



Center for Pedestrian and Bicyclist Safety (CPBS)

Year 3 Strategic Plan (2025-2026)

January 31, 2025

Lead Institution

University of New Mexico (UNM)

Partner Institutions

San Diego State University (SDSU)
University of California, Berkeley (UCB)
University of Tennessee, Knoxville (UTK)
University of Wisconsin-Milwaukee (UWM)

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1. Introduction

The Center for Pedestrian and Bicyclist Safety (CPBS) is a Tier-1 University Transportation Center (UTC) supported by the United States Department of Transportation (USDOT) through the Bipartisan Infrastructure Law (BIL).

CPBS's goal is to eliminate pedestrian and bicyclist fatalities and serious injuries. We take USDOT Secretary Pete Buttigieg's statement as our guiding principle: "Zero is the only acceptable number of deaths and serious injuries on our roadways." CPBS will play a critical role in realizing this target for the most vulnerable road users.

CPBS will explore the recent increase in pedestrian and bicyclist fatalities and injuries, identify transformative solutions, and disseminate that knowledge through education, technology transfer, and workforce development.

A key goal of the CPBS Year 3 Strategic Plan is to refine the direction of CPBS's research. For this Strategic Plan, we identify broad research priorities. Project specifics will subsequently be determined during the Problem Statement and Project Charter steps. Education, technology transfer, and workforce development efforts – which will coincide with CPBS's research – are detailed in Section 3.

2. Research

Year 3 projects will build upon Year 1 and Year 2 projects and are guided by the CPBS proposal (see the **Appendix** for priorities from previous years). During Year 3, CPBS will continue to define pedestrian and bicyclist safety problems and identify solutions.

CPBS pursues both fundamental and applied research. We want to ensure that CPBS research will be implemented by agencies, thereby making it transformative. The research team therefore integrates specific technology transfer efforts into every project. Since CPBS members come from a wide geographic range, CPBS research should apply broadly in urban and rural contexts and across the socio-economic spectrum, making it transformative on a wide scale.

It is also possible for projects that are not solely examining pedestrian and bicyclist safety to be selected. For instance, research linking pedestrian and bicyclist safety to wider transportation goals – such as how enabling walking and bicycling might help reach public health goals – may be worthy CPBS investments. Putting the importance of vulnerable road user safety into a wider context and therefore justifying continued investment in pedestrian and bicyclist safety is critically important.

All CPBS directors met and compiled the following list of Year 3 research priorities (**Table 1**). Note that research priorities are relatively evenly distributed across the different USDOT RD&T research objectives.

Table 1. Research Priorities for Year 3 CPBS Projects

Research Priority	USDOT RD&T Research Objective	Topic Examples
Enhanced Crash Reporting	Safety Data	Crash narrative analysis using AI; develop ped/bike-specific fields; enhanced single-user crash reporting
Speed Management	Safety Design	Intelligent speed assistance; roadway design as speed management; evaluation of automated speed enforcement
Safe Systems & Vision Zero	Safety Culture & Behavior	What strategies are working for cities?; building a comprehensive culture of safety
Distraction & In-Vehicle Devices	Human-Technology Interaction	Enhanced distraction data collection; distraction at night; infrastructure’s role in distraction
Perceived Safety Metrics (PLTS, BLTS, Transit Access)	Safety Data	BLTS and PLTS validation or analysis; perceived and proactive safety

It is not imperative that all projects align with the above research priorities. While advisory committee members will note those problem statements that address the above research priorities during the peer review process, projects that do not directly address one of the research priorities may still be chosen if they are otherwise highly ranked.

3. Education, Technology Transfer, and Workforce Development Efforts

CPBS’s education, technology transfer, and workforce development initiatives may be either inter-institutional/center-wide (e.g., CPBS’s newsletter and social media accounts) or specific to individual institutions (e.g., a study abroad course offered at an individual university). We detail progress made during Year 1 and Year 2, as well as goals for Year 3 and beyond in the sections below.

3.1. Education

The baseline for CPBS’s education program is the integration of CPBS research into each university’s coursework. This was initiated immediately in Year 1 and continued in Year 2.

UNM

UNM successfully established and administered a study abroad course in Year 1. The two-week study abroad course took place in the Netherlands (Amsterdam, Rotterdam, and Utrecht) and focused on multimodal transportation systems. During Year 3, UNM will begin planning to run the course again in summer 2026 and will explore options for collaboration with partner universities.

UNM successfully integrated CPBS research into the UNM Summer Transportation Institute (STI) in Year 1. The UNM STI is a program hosted at UNM for students in 9th through 12th grade to encourage them to get into 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. During Year 2, UNM expanded their STI involvement by offering more sessions during the summer and by collaborating with local middle schools and high schools during the school year. CPBS organized interactive tours for the students to visit the ABQ Ride (bus transit) headquarters and maintenance facility, the Sunport airport, and the Rail Runner NMRX passenger train. During these visits, students were able to talk to transportation professionals, learn what it takes to plan and manage these systems, and discover opportunities for the many different career opportunities in the transportation field.

UNM successfully pursued its educational goal of investing in undergraduate students during Year 1 and Year 2, with approximately five undergraduate students supported each year. With minimal investment, several promising undergraduate students were attracted to the transportation industry during Year 1 and Year 2. Undergraduate students will continue to be supported in Year 3.

UNM successfully implemented CPBS research into CE 382 (Transportation Engineering) and CE 482/582 (Traffic and Highway Engineering) during Year 1 and implemented CPBS research into CE 481/581 (Transportation Planning) during Year 2. UNM will develop a new course, CE 598 (Transportation Statistics), in Year 3 that will have lessons focused on pedestrian and bicyclist safety.

UNM is planning an ITE Student Leadership Summit (SLS) that will take place in June 2025. This meeting is open to transportation students from across the country who will come to Santa Fe, NM, in conjunction with the Mountain District Annual Meeting.

UNM collaborated with Story Riders in Year 2, a cycling program for children and youth of middle-school and high-school age that teaches STE(A)M and storytelling curriculum. CPBS helped develop course material and participated in a course and plans to continue engagement in Year 3.

UNM also collaborated with Albuquerque Public Schools (APS) on the Vision Zero program which is focused on ensuring that students can safely walk and bike to school. The main point of contact at APS is a former student and we will maintain a collaboration going into Year 3.

SDSU

SDSU will work to fund graduate students in their thesis research (and other CPBS research) beginning in Year 2 and continuing in all subsequent years. SDSU will create a program for undergraduates on financial aid to ensure that promising young students are excited to get into the transportation field.

Special focus will be given to students at the SDSU Imperial Valley Campus. At SDSU IV, we will hold special education and outreach events focusing on CPBS activities to get students interested in transportation research and careers.

In Fall 2024, Dr. Ghanipoor Machiani offered CIVE 697 Traffic Signal Systems Operations & Control, a course focusing on traffic signal system design and operations, traffic simulation techniques, advanced traffic control strategies, and the integration of surface street systems into Intelligent Transportation Systems (ITS). Her research in traffic safety, driver behavior modeling, and intelligent transportation directly informs the course content, emphasizing real-world applications and cutting-edge innovations. By incorporating findings from her ongoing research on automated vehicle integration, pedestrian and bicycle safety, and the impact of emerging technologies on transportation systems, the course provides students with a comprehensive understanding of advanced traffic systems and their practical implementation.

UCB

UCB developed and delivered courses that integrate CPBS concepts, including the Spring CE C265 Traffic Safety and Injury Control course, and the Fall PH 285 Injury Prevention and Control Course. In Year 1, UCB worked with the Transportation Program in Civil and Environmental Engineering to increase course enrollment to 16 for CE C265, the highest enrollment to date. In Year 2, UCB recruited a prominent local public health and traffic injury expert to co-teach PH 285 and is exploring ways of engaging more public health students in Year 3.

UCB will continue to engage students through student-directed activities and professional opportunities, including a CPBS Pedestrian and Bicyclist Safety Fellowship for graduate students from a diverse selection of academic programs on the Berkeley campus, including electrical engineering and computer science; history; civil and environmental engineering; public health; public policy; the school of information; and city and

regional planning. This would provide graduate students with the opportunity to generate high quality research advancing the CPBS mission to eliminate pedestrian and bicyclist fatalities and serious injuries.

UTK

In years 1 and 2, UTK introduced Pedestrian and Bicycle Safety content for CE 559 Transportation Safety and in CE 455 Transportation Engineering II. In CE 559, the class includes advanced modeling approaches for different modal safety outcomes. Non-motorized safety content will be refined in this course in subsequent offerings. At the undergraduate level, CPBS content was introduced more explicitly in the senior-level design class and lab sequence, CE 455/456 specifically focusing on added content road safety audits for pedestrian safety and vision zero content. In year 2, new content was added to CE 355 Transportation Engineering I, with an effort to increase exposure to multimodal complete streets concepts and move away from a sole focus on car-only style design principles. In year 3, bicycle and pedestrian safety policy will be added to the graduate course, CE 557 Transportation Economics and Policy.

UTK students in year one were engaged primarily through the civil and environmental engineering department. The UTK team collaborates with faculty in EECS that focus on road safety. In Year 2, the team focused more on engaging graduate and undergraduate students in active research projects. In year 1 and 2, the UTK team engaged with Knoxville Police Department's Safety City program, tasked at educating elementary-aged children on road safety, particularly bicycle and pedestrian safety. Year 3 work will continue this effort with evaluation of their program that may lead to added benefits to educational and safety outcomes for K-5 students.

In year 2, more students became engaged in pedestrian and bicyclist related safety efforts. As research projects mature, more students are engaging with the projects in year three. Currently, five PhD and three MS students are involved in bicycle and pedestrian safety research studies.

UWM

UWM continues to integrate new pedestrian and bicyclist safety content from CPBS UTC research into its graduate-level Pedestrian and Bicycle Transportation Planning (UP 772) and undergraduate-level Civil Engineering courses (CE 490 Transportation Engineering, CE592 Traffic Control, and CE 596 Transportation Facility Design).

Both the UWM Urban Planning and Civil Engineering programs have been successful at attracting more graduate students who are focused on transportation in the last two years. Specifically, both programs have hired incoming students to work on pedestrian and bicyclist safety projects for the CPBS UTC. Still, UWM has not yet had success at increasing enrollments in the dual degree program in Civil Engineering and Urban Planning. We will continue to work on marketing this program to attract additional students into transportation courses and increase student interest in improving pedestrian and bicyclist safety as professionals.

UWM continues to share information about CPBS UTC with the general public through media outlets. Interviews have covered pedestrian safety at night, child pedestrian and bicyclist safety, traffic calming in Milwaukee, street redesign projects to address reckless driving, progress toward Vision Zero in San Francisco, and other pedestrian and bicyclist safety topics. Dr. Robert Schneider also gave lectures about pedestrian and bicyclist safety to students at the Medical College of Wisconsin in April 2024, and the Milwaukee Area Technical College in September 2024.

3.2. Technology Transfer

CPBS's center-wide technology transfer efforts continued in Year 2, with the establishment of a monthly newsletter, weekly posts to a LinkedIn account, and webinar presentations every other month. The goal of this outreach is to 1) promote CPBS efforts and 2) promote other efforts toward pedestrian and bicyclist safety more broadly. CPBS is currently planning Year 3 webinars and will continue to engage in social media and their newsletter in Year 3.

The [webinar series](#) has produced the following topics so far:

- Advocating for Bicycle Safety: Strategies for Success at Local, State, and National Levels
- Demystifying Federal Grants for Street Safety Improvements
- From Heartbreak to Hope: Advocating for Safer Streets Through Storytelling
- Pedestrian and Bicycle Level of Traffic Stress
- Street Livability and Safety Webinar

In addition to the above center-wide technology transfer efforts, each research project has specific technology transfer activities. CPBS continued to support travel to conferences to disseminate our work during Year 2. Conferences have included TRB AM, CUTC, NACTO, and ASCE ICTD. CPBS also sponsored the New Mexico Transportation Safety Summit hosted by NMDOT in August 2024 (and will continue in Year 3 if NMDOT makes the event an annual event) and is currently planning the Student Leadership Summit for the Summer 2025 Mountain District ITE Conference.

SDSU

SDSU will establish an Active Transportation Research Technology Transfer Laboratory that will work to create web-based tools and apps based on the work of CPBS consortium members to help inform active transportation research and decisions. We will soon be making available new content from our Year 1 research activities.

Dr. Appleyard led two CPBS webinars, “From Heartbreak to Hope: Advocating for Safer Streets Through Storytelling” and “Street Livability and Safety”. On October 17 and 18, 2024, he also helped lead a day and a half long tour of complete and safe street improvement projects throughout San Diego to a group of transportation professionals from Hawaii.

UCB

UCB is exploring opportunities to work with the Tech Transfer program under the UCB Institute of Transportation Studies (ITS) which has a center called Tech Transfer that is devoted specifically to technology transfer. UCB will leverage ITS to develop courses and workshops to integrate bicyclist and pedestrian safety content into their traffic engineering continuing education coursework.

UCB is working with the California Transportation Commission to develop an academic research report and presentation materials on the topic of vehicle weights and vulnerable road user (VRU) safety and policies that may mitigate the effects. This report will support the work done by task force called for under CA Assembly Bill 251 (2023) to make policy recommendations to address VRU safety.

UCB will conduct a needs assessment of California cities with SS4A funding and Vision Zero programs to inform the development of a Safe System Collaborative Support Program for the local jurisdictions in the state.

UCB is working with the California Department of Transportation to develop the California Active Transportation Data Portal, a statewide resource for the collection, storage, and visualization of active transportation count data. Under this project, UCB is developing guidance for conducting quality counts, calculation adjustment factors, and validating data. This work supports the Active Transportation Program, the

largest source of active transportation funding in the state, and improves the ability of program staff to measure performance of the projects and program.

UTK

UTK has a strong working relationship with road safety staff in Tennessee cities and state agencies, including State DOT and DOSHS. We will continue to regularly brief staff and practitioners on outcomes from research and will continue to do so under this grant.

UTK will continue to work with the Knoxville Police Department that operates Safety City with the goal of improving, documenting, and replicating best practices for child safety education.

UTK is continuing to work with other partner agencies on aligned work, allowing cross-collaboration between teams. UTK PIs have ongoing projects with AAA Foundation for Traffic Safety and other relevant sponsors. Our work includes collaborations outside the CPBS consortium such as Portland State University and Safe Streets Consulting and Research.

UTK competed to host the 2026 International Cycling Safety Conference (ICSC) in Knoxville Tennessee. The CPBS team associate directors will for the scientific advisory committee and develop the program for the conference, which will take place November 3-5, 2026. During year 3 (and into year 4), the CPBS team will support the programming and organization for that conference.

The UTK team continues to publish academic papers related to pedestrian and bicyclist safety. Our team is presenting several related papers at TRB and other conferences and will continue to target high impact publications and presentations.

UWM

UWM continues to contribute to CPBS technology transfer efforts by sharing pedestrian and bicyclist safety research products and results through its annual Institute for Physical Infrastructure and Transportation (IPIIT) Southeastern Wisconsin Transportation Symposium. The October 2024 symposium broke the previous attendance record, attracting more than 200 students, researchers, and professionals from the private and public sectors. In particular, Dr. Xiao Qin kicked off the symposium as its co-host and Dr. Schneider led the afternoon symposium “walkshop”, a 1.5-hour informational and educational tour of new pedestrian and bicyclist facilities with more than 50 symposium attendees.

During Year 2, UWM partnered with WisDOT on its study of geographic, temporal, and demographic shifts in pedestrian and bicyclist injuries and with the City of Milwaukee on its Pedestrian Level of Traffic Stress tool and mid-block pedestrian crossing count research. UWM obtained CPBS matching funds from these agencies to further the reach of its research and provide additional benefits to local and state communities. UWM intends to expand its technology transfer work in Year 3 by sharing research results with and through the Southeastern Wisconsin Regional Planning Commission (our local MPO).

UWM presented a summary of its Pedestrian Level of Traffic Stress (PLTS) Version 1.0 tool during a Center for Pedestrian and Bicyclist Safety UTC webinar in November 2024. The webinar had more than 140 participants from throughout the US. UWM is also presenting the PLTS tool as a part of an Association of Pedestrian and Bicycle Professionals webinar in December 2024. These presentations also include discussion of how we plan to validate and refine the tool, as necessary, to create a new PLTS Version 2.0 by the end of Year 2. PLTS Version 2.0 will then be shared more broadly with professionals during Year 3.

During Year 2, UWM created a pilot statewide pedestrian and bicycle counting program and established a data clearinghouse for Wisconsin pedestrian and bicyclist exposure data. This clearinghouse includes manual and automated pedestrian and bicycle counts and model-based pedestrian and bicyclist volume estimates. Initially, the database will house data from Wisconsin, but it could be expanded in future years to include other states.

UWM also continues to participate in project- and program-level committees for the Wisconsin Department of Transportation and other local agencies. These include the serving on WisDOT Wisconsin Non-Drivers Advisory Committee (WINDAC), Wisconsin Automated Vehicle External (WAVE) Advisory Committee, WisDOT Traffic Records Coordinating Committee, and Milwaukee County Complete Communities Safety Working Group, as well as seeking input for research topics from the City of Milwaukee Vision Zero Community Action Committee. These collaborations provide platforms for UWM researchers to share new research results and tools that will come from CPBS. Dr. Schneider also presented research on pedestrian safety at night at the WisDOT Southeast Region, Innovation Hour Lecture in May 2024. This presentation was attended by approximately 50 WisDOT employees.

3.3. Workforce Development

CPBS previously reached out to the Institute of Transportation Engineers (ITE) regarding their Road Safety Professional (RSP) transportation professional certification program. CPBS seeks to ensure that the RSP pedestrian and bicyclist materials are up to date and will collaborate with RSP during Year 3 to see whether an update is warranted.

UNM

UNM's Year 2 workforce development strategy focused on strengthening the partnership with the New Mexico Local Technical Assistance Program (NMLTAP), which is housed in the Civil, Construction & Environmental Engineering Department at UNM. The goal is to organize CPBS research into deliverables that will be disseminated through NMLTAP to communities throughout New Mexico (with a strong focus on rural and tribal communities). In June 2024, CPBS organized an LTAP training titled "Building Safer Pedestrian and Bicycle Infrastructure: What does it really take?" with speakers including a former Albuquerque city councilor, NMDOT, Jemez Pueblo, and the City of Albuquerque Department of Municipal Development. UNM will continue to collaborate with NMLTAP in Year 3 to deliver more trainings to the professional community.

UNM was successful in investing in undergraduate students during Year 1 and Year 2. Several promising undergraduate students were attracted to the transportation field because of CPBS support. Some of these students already plan to continue with graduate studies, showing that the early investment will have positive long-term impacts. UNM will continue to support undergraduate students during Year 3.

UNM successfully participated in the Transportation Research Board (TRB) Minority Student Fellows Program and a local competition of the Dwight David Eisenhower Transportation Fellowship Program (DDETFP) during Year 2. UNM has historically supported two or three students annually through the TRB Minority Student Fellows Program, which involves mentoring the students through a research paper, submitting to the TRB Annual Meeting, and attending the TRB Annual Meeting. In Year 2, three students were awarded Eisenhower Fellowships. UNM will continue to support the TRB Minority Student Fellows Program and a local competition of the Dwight David Eisenhower Transportation Fellowship Program in Year 3.

UNM will also support the New Mexico Traffic Safety Center (NM TSC) in Year 3. The NM TSC is a group at UNM that provides mandatory annual trainings for New Mexico Driving School Owners and Instructors, as well as Driver Safety School Owners and Instructors. The goal of the trainings is to educate school owners and instructors about the current status of pedestrian and bicyclist safety.

SDSU

SDSU is developing a pedestrian and bicyclist street safety design course for professional workforces nationwide, and especially all CPBS regions. Dr. Appleyard from SDSU will also give talks to professionals, advocates, and members of the public on CPBS research activities and how to design safer streets for pedestrians and bicyclists, both in person and online. On October 17, 2024, Dr. Appleyard hosted a CPBS funded workshop with transportation professionals from throughout Hawaii on how to create complete and livable streets.

UCB

In Year 1 and 2, UCB developed a module about their bicycle simulator for a STEM summer program for young girls aged 7 to 17. The activity was a hit with the participants and UCB plans to continue this partnership in Year 3.

UCB is planning to work with K-12 educators to develop transportation-focused curriculum for an environmental literacy program in a local school district.

UTK

UTK will work with the Center for Transportation Research (CTR), who hosts the statewide LTAP program (Tennessee Technical Assistance Program – TTAP). The TTAP program offers dozens of training courses annually. Work from CPBS will be integrated into TTAP materials as appropriate. In year 2 the team presented a TTAP webinar on Pedestrian Safety to over 200 practitioners. We will also engage with the education and workforce development programs associated with local non-profits and advocacy (e.g., Two Bikes).

UWM

UWM supported 12 graduate students (6 at the masters level and 6 at the doctoral level) in Year 2 to assist with CPBS research projects. UWM plans to support a similar number of students in Year 3. Through this experience, these students will be well-equipped to enter the transportation field and provide their employers with the latest knowledge and innovations related to pedestrian and bicyclist safety. One masters student graduated and is working in the transportation profession. One doctoral student graduated and is doing pedestrian and bicyclist safety research as a post-doc at another leading US university.

Appendix 1

Research Focus Areas and Priorities from the CPBS Proposal and Previous Years

Table A1. All Proposed Research Focus Areas from the CPBS Proposal

Research Objective	Research Focus Areas		
Safety Data	Enhanced Crash Reporting	Fatalities Expected per Time Saved	Surrogate Safety Data
	CMFs & Systemic Safety Analyses	Exposure in Low-Count Locations	
Safety Design	Arterials	Freeways	Speed Management
	Nighttime Safety Treatments	Urban Form & Demographic Shift	
Safety Culture & Behavior	Behavioral Error vs. Violation	Safe Systems & Vision Zero	Complete Streets
	International Examples	Tribal and Rural Safety	Funding Safety
Human-Technology Interaction	E-bikes & Micromobility	Vehicle Design	Distraction & In-Vehicle Devices
	Infrastructure Quality	CAVs	

Table A2. Research Priorities for Year 1 CPBS Projects

Priority Rank (1= <i>highest priority</i>)	Research Priority	USDOT RD&T Research Objective
1	Urban Form & Demographic Shift	Safety Design
2	Speed Management	Safety Design
3	Arterials	Safety Design
4	Vehicle Design	Human-Technology Interaction
5	Funding Safety	Safety Culture/Behavior

Table A3. Secondary Research Priorities for Year 1 CPBS Projects

Research Priority	USDOT RD&T Research Objective
Pedestrian Level of Traffic Stress	Safety Data
Which Communities are Doing Well?	Safety Culture/Behavior
Transit Access and Ped/Bike Safety	Safety Design
Unhoused Populations	Safety Culture/Behavior
Equity in Police Enforcement	Safety Culture/Behavior

Table A4. Research Priorities for Year 2 CPBS Projects

Priority Rank (1= <i>highest priority</i>)	Research Priority	USDOT RD&T Research Objective
1	Exposure	Safety Data
2	Surrogate Safety	Safety Data
3	Geographic/Demographic/Temporal Shifts	Safety Design
4	Roadways	Safety Design
5	Behavior	Safety Culture/Behavior
6	Transit Access	Safety Culture/Behavior
7	Tribal and Rural Safety	Safety Culture/Behavior
8	E-bikes & Micromobility	Human-Technology Interaction
9	Vehicle Design	Human-Technology Interaction