largest bike parking garage in the world, held travel interviews with local Dutch commuters, measured right-of-way cross sections, and observed traffic control systems, all with a focus of building better multimodal systems.



Figure 2. UNM students studying abroad in the Netherlands, June 2023.

Mr. Latif Patwary, a PhD student at UTK who is working on project 23UTK04, received the 2023 Tennessee Section of Institute of Transportation Engineers (TSITE) Bill Kervin Scholarship Award.

CPBS supported many undergraduate and graduate students during the current reporting period. Four graduate students are being mentored at UCB as part of their participation in generating high quality CPBS research pertaining to pedestrian and bicyclist safety. Ms. Zeinab Bayati, a PhD student at UTK, was recruited from the University of North Florida, where she completed her MS degree. She is now working on the CPBS research project 23UTK04 titled “The Role of Disadvantaged Communities, Urban Form, and Demographics in Pedestrian and Bicycle Safety.” Ms. Allison Rewalt, an MS student, was recruited from New Mexico State University, where she completed her BS degree. She is now working on the CPBS project 23UTK01 titled “Identifying Research Priorities to Improve Safety for Pedestrians and Bicyclists Accessing Bus Stops”. In addition to new recruits, other UTK students who have benefited through mentoring and CPBS research include Latif Patwary, Nastaran Moradloo, Sheikh Usman, Sameer Aryal, Saurav Parajuli, and Kepler Barnhart. Several other UTK students in Civil and Environmental Engineering and Industrial and Systems Engineering have sharpened their research skills by working on research papers submitted to TRB. They have all worked on pedestrian and bicycle issues relevant to CPBS. A total of four undergraduate students and five graduate students are being supported at UNM to assist across the five UNM research projects.

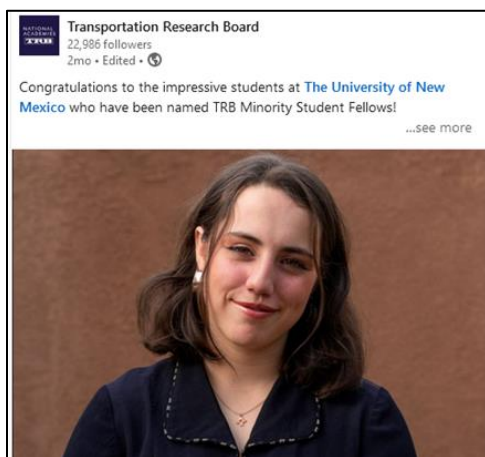


Figure 3. Olivia Tafoya was selected as a TRB Minority Fellow and is assisting with CPBS project 23UNM02.

CPBS supported and administered several fellowships during the current reporting period that further integrated students into the work of CPBS. For instance, Dr. Lisa Losada-Rojas organized an internal Dwight David Eisenhower Transportation Fellowship Program (DDETFP) competition at UNM that was supported by FHWA and supported three students, all of whom are assisting on CPBS research projects. UNM also participated in the TRB Minority Fellowship, with Olivia Tafoya being selected as a fellow and assisting with CPBS project 23UNM02 (**Figure 3**).

All CPBS consortium members began revising coursework to further integrate pedestrian and bicyclist safety topics. At UCB, course instructors for CE C265 (Traffic Safety and Injury Control) were secured and planning for a course curriculum refresh was begun. At UTK, courses being updated include CE 653 (Intelligent Transportation Systems), CE 559 (Transportation Safety), CE 553 (Geometric Design), and CE

554 (Public Transit). At UNM, courses being updated include CE 382 (Transportation Engineering) and CE 482/582 (Highway and Traffic Engineering).

CPBS supported the New Mexico Summer Transportation Institute in June 2023 (**Figure 4**). The NM Summer Transportation Institute is a program hosted at UNM for students in 9th through 12th grade from across the country to encourage them to enter the transportation field. The program is free for New Mexico residents and has been run for 20 years. The program typically has 25 students attend annually, but UNM plans to grow the reach of the NM Summer Transportation Institute beginning in Year 2 of CPBS.



Figure 4. UNM Summer Transportation Institute, June 2023.

1.3. What opportunities for training and professional development has the program provided?

UNM completed a Pedestrian Safety Training with MRCOG (see Section 1.2 above for details). UCB led trainings at the Safe System Implementation Academy and SafeTREC Seminar and is piloting free workshops and accompanying technical assistance sessions with California communities related to speed limit setting. Dr. Asad Khattak at UTK led a 2-hour online seminar related to pedestrian safety that was hosted by Tongji University, Shanghai, China (see Section for 3 and 4 for more detail on specific outputs and outcomes). CPBS has also established relationships with LTAPs that will provide a platform for future training and professional development programs.

1.4. How have the results been disseminated?

Results have been disseminated through the technology transfer channels that CPBS has established, namely the CPBS website, newsletter, and LinkedIn page. CPBS has also generated 9 conference papers, presented at 5 conferences, and been cited in 16 news articles (see Sections 3 and 4 for more detail on specific outputs and outcomes).

1.5. What do you plan to do during the next reporting period to accomplish the goals?

Research Plans & Goals

The CPBS team will continue to work on their Year 1 research projects. By the end of the next reporting period, CPBS research projects should begin to generate outcomes and CPBS researchers anticipate the dissemination of final reports, research papers, conference presentations, and other pertinent research deliverables. CPBS's goal is to have one final report for each Year 1 research project and at least one paper submitted to an academic journal for each Year 1 research project.

Technology Transfer Plans & Goals

Over the next reporting period, CPBS will continue to update the CPBS website and will take every opportunity to direct traffic to the website. For instance, Dr. Nick Ferenchak recently spoke at a meeting of all the US state DOT Pedestrian and Bicycle Coordinators and the TRB Bicycle Transportation Committee (ACH20), letting everyone know about CPBS and directing them to the CPBS website. CPBS will also begin publishing and disseminating a CPBS newsletter every month and regularly updating the CPBS LinkedIn page. To accomplish these goals, CPBS will need to establish a system where news worthy of being disseminated is regularly sent to the CPBS staff in charge of technology transfer.

CPBS consortium members will continue to attend conferences during the next reporting period and discuss their CPBS activities. By the end of the next reporting period, CPBS research projects should be generating research outputs that will be presented at conferences. A specific focus will be paid to the TRB Annual Meeting (TRB AM) which will occur during the next reporting period. CPBS researchers will have a significant presence at TRB AM and some preliminary research will be presented.

CPBS also plans to host its first webinar during the next reporting period. Since CPBS does not yet have many research outputs, the webinar's audience will be the bicycling advocacy community. The topic will be bicyclist safety and the role advocacy groups can play in pursuit of that goal. This webinar will be an opportunity for CPBS to build further collaborations throughout the transportation community early in Year 1 and create possibly transformative links with community organizations across the US.

Workforce Development Plans & Goals

CPBS will continue to build relationships with LTAPs, which will serve as a platform to disseminate workforce development outputs. For example, UNM plans to lead a pedestrian safety workshop with the Northwest New Mexico Council of Governments during the next reporting period. For project 23UNM03, the research team will develop a New Mexico LTAP training workshop to demonstrate how to use the developed visualization tools. The workshop will be offered in May 2024.

UTK is partnering with Knoxville Police Department to improve training materials for Safety City. UTK is also partnering with Two Bikes Knoxville to improve their advocacy and workforce development program to include bicycle safety into high school workforce development.

CPBS will also reach out to the Transportation Professional Certification Board, Inc. (TPCB) to explore the possibility of collaborating on their professional certification program. Specifically, there is a Road Safety Professional certification and CPBS may be able to help with the updating of content for that professional development program.

Dr. Nick Ferenchak (UNM) has a former student who is working on Albuquerque Public School's (APS) Vision Zero for Youth Initiative. He plans to meet with other leaders of that program to see if there is an opportunity for collaboration.

UNM will be organizing the 59th Annual New Mexico Paving and Transportation Conference, to be held in January 2024. CPBS will be hosting a session which will be a 90-minute panel session consisting of transportation safety professionals from the state, regional, and local levels. In addition to the panel discussion, the speakers will detail NMDOT's *New Mexico Vulnerable Road User Safety Assessment*, MRCOG's *Regional Transportation Safety Action Plan*, and the Albuquerque Vision Zero program. The conference typically attracts over 500 attendees from across the southwest US.

UCB will develop a Safe Speeds Toolkit to establish evidence-based, online educational resources to support Safe Speeds decision making in California during the next reporting period. UCB will also conduct two pilot workshops on Safe Speeds and provide limited, targeted technical assistance to enhance vulnerable road user safety and mobility through informed motor vehicle speed setting practice by applying flexibility to existing speed-limit-setting law.

Education Plans & Goals

CPBS consortium members will continue to integrate pedestrian and bicyclist safety topics into their coursework. At UTK, the education efforts will cover the Intelligent Transportation Systems course (CE 653: Intelligent Transportation Systems) and a safety course taught at the University of Tennessee (CE 559-Transportation Safety). Dr. Khattak teaches this graduate-level course every other year. Dr. Cherry will teach a course on road design (CE 553-Geometric Design), covering important aspects of safe systems in

design. Dr. Brakewood will teach public transit (CE 554-Public Transit) and incorporate aspects of safe pedestrian access into transit systems.

CPBS will organize a table at the UNM School of Engineering Open House in October 2023. This event hosts hundreds of prospective high school students from across New Mexico and the United States and presents a great opportunity for CPBS to attract new students.

CPBS consortium members will continue to mentor students working on the various research topics related to CPBS priorities and the safe systems approach. The topics include safe speeds, safe vehicles, and Tribal and Rural Safety-Safety Culture/Behavior/post-crash care. Several fellowship programs will continue during the next reporting period, including the Dwight David Eisenhower Transportation Fellowship Program and the TRB Minority Fellowship Program, and CPBS will continue to mentor the students that are involved with those programs and working on CPBS projects.

2. PARTICIPANTS & COLLABORATING ORGANIZATIONS

2.1. What organizations have been involved as partners?

New Partners

With CPBS being a new center, a major activity in this first reporting period was the establishment of collaborative relationships with other organizations. CPBS established partnerships with 28 organizations. These partnerships supported a wide variety of CPBS activities including providing data (e.g., IHS and People for Bikes) and in-kind support (e.g., Caltrans and NMDOT) for research projects, supporting CPBS educational efforts (e.g., Two Bikes Knoxville and Utrecht University), and supporting workforce development activities (e.g., FHWA and NM LTAP). New partnerships that were established during the reporting period are listed below:

Name	Location	Support
AAA Foundation for Traffic Safety	Washington, DC	Collaborative research for UTK projects
California Department of Public Health	Sacramento, CA	Collaborative research for UCB projects
California Polytechnic State University, San Luis Obispo	San Luis Obispo, CA	Research support for the Intersection and Safety Maneuvers and RTOR project
California Transportation Commission	Sacramento, CA	Provided data, project details, and report revisions for the ATP project
Caltrans	Sacramento, CA	In-kind match for several UCB projects
Centers for Disease Control & Prevention (CDC)	Atlanta, GA	Providing data for UTK projects
City of Albuquerque	Albuquerque, NM	Providing roadway data for 23UNM04
Federal Highway Administration (FHWA)	Washington, DC	Supporting UNM educational efforts through internal Eisenhower Fellowship and MRCOG workforce development event

Fehr & Peers	Walnut Creek, CA	Collaborative research for UCB projects
Florida Department of Safety	Tallahassee, FL	Providing data for UTK projects
Institute of Transportation Engineers (ITE)	Washington, DC	Providing data for UTK projects
Insurance Institute for Highway Safety (IIHS)	Arlington, VA	Collaborative research and providing data for UTK projects
Knoxville Police Department	Knoxville, TN	Programmatic educational support for UTK
Mid-Region Council of Governments (MRCOG)	Albuquerque, NM	Providing infrastructure data and staff support for 23UNM05
Mobycon	Delft, Netherlands	Supported UNM study abroad program
New Mexico Community Data Collaborative	Silver City, NM	Promote web map implementation with local communities for 23UNM03
New Mexico DOT	Santa Fe, NM	\$120k annual cost share, personnel exchange, and data for 23UNM01
New Mexico Local Technical Assistance Program (LTAP)	Albuquerque, NM	Staff time for organization and implementation of tech. transfer and workforce development events
North Carolina DOT	Raleigh, NC	Providing data for UTK projects
People for Bikes	Boulder, CO	Data, policy support, tech. transfer
Sandia National Laboratories	Albuquerque, NM	Participant recruitment through Commuter Bike Program for 23UNM04
Tennessee Department of Safety and Homeland Security	Nashville, TN	Collaborative research and providing data for UTK projects
Tennessee DOT	Nashville, TN	Providing data for UTK projects
Transportation Research Board (TRB)	Washington, DC	Support for 3 UNM students to attend TRB Annual meeting to present their research
Two Bikes Knoxville	Knoxville, TN	Programmatic educational support for UTK
UNM Lobo Bike Shop	Albuquerque, NM	Providing facilities and bike equipment and assisting with recruitment for 23UNM04
Utrecht University	Utrecht, Netherlands	Supported UNM study abroad program
Vision Zero Network	San Francisco, CA	Collaborative research for UCB projects
WeGo Transit Agency	Nashville, TN	Collaborative research and providing data for UTK projects

Wisconsin DOT	Madison, WI	Collaborative research for 23UWM04
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Ongoing Partners

All CPBS partnerships were newly established during the first reporting period and are therefore listed in the table above.

2.2. Have other collaborators or contacts been involved?

In addition to the established partnerships detailed in the table above, other CPBS partnerships are in the exploratory phase. Nascent CPBS partnerships are detailed in the table below:

Name	Location	Support
Albuquerque Public Schools	Albuquerque, NM	Discussing opportunities to collaborate with their Vision Zero for Youth Initiative
Association of Pedestrian and Bicycle Professionals (APBP)	Lexington, KY	Seeking opportunities for tech. transfer and workforce development, specifically with Wisconsin Chapter
City of Manteca	Manteca, CA	Organizing workforce development workshop with Caltrans on safe speeds
City of Milwaukee	Milwaukee, WI	Considering opportunities to collaborate with their Vision Zero program
City of Temecula	Temecula, CA	Organizing workforce development workshop with Caltrans on safe speeds
Council of University Transportation Centers (CUTC)	Missoula, MT	Applied to join CUTC and will leverage those resources to build CPBS
Milwaukee County DOT	Milwaukee, WI	Exploring collaboration opportunities
New Mexico MainStreet	Santa Fe, NM	Exploring opportunities to leverage their past work on state-owned arterials for 23UNM01
Northwest New Mexico Council of Governments	Gallup, NM	Organizing a workforce development event focused on pedestrian safety
Southeastern Wisconsin Regional Planning Commission	Waukesha, WI	Exploring collaboration opportunities
University of Aveiro	Aveiro, Portugal	UTK developed and submitted a joint research proposal

Over the next reporting period, CPBS members will continue to develop the above partnerships to help further the goals of the center. While many of the partnerships detailed above were institution-specific partnerships tied to specific research projects, CPBS will also pursue center-wide collaborations that will support center-wide efforts that CPBS is currently developing.

3. OUTPUTS

The following lists highlight the outputs generated during the reporting period. Note that since the CPBS research projects commenced during this reporting period, there are not many outputs to report yet. CPBS anticipates the Year 1 projects will begin generating significantly more outputs during the next reporting period.

Performance Measure	Count	Performance Measure	Count
Journal publications	1	Presentations	5
Books/non-periodicals	0	Websites	2
Research reports	0	New methods	0
Policy papers	0	Inventions	0
Conference papers	10	Other products	0

3.1. Publications, conference papers, and presentations

Journal publications

1. 23SDSU02: Appleyard, B. & Riggs, W. (2023). Designing for street livability in the era of driverless cars. *Transportation Research Interdisciplinary Perspectives*, 21, 100868.

Books or other non-periodical, one-time publications

Nothing to Report

Research reports

Nothing to Report

Policy papers

Nothing to Report

Conference papers

1. 23UWM03: Vajari, M. A., Li, Y., Aghayan, I., Qin, X., & Schneider, R. Current Practices in Non-motorist Crowdsourced Data among Transportation Agencies: A Nationwide Survey and Its Implications. Accepted for presentation at the 2024 TRB Annual Meeting, Washington, D.C.
2. 23UNM01: Joshi, A.R., Ferenchak, N.N., & Losada-Rojas, L.L. Bus Rapid Transit as Arterial Corridor Traffic Calming: The Relationship Between Transit Infrastructure and Vehicle Operating Speeds. Submitted for presentation and publication at the 2024 TRB Annual Meeting, Washington, D.C.
3. 23UNM01: Joshi, A.R., & Ferenchak, N.N. Where Is Bus Rapid Transit (BRT) Most Effective at Improving Safety Outcomes? A Crash Analysis by Roadway Characteristics. Submitted for presentation and publication at the 2024 TRB Annual Meeting, Washington, D.C.
4. 23UNM04: Habib K., Losada-Rojas L.L., & Ferenchak N. A Review of the Impacts of Human Factors on Cycling: Perceptions, Workload, and Behavior. Accepted for presentation and publication at the 2024 TRB Annual Meeting, Washington, D.C.
5. 23UNM04: Chaves Y., Losada-Rojas L.L. & Ferenchak N. “Exploring the Role of Arterial Roads Characteristics on Pedestrian and Bicyclist Crashes” International Conference on Transportation and Development (ICTD 2024). Atlanta, Georgia, June 15-18.

6. 23UNM04: Chaves Y., Losada-Rojas L.L. & Ferenchak N. “Exploring the Role of Arterial Roads Characteristics on Pedestrian and Bicyclist Crashes” Transportation Research Board 2nd International Roadside Safety Conference (IRSC) and Peer Exchange. Orlando, Florida, June 23-26.
7. 23UTK04: Patwary, L. & Khattak, A. Exploring How Urban Form, Demographics, and Disadvantaged Communities are Linked with Pedestrian and Bicycle Safety. TRBAM-24-04785, Accepted for presentation at the 2024 TRB Annual Meeting, Washington, DC.
8. 23UTK04: Patwary, L. & Khattak, A. Endogeneity of Pedestrian Survival Time and Emergency Medical Service Response Time: Variations Across Disadvantaged and Non-Disadvantaged Communities. TRBAM-24-04207, Accepted for presentation at the 2024 TRB Annual Meeting, Washington, DC.
9. 23UTK02: Parajuli, S. & Cherry, C. To Solve Urban Pedestrian Safety Risk: Start with Arterials. TRBAM-24-06211, Accepted for publication and presentation at the 2024 TRB Annual Meeting, Washington, DC.
10. 23SDSU03: Ahangarfabrik, N., Honey, M., Swayne, M., Appleyard, B., Ferenchak, N., & Carbajal, M. Evaluating California’s Active Transportation Program: The safety benefits of Safe Routes and Crossings to School Projects in Santa Cruz, CA. Accepted for presentation at the 2024 TRB Annual Meeting, Washington, D.C.

Presentations

1. UCB: Dr. Julia Griswold presented on the Safe System Implementation Academy research project with Caltrans on August 18, 2023, to the AASHTO COS Subcommittee on Toward Zero Deaths. There were 15 participants.
2. UCB: Dr. SangHyoun Oum presented “An Overview of SWITRS and TIMS” in the SafeTREC Seminar on September 20, 2023. There were 7 participants.
3. UTK: PhD students Latif Patwary and Nastaran Moradloo, presented safety work at the Intelligent Transportation Systems-Tennessee (ITS TN) seminar, which was held at UTK, on June 29, 2023.
4. UTK: Dr. Asad Khattak provided a 2-hour online seminar titled “The role of intelligent transportation systems,” covering vehicle and pedestrian safety on July 8, 2023, to an audience at Tongji University, Shanghai, China.
5. UTK: Dr. Chris Cherry presented *Established and Emerging Data Sources for Micromobility Safety* at the Traffic Records Forum (TRF) Conference on July 10, 2023, in Nashville, TN, to an audience of transportation safety professionals.

3.2. Website(s) or other internet site(s)

1. UNM: Center for Pedestrian and Bicyclist Safety (www.pedbikesafety.org)
2. UTK: Light Electric Vehicle Education + Research Institute (www.micromobilityresearch.com)

3.3. New methodologies, technologies, or techniques

Nothing to Report

3.4. Inventions, patents, and/or licenses

Nothing to Report

3.5. Other products

Nothing to Report

4. OUTCOMES

The outputs from CPBS efforts have been applied as outcomes in a variety of ways. Dr. Nick Ferenczak from UNM has been engaged by government organizations at different levels to assist with several plans and task forces related to pedestrian and bicyclist safety. He is currently serving on the stakeholder advisory committee for the city of Albuquerque's *Albuquerque Bikeways and Facilities Master Plan*, on the technical team for the Mid-Region Council of Governments (MRCOG) *Regional Transportation Safety Action Plan*, and as a member of the NMDOT Pedestrian Safety Task Force. The outputs of CPBS efforts are being implemented on the ground through these activities.

Dr. Lisa Losada-Rojas from UNM has been engaged by the Commuter Bike Program at Sandia National Laboratories and is leveraging that connection to not only enhance safe commuting options to a national laboratory but to also recruit participants for research project 23UNM04. Dr. Losada-Rojas is also collaborating with the UNM campus facilities planning and wider community through her partnership with UNM Student Affairs and their Lobo Bike Shop.

Dr. Julia Griswold from UCB – in collaboration with Caltrans and the Active Transportation Research Center – is leading a project to pilot free workshops and accompanying technical assistance sessions with California communities interested in learning how to implement lower speed limits in their city under new state laws. Two recently passed state laws in California - AB 43 (2021) and AB 1938 (2022) - create allowances for local jurisdictions to lower speed limits on locally-controlled streets to better account for safety concerns and surrounding land uses. Dr. Julia Griswold is also a member of the California Walk & Bike Technical Advisory Committee (CWBTAC).

Dr. Chris Cherry from UTK is a member of the Tennessee Pedestrian Task Force which provides input on the State of Tennessee Pedestrian and Bicyclist Safety Program Technical Assessment. Dr. Asad Khattak participated in that same Tennessee Pedestrian Task Force. Dr. Candace Brakewood is a member of Knoxville Transit Authority Board and is identifying ways to improve pedestrian and bicyclist safety when accessing bus stops through project 23UTK01.

CPBS's research, education, technology transfer, and workforce development efforts have been translated into several events, which have engaged numerous transportation students and professionals. These events and their reach are detailed below.

Research Events

Several conference papers will be presented at the 2024 TRB Annual Meeting (TRBAM) provide a deeper understanding of effective safe systems interventions, which can assist policymakers in allocating resources to improve disadvantaged communities on a priority basis. Although TRBAM work was prepared and submitted during this reporting period, the meeting itself will occur in the next reporting period and will therefore be detailed at that time.

Dr. Asad Khattak from UTK provided a 2-hour online seminar titled "The role of intelligent transportation systems," covering vehicle and pedestrian safety on July 8, 2023, to an audience at Tongji University, Shanghai, China. Dr. Chris Cherry from UTK presented at the Traffic Records Forum (TRF) on July 10, 2023, to an audience of transportation safety professionals. PhD students Latif Patwary and Nastaran Moradloo presented safety work at the Intelligent Transportation Systems-Tennessee (ITS TN) seminar, which was held at UTK on June 29, 2023.

Education Events

Dr. Nick Ferenchak led 21 UNM students on a study abroad course in the Netherlands in June 2023. The students learned about the safe design of multimodal transportation systems over two weeks while travelling through Rotterdam, Utrecht, Delft, Arnhem, Gouda, and Houten.

Dr. Nick Ferenchak led a session during the Summer Transportation Institute at UNM in June 2023. The 30 students came from across the United States but with a majority from New Mexico. The students completed an in-class activity where they built safe, comfortable, convenient bicycle networks for a variety of cities and in doing so experienced how network connectivity and road design impact multimodal system development.

Dr. Lisa Losada-Rojas led an internal Dwight David Eisenhower Transportation Fellowship Program (DDETFP) competition at UNM that was supported by FHWA. The fellowship is supporting three UNM students, all of whom are engaged with CPBS projects. Lonnie Wilhite is assisting in the measurement of bicyclist workload with 23UNM04. Ossiris Rodriguez is analyzing bicyclist fatality trends with 23UNM02. Brea Jarrell is generating infrastructure data related to access management with 23UNM05. Dr. Nick Ferenchak also mentored three UNM students on TRB Minority Fellowships, one of whom is working on a CPBS project (Olivia Tafoya is assisting with 23UNM02).

CPBS activities are also integrated into students' lives through student organizations. At UTK, PhD student Latif Patwary is serving as the vice president of the ITE student chapter. At UNM, Dr. Nick Ferenchak is serving as the Faculty Advisor of the ITE student chapter and the president, vice president, and treasurer are all students being supported by CPBS.

In addition to the programs above, CPBS outputs are being integrated into coursework across the CPBS consortium members. CPBS will provide more details on those courses as they are developed in future reporting periods. Many students are also engaged with CPBS activities through their participation in Institute of Transportation Engineers (ITE) meetings/seminars on various transportation topics.

Workforce Development Events

Dr. Nick Ferenchak from UNM led a session at a Pedestrian Safety Training hosted by the Mid-Region Council of Governments in June 2023. The event was co-hosted by FHWA and 14 people were in attendance from transportation agencies across New Mexico.

Dr. Julia Griswold from UCB presented on the Safe System Implementation Academy research project with Caltrans on August 18, 2023 to the AASHTO COS Subcommittee on Toward Zero Deaths. There were 15 participants. Dr. SangHyouk Oum from UCB presented "An Overview of SWITRS and TIMS" in the SafeTREC Seminar on September 20, 2023. There were 7 participants.

While CPBS is still a relatively new center, CPBS's work is already beginning to be recognized and cited in the press. The media organizations citing CPBS efforts range from the national level (e.g., *The New York Times* and *The Hill*) to local (e.g., *Daily Californian* and *KRQE News*). Given that the local news agencies that have cited CPBS's work are distributed across the country and not just in cities housing CPBS consortium members shows that CPBS's work has wide reach and relevance. Media citations referencing CPBS or its efforts from the last reporting period are below:

1. The Manila Times. (September 2023 – UNM). "A Painted Bike Lane Is Not Safe." By Robert Y. Siy, <https://www.manilatimes.net/2023/09/09/business/top-business/a-painted-bike-lane-is-not-safe/1909167>

2. Daily Californian. (August 2023 – UCB). “‘Outdated and dangerous’: Collisions on Ashby Avenue raise safety concerns” <https://dailycal.org/2023/08/29/outdated-and-dangerous-collisions-on-ashby-avenue-raise-safety-concerns>
3. The New York Times. (July 2023 – UTK). “Teenagers’ Accidents Expose the Risks of E-bikes.” By Matt Richtel, <https://www.nytimes.com/2023/07/29/health/ebikes-safety-teens.html>
4. The New York Times. (July 2023 – UTK). “Is It an E-Bike, or a Motorcycle for Children?” By Matt Richtel, <https://www.nytimes.com/2023/07/31/health/ebikes-super73-motorcycles.html>
5. Sacramento Bee. (June 2023 – UCB). “Left to die: Sacramento hit-and-runs have killed 140 people since 2018.” <https://www.sacbee.com/news/investigations/article275722096.html>
6. U.S. News & World Report. (June 2023 – UNM). “Danger Afoot: U.S. Pedestrian Deaths at Highest Level in 41 Years.” By Denise Mann, <https://www.usnews.com/news/health-news/articles/2023-06-22/danger-afout-u-s-pedestrian-deaths-at-highest-level-in-41-years>
7. MedicineNet. (June 2023 – UNM). “Danger Afoot: U.S. Pedestrian Deaths at Highest Level in 41 Years.” By Denise Mann, www.medicinenet.com/pedestrian_deaths_at_highest_level_in_41_years/news.htm
8. Scripps News. (June 2023 – UNM). “Researchers look to AI to reduce pedestrian and bicyclist fatalities.” By Maya Rodriguez, <https://scrippsnews.com/stories/researchers-look-to-ai-to-reduce-pedestrian-and-bicyclist-fatalities/>
9. Lex18 Lexington. (June 2023 – UNM). “Researchers look to AI to reduce pedestrian and bicyclist fatalities.” By Maya Rodriguez, <https://www.lex18.com/researchers-look-to-ai-to-reduce-pedestrian-and-bicyclist-fatalities>
10. 23ABC Bakersfield. (June 2023 – UNM). “Researchers look to AI to reduce pedestrian and bicyclist fatalities.” By Maya Rodriguez, <https://www.turnto23.com/researchers-look-to-ai-to-reduce-pedestrian-and-bicyclist-fatalities>
11. WTMJ 4 News. (June 2023 – UWM). “UW-Milwaukee researchers receive \$1.6M from US-DOT to study pedestrian, bicyclist safety,” by Ryan Jenkins, <https://www.tmj4.com/news/project-drive-safer/uw-milwaukee-researchers-receive-1-6m-from-state-to-study-pedestrian-bicyclist-safety>
12. The Hill. (April 2023 – UNM). “Pedestrian deaths have risen 70 percent since 2010. Blame trucks.” By Daniel de Vise, <https://thehill.com/policy/transportation/3976315-pedestrian-deaths-have-risen-70-percent-since-2010-blame-trucks/>
13. KNX News. (April 2023 – UNM). “Pedestrian deaths jump significantly the past decade” by Rob Archer, <https://omny.fm/shows/knxam-on-demand/pedestrian-deaths-jump-significantly-the-past-deca>
14. UNM Newsroom. (April 2023 – UNM). “UNM civil engineer attends transportation meeting with federal officials in Albuquerque” by Kim Delker, <https://news.unm.edu/news/unm-civil-engineer-attends-transportation-meeting-with-federal-officials-in-albuquerque>
15. KRQE News. (March 2023 – UNM). “UNM selected as location to study pedestrian safety” by Laila Freeman, <https://www.krqe.com/news/albuquerque-metro/unm-selected-as-location-to-study-pedestrian-safety/>
16. UNM Newsroom. (March 2023 – UNM). “UNM selected for new Center for Pedestrian and Bicyclist Safety” by Kim Delker, <https://news.unm.edu/news/unm-selected-for-new-center-for-pedestrian-and-bicyclist-safety>

In addition to the direct references to CPBS research and other efforts that are listed above, there are indirect measures of CPBS’s reach such as visits to the CPBS website and newsletter recipients. Such indirect measures of reach are detailed in the table below:

Performance Measure	Current Reporting Period		Next Reporting Period
	Target	Actual	Target
Number of views of reports	n/a	n/a	n/a
Number of page visits on CPBS website	500	1,164	500
Number of visitors to CPBS website	250	353	250
Number of LinkedIn followers	250	514	500
Number of newsletter recipients	250	662	500
Number of media mentions	5	16	10

Since CPBS has not completed any research projects during the current reporting period and will just be completing their Year 1 projects at the end of the next reporting period, CPBS does not yet have a stated goal for the number of views of published reports.

Given that the website was only populated with information and advertised for about 3 months over this reporting period, the number of visitors who have already visited the website has far exceeded expectations. 353 unique visitors viewed 1,164 different pages on the CPBS website during the current reporting period. This is surprising given the lack of content CPBS had and far exceeds expectations.

CPBS is also working to disseminate outputs through other avenues. CPBS established a LinkedIn group which has 514 followers and sent out the inaugural edition of the CPBS newsletter to 662 subscribers. The number of followers to the CPBS LinkedIn page and subscribers to the CPBS newsletter also far exceeded expectations.

CPBS will continue to work to increase these numbers for the next reporting period, although it may be easiest to increase these outcome numbers once CPBS has actual outputs to display, which may not begin until the end of the next reporting period.

5. IMPACTS

5.1. What is the impact on the effectiveness of the transportation system?

The US DOT will benefit from the deep analysis of the equitable transportation community data undertaken by CPBS. The US DOT can then model pedestrian and bicycle safety programs using the CPBS work on disadvantaged communities, on arterials, associated with transit, and form partnerships with other relevant entities such as the Governor’s Highway Safety Program and State DOTs.

The study on pedestrian and bicycle safety in disadvantaged communities, urban form, and demographics contributes to the body of knowledge about pedestrian and bicycle safety in different contexts characterized by urban forms/infrastructure variations, demographics, and disadvantaged communities. It also promotes social justice in transportation planning and policymaking and suggests safe systems initiatives to be explicitly considered in communities that can benefit most from such interventions.

The approach taken in the study of pedestrian and bicycle safety in disadvantaged communities over the reporting period entails applying new analytical techniques to data for enhancing equity. The study provides

information about risks in such communities and points to potential solutions through research. Additional impacts are achieved through the education of several students and technology transfer by working on practice-oriented papers.

CPBS's work will also increase awareness about road safety and crash-prone areas among community members. Access to real-time data on crash locations can encourage drivers to be more cautious in those areas. Data from crash mapping can help identify trends and patterns, leading to the implementation of safety measures such as improved signage, better road design, or enhanced law enforcement in specific areas that can be better prioritized based on need.

5.2. What is the impact of technology transfer on industry and government entities, on the adoption of new practices, or on research outcomes which have led to initiating a start-up company?

Two recently passed state laws in California - AB 43 (2021) and AB 1938 (2022) - create allowances for local jurisdictions to lower speed limits on locally-controlled streets to better account for safety concerns and surrounding land uses. Dr. Julia Griswold (UCB) is administering workshops and accompanying technical assistance sessions with California communities interested in learning how to implement lower speed limits in their city under these new state laws.

CPBS researchers are also impacting government entities through their involvement on committees such as the stakeholder advisory committee for the *Albuquerque Bikeways and Facilities Master Plan*, the technical team for MRCOG's *Regional Transportation Safety Action Plan*, the NMDOT Pedestrian Safety Task Force, the California Walk & Bike Technical Advisory Committee, the Tennessee Pedestrian Task Force, and the Knoxville Transit Authority Board.

5.3. What is the impact on the body of scientific knowledge?

CPBS is poised to add to the body of scientific knowledge through their outputs, citations, media mentions, and participation in conferences, all of which were detailed above. While the few outputs that were generated during this first reporting period likely had fewer impacts at this time, we believe that CPBS's leadership in committees throughout the scientific community make them well prepared to have a significant impact once outputs are completed. CPBS researchers are members, research coordinators, and chairs of many TRB committees and subcommittees, NCHRP/BTSCR/TCRP project panels, and other technical committees. A list of all CPBS directors and PIs and their leadership roles on TRB committees and subcommittees is listed below:

1. TRB Pedestrian Committee (ACH10): Dr. Nick Ferenchak (UNM): Committee Research Coordinator
2. TRB Bicycle Transportation Committee (ACH20): Dr. Nick Ferenchak (UNM): Member
3. TRB Transportation and Public Health Committee (AME70): Dr. Lisa Losada-Rojas (UNM): Committee Research Coordinator
4. TRB Travel Behavior and Values Committee (AEP30): Dr. Lisa Losada-Rojas (UNM): Member
5. TRB Public Transportation Planning and Development Committee (APO25): Dr. Lisa Losada-Rojas: Member
6. TRB Geospatial Data Acquisition Technologies Committee (AKD70): Dr. Su Zhang (UNM): Member
7. TRB International Coordinating Council (A0020C): Dr. Susan Shaheen (UCB): Member
8. TRB Executive Committee (E0000): Dr. Susan Shaheen (UCB): Member

9. TRB Travel Behavior and Values Committee (AEP30): Dr. Asad Khattak (UTK): Member
10. TRB Public Transportation Marketing and Fare Policy Committee (AP030): Dr. Candace Brakewood (UTK): Chair
11. TRB Transportation in the Developing Countries Committee (AME40): Dr. Chris Cherry (UTK): Member
12. TRB Emerging Technologies in Network Modeling Committee (AEP40): Dr. Tom Shi (UWM): Member
13. TRB Safety Performance and Analysis Committee (ACS20): Dr. Xiao Qin (UWM): Member

CPBS researchers also serve on various other technical committees, which span a variety of topics across the transportation field. This involvement will help expand CPBS's reach and impact beyond the discipline of active mobility:

14. Society of Automotive Engineers (SAE) Micromobility Vehicle Committee: Dr. Chris Cherry (UTK): Chair
15. American National Standards Institute (ANSI) D16 Consensus Body: Dr. Chris Cherry (UTK): Member
16. Centre for Mechanical Technology and Automation (TEMA) at the University of Aveiro in Portugal: Dr. Asad Khattak (UTK): Advisory Board Member
17. Institute of Electrical and Electronics Engineers (IEEE) Emerging Transportation Technology Testing (ET3) Technical Committee: Dr. Tom Shi (UWM): Member

CPBS's directors and PIs also serve on the editorial boards of many academic journals which will help expand CPBS's impact on the body of scientific knowledge:

1. Journal of Cycling and Micromobility Research: Dr. Chris Cherry (UTK): Associate Editor
2. Transportation Research Part D: Dr. Chris Cherry (UTK): Associate Editor
3. International Journal of Sustainable Transportation: Dr. Chris Cherry (UTK): Associate Editor
4. Journal of Public Transportation: Dr. Candace Brakewood (UTK): Associate Editor
5. Journal of Intelligent Transportation: Dr. Asad Khattak (UTK): Editor-in-chief
6. Journal of Transportation Safety and Security: Dr. Asad Khattak (UTK): Special Adviser
7. Analytic Methods in Accident Research: Dr. Asad Khattak (UTK): Advisory Board Member
8. International Journal of Sustainable Transportation: Dr. Asad Khattak (UTK): Associate Editor
9. Journal of Transport and Land Use: Dr. Bob Schneider (UWM): Editor

5.4. What is the impact on transportation workforce development?

CPBS efforts during this first reporting period were primarily focused on building relationships with organizations that will allow CPBS to reach the workforce (see Section 2 for more details). The one workforce development event that were completed at UNM included a pedestrian safety workshop sponsored by MRCOG and FHWA which was attended by 14 transportation professionals from across New Mexico (see Section 1 for more details). CPBS will continue to host more workforce development events as CPBS matures.

6. CHANGES/PROBLEMS

6.1. Changes in approach and reasons for change

Nothing to Report

6.2. Actual or anticipated problems or delays and actions or plans to resolve them

Nothing to Report

6.3. Changes that have a significant impact on expenditures

CPBS had two incidences of staff turnover during this reporting period which will result in a decrease in planned expenditures. However, CPBS is currently working to fill that staffing gap. CPBS anticipates that deliverables will remain on schedule.

6.4. Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards

Nothing to Report

6.5. Change of primary performance site location from that originally proposed

Nothing to Report

7. SPECIAL REPORTING REQUIREMENTS

There are no special reporting requirements to note. The SF425 financial reporting requirement will be met by separate reports.