

Street Coaching for Pedestrians and Cyclists: Traffic Education and Enforcement Mobilization Plan

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 promote awareness of pedestrian and bicycle state laws on and around a college campus, specifically Texas A&M University (TAMU).

As an initial deliverable for this project, researchers from the Texas A&M Transportation Institute (TTI) recently conducted and then reported the results of a pedestrian and bicycle crash analysis. The findings, uncovered through the analysis, will ultimately be used to provide guidance in developing a mobilization plan and educational outreach materials that address areas of concern for pedestrian and bicycle roadway users on or near college campuses. Ultimately, the resulting products will be used as aids to help inform and provide direction for users regarding reinforcement and compliance with pedestrian and bicycle state laws. This in due course, will advance awareness of state laws and overall safety for vulnerable roadway users in and around the Texas A&M University 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 memo is to develop a comprehensive bicycle and pedestrian safety mobilization plan that focuses on bicycle and pedestrian safety education, and also considers enforcement, evaluation and planning, encouragement, and engineering. To advance bicycle and pedestrian safety it is important not to deploy standalone strategies that do not take into consideration each of these components, as an effective safety mobilization plan requires collaboration between all types of stakeholders.

Street Coaching Mobilization 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.

- Mission and vision
- Stakeholder engagement
- Bicycle and pedestrian laws and regulations
- Safety and operations data analysis
- Local bicycle and pedestrian safety needs
- Role of educational outreach

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.

- Defining safety goals and performance measures
- Street Coaching Mobilization Plan

Mission and Vision

The guiding document for future physical development on the Texas A&M University campus is the 2017 Campus Master Plan. As part of this document, Focus Elements were established in support of key objectives, goals, and principles in recognition of the System’s mission. One of the six Focus Elements is Mobility and Safety which provides emphasis on walking, biking, and on-campus transit as preferred travel modes. The commitment to pedestrian safety and accessibility is further defined by plan goals and guiding principles. Establishing an accessible, pedestrian campus is included as one of the Campus Master Plan goals, while Guiding Principle #8 is to focus mobility planning on the pedestrian. The safety of campus users is the priority in decision making for mobility planning. The pedestrian priority zone is a planning tool for future development to prioritize the pedestrian connections over the vehicular access².

In addition to the Campus Master Plan, a Bicycle District Strategic Plan was completed in 2015 and included a vision as well as goals and objectives³.

The Vision statement is: Texas A&M will be the most bicycle friendly university in Texas and be one of the nation’s leading bicycle friendly universities. We will be leaders in setting policy, developing programs and increasing facilities to support and safely attract people bicycling to, from, and within the campus.

The goal, objectives and performance measures for the education elements of the strategic plan are included in Exhibit 1 below.

Exhibit 1. Bicycle Plan Education Goal, Objectives and Performance Measures.

Texas A&M University is dedicated to the discovery, development, communication, and application of knowledge in a wide range of academic and professional fields. Its mission of providing the highest quality undergraduate and graduate programs is inseparable from its mission of developing new understandings through research and creativity. It prepares students to assume roles in leadership, responsibility and service to society. Texas A&M assumes as its historic trust the maintenance of freedom of inquiry and an intellectual environment nurturing the human mind and spirit. It welcomes and seeks to serve persons of all racial, ethnic and geographic groups as it addresses the needs of an increasingly diverse population and a global economy. In the 21st century, Texas A&M University seeks to assume a place of preeminence among public universities while respecting its history and traditions.

- *Texas A&M University Mission Statement*

² Texas A&M University. (2017). Campus Master Plan. Retrieved from: <https://campusplan.tamu.edu/files/presentations/2017CampusMasterPlan.pdf>

³ Texas A&M University. (2015). Bicycle District Strategic Plan. Retrieved from: <https://transport.tamu.edu/WebFS/Transport/Alternative/bicycledistrictstrategicplan.pdf>

| 2. Education | |
|---|---|
| Goal: Implement comprehensive education programs targeted at students, faculty, and staff. | |
| Objectives: | <ul style="list-style-type: none"> a. Educate students, faculty, and staff on safe operation of a bicycle. b. Provide bikeway route maps both online and in hard copy form. c. Coordinate with nearby agencies and groups on annual bicycle events such as "Bike/Walk to Work Day," "Bike/Walk to School Day," and bicycle safety courses. d. Promote safe bicycling and walking through the use of encouragement, incentives, and bicycle-friendly programs. |
| Performance Measures | <ul style="list-style-type: none"> e. Number of Traffic Skills 101 (or other comprehensive training) offered annually f. Total number of university community members attending training g. Decrease in number of reported incidents of unlawful, inconsiderate, or dangerous bicycling on campus |

Source: Texas A&M University 2015 Bicycle District Strategic Plan

Stakeholder Engagement

This project includes formal stakeholder engagement through an advisory committee and a public survey. The output from these efforts is used in guiding the mobilization recommendations developed as part of this plan. The advisory committee is comprised of representatives from the following stakeholder groups:

- Law enforcement (Bryan, College Station, and Texas A&M police departments)
- Texas A&M Department of Residence Life
- Texas A&M Office of Student Life
- Texas A&M Student Government
- Texas A&M Corps of Cadets
- Texas A&M Director of Disability Resources
- Texas A&M Multicultural Services
- Texas A&M Student Health Services
- Texas A&M Office of Risk Management
- Texas A&M Transportation Services
- Texas A&M Department of Urban Planning

In addition, a survey was distributed that included questions about pedestrian and bicycle travel patterns as well as follow-up questions for individuals that had been involved or almost involved in

motor vehicle crashes. The results of the survey are forthcoming and will be incorporated into the overall study.

An advisory committee meeting was held in March 2021 and included representation from the majority of stakeholder groups. There were five major topics covered in the meeting. The following is a summary of the discussion points for each of the five topic areas.

- How does the university environment contribute to the pedestrian and bike safety issues?
 - Bicyclists and pedestrians need to use the facilities provided and need to pay attention to traffic including in parking lots. However, in the case of bike lanes, they are sometimes blocked by buses and service vehicles, which creates additional interaction with vehicles.
 - 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.
 - There needs to be a better understanding of the laws that apply to both bicycles and pedestrians, and everyone (including vehicle drivers) needs to understand these in order to manage expectations.
 - There is a very diverse population from different parts of the state, country and world and they might not know the local laws and regulations.
- Near misses and collisions: what is our experience of why these events occur?
 - Conflicts between turning vehicles and bicyclists and pedestrians are an issue.
 - Increased enforcement of illegal bicycle and pedestrian actions are needed.
 - Crashes between bicycles and pedestrians on campus usually go unreported.
 - There is a need to increase visibility of bicyclists and pedestrians during nighttime.
- Post-COVID impact of students coming back in the fall. How has COVID shutdown and move back into normal going to affect safety?
 - There will be an increase in activity, particularly at Northgate and for events, and the need to address unsafe behavior.
 - Consider appealing to the masses to spread the word that we are all in this together and encouraging better behavior.
- What are ways to promote the laws across campus?
 - Enhanced enforcement.
 - Education and outreach efforts that go above and beyond limited available enforcement.
 - Engage social media, biking clubs, and bike rental companies to engage in education opportunities. Use how-to videos to educate people.
 - Create a bicycle safety education short course class that could be used to dismiss a bicycle or pedestrian ticket, similar to defensive driving.
- If you had one last thing to share that could make a difference, what would that be?
 - Additional education is needed, and enforcement alone will not solve the issues.
 - Need to leverage student government, student health promotion network, and additional funding for media to promote safety messaging.
 - Addressing distracted pedestrians needs to be a focus area.
 - Pedestrian and bicycle safety is everyone's responsibility and human buy-in is critical.

Texas A&M University Transportation Services staff working in the area of sustainable transportation were also engaged to solicit feedback on issues or areas of concern as well as bicycle and pedestrian law knowledge gaps, data availability and lessons learned from previous education outreach efforts. Below is a summary of the input received.

- Data availability and other resources
 - Many collisions between bicycles and pedestrian go unreported, so it is difficult to complete a thorough assessment; however, collisions have been called in or witnessed on a weekly basis. There are also limitations with the crash reporting system when emergency services are called out and the exact location of the incident may not be accurate.
 - There have been previous studies on bicycle and pedestrian interactions at the Pickard Pass that may provide insight on issues at that location.
 - Bicycle use data may also be available through People for Bikes.
 - Bike share (Veoride) origin and destination data is available through 2019 via the Aggieland Bike Share Dashboard.
 - There is a campus Sustainability Master Plan from 2018 that includes information on bicycle and pedestrian initiatives.
 - The League of American Bicyclists (LAB) has tremendous educational information available on their website.
- Issues and areas of concern
 - Micromobility users are a great target audience. There are 6,000 users per day sharing 2,000 assets.
 - Micromobility and pedestrian laws are not regularly enforced.
 - The locations of greatest concern are Ross Street in the area of Ireland Street during class change. Pickard Pass and Lamar Street are some of the other challenging locations. There are a lot of small conflicts on Ross Street, while there are high speed conflicts at Pickard Pass.
 - Service vehicles and buses frequently block bike lanes forcing bicyclists to use sidewalks or weave out into the street.
 - The gates for restricted streets are frequently damaged by bicyclists. It is possible that adding LED lights to the bottom of the gates might help.
 - Pedestrians are frequently seen using earbuds or focused on their phones, not paying attention to the traffic around them.
- Lessons learned
 - TAMU received a Bicycle Friendly University silver designation from League of American Bicyclists. Education is one of the weak points for the university.
 - Have partnered with the City of College Station to offer Safe Cycling classes, but enrollment has dwindled and now offer individual training on an as needed basis.
 - Cyclists are required to show proof of registration for bicycles on campus. TAMU has tried to incorporate a short video and quiz as a prerequisite to registration. Although the process to create the video was organized, there we a technical issue in getting the registration system to work with the video program.
 - Tickets for bicycle infractions are handled by the College Station Justice of the Peace. There have been previous efforts to create a bicycle safety defensive riding program

that could be used to dismiss tickets similar to defensive driving classes; however, there has not been any interest in pursuing this option.

- Knowledge gaps
 - The highest priority for education would be bicyclists using pedestrian facilities followed by bicyclists then pedestrians and finally drivers.
 - The highest priority behavior change that would have the biggest impact would be to get bicyclists and micromobility users to stop at STOP signs.
 - Bicycle helmet usage is also a high priority.
 - Education initiatives need to be continuous/ongoing because there is annual turnover in the campus population.

The input received from these two groups gives great insight on some of the common issues and concerns related to bicycle and pedestrian travel on campus. This information along with safety and operations data will help form the basis and priorities of the mobilization plan.

Bicycle and Pedestrian 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 Texas A&M University campus. Links to each of these are provided in footnotes for a more detailed understanding.

Texas State laws governing use of a public roadway by a pedestrian⁴ are identified and summarized below. The full text for the chapters that include each law is included in Appendix A with applicable laws highlighted.

- 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.

⁴ State of Texas. (2021). Texas Constitution and Statutes. Retrieved from: <https://statutes.capitol.texas.gov/?link=TN>

- 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 jurisdiction 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.
- 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 bicyclist⁵ are described below. The full text for the chapters that include each law is included in Appendix B with applicable laws highlighted.

- 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

⁵ State of Texas. (2021). Texas Transportation Code. Retrieved from: <https://texas.public.law/statutes/tex.transp.code.section.551.001>

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.

There is no Texas state law prohibiting riding a bicycle or an electric bicycle on sidewalks, however, local governments may have local ordinances prohibiting bicycles on sidewalks⁶. 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 sidewalk⁷. Similar laws exist in a few 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 the downtown areas and/or business districts.

A summary of relevant Texas state bicycle laws is also provided on the Texas A&M Transportation Services webpage⁸. Texas A&M Transportation Services requires all bicycles on campus to be registered and show proof of registration by displaying a permit to avoid enforcement action⁹. Texas A&M University has additional instructions and regulations for operations and parking of bicycles on campus, as provided below¹⁰.

Texas A&M University Bicycle Operating Regulations

1. Persons operating bicycles and other non-motorized devices on campus shall practice courteous, defensive riding, giving right-of-way to pedestrians, traveling at safe speeds, and having their vehicles under control at all times.
2. Every person operating a bicycle should obey regulatory signs and rules for Texas A&M University and these regulations.

⁶ Texas Department of Transportation. (2021). Laws and Regulations FAQ. Retrieved from:

<https://www.txdot.gov/inside-txdot/modes-of-travel/bicycle/know/laws.html>

⁷ <https://www.npr.org/2016/10/16/496865680/6-things-you-need-to-know-about-cycling-on-the-sidewalk>

⁸ Texas A&M University Transportation Services. (2021). Texas State Bicycle Laws. Retrieved from:

<https://transport.tamu.edu/Alternative/bicycles/statelaw.aspx>

⁹ Texas A&M University Transportation Services. (2021). Mandatory Bicycle Registration. Retrieved from:

<https://transport.tamu.edu/Alternative/bicycles/register.aspx>

¹⁰ Texas A&M University Transportation Services. (2021). University Bicycle Regulations. Retrieved from:

<https://transport.tamu.edu/Alternative/bicycles/regulations.aspx>

3. Bicycles shall not be operated in parking garages, or in any areas where bicycles are restricted by regulation or signs.
4. No person operating a bicycle on University property, including bike paths should exceed a speed that is reasonable and prudent with respect to the number of pedestrians or other cyclists present, visibility, traffic, weather, and surface conditions that exist at the time, or that endangers property or the safety of any person.

Safety and Trip Data Analysis

To determine the locations and times to target safety education and enforcement efforts, readily available bicycle and pedestrian safety and bicycle trip data were analyzed. A detailed crash analysis was conducted and memorialized in TTI's recent Crash Analysis Technical Memorandum¹¹. A summary of the results along with key takeaways are contained within this section. Also included is trip information related to the University's bike share program.

Bicycle and Pedestrian Crashes

The crash analysis looked at pedestrian and bicycle crash data from the Texas Department of Transportation Crash Reporting Information System (TxDOT-CRIS). Both bicycle and pedestrian crashes were studied using descriptive statistics and geospatial (mapping) analyses to examine crash locations and assess crash factors. The following are the key takeaways from this analysis:

- Pedestrians had a higher percentage of crashes that involved fatal or suspected serious injury crashes (24%) compared to bicyclists (12%).
- Drug or alcohol impairment was a factor in a higher percentage of pedestrian crashes (12%) than bicycle crashes (3%).
- Most pedestrian crashes (61.6%) were not intersection related.
- Most bicycle crashes (77.2%) occurred in daylight conditions, while only 51.2% of pedestrian crashes occurred in daylight conditions.
- Most bicycle crashes (75.6%) occurred on streets posted between 25 mph and 44 mph, while pedestrian crashes on roads with speeds of 25 mph to 44 mph were approximately the same as crashes on roads of 45 mph to 64 mph speeds.
- Approximately half of bicycle crashes occurred at stop signs (30.5%) and traffic signals (20.8).
- Texas Avenue, University Drive and George Bush Drive were identified as the top three roadways of concern for bicycle-involved crashes.
- The top intersections for intersection-related bicyclist-involved crashes included:
 - University Drive and Wellborn Road
 - Texas Avenue and Harvey Road, Texas Avenue and University Drive
 - George Bush Drive and Houston Street.
- Texas Avenue, University Drive and State Highway 21 were identified as the top three roadways of concern for pedestrian-involved crashes.
- The top roadways for intersection and intersection-related pedestrian-involved crashes included:

¹¹ Trueblood, A.B., T.D. Walden, M. Perez, J. Woodward, N. Johnson, C. Adams. (2021). Street Coaching for Pedestrians and Cyclists: Putting Laws into Practice on University Campuses, Crash Analysis Technical Memorandum. *Texas A&M Transportation Institute*.

- University Drive and Wellborn Road
- FM 2818 and Welsh Avenue
- Southwest Parkway and Anderson.

The crash analysis findings highlighted the need to promote an increased awareness of state laws and emphasize how investing in enforcement strategies and mobilization can improve safety, particularly in the areas where bicyclists and pedestrians change from being on campus to off campus. Through the analysis, research staff discovered that 56.9% of bicyclist-involved crashes and 38.4% of pedestrian-involved crashes occurred at intersections. These findings support a strong need to educate bicyclists and pedestrians about the importance of following laws focused on safe intersection crossings and yielding right-of-way. Promoting these findings and educating vulnerable roadway users may very well help reduce the incidence of pedestrian and bicycle crashes at intersections.

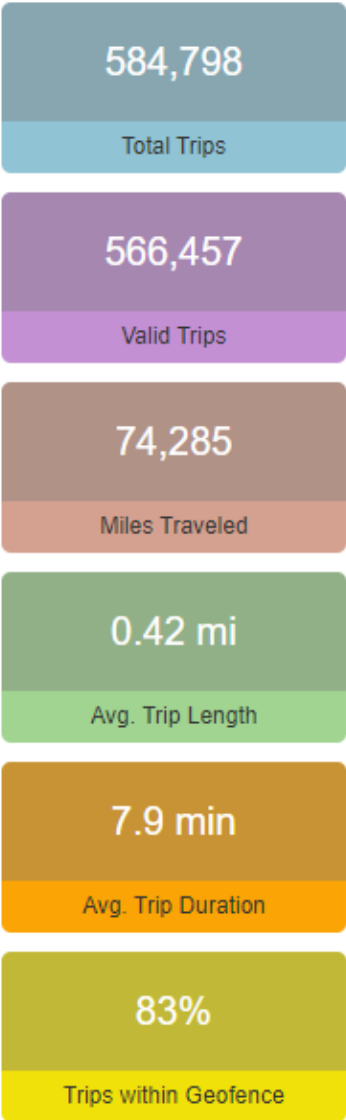
Bicycle Trip Data

The last Transportation Mode Split Survey conducted in 2017 estimated that 65 percent of students and 16 percent of staff travel to and from campus using something other than single occupancy vehicles¹². It is important to understand where the bicyclists and pedestrians are operating to assess opportunities for education efforts. Through TTI, TAMU has a comprehensive dashboard that compiles and illustrates the trip data collected as part of the bike share (VeoRide) program¹³. This data is available through 2019 and although it is not a complete count of all private and shared bike trips, this data represents typical, non-pandemic travel patterns. Exhibit 2 is a summary of the trip statistics for calendar year 2019 and Exhibit 3 shows a breakdown by month. In total, there were approximately 566,500 valid trips, with 76 percent of trips taken between August and November. Valid trips are categorized as a bicycle being unlocked and used to make a trip versus the bicycle being unlocked for maintenance purposes or unlocked but not used. The 2019 trips covered just under 75,000 miles of travel. The average trip length was approximately ½-mile. The monthly data provides some insight on high use times. There appears to be some anomalies in the spring 2019 data. Although a bike share program was not new to campus, 2019 was the first year of VeoRide's operation. As a result, the lower spring numbers could be attributed to the program ramping up and smoothing out any data reporting issues. The fall data does show that September has the highest number of trips (13,203 or 24 percent) for the semester.

¹² Texas A&M University 2018 Sustainability Master Plan. (2018). Retrieved from: <https://sustainability.tamu.edu/Data/Sites/1/downloads/2018SMP.PDF>

¹³ Aggieland Bike Share Dashboard. (Accessed May 2021). Retrieved from: <http://ttihouston.tamu.edu/bikeshare/>

Exhibit 2. 2019 Bike Share Use Data.



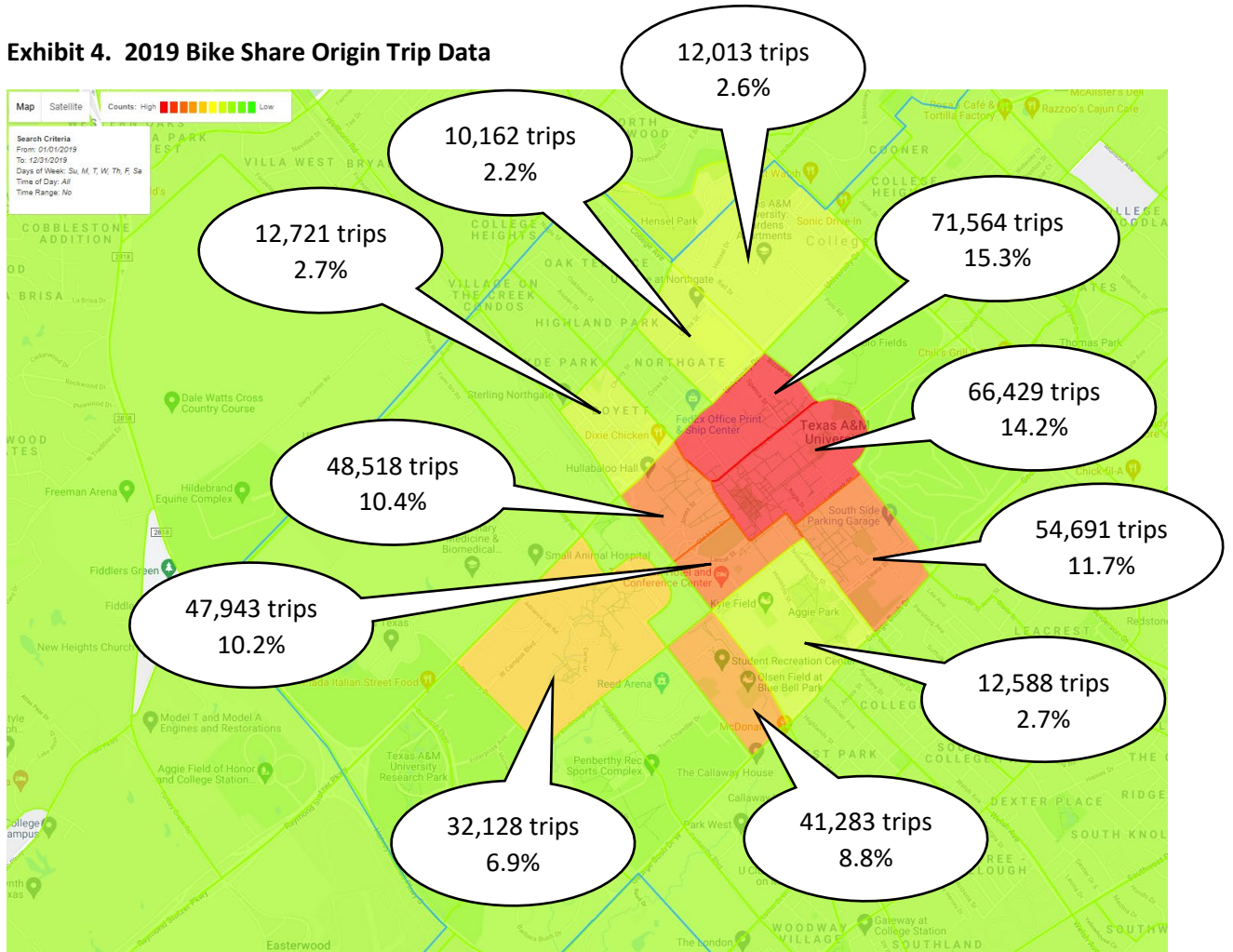
Source: Aggieland Bike Share Dashboard. <http://ttihouston.tamu.edu/bikeshare/>

Exhibit 3. 2019 Monthly Bike Share Use Data.

| Month | Valid Trips | Percentage |
|--------------|--------------------|-------------------|
| January | 0 | 0% |
| February | 14,886 | 3% |
| March | 21,586 | 4% |
| April | 28,388 | 5% |
| May | 12,657 | 2% |
| June | 15,588 | 3% |
| July | 20,279 | 4% |
| August | 126,608 | 22% |
| September | 136,203 | 24% |
| October | 110,061 | 19% |
| November | 55,905 | 10% |
| December | 24,296 | 4% |
| Total | 566,457 | 100% |

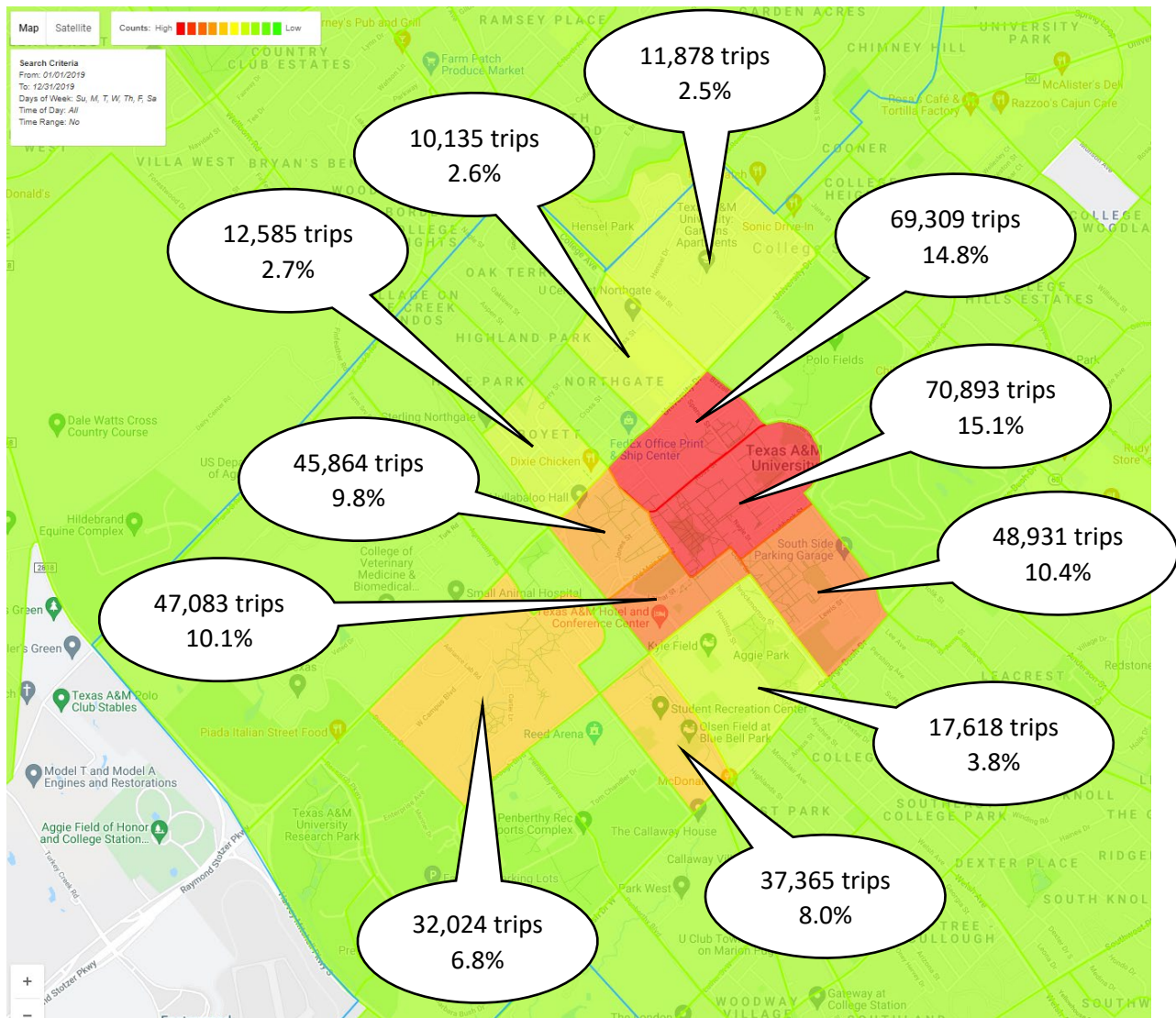
Bicycle trips are tracked and reported for 161 traffic analysis zones in and around campus and the surrounding communities. Exhibit 4 shows the VeoRide hot spots for trip origins on campus and in the immediate vicinity. Destination data is illustrated in Exhibit 5. The red shaded areas have the highest number of trips followed by orange, then yellow, and finally green. The highest trip origin and destination areas are on main campus between Lubbock Street and University Drive from Houston Street to Bizzell Street. These areas account for nearly 30 percent of all trips.

Exhibit 4. 2019 Bike Share Origin Trip Data



Source: Aggijland Bike Share Dashboard. <http://tthouston.tamu.edu/bikeshare/>

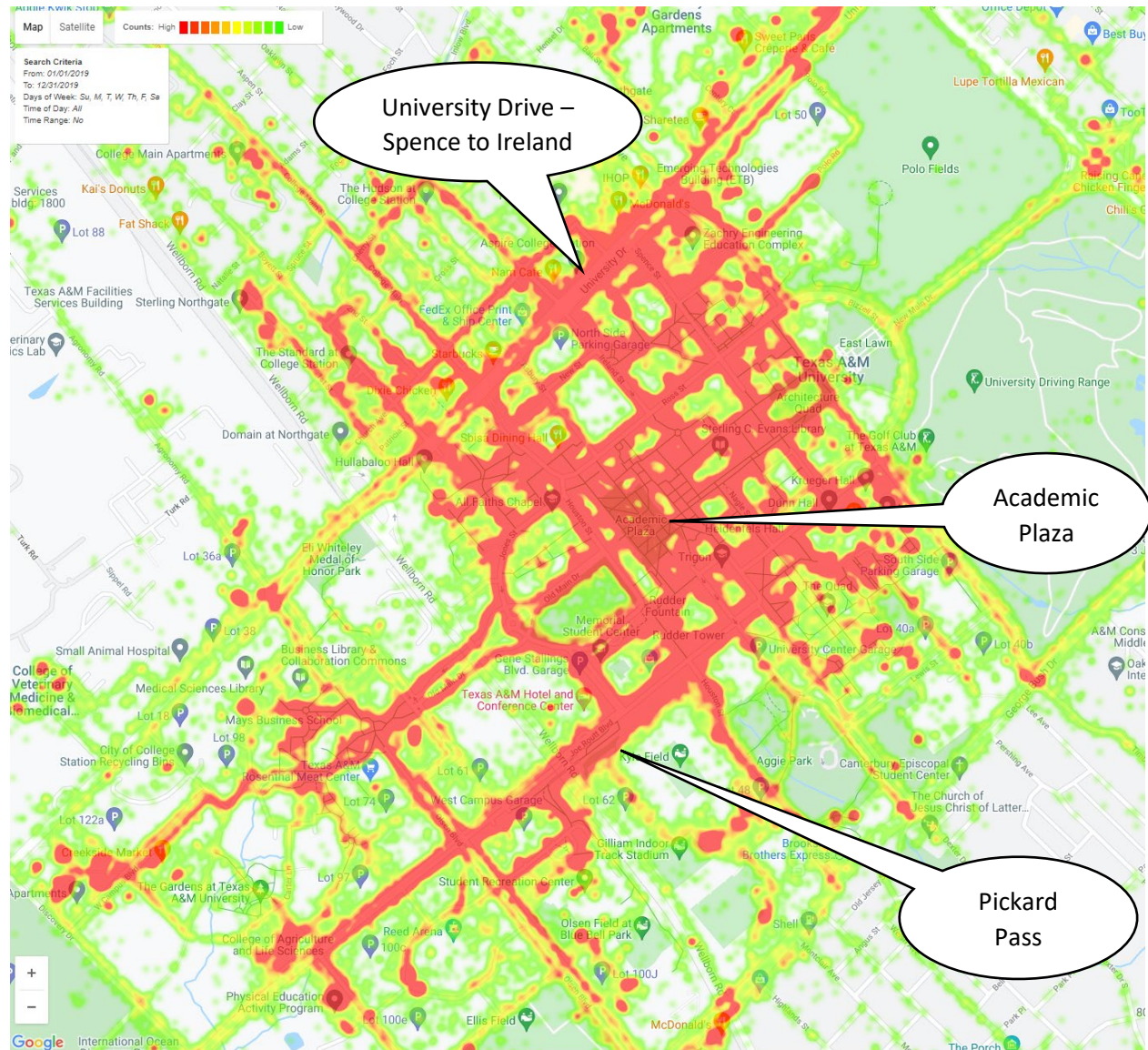
Exhibit 5. 2019 Bike Share Destination Trip Data



Source: Aggieland Bike Share Dashboard. <http://ttiuhouston.tamu.edu/bikeshare/>

In addition to the origins and destinations, the dashboard also has details on the travel routes. Exhibit 6 is a heatmap of trip waypoints. Again, red indicates the more heavily traveled routes and green represents the areas with the least volume. As expected, the heavily traveled paths are concentrated on main campus in the vicinity of dorms and academic buildings. Outside of the core campus area, travel routes generally follow the roadway and pathway corridors including many bicycles using the Pickard Pass to travel to and from west campus and in the area of University Drive between Spence Street and Ireland Street. Areas with significant levels of pedestrian and bicycle interaction are easily identifiable from this map.

Exhibit 6. 2019 Heatmap Waypoints



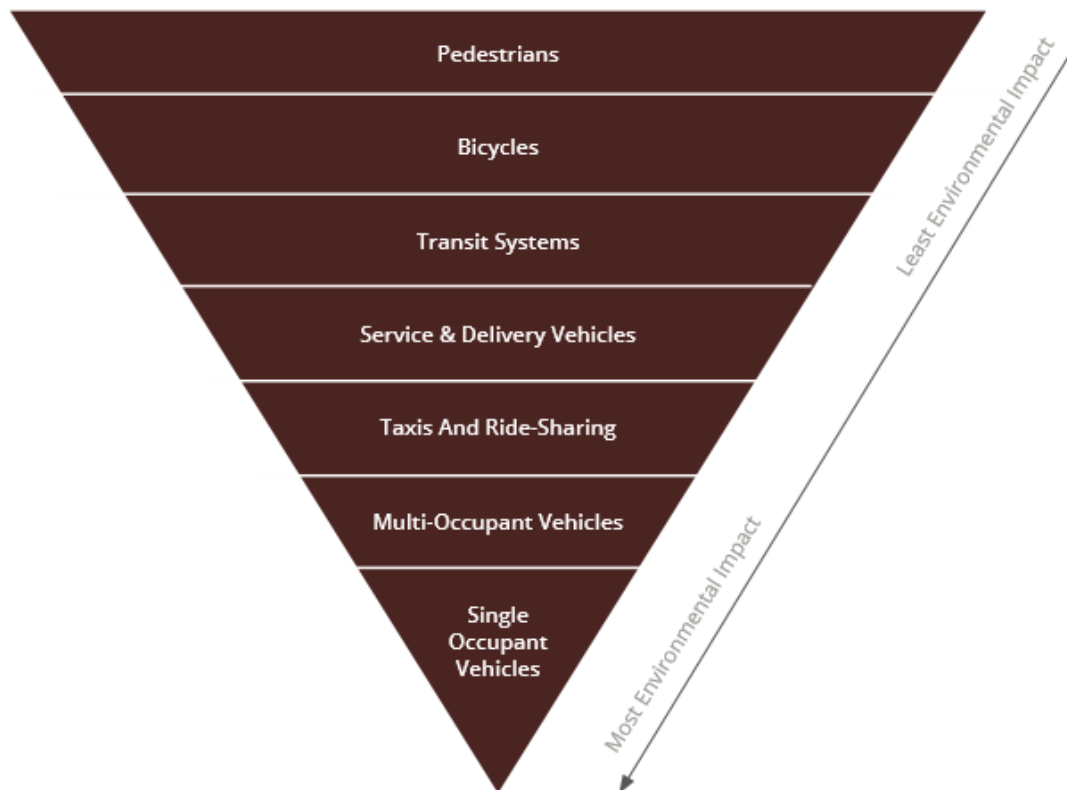
Source: Aggieldand Bike Share Dashboard. <http://tthouston.tamu.edu/bikeshare/>

The results of the bike share data analysis indicate that education and enforcement efforts should first be focused on the main campus area and at Pickard Pass, which is consistent with the stakeholder feedback. The specific areas of main campus include between Lubbock Street and University Drive from Houston Street to Bizzell Street. Additionally, the optimal timing for outreach efforts would be in September at the beginning of a new semester when there is a high proportion of new students on campus as well as a large number of bicycle trips being taken. Although the spring data is not conclusive, it would be reasonable to assume that April would be a good time for mobilization efforts to take advantage of numerous special events including family weekend, spring football, the MS 150 ride, and multiple spring sports on west campus in addition to a reduced risk associated with inclement weather during the winter months.

Local Bicycle and Pedestrian Safety Needs

Texas A&M University is committed to walking and cycling as primary modes of transportation, as shown below. Exhibit 7 outlines the campus mobility hierarchy with pedestrians, bicycles and transit systems as the top three priority modes. The Texas A&M University Campus Master Plan includes an extensive Mobility and Safety section, which is focused on bicycle and pedestrian safety.

Exhibit 7. Texas A&M University Mobility Hierarchy.



Source: 2017 Texas A&M University Campus Master Plan

Considering this focus area, there are several heavy bicycle and pedestrian activity times and areas that require enhanced education, encouragement, enforcement, and engineering solutions to meet planning goals. Class change times, numerous sporting and other campus events, the beginning of semesters, and after dark have been recognized as key times to focus education and enforcement on the importance of traffic safety laws for campus residents and visitors. Additionally, there are locations where bicycle and pedestrian activity is more concentrated which need to be considered. The safety data analysis section identified the University Drive and Texas Avenue corridors within the top three roadways for pedestrian and bicycle crashes. High bicycle activity areas are main campus including University Drive and the Pickard Pass areas based on bike share data. One of the major focus areas of the Campus Master Plan and Bicycle District Strategic Plan is creating the necessary facilities to accommodate the user demand safely. TAMU has completed extensive work in this area and continues to do so. Exhibit 8 shows new bicycle lanes and widened sidewalks near Lamar Street and Gene Stallings Boulevard. Exhibit 9 illustrates a concept for underpasses across University Drive to connect main

campus on the south side of the road with the residential, retail and entertainment areas on the north. This corridor is being studied by TxDOT for grade separation opportunities and construction of these types of improvements are critical to the continued efforts toward improving safety.

Exhibit 8. Texas A&M University Bicycle and Pedestrian Improvements at Lamar Street and Gene Stallings Boulevard.

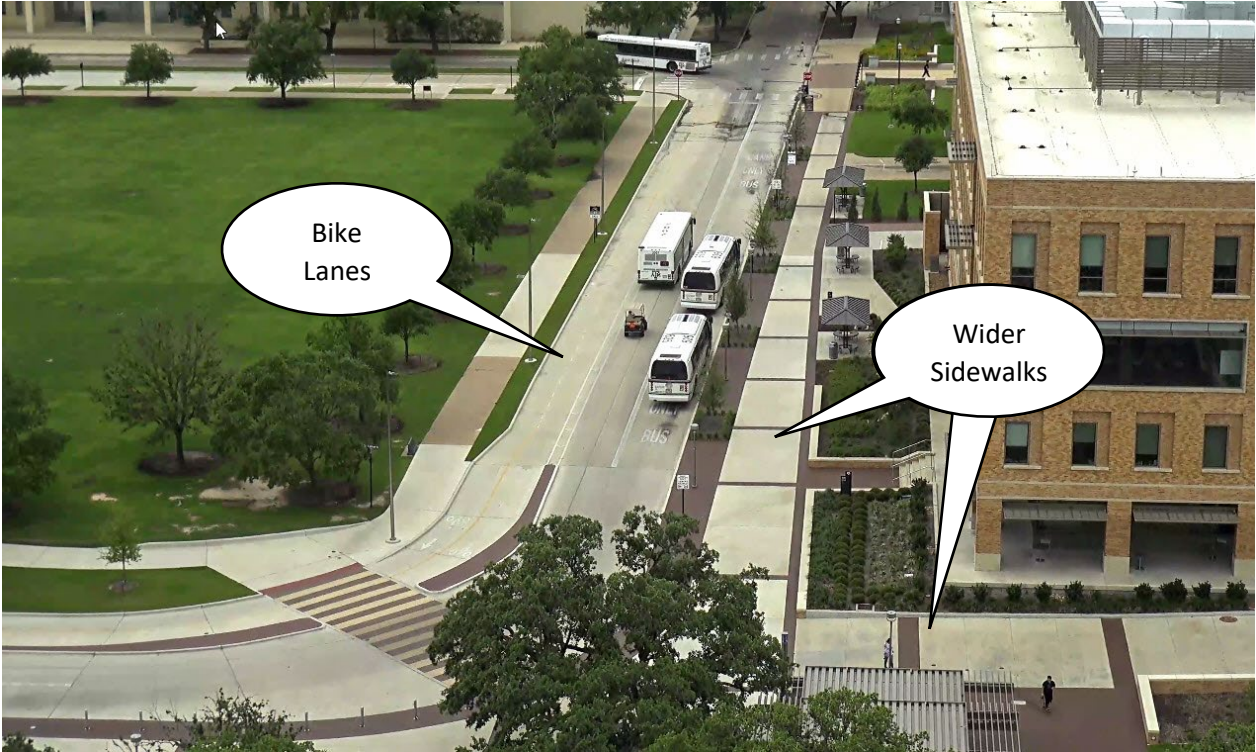
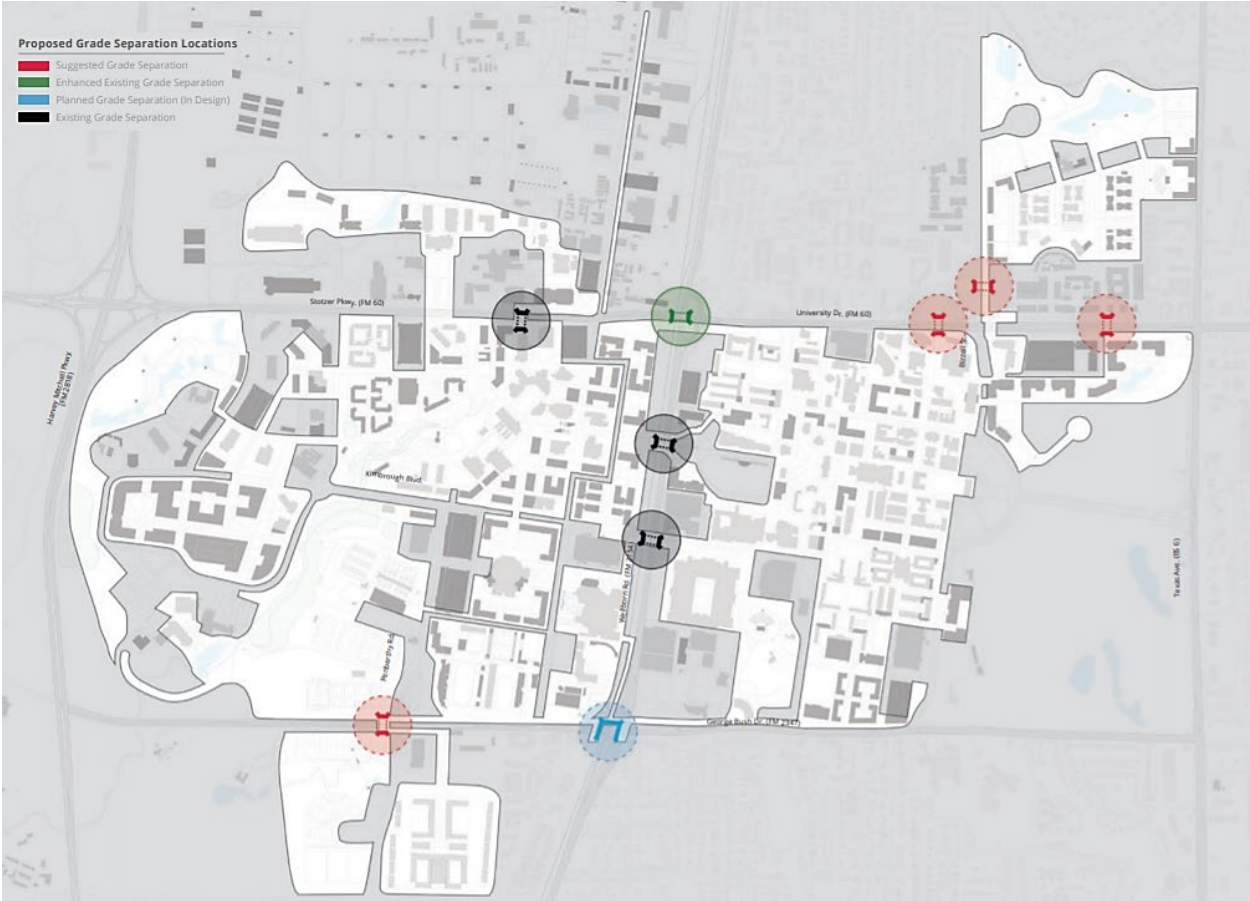


Exhibit 9. Proposed University Drive Crossings



Source: 2017 Texas A&M University Campus Master Plan

Other campus policy and regulations that should be incorporated include the no wheels zone, football gameday map shown below in Exhibit 10, and bicycle registration requirements.

Exhibit 10. Texas A&M University Football No Wheels Zone Map



Source: Texas A&M University Transportation Services Website, June 2021
<https://transport.tamu.edu/WebFS/Transport/Maps/Events/Football/Bike-Routes-No-Wheels.png>

Even with pedestrian and bicycle facility enhancements, there will still be interactions between vehicles, bicycles, and pedestrians. It is vitally important to have an ongoing coordinated education and enforcement effort to coach the different communities on the traffic laws and then enforce the laws to reinforce proper behavior.

The safety and bicycle travel analysis results call for integrating Texas Transportation codes into any street coaching outreach and educational materials. Exhibit 11 identifies key issues and concerns that

were identified through outreach efforts and analysis of crash and operations data along with state laws that could be enforced to address these items. Additionally, respective Texas A&M University bicycle and non-motorized operating regulations should be included in educational opportunities.

Exhibit 11. Key Issues and Concerns and Applicable State Law

| Issue/Concern | Applicable State Law |
|--|--|
| Need to increase compliance of bicyclists stopping at stop signs | <ul style="list-style-type: none"> • §551.101 (Rights and Duties) |
| Lack of No Wheels Zone Compliance | <ul style="list-style-type: none"> • §551.106 (Regulation of Bicycles by Department or Local Authority) |
| Bicycle helmet usage needs to be increased (see note below) | <ul style="list-style-type: none"> • N/A |
| Need to increase visibility of bicyclists and pedestrians during nighttime | <ul style="list-style-type: none"> • §551.103 (Operation on Roadway) • §551.104 (Safety Equipment) • §552.006 (Use of Sidewalk) |
| Conflicts between bicycles and pedestrians need to be reduced at busy intersections and shared paths (e.g., Ross Street near Ireland Street, and Pickard Pass) | <ul style="list-style-type: none"> • §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) |
| 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 | <ul style="list-style-type: none"> • §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) • §552.003 (Pedestrian Right-of-way at Crosswalk) • §552.005 (Cross at Point Other Than Crosswalk) |
| Pedestrians are distracted by mobile devices | <ul style="list-style-type: none"> • §552.003 (Pedestrian Right-of-way at Crosswalk) • §552.005 (Cross at Point Other Than Crosswalk) • §552.008 (Drivers to Exercise Due Care) |
| Pedestrians are two times more likely to be involved in a serious injury or fatal crash | <ul style="list-style-type: none"> • All traffic laws related to pedestrians. |
| Impairment was a factor in four times more pedestrian crashes than bicycle collisions | <ul style="list-style-type: none"> • §552.006 (Use of Sidewalk) |
| Most pedestrian crashes happen outside of intersections | <ul style="list-style-type: none"> • §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) |
| More pedestrian crashes happen at night than bicycle crashes. | <ul style="list-style-type: none"> • §552.006 (Use of Sidewalk) • Code §552.008 (Drivers to Exercise Due Care) |
| Most bicycle crashes happen on lower speed roads, while about the same number of pedestrian crashes happen on low and high-speed roadways | <ul style="list-style-type: none"> • §545.107 (Method of Giving Hand and Arm Signals) • §551.103 (Operation on Roadway) • §552.003 (Pedestrian Right-of-way at Crosswalk) |

| Issue/Concern | Applicable State Law |
|--|---|
| | <ul style="list-style-type: none"> • §552.005 (Cross at Point Other Than Crosswalk) • §552.006 (Use of Sidewalk) • Code §552.008 (Drivers to Exercise Due Care) |
| Nearly half of all bicycle crashes happen at stop signs and traffic signals | <ul style="list-style-type: none"> • §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) |
| Texas Avenue and University Drive are both in the top three locations for bicycle and pedestrian crashes | <ul style="list-style-type: none"> • N/A |

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

Role of Educational Outreach

College students are often returning to bicycling and walking as modes of transportation after a long break in their high school years. As children, they probably did not receive instruction on bicycle and pedestrian safety and never learned what laws govern biking and walking. An important 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 ideas include:

- Radio;
- Television;
- Print;
- Social media;
- Public service announcements at sporting events; and
- Static and dynamic message signs.

In addition, there are partnership opportunities to help share this message, such as community groups, Texas A&M stakeholder departments, and local law enforcement. Outreach can be performed on site at key areas of concern to deliver the message directly to users. An aggressive educational campaign is important to help change behaviors that negatively impact bicycle and pedestrian safety. Stakeholders (academic departments, administrative divisions, student bodies, etc.) can be engaged to make bike and pedestrian education a part of the student registration process to encourage a wider and more effective reach on this focus area.

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:

- Document the number of bicycle and pedestrian safety mobilizations per year;

- Document number of participants in mobilizations;
- Record before and after traffic law observations;
- Track annual crash frequency and costs; and
- Conduct before and after survey on bicycle and pedestrian traffic law understanding.

While the overall goal is to reduce the number of crashes, performance measure like before and after surveys of user understanding of bicycle and pedestrian laws are important tools to assess the effects of the street coaching mobilizations. 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 last step in the bicycle and pedestrian safety mobilization plan is to identify mobilizations that would provide the greatest influence on pedestrian and bicyclists safety. These mobilizations will require a dedicated and coordinated effort between the education team and law enforcement to increase awareness and compliance with bicycle and pedestrian safety laws by all transportation users. Action items need to provide a data-driven path towards reducing and eliminating bicycle and pedestrian serious injury and fatal crashes. In addition, they must be aligned with local plans for Bryan, College Station, and Texas A&M University as well as be supported by the advisory committee 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, and operations data as well as information obtained from stakeholders and campus planning documents, the following list of mobilizations is recommended. The top four are priority initiatives and the next four 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 could be targeted for on-site enforcement and engagement on a rotating cycle to increase the influence area. Initial target areas should include Ross Street, the Pickard Pass, and University Drive.

2. Who's Right? - Shared space

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

3. Who's Right? - Cross walk/intersection right of way

Crosswalks and intersections are high conflict locations for bicyclists, pedestrians and vehicles. This initiative focuses on laws and how to safely navigate an intersection from a bicycle and pedestrian perspective as well as what drivers should be looking for so Aggies can do the right thing and keep everyone safe.

4. Helmet your Head

The Helmet your Head initiative emphasizes the importance of wearing a bicycle helmet every time you ride. Wearing a helmet is one of the best ways to reduce the likelihood of serious injury or death in bicycle crashes.

5. No Wheels Zone

The No Wheels Zone is an area of campus where bicyclists must dismount to reduce the potential for bicyclist and pedestrian conflicts. While this restriction is always in effect, the area increases for large special events including football games. Educational efforts should leverage football activities and outreach opportunities to expand the mobilization reach.

6. 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 are highlighted during this mobilization.

7. Phones Down, Eyes Up... and Ears Open - Distracted pedestrians

Distracted pedestrians are increasingly becoming a safety issue in both mixed traffic as well as with fixed objects along pathways. This mobilization emphasizes the importance of paying attention, both visually and audibly, in traffic and while in motion.

8. Pass it Back - Bicycle hand signals

The importance and requirement to use hand signals to signal bicycle movement intentions is the focus of this initiative. Aggies need to let those behind them know where they are planning to go, so they can get there safely.

Like other successful public safety mobilizations (e.g, car seat safety awareness, impaired driving, seat belt compliance, distracted driving, etc.), it is proposed that there be a targeted, all-hands-on-deck approach to education and enforcement efforts. A four-year rotational schedule is recommended to cover Mobilizations 1-4 every two years and Mobilizations 5-8 every four years, resulting in three mobilizations annually. Exhibit 12 identifies an initiative mobilization schedule that provides outreach to address issues and concerns identified in Exhibit 11.

Exhibit 12. Mobilization Plan Schedule and Key Issues and State Laws

| Initiative/Mobilization | Issue/Concern | Applicable State Laws | Mobilization Year |
|-------------------------|--|---|-------------------|
| 1. STOP means Stop | <ul style="list-style-type: none"> • Need to increase compliance of bicyclists stopping at stop signs • Conflicts between bicycles and pedestrians need to be reduced at busy intersections and shared paths (e.g., Ross Street near Ireland Street, and Pickard Pass) • 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 • Nearly half of all bicycle crashes happen at stop signs and traffic signals. | §545.107 §551.101 §551.103 §552.001 §552.002 §552.003, §552.005 | 1 and 3 |

| Initiative/Mobilization | Issue/Concern | Applicable State Laws | Mobilization Year |
|--|---|--|-------------------|
| 2. Who's right? - Shared space | <ul style="list-style-type: none"> Lack of No Wheels Zone Compliance Conflicts between bicycles and pedestrians need to be reduced at busy intersections and shared paths (e.g., Ross Street near Ireland Street, and Pickard Pass) 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 Pedestrians are distracted by mobile devices | §545.107 §551.101 §551.103 §551.106 §552.001 §552.002 §552.003 §552.005 §552.008 | 1 and 3 |
| 3. Who's right? - Cross walk/Intersection Right-of-Way | <ul style="list-style-type: none"> Conflicts between bicycles and pedestrians need to be reduced at busy intersections and shared paths (e.g., Ross Street near Ireland Street, and Pickard Pass) 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 Pedestrians are distracted by mobile devices Pedestrians are two times more likely to be involved in a serious injury or fatal crash. Nearly half of all bicycle crashes happen at stop signs and traffic signals | §545.107 §551.101 §551.103 §552.001 §552.002 §552.003 §552.005 §552.008 | 2 and 4 |
| 4. Helmet your head | <ul style="list-style-type: none"> Bicycle helmet usage needs to be increased | N/A | 2 and 4 |
| 5. No Wheels Zone | <ul style="list-style-type: none"> Lack of No Wheels Zone Compliance Conflicts between bicycles and pedestrians need to be reduced at busy intersections and shared paths (e.g., Ross Street near Ireland Street, and Pickard Pass) 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 | §545.107 §551.101 §551.103 §551.106 §552.001 §552.002 §552.003 §552.005 | 1 |
| 6. Be safe be seen | <ul style="list-style-type: none"> Need to increase visibility of bicyclists and pedestrians during nighttime. Pedestrians are two times more likely to be involved in a serious injury or fatal crash. Impairment was a factor in four times more pedestrian crashes than bicycle collisions | §545.107 §551.103 §551.104 §552.003 §552.005 §552.006 §552.008 | 2 |

| Initiative/Mobilization | Issue/Concern | Applicable State Laws | Mobilization Year |
|---|---|--|-------------------|
| | <ul style="list-style-type: none"> • Most pedestrian crashes happen outside of intersections • More pedestrian crashes happen at night than bicycle crashes • Most bicycle crashes happen on lower speed roads, while about the same number of pedestrian crashes happen on low and high-speed roadways | | |
| 8. Phone Down, Eyes Up...and Ears Open – Distracted pedestrians | <ul style="list-style-type: none"> • Conflicts between bicycles and pedestrians need to be reduced at busy intersections and shared paths (e.g., Ross Street near Ireland Street, and Pickard Pass) • Pedestrians are distracted by mobile devices • Pedestrians are two times more likely to be involved in a serious injury or fatal crash • Impairment was a factor in four times more pedestrian crashes than bicycle collisions • Most pedestrian crashes happen outside of intersections • Most bicycle crashes happen on lower speed roads, while about the same number of pedestrian crashes happen on low and high-speed roadways. | §545.107 §551.103 §552.001 §552.002 §552.003 §552.005 §552.006 §552.008 | 3 |
| 7. Pass It Back – Bicycle Hand Signals | <ul style="list-style-type: none"> • Conflicts between bicycles and pedestrians need to be reduced at busy intersections and shared paths (e.g., Ross Street near Ireland Street, and Pickard Pass) • 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 • Nearly half of all bicycle crashes happen at stop signs and traffic signals | §545.107 §551.101 §551.103 §551.106 §552.001 §552.002 §552.003 §552.005 §552.008 | 4 |

The highest priority locations for conducting these safety mobilizations should include high crash and/or concern corridors and intersections identified in the safety analysis and stakeholder input. These locations include:

- Corridors:
 - Texas Avenue – bicycles and pedestrians
 - University Drive – bicycles and pedestrians

- George Bush Drive – bicycles
- Ross Street – bicycles and pedestrians
- Intersections:
 - University Drive and Wellborn Road – bicycles and pedestrians
 - Texas Avenue and Harvey Road – bicycles
 - Texas Avenue and University Drive – bicycles
 - George Bush Drive and Houston Street – bicycles
 - Ross Street and Ireland Street – bicycles and pedestrians

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 should involve both on site engagement and enforcement events as well as promotional materials with messages delivered via social media, transitional media, posters, banners, message boards that are used for special events, enhanced traffic signing, and printed materials lasting throughout the month. The messaging is best delivered from peers rather than “safety experts.” To that end, incorporating various university colleges such as Engineering (Civil Engineering), Architecture (Landscape Architecture and Urban Planning Department), and Mays Business School (Business & Marketing) students through classroom projects in addition to local and campus bicycling organizations in developing the specifics of the program is key to ensuring the program success. Finally, these same groups of students and organizations can be leveraged to conduct before and after behavior observations and surveys. This information is vital to assess the effectiveness of the mobilizations and determine what modifications should be incorporated.

Conclusion

Texas A&M University has put a major focus on pedestrian and bicycle safety through the campus planning efforts. The Aggie Spirit, legendary for embodying a warm and welcoming environment, can be capitalized on to share that same sentiment when traveling around campus. Aggies are known for doing the “right” thing. Through street coaching mobilizations, the campus community can be educated on the “right” ways for bicycles, pedestrians, and vehicles to interact to ensure everyone’s safety when traveling around campus.