Street Coaching for Pedestrian & Bicyclists

Putting Laws into Practice on University Campuses

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Texas A&M Transportation Institute

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Authors: Emmaline Shields, M.P.H., Troy Walden, Ph.D., & Melissa Walden, Ph.D.

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Introduction

College campuses and the communities built around them present challenges for pedestrians and bicyclists. They are typically dynamic environments, highly multimodal, and experience elevated motor vehicle, pedestrian, and bicyclist traffic which may result in increased conflict or crashes among the diverse road users.[1] These unique factors and challenges provide context that prompted the commission of a Texas Department of Transportation (TxDOT) sponsored project entitled "Street Coaching for Pedestrians and Cyclists: Putting Laws into Practice on University Campuses". The purpose of the project is to improve pedestrian and bicycle safety on and around a college campus, specifically the University of Texas at San Antonio (UTSA). To meet the project goals, TTI completed the following objectives:

1. Conducted a pedestrian and bicycle crash analysis at the selected university campus. This analysis identified the frequency of pedestrian and bicycle crashes on campus and the severity of the crashes. Additionally, demographic factors, environmental factors, roadway factors (e.g., surface condition, roadway classification), time of day, and other contributing factors were identified. The crash analysis helped to inform educational materials and recommendations for traffic enforcement activities.

2. Conducted focus group meetings with stakeholders who use proximate UTSA university roadway systems. The meetings and opinion inventories identified traffic law violation trends associated with ped/bike crashes, near misses, and unsafe behaviors among this demographic of roadway users.

3. Established a working group of local traffic safety stakeholders to function as an advisory committee. The stakeholders provided insight into UTSA's campus traffic safety concerns for vulnerable road users. The advisory committee was also tasked with championing the ped/bike safety message after the project grant year ends so that ped/bike law enforcement and education continues to be a priority on their campus.

4. Distributed a pedestrian and bicycle safety training to university-based organizations. TTI distributed the electronic online seminar training to 10 UTSA university-based offices and/or student organizations to advance pedestrian and bicycle safety through increased knowledge of laws as a component of educational outreach.

5. Developed pedestrian and bicycle law pocketbook guides. These resources will be distributed to vulnerable road users and law enforcement to educate on ped/bike laws and safety.

The findings from many of these objectives were used to provide guidance in developing a mobilization plan that addresses areas of traffic safety concern for pedestrian and bicycle roadway users on or near the UTSA campus. The resulting products can be used as aids to help inform and provide direction for users regarding reinforcement and compliance with pedestrian and bicycle state laws. This at the proper time, will advance awareness of state laws and improve overall safety for vulnerable roadway users in and around the UTSA campus.

Bicycle safety planning typically involves the five E's including engineering, education, encouragement, enforcement, and evaluation and planning. Due to the uniqueness of college campuses, these principles also apply to pedestrian safety planning. The purpose of this plan is to promote a comprehensive bicycle and pedestrian safety mobilization framework that is driven by the previously listed five constructs.

[1] Loukaitou-Sideris, A., Medury, A., Fink, C., Grembek, O., Shafizadeh, K., Wong, N., & Orrick, P. (2014). Crashes on and near college campuses: a comparative analysis of pedestrian and bicyclist safety. *Journal of the American Planning Association*, *80*(3), 198-217.

Street Coaching Pedestrian and Bicycle Safety Plan Elements

There are many components to a comprehensive safety mobilization plan that formulate the basis for recommendations and priorities. Key elements are listed below and discussed in this section.

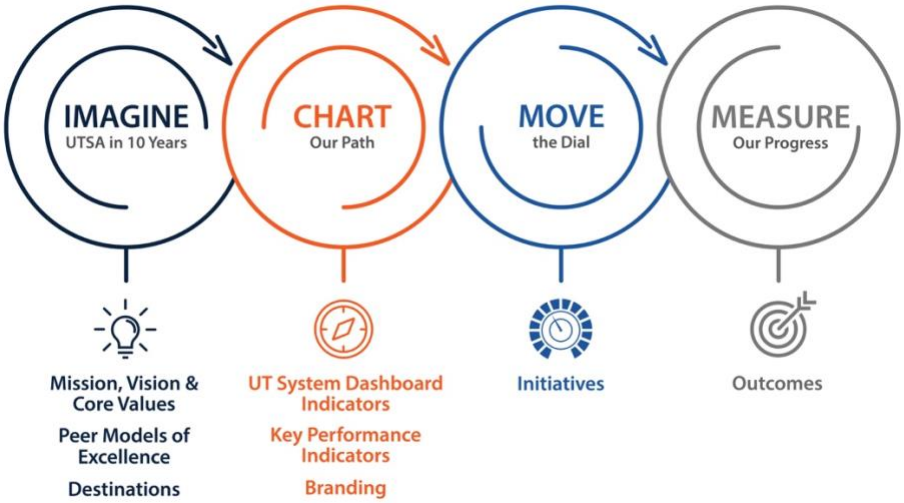
- Big Ideas
- Stakeholder Engagement
- Pedestrian and Bicycle Laws and Regulations
- Safety and Crash Data Analysis
- Role of Educational Outreach and Law Enforcement
- Evaluation: Define Safety Goals and Performance Measures
- Street Coaching Mobilization Plan

Big Ideas

Strategic Plan

Soon after arriving in the fall of 2017, UTSA President Taylor Eighmy launched a strategic planning effort to guide the university over the next decade.[2] The planning and implementation process is depicted in Figure 1.

Figure 1. Strategic Planning and Implementation Pathway



Source: The University of Texas at San Antonio. (2023). Strategic Planning and Implementation Pathway. Retrieved from: https://www.utsa.edu/strategicplan/Planning-and-Implementation/

The UTSA strategic vision is centered on three destinations:

- UTSA will be a Model for Student Success
- UTSA will be a Great Public Research University
- UTSA will be an Exemplar for Strategic Growth and Innovative Excellence

[2] The University of Texas at San Antonio. (2023). Strategic Plan - Home. Retrieved from: https://www.utsa.edu/strategicplan/

Table 1 provides an illustration of the strategic initiatives that support each destination and the key performance indicators that track progress towards each destination.[3] Since 2018, UTSA has completed or operationalized many initiatives to accelerate progress toward these destinations, including the 2019 Campus Master Plan. The Campus Master Plan—which focuses on three of UTSA's four campuses—enables UTSA's growth over time while reinforcing all three destinations.[4]

Table 1. UTSA Strategic Vision, 2018-2028

Destination	Strategic Initiatives		Key Performance Measures
UTSA will be a Model for Student Success	Operationalized/Complete	In Progress	• Total Student Enrollment • First-Year Retention Rate • 4-Year Graduation Rate • 6-Year Graduation Rate • Incoming First-Year Students in Top 25% of Graduating Class • Percentage of Students with Experiential Learning
	21st Century Learning Environments Task Group	Academic Success District	
	Behavioral Intervention Team	Classroom to Career	
	College for Health, Community and Policy	Enriching Campus Wellbeing Initiative	
	Downtown Campus	Respectful Discourse Initiative	
	Dreamers Center	Roadrunner Village	
	Equity Advocacy Initiative	Preventing Sexual Assault and Misconduct Initiative	
	Guadalupe Hall & Honors Residential College	Student Success 2.0	
	Hispanic Thriving Leadership Council		
	Klesse College of Engineering and Integrated Design		
	Public Health Task Forces (COVID-19 Response)		
	SACSCOC Reaffirmation of Accreditation		
	Student Success		
	University Student Success Center		
	Urban Education Institute		
	Weighted Student Credit Hour Optimization Committee		
	Operationalized/Complete	In Progress	

[3] The University of Texas at San Antonio. (2023). Strategic Plan – Destinations. Retrieved from: https://www.utsa.edu/strategicplan/destinations/

[4] The University of Texas at San Antonio. (2023). Campus Master Plan Initiative. Retrieved from: https://www.utsa.edu/strategicplan/initiatives/presidential/campusmasterplan/

UTSA will be a Great Public Research University	Graduate Student Success for Faculty Excellence	Comprehensive Campaign	• Total Faculty • Total Staff • Faculty Receiving Prestigious Awards • Faculty in the National Academies • Total Annual Research Expenditures • Endowed Chairs, Professorships and Fellowships
	Public Health Task Forces (COVID-19 Response)	San Pedro I Building (NSCC & School of Data Science)	
	San Antonio Workforce Initiative	Research Excellence	
	Strategic Faculty Hiring Initiative		
UTSA will be an Exemplar for Strategic Growth and Innovative Excellence	Operationalized/Complete	In Progress	• Total Endowment Value • Gross Square Footage of Facilities • Administrative Cost Ratio
	Campus Master Plan	Brand Development (Creating Bold Futures)	
	Implement an Incentivized Resource Management Budget Model	Cattleman's Square	
	Parking and Transportation Initiative	Innovation, Entrepreneurship and Careers Building	
	Public Health Task Forces (COVID-19 Response)	Inclusive Excellence	
	Roadrunner Athletics Center for Excellence	Institute of Texan Cultures – Stakeholder Visioning Process	
	Strategic Communications Task Force	Create and Foster a Flexible Workplace - Upcoming	
	Strategic Enrollment Task Force	Fiscal Strategies: Revenue Diversification - Upcoming	
		Web Infrastructure Project - Upcoming	

Source: The University of Texas at San Antonio. (2023). Strategic Plan – Destinations. Retrieved from: https://www.utsa.edu/strategicplan/destinations/

Campus Master Plan

UTSA's Campus Master Plan provides connections between the university's physical development, its academic mission, and its strategic priorities.[5] UTSA's 10-year strategic vision calls for growing

[5] The University of Texas at San Antonio. (2019). Campus Master Plan. Retrieved from: https://www.utsa.edu/masterplan/documents/UTSA_Master_Plan1.pdf

enrollment to upwards of 45,000 students with the support of more than 2,000 faculty. The Campus Master Plan addresses this anticipated growth as well as the critical space need deficits identified by The Higher Education Coordinating Board in 2018. Additional priorities addressed by the Campus Master Plan include academic classrooms and research facilities, student housing, parking and transportation, athletic and recreational facilities, infrastructure and safety, sustainability, and revenue development opportunities.

The Campus Master Plan prioritizes the livability, walkability, and sustainability of campus, as well as improving pedestrian and multi-modal campus circulation. UTSA already has a defined academic core, and the Campus Master Plan calls for future development to build onto this in a way that allows for effective pedestrian connectivity between academic buildings and other facilities (e.g., recreation center, student housing). By discouraging private motor vehicles within the campus core and expanding the paseo network (i.e., pedestrian pathways), a safe, efficient, and pedestrian-friendly environment and improved circulation will be promoted.

The following "Big Ideas" were identified in the Campus Master Plan that have a critical pedestrian and/or bicycle safety concern.

Big Idea 1: Pedestrian Network

The UTSA campus is ringed by an incomplete campus loop, some of which is embedded within busy parking lots. On-campus vehicular circulation has historically been a challenge; initial planning concepts established patterns of movement which were not augmented as the campus grew, creating a number of vehicular/pedestrian conflicts which have only been intensified by growing bicycle and scooter usage that must share space with other transportation modes.

The Campus Master Plan recommends completing the full loop road. This solution will allow for more evenly distributed traffic flow and result in fewer pedestrian/vehicular conflicts. Personal motor vehicles will no longer be permitted to cut through the campus core, allowing this to be a pedestrian-priority area.

Big Idea 2: Transit Network

UTSA transit services and connections have grown in conjunction with near-campus housing developments. Shuttle and bus stops are located at the perimeter of campus, with the exception of an internal campus shuttle circulator. Several VIA Metropolitan Transit routes run adjacent to, or stop within, the campus.

Beginning in the Fall 2019 semester, UTSA and VIA began providing free transit ridership to anyone with a valid UTSA ID (student, faculty, staff). The intent was to encourage multi-modal transit and reduce the future demand for on-site parking.

Big Idea 3: Vehicular Network

The UTSA Main Campus has multiple entrances on both the north (North Loop 1604) and south (UTSA Boulevard) sides, as well as one connection to Valero Way on the east. While the number of campus entrances is appropriate for the size of the campus, the internal campus roadway network is limited and

does not support efficiency in movement. The perceived main entrance to campus is at John Peace Boulevard, which connects directly to Peace Circle. The visual appearance and configuration of this entrance befits a major campus entrance for motorized vehicles; however, it is not ideal for pedestrian and bicycle users. Campus entries, in general, do not currently provide strong visual or wayfinding impact.

The Campus Master Plan recommends that major pedestrian crossings, especially at intersections of paseos, the loop road, and other campus entries, should be well-marked, and raised where possible. Pedestrian traffic should be given priority to promote safety.

Big Idea 4: Parking

Parking on the UTSA Main Campus is primarily composed of surface parking lots, many of which are in close proximity to the academic and research core. While surface parking options provide convenient locations, their use also creates significant congestion and hazards in areas where the lots are intersected with loop road circulation and large scale pedestrian and bicycle movement.

The Campus Master Plan recommends that parking be primarily concentrated along the loop road to allow the interior campus core to be a pedestrian-friendly environment. Most recently, new surface parking lots have been constructed on the eastern edge of campus, near Valero Way. These new parking lots provide a remote alternative to the more central lots; however, usage requires shuttle service or a long walk into the academic and research core.

Transportation Management Plan

As part of the UTSA Campus Master Plan, Alliance Transportation Group (ATG) assessed priority transportation constraints and opportunities for multi-user safety improvement.[6] ATG focused on two Main Campus priorities – Mode Shift and Ring Road. The "Mode Shift" priority promotes alternative transportation to alleviate congestion and reduces the need for infrastructure improvements. AGT provided recommendations to encourage alternative transportation options.

Big Idea 5: Alternative Transportation Modes

Recommendations that encourage students, faculty, staff, and visitors to use VIA Transit or other transportation modes besides driving alone include:

- Encouraging VIA to expand transit service to campus.
- Providing free transit passes to students, faculty, and staff use of performance-based parking.
- Pricing strategies that charge more for higher-demand facilities and for faculty and staff who are better able to pay.
- Building only the minimum amount of new or replacement parking needed to meet the university's needs.
- Giving priority to the attractiveness and safety of pedestrian and bicycle facilities to encourage their use on the campuses.

[6] Alliance Transportation Group. (2019). Transportation Management Plan: UTSA Campus Master Plan. Retrieved from: https://www.utsa.edu/masterplan/documents/Appendix-C_TransportationAnalysis.pdf

- Encouraging modern technologies to increase the ease of ridesharing and other shared-use options.
- Marketing demand management options.
- Adoption of university policies that promote the use of modes other than driving.

Big Ideas 6: Completion of "Ring Road"

The second priority – "Ring Road" – is to complete construction of the partial ring-road system around the outer edges of the UTSA campus with staged parking garages along the ring-road. This will allow potential construction of additional academic space in the core area of the campus, add more green space in the campus core, and provide safer pedestrian and bicycle connections between various parts of the campus. Future roadway networks and projected volumes were assessed to determine locations with potential safety concerns. These locations include:

- Pick Up and Drop Off Locations – UTSA Oval, Peace Circle, and UTSA Circle.
- Ximenes Avenue and Loop Road Intersection.
- East Campus Drive and Loop Road Intersection.

Recommendations to reduce conflicts between different roadway user modes at the listed locations include:

- Separate the modes of transportation.
- Move pedestrian crossing out from intersections to reduce the amount of through traffic and turning traffic pedestrians have to cross.
- Pedestrian crossings should be separated from intersections and identified by a well-marked crosswalk with or without a flashing beacon or pedestrian hybrid beacon if warranted.
- If warranted, pedestrian hybrid beacons should be placed at least one hundred feet from the intersection.
- Speed tables may also be considered in locations where there are high pedestrian volumes and there is not traffic control to stop traffic for the pedestrians crossing.

Stakeholder Engagement

UTSA is a rapidly growing institution, both in population size and infrastructure. While the university is working to create a social environment that encourages walking and bicycling, there are still a large number of students who commute to campus via motor vehicle. Additionally, the main campus is surrounded and intersected by major roads with high volumes of traffic (i.e., Loop 1604, UTSA Blvd). As a result, this complex environment poses safety risks to all road users, and to pedestrians and bicyclists in particular. Mobilization plan recommendations were generated from the result of formal stakeholder engagements using focus groups and an advisory committee meeting.

Focus Group

In order to participate in focus group activities, the candidate must have been a current student or employee at the UTSA Main Campus. Potential candidates were also required to travel upon the university or nearby roadway system regularly and be at least 18 years of age. The goal of the focus

group was to identify safety concerns involving bicycles and pedestrians on the UTSA campus. Below is a summary of the focus group findings. [7]

A recent crash analysis (2023) was conducted that focused on pedestrian and bicyclist involved crashes within/around the vicinity of UTSA's Main Campus. The crash analysis results suggested that the most frequently reported contributing factors for pedestrian and bicyclist involved crashes were:

- Inattention by motorists, pedestrians, and bicyclists.
- Motorist failed to yield right of way to pedestrians and bicyclists.
- Motorist failed to yield right of way when turning at a red light.
- Pedestrian failed to yield right of way to vehicle.
- Pedestrian disregarded stop sign or light.
- Bicyclist failed to drive in single lane.
- Bicyclist failed to yield right of way at an open intersection.

Focus group participants believe that students do not have a good understanding of pedestrian and bicycle traffic laws and that most are not accustomed to complex multi-modal environments like those found on university campuses. Particularly for bicyclists, many students begin cycling once they arrive on campus. These novice cyclists possess no formal rider training nor do they understand safe rider practices. Many never receive safety education on bicycle and pedestrian laws prior to attending university or after they arrive on campus.

Other reported factors involved in pedestrian and bicycle crashes and near misses included:

- Conflicts at crossing locations.
- Inadequate separation from motor vehicles.
- Inadequate roadway signage.
- Poorly designed or inadequate pedestrian and bicycle infrastructure.
- Excessive motor vehicle speed.

Multiple opportunities exist to improve safety for pedestrians and bicyclists on the UTSA campus by proactively addressing underlying contributing factors. Best practice approaches to improving pedestrian and bicycle safety on campus include:

- Improving infrastructure to better protect vulnerable road users.
- Repetitive traffic safety messaging.
- Education and outreach to improve pedestrian and bicycle knowledge gaps.
- Enforcement and encouragement for stakeholder to lean, understand, and comply with traffic safety laws.

Recommended improvements to UTSA's roadway infrastructure and traffic operations included:

[7] Shields, E., & Walden, T.D. (2023). Street Coaching for Pedestrians and Cyclists: Putting Laws into Practice on University Campuses (University of Texas at San Antonio), Findings from Pedestrian and Bicycle Safety Focus Groups at The University of Texas at San Antonio Technical Memorandum. *Texas A&M Transportation Institute.*

- Installation and maintenance of pedestrian crossing beacons and signs at high-volume crossing locations.
- Pedestrian and bicycle use corridors at campus entry points.
- Pedestrian and bicycle use underpass at Loop 1604.
- Bike lanes protected with traffic buffers/separations on campus and on proximal roadways (UTSA Blvd and Loop 1604).
- Visible and clear safety signage on campus, particularly within the parking lots.
- Dynamic and unobstructed stop signs at crosswalks.
- Traffic calming countermeasures such as speed bumps, buffer zones, and roundabouts, especially on UTSA Boulevard.

University campuses are excellent locations to implement safety education programs. The National Highway Traffic Safety Administration (NHTSA) recommends several countermeasures involving educational campaigns and training to pedestrians, bicyclists, and drivers, including specific training for university students and staff. Targeting new students and staff that may be unfamiliar with walking, cycling, and driving on campus is an optimal treatment option to improve safety. Potential educational messages include:

- Right of way rules and the importance of yielding right of way.
- Remaining visible and conspicuous during day and night times and during inclement weather.
- Making eye contact with roadway users at conflict points.
- Avoiding distractions.
- Speed control.

Education and outreach in the above listed areas was an expressed need voiced by focus group participants. Discussion centered upon how best to disseminate educational information to students, faculty, and staff employees. Suggestions included:

- Training videos at new student and new employee orientations.
- Traffic safety modules integrated into annual mandatory compliance training.
- Information tabling at “Roadrunner Days” and other university events.
- Educational events hosted by student organizations or athletic groups with “swag” (e.g., Running Club, Student Government Association).
- Informational brochures at campus tours.
- Traffic safety messaging at bulletin board maps on campus.
- “Rules of the road” digital materials displayed upon tv screens at the student union.

One identified challenge associated with traffic safety messaging suggested that students are regularly inundated with different messages and announcements. As such, it is difficult to compete for students’ attention. To contend, traffic safety messaging must be positive and promote a university connection. Additionally, messaging and/or signage entering the campus should utilize a “beautiful approach” to alert road users of UTSA cultural heritage, its multimodal environment, and emphasize being mindful of vulnerable road users. One example given was to commission the painting of institutional murals on campus and at the Loop 1604 underpass. These murals should depict the university mascot with cars, bikes, and pedestrians and emphasize a strong safety message that also embraces the university’s cultural heritage.

Advisory Committee

The UTSA Advisory Committee is comprised of representatives from the following stakeholder groups:

- Law Enforcement (UTSA Police Department)
- Housing and Residence Life
- Student Government
- Parking and Transportation Services
- Office of Sustainability
- Academia
- Leadership and Volunteer Services

An interview with the UTSA Advisory Committee was conducted to identify primary pedestrian and bicycle safety concerns on campus, as well as to explore how to address identified issues. The following summarizes the findings from the UTSA Advisory Committee meeting. [8]

It is important to recognize that a campus consists of several types of setting and varying levels of multimodal interaction. Therefore, limited resources and the deployment of evidence-based countermeasures should be focused on the most dangerous areas of campus. This can be determined by type and volume of pedestrian and vehicular traffic, the surrounding built environment and infrastructure, and social activity. Several hotspots for increased pedestrian and bicycle crash risk include: 1) Campus Access Points, 2) Campus Activity Hubs, and 3) High-Volume Through-Traffic Areas. These conflict zones typically have high volumes of pedestrian, bicycle, and motor vehicle traffic. Moreover, the built environment and campus transportation infrastructure in these zones may be inadequate for the differing transportation needs of multi-modal system users. Environmental factors identified by the UTSA Advisory Committee that may contribute to increased crash risk include:

- Narrow or non-existent bike lanes
- Obstructed or absent sidewalks
- Poorly designed pedestrian and bicycle infrastructure
- Poor signage
- Crowded pathways
- Lack of traffic control devices (e.g., speed bumps) and signals

In addition, there were several behavioral factors identified that contribute to crashes:

- Inattention
- Speeding
- Walking or biking at the incorrect location (e.g., pedestrian in street or bicyclist on sidewalk)
- Failure to yield to the right-of-way

The campus access points are located along the campus boundary and are used to enter or exit the campus. Examples of campus access points include:

[8] Shields, E., & Walden, T.D. (2023). Street Coaching for Pedestrians and Cyclists: Putting Laws into Practice on University Campuses (University of Texas at San Antonio), Pedestrian & Bicycle Safety Advisory Committee Meeting Technical Memorandum. *Texas A&M Transportation Institute.*

- UTSA Boulevard at Edward Ximenes Avenue
- UTSA Boulevard at Roadrunner Way
- North Loop 1604 at Walter Brennan Avenue
- North Loop 1604 at Babcock Road

Campus access points should have traffic signals at intersections that give generous time for pedestrians when using crosswalks. Advisory Committee members reported that motorists often speed on the roads that enter onto campus and fail to yield to pedestrians and bicyclists while entering campus. Recommendations for addressing these issues include installing traffic calming devices, such as vertical or horizontal deflections, medians, or speed bumps. The deployment of these type of countermeasures should help to slow speed. The UTSA Advisory Committee also recommends that some of the entry access points to campus be pedestrian-only and bicycle-only access points. Campus bicycle/pedestrian plans should be aware of the origins and destinations of pedestrian and bicycle commuters so that pedestrian-only and bicycle-only access points may be appropriately selected around the campus, when feasible. Proper ambient lighting and traffic control signage are also important at all access points. The UTSA Advisory Committee recommends vibrant murals and reflective signage entering campus to alert all road users that they are entering a multimodal environment. Particular attention should be given to campus access points because all modes of transportation routinely converge onto campus at these points. It is important that the traffic control treatments utilized at campus access points prioritize the safe passage of pedestrians and bicyclists, who are the most vulnerable travelers.

Campus activity hubs are frequently traveled to areas on campus, which can include parking facilities, libraries, dining halls, recreation centers, and student housing. Examples of UTSA campus activity zones include:

- John Peace Library: A highly popular study and hangout spot for students.
- The Paseo /Paseo del Norte: This is where students can access a number of buildings as well as a frequent stop for the campus transit bus.
- UTSA Housing Facilities: There are five housing communities on UTSA Main Campus.
- The Roadrunner Café: A popular dining spot conveniently located near the UTSA Residence Halls.
- Sombrilla: The heart of Main Campus and a popular social activity area.
- The Student Union: A central location on campus for events, resources, and dining.
- Brackenridge Avenue Parking Lots (1,2): This is the most popular lot due to its close proximity to campus buildings.

The UTSA Advisory Committee calls for safer routes to these locations and to limit interactions between motorized and non-motorized roadway system users. Unfortunately, many of UTSA's bike paths and sidewalks intersect to the campus largest parking lot (Brackenridge Ave). This requires pedestrians and bicyclists to unnecessarily compromise safety when traversing the busy parking lot. Alternative pedestrian and bicycle pathways around this parking facility should be considered to improve safety. There is also increased interactions between pedestrians and bicyclists, as well as other non-motorized devices (e.g., skateboards, electric scooters) at activity hubs. The UTSA Advisory Committee described near miss events between non-motorized transportation modes at the Paseos, as well as sidewalks throughout campus. At these campus activity hubs, there is a high concentration of pedestrians and bicyclists competing for shared space. As such, there is greater opportunity for crashes among pedestrians and bicyclists when they share common paths or bicyclists intrude into the pedestrian's

space when bike lanes are non-existent. Therefore, campus planners should assess the feasibility of reorganizing non-motorized traffic near major activity hubs. Some of the potential improvements may include channeling bike traffic through well-defined bike-only paths near activity hubs and converting pedestrian-heavy pathways into pedestrian-only/no wheel zones. The University of Texas at Austin has found some success in using this approach.

Lastly, the high-volume through-traffic areas can be dangerous for pedestrians and cyclists. These locations are located within the campus or along its periphery and used by motorized traffic to get around or through the campus. It is recommended that there are traffic controls in these areas, especially the arteries surrounding campus to reduce speed. Also, the visibility of pedestrians and bicyclists at these crossings can be improved through increasing ambient lighting, placement of appropriate signage, limited curbside parking, and deployment of pedestrian detection systems, such as flashing beacons that alert through traffic. Arterials bordering or leading to the campus that are heavily used by cyclists should have continuous bike lanes. Currently, there are minimal, if any, bike lanes on campus arteries or pathways through campus. While universities do not control the roadways outside of the campus boundaries, University representatives can work with state and local departments of transportation to add bicycle-friendly facilities to campus-adjacent major arterials. The UTSA Office of Sustainability has submitted a project proposal to limit motor vehicle though-traffic on Walter Brennan Avenue. This initiative will close through-traffic activity, except for emergency vehicles, in an effort to create safer walkability and bikeability to the core of campus. The university has touted sustainability as a major goal of campus planning, with walkability and bikeability representing prominent concerns.

While there is an obvious need to improve the safety for vulnerable road users on campus through infrastructure improvements, there is also a need to educate all road users on pedestrian and bicycle safety. Educating students and promoting pedestrian and bicycle safety to students is key. By changing the perception of students, the effort creates a shift in culture to prioritize safety for all Roadrunners and visitors. Opportunities to promote education for pedestrian and bicycle safety include:

- Campus orientation
- Involving student organizations, such as Triathletes, Student Government Association, Roadrunner Cycling, Green Society
- Tabling at Roadrunner Days
- Host trainings for students
- Partner with off-campus housing to provide educational materials and other communications
- Lecture series

As the university continues to grow, it is important to continue to prioritize pedestrian and bicycle safety on campus through effective messaging, enforcement, education/outreach, encouraging a culture of safety, and environmental design.

Pedestrian and Bicycle Laws and Regulations

This section provides a snapshot of relevant pedestrian and bicycle laws governing these modes. The Texas state laws are described first, followed by additional regulations governing bicycle use at UTSA's campus. Links to state laws and regulations are provided in footnotes for a more detailed understanding.

Texas State laws governing use of a public roadway by a pedestrian are identified and summarized below. [9]

- Texas Transportation Code §552.001 (Traffic Control Signals) – A pedestrian facing a green signal may cross a roadway in a marked or unmarked crosswalk unless the sole green signal is a turn arrow. A pedestrian facing a red or yellow signal may not enter the roadway.
- Texas Transportation Code §552.002 (Pedestrian Right-of-way If Control Signal Present) – A pedestrian facing a "Walk" signal may proceed across the roadway, and the operator of a vehicle shall yield the right-of-way to the pedestrian. A pedestrian may not cross the roadway in the direction of a "Don't Walk" signal or a "Wait" signal. A pedestrian who has partially crossed while the "Walk" signal is displayed shall proceed to a sidewalk or safety island while the "Don't Walk" signal or "Wait" signal is displayed.
- Texas Transportation Code §552.003 (Pedestrian Right-of-way at Crosswalk) – This law pertains to when the operator of a vehicle shall yield right-of-way to a pedestrian crossing a roadway, and the pedestrian not being able to enter the roadway such that it is impossible for the vehicle operator to yield.
- Texas Transportation Code §552.004 (Pedestrian to Keep to Right at Crosswalk) – A pedestrian shall proceed on the right half of a crosswalk if possible.
- Texas Transportation Code §552.005 (Cross at Point Other Than Crosswalk) – This law pertains to when a pedestrian should yield right-of-way to a vehicle.
- Texas Transportation Code §552.006 (Use of Sidewalk) – This law pertains to the use of roadway by pedestrians depending on whether sidewalks are present or not, and also includes requirements of operators of vehicles when pedestrians are approaching on a sidewalk while crossing an alley, building entrance or exit, road, or driveway.
- Texas Transportation Code §552.007 (Solicitation by Pedestrians) – A pedestrian may not stand in a roadway to solicit anything from an occupant of a vehicle unless it is a charitable contribution that is authorized by the local authority having legal control over the roadway.
- Texas Transportation Code §552.0071 (Local Authorization for Solicitation by Pedestrian) – This law pertains to requirements of local authorities granting authorization for a person to stand in a roadway to solicit a charitable contribution.
- Texas Transportation Code §552.008 (Drivers to Exercise Due Care) – The operator of a vehicle shall exercise due care to avoid colliding with a pedestrian in a roadway, give warning by sounding a horn when necessary, and exercise proper precaution when observing a child or an obviously confused or incapacitated person in the roadway.
- Texas Transportation Code §552.009 (Ordinances Relating to Pedestrians) – A local authority may require pedestrians to comply strictly with the directions of a traffic control signal, and/or prohibit pedestrians from crossing a roadway in a business district or designated highway except in a crosswalk.
- Texas Transportation Code §552.010 (Blind Pedestrians) – This law pertains to requirements related to blind pedestrians.

[9] State of Texas. (2021). Texas Constitution and Statutes. Retrieved from: https://statutes.capitol.texas.gov/?link=TN

- Texas Transportation Code §552.011 (Train Occupying Crossing) – A pedestrian may not move in front of, under, between, or through the cars of a moving or stationary train occupying any part of a railroad grade crossing.

Texas State laws governing use of a public roadway by a bicyclist are described below.[10]

- Texas Transportation Code §551.101 (Rights and Duties) – A person operating a bicycle has rights and duties applicable to a driver operating a vehicle unless this chapter alters the right or duty, or a right or duty applicable to a driver operating a vehicle cannot by its nature apply to a person operating a bicycle.
- Texas Transportation Code §551.102 (General Operation) – This law pertains to bicycles only being operated with passengers that the bicycle was designed or equipped to carry, and also requires the vehicle operator not carrying objects so that they are not able to have one hand on the handlebars.
- Texas Transportation Code §551.103 (Operation on Roadway) – This law pertains to where an operator should ride a bicycle in a roadway (right curb or edge of roadway) and exceptions thereof.
- Texas Transportation Code §551.104 (Safety Equipment) – This law pertains to requirements related to bicycle brakes and lights.
- Texas Transportation Code §551.105 (Competitive Racing) – A sponsoring agency may hold a competitive bicycle race on a public road with approval of the appropriate law enforcement agencies, and the local law enforcement agencies may agree on safety regulations governing the movement of bicycles during the race or associated training.
- Texas Transportation Code §551.106 (Regulation of Bicycles by Department or Local Authority) – This law pertains to regulation of bicycles by local authorities, including electric bicycles. In addition, the law allows local authorities to prohibit bicycles on sidewalks and establish speed limits for bicycles.
- Texas Transportation Code §551.107 (Operation of Electric Bicycle) – A person may not operate an electric bicycle unless the electric motor disengages or ceases to function either when the operator stops pedaling or when the brakes are applied.
- Texas Transportation Code §545.107 (Method of Giving Hand and Arm Signals) – An operator of a vehicle who is permitted to give hand and arm signals shall extend the left hand horizontally for a left turn, left hand and arm upward for a right turn (except a bicycle may use right hand), and hand and arm downward to stop or decrease speed.
- Texas Transportation Code §545.302 (Stopping, Standing, or Parking Prohibited in Certain Places) – This law pertains to standing, stopping, or parking vehicles, including bicycles.

On September 1, 2021, the Lisa Torry Smith Act went into effect across Texas.[11] Also known as Senate Bill 1055, the law states that if a driver causes bodily harm to "a pedestrian, a cyclist or a person operating a motor-assisted scooter, at a crosswalk," they can be charged with a misdemeanor, and if the pedestrian is seriously injured, the charge could be a felony. Along with the criminal charges, the law

[10] State of Texas. (2021). Texas Transportation Code. Retrieved from: https://texas.public.law/statutes/tex._transp._code_section_551.001

[11] How The New Texas Crosswalk Law Protects Pedestrians. Retrieved from https://dallas.legalexaminer.com/transportation/how-the-new-texas-crosswalk-law-protects-pedestrians/

also requires drivers to yield to pedestrians, as it did in the past, but additionally requires drivers to come to a full stop for pedestrians or cyclists who are properly in an intersection. The law does not allow pedestrians to step from a curb and move into a crosswalk into the path of a vehicle that is "…so close that it is impossible for the vehicle operator to stop and yield."

There is no Texas state law prohibiting riding a bicycle or an electric bicycle on sidewalks, however, local governments may create and enforce local ordinances prohibiting bicycles on sidewalks.[12] There are a few examples in the United States, such as New York City, San Francisco, Chicago, and Berkeley, where bicyclists older than a defined age limit (e.g., age 13 in San Francisco), are banned from riding on the sidewalk.[13] Similar laws exist in other cities and towns throughout the country, such as Columbus, Ohio, and Chapel Hill, NC. In Boston, MA, Washington, D.C., and Minnesota, sidewalk cycling is prohibited in downtown areas and/or business districts.

The City of San Antonio has adopted several bike ordinances including one requiring bicycle lights.[14] This ordinance is the same as the State of Texas law requirements which require a front white light, and rear red reflector or red rear light. Not complying with the ordinance is a Class C Misdemeanor punishable by a fine of up to $200 dollars. The City of San Antonio has also adopted a "Safe Passing" ordinance which sets a requirement for motorists to safely pass vulnerable road users. The ordinance establishes a duty of due care and the requirement of a motor vehicle operator not to interfere with a vulnerable users' legal right to use the road. Safe passing distance is defined as 3' for cars and 6' for commercial or large trucks when road conditions allow. Violation of the ordinance is punishable as a Class C misdemeanor and a fine not to exceed $200 dollars. Lastly, San Antonio's City Ordinance does not allow bicycles to be ridden on sidewalks with the exception of law enforcement and emergency personnel.

Walking and Biking on the UTSA Campus

UTSA Parking and Transportation Services provides expectations for walking and biking around campus and lists safety tips. [15] State and local laws pertaining to operation of a motor vehicle, bicycles, and pedestrians on public streets apply on the campus and streets owned and operated by university. Additionally, all bicycles on campus must be registered and show proof of that registration by displaying a permit to avoid enforcement action. UTSA references safe bicycle safety practices via the NHTSA Bicycle Safety webpage.

UTSA lists the following pedestrian laws and regulations:

- Pedestrians have the right-of-way at marked crosswalks, in intersections, and on sidewalks extending across a service drive, building entrance, or driveway.
- Pedestrians crossing a street at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles on the street.

[12] Texas Department of Transportation. (2021). Laws and Regulations FAQ. Retrieved from: https://www.txdot.gov/inside-txdot/modes-of-travel/bicycle/know/laws.html
[13] National Public Radio. (2016). 6 Things You Need to Know About Cycling On The Sidewalk. Retrieved from: https://www.npr.org/2016/10/16/496865680/6-things-you-need-to-know-about-cycling-on-the-sidewalk
[14] City of San Antonio. (2023). Laws and Ordinances. Retrieved from: https://www.sanantonio.gov/SABikes/SafetyAndEducation/LawsAndOrdinances#330798-city-bike-ordinances
[15] The University of Texas at San Antonio Parking and Transportation Services. (2023). Alternative Transportation. Retrieved from: https://www.utsa.edu/campusservices/runner/alt_transportation.html

- No pedestrian shall stand on the traveled portion of any street, alley, or driveway in such a manner as to obstruct or prevent the free flow of traffic.[16]

The UTSA Office of Sustainability has partnered with the Alamo Area Metropolitan Planning Organization (AAMPO) to help identify pedestrian and bicycle safety concerns (e.g., lighting, clear paths) and improvements that can be made on campus.[17] The AAMPO also offers bicycle safety classes to the public. The "Street Skills Class" helps new or returning bicycle riders to learn best practices for riding, understanding the laws and rules, and becoming more confident riding on city streets. Additionally, participants earn a free bike helmets and lights. While the AAMPO safety classes are not offered specifically for UTSA, they are available to the larger San Antonio community.

The university also launched the "BeakCycle" free bikeshare program which went into effect on UTSA's Main Campus in 2022.[18] This rideshare program is currently in the pilot stage and being evaluated for efficacy. Presently, there are eleven kiosks located around campus where students and employees can access free bikes for 30-minute rides. Kiosks are located in student commuter lots and at the inner campus core. The locations allow students to park their motor vehicles in the outer parking lots and then rent a university supplied bike to travel while on campus. You can view the BeakCycle kiosk locations here.

Students can also rent a bike for free for the semester from UTSA's Campus Recreation.[19] The Office of Sustainability secured a grant for Outdoor Pursuits to makes available a fleet of single speed commuter bikes that can be rented out to students for a semester. In addition to bicycle usability, there are eight walking trails on UTSA's Main Campus. The university is committed to supporting active transportation and mobility options for students, faculty, and visitors. Other projects and initiatives to promote active transportation include:

- Tito Bradshaw Repair Shop. The shop supplies various tools and materials (tubes and lubes) for students to repair their bikes free of charge.
- Mobile Bike Shop. The mobile shop provides tubes, tools, and a mobile compressor to help students maintain their bikes, scooters, wheelchairs, skateboards, etc.

UTSA has also received funding for a "ScooterLab."[20] The $1.7M National Science Foundation (NSF) grant will be used to deploy a fleet of e-scooters on both the main and downtown campuses. The battery-operated fleet will include various sensors, remote communication enhancements and control capabilities to gather data related to the riders' mobility, context, and environment. The data collected

[16] The University of Texas at San Antonio Campus Services. (2023). Section III: Traffic Regulations. Retrieved from: https://www.utsa.edu/campusservices/parking/Regs/sec3.html#s3-11
[17] Alamo Area Metropolitan Planning Organization. (2023). Safety Programs. Retrieved from: https://www.alamoareampo.org/Safety/
[18] The University of Texas at San Antonio Campus Services. (2023). Alternative Transportation. Retrieved from: https://www.utsa.edu/campusservices/runner/alt_transportation.html
[19] The University of Texas at San Antonio Real Estate, Construction, and Planning. (2023). Bike Friendly Campus. Retrieved from: https://www.utsa.edu/recap/services/campus-planning/sustainability/initiatives/bike-friendly-campus.html
[20] UTSA ScooterLab. (2023). Home. Retrieved from: https://scooterlab.utsa.edu

by the ScooterLab will inform micro-mobility and transportation related research. The program is currently in the "planning and operation logistics" phase.

Safety and Crash Data Analysis

Crash Analysis – UTSA Main Campus

A detailed crash analysis was conducted and was chronicled in TTI's recent Crash Analysis Technical Memorandum.[21] The crash analysis looked at UTSA's pedestrian and bicycle crash data from the Texas Department of Transportation Crash Reporting Information System (TxDOT-CRIS) and focused on crashes at the UTSA Main Campus over a span of 5 years (2018 – 2022). Due to the geographic nature of campus parking and student housing spread outside the defined boundaries of the campus area, additional crashes within a mile of campus were included in the analysis.

The following are the key takeaways from this analysis:

- There was a total of sixty-two pedestrian and bicyclist-involved crashes between 2018 and 2022 within/around the vicinity of UTSA, of which 42 percent (26 crashes) were bicyclist-involved and 58 percent (36 crashes) were pedestrian-involved.

Severity of Crashes

- The majority of the crashes were classified as non-incapacitating injury crashes (n=25; 40%) and possible injury crashes (n=24; 39%). There was one (2%) fatal crash, four (6%) suspected serious injury crashes, and six (11%) crashes that did not result in an injury.
    - The 36 pedestrian-involved crashes resulted in one (2%) fatality, four suspected serious injuries (6%), 25 (40%) non-incapacitating injuries, 24 (39%) possible injuries, seven (11%) crashes that did not result in an injury.
    - The 26 bicyclist-involved crashes resulted in no fatalities, one (4%) suspected serious injury, nine (35%) non-incapacitating injuries, 13 (50%) possible injuries, and two (8%) crashes that did not result in an injury.

Collision Type

- Pedestrian or bicyclist-involved crashes most frequently occurred when a motor vehicle was going straight. This collision type accounted for 61 percent (n=22) of pedestrian-involved crashes and 65 percent (n=17) of bicyclist-involved crashes.
    - The next most frequent type at pedestrian-involved crashes was a collision when a motor vehicle was turning right (n=10, 28%).
    - The next most frequent type at bicyclist-involved crashes was a collision when a motor vehicle was turning left (n=5, 19%).

Demographic Factors

[21] Walden, T.D., & Ko. M. (2023). Street Coaching for Pedestrians and Cyclists: Putting Laws into Practice on University Campuses (University of Texas at San Antonio), Pedestrian & Bicycle Safety Crash Analysis Technical Memorandum. *Texas A&M Transportation Institute.*

- For all severity crashes, 65 percent (n=40) were males and 35 percent (n=22) were females. For KAB severity crashes, 63 percent (n=19) were males and 37 percent (n=11) were females.
    - Twenty-one (58%) pedestrians involved in the crashes were male and 15 (42%) pedestrians were female. For KAB severity crashes involving a pedestrian, there were 13 (65%) males and 7 (35%) females.
    - Seventy-three percent (n=19) of bicyclists were male and 7 (27%) bicyclists were female. For KAB severity crashes involving a bicyclist, there were 6 (60%) males and 4 (40%) females.
- Pedestrians aged 18 to 22 are involved in a high number of crashes compared to other age groups. Sixteen (46%) pedestrians within this age group were involved in the crashes, with ten (50%) pedestrians being involved in a KAB crash.
- Bicyclists between the ages of 18 to 22 years were most frequently involved in a crash. Nine (38%) bicyclists within this age group were involved in the crashes, with three (38%) being involved in a KAB crash.
- The largest percentage of pedestrians involved in a crash were classified as Hispanic. There were 17 (47%) Hispanic pedestrians involved in all severity crashes – 12 (60%) being KAB classifications.
    - White pedestrians (12) represented 33% of all crash severities, of which, 25 percent were KAB classifications.
- Most of bicyclists involved in a crash were White (n=12; 52%) and Hispanic (n=6; 26%). For KAB severity crashes, four White (57%) bicyclists were involved and one (14%) Hispanics bicyclists were involved.
- During the months of August and September, pedestrians and bicyclists were more likely to be involved in a crash as opposed to any other months.
    - In August, there were two (6%) pedestrian-involved crashes and 5 (19%) bicyclist-involved crashes.
    - In September, there were 6 (17%) pedestrian-involved crashes and 2 (8%) bicyclist-involved crashes.
- More than any other day, pedestrian crashes of any severity occurred on Tuesday (n=8, 22%) and Friday (n=8, 22%).
- More bicyclists were involved in a crash on Monday (n=7, 27%) and Wednesday (n=10, 38%) than any other day of the week.
- Fourteen (32%) pedestrians were involved in a crash that occurred during 12:01 to 17:00, followed by the hours of 20:01 to 24:00 (n=9; 25%). More bicyclist-involved crashes occurred during 12:01 to 17:00 (n=10, 38%), followed by the morning hours of 07:01 to 12:00 (n=9, 35%).
    - For KAB severity crashes, 10 (50%) pedestrians were involved in a crash that occurred during 12:01 to 17:00, followed by the hours of 20:01 to 24:00 (n=6, 30%).
    - Seven (70%) bicyclists were involved in a KAB severity crash during the hours of 12:01 to 17:00.
- Fifty percent (n=13) of bicycle riders involved in a crash did not wear a helmet. In all crash severities, the percentage of bicycle riders who sustained damage to their helmet was 15 percent (n=4), compared to 40 percent (n=4) of those who were involved in KAB severity crashes.

Roadway Conditions & Environmental Factors- Pedestrian and Bicyclists

- Eighty-one percent (n=29) of pedestrians were involved in crashes that occurred in clear weather. Fourteen percent (n=5) of pedestrians were involved in crashes that occurred in cloudy weather. Three percent (n=1) of pedestrians were involved in crashes that occurred in rainy weather.
- Seventy-three percent (n=19) of bicyclists were involved in crashes that occurred in clear weather. Twenty-three percent (n=6) of bicyclists were involved in crashes that occurred in cloudy weather. Four percent (n=1) of bicyclists were involved in crashes that occurred in rainy weather.
- Sixty-one percent (n=22) of pedestrian-involved crashes occurred in daylight. Eleven percent (n=4) of pedestrian-involved crashes occurred in dark, not lighted conditions. Twenty-eight percent (n=10) of pedestrian-involved crashes occurred in dark, lighted conditions.
- Eighty-one percent (n=21) of bicyclist-involved crashes occurred in daylight. Eight percent (n=2) of bicyclist-involved crashes occurred in dark, not lighted conditions. Eight percent (n=2) of bicyclist-involved crashes occurred in dark, lighted conditions. Four percent (n=1)) of bicyclist-involved crashes occurred in dark, unknown lighting conditions.
- Eighty-nine percent (n=32) of pedestrian-involved crashes were associated with dry conditions, 6 percent (n=2) were associated with wet conditions, 3 percent (n=1) were associated with standing water conditions, and 3 percent (n=1) were associated with unknown surface conditions.
- Ninety-two percent (n=24) of bicyclist-involved crashes were associated with dry conditions and 8 percent (n=2) were associated with wet conditions.
- Seventy-eight percent of pedestrians (n=28) and eighty-one percent of bicyclists (n=21) were involved in crashes that occurred on city streets.
- Fifty percent of pedestrians (n=18) were involved in crashes at non intersection locations while forty-two percent (n=15) occurred at intersections.
- Sixty-five percent (n=17) of bicycle involved crashes occurred at intersections.
- Pedestrians were frequently involved in crashes that occurred on roadways with either no traffic control device (n=8; 22%), signal lights (n=8; 22%) or marked lanes (n=8; 22%). Bicyclists were frequently involved in crashes that occurred on roadways with signal lights (n=8, 31%).
- Crashes were examined by road alignment and the data shows that 27 (75%) pedestrians were involved in all severity crashes on straight and level roads. Most bicyclist-involved crashes (n=25, 96%) also occurred on straight and level roads.
- Eight-nine percent (n=32) of pedestrians involved in all severity crashes and 73 percent (n=19) of bicyclists involved in all severity crashes occurred on a roadway with a speed limit of 45 mile per hour or less.
- The majority of pedestrian- and bicyclist-involved crashes were not related to road construction. There was only one (3%) pedestrian and one (5%) bicyclist involved in the crashes related to road construction.

Top Contributing Factors

- For drivers, the most frequently assigned contributing crash factor was listed as inattention, with fifteen pedestrian-involved and fifteen bicyclist-involved crashes. The second most

frequent factor assigned was failure to yield right of way to pedestrian (n=5) and failure to yield right of way to a bicyclist while turning on red (n=3).

- The crash factor "Pedestrian failed to yield right of way to vehicle" was most frequent assigned to at fault pedestrians (n=11).
- The most frequent contributing crash factor for at fault bicyclists was "bicyclist inattention" (n=2).

Key Pedestrian and Bicycle Safety Concerns

The Campus Master Plan team launched the "Discovery Survey" to the UTSA community in 2018. [22] The responses from the community helped provide information to the planning team to better understand the state of the campus and what the community valued in their physical environment. Approximately 4,000 responses were received, of which, 10 percent were students.

The majority of respondents reported that they study (80 percent), socialize (70 percent), and collaborate (85 percent) at the academic core of campus. The academic core is by far the most popular outdoor space on campus, this includes the Paseo Principal, Sombrilla, and interstitial spaces between buildings. However, more than half of the responses identified places in and around the academic core that need improvement. The lack of open, outdoor space was a concern for respondents who wanted to see more walking and biking trials, gardens, ecological restoration, lawn areas, and recreation fields and courts.

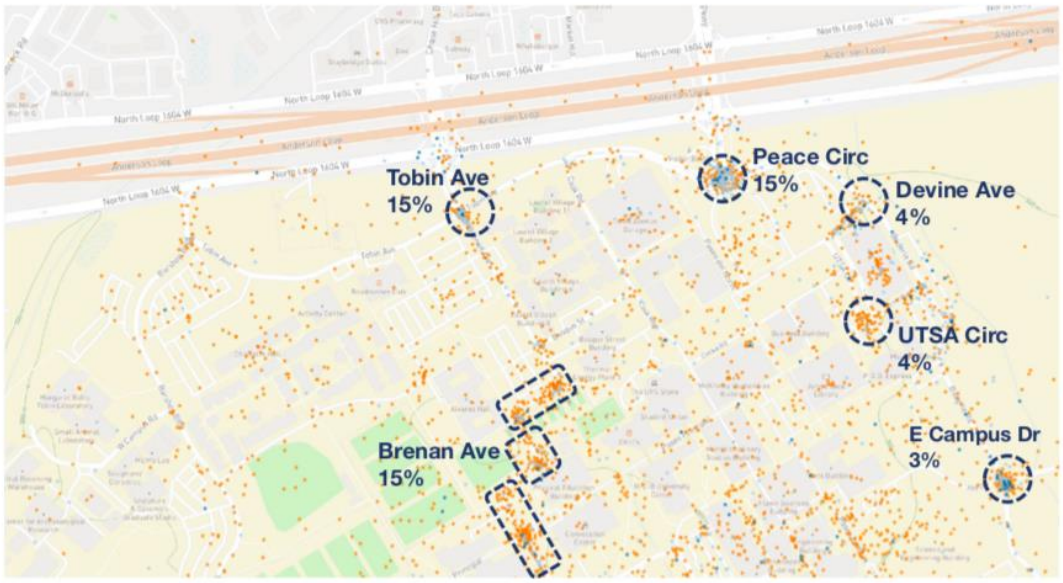
Respondents also reported that they drive to campus (66% percent) but primarily walk while on the campus (91 percent). The survey identified several unsafe pedestrian and bicycle areas within campus. Most were associated with intersections and/or pedestrian conflict areas. Respondents reported that crossing under the Loop 1604 underpass felt dangerous – this was also reported in the focus groups. Additionally, it was reported that "Peace Circle felt like a free-for-all." Similar to the findings from the focus groups, there is conflict between pedestrian traffic and speeding motorists at the Brackenridge Avenue Parking Lots. Lastly, there is an absence of crosswalks on South Campus along with heavy traffic flows.

[22] The University of Texas at San Antonio. (2018). Campus Master Plan: Discovery Survey Results. Retrieved from: https://www.utsa.edu/masterplan/documents/Appendix-E_DiscoverySurveyResults.pdf

Figure 2 and *Source: The University of Texas at San Antonio. (2018). Campus Master Plan: Discovery Survey Results. Retrieved from: https://www.utsa.edu/masterplan/documents/Appendix-E_DiscoverySurveyResults.pdf*

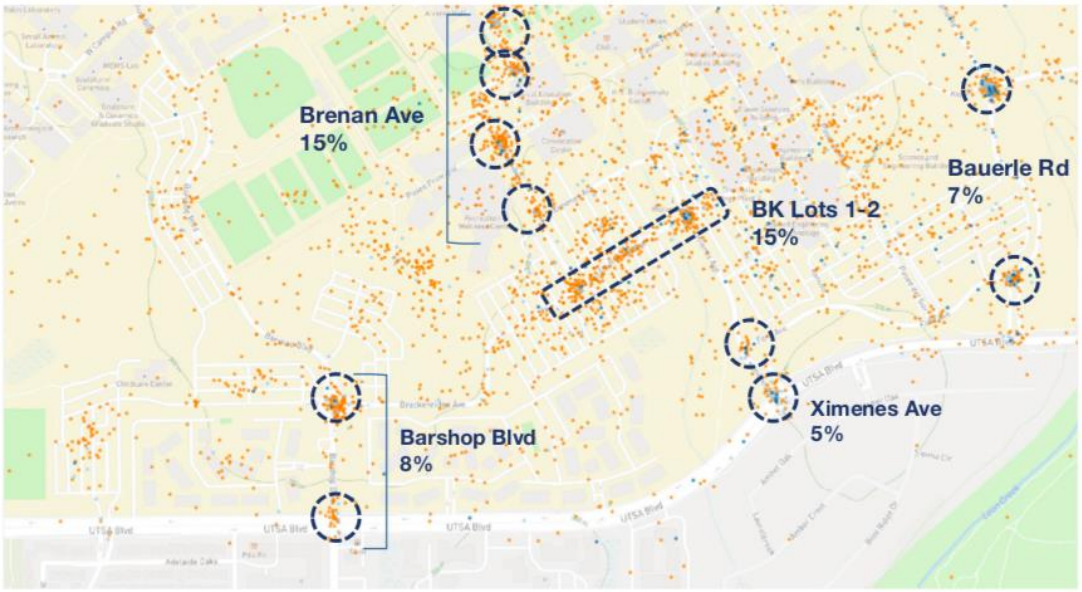
Figure 3 show the most unsafe areas of campus as identified by respondents.

Figure 2. Unsafe Areas on North Campus



Source: The University of Texas at San Antonio. (2018). Campus Master Plan: Discovery Survey Results. Retrieved from: https://www.utsa.edu/masterplan/documents/Appendix-E_DiscoverySurveyResults.pdf

Figure 3. Unsafe Areas on South Campus



Source: The University of Texas at San Antonio. (2018). Campus Master Plan: Discovery Survey Results. Retrieved from: https://www.utsa.edu/masterplan/documents/Appendix-E_DiscoverySurveyResults.pdf

Through focus groups, meetings, and a crash analysis conducted at the UTSA Main Campus, TTI identified infrastructure and driver behavior factors that contribute to pedestrian- and bicycle-involved crashes and near misses. These two factors should be addressed through engineering, education, evaluation, encouragement, and enforcement campaigns.

Environmental Factors:

- Narrow or non-existent bike lanes
- Obstructed or absent sidewalks
- Lack of pedestrian corridors entering campus
- Lack of bicycle 'No Wheels Zones' on campus
- Poor signage
- Crowded pathways
- Lack of traffic control devices and signals

Figure 4. Example of an obstructed sidewalk on campus.

Road User Behavior Factors:

- Inattention (e.g., distracted by mobile device) (see Figure 5)
- Speeding
- Walking or biking at the incorrect location (e.g., pedestrian in street or bicyclist on sidewalk) (see Figure 6)
- Failure to yield to the right-of-way

Figure 6. Student distracted by cell phone on UTSA campus

Figure 5. Student riding bike on sidewalk on UTSA campus

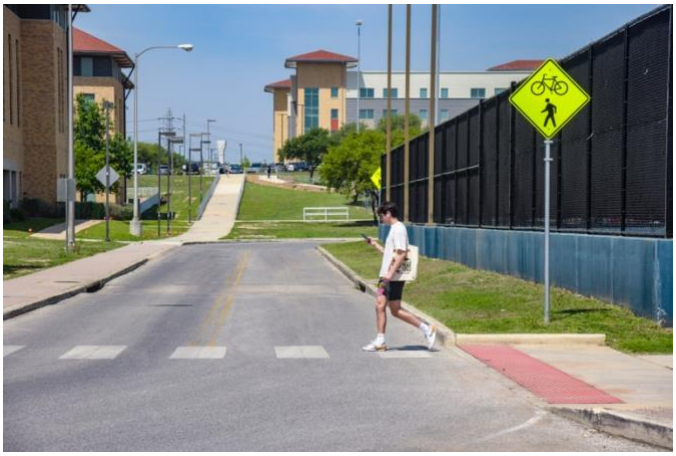


Table 2 provides a listing of key issues and concerns that were identified through outreach efforts and analysis of crash and operations data. Applicable state law is also listed to provide a contextual link to driver responsibilities and issues/concerns that were identified. Respective UTSA bicycle, pedestrian, and non-motorized vehicle safety regulations should be promoted through all UTSA campus educational and outreach opportunities that tie to traffic safety.

Table 2. Key Issues and Concerns and Applicable State Law

Issue/Concern	Applicable State Law
Increase compliance of bicyclists to stop at STOP signs.	• §551.101 (Rights and Duties)
Lack of No Wheels Zone Compliance; Need for strict enforcement of ped-bike disengagement in respective designated areas during class change times and high traffic periods (i.e., special events, game-days, etc.)	• §551.106 (Regulation of Bicycles by Department or Local Authority)
Increase bicycle helmet usage (see note below).	• N/A
Increase visibility of bicyclists and pedestrians during nighttime operation.	• §551.103 (Operation on Roadway) • §551.104 (Safety Equipment) • §552.006 (Use of Sidewalk) • Code §552.008 (Drivers to Exercise Due Care)
Reduce bicycle and pedestrian conflicts at busy intersections and shared pathways.	• §545.107 (Method of Giving Hand and Arm Signals) • §551.103 (Operation on Roadway) • §552.001 (Traffic Control Signals) • §552.002 (Pedestrian Right-of-way If Control Signal Present) • §552.003 (Pedestrian Right-of-way at Crosswalk) • Senate Bill 1055
Increase education and enforcement on bicycle and pedestrian laws, particularly at high volume traffic locations.	• §551.101 (Rights and Duties) • §551.103 (Operation on Roadway) • §552.001 (Traffic Control Signals)

Issue/Concern	Applicable State Law
	• §552.002 (Pedestrian Right-of-way If Control Signal Present) • §552.003 (Pedestrian Right-of-way at Crosswalk) • §552.005 (Cross at Point Other Than Crosswalk)
Pedestrians distracted by mobile devices.	• §552.003 (Pedestrian Right-of-way at Crosswalk) • §552.005 (Cross at Point Other Than Crosswalk) • §552.008 (Drivers to Exercise Due Care)
Pedestrian failure to yield right of way to motor vehicles.	• §552.005 (Cross at Point Other Than Crosswalk) • §552.006 (Use of Sidewalk) • §552.008 (Drivers to Exercise Due Care)
Mid-block crossing or other risky crossing behaviors.	• §552.003 (Pedestrian Right-of-way at Crosswalk) • §552.005 (Cross at Point Other Than Crosswalk) • §552.006 (Use of Sidewalk) • Code §552.008 (Drivers to Exercise Due Care)
Bicyclists failure to yield right of way while turning left.	• §545.107 (Method of Giving Hand and Arm Signals) • §551.103 (Operation on Roadway) • §552.003 (Pedestrian Right-of-way at Crosswalk) • §552.005 (Cross at Point Other Than Crosswalk) • §552.006 (Use of Sidewalk) • Code §552.008 (Drivers to Exercise Due Care)
Failure of bicyclists to obey stop signs and traffic signal laws.	• §545.107 (Method of Giving Hand and Arm Signals) • §551.101 (Rights and Duties) • §551.103 (Operation on Roadway) • §552.001 (Traffic Control Signals) • §552.002 (Pedestrian Right-of-way If Control Signal Present) • Code §552.008 (Drivers to Exercise Due Care) • Senate Bill 1055
Increase bicycle and pedestrian safety awareness in high volume areas.	• §551.101 (Rights and Duties) • §551.103 (Operation on Roadway) • §552.001 (Traffic Control Signals) • §552.002 (Pedestrian Right-of-way If Control Signal Present) • §552.003 (Pedestrian Right-of-way at Crosswalk) • §552.005 (Cross at Point Other Than Crosswalk) • Senate Bill 1055
Bicycle speeds for conditions.	• §551.101 (Rights and Duties) • §551.103 (Operation on Roadway) • §551.106 (Regulation of Bicycles by Department or Local Authority)

Note: Studies have shown that wearing helmets significantly reduces the risk of head injuries from bicycle crashes.

Role of Educational Outreach and Law Enforcement

College students often return to bicycling and walking as a mode of transportation after a long break in their high school years. As children, some may not have received instruction on bicycle and pedestrian

safety and as such, never learned what laws govern safe biking and walking. A vital component of pedestrian and bicycle safety is educating users on applicable bicycle and pedestrian right-of-way laws and behaviors that contribute to crashes. There are many types of educational materials and avenues through which these can be disseminated. Potential pathways could include:

- Radio
- Television,
- Print (fliers; safety tips and laws being posted at cafeterias, residential housing, and on bulletin boards, etc.),
- Social media,
- Public service announcements at sporting events,
- Promoting safety information at university safety events throughout the year and during orientation periods,
- Free giveaways such as bicycle lights and reflectors; and,
- Static and dynamic message signs.

In addition, there are partnership opportunities to help share this message, such as community groups (e.g., Roadrunners Triathlon, Roadrunners Cycling, Student Government Association, UTSA Greek Life), UTSA stakeholder departments (e.g., UTSA Transportation Services, UTSA Housing and Residence Life and UTSA Office of Sustainability Department), and local law enforcement. Focused outreach can occur on site at key conflict or high-volume roadways/locations to deliver traffic safety messages directly to users. An aggressive educational campaign is important to help change behaviors that negatively impact bicycle and pedestrian safety. It remains imperative that the university continue to prioritize pedestrian and bicycle safety on campus through effective messaging, enforcement, and improved environmental design. A consolidated effort between multiple safety partners will produce increased pedestrian and bicycle safety results. Additionally, UTSA stakeholders (academic departments, administrative divisions, student bodies, etc.) can make bicycle and pedestrian education a part of the student registration process. This activity may encourage and instill a wider and more effective safety reach on this focus area.

Local law enforcement also has a special opportunity to leverage their expertise in leading and supporting pedestrian and bicycle safety education. They are the first responders to the results of many of these conflicts and have a unique perspective on the issues which is valuable when reaching out to and gaining support from the community. Several ideas that officers can implement to improve pedestrian and bicycle safety include:

- Attend pedestrian and bicycle specific training,
- Examine and report crash data and share information,
- Identify partner opportunities and shared goals,
- Engage the community; and,
- Measure results and update policies and plans.[23]

[23] Blank, K., L. Sandt, and S. O'Brien. (2020). The Role of Law Enforcement in Supporting Pedestrian and Bicyclist Safety: An Idea Book. *University of North Carolina Highway Safety Research Center*.

This specific mobilization plan expands on the community engagement section and provides contextually relevant community education opportunities for law enforcement. Equally important is the feedback loop between these frontline workers and engineers and planners looking to make infrastructure improvements that support safe pedestrian and bicycle behaviors.

Evaluation: Define Safety Goals and Performance Measures

The goal of the bicycle and pedestrian safety mobilizations is to reduce the frequency of bicycle and pedestrian crashes through increased awareness and observation of traffic laws which are in place to protect the safety and mobility of walkers and bikers. The success of any program can only be determined if it is measured. Safety program performance measures include:

- Documenting the number of bicycle and pedestrian safety mobilizations per year,
- Documenting the number of participants in mobilizations,
- Recording before and after mobilization(s) traffic law observations,
- Tracking annual crash frequency and costs; and
- Conducting before and after mobilization surveys on bicycle and pedestrian traffic law understanding.

While the overall goal is to reduce the number of crashes, performance measures like before and after mobilization surveys of user understanding of bicycle and pedestrian laws are important for assessing the effects of the mobilization safety countermeasure(s). Surveys can be designed to assess specific student groups or populations, specific aspects of understanding of the governing laws, and performed at targeted locations and intervals, as appropriate.

Street Coaching Mobilization Plan

The final step in the bicycle and pedestrian safety plan is to identify mobilizations that would provide the greatest influence on pedestrian and bicyclists safety for UTSA's Main Campus. These mobilization activities will require a dedicated and coordinated effort between the UTSA education team and law enforcement to increase awareness and compliance with bicycle and pedestrian safety laws for all road system users. Action items should provide a data-driven path towards reducing and eliminating serious injury and fatal crashes for bicycle and pedestrian road users. In addition, the mobilization efforts must be aligned with local safety plans for the City of San Antonio and University of Texas at San Antonio as well as be supported by the UTSA Campus advisory committees and other key stakeholders. This will help ensure that there is community buy-in to implement the mobilizations.

There are numerous national and state initiatives aimed at increasing knowledge and awareness of bicycle and pedestrian laws. These programs can be leveraged along with new mobilizations that are geared towards specific needs and uniqueness of college campuses. Regardless, the mobilizations should be structured to build on traditions and messages that speak to the campus population. Based on the analysis of bicycle and pedestrian safety, as well as information obtained from stakeholders and campus planning documents, the following list of mobilization strategies are recommended. The top four are priority initiatives and the next two are second tier priorities.

1. **STOP means Stop**
   This initiative focuses educational and enforcement efforts on getting bicyclists to stop at STOP signs and traffic signals. Key intersections should be targeted for on-site enforcement and

educational engagement on an alternating cycle to increase compliance with the law. Initial target areas for UTSA Main Campus should include:

- Barshop Boulevard and Tobin Avenue
- Brenan Avenue and Tobin Avenue
- Peace Boulevard and Bauerle Road East Campus Drive
- Bauerle Road Bauerle Road and Ford Road
- Ximenes Avenue and Ford Road
- Barshop Boulevard and Brackenridge Avenue

Most of these intersection points are stop-controlled, while two are controlled by a roundabout.

2. Who's Right? - Shared Space and Crosswalk/Intersection Right of Way

2.1 Who's Right? - Shared Space/Sidewalk

Class change is an extremely busy time with a large number of people trying to get around campus quickly. This leads to conflicting interactions between bicycles and pedestrians in small spaces. Concentrated education and focused enforcement of traffic safety laws and regulations for shared roadways, pathways, and sidewalks should be used in this mobilization.

2.2 Who's Right? - Crosswalk/Intersection Right of Way

Crosswalks and intersections are prominent conflict locations for bicyclists, pedestrians, and vehicles. This initiative focuses on crosswalk and intersection traffic safety laws and promoting how bicycle riders and pedestrians can safely navigate them. The effort should also educate drivers on what their driving responsibilities are at intersections and crosswalks.

3. No Wheels Zone

The "No Wheels Zone" is an area of campus where bicyclists are required to dismount in an attempt to reduce the potential for crash conflicts. Currently, there are no dismount zones located on UTSA's campus. Making the network of paseos on the UTSA campus a "No Wheel Zone" should be considered to reduce pedestrian and bicycle conflicts. "No Wheel Zones" should also be used as areas to focus rider education about their responsibilities as bicyclists and emphasize the right of way others have when bicyclists traverse parking areas or high pedestrian volume areas of campus. Initial "No Wheel Zone" areas should be the Paseo /Paseo del Norte and the Brackenridge Avenue Parking Lots.

While this restriction is always in effect, the area increases for large special events including football games, ceremonies, and other campus celebrations (e.g., Dia En La Sombrilla). Educational efforts should leverage outreach opportunities to expand the mobilization reach.

4. Be Rowdy, Be Safe, Be Seen

Laws pertaining to bicycle light/reflector requirements and the safe practice of wearing light colored or reflective clothing when walking or riding at night should be highlighted during this mobilization effort. Additionally, bicyclists should be reminded of the importance of always wearing a helmet. Additional emphasis should be placed on educating pedestrians and bicyclists to always make eye contact with motorists before crossing the roadway. Initial target areas

should be along UTSA Main Campus access points where there is significant interactions between pedestrians, bicyclists, and motorists entering and exiting campus.

5. **Remember the Alamo – Now Remember to Slow Down**
   Speeding is a contributing factor to pedestrian- and bicycle-involved crashes and near misses. The speed limit on the UTSA Main Campus is 20 mph and must be adhered to by all road users. This mobilization effort emphasizes the importance of slowing down while on campus. This is especially important since there is an increase in the number of interactions between pedestrians, bicyclists, and motorized vehicles. Ongoing enforcement of traffic laws should be used as a deterrent and educational information about the dangers of speeding while on campus should be promoted.

6. **Fight, Roadrunners, Fight Distractions! - Phones Down, Eyes Up, and Ears Open**
   Distracted pedestrians are increasingly becoming a considerable safety issue. This includes pedestrian safety distractions among mixed traffic modes as well as with fixed objects along pathways. Additionally, inattention by motorists is a contributing factor to crashes and near misses. This mobilization effort emphasizes the importance of paying attention, remaining vigilant, and focusing on the importance of getting to your destinating safely. The effort should emphasize the importance of staying visually and audibly aware of the travel environment and minimizing distracting activities while walking, biking, or driving. Education and outreach efforts should be used to emphasize the importance of paying attention to the travel environment and eliminating cell phone use while walking, cycling, or driving.

Like other successful public safety mobilizations (e.g., car seat safety awareness, impaired driving, seat belt compliance, distracted driving, etc.), there should be a targeted, "all-hands-on-deck" approach to education and enforcement efforts. A two-year rotational cycle/schedule is recommended to cover mobilizations 1-4 while mobilizations 5-6 should be rotated every four years. Academic years should attempt to conduct a minimum of three mobilizations annually. Table 3 identifies an initiative mobilization schedule that provides outreach to address issues and concerns identified in Table 2. Although a lead party is identified, it is anticipated that the mobilization will be conducted by a larger stakeholder group including but not limited to University Police, Transportation Services, Student Affairs, Student Housing, Athletics, etc.)

Table 3. Mobilization Plan Schedule and Key Issues and State Laws

Initiative/Mobilization (Lead Party)	Issue/Concern	Applicable State Laws	Mobilization Year
1. STOP means Stop (University Police)	• Need to increase compliance of bicyclists stopping at STOP signs. • Motorists fail to yield to pedestrians and bicyclists at STOP signs or 'roll' through the STOP sign.	§545.107 §551.101 §551.103 §552.001 §552.002 §552.003 §552.005	1 and 3
2.1 Who's right? - Shared Space/Sidewalk	• Lack of No Wheels Zones	§545.107 §551.101	1 and 3

Initiative/Mobilization (Lead Party)	Issue/Concern	Applicable State Laws	Mobilization Year
(University Police)	• Conflicts between bicycles and pedestrians need to be reduced on busy shared paths (e.g., sidewalks) • Bicyclists can be both vehicles and pedestrians, which leads to confusion on how they operate. There needs to be education and enforcement on the laws, particularly at critical, high shared traffic locations.	§551.103 §551.106 §552.001 §552.002 §552.003 §552.005 §552.008	
2.2 Who's right? - Crosswalk/Intersection Right-of-Way (University Police)	• Motorists failing to yield to pedestrians and bicyclists • Pedestrians failing to yield right of way to motorists • Most pedestrian crashes happen outside of intersections. There are issues with mid-block crossing or other risky crossing behaviors. • The majority of bicycle crashes happen at intersection-related locations.	§545.107 §551.101 §551.103 §552.001 §552.002 §552.003 §552.005 §552.008 Senate Bill 1055	2 and 4
3. No Wheels Zone (Transportation Services)	• Lack of No Wheels Zones • Need for strict enforcement of ped-bike disengagement in respective designated areas during class change times, high traffic periods like special events, game-days, etc. • Conflicts between bicycles and pedestrians need to be reduced on busy shared paths (e.g., The Paseo) and intersections	§545.107 §551.101 §551.103 §551.106 §552.001 §552.002 §552.003 §552.005	1 and 4
4. Be Rowdy, Be Safe, Be Seen (Transportation Services)	• Need to increase visibility of bicyclists and pedestrians during nighttime. • A higher percentage of pedestrian crashes happen at night than bicycle crashes. • Most pedestrian crashes happen outside of intersections. • Bicyclists were more prone to being inattentive and failing to yield right of way while turning left. • Bicycle helmet usage needs to be increased.	§545.107 §551.103 §551.104 §552.003 §552.005 §552.006 §552.008	2 and 4
5. Remember the Alamo – Now Remember to Slow Down (Transportation Services)	• Bicycle and motorist speeds are too fast for conditions.	N/A (Although campus regulations apply to speed limits)	2

Initiative/Mobilization (Lead Party)	Issue/Concern	Applicable State Laws	Mobilization Year
6. Fight, Roadrunners, Fight Distractions! - Phones Down, Eyes Up… and Ears Open (University Police)	• Leading contributing crash factor for pedestrians, bicyclists, and motorists is inattention • Pedestrians and motorists are distracted by mobile devices.	§545.107 §551.103 §552.001 §552.002 §552.003 §552.005 §552.006 §552.008	3

The highest priority locations for conducting these safety mobilizations should include high crash locations and intersections as well as other locations identified in the safety analysis and stakeholder input. Initial recommended locations on UTSA Main Campus include:

- Barshop Boulevard and Tobin Avenue
- Brenan Avenue and Tobin Avenue
- Peace Boulevard and Bauerle Road East Campus Drive
- Bauerle Road Bauerle Road and Ford Road
- Ximenes Avenue and Ford Road
- Barshop Boulevard and Brackenridge Avenue
- The Paseo /Paseo del Norte
- Brackenridge Avenue Parking Lots

Each mobilization should have a comprehensive education and enforcement component to it as well as materials and subject matter on responsibilities or best behaviors for bicyclists, pedestrians, and motorists in order to affect the most change. The mobilization efforts should involve on-site engagement and enforcement activities as well as educational/promotional materials that focus messages through social media, transitional media, posters, banners, message boards, enhanced traffic signing, and printed materials that last throughout the mobilization period.

Messaging is best delivered from peers rather than “safety experts.” To that end, incorporating various university colleges such as College of Liberal and Fine Arts, School of Public Health, and Carlos Alvarez School of Business students through classroom projects is a great place to start. In addition, local and campus bicycling organizations and interest groups can develop the specifics of programs which is key to ensuring program success. Finally, groups of UTSA students and UTSA organizations can be leveraged to conduct before and after behavior observations and surveys. This information is vital to evaluate the effectiveness of the mobilization efforts and determine which countermeasures should be incorporated to keep them dynamic and connected to the trends being experienced by road users in and around UTSA campus.

Conclusion

The University of Texas at San Antonio has placed a primary focus upon pedestrian and bicycle safety through their campus planning efforts. The entire campus community has embraced the “San Antonio

Spirit" which is embodied by the student body in a warm and welcoming educational environment. This spirit can be capitalized upon and can be transferred to visitors and students alike who travel in and around UTSA's campus. Through the recommended street coaching mobilizations, the UTSA campus community can be educated, nurtured, and encouraged on the ways bicycles, pedestrians, and vehicles can remain safe. Ultimately, the goal is to improve road use harmony and to ensure safety is held in the same regard as is UTSA's traditions and its unique Roadrunner spirit.