APPENDIX: MULTIMODAL NETWORK EVALUATION

Multimodal Network Evaluation

El Paso, Texas

Draft

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Prepared by HNTB Corporation

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Executive Summary

The *Multimodal Network Evaluation* identified safety and connectivity gaps that can help guide where capital improvements to the roadway network can have an immediate impact toward improving multimodal travel networks where they are used the most. This evaluation also identified multimodal-supportive projects among those recently proposed by TxDOT, NMDOT and local governments for inclusion in the RMS 2050 MTP. This relationship between prioritized gaps in the network and proposed capital projects offers a way that investments in the roadway network can be programmed and leveraged to enhance the safety and connectivity of multimodal networks in the Borderplex Region. The gaps also highlight specific issues that may inform the type of infrastructure that can be employed to create a positive impact on the quality of multimodal networks. It should be noted that the gaps identified do not represent the only places where the multimodal network should be improved, but instead prioritize where initial investments can be made to address the most immediate needs.

Section 1 | Study Background: This section provides a description of what this evaluation is, its purpose and the criteria used to conduct the evaluation including Safety, Connectivity, Reliability, Density and Growth, and Leveraging Investments.

Section 2 | Multimodal Evaluation: This section describes the evaluation of the proposed RMS 2050 MTP capital projects against the criteria outlined in the previous section. It provides an overview of the data used and includes corresponding maps and evaluation results.

Section 3 | Addressing Multimodal Gaps: This section provides more detail on the multimodal safety and connectivity gaps with brief explanations of methodology and ways to address those gaps.

Section 4 | Recommendations: This section offers recommendations for how to incorporate the multimodal-supportive projects from the evaluation into the overall MTP project prioritization and recommended next steps to extend beyond this study.

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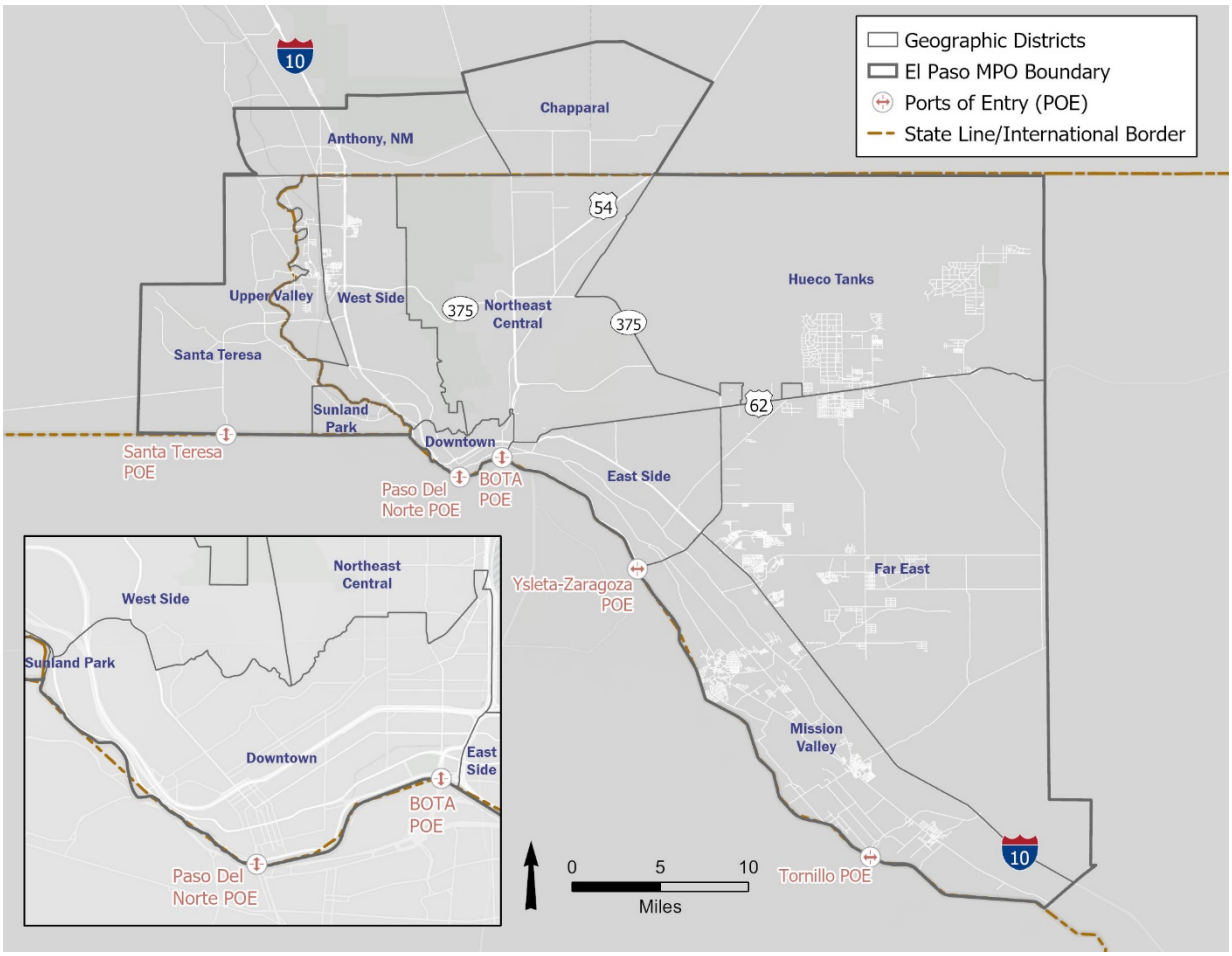
1.0 Study Background

The Regional Mobility Strategy (RMS) *Multimodal Network Evaluation* is an effort to compliment the prioritization of capital projects proposed by various jurisdictions across the Borderplex Region to be included in the next version of the fiscally constrained Metropolitan Transportation Plan (RMS 2050 MTP). The El Paso Metropolitan Planning Organization (MPO) has partnered with the Texas Department of Transportation–El Paso District (TxDOT) in this effort and will use this evaluation to identify critical gaps in the multimodal network, including bike, pedestrian and public transportation. The MPO will also identify opportunities to leverage transportation investments to grow and improve multimodal mobility throughout the region. For the purpose of this evaluation, the study area consists of area jurisdictions located within the MPO boundary, shown in **Figure 1**.

FIGURE 1. STUDY AREA AND GEOGRAPHICAL DISTRICTS



1.1 Purpose of Multimodal Network Evaluation

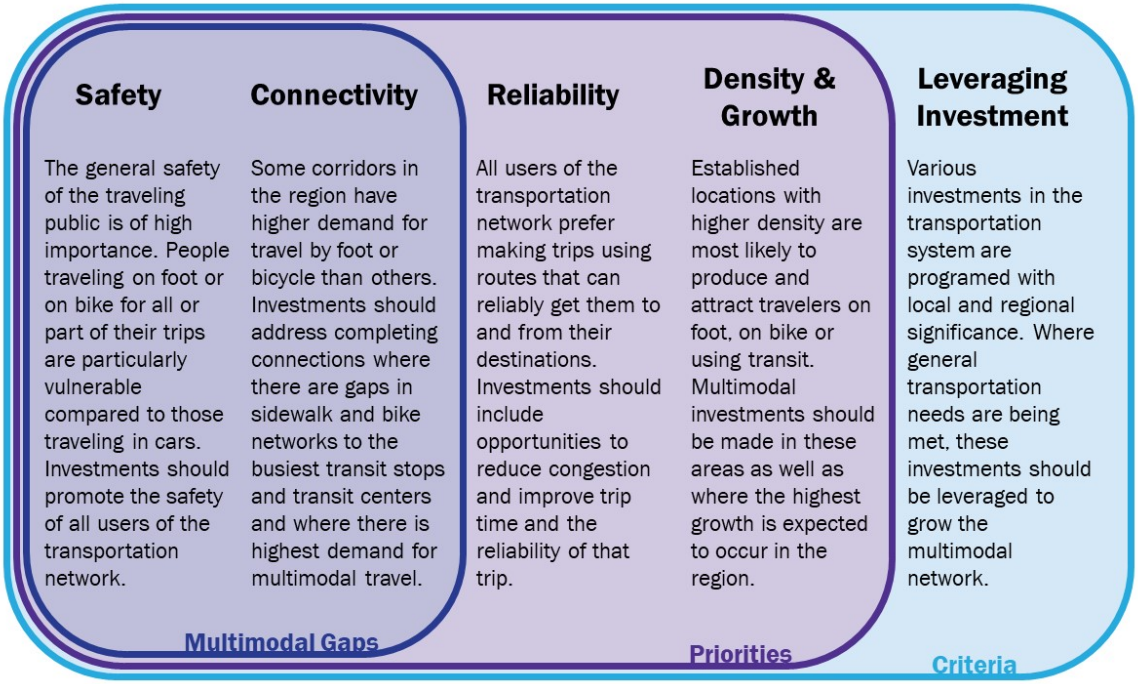
The purpose of the *Multimodal Network Evaluation* is to identify multimodal network gaps and provide an objective, data-driven evaluation of how some projects proposed for inclusion in the RMS 2050 MTP would be supportive of multimodal networks. The criteria for this evaluation, which can be found in more detail in **Figure 2**, help to articulate priorities and identify gaps, primarily focusing on pedestrian and bicycle safety, connectivity to the busiest bus stops in the region, and corridors with the highest multimodal demand.

As it relates to this *Multimodal Network Evaluation*, gaps and priorities can be considered as follows:

Gaps are locations in the region where pedestrian and bicycle safety are at highest risk, where pedestrian and bicycle connectivity to transit lacks sidewalks or protected bike lanes, and where pedestrian, bicycle and transit travel demand is greatest.

Priorities include improving gaps in safety and connectivity, improving reliability in terms of travel time and congestion, and building new infrastructure in areas around the region with higher densities and projected growth.

FIGURE 2. EVALUATION CRITERIA AND DESCRIPTION



The enhancement of multimodal networks is driven by the need to provide a connected, safe and reliable transportation network for all members of the traveling public regardless of travel mode. There are many needs spread across the Borderplex Region for improving multimodal networks just as there are many needs to improve the roadway system. This evaluation directly aligns multimodal needs with proposed RMS 2050 MTP capital projects to make sure that investments are coordinated to greatest extent possible. These criteria are similar to TxDOT goals and objectives such as Promoting Safety through reduced crashes, Optimizing Performance through enhanced connectivity and reduced congestion, and Delivering the Right Projects through leveraging investment.[1]

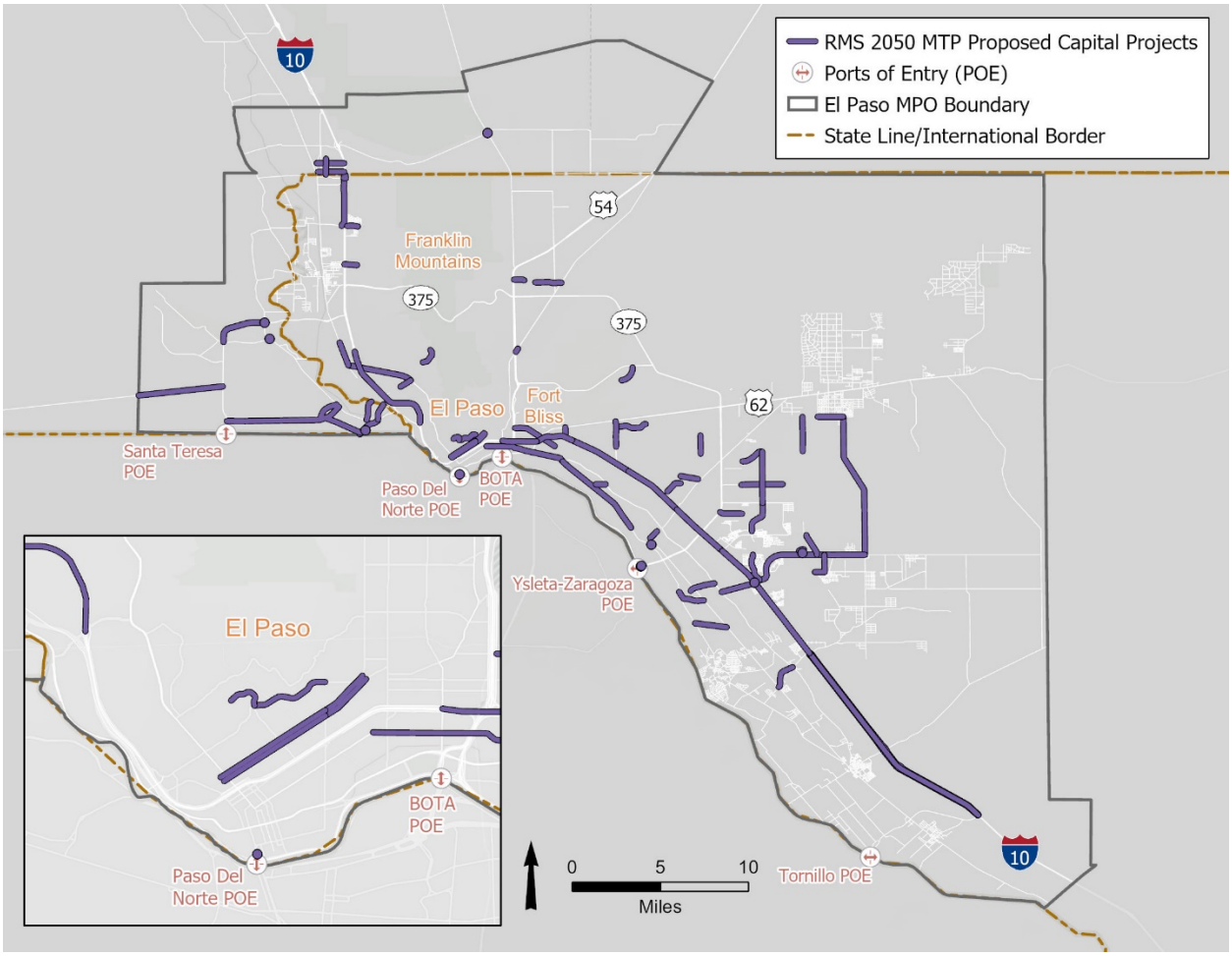
1.2 Proposed RMS 2050 MTP Projects

Leveraging investments in the overall transportation network can be used to grow and improve multimodal networks. Projects proposed to be considered for inclusion in the fiscally constrained RMS 2050 MTP have the opportunity to fill some of the safety and connectivity gaps in the multimodal network, as well as meet priorities of reliability, and density and growth. These include proposed projects submitted by local governments and TxDOT through the MPO's call for projects to be

[1] Values, Vision, Mission and Goals. TxDOT. Accessed September 2020. https://www.txdot.gov/inside-txdot/contact-us/mission.html

considered for inclusion in the MTP. Not all of these projects will be included for use of Federal or State funding and several may instead need to be part of local Capital Improvement Programs (CIP). Some projects may also require further study to better define their scope. The proposed capital projects submitted for the RMS 2050 MTP are shown in **Figure 3**.

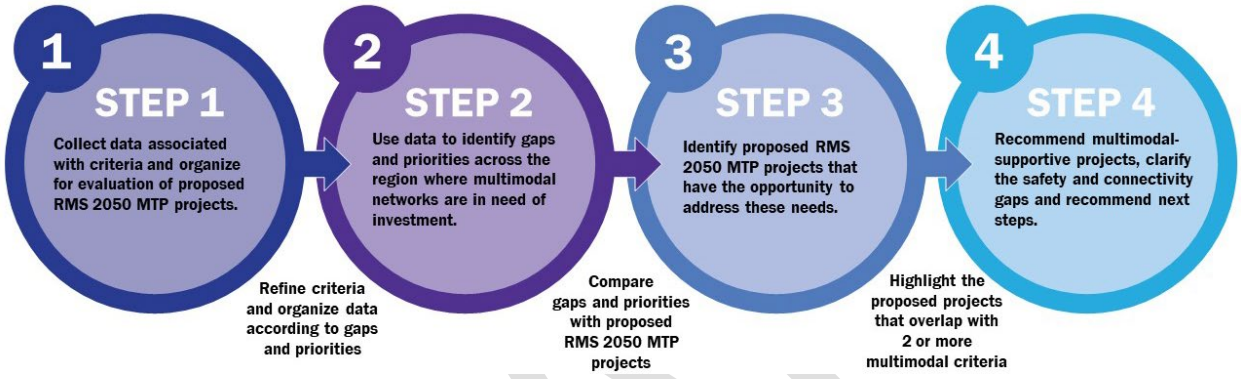
FIGURE 3. MAP OF PROPOSED RMS 2050 MTP CAPITAL PROJECTS



2.0 Multimodal Evaluation

The multimodal evaluation of projects that were proposed for inclusion in the RMS 2050 MTP began with identification of gaps and priorities as defined in **Section 1** using available data, followed by identification of proposed projects that overlap with two or more gaps or priorities. These resulting projects are included in **Section 2.4** below and identified as supportive of multimodal networks. In this section, the multimodal networks being supported in this evaluation and the data behind the gaps and priorities that proposed projects were compared against are described. Also included, are maps corresponding with the gap and priority data showing generally where these are located across the region. The process followed for this evaluation is summarized below in **Figure 4**.

FIGURE 4. PROCESS FOLLOWED FOR THIS EVALUATION



2.1 Multimodal Networks supported in this Evaluation

The various modes of transportation that are included as part of this evaluation include pedestrian, bicycle, public transit, and critical roadway projects not included as part of the State roadway system (off-system). While the majority of people in the Borderplex Region make their trips by driving their own car across the roadway network, there are a substantial number of people that travel using public transit, by riding their bike, by walking or a combination of these modes. In addition to these modes, TxDOT has identified a need for the region to further develop critical links in the off-system roadway network for the benefit of the entire travel network.

Pedestrian Network

The pedestrian network includes the sidewalk and roadway crossing infrastructure throughout the region. In addition to sidewalks; landscaping, lighting and pedestrian crossing enhancements all help to improve the quality and safety of the overall pedestrian network. These treatments should be considered throughout the network, though particularly where proposed projects overlap with pedestrian safety or connectivity gaps.

Bicycle Network

The bicycle network includes clearly marked and dedicated bicycle lane infrastructure. Safe, protected and continuous bike connections to public transit and where peak demand for bicycle travel has been identified should be prioritized where proposed RMS 2050 MTP projects overlap. Several proposed projects determined to be multimodal-supportive offer an opportunity to invest in the bike network.

Public Transit Network

The public transportation network is composed of Sun Metro, El Paso's municipal transit operator, El Paso County Transit, the primary rural transit provider, as well as a few routes operated by South Central Regional Transit District (SCRTD) and New Mexico Department of Transportation (NMDOT) in

New Mexico. The Brio rapid transit system operated by Sun Metro forms the "backbone" of the regional transit network, offering 10-minute peak service in four of the busiest transit corridors in the Borderplex region. At many locations, Brio interacts with the rest of the Sun Metro fixed-route bus system and is also fed by rural transit providers including El Paso County and SCRTD. Gaps and priorities that support transit identified in this evaluation include enhancing connectivity of bicycle and pedestrian networks to the busiest transit stops in the region and include locations where transit-priority treatments such as queue-jumps or bus lanes can improve transit performance and reliability.

Off-System Roadway Network

The majority of roadway infrastructure in the region can be considered "off-system." This term is employed to identify roadways that are not part of the TxDOT state-wide highway system, which includes most controlled-access freeways, farm-to-market roads and some of the region's busier arterial roadways. Off-System roadways represent 22 of the 28 proposed projects in **Table 1** that have been identified as multimodal-supportive.

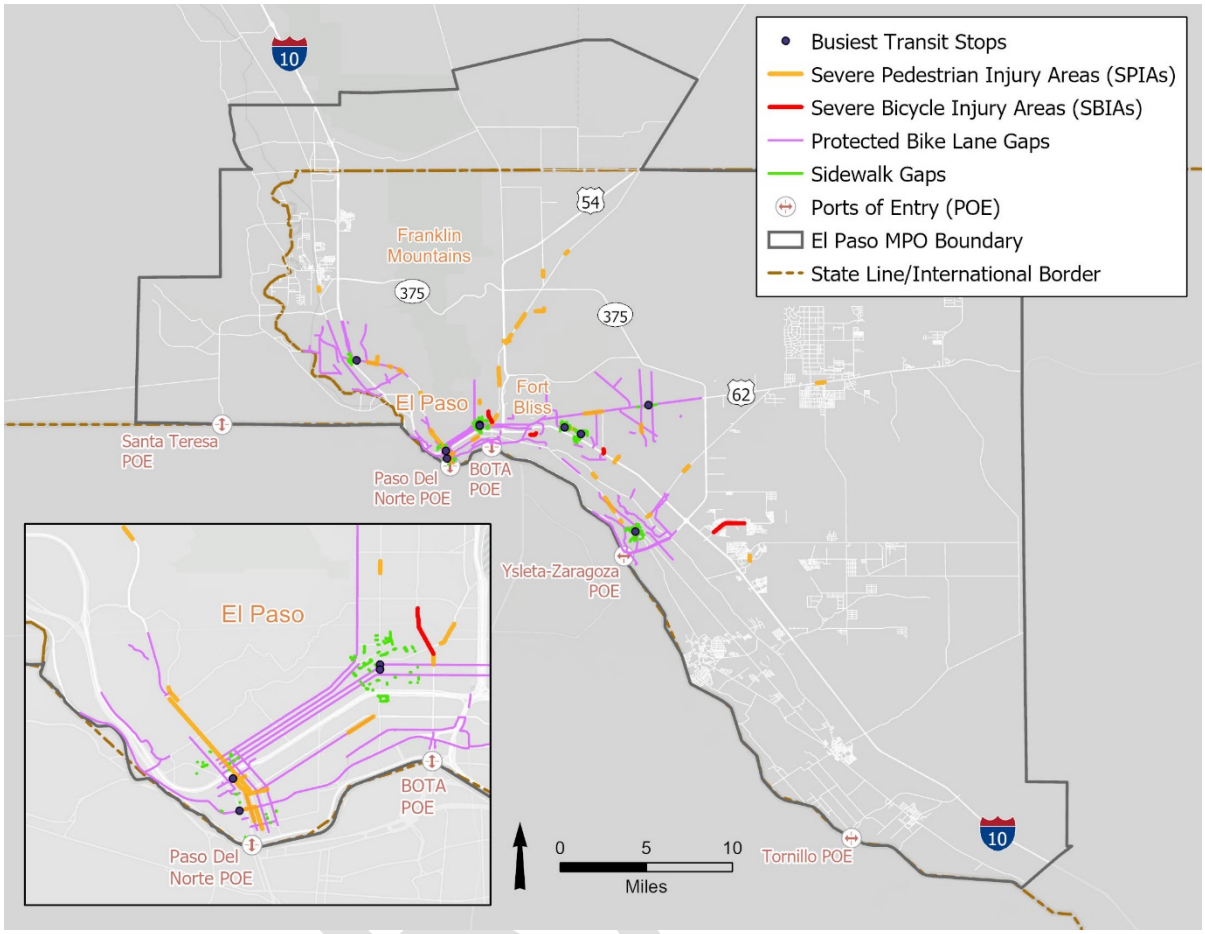
2.2 Multimodal Gaps

The gaps identified in this evaluation correspond with safety and connectivity. Data used to define the safety gaps included severe and fatal crashes involving pedestrians and bicyclists between 2015 and 2020.[2] Areas where these types of crashes occur within ½ and 2 miles of one another respectively, were identified. The data revealed that while only 1.3% of people in El Paso County walk as their primary mode of transportation to work,[3] approximately 17% of all severe and fatal crashes in El Paso County between 2015 and 2020 involved pedestrians.[4] These crash locations highlight areas where investing in safe infrastructure can greatly improve safety in El Paso for pedestrians and bicyclists. More information can be found on these gaps in **Section 3.1**. Data used to define the connectivity gaps include the 13 busiest transit stops in the region as identified in the travel demand model,[5] gaps in the City of El Paso's sidewalk network,[6] the proposed protected bike lane network from the City of El Paso's bike plan,[7] and a peak demand analysis, which is described below in more detail. It should be noted that the safety and connectivity gaps in this evaluation represent locations on the road network and do not include off-road trails or facilities located outside the right-of-way.

In **Figure 5** below, many multimodal gaps are shown including severe and fatal injury areas for both pedestrians and bicyclists as well as pedestrian and protected bike lane gaps connecting to the busiest transit stops. Crash data was only available within El Paso County and sidewalk gaps were only available within the City of El Paso. The protected bike lane gaps are solely from the City of El Paso's Bike Plan. The busiest stops in the system all occur within the Sun Metro system. This is all to indicate that these particular gaps can all be found within the City of El Paso. In **Figure 6** below, peak demand corridors were determined by analyzing all communities within the MPO boundary, and therefore included some areas outside City of El Paso. These locations offered a place to prioritize investment in connected sidewalks and protected bike lanes for people most likely to be also using public transit.

[2] Crash Records Information System (CRIS) Data, TxDOT. Accessed July 2020. https://cris.dot.state.tx.us/public/Query/app/welcome
[3] American Community Survey (ACS) 1-year estimates for 2019. Accessed October 2020. https://data.census.gov/cedsci/table?q=journey%20to%20work%20el%20paso&tid=ACSST1Y2019.S0802&hidePreview=true
[4] CRIS Data.
[5] Destino Travel Demand Model (TDM), El Paso MPO. Accessed July 2020.
[6] Sidewalk Gap data, 2017. El Paso MPO.
[7] El Paso Bike Plan, 2016. City of El Paso. Accessed July 2020. https://www.elpasotexas.gov/capital-improvement/project-updates/el-paso-bike-plan-final

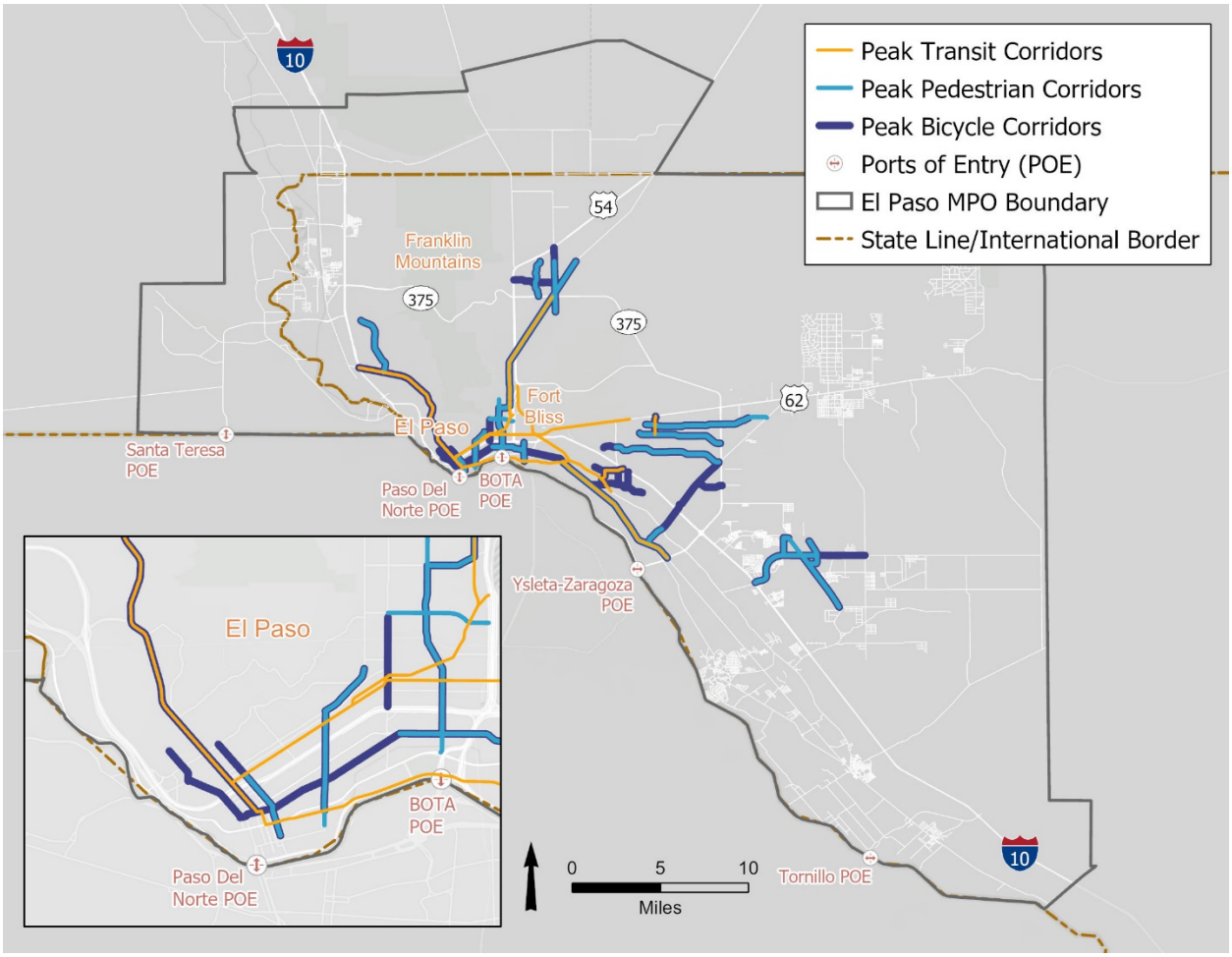
Figure 5. Map of Multimodal Gaps



Peak Demand Analysis

As part of the connectivity criterion, pedestrian, bicycle and transit travel demand projected for 2045 in the Destino Travel Demand Model (TDM) was modeled on the existing 2020 travel network to identify corridors with the highest peak hour demand.[8] In **Figure 6**, continuous corridors with the highest peak demand for pedestrian, bicycle and transit travel are shown together and represent connectivity gaps where capital investments to improve these networks would result in significant benefit. More information about this analysis can be found in **Section 3.2**.

FIGURE 6. MAP OF PEAK DEMAND ANALYSIS RESULTS

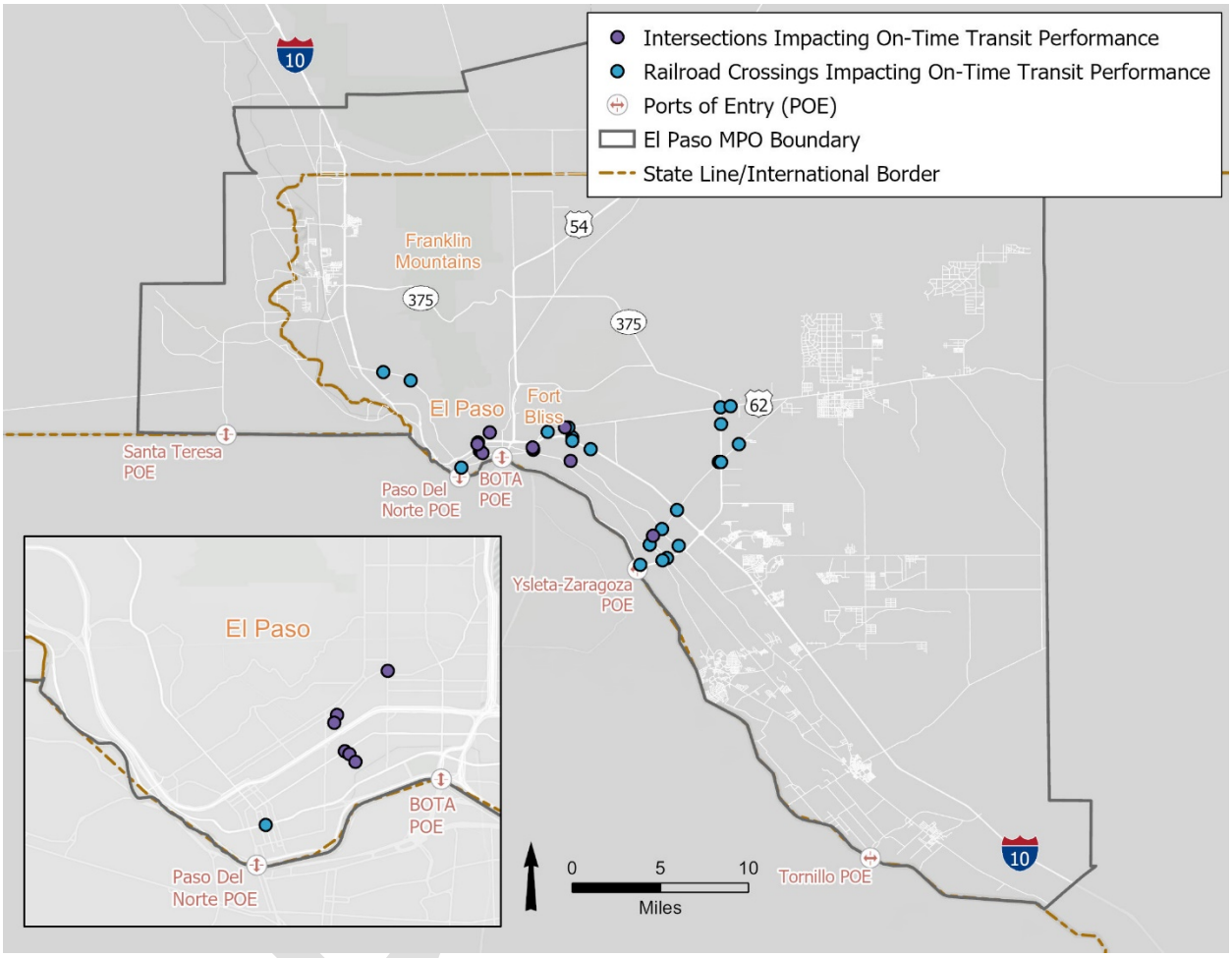


[8] TDM

2.3 Multimodal Priorities

The priorities identified in this evaluation correspond to the reliability and density and growth criteria. The approach used to define the reliability priorities included a network performance analysis, as well as a series of congested intersections and railroad crossings where traffic conditions can impact fixed-route service reliably during peak periods, shown in **Figure 7**.[9]

FIGURE 7. MAP OF LOCATIONS WHERE TRAFFIC CONDITIONS IMPACT ON-TIME TRANSIT PERFORMANCE



Since high density locations are most likely to produce and attract multimodal trips, locations with the highest current population and employment densities were identified as shown in **Figures 8-9**.[10] In addition, areas with the highest projected growth by 2045 in population and employment shown in **Figures 10-11**, such as the Upper Valley, Sunland Park and the Mission Valley should be considered for new multimodal infrastructure, to accommodate future regional population and employment centers.

[9] Congested locations impacting transit on-time performance, October 2020. Sun Metro.
[10] TDM

Figure 8. Map of High-Density Population Areas (2020)

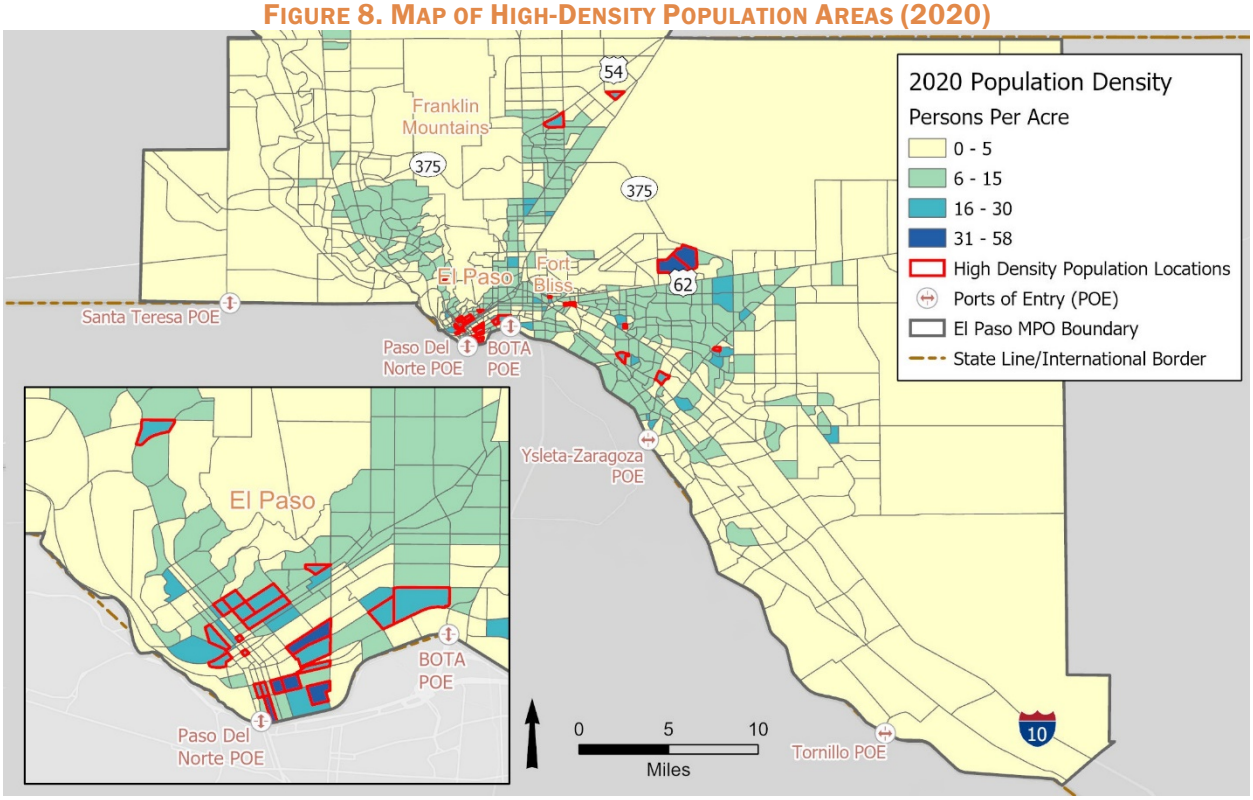


Figure 9. Map of High-Density Employment Areas (2020)

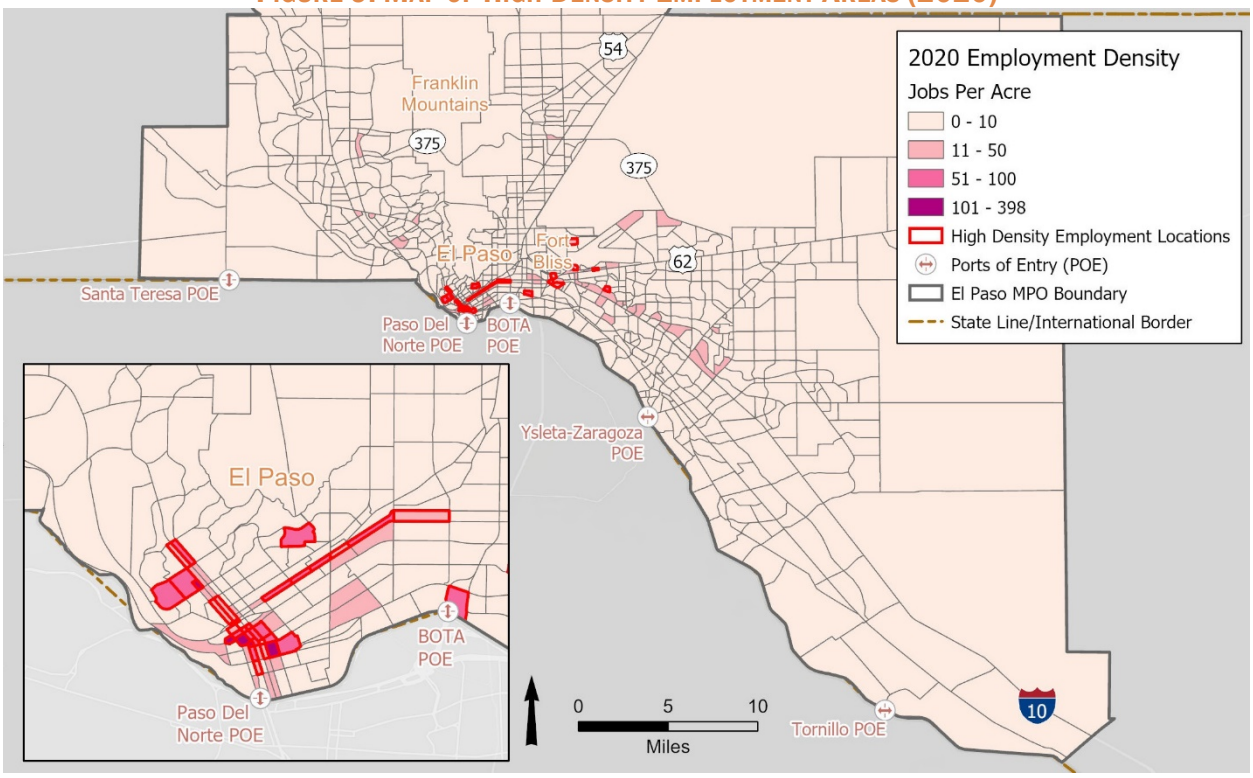


Figure 10. Map of High-Growth Population Areas (2020-2045)

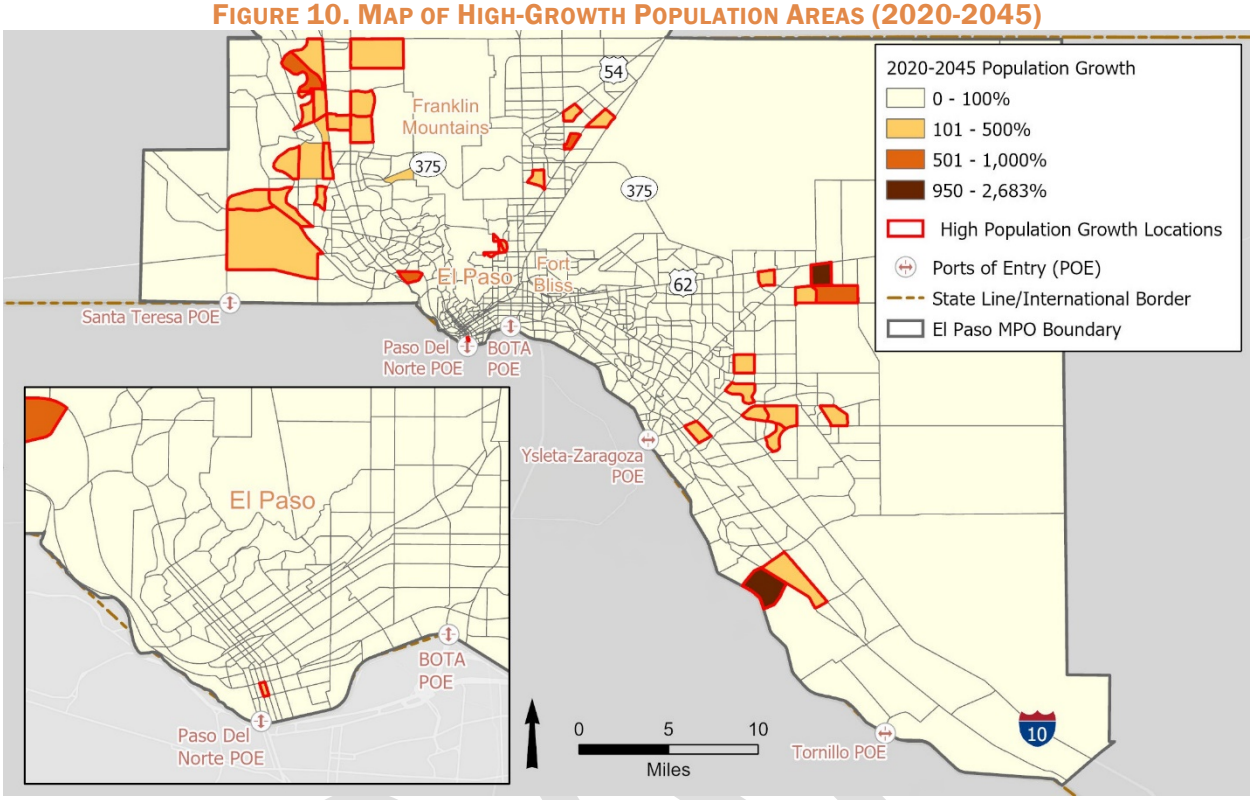
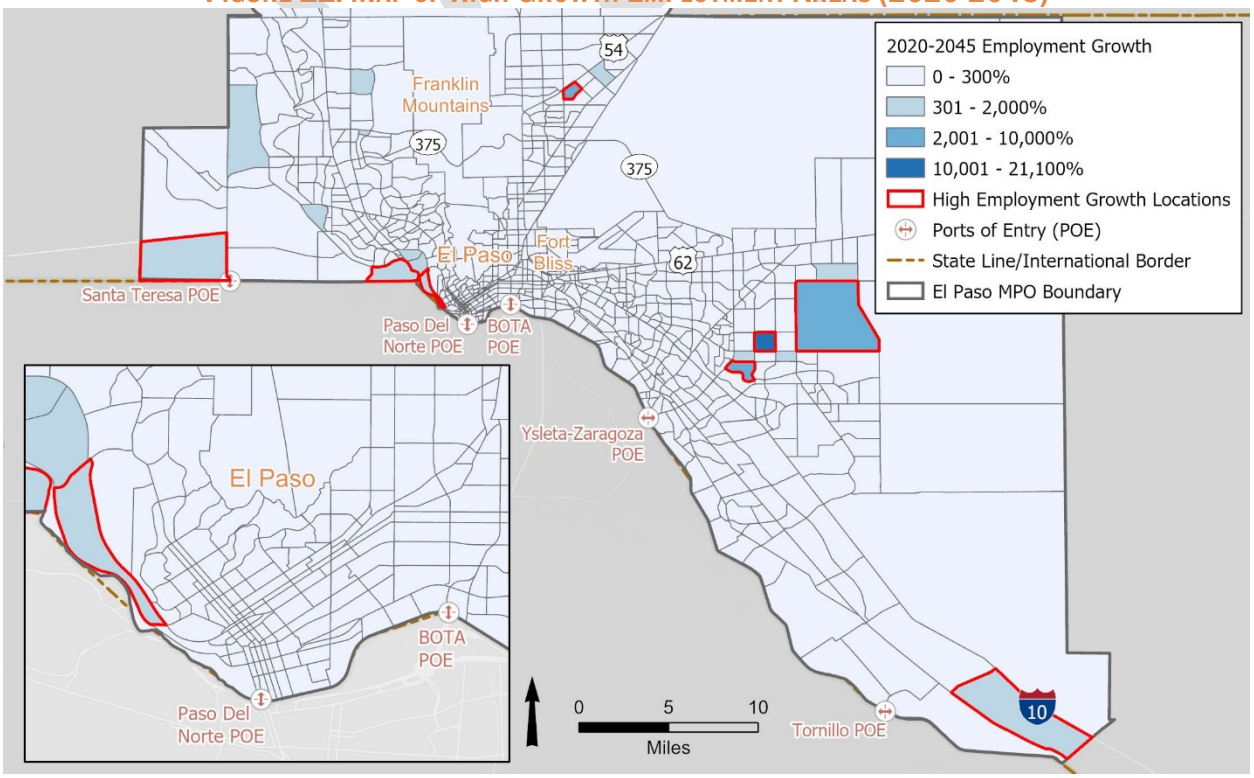


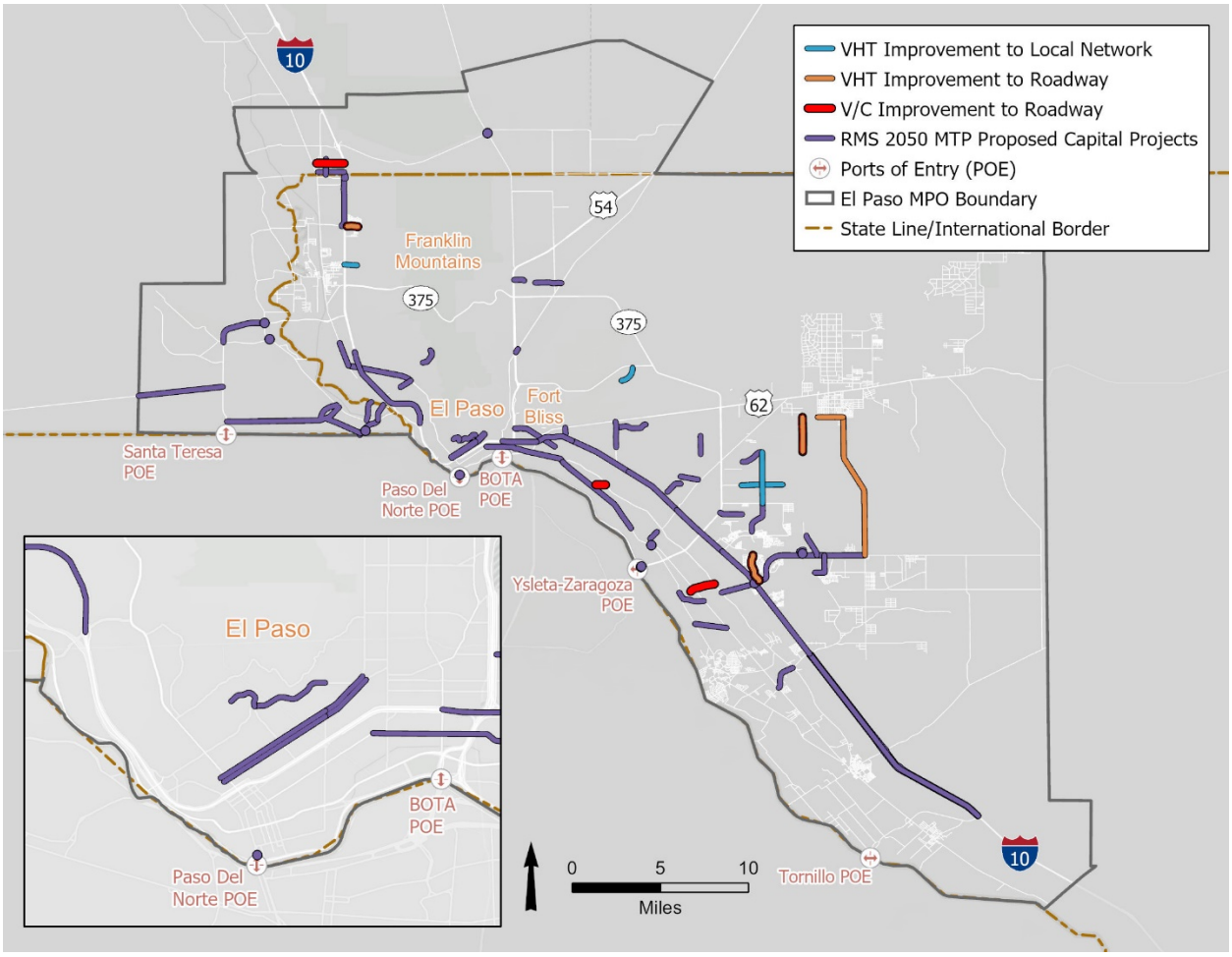
Figure 11. Map of High-Growth Employment Areas (2020-2045)



Network Reliability Performance Analysis

Proposed RMS 2050 MTP projects were entered into the Destino TDM to measure whether they improve travel time or congestion conditions on either the existing roadway or on the surrounding road network.[11] While this analysis was performed on all proposed roadway capital projects as shown in **Figure 12**, only off-system (i.e. non-TxDOT) projects were scored in the evaluation to focus this criterion on the local roadway network. Specifically, vehicle hours traveled (VHT) were used to determine if the project improves travel time on both the adjacent local road network and on the project's existing roadway. The traffic volume to roadway capacity ratio (V/C ratio) was used to determine if congestion was improved on the project's existing roadway. Improvements from off-system roadway projects in any of these three categories indicated that a proposed project meets the intent of the reliability criterion of this evaluation.

FIGURE 12. MAP OF NETWORK RELIABILITY PERFORMANCE ANALYSIS RESULTS



[11] TDM.

2.4 Multimodal Evaluation Results

Proposed RMS 2050 MTP projects that have been identified as supportive of multimodal networks are shown in **Figure 13** below. These are projects that overlapped with two or more of the evaluation criteria discussed in **Section 1**. In addition to these projects meeting two or more criteria, a series of proposed projects have been identified as multimodal-specific, which were not located on the road network and therefore did not correspond with the criteria used for this evaluation. These projects provide improved safety and connectivity for multimodal networks and should also be considered supportive of multimodal networks. Recommendations for proceeding with these results can be found in **Section 4** and complete analysis results are presented in **Appendix A**.

FIGURE 13. MAP OF MULTIMODAL-SUPPORTIVE PROJECTS

Numbers on this map correspond with numbers in the left column of **Table 1**.

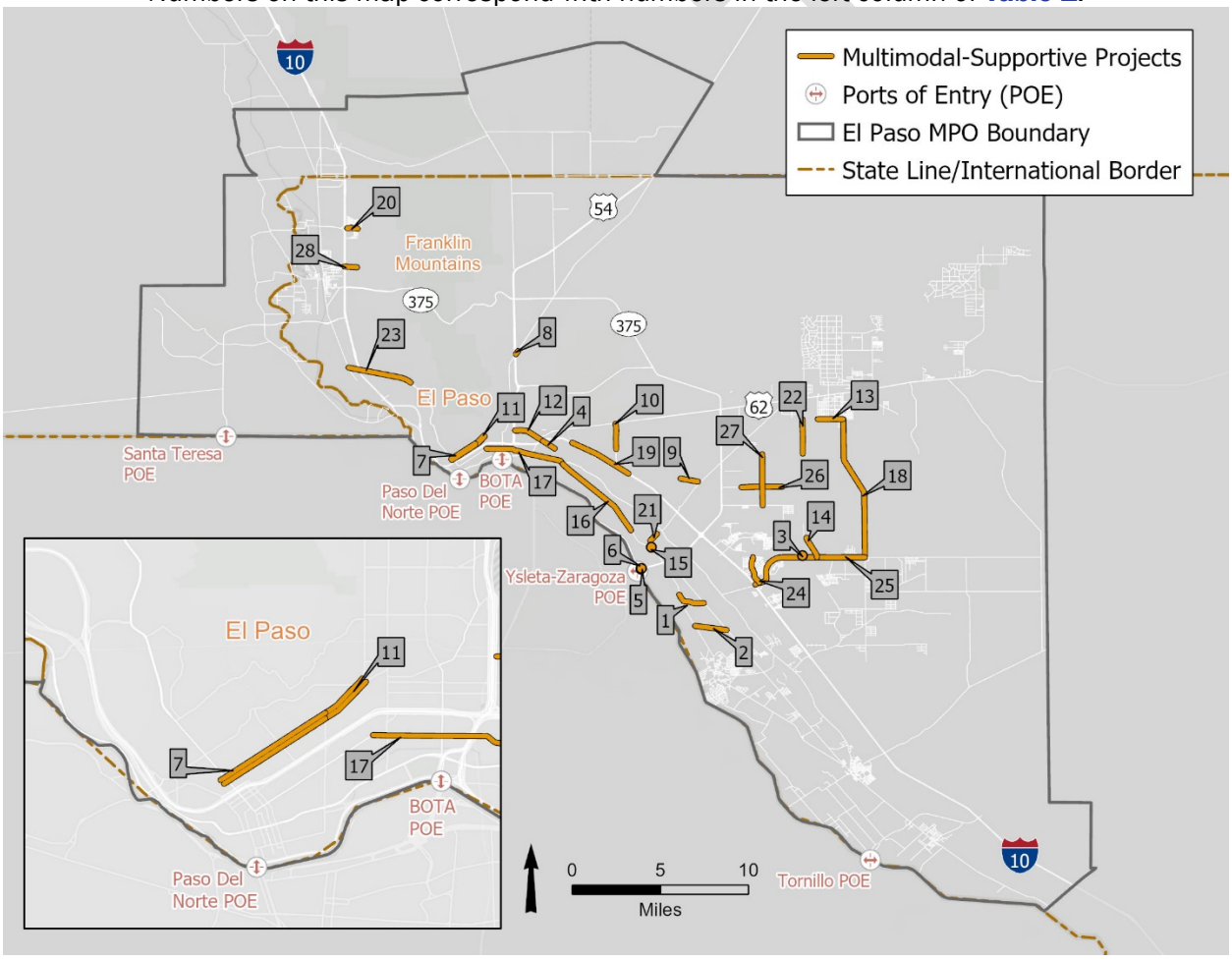


TABLE 1. PROPOSED MULTIMODAL-SUPPORTIVE PROJECTS

(These are not ranked, but shown in order by proposed Fiscal Year of Expenditure)
Project numbers in the left column correspond with numbers in **Figure 13**.

No.	Project Name	Project Sponsor	Proposed Fiscal Year of Expenditure	Meets 2+ Criteria	Multimodal-Specific
1	Segment 4B Socorro Spur PDN Trail	Socorro	2022		✓
2	Segment 4D Tigua Spur PDN Trail	Socorro	2022		✓
3	Horizon City Transit Plaza	Horizon City	2025		✓
4	Trowbridge Dr (I-10 to Marlow)	COEP	2025	✓	
5	Zaragoza POE Shade Canopies	COEP	2025		✓
6	Zaragoza POE Ped. Pick-Up Areas	COEP	2026		✓
7	Arizona–Rio Grande Two-Way	COEP	2026	✓	
8	Dyer Pedestrian and Parkway Improvements	COEP	2026	✓	
9	Pipeline Trail Shared-Use Path	COEP	2027		✓
10	McRae Shared-Use Path	COEP	2027		✓
11	Arizona-Grant Two-Way	COEP	2028	✓	
12	Trowbridge Dr (US54 to I-10)	COEP	2028	✓	
13	Greg Road widening	EP County	2028	✓	
14	N. Kenazo Reconstruction	Horizon City	2028	✓	
15	SH 20 Alameda (Old Pueblo to Candelaria)	TxDOT	2029	✓	
16	SH 20 Alameda (Delta to Prado)	TxDOT	2029	✓	
17	SH 20 Alameda (Texas to Delta)	TxDOT	2029	✓	
18	Ascension Widening	EP County	2030	✓	
19	I-10 (Airway to Yarbrough)	TxDOT	2031	✓	
20	Westway Blvd Widening	EP County	2034	✓	
21	Zaragoza Rd. RR Overpass	COEP	2034	✓	
22	Tim Floyd	EP County	2036	✓	
23	SH 20 Doniphan (Mesa – Sunland Park)	TxDOT	2039	✓	
24	Peyton Road Widening	EP County	2039	✓	
25	Widen Horizon Blvd. (I-10 to Ascension)	TxDOT	2039	✓	
26	Vista del Sol extension	EP County	2043	✓	
27	Rich Beam / Peyton extension	EP County	2044	✓	
28	Los Mochis extension	EP County	2045	✓	

3.0 Addressing Multimodal Gaps

Multimodal gaps are locations where pedestrian and bicycle safety are at highest risk, where pedestrian and bicycle connectivity to transit lacks sidewalks or protected bike lanes, and where multimodal peak travel demand is greatest. Many of these locations have become common pathways for travelers on foot or by bicycle, though in some cases the current state of the infrastructure is either incomplete or requires some degree of safety enhancement to address the gap that has been identified.

As noted earlier, multimodal gaps in this evaluation did not include off-road trails or facilities located outside the right-of-way, though the multimodal-specific projects included in **Table 1** are recommended to be multimodal-supportive. In the future, other gaps may be identified in addition to those discussed in this report. The purpose for identifying these gaps is to offer a tool that can help guide where capital improvements to the roadway network can be leveraged to have an immediate impact on multimodal travel networks.

3.1 Safety Gaps

Gaps where safety can be improved were identified for both the pedestrian and bicycle networks. Data used to define the safety gaps for each include severe and fatal crashes involving pedestrians and bicyclists between 2015 and 2020 from the State crash records information system (CRIS). In this evaluation, this only accounts for crash data within El Paso County. People traveling on foot or by bicycle for all or part of their trips are particularly vulnerable compared to those traveling in cars. The severe pedestrian and bicycle injury areas described below help to identify where the highest incidence of severe and fatal crashes occur.

Many cities across the United States have set policies and made formal commitments as part of a "Vision Zero" plan to bring traffic fatalities and severe injuries in their respective communities to zero. There are several strategies used to address this challenge such as reducing posted speed limits, educating the traveling public and designing additional safety features into the travel infrastructure. There are locations along Dyer St. (US 54) and Mesa St. (SH 20) for example where there are recent historical concentrations of severe and fatal crashes. This type of analysis helps to determine where enhanced roadway infrastructure or reduced speed limits can improve safety for all users of the travel network.

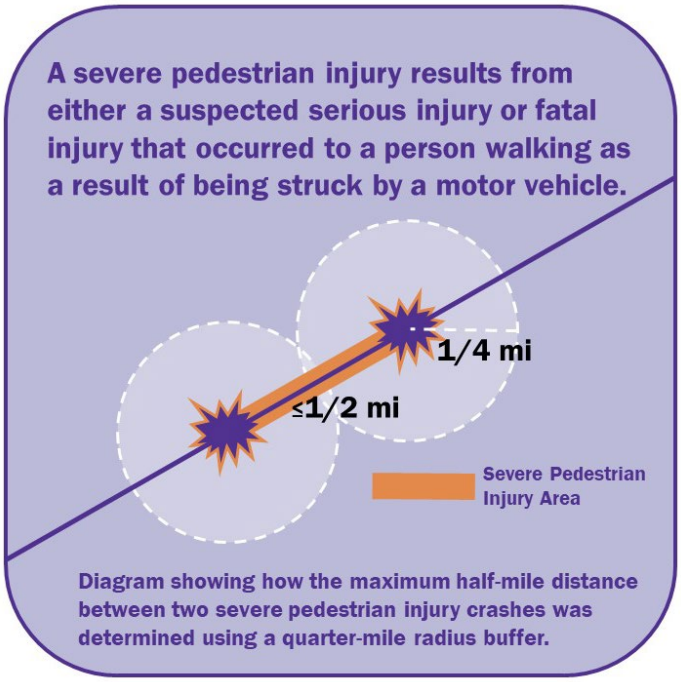


FIGURE 14. SEVERE PEDESTRIAN INJURY AREA DEFINITION AND DIAGRAM

Severe Pedestrian Injury Areas

To identify severe pedestrian injury areas, all suspected serious or fatal crashes involving pedestrians were mapped, then a 1/4-mile buffer applied to each to identify locations where 2 or more of this type of

crash occurred on continuous stretches of the roadway network. Incidents where this type of crash may have occurred on a controlled-access freeway were not included since these crashes often have unique circumstances. The stretches of roadway were then identified as severe pedestrian injury areas (SPIAs). This analysis identified 40 SPIAs in El Paso County consisting of 16 total miles of roadway, which represents just 0.4% of all the roadway in El Paso County and offers a small segment of the road network where significant safety benefit can be realized. Approximately 44% of all severe and fatal pedestrian crashes occur within these SPIAs. With just 1.3% of people in El Paso County walking as their primary mode of transportation to work and 17% of all severe and fatal crashes regardless of mode involving pedestrians, this safety analysis shows there are a disproportionate number of pedestrians involved in these crashes.

Severe Bicyclist Injury Areas

To identify severe bicyclist injury areas (SBIAs), a similar methodology to the SPIA analysis discussed above was followed with the key difference being that a 2-mile buffer was applied to suspected serious and fatal crashes involving bicyclists.

This analysis identified 4 SBIAs in El Paso County consisting of 3 total miles of roadway. Approximately 30% of all severe and fatal crashes involving bicyclists occurred within these 4 SBIAs. With just 0.1% of people in El Paso County bicycling as their primary mode of transportation to work,[12] this safety analysis shows that there are a disproportionate number of bicyclists involved in severe and fatal crashes.

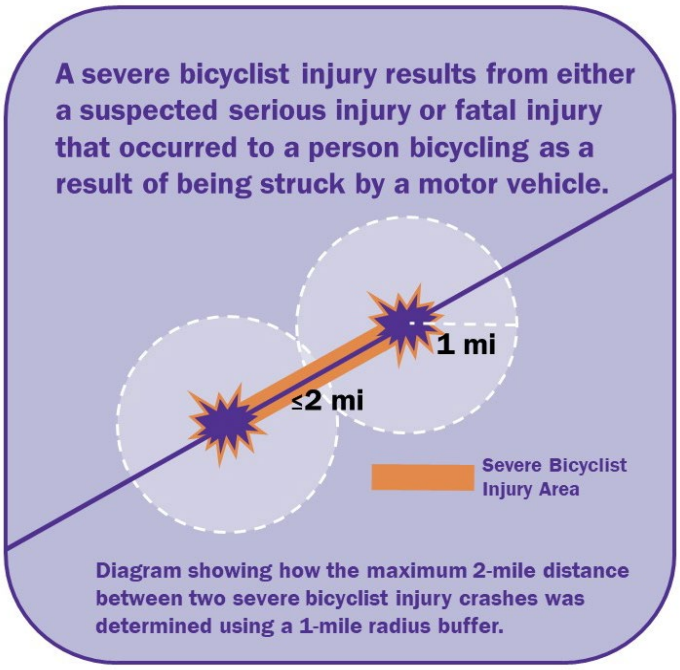


FIGURE 15. SEVERE BICYCLIST INJURY AREA DEFINITION AND DIAGRAM

Addressing Safety Gaps

This type of safety analysis can be taken a step further to consider times of day or year that these crashes occur and by looking at specific conditions in each of these severe injury areas. In doing so, specific solutions may become more apparent. There are many solutions that can help to address these safety gaps such as reducing travel lane width, posted speed limits, crossing distances at intersections or by adding raised pedestrian islands in the medians of wide, busy roadways. Many of these types of safety measures can be found in the City of El Paso's *Neighborhood Traffic Management Program*.[13]

Separated or protected bike lanes, particularly along higher-volume, higher-speed roadways can help to improve bicyclist safety. There are also intersection treatments that can help to keep bicyclists safe. A comprehensive and continuous bike trail network that runs generally parallel and provides access to major roadways such as that proposed by Paso del Norte (PDN) Health Foundation can provide a safe alternative for some people commuting by bicycle.[14]

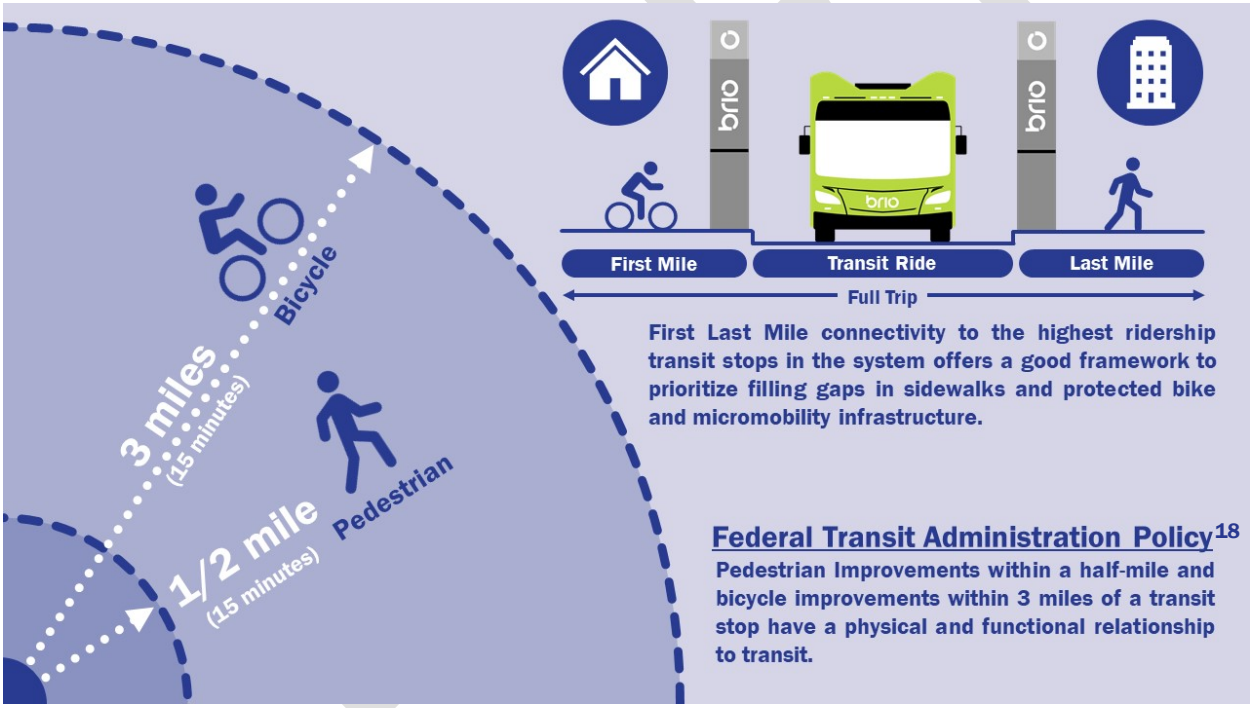
[12] American Community Survey (ACS) 1-year estimates for 2019.
[13] Neighborhood Traffic Management Program. City of El Paso. 2018. Accessed October 2020. https://www.elpasotexas.gov/~/media/files/coep/el%20paso%20department%20of%20transportation/ntmp/ntmp%20manual%20-%20new.ashx?la=en
[14] Paso del Norte Trail. PDN Health Foundation. Accessed September 2020. https://www.pasodelnortetrail.org/

3.2 Connectivity Gaps

There are many ways to look at connectivity throughout the transportation network ranging from gaps in the road network itself to incomplete bike and pedestrian infrastructure or missing connections in the transit system. For this evaluation, connectivity gaps were defined by incomplete pedestrian and bicycle connections to transit, and by projected peak demand travel flows for pedestrian, bicycle and transit travel.

To establish pedestrian and bike connectivity gaps to transit, the busiest transit stops in the system were identified using 2020 data from the travel demand model.[15] The stops identified are all Sun Metro stops, and most of them are Transit Centers where bus riders have access to customer services and multiple bus routes in the Sun Metro and in some cases the El Paso County Transit systems. The first last mile connections to these locations are likely to have a high demand for people primarily on foot, but also on bike, that are bound for transit as part of the first or last mile or leg of their complete trip. These are the portions of the trip where passengers walk or ride to and from the bus stop. This is important throughout the transit system, particularly where sidewalks are incomplete.

FIGURE 16. INFOGRAPHIC ON FIRST LAST MILE CONNECTIVITY



Sidewalk Gaps

The latest sidewalk data available is from 2017 and was provided by the MPO. It is possible that some of these gaps have since been addressed, though this provides a good indication as to where improvements to the sidewalk infrastructure might be most effective in terms of getting people to some of the busiest transit stops. While a complete sidewalk system is important, sidewalk gaps within a 1/2-mile of the busiest bus stops were prioritized for the purposes of this evaluation. This is the

[15] TDM.

distance on average that person can walk in about 15 minutes, which is the maximum distance most people would be willing to walk to transit.[16]

Protected Bike Lane Gaps

In 2016, the City of El Paso completed a comprehensive Bike Plan to help guide decisions on what streets are best for bicycling and how to make those streets safer for this mode of travel. Since then, other micromobility options such as shared electric scooters and bikes have started to become available to the public, and safe, dedicated bike infrastructure can make these micromobility options more attractive for people making first last mile connections to transit. The Bike Plan includes recommendations for bike infrastructure that shares the road with cars, provides dedicated lanes for bikes, and provides separated or protected lanes for bikes.[17]

For the purposes of this evaluation, the separated or protected bike lanes were prioritized. While a complete bicycle network is important, this type of bike facility offers the safest travel path for bicyclists. Proposed protected bike lane gaps within 3 miles of the busiest bus stops were prioritized for the purposes of this evaluation. This is the distance on average that a person can ride in about 15 minutes, which is the maximum distance most people would be willing to ride to transit.[18]

Peak Travel Demand Corridors

To identify the projected peak demand corridors for pedestrian, bicycle and transit, travel flows for each mode projected for 2045 were first applied to the 2020 roadway network. Then, any travel time impediments within the network were removed, allowing the travel demand model to identify segments of the roadway network that provide the shortest travel path and show where demand is highest. Roadway segments with the highest travel demand for pedestrian, bicycle and transit travel are spread throughout the region, however, as shown in **Figures 17-19**, some individual corridors have several segments with high demand for these modes.

For the purposes of this evaluation, these continuous corridors with multiple high-demand segments were identified as pedestrian, bicycle and transit connectivity gaps. The peak travel demand corridors identify locations where continuous infrastructure for each mode would be most likely to get the highest use and provides a framework for prioritizing investment in these travel networks. As shown in **Figure 6**, there is overlap among these corridors with pedestrian and bicycle demand overlapping in Northeast El Paso, the East Side and Horizon City, transit and bicycle demand overlapping along Mesa St. (SH 20) and all three overlapping along Alameda Ave. (SH 20) and Dyer St. (US 54). Corridors with the highest transit demand are located along the same arterials where Sun Metro's Brio system is currently running or planned to run.

[16] Final Policy Statement on the Eligibility of Pedestrian and Bicycle Improvements Under Federal Transit Law. Federal Transit Administration (FTA). 2011. Accessed October 2020. https://www.govinfo.gov/content/pkg/FR-2011-08-19/pdf/2011-21273.pdf
[17] El Paso Bike Plan.
[18] Final Policy Statement on the Eligibility of Pedestrian and Bicycle Improvements Under Federal Transit Law.

Figure 17. Peak Pedestrian Travel Flows identifying Peak Travel Demand Corridors

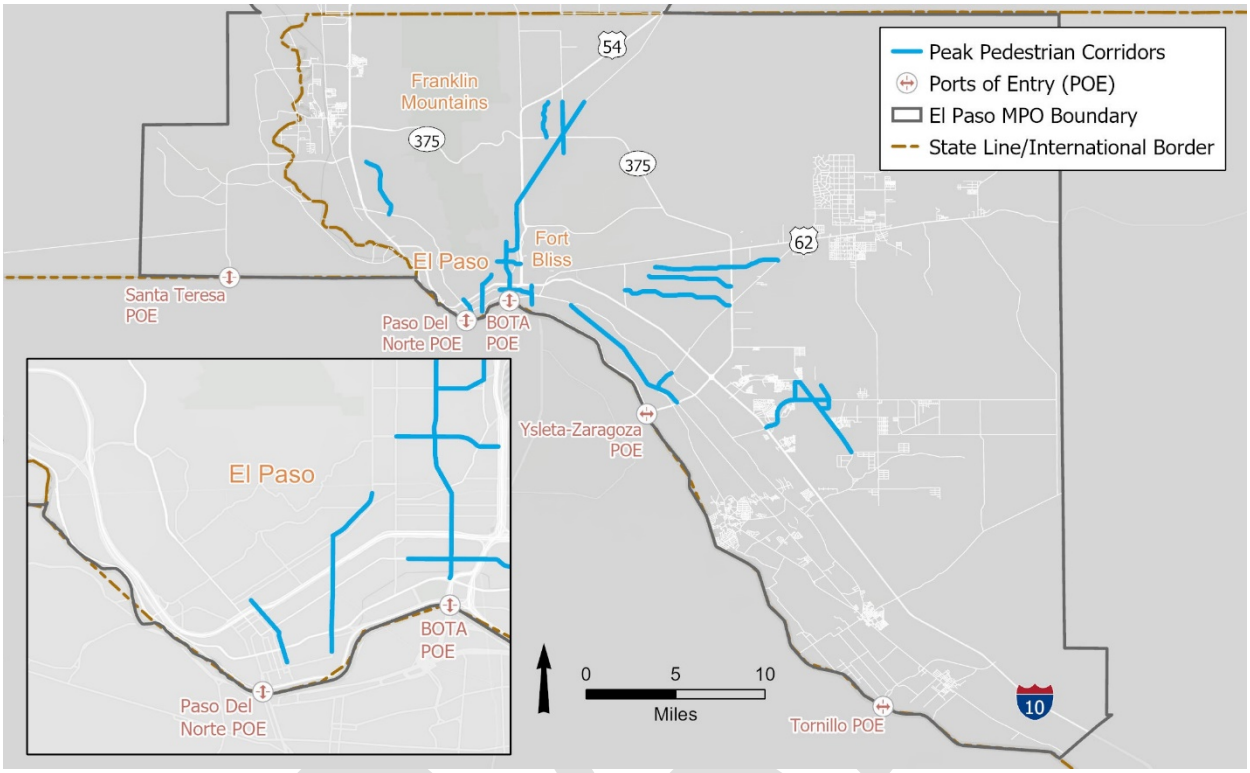


Figure 18. Peak Bicycle Travel Flows identifying Peak Travel Demand Corridors

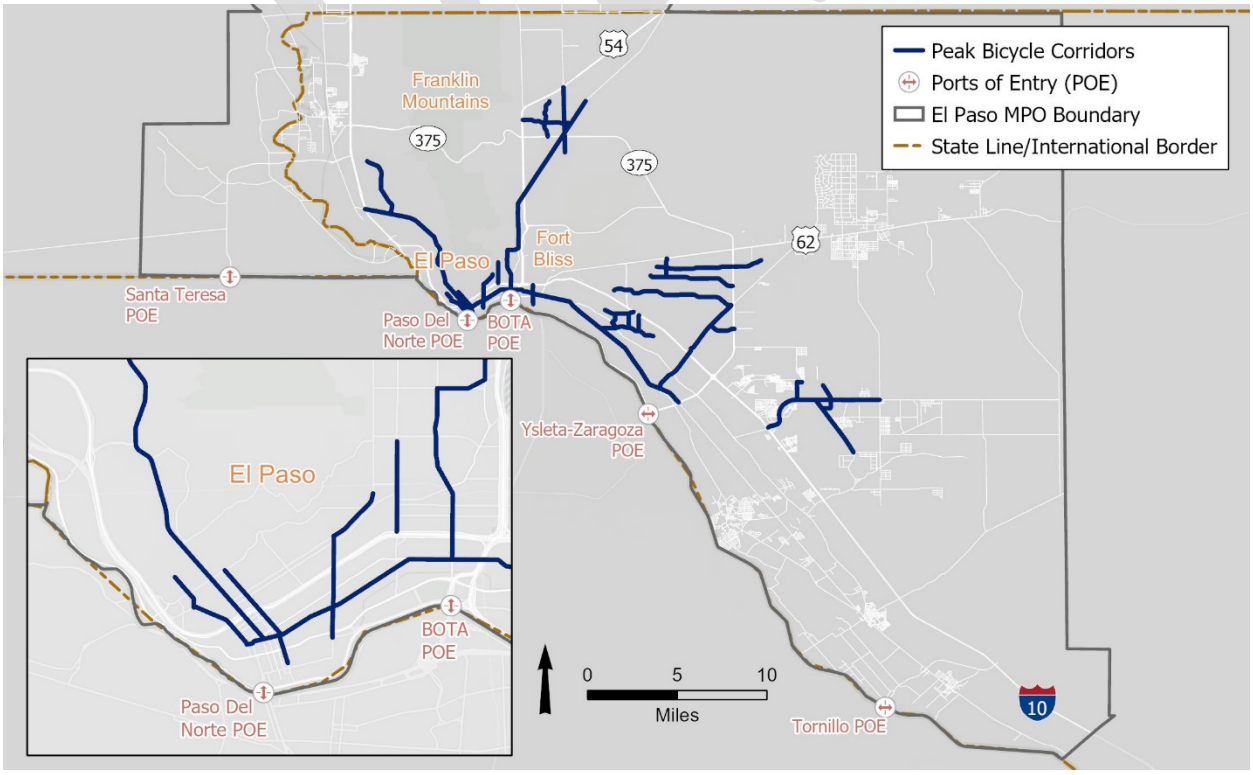
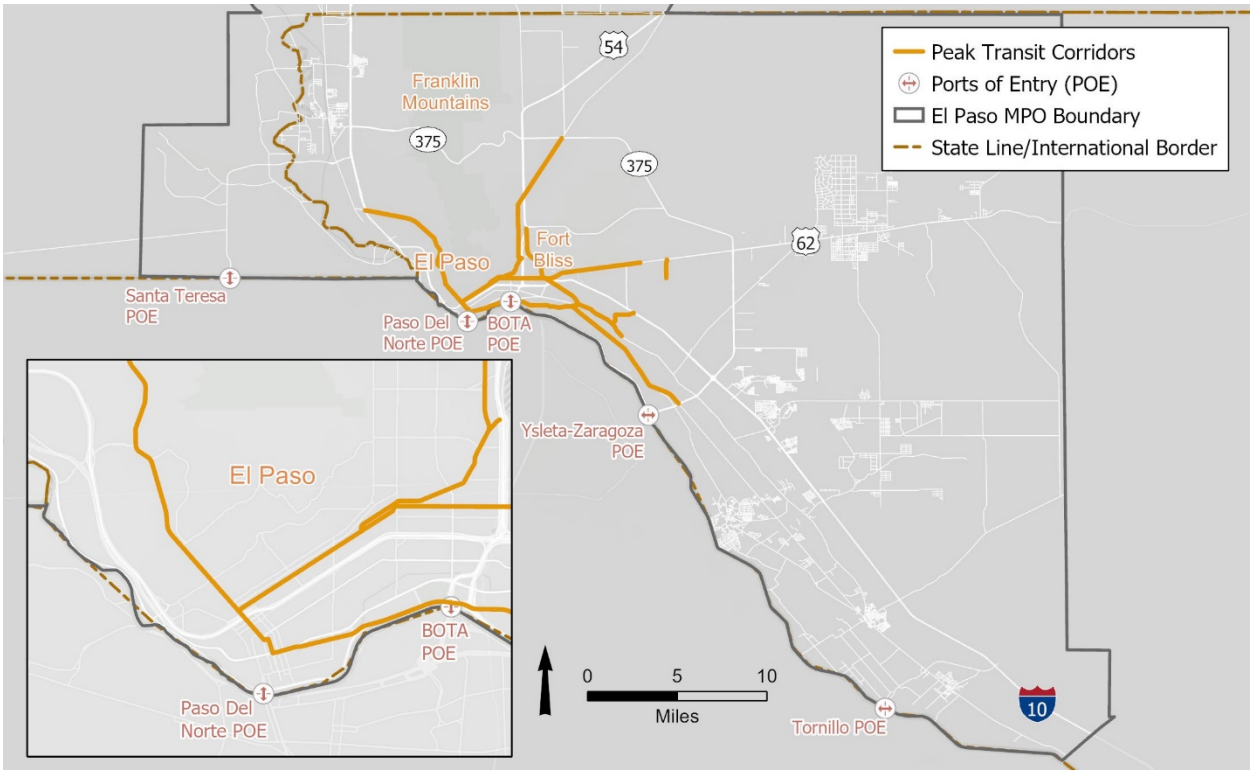


FIGURE 19. PEAK TRANSIT TRAVEL FLOWS IDENTIFYING PEAK TRAVEL DEMAND CORRIDORS



Addressing Connectivity Gaps

Solutions for pedestrian and bicycle connectivity gaps to transit essentially include sidewalks and protected bike lanes. When implementing parts of the sidewalk network, improvements must be ADA accessible, include crosswalks and median islands where appropriate, and introduce lighting and shade elements as often as possible. The City of El Paso has designated proposed bike facilities along individual roadways that can guide decisions on the type of bicycle infrastructure to design for. Where higher demand bicycle corridors are found along busy arterials, protected or separated bike lanes should be considered if they are not already proposed as such.

The transit demand corridors shown in **Figure 19** validate decisions made over the last decade to implement Brio along Mesa, Dyer, Alameda, and Montana. However, these corridors should not be considered as the only locations where transit investment should be made. Transit productivity (ridership per revenue hour of service) has been demonstrated to correlate with higher frequency of service. Transit can also be more attractive when the trip is reliable regardless of traffic conditions on the roadway throughout the day. This can take the form of dedicated bus lanes along the busiest parts of the transit system or targeted transit priority measures at key intersections that tend to impact transit performance (**Figure 7**). There is also a high propensity for transit use in locations with higher density and a mix of land uses such as in Downtown El Paso and as density increases in locations such as near the busiest bus stops or along new corridors, transit usage is likely to become more convenient and therefore in higher demand. Further study and data collection on the transit system, the roadway network it operates on and adjacent land uses will help to determine where increased frequency, reliability and transit-supportive land uses can enhance transit quality and productivity.

4.0 Recommendations

The *Multimodal Network Evaluation* identified safety and connectivity gaps that can help guide where capital improvements to the roadway network can have an immediate impact toward improving multimodal travel networks where they are used the most. This evaluation also identified multimodal-supportive projects among those recently proposed by TxDOT, NMDOT and local governments for inclusion in the RMS 2050 MTP. This relationship between prioritized gaps in the network and proposed capital projects offers a way that investments in the roadway network can be programmed and leveraged to enhance the safety and connectivity of multimodal networks in the Borderplex Region. The gaps also highlight specific issues that may inform the type of infrastructure that can be employed to create a positive impact on the quality of multimodal networks. It should be noted that the gaps identified do not represent the only places where the multimodal network should be improved, but instead prioritize where initial investments can be made to address the most immediate needs.

Multimodal-Supportive Projects

In **Section 2** of this report, capital projects proposed for consideration in the RMS 2050 MTP were evaluated against criteria shown in **Figure 2** with the results from that evaluation shown in **Table 1** and **Appendix A**. These proposed projects either meet two or more of the measures discussed in **Section 2** or are located off the roadway network and are multimodal-specific.

As part of the RMS 2050 MTP evaluation, the MPO uses a tool called Decision Lens, which uses several criteria set by the MPO Transportation Policy Board to prioritize projects from a regional mobility perspective. The purpose is to identify which projects should be carried forward into the fiscally constrained Metropolitan Transportation Plan. In addition to this, the MPO works with each proposing government entity to determine whether the regional prioritization analysis run through Decision Lens matches up with their local prioritization, offering an opportunity to make sure the most important projects are in fact included in the RMS 2050 MTP.

By identifying multimodal-supportive capital projects, a perspective specifically tuned into pedestrian, bicycle and transit needs offers another lens to consider these proposed projects through. If projects receive a higher priority using the criteria employed through Decision Lens, align in principle with local priorities and can be considered multimodal-supportive, those projects not only have regional and local significance, but have an opportunity to leverage infrastructural investment toward improving multimodal networks in the region.

Opportunities for Further Study

This evaluation represents a deliberate step by TxDOT and the MPO toward proactively addressing needs for safer and more complete pedestrian, bicycle and transit networks. Several gaps and priorities were analyzed using geographic information system (GIS) data that were available at the time of this evaluation. As new data become available and as analysis like that which was done as part of this evaluation are taken further, the *Multimodal Network Evaluation* can become a more robust tool to help inform project prioritization and scoping locally and regionally.

There are several opportunities to take this work further by developing plans and conducting further analysis that can effectively inform transportation policy in the Borderplex Region. The following items are recommended for consideration to take this work to the next level.

1. *Partnerships* – Establish and maintain partnerships with other entities to find mutual priorities and to streamline project development and improve funding feasibility for the many mobility needs in the region.

2. *Vision Zero Strategic Plan* – Continue the work started in **Section 3.1** of this report to more fully define these critical safety gaps and determine more specific solutions for individual locations that translate into new capital investment in multimodal networks.

3. *Comprehensive Transit Plan* – Develop a comprehensive transit plan, identifying needs, analyzing operations, integrating regional transit services and developing a comprehensive approach to delivering transit and mobility services to a wide range of travel markets.

4. *Transit-Supportive Land Use Plan* – Establish policy around regional centers and corridors where new higher-density, mixed-use development can be more transit-oriented, be responsive to market conditions and utilize investment in public transit as an organizing principle for future growth.

5. *Project Scoping* – Identify new multimodal projects informed by gaps discussed in this evaluation and consider modifying scopes of planned and proposed projects early in the project development process where appropriate.

Appendix A

Proposed RMS 2050 MTP Capital Project List with Criteria Ratings

The table below provides a list of all the capital projects proposed for inclusion in the RMS 2050 MTP. The projects are listed in the table in order according to the number of criteria the project overlaps with and then by proposed fiscal year of expenditure. Projects in this evaluation were not ranked or prioritized, just identified as multimodal-supportive if they overlapped with 2 or more criteria or were determined to be multimodal-specific.

Proposed Project Details				Safety		Connectivity					Reliability				Density & Growth	
Project Name	Project Sponsor	Proposed Fiscal Year of Expenditure	Total Evaluation Criteria	Severe Pedestrian Injury Areas	Severe Bicyclist Injury Areas	Sidewalk Gaps	Protected Bike Lane Gaps	Pedestrian Demand Corridors	Bicycle Demand Corridors	Transit Demand Corridors	Transit Reliability	Project Travel Time Reduction	Network Travel Time Reduction	Project Congestion Reduction	Current High Density	Projected High Growth
SH20 Doniphan (Mesa - SPark)	TxDOT	2039	6	✓		✓	✓		✓	✓	✓					
SH 20 Alameda (Old Pueblo to Candelaria)	TxDOT	2029	4			✓		✓	✓	✓						
SH 20 Alameda (Delta to Prado)	TxDOT	2029	4	✓				✓	✓	✓						
Arizona–Rio Grande Two-Way	COEP	2026	3				✓		✓						✓	
Dyer Pedestrian and Parkway Improvements	COEP	2026	3	✓					✓	✓						
Arizona-Grant Two-Way	COEP	2028	3				✓		✓	✓						
N. Kenazo Reconstruction	Horizon	2028	3						✓	✓						✓
Trowbridge Dr (US54 to I-10)	COEP	2028	3				✓			✓					✓	
SH 20 Alameda (Texas to Delta)	TxDOT	2029	3						✓	✓					✓	
Zaragoza Rd. RR Overpass	COEP	2034	3						✓	✓	✓					
Westway Blvd Widening	EP County	2034	3									✓		✓		✓
Tim Floyd	EP County	2036	3									✓		✓		✓
Widen Horizon Blvd. (I-10 to Ascension)	TxDOT	2039	3	✓					✓	✓						
Peyton Road Widening	EP County	2039	3									✓		✓		✓
Trowbridge Dr (I-10 to Marlow)	COEP	2025	2							✓					✓	
Greg Road widening	EP County	2028	2									✓				✓
Ascension Widening	EP County	2030	2									✓				✓
I-10 (Airway to Yarbrough)	TxDOT	2031	2			✓					✓					
Vista del Sol extension	EP County	2043	2										✓			✓
Rich Beam / Peyton extension	EP County	2044	2										✓			✓
Los Mochis extension	EP County	2045	2										✓			✓

Proposed Project Details				Safety		Connectivity					Reliability				Density & Growth	
Project Name	Project Sponsor	Proposed Fiscal Year of Expenditure	Total Evaluation Criteria	Severe Pedestrian Injury Areas	Severe Bicyclist Injury Areas	Sidewalk Gaps	Protected Bike Lane Gaps	Pedestrian Demand Corridors	Bicycle Demand Corridors	Transit Demand Corridors	Transit Reliability	Project Travel Time Reduction	Network Travel Time Reduction	Project Congestion Reduction	Current High Density	Projected High Growth
Bob Hope Extension	EP County	2022	1													✓
Acosta Road	Anthony	2025	1											✓		
I-10 (Paisano to Airway)	TxDOT	2025	1								✓					
NM 273/Airport Road Signals	NMDOT	2025	1													✓
George Perry Extension	COEP	2025	1										✓			
Murchison Road Diet	COEP	2025	1												✓	
Sunland Park POE	Sunland Park	2025	1													✓
NM 498 (Anapra)	Sunland Park	2025	1													✓
Sun Valley Street Improvements	COEP	2026	1						✓							
Carolina Street Improvements	COEP	2026	1											✓		
Rio Vista Road Widening	Socorro	2027	1											✓		
Sunland Park Street Improvements	COEP	2028	1								✓					
NM 136/NM 273 Grade Separation	NMDOT	2031	1													✓
NM 136/Airport Grade Separation	NMDOT	2031	1													✓
I-10 (Yarbrough to FM 659)	TxDOT	2034	1								✓					
I-10 (FM 659 to Eastlake)	TxDOT	2037	1								✓					
SH 20 Doniphan (Redd to Mesa)	TxDOT	2039	1				✓									
Widen Horizon Blvd. (North Loop to I-10)	TxDOT	2041	1						✓							
NM 9 Safety Corridor	NMDOT	2041	1													✓
I-10 (FM 1905 to SS 37) PH4	TxDOT	2021	0													
Segment 4B Socorro Spur PDN Trail	Socorro	2022	0	Multimodal-Specific Project												
Segment 4D Tigua Spur PDN Trail	Socorro	2022	0	Multimodal-Specific Project												
Horizon City Transit Plaza	Horizon	2025	0	Multimodal-Specific Project												
Zaragoza POE Shade Canopies	COEP	2025	0	Multimodal-Specific Project												
ITS at Paso del Norte POE	COEP	2025	0													
Sunland Park Drive Extension	Sunland Park	2025	0													
St. Francis Drive Extension	Sunland Park	2025	0													
Saul Kleinfeld Street Improvements	COEP	2025	0													
Race Track Drive	Sunland Park	2025	0													
Dilley Rd. and Delake St.	Horizon	2025	0													
Clark Ave.	Anthony	2025	0													
Church St.	Anthony	2025	0													

Proposed Project Details				Safety		Connectivity					Reliability				Density & Growth	
Project Name	Project Sponsor	Proposed Fiscal Year of Expenditure	Total Evaluation Criteria	Severe Pedestrian Injury Areas	Severe Bicyclist Injury Areas	Sidewalk Gaps	Protected Bike Lane Gaps	Pedestrian Demand Corridors	Bicycle Demand Corridors	Transit Demand Corridors	Transit Reliability	Project Travel Time Reduction	Network Travel Time Reduction	Project Congestion Reduction	Current High Density	Projected High Growth
Brown Street Improvements	COEP	2025	0													
I-10 (Copia to Paisano)	TxDOT	2026	0													
Zaragoza POE Ped. Pick-Up Areas	COEP	2026	0	Multimodal-Specific Project												
Edgemere St. Improvements	COEP	2026	0													
FM 1110 Widening (FM 76 to I-10)	TxDOT	2027	0													
Pipeline Trail Shared Use Path	COEP	2027	0	Multimodal-Specific Project												
McRae Shared Use Path	COEP	2027	0	Multimodal-Specific Project												
Pendale Street Improvements	COEP	2027	0													
Thunderbird Street Improvements	COEP	2028	0													
Robert E Lee Street Improvements	COEP	2028	0													
FM 1110 New Location (SH 20 to FM 76)	TxDOT	2029	0													
Alberton Ave/Antwerp Rd Construction	Horizon	2029	0													
I-10 (Thorn to Executive)	TxDOT	2031	0													
NM 404/NM 213 Interchange	NMDOT	2041	0													
I-10 Widening (FM 1281 to FM 1110)	TxDOT	2041	0													
I-10 FR (FM 1110 to FM 3380)	TxDOT	2041	0													
I-10 Widening (FM 1110 to FM 3380)	TxDOT	2041	0													
I-10 (Eastlake to FM 1281)	TxDOT	2041	0													