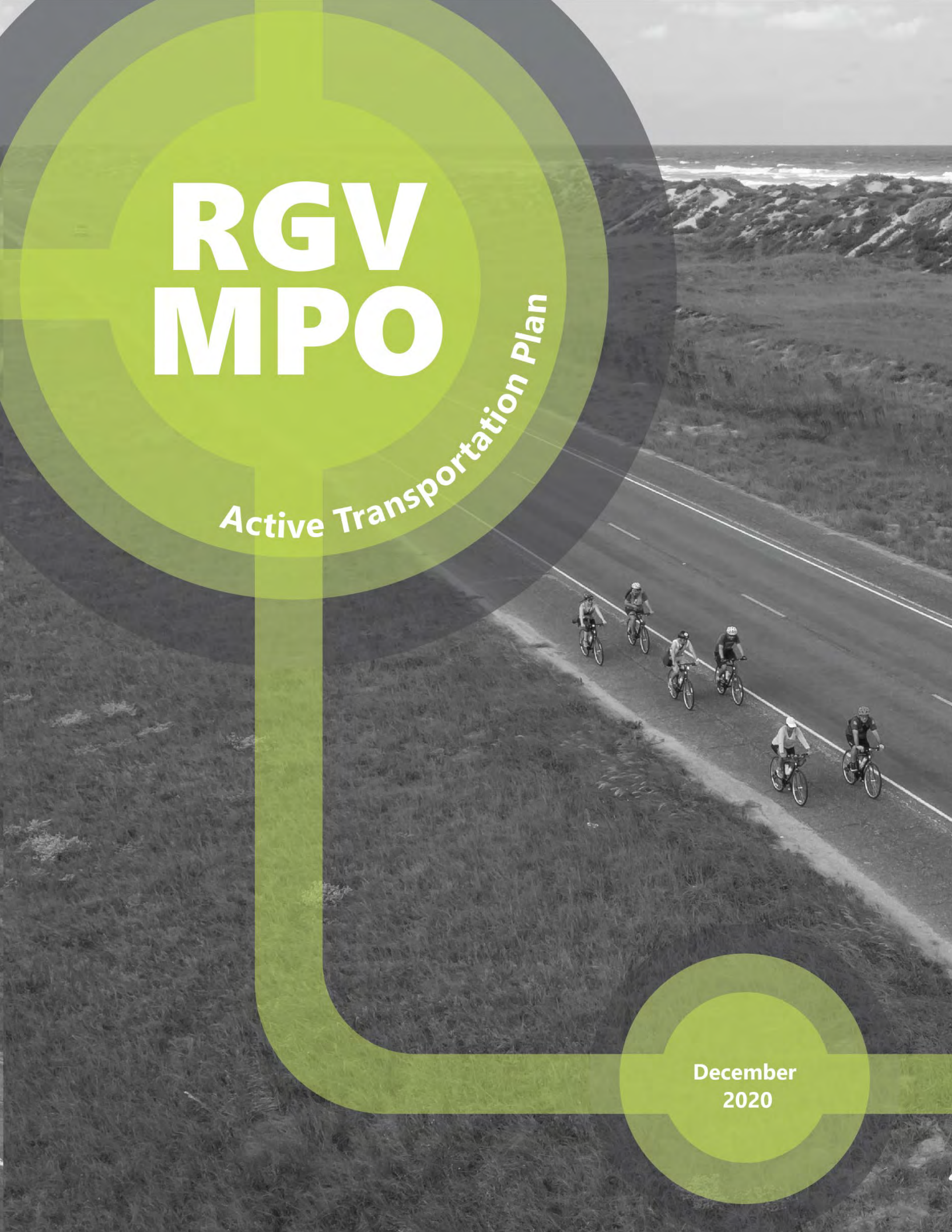
RGV MPO

Active Transportation Plan



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The Rio Grande Valley Metropolitan Planning Organization

and

The Texas Department of Transportation

The document was reviewed and approved by:

The Rio Grande Valley Metropolitan Planning Organization – Transportation Policy Board

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Rio Grande Valley Planning Organization (RGVMPO)

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"The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation."

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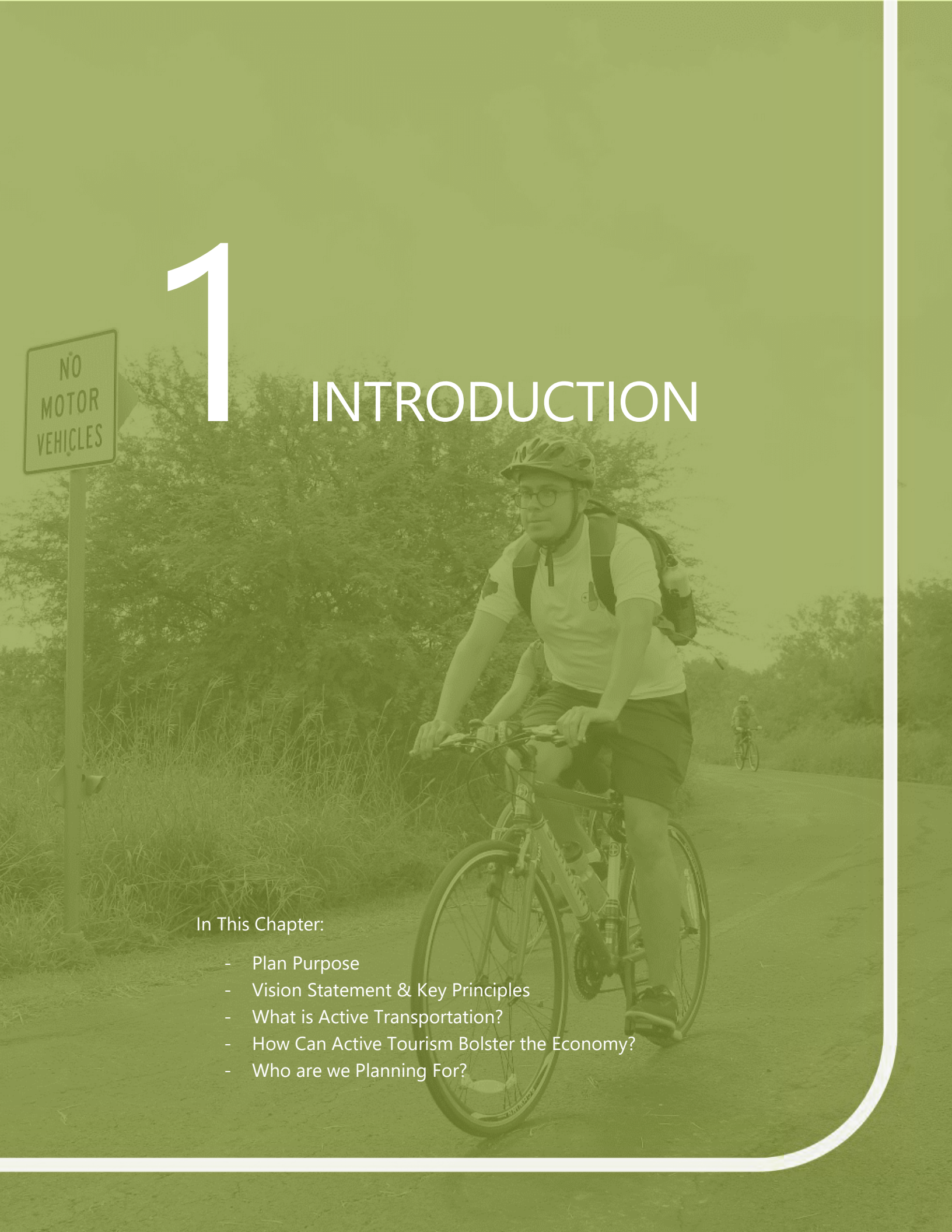
1 INTRODUCTION



In This Chapter:

- Plan Purpose
- Vision Statement & Key Principles
- What is Active Transportation?
- How Can Active Tourism Bolster the Economy?
- Who are we Planning For?

ACTIVELY PROMOTING CONNECTIONS

In coordination with the 2045 Rio Grande Valley Metropolitan Planning Organization (RGVMPO) Metropolitan Transportation Plan (MTP) update, the RGVMPO Active Transportation Plan (ATP) facilitates the creation of a regional approach to active transportation in the Rio Grande Valley while recognizing the unique community identities throughout the region. The purpose of this plan is to provide RGVMPO staff and local planning partners with a guide and source of information to continue to grow a supportive culture of walking and biking, and to expand the regional network of active transportation facilities.

VISION FOR THE FUTURE

The RGVMPO's regionally coordinated system for walking and bicycling is designed to provide world class facilities for active transportation and to integrate active tourism to support economic opportunity in local communities. The Rio Grande Valley's safe, comfortable, inclusive, and equitable system of active transportation facilities accommodates users of all ages and abilities, and supports increased public heath, excellent connectivity to transit and key destinations, simple and clear wayfinding for visitors and tourists, and a unique sense of place that celebrates the rich culture of the Rio Grande Valley.

Figure 1-1: Getting Active in the Rio Grande Valley



Key Principles

Although each community is distinct in their own ways, the Rio Grande Valley is unified by three key principles and their collective vision for a regional transportation network. This coalition prioritizes improving **connectivity**, **accessibility,** and **community health** while planning for a comprehensive active transportation system. Supporting each of the key principals are goals that enhance walking and biking for people in the Rio Grande Valley. Key principles and supporting goals can be found below in **Figure 1-2**. Active transportation emphasizes using non-motorized modes of transportation such as walking or biking. These activities have the added benefit of also contributing to the active tourism sector, which encourages Rio Grande Valley visitors to participate in walking, running, and biking networks.

Figure 1-2: Key Principles and Supporting Goals

Connectivity: *Increasing mobility across active transportation modes, while creating an integrated regional transportation network*

Connect Transit with Active Transportation	Establish a Regional Hike/Bike Network	Connect Pedestrian Network
Connecting the first and last mile of public transit trips to create a realistic and comprehensive network	Link existing pedestrian routes, increase connectivity, and increase user comfort via a system of safe facilities	Filling sidewalk gaps and improving the quality of the pedestrian network

Accessibility: *Establishing a comprehensive system of transportation options and allowing users of all ages and abilities to access resources across the region*

Improve Connections to Key Destinations	Ensure Equity	Support Education and Encouragement
Improving connections to key destinations promotes more frequent participation in active transportation	Enhancing travel choices for underserved people while increasing access to basic needs, services, and employment	Encouraging user participation through education and empowering residents to engage with the community

Community Health: *Promoting active transportation modes that improve public health and support local economies*

Build Active Tourism Network	Improve Mental and Physical Health	Improve System Safety
Supporting job creation and local spending through active tourism	Integrating activity to lower the effects of obesity, heart disease, mental health issues and other chronic conditions	Reducing speeds and minimizing conflicts with motorized vehicles to increase safety for all users

WHAT IS ACTIVE TRANSPORTATION?

The Rio Grande Valley grapples with the challenges of high rates of chronic health concerns, pollution, and economic hardship compared to other Texas and US regions due in part to the over reliance on automobiles and disparities in socioeconomic status. Although no one action can combat these stressors simultaneously, an approach to mitigating such issues can be through encouraging active transportation, which builds healthy communities and promotes physical activity—while supporting the economy and environment. Although, most Texans rely on automobiles to get to work, run their errands and travel around town, more and more residents have been discovering active modes of transportation as communities invest in sidewalks, bike lanes, and Hike & Bike trails.

Figure 1-3: Bicycle Art in the Rio Grande Valley

Active transportation is a sustainable transportation option and includes walking or bicycling for our daily commutes. While walking and bicycling are typically considered when discussing active transportation, it can also include any form of non-motorized, human-generated mode of transportation such as skateboarding, kayaking, and rollerblading. Taking advantage of active forms of transportation can improve community health and wellness, while reducing travel costs and expanding transportation networks to residents who do not own a vehicle.

Why Improve Active Transportation?

Investing in active transportation creates opportunities for residents to incorporate physical activity in their lifestyles. Not only does it improve the health of our communities, it also has significant environmental and economic impacts. In addition, in some communities where car ownership may be a financial burden for low income households, walking and bicycling may be primary modes of transportation.

Pathway to a Healthier Lifestyle

The Rio Grande Valley has some of the highest rates of obesity, Type 2 diabetes, and high blood pressure in the US. Almost 80% of the population in the Rio Grande Valley is considered overweight and the overall rate of diabetes in the region is 20% higher than the state[1]. Encouraging active

[1] (It's Time Texas, 2017)

lifestyles and providing communities with the active transportation infrastructure is an effective method to tackling these health concerns.

Figure 1-4: Cycling in the Rio Grande Valley

Transportation is often cited as a barrier to adequate healthcare. Investing in active transportation infrastructure grants residents the resources they need to access healthcare and prevent major illnesses through physical activity. It has been shown that residents who live in neighborhoods with sidewalks are 50% more likely to meet physical activity guidelines and those who live in dense neighborhoods are 33% more likely to meet them by walking for transportation[2].

The American Public Health Association has identified these health opportunities that can be attained through a comprehensive transportation network[3]:

- Women who walk or bike 30 minutes a day have a lower risk of breast cancer
- A 30-minute round-trip bicycle commute is associated with better mental health in men
- Incorporating active transportation in your commute is associated with an 11% reduction in cardiovascular risk
- Teenagers who use active transportation to get to school watch less TV and are less likely to smoke than their peers who are driven
- Public transportation users take 30% more steps and spend roughly 8 more minutes walking each day than drivers

Studies have shown physical activity can help reduce physical and mental illness; specifically, obesity, depression, heart disease, blood pressure and stress. Rio Grande Valley's proximity to the Mexican border and the fluid nature of border crossing in the region presents unique stressors in this community. Social policies and immigration status can be a source of stress and in some cases a barrier to adequate healthcare. Investing in active transportation increases mobility and connections to basic services to maintain a high-quality of life. These connections provide residents with the agency to access healthy food options, health resources, and mental health services.

[2] (Buehler, Winters, & Götschi, 2016)
[3] (American Public Health Association, 2010)

Navigating Environmental Benefits

As climate change continues to impact our communities, we must adapt and protect the natural resources that remain. The Rio Grande Valley has a rich and diverse natural ecosystem, which is threatened by environmental issues, such as air pollution, flash flooding, and poor water quality. This region struggles with the reoccurrence of hurricanes and flooding year after year due to the tropical climate and proximity to the ocean. Reducing one's carbon footprint and opting to utilize non-motorized forms of transportation can mitigate a number of these concerns.

Figure 1-5: Natural Beauty of the Rio Grande Valley

Our transportation choice directly impacts the air we breathe, the land we live on, and the natural world around us. Many destructive environmental impacts can be linked to car-centric communities. And like many places in the US, the Rio Grande Valley was built around highways and interstates.

Key direct and indirect environmental benefits include:

Building a transportation system that better supports active modes such as walking, biking, and transit as alternatives to driving alone can help lessen our dependence on motorized trips, therefore lessoning our carbon footprint connected to our transportation choice. A robust active transportation system can have a greater impact than just promoting an individual's choice in choosing active trips, it also promotes sustainable community design. For instance, active transportation infrastructure can reduce the need for parking facilities, which may allow for better preservation of natural habitats. The Lower Rio Grande Valley is home to a unique combination of temperate and tropical plants and

animals due to its geographic location. Located within in the LRGV are at least 24 plant species that are officially considered endangered by federal and state agencies[4]. Active transportation can facilitate the preservation these habitats through conscious consideration of how our transportation systems are laid out and the modes we engage with.

Route to Economic Growth

With almost 4.7 million workers or almost half of the state's private workforce, small businesses are at the core of Texas's economy[5]. In addition, the Rio Grande Valley's biodiversity provides the ideal landscape for wildlife and nature enthusiasts, a prime target demographic of active tourism. The potential for active tourism to bolster the local economy is unprecedented and a viable source of revenue for the region

HOW CAN ACTIVE TOURISM BOLSTER THE ECONOMY?

Long-distance trails and bike lanes in both urban and rural settings can act as tourist attractions in addition to supporting daily commuters. These multifunctional trails and paths boost the economy by supporting small businesses and promoting active tourism through effective place making. This method of tourism includes walking, biking, and hiking services and allows travelers to immerse themselves into authentic local experiences.

Encouraging outdoor recreation through active tourism can bring in revenue for local RGV communities. The United States Bureau of Economic Activity (BEA) found that outdoor recreation contributed **2.2 percent** (**$427.2 billion**) of national gross domestic product (GDP) in 2017. Of that, guided tours/outfitted travel, accounted for **$12.9 billion**. This was one of the fastest growing activities (**11%**) in 2017. Similarly, retail trade was the **second largest sector**, accounting for **$95.7 billion** of value added—with Texas contributing nearly **$8.5 billion**.

The Outdoor Industry Association found that bicycling participants spent **$83 billion** on 'trip-related' sales (bicycle tourism) and generated **848,000 jobs** nationally in 2017. Likewise, the BEA estimated outdoor recreation sales in 2018 to be **$734 billion**—surpassing industries such as agriculture, petroleum and coal, and computer and electronic products (Adventure Cycling Association , 2017).

The economic benefits of active transportation directly affect its users by reducing transportation costs and health costs, while simultaneously producing jobs. By increasing mobility choice, lower income residents can access the resources they need without having to own a car or pay for public transportation. Trips made using active transportation create a spillover effect, which supports the local economy—local services and shops are frequented during those trip and money saved on transportation costs allows the user more spending power.

Moreover, bicycling and pedestrian projects have shown to be more labor intensive than road projects, which are more material intensive. This means that active transportation projects create more jobs per dollar than a road project through the employment of construction workers (Flusche,

[4] (USGS, 2016)
[5] Based on 2016 employment numbers (U.S. Small Business Administration, 2019).

2012). Using and building active transportation infrastructure can create and maintain employment. Effective placemaking and a stronger sense of community can be implemented through active transportation, making desirable, thriving, and healthy places to live.

Figure 1-6: Touring the Landscape of the Rio Grande Valley

Multiple studies have shown that the built environment and placemaking can directly impact property value and sales revenue by increasing retail visibility. A case study from Fort Worth, Texas, found an over 100% increase in retail sales after bike lanes and improved bike parking were added to the commercial corridor (The League of American Bicyclists, 2018). In fact, most errands in the US are within walking or biking distance. Twenty-seven percent of errands are within easy walking distance (<1 mile), while sixty-one percent are within easy biking distance (<5 miles)[6]. While property values are higher and more stable in neighborhoods where residents utilize active modes of transportation, this plan takes into consideration both the economic benefit and risk of gentrification when considering the impacts of implementing equitable infrastructure within RGV communities.

WHO ARE WE PLANNING FOR?

The Rio Grande Valley is a diverse and culturally rich region of Texas, as is demonstrated by the people who live here and their transportation needs. Using both community feedback taken from the public engagement effort and using common concerns voiced by active transportation users, regardless of location, these user profiles have been developed to showcase the wide array of typical user experiences that need to be considered when developing an active transportation plan in RGV. This ATP is built to help people, and the profiles below are just examples of people you may find in the Rio Grande Valley who have concerns and needs regarding the active transportation network.

[6] (Buehler, Winters, & Götschi, 2016)

User Profiles

MICHAEL often uses a charter bus service to get to his destination. While the charter system works, he feels it could be more efficient.

FATEMA is a mother of two and often walks her children to the school bus. She has noticed the need for a safer crossing at the large intersection near her home.

CHRIS has lived in the community for many years. He walks to his local grocery store and knows the bus route well. Juan wishes there were more benches at his bus stops.

GLORIA is a recent retiree who enjoys walking around her neighborhood in the evening but wishes there was more shade near the sidewalks.

JUAN is a new resident who does not have access to a car. He'd like to explore the region more but has trouble understanding the regional bike system.

MARIA is a young professional who loves to ride her bike to work but feels that there are not enough designated areas for bikers on her commute to work.

MICHELLE is a college student and uses the campus bus to get around. She wishes there were a regional route to take back home for winter break.

SHAWN is an eighth grader who lives two blocks from school, but his parents drive him because there are no sidewalks in his neighborhood.

Transportation needs vary from person to person; however, key trends were identified from our community feedback. RGV residents are primarily concerned about connectivity, accessibility, and safety. Residents feel there are not enough sidewalks in their communities and that the existing roads are not safe enough to bike on. Residents also expressed the desire for a seamless and well-connected active transportation system from which all basic needs could be accessed. The active transportation plan aims to address these needs through this collaborative effort between the municipalities of the Rio Grande Valley, which considers how to develop sustainable, healthy connections. This is centered around a larger health initiative in the region that aims to inspire residents to incorporate physical activity into their daily lives; celebrate the natural beauty and showcase the diverse communities of the Rio Grande Valley.

Figure 1-7: All Ages and Abilities Facility

2 PUBLIC ENGAGEMENT

In This Chapter:

- Public Outreach Methods
- Visioning Process
- Stakeholder Meetings
- Draft Plan Review

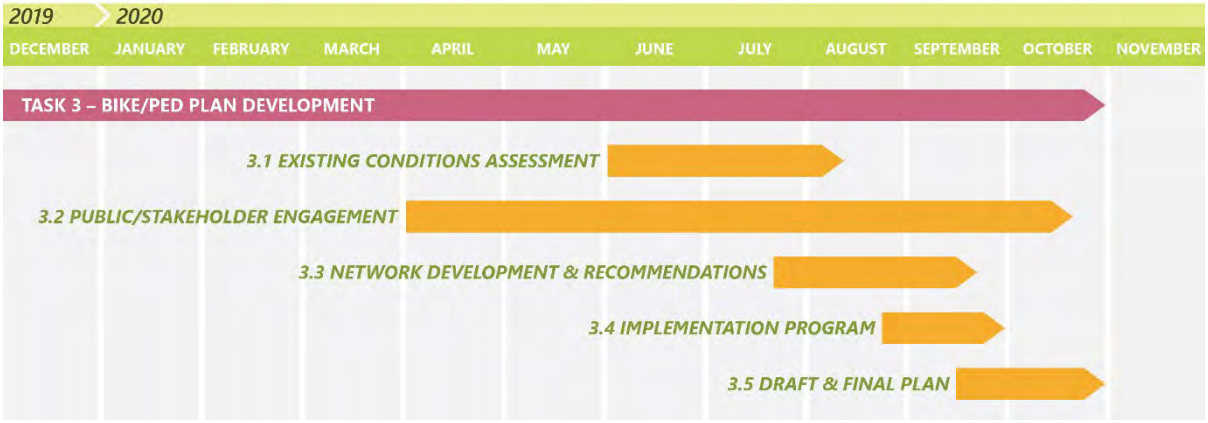
PUBLIC OUTREACH

Public engagement is essential to any well-developed ATP. Feedback from the public gives decision makers a better perspective on the daily experiences of people who walk and bike, providing a more holistic understanding of the community's active transportation needs and goals. To maximize public input, public participation strategies were implemented early in the development of the RGVMPO ATP and in coordination with the RGVMPO 2045 MTP update. A variety of engagement strategies were used, including:

- **Online visioning tools**
- **Surveys**
- **Stakeholder meetings**
- **Virtual open house**

The following sections outline the different methods used to engage the Rio Grande Valley community, many of which were conducted in tandem with the MTP public engagement process.

Figure 2-1: ATP Timeline



VISIONING

The RGVMPO and project team conducted multiple public and stakeholder outreach efforts to better understand the community's transportation challenges, needs, and opportunities. The participants' responses provided insight into their vision for the future of the active transportation system and their goals for the RGVMAB through 2045. This section describes the visioning process used for the RGVMPO ATP, including online visioning tools and public surveys.

BPAC Visioning Tool

The main objective of the online visioning process for the RGVMPO ATP was to solicit input from the Bicycle and Pedestrian Advisory Committee (BPAC), and the community they represent, regarding their priorities for the future of active transportation in the RGVMAB. The BPAC is a subcommittee to the RGVMPO Technical Advisory Committee (TAC) and is comprised of 22 members representing municipalities, local businesses, and private citizens who are engaged with active transportation issues in their communities spread across the Rio Grande Valley. Representatives from TxDOT, RGVMPO,

Texas State Parks and Wildlife, and Valley Metro are also members of the BPAC. The BPAC members were an especially valuable voice in the development of the ATP, due to their breadth of knowledge and understanding of local needs, as the challenges presented by the COVID-19 pandemic made reaching all corners of the RGVMAB more difficult. Members of the BPAC committee are listed in **Table 2-1** below.

Table 2-1: RGVMPO BPAC Members

Entity	Member
Bicycle / Ped Health Advocate	Rose Gowen (Chairperson)
Bicycle / Pedestrian Citizen At-Large	Michael McNew (Vice Chairman)
City of Brownsville	Cody Baczewski (Designee)
City of Brownsville	Antonio Zubieta (Alternate)
City of Edinburg	Larry Ayala (Designee)
City of Harlingen	Andy Vigstol (Designee)
City of Harlingen	Javier Mendez (Alternate)
City of McAllen	Marlen Garza (Designee)
City of McAllen	Martina Mejia (Alternate)
City of Pharr	Cynthia Garza (Designee)
City of Pharr	Maria Rangel (Alternate)
Texas Parks/Wildlife Department – Estero Llano Grande State Park	Javier De Leon (Designee)
TxDOT	Joseph E. Leal (Designee)
TxDOT	Evan Roberts (Alternate)
TxDOT	Craig Wuensche (Alternate)
Valley Metro – B-Cycle	Juan Macias (Designee)
Valley Metro	Frank Jaramillo (Designee)
Bicycle World RGV	Ana Adame (Designee)
Citizen At-Large	Eudenia "Eudy" Carrillo (Designee)
U.S. Fish and Wildlife - Santa Ana National Wildlife Refuge	Christine Donald (Designee)
Museum South Texas History	Rene A. Ballesteros (Designee)
Bicycle / Pedestrian Citizen At-Large	Richard Cavin (Designee)
Bicycle / Pedestrian Citizen At-Large	Michael Padgett(Designee)

Due to unforeseen circumstances caused by the COVID-19 pandemic, the entirety of the visioning process was conducted online. The ATP online visioning tool was a custom-built website created specifically for BPAC containing two modules: a survey and an interactive map. The tool was introduced to BPAC members in a meeting that demonstrated how to use the tool effectively. The interactive map provided the BPAC committee members an opportunity to draw on the map in order to indicate locations where they felt concerns, barriers, or opportunities for walking and biking existed in their communities. In addition, each BPAC member was asked the survey questions found below in

Table 2-2. The visioning tool was open from April 15th to May 31st and the modules yielded 5 survey responses and 21 comments on the interactive map.

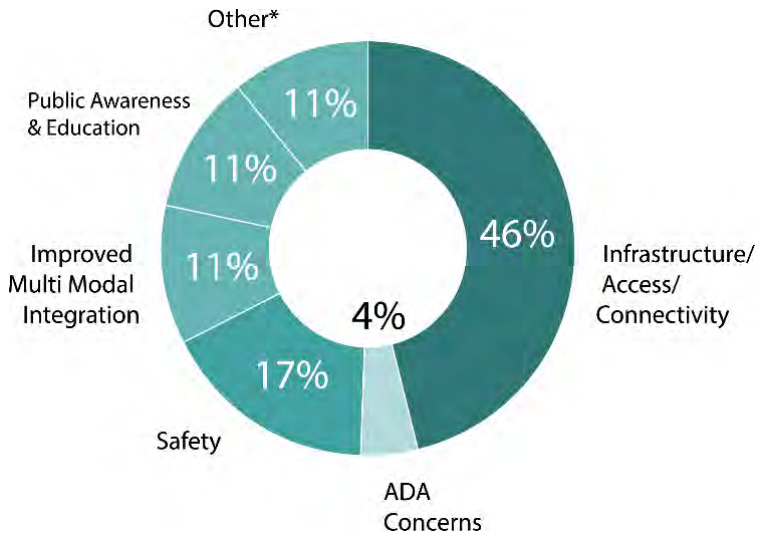
Table 2-2: BPAC Survey Questions

BPAC Survey Questions
Do you have any particular transportation problems/challenges with which either you or your constituency are currently dealing? Expect to deal with in the future?
Do you have any safety concerns relative to the transportation system?
Are there any changes relative to your agency's/organization's plans for the future that will impact the transportation system?
How do you see the future growth in the region impacting your agency/organization?
How do you normally communicate your needs relative to changes in the transportation system? Do you ever work with the MPO?
What changes in the transportation system are needed in order to address future needs?
How do the airports, border crossings, ports, and spaceport affect the transportation system?
Are you aware of any issues related to bicycle and pedestrian travel in the region?
Are there any issues relative to bicyclists and pedestrian access to universities, schools, hospitals, shopping areas, downtown areas, historic or cultural areas, parks and recreational areas?
Are you aware of any efforts to address these issues?
Are you aware of concerns over ADA accessibility in the region?
Where are the major connectivity issues for bicyclists and pedestrians (e.g. sidewalks not connecting to bus stops, bicycle lanes that stop abruptly, etc.)? These specific locations can also be left in the interactive map.
What are the major safety issues in the region related to bicycle and pedestrian travel?
How do you envision the future transportation network for people who walk and bike in your region?

BPAC Visioning Responses

The survey and interactive mapping tool were presented during a BPAC meeting via Microsoft Teams. The visioning process solicited insightful feedback from participants, and patterns often emerged in the responses. The results for each part of the visioning process are described below.

Figure 2-2: ATP Survey Results Themes



BPAC SURVEY

The BPAC survey included 14 questions regarding transportation in the RGVMAB, with a focus on active transportation. Feedback is described below, starting with the most common theme in the survey responses.

Infrastructure, Access, Connectivity

Out of all responses, nearly half were about infrastructure, access, and connectivity within the active transportation network. One committee member said, *"There is lacking or deficient infrastructure to give residents the opportunity to walk or connect existing efforts (hike and bike trails, sidewalks, etc.) across our region. Policies don't encourage active lifestyles or pedestrian-friendly environment."* The fragmented nature of the current active transportation network was mentioned several times, specifically noting sidewalks and bike lanes that end abruptly. Members expressed that the desired regional connectivity would require collaboration across municipalities and significant financial investment in infrastructure.

Safety

Lack of designated travel spaces for bicyclists and lack of sidewalk infrastructure were the most often-repeated safety concerns. One respondent said, *"My largest safety concern is the lack of designated space at intersections where the bike lanes and/or trails meet vehicular traffic. More bike lanes need to be protected and/or separated from moving vehicular traffic."* In addition, several people noted that drivers in the RGVMAB are not accustomed to bicyclists and pedestrians, so increased public awareness will be vital in creating safer active transportation routes.

Multi-Modal Integration

Respondents noted that there could be better coordination between the regional transit and active transportation networks. While many transit providers serve the Rio Grande Valley, improved connection between bus stops and active transportation networks will be crucial to fill service gaps and provide first and last mile options for transit riders. Additionally, one committee member noted that growth in the RGVMAB will likely lead to more demand for multimodal transportation and opportunities to implement the necessary infrastructure.

Public Awareness

Driver education was the most consistent theme regarding public awareness. Committee members also expressed desire for public service announcements regarding bike and pedestrian laws, infrastructure, and etiquette. Additionally, better wayfinding materials, such as signs or maps of connecting corridors, are needed to inform residents about the existence of trails. Without adequate signage, *"it is difficult to safely navigate new cities/other parts of the region,"* one committee member said.

Americans with Disabilities Act (ADA) Concerns

BPAC members expressed a great need for more ADA-compliant infrastructure. One person noted, *"Many people who use mobility devices are [forced] to use the vehicular lanes to get to and from their destinations because they too frequently encounter cracked/broken sidewalks, gaps of sidewalks in a block and/or no ADA-compliant ramps."* Additionally, one member said that residents from smaller communities have less ADA-compliant infrastructure; while larger municipalities may need to make ADA-compliant improvements to existing sidewalks, smaller communities may lack sidewalk infrastructure altogether.

BPAC INTERACTIVE MAP

BPAC members were encouraged to utilize the interactive mapping tool to leave comments at specific locations of concern or opportunity. Of all the comments, 10 were related to potential active transportation opportunities, such as a connection to public land, schools, and neighborhoods. One comment raised a concern about the railroad crossing in a Brownsville hike and bike trail. The other 10 comments included images of infrastructure or provided information about where the existing active transportation infrastructure data set may be incomplete. The responses are summarized below in **Figure 2-3**.

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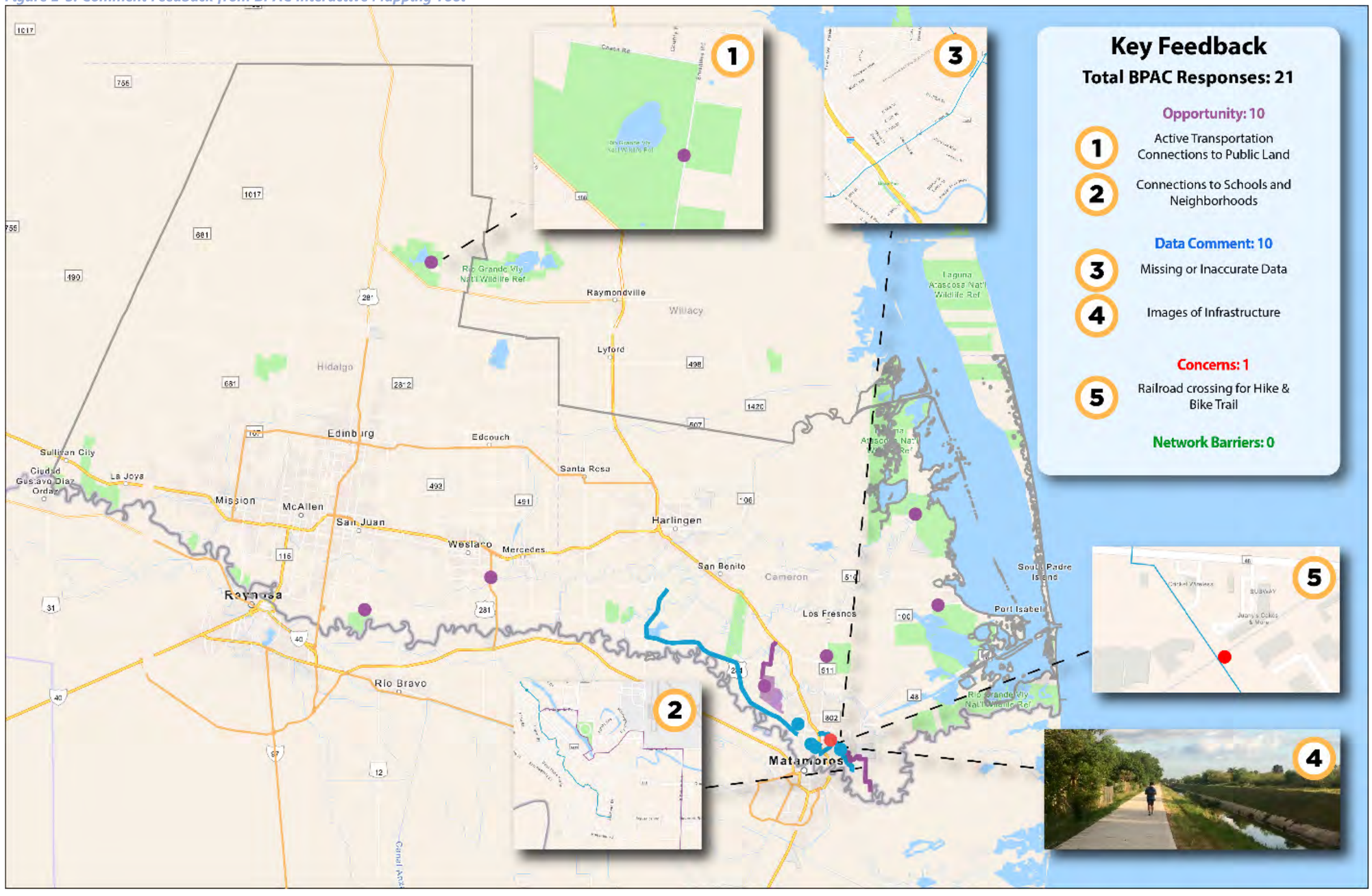
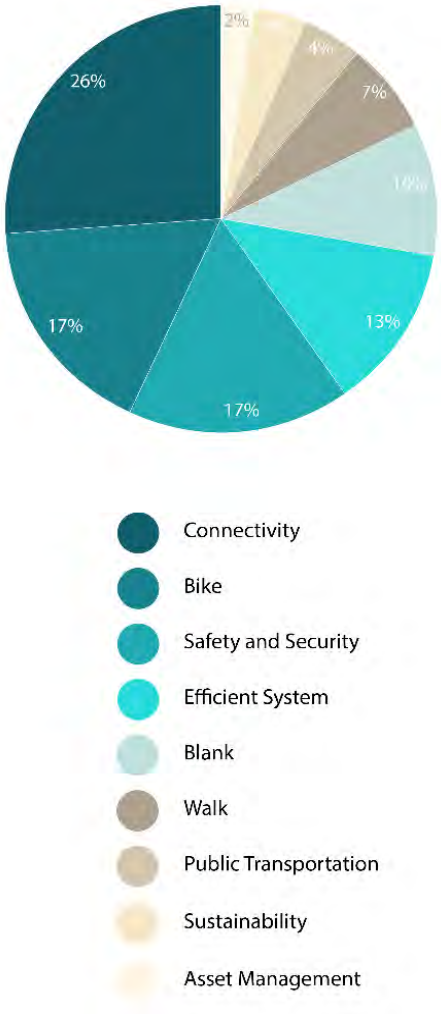
Figure 2-3: Comment Feedback from BPAC Interactive Mapping Tool



MTP Visioning Tool

As part of the public outreach efforts for the RGVMPO 2045 MTP, a second online tool was built to solicit public feedback. Similar to the ATP tool built for BPAC members, the MTP site included a public survey and interactive mapping tool, which received 83 survey responses and 200 comments on the map. More information on the demographic information of respondents can be found in Chapter 2 of the RGVMPO 2045 MTP. Much of the feedback from the MTP visioning tool aligns with comments received during the BPAC visioning process, as discussed in the paragraphs below.

Figure 2-4: Comments Received from MTP Interactive Mapping Tool



Safety

In the RGVMPO Visioning Survey module, respondents ranked safety as their number one priority, and safety was the third most consistent theme among responses on the interactive mapping tool. Most frequently, participants voiced a need for safer bike and pedestrian routes. One comment said,

"Bikers often share the roads with distracted drivers and are putting themselves at risk. Creating safe biking and walking trails would give people the options of choosing these means of conveyance over a car."

Other responses regarding safety included requests for more consistent lighting on expressways, installation of speedbumps on neighborhood streets, and additional sidewalks or sidewalk repairs to improve pedestrian safety.

Connectivity

System connectivity was the third-highest priority on the MTP visioning survey and the most common category for responses received on the interactive mapping tool. Bike and pedestrian connectivity was consistently mentioned. In addition to a general need for more bicycle and pedestrian trails, several respondents noted connections to parks and outdoor activities are conspicuously lacking. One commenter said, *"National Butterfly Center just a short 1-mile bike ride from Bentsen State Park, but no protected bike lane on Military Road E to encourage families to visit this park by bike."* Other hike and bike trail connection sites that were mentioned include Laguna Atascosa, Palo Alto Battlefield NHP, the Chachalaca Bike Trail, Hidalgo Pumphouse, and Valley Nature Center.

STAKEHOLDER MEETINGS

Throughout the development of the ATP, regular meetings were held with BPAC members to allow for a continuous stream of communication about the planning process. Additionally, a meeting with

BPAC and community stakeholders was conducted for the MTP update, prompting additional feedback about the active transportation network. Both BPAC and MTP stakeholder meetings are described in detail below.

BPAC Meetings

A total of eight meetings were held with BPAC members throughout the development of the ATP. There were six scheduled BPAC meetings in addition to one visioning session and one MTP active transportation stakeholder meeting. **Table 2-3** shows the list of meetings, all of which were conducted via Microsoft Teams or another online platform due to the COVID-19 pandemic.

Table 2-3: BPAC Meetings

Date	Meeting	Meeting Topic
April 15, 2020	BPAC Meeting #1	Overview of the components for the ATP, and a demonstration of interactive map tool and survey.
May 6, 2020	BPAC Meeting #2	Update on comments for the interactive map tool and survey, and reminder to submit comments.
June 3, 2020	BPAC Meeting #3	Presentation and discussion of feedback on interactive map and survey.
July 2, 2020	MTP Stakeholder Meeting	Discussion about challenges in the overall transportation system and active transportation network.
July 16, 2020	ATP Visioning Workshop	Overview of feedback to-date, including the survey, map, stakeholder comments. I dentification of key routes and destination and key principles to guide the plan.
August 5, 2020	BPAC Meeting #4	Update on the Existing Conditions & Needs Assessment memo. Discussion of Vision Statement for plan.
September 2, 2020	BPAC Meeting #5	Update on project schedule. Discussion of TASA scoring process. Request for plan photos and vision statement comments.
October 7, 2020	BPAC Meeting #6	Introduction to draft plan chapters and instructions on leaving feedback. Open questions.

VISIONING WORKSHOP

The visioning workshop conducted on July 16, 2020, engaged BPAC for two purposes. The first was to identify key destinations and routes in the region where the active transportation network could be expanded, and the second was to identify and establish key principals to guide the plan. The visioning workshop began with an overview of the BPAC survey feedback, interactive map comments, and the MTP stakeholder comments to-date. The group then discussed key destinations and important routes, listing them on the map as shown in **Figure 2-5**. A summary of comments received during the meeting is also shown in **.** In addition, the BPAC members confirmed key principles informed by previous regional plans and by BPAC comments. These key principles, as listed in chapter 1, were carried forward to shape and direct this plan.

Figure 2-5: Key Routes and Destinations Identified in Visioning Workshop

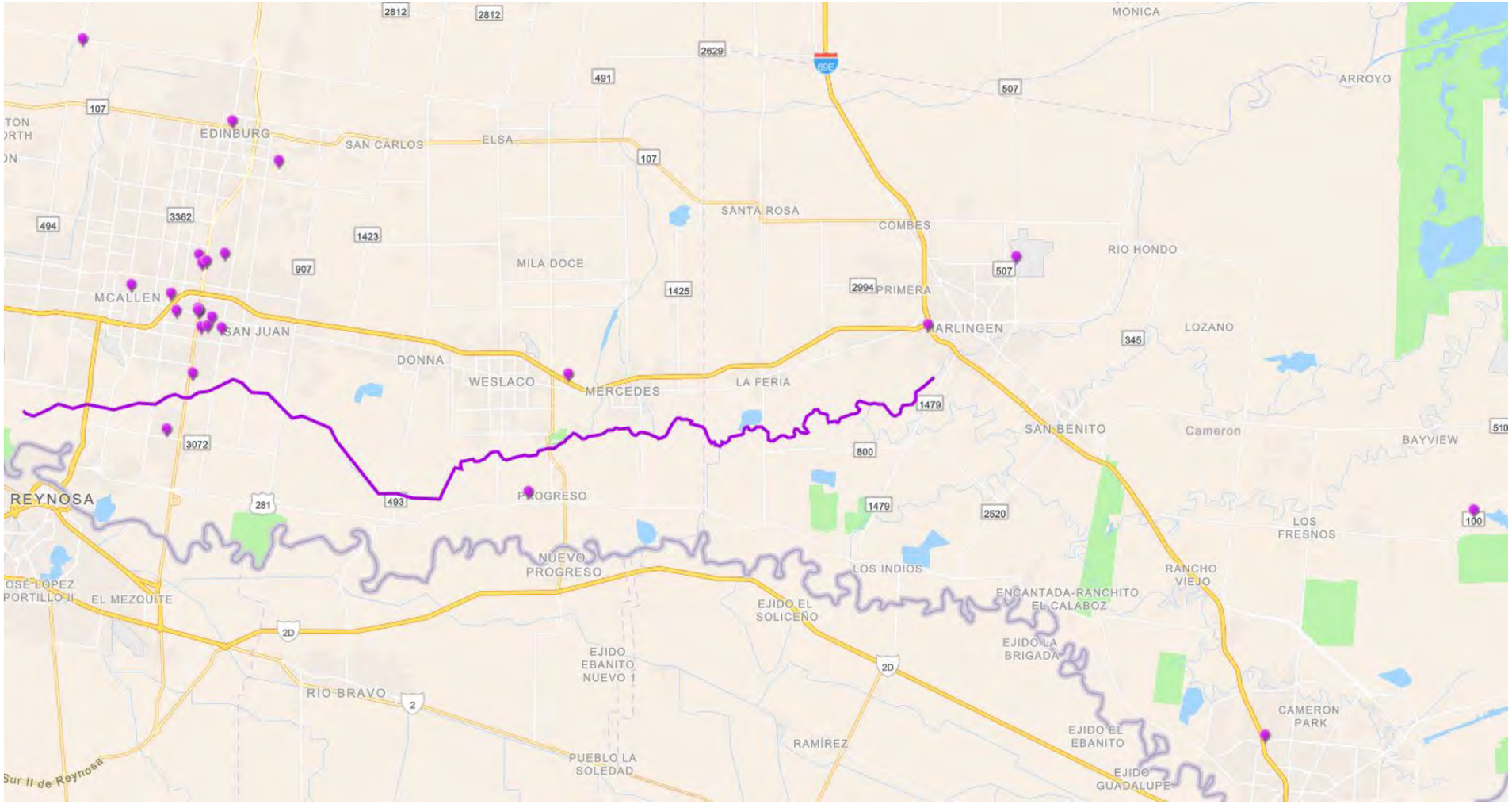


Table 2-4: Areas of Interest and Comments from BPAC Visioning Workshop

Region	Areas of Interest / Comments
McAllen	*A lot of people drive their bikes there to ride to Tres Lagos; could get there using shoulders if you wanted*
	Expressway and South McAllen are typically more low-income areas; we need to be sure to include them when considering AT networks
	Monte Cristo has potential for a good active transportation network, but currently feels risky to ride a bike
	Edinburg side streets are better for biking when the street parking on the more popular streets fills up; even in places where the data identifies shoulders, the reality of those areas being good for riding might not be great
	A popular route that runs EW in Edinburg is 107, but the traffic is high and speed is high. Not much space for someone to ride there, so you must go 10th St. or 12th St. above or below the courthouse to get around that congestion
Brownsville	*FM 802 and IH-69E intersection is complex and causes a lot of problems*
	TxDOT is doing median project along Boca Chica and intersection at freeway and Boca Chica is unsafe, so hopefully the median project will correct that if they do it right, but it hasn't been done yet
	Bajia Grande Trail isn't on the map
	The pedestrian bridge that they just did at IH-69E and the railroad should be on the map; trying to connect that bridge to a trail but they need to coordinate with the railroad
Harlingen	*East/West connections are lacking*
	Something that could connect La Jolla to Brownsville or even S Padre could be great
South Padre	*Hwy 100 to the island*
Not Specific to Area	*Issues with bicyclists trying to ride on chip seal*
	Make sure that the key principles don't make it look like some of the principles are more important than other ones because some people might not agree that, for instance, that education is more important that safety, though it's okay to prioritize certain geographic areas over others

Figure 2-6: Screenshot of BPAC Online Meeting

MTP Stakeholder Meeting

Efforts have been made within communities in the RGVMAB to encourage biking and walking and to bring awareness to the health benefits of being active. Multiple stakeholder groups have seen an increase in utilization of active transportation, in part due to the COVID-19 pandemic. However, there is a need for better active transportation infrastructure and connectivity to key destinations. Feedback regarding active transportation from the MTP stakeholder meetings is outlined below.

SAFETY

Most of the concerns raised by stakeholders regarding safety were in regard to a lack of bicycle and pedestrian infrastructure and increasingly congested roadways. The recurring theme during all stakeholder interviews for the MTP was that inadequate biking and pedestrian infrastructure has led to dangerous situations that may have otherwise been avoided. These have been exacerbated by an overall increase in bicycle traffic during the COVID-19 pandemic.

Some expressed interest in projects such as grade separation and pedestrian signal timing for people crossing at major intersections. Driver education is a large concern and seen as a key factor in increasing transportation safety within the RGVMAB. The responsibility for safety is typically put on pedestrians and bicyclists, and an education campaign for automobile users may help alleviate this burden and reduce safety incidents. However, both drivers and novice riders – especially new bike share users – should be educated to increase safety and understanding of other modes.

CONNECTIVITY

Stakeholders expressed a desire for a regional trail network, funding for maintenance of trails, and education about alternative bike paths off the main road. Stakeholders noted that expanded transit services that are integrated with the active transportation network would encourage the use of both modes. Coordination between all transportation systems could also help create a robust active tourism economy by providing more transit and active transportation options for tourists.

ENVIRONMENTAL

Access to green space through means of active transportation networks was an issue raised by environmental stakeholders. They noted that parks and nature centers may be *"close in proximity, but not in access,"* meaning that busy roads often act as barriers to the natural environment for cyclists and pedestrians and that public transit may not adequately service these destinations. Better infrastructure and connectivity is needed to help eco-tourism in the RGVMAB grow.

ADA CONCERNS

ADA acommodations were also a concern across all stakeholder groups; many stakeholders expressed the need for sidewalk improvements, such as truncated domes on curb ramps and better access to public transit to prevent social isolation for disabled residents. Ultimately, stakeholders expressed that it is important to consider how citizens of all ages and economic backgrounds will benefit from future investments throughout the region.

Overall, stakeholders observed that there is a current mindset that roads should be widened and dedicated to the car rather than sharing roadways with cyclists, pedestrians, and transit. In order to commit to a safe multimodal transportation system, this perspective will need to be addressed moving forward.

DRAFT PLAN REVIEW

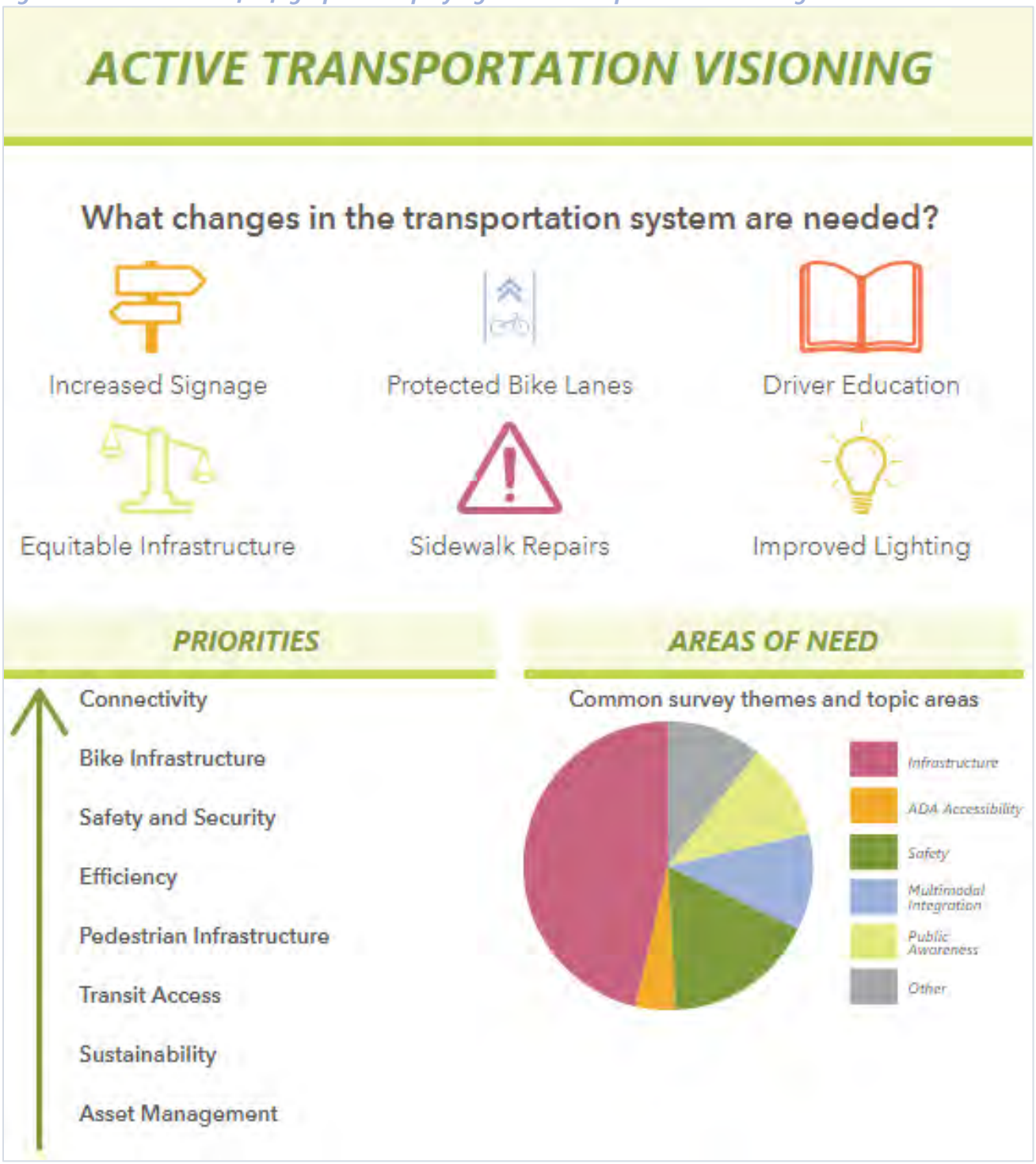
Similar to the visioning process, all reviewing activities were conducted virtually due to limitations caused by the COVID-19 pandemic. The RGVMPO ATP was available for review by the BPAC and RGVMPO staff during two comment periods: October 5th- 9th and October 19th – 23rd . Chapters 3, 4 and Appendix A Design Guidelines were made available during the first review period. The second review period included Chapters 1 and 2 along with the Plan Review and Existing Conditions and Needs Assessment Appendices. Comments made by both RGVMPO staff and BPAC members helped prepare and refine the plan for the 30-day public comment period.

Virtual Open House

A virtual open house was held on November 4, 2020 to December 4, 2020 with the purpose of presenting the analysis work completed in the development of the plan as well as the 30-day public comment period for the RGVMPO ATP along with the 2045 MTP document, in accordance with federal public participation guidelines.

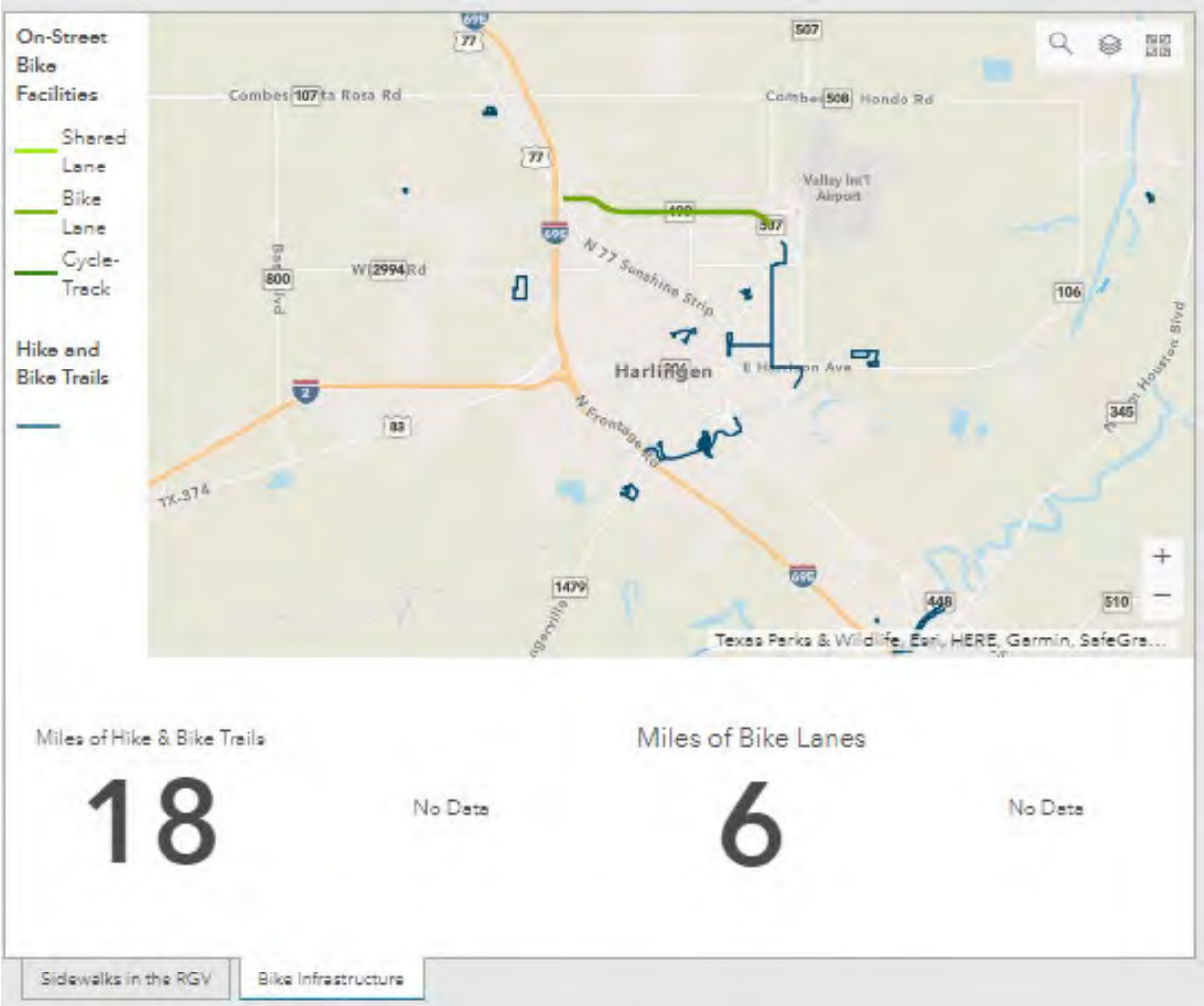
Similar to the visioning process, all open house activities were conducted virtually due to COVID-19 pandemic limitations. A custom-built website was created to display the open house information and solicit public feedback. The RGVMPO publicized the virtual open houses via social media posts and information on their website, ensuring the public was notified of the comment periods, and a mobile-friendly version of the open house site was available for people without access to desktop computers. The site displayed the visioning results of the ATP, as shown in **Figure 2-7.**

Figure 2-7: Screenshot of Infographics Displaying Active Transportation Visioning Results



Users could also view the existing conditions analysis of the current active transportation networks in the RGVMAB. **Figure 2-8** shows the interactive map displaying bike and sidewalk infrastructure in the RGVMAB.

Figure 2-8: Existing Sidewalks and Bike Infrastructure in RGVMAB



Public Comment

A number of comments were received during this 30-day comment period. A full summary of public comments and responses from the RGVMPO can be found in the appendix of the final RGVMPO 2045 MTP.

The RGVMPO Transportation Policy Board, having reviewed the draft RGVMPO ATP and incorporated public comments given during the comment periods, adopted the RGVMPO ATP as the ATP for the RGVMAB on December 10, 2020.

3 NETWORK DEVELOPMENT & RECOMMENDATIONS

In This Chapter:

- Walking and Biking Action Plan
- Local Network Connections
- Regional Network Connections

WALKING AND BIKING ACTION PLAN

Policies and programs that support people who currently or desire to walk and bike throughout the Valley are critical components to building a multimodal transportation system that achieves RGVMPO goals regarding safety, economic growth, and equity. Policies and programs are critical because they indicate the prioritization of walking and biking. In a world where funding and resources are limited, strong policies and programs provide a backbone to direct limited resources towards active transportation infrastructure. While many municipalities within the RGVMAB have worked to implement such policies and programs, further opportunities and desires to improve consistency throughout the region exist. When municipalities can move forward to implement policy to support walking and biking in a cohesive manner, it will support political and public backing for walking and biking projects. Even more, a unified approach across the RGVMAB to policy and program implementation would allow communities to build relationships, share resources, coordinate on funding, and merge trainings and data.

The RGVMPO Walking and Biking Action Plan is a comprehensive approach to building a safe and accessible regional active transportation network. The plan identifies five critical success areas that contain supporting initiatives. Each initiative is categorized within an implementation range of Short-, Medium-, and Long-Term. Although implementation length varies for each initiative depending on resources of the lead entity, community support, and funding, the following are general ranges for prioritization of each initiative.

Short-Term: 1 to 2 Years

Short-Term initiatives may be prioritized in 1 to 2 years, and are either relatively straightforward to implement or must be implemented to continue supporting Medium- and Long-Term initiatives.

Medium-Term: 2 to 5 Years

Medium-Term initiatives may be successfully implemented in 2 to 5 years and will take a higher level of coordination between agencies or within the community. Some initiatives may be contingent on Short-Term initiatives.

Long-Term: 5 + Years

Long-Term initiatives take a high level of effort and coordination to achieve. With steady and continuous progress, successful implementation may be expected in 5 or more years.

The listed entity or entities are tasked with leading the initiative and coordination among agencies will be integral to the success of the respective initiatives due to the needed alignment of goals, actions, and resources. Each initiative is categorized into one of five success areas shown in **Figure 3-1** that contribute to successful implementation of this plan's key principles and goals. Measures of success are then identified to guide the RGVMPO with metrics to measure and evaluate the status and successful implementation of each initiative.

Figure 3-1: Success Areas for Walking and Biking Action Plan

Planning & Design

Design Standards

Bicycle and pedestrian facility design standards are developed, researched, and proven recommendations that provide clear direction for choosing the most appropriate facility type, locations where the facility is best suited, and how to implement the design. Adopting these standards help build an accessible, well-connected, and safe active transportation network throughout the Rio Grande Valley. Federally recognized design standards include NACTO's *Urban Street Design Guide* and *Urban Bikeway Design Guide*. Local Design Guidelines have also been developed with this plan found in Appendix A.

Facility Inventory

Planning efforts depend upon the availability of a comprehensive inventory of bicycle and pedestrian facilities. It is recommended that municipalities and the RGVMPO work together to maintain an accurate inventory of geocoded facilities. The regional geospatial database should include at least the following attributes/features:

- **Pedestrian network facilities:** sidewalk location, sidewalk condition, width of sidewalk, spacing from curb, physical barriers present, side(s) of roadway
- **On-street bicycle network facilities:** facility location, facility type, protection element (if protected bike lane), width of facility, markings present, signage present, pavement condition
- **Off-street network facilities:** facility location, width of facility, surface material, markings present, signage present, surface condition, location of amenities (e.g. restrooms), repair stations or water fountains
- **Street crossings:** facility location, signalization, signage present, crossing distance, presence of curb extensions/refuge islands, ADA compliance, surface condition

Bicycle and Pedestrian Counts

Reliable bicycle and pedestrian count data greatly benefit the planning process. Creating an on-going count dataset can better provide insights and data-driven support for future projects. TxDOT and the Texas Transportation Institute (TTI) have worked to develop the Texas Bicycle and Pedestrian Count Exchange (BP|CX) Program, as a central location to exchange, manage, review, and import and export count data. TxDOT also developed webinars and workshops to inform communities of the platform along with best practices of bicycle and pedestrian counting. TxDOT maintains a count equipment loan program for local agencies, that can be accessed by contacting the Bicycle and Pedestrian Program at TxDOT. The Valley Baptist Legacy Foundations (VBLF) has also awarded the Lower Rio Grande Valley Development Council (LRGVDC) funding for 18 counters to be installed throughout the region to measure the use of trails.

Regional Data Portal

A regional data portal allows municipalities to easily upload, maintain, access, and download key pedestrian and bicycle data from across the region. Such a central data resource can better support regional network connectivity by providing easy-to-access data critical for multimodal planning efforts. The portal should include geocoded data such as a regional facility inventory, bicycle and pedestrian counts, pilot project locations, bicycle-friendly destinations, and other information relevant to planning efforts. It should also include information and tracking on project phase and funding sources. The RGVMPO currently hosts the interactive U.M.A.P, which may be used as a starting point to develop additional details.

End of Trip Facilities

End of trip facilities may include secure benches, water fountains, bicycle parking, locker rooms, and bicycle maintenance stations. RGVMPO has an active bicycle friendly business initiative that recognizes business for their commitment to providing support and services to people biking. An individual's decision to walk or bike to a destination can be hindered due to the lack of supporting end of trip facilities. Similarly, the presence of such facilities can further encourage the decision to walk or bike. These facilities can be provided by local governments at public locations, or by private businesses to encourage employees to make active transportation trips.

Pilot Projects

Pilot projects help bring 2D transportation project renderings to life, garnering a real life understanding of how bike and pedestrian projects can impact the community. These demonstration projects may involve a temporary re-arrangement of the street cross-section elements through temporary markings for a set amount of time. Multiple variations of travel lanes, parking, bike routes, and sidewalks which promote multimodal transportation can be demonstrated. In addition to the physical project, on-site public participation can be concurrently incorporated. Recourses and examples for pilot projects or other "quick build" projects are common, but a few of the more widely used resources include the publication by People for Bikes titled, *Quick Builds for Better Streets: A New Project Delivery Model for U.S. Cities*, and the tool kits and recipes made available by Team Better Block at teambetterblock.com. Additionally, a strategy to support local communities with pilot or temporary facilities is the ownership of common reusable bikeway elements like protective planters or bollards and bikeway signage, by one entity. The RGVMPO may consider purchasing such materials

that can then be loaned or rented by local planning partners. Investment in such materials could ease financial burden on municipalities and allow flexibility in the implementation process to ensure the best facilities for each street are built.

Table 3-1: Planning & Design Initiatives

Initiative	Action	Entity	Term	Measures of Success
Design Standards	Adopt Regional Design Standards for active transportation facilities.	MPO, Local	Short	• Adopted design standards are incorporated into municipal roadway design manuals or other similar documents.
Facility Inventory	Develop regional standards for a facility inventory. Develop strategy for cyclical review and updates.	MPO, Local	Short	• Complete facility Inventory. • Annual data collection and reporting effort taking place. • Established data benchmarks according to community goals.
Bicycle and Pedestrian Counts	Establish a regional bicycle, pedestrian, and trail count program. Participate in the TxDOT BP|CX at regional level.	MPO, Local	Short	• Annual count reporting. • Number of automated counters.
Regional Data Portal	Establish a regional data portal. Garner initial regional data.	MPO, State, Local	Medium	• Establishment of regional data portal. • Portal used for future plans or project development.
End of Trip Facilities	Develop end of trip facilities policy and/or programming.	Local, Transit Agencies, Local Business, Schools	Medium	• End of trip facilities installed at public locations. • Ordinances passed requiring end of trip facilities.
Pilot Projects	Obtain collection of resources and supplies for implementing pilot projects.	MPO, Local	Long	• Number of projects implemented. • Number of attendees or facility users • Public input supporting project.

Policies & Programs

Complete Streets

The Complete Streets movement promotes the concept that roadways are for all users - pedestrians, transit users, cyclists, and vehicular drivers alike. As such, roadway design should facilitate safe and comfortable access for all users. A Complete Streets policy may take the form of ordinance revisions, new street design guidelines or manuals, and capital improvement program criteria to meet the policy goals.

Safe Routes to School

Safe Routes to School (SRTS) is a federal program created to fund and support communities in their efforts to make walking and biking to and from school safer for children. The program supports safe infrastructure development that connects schools to neighborhoods and transit, as well as non-infrastructure projects, like Bike to School Day, that promote walking and biking for community health and reduce traffic congestion. SRTS programs are implemented at both the regional and local level, often in school districts in many areas around the county, as the key tenant of this program is coordination among multiple government entities and school families.

Supportive Land Use Policy

Land use and transportation policies are closely linked and can either support or discourage using active modes of transportation. Land Use policies that specifically include bicycle and pedestrian network considerations are critical in supporting a safe and connected network. Smart Growth is an approach to urban development that supports a mix of land uses and supports walkable and bikeable communities. The Smart Growth Network published their 2006 guide *This is Smart Growth* which is based on 10 basic principles to guide urban development. Preservation of right-of-way and the provision of on-site connectivity for new development should be present in land use policies. Connectivity provisions should at a minimum address:

- Dedicated pedestrian pathways from the street to buildings and key land uses.
- Pedestrian pathways between building and uses.
- Shared use connections to trails, public uses, adjacent properties, etc.

Advisory Committees

A regional bicycle and pedestrian advisory committee can help to ensure the planning process and implementation of plans meet the needs of the community, such as the current RGVMPO Bicycle and Pedestrian Advisory Committee (BPAC). Members of the committee are ideally active transportation champions who are committed to making their community friendly for biking and walking and ideally represent the demographic makeup of the region. Another prominent regional committee is the Caracara Trails Advisory Committee (CTAC) who oversee the implementation of the proposed routes produced by the Active Plan. Municipalities can also have their own BPAC committees who drive policy and implementation to support walking and biking in their communities. Coordination and communication between local and regional communities is key for success of the regional trails system.

Table 3-2: Policy and Program Initiatives

Initiative	Action	Entity	Term	Measures of Success
Complete Streets Policies	Adopt Complete Streets policies. Incorporation of Complete Streets policies into local planning documents. Implementation of Complete Streets policies.	Local, MPO, State	Medium	• Complete Streets Policy adopted. • All modes accommodated with safe facilities during resurfacing or expansion projects.
Safe Routes to School	Develop regional Safe Routes to School program.	MPO, State, School Districts	Long	• Measured increase in biking and walking activity in school children. • Number of lane miles of added all ages and abilities facilities within ¼ mile of schools.
Supportive Land Use Policy	Review land use policies and amend where needed. Incorporation of bicycle and pedestrian connectivity needs in future policy.	Local, State	Long	• Updates to land use policy that support mixed use development along regional trails. • Connectivity requirements implemented in land use policy.
Advisory Committees	Continued support of the RGVMPO Bicycle and Pedestrian Advisory Committee, and collaboration with the CTAT. Create municipal advisory committees.	Local, MPO	Short	• Number of municipal committees created.

Education & Encouragement

Bike Share

Bike share programs allow users to rent bicycles for short-term or monthly use from a network of closely spaced stations. Successful bike share programs exist in densely populated areas, near trail networks, tourist destinations, and major institutions. The program's success should be measured by equitable pricing structures and station locations, along with number of annual trips and memberships. Successful bike share programs may be an important tool to support the key principles of this plan in accessibility and community health. The City of McAllen has been operating a BCycle program since 2015. Plans to move the bike share system to a regional level are still in action through the LRGDV and its funding partners.

Open Streets

Open Street initiatives are temporary closures of public streets to motor vehicle traffic and designed in coordination with the municipality to provide the public access to streets for walking, biking, and recreation. These initiatives may include street festival activities as well as activities to promote walking and biking, and to teach attendees about the economic, health, and social benefits of active transportation. Open Streets began in Colombia as an inexpensive way to promote health using public space. Known as Ciclovias in South America, the events spread across North America where they are known as Open Streets events. Resources for starting Open Streets events are plentiful, with two primary examples being the NACTO *Open Streets Guide,* and the *Open Streets Toolkit* found at opentstreetsproject.org. Brownsville and Harlingen have both initiative successful Open streets events called "CycloBia" and "Viva Streets" respectively. Both communities may be local points of contact for information or advice for other communities looking to initiate an Open Streets event.

Walk & Bike Month

National Bike Month in the month of May, as designated by a leading bicycle advocacy group in the United States, the League of American Bicyclists, provides a fun and encouraging platform for communities and local businesses to support residents and employees to commute via bicycle during Bike to Work Month, and even during specific Bike to Work Week, or Day events. Bike to Work Month has evolved to include and encourage commuting by foot and/or by public transit. Bike, bus, and walk to work challenges encourage residents to take part in active transportation through fun events and challenges, and often include incentives for top contestants.

Media Awareness Campaigns

Media awareness campaigns present an opportunity to further reach the community through online, print, radio, and television materials. The campaigns can bring more driver awareness to safe driving behaviors when sharing the roadway as well as reminding bicyclists and pedestrians their rights and responsibilities as they travel. In addition, media campaigns can also celebrate the opening or groundbreaking of new facilities, and usher them into the community.

Figure 3-2: Helpful Signage

LCI Instructor Training & Skills Programs

League Certified Instructor (LCI) training is for individuals interested in teaching people how to bike safely and confidently. After successfully completing their instructor training, LCIs can lead programs for both adults and children. These programs are a great way to educate the public about bicycle skills, safety, and use of bicycles for transportation, as are the similar Bike Rodeos that occur in McAllen and other areas throughout the region. LCIs can partner with local school districts, employers, or government agencies to offer reoccurring trainings.

Employer Incentive Programs

The location where individuals are employed often directly impacts their travel behavior. Employer incentive programs are a tool for public and private employers interested in encouraging their employees to walk or bike to work. Incentives can be physical (e.g., loaner day trip bikes, end of trip facilities) and/or monetary (e.g., transit vouchers, monthly stipend, waived parking fee). End of trip facilities may include, but are not limited to showers, changing rooms, or secure bike parking. Developing strong relationships with Economic Development Councils or Chambers of Commerce is a strong first step to prolonged success working with employers to incentivize active modes.

Table 3-3: Education & Encouragement Initiatives

Initiative	Action	Entity	Term	Measures of Success
Bike Share	Develop regional bike share plan. Continued financial and political support of local BCycle program.	MPO, Local	Short	• Number of bike share programs established. • Number of annual trips.
Open Streets Events	Coordinate and implement a series of Open Streets Events.	Local, Advocacy Orgs	Medium	• Event attendance. • Number of communities hosting events. • Number of events annually.
Walk & Bike Month	Promote the official Bike/Bus/Walk to Work Day/Week/Month.	MPO, Local, Advocacy Orgs	Short	• Number of events. • Participating entities and individuals. • Cumulative miles ridden/walked.
Media Awareness Campaigns	Develop and implement a regional and/or local bicycle and pedestrian safety education and encouragement campaign strategy.	MPO, Local, Law enforcement, Non-profits, Advocacy Orgs	Medium	• Distribution of print materials. • Public service announcements.
LCI Instructor Training & Skills Programs	Organize annual LCI training program. Organize Smart Cycle classes led by LCIs for children and adults.	MPO, Local	Long	• LCIs completed training. LCI-led classes. • Number of attendees.
Employer Incentive Programs	Develop network of employer incentive programs. Develop relationship with Economic Development Councils or Chambers of Commerce.	MPO, Local	Medium	• Number of incentive programs. • Rates of participation • Number of reduced VMT.

Safety

Law Enforcement Trainings

Law enforcement officers can be champions of cycling and pedestrian safety when equipped with the appropriate training. Law enforcement training should include knowledge of bicycle and pedestrian facilities in their jurisdiction, current bicycle and pedestrian laws at the local and state levels, common collision types and locations, and community education program opportunities, like the LCI programs mentioned above. In addition, officers should review and understand protocols for properly completing collision forms when pedestrians and bicyclists are involved. Such protocols ensure the necessary details of the crash are properly recorded for later crash analyses.

Ordinance Enforcement

Community ordinances requiring safe motor vehicle passing and operation around bicyclists, transit vehicles, pedestrians, and subsequent enforcement of such ordinances are critical to supporting a safe transportation network. Laws, enforcement procedures, and penalties should be stringent enough to influence motorist behavior. Key ordinances and citation structures that should be evaluated include safe passage ordinances, crosswalk encroachments, and right-of-way violations to ensure shoulders remain safe for people cycling.

Vision Zero

Vision Zero is a holistic strategy to end all traffic-related fatalities and serious injuries while increasing mobility for all. Instead of accepting traffic-related fatalities as the result of unavoidable accidents, Vision Zero holds that such fatalities are preventable with key strategies. It also recognizes and accommodates human error in the design of transportation facilities. These strategies include but are not limited to establishing a Vision Zero action plan, safer street design, targeted law enforcement, evidence-based public policy, and thoughtful public engagement.

Table 3-4: Safety Initiatives

Initiative	Action	Entity	Term	Measures of Success
Law Enforcement Trainings	Work with local law enforcement to schedule reoccurring trainings.	Local, MPO	Short	• More accurate and informative citations.
Ordinance Enforcement	Work with local law enforcement to schedule reoccurring trainings.	Local	Medium	• Reduction in crashes involving people walking or biking.
Vision Zero	Pass Vision Zero Policy at the regional and municipal level. Develop and Implement a regional Vision Zero Action Plan.	MPO, Local, Law enforcement, Non-profits, Advocacy Orgs	Medium	• Vision Zero Policy adopted. • Distribution of print materials. • Public service announcements.

Active Tourism

Figure 3-3: Lower Rio Grande Valley 2016 Active Plan Proposed Routes

The Rio Grande Valley landscape is abundant with historic sites, natural areas, and wildlife refuges that create visitor demand. This tourism, known as Active Tourism, is an economic asset to the region that not only supports small businesses through direct revenue from visitor spending but also elevates the region's brand with a positive image that attracts permanent residents and businesses.

Active Tourism can be viewed as visitors looking for an opportunity for a closeup and personal interaction with the historical and natural attractions by walking, bicycling, or paddling to and through these destinations. To ensure that visitors experience the region in a positive way, visitors need support in the form of pedestrian and bicycle facilities in tourist areas. In 2016, the University of Texas School of Public Health and the Valley Baptist Legacy Foundation supported the development of the Lower Rio Grande Valley Active Transportation and Tourism Plan (Active Plan) to establish a regional Hike and Bike network, paddling trail network, U.S. bicycle route, and to integrate these networks into local and regional transportation and economic policy. This active transportation plan acknowledges and expands on the work done in the Active Plan to ensure there are supportive policies and programs in place throughout the RGVMAB.

Active Tourism programs, policies, and initiatives help ensure that visitors who choose to experience the wonders of the Rio Grande Valley have the kind of enjoyable visit that helps grow the tourism industry and enhance the brand of the Rio Grande Valley as a premier visitor destination.

Active Tourism

Walking & Biking Maps

Printed and interactive online maps that detail regional walking and biking routes and a component of an active tourist's experience. Maps can also be online or within mobile apps, such as the Go Explore RGV app used in the Rio Grande Valley. High quality maps contain information such as location of Bicycle Friendly Businesses, facilities categorized and labeled by comfort, and location of shelters, restrooms, and water access.

Wayfinding

Regional and local wayfinding directed for pedestrians and bicyclists gives areas a sense of place while also providing helpful travel information. Wayfinding signs are well-suited to point out the direction of local destinations like bike share stations and connections to other trails, and how far away they are located.

Figure 3-4: Active Tourism in the Rio Grande Valley

Bicycle Friendly Designations

The League of American Bicyclists' Bicycle Friendly America (BFA) program establishes a series of criteria for local governments, businesses, and universities to establish themselves as places supporting bicycle transportation. Through efforts to achieve the BFA designation, participating entities commit to implementing infrastructure, policies, and programs that create a bicycle friendly environment. Becoming a member of the BFA program cements an organization's commitment to making walking and biking a priority in their community, and presents them with a path for continues improvement based on the BFA program.

Table 3-5: Active Tourism Initiatives

Initiative	Action	Entity	Term	Measures of Success
Walking & Biking Maps	Design, print, and distribute regional walking and biking maps.	MPO	Short	• Maps printed or published online or on app. • Number of locations maps are distributed.
Wayfinding	Establish regional trail wayfinding program.	Local, MPO	Medium	• Number of signs placed.
Bicycle Friendly Designation	Develop network of bicycle friendly designated cities, public institutions, and local businesses.	MPO, Local, Local businesses, Local institutions	Medium	• Local government & businesses achieving BFA designation. • Number of designated businesses

LOCAL NETWORK CONNECTIONS

Regional connectivity begins with small-scale, concentrated efforts to connect residents with existing facilities. This section describes the preliminary recommendations for advancement of the active transportation network based upon the current and proposed bicycle and pedestrian facilities in the RGVMAB. The bike and pedestrian facility recommendations include 30 segments spanning more than 36 miles. This is not a comprehensive list of recommendations to statisfy all connectivity needs but rather areas of improvement highlighted by community input and demand. These proposed routes are intended to provide the RGVMPO and local municipalites a corridor that provides key connectivity to key destiantions and to exisiting walking and biking infrastructue. The RGVMPO or local agencies can use their local knowledge and the recources provided in **Chapter 4** and **Appendix A** to determine the most appropriate faciltiy for each segment.

Key destinations are basic services or highly frequented establishments. This includes:

- Schools
- Grocery Stores
- Social Services
- Medical Centers
- Religious Establishments

Specifically, these recommendations were made based on needs discovered from a needs assessment completed in **Appendix C** based on seven criteria for assessing supply and demand of active transportation facilities. **Figure 3-5** shows the criteria, population and employment, disability status, access to a vehicle, poverty, number of crashes, key desinations, and the number of intersections used to determine where the greatest need is for additional active transportation infrastructure. Combined with comments from the public and proximity to key destinations, this effort is able to identify a preliminary list of connections that will improve safety and connectivity to key destinations for active transportation users in the RGVMAB.

Figure 3-5: Factors Included in Needs Analysis

Each proposed route shown in **Figure 3-6** has been categorized as either pedestrian and bicycle recommendations. This section will be followed by an in-depth route profile highlighting the reasons that each recommendation was selected and the current street configuration.

Table 3-6 displays a list of each project segement identified by the project ID number, along with length, street name, and beginning and end of segement.

Figure 3-6:Overview of Route Recommendations

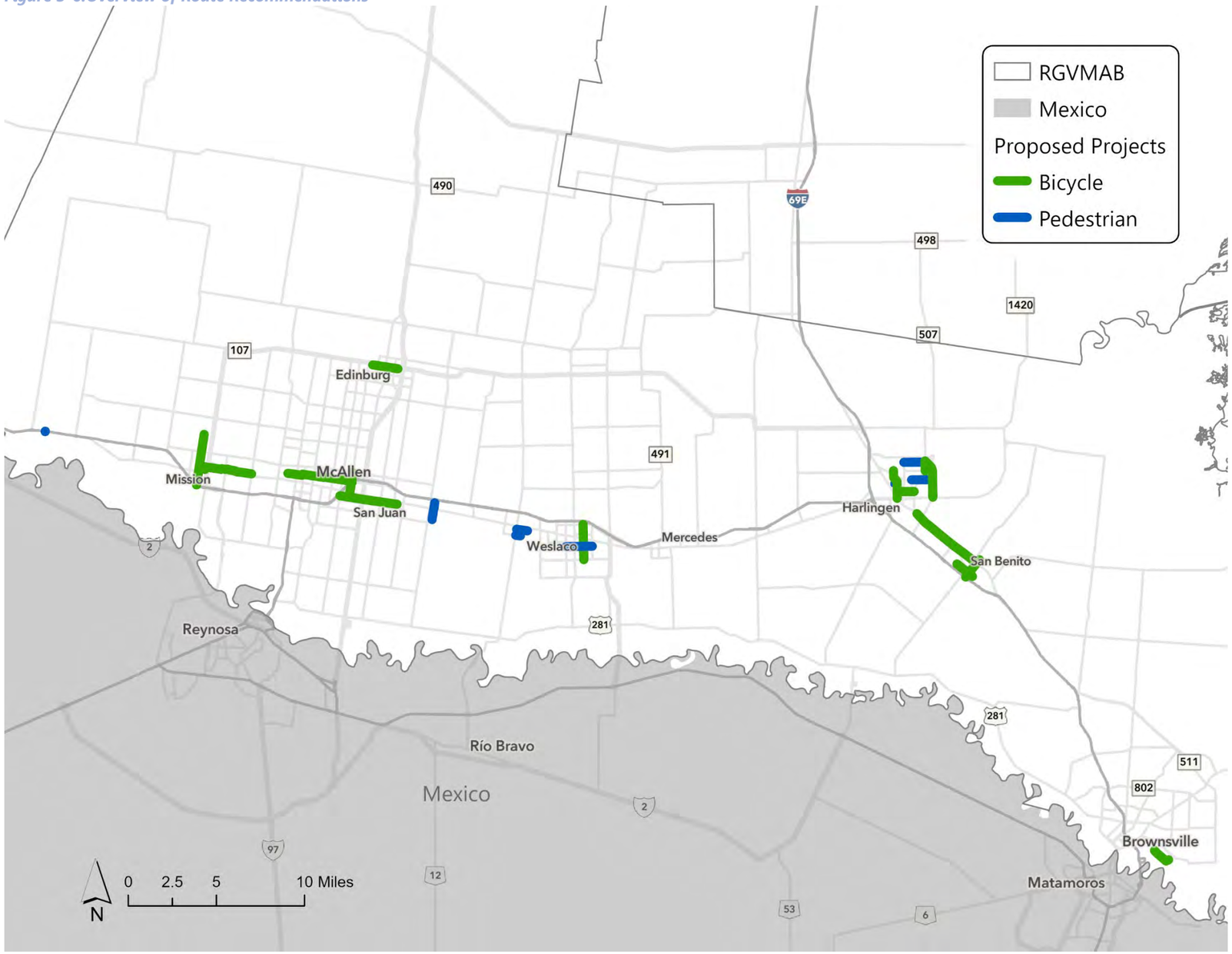


Table 3-6: Local Route Recommendations

Facility Type	Street Name	Begin	End	Length in Miles	Context	City	Project ID
Ped	Palm Shores	(North) Palm Shores	(South) Palm Shores	0.0	Highway crossing for communities to access schools and businesses.	La Joya	1
Bike	Elm Dr, School Ln	(West) Elm Dr	(East) School Ln	1.8	Creating a bike lane in a high demand area near a school.	Mission/Sharyl and	2
Bike	N Holland Ave	(North) N Holland Ave	(South) N Holland Ave	2.9	Creating a bike land in a high demand area and connecting multiple schools.	Mission	3
Bike	W Business 83, W 10th St	(West) W Business 83	(East) W 10th St	0.4	Connection two parallel ATP projects (N Holland Ave and N Perkins)	Mission	4
Bike	W Kelly Ave, E Kelly Ave, W 7th St	(West) W Kelly Ave	(East) W 7th St	3.3	Providing a connection from the northwest region of a high demand area to the southeast region.	Pharr	5
Bike	N Sugar Rd, S Sugar Rd	(North) N Sugar Rd	(South) S Sugar Road	1.5	Providing a north-south corridor of a large high demand area, providing a highway crossing, and connecting two cities (San Juan and Lopezville)	Lopezville/San Juan	6
Bike	W Hackberry Ave, E Hackberry Ave, W Polk Ave	(West) Hackberry Ave	(East) W Polk Ave	2.8	A West-East bike route that connects high demand areas in two cities (McAllen and Pharr).	McAllen	7
Bike	Gumwood Ave	(West) Gumwood Ave	(East) Gumwood Ave	0.9	A West-East bike route leading to the connection of an off-street bike facility on N Bicentennial Blvd	McAllen	8
Bike	N Bridge Ave, S Bridge Ave	(North) N Bridge Ave	(South) S Bridge Ave	2.0	Connecting high and low demand areas across Westlaco.	Westlaco	9
Ped	W 8th St, E 8th St	(West) W 8th St	(East) E 8th St	1.5	Connecting West Weslaco to key medical destinations on the east part of town and crosses a high demand area	Westlaco	10
Ped	Fordvce St	(West) Fordvce St	(East) Fordvce St	0.6	Connecting two high demand area and a grocery store	Donna	11
Ped	W Austin Ave	(West) W Austin Ave	(East) W Austin Ave	0.1	Providing a connection from a school to a major corridor	Harlingen	12
Ped	E Austin Ave	(West) E Austin	(East) E Austin	0.0	Provides a safe crossing to a sidewalk for a major arterial (N 1st St) near a school	Harlingen	13
Ped	E Vinson Ave	(West) E Vinson Ave	(East) E Vinson Ave	1.0	Providing a sidewalk for safe passage to a school	Harlingen	14
Ped	E Vinson Ave	(West) E Vinson Ave	(East) E Vinson Ave	0.0	Provides a safe crossing to reach a school on the same street	Harlingen	15
Bike	N Dick Dowling St, S Dick Dowling St	(North) N Dick Dowling St	(South) S Dick Dowling St	1.3	Connecting high demand areas with two schools and two grocery stores along the corridor	San Benito	16
Bike	Zaragosa St, W Landrum St, E Landrum St	(West) Zaragosta St	(East) E Landrum St	1.1	Connecting two high demand areas, four schools and two grocery stores	San Benito	17
Bike	W Business 77, E Business 77	(West) W Business 77	(East) E Business 77	4.4	Connecting two cities and their key destinations and high demand areas	Harlingen/San Benito	18
Bike	New Combes Hwy, N 1st St, S 1st St	(North) New Combes Hwy	(South) S 1st St	1.6	Connecting multiple government facilities, a school, and a grocery store across a high demand area along a common major corridor	Harlingen	19
Bike	E Jefferson Ave	(West) E Jefferson Ave	(East) E Jefferson Ave	1.0	Part of a larger route connecting a library in a high demand area to a school	Harlingen	20
Ped	Lissner Ave	(West) Lissner Ave	(East) Lissner Ave	0.3	Providing a pedestrian route to a local grocery store in a high demand area	Donna	21
Bike	W Cano St, E Cano St	(West) W Cano St	(East) E Cano St	1.4	Connecting a high demand area to an off street bike route and a school	Edinburg	22
Ped	N 9th St, S 9th St	(North) N 9th St	(South) S 9th St	0.7	Filling gaps in the sidewalk network across a high demand area	Alamo	23

Bike	E 30th St, Calle Milpa Verde	(North) E 30th St	(South) Calle Milpa Verde	0.9	Connecting a high demand area to a grocery store	Brownsville	24
Bike	Esperanza Rd	(West) Esperanza Rd	(East) Esperanza Rd	0.2	Connecting a high demand area to a school	Brownsville	25
Bike	N Perkins Ave	(North) N Perkins Ave	(South) N Perkins Ave	0.1	Connecting two parallel bike routes in a high demand area	Mission	26
Bike	W 12th St, E 12th St	(West) W 12th St	(East) E 12th St	1.1	Connecting multiple routes in a high demand area	Mission	27
Ped	E Grimes St	(West) N 13th St	(East) N Loop 499	1.2	Provides sidewalks to access community center and Harlingen High School	Harlingen	28
Bike	N 25th St	(North) N Loop 499	(South) Rio Hondo Rd	0.6	Connection from N Loop 499 to Hike/Bike Path at Rio Hondo Rd	Harlingen	29
Bike	N Ed Carey Dr	(North) N 25th St	(South) E Harrison Ave	2.2	Connecting Hike/Bike path at E Harrison and extended designated bike lane to connect to existing N Loop 499 section	Harlingen	30

Route 1: La Joya Pedestrian Crossing

The analysis of the existing pedestrian network suggests that a pedestrian crossing at the intersection of Business 83 and Palm Shores in the City of La Joya would increase the safety for pedestrians crossing the major highway, as well as added connectivity to key destinations in the area, shown in **Figure 3-8.** Much of the area south of Business 83 is residential, whereas the northern area includes multiple schools, La Joya Municipal Park, and several restaurants and businesses. The added crossing would allow residents on the south side of the highway to walk to the surrounding businesses and schools more easily. The intersection is owned by TxDOT. Specific recommendations regarding crossing characteristics would need to be approved by the agency. While cross walks and signage are considered the most cost-effective addition to the intersection, Highway 83 is a high traffic road and may require additional facilities such as a refugee island or a signalized crossing to ensure safety of pedestrians.

Figure 3-7: Route 1 (Pedestrian Crossing @ Business 83)

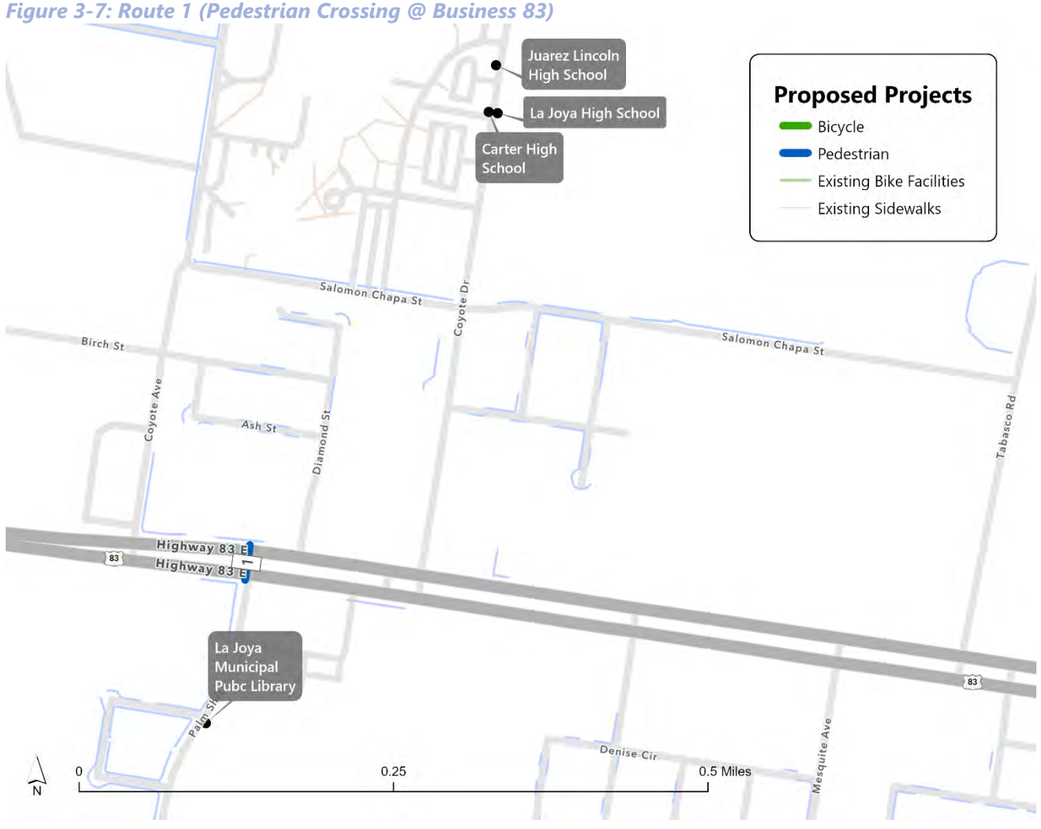


Figure 3-8: Birdseye View of Business 83 Intersection

Figure 3-9: Palm Shores & Business 83

Route 2: Weslaco Bike and Pedestrian Routes

Both bicycle and pedestrian network improvements are recommended in the City of Weslaco. The proposed project should consider two segments, as shown in **Figure 3-10**. This project is 3.5 miles and has identified the need to include a 2-mile bike route along N Bridge Avenue as shown in **Figure 3-11** and 1.5 miles of a pedestrian route to W 8th Street as shown in **Figure 3-12** and **Figure 3-13.** These additions to the network will improve connections to Knapp Medical Center, several schools, H-E-B, and a local Wal-Mart along the route. The demand for active transportation infrastructure in Weslaco is high and the additional bike networks on S Bridge Avenue will provide connections between two of the highest demand areas in the area. Similarly, the route on W 8th Street also crosses through high-demand areas. The goal to have an integrated active transportation network is demonstrated by the overlapping of the two different types of infrastructure recommendations. The W 8th Street additions will provide safer spaces for pedestrian activity and connect West Weslaco to key medical centers on the east side of town.

Figure 3-10: Route 2 (Bridge Ave and 8th St)

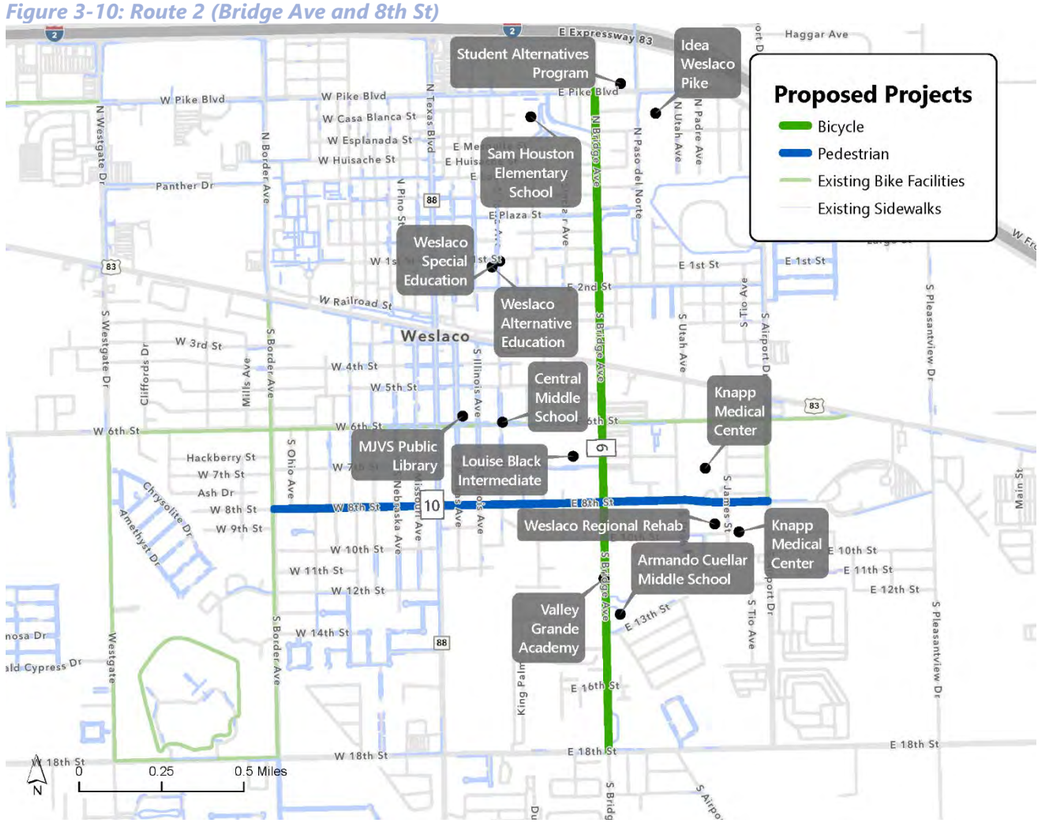


Figure 3-11: N Bridge Ave.

Figure 3-12: E 8th St.

Figure 3-13: W 8th St.

Route 3: Harlingen Bike and Pedestrian Routes

Several needs were identified for residents who walk and bike in the City of Harlingen as shown in **Figure 3-14.** It is recommended that three segments that span over 2.4 miles be considered. These improvements would include the addition of bike routes on E Jefferson Avenue (1 mi) and N 1st Street (1.4 mi) referenced in **Figure 3-16** and **Figure 3-17,** while the need for sidewalk improvements have been noted along W Austin Street (0.12 mi) shown in **Figure 3-15**. The additions to the network will improve connections to several key destinations along the route. The sidewalk on W Austin Street will provide a needed connection from a Zavala Elementary School to a major corridor, New Combes Highway. The bike route along New Combes Highway – which turns into N 1st Street – provides alternative modes of transportation to those looking to access basic services such as the US Postal Office, the Salvation Army, and Harlingen Market. Lastly, the bike route on E Jefferson Avenue serves as part of a larger route, connecting a Harlingen Public Library in a high demand area to a Zavala Elementary and continues along E Jefferson to N 25th Street.

Figure 3-14: Route 3 (New Combes Hwy, E Austin Ave, and E Jefferson Ave)

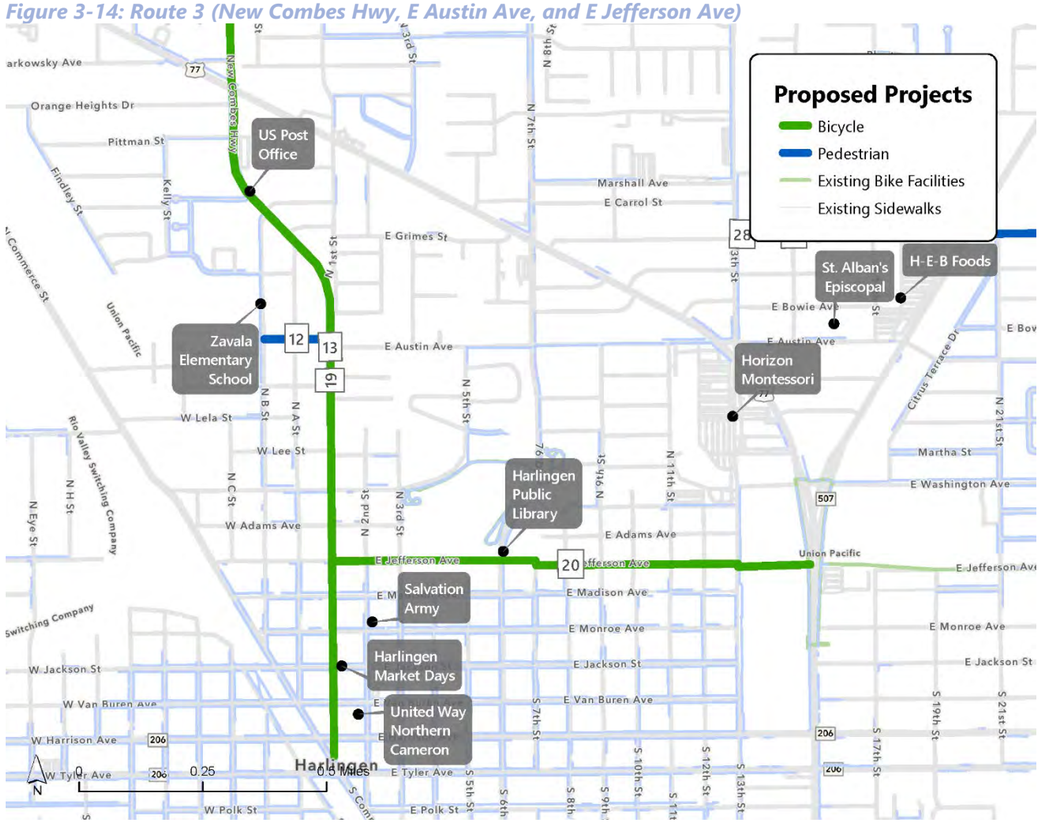


Figure 3-15: W Austin Ave.

Figure 3-16: S 1st St

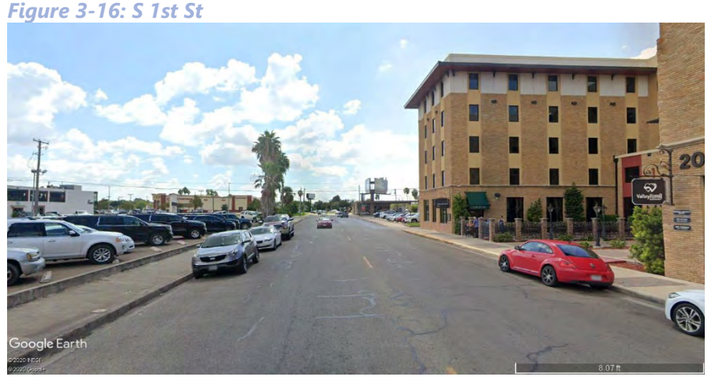


Figure 3-17: E Jefferson Ave

Route 4: McAllen to San Juan Bike Network

Bike network improvements recommended in the City of McAllen include three segments, spanning 8.1 miles, as shown in **Figure 3-18**. The east-west additions will connect high-demand areas in McAllen and Pharr, primarily running through residential and bike-friendly routes. A majority of the improvements are focused on Hackberry Avenue (3.6 mi) and W Kelly Avenue (3.2 mi), while N Sugar Road (1.3 mi) serves as a critical north-south connection and highway crossing connecting the cities of San Juan, McAllen, Pharr and Lopezville (**Figure 3-19 - Figure 3-21.**). Existing bike facilities north of the proposed addition on N Sugar Road leads to Lopezville, while W Kelly Avenue passes through the City of Pharr and connects to San Juan. Key destinations along this route include numerous elementary schools, McAllen Memorial High School, and Ruben's Grocery. Due to the residential nature of both Hackberry Avenue and W Kelly Avenue, a bike lane may be appropriate depending on the level of traffic. However, a protected bike lane should be considered along N Sugar Road to ensure user safety and confidence.

Figure 3-18: Route 4 (McAllen to San Juan Bike Route)

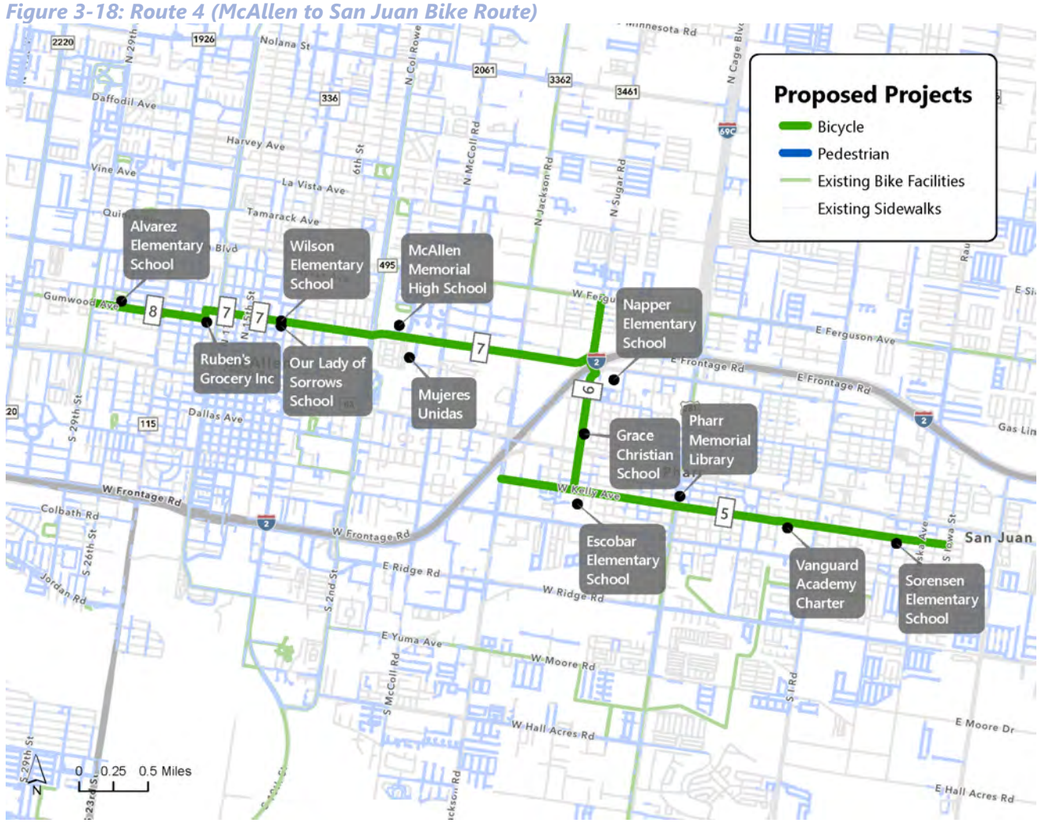


Figure 3-19: West 7th Street

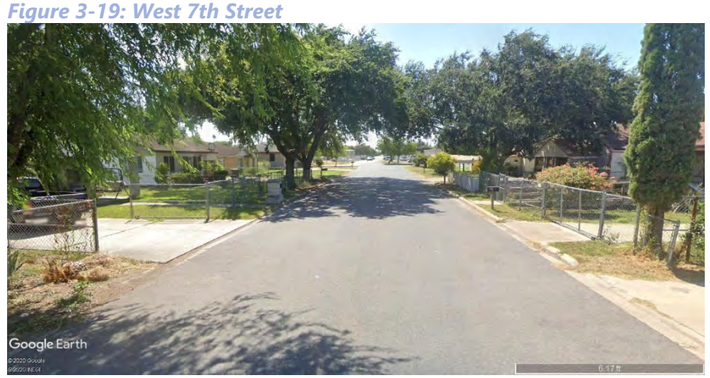
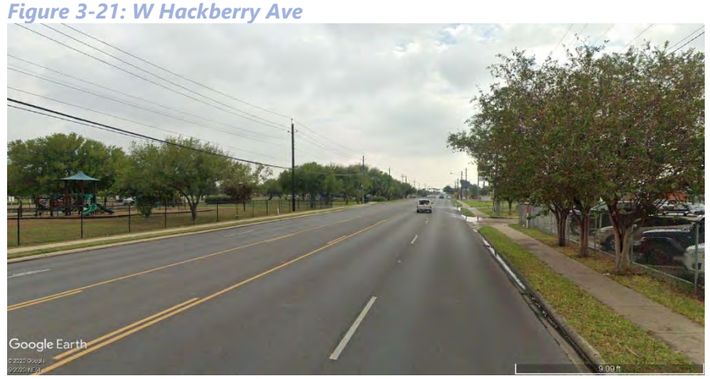


Figure 3-20: N Sugar Rd

Figure 3-21: W Hackberry Ave



Route 5: Alamo Pedestrian Route

Pedestrian network improvements recommended in the City of Alamo include three segments, as shown in **Figure 3-22.** This project will span 0.68 miles, focusing on 9th Street between Duranta and Citrus Avenue (0.06 mi), Birch Avenue and Business 83 (0.14 mi), and W Austin Avenue and PSJA Memorial High School (0.48 mi) as shown in **Figure 3-23** and **Figure 3-24**. These additions to the network will fill in gaps in the sidewalk network throughout a high-demand area and improve connections to the PSJA Special Education, Bowie Elementary, and Rio Home Care LLC. The proposed project is a key example on how this effort intends to build on existing conditions to provide safe routes for residents. Note that the sidewalk network is sparse in this part of Alamo, creating pedestrian corridors is integral to expanding connectivity in this area.

Figure 3-22: Route 23 (Alamo Pedestrian Route)

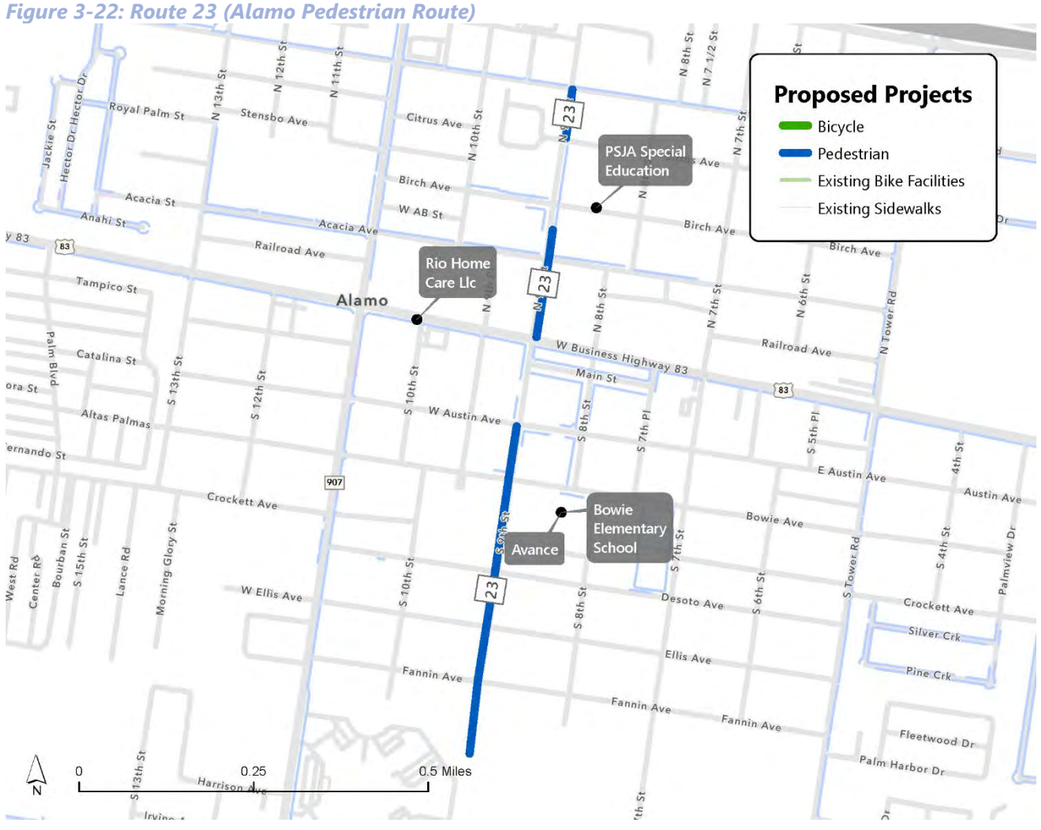


Figure 3-23: N 9th St

Figure 3-24: S 9th St

Route 6: Donna Pedestrian Route

Pedestrian improvements reccommended in the City of Donna include two segments, as shown in **Figure 3-25**. This project will span 0.89 miles, focusing on Fordyce St (0.62 mi) and Lissner Ave (0.27 mi) as shown in **Figure 3-26** and **Figure 3-27,** to improve connections to local elementary schools and grocery stores along the route. Fordyce Street intersects multiple high-demand areas and provides pedestrian connections to Guzman Elementary School, Stainke Elementary School, and Lighthouse Seafood Market in the vicinity. Similarly, Lissner Avenue provides the community a direct pedestrian connection to Sol Food Market. Here we see how the gap analysis and communtiy input can help us identifify missing connections to basic services.

Figure 3-25: Route 6 (Donna Pedestrian Route)

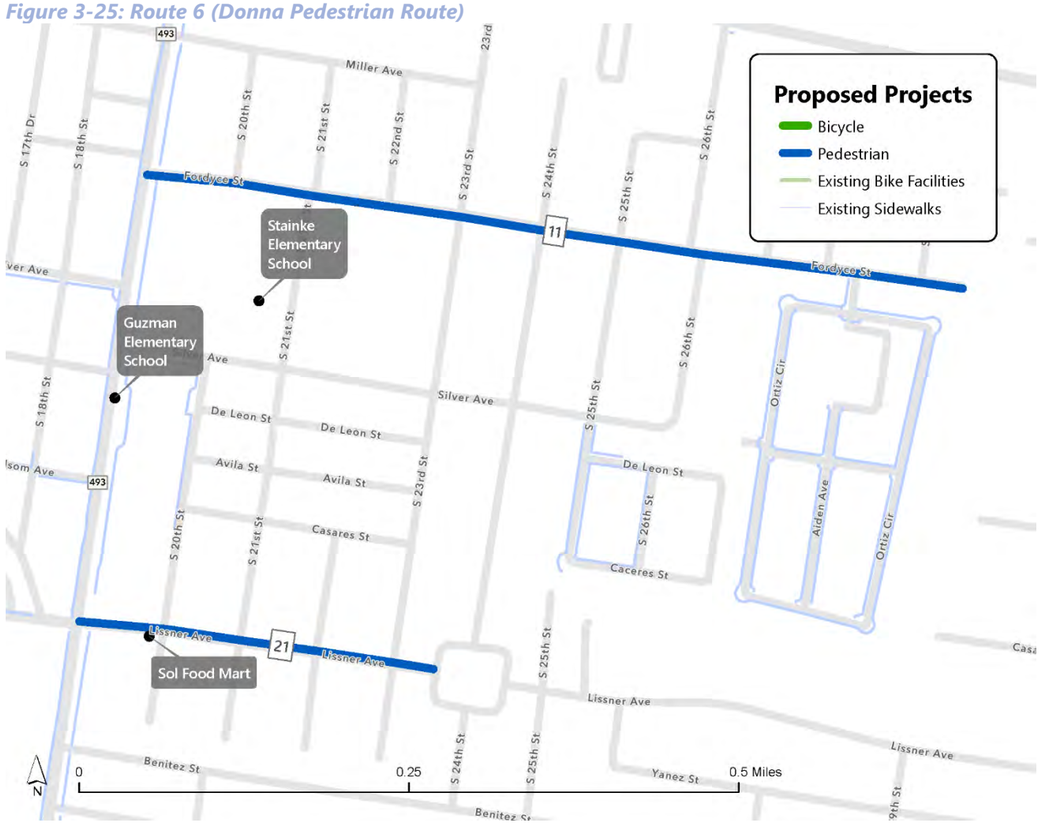
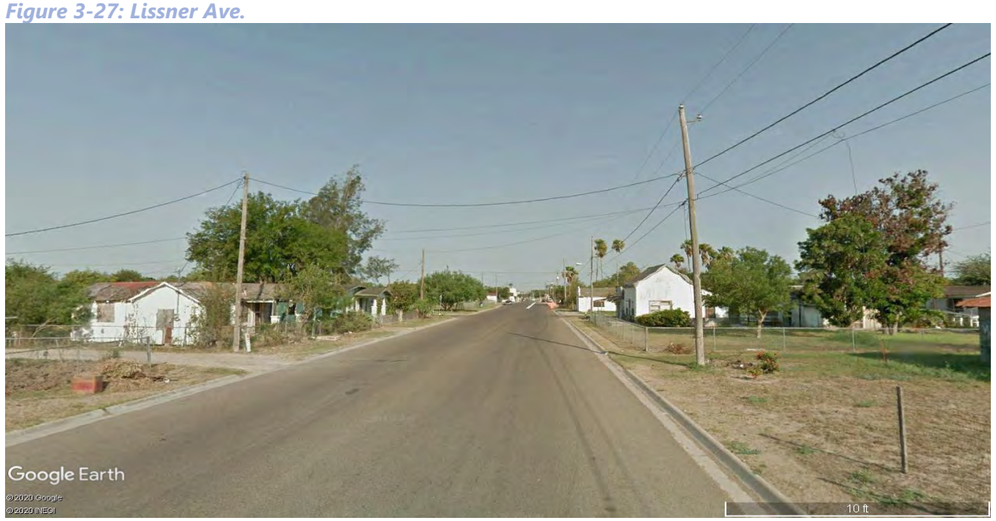


Figure 3-26: Fordyce St.

Figure 3-27: Lissner Ave.



Route 7: North Harlingen Pedestrian Route

One pedestrian improvement is recommended in the City of Harlingen, as shown in **Figure 3-14.** This project will span 0.96 miles, focusing entirely on East Vinson Avenue to improve the pedestrian network and develop safe crossings to Keys Academy along the route. The location in (**Figure 3-28-Figure 3-30**), specifically the intersection of N 7th Street and E Vinson Ave, was highlighted as an opportunity to provide a safe crossing to allow children to access Keys Academy from the residential area to the east. This project has the potential to expand even further to connect residents to other destinations such as Jane W. Long Elementary School, Harlingen School of Health Professions, Early College High School, and existing active transportation facilities along Loop 499 and N 29th Street.

Figure 3-#: Route 14 (E Vinson Avenue Pedestrian Route)

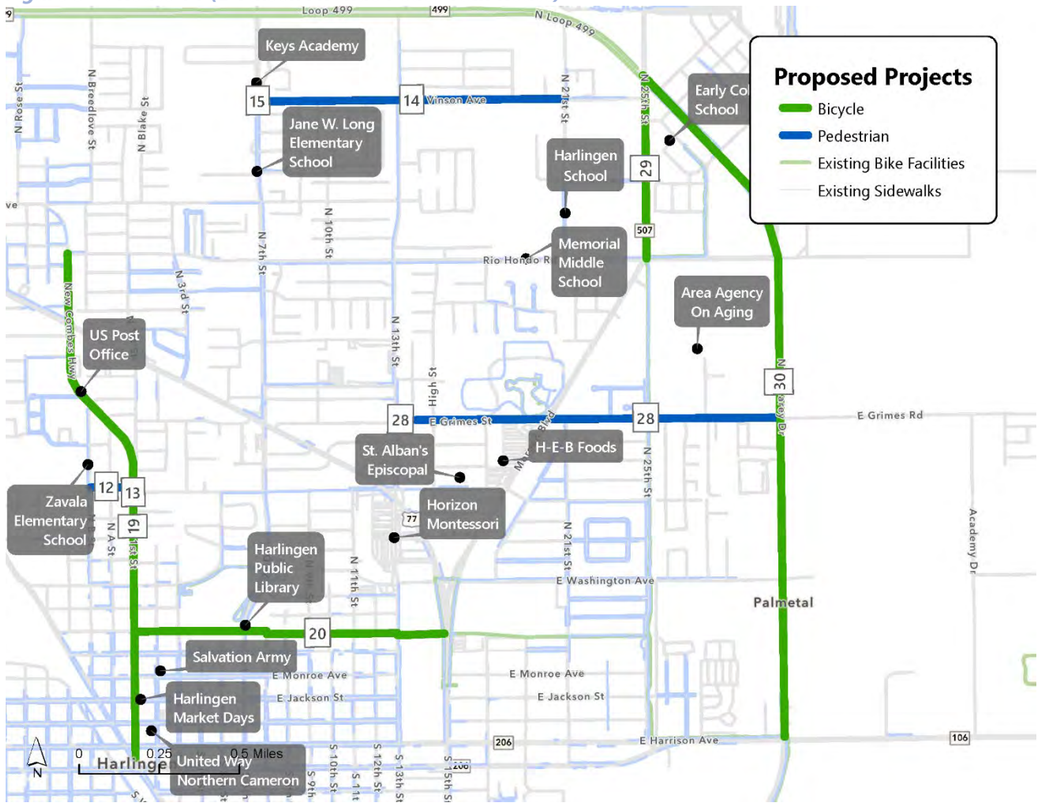
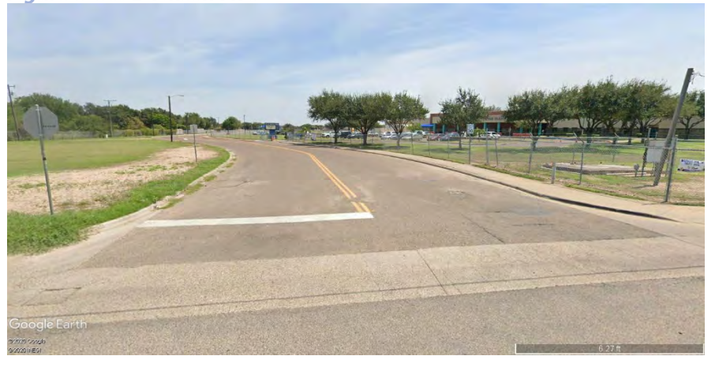


Figure 3-28: N 7th St and E Vinson Ave

Figure 3-29: N 7th St and E Vinson Ave

Figure 3-30: E Vinson Ave



Route 8: San Benito Bike Network

Bike improvements recommended in the City of San Benito include three segments, as shown **Figure 3-25.** This project will span 6.80 miles, focusing on Dick Dowling St (1.26 mi), Landrum St (1.13 mi), and Business 77 (4.41 mi) (**Figure 3-31 - Figure 3-33**) to improve connections to grocery stores, local schools, and government services along the route. This project provides a key connection from San Benito to Harlingen along Business 77. San Benito and Harlingen both contain high-demand areas. Connecting these two areas provides lower density communities in these two cites an alternative mode of transportation. Specifically, this segment intersects with Dick Dowling Street, to connect high-demand areas in northern San Benito to areas south of the city. Similarly, Landrum Street provides an east-west connection across the city, while maximizing intersections with key destinations, such as H-E-B Foods, Rosie's Grocery Store, and two elementary schools.

Figure 1 24: Route 8 (San Benito Bike Routes)

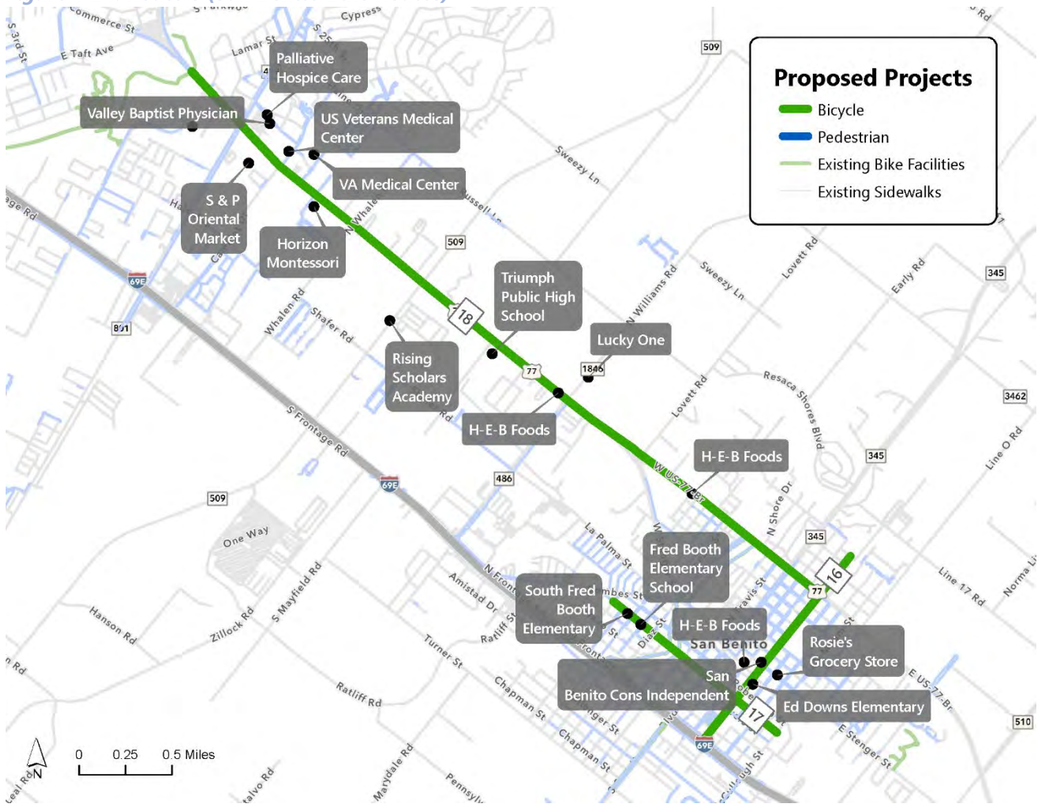
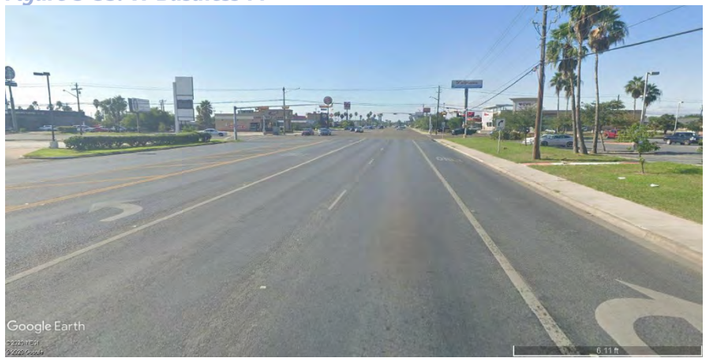


Figure 3-31: E Landrum St

Figure 3-32: Zaraaosa St

Figure 3-33: W Business 77



Route 9: Brownsville Bike Network

Bicycle improvements recommended in the City of Brownsville include two segments, as shown in **Figure 3-34**. This project will span 1.06 miles, focusing on Calle Milpa Verde (0.90 mi) and Esperanza Rd (0.16 mi), shown in **Figure 3-35** and **Figure 3-36**. Due to existing on-street parking, reasonable project types may include developing a sharrow or a protected two-way cycle track. The project improves connections between existing on-street bike facilities, Hernandez Food Store, and a Garza Elementary School along the route. The major goal of this project is to connect the existing shared lane on E 30th Street and the bike route on La Posada Drive. An added benefit is providing an alternative mode of transportation in a residential area that can easily support additional bike infrastructure and providing a safe route for residents to Hernandez Food Store and Garza Elementary School.

Figure 3-34: Route 9 (Brownsville Bike Network)

Figure 3-35: Calle Milpa Verde

Figure 3-36: Esperanza Rd

Route 10: Edinburg Bike Network

Bike improvements recommended in the City of Edinburg include one segment, as shown in **Figure 3-37**. This project will span 1.44 miles across Cano Street to improve connections to existing active transportation facilities and service high demand areas along the route. **(Figure 3-38 - Figure 3-39)** This route was specifically chosen to connect multiple parallel on- and off-street bicycle routes south of Highway 107. Through these connections a number of key destinations can be accessed such as St. Joseph's Catholic School, La Michoacana Meat Market, a Special Education Attorney, and Fernandez Grocery are more accessible. Cano Street is a built as a high volume road and would benefit from a protected bike line to ensure user confidence and safety.

Figure 3-37: Route 10 (Edinburg Bike Network)

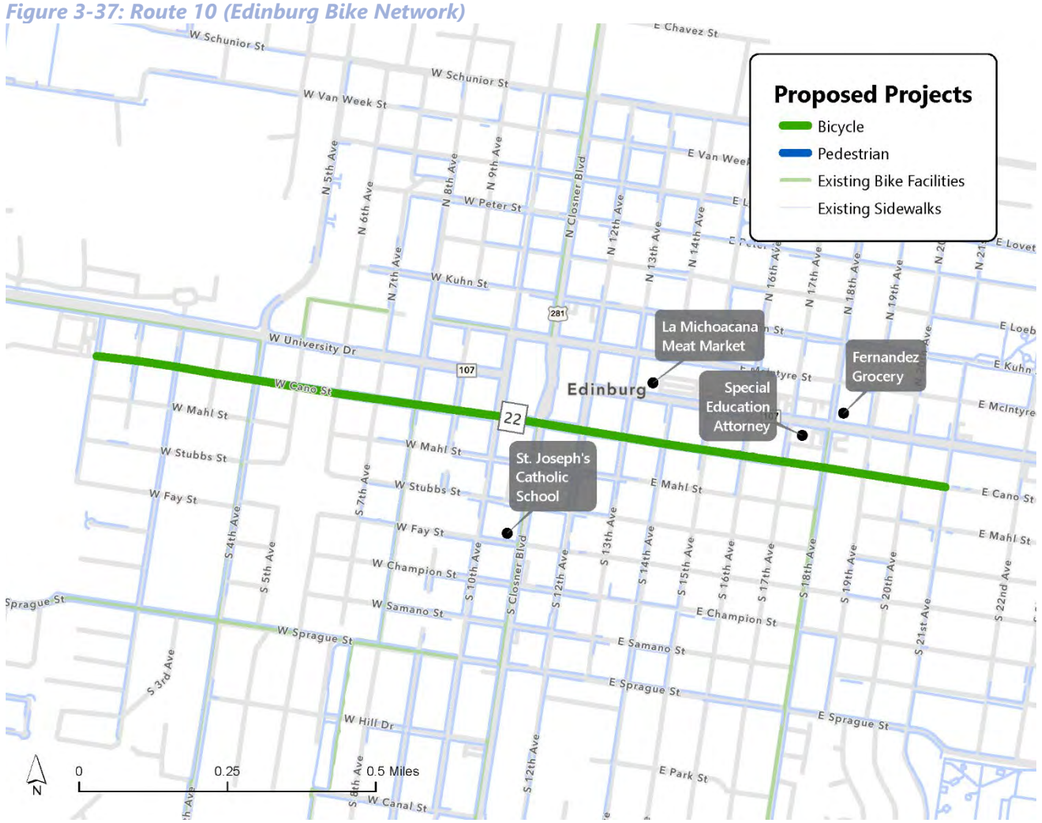


Figure 3-38: E Cano St

Figure 3-39: W Cano St

Route 11: Mission Bike Network

Bike improvements recommended in the City of Mission include five segments, as shown in **Figure 3-40** . This project will span 6.33 miles, focusing on Elm Drive (1.77 mi), N Holland Avenue (2.90 mi), W Business 83 (0.38 mi), N Perkins Avenue (0.14 mi), and 12th St (1.14 mi) (**Figure 3-41 - Figure 3-43**) to improve connections to a number of local high schools and elementary schools, Wal-Mart, and Mission Regional Medical along the route. These proposed segments create a north-south corridor and an east-west corridor that connect to existing on-street bike routes on W Griffin Pkwy and N Shary Rd. This project spans across the majority of the city's high demand areas, while simultaneously creating opportunities to venture to a neighboring community (Sharyland) and other key destinations.

Figure 3-40: Route 11 (Mission Bike Network)

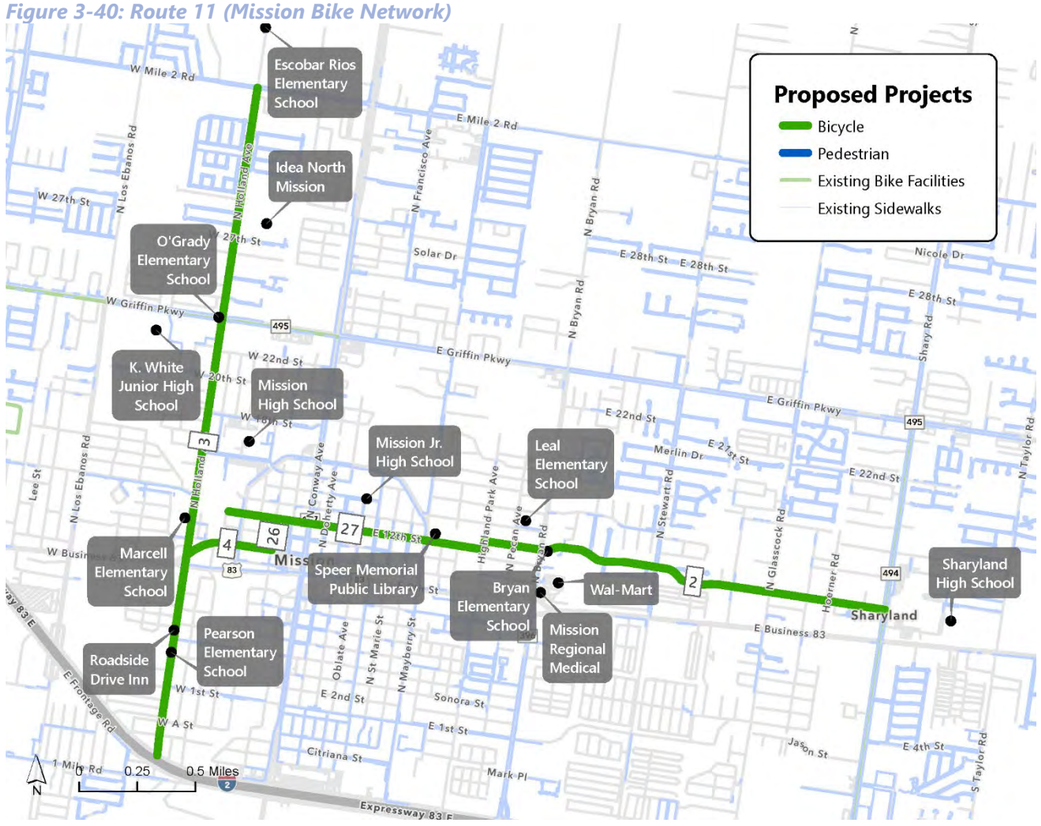


Figure 3-41: Elm Dr.

Figure 3-42: S Holland Ave

Figure 3-43: W Business 83

REGIONAL NETWORK CONNECTIONS

Route Development

A regional bicycle network across the Rio Grande Valley can build an important connection between local communities and the region's many destinations. A collection of safe and accessible bicycle routes spanning the region can inspire both residents and tourists alike to experience the Rio Grande Valley's unique character from natural habitats to historic and cultural sites. The development of a conceptual regional bicycle network for the Rio Grande Valley was inspired by the United States Bicycle Route network, a series of designated on-road routes spanning across the US to connect cyclists to natural and cultural destinations. This regional on-road bicycle network enhances already well-ridden cycling routes, compliments the region's off-road bicycle facilities and supports efforts for growing the active tourism economy.

The conceptual regional bicycle network was steered by key priorities to ensure the defined routes are reflective of community desires and needs. This high-level approach balances connectivity, feasibility, and safety to create a baseline for developing a well-connected network that encourages biking throughout the region. The following priorities highly influenced the proposed routes:

- **Connection to Communities:** The network connects urban and rural, coastal and border communities by designated bike routes throughout the region.
- **Connection to Regional Destinations:** Routes were developed to connect communities to the region's cultural and natural features.
- **Safety:** The network enhances on-road routes with infrastructure that increases cycling visibility and legibility for all users of the road.
- **Low Cost Infrastructure:** The on-road routes incorporate roads with wide shoulders, lower traffic volumes and easy-to-implement infrastructure enhancements.

The conceptual regional bicycle route establishes a basic network of on-road bicycle facilities to encourage healthy, active travel throughout the Rio Grande Valley. The on-road network works as a compliment to the region's commitment to building a regional network of off-road facilities. Given the region's expansive size, rich cultural amenities throughout the region, and pristine natural areas ranging from the coast to the border and beyond, an on-road network makes it possible to connect all of these key destinations. By enhancing routes already popular among local cyclists with easy-to-implement infrastructure, the region can further encourage cycling enthusiasts and legitimize local cyclists' rights to the road. Such enhancements can create a safer and more comfortable experience for local cyclists while also inspiring more bicycle tourists to experience the region.

Connection to Communities

The proposed regional routes connect major urban areas and rural communities throughout the Rio Grande Valley. **Figure 3-44** shows the routes spanning across the RGVMAB reaching Brownsville to the southeast to Mission on the western side, up to Edinburg to the north, and crossing many of the main community centers throughout. Incorporating both urban and rural community centers into the regional route promotes equity in access and the ability to take part in healthy, active travel.

Connection to Regional Destinations

A key feature of the regional bicycle network is creating better bicycle access to the region's public land destinations such as public parks, wildlife areas and trail heads. Based off community input, access to these destinations was prioritized when developing the regional route. Bicycle access to parks, trails and other regional destinations encourages bicycle tourism as these destinations are highly attractive to outdoor enthusiasts. The proposed regional bike routes provide access to the following public parks:

- Laguna Atascosa National Wildlife Preserve
- Santa Ana National Wildlife Refuge
- Lower Rio Grande Valley National Wildlife Refuge
- Las Palomas Wildlife Management Area
- World Birding Center – Bentsen Rio Grande Valley SP
- Port Isabel Lighthouse Historic Structure
- Palo Alto Battlefield National Historic Park
- Delta Lake Park

Low Investment Infrastructure

The proposed regional route covers a lot of ground to reach across the Rio Grande Valley. The on-road network establishes feasible bicycle connectivity throughout the region by incorporating roads that need low-investment enhancements to create safer and more comfortable routes for cycling enthusiasts. This network allows the region to broadly connect communities to destinations and fills in connectivity gaps where off-road facilities have not yet been established.

Much of the routes run along roads with wide shoulders (at least 4-feet wide). With the addition of enhanced treatments such a bike lane markings, signage and special intersection treatments, these roadways can provide much needed regional connectivity while better supporting cycling comfort and safety.

Safety

While on-road bicycle facilities create an opportunity to better connect the region via active travel, the nature of these facilities require special attention to safety. The network design balanced the need for connectivity with the presence of space for cyclists and traffic volumes and recommends critical enhancements to increase cyclist visibility and legibility for all road users. In addition, the network incorporated already popular routes among cyclists in the region.

The regional routes were aligned along roadways with wide shoulders as they provide space for biking outside of a travel lane. If a roadway with a shoulder was not present where connectivity was needed, vehicular speed, traffic volume and route popularity were considered to determine the safest route. Established routes for cycling enthusiasts in the region were determined by analyzing local Strava data. Strava is an app that many cycling enthusiasts use to record rides. Their anonymous user-generated data created a heat map for cycling activity that provided insight on what roads are used most often. While Strava app users are often the most experienced riders, these riders use routes that balance comfort, connectivity, and enjoyable scenery.

These designated regional routes should be established in-tandem with recommended facility enhancements to ensure safety and comfort.

Recommendations

Experience in other areas shows that safe, accessible, and comfortable network connections at the regional level can help to tie a region together and help promote regional identity. Regional routes also provide the transportation system resources to truly make commuting by bicycle or other active transportation modes feasible and attractive. Regional routes also provide a backbone for a growing Active Tourism initiative, while more off-street trails are developed and implemented. If properly signed and branded with attractive, identifiable themes, these routes can also induce businesses and activity centers that serve active transportation users to invest in locations along the route.

For this conceptual network, to become a successfully implemented regional network, the following actions are recommended as shown in **Table 3-7.**

Table 3-7: Regional Recommendations

Action	Entity	Term
Designate Route with Signage	County, TxDOT	Short
Prioritize Maintenance	County, TxDOT	Long
Eliminate or Reconfigure Rumple Strips	County, TxDOT	Medium
Connect Local Facilities	Local, County, TxDOT	Long

Designate Route

Route designation plays a significant role in building an awareness for all road users including cyclists and people operating motor vehicles as signage helps signal there are cyclists present. A key feature in developing this regional network includes establishing cyclist-minded wayfinding and signage alerting motorists that cyclists are present. Given that these designated routes are on-road, special attention to signage is critical to establishing safer and more comfortable bike facilities.

Share the Road signs should be used throughout the network to alert motorists to the presence of cyclists. Equally as important, the regional network should be seamlessly connected with bicycle-friendly wayfinding. Directional signage greatly assists people biking to feel comfortable and easily navigate the network. Branding the regional bike network and incorporating those design elements in the wayfinding signage provides an opportunity to create a strong sense of place and cultural importance while also providing help insights for cyclists navigating the network.

Pavement Markings

In addition to route designation, pavement markings legitimize the right for bicyclist to use the roadway, along with motor vehicles. Markings may come in the form of standard bike lane marking symbols, or in some cases buffered bike lane markings. Pavement markings should be extended to the entire network, and made more frequent where higher traffic volumes, or more route navigation occurs, and in coordination with TxDOT and local standards.

Intersection Treatments

On-road bike facilities need to take special precautions at intersections as these are the locations where road user conflicts are most likely. A common crash scenario occurs when highways users use the right shoulder as a turn lane. This increases the risk for people biking they may not be seen. Pavement markings, signage or other vertical protected elements may be uses at such intersections to provide bicyclists greater protection. Attention should be given to both urban and rural intersections that may present conflict, and solutions should be tailored for each unique location.

Prioritize Maintenance

Debris and hazards can accumulate on shoulders causing tire punctures, sudden maneuvers or even crashes for people biking. Prioritizing shoulder maintenance on designated routes will help create safe comfortable travel for all modes using the roadway. State and county officials can coordinate to determine scheduling and logistics.

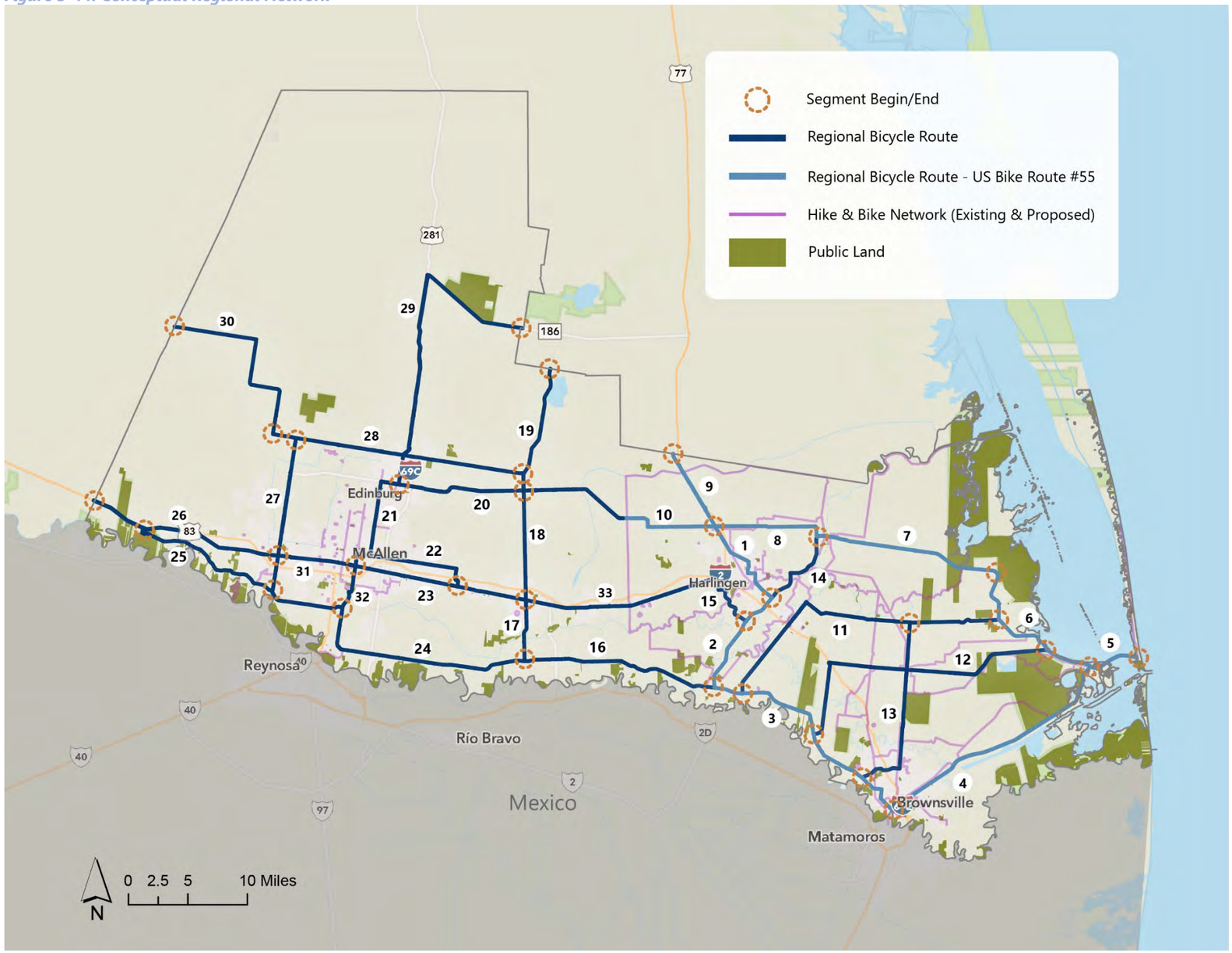
Rumble Strips

Rumble Strips used to alert people driving motor vehicles that they are leaving the travel lane, can also cause significant disruption or danger for people biking. If placed in a poor position, they can even render a roadway useless to people biking. Rumble strips located on regional routes should be eliminated or altered to create tolerable riding experience. If rumble strips are desired, they can follow guidance from *FHWA technical advisory 5040.39* to create a safer riding experience.

Connect Local Facilities

Existing facilities in communities can be expanded so they create a seamless transition between local and regional networks. This can be with on or off-street facilities. Bike trips will likely begin and end in a urban community, so the transition from a local network to regional routes is critical. Gaps between existing facilities and designated regional routes can be prioritized and filled with appropriate facilities to ensure a smooth transition.

Figure 3-44: Conceptual Regional Network



1. **USBR 55 Combes-San Benito**
2. **USBR 55 San Benito-Los Indios**
3. **USBR 55 Los Indios-Brownsville**
4. **USBR 55 Brownsville-Port Isabel**
5. **USBR 55 Port Isabel-SPI**
6. **USBR 55 Port Isabel-Laguna Atascosa NWR**
7. **USBR 55 Laguna Atascosa NWR-Rio Hondo**
8. **USBR 55 Rio Hondo-Combes**
9. **USBR 55 Combes-Willacy Co.**
10. **USBR 55 Combes-Elsa**
11. **La Paloma-Bayview**
12. **Laguna Vista-San Pedro**
13. **Brownsville-Los Fresnos**
14. **Rio Hondo-San Benito**
15. **Harlingen South**
16. **Progreso-Los Indios**
17. **Weslaco-Progreso**
18. **Weslaco-Elsa**
19. **Elsa-Delta Lake Park**
20. **Edinburg-Elsa**
21. **McAllen-Edinburg**
22. **83 Bypass**
23. **McAllen-Weslaco**
24. **Hidalgo-Progreso**
25. **Southern Nature Connector**
26. **Mission-Sullivan City**
27. **Mission-Alton**
28. **Monte Cristo Connector**
29. **Edinburg-Willacy Co.**
30. **McCook Connector**
31. **Mission-McAllen**
32. **McAllen-Hildalgo**
33. **Weslaco-Harlingen**

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4 IMPLEMENTATION

In This Chapter:

- Facility Selection Process
- Funding Opportunities
- Transportation Alternatives Set-Aside (TASA) Project Call
- Project Lists

INTRODUCTION

The Implementation chapter provides RGVMPO and their planning partners a path forward for identifying, funding and prioritizing projects that build a connected and accessible active transportation network; a network that supports people who walk and bike to accomplish their daily needs and/or for recreation. Additionally, a collection of Design Guidelines based on national best practices supports the facility selection process and can be found in **Appendix A.**

FACILITY SELECTION

The selection of an active transportation facility type requires a balance of factors. Among these factors are community priorities, local land use context, existing conditions, equity, engineering and design judgment, and project constraints, such as cost or right of way. The process of facility selection is iterative; as more data about the roadway and surrounding context is determined, the type of facility that designers, the community, and planners feel is best may change. It is important to consider all the tools listed in **Appendix A** to make the best selection for the given project.

Based on FHWA guidance, the facility selection charts shown in **Figure 4-1** and **Figure 4-2** below are general recommendations for both an urban and rural context and give a starting place for determining the appropriate facility type for each scenario. Because each scenario is unique, Specific conditions should determine the ultimate facility selection, in conjunction with professional planning, engineering expertise and input from the community. For additional information and characteristics on specific facility types, visit **Appendix A** to view Design Guidelines for bicycle and pedestrian infrastructure. The Design Guidelines in **Appendix A** reference national best practices from the National Association of Transportation Officials (NACTO), American Association State Highway and Transportation officials (AASHTO), and FHWA.

Figure 4-1: Bicycle Facility Selection Chart

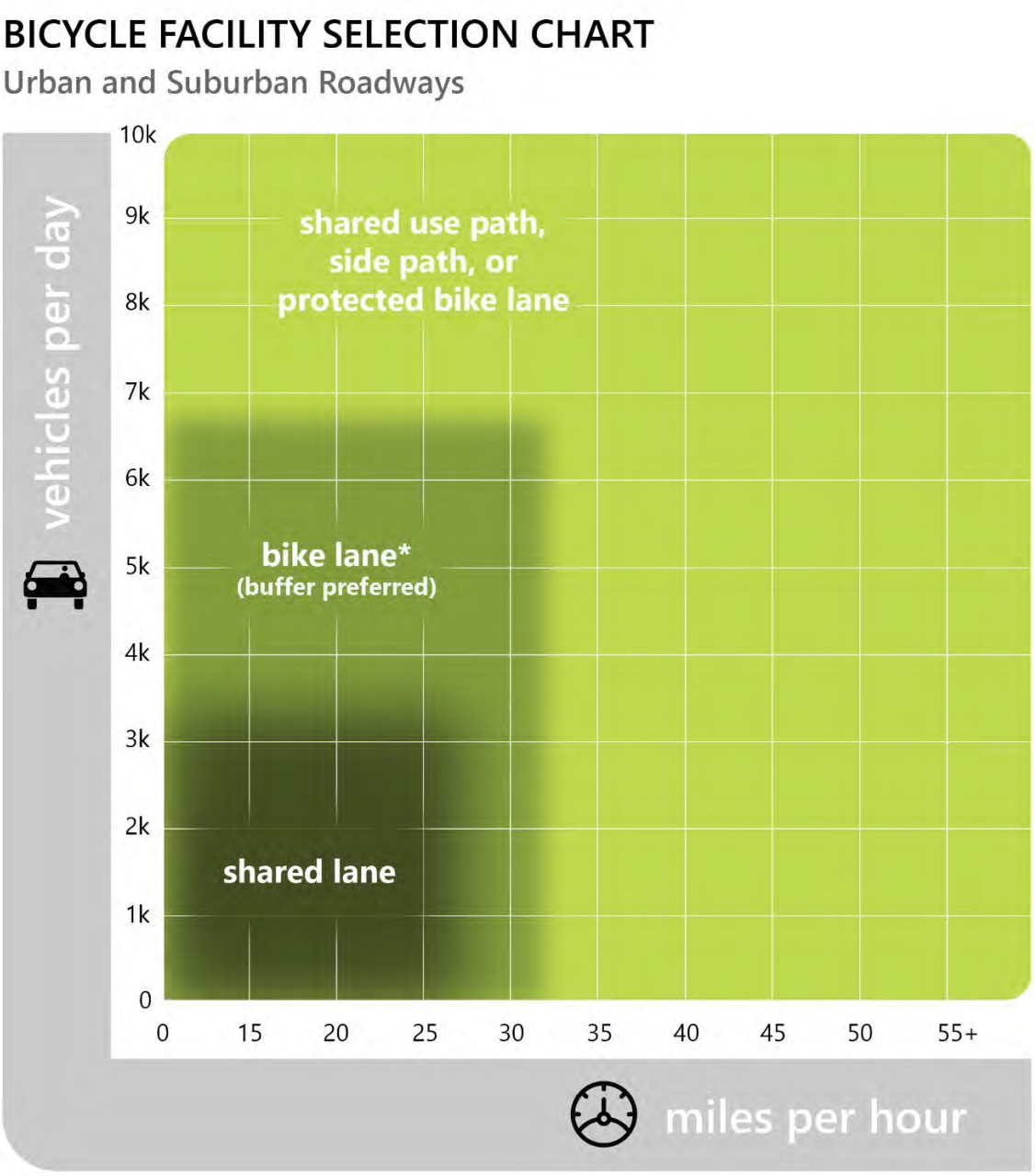
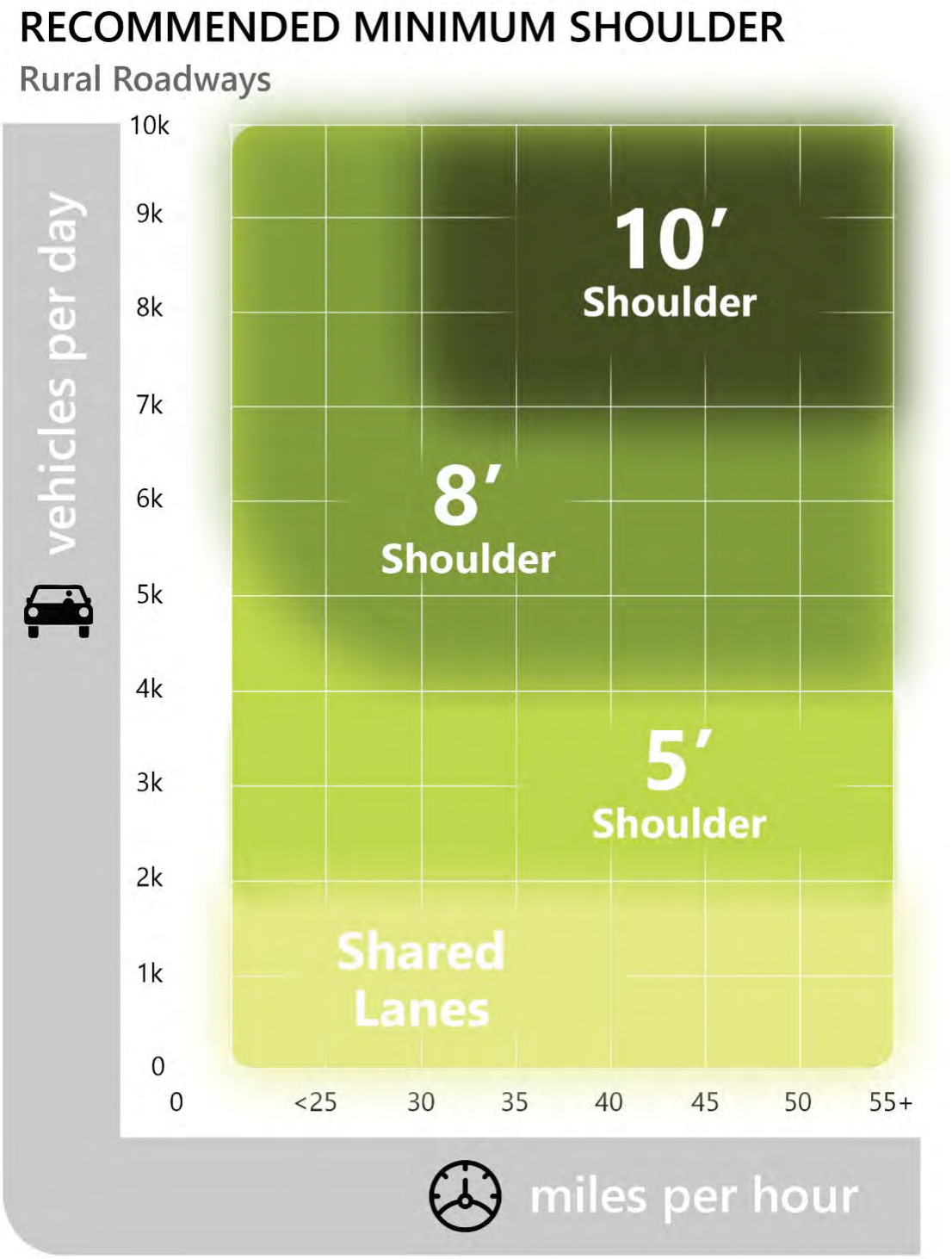


Figure 4-2: Recommended Minimum Roadway Shoulder



Planning Cost Estimates for Active Transportation

The planning phase cost estimate of an active transportation project is an essential piece of the project planning and prioritization phase . Weighing costs and balancing priorities are always challenging, so the more accurate costs can be initially, the easier the process becomes as projects advance.

To assist RGVMPO staff and local planning partners, planning-level cost estimates are listed individually at a per mile rate. Cost estimates can vary greatly from project to project depending on the conditions of the road, alterations needed to implement the project, and the right of way space available. **Table 4-1** provides several project costs based on TxDOT published low bid items from August 2020. Combining a number of these project items provides a planning-level cost estimate and can help determine project feasibility and prioritization given existing conditions. Multiple example projects are presented below as a guide for estimating cost-effective project development. These cost estimates do not include any contingency or construction mobilization and assume that the facilities are being added to existing roadway.

Table 4-1: Planning Cost Estimates

Project Item	Assumptions (Bikeway on both sides of street)	$/Mile
Continental Crosswalk (6 ft wide)	For roadways with width of 48 ft	$156
Standard Crosswalk (6 ft wide)	For roadways with width of 48 ft	$260
Bicycle lane pavement marking arrow	Marking set every 1,200 ft	$924
Signs for Mid-Block Application	Two signs per crossing	$1,000
Bicycle lane pavement marking symbol	Marking set every 1,200 ft	$1,936
Installing a sign	Sign placed on both sides every 1/4 mile	$4,000
4" white solid pavement marking with diagonal striping	Markings set on both sides	$6,811
Two-way bike lane	2 inch stipe OR 6 inch yellow pavement marking	$10,560
Precast Concrete Button	Set on both sides, 3 inch height, 10 ft spacing	$21,120
Flexible Plastic Post	Set every 20 ft on both sides	$26,400
Pedestrian Hybrid Beacon	One per crossing	$80,000
2.5' Armadillo Barrier	Parallel to bicycle travel lane at 6' spacing, both sides of street	$103,118
Conic Median	Set on both sides, 2 ft width	$117,333
Self-Watering Planters	Excluded plant and soil costs	$368,280
Concrete Traffic Barrier	Set on both sides	$369,600
Shared Use Path 12' wide concrete pavement Reflective centerline striping 1 sign per quarter mile on each side	No regrading, utility conflicts, curb ramps, tree removal, drainage work	$436,960

Example Project Estimation

A protected bike lane added to the existing roadway would essentially require roadway striping, markings, and signage equating to approximately $13,700 per mile. Right of way preparation, landscaping, excavation, and similar costs have intentionally been omitted from this cost estimate because of their variability. **Table 4-2** outlines each line item necessary for this type of project and provides the per mile cost of adding a physical barrier. Common and effective barriers to choose from include flexible plastic posts, self-watering planters, precast concrete barriers, armadillos, and concrete medians.

Table 4-2: Protected Bicycle Lane

Example 1: Protected Bicycle Lane w/ Barrier		
Project Item	**Assumptions (Both sides of street)**	**$/Mile**
4" white solid pavement marking w/ diagonal striping (Buffered Lane)	Markings set on both sides	$6,811
Bicycle lane pavement marking arrow	Marking set every 1,200 ft	$924
Bicycle lane pavement marking symbol	Marking set every 1,200 ft	$1,936
Installing a sign	Sign placed on both sides every 1/4 mile	$4,000
Total Road Marking Cost per Mile		**$13,671**
ADD A BARRIER		
Flexible Plastic Post	Set every 20 ft on both sides	$26,400
Self-Watering Planters	Excluded plant and soil costs	$368,280
Precast Concrete Button	Set on both sides, 3-inch height, 10 ft spacing	$21,120
Armadillo	Parallel to bicycle travel lane at 6' spacing, both sides of street	$103,118
Concrete Traffic Barrier	Large construction style, set on both sides	$369,600
Concrete Median	Set on both sides, 2 ft width	$117,333
Total per Mile	**$13,671+ Your Choice of Physical Barrier**	

Similarly, **Table 4-3** highlights the customization of these cost estimates and the variance between different projects. This example estimates the cost of a two-way bicycle lane with the same assumptions as the previous one-way example, which allows for cost comparison. Adding individual line items for planning-level cost estimates is recommended to help create cost-effective, successful projects.

Table 4-3: Protected Two-Way Bicycle Lane

Example 2: Two-Way Bicycle Lane		
Project Item	**Assumptions (Bi-directional, one side of street)**	**$/Mile**
4" white solid pavement marking w/ diagonal striping (Buffered Lane)	Marking set on one side	$3,406
Two-way bike lane	2-inch stipe & 6-inch yellow center line	$5,280
Bicycle lane pavement marking arrow	Marking set every 1,200 ft	$462
Bicycle lane pavement marking symbol	Marking set every 1,200 ft	$968
Installing a sign	Sign placed every 1/4 mile	$2,000
Total Road Marking Cost per Mile		**$12,116**
ADD A BARRIER		
Flexible Plastic Post	Set every 20 ft	$13,200
Self-Watering Planters	Excluded plant and soil costs	$184,140
Precast Concrete Button	3-inch height, 10 ft spacing	$10,560
Armadillo	Installed parallel to bicycle travel lane at 6' spacing	$51,559
Concrete Traffic Barrier	Large construction style, Set on both sides	$184,800
Concrete Median	2 ft width	$58,667
Total per Mile	**$12,116 + Your Choice of Physical Barrier**	

Crosswalks are another prime example of how location and design play an integral role in cost estimation. Depending on the design, a crosswalk can range from $156 to $260 for a 48 ft wide road The location of a crossing can also impact its cost. Mid-block crossings can be more costly depending on the signage and beacons used to allow for a safe crossing. . **Table 4-4** and **Table 4-5** display planning level cost estimates for standard and mid-block crosswalks.

Table 4-4: Crosswalk Estimates

Example 4: Crosswalk		
Project Item	**Assumptions**	**Cost**
Standard Crosswalk (6 ft wide)	For roadways with width of 48 ft	$260
- OR -		
Continental Crosswalk (6 ft wide)	For roadways with width of 48 ft	$156

Table 4-5: Mid-Block Crossing (Standard Crosswalk) Estimates

Example 5: Mid-Block Crossing (Standard Crosswalk)		
Project Item	**Assumptions**	**Cost**
Signs for Mid-Block Application	Two signs per crossing	$1,000
Pedestrian Hybrid Beacon	One per crossing	$80,000
Total		**$80,100**
CHOOSE A CROSSWALK		
Standard Crosswalk (6 ft wide)	For roadways with width of 48 ft	$260
Continental Crosswalk (6 ft wide)	For roadways with width of 48 ft	$156
Total	**$80,100 + Your Choice of Crosswalk**	

FUNDING OPPORTUNITIES

Summary of Federal Funding

The federal government provides multiple funding opportunities for implementation of bicycle and pedestrian improvements. The federal programs that provide the funding to build these improvements regularly requires a local match. The funding through the Federal Highway Administration (FHWA), Department of Transportation (DOT), and the Federal Transit Authority (FTA) is sent to TxDOT each year. TxDOT then works with local MPOs to prioritize different local transportation projects and administers the funding accordingly. FHWA funds are divided among individual apportioned programs—such as the National Highway Performance Program (NHPP), Surface Transportation Block Grant Program (STBG), and the Highway Safety Improvement Program (HSIP). Then the funding is distributed to local agencies. This section highlights the most relevant federal funding sources for bicycle and pedestrian infrastructure improvements and summarizes program guidelines, key eligibility requirements, and types of eligible projects.

Federal Funding

The primary federal transportation funding program for bicycling projects comes from a set-aside of the Surface Transportation Block Grant (STBG) Program funding for transportation alternatives (TA). These set-aside funds are eligible for a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, and safe routes to school projects. For most projects under the TA set-aside, the Federal share is generally 80 percent Federal and 20 percent State or local match. The TA set-aside and other federal funding sources that are pertinent to the RGVMPO are summarized in the following sections.

The Better Utilizing Investments to Leverage Development Grants (BUILD)

Formerly known as TIGER grants, BUILD grants are competitive grants that can be used to fund road, rail, transit or port projects that achieve national objectives or have significant regional impact. BUILD grant projects can support multi-jurisdictional projects that are typically difficult through typical federal funds. Urban areas over a population of 200,000 are considered urban for the purposes of the BUILD grant applications.

Federal Transit Administration (FTA)

The FTA provides funds for bicycle and pedestrian investment as they relate to transit investment. FTA funds may be used to fund appropriate bicycle and pedestrian infrastructure improvements such as bicycle lanes, bicycle parking, bus shelters/benches, sidewalks, and lighting among others. To qualify for FTA funds, projects must provide or improve access to existing or planned transit facilities such as stops and stations. Multiple FTA grant programs exist that can assist with funding bicycle and pedestrian infrastructure.

Fixing America's Surface Transportation (FAST Act)

The FAST Act, enacted in late 2015 and administered by the FHWA, provides secure surface transportation program funding for 2016 through 2020. The FAST Act is meant to improve mobility, enhance economic growth, and accelerate project delivery by providing funding for roadway improvements. The FAST Act requires MPOs to consider all users when designing and constructing transportation infrastructure projects and provides flexibility to use funds for bicycling and walking improvements. Individual programs under the FAST Act have varying requirements and eligible projects.

The FAST Act authorizes funding to each State in a lump sum for all apportioned programs. Programs related to bicycle and pedestrian infrastructure include the Surface Transportation Block Grant Program (STBG), Congestion Mitigation and Air Quality Improvement Program (CMAQ), Highway Safety Improvement Program (HSIP), and National Highway Performance Program (NHPP).

SURFACE TRANSPORTATION BLOCK GRANT PROGRAM (STBG)

As the most flexible federal funding program, the STBG Program—redesigned from the traditional Surface Transportation Program—provides funds that are eligible for use on nearly all projects that include bicycle and pedestrian improvements. Typically, STBG funds are not used on local or rural minor collectors; however, bicycle/pedestrian projects are exceptions to that standard. STBG funds are sub-allocated to the local level based on a municipality's relative share of the state's population and classification as one of the following: an urbanized area with population greater than 200,000, urbanized area with population greater than 5,000 but no more than 200,000, or areas with population less than 5,000. TxDOT prioritize projects and administer STBG funds.

CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT PROGRAM (CMAQ)

CMAQ funds are lump sum, state-apportioned funds available through the FHWA as a continuing program under the FAST Act. CMAQ funding availability is a proportion of the overall apportionment for each state. CMAQ funds are meant to assist in funding projects that improve air quality and relieve congestion. Eligible projects are likely to contribute to the attainment of air quality standards and reduce air pollution, and the projects must be included in an MPO's Transportation Improvement Program (TIP). CMAQ funds may be used on, but not limited to, the following transportation improvements: bicycle lanes, separated bicycle lanes, sidewalks, shared use paths, and signage. In Texas, CMAQ funds are included within TxDOT's Category 5 funding. The RGVMPO is currently in attainment as designated by the Environmental Protection Agency and is therefore not eligible form CMAQ funding.

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

Continued under the recently enacted FAST Act, the HSIP aims to assist public agencies in improving safety along public roadways. Specifically, HSIP funds are dedicated to projects that reduce conflicts between pedestrian/bicycles and automobiles, such as pedestrian hybrid-beacons and roadway improvements that provide separated facilities (e.g. medians or pedestrian islands). As part of the HSIP, a performance-based approach is used to determine funding projects. To be eligible for HSIP funds, projects must be consistent with State level strategic highway safety plans (SHSP) and must specifically address a hazardous location or safety concern. HSIP funds are administered within Texas by TxDOT.

NATIONAL HIGHWAY PERFORMANCE PROGRAM (NHPP)

NHPP funding availability is continued through the FAST Act and provides funding for the construction of new facilities on the National Highway System (NHS). NHPP funds can be utilized to fund bicycle lanes, bicycle parking, curb cuts and ramps, separated bicycle facilities, and shared use paths, among others. NHPP funds are administered by TxDOT in Texas.

TRANSPORTATION ALTERNATIVES SET-ASIDE PROGRAM (TA)

TA funding is a set-aside of the STBG Program. All bicycle and pedestrian projects previously eligible for TA funding under the Moving Ahead for Progress in the 21st Century Act (MAP-21) continue their eligibility in the revised TA from the FAST Act. Projects that are small-scale in nature typically qualify for TAP funding. TAP funding is a competitive process and now requires states and MPOs to provide annual reports on applications for funding and awarded funds.

RECREATIONAL TRAILS PROGRAM (RTP)

The RTP was reauthorized under the FAST Act and is now a set-aside of funds from the TAP. The RTP is administered in Texas by the Texas Parks and Wildlife Department. Eligible projects include maintenance and restoration of existing facilities, construction of new trails, acquisition of easements or property for trails, and the development and rehabilitation of trailside/trailhead facilities and trail linkages. Additional eligibility requirements specific to Texas can be found under the Texas Parks and Wildlife (TPWD) Recreational Trails Grants.

Community Development Block Grants (CDBG) Entitlement Program – Department of Housing and Urban Development (HUD)

The CDBG Entitlement Program, administered through the Department of Housing and Urban Development, provides funds to entitlement communities on a formula basis to develop viable urban communities. As such, funds available through the CDBG Entitlement Program would likely only be eligible for bicycle and pedestrian projects within city limits. These grants can be used to fund an array of community development projects, including public facilities and improvements that enhance the quality of life for residents of low- to moderate-income communities. Specifically, the construction or improvement of streets is an approved activity. Eligible projects could include sidewalk improvements, streetscape enhancements that promote economic development, and community-based active transportation facilities. The grantee must develop and follow a detailed citizen participation plan during the design and implementation of any funded project. Additional eligibility requirements can be found on the CDBG Entitlement Program website.

Section 108 – Loan Guarantee Program – Department of Housing and Urban Development (HUD)

Nestled under the CDBG program, the Section 108 - Loan Guarantee Program allows local governments to transform a small portion of their allotted CDBG funds into federally guaranteed loans to pursue revitalization projects for neighborhoods. These loans can be utilized by either the public entity receiving the funds or loaned to a third party to construct community projects. Guidelines and eligible projects under the Section 108 – Loan Guarantee Program match those under the CDBG program.

Transportation Infrastructure Finance and Innovation Act (TIFIA)

The TIFIA program provides financial assistance in the form of secured loans, loan guarantees, and lines of credit to finance surface transportation projects. Specific TIFIA requirements and project cost thresholds can be found at the FAST Act website.

Rapid Response Grants – Advocacy Advance

Rapid Response Grants are administered through the Advocacy Advance organization and help state and local organizations to secure funding for active transportation projects. The funds do not directly assist with the implementation of bicycle and pedestrian projects, they can provide local advocacy organizations with additional funds to campaign for improved funding of the bicycle and pedestrian projects at the state and local level. It is important to note that Rapid Response Grants are only available when funding permits.

Private Grants – Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation invests in grantees (e.g., public agencies, universities, and public charities) that are working to improve the health of all Americans. Current or past projects in the topic area "walking and biking" include greenway plans, trail projects, advocacy initiatives, and policy development.

Community Grants – People for Bikes

Community Grants, available through the People for Bikes organization, provide funding for projects that leverage federal funding and increase awareness for bicycling projects across the United States. Eligible projects include bike paths and trails.

State Funding

In addition to local funds, state funding sources can also be leveraged for implementing active transportation infrastructure. The following sources are state-level funding items in Texas.

Texas Department of Transportation (TxDOT)

TxDOT administers the State's apportionment of FAST Act funds provided by the FHWA. TxDOT sub-allocates these funds to the local level using twelve funding categories. Relevant bicycle and pedestrian funding categories include:

- Category 1: Preventative Maintenance and Rehabilitation
- Category 2: Metropolitan and Urban Corridor Projects
- Category 4: Statewide Connectivity Corridor Projects

- Category 5: Congestion Mitigation and Air Quality Improvement
- Category 7: Metropolitan Mobility and Rehabilitation
- Category 8: Highway Safety Improvement Program
- Category 9: Transportation Enhancements
- Category 9: Transportation Alternatives Program
- Category 10: Texas Parks and Wildlife Department
- Category 10: Curb Ramp Program
- Category 10: Supplemental Transportation Projects (Federal and Non-Federal)
- Category 11: District Discretionary
- Category 12: Strategic Priority (Economic Development)

It is important to note, that TxDOT funding categories are filled with federal funds and in some cases additional state funding resources, but contain slightly different labels than federal categories. Apart from federal funding, TxDOT finances transportation infrastructure projects through a variety of revenue sources, including State Highway Funds, bond proceeds, Texas Mobility Fund, General Revenue Fund, and concession fees.

Texas Parks and Wildlife (TPWD) Recreational Trails Grants

The Texas Parks and Wildlife Division (TPWD) administers the Recreational Trails Program in the state of Texas through funds provided by the FHWA, which receives its funding from a federal gas tax paid on fuel for non-highway recreational vehicles. Grants cannot exceed 80% of the project cost and have a $200,000 limit.

Local Funding

Dedicated local funding is the most consistent and reliable funding source to implement bikeway projects. It signals a community's commitment to bicycle and pedestrian projects and strengthens applications for federal, state, and private funding. The following descriptions apply to individual municipal governments within the RGV MPO.

Property Taxes

Property taxes are, historically, the primary source for local revenue and contribute to a city's general fund. These funds may be used at the discretion of each municipality—subject to local policies, procedures, and availability—to assist in the funding of bicycle and pedestrian infrastructure improvements. Property tax increases can be enacted through a public voting process to assist in the funding of specific bicycle and pedestrian projects.

Sales Taxes

Local sales taxes are another source for local revenue. Like property taxes, these funds may be used at the discretion of each municipality to fund bicycle and pedestrian infrastructure improvements. Sales taxes are typically a uniform percentage of the selling price and vary between local jurisdictions within Texas. Local sales tax is in addition to statewide sales tax. While sales taxes are typically distributed into the general fund, municipalities may vote to increase sales taxes as an option to fund bicycle and pedestrian projects.

Local Capital Improvement Programs

Capital Improvement Programs (CIPs) are utilized by local municipalities as a framework for financing future capital projects. Using a variety of local funding sources, including property taxes and sales taxes, municipalities can systematically determine which projects should be funded each year based on their anticipated revenues versus operating expenses. The process of developing a CIP allows municipalities to reasonably predict when funds will be available to construct capital improvement projects, as well as prioritize specific projects. The RGVMPO should coordinate with local jurisdictions to ensure that projects identified within the TIP are included within local CIPs to leverage additional funding opportunities.

User Fees

User fees are fees that are collected from those who utilize a facility. These fees are collected to pay for the cost of a facility, finance operations, and produce additional revenue. Typically, user fees are charged for the use of specific public utilities/services, such as public parks, water and sewer services, transit systems, and waste facilities. User fees are meant to directly charge those who use a facility, so as to not burden non-users with the additional charges to operate and maintain a service they do not use. User fees may be applicable for off-road facilities and recreational trails.

Bonds

Either general obligation or revenue bonds may be used to fund bicycle and pedestrian facilities. These bonds require approval from the voting public and must be paid back to investors throughout the duration of the bond. Revenues generated from property and sales taxes are generally used to pay off bonds.

Impact/Developer Fees

Development impact fees are an additional funding source that may be utilized at the local level to fund infrastructure improvements. Developer fees are generally collected and administered differently between jurisdictions. Developer fees require policy changes at the local level if no such fee currently exists. Developer fees are meant to ensure that developers pay their fair share of improvements along the transportation system where the development is impacting the system. The use of developer fees to fund bicycle and pedestrian improvements ensures that, as development occurs in an area, pedestrian and bicycle amenities/facilities are able to support the growth.

Special Assessments

A special assessment is a method of generating funds for public infrastructure improvements, of which the cost is directly collected from those who benefit from the project. For example, neighborhoods could coordinate to ensure that a portion of their property tax or an additional fee is used to help fund bicycle and pedestrian improvements along their streets. A specific example of a special assessment is a tax-increment financing district where properties are taxed at an additional rate above the base tax rate to fund specific improvements within a designated area. The difference between the additional rate and the base tax rate (i.e. the increment) is typically used to fund those improvements.

Crowd Funding

Crowd funding is an innovative and increasingly attractive option to fund bicycle and pedestrian infrastructure improvements. Crowd funding allows individuals to donate money to collectively fund a specific project. While crowd funding can help fund projects, it can also serve as a tool to raise community awareness for bicycle and pedestrian needs and, in turn, potentially attract additional donors and community support for continued investment in bicycle and pedestrian facilities.

Partnerships

Partnerships with local and regional businesses can be integral to securing additional funding for bicycle and pedestrian projects, particularly when local funding is not readily available. Additionally, institutions such as hospitals or universities may be interested in sponsoring bicycle and pedestrian facility improvements near their campuses to promote public health benefits associated with active transportation. Public/private partnerships are becoming increasingly popular as the economic benefits of walkable, pedestrian-friendly environments are being realized at the local level. Active transportation improvements can also revitalize and enhance business corridors by providing better accessibility. Additional partnerships between neighboring communities can lead to increased funding potential for projects that cross municipal boundaries.

Special Purpose Districts

Tax Increment Reinvestment Zones (TIRZs)

TIRZs are zones created by city councils to attract new investment and redevelopment to blighted areas. TIRZs cap property tax revenues within the designated zone. Then a bond is issued to make near-term public infrastructure investments, and to capture property tax revenue increments that capitalize due to the investment. The bonds are repaid over the life of the TIRZ with the incremental tax revenues. Public improvements can include bicycle facilities and amenities. Coordinating and leveraging funding with TIRZs is a strategy that cities can use to build their bicycle network and maintain amenities.

Municipal Management Districts (MMDs)

MMDs are special districts created through the Texas legislature. The businesses within a geographic area can opt to self-impose an assessment fee by establishing an MMD. The fees will be used to help with beautification, maintenance, signage and branding, and general marketing of the businesses. These districts promote transportation and economic development, among other functions in the boundary. MMDs provide maintenance activities for transportation facilities and implement bicycle programs. Most MMDs issue bonds, not to the level of a TIRZ, and receive funding from ad-valorem taxes, assessments, impact fees, or other funds in order to provide improvements and services. MMDs can be an avenue for cities to grow bicycle infrastructure and ensure investments are maintained.

Parking Benefit Districts

Parking Benefit Districts can finance infrastructure improvements in employment or commercial centers. This can be accomplished by dedicating parking fees and ticket revenue to bicycle and pedestrian enhancements. Within a parking benefit district, public parking spaces (on and off-street) are charged hourly rates to aid turnover of spaces for customers. The parking spots also generate revenues for facade, sidewalk, landscaping, and bike facilities improvements. It is encouraged that off-

street parking facilities be provided where people can pay a lower price to park-once-and-walk, with higher premiums for the on-street parking. This will help to incentivize turnover and lessen the idea of insufficient parking near popular commercial corridors. According to case studies in Austin, Texas and Washington, D.C., the Federal Highway Administration has found that parking benefit districts have reduced the need for surface parking and improve traffic congestion, all while funding local improvements within the district.

Funding Matrix

The funding matrix in **Table 4-6** will provide funding applicants a resource to see what funding opportunities their projects qualify for. The matrix was compiled by using FHWA resources. This list is not exhaustive and is subject to updates and changes. Further funding should resources be updated, may also become available.

Table 4-6: Funding Matrix

Activity	BUILD	INFRA	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP	STBG	TA	RTP	SRTS	PLAN	NHTSA 402	NHTSA 405
Access enhancements to public transportation (includes benches, bus pads)	X	~X	X	X	X	X		X	X	X					
ADA/504 Self Evaluation / Transition Plan									X	X	X		X		
Bicycle plans				X					X	X		X	X		
Bicycle helmets (project or training related)									X	XSRTS		X		X*	
Bicycle helmets (safety promotion)									X	XSRTS		X			
Bicycle lanes on road	X	~X	X	X	X	X	X	X	X	X		X			
Bicycle parking	~X	~X	~X	X	X	X		X	X	X	X	X			
Bike racks on transit	X	~X	X	X	X	X			X	X					
Bicycle repair station (air pump, simple tools)	~X	~X	~X	X	X	X			X	X					
Bicycle share (capital and equipment; not operations)	X	~X	X	X	X	X		X	X	X					
Bicycle storage or service centers (example: at transit hubs)	~X	~X	~X	X	X	X			X	X					
Bridges / overcrossings for pedestrians and/or bicyclists	X	~X	X	X	X	X*	X	X	X	X	X	X			
Bus shelters and benches	X	~X	X	X	X	X		X	X	X					
Coordinator positions (State or local)						X			X	XSRTS		X			
Crosswalks (new or retrofit)	X	~X	X	X	X	X*	X	X	X	X	X	X			
Curb cuts and ramps	X	~X	X	X	X	X*	X	X	X	X	X	X			
Counting equipment				X	X		X	X	X	X	X	X	X*		
Data collection and monitoring for pedestrians and/or bicyclists				X	X		X	X	X	X	X	X	X*		
Historic preservation (pedestrian and bicycle and transit facilities)	X	~X	X	X	X				X	X					
Landscaping, streetscaping related amenities (benches, water fountains); generally as part of a larger project	~X	~X	~X	X	X			X	X	X					
Lighting (pedestrian and bicyclist scale)	X	~X	X	X	X		X	X	X	X	X	X			
Maps (for pedestrians and/or bicyclists)				X	X	X			X	X		X	X*		
Pedestrian plans				X					X	X		X	X		
Recreational trails	~X	~X	~X						X	X	X				

Activity	BUILD	INFRA	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP	STBG	TA	RTP	SRTS	PLAN	NHTSA 402	NHTSA 405
Road Diets (pedestrian and bicycle portions)	X	~X	X				X	X	X	X					
Road Safety Assessment for pedestrians and bicyclists							X		X	X			X		
Safety education and awareness activities and programs to inform pedestrians, bicyclists, and motorists on ped/bike safety									XSRTS	XSRTS		X	X*	X*	X*
Safety education positions									XSRTS	XSRTS		X		X*	
Safety enforcement (including police patrols)									XSRTS	XSRTS		X		X*	X*
Safety program technical assessment (for peds/bicyclists)									XSRTS	XSRTS		X	X*	X	
Separated bicycle lanes	X	~X	X	X	X	X	X	X	X	X		X			
Shared use paths / transportation trails	X	~X	X	X	X	X*	X	X	X	X	X	X			
Sidewalks (new or retrofit)	X	~X	X	X	X	X	X	X	X	X	X	X			
Signs / signals / signal improvements	X	~X	X	X	X	X	X	X	X	X		X			
Signed pedestrian or bicycle routes	X	~X	X	X	X	X		X	X	X		X			
Spot improvement programs	X	~X	X	X			X	X	X	X	X	X			
Stormwater impacts related to pedestrian and bicycle projects	X	~X	X	X	X		X	X	X	X	X	X			
Traffic calming	X	~X	X	X			X	X	X	X		X			
Trail bridges	X	~X	X			X*	X	X	X	X	X	X			
Trail construction and maintenance equipment									XRTP	XRTP	X				
Trail/highway intersections	X	~X	X			X*	X	X	X	X	X	X			
Trailside and trailhead facilities	~X*	~X*	~X*						X*	X*	X*				
Training						X	X		X	X	X	X	X*	X*	
Training for law enforcement on ped/bicyclist safety laws									XSRTS	XSRTS		X			X*
Tunnels / undercrossings for pedestrians and/or bicyclists	X	~X	X	X	X	X*	X	X	X	X	X	X			

X =Eligible

~X =Eligible but not competitive unless part of a larger project

X* =Eligible under SRTS Program

TASA PROJECT CALL

Process

Each year, the federal government sets aside an amount of each state's Surface Transportation Block Grant (STBG) apportionment for Transportation Alternatives Set-Aside (TASA) funding to be spent on projects related to Transportation Alternatives. TASA eligibility encompasses a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, Safe Routes to School projects, community improvements (such as historic preservation and vegetation management), and environmental mitigation related to storm water and habitat connectivity.

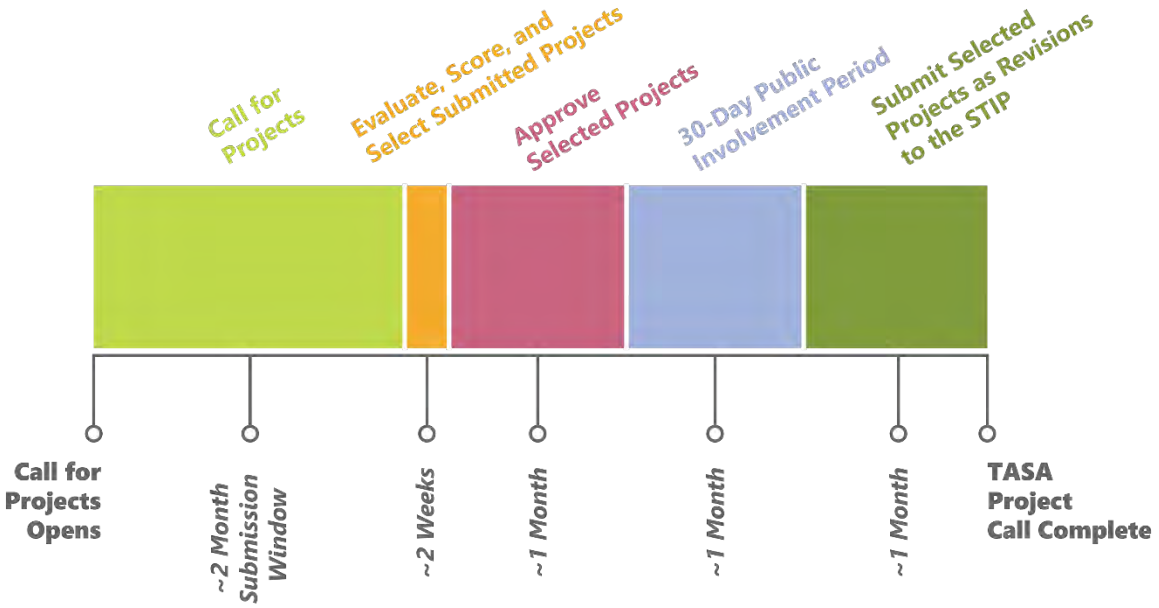
The RGVMPO conducts an annual Call for Projects to be considered for TASA funding. Sponsoring entities can submit their projects for funding consideration via an application form which will then be used by the MPO's Bicycle and Pedestrian Advisory Committee (BPAC) and Technical Advisory Committee (TAC) to evaluate and score submitted projects. The TAC and Transportation Policy Board (TPB) then formally approves projects selected through the evaluation and scoring process. Selected projects are put through a 30-day public involvement period to obtain community feedback.

Following the 30-day public involvement period, the TAC and TPB formally approve the selected projects as intended revisions to the Statewide Transportation Improvements Program (STIP). Finally, the MPO will submit the projects and other necessary revisions to the Texas Department of Transportation (TxDOT) as amendments for the STIP.

Timeline

Figure 4-3 illustrates the general timeline for the TASA project submission and selection process for the RGVMPO. As the TASA call for projects is anticipated to begin beyond the scope of this plan, finalized projects will be included in **Appendix D.**

Figure 4-3: TASA Project Call Timeline



Scoring Criteria

RGVMPO uses a set of specific criteria to evaluate and score projects submitted for TASA funding in the RGVMAB to ensure an equitable and calculated approach for prioritizing projects. **Table 4-7** and **Table 4-8** shows the Scoring Criteria used by the BPAC and TAC when evaluating the submitted projects. The table contains evaluation criteria, the maximum points a project can receive for each criteria, the description and factors related to each criteria, and the evaluation method that instructs evaluators on how to assign points to the projects based on the criteria.

Table 4-7: RGVMPO TASA Program Scoring Criteria

Scoring Criteria			
Evaluation Criteria	**Max Points**	**Description/Factors**	**Evaluation Method**
Improving Safety (Please use whole numbers)	**29**	Provides safer and less intimidating facilities for pedestrians, bicyclists, or other non-drivers by improving safety in areas with high numbers of crashes. This involves improved crossing, signalization, traffic calming and other safety improvements.	PTS - Improves safety in area with high # of crashes within a block (300ft) 8 PTS - Improves mobility for elderly, disabled, and/or youth (disadvantaged population) 8 PTS - Improves visibility of non-drivers to vehicular traffic
Making Linkages and Connections (Please use whole numbers)	**24**	Improves connections between neighborhoods, cities, transit services, bicycle facilities, or schools. This can be achieved through gap closures, extension of regional facilities, linking multiple jurisdictions, and providing access to rail stations, bus stops, & bicycle facilities via trails and sidewalks.	6 PTS - Connects other cities/ neighborhoods 6 PTS - Connects to schools/public building 6 PTS - Extends existing system (bike/ped/transit) 6 PTS - Eliminates gaps in system (bike/ped/transit)
Incorporates Pedestrian and Bicycle Design Enhancements and Promotes Active Living (Please use whole numbers)	**15**	Provides pedestrian and bicycle areas with landscaping, sidewalk design, crossing treatments, street furniture, bike racks, or lighting which encourages pedestrian and cyclists to utilize area, thus providing health and environmental benefits	5 PTS - Provides design enhancements 5 PTS - Provides bicycle parking/ seating for pedestrians, rest areas 5 PTS - Provides trailheads, staging area and parking
Implementing Active Transportation or Mobility Plan (Please use whole numbers)	**10**	Improves ability to use walking and bicycling facilities for everyday activities including travel to work, school, and shopping as described	4 PTS - City Plan 3 PTS - Regional Plan 3 PTS - MPO Plan

Scoring Criteria			
		in RGVMPO's Regional Bike Plan, Regional Pedestrian Plan, Regional Transit Plan, or other related community Master Plan adopted by a city or county's governing body	
Connecting to Employment, Households, and Activity Centers. Activity Centers include schools, gyms, birding centers, parks, Boys and Girls Club, etc. (Please use whole numbers)	***12***	Provides access to major entertainment destinations, parks & recreation, residencies, and general businesses for large numbers of residents and/or employees.	4 PTS - Improves access to commercial areas 4 PTS - Improves access to parks and recreational areas 4 PTS - Improves access to educational areas
Serving Disadvantaged (Environmental Justice) Areas (Please use whole numbers)	***10***	Provides access for underserved communities	10 PTS - Improves access to areas of commerce within or adjacent to 50% of households below poverty rate, as defined by Census
TOTAL:	**0 to 100 Points**		

Table 4-8: RGVMPO TASA Above and Beyond Criteria

Above and Beyond Criteria		
Evaluation Criteria	**Max Points**	**Evaluation Method**
Local Match is: (Please use whole numbers)	10	2 PTS = 21-30% 4 PTS = 31-40% 6 PTS = 41-50% 8 PTS = 51-60% 10 PTS = Above 61%
Project Readiness; PS&E, ROW (Please use whole numbers)	3	1 PT - If ROW acquisition is 90% complete or not required 2 PTS - PS&E is at least 90% Complete
Funding completes the project (Please use whole numbers)	5	5 PTS - Yes
Location of project has safe passing ordinance (Please use whole numbers)	2	2 PTS - Yes
TOTAL:	**120 Points**	

PROJECT LIST

Roadway Project Opportunities

The FAST Act requires the RGVMPO to increase the safety for motorized and non-motorized users encompassing the entire transportation network. There is significant opportunity to expand the active transportation network when adding capacity or resurfacing a road. Restriping roadways can be done simultaneously with resurfacing projects, and bike lanes or side paths can be added when expanding roadway capacity if there is enough right-of-way present. Taking advantage of these projects can enhance the roadways and expand the transportation network to accommodate a broader range of users.

To assist local government and MPO staff identify opportunities to combine planned roadway improvements with the expansion of the active transportation network, RGVMPO 2045 MTP roadway projects that either add capacity or undergo resurfacing were selected and shown in **Figure 4-4** and **Figure 4-5** .

Purple segments indicated in each figure show roadway projects that are ¼ mile or less from current active transportation facilities. **Table 4-9** lists those projects which are located within ¼ mile from existing bike facilities and may help extend the current network. Implementing facility accommodations for non-motorized users in tandem with roadway facility improvements is a key strategy to make efficient and meaningful improvements for people who walk and bike.

Figure 4-4: Active Transportation Opportunities in RGVMAB (West)

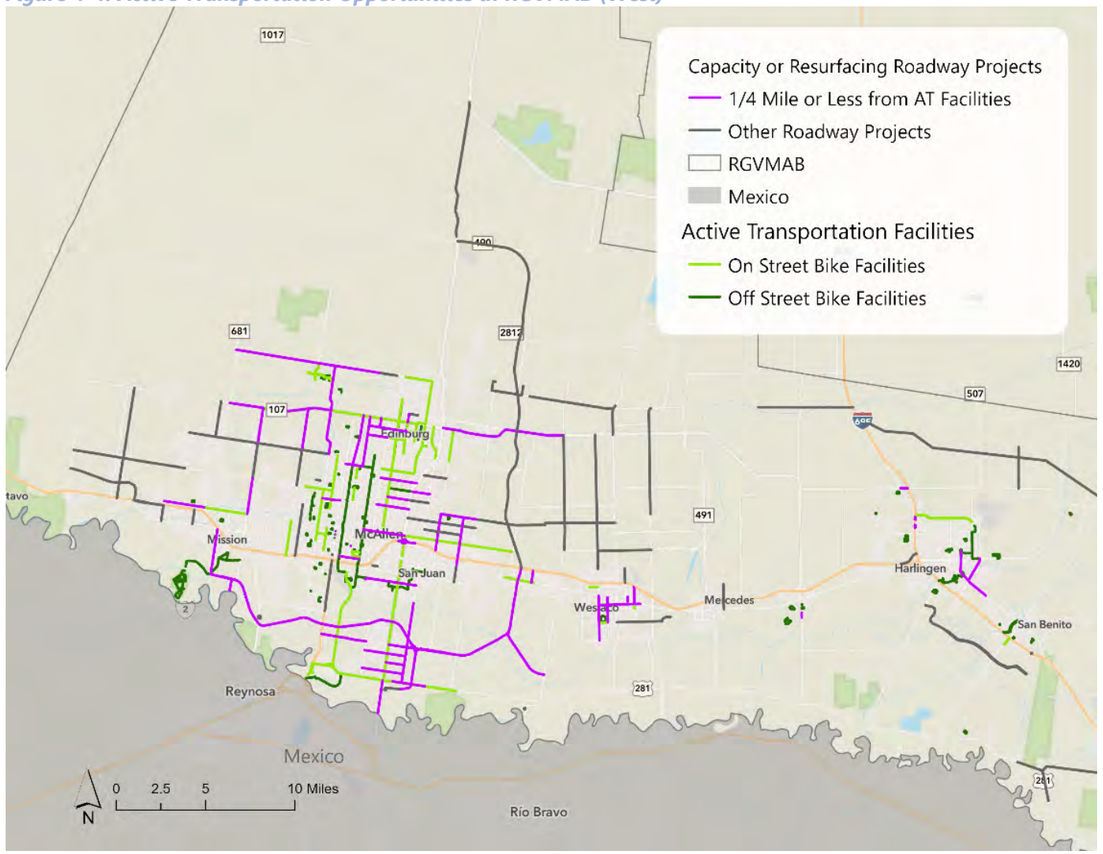


Figure 4-5: Active Transportation Opportunities in RGVMAB (East)

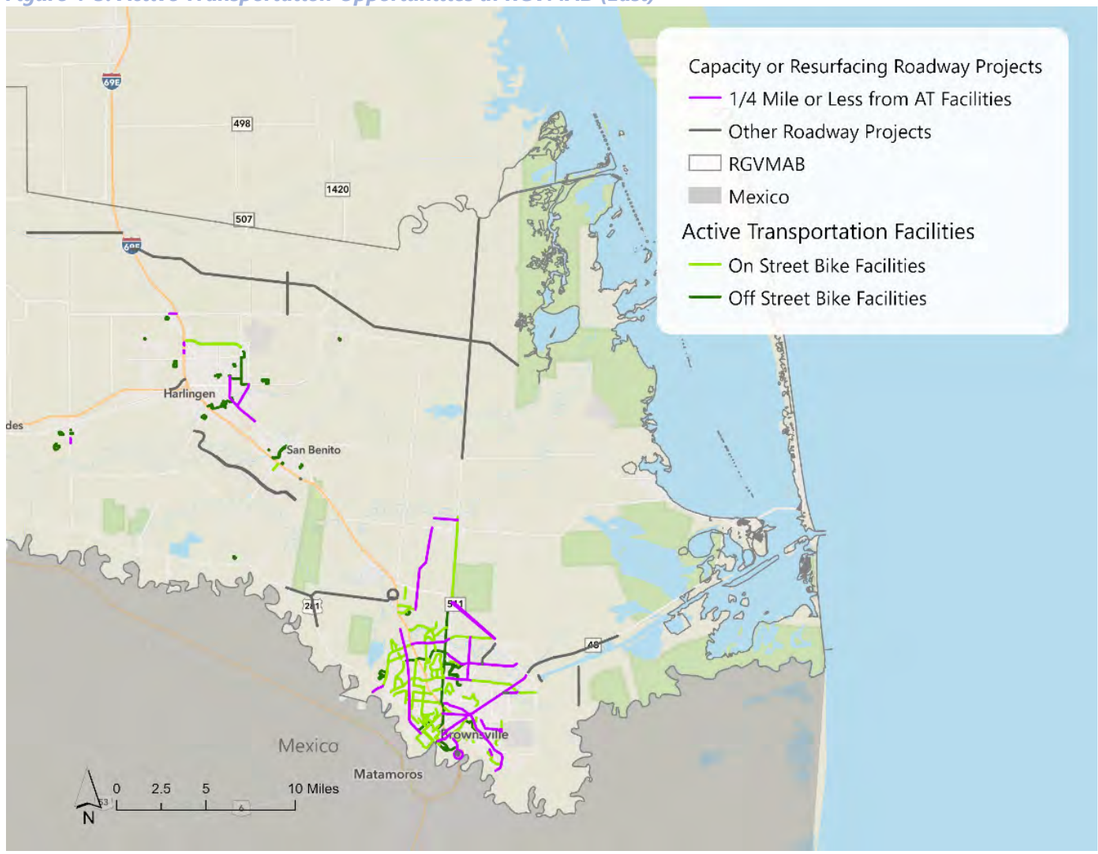


Table 4-9: RGVMPO MTP Roadway Projects Within 1/4 Mile of Active Transportation Facilities

2045 MTP ID	CSJ #	Project Length (Mile)	Project Description	Project Sponsor
3	1140-02-038	1.3	Proposed 6 lanes with raised center median.	TxDOT
4	0039-16-070	0	Construct a grade separation	CCRMA
8	0255-08-107	1.82	Construct Interchange	Pharr
18	0039-17-175	10	Interchange improvements	Pharr
31	0220-05-075	0	Install Raised Center Medians	TxDOT
39	0327-08-102	0	Install Raised Median	TxDOT
40	0327-08-092	0	NB and SB Ramps Reversal	TxDOT
45	0921-02-441	0.5	4 Lane urban section	Edinburg
45	0921-02-385	0	Construction additional northbound lane and related canopies and booths into the Pharr POE inspection area	Pharr
50	1804-01-069	1	Addition of North and South bound center turn lanes	McAllen
51	0621-01-106	0.025	Addition of north bound right turn lane	McAllen
62	2717-01-027	2.12	Construct 6 lanes with raised center median.	TxDOT
64	034-04-032	0	Widen to 4 Lane un-divided Curb and Gutter	TXDOT
64	0872-04-029	0	Widen and Add continuous Left Turn	TxDOT
67	0921-02-400	1	Widen to 5 lanes	Pharr
67	0921-02-395	0	Widen to 4 Lane Divided	Mission / McAllen / Hidalgo
69	0921-02-376	1	Widen to 2 lane with continuous left turn lane	Pharr
70	1429-02-036	2	Proposed 6 Lanes raised median	San Juan / HC 2
71	0921-02-312	2.56	Widen to 4 lane with continuous left turn	HC 2
73	0342-01-074	0	Construct 6 lane divided rural	Edinburg / HC 4
75	0921-02-375	1	Widen to 2 lane with continuous left turn lane	Pharr
76	0528-01-118	1	Construct 6 Lane w Raised Median	Mission/Palmhurst/HC 3
77	0528-01-112	2	Construct 6 lane divided urban	Alton / HC 3
80	0921-06-207	0	Construction of Border Safety Inspection Facility	TxDOT
82	0039-12-254	0	Construct Raised Median	TxDOT
83	0039-12-057	1.6	Proposed 6 lane with a raised median	TxDOT
84	1137-02-038	0	Construct 6 lanes road with Raised Median	TxDOT
86	0921-02-358	1	Widen to 4 Lane	Pharr / San Juan / HC 2 - 4
90	2094-01-062	2.5	Proposed 6 Lane Median	McAllen / HC 3-4
91	0864-01-068	2	Widen to 4 lane	HC 3
92	2094-01-063	2.5	6 Lanes Divided Urban Section	McAllen / HC 3-4
93	1803-01-094	3.5	6 lane with raised median	HC 4
114	0220-05-076	3.7	Proposed 6 lanes with raised median	TxDOT
121	0921-02-361	2.25	Widen to 4 Lane Divided	HC 2 / McAllen
126	0921-06-313	0	Expansion of primary lanes for passenger vehicles.	CCRMA
129	0921-02-363	4.5	Construct 2 Lane w/ Shoulders	Pharr/San Juan/ HC 2
130	1803-01-095	4.75	Proposed 4 lanes curb and gutter	HC 3
131	0528-01-116	5.75	Widen to 6 lane with raised median	HC 3
132	0669-01-060	1.79	Widen to 6 lane with raised median	HC 3
138	0921-06-292	1.3	Proposed 2 lane roadway with continuous left turn lane	CCRMA
144	0921-02-396	1	Widen to 6 Lane	McAllen
145		2.4	Widen roadway and add sidewalks	City of Brownsville
148	0921-02-398	0.6	Widen to 4 Lane Urban with siphon	McAllen
149	0921-02-440	1.13	Widen and Reconstruct Roadway (2 to 4 Lanes) Divided Urban	Edinburg
151		2.13	Widen to 4 Lane	Edinburg
155		2.8	Widen to 6 Lanes	Edinburg / McAllen
157		1	Widen 6 lanes divided with landscaped median	McAllen
158	1802-02-008	1.746	Widen to 6 Lanes	McAllen / Pharr
160		0.7	Widen to 4 Lane	Donna
161		3.9	Widen to 6 lane divided	McAllen / Pharr
163		2.3	Widen to 4 Lane	Weslaco
166	3627-01-002	0	Toll improvement being a 4 lane controlled access facility	HCRMA
171	0921-06-291	4	Construct 4 lane urban roadway	CCRMA
174		1.4	Raised median, sidewalks, pavement overlay.	TxDOT
175		0.8	Install raised median	TxDOT
176		0.9	Widen to 4 Lane	Weslaco
178		0.5	Widen to 4 Lane	Edinburg

2045 MTP ID	CSJ #	Project Length (Mile)	Project Description	Project Sponsor
183		1.4	Widen to 4 Lane	Weslaco
185		0.3	Widen to 4 Lane Divided	Weslaco
188		0.85	Widen to 4 Lane	McAllen
190		2.5	Widen to 4 lane divided	Weslaco
192		0	Expansion from a 4-lane to 6-lane controlled access toll facility (constructing an additional 2-lanes)	HCRMA
192		0	Expansion from a 4-lane to 6-lane controlled access toll facility (constructing an additional 2-lanes)	HCRMA
193	0921-02-434	1.25	Widen to 4 lane curb and gutter rd	Pharr
194	0921-02-435	1.25	Widen to 4 lane curb and gutter rd	Pharr

MTP Project List

As the RGVMPO carries forward the important work of three previously separate metropolitan planning organizations, the RGVMPO 2045 MTP update includes a broad range of active transportation projects from around the RGVMAB. Upon adoption of the 2045 MTP, the RGVMPO TAC will use the scoring criteria found in **Chapter 7** of the 2045 MTP to prioritize projects that will best meet national, state and regional goals and targets in order to improve the transportation system. The scoring criteria was developed through an iterative discussion between the RGVMPO staff and the TAC to both leverage the technical expertise embodied in the TAC and reference performance criteria and regional goals. This resulted in a robust scoring process for vetting and promoting projects geared to contribute towards meeting the targets for the regional transportation system.

Below in **Table 4-10**, all active transportation projects from the RGVMPO 2045 MTP project list have been identified based on funding category and project description.

Table 4-10: 2045 MTP Active Transportation Projects

2045 MTP ID	Highway	From	To	Project Description	Project Phase	CSJ	Project Sponsor	Year of Expenditure Dollars (YOE)	Year/MTP Stage
2	CS	B Metro Eastside Transfer Station	At Jose Colunga Jr & Billy Mitchell	Construct Bus Facility		0921-06-304	City of Brownsville	$812,862	2020
5	CS	On Stuart PL Rd, 0.18 MI N of Primera Rd	FM 2994/Wilson Rd	Construction of 1.2mi of ADA-accessible 5 to 6 foot wide sidewalk	C,E	0921-06-311	City of Primera	$578,412	2020
9	Pharr Comprehensive Pedestrian Safety Wellness Plan	City limits	City limits	Planning study for new construction pedestrian safety improvements	TAP	0921-02-389	Pharr	$254,000	2020
10	Vision Zero Planning Study	City limits	City limits	Vision Zero Planning Study	TAP	0921-02-390	McAllen	$150,000	2020
15	Loop 499	Rio Hondo Road	FM 106 (Harrison Ave)	Construction of 1.48 mi of ADA accessible 6 ft wide sidewalks	C,E	0921-06-312	City of Harlingen	$544,711	2021-2024
17	VA	Cano St.	Freddy Gonzalez	Installation of solar powered lighting along the Cano walking trail	TAP	0921-02-392	Edinburg	$534,400	2021-2024
30	VA	Southmost Nature Trail, from FM 1847	Alameda Dr./Monsees Rd	Construct 10' concrete trail	C	0921-06-289	City of Brownsville	$6,968,000	2021-2024
31	CS	On West Rail Trail, From Palm Blvd @ Former Rail Line	I-69E SB Frontage Road, W. of Old Alice Road	Construct Multimodal Facility	E	0921-06-293	CCRMA	$1,000,000	2021-2024
34	VA	Southmost Nature Trail Phase, from Manzano St	La Posada Dr.	Construct 10' concrete trail	C, E	0921-06-280	City of Brownsville	$375,000	2021-2024
36	VA	2 Mi North of FM 511/FM 1847 int.	Along Canal, .7 mi E, .38 mi N, 0.3 mi W	Construct 10' Hike and Bike Trail between Brownsville and Los Fresnos	C	0921-06-322	City of Brownsville	$999,080	2021-2024
41	SH 107	Louisiana St.	Hooks E. Hodges Rd.	Reconstruct to 4 lanes C&G and add ADA sidewalk	C	0342-03-037	TxDOT	$10,185,301	2021-2024
47	VA	Canton Rd & Jackson Rd (Edinburg)	Bicentennial H/B & Wisconsin (McAllen)	Jackson Rd Hike & Bike Project Phase II	TAP	0921-02-431	McAllen / Edinburg	$2,753,775	2021-2024
48	VA	City of Pharr	City of Alamo	PSJA Tri-City Pedestrian Safety Improvements - New Construction Safety Improvement	TAP	0921-02-391	Alamo / San Juan / Pharr	$2,286,000	2021-2024
49	VA	Donna Sidewalk Project	S. International Blvd.	Rehabilitation of deteriorated sidewalks and construction of new sidewalks	TAP	0921-02-393	Donna	$340,741	2021-2024
55	VA	City Pharr	City Alamo	PSJA Tri-City Ped Improvement Phase II	TAP	0921-02-432	Pharr / San Juan / Alamo	$2,196,840	2021-2024
56	VA	Within Hidalgo County	0	RGV B-Cycle Bikeshare	TAP	0921-02-429	LRGVDC	$544,000	2021-2024
57	VA	Within Hidalgo County	0	Hidalgo County Active Mobility Plan	TAP	0921-02-430	Valley Metro	$330,000	2021-2024
59	VA	Phase 1 terminus, 1 Mile North	0.38 miles west, 0.1 miles north	Construct 10' Hike and Bike Trail between Brownsville and Los Fresnos	C	0921-06-324	City of Brownsville	$999,080	2021-2024
60	Mesquite St	Interior Roads at Olmito Townsite	FM 1732	Construct 5’ concrete sidewalks	C & E	0921-06-326	Cameron County	$418,243	2021-2024
63	VA	On W side of FM 1847, Henderson Road	First Street	Construct sidewalk on west side of FM 1847	C	0921-06-325	City of Los Fresnos	$412,608	2021-2024

2045 MTP ID	Highway	From	To	Project Description	Project Phase	CSJ	Project Sponsor	Year of Expenditure Dollars (YOE)	Year/MTP Stage
79	VA	Interior Roads at Las Palmas Mobile Estates	FM 802	Construct 5' concrete sidewalks	C & E	0921-06-327	Cameron County	$315,925	2021-2024
109	Dana Road	FM 802	FM 3248	Widen roadway and add sidewalks	E	0921-06-330	City of Brownsville	$517,440	2025-2030
115	West Rail Trail	West Blvd on Palm Blvd @ Rail Line	I-69E SB Frontage Road, W. of Old Alice Road	Construct Multimodal Facility	C, E	0921-06-293	CCRMA	$6,900,000	2025-2030
125	Los Fresnos Hike and Bike Trail	Circles the City of Los Fresnos	0	Establish Hike and Bike Trail	C	0921-06-334	City of Los Fresnos	$3,511,436	2025-2030
140	West Blvd	Palm Blvd.	US 281 / Boca Chica Blvd	Construct Trail	C		CCRMA	$1,945,500	2025-2030
145	Dana Road	FM 802	FM 3248	Widen roadway and add sidewalks	C		City of Brownsville	$13,618,176	2025-2030
174	Billy Mitchell Blvd FM 2519	SH 4	Jose Colunga Street	Construct raised median, sidewalks, pavement overlay.	C	0487-01-015	TxDOT/ Brownsville	$1,920,000	2031-2036
186	Kennedy	Ware Road (FM 2220)	Bentsen Rd	2 lane divided with bike lanes			McAllen	$3,562,220	2031-2036
222	Palo Alto Hike and Bike Trail	Palo Alto Battlefield National Historical Park	Eco Tourism at Laguna Vista	Construct Hike and Bike trail			CCRMA	$8,948,000	Unfunded

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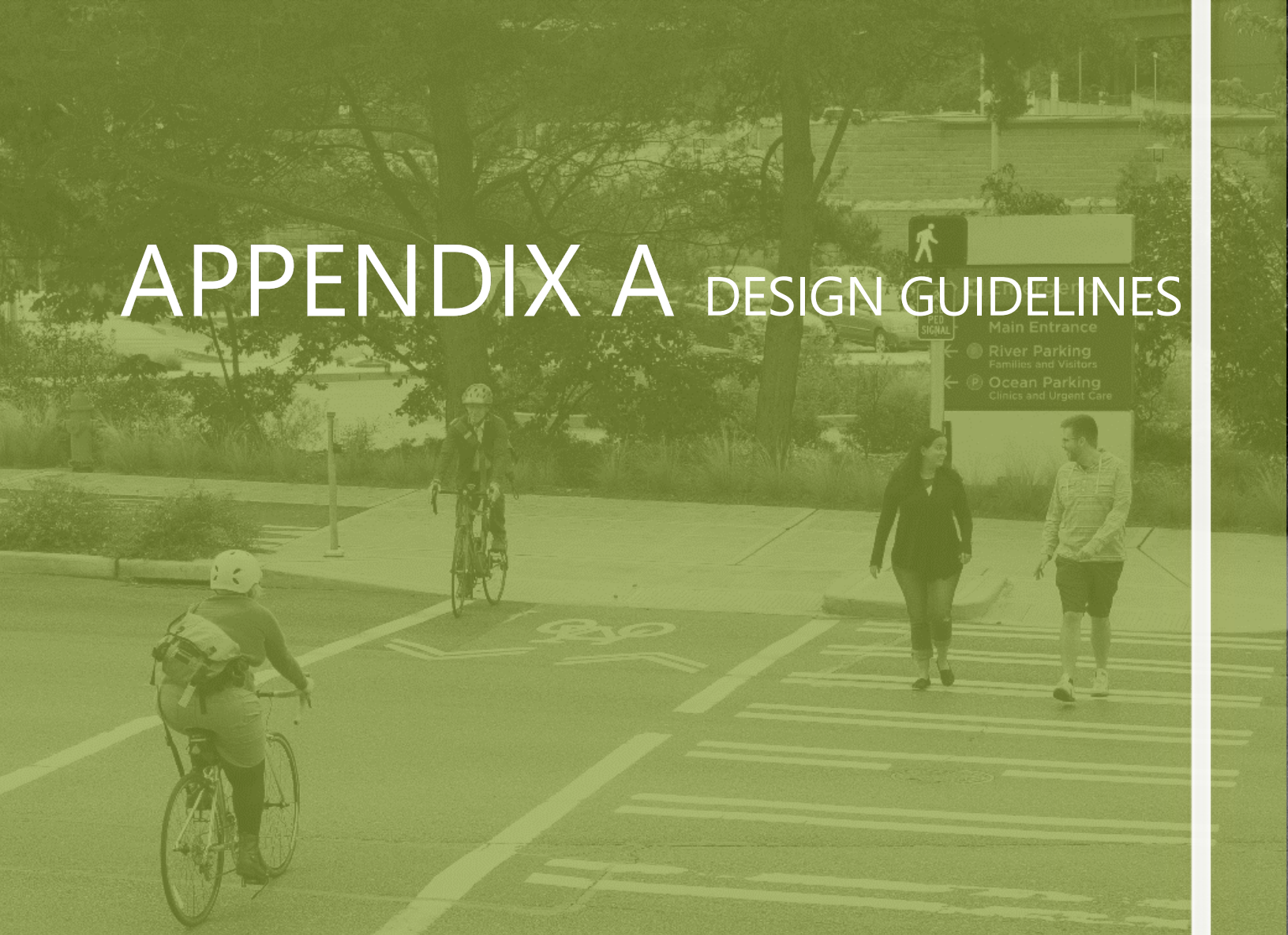
APPENDIX A DESIGN GUIDELINES

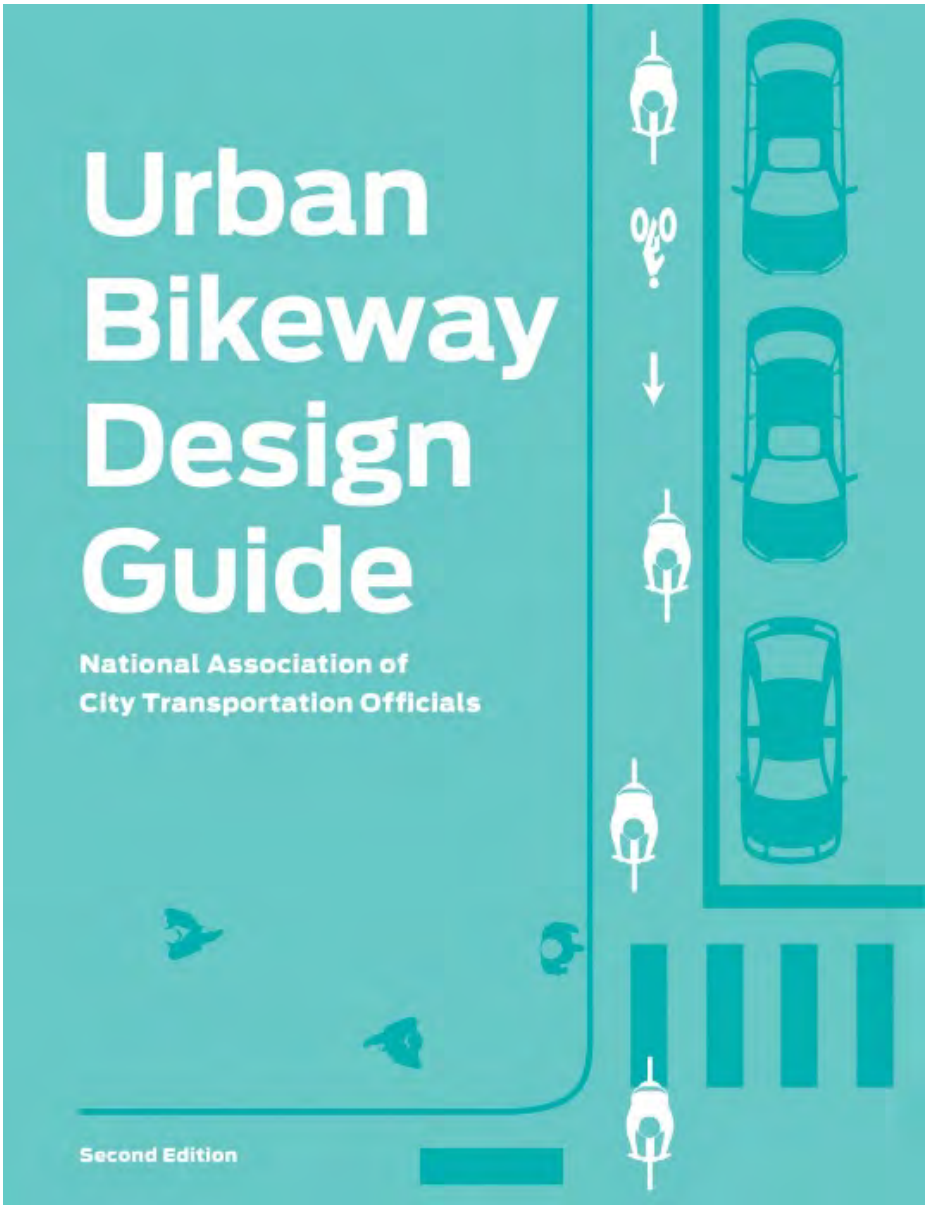


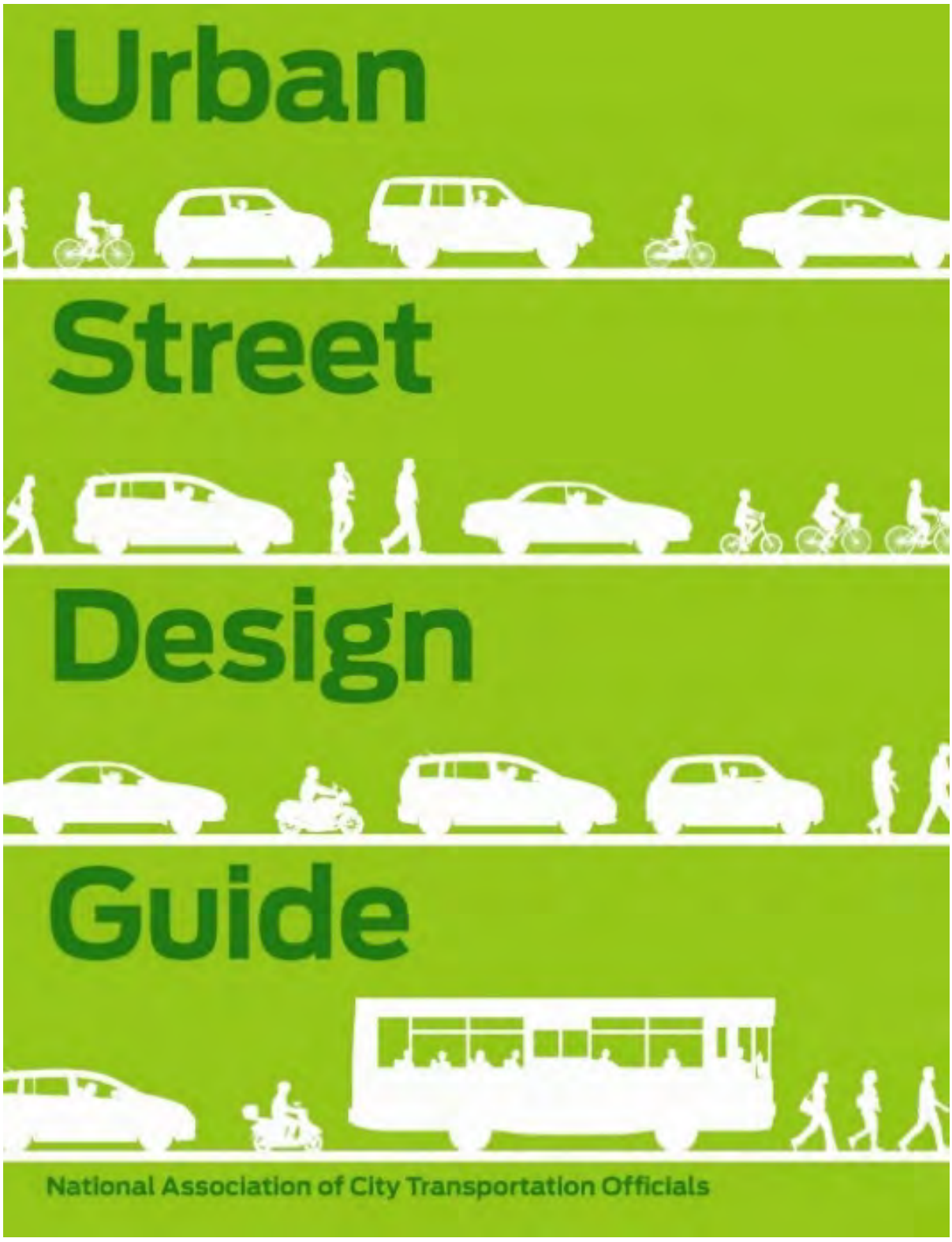
These design guidelines include information about bicycle user types, the various kinds of bicycle and pedestrian facilities, and how these facilities can be applied to example scenarios in the RGVMAB to solve issues in the existing active transportation network.

INTRODUCTION

The following sections describe in detail the various types of active transportation facilities that can be implemented to create a connected and complete bicycle and pedestrian network, as well as the types of users who will utilize these facilities. Detailed information is provided to help entities determine where and when to install these facilities. These design guidelines are then applied to example scenarios in the RGVMAB.

The development of these typologies and design guidelines was supported by information gathered from a number of different sources, including the "Four Types of Cyclists" report from the City of Portland, the National Association of City Transportation Officials (NACTO), the American Association of State Highway and Transportation Officials (AASHTO), and the Federal Highway Administration (FHWA)'s PEDBIKESAFE website.

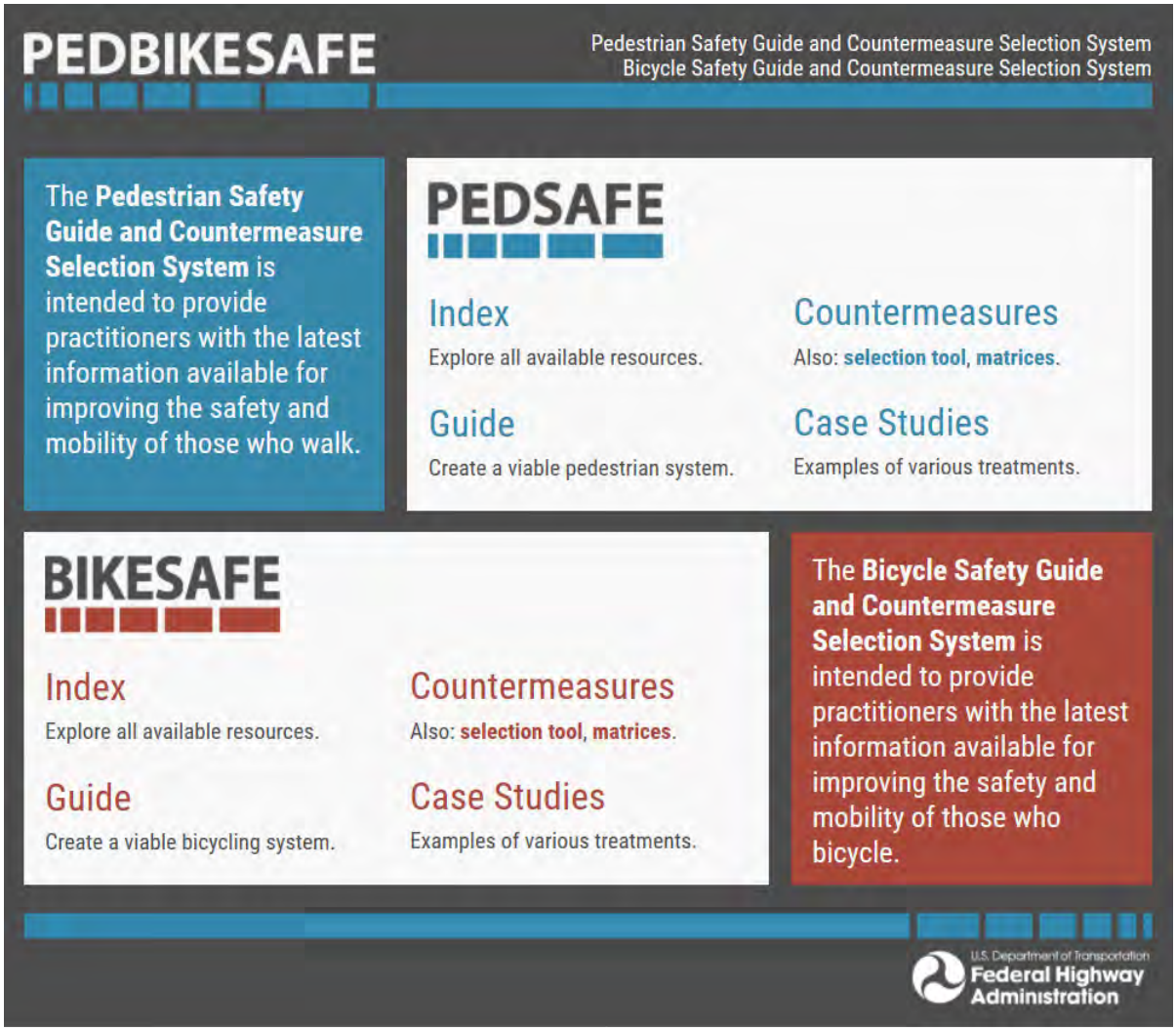



Urban
Street
Design
Guide
National Association of City Transportation Officials

Guide for the Development of Bicycle Facilities

2012 • Fourth Edition

American Association of State Highway and Transportation Officials
AASHTO
The Voice of Transportation


PEDBIKESAFE
Pedestrian Safety Guide and Countermeasure Selection System
Bicycle Safety Guide and Countermeasure Selection System
The Pedestrian Safety Guide and Countermeasure Selection System is intended to provide practitioners with the latest information available for improving the safety and mobility of those who walk.
PEDSAFE
Index
Explore all available resources.
Countermeasures
Also: selection tool, matrices.
Guide
Create a viable pedestrian system.
Case Studies
Examples of various treatments.
BIKESAFE
Index
Explore all available resources.
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Guide
Create a viable bicycling system.
Case Studies
Examples of various treatments.
The Bicycle Safety Guide and Countermeasure Selection System is intended to provide practitioners with the latest information available for improving the safety and mobility of those who bicycle.
U.S. Department of Transportation
Federal Highway Administration

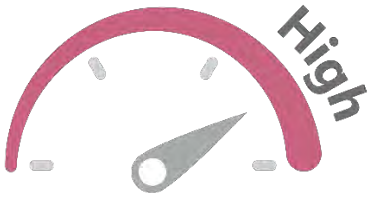
BICYCLE USER TYPES

Strong and Fearless

Description:

"Strong and fearless" bicyclists are highly experienced and ride their bikes on a regular basis. In addition, they have experience with and are comfortable riding on roadway networks, even those without designated bicycle facilities or on which bicycle facilities provide little-to-no separation from automobile traffic. Strong and fearless bicyclists are often deeply engaged in the public participation process when projects impact the cycling environment. Strong and fearless bicyclists are more likely to commute by bicycle in addition to riding for recreational purposes.

Comfort Level



Enthusiastic and Confident

Description:

"Enthusiastic and confident" bicyclists are moderately experienced and ride their bikes on a semi-regular basis. In addition, they have some experience with and are somewhat comfortable riding on roadway networks, as long as there are designated bicycle facilities, particularly on the roadways that have higher speed limits and more vehicular traffic. Enthusiastic and confident bicyclists may sometimes engage in the public participation process when projects impact the cycling environment. Enthusiastic and confident bicyclists may sometimes commute by bicycle when comfortable bicycle facilities are present but are more likely to ride for recreational purposes or for casual travel.

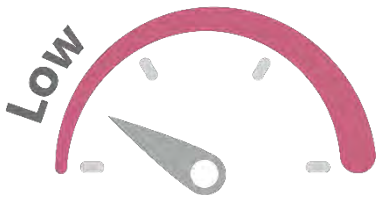
Comfort Level

Interested but Concerned

Description:

"Interested but concerned" bicyclists are somewhat experienced and may ride their bikes from time-to-time. In addition, they have little-to-no experience with and are not comfortable riding on roadway networks unless there are designated and protected bicycle facilities, or unless the roadways have lower speeds and low levels of automobile traffic (for example, in residential areas). Interested but concerned bicyclists are unlikely to engage in the public participation process when projects impact the cycling environment. Interested but concerned bicyclists are highly unlikely to commute by bicycle and are most likely to ride for recreational purposes only, or to make short trips between nearby destinations when they feel that the cycling environment is safe and comfortable.

Comfort Level

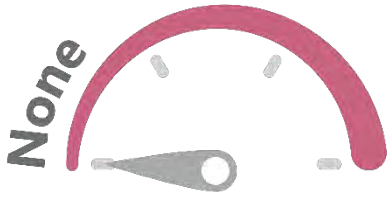


No Way, No How

Description:

"No way, no how" bicyclists generally have little-to-no experience and rarely ride a bike, if ever. They are unlikely to own a bike and might not have reasonable access to bike rentals. People with no interest in bicycling are highly unlikely to ride a bike on a roadway, even if there are designated and protected bicycle facilities, and are even unlikely to ride on facilities that are separated from the roadway network entirely, such as Trails or Shared Use Paths. People with no interest in bicycling are highly unlikely to engage in the public participation process when projects impact the cycling environment and might only engage if it is to express opinions against bicycle facilities or against cycling in general.

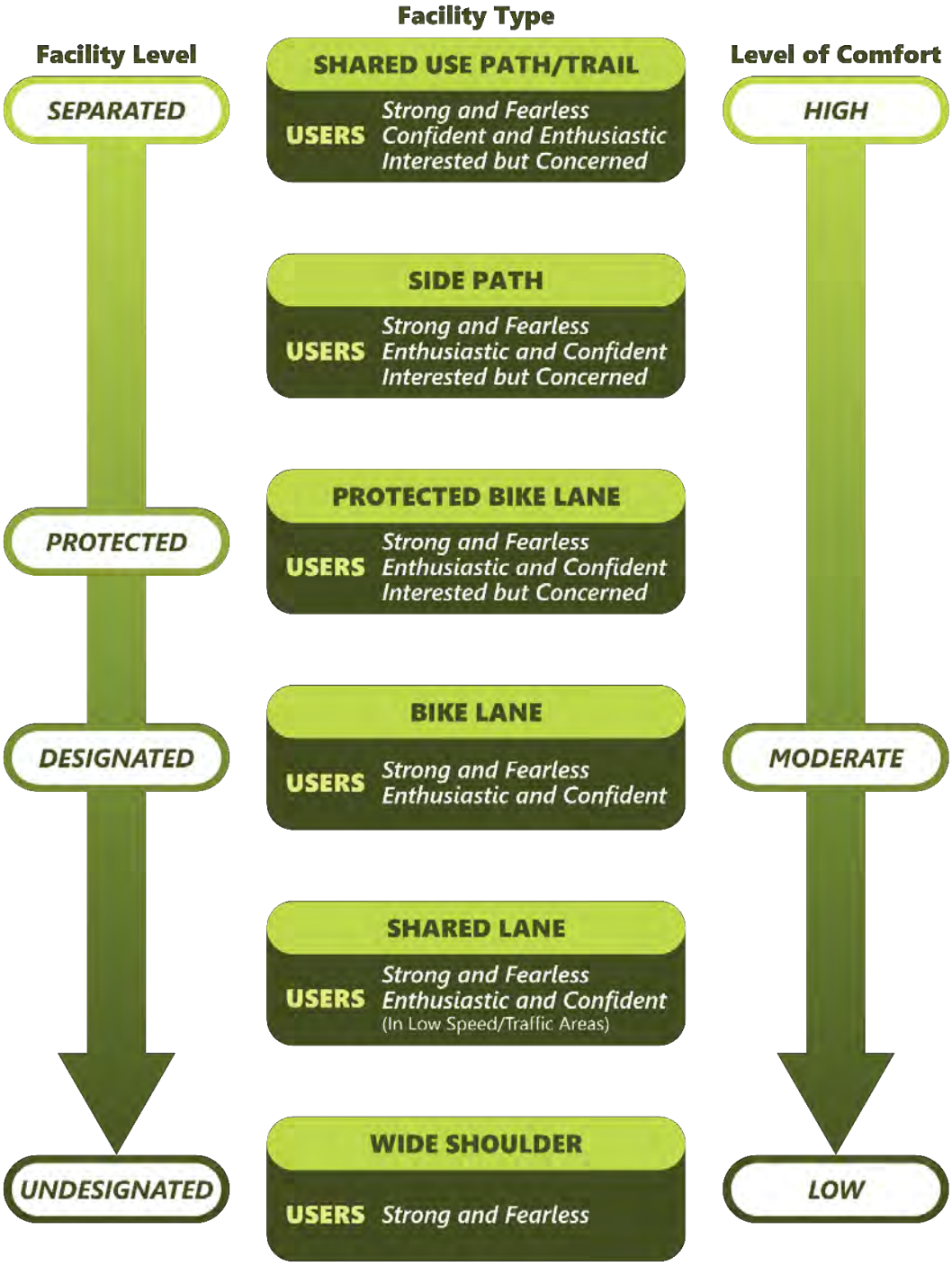
Comfort Level



BICYCLE FACILITY TYPES

Bicycle facilities exist in a hierarchy based on how they relate physically to the existing roadway network and how comfortable they are for potential users. **Figure A-1** illustrates this hierarchy. This section provides detailed information about these facilities, which can be used to help determine when implementation of each is most appropriate.

Figure A-1: Facility Type and Comfort Level



Shared Use Path/Trail

Description:

Shared Use Paths (also known as Multi-Use Paths) and Trails are facilities that support both bicycle and pedestrian use, as well as other forms of active transportation. These facilities are completely separated from roadway networks and may instead follow corridors along waterways and irrigation channels, parks, unused railways, natural areas and greenbelts, and utility rights-of-way.

Design Standards/Specifications:

- The recommended minimum paved width for a two-directional Shared Use Path or Trail is 10 ft with a maximum of 14 ft
- A width of 8 ft may be used for a short distance due to physical constraint/right-of-way limitations
- Pathways with heavy peak hour and/or seasonal volumes should use a centerline stripe or multiple texture materials to clarify the direction of travel and organize pathway traffic

Benefits:

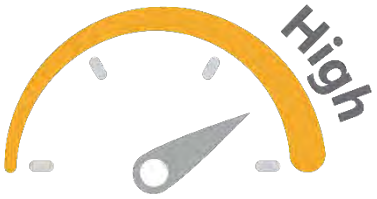
Because these types of facilities are completely separated from roadway networks, they provide all types of users the highest levels of comfort and safety. Shared Use Paths and Trails are generally wide enough to allow for higher volumes of active transportation users, providing enough space for all types of users and people with all levels of ability to use the facility at the same time.

Considerations:

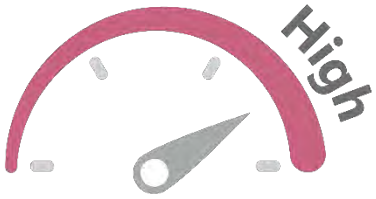
These types of facilities may be appropriate for creating connections between various urban areas on a regional scale, or between urban areas and designated recreational attractions such as state parks and natural areas. These facilities may be paved with fixed materials such as concrete or asphalt, or loose materials such as crushed granite.

Facility Level

Relative Cost



Comfort Level



Ease of Implementation

Side Path

Description:

Side Paths are similar to Shared Use Paths/Trails because they are intended to be used by both bicycles and pedestrians, as well as by users of other types of active transportation. The primary difference is that Side Paths are located adjacent to roadways.

Design Standards/Specifications:

- Side paths are most commonly designed for two-way travel accommodated in a single treadway, though multiple treadways are possible
- The minimum width for a two-directional side path is 10 ft, with the desired width of 12-14 ft

Benefits:

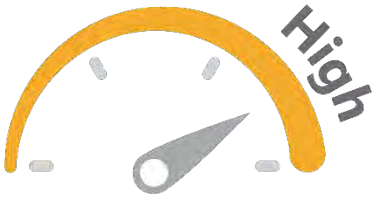
Like Shared Use Paths/Trails, Side Paths offer a higher level of safety to users because they are not situated within the streetscape. This increased safety encourages all types of users and people with all levels of ability to use the facility. Though Side Paths are not situated within the streetscape, their proximity to the roadway network allows users to take advantage of its connectivity.

Considerations:

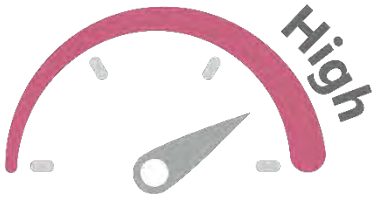
Side Paths may connect to Shared Use Paths/Trails that diverge from the roadway. They are suitable for streets that have heavy traffic, high speed limits, and few driveway intersections, and are appropriate where bicycle and pedestrian interactions won't create continual conflict. Additionally, Side Paths provide two-way bicycle flow on one side of the adjacent roadway.

Facility Level

Relative Cost



Comfort Level



Ease of Implementation

Protected Bike Lane

Description:

Protected Bike Lanes, also known as Cycle Tracks, are facilities that are similar to Side Paths because they run along the sides of roadways but are different from Side Paths in that Protected Bike Lanes are exclusively designated for bicycles. Protected Bike Lanes can be located at the street level, the sidewalk level, or an intermediate level, but are always protected from automobile traffic and distinct from sidewalks. Protected Bike Lanes can be either one-way or bi-directional.

Design Standards/Specifications:

- At the street level, Protected Bike Lanes are separated from automobile lanes by physical barriers such as medians or bollards, and the width of the barrier space is recommended to be a minimum of 3 ft
- At the sidewalk level, Protected Bike Lanes are separated from automobile lanes by physical barriers and are distinguished from the sidewalk using colored or textured pavement
- Bike lane markings should be painted at the start of the track and at intervals along the facility
- Depending on context, painted markings or physical barriers can separate the Protected Bike Lane from adjacent facilities
- For one-way facilities, the recommended minimum width is 5 ft to 7 ft
- For bi-directional facilities, the recommended minimum width is 12 ft, with allowances for 8 ft in constrained conditions

Benefits:

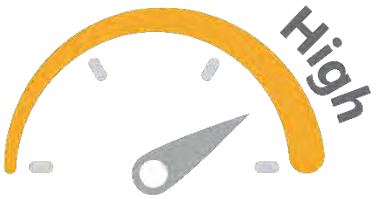
Protected Bike Lanes improve the actual and user-perceived safety for bicyclists by protecting their cycling space from motor vehicles. This can also encourage a wider variety of users to ride on this type of facility. In addition, the separation between the Protected Bike Lane and the street space helps prevent cars from parking in the cycling space.

Considerations:

Protected Bike Lanes are suitable for streets with parking lanes and high parking demand, high traffic volumes and speeds, and high bicycle volumes. The fact that Protected Bike Lanes can be either one-way or bi-directional means that the direction of bicycle flow can be controlled regardless of the direction of flow for the adjacent automobile traffic.

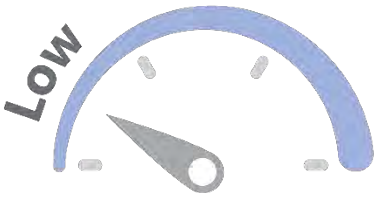
Facility Level

Relative Cost



Comfort Level

Ease of Implementation



Bike Lane

Description:

Bike Lanes are on-street bicycle facilities that are designated using pavement markings, striping, paint, and signage. Bike Lanes are usually placed on the outermost edges of a street and usually have one-way flow in the direction of the adjacent automobile traffic but can also run contraflow. Bike Lanes can also be buffered from automobile traffic by either a buffer space or by physical barriers such as bollards.

Design Standards/Specifications:

BIKE LANE

- A minimum width of 6 ft is recommended when the Bike Lane is situated against a curb or adjacent to a parking lane
- Bike Lane markings should be used to designate the cycling space
- A 6-8 inch solid white line should be used to mark the boundary of the Bike Lane adjacent to the automobile lane, and a 4 inch solid white line should be used to mark the boundary
- Gutter seams, drainage inlets, and utility covers should be flush with the ground to prevent conflicts with bike tires

BUFFERED BIKE LANE

- The typical width for a buffered Bike Lane is 8 ft - 5 ft for the bike lane plus a 3 ft buffer
- The buffer may be less than 3 ft if vertical delineators such as bollards or armadillos (plastic bumps placed at regular intervals) are used
- Bike lane markings should be used to designate the cycling space
- The buffer should be marked with two solid white lines, with diagonal hatching or chevron marks on the interior if the buffer is 3 ft or wider
- The buffer boundary lines should be solid if crossing is discouraged and dashed if crossing is permitted

Benefits:

BIKE LANES

Bike Lanes create a designated space for bicyclists to ride that is separate from the space where automobiles travel, which allows for an increased sense of safety for the Bike Lane users. These facilities also create some level of predictability for bicycle and automobile interactions and movements.

BUFFERED BIKE LANES

Buffered Bike Lanes can further increase the perception of safety for its users by adding more space between bicyclists and automobile traffic and at times adding a physical barrier of bollards, which can encourage a wider variety of users to ride on this type of facility.

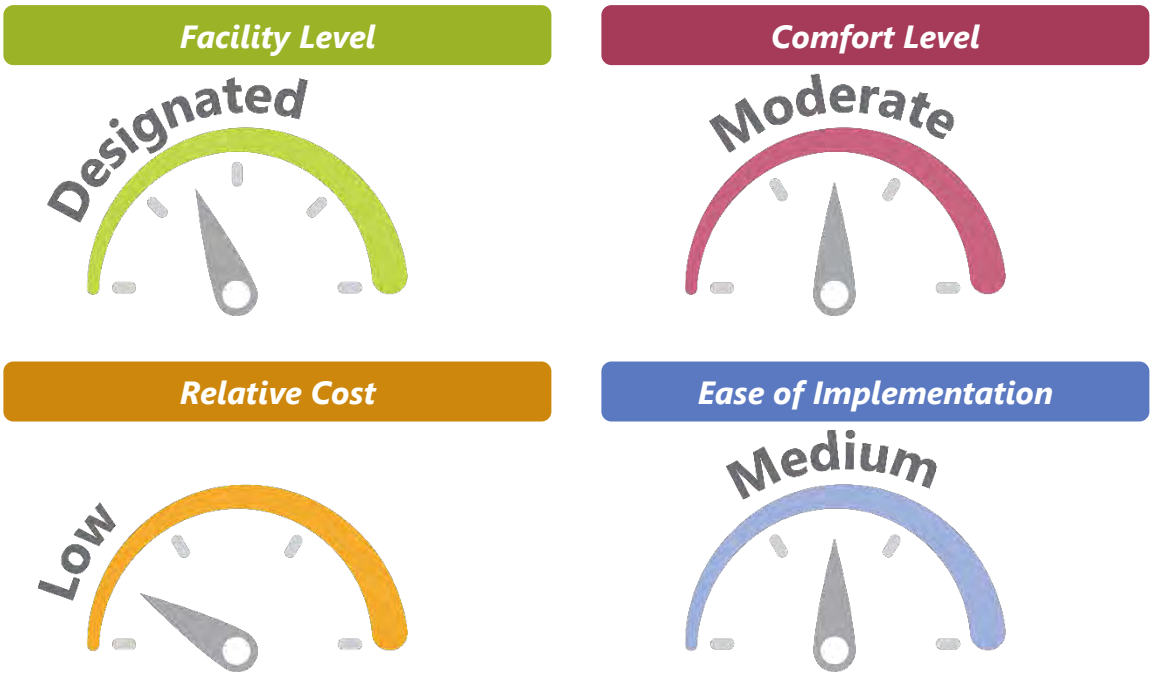
Considerations:

BIKE LANES

Bike Lanes have the most positive impact on streets with average daily automobile traffic levels higher than 3,000 vehicles, streets with posted speed limits between 25-35 miles per hour, and streets with high transit vehicle volumes. Although Bike Lanes are one of the easier bicycle facilities to implement, they are on the lower level of comfort for potential users. In addition, because unbuffered Bike Lanes are on-street facilities and have no physical barrier between them and automobile lanes, it is easy for gravel and other forms of debris to build up in the cycling space, so it is crucial to maintain these facilities as clean spaces for the sake of users' safety.

BUFFERED BIKE LANES

The use of various forms of separation can determine the flow of cyclists in and out of a buffered Bike Lane. For example, the use of bollards or armadillo bumps would allow for cyclists to enter or exit the facility to make turns more freely than the use of a median would. Buffered Bike Lanes generally have one-way flow, and there is usually one lane on each side of the street with the directional flow of each lane matching that of the adjacent automobile lanes. This type of facility is appropriate anywhere a standard Bike Lane is being considered, places where existing paving allows for more substantive bicycle facilities, and on streets with high speeds and traffic/truck volumes. Where street parking turnover is high, consider placing the buffer between the parking lane and the Bike Lane.



Shared Lane

Description:

Shared Lanes are travel facilities that are designated for both bicycle and automobile travel within the same shared space on a roadway. This facility type is often used when there is a need or demand for bicycle travel on a roadway facility, but the facility width/right-of-way is not sufficient for designated bicycle lanes.

Design Standards/Specifications:

- The Shared Lane should be designated by a specific pavement marking, also called a "sharrow," which includes a bicycle situated below two upward-facing chevron markings
- Shared Lane markings should not be used on roadway shoulders, in designated bike lanes, or to designate bicycle detection at signalized intersections
- Lateral placement of the marking within the travel lane is critical to encourage automobiles to use safe passing behavior and for bicyclists to avoid the "door zone" when there is on-street parking adjacent to the Shared Lane

Benefits:

One of the main benefits of Shared Lanes is that they provide intentional, designated space for bicyclists at a relatively low cost to the entity installing the facility. In addition, the sharrow marking alerts automobiles to the potential presence of bicyclists and communicates the fact that bicyclists have a right to occupy that facility.

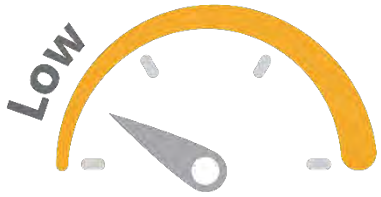
Considerations:

Shared Lanes are suitable on streets with low traffic volumes/speeds, but not ideal where speeds and volumes are higher. These facilities typically incorporate sharrow pavement markings in addition to bikeway signage to provide additional clarity for users. It is important to note that Shared Lanes indicate

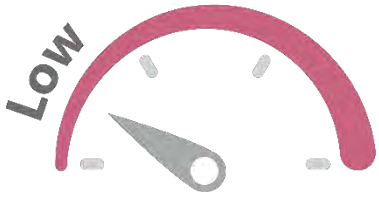
where bicyclists may likely be found, but do not necessarily confine bicyclists to a rigidly defined path. Because these types of facilities mix bicyclists with automobile traffic, Shared Lanes are less likely to be used by inexperienced or unconfident bicyclists.

Facility Level

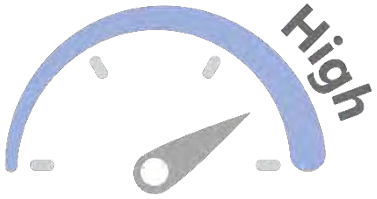
Relative Cost



Comfort Level



Ease of Implementation



Wide Shoulder

Description:

AASHTO defines shoulders as "the portion of the roadway contiguous with the travel way for accommodation of stopped vehicles, for emergency use." A Wide Shoulder is a facility that can accommodate bicyclists if it is adequate in width and encounters few driveways or other crossings.

Design Standards/Specifications:

- The minimum of 4 ft wide to accommodate bicycle travel
- An additional buffer of 1.5-4 ft wide is optional
- On roadways with guardrails, curbs, or other roadside barriers, the recommended minimum shoulder width is 5 ft

Benefits:

Wide Shoulder facilities are suitable for rural areas, and implementation needs are often minimal as these facilities already exist along many highways.

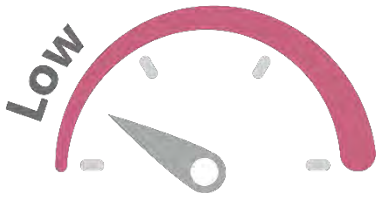
Considerations:

Wide Shoulders are appropriate on streets with high speeds and relatively low bike demand/use, as this type of bicycle facility is used principally by experienced bicyclists. The implementation of wide shoulders should correspond with resurfacing efforts to ensure the longevity of the initial investment. In addition, bicycle facilities on Wide Shoulders should remain clear of debris to maintain a safe cycling space. For additional safety, rumble strips can be installed to alert automobile drivers if they begin veering off the road.

Facility Level

Relative Cost

Comfort Level



Ease of Implementation

PEDESTRIAN FACILITY TYPES

Sidewalk

Description:

Sidewalks are the standard pedestrian facilities that establish the overarching pedestrian network. Sidewalks are intended for pedestrian use only and are meant to serve people of all ages and abilities. These facilities are frequently placed along roadways but can also be installed in other locations where it is beneficial to designate the pedestrian environment.

Design Standards/Specifications:

- The minimum desired width for a sidewalk is 5 ft, excluding any attached curb
- The desired width outside a core urban area is 6-8 ft
- The desired width in a core urban area is 10 ft or wide enough to provide desired volumes
- Ideally, sidewalks should be separated from the roadway by an unpaved buffer
- If the facility must be less than 5 ft wide, passing spaces of at least 5 ft wide should be provided at reasonable intervals
- If the facility is flush against the curb, wider sidewalk widths of 8-10 ft are desired

Benefits:

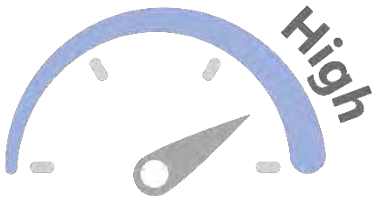
Sidewalks provide a designated space for pedestrians and help to limit their interactions with motor vehicles and other forms of transportation, which increases the real and perceived safety of users. In addition, a well-developed sidewalk network provides users with connectivity within and between urban areas and neighborhoods. Additionally, Sidewalks provide access to transit and accessible travel routes for persons who are mobility impaired.

Considerations:

The proximity of the sidewalk to an adjacent roadway should be determined based on the size, level of traffic, and speeds of the roadway. For example, larger roadways with higher levels of traffic and faster speeds can present potential dangers for pedestrians, so it may be appropriate for adjacent sidewalks to have a buffer space between them and the roadway to further separate pedestrians from automobile traffic. In addition, the pedestrian environment of these facilities can be improved by including, if possible, trees or other vegetation in the buffer space, lighting to provide additional visibility, safety, and comfort at night, and benches to provide users with opportunities to rest.

Relative Cost

Ease of Implementation



Crosswalk

Description:

Crosswalks are pedestrian spaces that designate the appropriate locations for pedestrians to cross roadways and are typically located at the intersections of two or more roadways.

Design Standards/Specifications:

- Crosswalk width should reflect the width of the sidewalks that approach the intersection, but should be no less than 6 ft wide
- The connecting of sidewalks to crosswalks at intersections frequently creates changes in grade, which must be addressed using ADA-compliant ramps or other ADA-compliant features
- Crosswalks are delineated using either pavement markings or paving materials that differ from the pavement of the roadway to create visual contrast so that automobile drivers and pedestrians alike are made aware of these crossing locations
- Crosswalks should include electronic signage that designate when pedestrians are permitted to cross (symbolized by a white pedestrian symbol), when they are not permitted to cross (symbolized by a red hand symbol), and how much time is remaining before the signal returns to a red hand symbol (symbolized by a flashing red hand symbol and a countdown).

Benefits:

Crosswalks provide a designated space for pedestrians to cross a roadway and draw the attention of automobile drivers to the potential presence of pedestrians. In addition, Crosswalks provide crucial linkages within the pedestrian network to create access and connectivity for users.

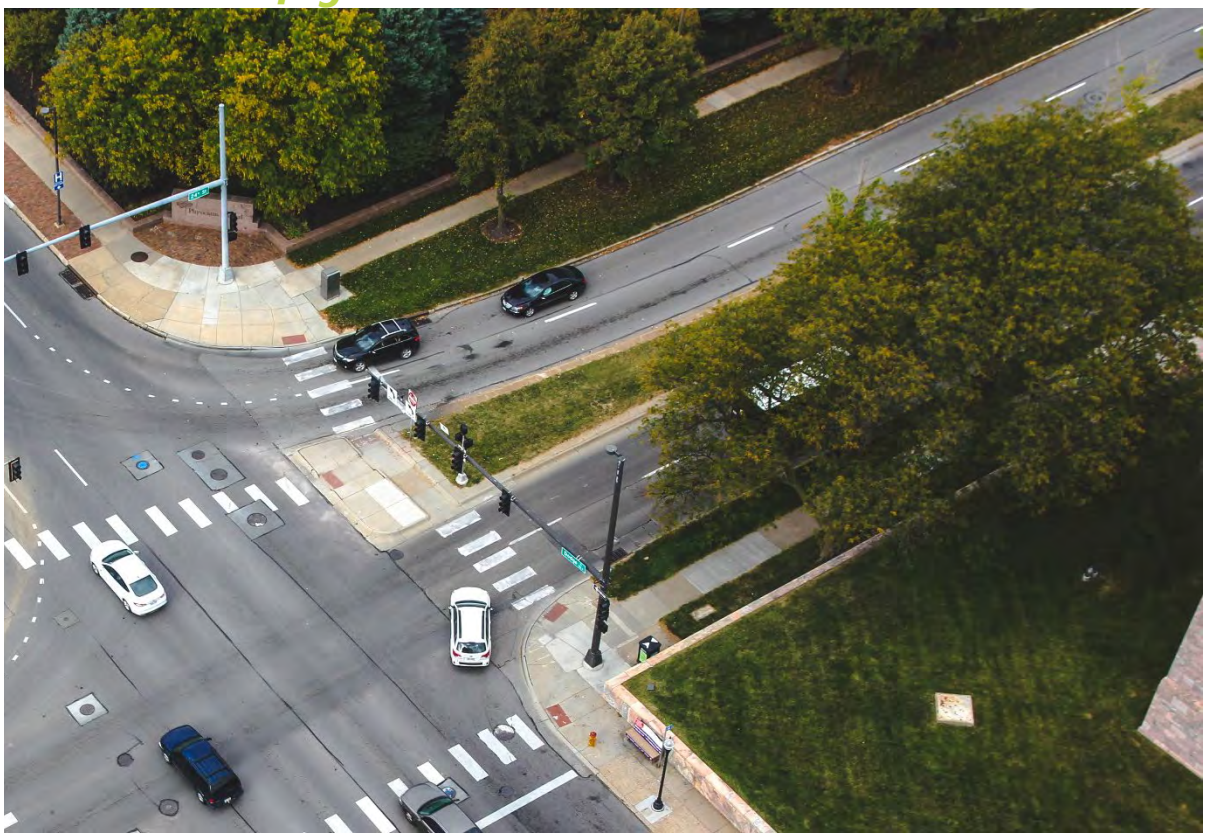
Considerations:

The frequency of crosswalks should increase in areas where pedestrian volumes are higher. In addition, crosswalks should be highly visible to both pedestrians and automobile drivers, and pedestrians should experience a short wait time to cross and be given adequate time to traverse the crosswalk. The crossing distance should be minimized as much as possible and, where necessary, should be broken up using pedestrian refuge islands to give pedestrians safe places to wait as they cross the road in segments.

Relative Cost

Ease of Implementation

Pedestrian Refuge Island



Description:

Pedestrian Refuge Islands utilize median space in the midst of a crosswalk to create a safe place for pedestrians when crossing larger/wider roadways. Pedestrians can utilize this type of facility if they need space and time to wait when crossing different segments of the roadway.

Design Standards/Specifications:

- The designated pedestrian space on the island should be the same width as the connecting crosswalk at a minimum, but can also be wider
- The refuge space should be protected by some type of barrier element
- The use of curbing and planted medians clearly differentiates the pedestrian refuge space from the motor vehicle travel area
- In instances where both pedestrians and bicyclists will share the crossing and median area, additional space or parallel facilities may be appropriate

Benefits:

Pedestrian Refuge Islands increase pedestrian safety and comfort when crossing wide or busy roadways and provide a place for people to wait or rest before completing the process of crossing.

Considerations:

Pedestrian Refuge Islands can be utilized on wide, busy roadways where there is available median space, and are recommended in areas where pedestrian activity is high.

Relative Cost

Ease of Implementation

Mid-Block Crosswalk

Description:

Mid-Block Crosswalks provide designated pedestrian crossing space in locations between intersections along a given block.

Design Standards/Specifications:

- Automobile stop lines at the crossings are recommended to be set back 20-50 ft
- Crossings are recommended to be striped regardless of paving pattern or material to increase visibility for automobile drivers
- Pedestrian refuge islands compliment Mid-Block Crosswalks by increasing pedestrian safety
- Methods like restricting parking near the crossing or adding curb extensions help keep the area around the crossing clear and visible
- It is recommended that Mid-Block Crosswalks are accompanied by pedestrian crossing signage that includes the symbol of a pedestrian and an arrow pointing toward the crossing space
- The safety of these facilities is further increased when accompanied by flashing beacons that can either flash consistently or flash only when activated by a waiting pedestrian

Benefits:

These facilities increase the number of crossing options and the convenience of crossing a roadway. In addition, Mid-Block Crosswalks increase safety by offering a designated crossing space in locations

where pedestrians might have opted to cross even if the facility wasn't in place in order to avoid the inconvenience of traveling to an out-of-direction intersection Crosswalk.

Considerations:

Mid-Block Crosswalks are suitable in areas with long block lengths where forcing pedestrians to cross at intersections would often require them to travel significantly out of their way to cross the road safely. They are also suitable when paired with mid-block bus stops and in locations with high pedestrian activity to and from destinations located mid-block. Places such as schools, parks, museums, waterfronts, and other major social, cultural, and economic places of interest and employment tend to generate the levels of pedestrian activity that may warrant Mid-Block Crosswalks. Because mid-block placements may not be perceived as natural crossing locations and because Mid-Block Crosswalks are less common than Crosswalks at intersections, the use of signage and even signals can help alert drivers to the presence of pedestrians crossing the road.

Relative Cost

Ease of Implementation

Pedestrian Hybrid Beacon

Description:

Pedestrian Hybrid Beacons (PHBs) are installed at designated crossing locations and are used to warn and control automobile traffic at the crossing when the beacons have been activated by a pedestrian. The beacons remain off and traffic can flow freely through the crossing space until a pedestrian activates the beacons by pressing a button.

Design Standards/Specifications:

- The vehicle signals on PHBs should include multiple stages of lighting/flashing that warn oncoming traffic that a pedestrian is about to cross, stop the traffic so that the pedestrian can traverse the crossing, allow automobiles to gradually proceed through the crossing after stopping, and finally proceed as normal after the beacons shut off
- These facilities are recommended to include signage that explain the stages of the vehicle signal to approaching automobiles
- The crossing space are recommended to be designated with striped pavement markings
- Similar to those included at intersection Crosswalks, the PHB facility is recommended to include electronic pedestrian signals that indicate to pedestrians when they are permitted to begin crossing, how much crossing time they have remaining, and when not to cross, as well as signage that explains these signals

Benefits:

PHBs can decrease pedestrian-automobile crashes by creating a designated and controlled crossing space in locations where it would otherwise be very dangerous for pedestrians to cross the roadway. In addition, the nature of these beacons draws the attention of automobile drivers to the presence of a waiting/crossing pedestrian and both warn and control approaching automobiles so that the pedestrian(s) can cross safely. PHBs also give pedestrians priority over vehicles by allowing users to cross very quickly after pressing the button.

Considerations:

Decisions to install PHBs should be made carefully because they give pedestrians nearly immediate priority over oncoming traffic and their cycles are unrelated to nearby traffic signal cycles. These types of facilities are most appropriate in locations where there may be demand for designated pedestrian crossings but where the roadway facility could be extremely dangerous to cross without the ability to both warn and stop traffic for the pedestrians. Such roadway facilities include those with at least three or four lanes, high traffic volumes, and higher speed limits (40 miles per hour or higher).

Relative Cost	*Ease of Implementation*
	

Rectangular Rapid Flashing Beacon (RRFB)

Description:

Rectangular Rapid Flashing Beacons (RRFBs) can be installed at pedestrian crossings as an additional method of drawing the attention of automobile drivers to the presence of pedestrians. These facilities include pedestrian warning signage with rectangular beacons that flash at a rapid rate and with a brighter light intensity than standard flashing beacons when activated by a pedestrian.

Design Standards/Specifications:

- RRFBs should be rectangular and flash at a bright intensity at a rapid rate
- The beacons should be affixed directly to the post that holds the pedestrian crossing sign
- The crossing space should be designated with striped pavement markings
- RRFBs should be placed on both sides of the crossing and should be placed below the pedestrian crossing sign and above an arrow sign that points to the crossing

Benefits:

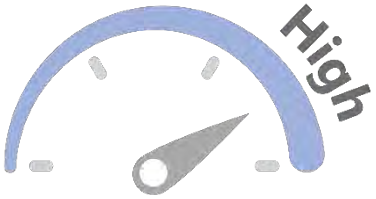
RRFBs provide additional safety to pedestrians crossing a roadway because they draw the attention of approaching automobile drivers to the presence of pedestrians.

Considerations:

RRFBs are suited to pedestrian crossings on multi-lane roadways where speed limits are under 40 miles per hour. These beacons can be activated either by a pedestrian pushing a button prior to crossing the roadway, or by automated video/infrared detection. The beacons should remain unlit until activated. RRFBs can be installed with solar power to simplify installation.

Relative Cost

Ease of Implementation



Bulbout

Description:

Bulbouts are facilities that extend the pedestrian realm further out into the streetscape as a way to shorten the distance that pedestrians must traverse when crossing a roadway.

Design Standards/Specifications:

- The width of a bulbout in any given direction should be no wider than the adjacent on-street parking, bus bay, or turn bay, so that the bulbout does not extend into automobile or bicycle lanes and impede traffic traveling through an intersection
- Bulbouts that are grade-separated from the connecting crosswalks should include ADA-compliant ramps

Benefits:

Bulbouts increase pedestrian safety by shortening the distance that pedestrians must travel to get across the roadway, increasing pedestrian visibility, and slowing turning vehicles.

Considerations:

Bulbouts are only viable in locations where there is on-street parking, where there are bus bays for buses to pull out when making stops, or where there are automobile left- or right-turn bays. This is due to the fact that on-street parking, bus bays, and turn bays do not extend through pedestrian crossings, meaning that traffic traveling through the crossing will not be impeded by the existence of a bulbout. Bulbouts should be implemented thoughtfully, as they may reduce flexibility to make changes to the streetscape in the future. It should be noted that Bulbouts may make it more difficult for larger vehicles, such as school buses and freight trucks, to make turns at intersections.

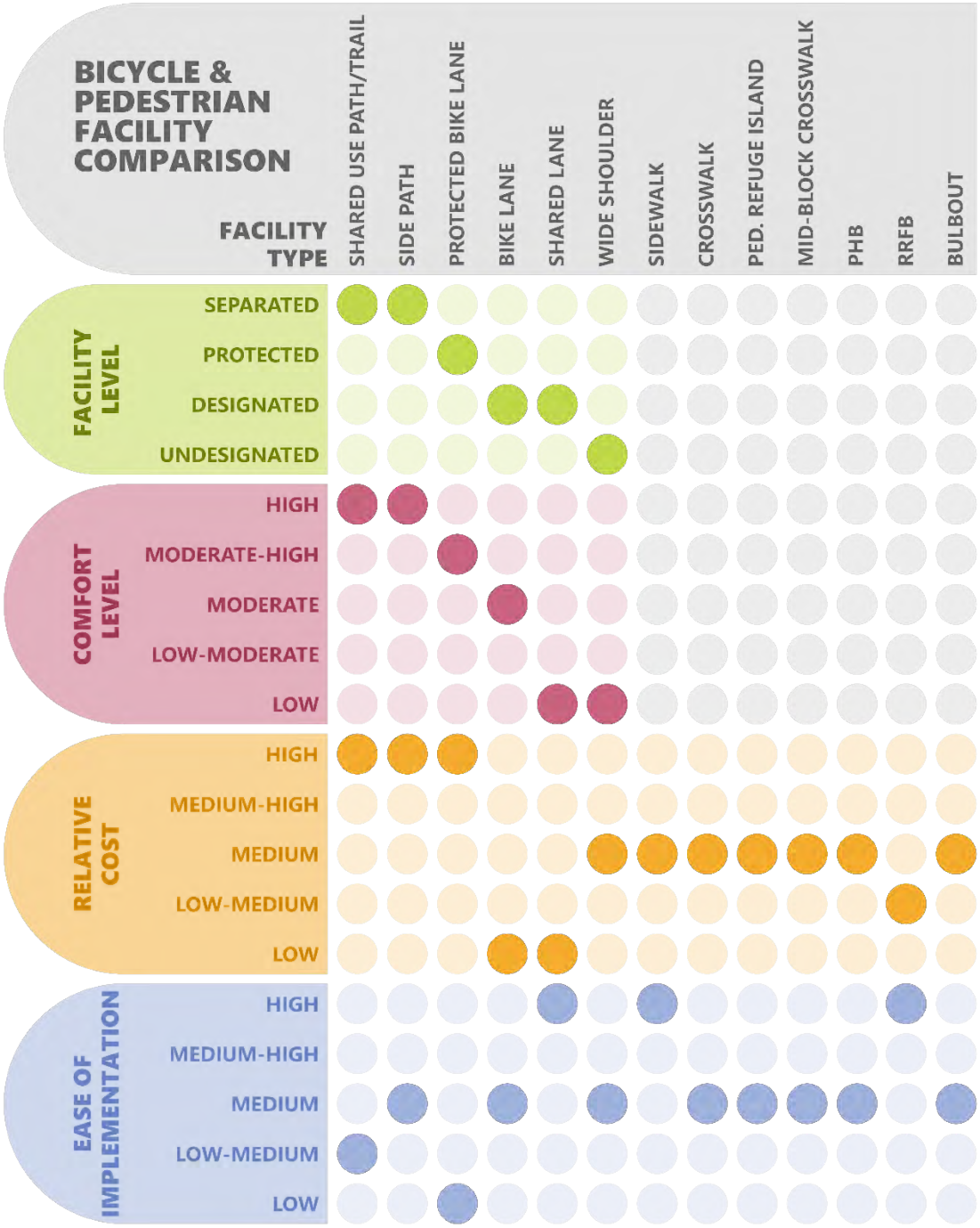
Relative Cost

Ease of Implementation

FACILITY COMPARISON

Figure A-2 illustrates the facility level, comfort level, relative cost, and ease of implementation for each bicycle facility and the relative cost and ease of implementation for each pedestrian facility. This graphic provides a means to compare these characteristics across the various active transportation facility options to help decision makers better determine when each facility meets identified needs.

Figure A-2: Bicycle and Pedestrian Facility Comparison



CONTEXT SENSITIVE IMPLEMENTATION

The following sections describe examples of bicycle and pedestrian issues that exist in the RGVMAB's active transportation networks and provide potential solutions to mitigate or eliminate these issues and increase opportunities and safety for active transportation users. These examples can be utilized by RGVMPO to assess other points in the region's networks that could benefit from the implementation of facilities discussed in these design guidelines.

Urban Bicycle Environment

Example Issue

Figure A-3: Bicycle Issue in an Urban Environment

Figure A-3 shows a segment of W. Rose St. (running southeast to northwest) from Sam Houston Blvd. to its end at Heavin Park in San Benito. This segment of Rose St. has the potential to connect the bicycle lanes on Sam Houston Blvd. to the Heavin Resaca trail, but the street currently lacks any form of designated bicycle facility. Due to Rose St. being in a residential area, people may already feel comfortable riding their bicycles on it. However, people may be less likely to use Rose St. as a connector between the two other facilities because they may not realize that it offers the benefit of that connection.

Example Solution

This segment of W. Rose St. could benefit from an official shared lane designation. The residential context and low existing speed limit on this street offer an environment suitable for this type of bicycle facility. In addition, shared lanes would be relatively easy implement in this location, requiring only Sharrow pavement markings and signage designating the shared nature of the street. Implementation of shared lanes along Rose St. would improve bicycle safety and create additional benefits in the area

by creating a designated connection between the Heavin Resaca Trail/Heavin Park on the northeast side of the street and the designated bicycle lanes on Sam Houston Blvd., which is one of the primary roadways that passes through urban San Benito.

Rural Bicycle Environment

Example Issue

Figure A-4: Bicycle Issue in a Rural Environment

Figure A-4 shows New Carmen Ave. northwest of Brownsville where it meets the entrance to Resaca de la Palma State Park. Currently, there are no designated bicycle facilities along New Carmen Ave., and because this roadway provides the only public entrance to the state park, there are currently no active transportation connections between Resaca de la Palma and the rest of the existing bicycle network in the Brownsville area. State parks have the potential to be major destinations for bicyclists, and the lack of designated connections to Resaca de la Palma may discourage people from cycling to and from the park.

Example Solution

A major connection could be made between Resaca de la Palma State Park and the existing bicycle network in Brownsville. New Carmen Ave. potentially has space to install a bicycle facility, such as paved Wide Shoulders or Side Paths, depending on further study. New Carmen Ave. runs north/south, with its southern terminus intersecting Military Rd., which runs northwest/southeast and eventually turns into Boca Chica Blvd in Brownsville. Military Rd. contains paved shoulders on both sides from west of New Carmen Ave. to Ruben M. Torres Sr. Blvd., which contains designated bicycle lanes and connects to other facilities in the existing bicycle network. These existing facilities and connections illustrate that if bicycle facilities were installed along New Carmen Ave., bicyclists could make connections from the

existing urban network in Brownsville all the way to Resaca de la Palma State Park, using New Carmen Ave. and Military Rd. as connecting routes.

Urban Pedestrian Environment

Example Issue

Figure A-5: Pedestrian Issue in an Urban Environment

Figure A-5 shows a stretch of W. Jordan Ave. in southwest McAllen. The area includes several community-centric land uses, such as the Palm View Community Center and Branch Library as well as Palm View Park, across W. Jordan Ave. from a large residential area. The photo illustrates that, along a relatively long stretch of W. Jordan Ave., there are currently no designated pedestrian crossings that would allow pedestrians to cross the street safely to travel between their homes and these community land uses. This combination of land uses implies that there is likely a high demand for children and family groups to travel back and forth between the neighborhood and the community center, library, or park.

Example Solution

To provide a safe pedestrian crossing environment for people wishing to cross W. Jordan Ave., solutions such as Pedestrian Hybrid Beacons paired with painted crosswalks could be installed at a few locations along the roadway. These facilities increase the safety of crossing pedestrians by clearly defining the crossing area, alerting the attention of drivers to crossing pedestrians, and controlling automobile traffic at the crossings.

Rural Pedestrian Environment

Example Issue

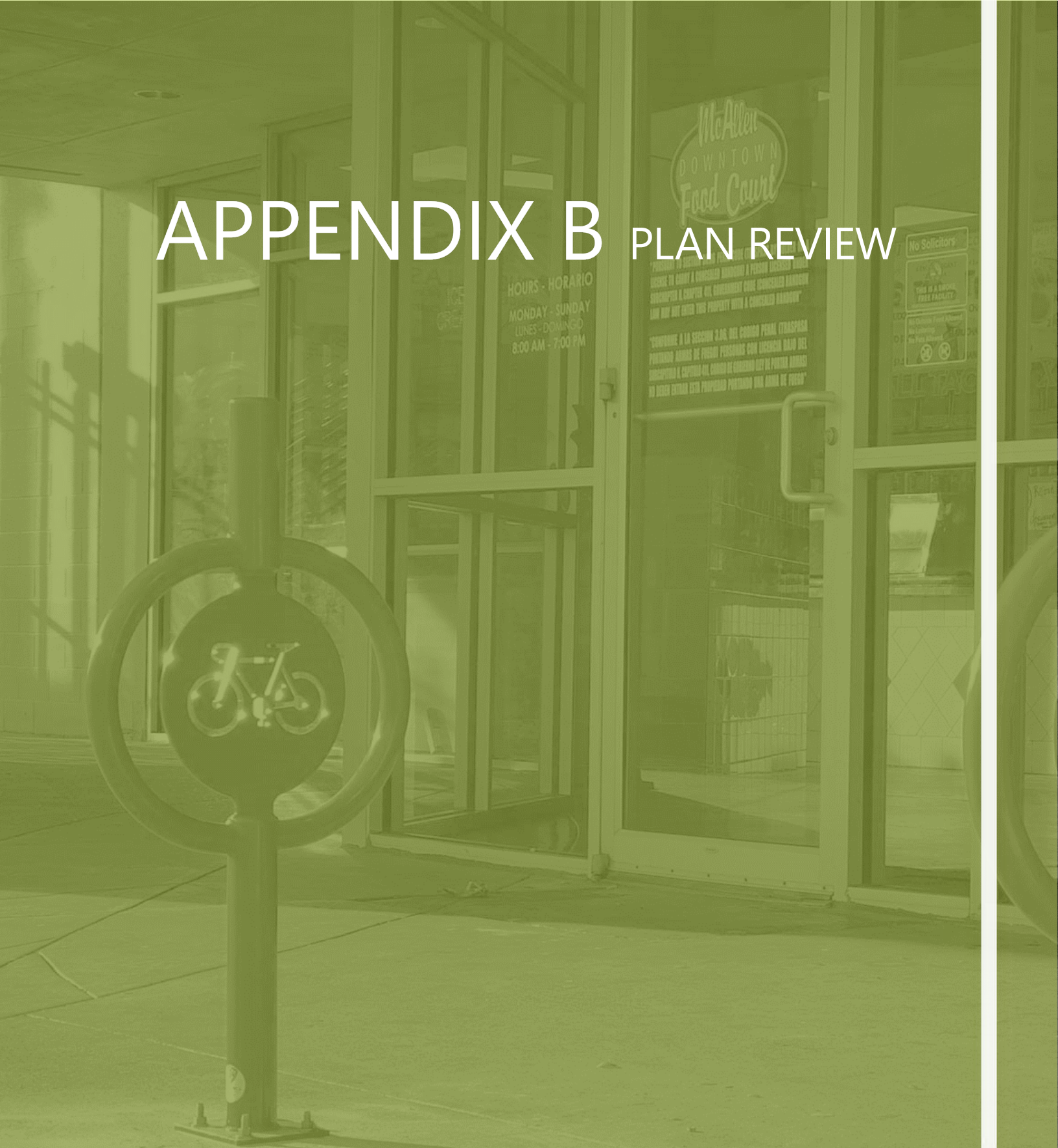
Figure A-6: Pedestrian Issue in a Rural Environment

Figure A-6 shows a stretch of Montezuma Rd. in north Harlingen. In this area, Montezuma Rd. runs next to Lee H. Means Elementary Fine Arts Academy and through a few residential neighborhoods. The photo illustrates a lack of sidewalks on either side of Montezuma Rd. This lack of a designated pedestrian space creates a safety hazard for any child, family, or resident who wants to walk between the nearby elementary school and their home because the terrain is inconsistent and pedestrians may experience close encounters with automobiles. Currently, people are either discouraged from walking altogether, or must walk in the grass or ditches alongside the roadway.

Example Solution

This stretch of Montezuma Rd. could benefit from the installation of ADA-compliant sidewalks on both sides of the roadway so that residents from the nearby neighborhoods can walk safely to and from the elementary school. In addition to installing sidewalks, designated pedestrian crossings are also recommended to provide safe places for pedestrians to cross Montezuma Rd. between the school and the neighborhoods.

APPENDIX B PLAN REVIEW



This appendix contains a summary of published plans through the RGVMAB that contributes to improving the active transportation network. Plans are from both the regional and municipal level.

The Rio Grande Valley contains many communities that have developed plans to support and enhance active transportation networks. Both regional and local entities have contributed to this effort, improving quality of life for people who walk or bike. As this plan was developed for the RGVMPO, it was crucial that the work done in the plans mentioned below be acknowledged and carried forward into the RGVMPO Active Transportation Plan.

MULTIMODAL TRANSPORTATION PLANNING EFFORTS

Documents produced by the three former MPOs in the Rio Grande Valley (Brownsville MPO, Harlingen San Benito MPO, and Hidalgo County MPO) represent considerable effort and coordination in establishing and working towards regional goals. These three MPOs and their regional planning partners, have been the primary authors of the following documents.

Hidalgo County MPO 2015-2040 Metropolitan Transportation Plan

In 2014, the HCMPO adopted the 2015-2040 MTP, a long-range transportation planning document which identifies priorities for development programs and transportation projects within the Hidalgo County Urbanized Planning Area. The document identified existing and future land use trends and transportation needs and developed coordinated strategies to deliver transportation projects essential for the continued mobility and economic vitality of the Hidalgo County Urbanized Planning Area.

The Hidalgo County MTP sought to balance investments in various transportation modes against anticipated funding from federal, state, and local sources, while maintaining flexibility to address the dynamic changes in both the needs and resources of the community. Levels of acceptable system performance may vary among local communities, so performance measures were tailored to the specific needs of the area. The state, the MPO, and local officials collaborated to create performance measures in consultation with the operators of major modes of transportation in the coverage area.

2040 Harlingen-San Benito Metropolitan Transportation Plan

In 2014, the HSBMPO adopted the 2040 Harlingen-San Benito MTP. The plan included an assessment of the existing conditions of the region, a vision for the future of the transportation system to be implemented by stated goals and objectives, potential areas of system improvements, a program of transportation projects, a financial plan to fund the projects, and concerns about environmental/community impacts and how the MPO planned to address such impacts. In addition, the plan provided a summary of public engagement efforts conducted, the questions asked, and feedback provided by citizens who participated in the process.

The most recent update of the list of 2040 MTP projects were adopted in October of 2018 and identified 31 projects falling into the following categories:

- Mobility (contains primarily roadway projects along with a handful of sidewalk projects)
- Safety
- On/Off System Bridges
- Transportation Enhancements
- Operational Improvements
- Comprehensive Development Agreement
- Preliminary Engineering
- Transit

2020-2045 Brownsville Metropolitan Transportation Plan

In 2019, the Brownsville MPO adopted the 2020-2045 MTP, which identified policies, programs, and improvement projects to address the evolving needs of the Brownsville Urbanized Planning Area over the long-range planning horizon of 25 years. This plan also prioritized transportation projects based on a variety of values (such as indicating environmental impacts, adding roadway capacity, contributing towards economic vitality, improving transit, etc.), which guide the development of the overall transportation system. The overarching goals for this MTP were to:

- Support economic vitality
- Increase safety and security
- Increase accessibility and mobility
- Protect and enhance the environment
- Promote efficient management and operation of the transportation system

ACTIVE TRANSPORTATION PLANNING EFFORTS

The following represent a sampling of active transportation planning efforts at the regional and local level in the Rio Grande Valley.

The Active Plan

The *Lower Rio Grande Valley Active Transportation and Tourism Plan* was adopted in September of 2016. The goal of the plan is to help create "one of the finest and most extensive region-wide non-motorized transportation networks anywhere in the United States" by providing facilities and infrastructure for active transportation, and active tourism more specifically, which will create benefits for transportation, health, and the economy. The plan proposes a network of various active transportation and recreational facilities, some of which include multi-use trails and bike facilities and provides design considerations and potential facility costs.

The plan also proposes a set of catalyst projects, two of which fall within the HSBMPO planning area (Arroyo-Resaca Multi-Use Trail segment and Arroyo Colorado Paddling Trail segment). The Active Tourism portion of the plan explores the possibility of bicycle tourism and trail tourism as potential programs and economic markets, which would have a significant impact on the use of and need for active transportation facilities in the HSBMPO region.

Hidalgo County MPO Bicycle Plan

Adopted in 2017 by the HCMPO, the Bicycle Plan 2018 serves as a complement to the existing HCMPO Pedestrian Plan and as a core component in the overall multimodal plan for Hidalgo County. Additionally, the Bicycle Plan provides solutions to issues such as gaps within the sidewalk network, identifies safer approaches to street crossings and paths, provides environmental and health benefits, and encourages a bicycle-friendly environment.

Recommendations were developed based on analysis of existing facilities, policies, and plans as well as suggestions from the HCMPO's Bicycle and Pedestrian Advisory Committee (BPAC), Technical Advisory Committee (TAC), and through a series of public meetings and workshops.

The plan uses the 5 E's approach: engineering, education, enforcement, encouragement, and evaluation of outcomes. The plan also includes an approach to document and monitor trends through data collection to recognize progress and to identify achievement of plan goals and objectives. Localized data gathered in this process allows planners to better recommend courses of action designed to increase bicycling compared to more general data available at the national level. Surveys are used on a recurring basis to assess presumed preferences for driving over cycling and provide insight for ways to encourage a shift in behavior.

Hidalgo County MPO 2016 Pedestrian Plan

The 2016 Pedestrian Plan, adopted by the former HCMPO, was updated from the 2014 plan and was intended to serve as a comprehensive planning tool for the Texas Department of Transportation (TxDOT), the HCMPO, and the local jurisdictions within the former MPO's boundaries to develop a safe and comfortable pedestrian network and an increased standard for walkable communities.

Coordination and collaboration with the other neighboring former MPO's like HSBMPO and Brownsville MPO was designed to improve regional connectivity on cooperative projects. Planning directly for a pedestrian network has previously been left to the cities within the HCMPO's old planning boundaries resulting in a lack of connectivity in sidewalk infrastructure between cities. The Pedestrian Plan promoted a continuous and safe pedestrian network required as part of a federally mandated comprehensive multimodal transportation plan. This cross MPO coordination has been adopted and merged into the newly formed RGVMPO's vision and efforts.

2016 Bicycle and Pedestrian Master Plan

Finalized in 2016, the HSBMPO Bicycle and Pedestrian Master Plan provided a set of recommended projects, policies, and practices meant to improve and expand the active transportation network in the old HSBMPO study area. The plan's recommendations resulted from a combination of public engagement, best practices, and an assessment of community conditions and needs. In addition, the plan includes an implementation program that defines roles and responsibilities, identifies funding options, and provides detailed information about the recommended projects.

Harlingen Trails Master Plan

Adopted in March of 2010, the Harlingen Trails Master Plan's purpose is to aid in the creation of a trails system that provides safety, accessibility, and connects people to existing destinations;

represents the identity and character of the city and enhances its physical appearance; and provides opportunities to learn about the city and form public/private partnerships.

The plan aims to create a trails system that provides recreational/functional mobility opportunities for active transportation modes, promotes a sense of place, and provides a safe environment; develop tools and mechanisms to implement the plan and facilitate trail development; develop and identify funding sources; and incorporate public participation into the planning and design process for new trails. The plan's recommendations identify four types of opportunities for trail development, including arroyo trails, irrigation trails, rail trails, and street trails.

Harlingen Parks and Recreation Master Plan

In conjunction with the City of Harlingen's One Vision and One Harlingen Comprehensive Plan, the city also developed a Parks and Recreation Master Plan, which was adopted in early 2016. One of the major findings to come out of this plan is the need for trails. Citizen input resulting from a needs assessment ranked "Add more trails or places to ride a bicycle" as the community's second highest concern under the parks and recreation umbrella.

Therefore, the plan includes trails under the list of "very high" needs, noting that there are still key gaps and that the western part of the city currently has no trails. The plan includes trail development as one of the improvement categories in its final recommendations, with an aim of "developing a citywide connected trails system based on the recommendations of the city's adopted 2010 Trails Master Plan."

San Benito Parks and Recreation Master Plan

With its most recent draft in 2015, the San Benito Parks and Recreation Master Plan acts as a supplemental piece of the San Benito Comprehensive Plan. The Parks and Recreation Master Plan's purpose is to "provide thoughtful guidance and sound direction to the city in its commitment to acquire, develop, and manage an adequate and easily accessible system of parks and recreation facilities and programs to serve the residents of San Benito."

One of the specific goals of the plan involves building an active transportation network to improve connectivity throughout the community. Under this goal, the plan provides a set of actionable objectives as recommendations for achieving the goal. These actionable objectives include items such as taking steps to create more focused and detailed plans/designs, identifying and obtaining funding, coordinating with relevant entities, and obtaining the necessary rights-of-way or easements to use in the creation of the network.

San Benito Downtown Revitalization Plan

Adopted in August of 2016, the *San Benito Downtown Revitalization Plan* is a supplement to the San Benito Comprehensive Plan. Though transportation is not the primary focus of this plan, there are concerns, opportunities, and recommendations discussed that are related to transportation. Traffic is listed as both a major opportunity and concern for the downtown area. Some of the recommendations in the plan include steps such as enhancing connectivity to downtown, in particular for active transportation modes and the trail network, improving the traffic environment through

traffic calming strategies, reconfiguring certain roadway sections, and implementing Complete Streets.

Brownsville Parks & Recreation Open Space Master Plan, 2008

This plan takes an inventory of the existing parks and open space in Brownsville, while creating an implementation plan to connect the existing infrastructure to the current and anticipated needs of community by improving the quality of the resources available with a planning horizon of 2008-2022. Procedures within this plan follow guidelines set forth by the Texas Parks and Wildlife Department (TPWD) to ensure the city continues to maintain eligibility for funding future parks projects.

Priorities identified through community engagement included:

- Provide more efficient maintenance and security
- Provide more recreational amenities and facilities
- Include educational/interactive opportunities with natural areas
- Expand the existing park system through acquisition of more open space/natural areas

The plan's goals also focus on improving existing parks and open space, while identifying potential areas for acquisition that would play a major role in improving connectivity between open spaces and enhance the quality of life of Brownsville residents.

Connecting Brownsville, The 2013 Bicycle and Trail Master Plan

The City of Brownsville took a progressive approach in 2013 to meet the evolving transportation needs of their fast-growing population. To increase resident's quality of life and number of transportation choices, the City created *Connecting Brownsville* which builds on the previous efforts set forth in the *Parks & Recreation Open Space Master Plan*. This plan emphasizes five major goals to accomplish its overarching mission:

- Create an interconnected network
- Form partnerships throughout the community that will help facilitate this mission
- Invest, when feasible, in comfortable infrastructure that separates non-vehicular and vehicular traffic
- Ensure ease of accessibility to infrastructure
- Encourage short trips to connect longer trips (i.e. bike to a bus stop)
- Provide a variety of facility types

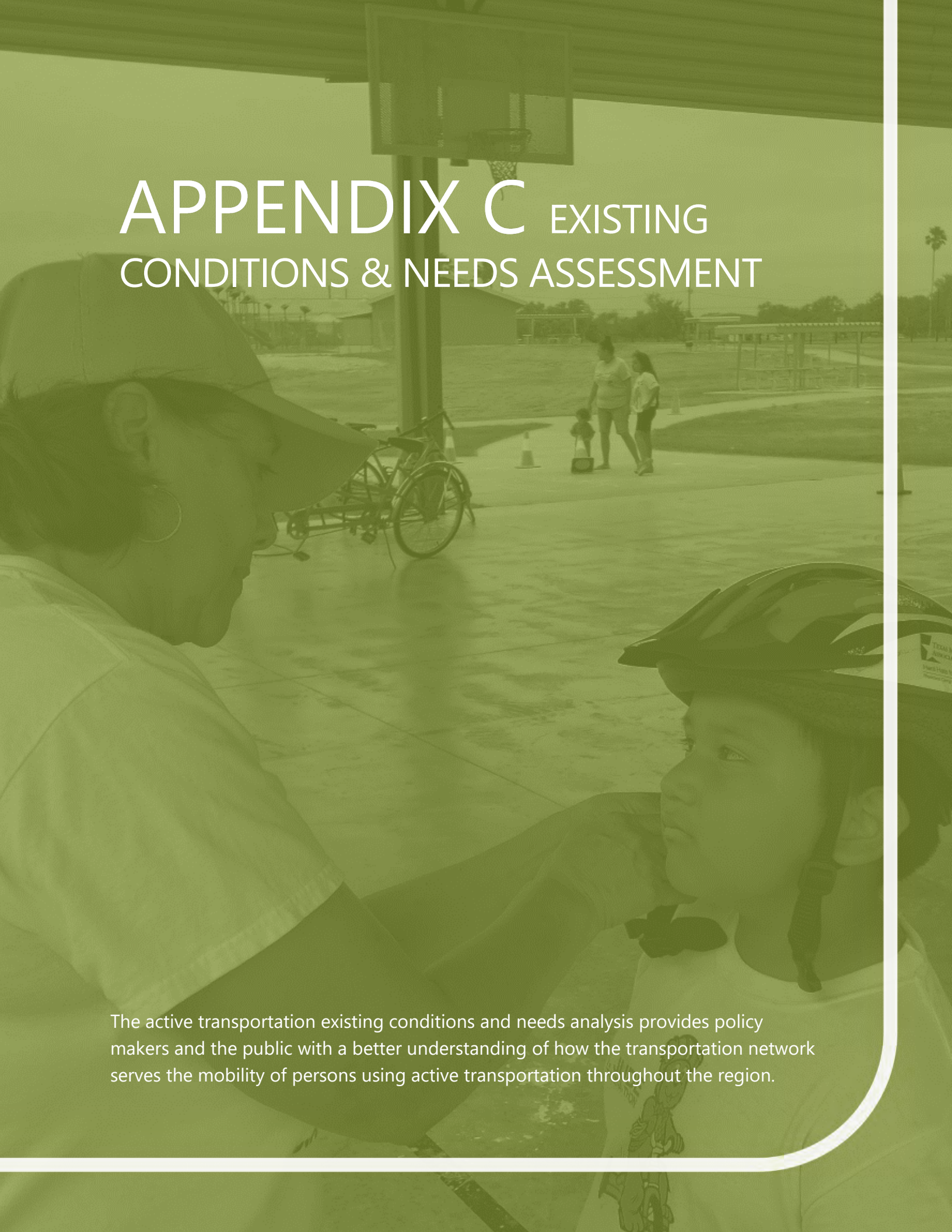
Recommendations were developed based on analysis of existing facilities, policies, and plans as well as suggestions from the public participation process. The public participation process was conducted through a series of public meetings, workshops, surveys, and conversations at local events. Recommendations were also separated into four different phases based on timeline of implementation (rapid implementation, near-term, mid-term, and long-term).

South Padre Island, Parks & Open Space Master Plan, 2013

The *Parks & Open Space Master Plan*, adopted in 2013, takes an inventory of existing parks, open space, and recreational facilities, while identifying opportunities to improve those existing spaces or acquire new lands to be converted to parks, open spaces, or recreational facilities. Public participation was used to highlight and support the existing facilities analysis, giving the community a voice to help identify and set priorities within the scope of the plan.

Additionally, this plan holds strong connections to the tourism sector of South Padre Island's economy, ensuring that all parks and open spaces will continue or build upon the support of tourist activities. Through the planning process, the Parks & Open Space Master Plan identified three major goals:

- Protect and improve the existing system of parks and open space.
- Enhance tourism by networking local resources and system of parks and open space.
- Provide healthy environments to residents.



APPENDIX C EXISTING CONDITIONS & NEEDS ASSESSMENT

The active transportation existing conditions and needs analysis provides policy makers and the public with a better understanding of how the transportation network serves the mobility of persons using active transportation throughout the region.

EXISTING CONDITIONS

This memo looks at three primary aspects in gauging active transportation network performance. Existing conditions were examined by reviewing an inventory of existing facilities as well as policies and programs throughout the region that influence active transportation. Safety data was examined in order to detail the regional trends in crashes for active transportation users using the Texas Department of Transportation's (TxDOT) Crash Records Information System (CRIS) for Cameron and Hidalgo Counties for the five-year period from 2015-2019. Lastly, an analysis of the network was performed to review travel patterns, accessibility, level of stress, and proximity to transit in order to perform a gap analysis. The existing conditions analysis and needs assessment explored the current state of the transportation system for those who walk and bike and identifies deficiencies and safety concerns within the network. As this analysis was conducted in support of the development of both the Metropolitan Transportation Plan and Active Transportation Plan, the contents of this memo reflect a higher level of detail in analysis than is typically contained in an active transportation needs analysis for the MTP alone. The Rio Grande Valley Metropolitan Planning Organization (RGVMPO) has a mixture of on street and off-street facilities within the Rio Grande Valley Metropolitan Area Boundary (RGVMAB). As urban areas in the Rio Grande Valley continue to densify and grow, walking and bicycling become an increasingly vital component of the transportation system.

Existing Bicycle Facilities

Within the RGVMAB there are nearly 178 miles of on-street bike facilities, consisting of bike lanes, cycle tracks or shared lanes with either a shared lane marking or signage. Protected bikeways, which are the most comfortable for the broad range of people using the facility, make up about 2 miles or 1% of the total on-street bike facilities. **Figure C-1** displays examples of the on-street facility types commonly found throughout the RGVMAB today.

Figure C-1: Example On-Street Bike Facilities in RGVMAB

Bike Lane – N. Main St. Shared Lane – N. Coria Protected Bike Lane – E. Jackson

Off-Street facilities are located outside of the traffic lanes, where users are not directly interacting with vehicle traffic. The RGVMAB contains about 114 miles of off-street facilities, often referred to as Hike and Bike trails. **Table C-1** below shows the total mileage for bike facilities within the RGVMAB. Brownsville, Edinburg, Harlingen, McAllen, and Pharr make up the largest portion of urban bike

facilities throughout the RGVMAB, while bike facilities outside of the urban centers comprise 14% of the total 292 miles.

Table C-1: Miles of Bike Facilities within RGVMAB by City

City	On-Street Miles	Off-Street Miles	Total Miles	Percent of Total RGVMAB Bike Facilities
Alamo	1.3	0.0	1.3	0%
Brownsville*	71.2	26.2	97.4	33%
Donna	1.1	0.0	1.1	0%
Edinburg*	26.2	3.9	30.1	10%
Harlingen*	6.3	13.7	20.0	7%
Hidalgo	7.1	1.8	8.9	3%
Los Fresnos	1.6	0.0	1.6	1%
McAllen*	17.4	33.3	50.7	17%
Mission	3.7	3.7	7.4	3%
Palmview	0.3	0.4	0.6	0%
Pharr*	12.7	6.3	19.1	7%
San Benito	0.9	3.2	4.1	1%
San Juan	2.1	0.5	2.5	1%
Weslaco	5.9	1.1	7.0	2%
Primera	0.0	0.2	0.2	0%
Rio Hondo	0.0	0.4	0.4	0%
Outside of City*	20.6	18.9	39.5	14%
Grand Total	178.3	113.6	292.0	100%

*Communities represent the highest proportion of bike facility mileage

Existing Sidewalk Facilities

Sidewalk facilities in the RGVMAB are prevalent within urban areas**.** The total miles of sidewalk were found for each city within the RGVMAB. In addition to the quantity of sidewalks, the sidewalk network coverage was calculated by selecting roadways within each city with a speed limit of less than 60 miles per hour (mph) because roadways with speeds at or above 60mph do not commonly contain sidewalks and are not conducive to walking.

To calculate for a full coverage sidewalk network, with sidewalks on both sides of a road, the selected roadway miles were doubled. To measure the coverage of the sidewalk network, total miles of existing sidewalk were divided by the doubled roadway miles, for roadways under 60mph, as show in the formula below.

Table C-2 shows the number of miles of sidewalk within each city, along with the coverage of the sidewalk network.

$$\frac{Sidewalk\ Miles}{(Roadway\ Miles\ under\ 60mph * 2)} = \%\ of\ Sidewalk\ Coverage$$

Table C-2: Sidewalk Mileage and Coverage by City

City	Miles of Sidewalk	Sidewalk Coverage
Alamo	31.4	18%
Alton	21.5	19%
Brownsville	412.9	30%
Combes	1	2%
Donna	43.2	24%
Edcouch	3.6	10%
Edinburg	238.1	34%
Elsa	6.9	13%
Granjeno	2	43%
Harlingen	159.7	20%
Hidalgo	30.1	26%
La Feria	10.3	12%
La Joya	12.6	26%
La Villa	2.8	11%
Los Fresnos	18.1	33%
Los Indios	1.2	4%
McAllen	533.7	45%
Mercedes	39.2	21%
Mission	263.3	35%
Palm Valley	0.8	5%
Palmhurst	3.8	7%
Palmview	4.4	7%
Penitas	7.2	24%
Pharr	162	32%
Primera	3.9	10%
Progreso	2.6	6%
Progreso Lakes	0.4	2%
Rancho Viejo	0.3	1%
Rio Hondo	2.2	8%
San Benito	48.4	17%
San Juan	60	24%
Santa Rosa	0.6	2%
Sullivan City	0.3	1%
Weslaco	83.8	22%
Total	**2,212.20**	**--**

Figure C-2, Figure C-3 and **Figure C-4** show both on- and off-street bike facilities, along with sidewalks in each of the major urban areas within the RGVMAB.

Figure C-2: Bike Facilities in McAllen & Edinburg Area

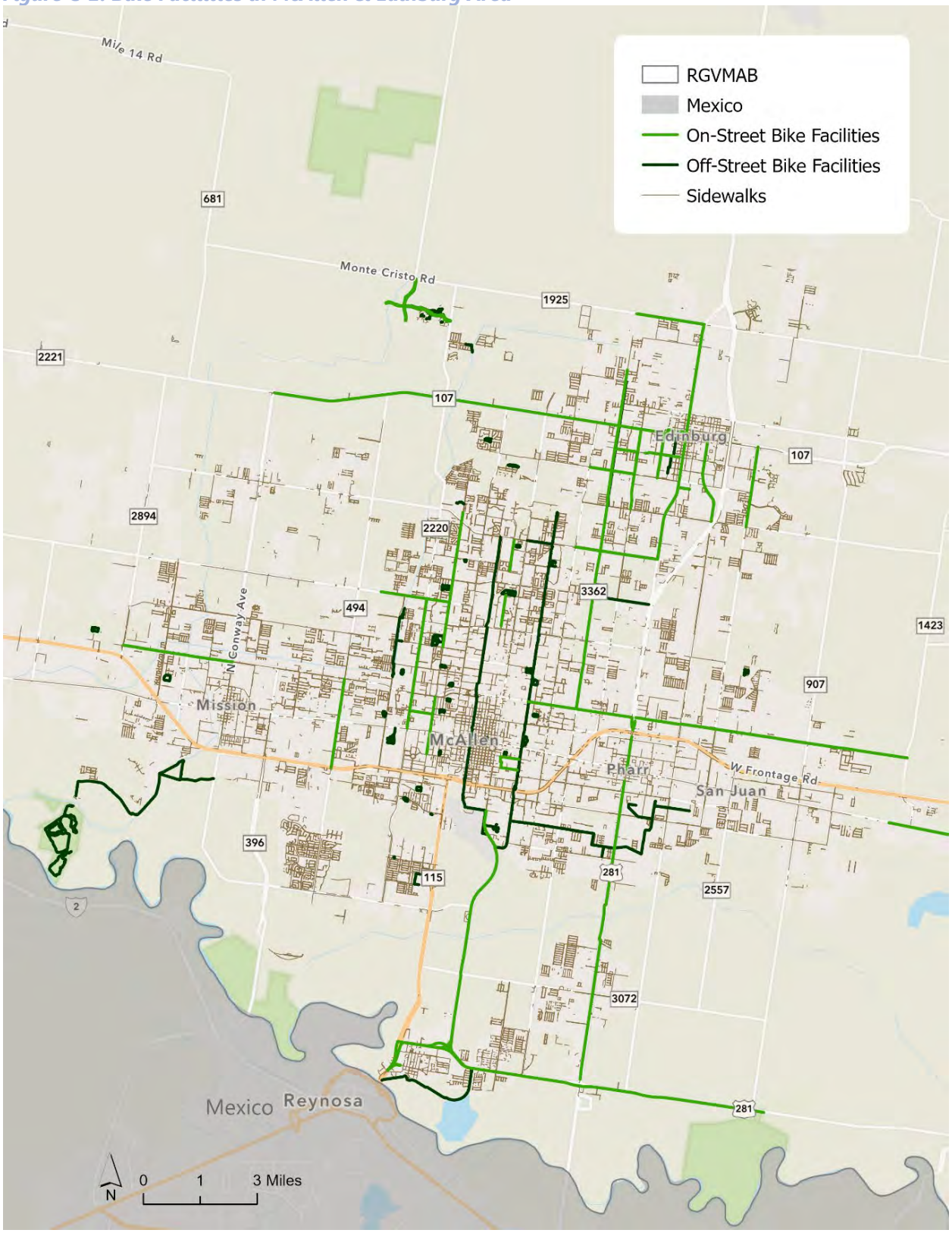


Figure C-3: Bike Facilities in the Harlingen & San Benito Area

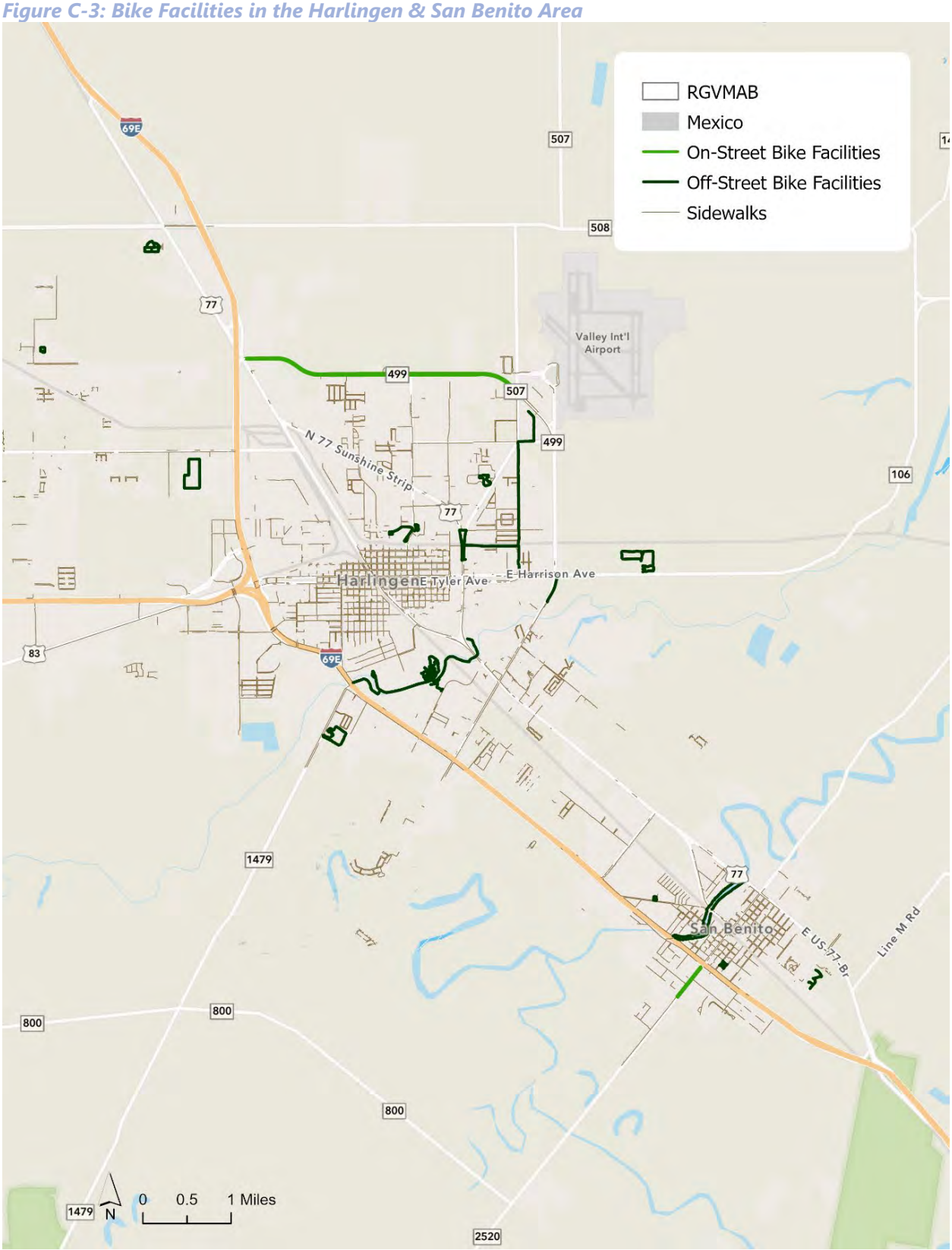
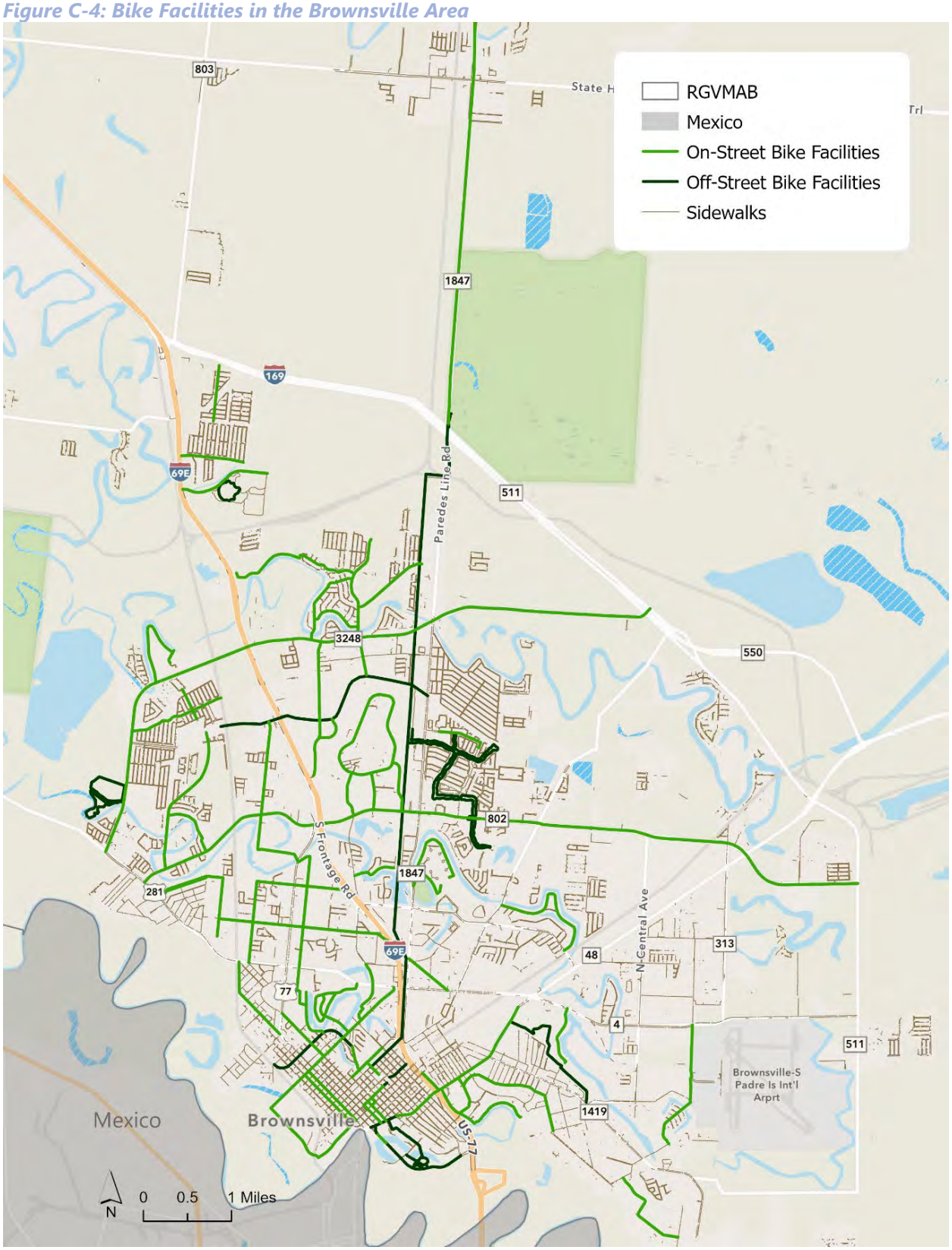


Figure C-4: Bike Facilities in the Brownsville Area



Policy and Program Review

Policies, programs, and ordinances are powerful tools that governments use to shape how the transportation system serves its residents. If a government aims to support people who move by active transportation modes like walking and biking, its funding priorities, policies, ordinances, and codes must also reflect the same outcome. There are many policies and ordinances that support and shape active transportation within communities. A few key policies and practices have been selected for review in major cities within the RGVMAB. While many smaller communities can also benefit from such policies and programs, they are not commonly found. The policies, programs and ordinances described below were reviewed.

Complete Streets

Complete Streets Policies are a collection of goals, design standards, ordinances, or performance measures that ensure streets are safe for people of all ages and abilities, regardless of how the travel. Complete Streets Policies also tend to the needs of local economies, cultures, and the environment in an equitable manner.

Open Streets Events

Open Streets events or initiatives temporarily close significant lengths of street to people using automobiles and encourage use for people walking, biking, rolling, playing, dancing, or nearly any other non-automobile activity. Open Streets events in North America are modeled closely after the events starting in the 1970's in Colombia called ciclovías, though similar events occurred in major cities in the United States, as early as the 1960's.

Parking Enforcement

Parking ordinances or municipal city codes that restrict automobiles parking, stopping, or standing in a bike facility are an important aspect of providing safe access for people of all ages and abilities. Automobiles in bike facilities may necessitate unsafe maneuvers for people in a bike lane, such as merging into an adjacent travel lane with automobiles travelling at high speeds. Enforcement is a key component of such an ordinance.

Safe Passing Ordinance

For a person using a bicycle, sharing lanes with automobile traffic, or using a narrow bike lane adjacent to high speed traffic can cause significant stress or possible erratic reactions to a close encounter. A safe passing ordinance dictates that people driving a car must allow a specified distance between their vehicle and someone riding a bicycle. Typical that distance is 3 feet or more.

Safe Routes to School

Safe Routes to School (SRTS) is a program to encourage and assist children and families getting to and from elementary, middle, and high schools. There is a shared focus on infrastructure improvements and programs to encourage kids and families to walk and bike to school.

Planning Goals

One of the first steps to improving the transportation system for people who walk, and bike is setting goals that clearly prioritize and necessitate change. Goals can often be found in planning reports or documents like comprehensive plans, master plans or similar resources.

Transportation Demand Management (TDM)

TDM aims to reduce the negative impacts of typical peak AM and PM single occupancy car trips by spreading the demand across the entire day and encouraging the use of alternative modes including walking, biking, and transit. Strategies may include shifting commute times or incentivizing alternative work schedules, encouragement programs surrounding active transportation use, or parking policy.

Vision Zero

Vision Zero takes a clear and unrelenting stance on eliminating traffic fatalities. Vision Zero policies clearly state that no death or serious injuries in our transportation systems are acceptable. A Vision Zero policy takes a multifaceted approach to reducing deaths and serious injuries such as reducing speeds and rethinking the street design process.

Policy Review Summary

The review in **Table C-3** indicates several active measures communities within the RGVMAB are taking to support people to use active modes of transportation.

For example, nearly all of the cities reviewed have ordinance requires safe passage of vulnerable road users, and several more enforce a no parking ordinance within bike facilities. However, the review also shows areas where these major cities can improve.

Complete Streets policies are only present in the city of Mission. Complete Streets can be a building block policy to help shape the roadway system to safety accommodate all users.

Table C-3: Active Transportation Policy and Program Review

Region	Complete Streets	Open Streets Events	Parking Enforcement	Safe Passing Ordinance	Safe Routes to School	Planning Goals	TDM Programs	Vision Zero
State of Texas								
RGVMPO								
Cameron County								
Hidalgo County								
Brownsville								
Edinburg								
Harlingen								
McAllen								
Mission								
Pharr								
San Benito								
San Juan								
Weslaco								

= Policy or Program present = Progress towards Policy or Program but not fully present

ACTIVE TRANSPORTATION NEEDS ANALYSIS

In addition to the review of the existing conditions for active transportation, a granular analysis was conducted to review the safety, level of stress, transit proximity, and expected travel patterns as part of the deficiencies, or needs analysis for non-motorized travel choices. The following sections represent in depth narratives of these portions of the needs analysis.

Safety Analysis

One of the most important steps in planning for the future of active transportation in a region is to determine the region's specific modal needs so that these needs can be addressed accordingly. One type of needs identification comes in the form of a safety analysis, which involves examining how safe the regional environment is for active transportation users. This type of analysis can pinpoint current safety issues and challenges, allowing the region to implement measures to mitigate or prevent crashes over time to address the existing and future safety needs of active transportation users.

As mentioned in the introduction to this memo, in order to identify and assess patterns of active transportation safety in the RGVMAB, crash data was gathered from the Texas Department of Transportation's (TxDOT) Crash Records Information System (CRIS) for Cameron and Hidalgo Counties for the five-year period from 2015-2019. Using this data, active transportation (AT) crashes were identified and isolated, then evaluated based on various characteristics such as time, severity, contributing factors, and location. For this analysis, AT crashes are defined as crashes involving at least one pedestrian bicyclist or person using another mobility device. (no individual crash involved both pedestrians and bicyclists).

Regional Active Transportation Crash Trends by Attribute

Attributes contained in the CRIS data were first used to analyze trends in crash frequency and severity separately from the location of the crash in order to gain a deeper understanding of how severe active transportation crashes tend to be, how frequently and at what time of the day these crashes are occurring, and to better understand possible contributing factors.

TOTAL CRASHES & CRASHES BY MODE

Over the course of the five-year period, a total of 2,238 AT crashes occurred in Cameron and Hidalgo Counties. 71% of these crashes involved pedestrians, while 29% involved bicyclists. In all, AT crashes accounted for only 1.6% of all crashes in the RGVMAB (involving all modes of transportation) for the same five-year period. **Table C-4** shows a breakdown of total crashes involving pedestrians or bicyclists.

Table C-4: Total Active Transportation Crashes and Crashes by Mode

Crash Types	Crash Count	Percent of All AT Crashes	As a Percent of Total Crashes (All Modes)
Pedestrian Crashes	1,582	71%	1.1%
Bicyclist Crashes	656	29%	0.5%
All AT Crashes	2,238	100%	1.6%

Figure C-5 shows the locations of AT crashes throughout the region symbolized by mode (i.e. whether bicyclists or pedestrians were involved). It is important to note that 622 of the 2,238 AT crash records did not include latitude and longitude data and therefore were not mapped.

Figure C-5: RGVMAB Crashes by Mode

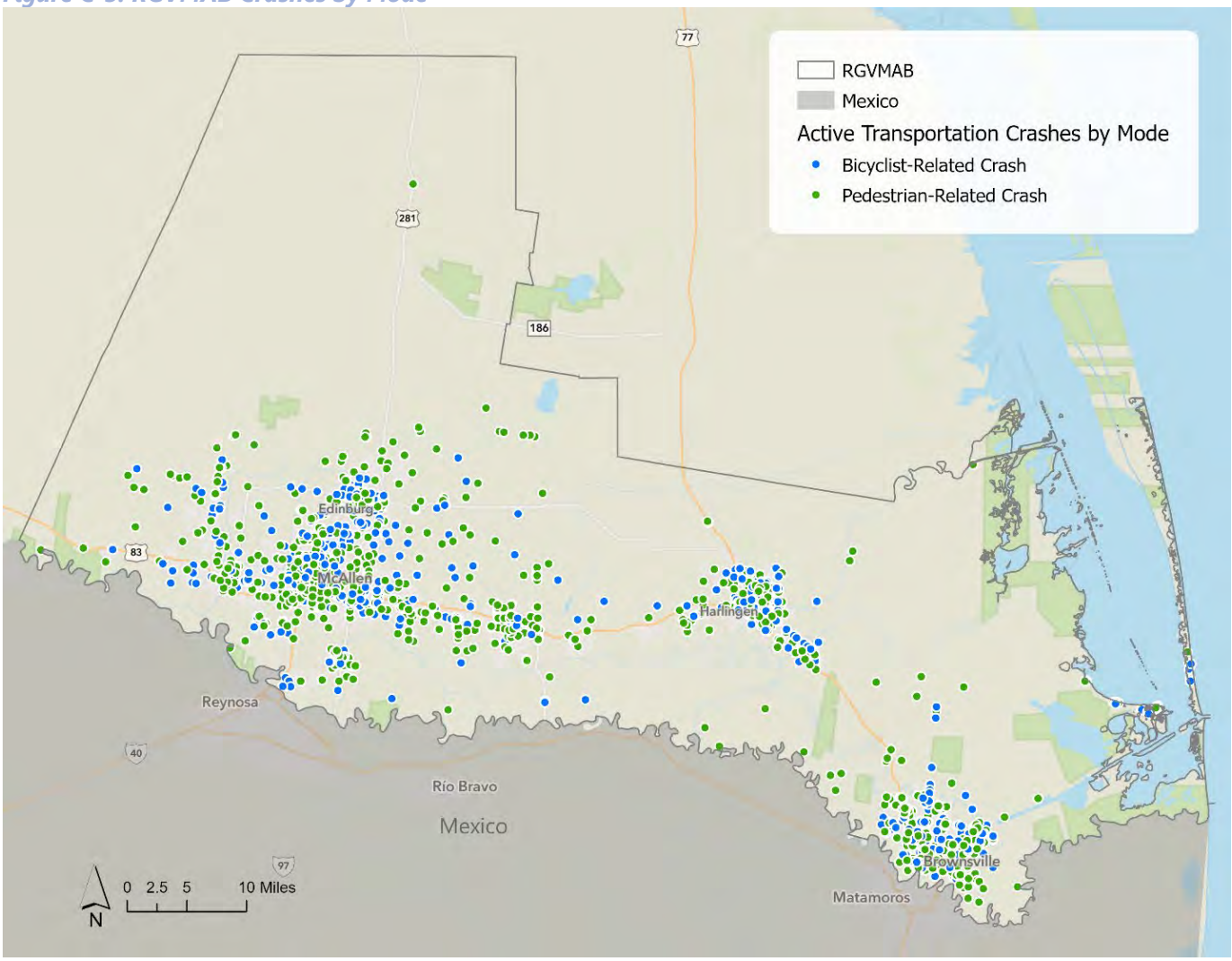
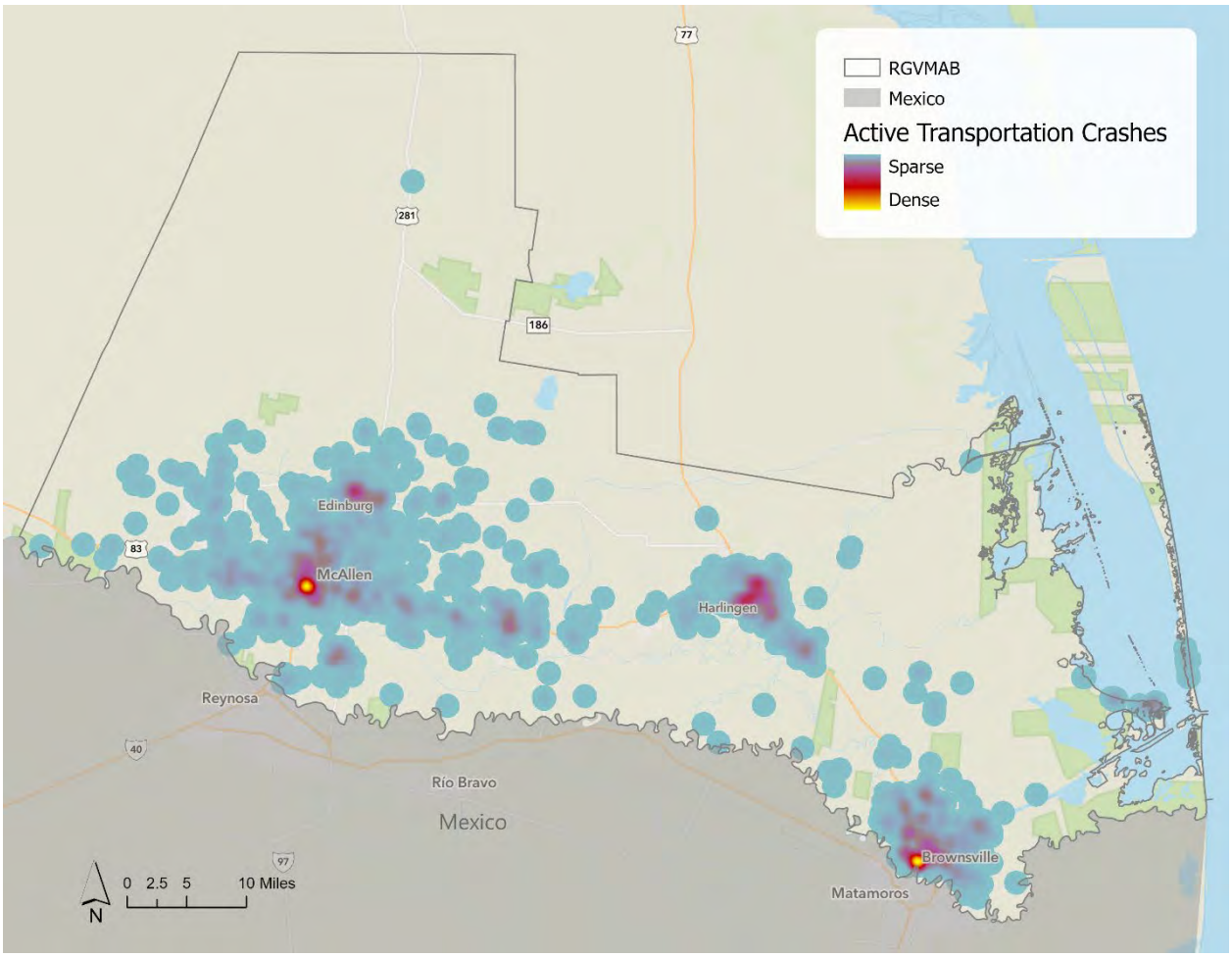


Figure C-6 represents a heat map that illustrates concentrations of AT crashes within the region. The map indicates that higher densities of AT crashes occur in the larger urban areas, correlating with the levels of traffic in these areas.

Figure C-6: RGVMAB: Crashes by Location Heatmap



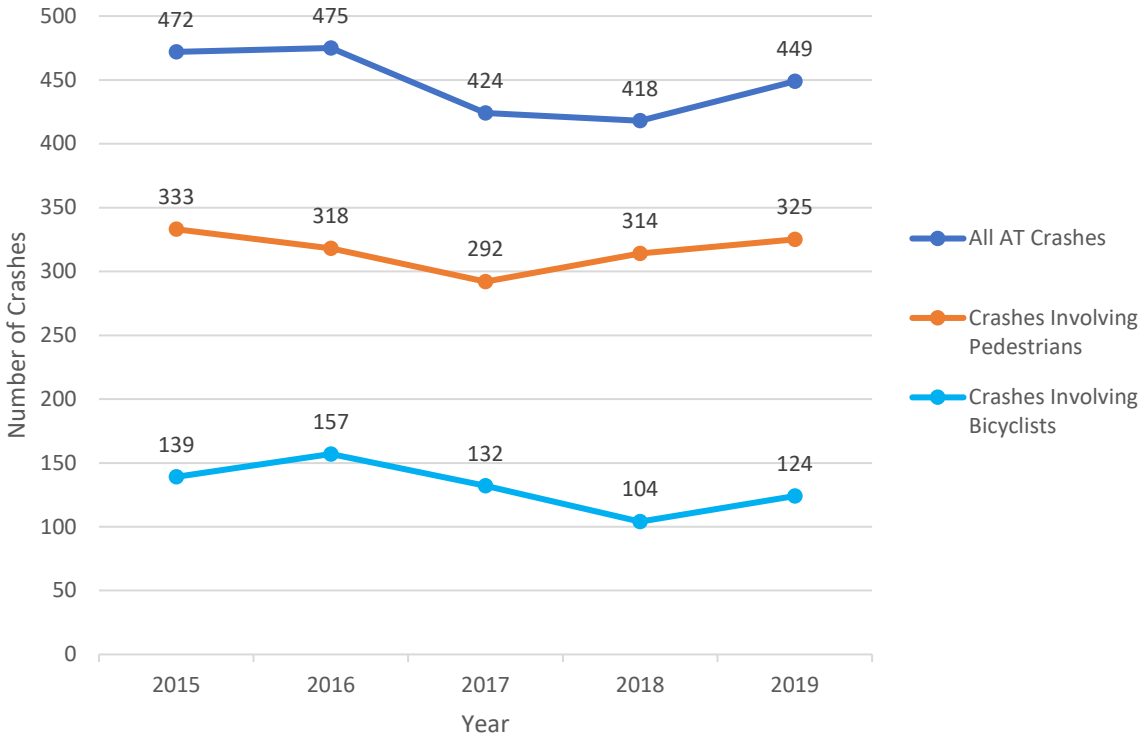
When broken out by year, as shown in **Table C-5**, the data can reveal potential trends in AT crashes over time. **Table C-5** also reveals that, within the past five years, there has been a slight decrease in crashes involving pedestrians, crashes involving bicyclists, and all AT crashes. However, the data also shows that occurrences of these types of crashes have begun to increase again within the past 1-2 years.

Table C-5: Active Transportation Crashes by Year (2015-2019)

Year	Number of AT Crashes	Percent of All AT Crashes	As a Percent of Total Crashes (All Modes)	Number of Pedestrian Crashes	Percent of All Pedestrian Crashes	Number of Bicyclist Crashes	Percent of All Bicyclist Crashes
2015	472	21%	1.7%	333	21%	139	21%
2016	475	21%	1.6%	318	20%	157	24%
2017	424	19%	1.6%	292	18%	132	20%
2018	418	19%	1.5%	314	20%	104	16%
2019	449	20%	1.5%	325	21%	124	19%
Total	**2,238**	**100%**	**1.6%**	**1,582**	**100%**	**656**	**100%**

Figure C-7 shows the increases and decreases in the number of crashes over time for all AT crashes, all crashes involving pedestrians, and all crashes involving bicyclists.

Figure C-7: Active Transportation Crashes Over Time (2015-2019)



CRASHES BY SEVERITY

CRIS data provides information about severity, which represents the impact of each crash. Severity is broken into six levels, including crashes resulting in fatality, serious injury, non-serious injury, possible injury, and no injury, as well as unknown severity. **Table C-6** shows the distribution of AT crashes across the six severity levels for the five-year period of 2015-2019.

Table C-6: Active Transportation Crashes by Severity

Crash Severity	Number of AT Crashes	Percent of All AT Crashes	Number of Pedestrian Crashes	Percent of Pedestrian Crashes	Number of Bicyclist Crashes	Percent of Bicyclist Crashes
Fatality	123	5%	107	7%	16	2%
Serious Injury	268	12%	219	14%	49	8%
Non-Serious Injury	695	31%	468	29%	227	35%
Possible Injury	930	42%	660	42%	270	41%
No Injury	219	10%	126	8%	93	14%
Unknown	3	0.1%	2	0.1%	1	0.1%
Total	**2,238**	**100%**	**1,582**	**100%**	**656**	**100%**

The pie chart shown in **Figure C-8** illustrates the portions of all AT crashes that fall into the various severity levels (unknown severity was excluded because its portion is less than 1%). The pie chart reveals that less than a fifth of all AT crashes resulted in either fatality (5%) or serious injury (12%). Just over 40% of all AT crashes resulted in possible injury, over 30% resulted in non-serious injury, and 10% resulted in no injury.

Figure C-8: All Active Transportation Crashes by Severity

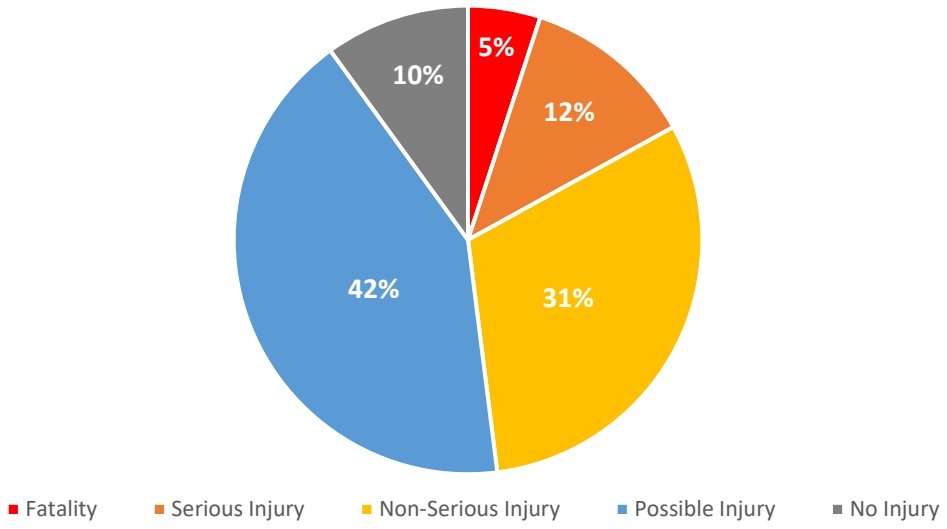


Table C-7 focuses on AT crashes that resulted in fatality, breaking these crashes out by year and counting the number of fatalities resulting from these crashes, while **Table C-8** does the same with AT crashes resulting in serious injury. These tables show that more than a fourth (28%) of all crashes resulting in fatality were AT crashes, while 14% of all crashes resulting in serious injury were AT crashes. These results are significant because although AT crashes make up only 1.6% of all crashes in the region for the five-year period, they comprise a much larger portion of all crashes that resulted in fatality or serious injury. This information implies that active transportation users bear a disproportionate amount of risk of injury or fatality and that planning for the safety of these users is of the utmost urgency.

Table C-7: Active Transportation Crashes Resulting in Fatality by Year (2015-2019)

Year	Number of AT Crashes that Resulted in Fatality	Percent of All AT Crashes that Resulted in Fatality	As a Percent of Total Crashes (All Modes) that Resulted in Fatality	Number of Fatalities Resulting from AT Crashes
2015	25	20%	28%	25
2016	30	24%	26%	30
2017	26	21%	28%	27

2018	23	19%	29%	24
2019	19	16%	31%	19
Total	**123**	**100%**	**28%**	**125**

Table C-8: Active Transportation Crashes Resulting in Serious Injury by Year (2015-2019)

Year	Number of AT Crashes that Resulted in Serious Injury	Percent of All AT Crashes that Resulted in Serious Injury	As a Percent of Total Crashes (All Modes) that Resulted in Serious Injury	Number of Serious Injuries Resulting from AT Crashes
2015	64	23%	17%	66
2016	55	20%	13%	56
2017	49	18%	12%	53
2018	45	16%	13%	51
2019	63	23%	15%	64
Total	**276**	**100%**	**14%**	**290**

Figure C-9 illustrates the changes in the number of AT crashes resulting in fatality or serious injury over the five-year period. From 2015-2016, there was a slight increase in the number of AT crashes resulting in fatality, while from 2016-2019 these crashes gradually decreased.

Crashes resulting in serious injury decreased over time from 2015-2018, but then experienced a sharp increase from 2018-2019, putting the count of these crashes back up to the 2015 level.

Figure C-9: Active Transportation Crashes by Severity Over Time (2015-2019)

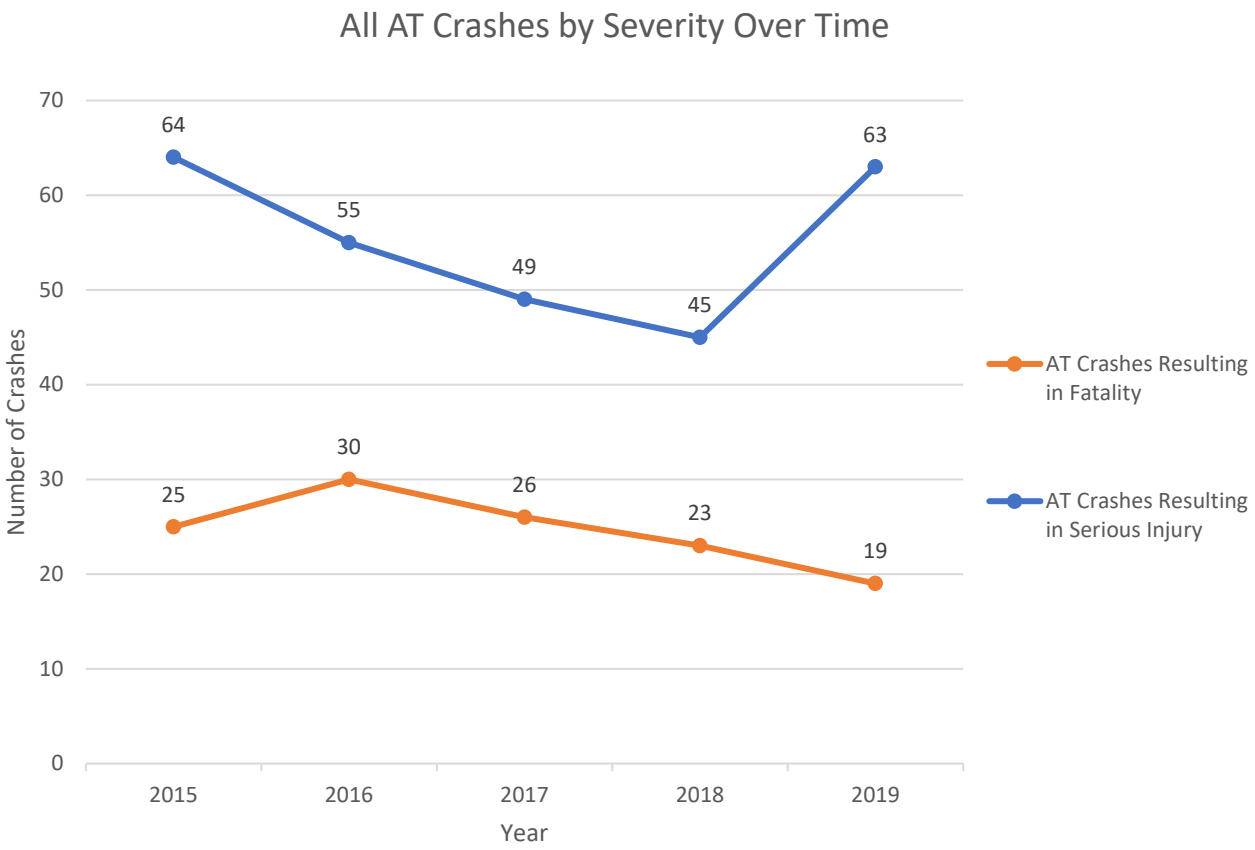


Figure C-10 shows the locations of AT crashes that resulted in fatality or serious injury throughout the region.

Figure C-10: Active Transportation Crashes by Severity

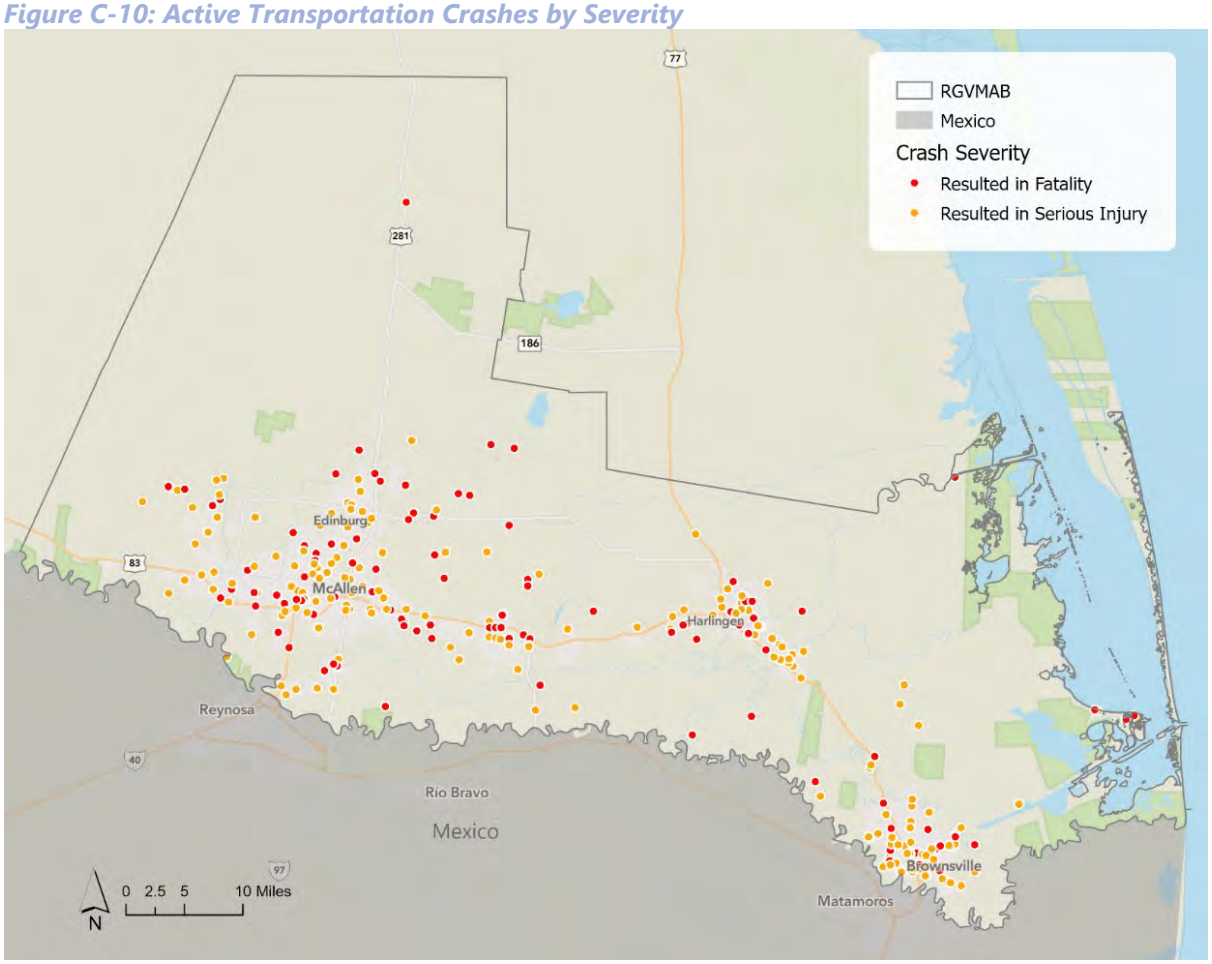


Table C-9 shows the total number of AT crashes over the five-year period that resulted in any injury whatsoever, including serious and non-serious injuries. These values reveal that over the course of the period from 2015-2019, 85% of AT crashes resulted in an injury of some type.

This means that there is a high chance that pedestrians and bicyclists will sustain an injury if they are involved in accidents with automobiles. In addition, the bicyclists and pedestrians involved in the 2,238 AT crashes from 2015-2019 were much more likely to sustain an injury than the people in the automobiles that were involved in these crashes.

Over the five-year period, a total of 2,143 injuries were sustained by people involved in AT crashes, and 2,013 (94%) of these injuries were sustained by the bicyclists and pedestrians involved. This information illustrates why proactive implementation of measures to improve the safety of the active transportation network is critical for the health and safety of these users.

Table C-9 also compares the total number of AT crashes that resulted in injury to the total number of injuries that resulted from these crashes. The comparison reveals that the number of AT crashes that resulted in injury over the five-year period does not have a one-to-one relationship with the number of people that sustained an injury due to these crashes, because multiple people may be injured in the same crash.

This information illustrates how the number of people impacted by crashes can be much higher than the number of crashes itself.

Table C-9: Active Transportation Crashes Resulting in Any Injury by Year (2015-2019)

Year	Number of AT Crashes that Resulted in Any Injury	Percent of All AT Crashes that Resulted in Any Injury	As a Percent of All AT Crashes	Number of Injuries Resulting from AT Crashes
2015	403	21%	85%	443
2016	400	21%	84%	456
2017	357	19%	84%	396
2018	360	19%	86%	420
2019	387	20%	86%	428
Total	**1,907**	**100%**	**85%**	**2,143**

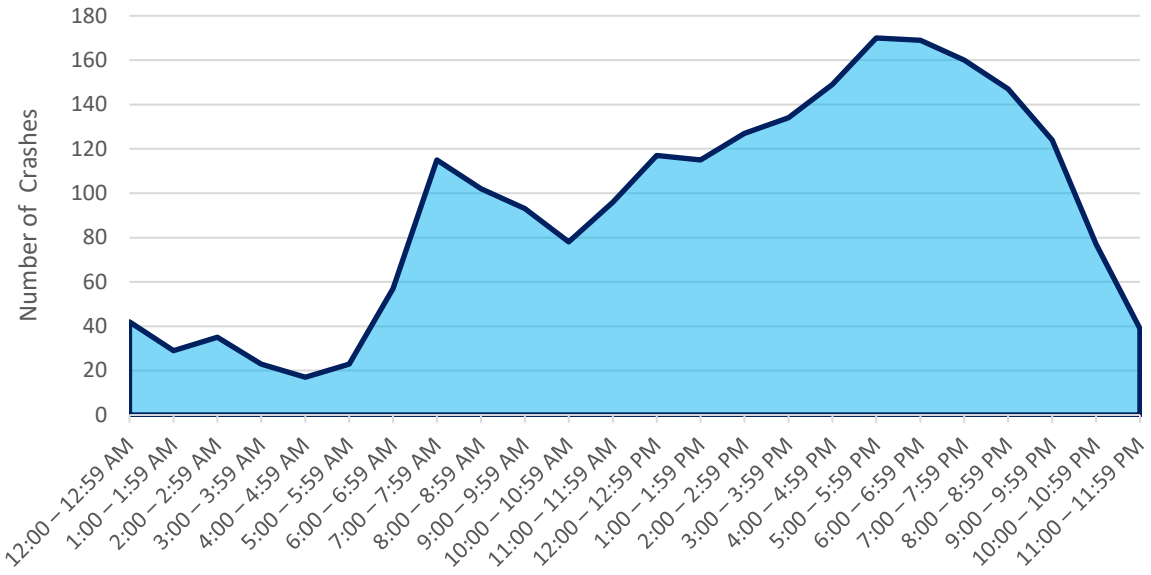
TIME OF DAY

The primary purpose for reviewing crashes by time of day is to identify peaks when more crashes happen and compare these peaks to other daily patterns to understand potential correlations that may explain why crashes occur more frequently at certain times. **Figure C-11** shows the number of AT crashes that occurred during each hour of the day by year and for the five-year period overall.

Figure C-11 also illustrates the trends of increasing and decreasing occurrences of AT crashes from hour to hour for the 24 hours within a day. The trend of the line from hour to hour reflects a pattern similar to that of the common pattern of traffic congestion that occurs throughout a given day in many urban areas – over the five-year period, the total number of crashes that occurred between the 11:00 PM hour and the 5:00 AM hour is relatively low, but there is a morning rush hour spike from the 5:00 AM hour to the 7:00 AM hour, after which the number of crashes decreases a small amount until the 10:00 AM hour.

At the 10:00 AM hour, the number of crashes begins to increase again as the lunchtime rush starts, and the number of crashes continues to increase throughout the afternoon and into the evening rush hour. After the 5:00 PM hour, the number of crashes begins a gradual decrease until the 9:00 PM hour, and from the 9:00 PM hour to the 11:00 PM hour the crash count dips back down quickly. This pattern indicates that AT crash trends within the RGVMAB are generally correlated with daily peak traffic periods.

Figure C-11: Active Transportation Crashes by Time of Day



Potential Contributing Factors

When a region takes the time to examine and evaluate some of the factors that have potentially contributed to crashes, it is able to identify solutions that can mitigate or eliminate these factors so that the safety needs of active transportation users can be met for both the short term and long term.

CRIS data provides a contributing factor attribute for crashes at the unit level rather than at the crash level (cars, bicyclists, pedestrians, etc. are all considered to be individual units that could be involved in the same crash). Using the crash identification numbers attributed to each crash in the database, the project team aggregated the contributing factors attribute up to the crash level to assess which contributing factors occurred the most frequently for AT crashes over the five-year period.

While a contributing factors attribute would theoretically provide the clearest insight into why crashes are happening in a region, the majority of AT crashes did not have contributing factor data recorded, so for this particular analysis, evaluating the contributing factor attribute is more useful as supporting information for why crashes might be occurring.

Table C-10 shows the various contributing factors and the number of AT crashes to which each factor applies.

Table C-10: Active Transportation Crashes by Contributing Factor

Contributing Factors	Number of AT Crashes	Percent of All AT Crashes
Wrong Side - Not Passing	15	1%
Disregard Stop and Go Signal	16	1%
Disregard Stop Sign or Light	16	1%
Failed to Yield Right of Way - Open Intersection	17	1%
Failed to Yield Right of Way - Private Drive	23	1%
Failed to Yield Right of Way - Stop Sign	26	1%
Wrong Way - One Way Road	30	1%
Wrong Side - Approach or Intersection	38	2%
Additional Factors*	72	3%
Other Factor	223	10%
Pedestrian Failed to Yield Right of Way to Vehicle	495	22%
No Contributing Factor Data	1,267	56%
Total	**2,238**	**100%**

*Combined remaining factors that individually have less than 1% occurrence.

This information reveals that, for crashes with known contributing factor data, the most frequent contributing factor for AT crashes is "pedestrian failed to yield right of way to vehicle." This type of crash occurs when pedestrians are attempting to cross a street at a time or in a location where they do not have the right of way.

When crashes like this occur frequently, it may be an indicator that the street network and built environment do not provide pedestrians with sufficient crossing opportunities, times, or infrastructure, or do not provide crossing opportunities in the places where they are most needed/desired. Further studying the travel patterns of pedestrians in conjunction with the existing pedestrian infrastructure network could reveal areas where issues currently exist as well as areas where there are opportunities to make improvements.

SPEED-RELATED CRASHES

The speed of the various vehicles and people involved in a crash is another potential contributing factor that can help explain why a crash occurred. The CRIS data gathered for Cameron and Hidalgo Counties for the period of 2015-2019 showed that only about 1% of all AT crashes over the five-year period were considered to be speed related. Additionally, just over half of the speed-related crashes occurred in areas where the posted speed limit was 30 miles per hour. These findings imply that speed may not be as significant of an indicator for AT crashes as it is for automobile crashes, and that areas with relatively low automobile speed limits can still create unsafe environments for pedestrians and bicyclists. These areas could be candidates for additional safety measures, such as designated bicycle facilities, road diets, and other treatments. **Table C-11** breaks out the number of speed-related AT crashes by year.

Table C-11: Speed-Related Active Transportation Crashes by Year (2015-2019)

Year	Speed-Related AT Crashes	As a Percent of All AT Crashes
2015	7	1.5%
2016	7	1.5%
2017	4	0.1%
2018	3	0.7%
2019	2	0.4%
Total	**23**	**1%**

MANNER OF COLLISION

Manner of collision relates to the specific movements of the vehicle(s) involved at the time of the accident. This information can provide insight into what types of physical situations or environments might be most hazardous for people using active transportation modes.

As shown in **Table C-12**, the most common type of collision related to AT crashes involves a single motor vehicle colliding with either pedestrians or bicyclists. AT crashes involving more than one vehicle were infrequent, representing only 2% of all AT crashes over the five-year period.

The data shows that, by far, the most frequent type of collision for AT crashes is "one motor vehicle – going straight." This could imply that most AT crashes occur when the motor vehicle involved is traveling straight and the pedestrian(s) or bicyclist(s) involved are also traveling straight, but in a direction perpendicular to the motor vehicle.

This type of scenario could occur either at an intersection or mid-block, and – similar to how "pedestrian failed to yield right of way to vehicle" was the most frequent contributing factor to AT crashes – this information provides an opportunity to assess how areas where active transportation users and automobiles make conflicting movements raise both challenges and opportunities for safety in the transportation system of the region.

Table C-12: Active Transportation Crashes by Manner of Collision

Manner of Collision	Number of AT Crashes	Percent of All AT Crashes
One Motor Vehicle - Backing	256	11%
One Motor Vehicle - Going Straight	1,443	65%
One Motor Vehicle - Turning Left	303	14%
One Motor Vehicle - Turning Right	181	8%
Other Manners of Collision*	55	2%
Total	**2,238**	**100%**

*Combined remaining manners of collision that individually have less than 100 occurrences over the five-year period.

OTHER FACTORS

Other, secondary, factors that contributed to AT crashes can provide additional information on the conditions of each accident and increase understanding of why a crash occurred. **Table C-13** presents AT crashes categorized by secondary factors that contributed to crashes. This information reveals that,

for crashes where a secondary factor was reported, "attention diverted from driving" was the most prominent category. Issues of driver inattention could potentially be addressed in part by street environment design choices that naturally encourage drivers to pay closer attention to their surroundings, such as flashing light beacons or reflective materials at pedestrian crossings, painted pavement along bicycle facilities, and other techniques.

Table C-13: Active Transportation Crashes by Other Factors

Other Factors	Number of AT Crashes	Percent of All AT Crashes
Open Door or Object Projecting from Vehicle	10	0.5%
One Vehicle Forward from Parking	11	0.5%
One Vehicle Parked Improper Location	16	1%
Vision Obstructed by Headlight or Sun Glare	16	1%
One Vehicle Entering Driveway	42	2%
Additional Other Factors*	88	4%
One Vehicle Backward from Parking	139	6%
One Vehicle Leaving Driveway	166	7%
Attention Diverted from Driving	228	10%
Not Applicable	1,522	68%
Total	**2,238**	**100%**

*Combined remaining factors that individually have less than 10 occurrences over the five-year period.

ROADWAY TYPE

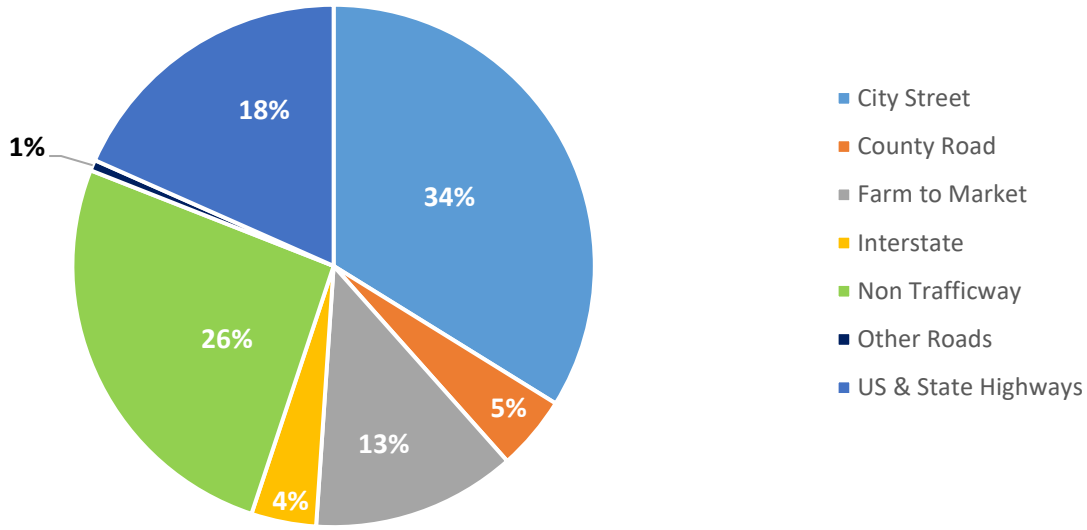
Identifying patterns in the frequency of AT crashes based on the type of roadway facilities where they occur is another technique that can help RGVMPO focus their efforts to improve safety by exposing which types of facilities may pose higher risks for active transportation users. Normally, this comparison of crashes to the facilities on which they occur would be conducted based on roadway functional classifications. The CRIS database does provide functional classification information, however, for the AT crashes examined in this safety analysis, 68% were not assigned functional class attributes. So, the project team used the roadway type attribute instead, which provides similar information but grouped into slightly different categories. **Table C-14** shows these roadway types, as well as the number of AT crashes experienced in relation to each.

Table C-14: Active Transportation Crashes by Roadway Type

Roadway Type	Number of AT Crashes	Percent of All AT Crashes
Other Roads	15	1%
Interstate	90	4%
County Road	103	4%
Farm to Market	283	13%
US & State Highways	411	18%
Non Trafficway	579	26%
City Street	757	34%
Total	**2,238**	**100%**

Figure C-12 illustrates that, for the period from 2015-2019, just over a third of AT crashes occurred on city streets, just over a fourth occurred on non-trafficways (such as parking lots), just under a fifth occurred on US & State highways, and 13% occurred on Farm to Market facilities.

Figure C-12: Active Transportation Crashes by Roadway Type



Regional Active Transportation Crash Trends by Location

In addition to understanding crash patterns based on attributes such as time, severity, and contributing factors, it is also crucial to understand locational patterns of crashes over time so that the RGVMPO and its member jurisdictions can address safety needs on a geographic basis using targeted solutions and strategies that are appropriate to specific locations and areas.

Intersection-Related Crashes

Intersections can be some of the most dangerous locations within a transportation system because they create points of interaction where various forms of transportation such as cars, bicyclists, pedestrians, and other modes make conflicting movements. Intersections can be particularly dangerous for bicyclists and pedestrians because when collisions happen, these transportation system users are unprotected from the speed and strength of moving motor vehicles. CRIS data provides attributes to determine whether a crash was intersection related, and this information can help RGVMPO understand whether these features of its transportation network create notable safety issues for active transportation users.

Table C-15 compares the total number of intersection-related AT crashes in the region to the total amount of AT crashes overall, as well as to the total amount of all intersection-related crashes in the region, regardless of the modes of transportation involved. This information shows that a third of all AT crashes are also intersection related, while the 747 intersection-related AT crashes make up only 1% of all intersection-related crashes in the region.

Table C-15: Intersection-Related Active Transportation Crashes Compared to Other Crash Figures

Number of All Intersection-Related AT Crashes*	As a Percent of All AT Crashes	As a Percent of Total Intersection-Related Crashes* (All Modes)
747	33%	1%

*Intersection-related crash information was gathered through the pre-defined filter available from the CRIS Query Builder. The filter returns any crashes that are in any way related to an intersection or occurring within an intersection.

Table C-16 breaks out the number of all intersection-related AT crashes per year over the five-year period, as well as the number of intersection-related pedestrian crashes and intersection-related bicycle crashes for the same period.

The involvement of pedestrians versus the involvement of bicyclists within the total number of intersection-related crashes is almost exactly equal, with 374 crashes being intersection-related pedestrian crashes and 373 being intersection-related bicyclist crashes.

Table C-16: Intersection-Related Active Transportation Crashes

Year	Number of All Intersection-Related AT Crashes	Percent of All Intersection-Related AT Crashes	Number of Intersection-Related Pedestrian Crashes	Percent of Intersection-Related Pedestrian Crashes	Number of Intersection-Related Bicyclist Crashes	Percent of Intersection-Related Bicyclist Crashes
2015	159	20%	77	21%	82	22%
2016	161	21%	68	18%	93	25%
2017	136	18%	70	19%	66	18%
2018	135	18%	80	21%	55	15%
2019	156	23%	79	21%	77	20%
Total	**747**	**100%**	**374**	**100%**	**373**	**100%**

Locations of Top AT Crash Intersections

In addition to understanding whether intersections create safety hazards for active transportation users in the region, identifying specific intersections that experienced the most AT crashes over the five-year period can help RGVMPO further fine-tune any potential solutions to its active transportation safety issues and distribute resources more efficiently.

A two-step methodology was used to identify the top AT crash intersections in the region. The first step was an Excel analysis in which the intersection flag attribute of the CRIS data was used to identify any crashes that occurred at intersections. Once the data was filtered down to include only crashes that occurred at intersections, the information in the street name and intersecting street name fields was counted to determine the number of times each specific intersection appeared in the filtered data. The second step was a GIS spatial analysis that used latitude and longitude information from the CRIS database to examine the proximity of crash points to intersection points. A buffer of 50 feet was created around each intersection in the network, and the number of AT crash points that fell within each intersection buffer was counted to determine the intersections with the most crashes in close proximity.

The intersections resulting from this two-step methodology are shown in **Table C-17**, along with the broader location of each intersection and the number of AT crashes counted there for the five-year period. To determine which intersections were considered to be "top" crash intersections, the project team used a threshold of 4 or more crashes from 2015-2019.

Table C-17: Top Active Transportation Crash Intersections

Intersection	Location	Crash Count
International Blvd. (SH 4) @ Southmost Blvd. (FM 1419)	Brownsville	11
Spur 206 @ IH-69E	Harlingen	8
Jackson St. (FM 3362) @ W. University Dr. (SH 107)	Edinburg	6
Paredes Line Rd. (FM 1847) @ E. Alton Gloor Blvd. (FM 3248)	Brownsville	6
16th St. @ W. US Business 83	McAllen	6
15th St. @ W. US Business 83	McAllen	6
Sugar Rd. @ W. University Dr. (SH 107)	Edinburg	6
N. 10th St. (SH 336) @ Pecan Blvd. (SH 495)	McAllen	5
N. Ware Rd. (FM 2220) @ Pecan Blvd. (SH 495)	McAllen	5
IH-69E @ Boca Chica Blvd. (SH 48)	Brownsville	5
Beaumont Ave. @ S. 15th St.	McAllen	5
E. 12th St. @ US Business 77	Brownsville	5
Spur 206 @ US Business 77 (S. 77 Sunshine Strip)	Harlingen	4
N. 7th St. @ US Business 77 (N. 77 Sunshine Strip)	Harlingen	4
E. 7th St. @ E. Jackson St.	Brownsville	4
SH 100 @ Padre Blvd. (PR 100)	South Padre	4
10th St. (SH 336) @ W. US Business 83	McAllen	4
N. McColl Rd. (FM 2061) @ Nolana Ave. (FM 3461)	McAllen	4
1st St. @ Jackson St.	Harlingen	4

Figure C-13 shows the top AT crash intersections identified throughout the region using the two-step methodology. **Figure C-14, Figure C-15, Figure C-16**, and **Figure C-17** provide closer looks at the areas where these top crash intersections are concentrated within the RGVMAB.

Figure C-13: : Active Transportation Top Crash Intersections - Regionwide

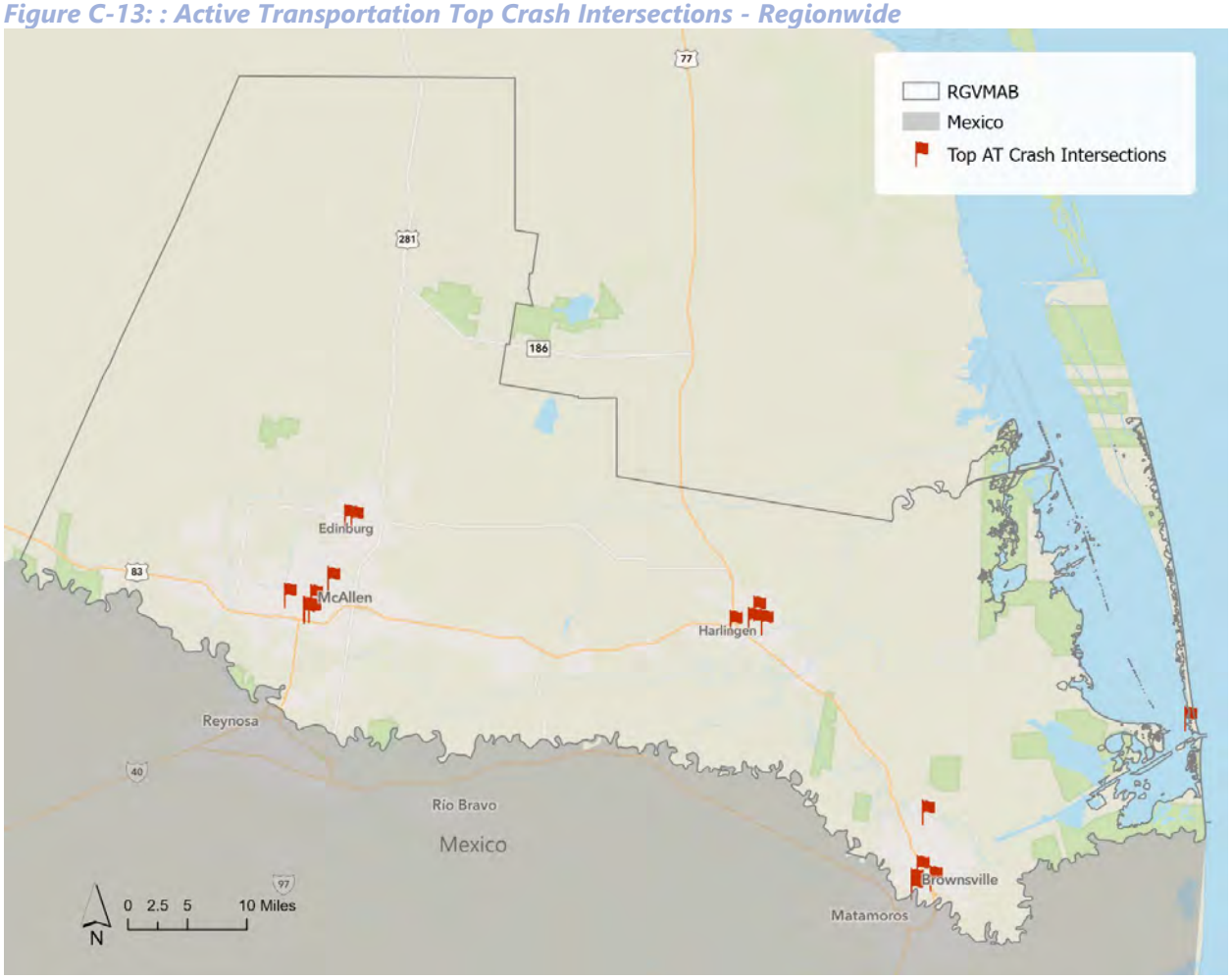


Figure C-14: Active Transportation Top Crash Intersections – McAllen & Edinburg

Figure C-15: Active Transportation Top Crash Intersections - Harlingen

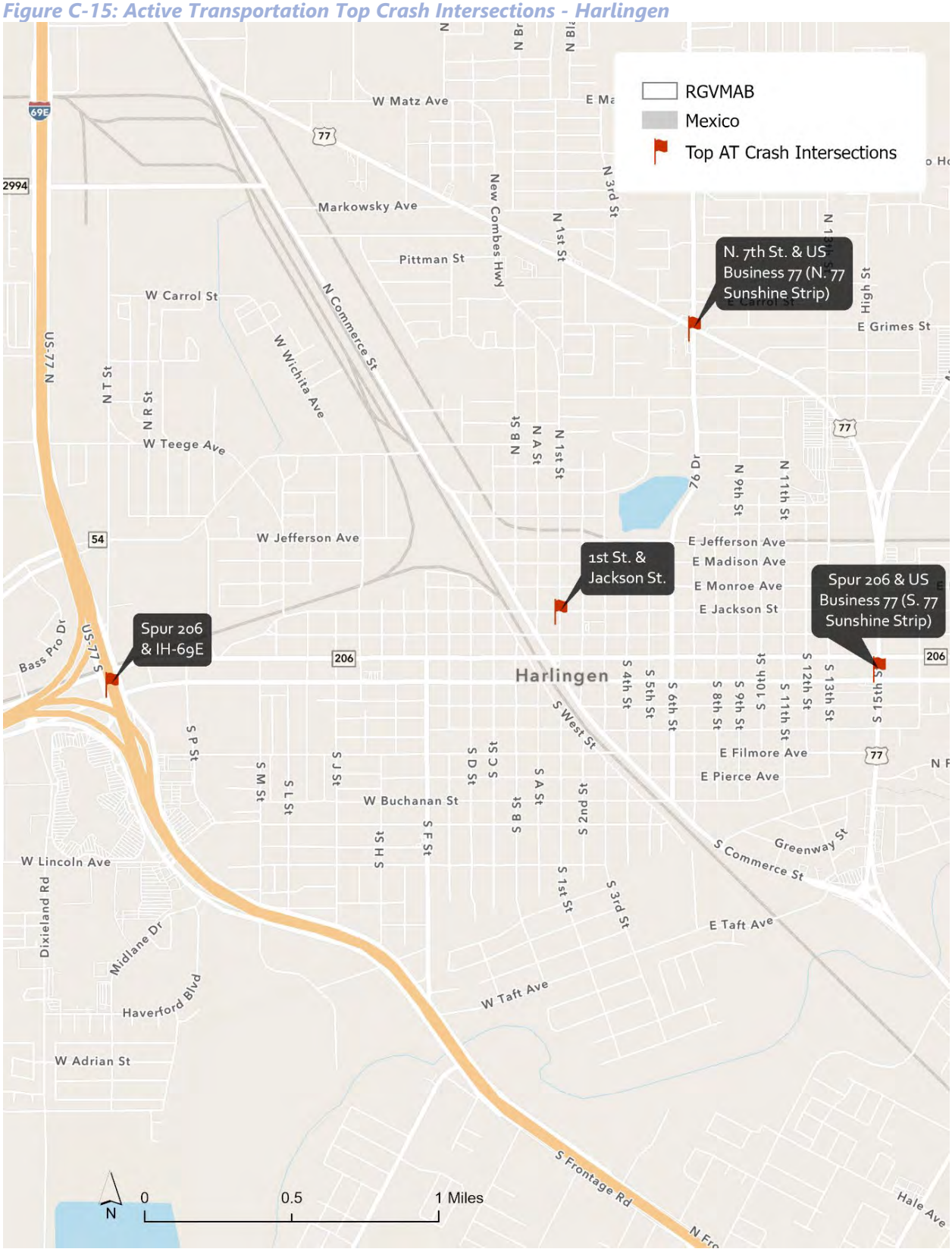


Figure C-16: Active Transportation Top Crash Intersections - Brownsville

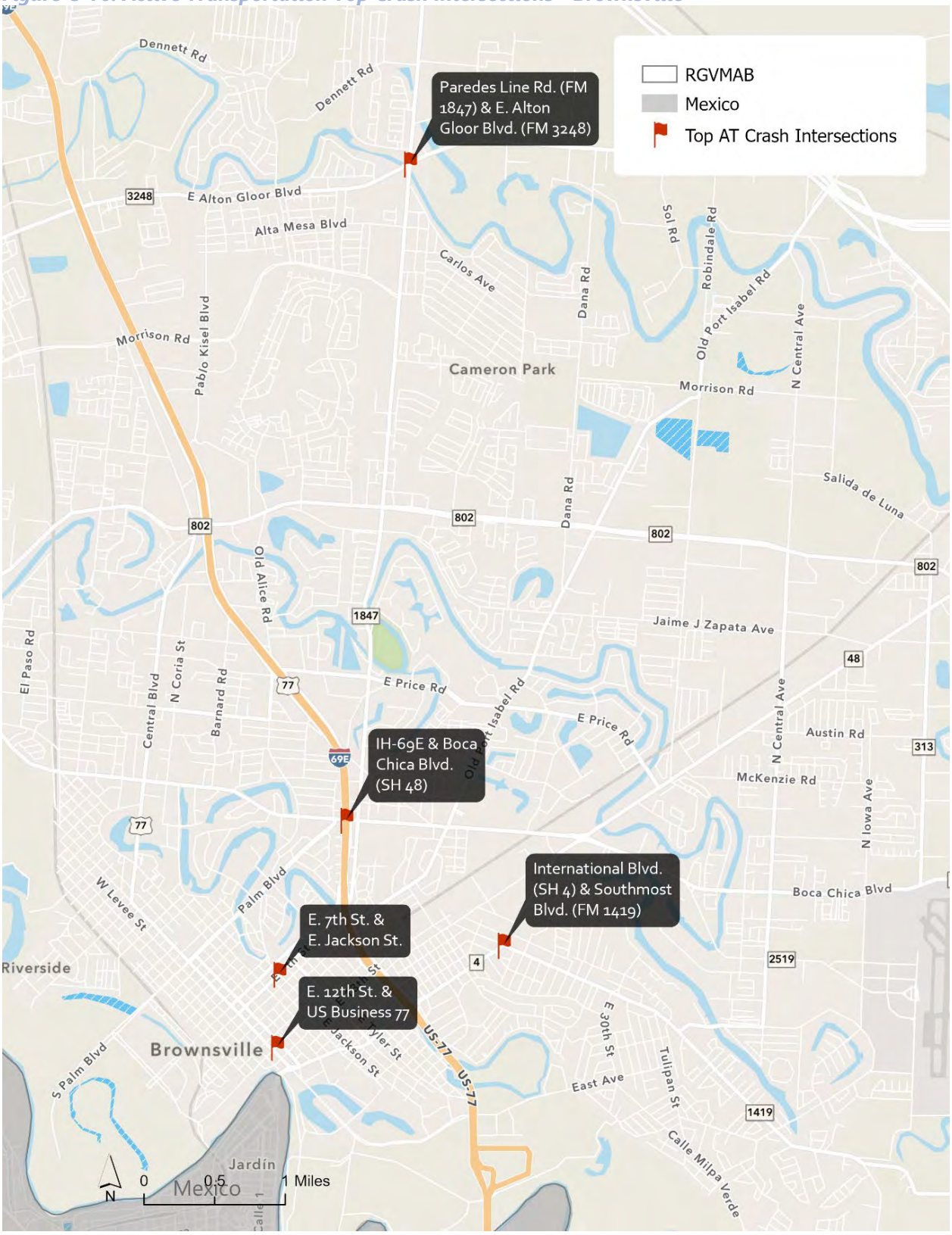
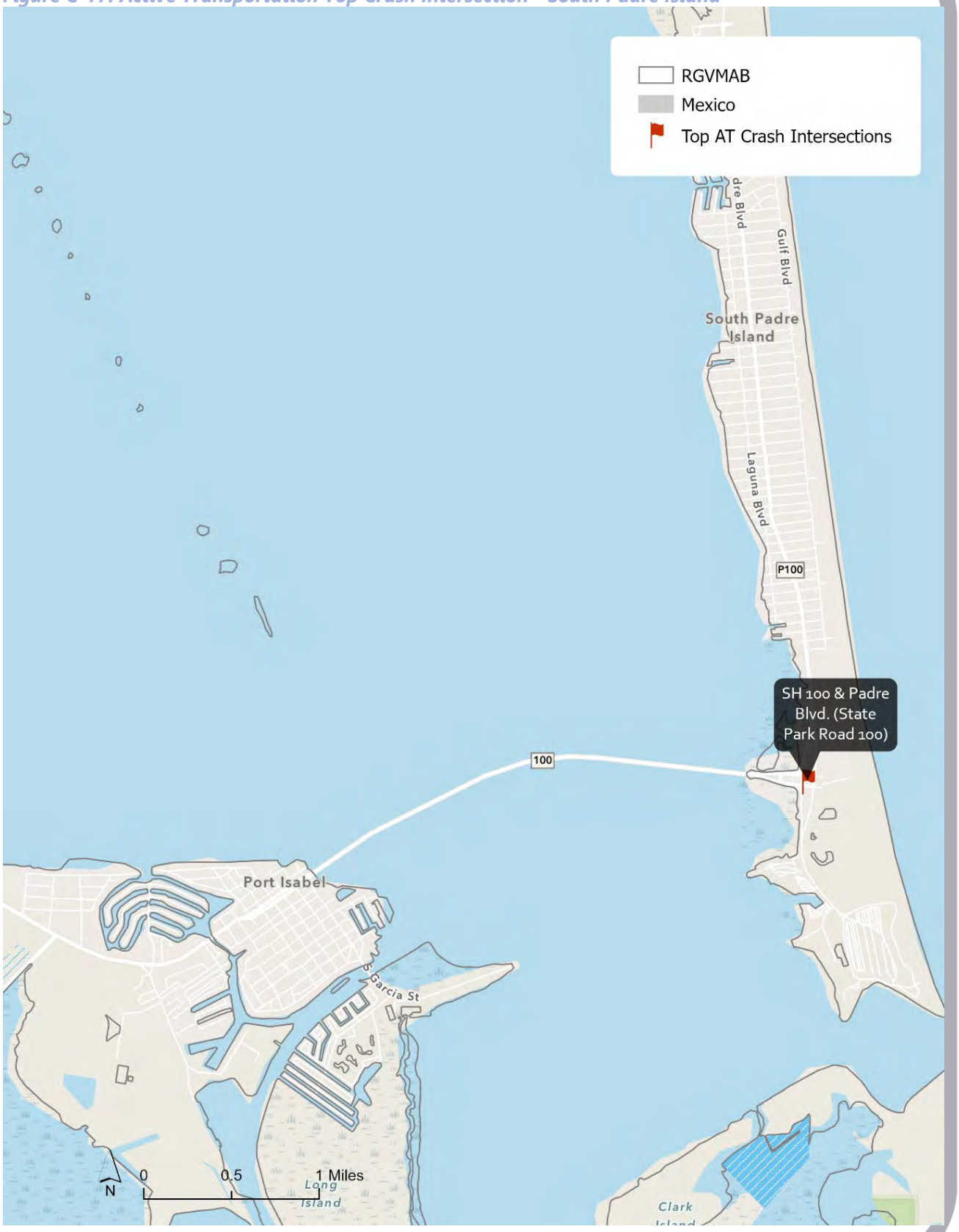


Figure C-17: Active Transportation Top Crash Intersection - South Padre Island



NETWORK ANALYSIS

Bicycle Level of Traffic Stress

A Bicycle Level of Traffic Stress analysis (LTS) used roadway characteristic factors to estimate how an average person would feel while using a bicycle on a given segment of roadway. Roadway characteristics that influence a decision to cycle include high vehicle speed, high traffic volumes, wide roads, or lack of designed space for bicycles. Roadway factors that contribute to comfort include, low speeds, presence of a bike facility, especially those separated from traffic, and traffic calming measures.

The LTS analysis identified gaps/deficiencies in the region's roadway network where bicyclists do not have comfortable travel options. It also provided a look at opportunities for safe comfortable roadways, produced updated LTS data inventories for the region and provided an inventory to guide the region's discussions on future facility upgrade alternatives.

Methodology

The methodology for this analysis was conducted using a method modified from a 2012 report by the Mineta Transportation Institute (MTI) titled, *Low-Stress Bicycling and Network Connectivity*[1], which is widely credited in similar analysis from other existing condition analysis reports. The project team used a data-driven process considering the following factors to better understand how they relate to perceptions of bicycle comfort:

- Posted speed limits
- Number of travel lanes; and
- Presence of bicycle facility by type

All measures were attributed to RGVMPO travel demand model roadway segments within the RGVMAB. Staff used the four bicycle LTS categories defined in the MTI report and accordingly, a network was produced, flagging roadways that matched. Each of the four designated levels of comfort, are described in **Table C-18.**

Table C-18: Level of Traffic Stress (LTS) Descriptions

Level of Stress	Description
1 (Low Stress)	Presents little traffic stress and is comfortable for most all users, including children and families.
2	Presents little traffic stress and is suitable for many adult users or those with some cycling experience.
3	Presents some traffic stress and is suitable for only those who are confident or possess significant cycling experience.
4 (High Stress)	Only comfortable for the most confident bicyclist and not suitable for the average user.

**Due to variability and gaps in data, not all segments with given LTS scores may reflect real life conditions.*

As with all bicycle LTS and similar bicycle comfortability/safety perception analyses, the dispersion of metrics (e.g. facility design, traffic volumes, and automobile speeds) into categories and outcomes were highly dependent upon data availability. The project team used MTI's LTS methodology as a

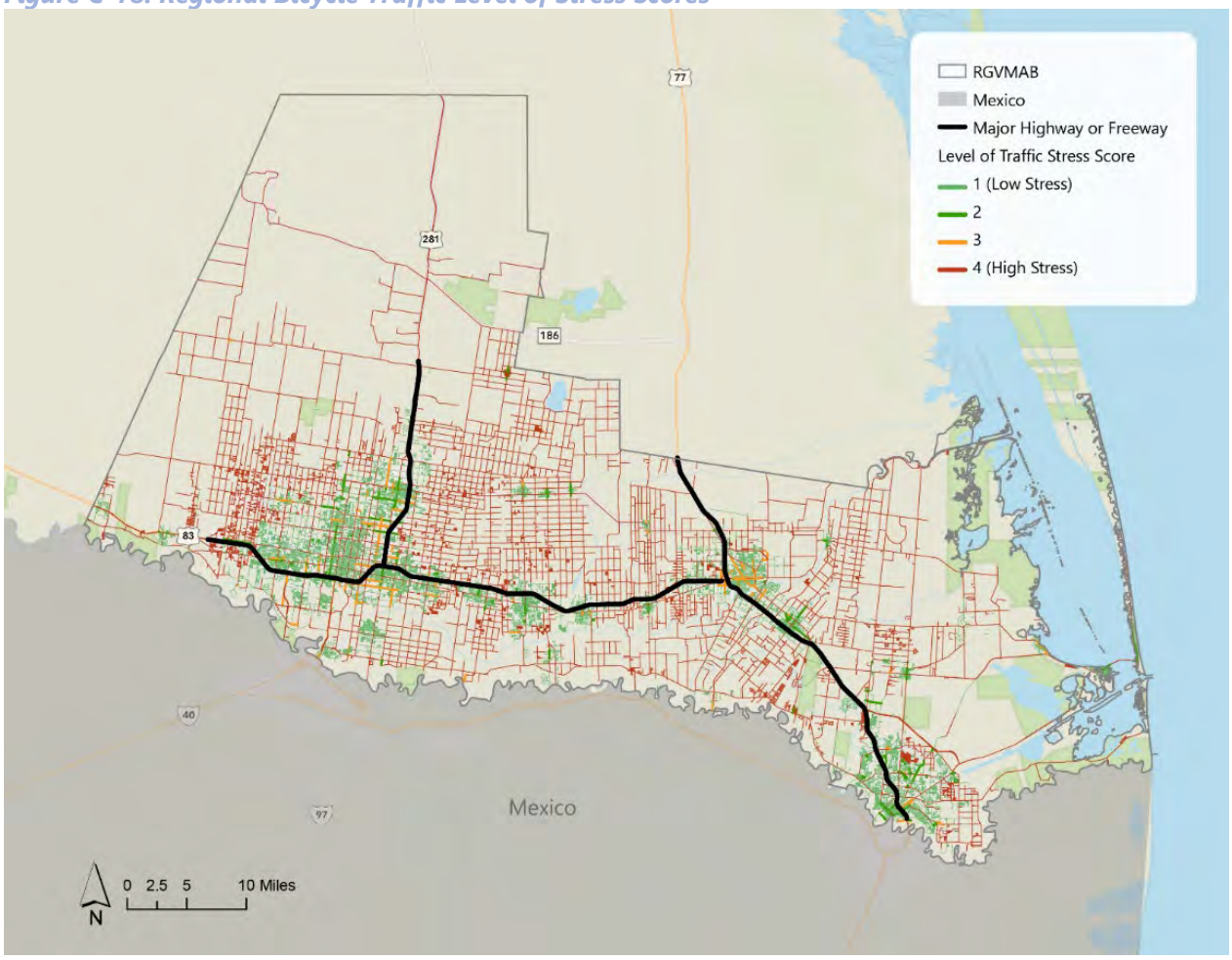
[1] (Mineta Transportation Institute, 2012)

guide for choosing applicable metrics and determining how to best apply them to the analysis. to the LTS category range. It is important to note that roadway shoulder width was not considered in this analysis as it does not necessarily make a high speed or high-volume roadway comfortable for bicycling for the average user. Shoulder width is also not incorporated in the MTI methodology however, it is important to recognize that wide shoulders are valuable for confident users and act as important connections, especially in recreational riding networks. Roadways with wide shoulders will be analyzed in the Network Development and Recommendations section of this plan. It should be noted that the data for a few specific rural roadways that serve as local streets did not contain speed limit information. Without speed, limit data for some rural roadways the LTS score for these roadways may be skewed and reported as higher stress than is experienced in the field.

Results

Figure C-18 shows LTS scores across the RGVMAB. Many rural roadways are classified as LTS 4 or the highest level of stress. Speed limits on many of these roadways are the main contributing factor, as even small increases of speed by 5-10 miles per hours can result in a large jump in stress by a person biking. Urban areas in the RGVMAB contain a larger concentration of low stress roadways.

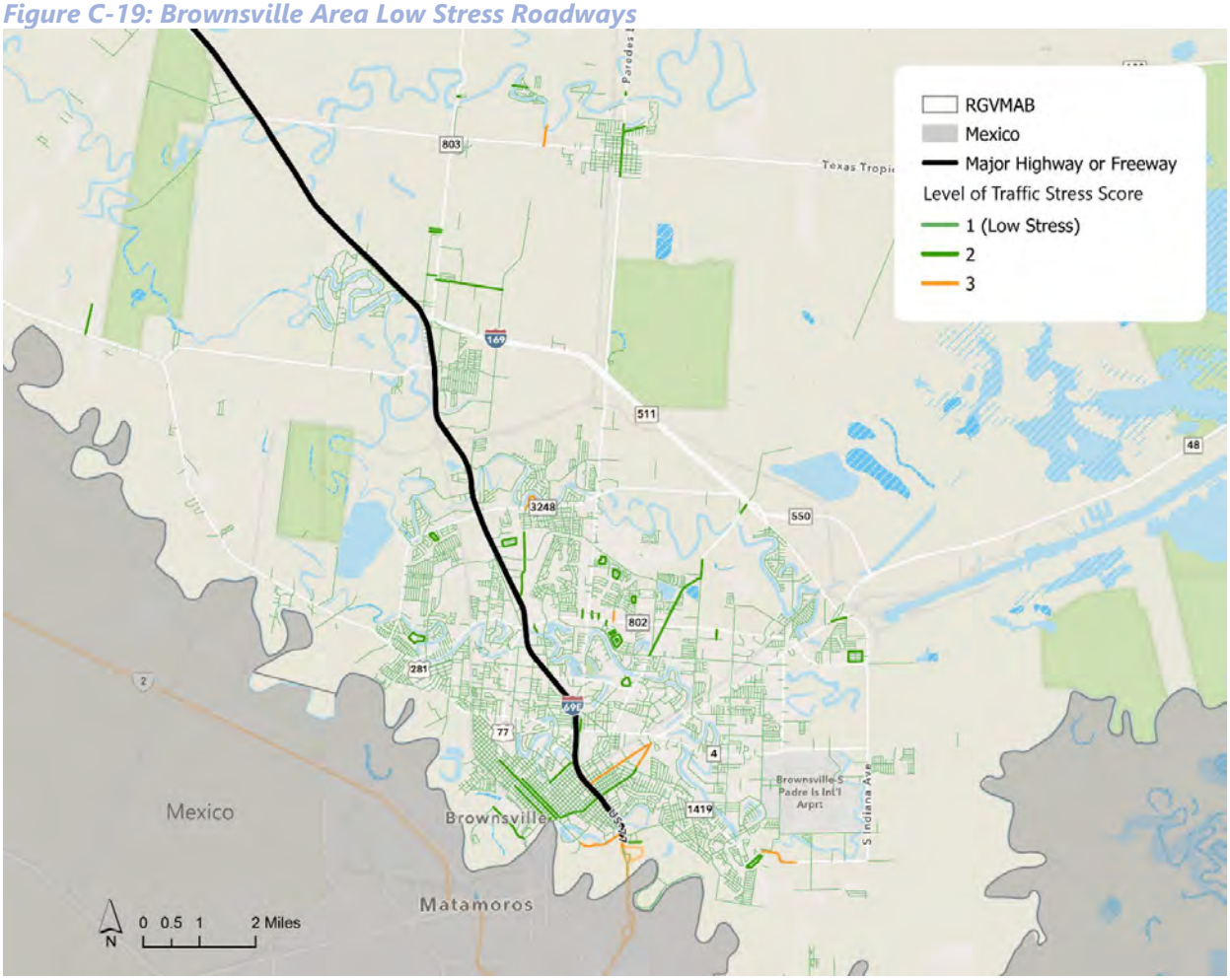
Figure C-18: Regional Bicycle Traffic Level of Stress Scores



On the following pages, **Figure C-19**, **Figure C-20**, and **Figure C-21** show only the LTS scores 1 to 3 in each urban area within the RGVMAB. This shows a high-level estimate of the low stress roadways potentially available for use in the active transportation network.

In the Brownsville area, there are many local streets for low stress riding, however connections to other low stress routes may wane as the gridded roadway network dissipates further from the urban core.

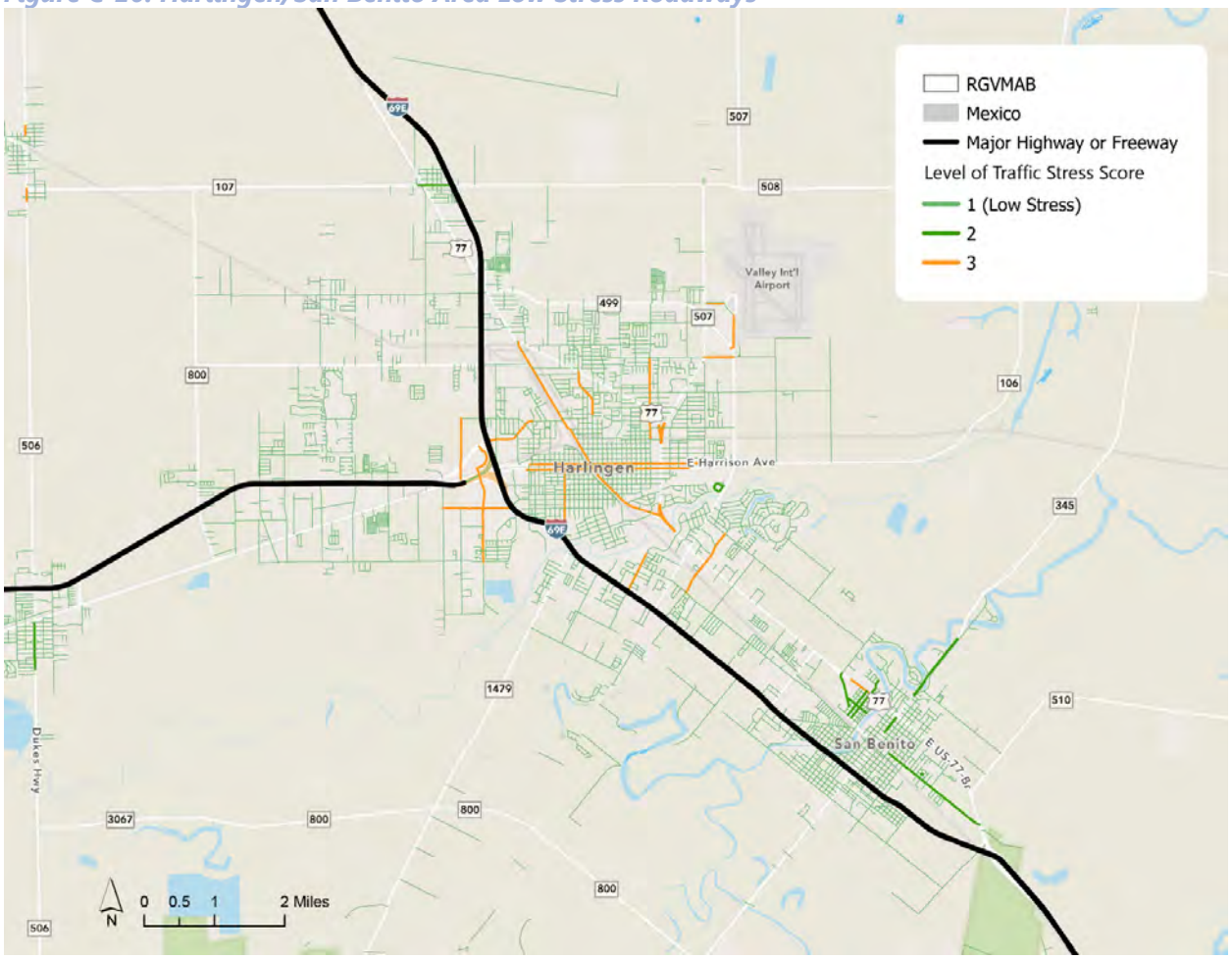
Figure C-19: Brownsville Area Low Stress Roadways



*LTS 4 not included at this scale

In the Harlingen and San Benito areas, much of the gridded roadway network provides low stress connectivity for active transportation users. Additionally, Hale St. and Shafer Rd. may provide low stress connection between the two communities.

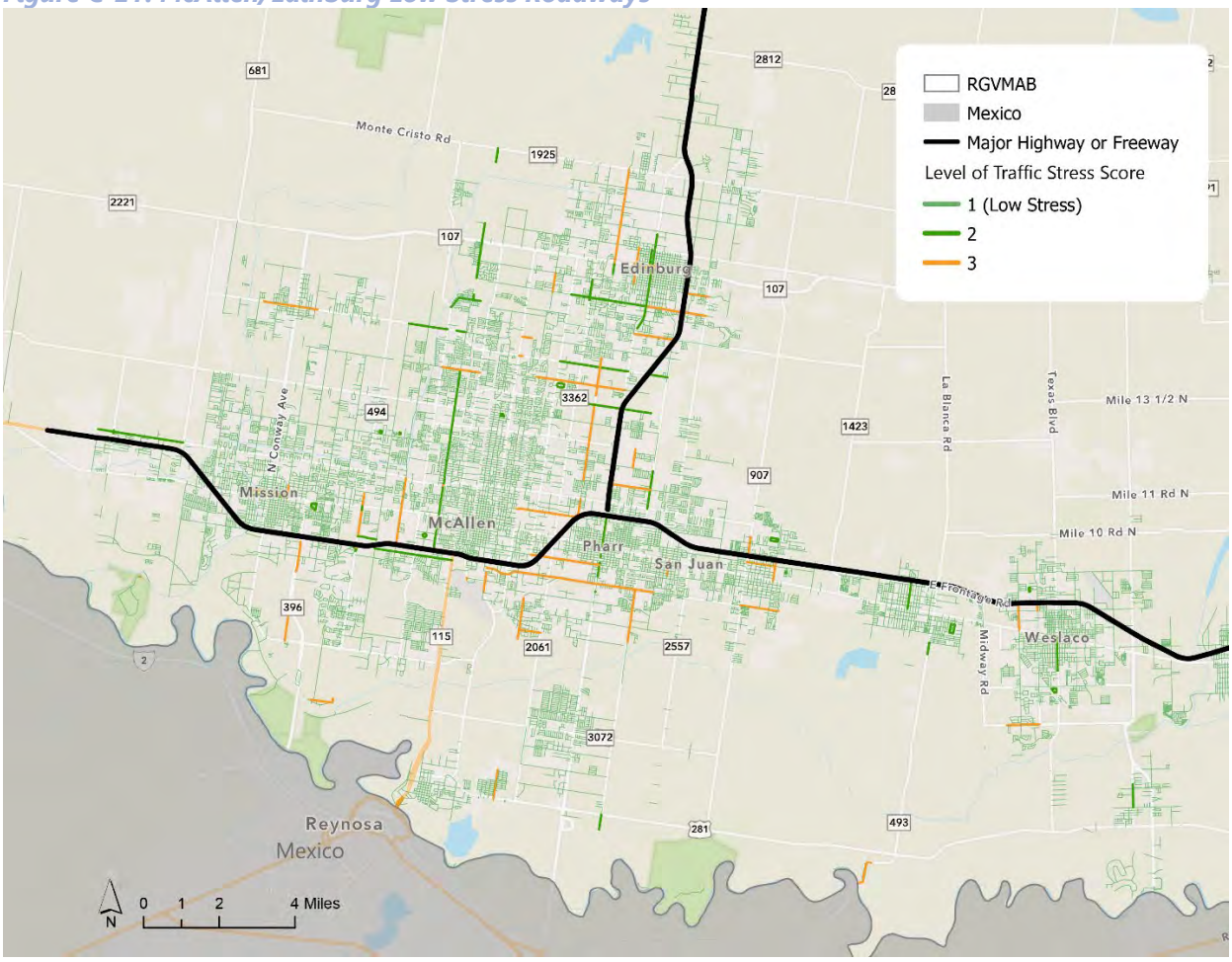
Figure C-20: Harlingen/San Benito Area Low Stress Roadways



*LTS 4 not included at this scale

In the urban region of McAllen and Edinburg, each of the communities presents options for low stress connectivity. However, connections between each community are more limited. This is especially true for east to west connections along the major transportation thoroughfares, appearing to make travel using a bike difficult for most users.

Figure C-21: McAllen/Edinburg Low Stress Roadways



* LTS 4 not included at this scale

To summarize the findings for the analysis at a regional level, low stress connections are available in many communities however, connectivity for all users is limited, especially east to west along the major interstate corridor. This may be an opportunity for regional collaboration on an off-street trail system.

Pedestrian Accessibility

The pedestrian network consists of sidewalks or Hike and Bike trail facilities. Sidewalk facilities are the backbone of this network and present mobility options for short trips so people can reach their destinations. Sidewalks, however, are bound to the location of the roadway network. A denser, more connected street network will typically indicate lower vehicle speeds, shorter walking trip distances and a greater concentration of destinations. Intersection density is a measure of how many intersections exist per square mile. Intersection density is a major factor to the propensity for people to walk or bike, along with other supporting factors like, sidewalk setback, safe crossings, placemaking, and trees or shade. Intersection density was chosen to analyze as it is the building block for all other factors. In a poorly connected street network with low intersection density, walkability can greatly suffer and only be encouraged to an extent with mentioned supporting factors.

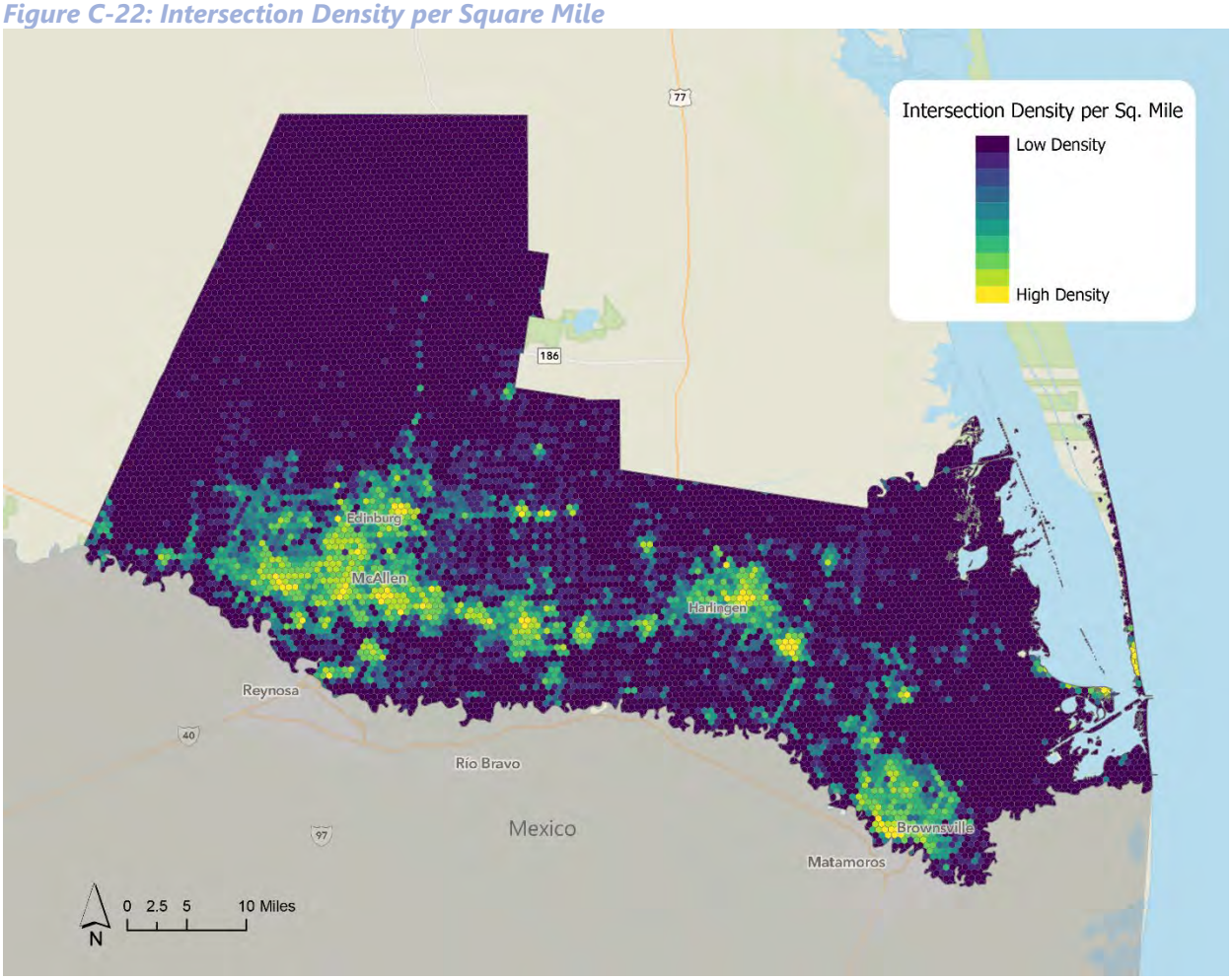
Methodology

Intersection density was calculated using roadways provided by the RGVMPO to identify intersections, or where more than one roadway crosses. To map the density of intersections per square mile, the project team opted to use a ¼ square mile hexagonal layer to show the distribution of intersection points. This method allows for an equal visual representation of density throughout the region, displaying both the more rural areas and urban areas with a standard unit. This allows for representation that more closely aligns with roadway locations and shapes over other displays such as a census block group which varies in size and is often divided along roadways. The number of intersections were spatial joined to the hexagons, to display the density of intersections per square miles.

Results

Figure C-22 shows high intersection density in larger urban centers like Edinburg and Brownsville, but also captures high intersection density in smaller communities like Elsa and Edcouch. Intersection density ranged from 0 on the low end, in the purple areas, to 442 per square mile on the high end, in the yellow areas. If sidewalks are present in the areas with high intersection density, this would support a higher propensity for walking. Conversely, if sidewalks are not present, it may indicate a missed opportunity or unmet need for people who desire to walk. A major takeaway from this analysis is the supportive urban network that exists for walking, even outside of urban areas in the RGVMAB.

Figure C-22: Intersection Density per Square Mile



Transit Proximity

There are six (6) transit agencies within the RGVMAB, which provide service to the densest areas of the region and to Rio Grande City and Roma, just to the west of the RGVMAB. These routes should be accompanied by the proper infrastructure that allows pedestrians and bicyclists to travel safely from the origin to the nearest bus stop and from the bus stop to their destination. In addition, getting to the transit station may not be enough. End of trip facilities should also be provided to allow people to lock up their bike, take their bike on the front of the bus, and to wait in relative shade. Proper infrastructure in many cases means ADA compliant sidewalks to accommodate people who walk or use a mobility devise, and bike facilities (on- or off-street bike facilities) to accommodate those who use a bike. This type of infrastructure in place not only ensures a safe trip from origin to destination, but increases overall connectivity within the transportation network, and helps provide a solution to the first-last mile dilemma. In addition, it encourages forms of active transportation which have a variety of positive impacts (environmental, health, economic, etc.).

Methodology

To better understand what connections transit riders, have available to walk or bike to a stop, a review was completed to inventory all active transportation facilities within walking or biking distance of

transit. All of the transit routes that service the RGVMAB were reviewed in the analysis. A buffer of ¼ mile was placed on each route to review the sidewalk infrastructure that exists within ¼ mile. Within a ¼ mile is the general distance transit users are willing to walk to access transit services. A one-mile buffer was applied to each route to review the existing bike facilities within a mile of each route, as transit users are typically willing to ride up to a mile to access transit services. **Figure C-23** gives a regional visual representation of the two buffers used to analyze the walking (¼ mile buffer) and the bicycling (1-mile buffer) infrastructure within the RGVMAB, while differentiating between the six transit providers.

Figure C-23: Sidewalk & Bike Facility Transit Proximity Buffer Analysis

Additionally, this analysis incorporated bike and pedestrian facilities that were within close proximity to provider connections within the region. **Figure C-24** shows the location of each provider connection. Major transit activity areas generally incentivize transit users to travel slightly farther distances due to the amenities they provide or the route connections available. To better understand conditions near the provider connections, an inventory of the percent of roads with no sidewalks and the road distance (miles) without sidewalks within ½ miles rather than ¼ mile, of each Provider Connection was created. This analysis was performed by comparing the length of roadways to the length of sidewalks within the ½ mile buffer.

Figure C-24: Overview of RGVMAB Provider Connections

Results

When analyzing bicycle and pedestrian infrastructure within a large region, such as the RGVMAB, it is important to pinpoint the regional connection points within the transportation network. These areas usually correspond with the urban centers of a region, which require the most attention when taking an inventory of sidewalk and bike infrastructure, as active transportation activities such as biking and walking occur most frequently in the urban core. Additionally, the majority of transit trips take place within the urban core, which indicates a higher need for the proper infrastructure to increase access to transit. In the case of the RGVMAB, the three major urban areas are Brownsville, Harlingen-San Benito, and McAllen-Edinburg. **Figure C-25, Figure C-27,** and **Figure C-30** detail a local and regional inventory of the active transportation facilities within close proximity to the transit services available within the RGVMAB. The following **Table C-20, Table C-21,** and **Table C-22** along with **Figure C-26, Figure C-28, Figure C-29, Figure C-31** and **Figure C-32** display sidewalks within 1/2mile of each Provider Connection. The analysis shows which Provider Connections may lack adequate facilities for people to walk to the transit stop, which may help prioritize future sidewalk improvements in these areas. The analysis indicates that Weslaco Transit Center, is the Provider Connection that could most use additional sidewalks.

Table C-19: Sidewalk Coverage at Provider Connections

Provider Connection	Percent of roads with sidewalks	Road distance with sidewalks (miles)
Weslaco Valley Metro Transit Center	11%	0.5
San Juan Station	15%	2.0
Foy's Supermarket	18%	2.2
La Feria City Hall	25%	3.1
Edinburg Transit Terminal	35%	4.7
Donna City Square Park	35%	4.7
UTRGV Visual Arts Building	36%	3.2
UTRGV Regional Academic Health Center	40%	3.3
UT Rio Grande Valley	42%	3.4
South Texas College Pecan Campus	43%	4.7
San Benito City Hall	44%	7.1
Hidalgo County Court	46%	8.3
Harlingen Terminal and Greyhound Bus Station	56%	9.4
STC Nursing Center	56%	2.9
La Plaza Brownsville	60%	8.3
McAllen Central Station	61%	11.0

BROWNSVILLE

Figure C-25: Brownsville Active Transportation Facilities within Close Proximity of Transit Routes

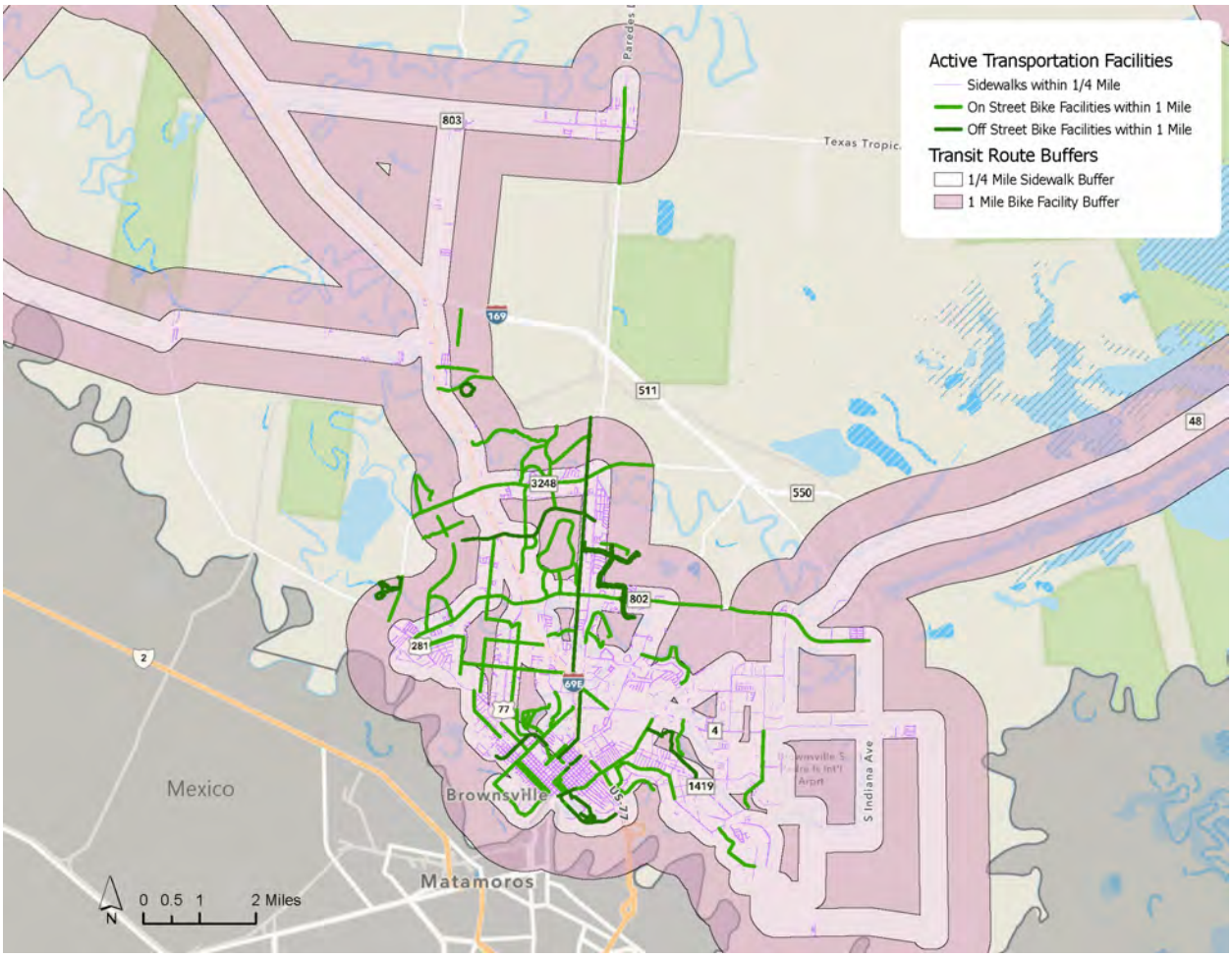
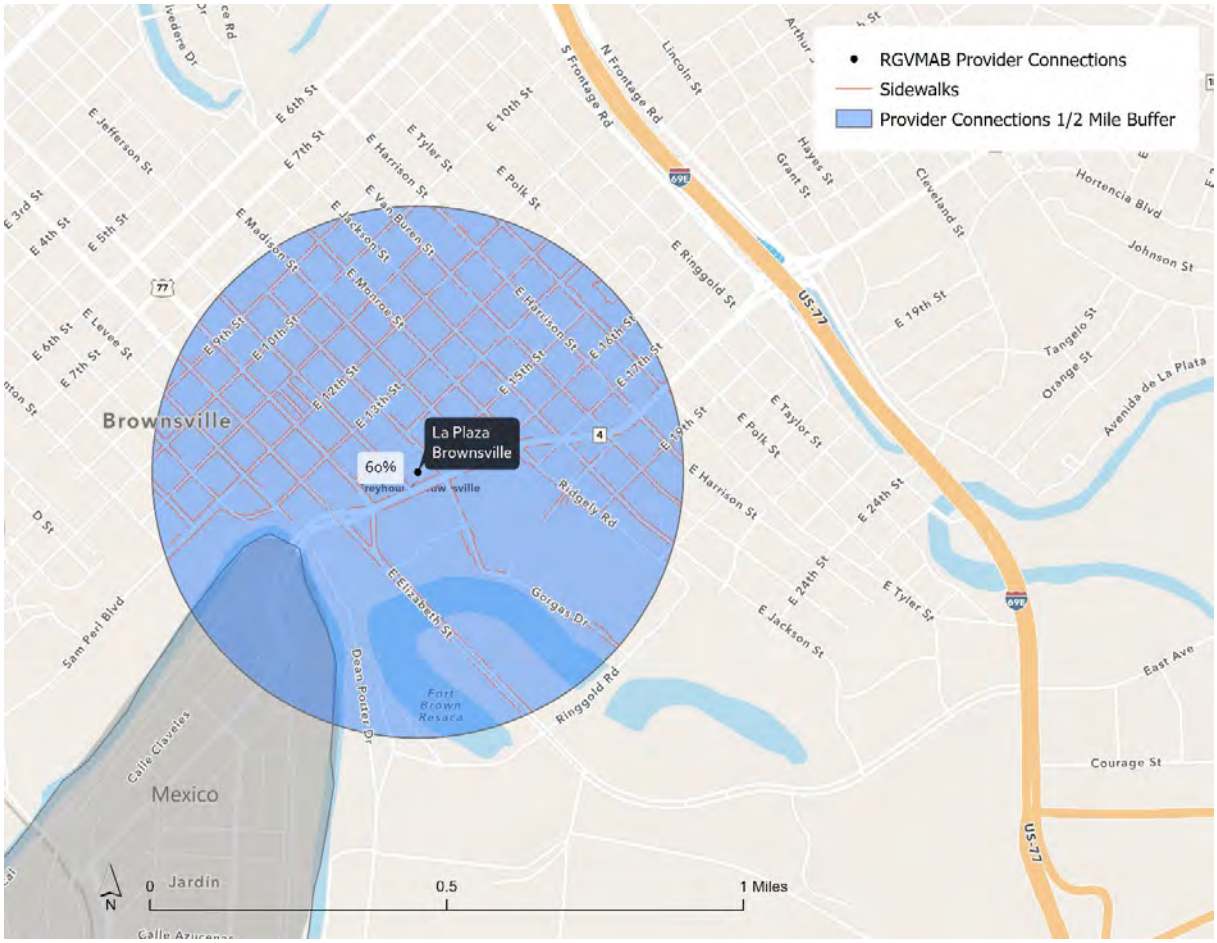


Table C-20: Inventory of Brownsville Sidewalk Facilities within 1/2 Mile of Provider Connections

Provider Connection	Percent of roads with sidewalks	Road distance with sidewalks (miles)
La Plaza Brownsville	60%	8.3

Figure C-26: Percent of Roadways within 1/2 Mile of Brownsville Provider Connections with Sidewalks Present



HARLINGEN-SAN BENITO

Figure C-27: Harlingen-San Benito Active Transportation Facilities within Close Proximity of Transit Routes

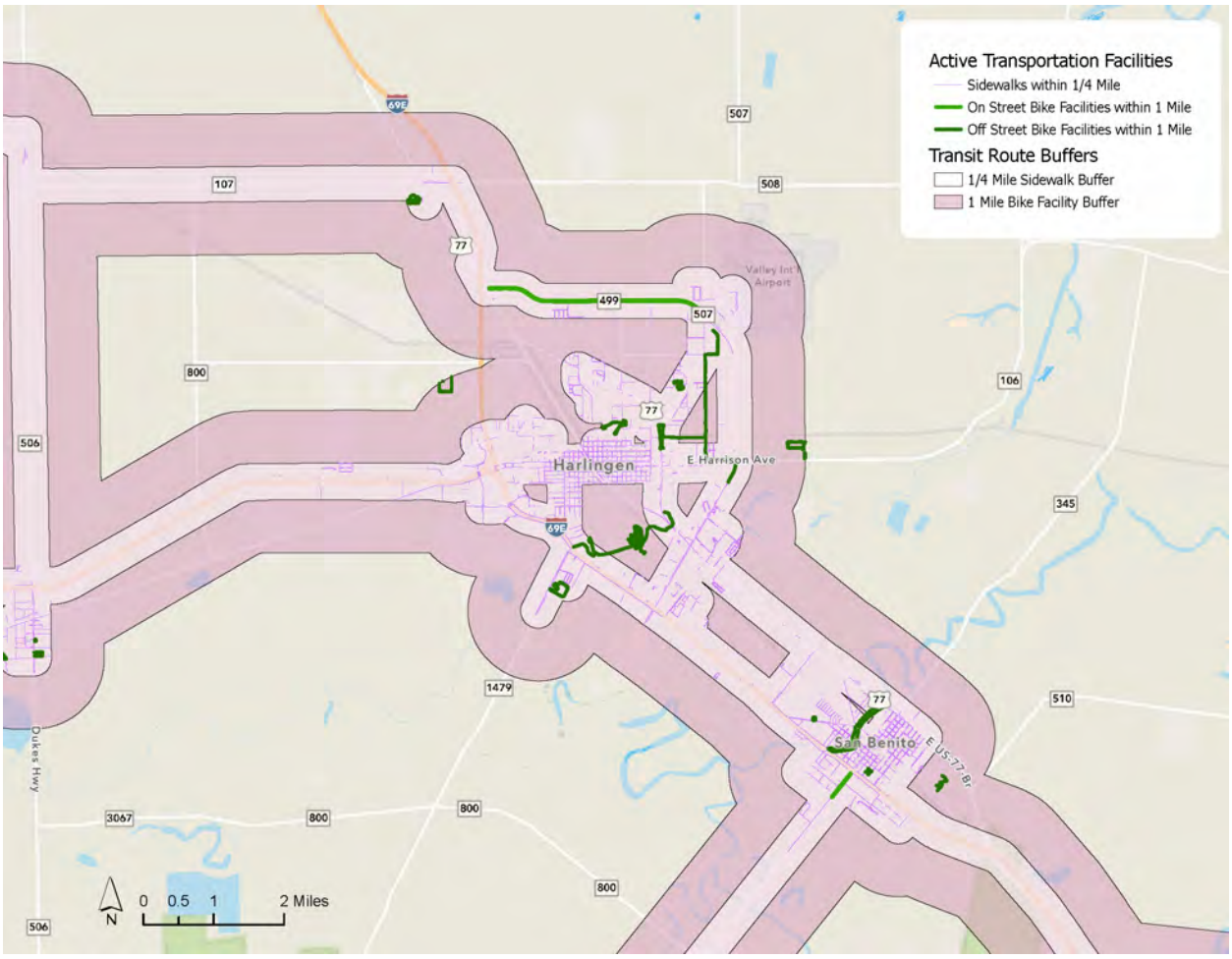


Table C-21: Inventory of Harlingen-San Benito Sidewalk Facilities within 1/2 Mile of Provider Connections

Provider Connection	Percent of Roads with Sidewalks	Road Distance with Sidewalks (miles)
Weslaco Valley Metro Transit Center	11%	0.5
La Feria City Hall	25%	3.1
Donna City Square Park	35%	4.7
UTRGV Regional Academic Health Center	40%	3.3
San Benito City Hall	44%	7.1
Harlingen Terminal and Greyhound Bus Station	56%	9.4

Figure C-28: Percent of Roadways with Sidewalks Present within 1/2 Mile of Harlingen Provider Connections

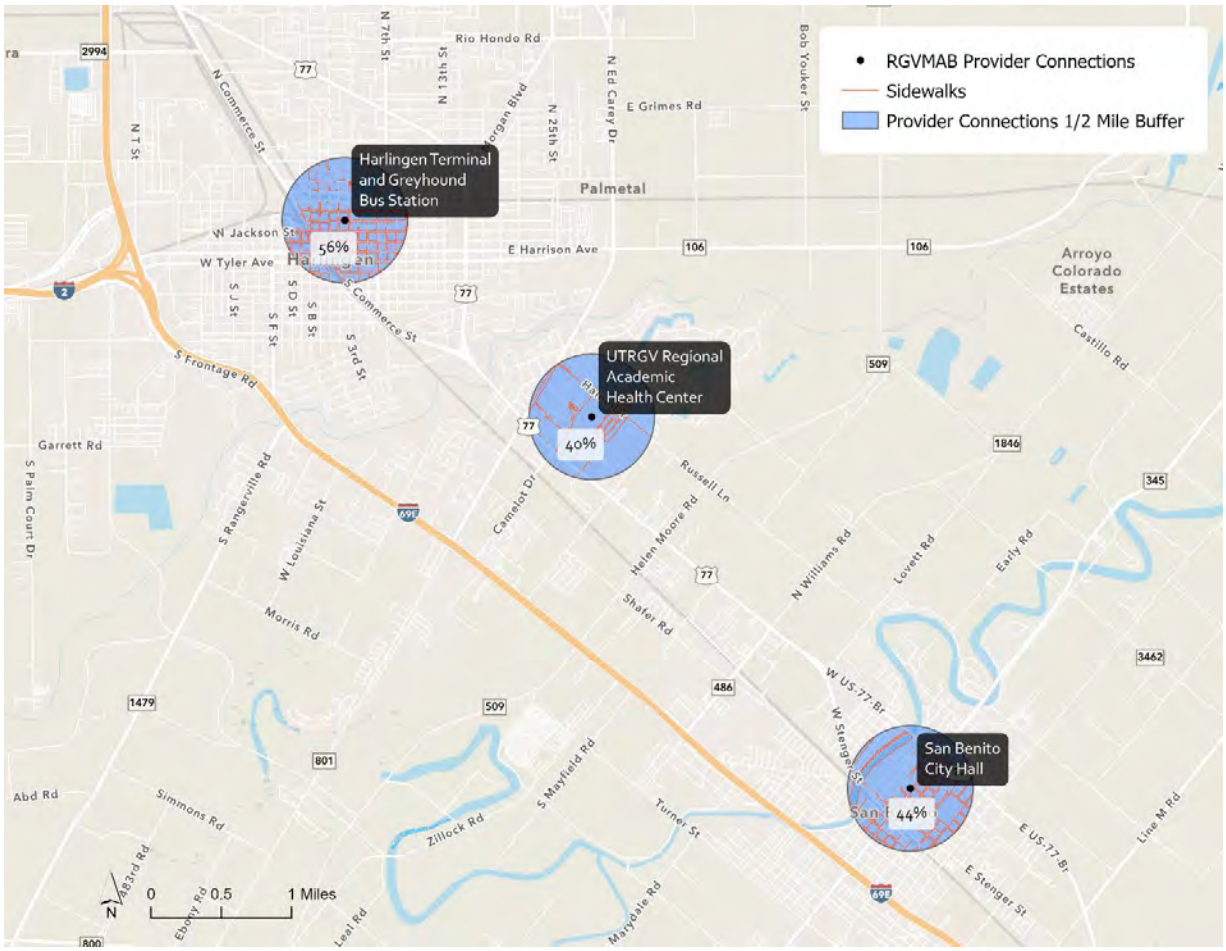
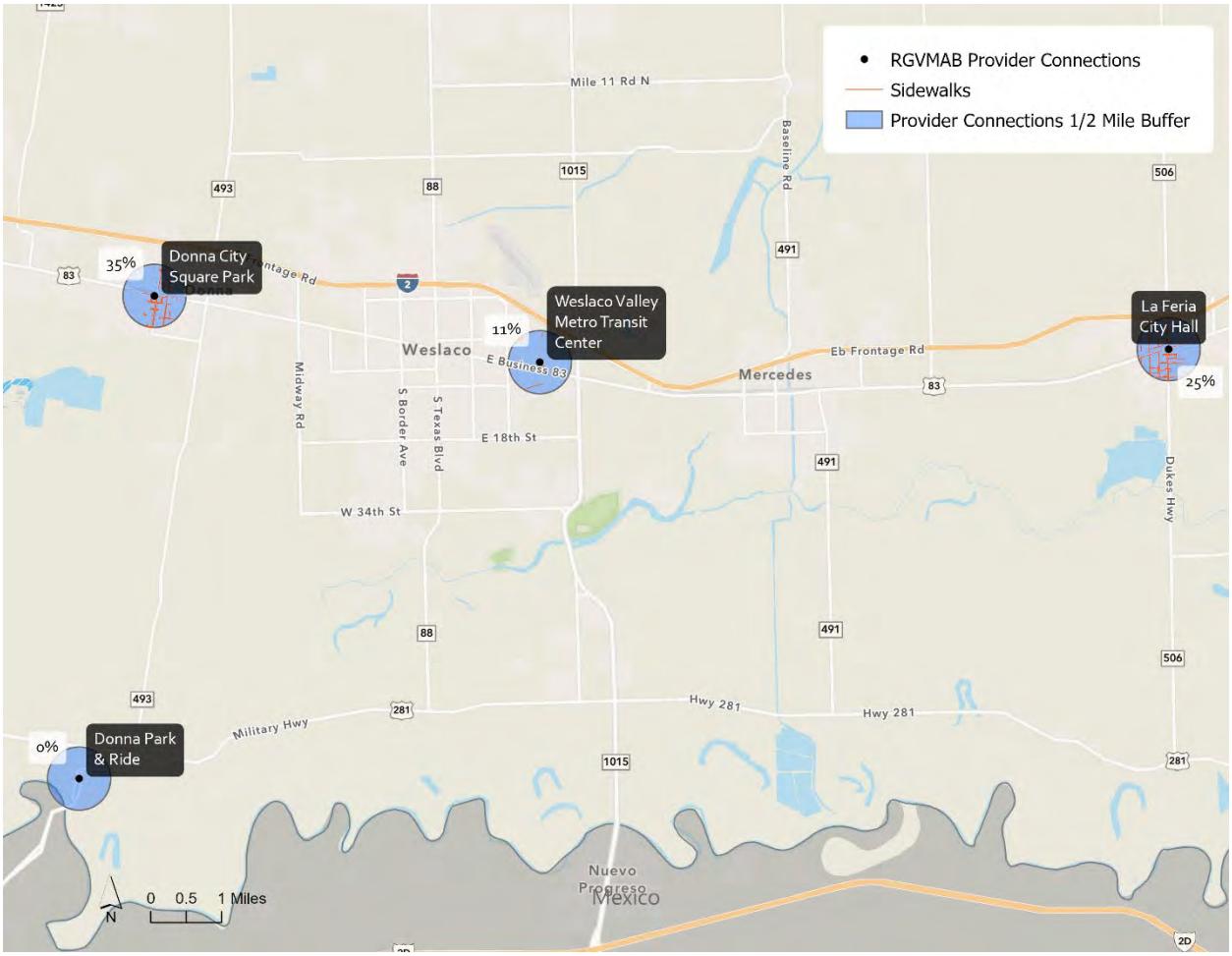


Figure C-29: Percent of Roadways with Sidewalks Present within 1/2 Mile of Weslaco Provider Connections



MCALLEN-EDINBURG

Figure C-30: McAllen-Edinburg Active Transportation Facilities within Close Proximity of Transit Routes

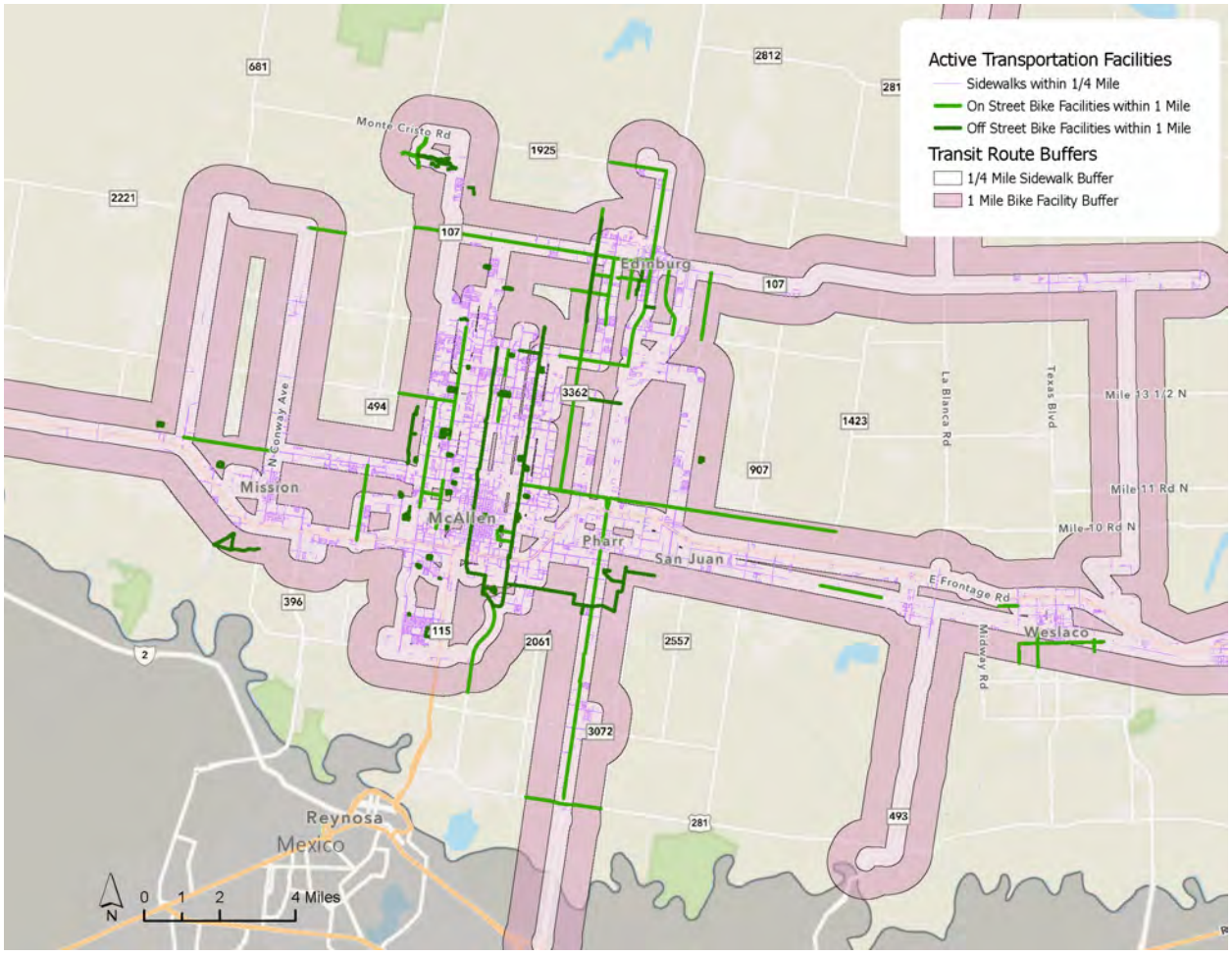


Table C-22: Inventory of McAllen-Edinburg Sidewalk Facilities within 1/2 Mile of Provider Connections

Provider Connection	Percent of Roads with Sidewalks	Road Distance with Sidewalks (miles)
San Juan Station	15%	2.0
Foy's Supermarket	18%	2.2
Edinburg Transit Terminal	35%	4.7
UTRGV Visual Arts Building	36%	3.2
UT Rio Grande Valley	42%	3.4
South Texas College Pecan Campus	43%	4.7
Hidalgo County Court	46%	8.3
STC Nursing Center	56%	2.9
McAllen Central Station	61%	11.0

Figure C-31: Percent of Roadways within 1/2 Mile of McAllen Provider Connections with Sidewalks Present

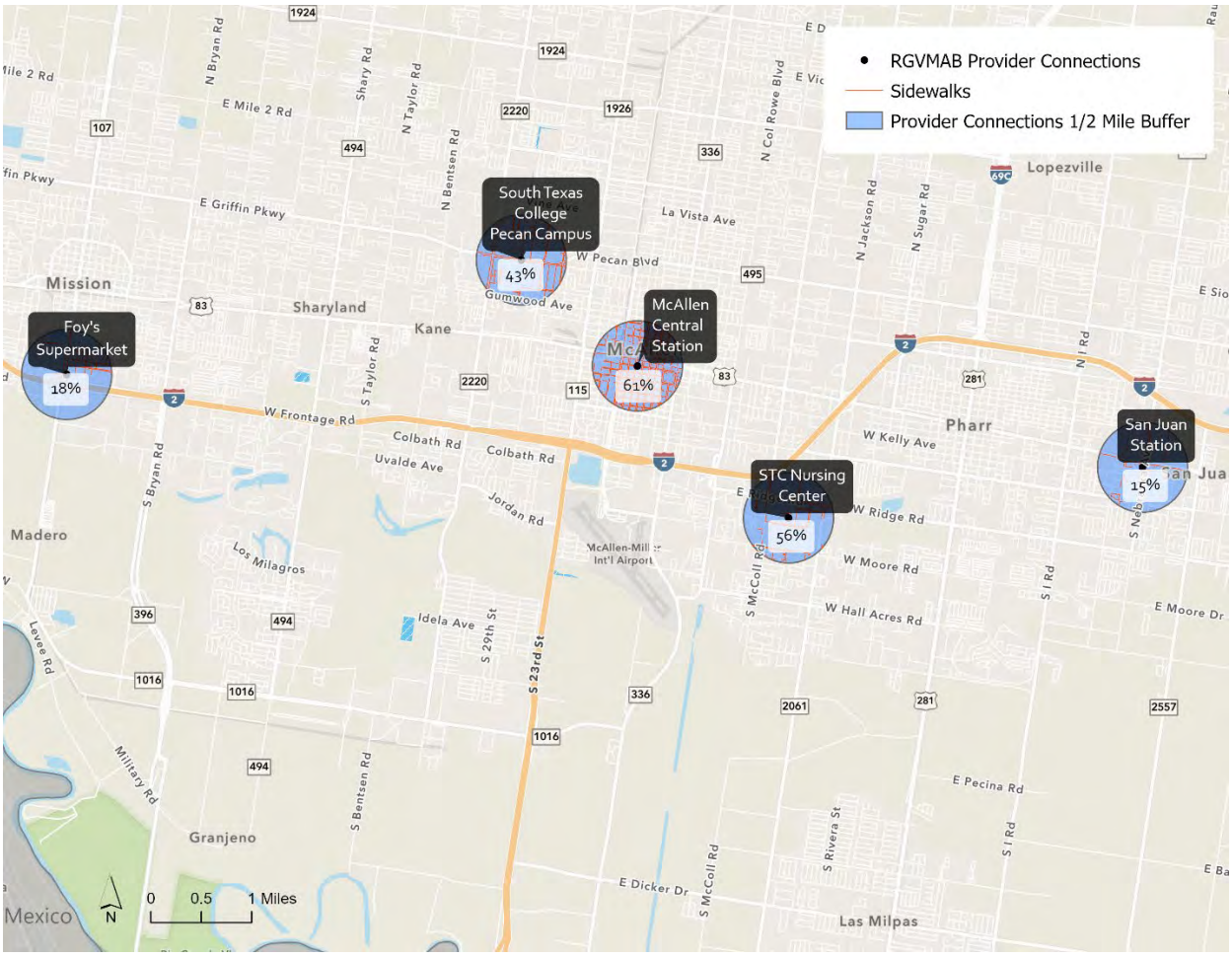


Figure C-32: Percent of Roadways within 1/2 Mile of Edinburg Provider Connections with Sidewalks Present

Travel Patterns

Short trips, trips less than 2 miles, in urban areas can often be made by modes other than a car, such as walking, biking, or using transit. Most urban areas support these modes because of the dense land use that lends to shorter distances between trip origins and destinations, as compared to rural or suburban areas.

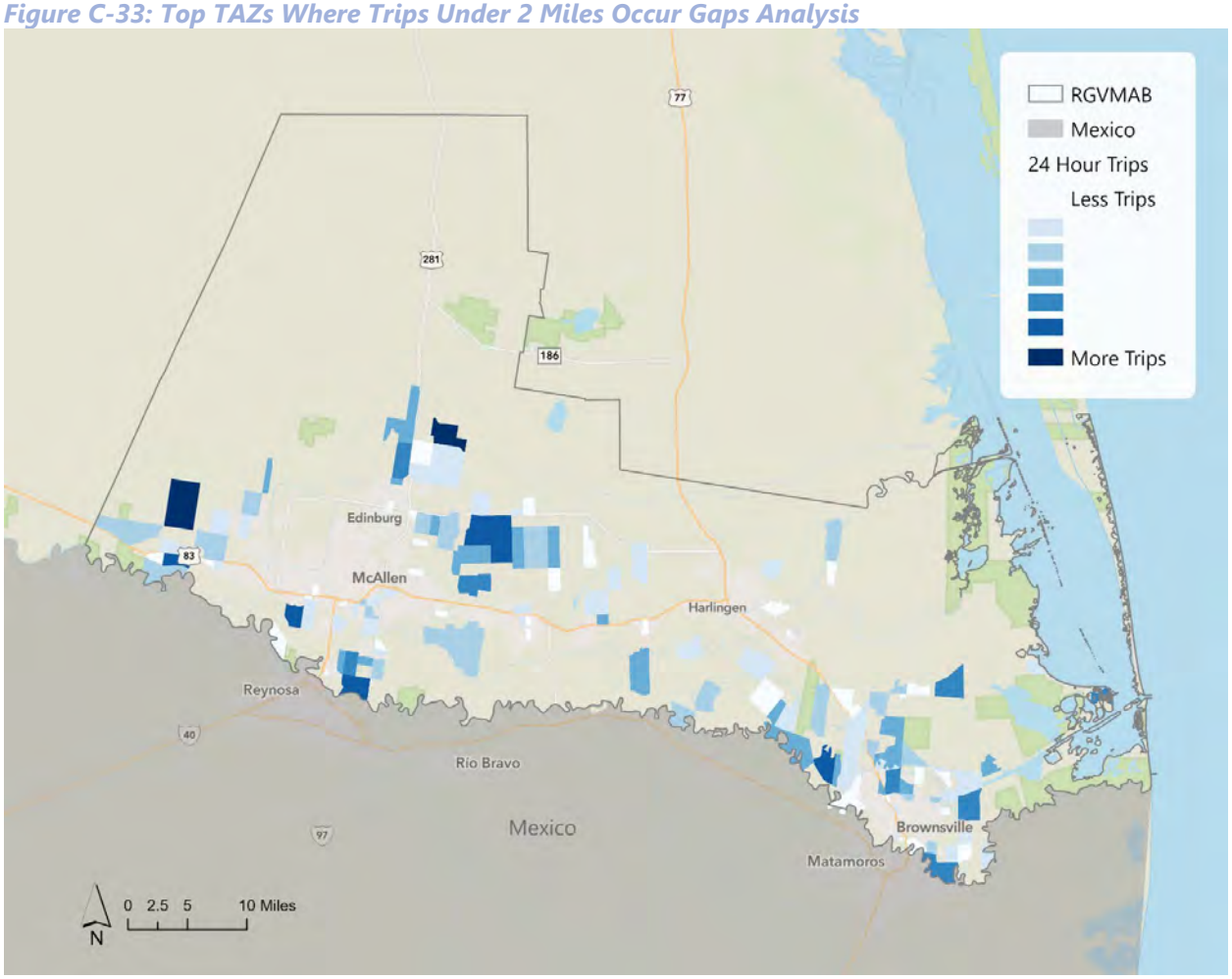
Methodology

To see where short trips occur, the project team used RGVMPO travel demand model data for 24-hour trip estimates. The travel demand model does not capture trips made by active transportation modes. It only captures trips made in motorized vehicles. The unit of geography used in the TDM is a traffic analysis zone (TAZ). TAZs where the top 250 short trips under 2 miles occur were identified.

Results

Figure C-33 shows the location of top trip TAZs. The data points out that locations with the most trips under 2 miles occur predominantly outside of the urban areas within the RGVMAB. The analysis suggests two things. Firstly, facilities for walking and biking are relatively vacant from the top trip TAZs, so residents in those areas may not have any other mode choices than to use a personal vehicle. Secondly, while urban areas show fewer short top trip TAZs, this may signal that residents are able to use modes not captured in the travel demand model data. For example, McAllen and Brownsville have pockets in their densest areas where there are no top trip TAZs, however, these areas contain facilities for walking and biking to accomplish daily needs. In summary, those top trip TAZs may benefit from additional active transportation facilities to support short trips by active modes.

Figure C-33: Top TAZs Where Trips Under 2 Miles Occur Gaps Analysis



Gap Analysis

To better understand where disparities within the RGVMAB occur between demand and supply for active transportation facilities, a gap analysis was conducted. Current walking and biking facilities were overlaid with a map of relative demand, based on seven criteria described in the methodology below. Creating a comprehensive view of existing supply and demand for active transportation facilities allows gaps to be identified and discussed with the community, which provides solutions tailored towards community needs.

Methodology

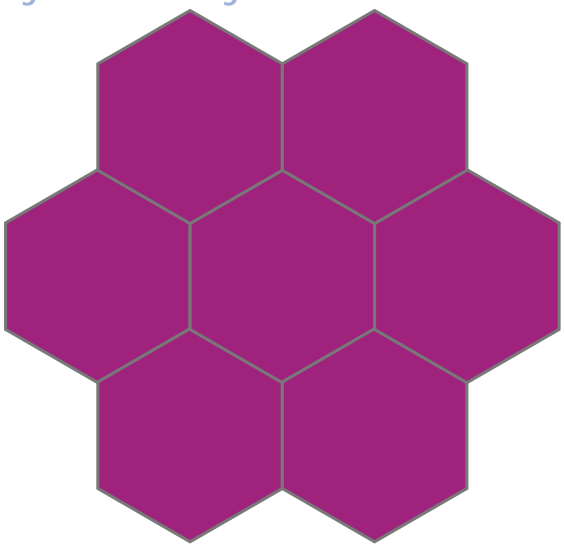
Demand was determined using seven characteristics that are driving factors that indicate a need for trips using active modes, such as walking and biking. Data was collected from Longitudinal Employer-Household Dynamics data by the US Census (LEHD), CRIS, US Census 2019 American Community Survey data (ACS), ArcGIS Business Facilities Search Tool (ArcGIS), and TxDOT's GIS roadway inventory. **Table C-23** describes each of the seven factors.

Table C-23: Gap Analysis Criteria

Criteria	Description	Geography	Data Source
Population & Employment	Total count of people and jobs per square mile.	Census Block Groups	ACS & LEHD
Population with a Disability	Percent of total population with a disability.	Census Block Groups	ACS
Population in Poverty	Percent of total population in poverty.	Census Block Groups	ACS
No Vehicle Households	Percent of total household without access to vehicle.	Census Block Groups	ACS
Crashes	Number of crashes	Point Data	CRIS
Key Destinations	Number of key destinations including: Schools, Grocery Stores, Medical Facilities, Civic Amenities, and Recreation Facilities	Point Data	ArcGIS
Intersections	Number of Intersections	Point Data	TxDOT

To make it easier to draw uniform comparisons between these criteria the data was standardized. The first method for creating a standard unit of measurement was to develop one identical unit of geography as the analysis compares datasets with different geographies (i.e. polygon and point data). This step allowed the project team to locate active transportation gaps that may not appear only using census polygon geographies. For example, the needs of small communities located in rural areas may not be accurately represented within a large Census block group, and thus a gap may not be identified. One method of standardizing geography is to use hexagonal grids to aggregate and compare data. This helps reveal patterns in the data and is suitable for both shape-based and point-based data. For this analysis, the region was divided into hexagons that are 0.125 or 1/8th square miles each (**Figure C-34**).

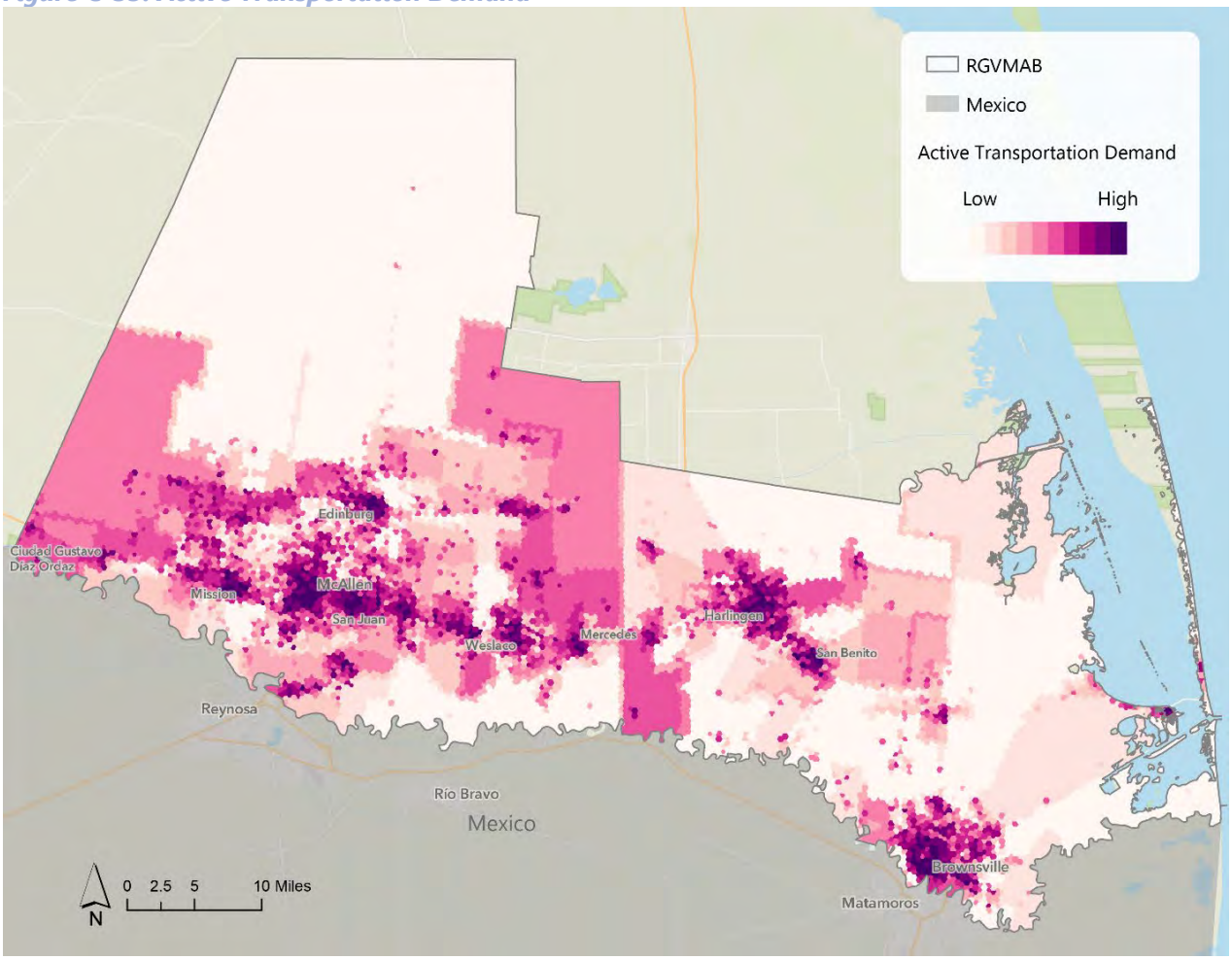
Figure C-34: Hexagonal Grid



Each criterion was aggregated to the hexagonal grid, using a spatial join in GIS. For shape-based data like the Census block groups, a criterion was averaged where a hexagon overlapped more than one shape.

To finalize the standardization process, the project team converted the criteria to a 100-point scale. Each measure was normalized through scoring assignments based on a scale of 0 - 100 for each hexagon. Hexagons with the highest scores contain a value of 100, while the lowest contain a value of 0. For example, a hexagon with a value that is higher than 90% of other propensity hexagons is assigned a value of 90 out of 100. Once each measure was scaled from 0 -100, the measures were aggregated to generate final combined scores. Final scores were then normalized on a scale from 0 - 100. This final combined score indicates the relative demand for active transportation options occurring in each hexagon, based on the criteria. **Figure C-35** shows demand dispersed across the RGVMAB.

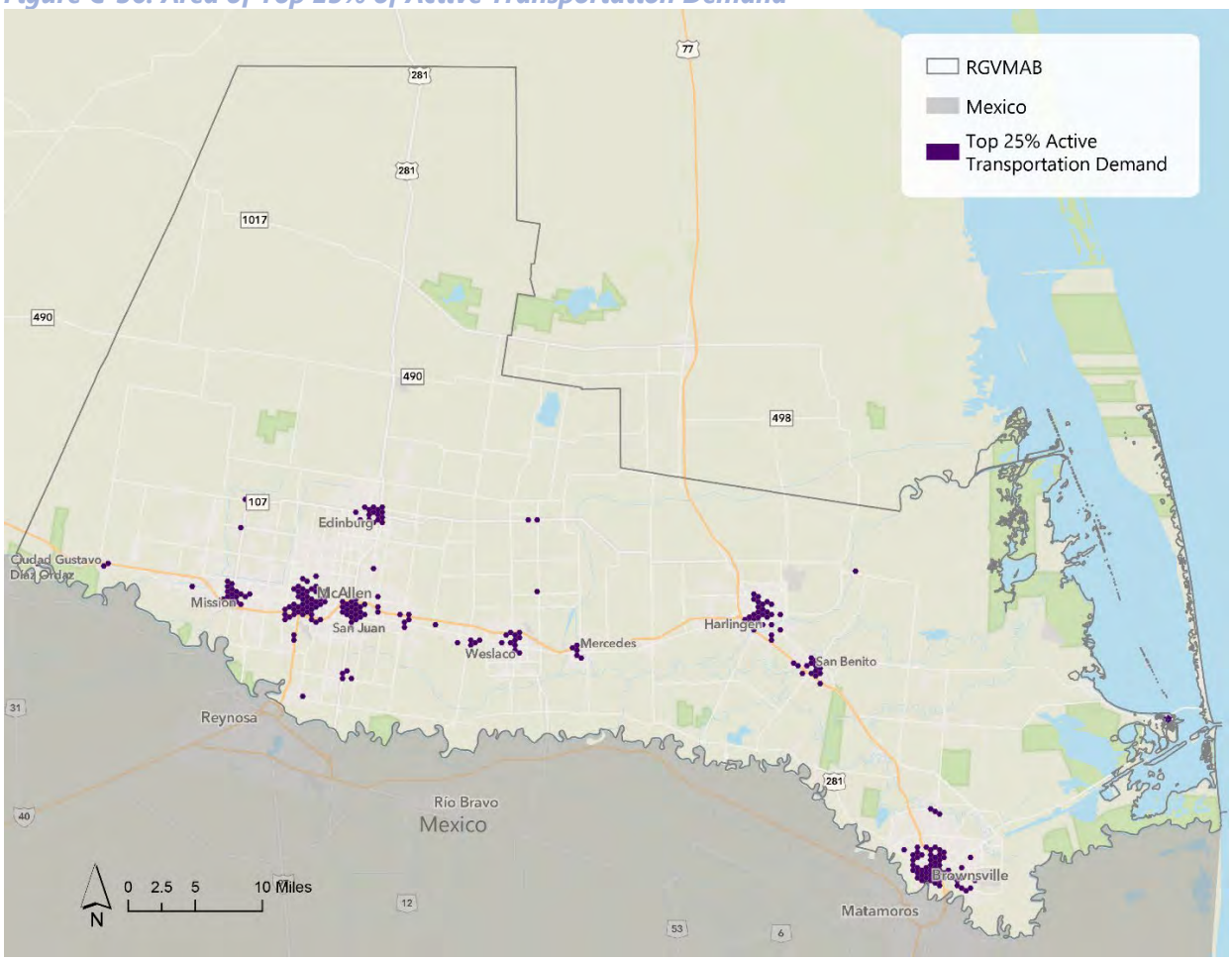
Figure C-35: Active Transportation Demand



Results

Current supply of active transportation facilities (sidewalks, bike lanes, and hike & bike trails) were overlaid on the top 25% of demand scores to identify where areas of high demand have insufficient facilities. Below, **Figure C-36** shows those areas with the top 25% of demand. The analysis showed many gap areas occurring in rural or semi-rural areas, many of which contain gridded street networks, but lack adequate sidewalk facilities. The section below summarizes four key gap areas.

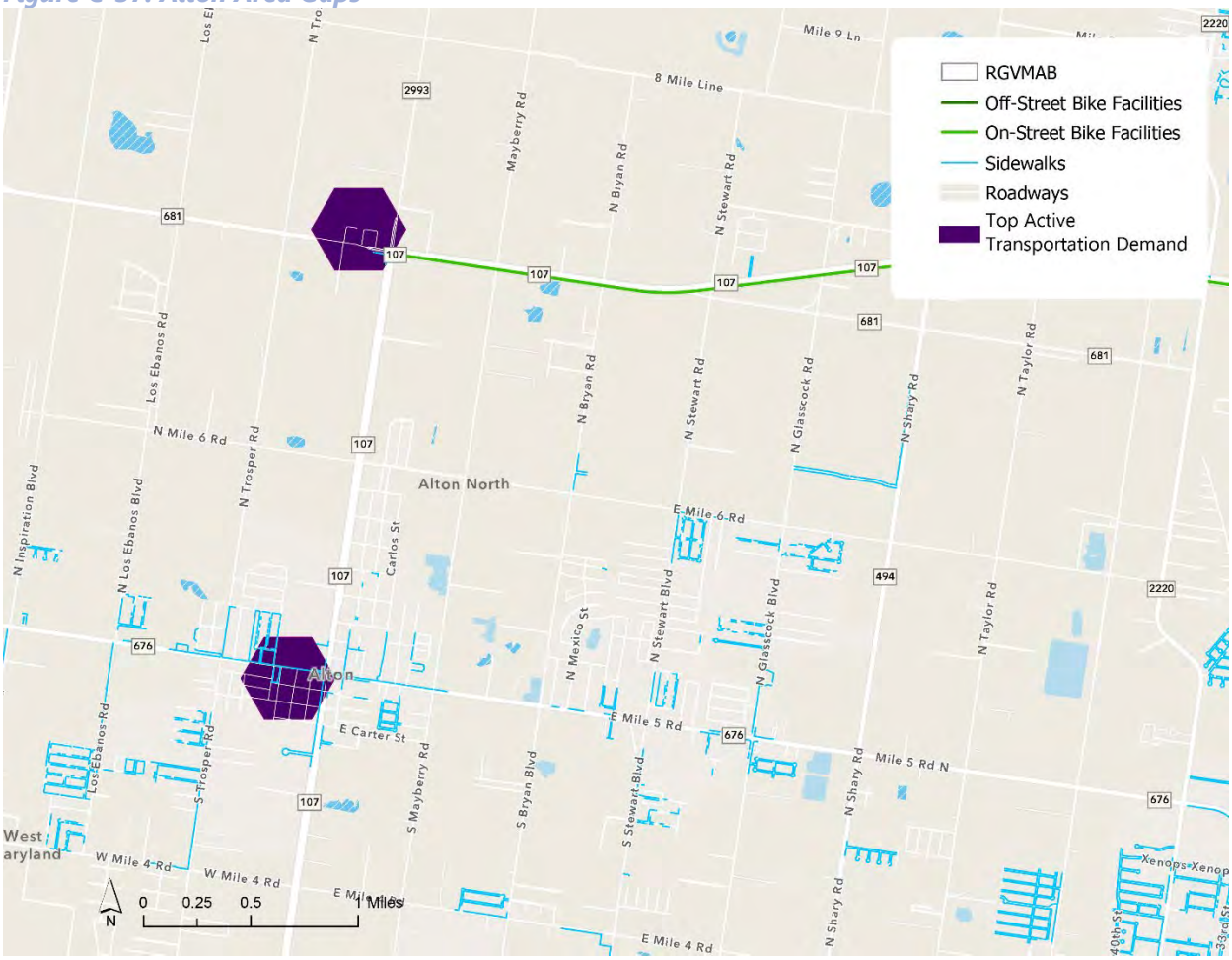
Figure C-36: Area of Top 25% of Active Transportation Demand



ALTON

In **Figure C-37** the Alton community northwest of McAllen contains two high demand areas with very little access to sidewalks. A bike lane runs along SH 107; however, it may not be comfortable for all users due to traffic speed.

Figure C-37: Alton Area Gaps



DONNA

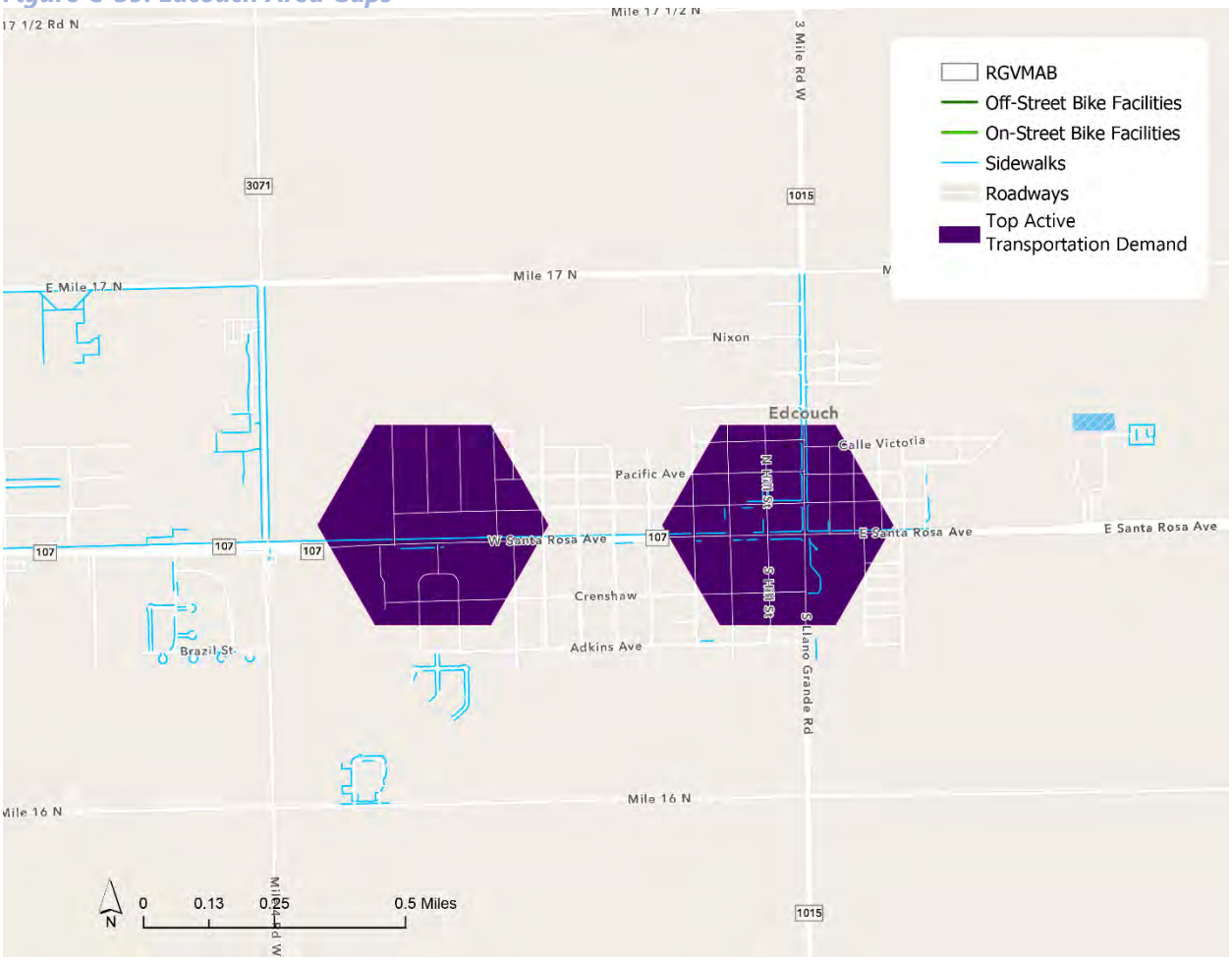
In **Figure C-38** the Donna area, south of SH 83 BUS, a pocket of high demand has no access to bicycle facilities and lacks complete sidewalks, despite a well-connected street network. Improved sidewalk connections could improve access to nearby sports parks, schools, and local businesses.

Figure C-38: Donna Area Gaps

EDCOUCH

In **Figure C-39** along the SH 107 corridor in the Edcouch area, two high demand hexagons have little access to sidewalk, except for along main thoroughfares. No bike facilities are present. Facilities to nearby Elsa may benefit residents in both communities.

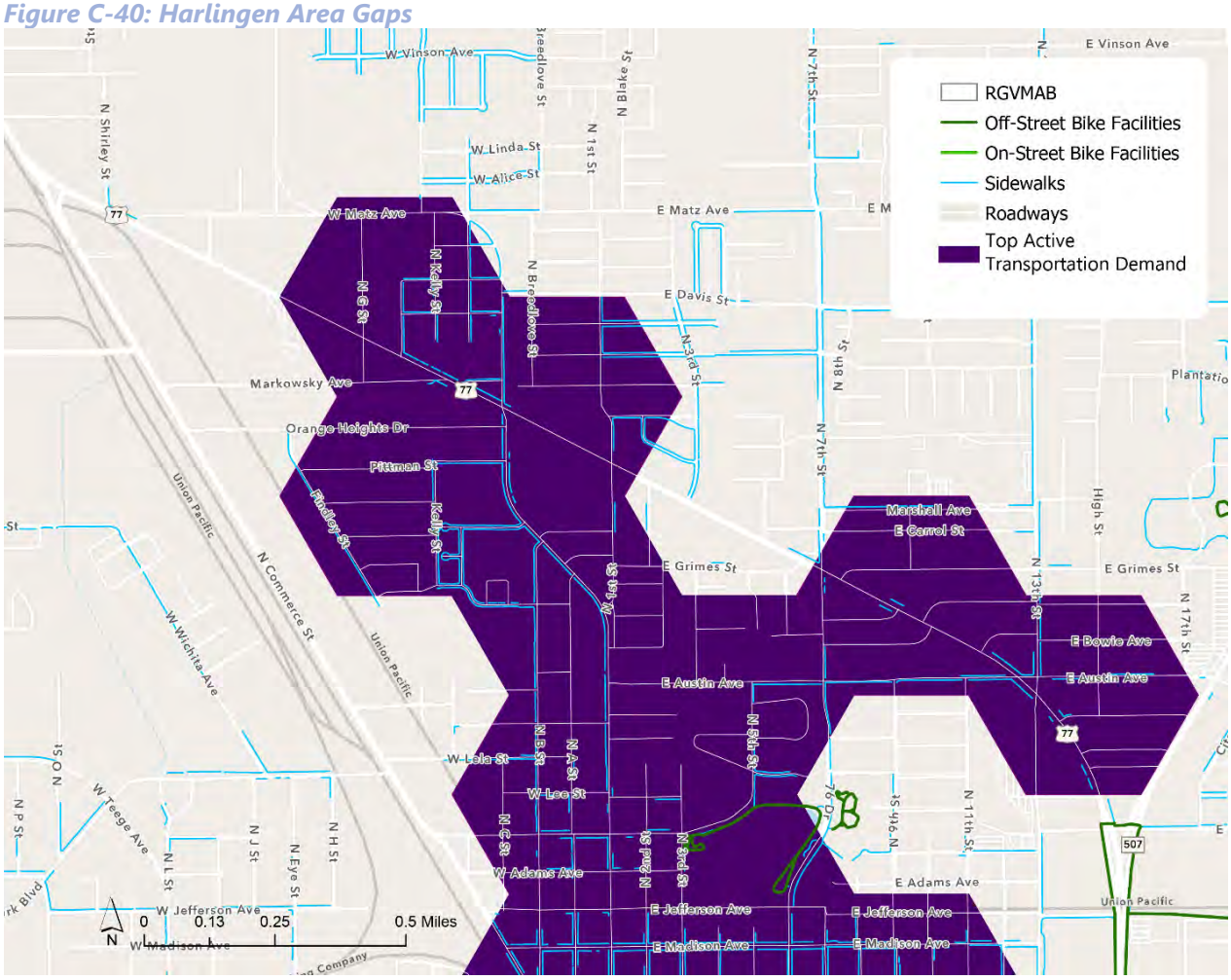
Figure C-39: Edcouch Area Gaps



HARLINGEN

In **Figure C-40,** on the north side of Harlingen on N. Commerce St. a large cluster of high demand areas lack complete sidewalk networks in residential areas and contains no bike facilities. Bike facility connections south may connect residents to downtown employment and amenities, while connections to the east may provide direct connection to Pendleton Park and Harlingen High School.

Figure C-40: Harlingen Area Gaps



CONCLUSION

The Rio Grande Valley is a rich and intricate region with a blend of urban and rural communities coming together to weave a unique experience, and set of needs, for those using, or wanting to use modes of active transportation. Whether that be for recreation, commuting, business, or sport.

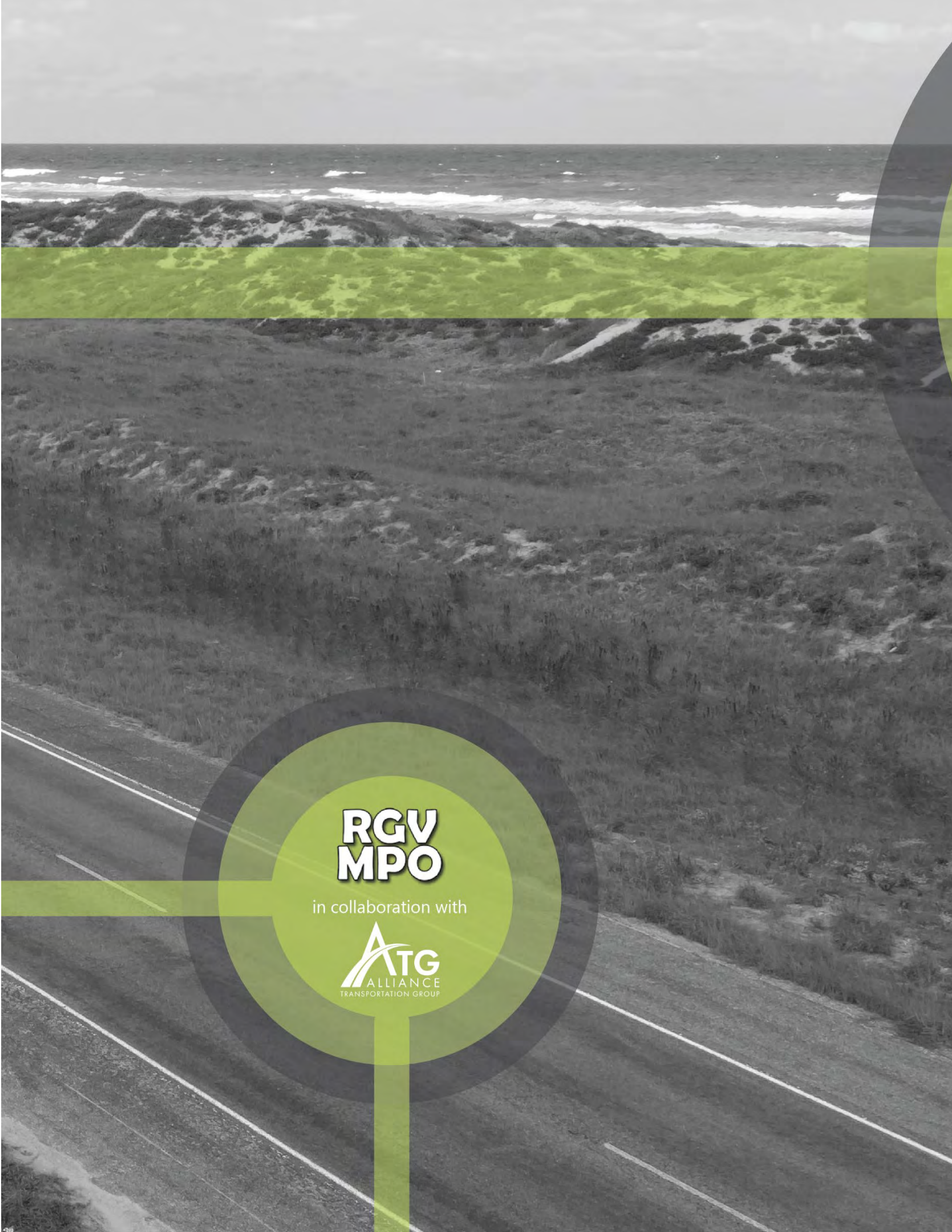
To identify the current state of the transportation network for the people who walk and bike, a comprehensive analysis identified current conditions and need within the RGVMAB. This technical and data driven analysis is inclusive of all communities within the RGVMAB and aims to provide direction for prioritizing and implementing solutions that help residents improve their day to day lives.

Within the RGVMAB, many communities have well connected, gridded street networks that create an opportunity to implement or expand facilities for people to walk and bike. However, connections between communities that are comfortable for all users are more limited.

To summarize key takeaways from each analysis, findings have been listed below in **Table C-24**.

Table C-24: Key Takeaways

Analysis	Key Takeaway
Policy Review	• Opportunities for additional policy and program elements can be made in all the major cities throughout the RGVMAB. • Consistent policy on safe passing is found in almost every city reviewed.
Safety	• AT crashes happen most often during PM peak travel times. • Although AT crashes make up only 1.6% of all crashes in the region for the five-year period, they comprise a much larger portion of all crashes that resulted in fatality or serious injury. This information implies that active transportation users bear a disproportionate amount of risk of injury or fatality and that planning for the safety of these users is of the utmost urgency. • The intersections with the most crashes were identified throughout the RGVMAB. The following were the highest two intersections: o International Blvd. (SH 4) @ Southmost Blvd. (FM 1419) o Spur 206 @ IH-69E
Bicycle Level of Stress	• Many urban areas in the RGVMAB have an array low stress roadway for all users, especially where the gridded roadway network is present. • Low stress connections between urban areas are limited, especially along major roadway thoroughfares, such as the I-2 corridor.
Pedestrian Accessibility	• Intersection Density supports walking propensity throughout the dense urban areas of the RGVMAB, as well as in several smaller communities with well-connected street networks.
Transit Proximity	• Identifies the transit Providers Connections in most need of additional sidewalk connections within ½ mile. The following Providers connections were identified as having the lowest sidewalk coverage. o Weslaco Valley Metro Transit Center o San Juan Station o Foy's Supermarket
Travel Patterns	• The highest number of trips under 2 miles occurs in TAZs that are predominantly in rural areas. Those TAZ may benefit from increased facilities for walking and biking. • Travel demand model does not capture nonvehicle trips, which may not fully account for short urban trips made by active modes.
Gaps	• Demand for active transportation facilities through the RGVMAB was mapped and areas within the top 25% of demand were identified. • In the top demand areas, current active transportation facilities were lacking in the following areas: o Alton o Donna o Edcouch o Harlingen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