

APPENDIX H

H

STATEWIDE ACTIVE
TRANSPORTATION PLAN 2050

2050

Statewide Active Transportation Plan



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1.1 Overview

Texas is home to more than 31 million people supporting 15.5 million jobs. The state's strong economy is expected to add 9 million new residents' and 6 million new jobs by 2050. Texas's rapid growth requires a transportation system that is responsive to the increasing and changing needs of residents, workers, and visitors. *Connecting Texas 2050*, the state's Long-Range Transportation Plan, describes an integrated multimodal approach focused on creating more travel choices that are safe, connected, and support the growing Texas economy. The Texas Statewide Active Transportation Plan (SATP) highlights the role that walking, biking, and using other mobility devices (or "rolling") will play in the statewide transportation strategy by identifying the needs, opportunities, and outlining strategies required to achieve the vision for active transportation in Texas.

The Importance of Active Transportation

Active transportation modes play an important role in responding to existing transportation needs and supporting future growth and travel demand. This importance is underscored when we consider the role of active transportation:

Facilitates Mobility and Connectivity

All trips begin and end with some form of active transportation (walking, bicycling, or rolling). Over, 39% of weekday trips are relatively short (less than 3 miles) and 6% of trips are less than 0.5 miles. When appropriate infrastructure and connectivity are present, a portion of these short trips have the potential to be accomplished through walking, biking, or the use of other mobility devices. In 10 minutes, a person can walk 0.5 miles or bike 2 miles, making active transportation a time-efficient mode for short trips.

Increases Access to Opportunities

Active transportation can be an affordable travel option. Compared to driving, walking and biking are low-cost transportation modes. In Texas, 5% of households do not own a vehicle. Effective active transportation networks have the potential to connect people with key destinations.

Increased access to economic and social opportunities results in:

- Connecting people to employment
- Improving access to education
- Supporting economic growth
- Support expansion and social activities

This access is further extended when combined with public transit.

Texas is expected to grow by 11 million new residents and 6 million new jobs by 2050.

Creates Active and Safe Communities

Complete active transportation networks create safe environments for people to live active lifestyles. Active transportation networks can help overcome community barriers such as infrastructure gaps and safety concerns by making community assets accessible to everyone while creating the opportunity for healthy and active living for people of all ages, including schoolchildren and seniors.

There is strong public support for active transportation. A statistically valid survey performed in support of *Connecting Texas 2050*, the 2050 Statewide Long-Range Transportation Plan (*Texas Department of Transportation (TxDOT) / ETC Institute*), found that a majority of Texans supported increased investments in active transportation and recognized the importance of establishing a safe and connected active transportation network. The creation of the SATP is a first step in responding to the vision and priorities expressed in *Connecting Texas 2050*.

79.4% of Texans recognized that improving bicycle/pedestrian network is important, very important, or critically important.

- *Connecting Texas 2050*

A safe, accessible, connected, and fully integrated pedestrian and bicycle network that increases active mobility and supports health, economic vitality, and resiliency within communities and across Texas.

- Vision for Active Transportation in Texas



Bicycle infrastructure can connect Texans with the state's natural resources

Alignment with Other TxDOT Initiatives

The SATP is part of a coordinated strategy to improve travel within Texas. There are a number of TxDOT studies and plans that helped inform the SATP, including:

- [Connecting Texas 2050, Statewide Long-Range Transportation Plan](#)
- [Texas Statewide Multimodal Transit Plan](#)
- [Texas Bicycle Tourism Trails Study](#)
- [ADA Self-Evaluation and Transition Plan](#)
- [Texas Pedestrian Safety Action Plan](#)
- [Statewide Bicycle Safety Analysis](#)
- [Vulnerable Road User Safety Assessment](#)
- [TxDOT District Bicycle Plans](#)

Texas SATP 2050 Goals

The SATP goals are described in Section 3. Five goals were developed through early stakeholder and public engagement to identify community values to shape the vision of active transportation in Texas. The goals position the SATP to support implementation of *Connecting Texas 2050*.

Goals

- Improve Safety, Comfort, and Accessibility**
Design for safety and comfort by providing low stress level facilities.
- Enhance Connectivity**
Connect community destinations through plans and project development activities and build more connective infrastructure.
- Address Community Needs**
Provide mobility options for people who don't have vehicle access or rely on active transportation modes.
- Support Economic Vitality**
Increase accessibility and connect the workforce.
- Promote Healthy Communities**
Make it easier for Texans to live healthy and active lifestyles.



A family crossing the street at a highly visible crosswalk

Current Challenges

Section 4 of the SATP describes a variety of challenges to address the changing needs of pedestrians and bicyclists and expand active transportation networks throughout Texas to achieve the SATP vision and serve a wider array of people to walk, bike, and use mobility devices. These challenges include:

1. Congestion in large metro regions is driven by rapid growth.
2. Current funding for active transportation does not cover demand and need.
3. Pedestrians and bicyclists are disproportionately represented in roadway fatalities.
4. Drivers and active transportation users can be unsure about rules of the road.
5. Many active transportation routes are not comfortable for all users.
6. Limited space can lead to less than optimum active transportation designs.
7. Emerging design techniques and technologies have not been integrated to their fullest extent.
8. Active Transportation may not always be prioritized in the planning and design process.
9. Active Transportation travel options are not widely available in all local communities.
10. Statewide network for long-distance active transportation needs further investments.
11. Physical barriers limit access to opportunities, especially for people with disabilities.
12. Limited connections to transit and other travel modes reduce accessibility and mobility.
13. Multimodal connections and amenities serving ports of entry are limited.
14. Some active transportation facilities have not been maintained.
15. The economic benefits of active transportation are not fully understood.
16. Coordination between land use planning and active transportation implementation needs further integration.

Key Strategies

The SATP vision and goals provided a framework for the identification of key strategies to address the challenges. These nine key strategies were developed through both SATP engagement and technical analysis. Each strategy is described in greater detail in Section 5. Key strategies are:

1. **Improve active transportation safety**
A positive travel experience requires safe conditions, which can be achieved through safe designs, complete networks, enhanced crossings, education, and coordinated enforcement. Combined, these conditions offer the potential to generate more active travel.
2. **Prioritize more active transportation infrastructure**
Leverage existing resources to accelerate the construction of more sidewalks, bikeways, multi-use paths, and trails so that active transportation is a more attractive travel option.
3. **Integrate active transportation with other travel modes**
In communities with public transit and micromobility options, connections between active transportation can play a key role in completing trips. These "last-mile connections" improve the beginning and ending of each trip and offer safe passage to and from trip origins and destinations, improving the viability and comfort of transit as a travel option.
4. **Include active transportation early in project planning and scoping**
When active transportation is considered proactively, achieving consistent implementation becomes more likely.
5. **Overcome physical barriers in the active transportation networks**
Without strategies to overcome physical barriers (bridges, large intersections, and wide roads) the system will not operate as envisioned and can potentially dissuade users and expose travelers to less-optimal alternatives.
6. **Implement optimal designs to improve travel experience**
A positive travel experience has a greater likelihood of being repeated than one that is negative. A combination of infrastructure design, exposure to risk, urban design, and comfort features such as shade and benches can combine to influence travel experience.
7. **Create statewide active transportation networks**
An interconnected system of active transportation extends travelers' access to key destinations and opportunities, such as employment, healthcare, shopping, daycare, education, and job training. Complete networks ensure safety and accessibility, making it a viable option for more people.

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8. Work with partners and communities to develop plans, increase awareness, and implement active transportation

TxDOT alone cannot build and maintain the envisioned active transportation system. It will require partnership with local communities and developers to build and operate a more complete and effective active transportation system. Creating awareness has the potential to build ongoing support across the state for the construction of more active transportation infrastructure. Education can help promote awareness and safer interactions between drivers and active road users, and can create informed travelers.

9. Improve conditions through maintenance and repair

New roads sometimes take years to plan, design, and construct, but maintenance happens daily. As new resources, training, and expectations are introduced, regular maintenance can play a role in ensuring safe conditions for active transportation travelers.

Moving into the Future

These strategies will require long-term partnership, coordination, and investment of resources from both the public and private sectors. To accelerate these efforts, priority actions to be taken over the next five years are detailed in Section 6, consisting of the following:

Identify and invest in Statewide Active Transportation Networks

The SATP key strategies call for the creation of active transportation networks statewide. This includes defining and identifying a Priority Investment Network, making initial investments in the Bicycle Tourism and Trail Network, and identifying candidate routes for integration in the U.S. Bicycle Route System.

Lead an Active Transportation Awareness and Education Campaign with Partnerships

Advancing active transportation in Texas will require the efforts of both TxDOT and its partners throughout the state. The phased implementation approach will include an awareness campaign to promote the plan and highlight partnership opportunities. TxDOT will also support implementing agencies in thoroughly engaging the public and stakeholders before implementing active transportation projects.

Develop Design Examples and Train for the Consistent Application of Active Transportation

TxDOT recently updated the Roadway Design Manual (RDM) to offer a greater variety of design solutions for active transportation and reflect best practices. One way to build on these efforts is to create design prototypes for incorporating bicycle and pedestrian infrastructure in new and retro-fit projects (especially those with challenging constraints). These prototypes should be incorporated into internal and external training.

Enhance Data Collection and Reporting

Monitoring progress requires consistent data collection, performance metrics, and regular reporting. By making initial enhancements to active transportation data collection and reporting, TxDOT can take advantage of harnessing meaningful data to improve decision-making and the allocation of existing funds and resources.

Effectively Leverage Resources for Active Transportation

One of the most effective ways to make an immediate impact is to effectively leverage resources for active transportation. This can be done in multiple ways, including improving the flexibility of existing funding, and identifying new and innovative funding sources.



2050 Statewide Active Transportation Plan

SATP Participants

Development of the plan required input from a variety of perspectives. Participants from throughout Texas provided input that ensured a comprehensive set of viewpoints and experiences were considered, comprised of:



6

Public Engagement Statistics

The SATP included two rounds of public and stakeholder engagement to gather feedback. Round 1 focused on the identification of project goals and included open houses, a public survey, meetings with local jurisdictions, and discussions with advocacy groups. Round 2 involved a series of six individual Emphasis Area Working Groups (EAWGs) that met multiple times, each organized around a central set of topics. Additional public feedback was collected through a series of pop-up events held in each of the TxDOT districts. Round 3 introduced the draft plan to the public and stakeholders through a series of open houses, virtual meetings, and a public survey. Engagement results were used to inform the SATP and are referenced throughout this report. The following statistics offer a summary of the scale and success of SATP engagement activities. The Appendix provides a detailed summary of SATP engagement, which included:

Round 1: Input from 4,800 individuals, stakeholders, and other groups

- 861 Surveys Completed
- 61 Advocacy Group Meeting Attendees
- 4,239 Website Unique Visitors
- 140 Attendees at 10 Public Meetings
- 50 EAWG Members
- 21 Steering Committee Members
- 445 Social Media Interactions
- 41,062 Social Views
- 250 Conversations with Local Agencies, Jurisdictions, and Advocacy Groups

Round 2: More than 1,400 targeted conversations with individuals, stakeholders, and other groups

- 593 Surveys Completed
- 2,363 Email Subscribers
- 297 Website Unique Visitors
- 32 Pop-Up Events
- 43,800 Social Media Views
- 3 Virtual Meetings for MPOs and Local Agencies
- 196 Social Media Interactions

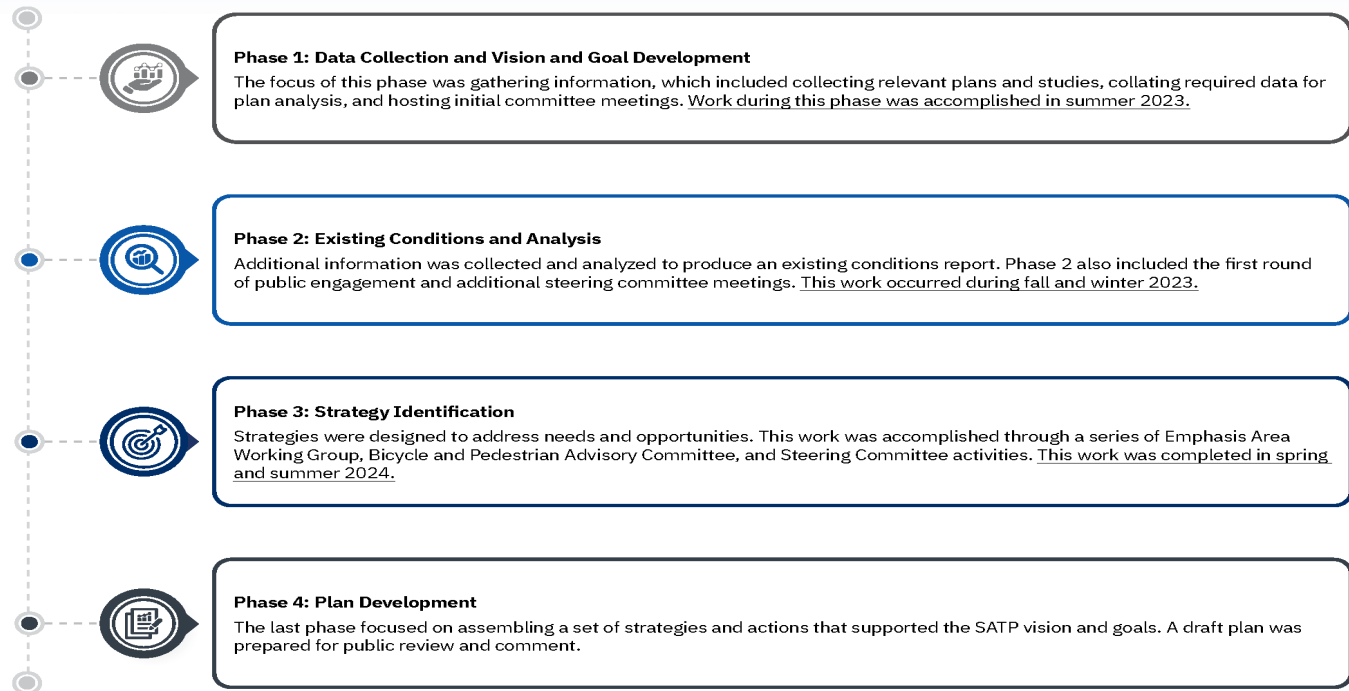
Round 3: 30,294 total touchpoints

- 10 Open House Meetings
- 155 In-Person Attendees
- 26,082 Social Media Views
- 339 Social Media Interactions
- 1,057 Survey Responses and Comments
- 2,918 Unique Visitors (SPP)
- 6 Virtual Meetings with Key Stakeholders (MPO, EAWG, Steering Committee, and BPAC)

2050 Statewide Active Transportation Plan

Timeline and Process

The SATP planning process was created to carefully consider technical analysis, stakeholder engagement, and key decision-making. The process was organized into four distinct phases. Stakeholder engagement occurred throughout the process.



A more detailed set of public engagement results can be found in [here](#) for Round 1, [here](#) for Round 2, and [here](#) for Round 3.



TxDOT maintains a comprehensive set of plans and programs that represents a coordinated strategy to move people and goods throughout the state including best practices to manage, maintain, and expand the transportation system. These plans and programs communicate a shared vision for transportation, provide critical analysis, identify strategies and tools, and ultimately fund, construct, and maintain our transportation system. *Connecting Texas 2050* serves as the Statewide Long-Range Transportation Plan providing a 25-year vision. The Statewide Active Transportation Plan and Statewide Multimodal Transit Plan focus on ways to support the Connecting Texas 2050 goals through travel options, safe design, and multimodal connectivity.

TxDOT Plans for Moving People

Connecting Texas 2050 Statewide Long-Range Transportation Plan

Statewide Active Transportation Plan

The Texas Statewide Active Transportation Plan is a collaborative effort to advance a safe, accessible, connected and fully integrated pedestrian and bicycle network that increases active mobility and supports health, economic vitality and resiliency within communities and across Texas.

Statewide Multimodal Transit Plan

A safe, universally accessible, and integrated network of transit mobility options that connects people seamlessly, locally and across the state, supporting an improved quality of life and a resilient and vibrant economy.

Supporting Studies

- [Texas Bicycle Tourism Trails Study](#)
- [ADA Self-Evaluation and Transition Plan](#)
- [Statewide Bicycle Safety Analysis](#)
- [Texas Pedestrian Safety Action Plan](#)
- [Vulnerable Road User Safety Assessment](#)
- The Texas Department of Transportation's Transit Asset Management (TAM)
- The Intercity Bus Study
- The Bus Safety Plan

\$764M invested in bicycle and pedestrian projects across Texas from 2015-2023

This amount includes \$546 million in TxDOT Transportation Alternatives funding; \$10 million in Safe Routes to Schools funding; and \$208 million in federal and state funding through the statewide ADA Pedestrian Program to upgrade sidewalks, curb ramps, and striping for pedestrian accessibility, safety, and mobility along TxDOT roadways. This sum does not include bicycle and pedestrian infrastructure elements embedded in larger roadway projects.

2.1 Leveraging Previous Plans and Programs

TxDOT maximizes resources and ensures continuity among state plans by building on previous initiatives and investments. The SATP is part of a coordinated approach to improve conditions for active transportation within Texas. There are a number of existing TxDOT studies and plans that helped inform the SATP including:

- [Texas Bicycle Tourism Trails Study](#)
- [ADA Self-Evaluation and Transition Plan](#)
- [Statewide Bicycle Safety Analysis](#)
- [Texas Pedestrian Safety Action Plan](#)
- [Vulnerable Road User Safety Assessment](#)

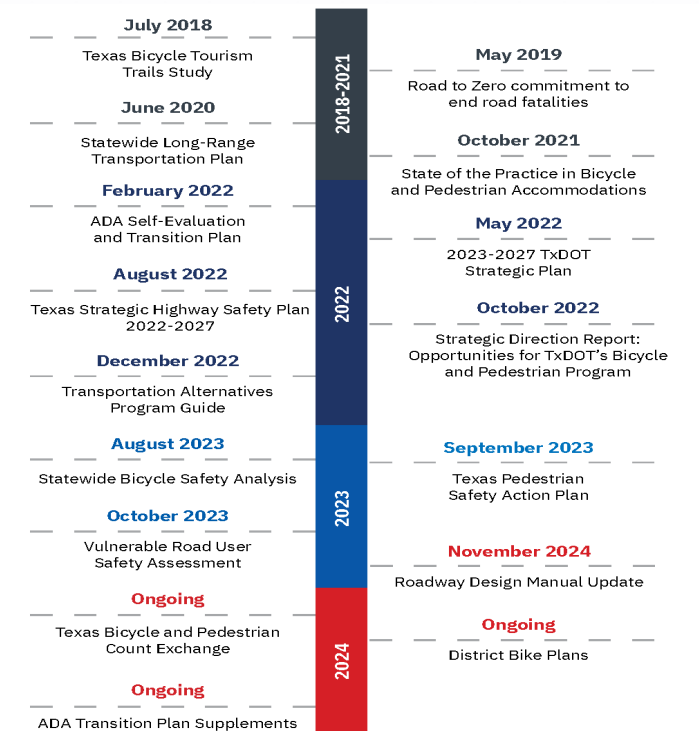
Each of these plans aims to guide decisions and align TxDOT's strategic goals with practical actions. These active transportation plans complement goals and objectives of and are developed in coordination with [Connecting Texas 2050](#), [The Road to Zero](#), and the [Texas Statewide Multimodal Transit Plan](#).

Key Takeaways

- Safe and connected travel options provide access to jobs, services, and more. Current statewide transportation planning efforts emphasize safety for all users, including pedestrians and bicyclists. Safety is addressed through the implementation of updated design standards, systemic safety improvements, and specific countermeasures to protect vulnerable road users.
- Connectivity and accessibility, with efforts directed toward removing barriers to accessibility, developing a statewide network of long-distance bikeways, enhancing first- and last-mile connections, and expanding multimodal transportation options, provide access to opportunities. Walking and bicycling create vibrant communities that have direct impacts on economic vibrancy and public health.

Previous Plans and Programs Timeline

The SATP builds on significant advancements toward enhancing active transportation safety and connectivity across Texas.

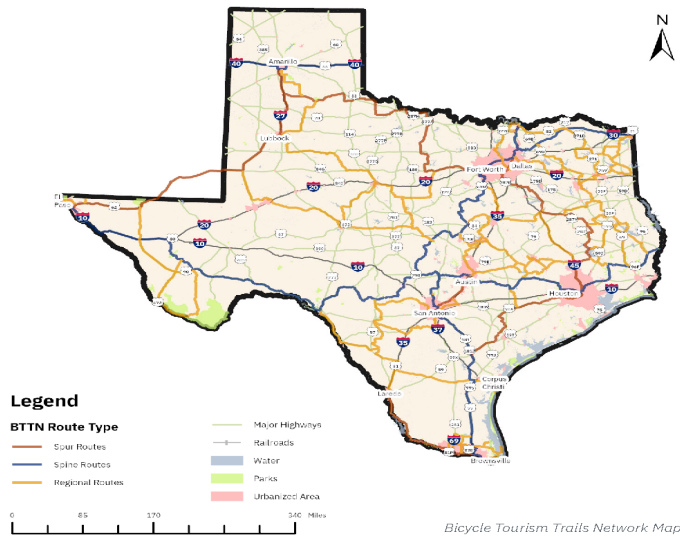


Summary of Previous Plans

Texas Bicycle Tourism Trails Study (BTTS)

The *Bicycle Tourism Trails Study (BTTS)* was developed to establish a long-distance bikeway network that would provide safe, non-motorized access and connectivity between statewide/regional destinations and support economic development across Texas.

Initiated in 2017 by TxDOT, the project developed quantitative and qualitative routing criteria to provide an example vision of a statewide network of bikeways for tourism. The network established design standards that have been incorporated into the TxDOT Roadway Design Manual. The tiered network includes cross-state spines, connecting spurs, and regional routes totaling 8,933 miles.



ADA Self-Evaluation and Transition Plan

The *ADA Self-Evaluation and Transition Plan* (ADA Transition Plan) assessed TxDOT's services, policies, and practices to identify any policies or practices that discriminate against people with disabilities and to develop a transition plan that identifies any physical changes to facilities that are necessary to achieve program access.

The ADA Transition Plan evaluated several areas of accessibility statewide, including within public right-of-way (ROW), websites, and facilities. The public ROW evaluation is particularly pertinent to the SATP, as it identifies pedestrian facilities that were not in compliance with the ADA as of 2022, as well as a transition plan to bring these facilities into compliance. The pedestrian facilities evaluated included sidewalks, curb ramps, transit stops, and pedestrian signal pushbuttons. **In total, the ADA Transition Plan identified approximately \$1.64 billion (per preliminary cost estimates not adjusted for inflation) of needed improvements to facilities in the public ROW.**

A prioritization process was included as part of the ADA Transition Plan to help facilitate the agency's decisions around which non-compliant elements should be addressed first. The prioritization ranked barriers according to severity and level of activity. This prioritization culminated in a statewide implementation schedule of priority pedestrian improvements to be implemented from fiscal years 2022 to 2025. The implementation schedule is updated every four years and the remediation of the non-compliant infrastructure inventory is managed through a custom GIS-based web application named the TxDOT Accessibility Management Enterprise System (TAMES).

Statewide Bicycle Safety Analysis

The Statewide Bicycle Safety Analysis (BSA) is a high-level assessment of crash and safety trends and patterns. The analysis examined bicycle-related crashes, and the results were used to support the TxDOT Vulnerable Road User (VRU) Safety Assessment.

Based on data from 2017 to 2021, the BSA revealed that the majority (61.8%) of fatal and serious injury crashes occurred on roadways that are part of the state highway system (i.e., "on-system"). Additionally, 77.8% of these crashes happened in urban areas, with the most common collision type being one vehicle going straight (81.1%).

The study identified three risk factors: Average Daily Traffic (ADT), speed, and shoulder width. ADT risk affected 24.0% of TxDOT's centerline lane miles, speed was a factor for 46.6%, and shoulder width impacted 44.4%.

Texas Pedestrian Safety Action Plan

The *Texas Pedestrian Safety Action Plan* (PSAP) was created to address a rising number of pedestrian-related crashes occurring on Texas roadways.

The PSAP included systemic and targeted crash analyses that were performed to proactively identify potential risk segments throughout the state while also comprehensively targeting historical crash locations and recommending countermeasures to reduce pedestrian crashes.

In addition to district-specific safety profiles, a PSAP screening tool was created to allow TxDOT districts, metropolitan planning organizations (MPOs), and the public to identify priority areas to improve pedestrian safety.

Vulnerable Road User Safety Assessment

The *Vulnerable Road User (VRU) Safety Assessment* identifies the factors contributing to the increase in fatal and serious injury crashes involving vulnerable road users. The VRU Safety Assessment conveyed the PSAP and BSA results to identify physical characteristics of facilities that may influence the severity of a VRU crash. The assessment also incorporated census data analysis to determine factors that could possibly influence the severity of VRU crashes.

Findings from these analyses as well as feedback from the public and MPOs ultimately informed the list of recommended strategies that aim to mitigate and reduce VRU crashes.

Some of the important indicators of the severity of VRU crashes included: light conditions, speed, demographics, and area type. Statewide maps were developed using pedestrian and bicyclist systemic analysis and hot spot analysis to provide decision-makers with a tool that can help them prioritize locations for screening and implementing countermeasures.

District Bicycle Plans

In September 2024, a pilot was completed to develop the first four TxDOT district bicycle plans for the Bryan, Laredo, Pharr, and San Antonio districts. The approach included technical studies, stakeholder engagement, and virtual public outreach that can be applied in the remaining 21 TxDOT districts.

The bikeway prioritization process within the district bicycle plans offers a consistent and incremental way to identify, evaluate, and prioritize on-system roadway segments for bicycle improvements. A consistent set of evaluation criteria, organized around a common approach, is used to score roadway segments so that statewide goals and local preferences can be aligned.

This process resulted in the designation of roadway segments to one of four bikeway development priority categories:

- Opportunistic Improvements, which are achieved through other roadway improvement projects.
- Proactive Improvement, where the benefits merit a freestanding bikeway project.
- Constrained Corridors, where the addition of bike infrastructure is a priority but there are significant space constraints and other barriers to implementation.
- High-Priority Improvement, where bikeways should be improved as soon as is feasible, due to intensity of bicycling needs and potential benefits.

In the years to come, TxDOT will develop the remaining district bicycle plans.

Active Transportation connects EVERYONE



2.2 Summary of Existing Conditions and Analysis

More than 31 million people call Texas home, and by 2050 the population is forecasted to increase nearly 40%. Due to Texas' expansive geography, TxDOT manages the transportation system via 25 districts. Each district oversees the design, location, construction, and maintenance of its area's transportation network, including active transportation infrastructure such as sidewalks, bike lanes, and shared-use paths. Combined, the 25 districts maintain and operate over 80,000² on-system centerline miles.

Mode Share and Infrastructure

Biking and Walking

Walking and Biking is an important mode of transportation. Today, it is estimated that in Texas over 11 million bicycle and pedestrian trips occur every day⁷. This represents over 10% of the daily trips and play a key role in the multimodal movement of people. Many of these trips occur outside of the traditional commute and represent the numerous trips needed to access services and amenities that are near work or home.

- Almost **1 million** of daily trips are biking
- Over **10 million** daily trips are walking

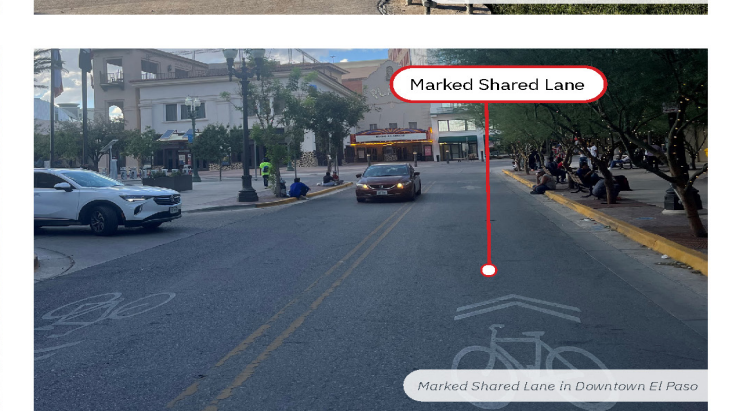
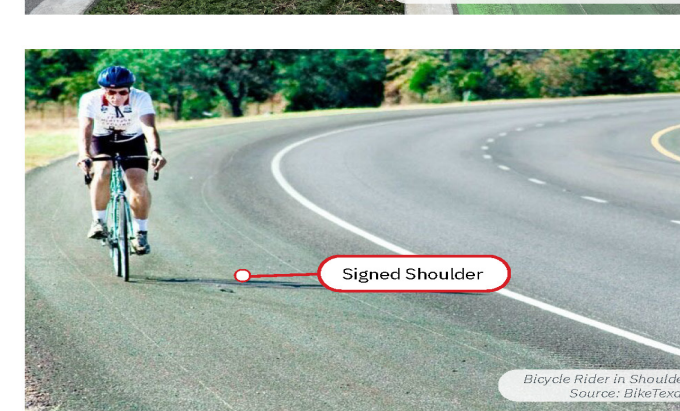
Bike infrastructure and sidewalks provide connections and access to jobs and education, bridging gaps to create links with other travel options, including transit. **As of 2020, Statewide, sidewalks make up most of the active transportation infrastructure on the state highway system with approximately 5,000 miles, while bikeway facilities make up almost 500 miles.**

This data was collected as part of the Pedestrian Access Inventory (PAI) in 2015–2021 and further investment in active transportation infrastructure has been made within Texas since then. This existing conditions inventory of bicycle and pedestrian facilities should be updated as the district bike plans are completed and the existing data is confirmed.

Bike and Sidewalk Facility Examples



Bike and Sidewalk Facility Examples



Bike and Sidewalk Facility Examples



Existing Sidewalk in Amarillo District

Micromobility

Micromobility refers to the use of small, lightweight vehicles and devices, such as electric bikes (e-bikes) and electric scooters (e-scooters). Most of this travel occurs in urban areas on existing pedestrian or bicycle infrastructure. The use of these lightweight vehicles has become a viable option for shorter trips (1 to 5 miles). 39% of Texans' trips are less than 3 miles long, and with micromobility options, these trips could take less than 10 minutes. While micromobility-specific plans do not currently exist, several cities in Texas have implemented bike-share programs and permit commercially operated e-scooters. Statewide standardization and best practices for micromobility planning, design, and implementation have not been established and are recognized as a gap in statewide mobility efforts.

Micromobility options could make 39% of all Texans' trips take less than 10 minutes.



E-scooters parked in front of an Engineering building at Texas Tech University in Lubbock.

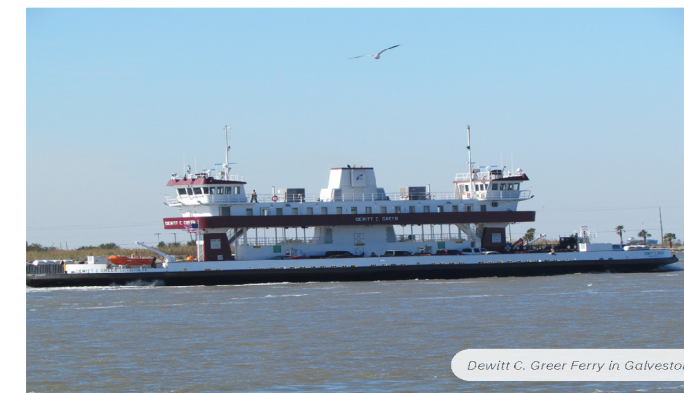
Additional Modal Considerations: Transit, Ferry, Cross-Border, and Emerging Technology

Transit

Texas had 205 million transit passenger trips in 2023.⁴ Enhancing the connectivity of walking and biking infrastructure with transit has the potential to make all of these modes more attractive options for travelers. For example, transit waiting areas such as stops, stations, and terminals require connecting infrastructure that promotes the safety of travelers using non-motorized modes. This is especially critical at high-risk areas such as intersections. The SATP is closely aligned with the ongoing planning effort for the Statewide Multimodal Transit Plan (SMTP) so that the coordinated recommendations expand the trip range and coverage of non-vehicle travel.-risk areas such as intersections.

Ferry

TxDOT operates two ferry routes in the Houston and Corpus Christi districts. The Port Aransas Ferry operates from Port Aransas to Harbor Island in the Corpus Christi District. The Galveston Ferry operates from Galveston to Port Bolivar in the Houston District. Ferries on these routes allow pedestrians and bicyclists to walk on board and function as a connection for the active transportation network in these areas 24 hours a day, 365 days a year. Annually, the ferries transport more than 8 million passengers.



Dewitt C. Greer Ferry in Galveston

Cross-Border Active Transportation

Active transportation infrastructure is important at ports of entry, as it provides a critical linkage to jobs, family, education, and daily needs. The Texas-Mexico border is 1,254 miles long with 28 ports of entry grouped into three regions: El Paso, Laredo, and Rio Grande Valley. Each of these regions has at least one port of entry used primarily by pedestrians and bicyclists, due in part to the amenities such as transit hubs and bike-share stations available. In 2022, the El Paso and Rio Grande regions experienced over 5.2 million pedestrian crossings each, and the Laredo region experienced 3.4 million crossings.



Emerging Technology

Autonomous delivery vehicles (ADV) are being tested on sidewalks across the country for food and grocery deliveries. ADV companies are working to determine the costs and benefits of developing this technology to operate in the roadway versus sidewalks. The potential impact of ADVs and demands on active transportation facilities will need to be considered.

Smart intersections use intelligent systems technology to collect road and infrastructure data. The data can be used by city and state governments to implement safety equipment and infrastructure that protect vulnerable road users such as pedestrians and bicyclists.

2.3 Safety Risks

Active transportation users are exposed to a greater risk of fatality or injury compared to automobile users. In just three years (2021–2023), fatal, serious injury and minor injury crashes involving a pedestrian, bicyclist, or person riding an e-scooter increased 14% from 5,462 to 6,235. Of the crashes in 2023, 4,449 pedestrians, 1,730 bicyclists, and 56 e-scooter riders experienced a fatal, serious injury, or minor injury crash. During this same period, bicyclist fatal crashes increased 12% (from 91 to 102 fatal crashes) while pedestrian fatal crashes decreased 2% (from 813 to 799 crashes). However, the number of pedestrian crashes resulting in a serious or minor injury increased 15% (from 3,185 to 3,650 crashes).

Active transportation travelers are largely exposed and unprotected, resulting in 18% of pedestrian crashes, 6% of bike crashes, and 4% of scooter crashes being fatal (compared to less than 1% of auto crashes). TxDOT Districts with large urban areas and high population density, such as Dallas, Houston, and San Antonio, also have the highest crash totals.

Contributing Factors

There are often a variety of reasons crashes occur. A review of data can help reveal the circumstances and conditions that are common across crashes involving active transportation users. Specific efforts have been made to understand the influence of failure to yield right-of-way (ROW), lighting, context, and street types.

Understanding the contributing factors to crashes is the first step in identifying effective countermeasures and solutions to reduce crashes. The most successful approach typically includes a combination of Engineering, Enforcement, and Education. The proper balance of those three measures is most appropriately determined at the local or corridor level where the most prominent contributing factors leading to active transportation crashes for the area or location can be closely examined.

Failure to Yield ROW

The leading contributing factor for active transportation crashes throughout Texas is pedestrian or bicyclist failed to yield ROW. This contributing factor occurs when a pedestrian or bicyclist is crossing midblock or at an unmarked crosswalk where the pedestrian or bicyclist is required to yield to vehicles in accordance with state law. In addition failure to yield ROW occurs when bicyclist ride through signalized intersections when required to stop. The reasons these crashes occur are varied but can include lack of physical barriers along a controlled access facility (Engineering), lack of pedestrian or bicycle attention or confusion (Education), and frequent crossings outside of designated areas (Enforcement).

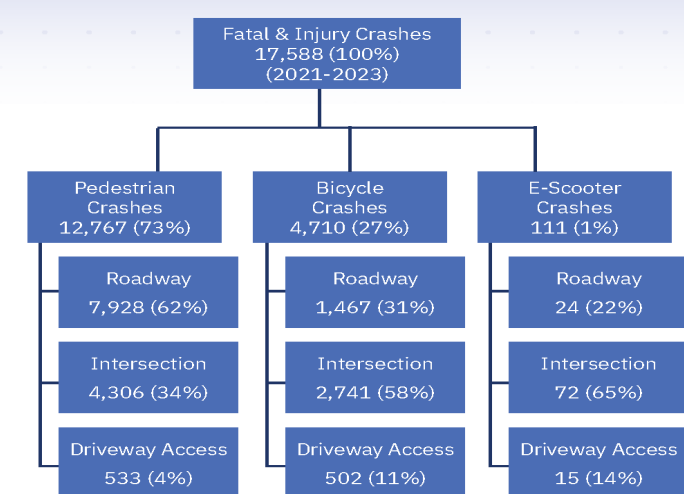
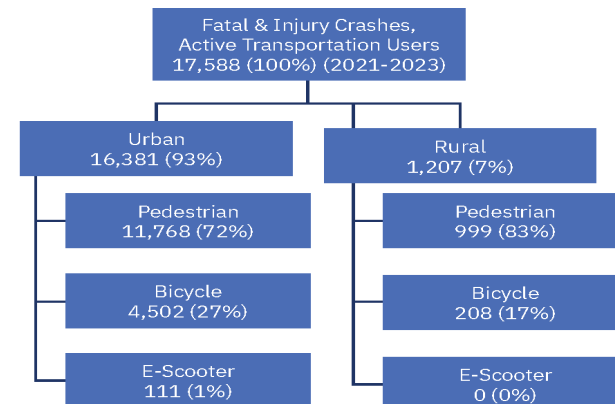
The second leading contributing factor for active transportation crashes is Motorist Failed to Yield ROW. This contributing factor occurs when the motorist does not yield to a pedestrian crossing at a marked crosswalk or walking on a sidewalk or the motorist turns left into a bicyclist. The reasons these crashes occur are varied and can include speeding (Enforcement, Engineering), and driver inattention (Education, Enforcement).

Lighting

Most fatal pedestrian (81%) and bicycle/e-scooter (67%) crashes occur in dark conditions where visibility is limited for both motorists and vulnerable road users.

Context

For purposes of crash analysis, TxDOT defines urbanized areas using the 2020 Census definition for incorporated areas with a population over 5,000. All roads inside these urbanized areas are considered urban, while all other roads outside of these urban areas are considered rural. Over 90% of fatal, serious injury, and minor injury pedestrian crashes that occurred between 2021–2023 were in urban areas. Most pedestrian fatal, serious injury, and minor injury crashes occur along street segments rather than at intersections. Bicyclist and e-scooter fatal, serious injury, and minor injury crashes typically occur at intersections rather than along street segments.



What We've Heard

- Safety was the most prioritized public engagement topic. The related topics of Accessibility and Comfort ranked fourth in priority.
- There is difficulty bridging the gap between on-street and off-street infrastructure.
- Stakeholders said, "Safety should not just be a feeling, but a certainty."
- The design and construction of ADA-compliant bicycle and pedestrian infrastructure can be challenging, often requiring technical assistance.
- Emphasis Area Working Groups (EAWGs) identified several key factors that should be considered, accounted for, and addressed when making future active transportation design decisions:
 - Separation – The greatest level of separation from automobile uses was expressly preferred.
 - Speed – Stakeholders recognized the safety risks of elevated automobile speeds and the negative implications associated with active transportation.
 - Comfort – All users deserve to feel comfortable regardless of their mode of transportation.

See Appendix for a more comprehensive set of engagement summaries.

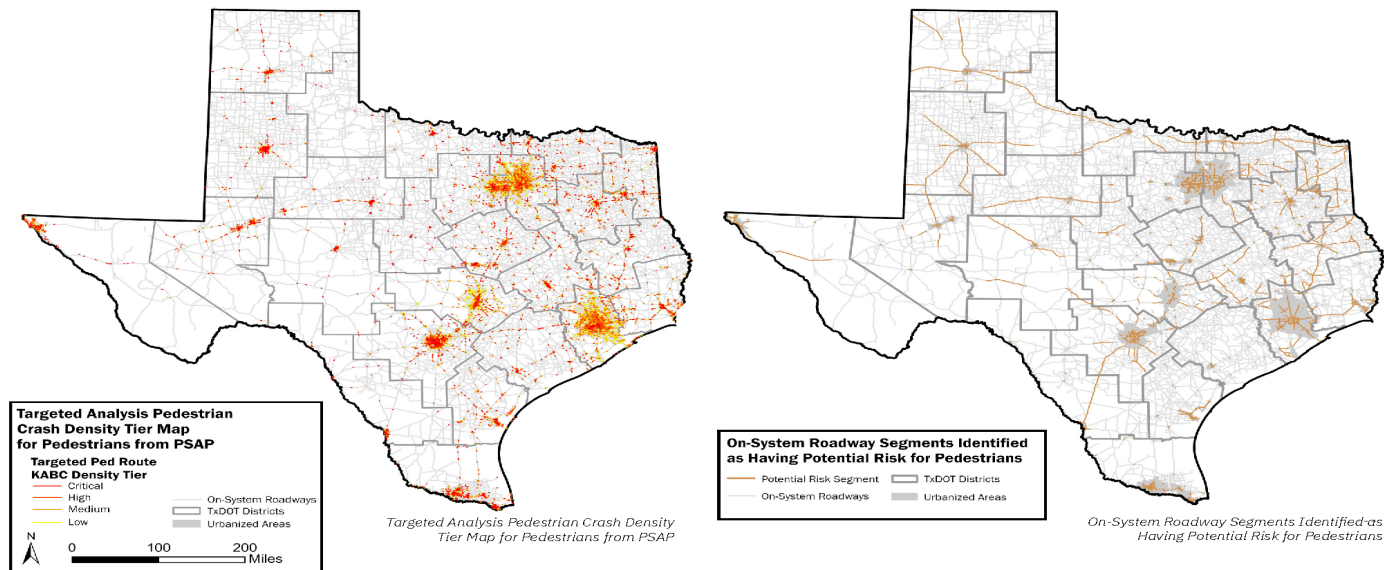
Analysis Results

The 2023 Texas Pedestrian Safety Action Plan (PSAP) and the 2023 Statewide Bicycle Safety Analysis (BSA) serve as the foundation for the statewide safety analysis for the SATP. The PSAP analyzed pedestrian crash densities, as well as potential risk areas identified through a systemic pedestrian crash analysis. The BSA included a statewide analysis of motor-vehicle related bicycle crashes.

In addition to the analyses performed in the PSAP and the BSA, a district-level safety analysis was performed as part of the SATP. This analysis provides insights on active transportation crash patterns in addition to recommended countermeasures along select corridors.

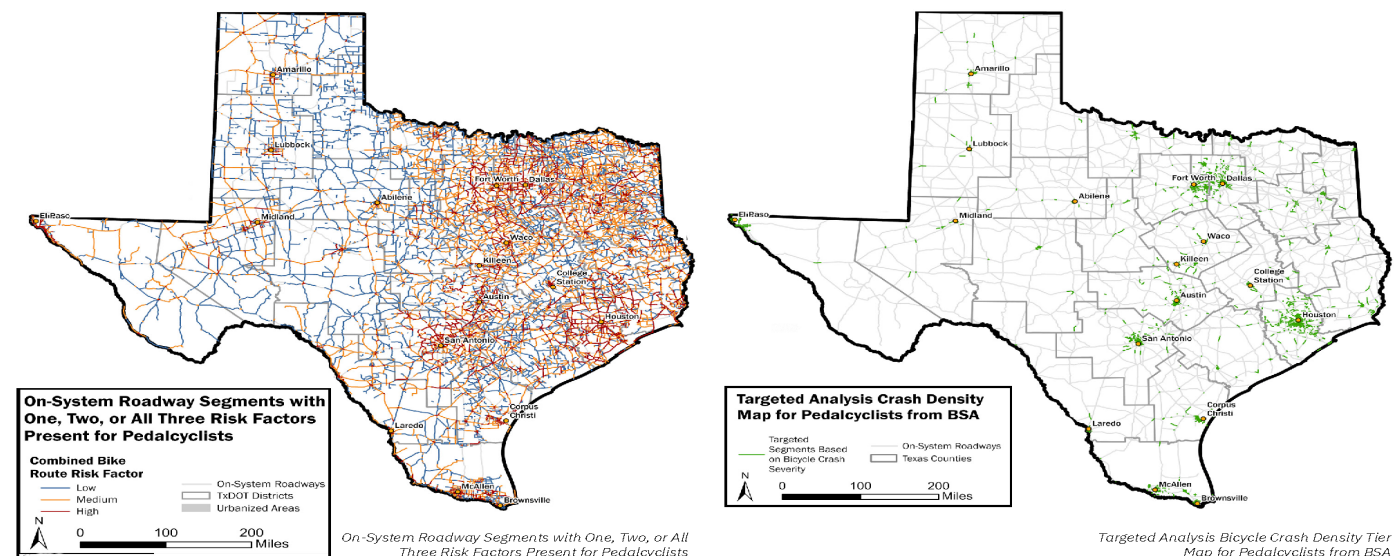
Key Takeaways — Pedestrian Safety

- The hot spot targeted analysis in the PSAP showed that most of the pedestrian crashes occurred on roadway in urban areas (~85%). This observation aligns with the expectation that more densely populated areas tend to have a higher pedestrian and bicyclist exposure, as illustrated in the map below.⁸
- 68% of all pedestrian fatalities occur on 25% of centerline miles.⁸
- Dark conditions account for 52% of pedestrian crashes and 82% of those result in fatalities.⁸
- 70% of pedestrian crashes involved a motor vehicle traveling straight along a roadway. 23% of pedestrian crashes involve a motor vehicle making a turning movement.⁸
- Rural interstates/freeways have a higher systemic risk for pedestrians because they include higher speeds, lack pedestrian infrastructure such as sidewalks, and have longer distances for crossing.⁸



Key Takeaways — Bicyclist Safety

- On-system** bicycle crashes resulted in a greater percentage (61.8%) of fatal and serious injury crashes compared to those occurring on **off-system** facilities (38.2%).⁷
- Nearly 50% of the bicycle crashes on **rural** on-system routes resulted in fatalities or serious injuries, while approximately 25% of the **urban** on-system bicycle crashes resulted in fatalities or serious injuries.⁷
- For bicyclists, a large portion of crashes occur at **intersections** compared to non-intersections. Intersection-associated crashes account for approximately 60% of the total bicyclist crashes, as well as 45% of fatal and serious injury crashes.⁷
- Midblock or non-intersection-related crashes involving bicyclists contribute to 55% of fatal and suspected serious injury crashes. Midblock crashes involving bicyclists prove to be more severe and have a high fatality rate.⁷
- The top three systemic risk factors identified for bicyclists are average daily traffic, speed, and shoulder width. For on-system TxDOT facilities, 8.4% centerline miles have all three risk factors, 26.4% have two risk factors, 36.9% have one risk factor.



2.4 Demand

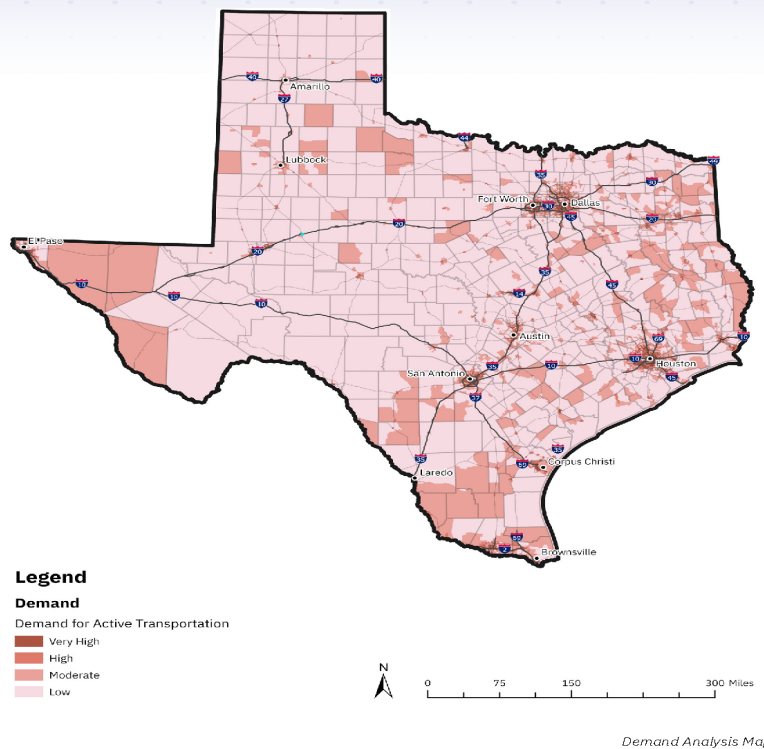
Demand Analysis

An area's sociodemographic characteristics serve as a good predictor of active transportation infrastructure need and demand. When overlaid with the connectivity analysis, the results are a strong indicator of opportunities to maximize investments in active transportation infrastructure. The demand analysis includes the following variables:

- Population density** | Density serves as an indicator of the potential magnitude of demand for active transportation infrastructure.
- Older adult and youth populations** | Older adults are more likely to engage in active transportation due to a desire to avoid driving or due to an inability to drive. Travelers 17 years and younger are also more likely to engage in active transportation because the vast majority cannot drive.
- Low-income individuals** | Owning and operating an automobile is costly. Individuals living in households earning less than 150% of the poverty line are more likely to rely on active transportation to meet their transportation needs.
- Vehicle ownership** | Individuals living in households that do not own automobiles engage in active transportation more frequently than those that do have an automobile.
- Individuals living with disabilities** | Individuals with disabilities rely more often on active transportation infrastructure to meet their travel needs.

Key Takeaways

- Demand for active transportation infrastructure is greatest in areas with significant population densities.
- Areas with low demand for active transportation generally feature lower population densities and greater distances between destinations.



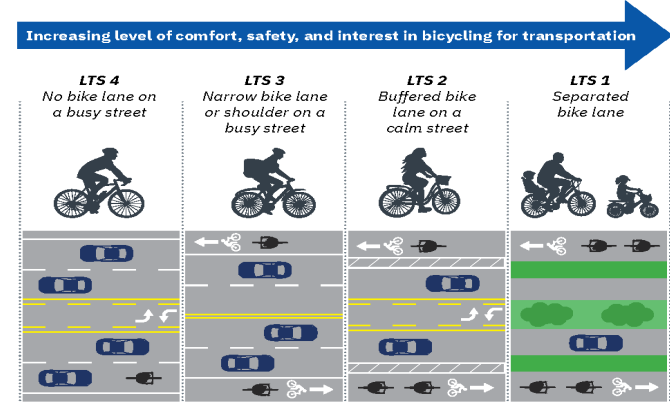
2.5 Connectivity Need

Connectivity Need Analysis Methodology

Improving connectivity at various levels is fundamental to improving access to services and destinations and unlocking opportunities for economic growth. The connectivity need analysis evaluates how effectively active transportation infrastructure accomplishes access to the key destinations. This analysis not only checks for existing connections but also assesses route comfort and safety to destinations within three miles.

The LTS analysis ranks street segments on a scale of one to four, with four representing a very high-stress environment, suitable only for experienced cyclists. An LTS of one represents a low-stress environment, suitable for interested but concerned individuals of all ages and abilities.

The LTS analysis used data available in March 2024 from the TxDOT Statewide Planning Map. District and corridor plans should update the analysis on existing conditions based on current conditions at the time of their analysis.



What We've Heard

- Engagement participants prioritized Connectivity as the second most important topic to them.
- Rural districts often cited a desire to focus on filling in gaps and upgrading their existing active transportation infrastructure, as opposed to creating new infrastructure.
- Metro and urban districts representatives suggested to focus on providing stand alone active transportation connections as facilities adjacent to high-volume, high-speed arterials and highways.
- All districts discussed the need to connect across barriers in an efficient and safe manner.
- Connecting critical destinations to health care, schools, and employment centers was a frequent priority.
- EAWGs suggested:
 - Sustained partnerships and coordination with regional and local agencies on transportation and land use decisions would result in improved community outcomes; and
 - Continued awareness of active transportation benefits and opportunities for public needs to be prioritized.

See Appendix for a more comprehensive set of engagement summaries.



Analysis Results

The connectivity analysis highlights areas where new or improved active transportation infrastructure would be expected to increase active transportation travel.

Urban Context | The greatest demand for active transportation infrastructure is in the metropolitan areas of the state, such as Austin, Dallas-Fort Worth, El Paso, Houston, and San Antonio. High demand is also most observable in and around urban contexts of larger cities and generally decreases as distance from those urban centers increases.

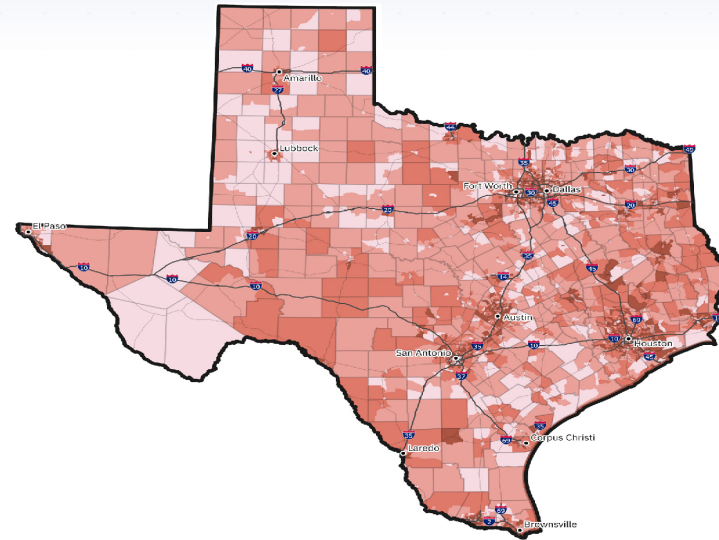
Suburban Context | Some counties, such as Midland, Taylor, Jones, and Lubbock Counties, face some of the greatest connectivity challenges in Texas. Much of this poor connectivity directly relates to land use patterns, with limited connectivity between housing subdivisions and nearby schools, shopping centers, and office parks.

Rural Context | Areas with low demand for active transportation generally feature lower population densities and greater distances between destinations; this combination makes active transportation more challenging. Some rural counties feature strong connectivity, reflected by the presence of gridded, low-stress street networks within towns, as well as arterials with low travel volumes. Conversely, some areas had lower connectivity scores, attributable to larger, busier arterials that preclude low-stress active transportation travel.

The result of the analysis is mapped by census tract, with the darker shades reflecting areas where a higher number of people could access a greater number of key destinations that facilitate walking, bicycling, and the use of micromobility devices. Some counties like Midland, Taylor, Jones, and Lubbock Counties feature strong connectivity, reflected by the presence of gridded, low-stress street networks within towns, as well as arterials with low travel volumes.

Key Takeaways

- Highways, major arterials, and natural barriers may cause disruptions in network connectivity. Connecting across is integral to increasing the number of successful active transportation trips.
- Many areas have access to comfortable streets that people can currently walk, bike, and roll on within their neighborhoods, but are not able to access adjacent neighborhoods or destinations farther away using these routes due to the lack of safe accommodations on larger streets.



Legend



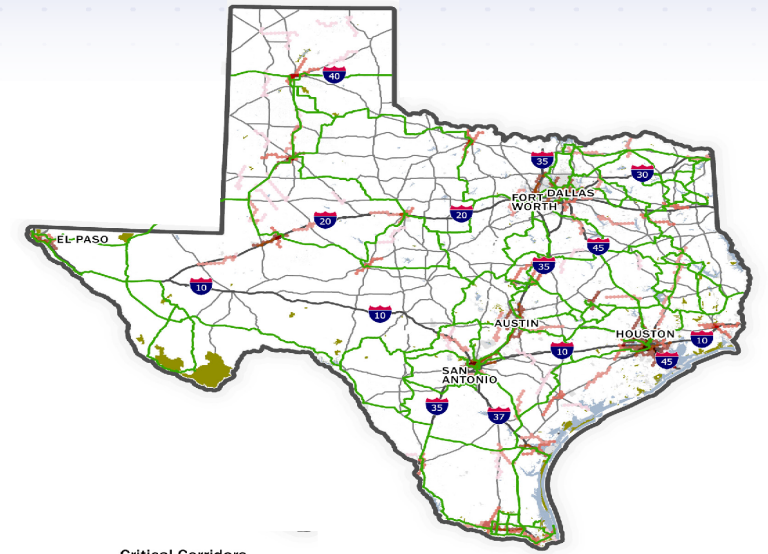
Connectivity Need Map

Critical Statewide Connections

Travel behavior modeling was used to predict the corridors that are most likely to attract active transportation. The SATP used modeling to identify critical corridors throughout the state where active transportation facilities have the greatest potential to impact travel demand.

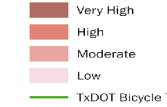
The analysis split TxDOT's 25 districts into four regions (North, South, East, and West) to identify the corridors containing the greatest proportion of trips. The model automatically discarded trips greater than 3 miles (trips that are unlikely to be completed through active transportation) as well as any freight trips (trucks). Walking, bicycling, and transit trips were weighted to increase attractiveness, especially for short trips (less than a mile).

The Critical Corridors Map depicts critical corridors in each of the four regions of Texas (North, South, East, and West). Darker corridors represent higher trip volumes where there is a greater opportunity to shift travel from automobiles to active transportation and transit travel.



Critical Corridors

Modeled Trip Activity



TxDOT Bicycle Tourism E.



Statewide Critical Connections



Notably in **West Texas**, corridors emerge in rural areas between Odessa, Lubbock, Abilene, and San Angelo—larger cities which each feature their own critical corridors. Numerous corridors also appear in El Paso and in and around Amarillo.

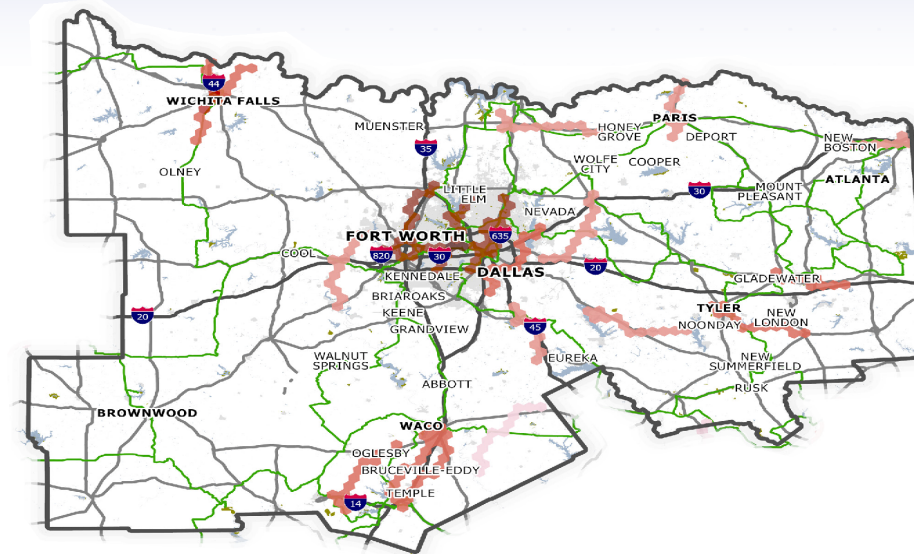
West Texas

Critical Corridors

Modeled Trip Activity



TxDOT Bicycle Tourism Example Network

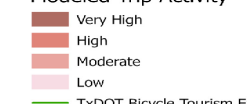


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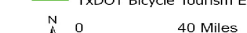
North Texas

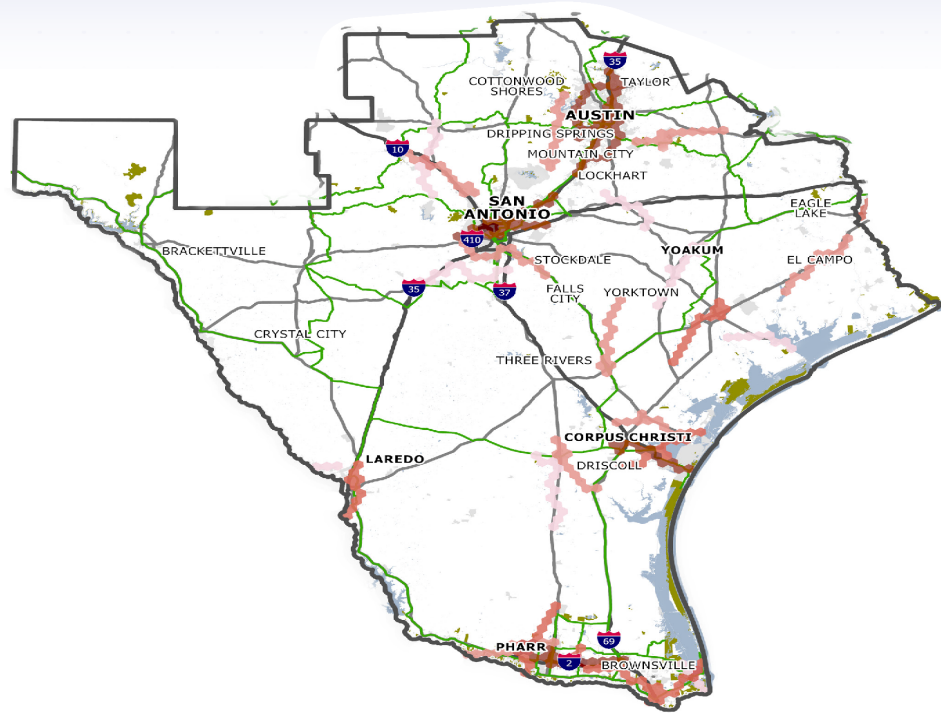
Critical Corridors

Modeled Trip Activity

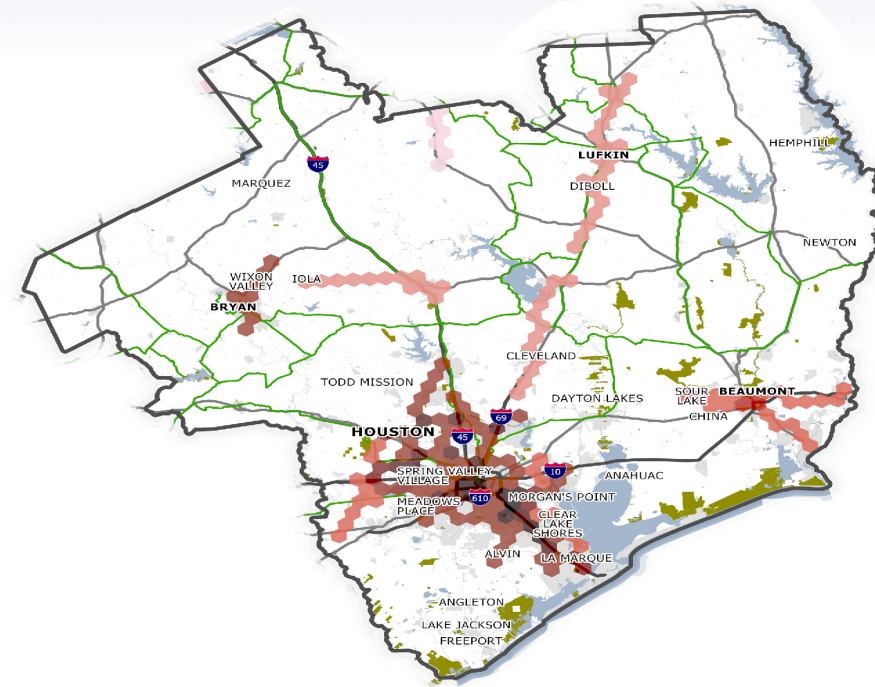
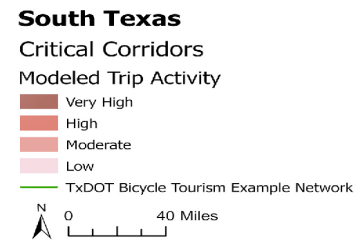


TxDOT Bicycle Tourism Example Network

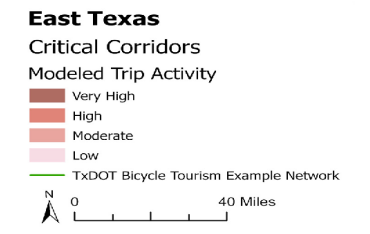




Critical corridors appear in a wide variety of places in **South Texas**. In addition to the corridors with very high modeled trip activity in and around the cities of Austin, San Antonio, and Corpus Christi, the entire Rio Grande Valley (LRGV) is connected with critical corridors, illustrating the density of cities that would be connected in the LRGV.



The **East Texas** region includes numerous critical corridors with high levels of modeled trip activity in and around Houston. The results also highlight critical corridors in and around larger cities such as Beaumont, Lufkin, and Bryan, as well as connections to smaller cities, including Cleveland, Diboll, Iola, Alvin, and La Marque.



2.6 Community Need Analysis

The community need analysis was based on demographic census data, which was used to identify communities with elevated concentrations of populations who stand to benefit significantly from active transportation improvements. The community need analysis provides a framework for identifying opportunities for improvements based on their expected ability to benefit communities with the greatest needs.

Socioeconomic factors, like the percent of households below the poverty line and the number of households with limited vehicle access, can serve as measures of the need for active transportation access. The table below shows the average percent of people affected by several community need indicators in Texas and the US.

Community Need Indicator	TX (Percent of People)	US (Percent of People)
Households Below Poverty Line	19%	12%
Households without Vehicle Access	5%	8%
Households with One Vehicle	32%	33%
Median Income per Household	\$67,321	\$69,021

What We've Heard

- Engagement participants were asked to prioritize topics that were most important to them, and Community Need was the third-highest prioritized topic.
- Active transportation is not merely a choice for large portions of the population, rather it is a way of life and deserves consideration and representation in the future of transportation.
- Coordination between the district and local transit planning agencies and municipalities is complex but necessary to better connect underserved communities with essential goods, services, and employment opportunities.
- EAWGs noted the importance of working closely with local organizations, non-profits, and other active transportation allies to plan future connections and improvements that are impactful.

See Appendix for a more comprehensive set of engagement summaries.



Man on a bike in Laredo, Texas
Source: Laredo District Bicycle Plan

Analysis Results

The level of community need varies across and within districts depending on their level of urbanization.

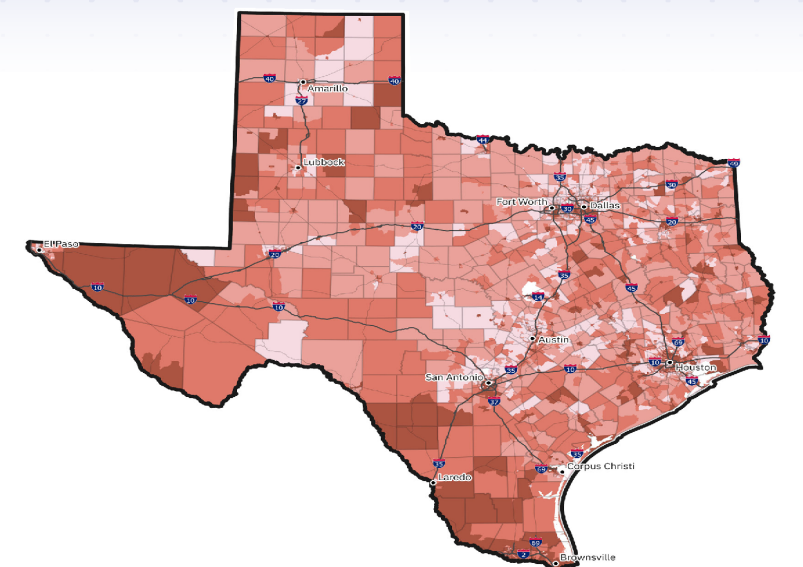
Urban Context | Urbanized areas have larger concentrations of lower income communities.

Suburban Context | As the distance from urban centers increases, the concentration of low-income populations generally decreases. Exceptions to this are found in locations immediately adjacent to larger urban centers, such as the inner suburbs of Houston and Dallas-Fort Worth.

Rural Context | Rural areas generally experience moderate to high community needs. Community needs in rural areas often increase within towns and other more populated areas.

Key Takeaways

- Lower car ownership rates directly correlate to increased demand for active transportation. Nearly one-third of Texas households have access to only one car and are more reliant on other forms of transportation such as active transportation and transit.
- Improved active transportation connectivity to and within communities can increase their access to jobs, goods, and critical services.
- Investment in underserved areas with concentrations of lower income populations can help increase access to opportunities.
- Understanding where populations with fewer resources exist, in conjunction with high-stress road networks, can help to identify areas to target infrastructure investments.



Legend
Community Need
Census Demographic Analysis Score

- Very High
- High
- Moderate
- Low



Community Need Map

2.7 Economic Impacts

Leveraging active transportation investments to create vibrant places to stimulate local economies is a key reason to improve active transportation. The SATP conducted an economic benefit analysis to estimate the value of benefits derived from investing in active transportation infrastructure. The economic benefit analysis considered safety (the cost of crashes and mortality) and mode-shift (the change from driving to active transportation and/or transit). The results are measured through the estimated cost savings from the growth of active transportation in Texas.

Analysis Methodology

This analysis scanned best practices across the nation and analyzed various methodologies for the calculation of economic benefits related to active transportation. The following topics of health, environment, commerce, tourism, recreation, construction, and employment were considered as criteria for economic benefit.

The World Economic Forum's web-based Health and Economic Assessment Tool (HEAT) was chosen as the tool for measuring future active transportation improvements in the state of Texas. This analysis estimates the economic value of achieving the Texas Road to Zero goal and a moderate adjustment in mode-shift.

Analysis Results

The HEAT quantifies the economic impact of active transportation investment as a result of reduced mortality (i.e., premature deaths) and traffic fatalities. The HEAT analysis holistically assessed the economic impact of active transportation in Texas. HEAT estimates include yearly economic value figures, which forecast annual savings of ~\$312 million. An aggregate forecasted impact through 2050 assumes a 5% increase in active transportation trips occurs in the first year, and sums the impact over the span of 25 years, resulting in a savings of nearly \$4.1 billion in inflation-adjusted dollars.

Premature Deaths Prevented	<ul style="list-style-type: none"> Yearly – 78 Through 2050 – 1,953
Economic Value	<ul style="list-style-type: none"> Yearly – \$312 million Through 2050 (Adjusted for Inflation) – \$4.09 billion

Key Takeaways

- Active transportation investments can have a trickle-down effect, providing economic benefits to system users by providing cost-saving transportation options and expanded access to economic opportunities (education, training, and jobs).
- As active transportation infrastructure becomes more available and connected, it becomes easier for people to incorporate routine physical activity into their daily lives, reducing healthcare costs.
- Active transportation infrastructure can drastically improve residential and commercial performance by enhancing the sense of place and providing an amenity.

What We've Heard

- When asked to describe "successful places" throughout their respective communities, stakeholders commonly identified active transportation infrastructure that had been implemented. Examples included Polk Street in Amarillo, the Katy Trail in Dallas, and other major active transportation projects throughout the state.
- In many cases, the ingredients for economic vitality exist throughout communities, but it is often the sense of place created by active transportation that is missing.
- Various EAWGs identified active transportation network connections to employers as a priority.

See Appendix for a more comprehensive set of engagement summaries.

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2.8 Health Influence

Access to a safe and connected active transportation network allows people to integrate physical activity into their daily trips through bicycling or walking. The most common health issues Texans experience are related to physical activity: more than 37% of the population have been diagnosed as excessively overweight or obese, 22% experience some form of depression, more than 12% have diabetes,¹⁰ and 9.4% have asthma.

Physical activity is linked to a several health benefits, both mental and physical. Physical activity can lower risk of heart disease, diabetes, stroke, high blood pressure, and certain types of cancer and lower stress levels and boost mood. The CDC recommends that adults engage in a minimum of 30 minutes of exercise a day, or 150 minutes a week. While there is no prescriptive formula for exercise, it can take the form of walking or biking during a daily commute. In contrast, inactive lifestyles have been shown to exacerbate health issues.

In Texas, several counties have a large percent of the population that are below the national average of the US population.

Health Indicator	TX County Ranges	U.S. (Percent of People)
Obesity	30.40–44.10%	37.20%
Asthma	8.80–10.20%	10.20%
Mental Health Distress	14.80–17.20%	15.90%
Coronary Heart Disease	4.50–9.00%	7.60%
Diabetes	8.50–17.00%	12.90%
Depression	19.80–24.00%	22.10%

Source: 2023 Centers for Disease Control and Prevention



Man running on trail

2050 Statewide Active Transportation Plan

Analysis Methodology

Infrastructure that fosters active forms of travel can have a positive influence on health outcomes. The analysis in this report used measures from CDC PLACES 2023, a set of weighted variables was used to calculate a health index score for adults aged ≥ 18 years.

Variable	Dataset	Weight
Obesity	Obesity among adults aged ≥ 18 years (prevalence)	20%
Asthma	Asthma among adults aged ≥ 18 years (prevalence)	20%
Diabetes	Diabetes among adults aged ≥ 18 years (prevalence)	20%
Mental Health	Frequent mental health distress among adults aged ≥ 18 years (prevalence)	10%
	Depression among adults aged ≥ 18 years (prevalence)	10%
Cardiovascular Health	High blood pressure among adults aged ≥ 18 years (prevalence)	10%
	Coronary heart disease among adults aged ≥ 18 years (prevalence)	10%

What We've Heard

- Healthy communities were identified as a second-tier priority by participants in the Round 1 engagement.
- EAWGs pointed out the importance of developing educational materials to increase awareness of the benefits of active transportation.
- Land use context matters and it influences the need and opportunity for active transportation to improve community health.

See Appendix for a more comprehensive set of engagement summaries.

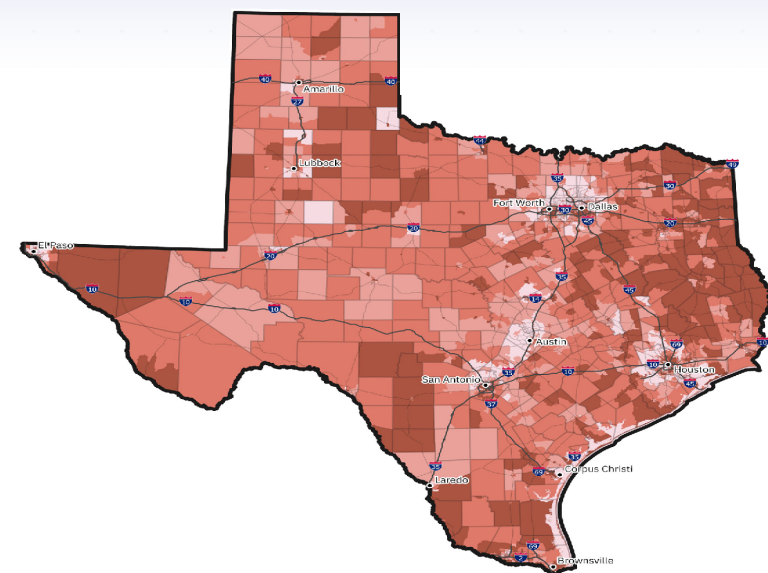
Analysis Results

An analysis of health data, performed by TxDOT and the Texas Department of State Health Services, identifies communities disproportionately impacted by diagnoses associated with sedentary lifestyles.

- The state's urban areas experience health outcomes that resemble trends observed in the community need analysis.
- Better health outcomes in suburban areas can be attributed to increased access to healthy foods and healthcare, ample time and priority given to exercise and the presence of ample recreation areas (e.g., public parks and shared-use paths).
- Rural areas face some of the largest and most substantial health challenges. Many of these areas exhibit very poor health outcomes.
 - Travel in these areas often requires the use of an automobile
 - Providing formal and informal recreation and physical activity opportunities presents a potential means of improving health outcomes.

Key Takeaways

- Health outcomes in urban areas tend to resemble trends observed in the community needs analysis.
- Poor health outcomes tend to concentrate in high-population areas of the state.
- Rural communities, especially in East Texas, tend to display the most significant poor health outcomes.
- Travel distances and auto dependency are significantly greater in rural contexts, which are contributing factors to poor health outcomes.
- The prevalence of poor health outcomes was generally lower in suburban areas.



Legend

Health Risk
Prevalence of Poor Health Outcomes

- Very High
- High
- Moderate
- Low



Health Risk Map

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3 Goals and Opportunities



Through early stakeholder and public engagement, the SATP identified five planning goals that align with community values to shape the vision of active transportation in Texas. The goals position the SATP to support *Connecting Texas 2050*. The vision for active transportation in Texas is "A safe, accessible, connected and fully integrated pedestrian and bicycle network that increases active mobility and supports health, economic vitality, and resilience within communities and across Texas." The planning goals of the SATP support the vision for active transportation in Texas.

3.1 Process for Goal Development

The goals for the SATP were developed through a combination of public and stakeholder input, data collection, and technical analysis. Public engagement efforts began in fall 2023 and continued through fall 2024. Input from stakeholders, including TxDOT districts and divisions, local governments, MPOs, active transportation advocates, and the public, was used to identify key challenges and priorities. The result is a plan developed with internal and external partners that can benefit all Texans. **TxDOT hosted more than 30 open house and stakeholder meetings during the SATP planning process, generating input from more than 4,800 individuals, stakeholders, and other groups on SATP priorities.**

Survey | Key Findings From Public and Stakeholders in Round 1 Engagement



Survey | Key Challenges

Limited Space: Space-constrained transportation corridors make it difficult to implement active transportation infrastructure.

Funding: More resources are needed to construct and maintain an interconnected system.

Culture: Education and facility design favors cars.

Survey | Key Priorities

Effective and Inviting Infrastructure: Create safe and comfortable active transportation infrastructure that prioritizes separation from vehicle traffic and a positive travel experience. Emphasize that active transportation connects everyone.

Connection to key destinations: Create a safe and connected active transportation network to provide access to community features and key destinations that increase access to opportunity and transit.

Funding: Increase funding for multimodal infrastructure, retrofit roadways to benefit all users, and prioritize community needs. Leverage opportunities to emphasize that walking and biking are important ingredients to create vibrant communities.

Priority to complement Connecting Texas 2050:

Connecting Texas 2050 Survey Takeaways: 55% of Texans support an increase in funding for pedestrian infrastructure, 49% of Texans support an increase in spending for bicycle infrastructure, and 93.6% of Texans cite meeting the needs of persons with disabilities and/or individuals who do not have access to a motor vehicle as critically important or very important.

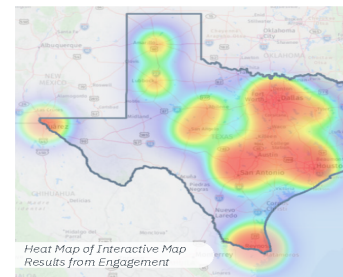
Alignment to Goals: The goals of the SATP considered the six goals of *Connecting Texas 2050*. Four of the SATP goals align which are safety, mobility (options), connectivity, and economic vitality.

What We Heard

Key priorities were collected from participants using a combination of meetings, small group discussions, public surveys, and interactive maps. Participants were asked to rank potential priorities; the summary table identifies high-priority topics organized into two tiers:

Primary Tier: Safety, connectivity, community need, accessibility and comfort, funding, and context-specific design.

Secondary Tier: Healthy communities, economic opportunities, culture of safety and integration of all modes, and multimodal optionality (travel choices).



The interactive map allowed participants an opportunity to identify active transportation connection needs, existing barriers to active transportation, and add open comments about the condition of specific areas. The map to the left indicates the volume and geographic distribution of comments. The responses from the public, stakeholders, and working groups identified 122 active transportation barriers, 276 specific active transportation needs, and 86 priority connections to transit.

Public Open House Feedback

The input collected came from a variety of participants across the state. The process of using an in-person and online format ensured that a variety of perspectives were collected. The topics in metropolitan or urban areas of the state differed from those collected from rural areas. The following subjects were most discussed in each area:

AMARILLO

- Community need
- Build where it makes sense
- Smaller projects

EL PASO

- Health benefits of active transportation
- Safety
- Paso Del Norte Trail

SAN ANGELO

- Ports-to-Plains corridor investments
- Need for rural improvements

SAN ANTONIO

- Connectivity
- Accessibility

BROWNSVILLE

- Funding
- Lighting in and near active facilities
- Drainage

DALLAS

- Intersection design
- Maintenance
- Community access to Dallas Area Rapid Transit (DART) facilities

TYLER

- Safety and connectivity for students
- Sidewalk improvements

WACO

- Sidewalk connections to campus
- Community need focused improvements

HOUSTON

- Multimodal funding investment
- Active transportation facilities in conjunction with highways

AUSTIN

- Safety
- Transit connections

3.2 Goal Development

The SATP supports the *Connecting Texas 2050* goals (safety, preservation, mobility, connectivity, economic vitality, and stewardship). The SATP uses these goals plus additional goals to address the unique needs and opportunities associated with active transportation. Additional goals that address travel experience and community needs demonstrate the importance of active transportation to local communities as well as the ingredients required to better connect people with opportunities throughout Texas. Each SATP goal is accompanied by a brief overview of the goal, some supporting research, and identified opportunities that serve as the foundation for the strategies developed for the SATP in Section 5.

Goal: Improve Safety, Comfort, and Accessibility

Why This is Important:

Unsafe conditions are repeatedly cited as a reason for not choosing active transportation over other travel options. Preventing fatal and serious injuries for vulnerable users is a top priority. Section 2.4 details many of the current trends in crashes and fatalities affecting active transportation users. These trends underscore the need to make safety for vulnerable road users a priority.

Comfort and travel experience have the potential to influence travel choice. If conditions are unfavorable for active transportation and result in undue stress, it will impact the frequency of active transportation travel. Major factors to consider when designing a comfortable bicycle or pedestrian facility include separation from adjacent vehicle lanes, shade, vehicle speed in adjacent travel lanes, surface material, the presence of debris or obstructions, lighting, and driver behavior.

The active transportation system should meet the needs of travelers of varying ages and abilities. Elderly travelers and those with mobility impairments often rely on alternative methods of travel, including active transportation and transit. In addition, gaps in sidewalk networks or the absence of well-designed and accessible street crossings place vulnerable users at excessive risk. As the population ages and cities become more densely populated, increased accessibility to active transportation becomes more important.

Supporting Research:

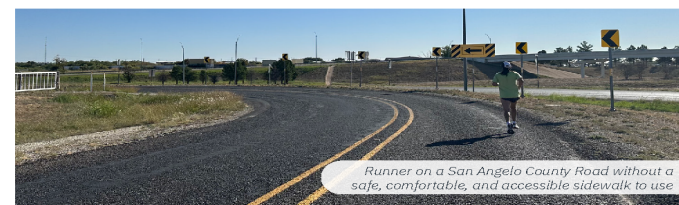
- Separated bike lanes have been associated with improved safety for road users of all modes, because of their traffic calming effects, including reduced speeds, in a research study of 12 major U.S. cities.¹²
- Respondents of a survey conducted in two New York City neighborhoods indicated that people "experienced a greater sense of safety when there were more people on streets, more street activity, and more mixed-use zoning, while elements of disorder (i.e., trash on sidewalks) reduced the feeling of street safety."¹³

- One study concluded that "to make on-road bicycling comfortable, traffic speeds must be low, bike facilities must be present, and these facilities must provide wide operating space. However, even these changes may not be enough to provide comfortable environments for many current and prospective bicyclists, suggesting that protected and separated facilities are needed to provide comfortable bicycling environments for all."¹⁴
- "When locating bicycle facilities on higher-speed or higher-volume facilities, the separation afforded by separated bike lanes (SBLs) may provide increased comfort and safety benefits. Improved organization of motor vehicle travel lanes and turn lanes, as well as reduced crossing distances and potential pedestrian safety islands, all provide benefits related to those found in FHWA's nine proven pedestrian safety countermeasures."¹⁵
- Research has shown that the likelihood of a pedestrian surviving a crash increases as the speed decreases. Incorporating speed management techniques into the design of roads can play a vital role in reducing pedestrian and bicyclist fatalities.¹⁶
- Providing accessible infrastructure ensures that people with disabilities have the same rights and opportunities as everyone else.

Opportunities:

Stakeholder engagement revealed several opportunities to improve safety, comfort, and accessibility, including:

- Include active transportation in all phases of project development.
- Emphasize safe crossings and intersection using proven safety countermeasures such as RRFBs, pedestrian hybrid beacons (PHBs), and pedestrian refuges to reduce bike and pedestrian crashes.
- Implement optimal design options in an urban environment to accommodate a diversity of active transportation facility types and street types.
- Improve bicyclist and pedestrian visibility, including enhanced lighting and raised crosswalks.



Goal: Enhance Connectivity

Why This is Important:

Connectivity is critical to active transportation networks' effectiveness. The most effective networks connect priority destinations within communities and are constructed with continuous/uninterrupted routes. Active transportation networks should also connect with public transportation and places where transportation options are present.

Short trips have the potential to be accomplished through active transportation if the route is safe and without significant gaps or barriers. Furthermore, trips of longer distances can be completed through an interconnected system of safe sidewalks and pedestrian paths, protected bicycle infrastructure, and connections with public transit services.

Some of the most common barriers to active transportation connectivity include:

- Higher-speed travel corridors
- Infrequent locations of safe crossings
- Gaps in active transportation facilities
- Bodies of water

Supporting Research:

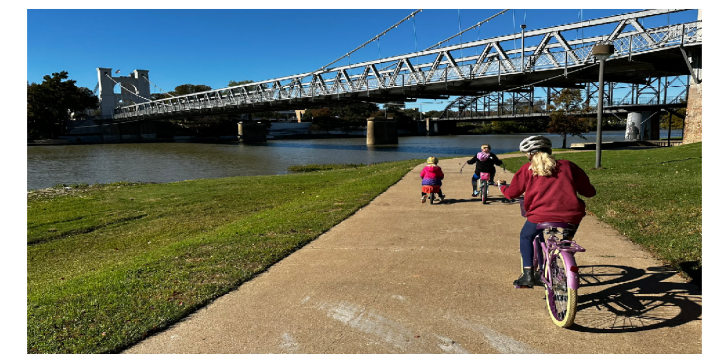
- 39% of weekday trips in Texas are 3 miles or less in length and 6% of weekday trips are 0.5 miles or less long, a portion of which may be suitable for mode shift.⁹
- Seamless active transportation networks have the potential to connect people with essential goods, services, and employment.
- Interconnected transportation systems can increase access to opportunity by combining different modes for longer-distance travel and have the potential to overcome significant barriers (such as water bodies and higher-speed travel corridors).
- "Bicycle facilities can expand access to transit service, doubling the accessible distance to stations and complementing transit trips as a first/last-mile mode option."¹⁷

Opportunities:

Stakeholders identified the following opportunities to enhance connectivity:

- Construct more continuous bike networks and connected systems of separated bike lanes.
- Prioritize projects that include bicycle and pedestrian infrastructure.
- Create context appropriate active transportation options for rural areas to enhance active transportation.

- Track amount of TxDOT constructed and maintained bicycle and pedestrian infrastructure.
- Use the ADA Transition Plan to prioritize the construction of critical projects in the sidewalk network.
- Review best practices, regulations, and public education efforts for the successful and safe integration of micromobility into the transportation system.



Goal: Address Community Needs

Why This is Important:

Many communities desire increased access to affordable and reliable travel options, particularly in low-income areas. These areas often have higher numbers of people who rely on active transportation. Challenges are amplified when these same areas have critical gaps in the active transportation system or barriers that result in unsafe conditions for walking and bicycling.

Supporting Research:

- Active transportation provides individuals with an affordable and accessible travel option, reducing the need for car ownership and associated expenses (loan/lease payments, taxes, fuel, parking, vehicle maintenance, and insurance).
- There is a correlation between employment and access to reliable transportation options.¹⁸
- A well-connected active transportation system offers children the opportunity to observe and explore their environment, increased social interactions, enhanced spatial awareness, and expanded cognitive well-being.¹⁹

Opportunities:

Stakeholders identified the following ways to respond to identified community needs:

- It is estimated that approximately 19% of Texans eligible for driver's licenses do not currently hold one. Active transportation investments can be prioritized for areas with higher concentrations of license-eligible non-drivers.³
- Include walking/biking accommodations in every roadway project.
- Outreach to nonprofit organizations, users of all ages, and individuals with disabilities to identify community priorities.
- Work with partners to increase awareness and support of active transportation.
- Infill critical gaps in active transportation networks and eliminate barriers and travel obstacles.
- Prioritize improvements that expand access to opportunities such as jobs, housing, and key services.
- Provide amenities such as shade, benches, and water fountains to improve the user experience.



Family ride bikes on an urban bike path



Separated bike lanes and bike share

Goal: Support Economic Vitality

Why This is Important:

Land development patterns significantly impact how we travel. In communities where housing and non-residential uses are separated, average trip lengths are often longer, which significantly reduces the opportunity for active transportation travel. This development pattern, typically organized around vehicular access, offers fewer travel choices for workers, residents, and visitors. Demand for walkable communities continues to increase; however, several challenges make meeting this demand difficult, including zoning codes, parking requirements, and designs that do not incorporate walking and biking infrastructure.

The presence of a safe and comfortable active transportation network can have significant economic benefits, including attracting more employees, bolstering tourism, and increasing property values.

Supporting Research:

- "Across metro areas, walkable urban places demand commercial rent premiums 75% higher than auto-oriented suburban places."²⁰ Modernizing zoning codes to promote the creation of walkable and bikeable environments will increase these opportunities.
- The World Economic Forum indicates that walkable urban areas almost always generate a positive net fiscal impact for local government through increased development and tax receipts, while also maintaining availability and affordability of desirable places.
- Active transportation infrastructure can provide positive impacts to commercial districts through reduced demand for parking, increased size of the employment pool within comfortable walking distance, and increased accessibility by patrons who otherwise wouldn't have access.
- Both domestic and international studies have indicated that consumers arriving at retail establishments via bicycle spend similar or less than average per trip compared to those arriving by automobile, but visited the business more frequently, resulting in greater spending over time.²¹

Opportunities:

Stakeholders identified the following opportunities to support economic vitality:

- Measure the effects of newly implemented active transportation facilities on the tourism industry, real estate values, and business attraction, over time.
- Partner with governmental entities and businesses to identify priority improvements.



Dining opportunities at the Clearfork Food Park along the Trinity River Trail in Fort Worth



Trail head at Press Cafe along the Trinity River Trail in Fort Worth

Goal: Promote Healthy Communities

Why This is Important:

Obesity, asthma, mental health distress, coronary heart disease, diabetes, and depression are all physical and mental health indices tracked by the Centers for Disease Control and Prevention (CDC). Except for asthma, Texas exceeds the US average in multiple geographic areas. These six health categories can be improved with a more active lifestyle that can be influenced by investment in active transportation.

Based on these six health indicators, some Texas counties have more people with obesity or diabetes when compared to the national average. Investments in active transportation infrastructure can encourage a more active lifestyle, which can also improve these health metrics.

Supporting Research:

- According to a 2014 study, men and women who commuted to work by active and public modes of transport had a significantly lower body mass index (BMI) and percentage body fat than their counterparts who use private transportation.²²
- Some studies have correlated car driving with boredom, social isolation, and stress. As a result, converting automobile trips to active transportation trips may be beneficial to well-being.²³
- A well-connected active transportation system offers children the opportunity to observe and explore their environment, developing more spatial awareness and improving their cognitive well-being. Active transportation also allowed children to have more time for social interactions.¹⁹

Opportunities:

Stakeholders identified the following opportunities to promote healthy communities:

- Partner with businesses on Travel Demand Management programs that support the creation of viable travel choices.
- Conduct regular bike rodeos that encourage students to live an active lifestyle.
- Prioritize active transportation options that provide access to key community features (jobs, healthcare, education, and parks) and connect with existing and future transit service.



The Paso Del Norte Trail in El Paso creates healthy community connections.



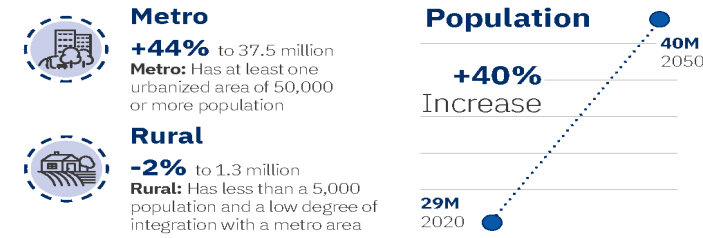
4.1 Challenges

Active transportation—walking, biking, and using other mobility devices (i.e. rolling)—is part of every trip, to every destination. Even trips that are primarily accomplished by driving or riding transit begin and end with a walking trip. There are many challenges to safe, convenient, and accessible active transportation in Texas. To understand these challenges, the SATP planning process collected the experiences, observations, and input of participants from all TxDOT districts, various TxDOT divisions, cities, counties, MPOs, bicycle and pedestrian advocates, and the general public. Numerous recurring challenges emerged from these outreach efforts, as discussed in this section.

Congestion in large metro regions is driven by rapid growth.	Emerging roadway design techniques and technologies have not been integrated to their fullest extent.	Multimodal connections and amenities serving ports of entry are limited.
Current funding for active transportation does not meet demand and need.	Active Transportation may not always be prioritized in the planning and design process.	Some active transportation facilities have not been maintained.
Pedestrians and bicyclists are disproportionately represented in roadway fatalities.	Active Transportation travel options are not widely available in all local communities.	The economic benefits of Active Transportation are not fully understood.
Drivers and active transportation users can be unsure about rules of the road.	Statewide network for long-distance active transportation needs further investments.	Land use planning and active transportation implementation needs further integration.
Many active transportation routes are not comfortable for all users.	Physical barriers limit access to opportunities, especially for people with disabilities.	
Limited space can lead to less than optimum active transportation facility or network designs.	Limited connections to transit and other travel modes reduce accessibility and mobility.	

Challenge 1: Congestion in large metro regions is driven by rapid growth.

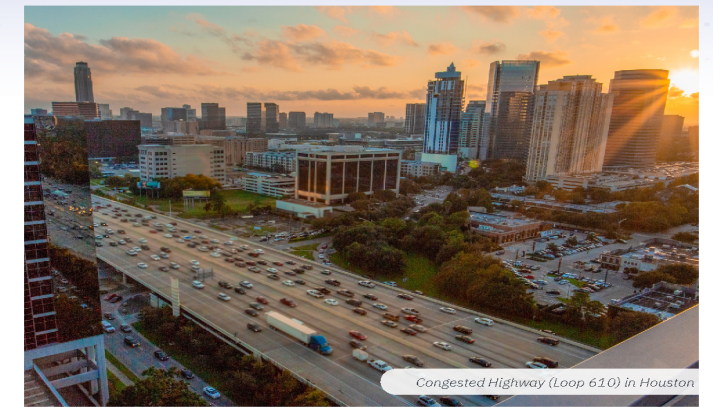
As described in Section 1, the population of Texas is projected to increase 40% (from 29 million to over 40 million) between 2020 and 2050.¹ Most of this growth is anticipated to occur within Texas's metropolitan areas (communities with populations greater than 50,000 people).



As Texas grows, so does travel demand. In 2020, Texans traveled 673 million vehicle-miles. By 2050, travel is projected to increase to 957 million vehicle-miles, resulting in an increase of over 42%. The increase in vehicle travel has the potential to increase vehicle congestion. Daily delay per person is projected to increase more than 211% to 36 minutes per person by 2050. A safe and connected active transportation system can play an important role in addressing this challenge by providing safe and effective travel options, especially for shorter trips.



Source: Statewide Analysis Model (2020 & 2050)



What We've Heard

- “The development pattern of the past 75 years requires us to build farther and farther away from where we want to be and requires us to drive more and farther distances.”
- “It would be a great to have more intercity travel options. Traffic is already bad and it's going to get worse as we grow.”

Potential Key Strategies

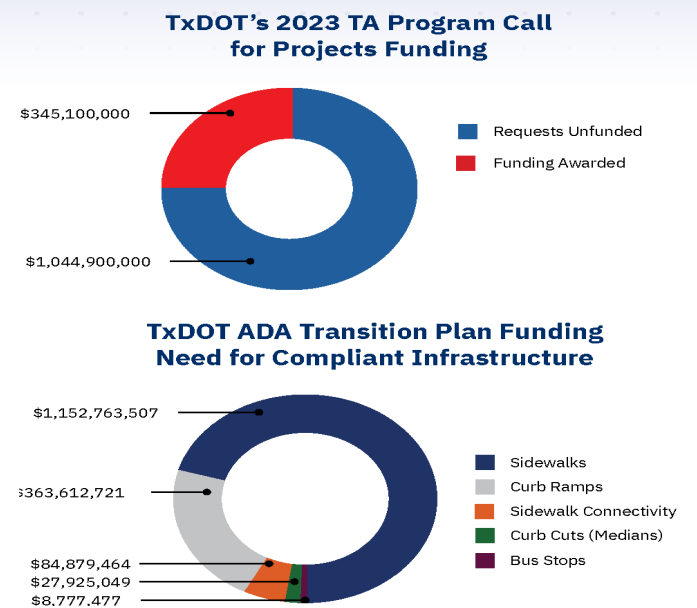
- Integrate active transportation with other travel modes
- Prioritize more active transportation infrastructure
- Implement and integrate optimal designs to improve travel experience
- Develop and expand active transportation networks statewide
- Address physical barriers in the active transportation networks
- TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation

Challenge 2: Current funding for active transportation does not meet demand and need.

During the SATP planning process, many municipalities and TxDOT districts identified the gap between active transportation needs and current funding. As part of TxDOT's 2023 Transportation Alternatives (TA) Program call for projects, 222 unique project sponsors requested a combined total of \$1.39 billion in federal funding for 312 active transportation projects. Of the funds requested, \$345.1 million was awarded to 83 projects throughout Texas, leaving a shortfall of more than a \$1 billion during the 2023 funding cycle. The true unmet need is likely even higher because requesting municipalities were limited to only three project submissions and many municipalities did not request funding at all. Similar funding needs have been observed through TxDOT's ADA Transition Plan, which shows an unmet need of approximately \$1.64 billion (per preliminary cost estimates not adjusted for inflation) for sidewalks, curb ramps, curb cuts, and bus stops that are either missing or otherwise non-compliant with ADA standards along TxDOT roadways.

Compounding the funding challenge is the fact that active transportation infrastructure projects compete against highway projects within existing funding programs. It is also difficult to accurately account for active transportation elements that are integrated within roadway projects and maintenance activities.

In FY2023-2024, TxDOT invested a total of \$487.2 million into active transportation, with an estimated \$181.2 million going toward infrastructure embedded within roadway and other projects and \$306 million going toward infrastructure built as independent active transportation projects.



What We've Heard

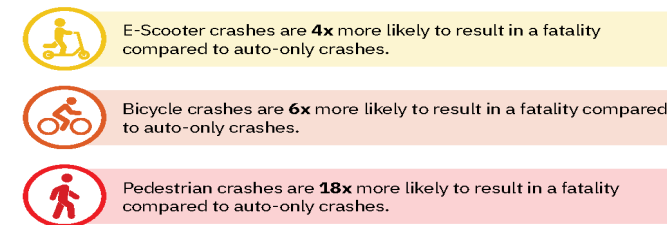
- “More balanced spending on transit and active transportation would help to solve some of the transportation issues.”
- “Please increase funding for both rail transit and active transportation facilities. I have none of this in my city and would love to use them both. Texas roads are becoming more and more dangerous, and we need other options.”

Potential Key Strategies

- Integrate active transportation with other travel modes
- Prioritize more active transportation infrastructure
- Improve active transportation safety
- Implement and integrate optimal designs to improve travel experience
- TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation
- Integrate active transportation early in project planning and scoping
- Improve infrastructure conditions through maintenance and repair

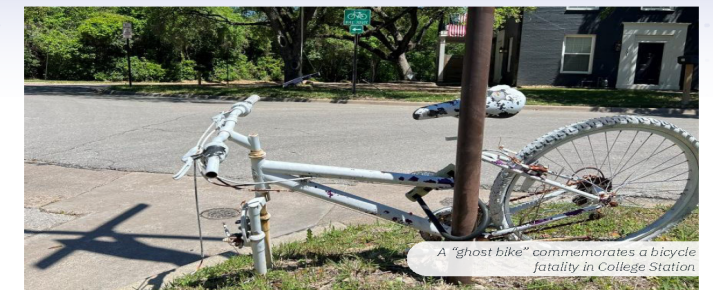
Challenge 3: Pedestrians and bicyclists are disproportionately represented in roadway fatalities.

Active transportation users are exposed to a greater risk of fatality or injury compared to auto travelers. Between 2021–2023, 17,588 crashes on Texas roadways involved pedestrians, bicyclists, or people riding an e-scooter. Active transportation travelers are largely exposed and unprotected, with 18% (2,424) of all pedestrian-involved crashes, 6% (285) of all bicyclist-involved crashes, and 4% (5) of all crashes involving e-scooter riders resulting in a fatality. In contrast, less than 1% (9,149) of total auto-only crashes resulted in a fatality. **Active transportation crashes are more likely to result in a fatality (vs auto-only crashes).**



Additional insights demonstrating the vulnerability of active transportation users include:

- From 2021–2023, 21% of fatalities on Texas roadways were pedestrians or bicyclists
- 85% of pedestrian fatalities and 82% of bicyclist fatalities occurred in urban areas (cities greater than 5,000 people)
- Between 2018 and 2023, there was a 30% increase in bicyclist and pedestrian fatalities
- 81% of all pedestrian crashes and 67% bicycle/e-scooter fatalities occurred at night in dark conditions



What We've Heard

- “Transportation designs should include safety for all transportation users (not just cars), as their number one priority. This safety focus needs to extend far beyond signage, rules, and driver education to ensure the safety of our most vulnerable road users.”
- “It's time to stop catering to cars and treat all road users with equal priority and take additional measures to protect vulnerable road users.”
- “Vehicle speeds need to be reduced. Speed kills. Where speeds cannot be reduced, there must be separate and protected facilities for people walking, biking, rolling.”

Potential Key Strategies

- Prioritize more active transportation infrastructure
- Improve active transportation safety
- Implement and integrate optimal designs to improve travel experience
- Develop and expand active transportation networks statewide
- Address physical barriers in the active transportation networks
- TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation through maintenance and repair

Challenge 4: Drivers and active transportation users can be unsure about rules of the road.

A consistent point of feedback mentioned during the SATP process was general confusion about the rules of the road and the potential danger that results for active transportation users. Specifically, participants mentioned that drivers often do not understand that sharing the road with pedestrians and bicyclists is required. They also do not know how to safely operate their vehicles when in close proximity to active transportation users. This confusion can result in unsafe conditions, road rage, and crashes. Awareness, education, enforcement, and signage can help reduce confusion and create more inviting conditions for active transportation.

Education

Education plays an important role in helping both drivers and active transportation users understand how to properly interact and share the public roadway while keeping everyone safe. According to the Texas Strategic Highway Safety Plan (SHSP), there are 34 programs and projects targeted towards vulnerable road users. However, it is unclear how many potential drivers these programs are reaching and what effect they are having. Moving forward, education efforts could be enhanced with improved reporting on the number of education programs administered and how many drivers are reached.

Signage and Pavement Markings

Signage and pavement markings also play an important role in ensuring all users understand how to safely and effectively share the road. Missing or unclear signage and wayfinding and poorly maintained pavement markings can increase confusion for both drivers and active transportation users. Currently there are 1,931 bike network signs along state roadways.

The standards for signage and pavement markings have evolved over the last decade and several standards have changed that require the public to understand what new signage and markings mean. The governing document for the proper application of signage, pavement markings, and more is the Texas Manual on Uniform Traffic Control Devices (TMUTCD). The TMUTCD is occasionally revised to align with the latest research and best practices to optimize safety and minimize confusion for users of the roadway. This includes updating guidance for signs and pavement markings related to active transportation users. This document is currently being revised. With this revision, new signage and markings will be added and education on the application of and compliance to these new signs and markings will be needed.



Worn bike lane markings in San Angelo

What We've Heard

- “[There is] a lack of education for all roadway users about the responsibility of sharing the roadway”
- “Even though Texas is a “stop for pedestrian” state, most motorists don't seem to follow this.”

Potential Key Strategies

- ✓ Prioritize more active transportation infrastructure
- ✓ TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation

Challenge 5: Many active transportation routes are not comfortable for all users.

Comfort and travel experience have the potential to influence travelers' decision making. If conditions are unfavorable and result in stress for the user or an unpleasant experience, these routes may not be used as much. Infrastructure conditions that can improve the comfort and travel experience for pedestrians and bicyclists include:

- Safe separation from adjacent vehicle lanes
- Presence of shade to offset warm temperatures
- Appropriate travel speed for adjacent travel lanes
- Adequate lighting
- Smooth surface materials that are free of obstructions and debris
- Well-designed intersections and crossings
- Appropriate driver behavior

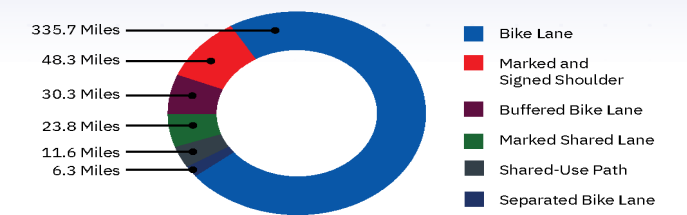
In addition, there are other conditions that make active transportation welcome and intuitive, including:

- **Zoning that permits a mixture of land uses.** The result is shorter distances between trips. These are places with higher development intensities and greater concentrations of jobs and housing.
- **Vibrant places.** Places that cater to people, not just cars, through designs that are people friendly, full of activity, safe, and attractive.
- **Dedicated and separated infrastructure.** Dedicated, facilities, like protected bike lanes, generous sidewalks, greenways and multi-use paths, are inviting to travelers of all ages and abilities.
- **Accessible and connected infrastructure.** Infrastructure that is ADA compliant and connects with places of interest, as well as other travel options like transit, are often used more than those that are not.

What We've Heard

- “The whole picture of active transportation needs to be considered when planning spaces that are friendly to walkers. A narrow sidewalk alongside a large road with few crossing opportunities is unfriendly. I want to see wide sidewalks with space for walking and cycling with barriers between them and traffic.”
- “Protected bike facilities improve outcomes for every road user.”
- “Active transportation networks should, as often as possible, be separate from existing road infrastructure but equally complete in its interconnection.”

Miles of Bikeway Type on TxDOT Roadways, 2020



Currently, many of the active transportation facilities along state routes do not possess all these characteristics, which can increase the level of stress experienced by active transportation users. A LTS analysis can help measure the comfort experienced by bicyclists, with level 1 being most comfortable and level 4 being least comfortable. When combined with ADA and pavement condition evaluations, a more complete understanding of travel conditions for active transportation users can be established. The results from existing analyses suggest:

- 99.4% of bike route miles on State roads are LTS level 3 or 4.
- Only 10.6% of on-system bicycle facilities feature physical separation (buffered bike lanes, separated bike lines, or SUPs)
- Approximately 30% of existing on-system sidewalks are not meeting minimum design criteria for cross slope.

Potential Key Strategies

- ✓ Prioritize more active transportation infrastructure
- ✓ Improve active transportation safety
- ✓ Implement and integrate optimal designs to improve travel experience
- ✓ Develop and expand active transportation networks statewide
- ✓ Address physical barriers in the active transportation networks
- ✓ TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation
- ✓ Integrate active transportation early in project planning and scoping
- ✓ Improve infrastructure conditions through maintenance and repair

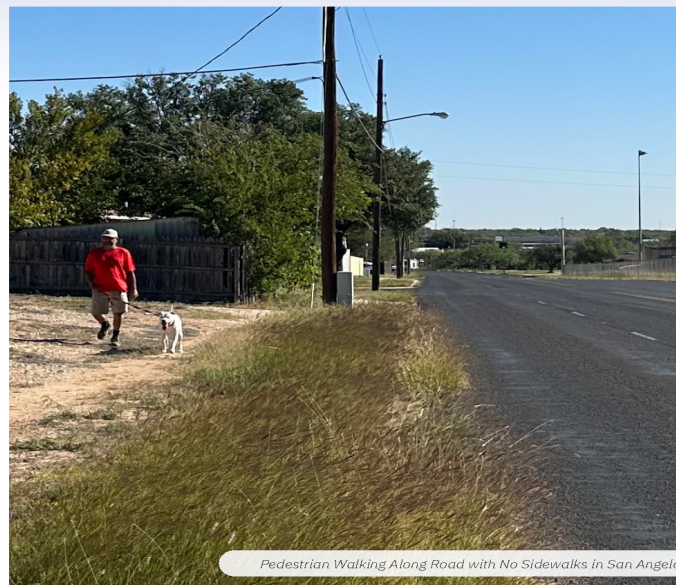
Challenge 6: Limited space can lead to less than optimum active transportation facility or network designs.

As discussed in Section 1, the acquisition of ROW is often a lengthy and expensive process that involves multiple parties, including landowners. TxDOT district representatives expressed through the SATP process that securing the optimum amount of ROW can be very challenging.

This can lead to design compromises that are less than optimal for active transportation users. As previously detailed in this section, most active transportation users prefer maximum separation from vehicular traffic to feel safe and comfortable. When ROW is limited, active transportation design can be impacted in the following ways:

- Sidewalks are excluded from the design
- Sidewalks are built at the back of the curb with no separation from the street
- Narrow shoulders are built (rather than wider shoulders)
- Dedicated bike infrastructure is excluded from the design
- Shared lanes are used when dedicated bike lanes would be preferred
- Unprotected bike lanes are used when buffered/separated bike lanes would be preferred
- On-street bike lanes are used when SUPs would be preferred

When suboptimal active transportation designs are implemented, they have the potential to impact safety, connectivity, and user experience. Approximately 4,500 pedestrians are killed in traffic crashes with motor vehicles in the United States annually.²⁵ Pedestrians killed while “walking along the roadway” account for almost 8% of these deaths.²⁶ Many of these tragedies are preventable. Providing walkways separated from the travel lanes could help to prevent up to 88% of these “walking along roadway crashes.”²⁷



Pedestrian Walking Along Road with No Sidewalks in San Angelo

What We've Heard

- “Sharrows (shared lanes) are not a solution. [...] sidewalks should have setbacks. Any on-road bike infrastructure should have physical delineation (i.e., not paint).”
- “Create more 8- to 10-foot-wide multi-use paths.”
- “Walkers require a safe and comfortable place. A narrow sidewalk right next to a large road and few crossing opportunities is unfriendly.”

Potential Key Strategies

- ✓ Prioritize more active transportation infrastructure
- ✓ Improve active transportation safety
- ✓ Implement and integrate optimal designs to improve travel experience
- ✓ Address physical barriers in the active transportation networks
- ✓ TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation
- ✓ Integrate active transportation early in project planning and scoping

Challenge 7: Emerging roadway design techniques and technologies have not been integrated to their fullest extent.

Active transportation designs, materials, and technology continue to evolve. Many of these innovations are being implemented to improve safety, comfort, and user experience by increasing the visibility of active transportation users and providing more space clearly dedicated to bicyclists and pedestrians. However, the pace of change is not always swift when implementing active transportation infrastructure, and designs tend to vary across communities and states. With few exceptions, the majority of existing bicycle and pedestrian infrastructure in Texas has been built using traditional designs and technologies.

New infrastructure approaches require testing and real-world use to determine efficacy. This process has yielded several innovations, especially in urban and suburban settings, that have been recognized as best practices, including:

- Separated bike lanes
- Bicycle signals
- Bike boxes
- Two-stage bicycle turn boxes
- Combined bike lane/turn lanes
- Protected intersections
- Leading Pedestrian Interval (LPI)

Currently, TxDOT has implemented one separated bike lane and one protected intersection on-system. TxDOT will continue to evaluate modern designs and the effectiveness of technology as investments in active transportation are made throughout the state. The incorporation of new approaches to design and technology will help Texas address challenges surrounding safety and comfort to create more effective travel choices.



Cyclists Riding Through a Protected Intersection

What We've Heard

- “Think broader.... technology is changing. It's not just pedestrians and bicycles. It's personal electric vehicles, scooters, OneWheels, electric unicycles, Segways. Tech is changing quickly, and Texas needs to adapt and be progressive.”
- “Design details need a significant upgrade with a focus on usability and user safety.”
- “Smart signal systems that detect cars, pedestrians and bicyclists to increase flow for bikes and pedestrians is critical.”

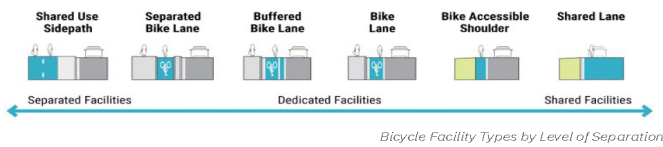
Potential Key Strategies

- ✓ Integrate active transportation with other travel modes
- ✓ Prioritize more active transportation infrastructure
- ✓ Improve active transportation safety
- ✓ Implement and integrate optimal designs to improve travel experience
- ✓ Develop and expand active transportation networks statewide
- ✓ Address physical barriers in the active transportation networks
- ✓ TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation
- ✓ Integrate active transportation early in project planning and scoping

Challenge 8: Active transportation may not always be prioritized in the planning and design process.

Most of Texas was planned, designed, and built with a focus on automobiles, including a separation of land uses, wide roads, and an absence of designated space for walking and bicycling. In recent years, this pattern has begun to shift as many communities revise their growth strategies. Communities are elevating the importance of building walkable communities, prioritizing safe travel options, and investing public and private resources into creating integrated transportation systems. TxDOT plays a role in this process, especially given its role as a primary funding partner and the presence of state-maintained transportation corridors.

Prior to 2022, design criteria and guidance for active transportation elements in TxDOT's RDM had little detail and few choices. The 2022 RDM update significantly expanded on the previous version by adding new bicycle and pedestrian chapters with robust criteria and guidelines. For example, the bicycle chapter now includes guidance on providing physical separation for bicycle facilities based on roadway functional classification, traffic volumes, speed, and land use context. Since this update, all roadway projects are required to evaluate appropriate integration of bicycle and pedestrian accommodations, except in circumstances specifically defined by the RDM.



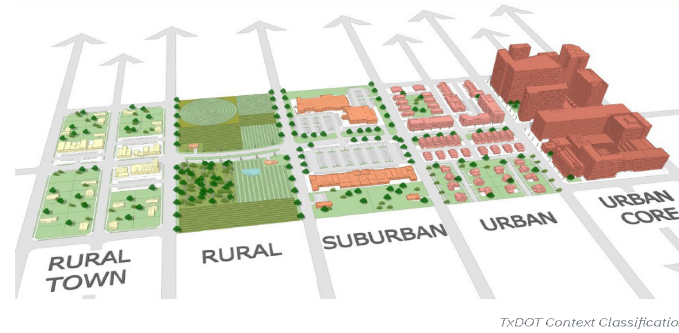
Potential Key Strategies

- Integrate active transportation with other travel modes
- Prioritize more active transportation infrastructure
- Implement and integrate optimal designs to improve travel experience
- Develop and expand active transportation networks statewide
- Address physical barriers in the active transportation networks
- TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation
- Integrate active transportation early in project planning and scoping

In late 2024, the RDM received an additional update and expanded on context-sensitive design. Previously the RDM included three context areas: Urban, Suburban, and Rural. The updated RDM now includes design criteria and guide for five context areas:

- Urban
- Urban Core
- Suburban
- Rural
- Rural Town

As these manual updates are recent, consistent adoption and implementation of these new guidelines has been gradual.



What We've Heard

- "Active transportation options should be mandatory. A lack of regulatory requirements is a major challenge."
- "Design mandates and guidelines need to have safety for all transportation users as their number one priority."
- "Active transportation facilities should be built as part of each new roadway expansion (especially in urbanized areas)."
- "Active transportation should not be an afterthought. We need to change the mindset from moving cars to moving people."

Challenge 9: Active transportation travel options are not widely available in all local communities.

In many communities, travel by car remains the only viable travel choice that connects with key destinations. This is especially concerning for the 20% of Texas households live below the poverty line and 5% of households (1.53 million people) are without vehicle access. The option to connect with key destinations through a combination of walking, bicycling, and public transit creates the potential for more affordable travel. This is important when comparing active transportation options with the costs of driving. In 2020, the average cost to own and operate a motor vehicle in Texas was \$9,561 per year.²⁸ By contrast, the average annual cost of owning and riding a bicycle was \$308.²⁹ Section 2 of the SATP highlights a technical analysis performed for each census tract across the State. The results revealed that 24% of Texans live in census tracts with a "Very High" need for active transportation.

What We've Heard

- "Many streets don't have a sidewalk built, leaving pedestrians no designated space to walk. All communities should be built with a sidewalk."
- "The limited amount of sufficient and usable infrastructure is a major barrier for many Texans to be able to contribute to the social and economic prosperity of our state."
- "The limited amount of good, usable active transportation infrastructure is a barrier to employment, education, health, leisure, and..."

Potential Key Strategies

- Integrate active transportation with other travel modes
- Prioritize more active transportation infrastructure
- Develop and expand active transportation networks statewide
- Address physical barriers in the active transportation networks
- TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation
- Integrate active transportation early in project planning and scoping

20% of Texas households live below the poverty line and 5% of households are without vehicle access.

In 2020, the average cost to own and operate a motor vehicle in Texas was \$9,561 per year. By contrast, the average annual cost of owning and riding a bicycle was \$308.



Girl Riding to School on a Bike

Challenge 10: Statewide network for long-distance active transportation needs further investments.

Most active transportation trips are local, short trips to school, work, or other close destinations. However, long-distance active transportation networks are often used for recreation and tourism. Well-connected and longer-distance active transportation networks have the potential to bolster tourism and increase the quality of life for residents and economic opportunities for cities and towns throughout Texas.

In 2018, TxDOT completed the Texas Bicycle Tourism Trails Study (BTTS). The BTTS was developed to identify long-distance bikeway networks between statewide/regional destinations to support economic development across Texas. The study used quantitative and qualitative routing criteria to generate a potential statewide network of bikeways for tourism. The study also established design standards that were integrated with the TxDOT RDM.

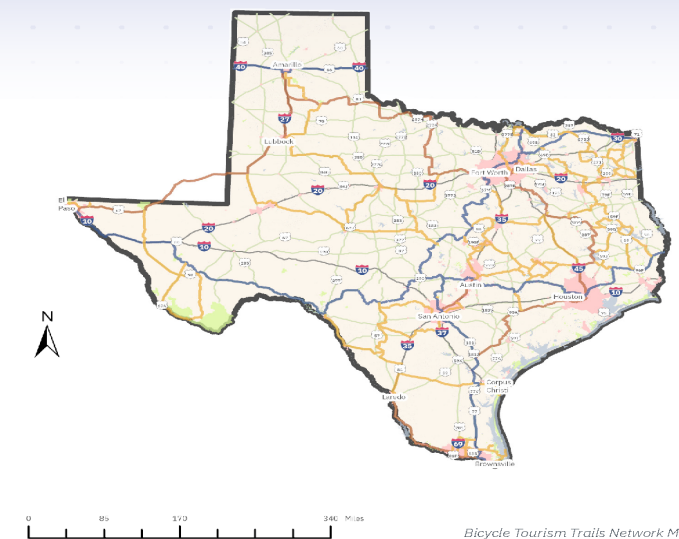
The resulting Bicycle Tourism Trails Network (BTTN) is a tiered network that includes cross-state spines, connecting spurs, and regional routes, totaling 8,933 miles. Identification of the BTTN was only the first step, as only 6.3% of the network has existing bike lanes, buffered bike lanes, or SUPs. Wide bikeable shoulders are appropriate for many rural portions and already exist in some cases, which also add to the existing network. The BTTN is intended to be built out incrementally over time through adjacent roadway projects and local partnerships. Future steps will require funding and implementation of designs that meet the identified design guidance.

What We've Heard

- "Routes like the Katy Trail in Denton are extremely helpful, pleasant, and effective for medium-/long-distance active transportation."
- "As a rural Texan involved in ranching and construction, active transportation is difficult if not impossible given the few available facilities."

Potential Key Strategies

- Integrate active transportation with other travel modes
- Prioritize more active transportation infrastructure
- Develop and expand active transportation networks statewide



Separated Bike Path

Challenge 11: Physical barriers limit access to opportunities, especially for people with disabilities.

Even when bicycle and pedestrian facilities are available, physical barriers often limit access to key destinations. This is especially true for people with disabilities and the elderly. Physical barriers that may exist and limit active transportation use include:

- Sidewalk gaps
- Missing curb ramps
- Missing crosswalks
- Missing pedestrian signals
- Sidewalk obstructions
- Sidewalks in poor condition
- Gaps in bicycle infrastructure or routes
- Bridges that do not have active transportation accommodations
- Railroad crossings
- Highway interchanges

As part of the ADA Self-Evaluation and Transition Plan, a total of 4,419 miles of sidewalk and 131,920 curb ramps¹² were evaluated for compliance with ADA guidelines. Highlights of the evaluation results include:

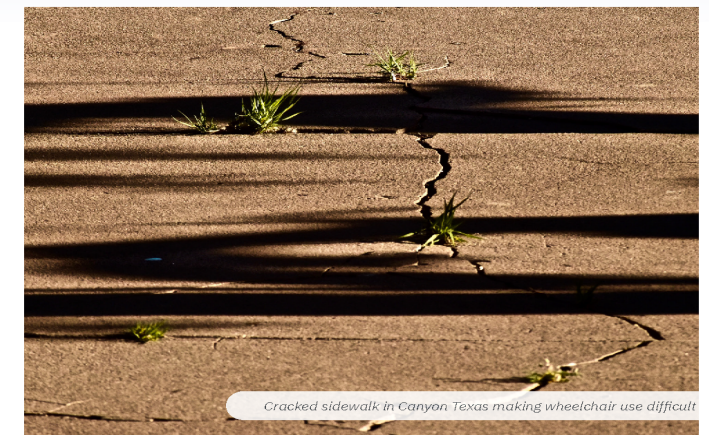
- Over 48,000 sidewalk obstructions
- Approximately 30% of sidewalks are not meeting minimum design criteria for cross slope
- 58 miles of missing sidewalks
- 261 miles of overgrown (buried) sidewalk
- 6,971 missing curb ramps

Additional findings are available in the Transition Plan report.

Potential Key Strategies

- Integrate active transportation with other travel modes
- Prioritize more active transportation infrastructure
- Improve active transportation safety
- Implement and integrate optimal designs to improve travel experience
- Develop and expand active transportation networks statewide
- Address physical barriers in the active transportation networks
- TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation

There are 261 miles of overgrown (buried) sidewalk on-system.



Cracked sidewalk in Canyon, Texas making wheelchair use difficult

What We've Heard

A survey was conducted during the ADA Self-Evaluation and Transition Plan development to highlight the lived experience of the public. The survey revealed that only 10% of respondents consider their community to be generally accessible. Furthermore, these same respondents identified the following as their most frequently encountered challenges with active transportation:

- Missing sidewalks (75%)
- Inaccessible sidewalks (61%)
- Absence of effective curb ramps and pedestrian signals (57%)
- Inaccessible transit features or transit connectivity (43%)

Challenge 12: Limited connections to transit and other travel modes reduce accessibility and mobility.

Building a robust and effective transportation system requires a variety of interconnected modes of travel that are accessible to the maximum number of people. The opportunity to create places where travel modes converge often occurs at places with the greatest vibrancy, walkability, and accessibility. While not all places in our communities require the same degree of connectivity, business districts, transit corridors, educational institutions, and community cores should have the most emphasis on travel options and connectivity. Multiple challenges can arise when active transportation is not connected with transit, including:

Limited Access: When travel modes are disconnected, the ease for travelers to connect with critical needs and opportunities is limited. Imagine an employee without access to a car attempting to navigate from where they live to their place of employment or grocery store, or to attend job training and higher education. Travel choice is influenced by travel experience (comfort and safety) as well as travel time. Consider the following:

Walking | The CDC states that the average walking speed for adults is between 2.5 and 4 miles per hour. This will allow for a quarter- to half-mile of distance to be covered in 15 minutes.

Wheelchair Use | The National Institute of Health states that wheelchair users travel at an average speed of 1.2–1.8 mph. This will allow for up to a third of a mile to be covered in 15 minutes.

Bicycling | Bike riding can offer a much expanded travelshed. While most bicyclists would prefer dedicated bike facilities, skilled riders can travel on safe streets where traffic and speeds are low. Most people can bike around 2–3 miles in 15 minutes, (assuming a leisurely pace on relatively flat terrain). This translates to an average speed of roughly 8–12 miles per hour, which is typical for a casual cyclist.

Note: A person's willingness to walk or bike more than 10–15 minutes can be influenced by personal health and conditioning as well as environmental conditions such as time of day (whether it is daylight or dark) and weather conditions (is it hot, cold, rainy, or windy).

Transit | When walking and bicycling travel connects with transit, the travel opportunity (distance) is less influenced by environmental or physical conditions. The primary limitation is the time of day that transit service is provided and the routing of the transit services to destinations. Transit significantly expands the reach of travelers which has the added benefit of increasing the variety of destinations and opportunities that are within a traveler's reach.

Limited Number of Last-Mile Connections: In communities with public transit, connections between active transportation can play a key role in completing trips. Transit cannot practically offer service along every corridor, nor stop at every block.

When critical active transportation gaps exist between transit stops and destinations, the number of people that see transit as a viable option is significantly reduced. These "last-mile connections" improve the beginning and ending of each transit trip and offer safe passage to and from trip origins and destinations. This is currently a challenge in Texas as indicated by the following metrics:

- 92% of on-system bus stops are farther than 100 feet from a bicycle facility.
- 25% of on-system bus stops are more than 50 feet from a sidewalk.
- 35.1% of on-system bus stops are missing bus stop pads.
- 48.7% of on-system bus stops have bus stop pads that are not ADA-compliant.



Potential Key Strategies

- ✓ Integrate active transportation with other travel modes
- ✓ Address physical barriers in the active transportation networks
- ✓ Prioritize more active transportation infrastructure
- ✓ TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation
- ✓ Develop and expand active transportation networks statewide

What We've Heard

- "First and last-mile connections are lacking at existing transit transfer locations"
- "Public transit is often the only option for those in rural areas that are unable or do not have access to a vehicle"

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Challenge 13: Multimodal connections and amenities serving ports of entry are limited.

There are 28 ports of entry along the Texas-Mexico border grouped into three regions: El Paso, Laredo, and Rio Grande Valley. In 2022, these three regions experienced over 14.2 million pedestrian crossings at ports of entry. Some of these locations have active transportation infrastructure, but many are missing critical connections, especially to the transit routes that service the Cities of El Paso, Laredo, and Brownsville.

In addition, the *Texas-Mexico Border Transportation Plan 2021* notes that continued growth of population, trade, and personal travel has outpaced investments in border-wide multimodal transportation infrastructure. This has resulted in border wait times, congestion, safety hot spots, deferred maintenance, and connectivity gaps. Addressing this challenge is important as growth is expected to continue.

2019-2050 Forecasting Increase in Bike/Pedestrian Border Crossings by TxDOT District

- Laredo – 13%
- El Paso – 10%
- Rio Grande Valley – 23%

These projected increases underscore the need to plan for an increase in multimodal connections and amenities serving ports of entry along the Texas-Mexico border.

"In 2022, TxDOT's El Paso, Laredo, and Pharr Districts experienced over 8.6 million pedestrian crossings at ports of entry."



2050 Statewide Active Transportation Plan

TEXAS-MEXICO BORDER TRANSPORTATION MASTER PLAN 2021
PLAN MAESTRO DE TRANSPORTE FRONTERIZO DOS MIL VEINTIUNO

FINAL REPORT
March 19, 2021

Potential Key Strategies

- ✓ Integrate active transportation with other travel modes
- ✓ Develop and expand active transportation networks statewide
- ✓ Prioritize more active transportation infrastructure
- ✓ Address physical barriers in the active transportation networks
- ✓ Implement and integrate optimal designs to improve travel experience
- ✓ TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation

Challenge 14: Some active transportation facilities have not been maintained.

Building safe, comfortable, and connected active transportation infrastructure is only half the battle. Once built, the infrastructure needs to be well-maintained to continue serving active transportation users effectively. This is a challenge because federal funding is not available for maintenance activities and active transportation maintenance often falls behind other priorities in state and local budgets, which have many competing interests. An absence of maintenance can impact safety when corridors are impassable due to obstructions or pavement marking and signage are not clearly visible.

A part of this challenge is the availability of data to determine the scale of unmet maintenance needs. It is difficult to keep an accurate and up-to-date inventory of active transportation infrastructure. Without an accurate inventory, it is difficult to estimate the need for maintenance and prioritize maintenance funds. However, ADA transition plans can provide details on the condition of sidewalks throughout the state and the need for maintenance. Along the 4,419 miles of on-system sidewalk that data was collected for, there were over 48,000 obstructions. Of these obstructions, 58.2% (28,344) were due to vegetation growing overhead or alongside the sidewalk. In addition (as mentioned in Challenge 11), 5.9% of the sidewalks evaluated were marked as buried (covered with immovable debris). Removing vegetation and clearing the walking surface is a low-cost maintenance activity that can be performed to improve the condition of sidewalks and improve the user experience.



What We've Heard

- "Frontage road and shoulder pavement materials can have a huge impact on the ability for bicyclists to use the facility. Chip seal pavement and the absence of any shoulder (or both) on some facilities [make them] impossible to ride on."
- "Rumble cuts and chip and seal methods for paving roads make it very uncomfortable for bikers."
- "The standard FM highway is unsafe for bicyclists and pedestrians. Even with a full width shoulder, it's covered in broken glass and debris. Many short trips are taken by car because of this."
- "There are almost no unbroken sidewalks in [my] entire town, the ones that aren't broken have telephone poles sticking out of the center of them."

Potential Key Strategies

- ✓ Address physical barriers in the active transportation networks
- ✓ Improve infrastructure conditions through maintenance and repair
- ✓ Integrate active transportation early in project planning and scoping



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Challenge 15: The economic benefits of active transportation are not fully understood.

Transportation creates positive impacts by contributing to the value of land, accommodating the transport of goods and services, and connecting employees and employers. Active transportation can add additional value through creating the social infrastructure that ties a community together. As communities become more walkable and bikeable, they become desirable to residents and employers, leading to increased opportunity for economic growth.

Active transportation's positive influence can be seen in the perception of places and the real estate market. One of the tools that real estate professionals use to assess the value and desirability of communities is the *Walk Score*®. The Walk Score evaluates communities based on the distance to nearby places and pedestrian friendliness. The Walk Score is measured on a scale from 0 to 100, with 0 being "Car-Dependent" and 100 being a "Walker's Paradise." Based on research published by Redfin, buyers who bought walkable homes (Walk Score ≥ 70) in 2019 paid a premium of \$19,000 in Dallas and nearly \$40,000 in Houston. Across the United States, the average premium for a home in a walkable neighborhood was \$77,668, or 23.5% of the home's value.³⁰ While other factors are also in play, this data demonstrates the value of providing walkable spaces with facilities and amenities for active transportation.

Similar measures are used to index the influence of greenways and multi-use trails. These walkways and bikeways are important ingredients to connecting cultural and natural treasures while boosting tourism and supporting local business. Some research suggests that every dollar that is spent on a greenway will return no less than \$3 in economic benefits.³¹ These same facilities support active living, create safe recreation opportunities, and improve quality of life.

Support for increased investments in active transportation is stronger when there is a greater awareness about the positive influence of active transportation on real estate, the local economy, affordability, and safety.



What We've Heard

- "Areas that are bike- and pedestrian-friendly are popular economic engines!"
- "[We need] more education about benefits of active transportation for public officials and best practices for state agencies that have a say in decision-making."
- "If we decide [active transportation] matters, we can build it."

Potential Key Strategies

- ✓ Integrate active transportation with other travel modes
- ✓ Address physical barriers in the active transportation networks
- ✓ Prioritize more active transportation infrastructure
- ✓ TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation
- ✓ Develop and expand active transportation networks statewide

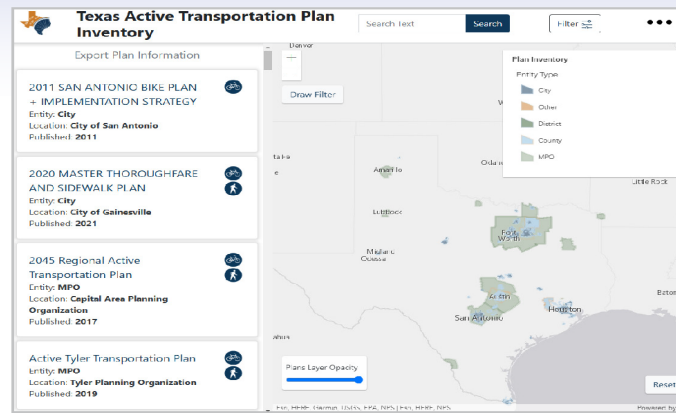
2050 Statewide Active Transportation Plan

Challenge 16: Land use planning and active transportation implementation needs further integration.

Where and how development occurs must be planned in coordination with transportation investments. When there is a disconnect between land use planning and active transportation, the results can leave people isolated, reliant on expensive travel options, and render walk and bike travel with less than optimum conditions. This is becoming even more important as the price of housing continues to rise and the construction of more affordable housing is pushed beyond the perimeters of existing communities. How Texas grows is also an expression of how Texans travel. Compact and connected forms of development can reduce reliance on car travel by creating opportunities for shorter trip lengths between origins and destinations. Similarly, investments in transportation options like transit can be left underutilized if not supported through conditions that support higher frequency transit options.

Demand for walkable communities continues to increase; however, several challenges make meeting this demand difficult, including zoning codes, parking requirements, and designs that do not intentionally introduce walking and biking infrastructure. Improved coordination can be accomplished through enhanced planning, policy changes, and coordination between implementing agencies. Land use planning at the local and regional scales should outline the expectations for how people want to travel, active transportation options, and associated design expectations. Active transportation plans are typically produced by cities and/or MPOs. Local and regional active transportation plans can be used as a guide to help land planners and developers better coordinate around active transportation to establish seamless, integrated networks. Local and regional policies can also be used to align capital infrastructure programs with priority locations for active transportation investment (such as affordable housing developments and transit corridors).

TxDOT continues to partner locally and regionally to help with planning and coordination. The *Texas Active Transportation Plan Inventory* is a TxDOT tool that tracks adopted active transportation plans throughout Texas to assist with local coordination and information-sharing. The inventory includes pedestrian-only plans, bicycle-only plans, and plans that incorporate both pedestrian and bicyclist needs. In addition, TxDOT is endeavoring to create district-level bicycle plans throughout Texas to aid with these planning and coordination efforts.



What We've Heard

- “[There is a need for] better mixed-use land development and zoning that allows people to take advantage of active transportation”
- “Active transportation should be planned and built in heavy conjunction with parks departments and City planning departments.”
- “Active transportation is easy to provide if it is planned for while the areas to be connected are undeveloped; reserve corridors in the planning maps for connections to future neighborhoods.”

Potential Key Strategies

- ✓ Integrate active transportation with other travel modes
- ✓ Prioritize more active transportation infrastructure
- ✓ Implement and integrate optimal designs to improve travel experience
- ✓ TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation



5.1 SATP Strategies and Supporting Actions

SATP provides a foundation for future planning and guide future decisions, investments, and programs. Implementing the Key Strategies and Supporting Actions of this plan will occur incrementally over the next 20 years.

SATP Key Strategies represent the overarching methods or approaches intended to support SATP goals. These Key Strategies are a direct response to the challenges discussed in Section 4. Nine Key Strategies have been identified through input from the SATP Steering Committee, TxDOT District engagement, and various working groups. These same groups also generated actions needed to advance each strategy and ultimately achieve SATP goals. These Key Strategies will require significant levels of public and private sector coordination, collaboration, and partnerships.

SATP Key Strategies

<p>Improve active transportation safety</p> <p>A positive travel experience requires safe conditions, which can be achieved through safe designs, complete networks, enhanced crossings, education, and coordinated enforcement. Combined, these conditions offer the potential to generate more active travel.</p>	<p>Implement and integrate optimal designs to improve travel experience</p> <p>A positive travel experience has a greater likelihood of being repeated than one that is negative. A combination of infrastructure design, exposure to risk, urban design, and comfort features such as shade and benches can combine to influence travel experience.</p>
<p>Prioritize more active transportation infrastructure</p> <p>Leverage existing resources to accelerate the construction of more sidewalks, bikeways, multi-use paths, and trails so that active transportation is a more effective travel option.</p>	<p>Develop and expand active transportation networks statewide</p> <p>An interconnected system of active transportation and transit can significantly increase the reach of travelers, allowing them to access critical destinations and new opportunities. When a traveler’s reach is increased, so is the number of significant destinations, including employment, healthcare, shopping, daycare, education, and job training.</p>
<p>Integrate active transportation with other travel modes</p> <p>In communities with public transit and micromobility options, connections between active transportation can play a key role in completing trips. These “last mile connections” improve the beginning and ending of each trip and offer safe travel to and from trip origins and destinations, improving the viability and comfort of transit as a travel option.</p>	<p>TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation</p> <p>TxDOT alone cannot build and maintain the envisioned active transportation system. It will require partnerships with local communities and developers to build and operate a more complete and effective active transportation system. These partners will need to thoroughly engage with stakeholders and the public before implementing active transportation projects.</p>
<p>Integrate active transportation early in project planning and scoping</p> <p>When active transportation is considered and integrated proactively, achieving consistent implementation becomes more likely.</p>	<p>Improve infrastructure conditions through maintenance and repair</p> <p>New roads sometimes take years to plan, design, and construct, but maintenance happens daily. As new resources, training, and expectations are introduced, regular maintenance can play a role in creating safe conditions for active transportation travelers.</p>
<p>Address physical barriers in the active transportation networks</p> <p>Without strategies to address physical barriers (bridges, large intersections, and wide roads) the system will not operate as envisioned and can potentially dissuade users and expose travelers to less-optimal alternatives.</p>	

Improve active transportation safety

A positive travel experience requires safe conditions, which can be achieved through safe designs, complete networks, enhanced crossings, education, and coordinated enforcement. Combined, these conditions offer the potential to generate more active travel. This strategy is best achieved by:

Construct more dedicated and protected active transportation infrastructure

Building more active transportation infrastructure will provide dedicated space for this form of travel, reducing the risk of walkers and bicyclists mixing with traffic. When this infrastructure includes protected designs, the maximum separation possible results in enhanced comfort and safety for active transportation travelers. When comfort and safety are high, attractive transportation infrastructure has the potential to attract more use and greater diversity of travelers.

Create modern TxDOT designs that prioritize safety

Modern design guidance prioritizes active transportation safety by enhancing the visibility of bicyclists and pedestrians, creating safe refuge areas, and reducing crossing distances and time. Combined, these updates in design can impact safety outcomes, travel experience, and assist with overcoming safety-related barriers to travel.

Place an emphasis on safe crossings and intersections

Intersections are the place of greatest conflict for vehicles and active transportation travelers. When left unimproved, these locations can be barriers to unskilled and at-risk travelers, especially children, elderly persons, and disabled individuals. Improving safety at these locations often requires a combination of innovative traffic control, pavement markings, and geometric designs. Offering new crossing designs in appropriate, high-volume mid-block

conditions (e.g., overpasses, RRFBs, and PHBs) creates safe opportunities to connect with key destinations, especially in areas with longer block lengths and greater distance between intersections.

Invest first in locations with the greatest safety needs

There will always be locations with high volumes and conflicts. As prioritization of investments occurs, investing first in the locations with the greatest crash history will help to systematically improve conditions and safety for active transportation travelers. As projects are being developed, investigating characteristics and contributing factors such as pedestrian failed to yield and lighting to ensure they address the need.

Optimize regulatory efforts and align enforcement efforts

Speed is one of the greatest influences on transportation safety. As vehicle travel speeds increase, reaction times are reduced. Higher speeds also reduce the gaps between traffic, narrowing the windows of safety for crossing. When active transportation safety is introduced into the consideration process, speed limits and design speed specifications can be balanced to improve conditions for active transportation. Furthermore, as active transportation crash data is collected and analyzed, sharing this information with local law enforcement creates the potential for aligned enforcement activities. The combination of enhanced designs, setting speed limits, data-sharing, and coordinated enforcement can result in improved safety conditions for active travel.

Challenges Addressed

- | | | |
|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 2. Current funding for active transportation does not cover demand and need. | 5. Many active transportation routes are not comfortable for all users. | 7. Emerging roadway design techniques and technologies have not been integrated to their fullest extent to improve active transportation. |
| 3. Pedestrians and bicyclists are disproportionately represented in roadway fatalities. | 6. Limited space can lead to less than optimum active transportation facility or network designs. | 11. Physical barriers limit access to opportunities, especially for people with disabilities. |

Prioritize more active transportation infrastructure

Leverage existing resources to accelerate the construction of more sidewalks, bikeways, multi-use paths, and trails so that active transportation is a more effective travel option. This strategy is best achieved by:

Increase funding for active transportation to create a steady stream of projects

Funding is crucial for advancing active transportation and achieving the plan's goals. To increase funding, a focus on grants should continue, but innovation is needed through public-private (or public-public) partnerships, including sponsorships, donations, and shared-use agreements. These novel funding sources can advance active transportation. Additionally, stakeholders can advocate for policy changes that prioritize active transportation funding or allocate a percentage of transportation funds specifically for pedestrian, bicycle, or multimodal street improvements. Developing effective funding strategies can ensure the growth and enhancement of active transportation infrastructure.

Prioritize funds to places with the greatest needs, connections with transit, and that support the economy and tourism

Evaluating and prioritizing projects in ways that consider their influence on safety and their ability to connect people with transit and economic opportunities will elevate active transportation projects that have the

potential to make the biggest impact on the metrics that matter most to Texas communities.

Align efforts with partner agencies, private sector, and local communities

Collaboration and partnerships are crucial for implementing the SATP. A diverse set of stakeholders is invested in improving SATP goal areas throughout Texas. TxDOT cannot do this alone. Enhanced coordination has the potential to amplify efforts and accelerate the pace of positive change. Some of the most notable partnerships and collaborations include regional transportation agencies (MPOs, councils of governments, counties, and local government), workforce and industry partners, and advocacy groups.

Challenges Addressed

- | | | |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 1. Congestion in large metro regions is driven by rapid growth. | 6. Limited space can lead to less than optimum active transportation facility or network designs. | 11. Physical barriers limit access to opportunities, especially for people with disabilities. |
| 2. Current funding for active transportation does not cover demand and need. | 7. Emerging roadway design techniques and technologies have not been integrated to their fullest extent. | 12. Limited connections to transit and other travel modes reduce accessibility and mobility. |
| 3. Pedestrians and bicyclists are disproportionately represented in roadway fatalities. | 8. Active Transportation may not always be prioritized in the planning and design process. | 13. Multimodal connections and amenities serving ports of entry are limited. |
| 4. Drivers and active transportation users can be unsure about rules of the road. | 9. Active Transportation travel options are not widely available in all local communities. | 15. The economic benefits of Active Transportation are not fully understood. |
| 5. Many active transportation routes are not comfortable for all users. | 10. There is no statewide active transportation network for long-distance travel. | 16. Land use planning and active transportation implementation needs further integration. |

Integrate active transportation with other travel modes

In communities with public transit and micromobility options, connections between active transportation can play a key role in completing trips. These "last-mile connections" improve the beginning and end of each trip and offer safe passage to and from trip origins and destinations, improving the viability and comfort of transit as a travel option. To achieve this, actions include:

Address physical barriers in active transportation networks

Active transportation barriers can include large intersections, gaps in infrastructure, and conditions that are prohibitive of safe travel for vulnerable users. Building more infrastructure without overcoming these barriers will limit progress and fall short of creating effective travel options. Identifying ways to retrofit these barriers and creating maintenance programs that emphasize safe conditions for walkers and bicyclists will result in improved conditions that attract more usage and improved safety.

Design transit corridors to integrate with active transportation environments

The SATP was developed in tandem with the creation of the 2050 Statewide Multimodal Transit Plan (SMTP). Several synergies between transit and active transportation initiatives were noted by participants. Because all transit travel begins and ends with some form of active transportation, it makes sense to align these investments to amplify their positive impact toward statewide goals. The outcome is an increase in travel options that are affordable, reliable, safe, and contribute to the vibrancy of our communities and our statewide economy.

Expand access to opportunity through mobility hubs and transit

Travel choice and travel affordability can significantly impact access to opportunities. Intentional planning of transit and active transportation, in combination with creation of mobility hubs, has the potential to improve access to concentrations of services (healthcare, shopping, education) and greater connection of the workforce with jobs. Increased access to opportunities helps to fuel the economy while creating greater choices for citizens.

Challenges Addressed

- | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| 1. Congestion in large metro regions is driven by rapid growth. | 9. Active transportation travel options are not widely available in all local communities. | 13. Multimodal connections and amenities serving ports of entry are limited. |
| 2. Current funding for active transportation does not cover demand and need. | 11. Physical barriers limit access to opportunities, especially for people with disabilities. | 15. The economic benefits of active transportation are not fully understood. |
| 7. Emerging roadway design techniques and technologies have not been integrated to their fullest extent to improve active transportation. | 12. Limited connections to transit and other travel modes reduce accessibility and mobility. | 16. Land use planning and active transportation implementation needs further integration. |
| 8. Active transportation may not always be prioritized in the planning and design process. | | |

Integrate active transportation early in project planning and scoping

When active transportation is considered from the start, achieving consistent implementation becomes more likely. This strategy requires:

Consider integrating active transportation earlier in the process

Implementing procedural changes to consider active transportation options from the outset of project development can greatly impact how TxDOT incorporates infrastructure and safety features in transportation designs. This approach increases the likelihood that active transportation elements are integrated early in the project development process and included in initial cost estimates.

Increase technical support and capacity building

Technical support can take a variety of forms, including creating effective design guidance, providing more training, and hiring additional staff who are positioned to help. Increasing the capacity of TxDOT and its partners has the potential to increase the number of people working on the advancement of active transportation objectives. This will lead to more consistent design decisions, project prioritization, successful grant implementation, and effective partnerships. The result of this support will be improved safety and the implementation of more active transportation infrastructure.

Update project prioritization processes for funding programs

Prioritization processes for capital programs are regularly updated to reflect new priorities, data trends, and regulatory requirements. The intentional inclusion of evaluation and prioritization criteria that include active

transportation should result in more projects being funded that respond to priority locations (gaps and critical corridors), safety (places with the greatest need), and projects that include active transportation elements. This has the potential to accelerate the retrofit and expansion of active transportation networks, improving safety.

Enhance data collection and reporting

Creating and improving collection of data on active transportation facilities, funding, and safety can provide decision-makers better information to allocate resources and inform the project delivery process.



Women using roller blades on a trail in Dallas

Challenges Addressed

- | | | |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 2. Current funding for active transportation does not cover demand and need. | 7. Emerging roadway design techniques and technologies have not been integrated to their fullest extent to improve active transportation. | 9. Active transportation travel options are not widely available in all local communities. |
| 5. Many active transportation routes are not comfortable for all users. | 8. Active transportation may not always be prioritized in the planning and design process. | 14. Some active transportation facilities have not been maintained. |
| 6. Limited space can lead to less than optimum active transportation facility or network designs. | | |

Address physical barriers in the active transportation networks

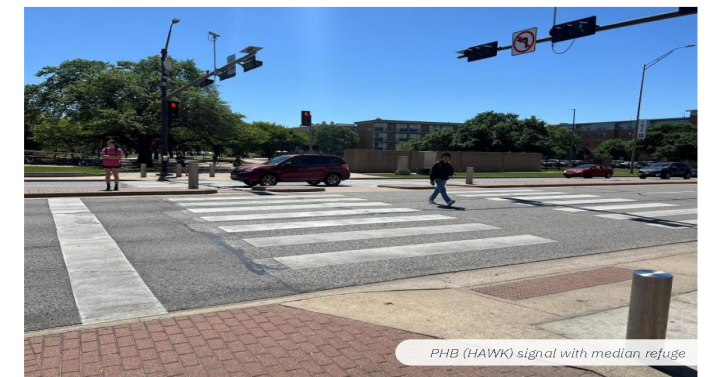
Without strategies to address physical barriers (such as bridges, large intersections, and wide roads) the system will not operate as envisioned and can potentially dissuade users and expose travelers to less-optimal alternatives. Advancing this strategy will require:

Identify and address key barriers through community engagement and data collection

Many physical barriers are easy to identify (e.g., gaps in active transportation infrastructure at bridges and major intersections). However, partnerships with local communities, advocacy groups, and public engagement can assist with the identification of priority destinations, preferred routes, and major barriers that reduce the use of active transportation and transit travel. By working together, key barriers can be documented and understood so that strategies to overcome them can be more readily applied and safe routes implemented more effectively.

Investment in key corridors, innovative designs, and enhanced routing

Retrofitting existing urban arterials to include multimodal elements has historically been a challenge due to limited space, funding constraints, and operational expectations. Establishing a model approach to critical corridors, where active transportation is a key ingredient in an integrated transportation system, will demonstrate effective ways to navigate trade-off decisions, create a more efficient process, and result in outcomes that align with SATP goals.



PHB (HAWK) signal with median refuge

Challenges Addressed

- | | | |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 1. Congestion in large metro regions is driven by rapid growth. | 7. Emerging roadway design techniques and technologies have not been integrated to their fullest extent to improve active transportation. | 12. Limited connections to transit and other travel modes reduce accessibility and mobility. |
| 3. Pedestrians and bicyclists are disproportionately represented in roadway fatalities. | 8. Active transportation may not always be prioritized in the planning and design process. | 13. Multimodal connections and amenities serving ports of entry are limited. |
| 5. Many active transportation routes are not comfortable for all users. | 9. Active transportation travel options are not widely available in all local communities. | 14. Some active transportation facilities have not been maintained. |
| 6. Limited space can lead to less than optimum active transportation facility or network designs. | 11. Physical barriers limit access to opportunities, especially for people with disabilities. | 15. The economic benefits of active transportation are not fully understood. |



Northaven Trail Bridge built in 2023 provides a safe bicycle/pedestrian connection across US 75 that reduce barriers to connecting the trails east and west of the highway

Implement and integrate optimal designs to improve travel experience

A positive travel experience has a greater likelihood of being repeated than one that is negative. A combination of infrastructure design, exposure to risk, urban design, and comfort features such as shade and benches can combine to influence travel experience. This strategy will require:

Implement designs that emphasize safety and travel experience

TxDOT's RDM update places an emphasis on context-sensitive designs. This recent revision should be monitored to ensure intended design outcomes (improved safety and travel experience). Consistent design decisions will offer safer and better travel experience across diverse terrains and contexts. Investing in training, creating awareness about exemptions and exceptions, and providing a well-understood appeals process will further enhance the active transportation network.

Create modern TxDOT designs that prioritize safety

Eliminating confusion and setting expectation is best accomplished through the clear expression of examples. To supplement the TxDOT RDM, context examples should be created and example images/locations provided. The examples will showcase preferred ways to handle pedestrians and bicycle infrastructure at driveways and intersections. These locations are the most stressful for active transportation users, and improved designs will encourage usage.

Develop statewide best practices for the design and operations of micromobility

Additionally, there are no statewide planning best practices and design

standards for micromobility. Creating a framework for designing micromobility networks, facilities, and end-of-trip spaces (e.g., hubs, stations, and parking) will promote the integration of this mode into the overall active transportation network. This will enhance connectivity, convenience, and the overall efficiency of transportation options.

Train engineers and planners to develop designs that lead to consistent application of active transportation facilities

TxDOT is continually updating its design standards. Most recently, in November 2024, the RDM was updated. While the creation of new design guidance is a critical step in improving active transportation, ensuring design guidance is consistently applied and understood across Texas is important. Providing training will ensure that new guidance is applied consistently.

Monitor design exceptions to ensure consistent application of design guidance

Project development and design guidance must allow for exceptions when specific conditions are encountered. Through training and monitoring, a more consistent application of exception criterion has the potential to reduce inadvertent gaps in the active transportation network.

Challenges Addressed

- | | | |
|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 1. Congestion in large metro regions is driven by rapid growth. | 6. Limited space can lead to less than optimum active transportation facility or network designs. | 11. Physical barriers limit access to opportunities, especially for people with disabilities. |
| 2. Current funding for active transportation does not cover demand and need. | 7. Emerging roadway design techniques and technologies have not been integrated to their fullest extent to improve active transportation. | 13. Multimodal connections and amenities serving ports of entry are limited. |
| 3. Pedestrians and bicyclists are disproportionately represented in roadway fatalities. | 8. Active transportation may not always be prioritized in the planning and design process. | 16. Land use planning and active transportation implementation needs further integration. |
| 5. Many active transportation routes are not comfortable for all users. | 9. Active transportation travel options are not widely available in all local communities. | |

Develop and expand active transportation networks statewide

An interconnected system of active transportation and transit can significantly increase the reach of travelers, allowing them to access critical destinations and new opportunities. When a traveler's reach is increased, so is the number of significant destinations, including employment, healthcare, shopping, daycare, education, and job training. Advancing this strategy will require:

Create processes that lead with active transportation

Implementing procedural changes to consider active transportation options from the outset of project development can greatly impact how TxDOT incorporates infrastructure and safety features in transportation designs. This approach increases the likelihood that active transportation elements are integrated early in the project development process and included in initial cost estimates. Additional training, both internal and external, can help traditional methods evolve faster, leading to solutions more quickly.

Develop a priority investment network (PIN) to advance SATP goals for TxDOT Districts and Statewide

Creating a statewide PIN for active transportation projects will enable TxDOT and its partners to make strategic investments and expedite the expansion of infrastructure. The PIN will highlight crucial corridors within a comprehensive network of planned bicycle and pedestrian facilities. The goal is to prioritize and accelerate the implementation of corridor improvements that lead to connected networks that significantly impact mobility and travel choices.

Investment and implementation of the Bicycle Tourism and Trail Network (BTTN)

The current BTTN aims to leverage the state's natural beauty and diverse landscapes by developing a network of accessible trails for biking and walking. Trails can attract tourists from across the country, boost local economies, promote healthy lifestyles, and enhance quality of life for Texans by providing recreational opportunities while also connecting communities to cultural and historical sites.

Join the U.S. Bicycle Route System

The opportunity exists to enhance connectivity between Texas and surrounding states by identifying bicycle routes suitable for the US Bicycle Route System, a national network spanning the US. This collaborative effort among national, state, and local agencies, non-profits, and cycling advocates aims to create a comprehensive network of interconnected routes for travel, transportation, and recreation.

Challenges Addressed

- | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 1. Congestion in large metro regions is driven by rapid growth. | 8. Active transportation may not always be prioritized in the planning and design process. | 12. Limited connections to transit and other travel modes reduce accessibility and mobility. |
| 3. Pedestrians and bicyclists are disproportionately represented in roadway fatalities. | 9. Active transportation travel options are not widely available in all local communities. | 13. Multimodal connections and amenities serving ports of entry are limited. |
| 5. Many active transportation routes are not comfortable for all users. | 10. There is no statewide active transportation network for long-distance travel. | 15. The economic benefits of active transportation are not fully understood. |
| 7. Emerging roadway design techniques and technologies have not been integrated to their fullest extent to improve active transportation. | 11. Physical barriers limit access to opportunities, especially for people with disabilities. | |

TxDOT to work with partners and communities to develop plans, increase awareness, and implement active transportation

TxDOT alone cannot build and maintain the envisioned active transportation system. It will require partnerships with local communities and developers to build and operate a more complete and effective active transportation system. Applying this strategy will include:

Select opportunities for more active transportation design training

Some local and regional governments lack the staff capacity or expertise to effectively compete for resources and navigate project development processes. This disadvantage can hinder the advancement of active transportation infrastructure. To address this, TxDOT can build on past successes with the Transportation Alternatives Technical Assistance Program to provide resources and support. Using existing and emerging tools and training programs will help build additional capacity. Engaging partners from MPOs, regional planning organizations, councils of governments, local governments, and advocacy groups will establish a strong coalition of support throughout the state.

Lead an active transportation awareness campaign with partnerships

A shared vision is stronger than individual priorities. To effectively integrate the SATP throughout Texas, there must be partnership and cohesion across goal areas as well as agencies, community partners, and advocacy groups. Campaigns and educational material regarding the goals and implementation strategies included in the SATP increase the probability that consistency is developed at the regional and local levels. Collaborating with MPOs and local jurisdictions can encourage integration and expansion of active transportation networks.

Enhance public engagement in support of active transportation

In conjunction with increasing active transportation awareness through partnerships and campaigns, the benefits of active transportation should be conveyed to the public at large. TxDOT should continue the social media and education campaigns to reach a larger audience.



A bike path in San Antonio required significant coordination to implement.



Cyclists ride on the Trinity Trail in Fort Worth

Challenges Addressed

1. Congestion in large metro regions is driven by rapid growth.
2. Current funding for active transportation does not cover demand and need.
3. Pedestrians and bicyclists are disproportionately represented in roadway fatalities.
4. Drivers and active transportation users can be unsure about rules of the road.
5. Many active transportation routes are not comfortable for all users.
6. Limited space can lead to less than optimum active transportation facility or network designs.
7. Emerging roadway design techniques and technologies have not been integrated to their fullest extent to improve active transportation.
8. Active transportation may not always be prioritized in the planning and design process.
9. Active transportation travel options are not widely available in all local communities.
11. Physical barriers limit access to opportunities, especially for people with disabilities.
12. Limited connections to transit and other travel modes reduce accessibility and mobility.
13. Multimodal connections and amenities serving ports of entry are limited.
15. The economic benefits of active transportation are not fully understood.
16. Land use planning and active transportation implementation needs further integration.

Improve infrastructure conditions through maintenance and repair

New roads sometimes take years to plan, design, and construct, but maintenance happens daily. As new resources, training, and expectations are introduced, regular maintenance can play a role in creating safe conditions for active transportation travelers. This strategy requires:

Expand asset management programs

Increasing the breadth of comprehensive active transportation data and inventory programs is paramount to understanding utilization, safety, and quality of existing infrastructure. This information, along with the ability to more broadly understand it, is similarly critical to identifying gaps and deficiencies in the network, which helps prioritize future investments.

Generate safety and longevity performance measures

Deteriorating infrastructure is not only unattractive but also presents risks to users, especially those with mobility challenges. Creating tools such as inspection schedules and key metrics to track the quality and functionality of active transportation infrastructure will enable the prioritization of rehabilitation funds to generate the greatest improvements. Collecting data related to active transportation infrastructure is essential for improving and promoting walking and bicycling.

Partner with communities to enhance awareness and improve maintenance and repair

Obstructions and misuse of active transportation infrastructure (such as parked vehicles or road debris in bicycle lanes) can increase the need for maintenance and repair, whereas community partnership, education and awareness of proper uses can prolong the life cycle of active transportation infrastructure. Community and advocacy groups can play a role in both reporting maintenance needs and assisting with clean up efforts, making existing infrastructure safer and more comfortable.

Active transportation marketing campaigns and educational material both offer opportunities to teach regulations and safety behaviors, reducing maintenance and repair needs by educating the public on best practices for active transportation use. Grassroots efforts to prolong the life cycle of active transportation infrastructure emerge through education and awareness of proper use.



A group of women on a community bike ride

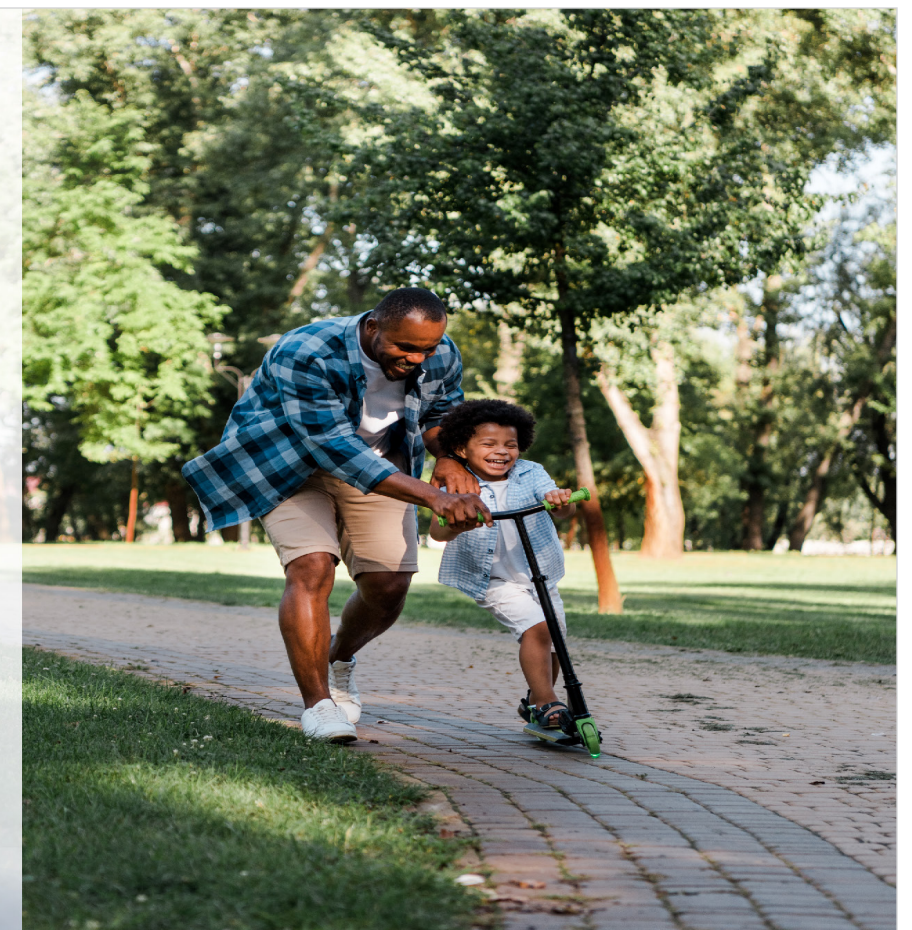
Challenges Addressed

2. Current funding for active transportation does not cover demand and need.
3. Pedestrians and bicyclists are disproportionately represented in roadway fatalities.
5. Many active transportation routes are not comfortable for all users.
14. Some active transportation facilities have not been maintained.



Fort Worth protected intersection from E 1st and E 4th Bike lane project

6 Advancing Active Transportation in Texas



Advancing Active Transportation in Texas

Advancing Strategies with Initial Steps Toward Implementation

Implementing the Statewide Active Transportation Plan (SATP) will be a collaborative effort with Connecting Texas 2050 and the Texas Statewide Multimodal Transit Plan (SMTP) 2050. It will require partnerships with internal and external stakeholders working together to navigate the state's evolving transportation needs. It will require a combination of TxDOT-led and TxDOT-supported efforts. Achieving SATP goals will be achieved as key actions are implemented. Accelerating implementation requires priority actions to be taken over the next five years, including the following priority steps:

- Identify and invest in Statewide Active Transportation Networks
- Lead an Active Transportation Awareness and Education Campaign with Partnerships
- Develop Design Examples and Train for the Consistent Application of Active Transportation
- Enhance Data Collection and Reporting
- Effectively Leverage Resources for Active Transportation

6.1 Priority Actions

The Priority Actions described below will be intended to accelerate progress towards achieving SATP goals, including advancing an integrated active transportation system throughout Texas.

Identify and Invest in Statewide Active Transportation Networks

Section 5 calls for the creation of active transportation networks statewide. There are three steps to initiate this work immediately that can act as a catalyst for advancing active transportation in Texas:

1. Define and identify a Priority Investment Network (PIN)
2. Make initial investments in the BTTN
3. Identify a candidate route for the US Bicycle Route System

Begin Identification of a PIN | Section 5 describes the importance of a statewide PIN to direct investments in critical corridors. TxDOT has several tools and resources to initiate the PIN, including the SATP 2050 critical corridors maps (Section 2), ongoing *District Bicycle Plans*, ADA Transition Plan, Vulnerable Road User Safety Assessment, the *BTTN*, and Regional and Local Active Transportation Plans.

Make Initial Investments in the BTTN | This step that can be taken in concert with or before the completion of the PIN. By creating connections that have already been identified on the BTTN, Texas can improve its bicycle connectivity and create additional interest from the bicycle tourism industry that can lead to other investments and partnerships.

Identify a Candidate Route for the USBRS | As mentioned in Section 5, joining the USBRS can enhance connectivity between Texas and surrounding states, in addition to bolstering the BTTN. The establishment of a corridor as an official USBRS route is a multi-step process requiring support from both local and federal jurisdictions.

Lead an Active Transportation Awareness and Education Campaign with Partnerships

Advancing active transportation in Texas will require the efforts of both TxDOT and its partners throughout the state. The phased implementation approach will include an awareness and education campaign to promote the plan and highlight partnership opportunities. This campaign could include a mix of digital and in-person outreach, such as social media campaigns, public service announcements, community events, and educational workshops. By highlighting the benefits of active transportation—such as improved safety, increased travel options, and economic vitality—the campaign can educate and encourage more Texans to walk, bike, and use other forms of active transportation. TxDOT can also support implementing agencies in thoroughly engaging with the public and stakeholders before implementing active transportation projects. Through these efforts, the campaign can help create a more connected, accessible, and safe transportation network across Texas, ultimately enhancing the quality of life for Texans.



Every mile matters. Learn more at DriveLikeATexan.com

Example of an awareness campaign | www.txdot.gov/drivelikeatexan.html

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2050 Statewide Active Transportation Plan

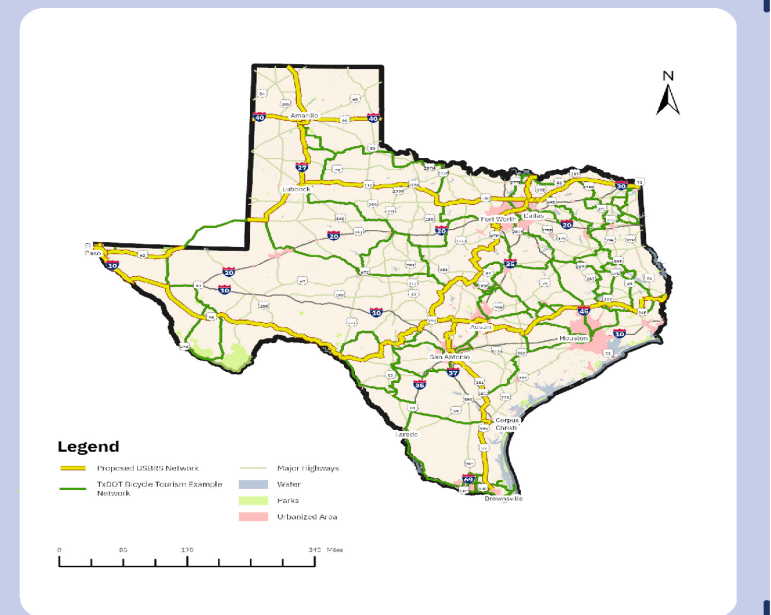
Statewide Bicycle Networks

TxDOT collaborated with its BPAC to develop the BTTN—an example network of statewide long-distance bike routes based on a 2018 study of statewide tourism. With cross-state connectivity in mind, the BTTN strategically placed its conceptual routes alongside the National Corridor Plan, making the cross-state spine routes potential candidates for a USBRS designation.

The nationwide blueprint for USBRS development is known as the National Corridor Plan, which depicts a conceptual 50,000-mile bicycle network throughout the country. While there are currently no US Bicycle Routes designated within the state of Texas, the National Corridor Plan identifies several potential corridors, including:

- USBR 66 across the Texas Panhandle
- USBR 90 from El Paso to Beaumont
- USBR 84 from El Paso to Texarkana
- USBR 55 through the Dallas-Fort Worth Metroplex and the Texas Hill Country to the Lower Rio Grande Valley

These potential routes are being refined through local and regional planning efforts, including TxDOT district bike plans, recommendations from TxDOT's Statewide Long-Range Transportation Plan (*Connecting Texas 2050*) and public input collected during the SATP process. Note that not all routes on the SATP proposed network of bicycle tourism trail routes are proposed to be included in the USBRS. The SATP network provides potential candidates to be considered for integration in the USBRS.



2050 Statewide Active Transportation Plan

Develop Design Examples and Train for the Consistent Application of Active Transportation

TxDOT recently updated its RDM to offer a greater variety of design solutions for active transportation and reflect best practices. One way to build on these efforts is to create design prototypes for incorporating bicycle and pedestrian infrastructure in new and retrofit projects (especially those with challenging constraints). Examples of potential design prototypes include:

- Retrofitting existing urban arterials to incorporate bicycle infrastructure
- Designs for bicycle and pedestrian infrastructure along corridors with constrained ROW or drainage constraints
- Integration of bicycle infrastructure at urban intersections (protected intersections, bicycle signals, etc.)

In addition to design prototypes, Section 5 calls for additional internal and external training to increase consistency of active transportation applications across the state. Externally, this includes expanding on the Transportation Alternatives Technical Assistance Program to provide support to more local and regional governments whose staff capacity to compete for resources is limited. Internal training programs can also be improved and implemented to ensure all TxDOT districts have consistent guidance and resources to design active transportation infrastructure consistently.

Enhance Data Collection and Reporting

Monitoring progress requires consistent data collection, performance metrics, and regular reporting. For example, the ability to track active transportation crashes and understand what factors are contributing to these crashes can further the effort to improve active transportation safety.

Enhance Data Collection | Detailed geospatial intersection data needs to be collected to improve analysis and countermeasure selection for pedestrian and bicyclist crashes at intersections. Effective metric tracking begins with collecting meaningful data. TxDOT collects a wide range of data related to active transportation, including crashes, the amount of infrastructure built, and bicycle and pedestrian counts. Collection of these data sources can be enhanced with new and emerging technologies and by partnering with private agencies that collect transportation data.

Enhance Data Reporting | Data reporting can have a significant impact on decision-making. Reporting can be enhanced through the implementation of dashboards, maps, and other tools that can help integrate and display information in the most useful way.

Note: Performance Metrics are described further in Section 6.2.

Effectively Leverage Resources for Active Transportation

One of the most effective ways to make an immediate impact is to effectively leverage resources for active transportation. This can be done in multiple ways, including improving the flexibility of existing funding and identifying new and innovative funding sources.

Improve Flexibility of Funding Sources | One of the most common challenges identified by internal and external stakeholders was a limited amount of funding for infrastructure. While an increase in overall funding would be a significant benefit to active transportation, one initial step can be to leverage flexibility for the use of funds. TxDOT has identified ways to implement active transportation infrastructure through funding programs. This flexibility can be used to create consistent allocation of resources to fund active transportation projects.

Identify New and Innovative Funding Sources | A desire for new and dedicated resources to advance SATP goals was a recurring theme. While TxDOT does not have the authority to increase existing funding, it can identify strategies that could result in more resources for active transportation infrastructure. This includes:

- Pursue more grants and funding through several dozen funding opportunities established to assist with the implementation of active transportation infrastructure. A comprehensive inventory can be found at the FHWA report *Pedestrian and Bicycle Funding Opportunities*.
- Establish targets that set aside a percentage of transportation funding to be assigned to active transportation. To accomplish this type of target, terms must be well-defined, and effective methods must be in place to track spending.
- Develop a dedicated multimodal streets fund that will prioritize projects that support priority corridors or areas that benefit multiple modes, enhancing safety, connectivity, and economic development, and addressing community need. By leveraging diverse funding streams, TxDOT can ensure consistent and adequate resources for the planning, development, and maintenance of multimodal streets, fostering economic vitality and promoting healthy communities.

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2050 Statewide Active Transportation Plan

6.2 Progress Measures

Monitoring progress is critical to understanding the pace and effectiveness of SATP implementation. It increases transparency, highlights the actions that are most impactful, and can help to guide future efforts to advance active transportation in Texas.

Connecting Texas 2050 Performance Measures

Connecting Texas 2050 provides a long-range plan for all transportation modes in Texas through 2050. A total of 25 performance measures will be used to monitor the state's progress in meeting the goals of the plan. These performance measures are organized around the *Connecting Texas 2050* goals of Safety, Preservation, and Mobility.

SATP Progress Measures

The concept of monitoring progress for the SATP is similar to the *Connecting Texas 2050* approach; however, the focus is narrowly applied to monitor active transportation. For example, *Connecting Texas 2050* includes performance measures to track total fatalities and serious injuries. The SATP progress measures focus on fatalities and serious injuries involving active transportation users. The SATP relied on input from EAWGs, the Steering Committee (SC), and BPAC to identify relevant, measurable, and repeatable set of progress measures. The process revealed three relevant progress measure areas:

1. Active Transportation Fatalities and Serious Injuries
2. Active Transportation Mode Share
3. Amount of Active Transportation Infrastructure Constructed

This section discusses each of the SATP progress measures, as well as the relevant emphasis areas for each.

Active Transportation Fatalities and Serious Injuries

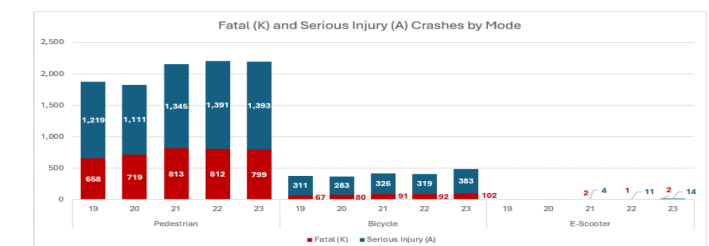
Texas has adopted the Road to Zero, which is a goal of eliminating fatalities on Texas roadways by 2050 and the idea that all deaths are preventable on Texas roads. The rate of fatalities and serious injuries to active transportation users is the ultimate measure. A decrease in active transportation fatalities and serious injuries would be a positive indicator that:

- Active transportation has become a **safer** option for all people in Texas, especially those in areas of **higher need**; and
- More active transportation users are living with fewer **health** complications due to injuries.

2050 Statewide Active Transportation Plan

Current Trends

From 2019-2023, fatal crashes involving pedestrians remained relatively flat, while fatal crashes involving bicyclists increased slightly over the same time period. Fatal crashes for E-Scooters remained low. Serious injury crashes increased for all three modes between 2022 and 2023. The desired trend is to observe a decrease in both fatal and serious injury crashes.



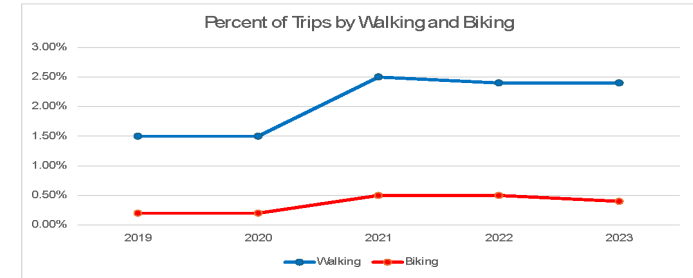
Active Transportation Mode Share

Active Transportation Mode Share is defined as the percent of people who travel using active transportation as their primary method of travel. One of the best ways to measure the effectiveness of the active transportation network is through the number of people that use it. Based on the SATP public outreach efforts, many people do not feel comfortable using active transportation in Texas. This measure also indicates improvement in all the goal areas. If more people are biking or walking to their destinations, it likely also indicates that:

- People feel **safe and comfortable**;
- People have improved **access** and are more **connected** to their destinations, including in **areas of higher need**;
- Centers of **economic** activity are more accessible via active transportation; and
- People are improving their **health** through physical activity.

Current Trends

From 2020 to 2021, there was a slight increase in the percentage of people walking and biking as their primary commute mode in Texas, indicating how the COVID-19 pandemic affected trip-making choices. Since 2021, the percentage of people walking and biking as their primary commute mode in Texas has remained relatively flat. The desired trend is to observe an increase in percentage of trips made by walking and biking.



*ACS 5-Year Estimates

Amount of Active Transportation Infrastructure Constructed

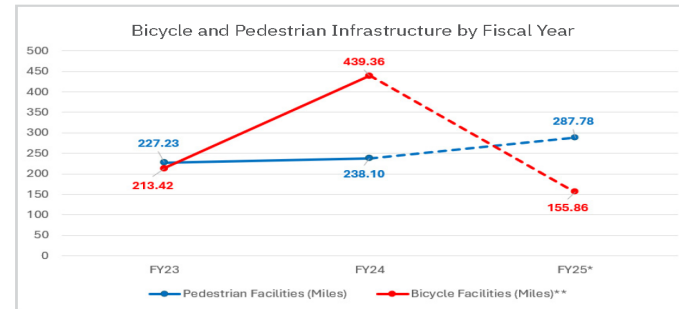
More people would use active transportation if active transportation infrastructure were more widely available. The analyses discussed in Section 2 indicated that there are many areas throughout Texas where demand for active transportation exists despite an absence of supporting infrastructure. To support this demand, more infrastructure needs to be constructed. An increase in the amount of active transportation infrastructure constructed is a positive indicator that:

- Active transportation users have more infrastructure that are **safe, comfortable, and accessible**;
- More active transportation routes are being **connected** to each other, creating networks;
- The active transportation network is expanding in **communities of need** and in **economic centers**; and
- Communities have more transportation options that are better for their **health** than driving.

Tracking the annual amount of new active transportation infrastructure (pedestrian and bicycle infrastructure) at the TxDOT District and statewide scale will offer an enhanced understanding of the pace of implementation and geographic distribution of progress.

Current Trends

Due to limited data available, a three-year trend was used as the basis for this measure. In Fiscal Year (FY) 2024, TxDOT built more than double the number of miles of bicycle infrastructure compared to FY 2023, and also built more miles of pedestrian infrastructure. Based on partial year data, TxDOT is projected to build more miles of pedestrian infrastructure in FY 2025 compared to FY 2024. The mileage of bicycle infrastructure currently projected to be built in FY 25 is lower than in previous years; however, this may change as more data become available. The desired trend for this measure is to observe an increase in both bicycle and pedestrian infrastructure.



Note: Pedestrian and bicycle facility lengths should not be added together due to the overlap (i.e., SUPs are included in both).

Baseline Performance

The measures for progress in these three areas are broken into eight distinct statewide metrics with the desired trend direction (up or down).

Progress Measure	Current Value (Statewide)	Desired Trend
Active Transportation Fatal and Serious Injury Crashes (Pedestrians, Bicycles, and E-Scooters)		
Active Transportation Fatal Crashes	903	↓
Active Transportation Serious Injury Crashes	1,790	↓
Active Transportation Fatal Crashes per 100,000 Population	2.96	↓
Active Transportation Serious Injury Crashes per 100,000 Population	5.87	↓
Active Transportation Mode Share		
Percent of Commute Trips by Walking	2.4%	↑
Percent of Commute Trips by Biking	0.4%	↑
Amount of Active Transportation Infrastructure Constructed Annually		
Pedestrian Infrastructure (FY 24 - Miles)	238.10	↑
Bicycle Infrastructure (FY 24 - Miles)	439.36	↑

Note: Pedestrian and bicycle facility lengths should not be added together due to the overlap (i.e., SUPs are included in both).



A couple walking along the Waterway in the Woodlands, TX

Appendix

Acronyms

- **AASHTO** — American Association of State Highway and Transportation Officials
- **ATP** — Active Transportation Plan
- **ADA** — Americans with Disabilities Act
- **ADV** — Autonomous Delivery Vehicles
- **AGOs** — Areas of Greatest Opportunity
- **BPAC** — Bicycle and Pedestrian Advisory Committee
- **BTTN** — Bicycle Tourism Trails Network
- **CARTEEH** — Center for Advancing Research in Transportation Emissions, Energy, and Health
- **CDC** — Centers for Disease Control
- **COGs** — Councils of Government
- **CRIS** — TxDOT Crash Records Information System
- **DISCOS** — TxDOT District and County Statistics
- **DSHS** — Texas Department of State Health Services
- **EAWGs** — Emphasis Area Working Groups
- **FHWA** — Federal Highway Administration
- **HEAT** — Health and Economic Assessment Tool
- **HHS** — Texas Health and Human Services
- **HHSC** — Texas Health and Human Services Commission
- **LEP** — Limited English Proficiency
- **LPI** — Leading Pedestrian Interval
- **LTS** — Level of Traffic Stress
- **MPO** — Metropolitan Planning Organization
- **NCS** — National Corridor Plan
- **PHB** — Pedestrian Hybrid Beacons
- **PIN** — Statewide Priority Investment Network
- **PSAP** — Texas Pedestrian Safety Action Plan
- **PWD** — Texas Parks & Wildlife Department
- **RDM** — Roadway Design Manual
- **ROW** — Right-of-Way
- **RPOs** — Rural Planning Organizations
- **RRFB** — Rectangular Rapid Flashing Beacons
- **SBL** — Separated Bike Lane
- **SC** — Steering Committee
- **SATP** — Statewide Active Transportation Plan
- **SLRTP** — Statewide Long-Range Transportation Plan (*Connecting Texas 2050*)
- **SMTP** — Statewide Multimodal Transit Plan
- **STIP** — Statewide Transportation Improvement Program
- **SUP** — Shared-use Path
- **TCAP** — Texas Comprehensive Accessibility Program
- **TML** — Texas Municipal League
- **TMUTCD** — Texas Manual on Uniform Traffic Control Devices
- **TODs** — Transit-Oriented Developments
- **TPWD** — Texas Parks and Wildlife Department
- **TTI** — Texas A&M Transportation Institute
- **TxDOT** — Texas Department of Transportation
- **USBRS** — U.S. Bicycle Route System
- **UTP** — Unified Transportation Program
- **VMT** — Vehicle Miles Traveled
- **VSLs** — Variable Speed Limits

Round 1 Public Engagement Summary

You can find the Round 1 Public Engagement Summary by clicking [here](#).

Round 2 Public Engagement Summary

You can find the Round 2 Public Engagement Summary by clicking [here](#).

Round 3 Public Engagement Summary

You can find the Round 3 Public Engagement Summary by clicking [here](#).

Identify Working Group Topics

Developing the SATP required input from the public and TxDOT, but also from advocates and participants with experience and specialized knowledge. To gather this information, six EAWGs were created in response to the goals and topics that most frequently referenced during public engagement. EAWGs varied in size, with representatives from local governments, agencies, and organizations throughout Texas. The primary purpose of the SATP EAWG was to determine gaps and opportunities that would lead to the formation of strategies and actions.

SATP Emphasis Area Working Group Topics

Topic	Description	Initial Focus Area
Safe design	<ul style="list-style-type: none"> • Highlight safe design options for active transportation. • Explore best practices. 	<ul style="list-style-type: none"> • Identify safe design options for active transportation not included in the TxDOT RDM. • Identify design constraints and limitations. • Identify additional design criteria that can promote active transportation.
Urban context considerations	<ul style="list-style-type: none"> • Identify challenges and opportunities for urban contexts. • Recommend best practices and future actions. 	<ul style="list-style-type: none"> • Contextual or roadway characteristics • Understanding pros and cons of retrofitting roadways in urban contexts. • Recommend optimum design criteria to accommodate all modes.
Rural and suburban context considerations	<ul style="list-style-type: none"> • Focus on unique attributes of rural and suburban transportation networks and communities. 	<ul style="list-style-type: none"> • How is active transportation used/perceived in rural versus suburban areas? • What are the highest priorities for active transportation in rural versus suburban areas?
Multimodal integration	<ul style="list-style-type: none"> • Develop policy recommendations that encourage mode integration. 	<ul style="list-style-type: none"> • Identify where multimodal connections are most lacking. • Identify barriers to multimodal connection. • Suggest solutions to close the gaps in areas where integration is most needed.
Community need, demand, and health	<ul style="list-style-type: none"> • Explore needs, opportunities, and partnerships to provide active transportation infrastructure where it is most needed. 	<ul style="list-style-type: none"> • Where is the greatest need? (Considering both demographics and places.) • Which opportunities will provide the maximum benefits to areas of highest need? • Which partnerships need to be made/improved to be successful?
Micromobility	<ul style="list-style-type: none"> • Explore how micromobility interacts with other road uses • Develop best practices for mode integration. 	<ul style="list-style-type: none"> • Find models of where micromobility is being integrated well. • How can the model be adapted to fit Texas? • Recommendations for balancing safety of all modes.

The working groups each had three meetings, (the micromobility group which met twice), that began in March 2024 and ended in July 2024 and followed a consistent agenda:

Meeting 1: Defining the Challenge

- Review data and results of engagement efforts.
- Define the issues we are trying to solve.
- Notate key challenges and barriers.

Meeting 2: Identifying Remedies and Solutions

- Develop actions that align with goal achievement.
- Identify potential strategies.
- Identify case studies that demonstrate success.

Meeting 3: Action Planning

- Affirm priority actions and strategies.
- Consider ways to measure progress.
- Set a call to action.

District Interviews

- All 25 TxDOT districts were interviewed about active transportation. Key takeaways were the following:
- Rural districts are focused on maintenance, sidewalk upgrades, highway crossings, and ADA compliance.
 - There is difficulty bridging the gap between on-system and off-system facilities.
 - Funding is a barrier to active transportation. Some suggested funds be dedicated specifically to active transportation.
 - Limited flexibility in time frames and design guidelines makes implementation difficult, especially in areas with limited ROW and other design constraints.
 - Districts with large urban areas are interested in exploring alternative active transportation opportunities outside of the ROW, especially along frontage roads and high-speed corridors.



An interactive online meeting portal was used to gather input from EAWG participants during meetings. This allowed participants to contribute outside of regularly scheduled meetings.



Gaps and Opportunities

The following are ideas and key takeaways from each EAWG to identify gaps and opportunities to inform strategies and actions.

Safe Design

- Design for safety first and mobility second. Make pedestrians a priority.
- There is a lack of frequent, safe crossings.
- There needs to be greater flexibility in urban design standards.
- Focus on proven safety countermeasures and locations that will reduce bike and pedestrian crashes.
- Consider pedestrian lighting when designing roadways.
- Increase safe, multimodal access in networks by providing an increased level of comfort for active transportation users.
- Corridors and how they connect the various networks (vehicle, bike, utilities) need long-term planning. Decisions should be made at a system level.
- Consider separating pedestrians from bicyclists and lowering speed limits on roadways in areas of high activity.
- Consider adding raised crosswalks and intersection treatments.
- Safety should be TxDOT's highest priority.

Urban Context Considerations

- Continuous bike networks and separated bike lanes should be considered.
- Facility widths should be based on land use and an understanding of trip purpose.
- Limit locations for drivers to make right turns at red lights.
- Develop curbside management plans and parking strategies.
- Conduct before and after studies to show the impacts of various design decisions.
- Consider a formal process for bicycle and pedestrian scoring for TxDOT roadways.
- Consider using a context-based design approach versus looking at functional class only.
- Maintenance plans should be required to ensure projects are rehabilitated or maintained well.



Multimodal Integration

- Focus on accessibility, frequency, reliability, and community need when considering multimodal integration with transit.
- Encourage increased land use density near transit. Consider zoning adjustments and reduced parking requirements.
- Rural areas need more active transportation options.
- Explore requirements for connections to TxDOT facilities at adjacent developments.
- Update the RDM to include ROW priorities based on current and future land use contexts.
- Recommend quick-build solutions for priority projects.
- Track statewide and regional miles of TxDOT bicycle and pedestrian facilities.
- Create progress measures focused on decreasing vehicle miles traveled (VMT) per person in Texas.
- Link active transportation facilities with the economic benefits they could provide.

Community Need, Demand, and Health

- Include walking/biking accommodations in every roadway project.
- Select partnerships that positively affect communities by addressing the greatest needs.
- Engage disadvantaged communities, users of all ages, and individuals with disabilities.
- Build a coalition of support to accelerate the pace of active transportation implementation.
- Eliminate barriers and protect vulnerable road users.
- Focus on improvements that connect people with jobs, housing, and food.
- Encourage active and healthy communities.
- Engage people with disabilities and young people in decision-making.
- Conduct crossing tests with vulnerable road users.
- Connect missing sidewalk links.
- Mitigate for heat exhaustion (i.e., provide shade and water fountains, etc.).

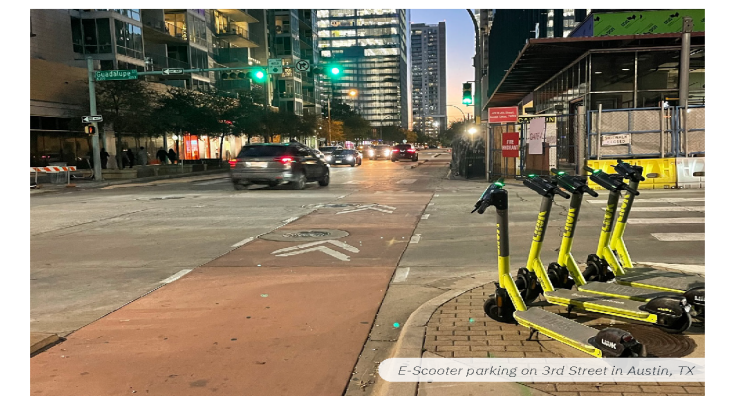


Rural and Suburban Context Considerations

- Freight is critical for rural economic development.
- While some thought separated or buffered lanes should be considered, others said they are not needed in rural areas.
- Consider widths of bike lanes in comparison to the speed of adjacent roadways.
- Explore programs where local jurisdictions take back ownership of a roadway to allow design standards specific to local contexts.
- Consider regional safety plans to give rural areas the opportunity to develop a local safety plan.
- Develop district-level design standards.

Micromobility

- Review best practices on partnerships, regulations/ordinances, and recruiting vendors. Include information on standards and definitions, travel patterns, mobility network design, shared micromobility systems, and micromobility policy and regulation.
- Update the level of service from vehicle-based to multimodal.
- Consider a designated space for micromobility and people (or other policy solutions) to avoid conflict between modes. Safety is the most important consideration.
- Use technology to connect to amenities and destinations.
- Regulation and public education is needed, specifically around micromobility speed, volume, and width.



Emphasis Area Working Group Acknowledgments

Efforts were made to ensure representation from a variety of contexts (rural, suburban, urban) as well as geographic distribution from across Texas. Invited participants included:

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