Bicycle and Pedestrian Benefits Memorandum

Downtown 10 (CSJ: 2121-02-166)

From Executive Center Blvd to Loop 478 (Copia St)

El Paso

January 1, 2023

Summary of Findings

Creating a low-stress bicycle and pedestrian option connecting I-10 to downtown and surrounding services provides numerous benefits to the community, including safety, travel time, and overall comfort. The improvement correlates to a national trend of communities wanting more bicycle and pedestrian options. Recent studies indicate, 71% of Americans have expressed interest in riding a bike more often but find it unsafe. A low stress network includes utilizing a shortest path from every census block in the study area, to every other census block with 2-5 miles.

Communities across the U.S. are making efforts to provide more mobility options for their residents. Furthermore, investing in bicycle and pedestrian helps achieve goals outlined in the latest U.S. Department of Transportation (USDOT) Strategic Plan FY 2022-2026. The plan calls for an increase in the percentage of person trips by transit and active transportation modes from 4% to 6%.

I-10 Multiuse Trail Infrastructure (within half- mile of I-10)		
Facility Type	Existing	Build
Bike Lanes	1.8 Miles	1.8 Miles
Cycle Tracks	0.3 Miles	4.0 Miles
Shared-use Paths	0.1 Miles	4.2 Miles

Level of Service:

- Potential to comfortably accommodate more than 9,000 cyclist per day
- Potential to comfortably accommodate more than 1,500 pedestrians per day

Access to the Community:

- Access to transit stops increase from **40** to **57** bus stop within a half- mile of I-10
- The number of opportunities to cross I-10 on a ADA compliant facility, increased from **1** to **12**
- Number of Jobs within a half- mile of I-10 increases from **280** to **570**
- From **0** to **2** community centers within half- mile of I-10

Health and Safety Benefits:

- From **0** to **2** hospital connections within half- mile of bike/ped infrastructure along I-10
- Connections to communities in need of diabetes services increased from **5 census tracts** to **10 census tracts** within the half- mile study area.
- Estimated potential for a 36-40% (FHWA) bicyclist crash reduction

New Demographics and Social Equity

- Nearly 10,000 more low-income residents connected to bike/ped

Return on Investment:

<u>Increased Property Values:</u>
Houses with the above-average levels of walkability

average increase in $4,000 to $34,000 (1).

Increased Jobs and Revenue in Local Businesses: A study in New York city saw a 49% increase in business after projected bike lanes were installed (New York DOT).

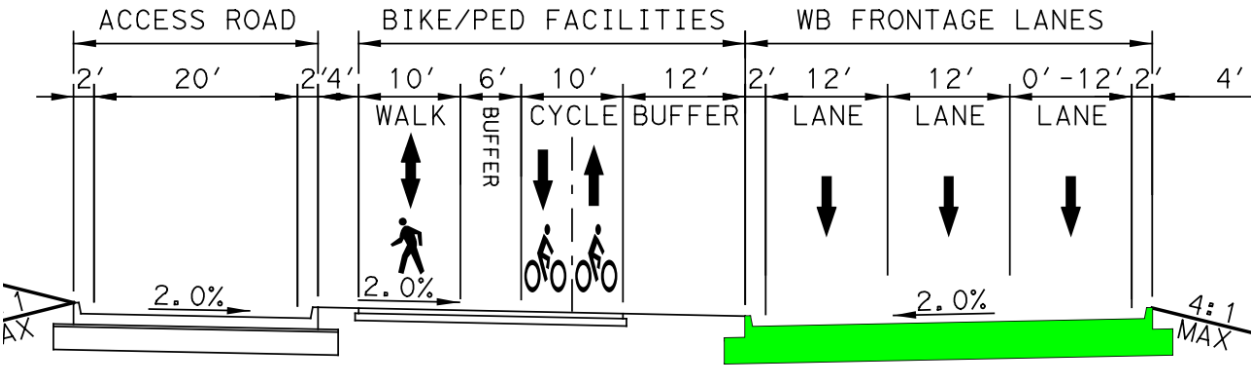
Environmental Benefits: Replacing 2 miles of driving with walking or biking results in 730 lbs. of carbon dioxide reduction. (Arendt, (1994))

Medical Costs: Spending $1.00 on bicycle and pedestrian trails results in saving $3.00 of direct medical expenses.

Background

This memorandum examines the potential benefits of a proposed shared-use path and cycle track included as an element of the Reimagine I-10 Corridor study. The study area included a half- mile buffer along the Reimagine I-10 corridor. The proposed facility would run alongside the northside and southside of the freeway of the Downtown Segment as well as connections over the freeway. Recommended cross section for the facility would include a 10' pedestrian path and a 10' bidirectional cycle track (**Figure 1**).

Figure 1: Proposed Cross Section



The improvement will serve as an additional transportation corridor, connecting people to the places and providing another mobility option. Urban shared-use paths, cycle tracks and bike lanes similar to the proposed facility are heavily used for commuting and other utilitarian trips across the country. Like roads and rails, an active transportation network focuses on creating a seamless network that connects to key destinations such as schools, transit facilities, shops, health services and entertainment.

Level of Service (LOS) and Volumes

In general, shared-use trail use is on the rise. Trail activities remain high on the list of most popular outdoor recreation activities, and U.S. participation levels in trail activities continue to trend upwards (Cordell, 1999). The paths are designed for a variety of nonmotorized users that

when encountering slow moving users in either direction of travel increases the need for users to make maneuvers or experience a less comfortable trip. The Leve of Service (LOS) evaluations provide the degree of bicycle and pedestrian accommodation. The bicycle and pedestrian LOS performance measures use a point scale resulting in an LOS rating system of A through F.

Potential LOS estimates for the trails were developed utilizing the Shared-use Path Flow Analysis Tool (DOT, n.d.) created by the Federal Highway Administration. **Tables 2-1** – **2-3** provides estimated LOS for the proposed 11 ft proposed path utilizing estimated path volumes.

Table 1: Cycle Track Level of Service

Segment Name	Path Width	Centerline	Volume (users per hour in 1 direction) and Mode Split							Track Level of Service	
Name	Width (ft)	1=Centerline	One-Way (per hour)	Adult Bicyclists	Pedestrians	Runners	In-Line Skaters	Child Bicyclists	All Modes	LOS Score	LOS Grade
I-10 Cycle Track	10.0	1	200.0	90.0%	0.0%	0.0%	5.0%	5.0%	100.0 %	**3.30**	**C**

Table 2: Pedestrian Path Level of Service

Segment Name	Path Width	Centerline	Volume (users per hour in 1 direction) and Mode Split							Path Level of Service	
Name	Width (ft)	1=Centerline	One-Way (per hour)	Adult Bicyclists	Pedestrians	Runners	In-Line Skaters	Child Bicyclists	All Modes	LOS Score	LOS Grade
I-10 Ped Path	10.0	1	37.0	0.0%	75.0%	25.0%	0.0%	0.0%	100.0 %	**3.01**	**C**

1.1. Bicycle and Pedestrian Volumes

Daily volumes for the cycle track and pedestrian path were estimated by utilizing the projected LOS C activity volumes calculated from the Shared-use Path Analysis Tool. Volumes displayed in Table 3 indicate a potential for 11,373 daily users of the facility (9,600 cyclist and more than 1,700 pedestrians).

Table 3: Estimated Bicycle and Pedestrian Volumes

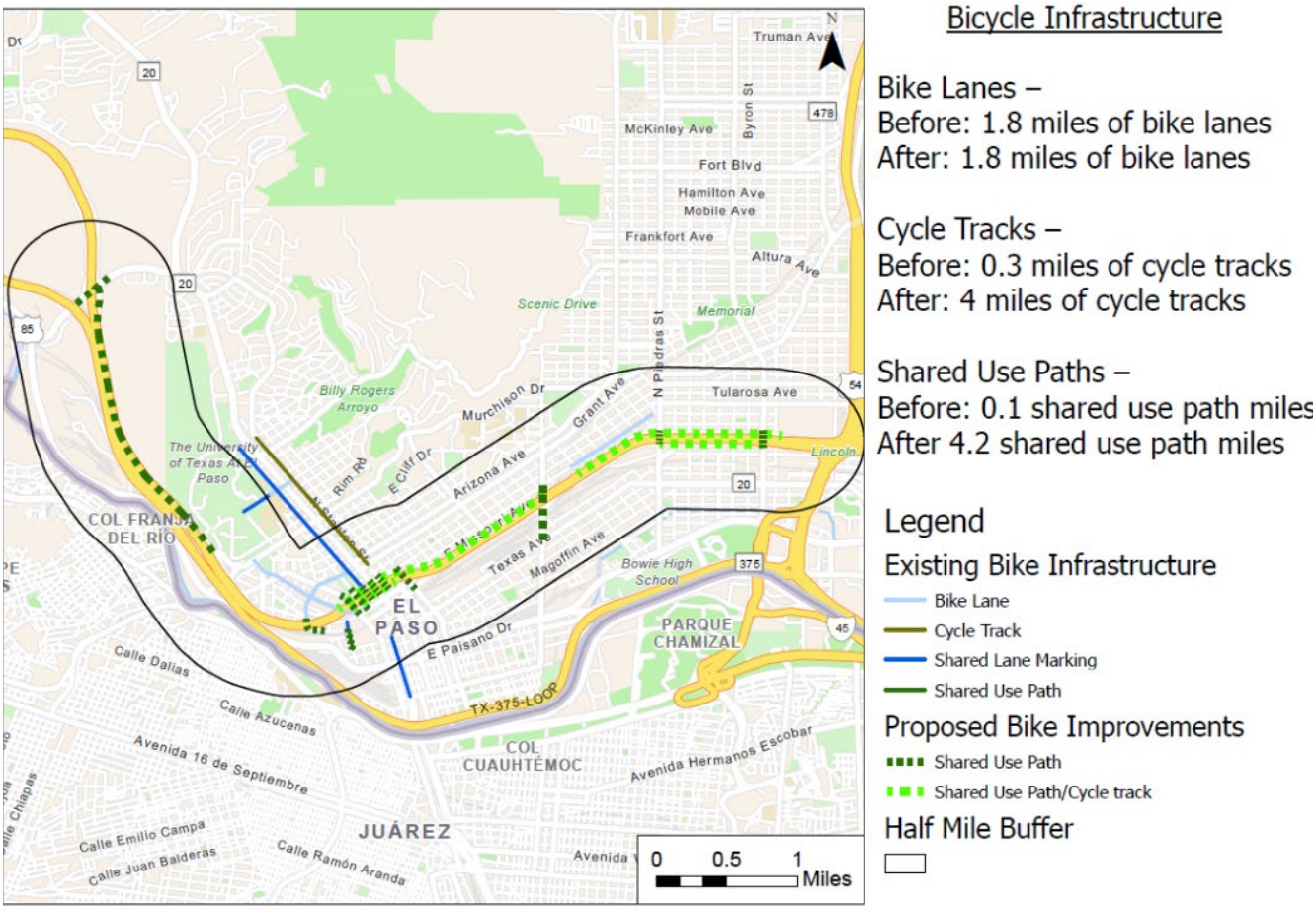
Facility	Volumes One-Way (per hour)	Volumes Two-Way (per hour)	Daily Volumes (24 hours)
I-10 Cycle Track	200	400	**9,600**
I-10 Ped Path	37	74	**1,776**
Total	**237**	**474**	**11,376**

Connectivity

Increasing connectivity with a multiuse trail also increase mobility across all the active transportation modes, while also creating network density along I-10. Creating a low-stress bicycle and pedestrian option connecting I-10 to downtown and surrounding services, provides numerous benefits to the community, including safety, travel time, and overall comfort. A low

stress network includes utilizing a shortest path from every census block in the study area, to every other census block with 2-5 miles. Furthermore, it will also address the increased desire for more bicycle and pedestrian options across the country.

Communities across the U.S. are making efforts to provide more mobility options for their residents. In a recent study, 71% of Americans have expressed interest in riding a bike more often but find it unsafe (NHTSA, 2008)., the U.S. Department of Transportation Strategic Plan FY 2022-2026 calls for an increase in the percentage of person trips by transit and active transportation modes from 4% to 6% (FHWA, n.d.).



Bike Lanes and Cycle Track Connections:

Measures how many existing bikeway facilities a new project would connect to as well as the length of those facilities. **Figure 2** shows the proposed cycle tracks and shared-use paths within the half-mile study area as well as the existing bicycle infrastructure within the study area.

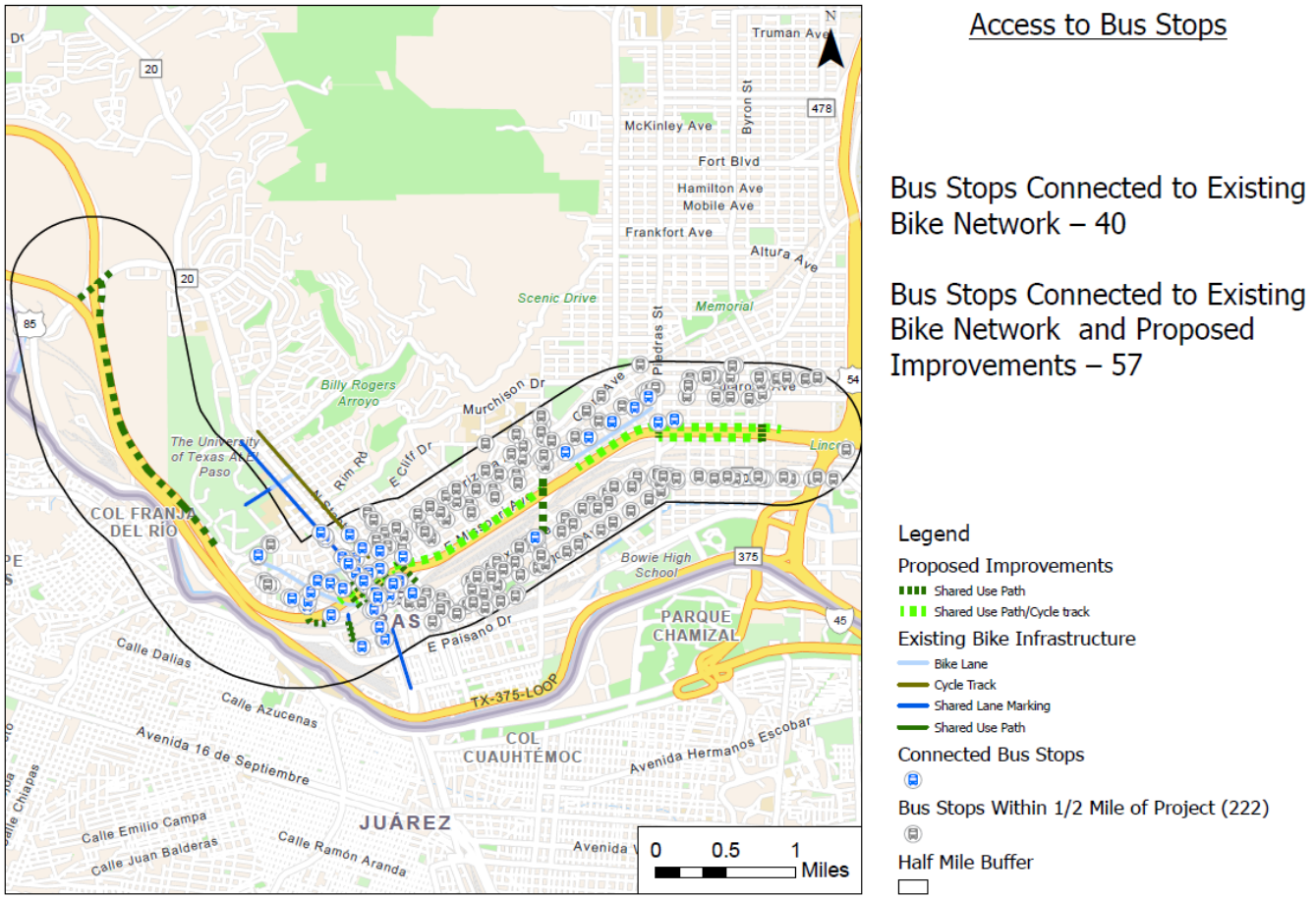
Figure 2: Bicycle Infrastructure

Transit Connections

Measures the number of transit stops connected to the proposed cycle tracks and shared-use paths within the half- mile study area. A complete streets network looks at all the modes and connects them together to create a seamless network. Bicycle and pedestrian networks should connect to bus and other transit facilities to facilitate a complete network. As displayed in **Figure**

3, there are a total of 222 bus stops within a half mile of the proposed bike improvements. With the proposed bike improvements, access to bus stops increases by connecting to 17 more stops.

Figure 3: Access to Bus Stops

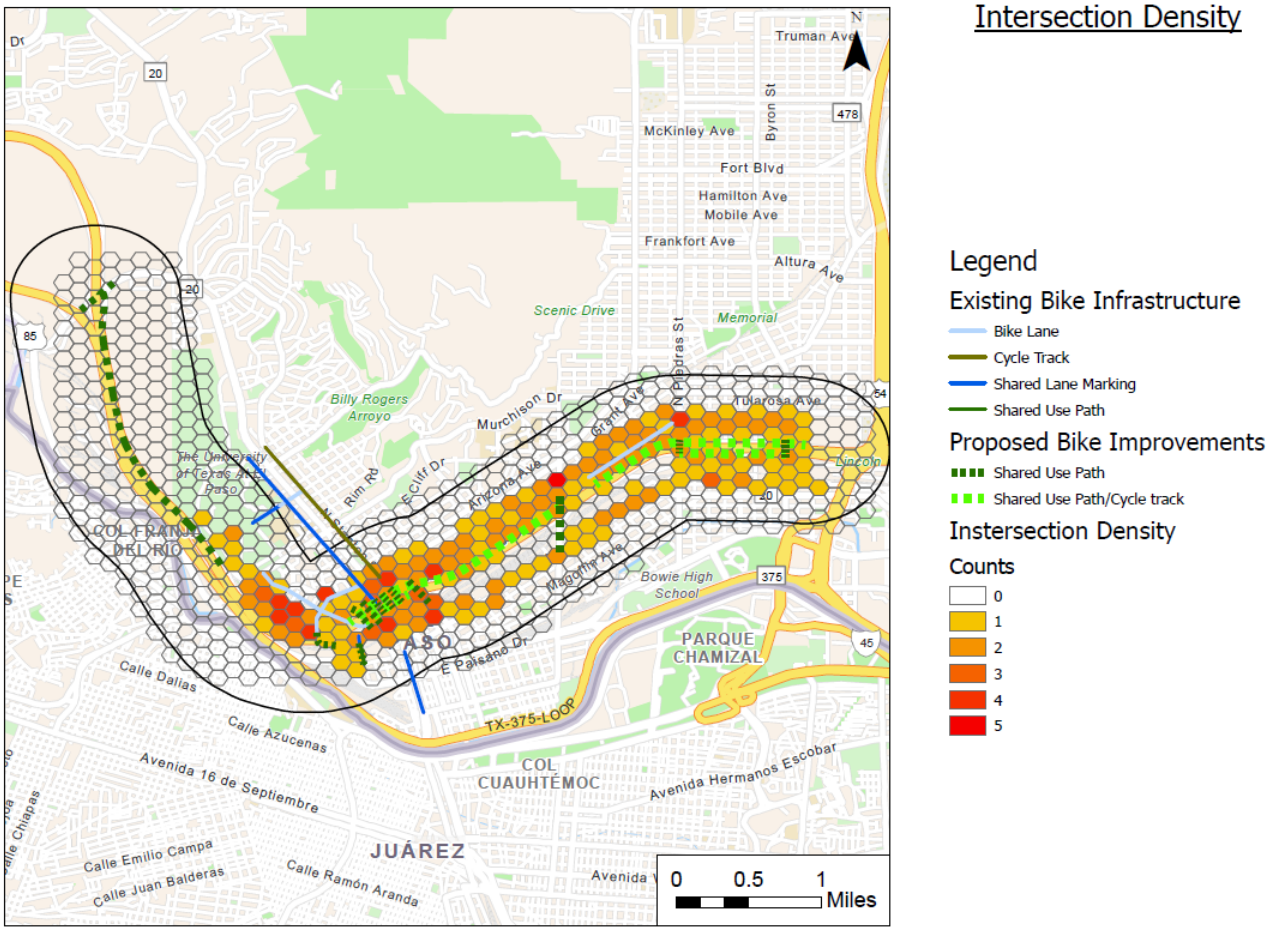


Intersection Density

Providing crossing opportunities aids in having a complete and connected bicycle and pedestrian network. High number of crossings are typical for roadways that are formatted in a grided format. These are common in downtowns and other higher density areas of cities. Higher number of crossings provides opportunities for bicyclist and pedestrians to safely cross at intersections where motorist are expecting them to cross instead of crossing mid-block. The map below shows the intersection points within the half-mile study area as well as the areas that have high density of crossings.

Intersection density is the number of intersections in an area and corresponds to making a neighborhood more walkable, and more opportunities for transit. **Figure 4** below highlights the overall intersection density within the half-mile study area.

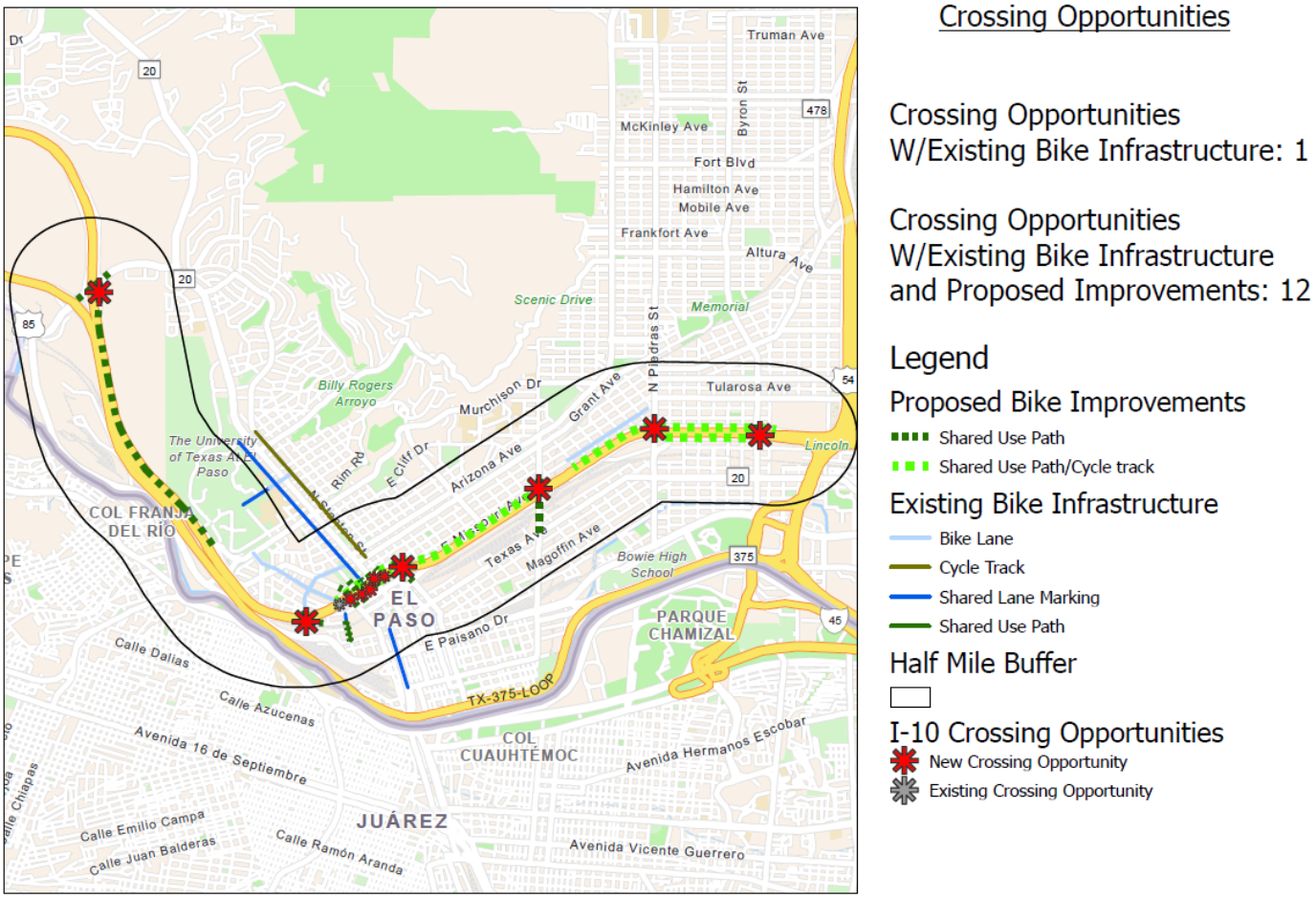
Figure 4: Intersection Density



Barriers and Crossing Opportunities

Highways have historically created barriers for communities. Providing safe and comfortable crossing opportunities is important to overcome the barrier a highway creates in communities. Currently there is only one bike lane that provides a crossing of I-10 on Prospect St. The proposed cycle tracks and shared-use paths will significantly increase the number of safe crossing opportunities for both bicyclist and pedestrians. **Figure 5** provides the locations of the new crossing opportunities along I-10.

Figure 5: Crossing Opportunities:



Return on Investment

Trails are in high demand, and proximity to them can make a place more attractive. In fact, small towns which have been hit hard by job losses have redeveloped around trails. Cumberland, Maryland, for example, a once booming coal mining town that experienced decades of decline, has found new vitality by catering to trail users.

In an urban context, the economic boost can manifest as increased foot traffic for stores and restaurants, as well as new trailside businesses and residences. In neighborhoods where residents may experience pressures to leave because of rising costs, deploying policies and

tools to prevent physical or cultural displacement can help mitigate unintended negative consequences.

There are quantifiable impacts of trails, walking and biking. Key economic impacts include:

- Return on investment (ROI): The current ROI of active transportation infrastructure, which accounts for fuel savings, CO2 reduction, net spending impact of rail-trails and health cost savings.
- Mode shift and environmental benefits: The value of fuel savings from shifting short car trips to walking and bicycling trips, using walking and bicycling to access public transit, inducing mixed use, and reducing congestion.
- Calculations of economic impact: The total local spending impact
- Health cost savings: Health cost savings from increased physical activity due to active transportation.

Increased Property Values

Many residents are re-examining where they live and how they live for more sustainable communities both economically and environmentally. Having strong walkability increases options for communities and becomes more desirable for residents leading to higher property values. Houses with the above-average levels of walkability command a premium of about $4,000 to $34,000 (American Trails, n.d.) over houses with just average levels of walkability in the typical metropolitan areas studied.

Increased Jobs and Revenue in Local Businesses

Protected bike facilities are good for business. According to the Clean Air Partnership study (Bike League, n.d.) on Bike Lanes, On-Street Parking and Business patrons arriving by foot and bicycle visit the most often and spend the most money per month. A study conducted in Portland, Oregon found bike riders will go out of their way to a street with good bike infrastructure, which equals more business exposure (Dill). Additionally, a study in New York city saw a 49% increase in business after projected bike lanes were installed (New York DOT).

Environmental Benefits

Sidewalks, bike lanes, paths, and trails help to reduce vehicle emissions, fuel consumption, and congestion. Replacing 2 miles of driving with walking or biking 365 days a year results in 730 lbs of carbon dioxide reduction (Arendt, (1994)).

Reduction of Medical Costs

Promoting healthy and sustainable communities' results in many health benefits including a reduction in overall medical costs to the community. According to a study conducted by the North Carolina Medical Journal, spending $1.00 on bicycle and pedestrian trails results in saving $3.00 of direct medical expenses (Chenoweth, 2012).

Revitalization of Depressed Areas

Businesses, residents, and visitors consider quality of life factors like walkability and biking when choosing locations to call home. This generates an opportunity for revitalizing depressed areas. For example, the Economic Impact Analysis from the 2013 North Carolina Department of Transportation WalkBikeNC Plan (NCDOT, 2013) indicates an initial investment of $6.7M in walking and bicycle facilities has generated $60M in annual bicycle-related tourism revenue in the Outer Banks.

Access to Community Destinations

Transportation is a large cost to household budgets and affordable mobility options are critical for lower income families. Bicycle and pedestrian facilities benefit those who are unable drive due to the high costs, age or disability. For longer trips, urban trails often connect to transit facilities, enabling residents to safely access public transportation. Access to community destination explores how the cycle track and pedestrian path connects residents to jobs, community centers, schools, places of worship, and parks.

Jobs

Trails are in high demand across the country, and proximity to them can make a place more attractive. In an urban context, it can boost the economy as increased foot traffic for stores and restaurants, as well as new trailside businesses and residences are developed. **Figure 6** shows the locations of where major employers are located within the half-mile study area. The proposed cycle tracks and shared-use paths will provide connections to 15 additional major employers. Additionally, they will connect to 290 jobs within the study area, including the major employers. The job locations within the study area are shown on **Figure 7**.

Figure 6: Access to Major Employers

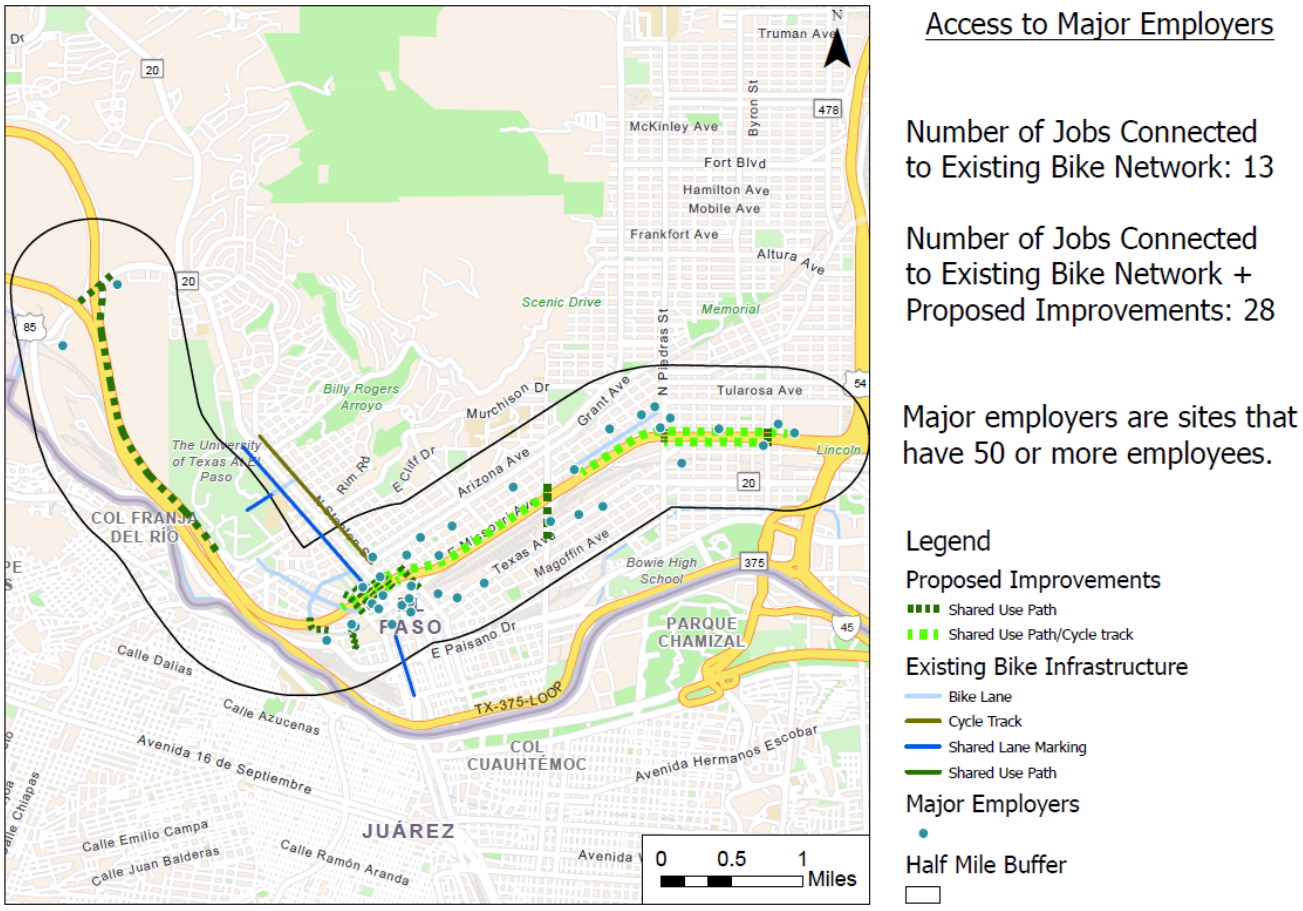
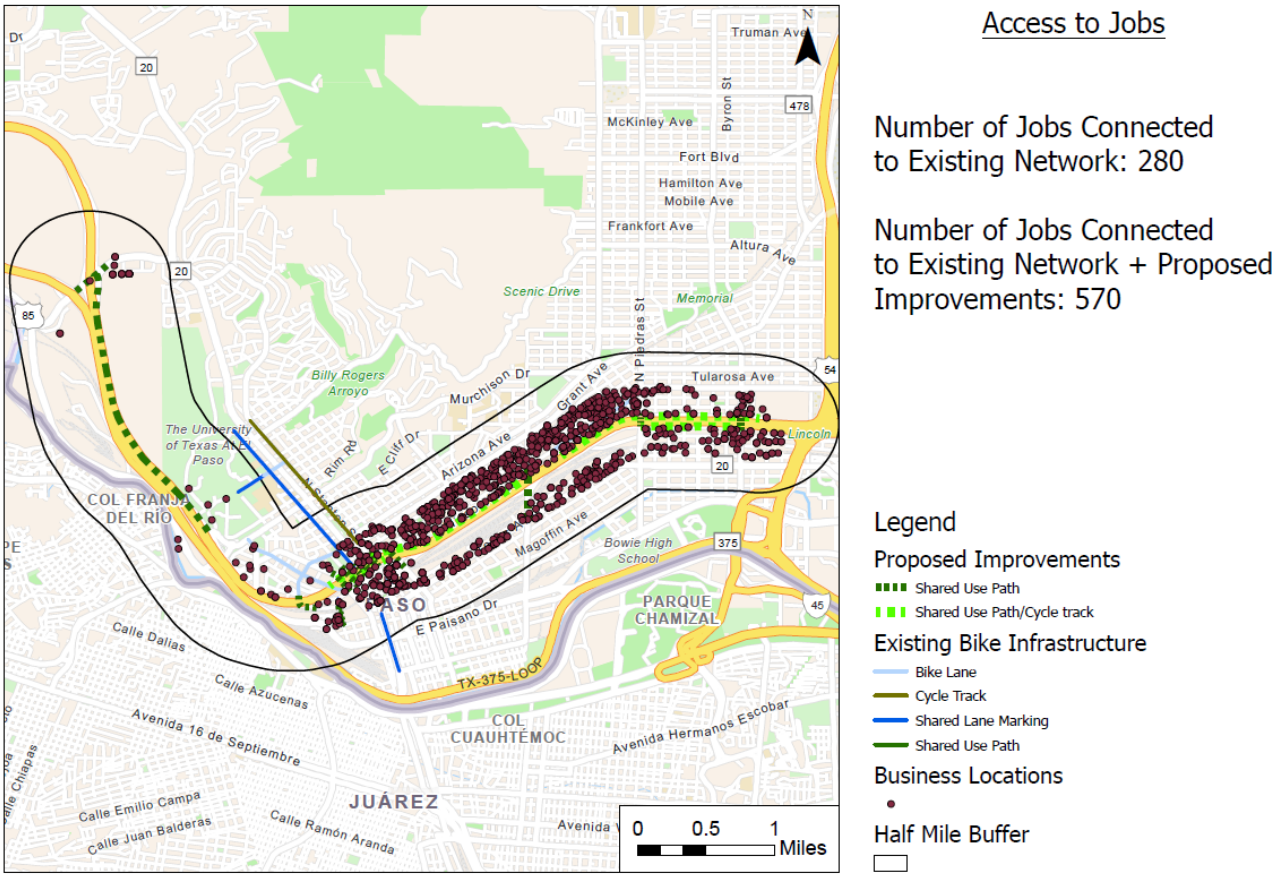


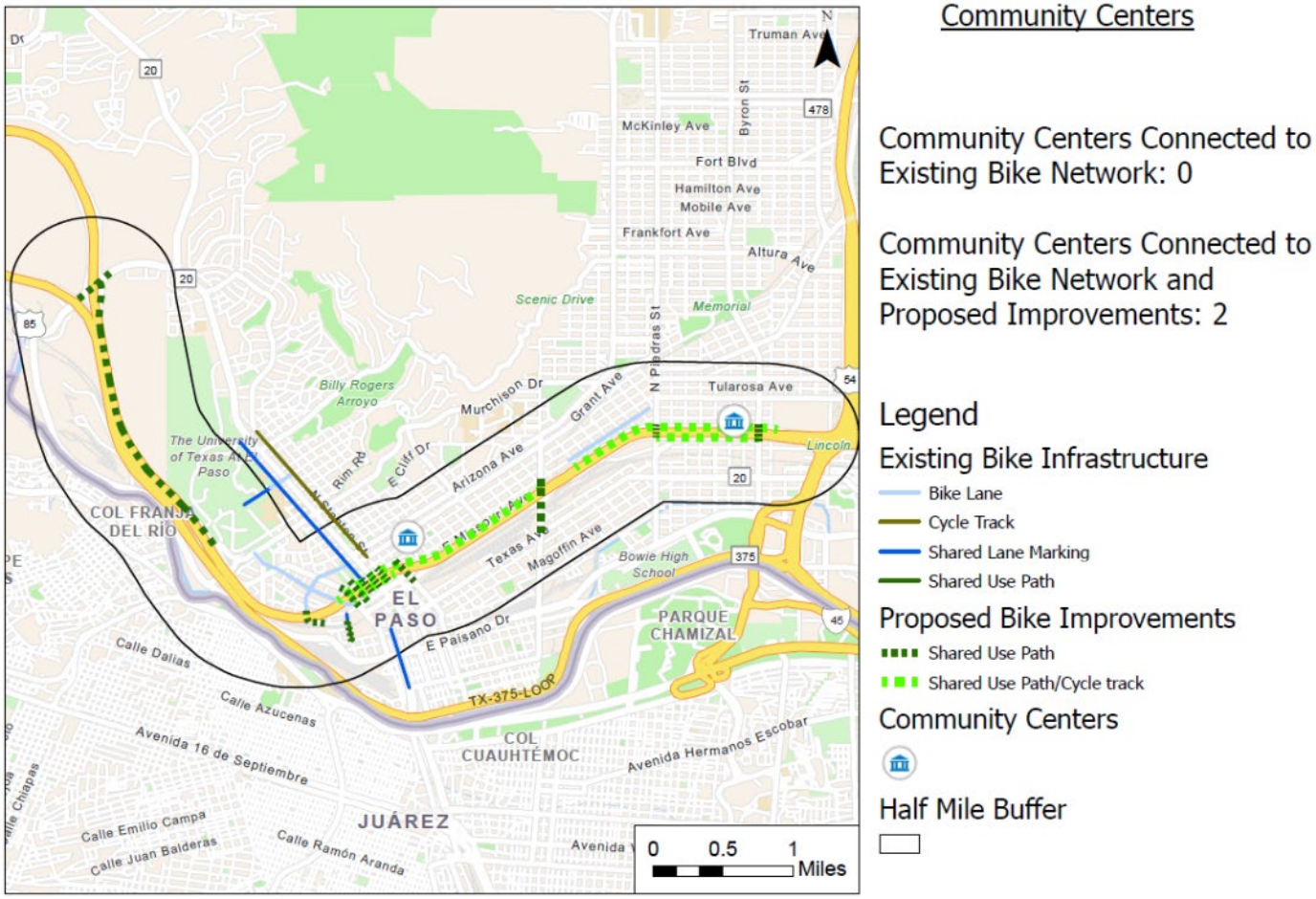
Figure 7: Access to Jobs



Community Centers

Community Centers provide various resources for communities. These community centers are usually the locations where public meetings are held, sports are played and provide other activities for young and old people. Providing adequate access to these centers is important as sometimes they are the only location available that provides such activities for residents. There are two community centers located within the half-mile study area which are not connected to the existing bicycle network. **Figure 8** shows how the proposed cycle tracks and shared-use paths will provide connections to these community centers.

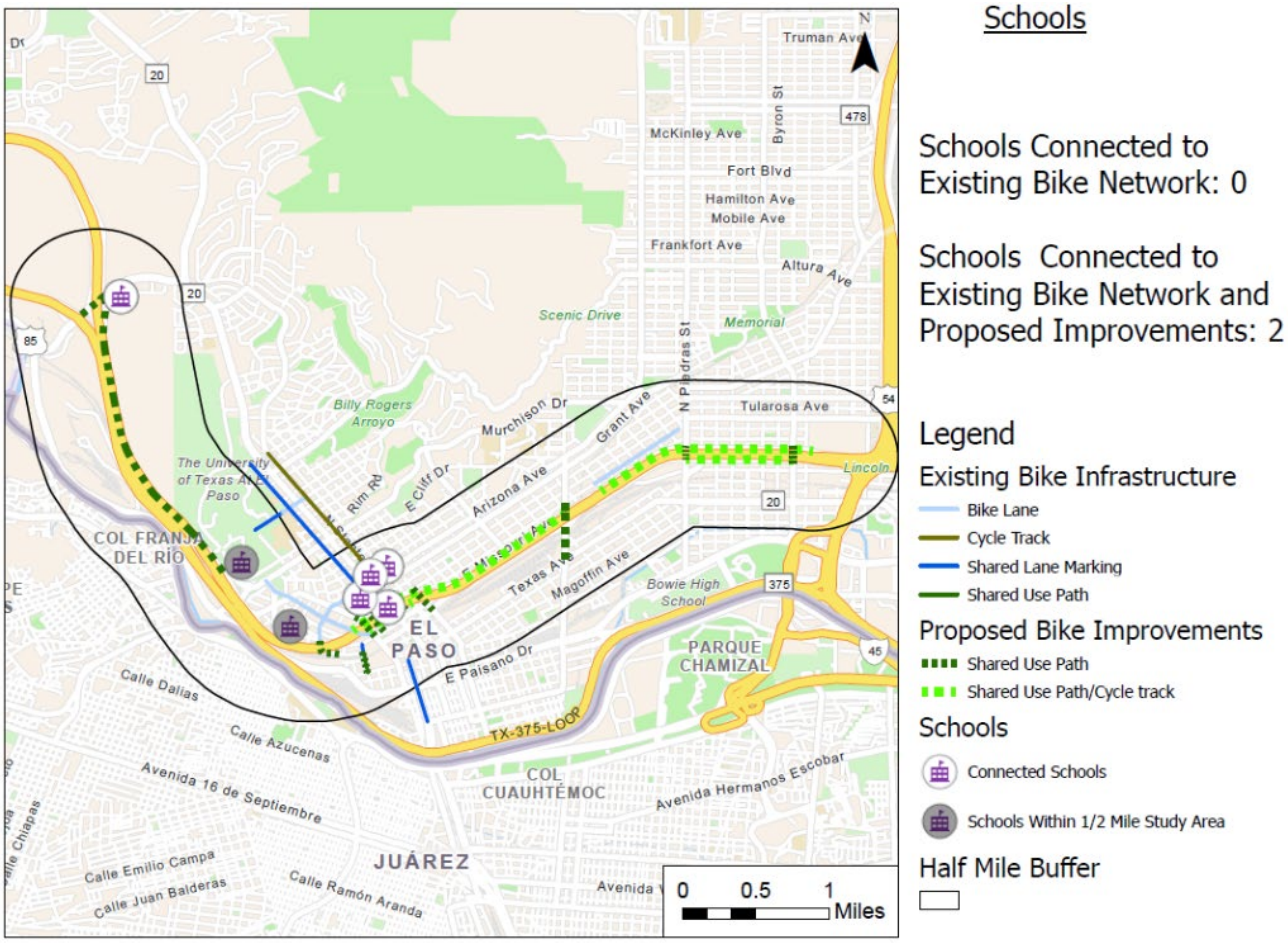
Figure 8: Community Centers Connected



Schools

Providing safe routes to school is a method to reduce vehicle trips as well as aid in school pick-up/drop-off congestion at schools. The proposed cycle tracks and shared-use paths will connect to one additional school that are currently connected to the existing bicycle network. **Figure 9** shows the schools connected within the half-mile study area.

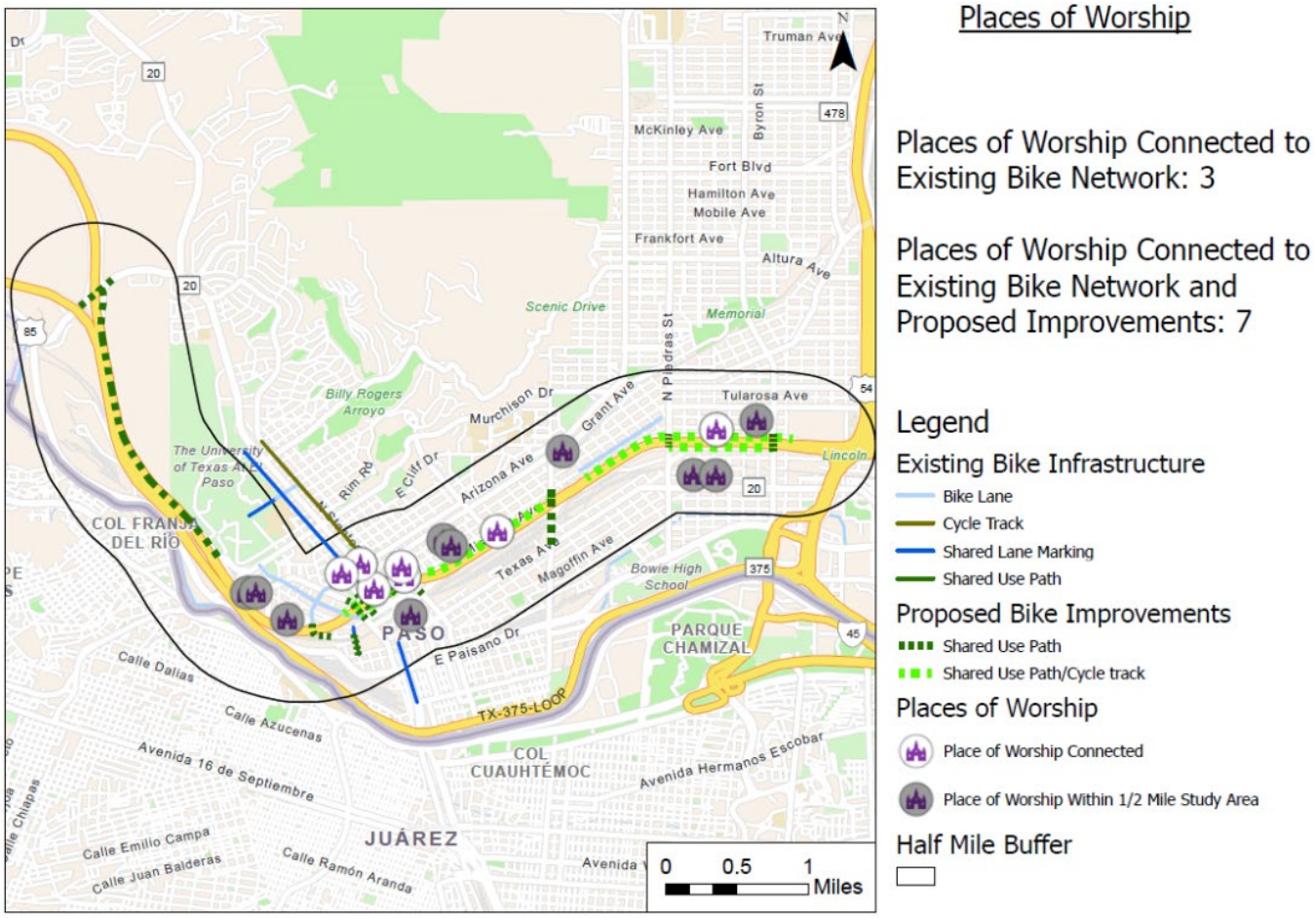
Figure 9: Connections to Schools



Places of Worship

The proposed cycle tracks and shared-use paths connect to four additional places of worship where various community services are provided. **Figure 10** shows the places of worship the proposed bike improvements will connect to.

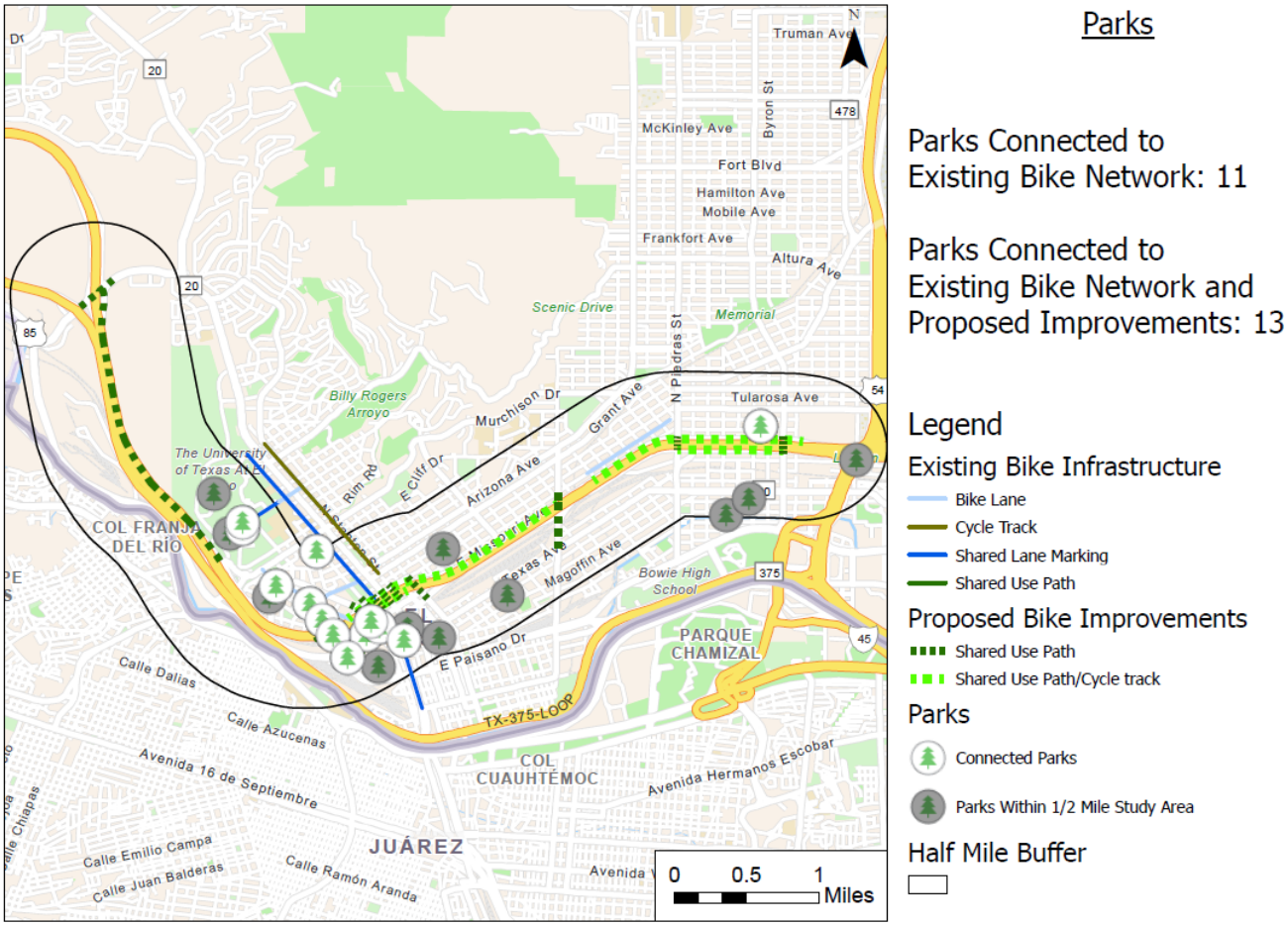
Figure 10: Places of Worship Connected



Parks

According to the Trust for Public Land, 60% of El Paso residents live within a 10-minute walk of a park. The proposed cycle tracks and shared-use paths will provide more access to parks which has shown to benefit residents in their quality of life. These improvements will add two more parks to the connected bicycle network. **Figure 11** shows the parks connected within the half-mile study area.

Figure 11: Parks Connected



Health and Safety Benefits

Building healthy places for healthy people is embedded in Reimagine I-10's mission. More than 60 percent of people in the United States fail to get the recommended 150 minutes of physical activity each week, and 25 percent are completely inactive.

Shared-use paths provide attractive space for physical activity, which can prevent or decrease chronic illness and medical costs. They also can also provide mental health benefits by providing a place to exercise, which has been linked to decreasing mental health conditions such as depression and anxiety.

Health

According to data (Carlson SA, 2015) from the Center for Disease Control and Prevention (CD) inactive individual who exercise less than ten minutes weekly spend approximately $1,303 more on average in annual health care expenditures compared to active individuals who spend 150 minutes or more exercising weekly.

Millions of Americans use trails to become more active and the low-stress, traffic-free environment entices people of all ages and abilities.

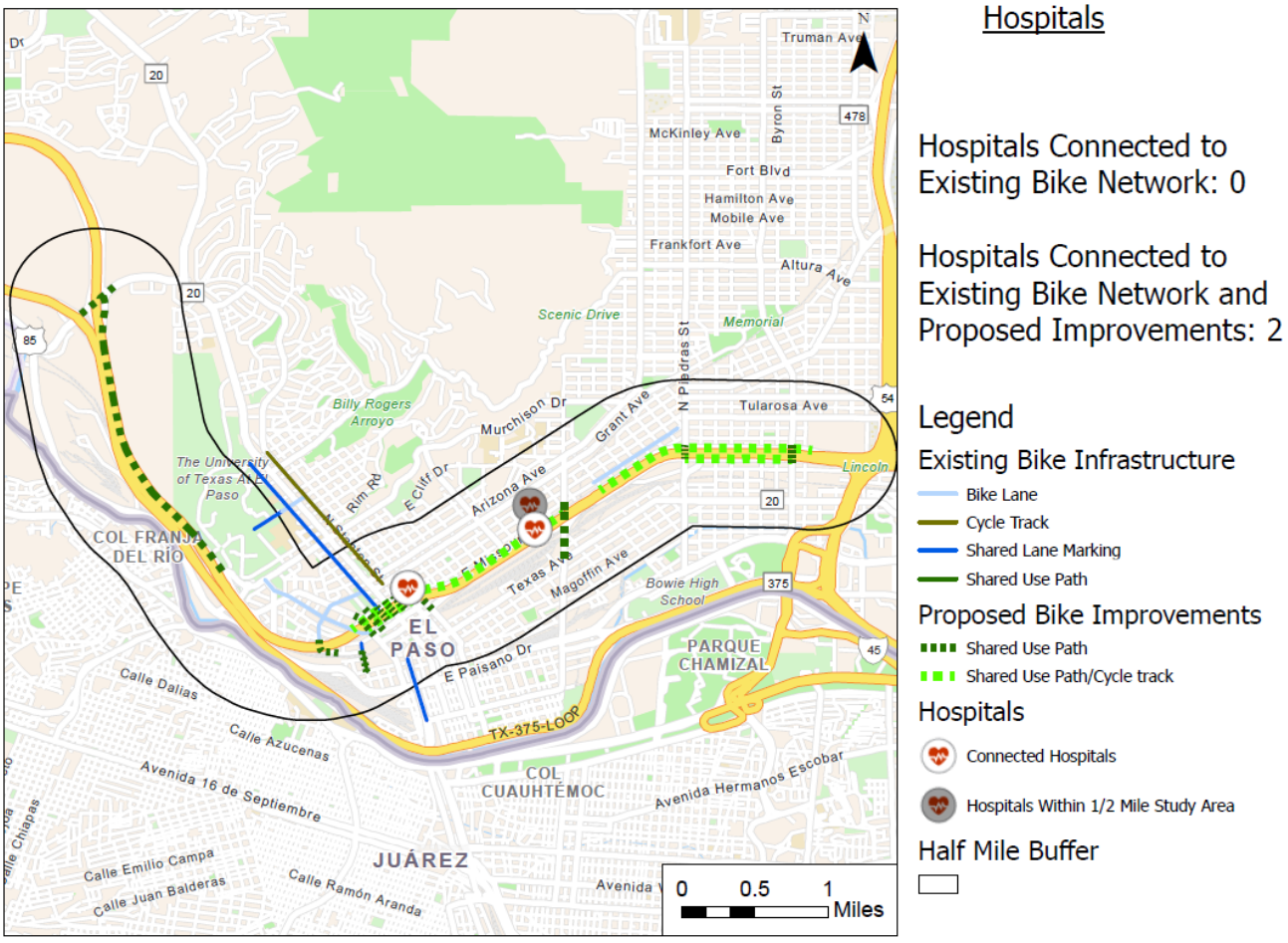
According to the US Department of Transportation (USDOT, n.d.), investing in bicycle and pedestrian infrastructure can result in the following health benefits:

- Address chronic disease (e.g., asthma, diabetes, heart disease)
- Improve access to health-supportive resources
- Improve equity
- Increase physical activity
- Improve safety
- Reduce human exposure to transportation-related emissions
- Reduce motor vehicle-related injuries and fatalities
- Reduce transportation's contribution to air pollution

Hospitals

Hospitals are typically referenced as locations that provide critical health services but also provide other daily health services for communities. Providing alternative modes of transportation to hospitals is critical to the population who do not have adequate access to vehicles. **Figure 12** shows the new connections to hospitals the proposed cycle tracks and shared-use paths will provide.

Figure 12: Access to Hospitals

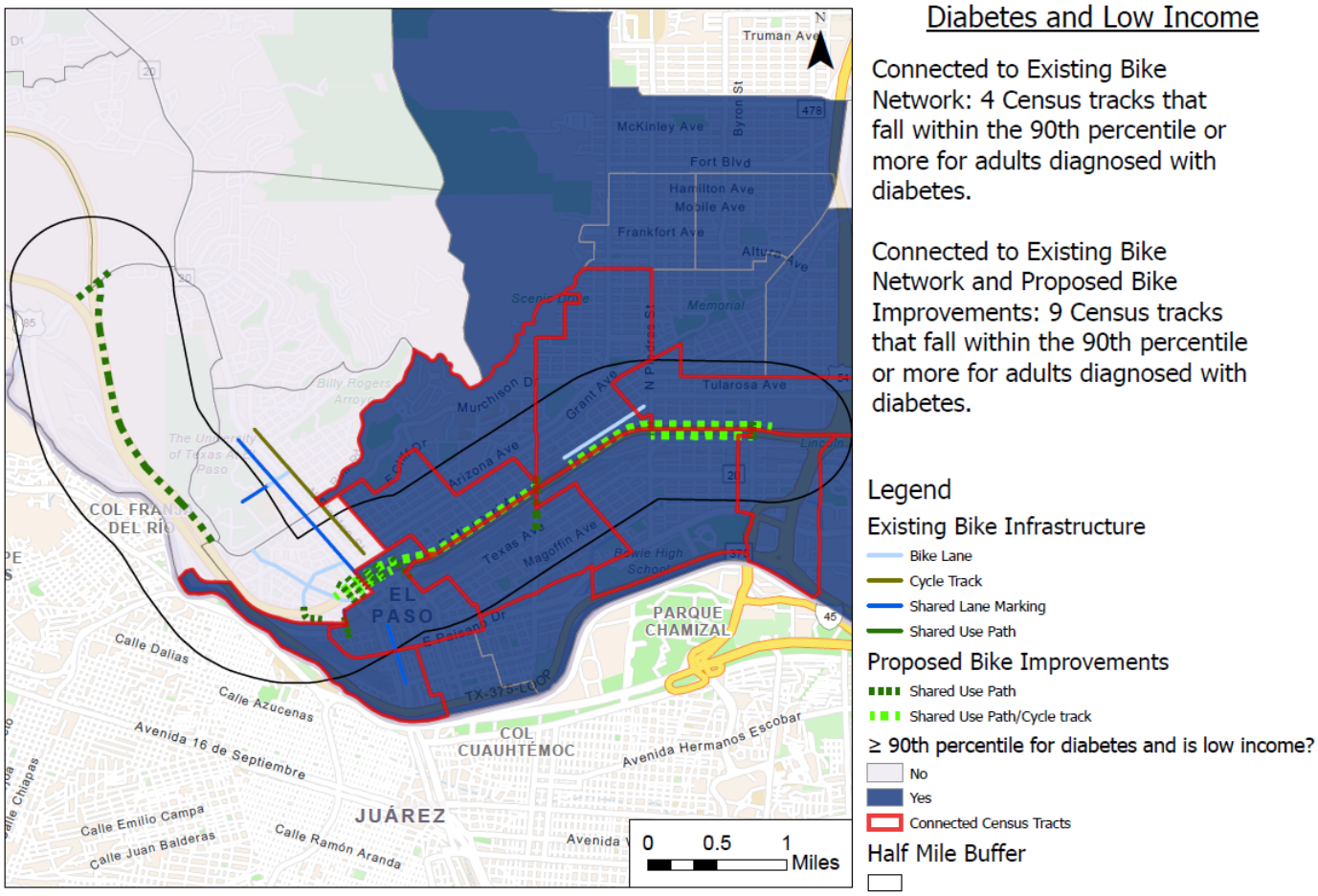


Low Income and Diabetes

There is no denying the health benefits active transportation such as walking, and bicycling provide. Exercise is one of the many benefits active transportation provides to its users. There is a high correlation between low-income communities and the health disparities that are associated with them. One health indicators that are commonly associated with low-income communities is coronary heart disease. **Figure 13** shows a before and after snapshot of the Census tracts that fall within the 90th percentile for diabetes. Additionally, **Figure 14** provides before and after snapshot of the Census tracts that are greater than or equal to the 90th percentile for diabetes and are classified as low income.

- Connected to Existing Bike Network – 4 Census tracks that fall within the 90th percentile or more for adults diagnosed with diabetes and is low income.
- Connected to Existing Bike Network and Proposed Bike Improvements – 9 Census tracks that fall within the 90th percentile or more for adults diagnosed with diabetes and is low income.
- Connected to Existing Bike Network – 5 Census tracks that fall within the 90th percentile or more for adults diagnosed with diabetes.

Figure 13: Population with Diabetes and is Low Income



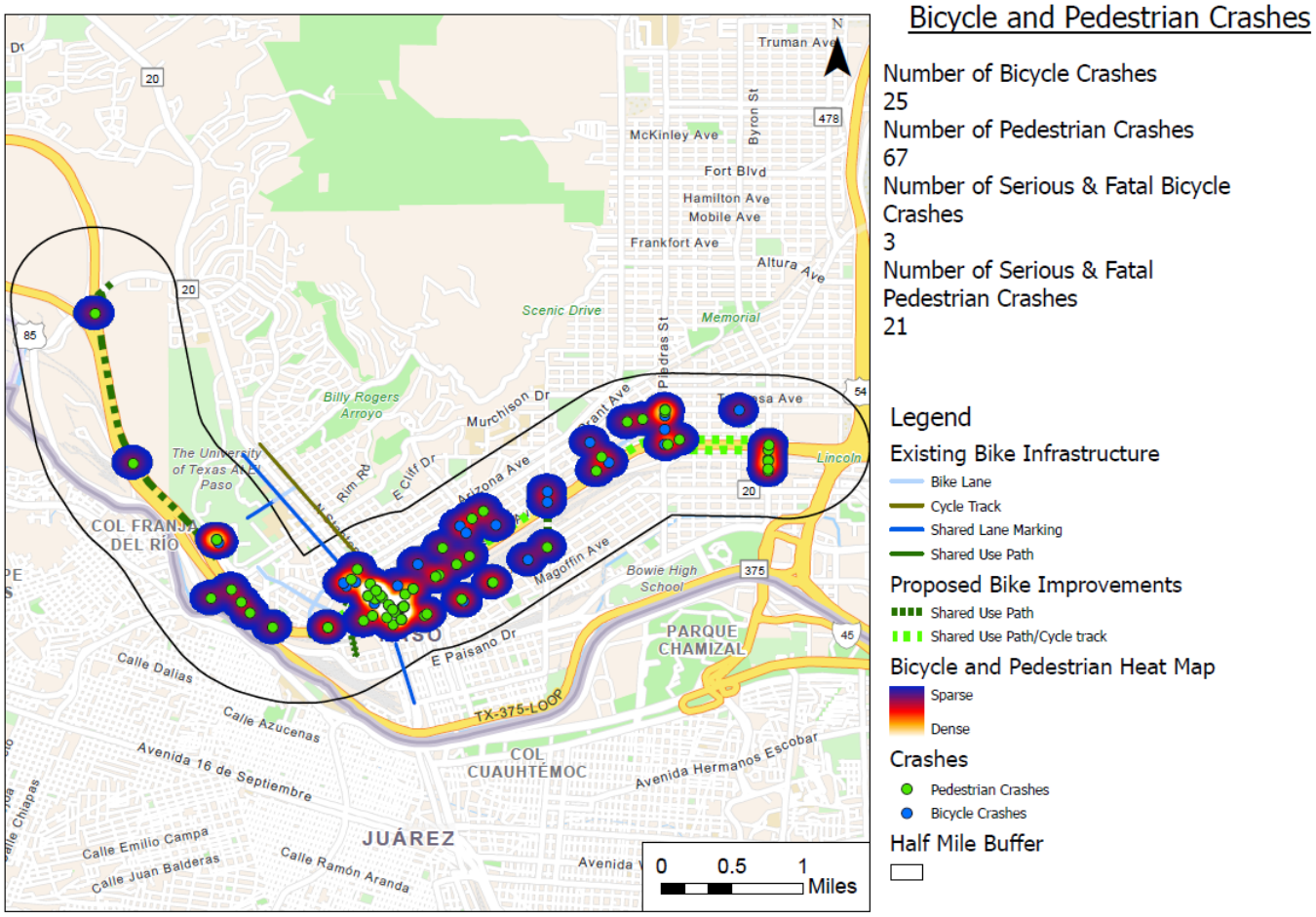
- Connected to Existing Bike Network and Proposed Bike Improvements – 10 Census tracks that fall within the 90th percentile or more for adults diagnosed with diabetes

Bicycle and Pedestrian Crashes

Bicycle and Pedestrian Crashes are important to evaluate as they can pinpoint areas of deficiency or lack of safety measures. Between 2017 and 2021, there was a total of 92 bicycle and pedestrian crashes that occurred within the half- mile study area. A total of 24 crashes resulted in either a fatal or serious injury. Pedestrians accounted for most of the crashes (73%) while bicycles accounted for the rest. **Figure 15** below identifies areas of where crashes have frequently occurred within the half-mile study area.

Protected facilities provide the benefit for cyclist and pedestrian to not have conflicts with motor vehicles. Studies indicate constructing a protected bike lane facility estimates 89% few injuries (Kay.Teschke) and leads to less collisions, even when more people are out (PL, 2003). The Desktop Reference for Crash Reduction Factors (FHWA) indicates the potential for a 36-40% bicyclist crash reduction when protected bicycle lanes are installed. This could potentially reduce bicycle crashes from 25 to 15 crashes in the study area.

Figure 14: Bicycle and Pedestrian Crashes



New Demographic Coverage and Social Equity

The addition of a dedicated multiuse trail will provide a bikeway in a location that will provide access to new households that previously did not have access to a dedicated bikeway within one mile.

With transportation being the second biggest drain on household budgets, affordable mobility options are critical for lower income families to make ends meet. Trails are part of the solution for those who cannot drive due to the high costs of car ownership, age or disability. With nearly half of all trips in the United States within a 20-minute bike ride, and more than 1 in 5 trips within a 20-minute walk, active transportation is a practical choice. For longer trips, urban trails often connect to transit facilities, enabling residents to safely access public transportation.

Further, rail-trails are relatively flat and highly accessible for persons with disabilities. Lower-income neighborhoods and persons of color have even more to gain from access to trails, given higher average incidences of chronic diseases associated with inactivity and less access to

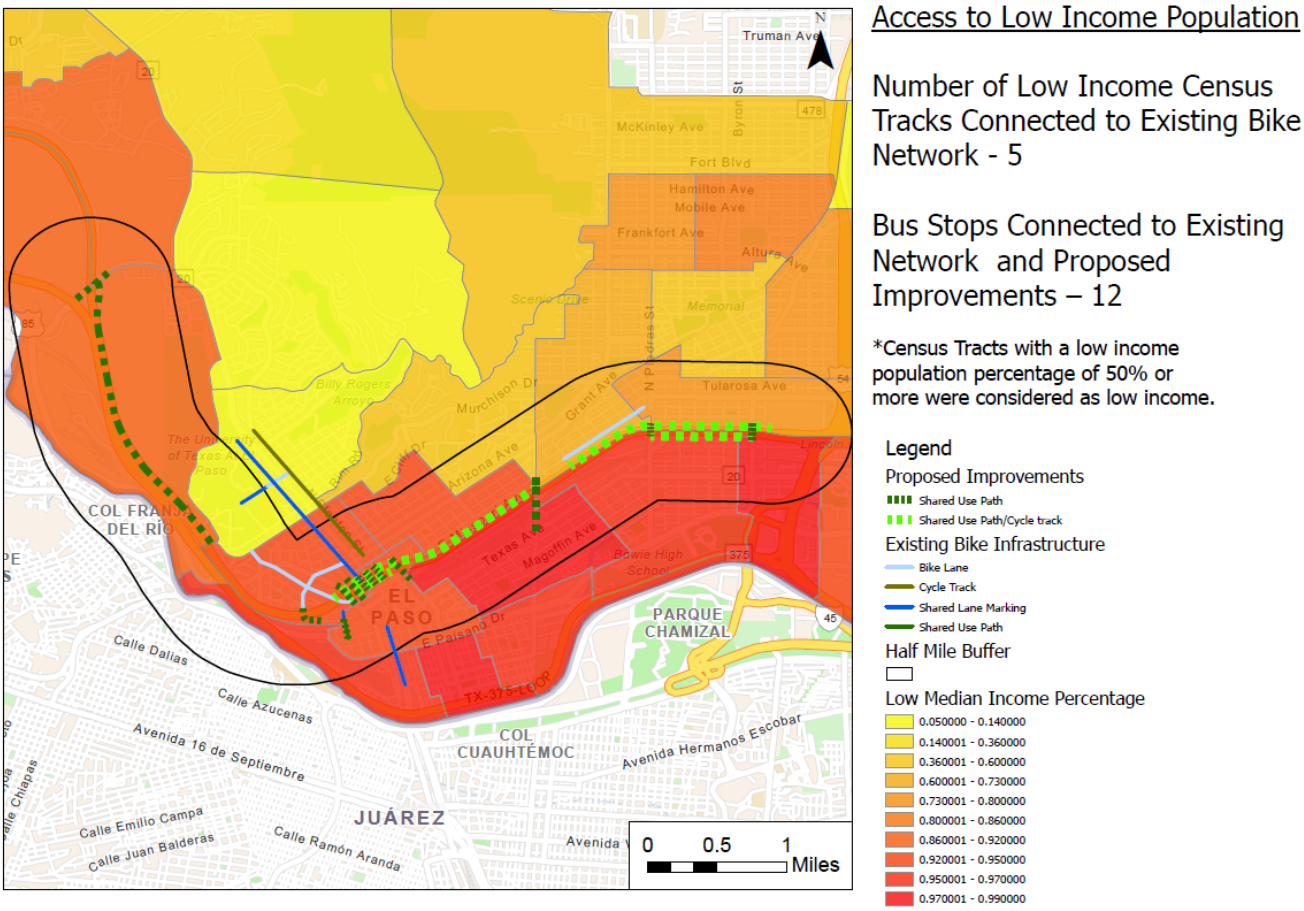
green outdoor spaces. California has recognized these needs and requires that a share of active transportation funds flow to disadvantaged communities.

Low Income

Low-income populations are typically synonymous to the population who do not have ownership or access to a vehicle for transportation. It is important to focus resources in these communities to equitably provide an alternative mode of transportation. **Figure 16** shows where these communities are located in relation to the proposed cycle tracks and shared-use paths.

- Before – 3,519 low-income people connected to Existing Bike Network within half- mile study area.
- After - 13,157 low-income people connected to Existing Bike Network and Proposed Bike Improvements within half- mile study area.

Figure 15: Access to Low Income Population



Summary

[IN PROGRESS]

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