# DESTINO 2045

## METROPOLITANTRANSPORTATIONPLAN

# NEEDS ASSESSMENT REPORT

December 2017

ElPasoMetropolitanPlanningOrganization

# EXECUTIVE SUMMARY

## PURPOSE OF NEEDS ASSESSMENT

The multimodal needs assessment for Destino 2045 has been performed to ensure that the investments recommended by the plan address the needs of the region. An early stage in the plan development used public and stakeholder input to define a statement of vision for the region supported by broad goal statements each with specific objectives. Quantifiable and measurable *system* performance measures were defined for each of the objectives and these performance measures were used to identify the areas of transportation need with the region. This process of defining a vision statement with corresponding goals, objectives and performance measures is essential to a data-driven and outcomes-based decision-making process for Destino 2045. The needs that drive the recommendations are determined by infrastructure or service gaps that are identified by comparing existing or future travel demand with the existing transportation system.

As part of the multimodal needs assessment for Destino 2045, the needs of the region were analyzed for existing conditions (typically 2015) and, where possible, for the conditions that are likely to exist in 2045 if no new public investment in transportation is made beyond projects that are already under construction or about to be released for construction bids. Consistent with the statement of vision, the goals, and the objectives of Destino 2045, needs were considered for transportation in four key modal categories:

- Roadway – Personal travel by driving alone or shared ride
- Transit – Personal travel by Brio Rapid Transit, fixed-route bus, or demand-response transit
- Active Transportation – Personal travel by bicycling or walking
- Freight – Commercial travel by truck, rail, air

For each of these modal categories, existing and future needs were evaluated with respect to seven goal areas:

1. Safety - Improve safety for all who travel in the region
2. Maintenance and Operations - Maintain the current transportation system in a state of good repair and maximize the system's functionality
3. Mobility - Improve the ability for travelers to reach destinations quickly and efficiently
4. Accessibility and Travel Choice - Provide a variety of reliable transportation options that are equitable and context-sensitive
5. Sustainability - Protect and enhance the natural environment
6. Economic Vitality - Expand economic opportunities and strengthen the regional freight network
7. Quality of Life - Implement plans, programs, and projects that contribute to the overall goals and objectives defined in Destino 2045 MTP to ensure an enhanced quality of life in the El Paso Region

The assessment of needs for each goal area was conducted by comparing the performance of the system for each mode in 2015 and 2045 against specific objectives defined for the seven goal areas.

## METHODOLOGY AND DATA SOURCES

Evaluation of the existing transportation needs within each of the four modal areas based on the performance measures in the seven goal areas was performed using a variety of information on existing conditions. This included information on the location and characteristics of regional population and employment as well as other significant land uses that either generate or attract trips. Information on the existing patterns of travel (by mode) was assembled from a combination of observations of roadway volumes and speed, transit boardings and alightings, and other specialized counts, but was also supplemented where necessary with output from the El Paso Travel Demand Model. Information on the characteristics of existing transportation facilities and services was derived from available inventories and databases for the modes analyzed. The evaluation of the future (2045) condition with only existing and programmed transportation improvements was conducted using the output of the El Paso Travel Demand Model for the 2045 forecast year, though not all performance measures in the seven goal areas could be estimated using model data. The analysis of needs for the existing condition and for 2045 was supplemented where necessary and/or appropriate with public or stakeholder input derived from outreach events or surveys of potential transportation system users.

## RESULTS

The results of the evaluation of the transportation system performance measures for the multimodal needs assessment are presented in Table ES1. The performance measures and the additional analysis conducted for the needs assessment indicate that transportation facilities and service in the El Paso region are generally meeting the travel needs of the region's residents where a comparison with national averages or standards was possible. In the latest Texas Transportation Institute Urban Mobility Scoreboard, the El Paso region was ranked 54th nationally in terms of population but 61st in terms of total vehicle hours of delay and 81st in terms of average auto commuter delay. This comparison for "Annual Hours of Delay" suggests that congestion in the El Paso region is not any worse than might be expected for a region of its size. Although not always directly correlated, other performance measures such as vehicle crashes, fatalities, speed index, pollutant emissions, and delay on freight corridors are often highly related to congestion. While roadway congestion is currently not any worse than might be expected, there are locations where roadways have significant congestion during peak commute times. These are generally on the major highways and regional connectors rather than the arterials and collectors. The forecast of auto and truck travel for 2045 also suggests that the number of annual hours of delay will almost triple in the next thirty years if no capacity improvements are made beyond what is already programmed. The major highways and connectors will become more severely congested and the congestion will spread to many arterial roads. In addition, most visioning survey respondents (71%) believed that congestion needs were a top priority regionwide.

Safety is also a high-priority concern for the roadway system. While the rate of vehicle crashes per million vehicle miles remained fairly constant between 2011 and 2014, there was a dramatic increase in crashes in 2015, the last year for which crash information was available. The 2015 crash rate was 35 percent higher than the rate for 2014 and 37 percent higher than the average rate for the previous four years. Fortunately, only 0.42 percent of the crashes between 2011 and 2015 resulted in a fatality, but this produced 344 traffic-related deaths. The rate of fatalities for the El Paso region for the five-year period was almost 10 percent higher than the statewide average for Texas. While congestion is often a major factor in the number of vehicle collisions, the crashes resulting in incapacitating injury or death were spread over both congested and relatively uncongested roadways. Over the five-year period for which crashes were analyzed, there were 1,536 crashes involving either a pedestrian (1,142) or a bicyclist (394). These crashes represent about 2 percent of all crashes. The crashes involving pedestrians or bicyclist were even more focused on arterials and collectors and less focused on the major highways. The desire for safer roads in the El Paso region was reflected in safety being one of the top priorities for transportation system improvements identified by members of the public during the Destino 2045 visioning workshops.

The assessment of needs for transit focused primarily on where additional investment would be most effective in addressing the increase in potential transit demand from growth in population, employment, and transit-dependent residents. The assessment of existing and potential transit demand for fixed-route services was based on a combination of output from the El Paso Travel Demand Model and an assessment of expected growth and its proximity to existing and programmed fixed-route transit services. A comparison of the potential demand with the location and quality of services provided resulted in the identification of service gaps where potential demand was high but service quality was low or service was not available.

The needs assessment for fixed-route transit identified the need for more frequent service in the areas of highest existing demand and the need for new services to provide transit accessibility to the areas of high population and/or employment growth. Besides gaps in service, there are also areas where service levels and demand levels may not be matched appropriately. The assessment suggested that the region could benefit from a comprehensive service evaluation and realignment to better match higher levels of service with areas that have a higher demand or propensity for transit. The potential need for demand-responsive services relied primarily on the recently completed Far West Texas / El Paso Regional Human Services – Public Transportation Coordination Plan, which relied heavily on input form stakeholder and user surveys. That plan indicated that greatest need was for better coordination of service. Some improvements in fixed-route services and a uniform payment system could potentially reduce the need for more costly demand-responsive service by attracting more riders to fixed-route services. Other potential improvements suggested for demand-responsive service was for more same-day service and better coordination of rural transit service with demand-responsive service to reduce redundancy.

For active transportation modes, the assessment of needs was based on a comparison of potential desire for walking and bicycling with the existing and planned facilities for these modes. The desire for walking and bicycling was based on proximity of populations to schools, parks and other points of interest such as restaurants, bars, pharmacies and grocery stores. The areas of high potential desire were then evaluated with respect to the quantity and quality of facilities to accommodate walking and bicycling. Gaps in the system were defined by areas of high potential desire but with limited or no access to facilities of good quality. The assessment of needs for active transportation modes revealed that there is a high degree of variation with respect to accessibility by walking or biking across the region. Some areas have excellent walking or cycling conditions, and other areas have very poor walking or cycling conditions. While it is not necessary for all areas to have excellent walking or cycling conditions, the results of the active transportation gaps analysis identified specific locations where investment and development of both bicycle and pedestrian facilities could improve regional connectivity.

The assessment of needs for freight movement was focused on the amount of delay along the locally defined freight highway network within the El Paso region. This network is a combination of freight networks established by FHWA and TxDOT plus other roadways in the region that experience large amounts of current or forecasted freight traffic. In the needs assessment, the performance of the roadways in the freight network was evaluated with respect to major generators of freight movement. These included industries involved in natural resources extraction, utilities, construction, manufacturing, wholesale trade, and transportation/warehousing. It also included terminals for other modes of transportation for freight including rail and air.

Specific issues revealed in the freight needs assessment include congestion and delays on the freight network. The vehicle delay on the network is currently estimated to be about 7 million vehicle hours of delay per year, but that is expected to increase by 250 percent by 2045. The roadways of most concern are IH 10, Loop 375, Global Reach Dr., Montana Ave., and Sergeant Major Blvd. Forecasts reveal that congestion is also expected to become a major issue along freight corridors near the El Paso International Airport and the southwestern portion of Fort Bliss, which are major freight terminals that also include intermodal transfer facilities. The long commercial wait times at the border crossings and growing congestion on portions of the roadway network connecting the ports of entry with the major regional highways are also areas of significant concern because of existing congestion. The assessment suggests that it will be crucial that projects selected as a part of Destino 2045 address these identified freight issues if the economic growth in the region is to continue.

Finally, the needs assessment also reports qualitative performance of the region's ports of entry for multimodal travel, intercity passenger transportation, and infrastructure condition/maintenance. These needs are mostly analyzed qualitatively based on existing conditions due to the lack of available forecast data and the narrowly focused role these elements play in the region's transportation system.

TABLE ES1: SUMMARY OF SYSTEM PERFROMANCE 2015 AND 2045

| Goals | Existing System Performance Measures | Current | 2045 | Change | % Change |
|---|---|---|---|---|---|
| Safety | Crashes per 100 million Vehicle Miles Traveled | 489 | - | - | - |
| | Total crashes resulting in fatality or incapacitating injury | 59 | - | - | - |
| | Total crashes involving cyclists and pedestrians | 322 | - | - | - |
| Maintenance & Operations | Number of deficient bridges | 6 | - | - | - |
| | Lane miles of deficient pavement | 86 | - | - | - |
| Mobility | Speed Index (actual travel speed versus non-congested travel speed | 0.8839 | 0.80238 | (0.08) | -9% |
| | Annual hours of delay | 11,281,388 | 31,247,000 | 19,965,612 | 177% |
| | Commute times from Environmental Justice zones | 20.99 | 22.67 | 1.68 | 8% |
| Accessibility & Travel Choice | Percent of Population within 1/2 Mile of High Quality Transit | 4.0% | 15.0% | | 11% |
| | Percent of Employment within 1/2 Mile of High Quality Transit | 14.0% | 31.0% | | 17% |
| | Percent Non-Single Occupant Vehicle Travel (Commute Trips) | 11.2% | 11.3% | | 0.10% |
| | Average trip costs | $2.26 | $2.21 | (0.05) | -2% |
| Sustainability | Estimated Max Daily CO Emissions (Tons/Day) | 7.8 | 2.1 | (5.70) | -73% |
| | Estimated Max Daily PM10 Emissions (Tons/Day) | 7.1 | 9.6 | 2.50 | 35% |
| | Daily Vehicle Miles Traveled (VMT) | 14,691,694 | 22,838,563 | 8,146,899 | 55% |
| | Daily VMT per capita (regional) | 16.64 | 16.63 | (0.01) | -0.1% |
| Economic Vitality | Annual hours of delay along major freight corridors | 6,733,443 | 23,499,313 | 16,765,870 | 249% |
| | Average commercial vehicle wait time at POEs (Minutes) | 45 | - | - | - |

## 2045 DEMOGRAPHIC AND EMPLOYMENT GROWTH

A major component of identifying future transportation needs is understanding future population and employment growth trends for the region. Land use and growth patterns directly impact how people travel. In places where development is spread out and land use is separated, people are likely to take more long-distance trips in a personal vehicle throughout the day. On the other hand, in more dense, mixed-use environments, people can take more short trips and utilize other modes of transportation such as transit and walking. To better assess the transportation needs of the region, Destino 2045 first considered the potential growth trends that will impact both the performance of the transportation system as well as how travelers interact with the system.

Additional factors like household size and median income are major forces behind travel behavior. 2015 American Community Survey (ACS) data displays the El Paso MPO Region's median household income to be roughly $36,800 and contains an average household size of 2.92. The region's median household income is lower in comparison to those of Texas ($53,207) and New Mexico ($44,963), with concentrations of low-income households along the United States-Mexico border, downtown El Paso, the Mission Valley, and in Dona Ana and Otero Counties just north of the Texas state line.

Since travel along a transportation system relies so heavily on where people live and work, the 2045 El Paso Travel Demand Model (TDM), which is a travel forecasting tool that is explained further in later sections, includes an estimate of population and employment distribution for current and future years. For this metropolitan transportation plan, the El Paso MPO updated a community-driven demographic forecast that was originally developed for the 2040 Horizon MTP. Figure 1 shows population growth in the region between 2012 and 2045 based on estimates provided in the TDM.

Based on the TDM inputs, the region's population is anticipated to grow to nearly 1.4 million people by 2045, or by roughly 57% from 2012. Figure 0.1 shows the largest population increases are expected to occur outside of the current City of El Paso limits, particularly where there is more undeveloped land. Specific areas expected to experience high population growth compared to the rest of the region include the area near Eastlake Boulevard and the area east of Zaragoza Road at US 62. The forecasts also show significant growth in New Mexico west of El Paso County, as well as near Vinton and along Dyer Street at the northern part of El Paso County. Figure 0.2, which shows percent increase in population between 2012 and 2045, confirms these forecasted growth trends where areas outside of the City of El Paso are expected to experience much higher levels of growth relative to the population already living in those areas.

High employment growth areas are scattered throughout the region, according to TDM estimates (Figure 0.3). The largest concentration of employment growth appears east of El Paso International Airport on land formerly belonging to Fort Bliss and near the intersection of Loop 375 East and IH 10. Other areas of expected employment growth include the industrial and logistics development occurring near the Santa Teresa Port of Entry in Dona Ana County, the former smelter lands west of UTEP, and portions of the Upper West Valley along IH 10 and near the new westside hospital. Figure 0.4 combines the top employment and population growth areas, as forecasted by the TDM, to show the areas expected to experience the highest amounts of growth.

FIGURE 0.1: FORECASTED POPULATION GROWTH; 2012-2045

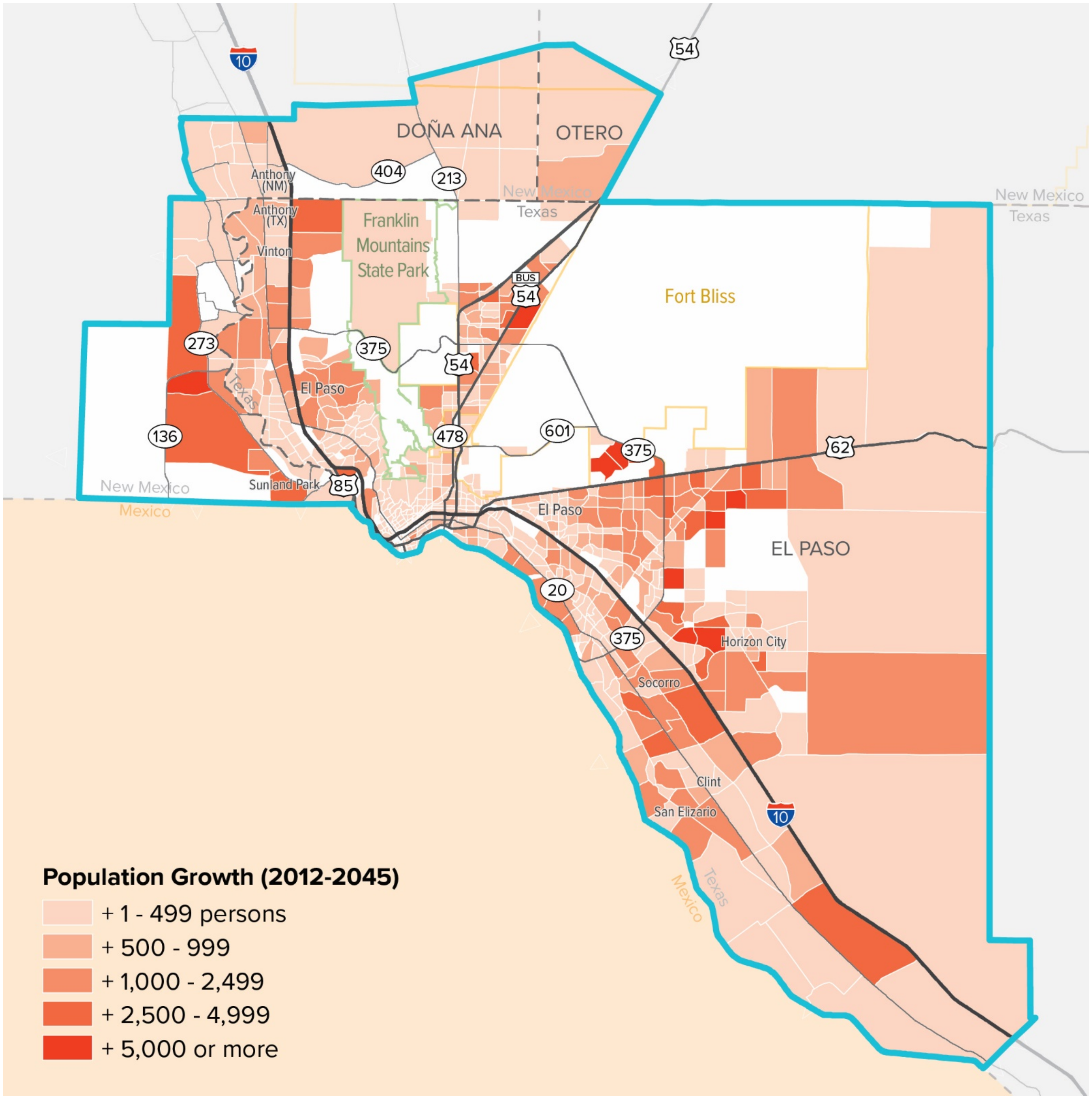


FIGURE 0.2 POPULATION PERCENTAGE CHANGE; 2012-2045

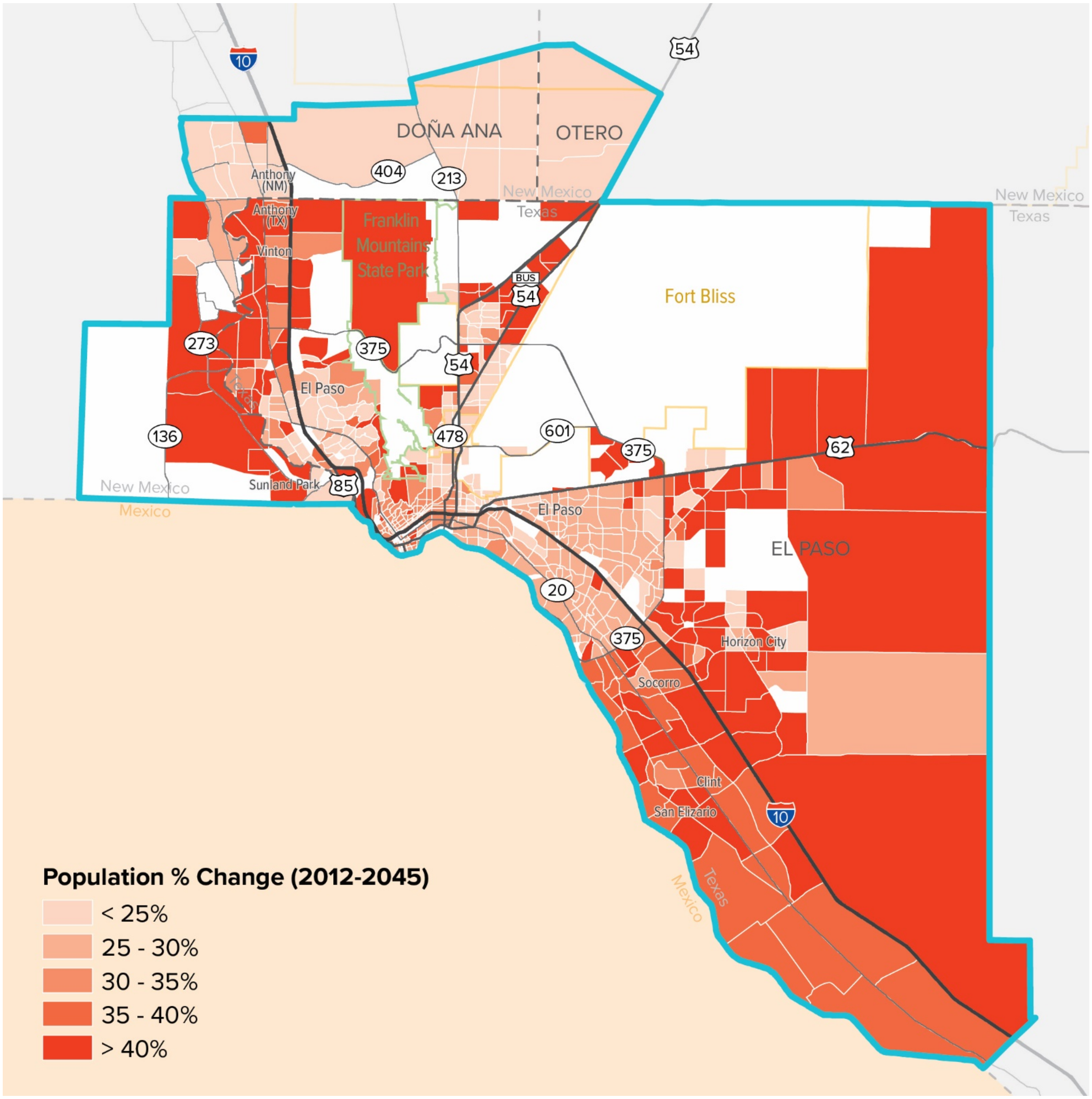


FIGURE 0.3: FORECASTED EMPLOYMENT GROWTH; 2012-2045

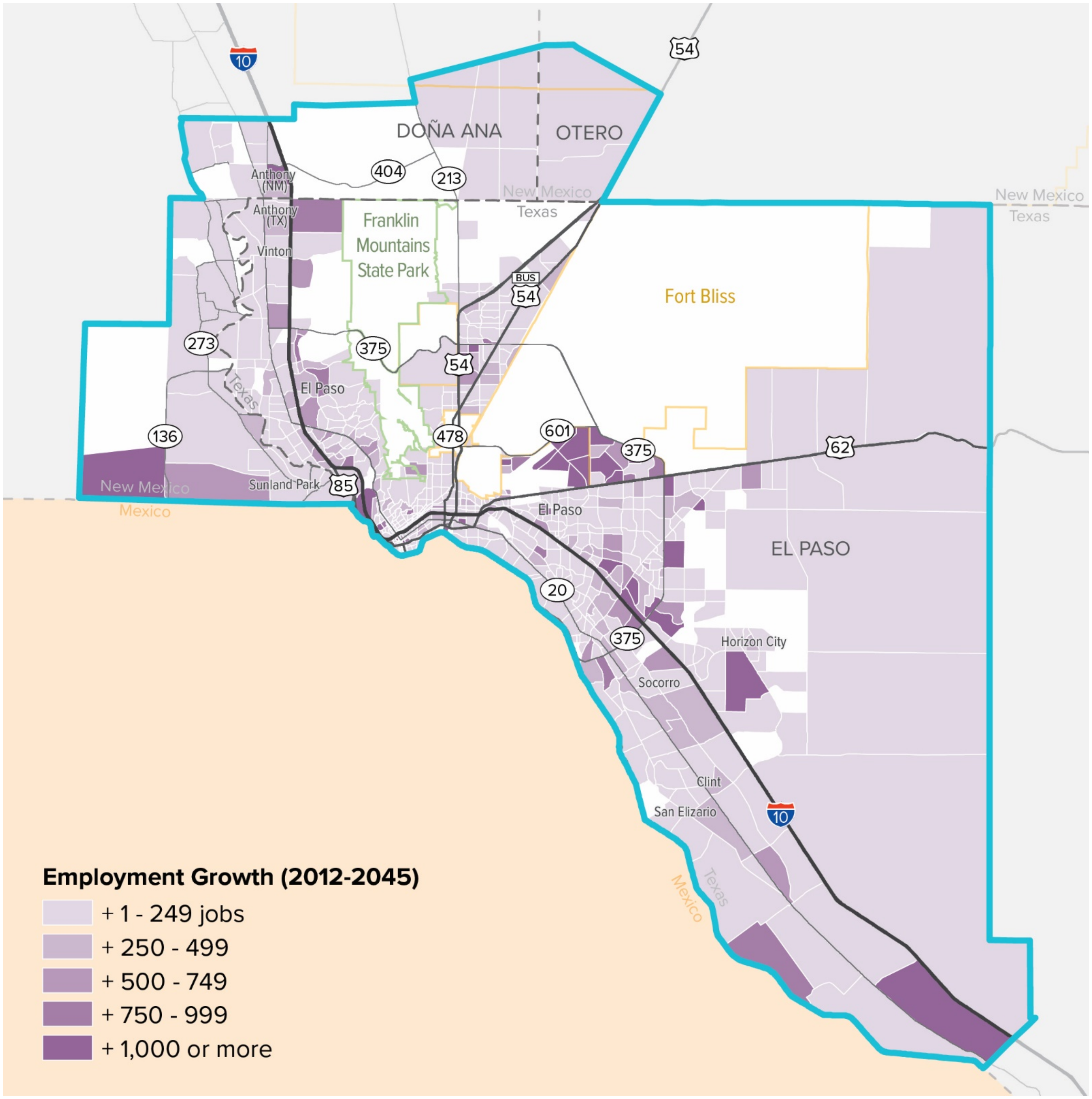
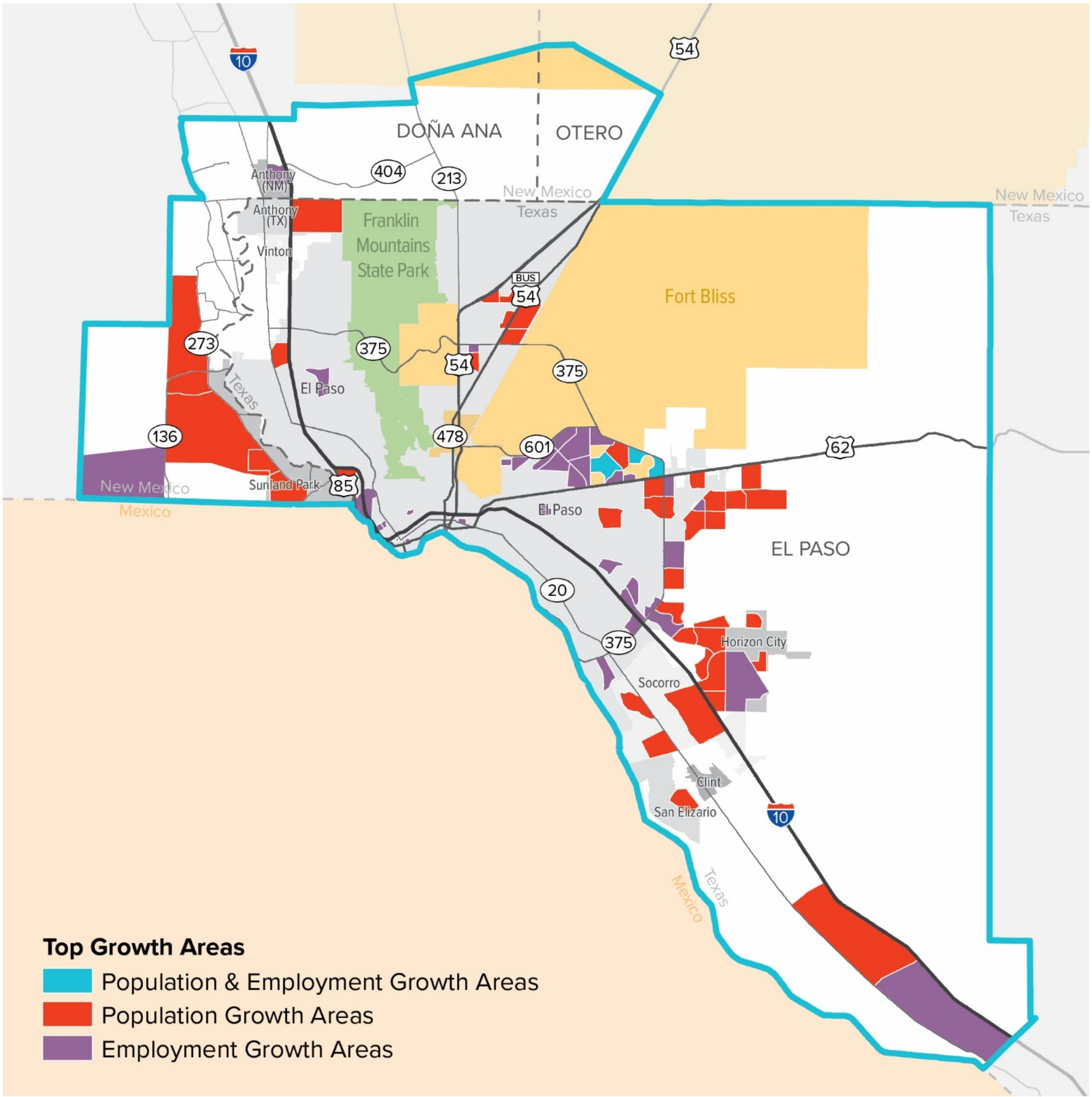


FIGURE 0.4: TOP GROWTH AREAS; 2012-2045



# ENVIRONMENTAL JUSTICE

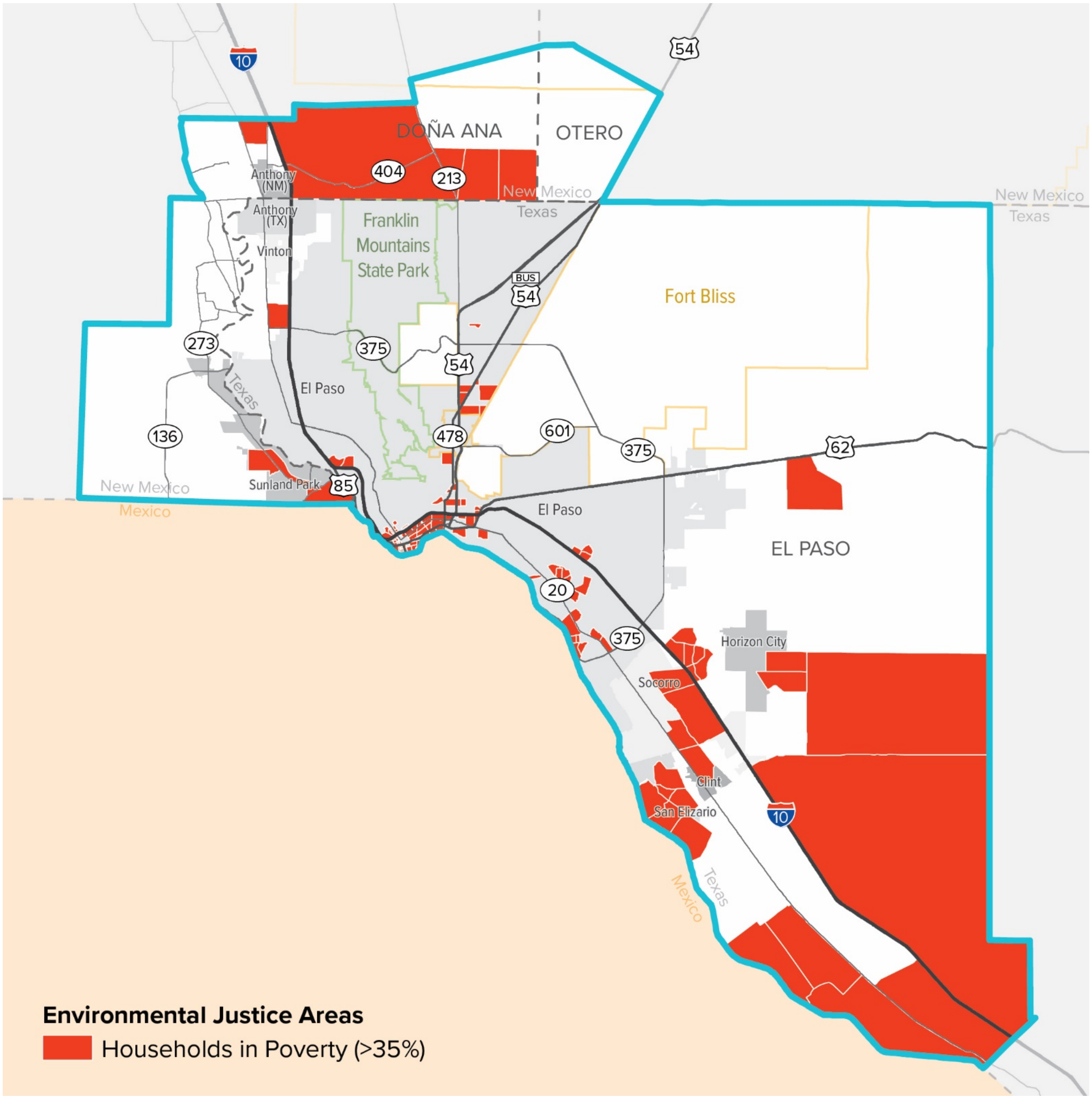
In addition to future population and employment growth, environmental justice considerations are also a critical step in addressing a region's transportation needs. Environmental justice considerations aim to minimize negative externalities created by a transportation system and ensure that harmful effects of infrastructure investments are avoided in areas with concentrations of populations that have been disproportionately impacted by past interventions, such as neighborhoods demolished for freeway construction or families living near heavy-polluting industrial development. Introduced to metropolitan scale planning in 1994 by Executive Order 12898 and stemming from Title VI of the Civil Rights Act, the regulation specifically seeks to:

- Avoid or mitigate disproportionately high public health, socioeconomic, and environmental effects on low-income and minority populations;
- Locate and include all potentially impacted communities in the decision-making process;
- Prevent the denial or lack of receipt of benefits from the process by low-income and minority populations.

With SAFETEA-LU, MAP-21, and now the FAST Act further outlining these principles, Destino 2045 incorporated environmental justice considerations into the multimodal needs assessment to evaluate and locate environmental justice zones (EJZs) throughout the region. Accordingly, Destino 2045 utilized GIS analysis tools and 2015 American Community Survey (ACS) data detailing households below the poverty line and limited English proficiency (LEP) households. While minority population is an important consideration in any environmental justice analysis, the high concentration of Hispanic population in the El Paso region makes it difficult to consider this population in this analysis, since nearly the entire study area would be designated as an environmental justice area based on minority population criteria. For this reason, minority status was not used as an indicator of for EJZs. Furthermore, the ACS data revealed that areas with high concentrations of households in poverty closely overlapped with areas where there were high concentrations of households with limited English proficiency; therefore, Destino 2045 identifies households below the poverty line as the primary indicator for determining EJZs.

ACS household poverty status data originates at the census block group level and was aggregated to the region's traffic analysis zones (TAZ) to highlight low-income areas in relation to the El Paso MPO's transportation system. The analysis identifies EJZs as any TAZ where 35% or more of households are considered to be in poverty (i.e. household income is below a certain poverty threshold determined by the ACS). Figure 0.5 shows the location of EJZs within the region. In general, the Mission Valley (e.g. San Elizario and Socorro), the area south if IH 10 in downtown El Paso, and portions of Dona Ana County in the north of the study area show the highest concentrations of EJZs. As analysis progresses for Destino 2045, this inventory of EJZs will serve to identify and assess potential impacts created by proposed transportation improvements, ultimately resulting in the development mitigation strategies for the system. Destino 2045 will also explore the benefits of proposed transportation projects in terms of commute times improvements specific to EJZs.

FIGURE 0.5: ENVIRONMENTAL JUSTICE ZONES; HOUSEHOLDS BELOW THE POVERTY LINE



# 1. ROADWAY

## INTRODUCTION

The roadway network is the backbone of the region's transportation system. While Destino 2045 strives to establish a multi-modal transportation system, the roadway network is still a focal point as it supports the majority of travel in the region on a day-to-day basis. An efficient roadway system can provide better mobility, which leads to better accessibility to goods and services and improved quality of life.

The following section details the roadway analysis findings for the El Paso Metropolitan Planning Organization (MPO) region. The analysis utilizes historic trend data, the 2045 El Paso Travel Demand Model (TDM), and detailed stakeholder input to reveal estimated current and future roadway performance. The analysis focuses on the roadway network at several different levels: major highways (e.g. IH 10, Loop 375, and US 54), emphasis corridors, and the overall regional network. The findings from this analysis serve to indicate how the roadway system performs today and how it is expected to perform in the future, and identifies roadway deficiencies in terms of congestion throughout the region. The roadway deficiencies analysis also provides an existing baseline and future "no-build" scenario performance measurement for several of the performance measures identified for Destino 2045 that will be used to compare against alternative transportation investment scenarios later in the planning process.

## METHODS

### *2045 El Paso Travel Demand Model*

A TDM is a tool that forecasts travel patterns throughout a network based on roadway characteristics and transportation demand, which is determined by land use and demographic information. Destino 2045 employs the 2045 El Paso TDM which was developed for the El Paso MPO region as a part of this MTP update process. For the needs assessment, the TDM was executed for 2012 and 2045. The 2012 model results provide a base year comparison for roadway performance using the network and estimated demographics for that year. The 2045 model results, which use the existing plus committed roadway network – i.e. the existing roadway network including any projects that are currently under construction or scheduled to be let by 2019 – and 2045 demographics, show how the roadway system would perform if no further transportation improvements were constructed by 2045. The TDM is also used throughout the other portions of the Needs Assessment, providing performance indicators for the measures established for Destino 2045.

### *Roadway Performance Measures*

The 2045 El Paso TDM and Texas Transportation Institute's (TTI) Urban Mobility Scorecard produce the following roadway performance measures, among others, that Destino 2045 uses to analyze and project travel trends for the region:

- *Vehicle Miles Traveled (VMT)* - roadway miles traveled by vehicles within a specified segment for a specified period of time
  - *Provides a sense of the overall level of vehicular traffic in the region and on individual roadways*
- *Vehicle Hours of Delay* - additional hours spent in traffic due to congestion on the roadway network
  - *Indicates the amount of extra time it takes travelers to reach destinations compared to free*-flow conditions
- *Volume Capacity (V/C) Ratio* - ratio of traffic flow to maximum allowable traffic flow on a road segment, where a ratio of 1 represents a segment at full capacity and higher values indicate more severe congestion
  - *Used to isolate specific locations where vehicular demand outstrips capacity of a roadway section*
- *Speed Index* - ratio of peak hour speed and free-flow speed for a given roadway segment illustrating how fast traffic is moving on average in relation to how fast traffic would move with no congestion, where lower ratio values (i.e. less than 0.7) represent severe congestion.

For VMT and vehicle hours of delay, TTI provided historic trend data up to 2014. Using a methodology similar to the one used in the development of the TTI scorecard, future estimates of these two measures were calculated using the TDM outputs to show how these measures are anticipated to change between now and 2045. The TDM also provided the necessary outputs to calculate the other two congestion measures—V/C ratio and speed index. Note that these measures represent level of congestion during the worst traffic conditions throughout an average day (i.e. peak period). Both measures were calculated and converted to a value on a 1-5 scale, with 1 representing ideal traffic flow and 5 representing extreme levels of congestion, for each roadway segment. The scaling was based on known congestion metrics from TTI and DOT literature/case studies. The congestion index values for the two measures were then averaged together to create a combined congestion index.

Throughout the needs assessment, 2012 and 2045 TDM results provide the outputs that are used to calculate other performance measures included in Destino 2045. The following lists the different Destino 2045 performance measures which utilize outputs from the 2045 El Paso TDM:

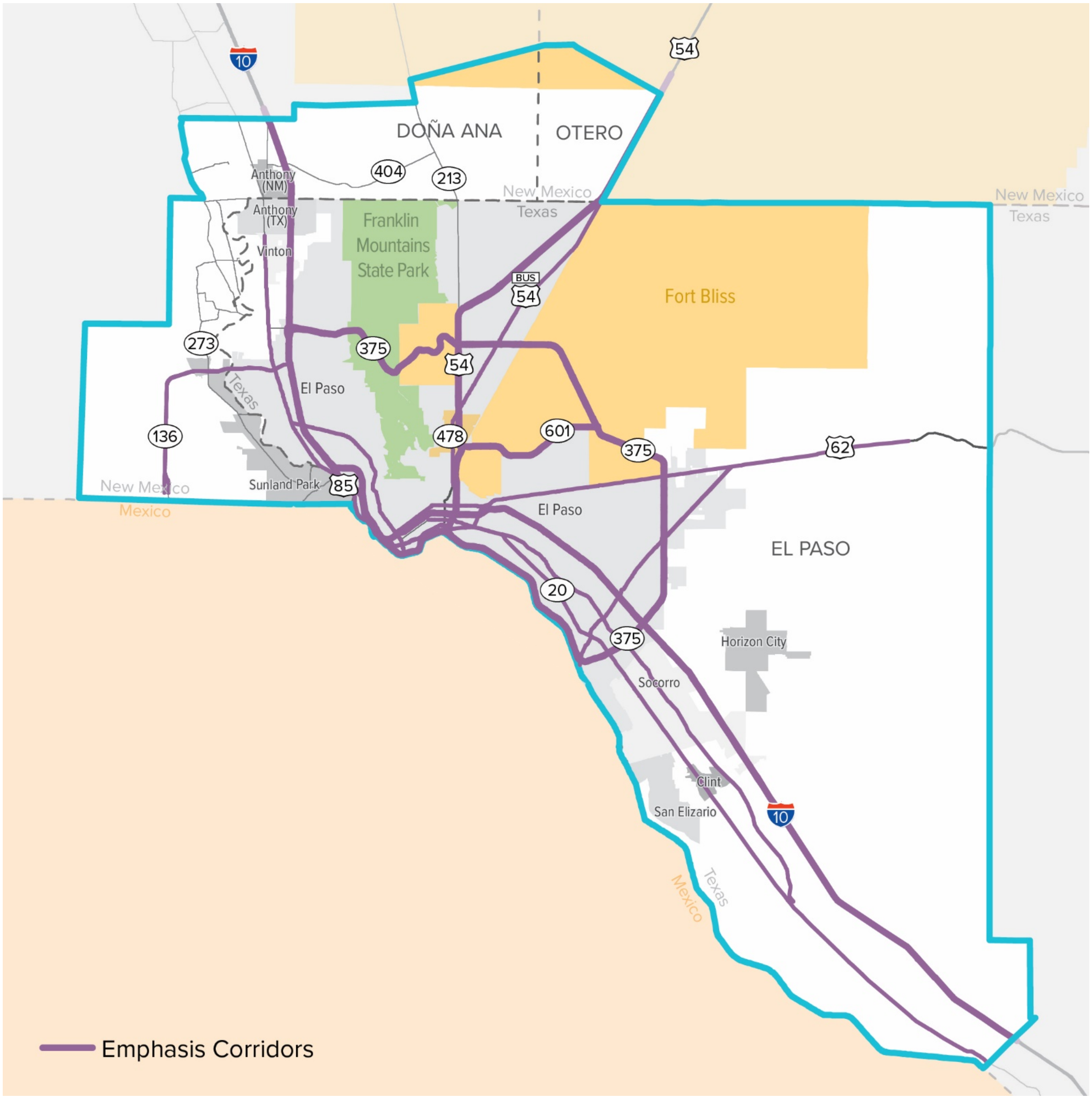
- *Crashes per VMT*
- *Speed Index*
- *Annual hours of delay*
- *% of jobs, key destinations, and population within ½ mile of high-quality, rapid transit*
- *Commute times from Environmental Justice zones*
- *% non-SOV trips*
- *Average trip costs*
- *Average wait times by mode at Ports of Entry (POEs)*
- *Estimated emissions*
- *Total VMT & VMT per capita*
- *Annual hours of delay along major freight corridors*

## *Emphasis Corridors*

Much of the growth in the El Paso region has followed the paths of the major transportation corridors that connect the region to the rest of the world. These “emphasis corridors” carry the vast majority of the region’s automobile travelers, freight traffic, and transit users and form the backbone of the region’s multimodal transportation system. Some of these roads are major regional connectors (Montana Ave.) and others provide access to the region’s ports of entry (Zaragoza Rd. and Pete Domenici Memorial Highway). Destino 2045 classifies the following roadways as emphasis corridors (Figure 1.1):

- IH 10
- US 54 – Patriot Freeway
- Loop 375
- Spur 601 – Liberty Expressway
- Alameda Ave. (TX SH 20)
- Doniphan Dr. (TX SH 20)
- Dyer St. (US 54 Business/TX LP 478)
- N. Mesa St. (TX SH 20)
- Montana Ave. (US 62)
- N. Loop Dr. (FM 76)
- Paisano Dr. (US 62)
- Pete Domenici Memorial Highway/Artcraft Rd (NM 136/TX SH 178)
- Zaragoza Rd. (FM 659)

FIGURE 1.1: EMPHASIS CORRIDORS

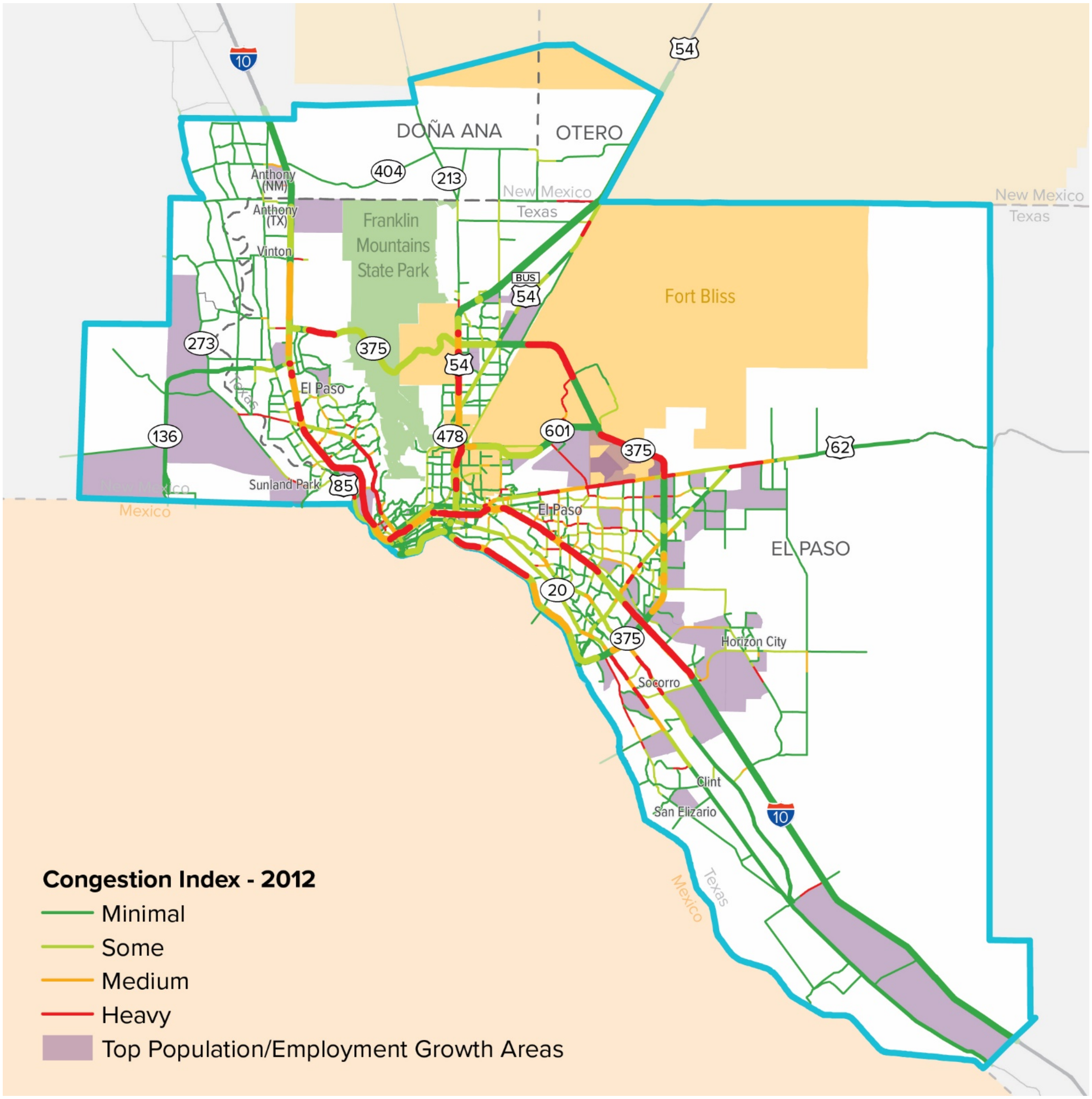


## CURRENT NETWORK CONDITIONS & PERFORMANCE

The 2012 roadway network shows congestion primarily occurring on major highways and regional connectors (Figure 1.2). IH 10 displays medium to heavy congestion along the majority of the network from Socorro to Vinton. Loop 375 shows medium to heavy congestion along the United States-Mexico border and in portions cutting through Fort Bliss. Other noteworthy roadways displaying medium to heavy congestion include the following:

- US 54
- N. Mesa St./Country Club Rd.
- Montana Ave. (particularly west of Loop 375)
- Alameda Ave.
- Socorro Rd.
- North Loop Dr.
- Global Reach Dr.
- Fabens St.
- Montwood Dr.

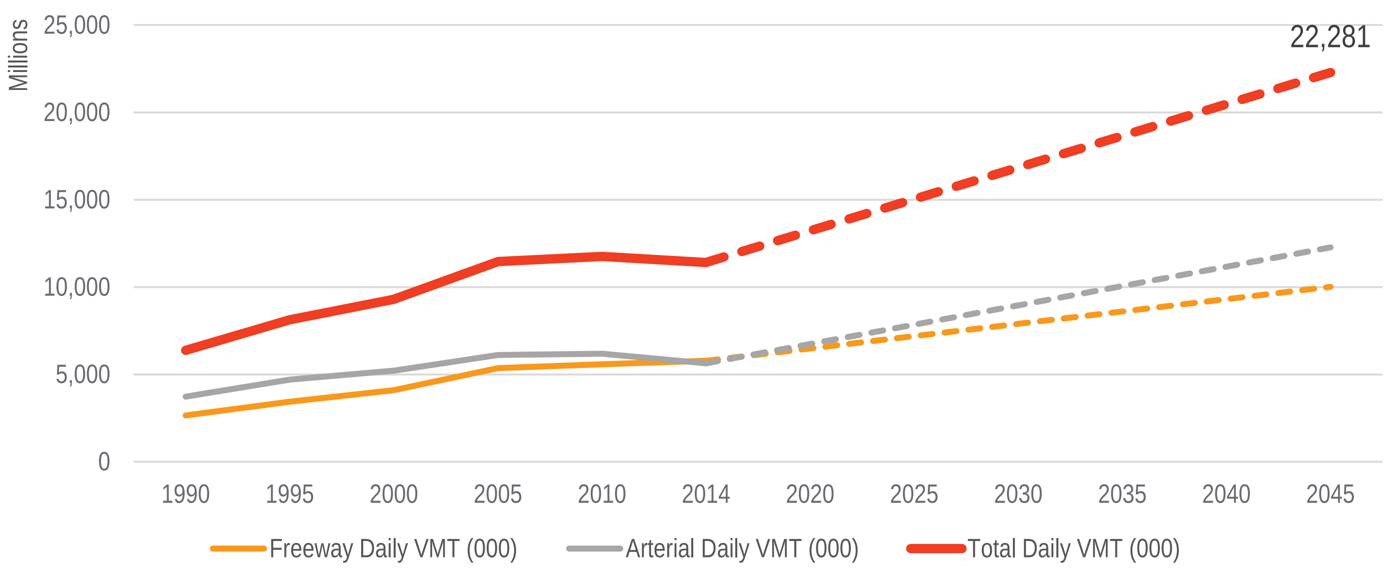
FIGURE 1.2: CONGESTION INDEX; 2012



## FUTURE NETWORK CONDITIONS & PERFORMANCE

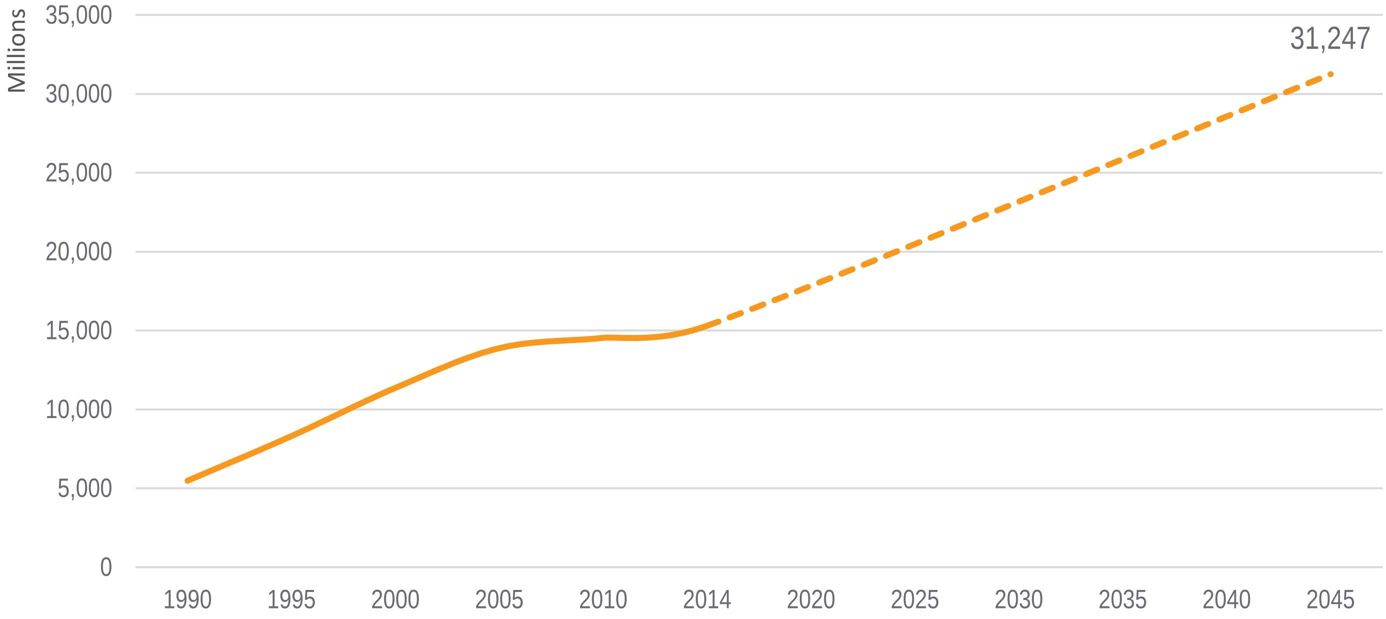
2045 TDM outputs show anticipated roadway performance if no additional transportation improvements were made beyond the existing and committed network. In general, these outputs indicate a significant increase in the amount of moderate to severe congestion—spurred by a rise in traffic—throughout the network. Figure 1.3 shows estimated average daily VMT growth between 1990 and 2045, where VMT is extrapolated from 2014 TTI estimates. Total daily VMT is estimated to reach roughly 22-million miles by 2045, with arterial network daily VMT surpassing freeway daily VMT by roughly 2-million miles. On a per capita basis, daily VMT per person is expected to increase from 13.9 to 16.2 between 2014 and 2045. This moderate increase (17%) in VMT per person indicates that the total amount of vehicle travel in the region is expected to increase by more than the increase in number of potential people traveling. This suggests that the region's population will be traveling further distances or taking more vehicle trips on the roadway network in a given day in order to reach destinations if no further changes are made to the system by 2045.

FIGURE 1.3: AVERAGE DAILY VEHICLE MILES TRAVELLED; 1990-2045



Due to the increase in VMT and relatively stable vehicular capacity of the roadway network, congestion is forecasted to increase by 2045 if no other changes are made to the roadway network. Figure 1.4 reflects the forecasted increase in delay by 2045, highlighting that congestion is anticipated to be much worse by the horizon year 2045. In fact, the forecast estimates that travelers in the region will experience over 31 million annual vehicle hours of delay by 2045—a 115% increase from 2014.

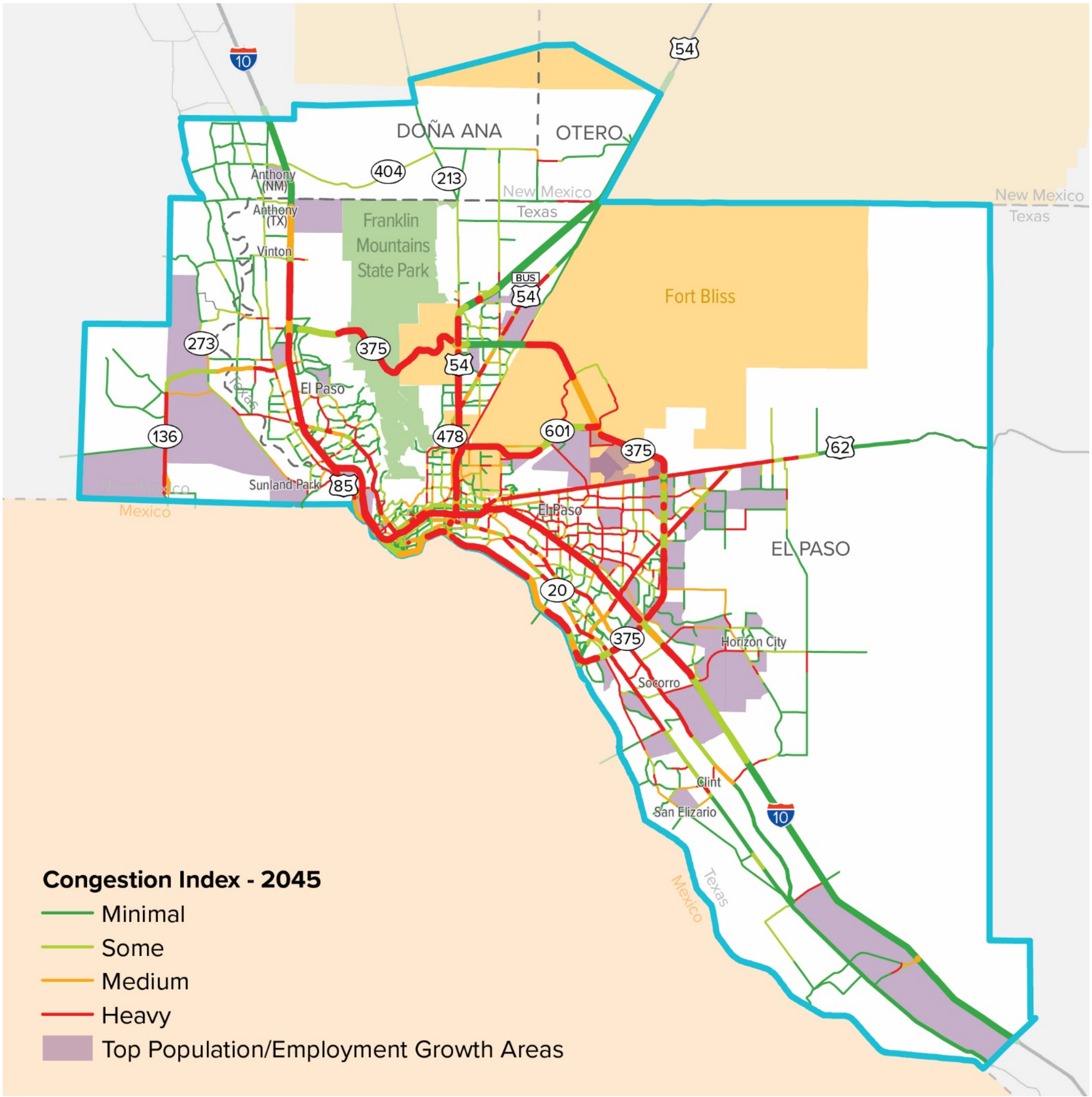
FIGURE 1.4: ANNUAL WEEKDAY VEHICLE HOURS OF DELAY; 1990-2045




### *Congestion Index*

In general, forecasted increases in congestion along the network are particularly prevalent along major highways and the emphasis corridors but also in the Mission Valley region near Socorro and in Central-East El Paso (just south of US 62 and West of Loop 375). The most notable changes in level of congestion in 2045 occur along the IH 10 corridor and Loop 375. IH 10 shows heavy congestion from roughly Horizon Boulevard in the southeast to Vinton Road in the northwest portion of the region, with the most congested segments near the El Paso central business district. US 54 is projected to experience increased congestion from the IH 10 junction (central to the region) northward to the Transmountain Drive intersection. Figure 1.5 shows the congestion index calculated from the El Paso TDM using the existing and committed network and 2045 demographics, as well as high population and employment growth areas. The high growth areas are meant to show how population and employment changes affect congestion by generating more trips to/from these areas. For the most part, roadways in the network adjacent to high growth areas show significant increases in congestion between 2012 and 2045.

FIGURE 1.5: CONGESTION INDEX; 2045



### *Delay*

Table 1.1 shows the percentage of 2045 delay and VMT of each major highway and emphasis corridor compared the to the entire network. Again, this table shows the importance of IH 10 as a major transportation corridor for the region, as 32% of all VMT occurs along IH 10. Comparatively, the other roadways included in this table only make up 41% of all VMT on the network. Alameda Ave. and Loop 375 both make up higher percentages of total network delay compared to VMT, indicating that these roadways generate more delay relative to their usage. IH 10, US 54, and Montana Ave., on the other hand, have lower percentages of total network delay compared to total network VMT. This indicates that, while these roadways are expected to generate large amounts of delay annually, they produce less delay than would be expected based on usage.

TABLE 1.1: MAJOR HIGHWAY AND EMPHASIS CORRIDOR DELAY CHANGES; 2045

| CORRIDOR | 2045 DAILY VMT | % OF TOTAL NETWORK VMT | ANNUAL DELAY (VEHICLE HOURS) | % OF TOTAL NETWORK DELAY |
|---|---|---|---|---|
| Alameda Ave. | 529,826 | 2% | 829,355 | 3% |
| Doniphan Dr. | 227,199 | 1% | 240,962 | 1% |
| Dyer St. | 290,550 | 1% | 377,523 | 1% |
| N. Mesa St. | 381,855 | 2% | 712,966 | 2% |
| Montana Ave. | 1,683,658 | 8% | 1,870,205 | 6% |
| N. Loop Dr. | 390,745 | 2% | 644,918 | 2% |
| Paisano Dr. | 194,383 | 1% | 214,332 | 1% |
| P. Domenici Memorial Hwy | 165,689 | 1% | 201,073 | 1% |
| Zaragoza Rd. | 365,158 | 2% | 662,901 | 2% |
| Spur 601 | 272,249 | 1% | 457,117 | 1% |
| Loop 375 | 3,224,437 | 14% | 5,019,525 | 16% |
| IH 10 | 7,097,223 | 32% | 8,112,238 | 26% |
| US 54 | 1,637,025 | 7% | 1,860,092 | 6% |
| *Total Network* | *22,281,000* | - | *31,247,000* | - |

All major highways and emphasis corridors are expected to experience percentage increases in annual delay that are higher than the percentage increase in delay for the entire network, with the exception of IH 10. In other words, when compared to the rest of the network, the emphasis corridors and major highways are anticipated to experience greater changes in congestion compared to the rest of the network if no improvements are made. The biggest increases in delay between the 2012 base year and 2045 forecast year occur along Doniphan Dr., Pete Domenici Memorial Highway, and Montana Ave., Dyer St., and Zaragoza Rd. Figure 1.5 above shows that these increases in congestion appear to be logical as some of the highest population and employment growth is expected to occur around these corridors. For example, there are several high employment and population growth areas immediately north of Montana Ave., just west of Loop 375. Sunland Park and the southern portions of Dona Ana County, adjacent to Pete Domenici Memorial Highway and west of Doniphan Dr., are also forecasted to experience significant population and employment growth. This growth will generate much more traffic along these roadways, and if no improvements are made beyond existing and committed projects, these roadways are anticipated to experience major increases in traffic congestion. Figures 1.6 and 1.7 below show the change in annual vehicles hours of delay between 2012 and 2045 for all major highways and emphasis corridors.

FIGURE 1.6: MAJOR HIGHWAY ANNUAL VEHICLE HOURS OF DELAY; 2012-2045

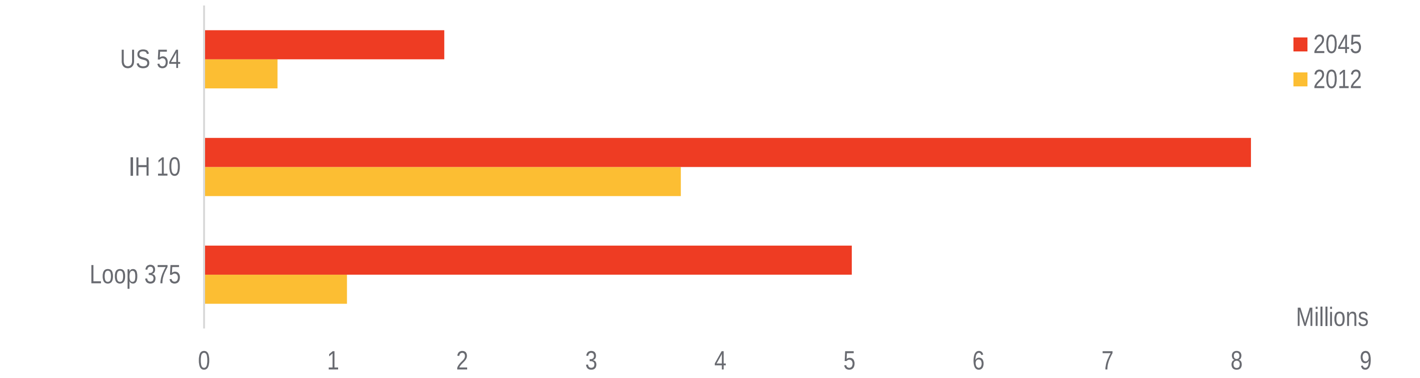
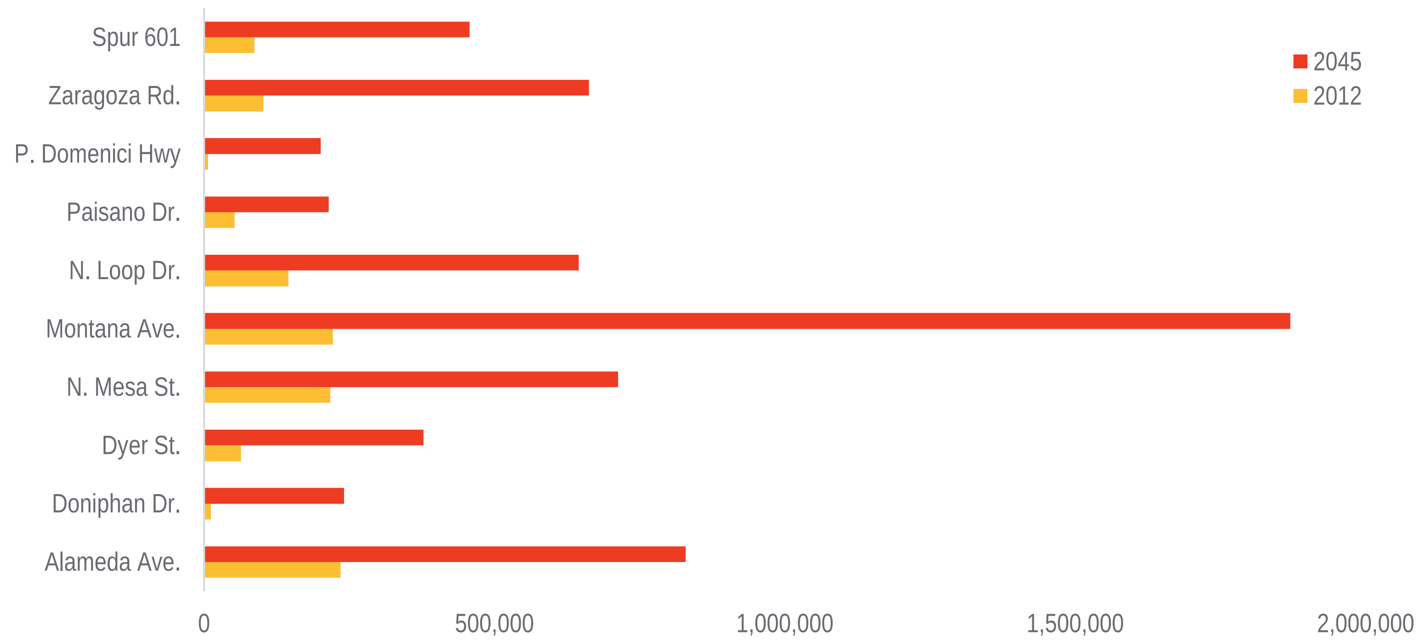



FIGURE 1.7: EMPHASIS CORRIDOR ANNUAL VEHICLE HOURS OF DELAY; 2012-2045



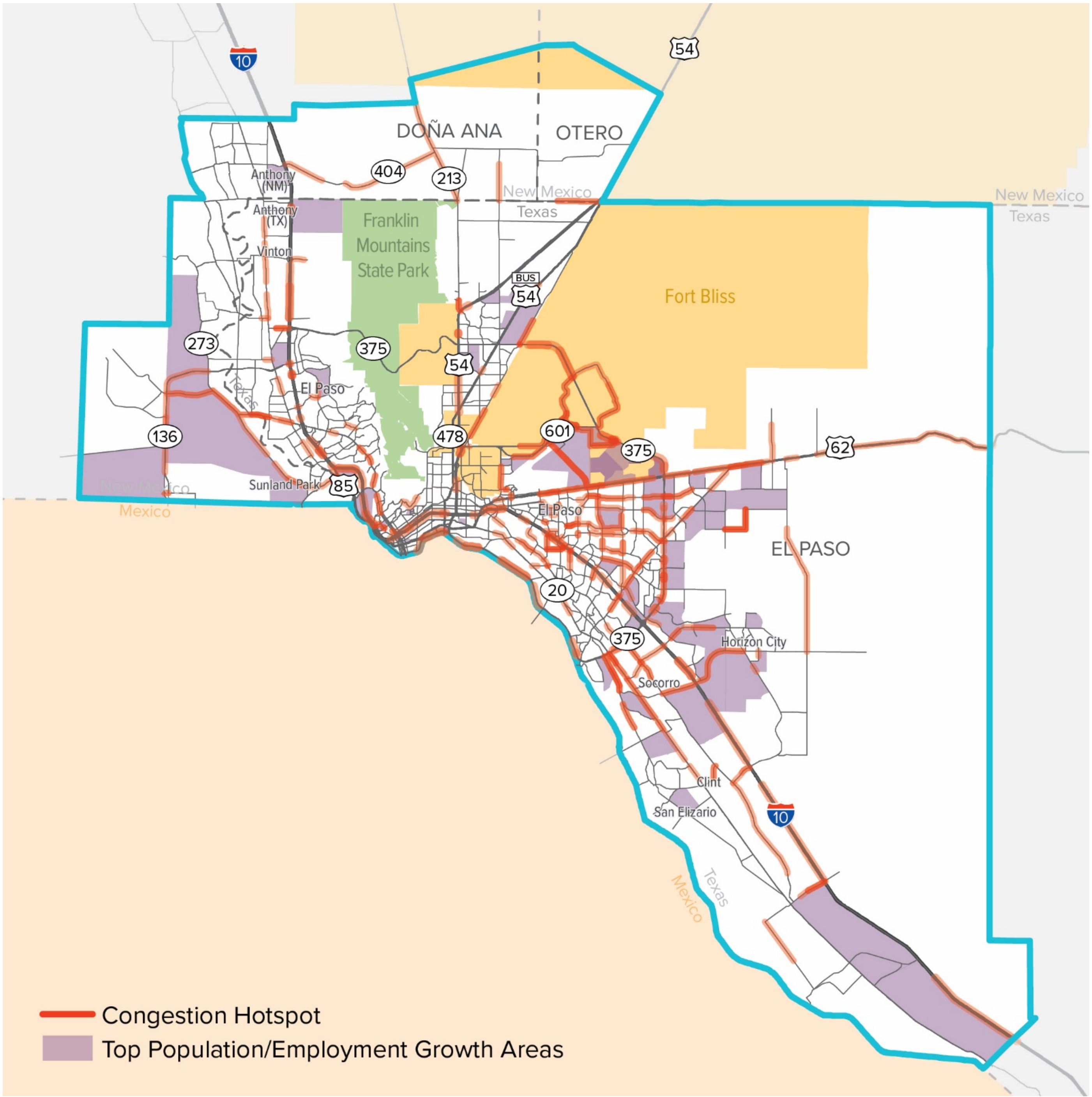
### *Congestion Hotspots*

Analysis of TDM outputs and trends helps to set a baseline for performance and to determine which roadway facilities are anticipated to experience the largest increases in congestion. However, to further determine potential roadway needs, Destino 2045 combines the roadway performance measures with overlay analysis to pinpoint specific segments throughout the network that are expected to become major issues if they are not addressed by 2045. To identify these segments, the analysis identifies segments along the existing plus committed roadway network with the highest amount of delay, highest peak period V/C ratio, most VMT, and lowest speed index. The analysis first identifies segment in the top (or bottom in the case of speed index) 5% for each of these measures. Once this base set of segments was identified, overlay analysis was used to determine where segments that performed poorly for a given performance measure overlapped. Segments where there was overlap for multiple performance measures that were adjacent to each other were aggregated to form larger segments that were easier to define. This process was done separately for major highways and the remainder of the network. The result identifies the location of segments throughout the network that are anticipated to experience significant traffic, heavy congestion and slow speeds during peak periods, and/or many hours of delay compared to the rest of the region's network by 2045. Table 1.2 lists the top congestion hotspots for major highways and for the rest of the El Paso TDM existing plus committed network and summarizes roadway performance measures for each identified segment; Figure 1.8 shows the results of the performance measure overlay analysis.

TABLE 1.1: MAJOR HIGHWAY AND EMPHASIS CORRIDOR DELAY CHANGES; 2045

| ROADWAY NAME | SEGMENT LIMITS | LENGTH | DAILY VMT | ANNUAL DELAY (VEHICLE HOURS) | AVERAGE MAX V/C RATIO | SPEED INDEX |
|---|---|---|---|---|---|---|
| Loop 375 | Railroad Dr. - Sergeant Major Blvd. | 6.9 | 143,753 | 568,120 | 1.29 | 0.52 |
| Loop 375 | Fonseca Dr. - S. Park St. | 7.3 | 230,037 | 1,035,443 | 1.03 | 0.69 |
| IH 10 | Viscount Blvd. - Yarbrough Dr. | 3.2 | 292,480 | 567,178 | 1.05 | 0.45 |
| Loop 375 | Spur 601 - Montana Ave. | 8.7 | 193,075 | 533,232 | 1.02 | 0.45 |
| US 54 | Spur 601 Interchange | 1.7 | 104,579 | 343,681 | 0.85 | 0.58 |
| IH 10 | Resler Dr. – 1 mi. east of IH 10 | 5.8 | 352,092 | 578,621 | 0.91 | 0.57 |
| Loop 375 | Alameda Ave. - N. Zaragoza Rd. | 2.9 | 190,163 | 656,279 | 1.02 | 0.44 |
| ARTERIALS AND OTHER ROADWAYS | | | | | | |
| Montana Avenue | Hawkins Blvd. - Krag St. | 11.5 | 494,786 | 1,517,444 | 1.3 | 0.5 |
| Global Reach Drive | Montana Ave. - Sergeant Major Blvd. | 3.5 | 192,174 | 732,927 | 1.5 | 0.4 |
| Socorro Road | Loop 375 - Buford Rd. | 1.9 | 39,375 | 157,007 | 1.7 | 0.4 |
| Edgemere Boulevard | Yarbrough Dr. - Rich Beem Blvd. | 5.2 | 179,045 | 517,692 | 1.3 | 0.5 |
| Alameda Avenue | Loop 375 - Passmore Rd. | 4.6 | 162,239 | 442,772 | 1.2 | 0.5 |
| Sargeant Major Boulevard | Old Ironsides Dr. - North of Constitution Dr. | 1.3 | 68,768 | 573,918 | 2.2 | 0.3 |
| Country Club Road | McNutt Rd. - Doniphan Dr. | 2.6 | 67,906 | 286,052 | 1.4 | 0.4 |

FIGURE 1.8: TOP CONGESTION HOTSPOTS; 2045



## STAKEHOLDER FEEDBACK

Congestion in the region was also evaluated through Destino 2045 public visioning workshops, stakeholder outreach sessions, and an online survey. The following provides information gathered from these activities regarding the outlook on congestion and roadway performance.

- *Population Growth:* Accelerated growth in downtown El Paso and fringe areas (Sunland Park, Horizon City) is putting stress on current facilities.
- *Highway Accessibility & Mobility:* Highway infrastructure (namely IH 10, US 54, and Loop 375) currently provide inadequate access ramps and emergency lanes; accidents overwhelm the system and cause extreme levels of congestion. Congestion from accidents and peak hour traffic leads to spillover traffic on adjacent roadways.
- *Emphasis Corridors:* Stakeholders noted that congestion was generally the result of poor system connectivity, truck freight thru-traffic, and stress provided by downtown growth and University of Texas El Paso's (UTEP) population presence. Stakeholders representing cities/villages outside of the El Paso city limits (Socorro, Vinton) noted that the increase in housing and car ownership has put stress on local farm roads, resulting in longer commute times. Feedback consistently noted congestion issues on the following roadways:
    - Mesa Street
    - IH 10 ramps/interchanges
    - Doniphan Drive
    - Paisano Drive
    - Stanton Street
    - Zaragoza Road
    - Vinton Road

  *Survey Results:* The majority of visioning survey respondents (71%) believed that congestion needs were a top priority region wide; the Central El Paso (74%) and West Valley (71%) sub-regions had the highest respondent rates prioritizing congestion needs. Most respondents (86%) agreed with maps of forecasted V/C ratios provided during the public visioning workshops. Furthermore, 61% of respondents believed that automobiles in the El Paso study area would be inadequately served in the next 28 years.

## CONCLUSIONS

Analysis shows the El Paso MPO region is currently experiencing moderate congestion along major highways. The region is unique in that its roadway network is constrained by geographic and jurisdictional barriers, such as the Franklin Mountains, Fort Bliss, and the international border with Mexico. The region will continue to experience traffic pressure from a growing central population, developing fringe area, and a substantial population located across the border in Ciudad Juarez. Overall, if nothing is done to improve the region's roadway network, the traffic generated from population growth, particularly growth outside of the City of El Paso, will inevitably cause significant congestion throughout the network, leading to millions of hours of additional time wasted in traffic.

# 2. SAFETY

## INTRODUCTION

Safety is one of the top priorities members of the public identified for the transportation system through the Destino 2045 visioning workshops. The safety analysis for Destino 2045 primarily consists of technical analysis focused on vehicular crash characteristics and trends over a five-year period—2011 to 2015. TxDOT's Crash Records Information System (CRIS) and NMDOT's Statewide Traffic Records System (STRS) provided the data for the analysis of the regional crash trends and identification of location-specific crash hotspots.

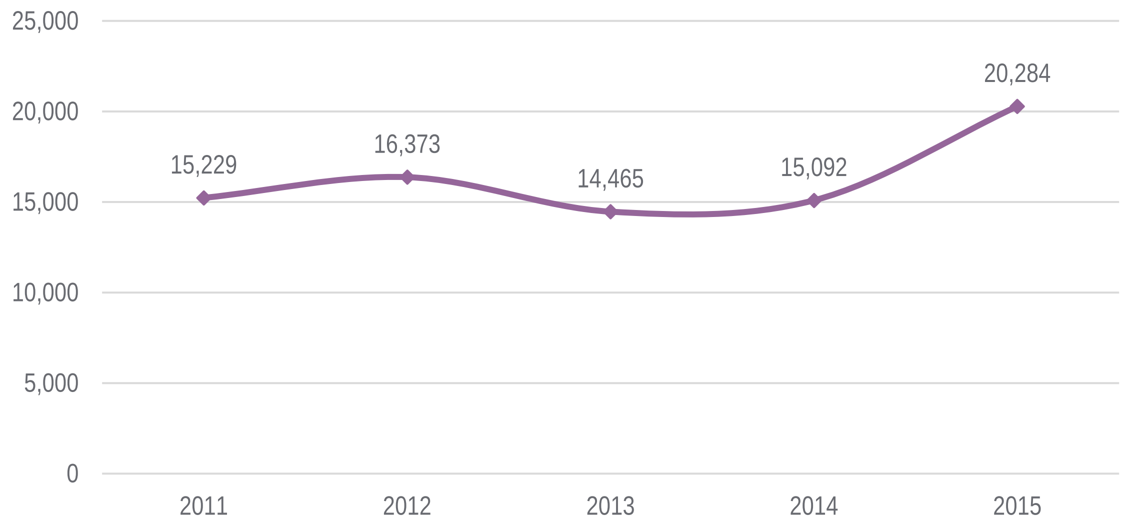
## REGIONAL CRASH TRENDS

The summaries and figures in this section provide an understanding of the recent regional crash trends in the El Paso MPO region, including total crashes regionwide, total crashes per capita, crash rate based on roadway usage, crashes by severity, crashes involving pedestrians and/or bicyclists, and rear-end crashes.

### TOTAL CRASHES REGIONWIDE

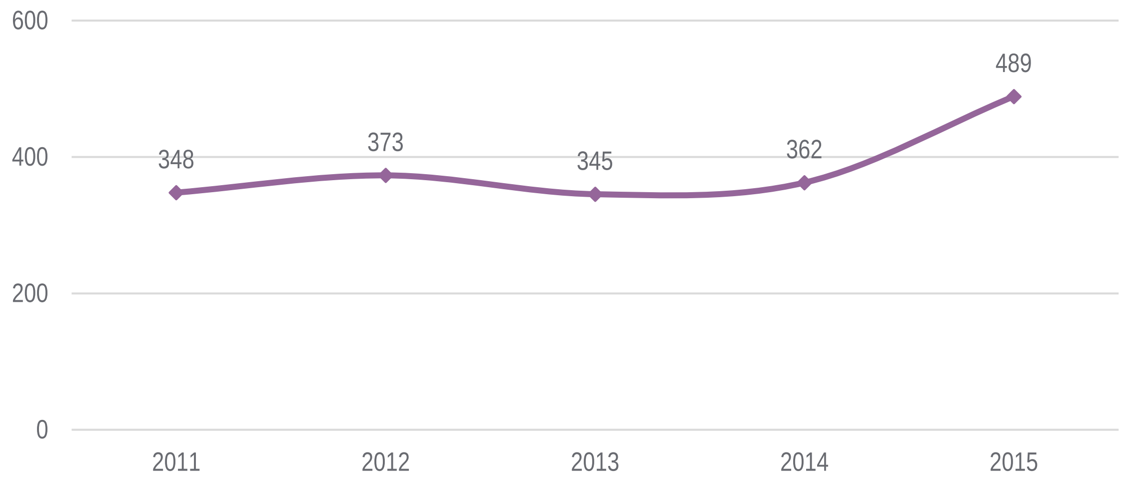
Between 2011 and 2015, a total of 81,443 crashes occurred in the Destino 2045 study area. Though the annual number of crashes has fluctuated slightly over the five-year period, the biggest spike in crashes occurred most recently in 2015. In fact, the region experienced roughly a 34% increase in crashes between 2014 and 2015, pushing the annual crash total over 20,000. Figure 2.1 shows the annual number of crashes in the regions between 2011 and 2015.

FIGURE 2.1: REGIONAL CRASH TOTALS BY YEAR; 2011-2015




The crash rate is an important metric as it represents the amount of crashes relative to how much travel is occurring in the region. When considering roadway usage (i.e. VMT), crash rate trends over the period remain similar—minor fluctuations between 2011 and 2014 and a more significant increase in 2015. Since there is relatively little change in VMT between years, the trends reveal that crashes do not necessarily correlate directly with the amount of travel (i.e. VMT), which also speaks to the randomness and unpredictability of crashes from year to year. Annual VMT for the period was estimated using extrapolated daily VMT data from the TTI Urban Mobility Scorecard. Figure 2.2 shows the crashes per 100 million vehicle miles traveled for the region between 2011 and 2015.

FIGURE 2.2: REGIONAL CRASHES PER 100 MILLION VMT BY YEAR; 2011-2015




## CRASHES BY SEVERITY

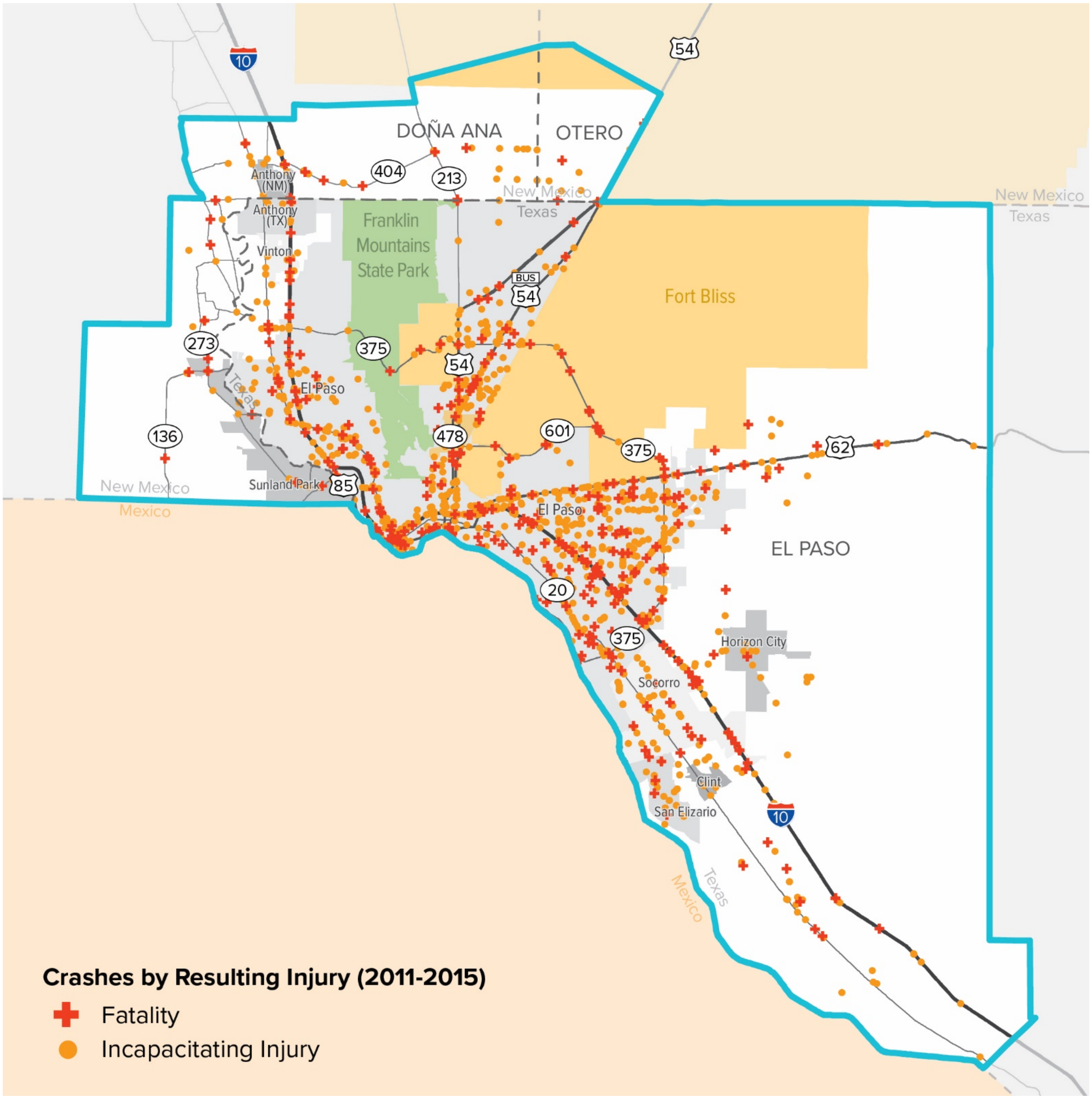
Crash severity is perhaps the most important factor to consider when evaluating safety, as crashes that result in injury or death represent the worst consequences related to roadway safety. Destino 2045 classifies crashes into four crash result categories: no injury, non-incapacitating injury, incapacitating (serious) injury, and fatality. Table 2.1 shows the number of crashes by result category, as well as the percentage relative to the total number of regional crashes. Crash data shows that nearly 28% of crashes in the region result in some kind of injury, and about 1 out of every 237 crashes results in a fatality.

Though the region experienced the highest total number of crashes in 2015 (20,284) compared to the other four years in the period, this year also had the highest number of crashes resulting in no injury (15,125) and the lowest number of crashes resulting in fatality (59). However, comparing the likelihood of a crash-related fatality between the MPO region and the state of Texas for 2015, the estimated number of fatalities per 100 million VMT is 1.52 and 1.39 comparatively, indicating that crashes in the region typically have more severe consequences compared to the rest of the State. Figure 2.3 shows the location of all crashes resulting in fatality or incapacitating injury between 2011 and 2015.

TABLE 2.1: REGIONAL CRASHES BY SEVERITY; 2011-2015

| SEVERITY | CRASHES | PERCENT |
|---|---|---|
| Fatality | 344 | 0.42% |
| Incapacitating injury | 1,126 | 1.38% |
| Non-incapacitating injury | 21,149 | 25.97% |
| No injury | 59,313 | 72.83% |
| Total Crashes | 81,443 | 100% |

FIGURE 2.3: REGIONAL CRASHES BY RESULTING INJURY; 2011-2015



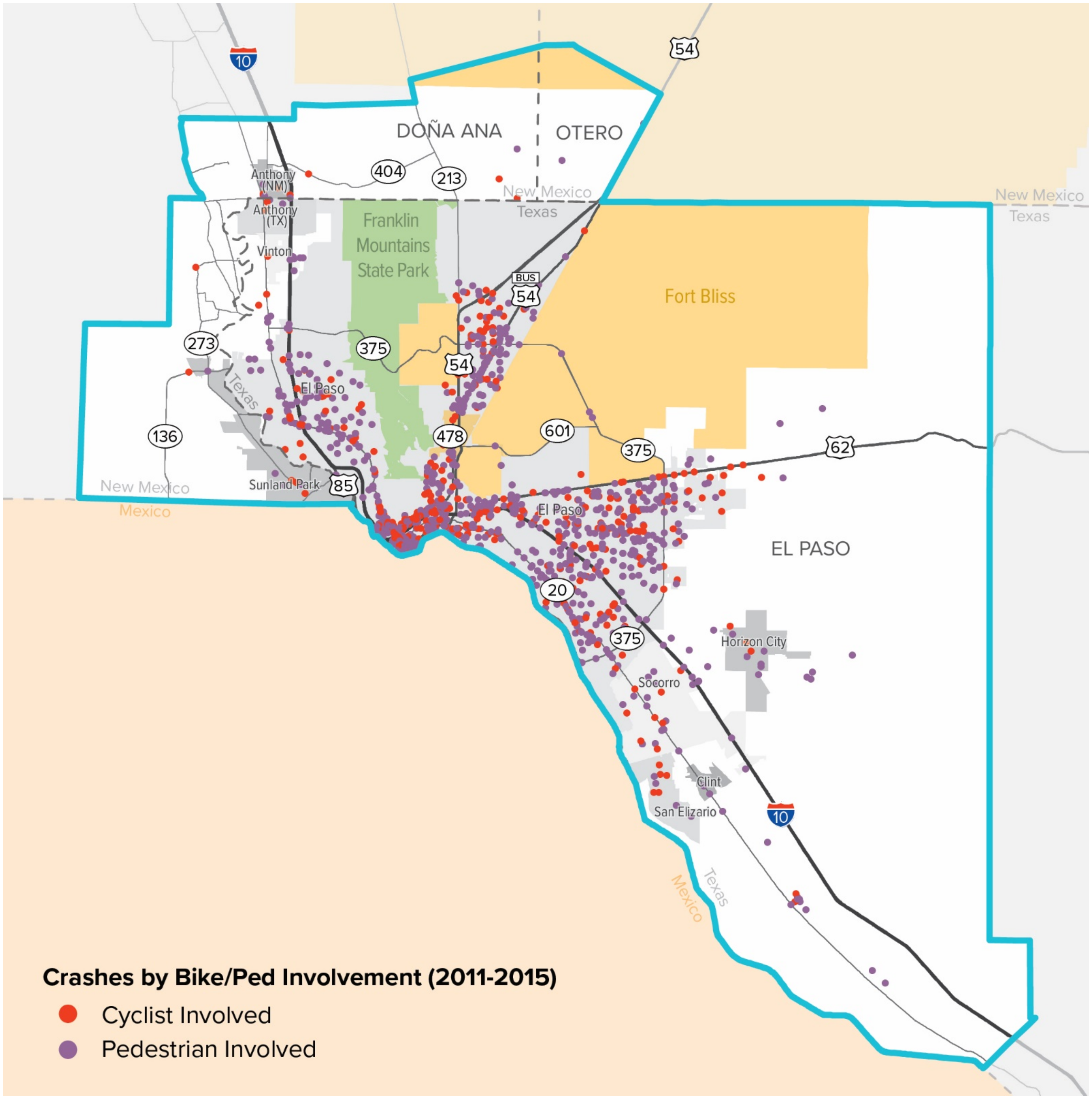
## CRASHES INVOLVING PEDESTRIANS OR BICYCLISTS

A total of 1,536 crashes during the five-year period involved pedestrians or cyclists, which is 1.89% of the total number of crashes for the region. Table 2.2 shows the total and percentage of crashes involving pedestrians or cyclists. Looking at crash severity, 88 of the crashes that involved pedestrians or cyclists resulted in a fatality. In other words, 5% of crashes involving a pedestrian or cyclist resulted in a fatality, while less than 0.5% of crashes involving vehicles resulted in fatalities, which underscores the disproportionate safety threats facing cyclists and pedestrians on the transportation system. Figure 2.4 shows the location of crashes involving cyclists and pedestrians throughout the region between 2011 and 2015.

TABLE 2.2: REGIONAL CRASHES INVOLVING PEDESTRIANS OR BICYCLISTS; 2011-2015

| CRASH TYPE | CRASHES | PERCENT OF CRASHES INVOLVING PEDESTRIANS OR BICYCLES | PERCENT OF TOTAL 5-YEAR CRASHES |
|---|---|---|---|
| Involving pedestrians | 1,142 | 74.35% | 1.40% |
| Involving cyclists | 394 | 25.65% | 0.48% |
| Involving either pedestrians or cyclists | 1,536 | 100% | 1.89% |

FIGURE 2.4: REGIONAL CRASHES INVOLVING CYCLISTS AND PEDESTRIANS; 2011-2015



## CRASH HOTSPOTS

Destino 2045 identified crash hotspots within the region through spatial analysis of intersections and roadway segments that experience the highest number of crashes. Total crashes, crashes involving pedestrians, crashes involving cyclists, and crashes resulting in serious injury or death are all considered in this analysis. Figure 2.5 shows congestion hotspots identified through geolocation of the collected crash data.

### TOP CRASH INTERSECTIONS

Destino 2045 employed the TDM network and intersection points along the network to conduct proximity analysis that associated intersection crashes to the nearest intersection. Texas crash data was filtered using attributes provided in the dataset that flagged crashes occurring at intersections. New Mexico crash data did not include this information, so only crashes that were within 150 feet of an intersection were included in the analysis. Once the crash data was narrowed down, the number of crashes for each intersection was calculated by assigning each crash to its closest intersection. The below sections list and summarize the intersections that experienced the most crashes between 2011 and 2015.

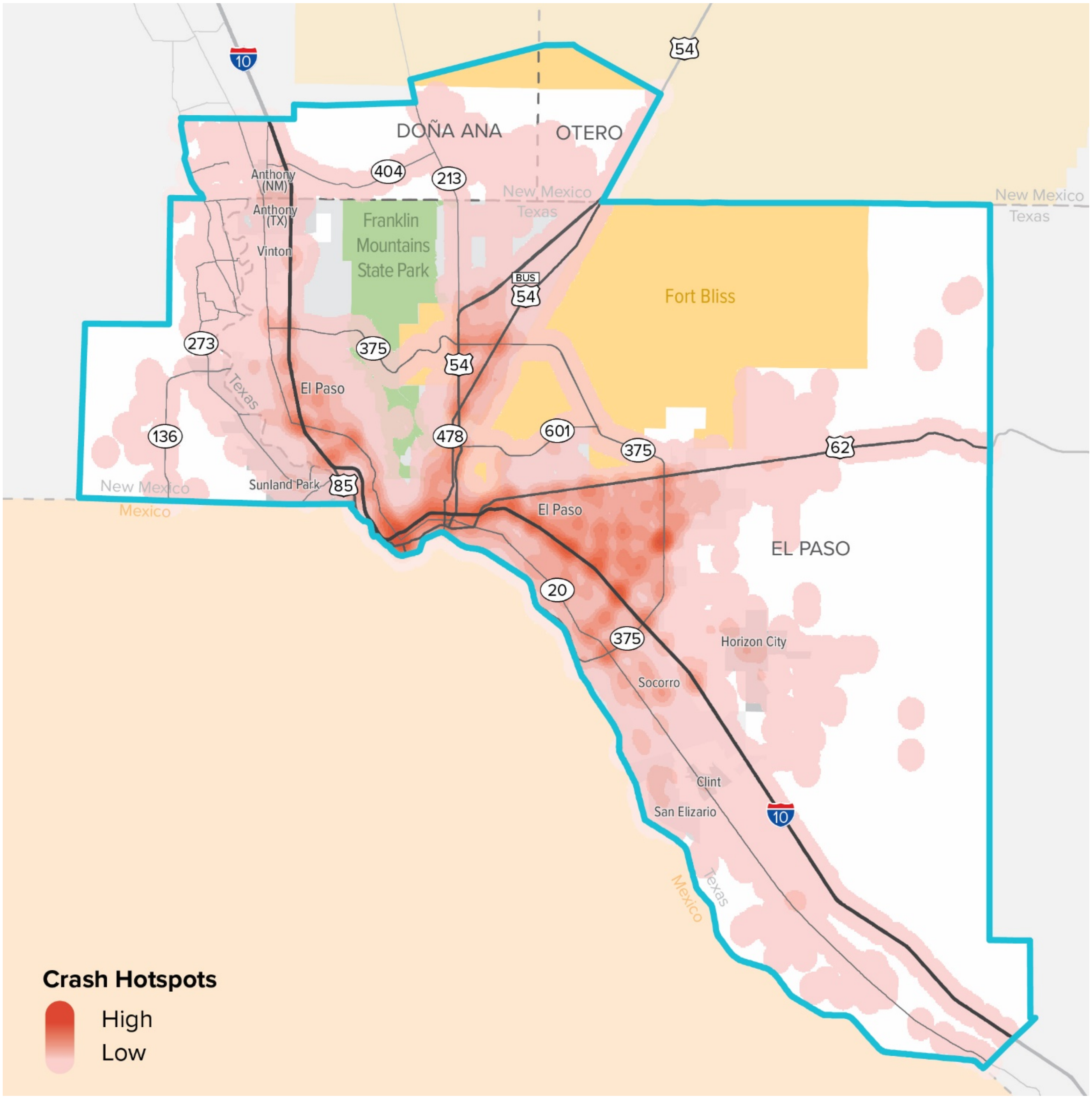
#### *Total Crashes*

Seven of the top ten intersections with the highest total crashes are located along IH 10/Gateway Boulevard. Two of the top ten intersections are located on Loop 375, and one is located on US 54/Patriot Freeway. The intersection of IH 10/Gateway Blvd. W. at Sumac Dr. topped the list with the highest total number of crashes (196) between 2011 and 2015. Table 2.3 shows the number of crashes experienced at the highest crash intersections in the region.

TABLE 2.3: TOP TEN CRASH INTERSECTIONS; 2011-2015

| INTERSECTION | CRASH COUNT | RANK |
|---|---|---|
| IH 10/Gateway Blvd. W. at Sumac Dr. | 196 | 1 |
| IH 10/Gateway Blvd. W. at George Dieter Dr. | 179 | 2 |
| IH 10/Gateway Blvd. W. at McRae Blvd. | 139 | 3 |
| IH 10/Gateway Blvd. E. at Hawkins Blvd. | 134 | 4 |
| Loop 375/Woodrow Bean Transmountain Dr. W. at Dyer St. | 130 | 5 |
| Loop 375/Joe Battle Blvd. S. at Rojas Dr. | 129 | 6 |
| US 54/Patriot Frwy./Gateway Blvd. S. at Sean Haggerty Dr. | 126 | 7 |
| IH 10/Gateway Blvd. W. at Lee Trevino Dr. | 116 | 8 |
| IH 10/Gateway Blvd. W. at Geronimo Dr. | 112 | 9 |
| IH 10/Gateway Blvd. W. at N. Yarbrough Dr. | 103 | 10 |

FIGURE 2.5: REGIONAL CRASH HOTSPOTS; 2011-2015



### *Crashes Involving Pedestrians*

Many of the intersections reported the same number of crashes involving pedestrians. However, six intersections stood out as having more occurrences of this type of crash. Two of the six intersections are located along US-62/US-85/Paisano Dr. and two are located on Oregon St. The intersections of E. San Antonio Ave. at N./S. Oregon St. and E. Paisano Dr. at S. Oregon St. experience the most pedestrian-involved crashes, each with five over the five-year period.

### *Crashes Involving Bicyclists*

The number of reported crashes involving cyclists at intersections is relatively low, with only four intersections experiencing more than one crash of this type between 2011 and 2015. These four intersections include:

- Pershing Dr. at N. Piedras St.
- Rushing Rd. at Woodrow Bean Transmountain Dr. eastbound frontage road
- N. Lee Trevino Dr. at Edgemere Blvd.
- US-85/W. Paisano Dr. at Ruhlen Ct.

### *Crashes Resulting in Serious Injury or Fatality*

For intersections where crashes resulting in serious injury or fatality occurred over the time period, two of the intersections are located along Loop 478 (Dyer Street), two more are located on Pete Domenici Memorial Hwy./Artcraft Rd./Loop 136/Loop 178, and two others are located on Loop 273/McNutt Rd. The intersection of Loop 136/Pete Domenici Memorial Hwy. eastbound at Loop 273/McNutt Rd. experienced seven crashes involving serious injury or fatality over the five-year period, which is the highest amount of this type of crash for all intersections.

## TOP CRASH ROADWAY SEGMENTS

To identify the roadway segments with the highest crash counts in the study area, Destino 2045 utilizes the same proximity analysis used for the intersection hotspots applied instead to the roadway segments in the study area. Intersection crashes were excluded from this analysis. The analysis first determines a 150-foot buffer around El Paso TDM network segments. The next step is to assign any crashes within the buffer to a segment, indicating that the crash likely occurred along that particular portion of the roadway. The result of this analysis is a list of top roadway segments in the region with potential safety issues (i.e. road segments that experienced the highest number of crashes between 2011 and 2015).

### *Total Crashes*

Seven of the top eleven high-crash segments are along IH 10, indicating not only the high degree of traffic flowing along the freeway, but also the increased safety concerns generated by high-speed roadway facilities. Two other high-crash segments are located on Loop 375, one is located on SH 20/N. Mesa St., and another is located on N. Zaragoza Rd./George Dieter Dr. The roadway segment of IH 10 southeast-bound main lanes from Adabel Dr. to Henry Brennan Dr. topped the list with 451 crashes between 2011-2015.

Table 2.4 describes the roadway segments that experience the largest number of crashes and provides a total number of crashes that occurred during the five-year time period.

TABLE 2.4: TOP ELEVEN CRASH ROADWAY SEGMENTS; 2011-2015

| SEGMENT DESCRIPTION | CRASH COUNT | RANK |
|---|---|---|
| IH 10 S.E. main lanes from Adabel Dr. to Henry Brennan Dr. | 451 | 1 |
| Loop 375 N. from Laila H. Ln. to Tree Quail Ct. | 439 | 2 |
| IH 10 N.E. main lanes from Remcon Cir. to S. end of Torres St. | 301 | 3 |
| 375 Loop W. from Pan American Dr. to Roseway Dr./UPAC RR | 274 | 4 |
| IH 10 N.E. main lanes from Kaiser Dr. to halfway between N. Lee Trevino Dr. and Albert Saab Dr. | 263 | 5 |
| IH 10 W. main lanes from Magruder St. to Bassett Townhomes | 257 | 6 |
| IH 10 S.E. main lanes from Albert Saab Dr. to Adabel Dr. | 233 | 7 |
| IH 10 S.E. main lanes from Venado Dr. to Lafayette Dr. | 216 | 8 |
| IH 10 S.E. main lanes from Kingman Dr. to Caper St. | 211 | 9 |
| SH-20/N. Mesa St. from halfway between Doniphan Dr. and Lynch Ln. to Crossroads Dr. | 208 | 10 |
| N. Zaragoza Rd./George Dieter Dr. between the main lanes of IH 10 | 208 | 10 |

### *Crashes Involving Pedestrians*

Focusing on roadway segments with relatively high counts of crashes involving pedestrians, two of the top segments are along Dyer St., two are along Alameda Ave., and two are located on N. Mesa St. The roadway segment that experienced the highest number of crashes involving pedestrians is Dyer St. from Broaddus Ave. to between Keltern Ave. and Fred Wilson Ave. with 9 crashes between 2011 and 2015. All three of these streets are TxDOT facilities operating within the urban core of El Paso, which tend to have higher concentrations of trips taken on foot, which highlights the context-sensitive nature of safety needs depending on the different types of built environments throughout the region.

### *Crashes Involving Bicyclists*

Analysis of crashes involving cyclists revealed that there are few segments with more than one crash of this type. The following road segments are the only segments that experienced more than one crash involving a cyclist, with a total of two each between 2011 and 2015:

- S. El Paso St. from US-85/Paisano Dr. to 130 feet north of US-85/Paisano Dr.
- Alameda Ave. from Landon Way to Finita Ln.
- US-180/US-62/Montana Ave. westbound main lanes from Texas Star St. to between Leticia St. and Loop 375/Joe Battle Blvd.

### *Crashes Resulting in Serious Injury or Fatality*

Of the top thirteen roadway segments with the highest total number of crashes resulting in serious injury or fatality, ten are located along IH 10, and the remaining three are located on Loop 273/McNutt Rd., Dyer St., and Alameda Ave., all of which appeared in at least one of the other hotspots lists for roadway segments and intersections. The segment of IH 10 from Fabens Rd. to O. T. Smith Rd. topped the list with nine crashes resulting in serious injury or fatality over the five-year period.

## CONCLUSION

The primary takeaways from the Destino 2045 safety analysis for the El Paso MPO region include:

- Crash trends between 2011 and 2015 indicate a fluctuating rise in total number of crashes, with a sharp increase in 2015. The increase in the number of crashes does not necessarily correlate with increases in VMT, which highlights how unpredictable crashes can be from year to year.
- Most crashes in the region result in no injury or a non-incapacitating injury. However, when compared to the rest of the state, crashes occurring in the MPO study area are more likely to result in fatality.
- The region experiences nearly three times as many reported crashes involving pedestrians than crashes involving cyclists.
- IH 10 appears the most frequently on hotspot lists with high crash concentrations for both intersections and roadway segments. A handful of other major roadways in the region also appear on multiple crash hotspot lists for both intersections and roadway segments, including:
  - US-85/Paisano Dr.
  - US-62
  - Loop 375
  - Loop 273/McNutt Rd.
  - SH-20/Mesa St.
  - Alameda Ave.
  - Oregon St.
  - Dyer St.

Few MPOs – including the El Paso MPO – possess the technical tools necessary to predict crashes along the transportation system in 2045, so the safety needs assessment does not include an assumption of where crashes are more likely to occur on the future transportation network. However, the analysis of observed crash hotspots and overall safety trends will help the MPO prioritize projects in Destino 2045 that include safety enhancements and are located near high-crash locations. This information will also help the MPO's planning partners identify factors that contribute to crash prevalence and severity (including speed, lack of pedestrian and bicycle facilities, and geometric design issues) that can be used to inform future planning efforts and project identification not included within the scope of the Destino 2045 MTP.

# 3. TRANSIT

## INTRODUCTION

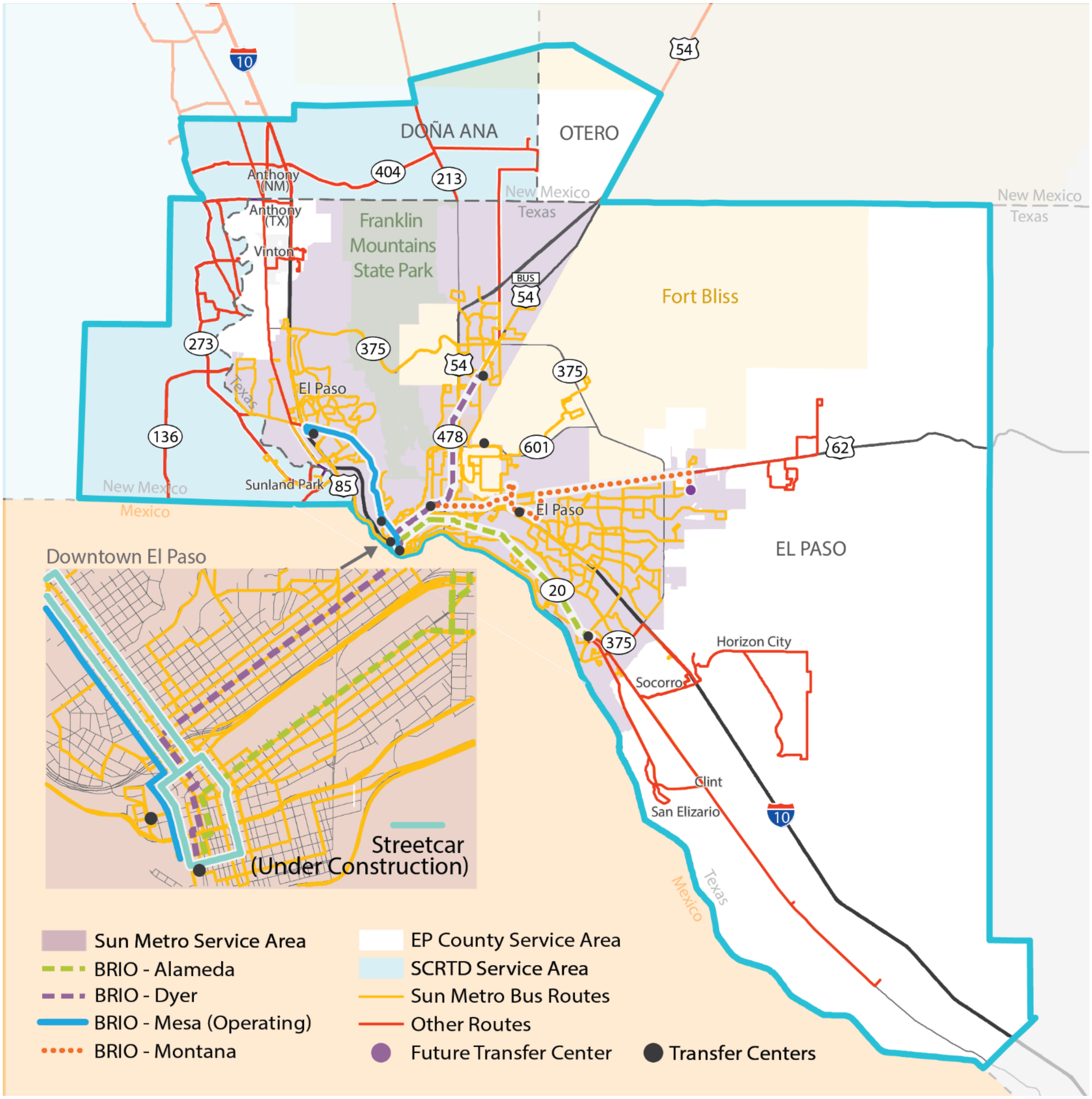
The following section presents an analysis of the existing transit system, the transit needs of the community, and opportunities for improvement so that the El Paso MPO and its planning partners can prioritize investments in public transportation. The analysis includes an inventory of existing and planned services, an analysis of population and employment coverage of the existing and planned system, and an identification of gaps in service based on potential transit need and key destinations in the region. Ongoing public and stakeholder engagement regarding public transportation needs, supported by Geographic Information System (GIS) mapping, informed the public transportation analysis.

## EXISTING TRANSIT SERVICE

Developing an understanding of the existing transit system and the various providers within the region helps identify the strengths of the system and how to build on them, as well as where gaps or duplication in service occur. This level of understanding will help inform the processes and methodologies used to create context sensitive solutions or improvements that will address the gaps and duplications in service and prepare the region for future growth. El Paso County Transit, South Central Regional Transit District (SCRTD) and Sun Metro all provide transit services in the study region and this section identifies their operational characteristics.

Figure 3.1 shows current and planned transit routes in the El Paso area, as well as the service area boundaries of the various transit providers that operate throughout the region.

FIGURE 3.1: CURRENT AND PLANNED EL PASO TRANSIT SERVICES

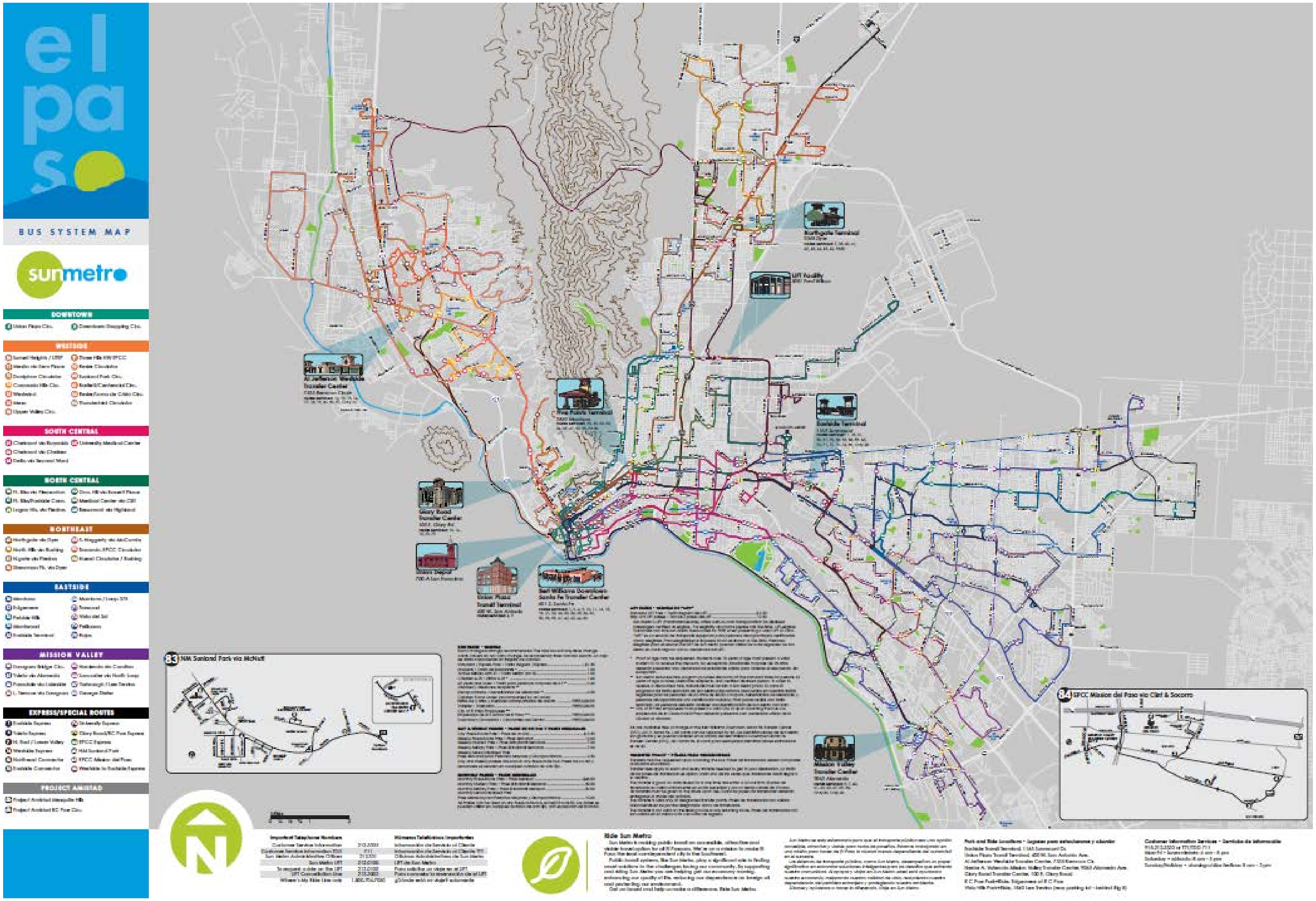


## SUN METRO TRANSIT

Sun Metro is the largest transit provider in the El Paso area and initially began as Sun City Area Transit (SCAT) in 1977 when the City of El Paso bought out three existing public transit lines. In 1987, SCAT became Sun Metro in conjunction with a change in dedicated funding.

Sun Metro serves more than 14 million passengers a year through a combination of 166 buses running on 64 fixed-routes and 65 LIFT vehicles. There are approximately 3,000 bus stops and 500 bus shelters. The service area is 255 square miles and has six park-and-ride lots and eight transfer centers. Both services utilize buses to connect the region, however differ in that the demand response systems cater to users who may not be able to access a typical fixed-route transit stop. Figure 3.2 provides a map of routes operated by Sun Metro as of June 2017.

FIGURE 3.2: SUN METRO ROUTE MAP



### *Fixed-Route Transit*

Sun Metro operates a total of 64 transit routes and provides service in one of the following three operational manners:

1. Line Route
2. Circulator
3. Express

Sun Metro's 38 line routes comprise the bulk of its transit operations, and typically run from the edges of the service area to transit centers or across town. Sun Metro operates 13 routes as circulator routes that generally operate in one-way or bidirectional loop patterns, focusing on providing coverage for smaller geographical areas. 12 routes operate as Express routes with limited stop spacing connecting remote geographic areas to each other, often operating on highways.

Sun Metro categorizes and brands the routes by region and type. The service area is broken up into nine subareas or categories with some of the routes serving multiple subareas. For example, route 18 – Westside Express is an express route between the Downtown Transfer Center and the Westside Transfer Center that runs along Paisano. This route is listed in both the Westside category and the Express/Special service category. The table below identifies all categories and the routes within each.

## Routes by Area

changes alerts

| Area | Route Numbers |
|---|---|
| Downtown Circulators | 4 9 |
| Westside | 10 11 12 13 14 15 16 17 18 19 20 70 75 90 91 92 93 |
| South Central | 21 22 24 25 |
| North Central | 30 31 32 33 34 35 36 |
| Northeast | 7 35 40 41 42 43 44 45 46 80 90 PA 50 |
| Eastside | 1 7 50 51 52 53 55 58 59 70 71 72 73 74 75 80 90 |
| Mission Valley | 3 7 60 61 62 63 65 66 67 69 80 PA 60 |
| Express/Special | 1 3 7 18 42 59 70 75 80 83 84 90 PA 50 PA 60 |
| County/New Mexico | 83 84 COUNTY 10 COUNTY 20 COUNTY 30 COUNTY 40 COUNTY 50 GR |

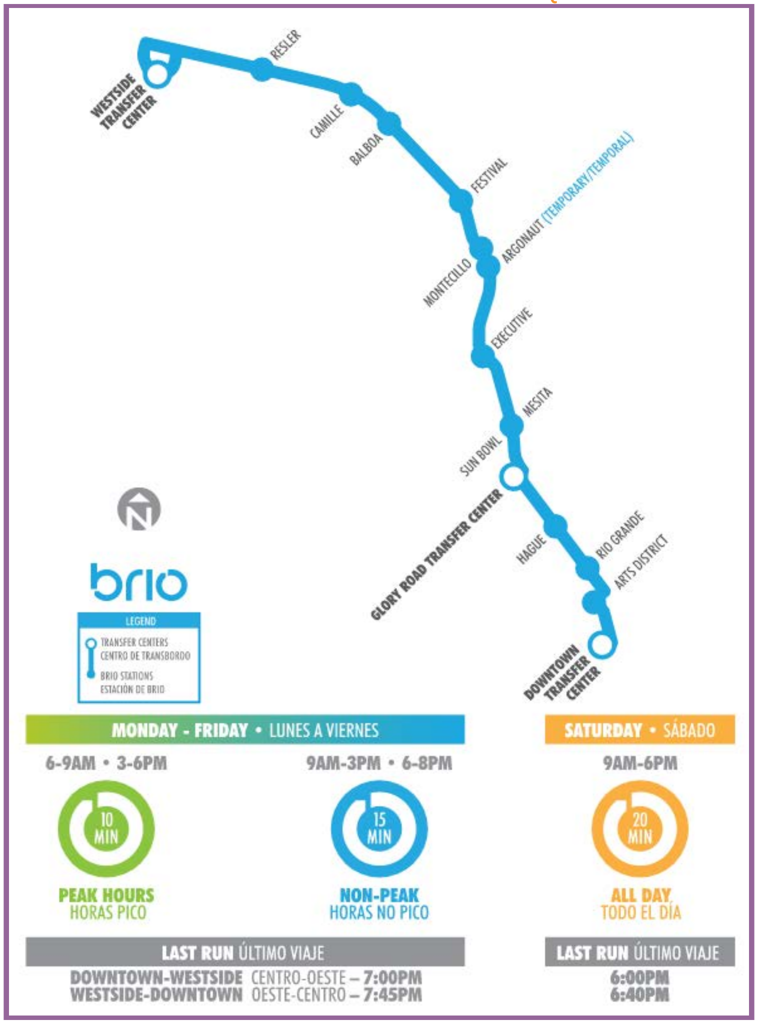
Grouping routes by service area or by service type helps passengers understand and navigate the transit network, but categorizing the routes by service area and by service type could create confusion. Due to the limited number of routes that cross between different service areas, the system also requires users to transfer (sometimes multiple times) to reach destinations in other parts of the region.

### *The Brio*

The Brio Rapid Transit System (RTS) is a premier bus service that offers similar benefits to light rail transit, such as improved speed and reliability, but at a much lower implementation cost. The Brio features uniquely branded 60-foot articulated buses that operate in mixed traffic at high frequencies of every 10 to 15 minutes depending on the time of day. It has stations spaced about a mile apart along the corridor that feature improved pedestrian amenities, real-time travel info, partially enclosed shelters, and landscaping. The service also utilizes traffic signal prioritization, which means that green light durations are lengthened for the vehicles, allowing them to move faster through the corridor.


Sun Metro introduced the first of four planned Brio corridors in the fall of 2014 with the implementation of the Mesa Corridor as shown in Figure 3.3. The Mesa Corridor is approximately 8.6 miles long and begins at the Downtown Transfer Center and ends at the Westside Transfer Center serving 22 stations along the corridor.

FIGURE 3.3: MESA BRIO ROUTE AND FREQUENCIES



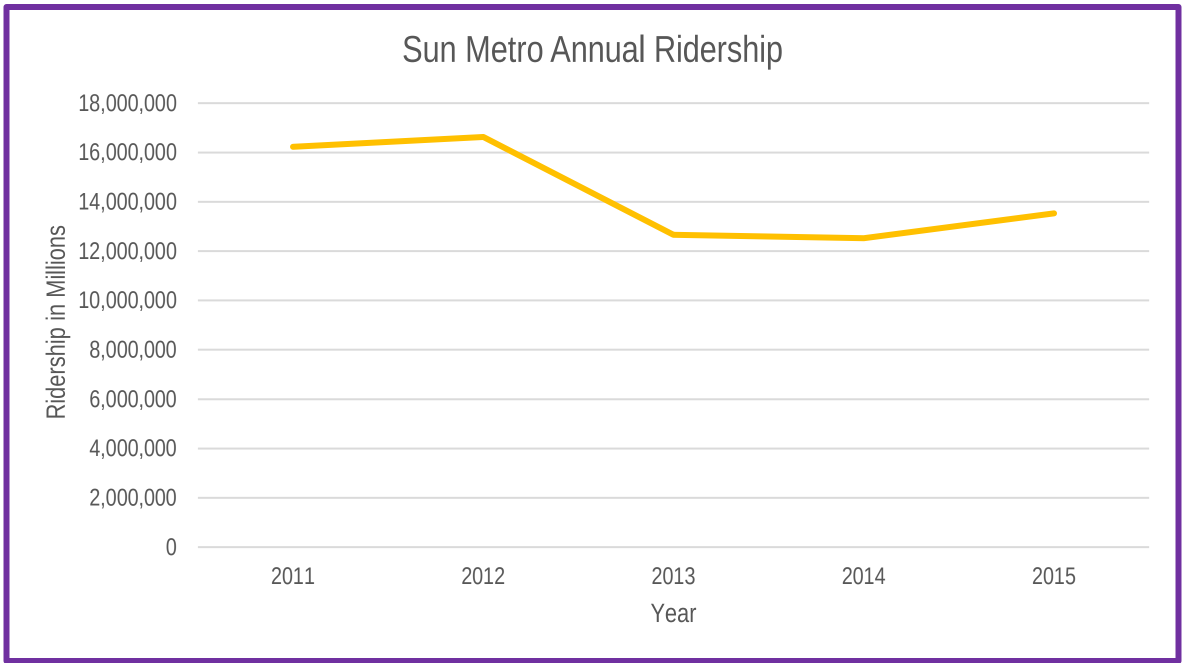

### *LIFT*

Sun Metro operates the LIFT, which is a paratransit service for ADA paratransit-eligible clients. The LIFT provides origin-to-destination (curb-to-curb), on-demand transportation using small buses equipped with hydraulic mobility device lifts and tie downs, as well as contracting with private operators using regular passenger vehicles. This service complements the area and hours of operation covered by Sun Metro's fixed-route service and extends 1.5 miles beyond the fixed-route service, still within the El Paso city limits. There is also door-to-door service available for those who qualify.

### *Sun Metro Ridership*

Figure 3.4 displays Sun Metro's systemwide ridership trends over the five-year period from 2011 through 2015. Systemwide ridership peaked in 2012 at over 16 million annual riders, but has decreased since then. Over the past few years, ridership has generally hovered between 12 and 14 million annual riders. This is consistent with trends observed throughout the country and can partially be attributed to inexpensive gas prices and higher wages leading to increased car ownership.

FIGURE 3.4: SUN METRO RIDERSHIP




## EL PASO COUNTY TRANSIT

El Paso County Transit operates six rural transit routes that have listed stop locations but can also be boarded at any safe location along the route by flagging the bus. While there is variability from route to route, service is generally provided from 7:00 a.m. until 7:00 p.m. All routes operate from Monday to Saturday and one route, 50 Mission Trail, offers service on Sundays. El Paso County Transit also offers limited commuter service between Las Cruces and El Paso on the Gold Route. El Paso County Transit sponsors Vamonos Vanpool, which is a program that utilizes Zimride as a private ridesharing network. Fares are $2.00 per trip and $3.00 for the Gold Route.

TABLE 3.1: EL PASO COUNTY RURAL TRANSIT ROUTES

| ROUTE ID | ROUTE NAME | LIMITS |
|---|---|---|
| Route 10 | Anthony/Canutillo | Westside Terminal-Franklin/Doniphan |
| Route 20 | Montana Vista | Eastside Terminal-Deerfield/Greg |
| Route 30 | Horizon | Alameda/Zaragoza-Kentwood/Agua Clara |
| Route 40 | Fabens/Tornillo | Alameda/Zaragoza-O.T. Smith Wenchos |
| Route 50 | Mission Trail | Mission Valley Terminal-San Elizario Presidio |
| Route 84 | EPCC Mission del Paso | Alameda/Zaragoza-Socorro/San Antonio |

## SOUTH CENTRAL REGIONAL TRANSIT DISTRICT (SCRTD)

The SCRTD was created in 2006 and provides transportation between rural areas, small unincorporated communities, and municipalities throughout its service area. The SCRTD primarily operates in Doña Ana County with limited service in Sierra County and connections to Otero and El Paso Counties. Service connects with Sun Metro service via the Purple Line at the Westside Transfer Center. At this location, transit riders can access 13 different Sun Metro routes, including the premier Mesa Brio Line, providing connections to Downtown El Paso and the eastside transit facilities. The Purple Flex Route (see Figure 3.10) is a 5310-grant funded service utilizing one 22-foot 14 passenger van to provide flex service. This route recently released new schedules with fixed bus stops and scheduled passing times in addition to providing route deviations upon customer request. Ridership has grown steadily since service started in 2016.

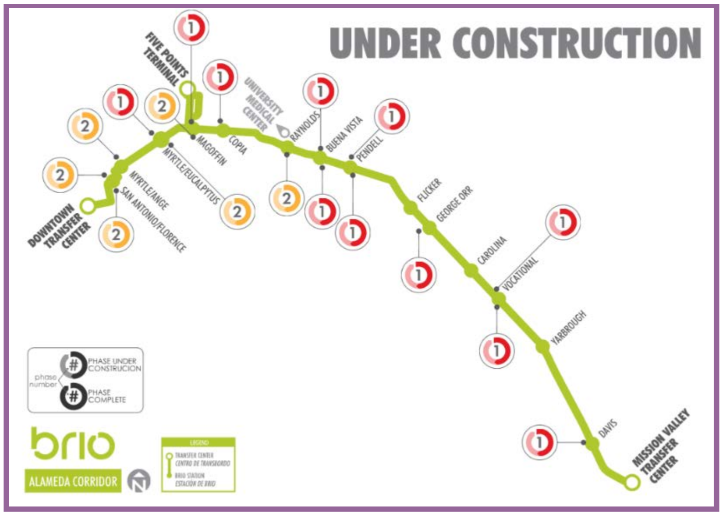
FIGURE 3.10: SCRTD PURPLE ROUTE


# CURRENT INITIATIVES/PLANNING EFFORTS

## THE BRIO

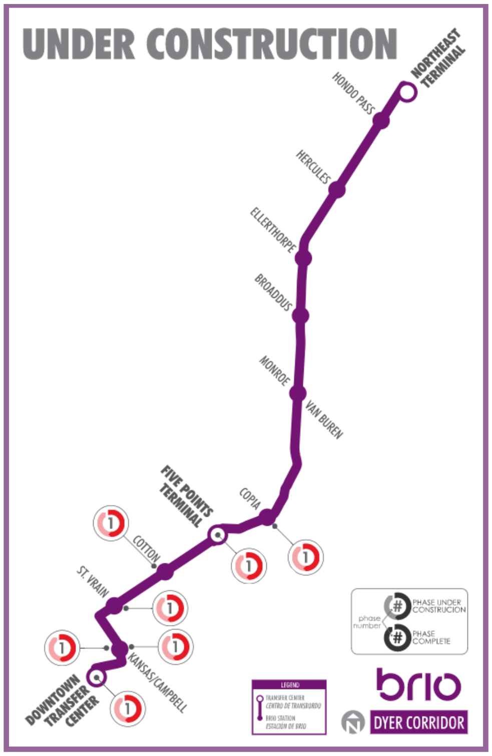
Sun Metro plans to expand and improve the Brio network to create a complete and connected rapid transit system. There will be four Brio corridors in total. The next two Brio corridors, Alameda (see Figure 3.5) and Dyer (see Figure 3.6), are now under construction. The Alameda Corridor will be approximately 14.5 miles long and will begin at the Downtown Transfer Center and end at the Mission Valley Transfer Center serving 29 stations along the corridor including the Five Points Terminal. The Alameda Corridor is expected to be operational in mid-2018.

FIGURE 3.5: ALAMEDA BRIO BRT



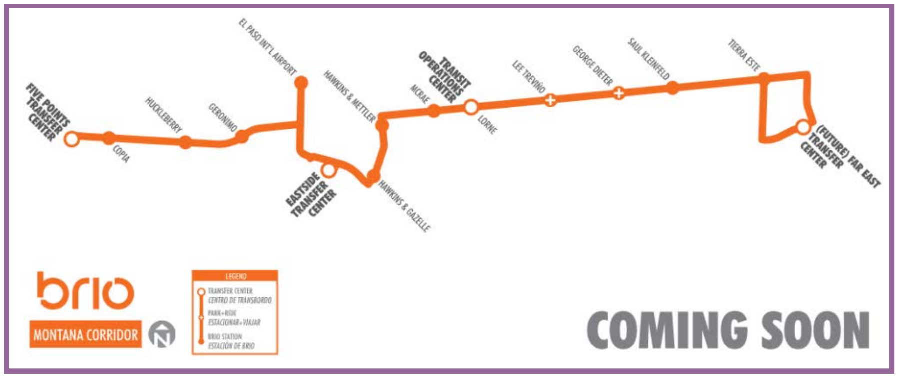

The Dyer Corridor will be approximately 10.2 miles long and is expected to be operational in late 2018. It will begin at the Downtown Transfer Center and end at the Northeast Transfer Center, serving 22 stations along the corridor including the Five Points Terminal.

FIGURE 3.6: DYER BRIO BRT




The Montana Corridor (Figure 3.7) will be the fourth Brio corridor and is in the planning phase The Montana Corridor will be approximately 16.8 miles long, beginning at the Five Points Terminal and ending at the planned Far East Transfer Center. It will serve 25 stations along the corridor including the Eastside Terminal and the Transit Operations Center. Operations are expected to begin in late 2019.

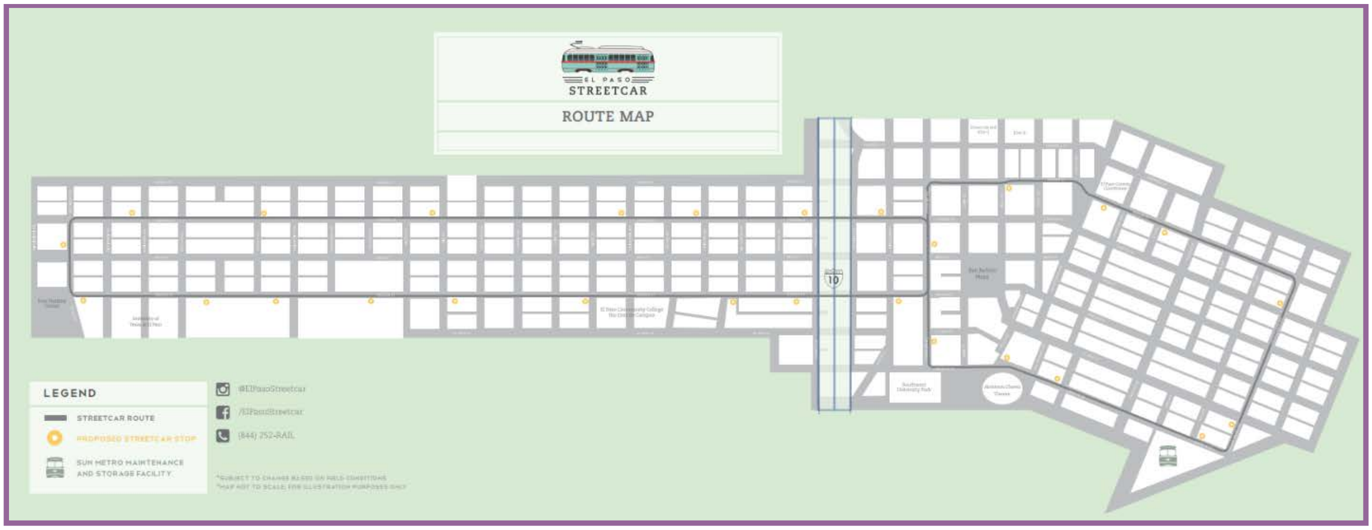
FIGURE 3.7: MONTANA BRIO BRT




## STREETCAR

The El Paso Streetcar Project (Figure 3.8) will be a 4.8-mile route with 27 stations that will operate in two loops, one in the downtown and one in the uptown that connect along Franklin Avenue. The route will connect the international bridges, retail areas, government buildings, convention center, and downtown ballpark with the medical center, University of Texas at El Paso and several historic neighborhoods. Construction is currently underway and the project will include utility relocation, a new maintenance and storage facility, sidewalk repairs, complete street reconstruction, and resurfacing work on other streets.

FIGURE 3.8: EL PASO STREETCAR CONCEPT MAP




## NORTHGATE TRANSFER CENTER

The Northgate Transfer Center recently opened and is one of the first transit centers in the region that is part of a transit-oriented development built around a bus rapid transit system. This center will be the anchor of the Dyer Brio line on its farthest extent and will include a park-and-ride garage, multiple shelters, enclosed waiting and ticketing areas, electronic on-street message boards, ticketing and information offices, bike racks, and a landscaped pedestrian plaza.

FIGURE 3.9: NORTHGATE TRANSFER CENTER


## TRANSIT GAP ANALYSIS

To understand how well the existing and planned transit system serves the El Paso region, Destino 2045 uses a GIS-based, data-driven analysis that compares existing transit supply to one measure of potential transit demand – described later in this section - to identify service gaps throughout the region. This analysis can assist the MPO and its planning partners in identifying projects or future studies for inclusion in the MTP.

### TRANSIT DEMAND

Demand for transit, as with most forms of transportation, is primarily driven by concentrations of people and jobs throughout the region. Destino 2045 explored where concentrations of those choosing transit for commute trips are currently distributed as well as areas where additional population and employment growth is expected to be concentrated to 2045 to gain high-level, qualitative understanding of where transit demand is currently highest and where additional services may be needed in the future. The demand discussion concludes with a quantitative analysis of where populations with limited access to or ability to operate motor vehicles are concentrated throughout the region, which becomes the “demand input” for the gap analysis described later in this section.

#### *Transit Mode Share*

Mode share refers to the type of transportation mode that an individual may chose for each trip – including single-occupant vehicle (SOV), high-occupant vehicle (HOV), bicycle, walking, and transit. The El Paso Metropolitan Planning Organization (MPO) 2045 Travel Demand Model produces estimates of mode shares for many trip purposes for both 2012 and 2045, using travel surveys and observed trends to inform the calculation. The following maps (Figures 3.11 and 3.12 ) illustrate the model estimated concentrations of home-based work (i.e. commute) transit trips by origin and destination Traffic Analysis Zone (TAZ) for both 2012 and 2045. These maps provide some context to how existing and future transit demand is distributed throughout the area. Higher concentrations of transit trips can be seen originating in central East El Paso, the Mission Valley (near Alameda Ave), north El Paso (near Dyer St) and some parts of the westside, primarily near the existing Brio route along Mesa. Popular transit trip destinations include Downtown El Paso, UTEP, The I-10 East corridor, and Fort Bliss.

Across the region, transit trips are forecast to comprise 1.2% of all commute trips by 2045, which is roughly the same percentage as observed in 2012.

FIGURE 3.11: 2012 TRANSIT COMMUTE TRIPS

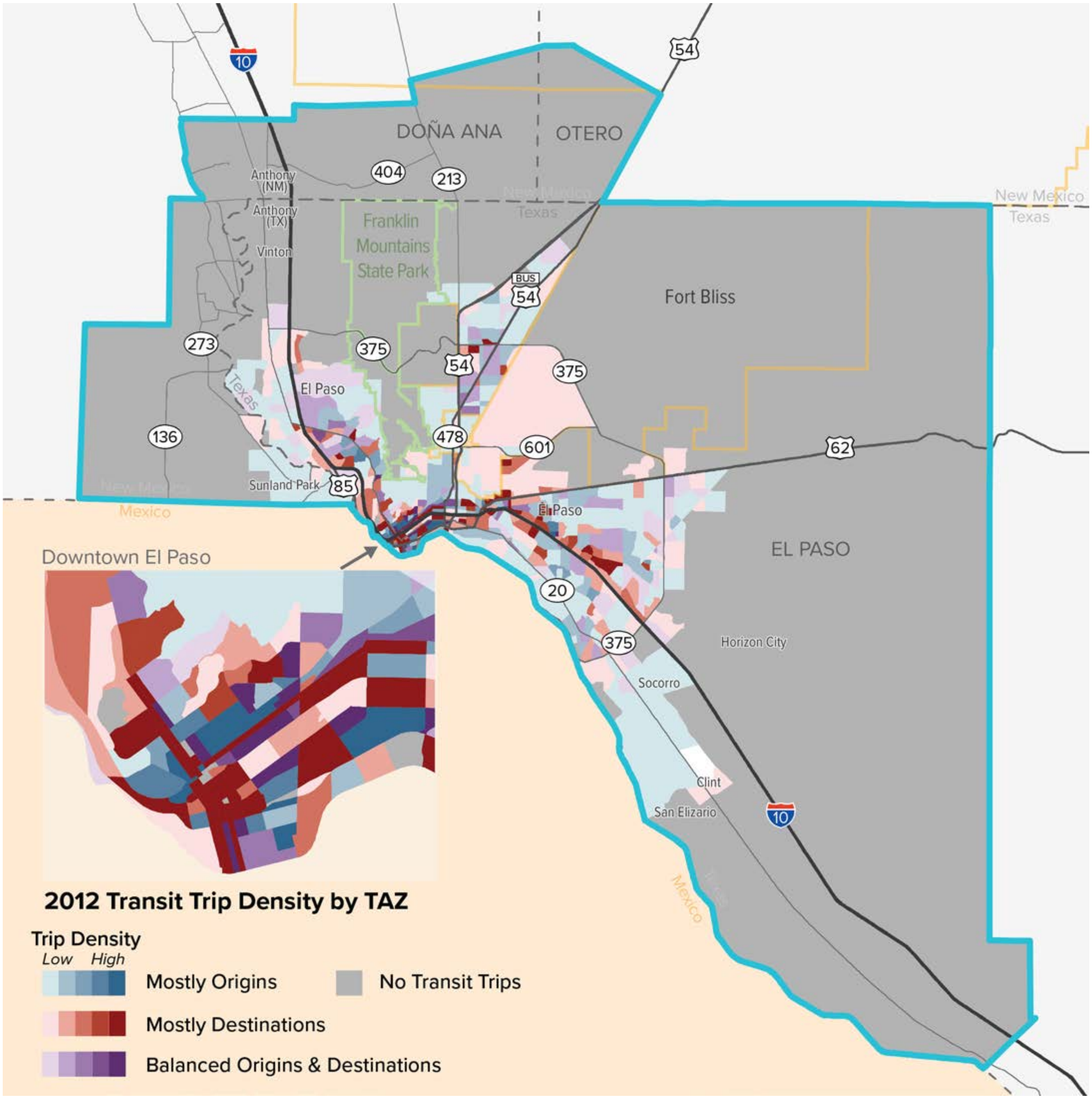
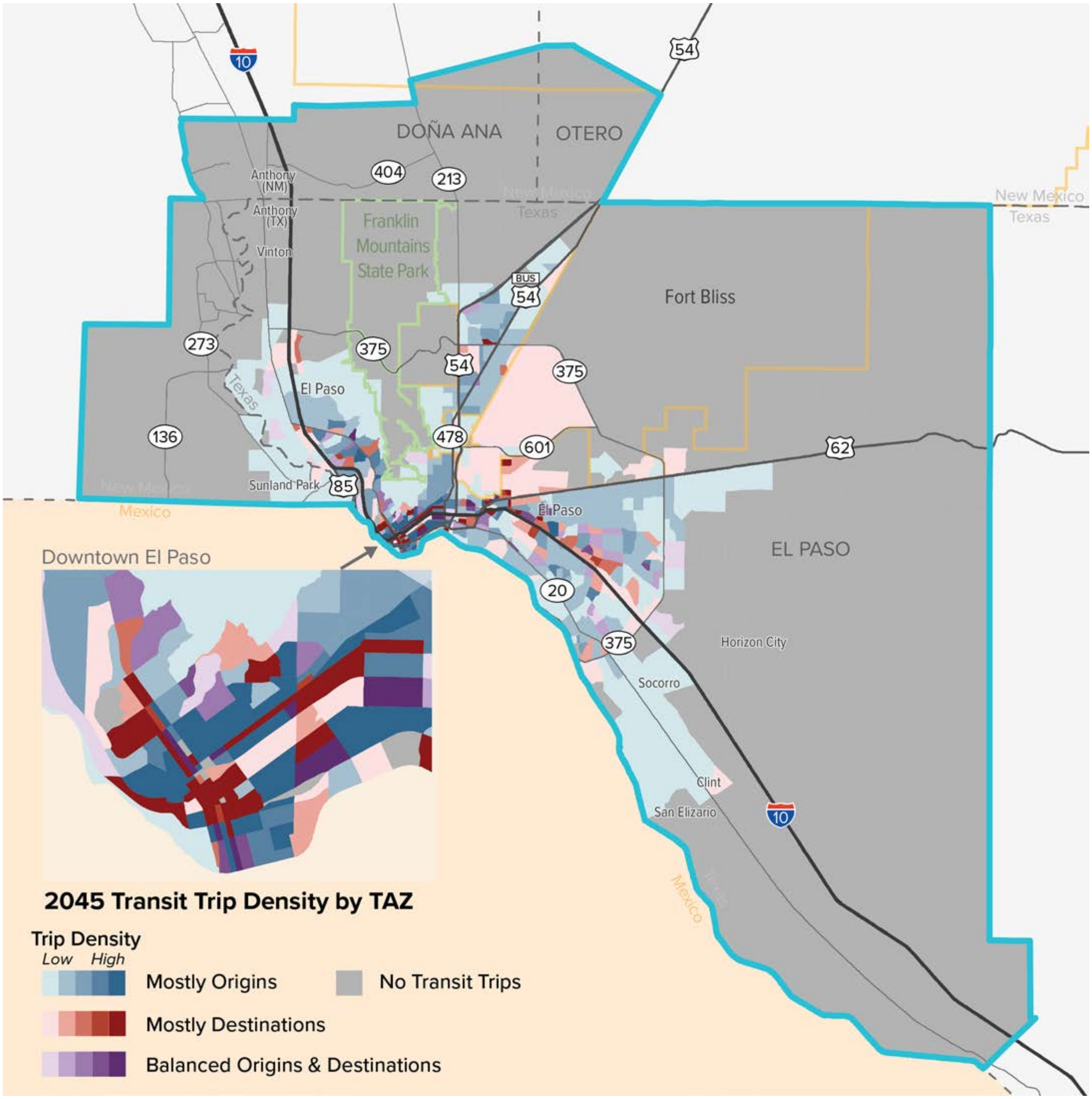


FIGURE 3.12: 2045 TRANSIT COMMUTE TRIPS



### *Future Growth Areas*

Growth in the El Paso region is expected to introduce additional demand for transit near the edges of the existing urbanized area. The low-density, disconnected nature of this type of growth presents challenges for transit providers extending system coverage without jeopardizing service quality in other parts the network. The MPO, transit providers, and planning partners responsible for land-use planning in these areas should pay special attention to regional growth patterns and their effects on transit service delivery as the region continues to expand through 2045.

FIGURE 3.13: TRANSIT COVERAGE AND FUTURE POPULATION GROWTH

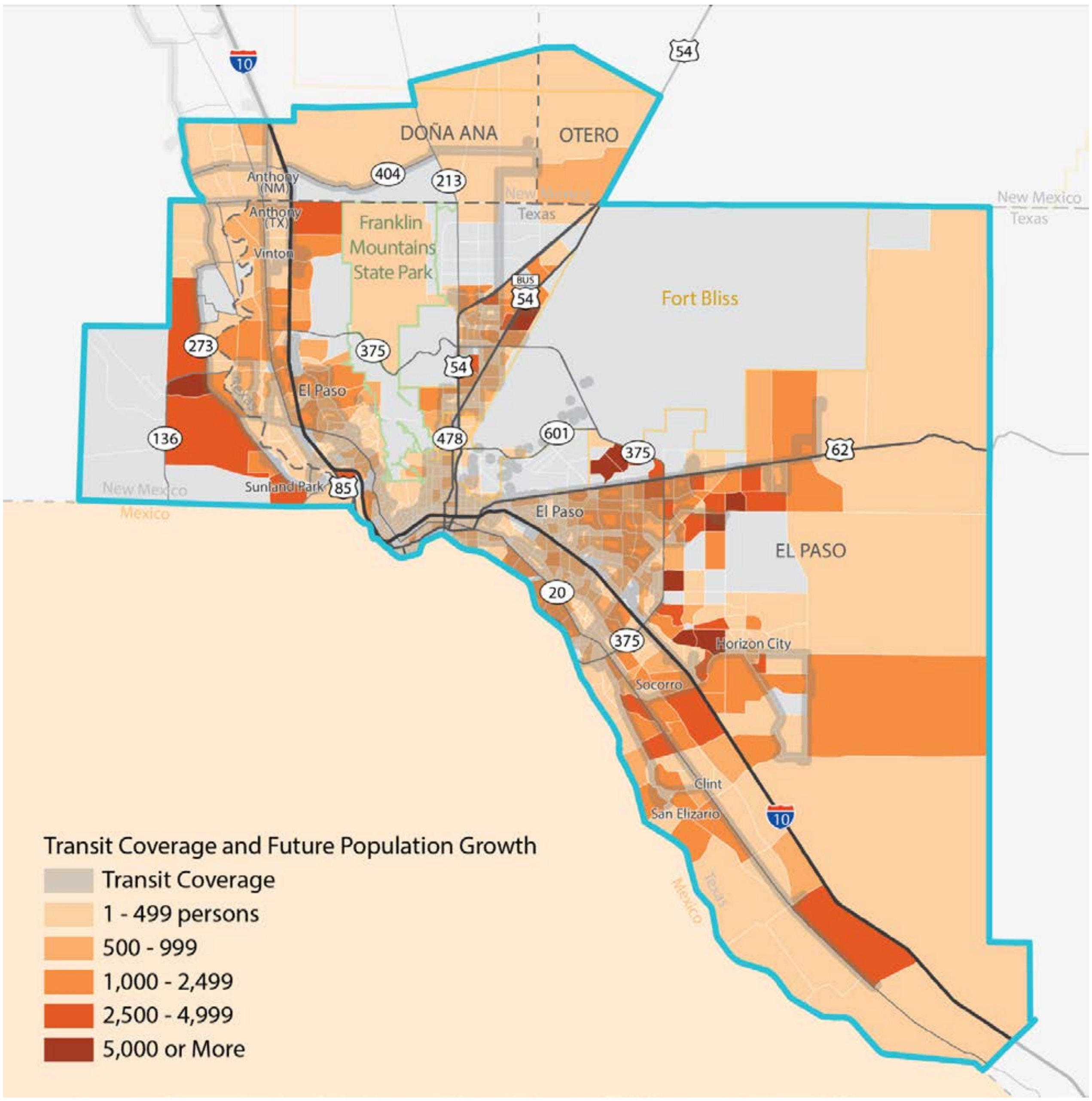


FIGURE 3.14: TRANSIT COVERAGE AND FUTURE EMPLOYMENT GROWTH

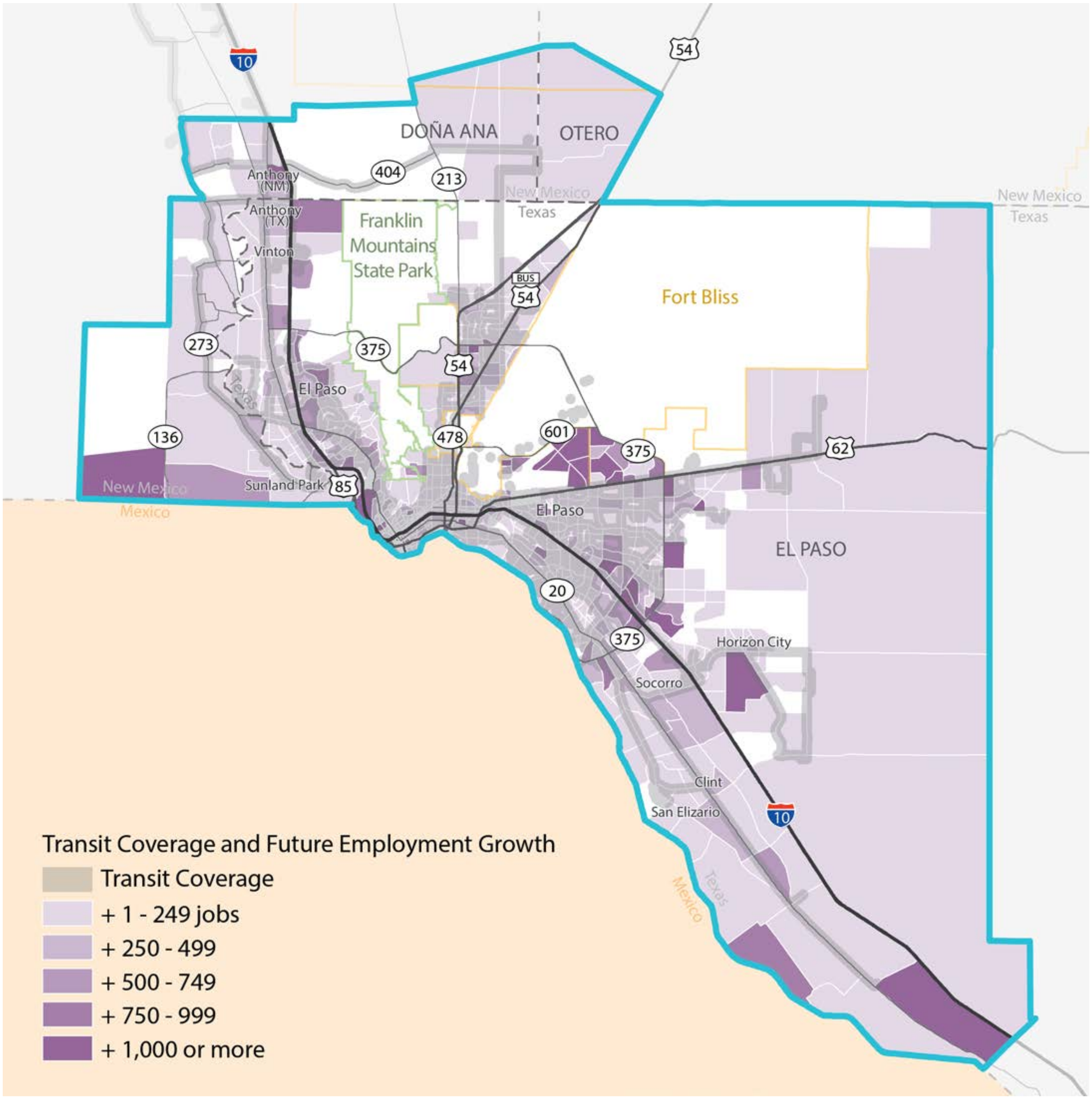
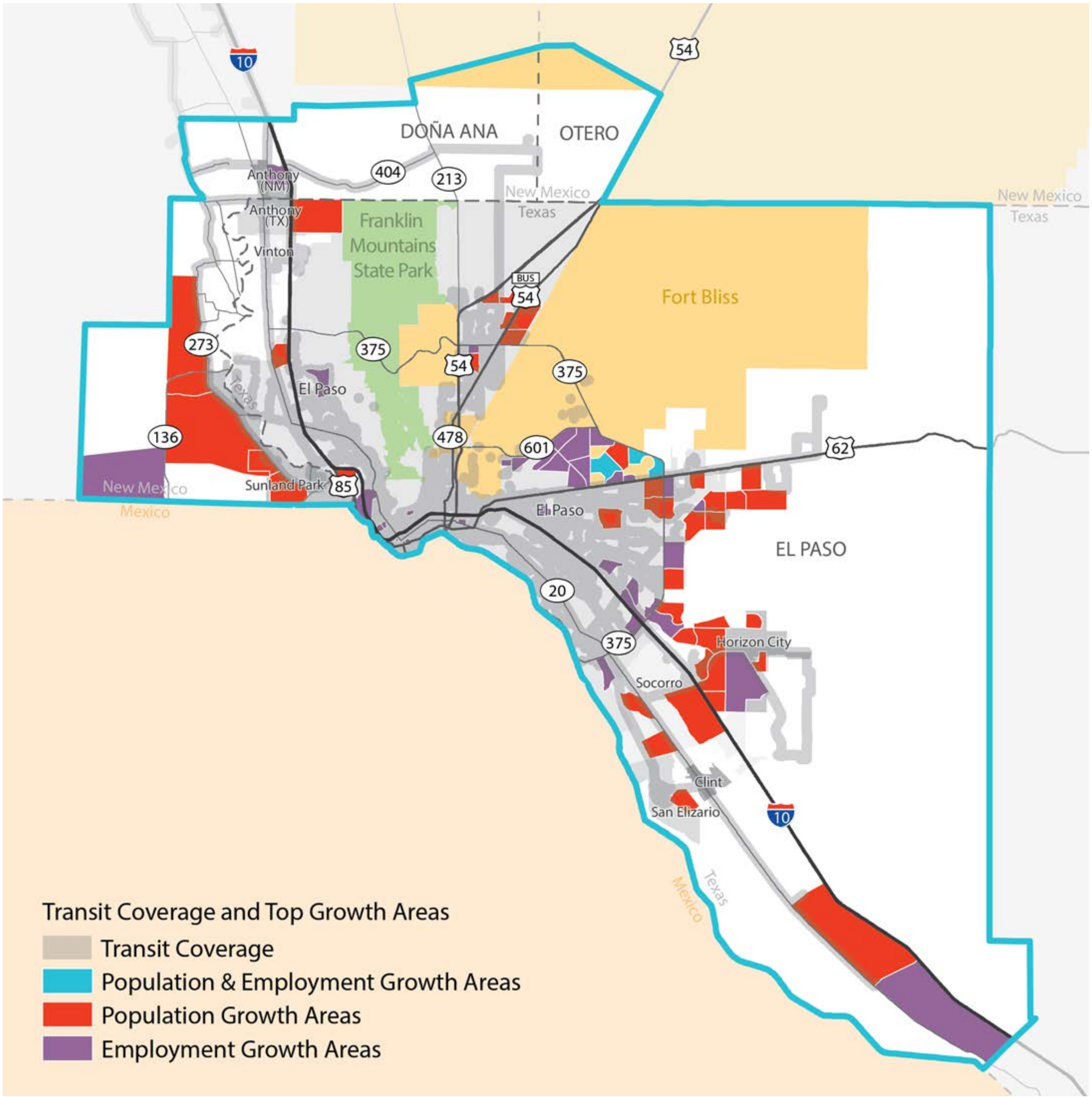


FIGURE 3.15: TRANSIT COVERAGE AND HIGH GROWTH AREAS



### *Transit Dependent Population*

For purposes of the gap analysis, transit demand was defined by the amount of transit dependent population (TDP) of an area. The transit dependent population is calculated at the census block-group level based on a formula from the U.S. Department of Transportation (USDOT). A modified version of this formula from the Capital Area Transit Authority in Lansing, Michigan was used in this analysis to identify areas where there are large concentrations of driving-age people that have limited access to vehicles. American Community Survey (ACS) data was used to calculate the transit dependent population. The formula is as follows:

- Household Drivers = (population aged 18 and over) - (persons living in group quarters)
- Transit-Dependent Household Population = (household drivers) – (vehicles available)
- Transit-Dependent Population = (transit-dependent household population) + (population aged 10-17) + (non-institutionalized population living in group quarters)

It should be noted that while the driving age is 16 and someone could technically be driving at that age, the cutoff age of 18 was used for this analysis. This was done because ACS data does not allow for using the age 16 as a breaking point. It is possible – and not completely uncommon – for people between the ages of 16-18 to own a car, but car availability will be lower for this group than for other age groups. It should also be noted that 2015 ACS data does not distinguish between institutionalized and non-institutionalized populations living in group quarters. This means that the non-institutionalized population living in group quarters was estimated by multiplying the percentage of non-institutionalized populations living in group quarters from the 2010 Census by the 2015 total population living in group quarters. This estimate operates under the assumption that the relative proportion of institutionalized to non-institutionalized populations will not change much within each block group between 2010 and 2015.

Once the transit-dependent population is calculated, it is measured in both dependent population density and dependent population percentage per block group. Each measure is given a score from 1 to 5 based on the following breakpoints in Table 3.2:

TABLE 3.2: TRANSIT DEPENDENT POPULATION (TDP) DENSITY AND PERCENTAGE MEASURE BREAKS

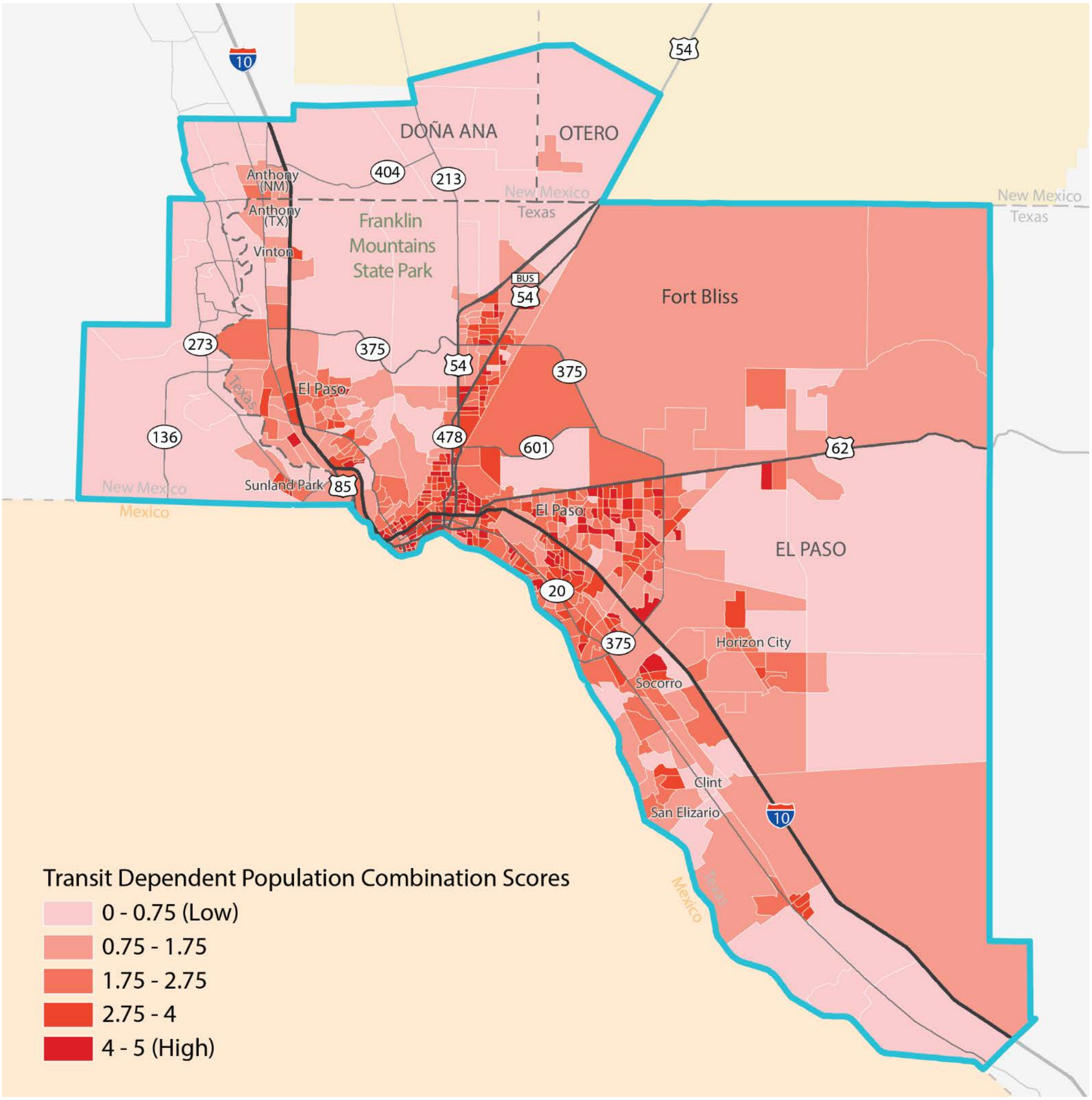
| SCORE | DENSITY (PER ACRE) | PERCENTAGE OF BLOCK GROUP |
|---|---|---|
| 0 | Less than 0.2 TDP Per Acre | Less than 10% TDP |
| 1 | 0.2 – 1 TDP Per Acre | 10% - 20% TDP |
| 2 | 1 – 2 TDP Per Acre | 20% - 30% TDP |
| 3 | 2 – 3 TDP Per Acre | 30% - 40% TDP |
| 4 | 3 – 5 TDP Per Acre | 40% - 50% TDP |
| 5 | More than 5 TDP Per Acre | More than 50% TDP |

Both the density and percentage scores were combined to create a transit dependent population combination score, with more weight (75%) given to density than to percentage (25%). The formula used to produce the final analysis is listed below:

Combined Score = (.75 * TDP_Dens_Score) + (.25 * TDP_Pct_Score)

Figure 3.16 maps the resulting TDP concentration by both the density and percentage of transit dependent people at the block group level of the El Paso MPO Region. Moreover, the formula adjusts for the fact that the block groups vary in size, enabling the identification of areas with high concentrations of citizens who do not have access to a car. The final scale ranges from 0 to 5, with values closer to 5 representing high concentrations of transit dependent populations, with lower concentrations reflected in areas where the combined score is closer to 0.

FIGURE 3.16: POTENTIAL TRANSIT DEMAND (TRANSIT DEPENDENT POPULATION)



## SUPPLY

Transit supply is quantified by measuring various characteristics of the region's transit system. This includes characteristics such as frequency or how often the bus comes, hours and days of operation, and type of service such as local, commuter or Brio. Each transit route is assigned a score from 1-5 to quantify the quality of the service. A score of 1 indicates low-quality service and a score of 5 indicates high-quality service. A route may receive a score of 1 if it only operates a few days per week and has low frequency, while a different route may receive a score of 5 if it operates every day of the week and has relatively short headways. Higher-quality services, such as BRT or rail transit receive a higher score because of the premium amenities and the high visibility factor associated with their service. Visibility refers to the fact that these types of services are more reliable because of the investments Sun Metro made in the Brio network such as enhanced stations, signal priority, and other capital improvements.

Buffers were created around the transit stops along each line and the transit supply scores were assigned to these buffers. Quarter-mile buffers were placed around rural transit stops and regular, fixed-route bus services. Half-mile buffers were placed around the Brio transit stops. These distances were chosen because the average person is generally willing to walk five minutes – or a quarter mile – to access transit. People will typically be more willing to walk further for higher-quality transit services, such as streetcars or bus rapid transit.

### *Transit Corridor Frequencies*

A critical element of transit supply is how frequently transit services arrive along a street. The more frequent transit is, the easier it is for users to rely on transit to reach destinations due to the minimal wait time and less need to “plan” their trip. Figures 3.17, 3.18, and 3.19 show the frequency along the combined transit network for weekdays, Saturdays, and Sundays.

FIGURE 3.17: WEEKDAY TRANSIT FREQUENCY

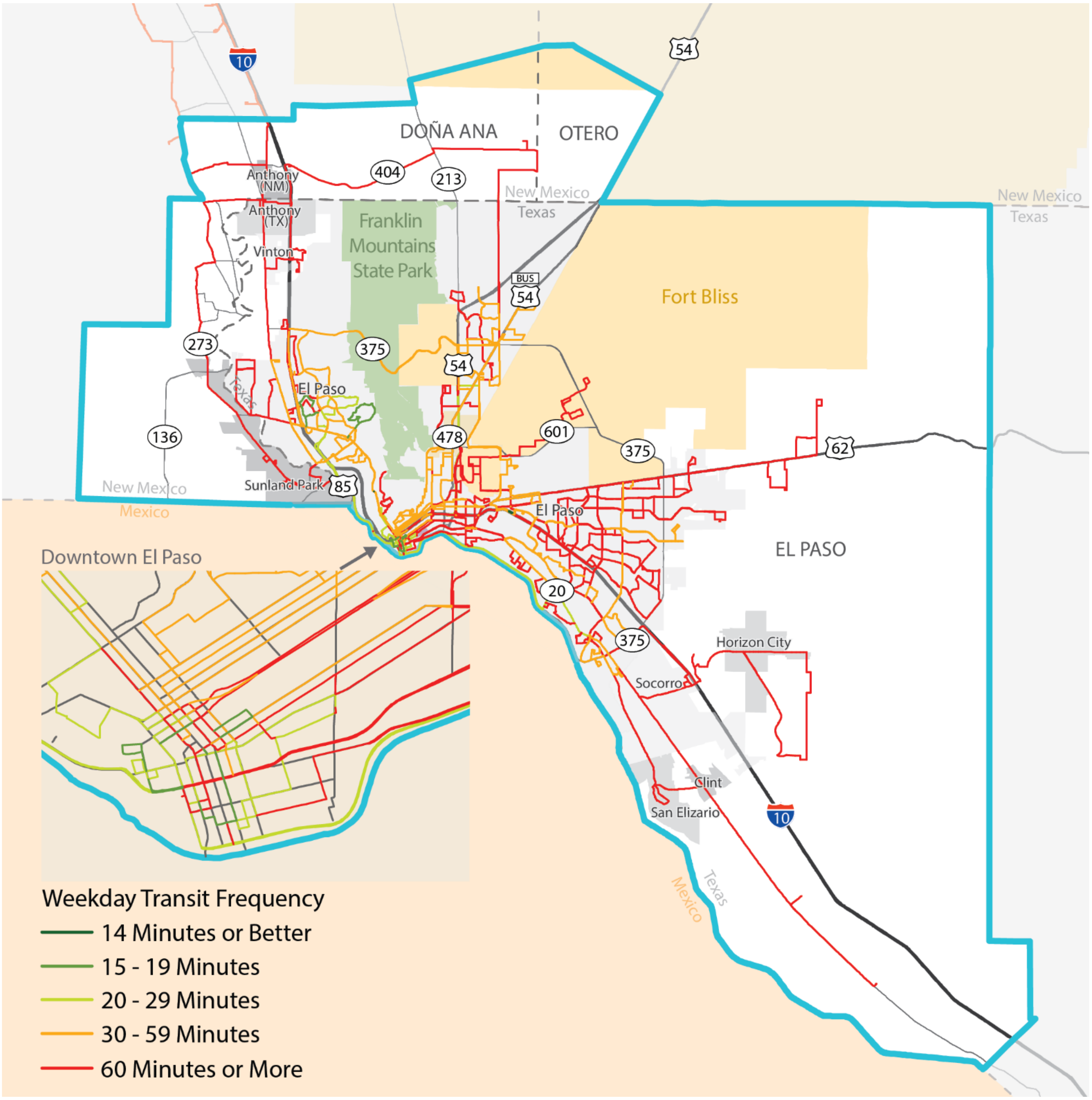


FIGURE 3.18: SATURDAY TRANSIT FREQUENCY

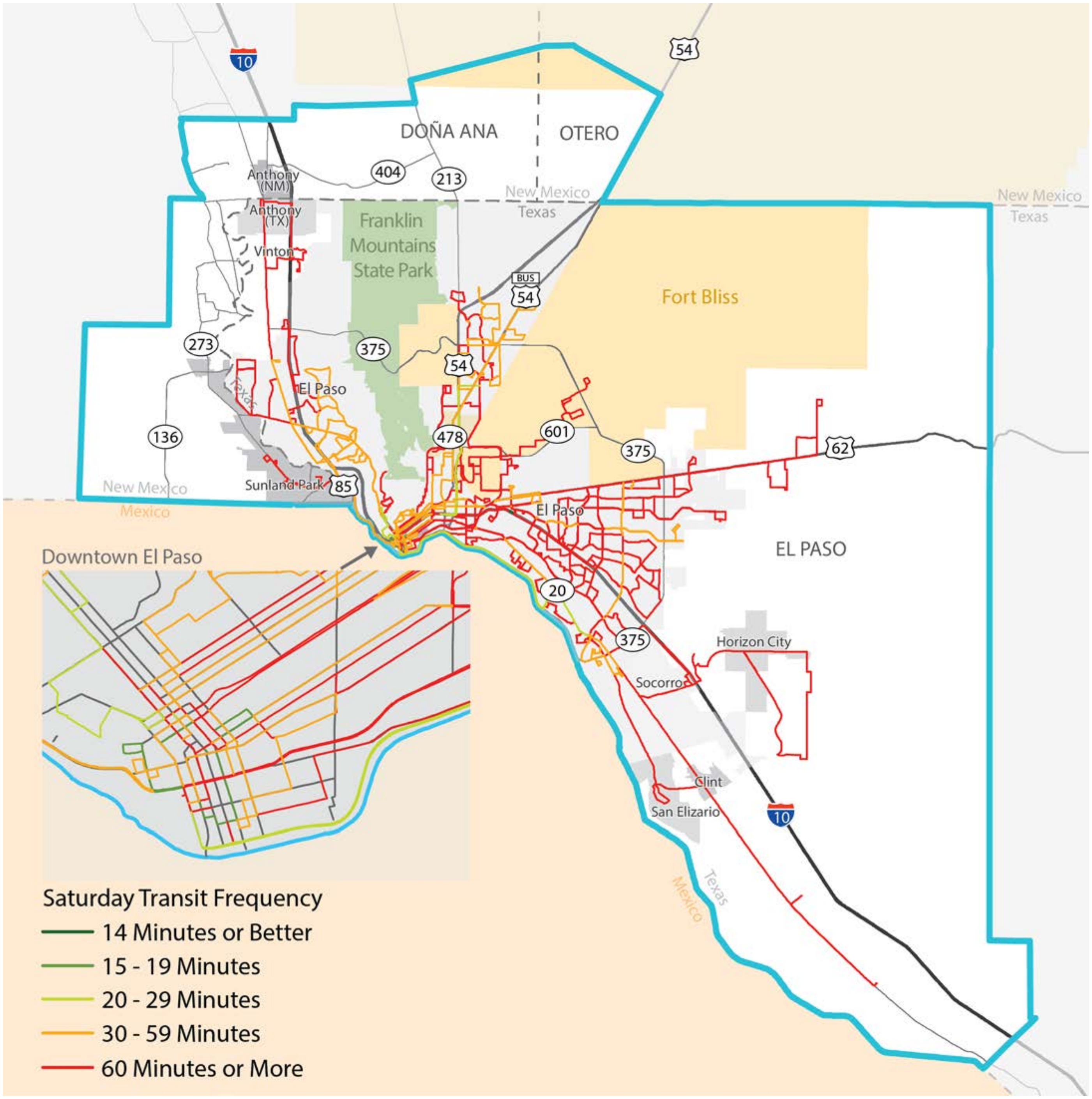
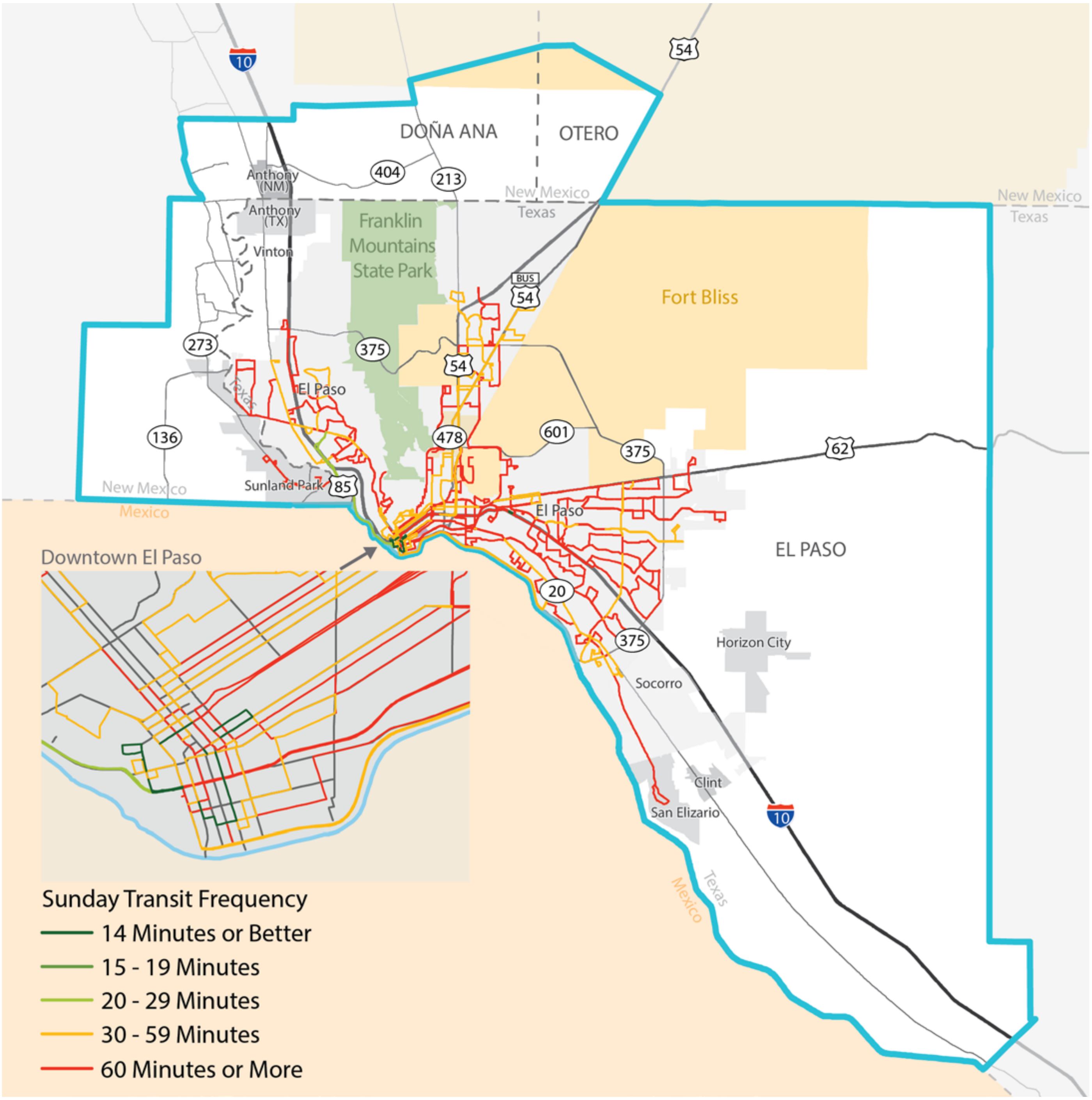


FIGURE 3.19: SUNDAY TRANSIT FREQUENCY



These three maps (Figures 3.17– 3.19) show that transit frequency throughout most of the system is much lower on the weekends than during the week. This is partly because some routes just don't run as often, and other routes don't run at all during the weekend.

The frequency maps also highlight the abundance of relatively infrequent services in east El Paso. While many bus lines go through this area, most of them run infrequently and many of them rarely operate along the same corridors as other routes.

### *Existing Network Coverage*

Table 3.3 shows the breakdown of 2012 population and employment within the transit service area, broken down by maximum score. This shows the breakdown of population and employment by the score of available transit services. A neighborhood might have access to multiple transit routes of varying scores, but the population and jobs are only counted within the highest ranked transit service. Figure 3.20 on the following page displays the region's transit existing transit supply by maximum score.

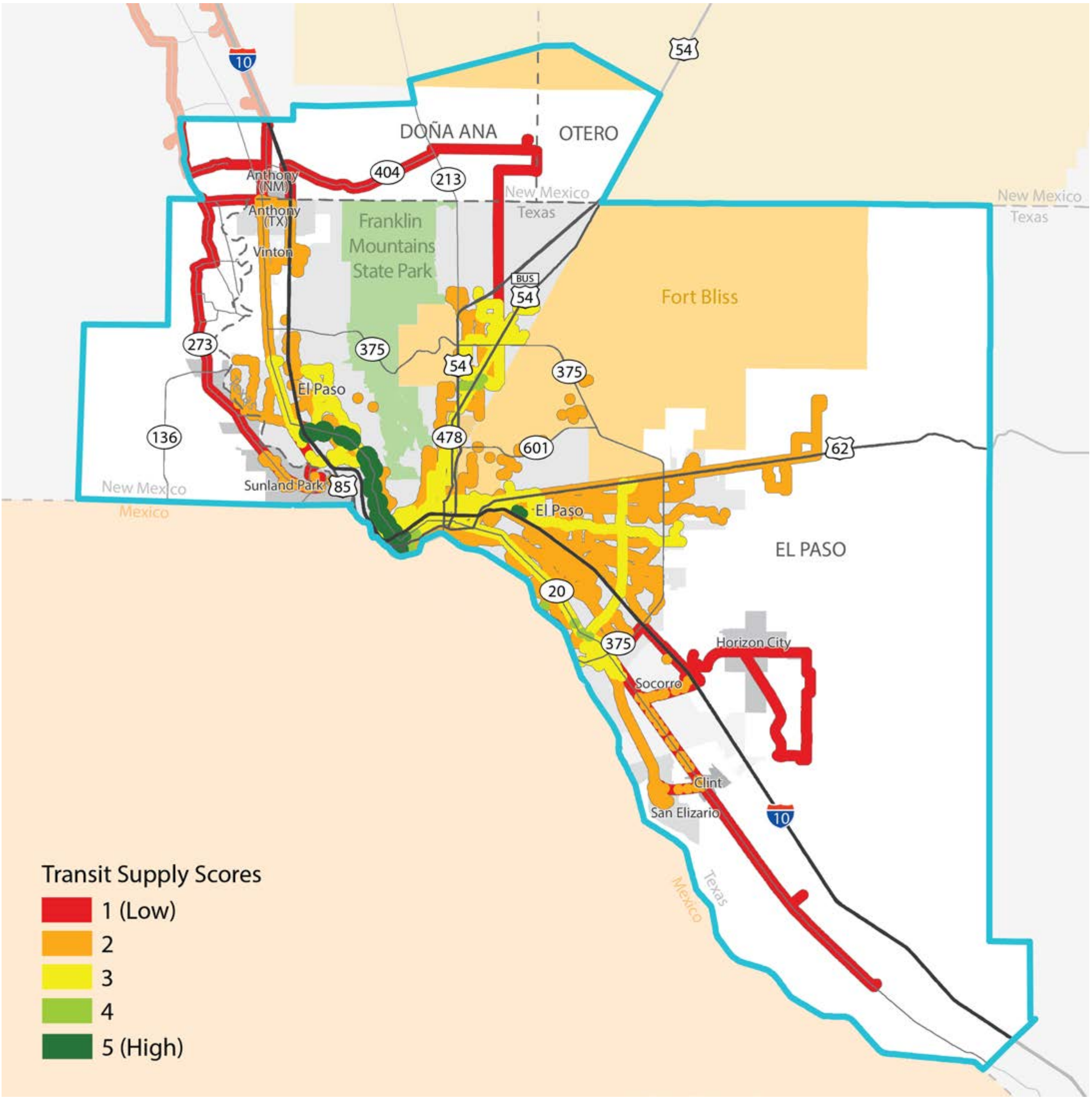
The supply analysis reveals that about 51% of the estimated regional population is either within one quarter mile of a rural or regular fixed-route bus service, or within one half mile of Brio service. Table 3.3 shows that only 1% of the 453,826 people who live within the transit coverage area have access to a transit service with a score of 1 as the lowest-quality available service, while 8% of the population that lives in the coverage area has access to a transit service with a score of 5 (best service). Most of the population that lives in the transit coverage area has access to a transit service with a score of 2.

TABLE 3.3: 2012 POPULATION AND EMPLOYMENT BY MAXIMUM ROUTE SCORES IN EXISTING TRANSIT NETWORK

| MAXIMUM SERVICE SCORE | POPULATION COVERED | PERCENT OF REGIONAL POPULATION COVERED | EMPLOYMENT COVERED | PERCENT OF REGIONAL EMPLOYMENT COVERED |
|---|---|---|---|---|
| 0 | 429,034 | 49% | 104,630 | 34% |
| 1 | 8,616 | 1% | 1,388 | 0% |
| 2 | 233,224 | 26% | 83,743 | 27% |
| 3 | 166,899 | 19% | 74,339 | 24% |
| 4 | 8,164 | 1% | 1,187 | 0% |
| 5 | 36,923 | 4% | 41,944 | 14% |
| Total | 882,860 | 100% | 307,231 | 100% |

Table 3.3 shows a similar situation for jobs within the transit service area. While a larger percentage of the region's total jobs are within the transit service area, only 14% have access to a transit service with a maximum score of 5, and the majority have access to transit with a score of 2 or 3.

FIGURE 3.20: TRANSIT SUPPLY (EXISTING TRANSIT NETWORK)



### *Future Network Coverage*

The future transit network in El Paso includes all the transit routes that are currently operating, as well as the planned Brio routes and the downtown streetcar. The planned services all received a score of 5, and half mile buffers were created around the future transit stops as well. The addition of new high-quality transit services in El Paso means that an even larger proportion of the population will be within an area serviced by transit with a score of 5, despite expected population and employment growth outside of the current service buffers.

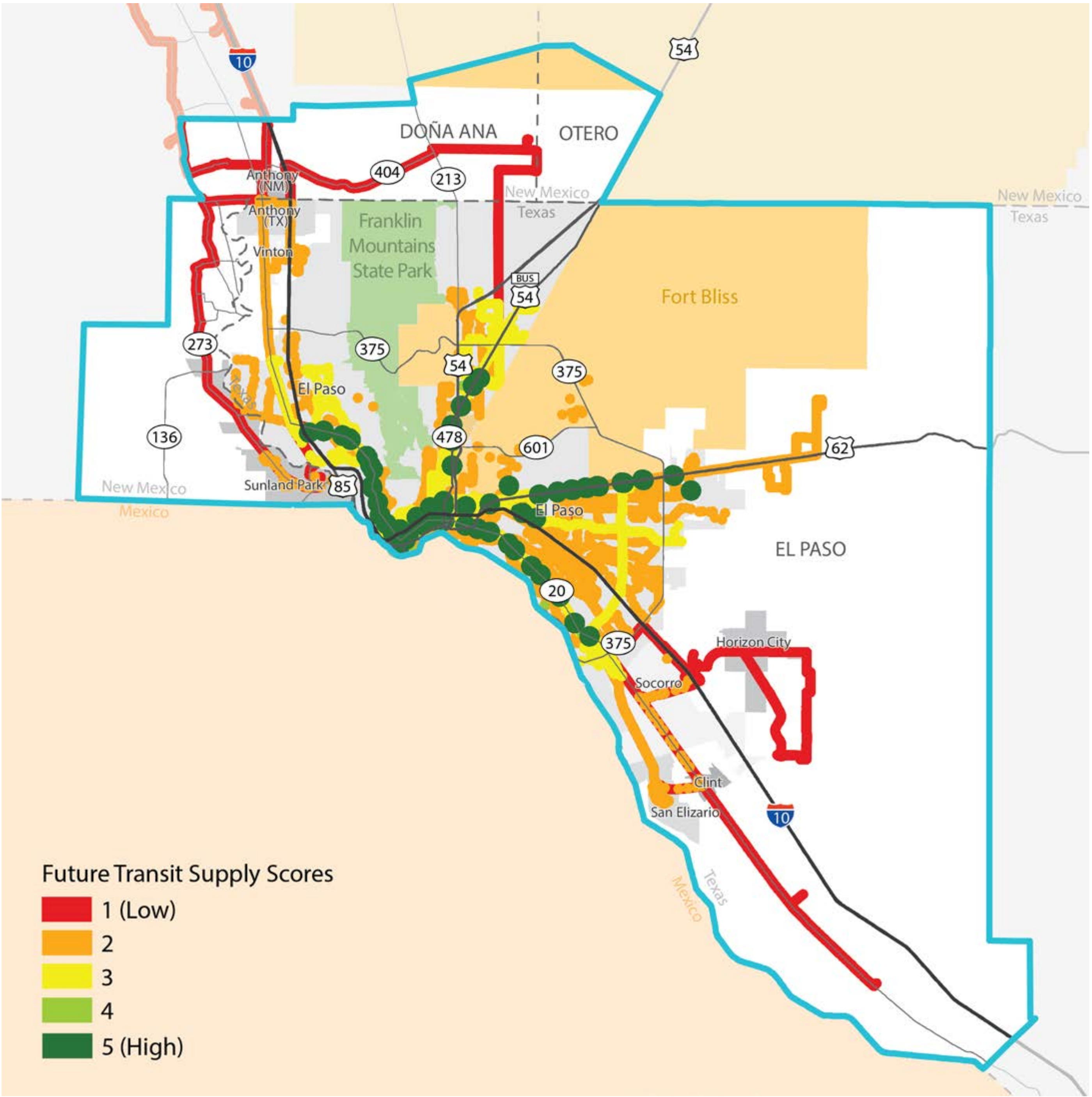
Table 3.4 shows the breakdown of 2045 population and employment within the future transit network service area. The most notable difference between the existing transit network service area and the future network service area is the addition of three new Brio routes and two streetcar circulators. This means that an even greater percentage of the population will be near high-quality transit services. In the existing transportation network, only 4% percent of the region's population live within a half mile of a high-quality transit route. The addition of new routes means that in the future, about 15% of the region's population will live within a half mile of high-quality transit.

The region's employment will also experience increased coverage in the future transit network service area due to the addition of new routes. Approximately 65% of the region's jobs are within the existing network service area. This percentage increases in the future service area to 78%, but a much more significant increase is the proportion of the jobs in the service area will be near high-quality transit. Now, only 21% of the jobs that have access to transit are near a route with a score of 5. This percentage is expected to increase to 40% in the future.

TABLE 3.4: 2045 POPULATION AND EMPLOYMENT BY MAXIMUM SERVICE SCORES IN FUTURE TRANSIT NETWORK

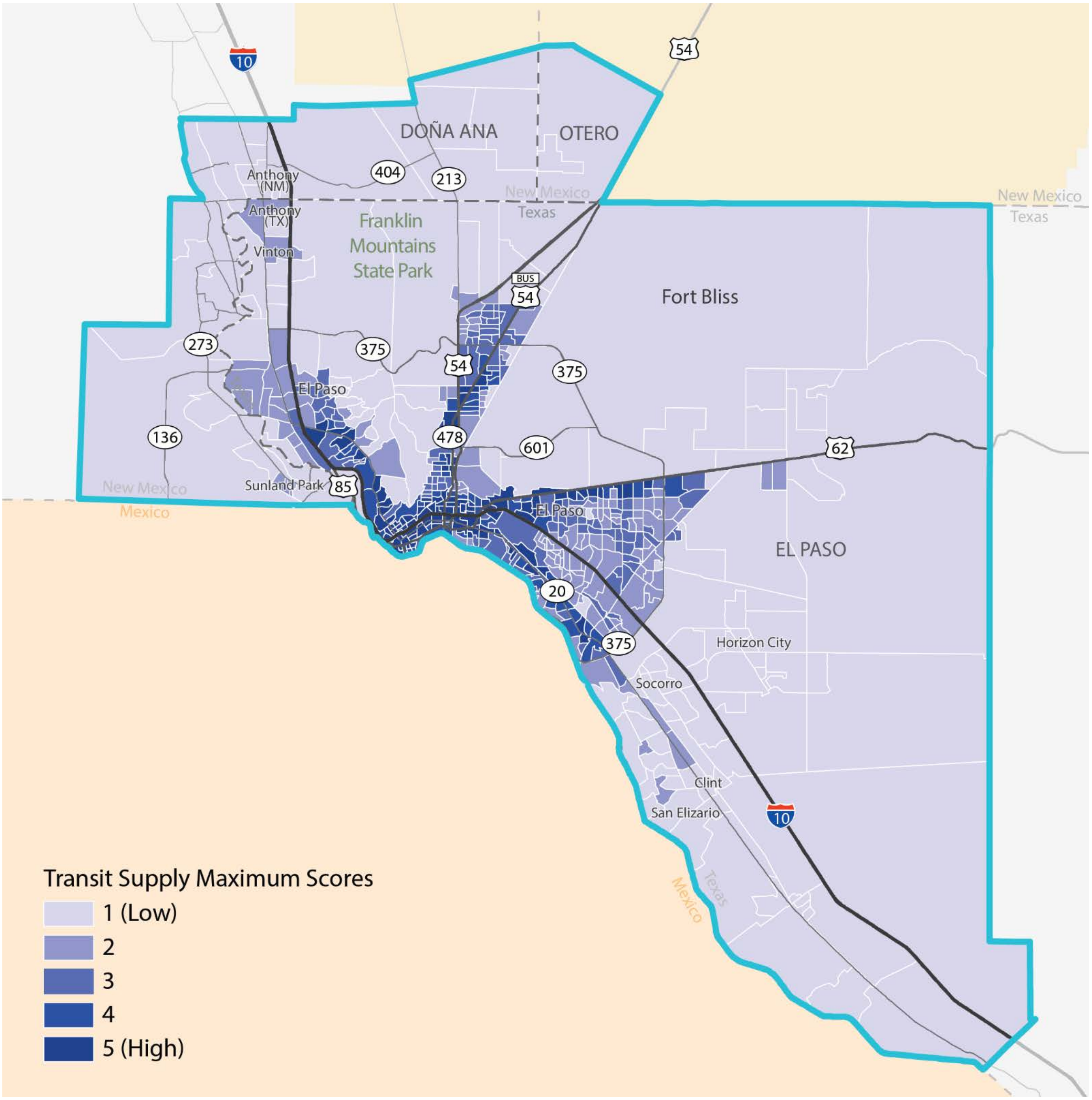
| MAXIMUM SERVICE SCORE | POPULATION COVERED | PERCENT OF TOTAL REGIONAL POPULATION COVERED | EMPLOYMENT COVERED | PERCENT OF TOTAL REGIONAL EMPLOYMENT COVERED |
|---|---|---|---|---|
| 0 | 620,668 | 45% | 102,238 | 22% |
| 1 | 15,114 | 1% | 2,365 | 1% |
| 2 | 305,584 | 22% | 113,354 | 24% |
| 3 | 218,751 | 16% | 102,234 | 22% |
| 4 | 11,635 | 1% | 1,733 | 0% |
| 5 | 201,805 | 15% | 144,905 | 31% |
| Total | 1,373,557 | 100% | 466,829 | 100% |

FIGURE 3.21: TRANSIT SUPPLY (EXISTING + COMMITTED TRANSIT NETWORK)



To facilitate the gap analysis process, the supply scores for the existing and planning route buffers were translated to the block group level. The scores were distributed based on the percentage of the block group covered by each score.

FIGURE 3.22: SUN METRO TRANSIT SUPPLY MAX SCORES



## GAP ANALYSIS

Once the supply and demand analyses were complete and a comparable 1-5 score generated for both supply and demand, the “transit gap” was measured by subtracting the future network supply score from the existing demand score. This analysis highlights the areas where there is likely high demand for transit currently but existing or planned transit service is lacking. Identifying these areas is a way of measuring the effectiveness of the transit system as well as a way of identifying transit needs in the current and future transportation network. This analysis – in conjunction with the overlay of expected growth and potential transit mode share – can help shape the types of transit projects that the MPO and its planning partners can consider for inclusion in the Destino 2045 MTP to help the region meet its long-term goals to enhance sustainability and expand multimodal accessibility as it continues to grow and evolve.

## RESULTS

El Paso has unique geographic characteristics that limit where development can and cannot occur. Mountains, an international border, a military base, and large swathes of undeveloped desert confine both development and transit to a relatively small geographic area. This means that current and planned transit service throughout the region does a fairly good job reaching riders in terms of geographic coverage. However, there are still some gaps in the service area where people who might benefit from transit do not have easy access to transit or could benefit from a higher level of transit service. See Figure 3.23 for a detailed map of the existing network’s transit gap. Besides gaps in service there are also areas where service levels and demand levels may not be matched appropriately. Looking at the supply and demand levels reveals areas in El Paso that could benefit from a comprehensive service evaluation and realignment to better match higher levels of service with areas that have a higher demand or propensity for transit. High priority gaps identified through stakeholder and public outreach as part of the Destino 2045 visioning process – and corroborated through this analysis – include Sunland Park, Central East El Paso, portions of the lower Mission Valley, and Tornillo.

TABLE 3.5: TRANSIT DEPENDENT POPULATION COVERAGE

| ROUTE SCORE | TRANSIT DEPENDENT POPULATION COVERAGE | PERCENT OF TOTAL REGIONAL TDP COVERED BY SCORE |
|---|---|---|
| 0 | 106,002 | 38% |
| 1 | 4,933 | 2% |
| 2 | 85,840 | 31% |
| 3 | 69,488 | 25% |
| 4 | 4,460 | 2% |
| 5 | 10,116 | 4% |
| Total | 280,839 | 100% |

Table 3.5 further breaks down transit demand by attributing TDP population to transit coverage by route score, with 5 representing the highest quality coverage provided and 1 the lowest. Scores were based on performance measures with a capture radius of a quarter-mile. The majority of the region’s TDP falls within transit coverage with route scores of 2 and 3. Overall, the existing and committed transit system covers roughly 62% of the region’s estimated 282,000 transit dependent residents.

FIGURE 3.23: EXISTING + COMMITTED NETWORK TRANSIT GAP ANALYSIS

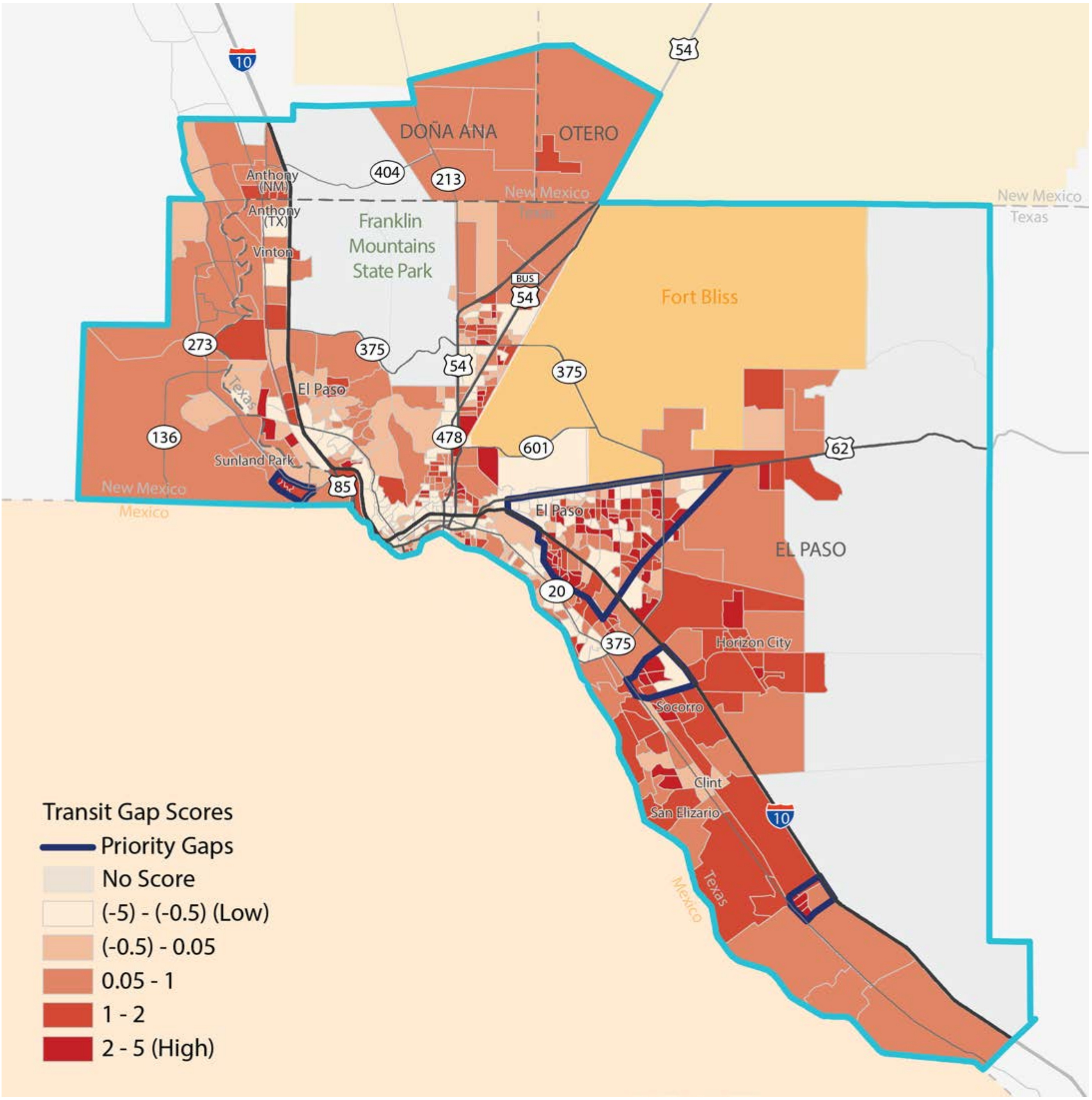
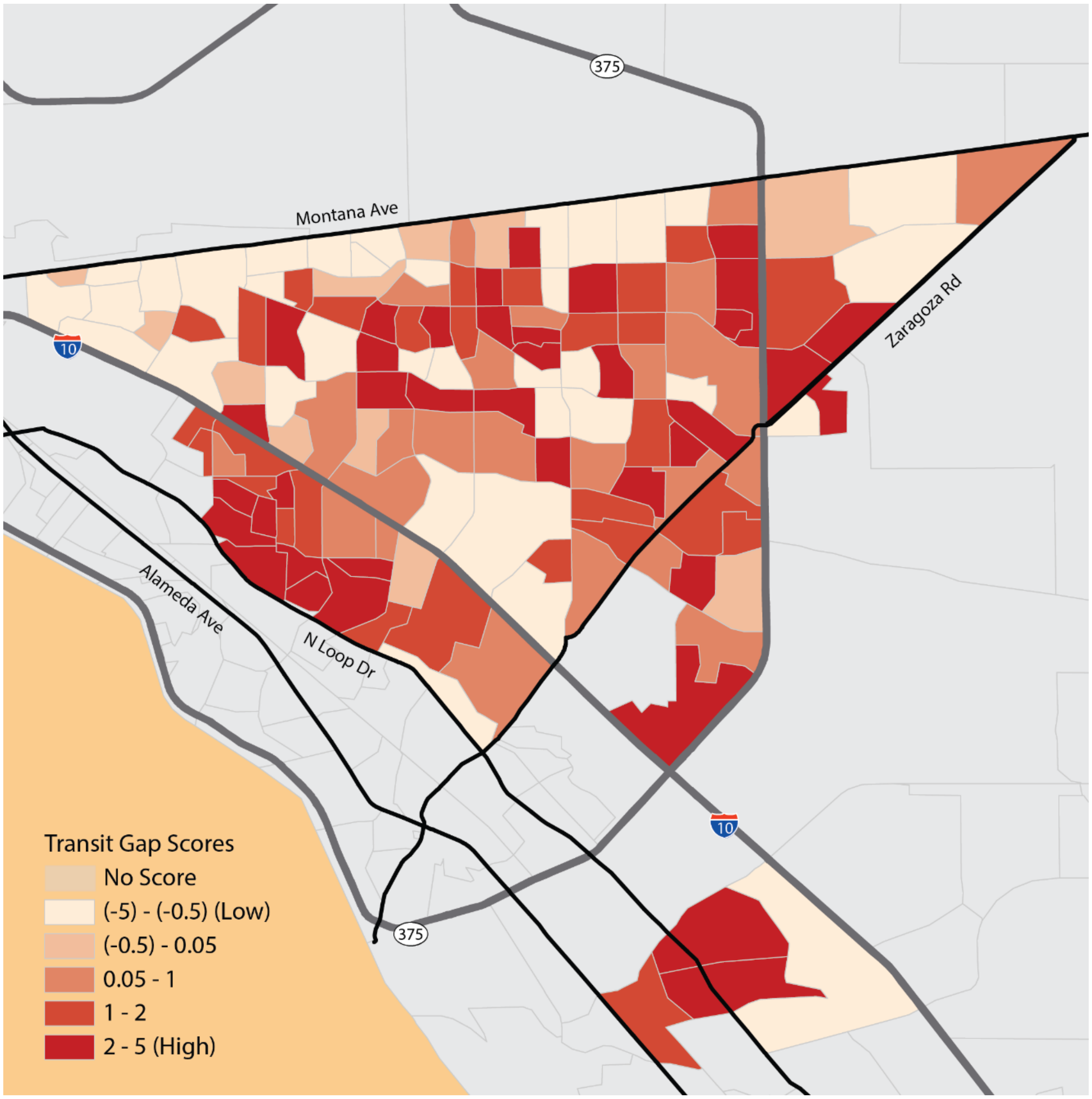


Figure 3.24 reveals the most notable gap in the service region, which is the area in East El Paso where most of the transit service provides good coverage but not the highest level of service. Most of the transit in the area has a low service quality score of two with a few transit lines that have an average service quality score of three. This area contains some of the highest transit demand scores in the region, and could be an ideal location to evaluate how the existing Sun Metro network is structured and how service can be reimagined to improve the experience for existing users while at the same time attracting new riders.

Another gap visible in Figure 3.24 occurs at the neighborhood just southwest of the intersection of N. Loop Drive and N. Moon Road in southeast El Paso. Transit service reaches the streets that surround this neighborhood, but most of the residences are more than half a mile from a transit stop, which is further than people are usually willing to walk to access transit.

FIGURE 3.24: CENTRAL EAST EL PASO AND MISSION VALLEY TRANSIT GAPS



## POINTS OF INTEREST

Key destinations and points of interest were collected and mapped in relation to the El Paso region's transit system. Figure 3.25 illustrates points of interest that lie outside the existing transit system coverage area. Destinations are mapped by type, and certain key destinations are labeled to identify places where further service adjustments could be made to enhance access.

FIGURE 3.25: KEY DESTINATIONS AND POINTS OF INTEREST PART

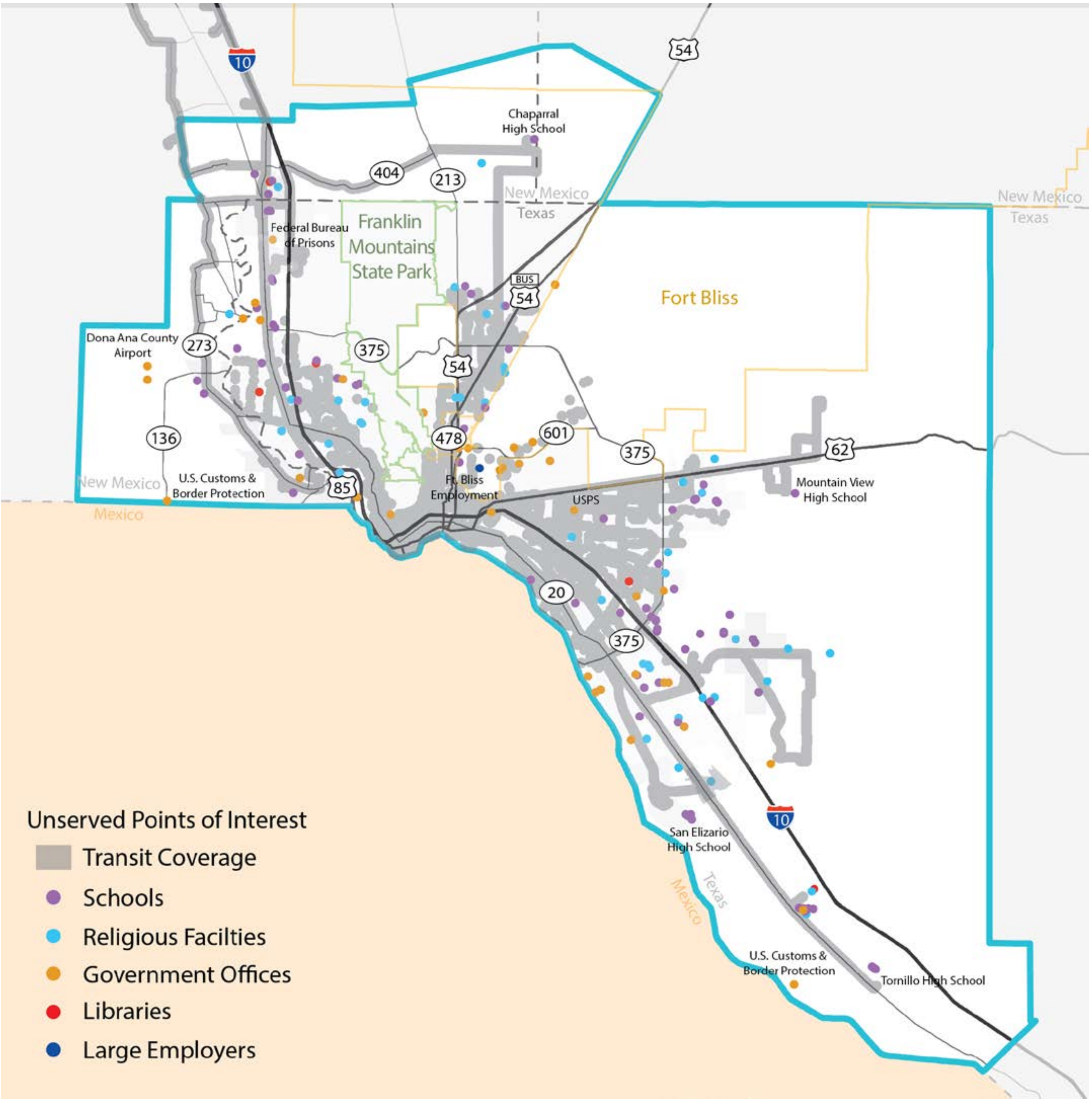


Table 3.7 shows the number and percentage of facilities within each supply area, as well as within the entire transit service area. The clear majority of key destinations are within the transit service area, with all the higher education facilities and hospitals within the transit service area.

TABLE 3.7: POINTS OF INTEREST IN SERVICE AREA

| TYPE | MAXIMUM SUPPLY SCORE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | % | 1 | % | 2 | % | 3 | % | 4 | % | 5 | % | ALL TRANSIT | % |
| All | 170 | 15% | 27 | 2% | 0 | 0% | 72 | 6% | 215 | 18% | 685 | 59% | 999 | 85% |
| Government Offices | 41 | 10% | 3 | 1% | 0 | 0% | 22 | 5% | 46 | 11% | 294 | 72% | 365 | 90% |
| Schools | 79 | 26% | 10 | 3% | 0 | 0% | 20 | 7% | 77 | 26% | 114 | 38% | 221 | 74% |
| Large Employers | 1 | 17% | 0 | 0% | 0 | 0% | 0 | 0% | 2 | 33% | 3 | 50% | 5 | 83% |
| Higher Education | 0 | 0% | 1 | 8% | 0 | 0% | 3 | 25% | 1 | 8% | 7 | 58% | 12 | 100% |
| Hospitals | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 2 | 25% | 6 | 75% | 8 | 100% |
| Religious Institutions | 44 | 11% | 12 | 3% | 0 | 0% | 26 | 6% | 83 | 20% | 248 | 60% | 369 | 89% |
| Libraries | 5 | 21% | 1 | 4% | 0 | 0% | 1 | 4% | 4 | 17% | 13 | 54% | 19 | 79% |

## TRANSIT SYSTEM PERFORMANCE MEASURE

Proximity to high-quality transit is one of the primary multimodal performance measures included in Destino 2045. Table 3.6 shows the breakdown of population and employment served by future high-quality transit services. “High-Quality Transit” is defined as the existing Brio route, future Brio routes, and the streetcar. Without the implementation of additional high-quality transit services, it is expected that roughly 27% of the population within the transit service area, and about 15% of the region’s total population will have access to high quality transit. Roughly 40% of the employment in the transit service area will have access to high quality transit and about 31% of the region’s employment will be near high-quality transit. These estimates provide the baseline performance for transit access that can be used to compare alternative programs of projects to be included in the final recommendations of Destino 2045.

TABLE 3.6: POPULATION AND EMPLOYMENT IN FUTURE HIGH QUALITY TRANSIT NETWORK

| | TOTAL WITHIN REGION | TOTAL SERVED BY ANY TRANSIT | PERCENT SERVED BY ANY TRANSIT | TOTAL WITHIN ½ MILE OF HIGH QUALITY TRANSIT | PERCENT OF TRANSIT COVERAGE WITHIN ½ MILE OF HIGH QUALITY TRANSIT | PERCENT OF REGION WITHIN ½ MILE OF HIGH QUALITY TRANSIT |
|---|---|---|---|---|---|---|
| Population (2045) | 1,369,000 | 753,000 | 55% | 202,000 | 27% | 15% |
| Employment (2045) | 467,000 | 365,000 | 78% | 145,000 | 40% | 31% |

## COORDINATED HUMAN SERVICES TRANSPORTATION NEEDS

In addition to analyzing the fixed-route transit system, Destino 2045 also considered the needs of those that rely on Human Service Transportation providers throughout the region, which can (but doesn't necessarily) include the transit dependent population that reside within the Sun Metro service area. This section combines information gathered from The Far West Texas / El Paso Regional Human Services – Public Transportation Coordination Plan (referred to as the HSPTCP for the rest of this section) – completed in 2017 – with feedback gathered through the Destino 2045 public visioning meetings and stakeholder outreach meetings, to supplement technical analysis of paratransit demand in the El Paso Region and identify needs related to demand-responsive transit to be addressed by the Destino 2045 MTP.

### HSPTCP Summary

The 2017-2022 HSPTCP was created to support the 5-year coordination plan for the region composed of Brewster, Culberson, El Paso, Hudspeth, Jeff Davis and Presidio Counties. A committee was assembled to begin the effort to assess existing transportation resources and identify gaps and duplication of services within the current public transportation system. The goal of the plan was to prioritize mobility needs and coordination strategies to better serve those needs.

Table 3.8 identifies a summary of the mobility goals and objectives of the region overall as established by the plan committee in relation to the El Paso Transportation Plan.

TABLE 3.8: 2017-2022 FAR WEST TEXAS/EL PASO REGIONAL HSPTCP GOALS AND OBJECTIVES

| GOALS | SUMMARY OF OBJECTIVES |
|---|---|
| Maintain an inclusive and sustainable planning process that seeks and values public participation, communicates its goals and activities to the public and honors its Regional Plan and Priorities | Maintain a viable steering and stakeholder committee, communicate with adjacent regions by establishing a mechanism to define metric parameters for data collection and prepare and follow annual detailed workplans to guide regional coordination activities. |
| Fill unacceptable gaps in service, especially for transit dependent populations, through the continuous identification and assessment of changing mobility needs, expansion of financial support, increased efficiency, redeployment of redundant resources and services innovation | Encourage the expansion of Sun Metro service hours and identify resources and expand same-day options in both urban and rural demand-response systems by developing partnerships with health and human service organizations and monitoring transportation needs |
| Provide technical assistance and training to transit providers and encourage linkages between providers and with organizations serving transit dependent populations to create a customer-centered and seamless public transportation system | Encourage human service agencies to offer or expand fixed route transportation assistance and establish a mechanism for rural agencies to purchase transportation on rural systems, improve accessibility and reliability and improve driver availability |
| Ensure broad public knowledge of transit services and issues and maintain effective public awareness effort targeted to significant segments regarding specialized services and resources | Develop, pilot and implement transit consumer education and engagement program and provide comprehensive information about transit and §5310 |
| Work to eliminate physical, financial, regulatory and operational barriers to the delivery of seamless regional transportation | Assess approaches to further reducing demand-response wait times, pick up window and travel time and developing training programs to encourage the use of fixed-route services and combine city and county transit services into a single integrated service design and adjust to increase neighborhood coverage and accessibility |
| Enhance the mobility of older adults and persons with disabilities through an inclusive and deliberative process that encourages coordinated services and the efficient use of limited §5310 funds to ensure the creation and continuation of mobility services where existing transportation services do not fully meet the needs of rural and urban communities | Sustain and support current urban and rural demand-response service system by supporting vehicle acquisition and replacement and sustaining coordinated service delivery enhancements that will support transportation for older adults |

## PROVIDERS AND SERVICES

Paratransit and rural transit services are predominantly provided by agencies that have transportation as an auxiliary function for their primary services, such as healthcare providers. Below are the providers mentioned in the HSPTCP that serve the Destino 2045 study area.

### *Sun Metro Lift*

Sun Metro LIFT service is contracted to MV Transportation Inc. to provide paratransit services. The LIFT service operates within the city limits and extends 1.5 miles beyond the agency's traditional fixed-route bus service. Sun Metro also used New Freedom funds for a contracted collaboration with Project Amistad, Sun City Cab and Viba Transportation to provide demand-response services that exceeds the requirement for complementary ADA paratransit through the provision of same-day service and the expansion of service hours and range. The program is being continued through the Enhanced Mobility for Seniors and Person with Disabilities program grant funding awarded to Project Amistad by the El Paso MPO.

### *El Paso County Rural Transit District*

El Paso County receives a combination of funds from state and federal 5310 programs to provide fixed-route transit and vanpool service. Their fleet consists of wheelchair lift equipped buses that can each accommodate two wheelchairs.

### *Project Amistad*

Project Amistad is the Managed Transportation Organization that provides free curb-to-curb, non-emergency medical transportation for Medicaid recipients through a contract with the Texas Department of State Health Services. The non-profit organization subcontracts with several service providers to provides service to 23 counties surrounding El Paso. Project Amistad was awarded the Enhanced Mobility for Seniors and Persons with Disabilities program grant to collaborate with Sun Metro to provide ADA services. It recently became the service provider for after-hours service for the LIFT. The agency also operates two rural fixed-routes in rural El Paso county that connect with Sun Metro transfer centers.

Table 3.9 describes other transportation providers in the region.

TABLE 3.9. OTHER SERVICE PROVIDERS

| HUMAN SERVICE/TRANSPORTATION PROVIDER | PIMARILY TRANSPORTATION | TYPE OF SERVICE |
|---|---|---|
| Amerigroup Inc. | No | Information and referral of transportation services |
| Bienvivir Senior Health Services | No | Demand-response medical transportation for members |
| Big Bend Community Action Committee, Inc. (BBCAC) | Yes | Demand-response medical transportation and rural transit |
| The Opportunity Center for the Homeless | Yes | Transportation to health and human services and employment; issuance of bus passes |
| Sun City Cab | Yes | Accessible cab services for people with disabilities and the elderly |
| University Medical Center | Yes | Medical Transportation |
| Viba Transportation | Yes | Demand-Response transportation for people with disabilities and the elderly |
| Volar | No | Certify eligibility for Sun Metro LIFT and fixed-route travel training |

## STAKEHOLDER INTERVIEWS AND USER SURVEY RESULTS

### *HSPTCP User Survey*

Consumers and members of the public in the Far West Region were surveyed by the plan committee to identify travel needs. The following information is key to giving context to mobility needs.

- 85% of respondents did not have access to a vehicle
- 90% of respondents had some type of disability, 39% of who stated their disability limited their ability to operate a vehicle
- 22% of respondents used some form of mobility device, such as a cane or wheelchair
- 6% of respondents required assistance from another person during travel

The most commonly mentioned issues identified in user survey results was the late arrival of vehicles, which made it difficult to retain employment and reach multiple destinations in the same day. User feedback and stakeholder interviews also identified other issues with demand response services.

- Same-Day service – Scheduling rides for the same day rather than advance
- Long travel times
- Lack of drivers – Need for more drivers willing to drive longer distances
- Lack of service awareness – Need for more awareness of services
- Consistent Funding – Need for more consistent funding sources to provide for continuation of services

The plan identified gaps that need to be addressed with the current system that would improve service for consumers and improve service for those who are not currently users.

- Buses arrive after scheduled pick up window
- Pick-up window excessively long
- Travel time on bus too long
- Limited same-day demand-response service
- Demand-response service needed for low-income parents who must commute to childcare then work
- Demand-response service for shelter residents or other human-service program clients who must make multiple closely spaced daily appointments
- No ability to schedule, cancel or receive trip updates on smart phone
- Passenger expectations unrealistic and operators not fully trained and engaged to make system run more timely
- Limited awareness and availability of paratransit or equivalent service outside city limits
- LIFT services not available to otherwise eligible persons without photo ID

### *Destino 2045 Feedback*

The Destino 2045 MTP Visioning Survey also asked respondents to identify groups that would not be well served by the transportation system if service remained the same.

- 69% of respondents identified elderly populations
- 68% of respondents identified low-income individuals/families
- 66% of respondents identified people with disabilities
- 69% of respondents identified people with medical needs

When referencing paratransit and demand-response services, stakeholders interviewed as part of the Destino 2045 visioning process most often referenced Project Amistad, and described it as a helpful organization that provided exemplary service by connecting with other service providers. This was consistent with the user survey results from the coordination plan which described demand-response transit service as excellent. Despite the overall positive impression of Project Amistad, stakeholders still described some difficulty with coordination. For example, although Project Amistad recently replaced after-hours service previously provided by Sun Metro Lift, there is currently no ability for users to transfer tickers from one service to another.

## FUNDING

Several funding sources were mentioned in the HSPTCP that could affect the level of service for the region. Interviews conducted by the committee and stakeholder interviews revealed that these funds are currently supporting projects that support rural, low-income, elderly and populations of disabled people. The Job Access and Reverse Commute Program (JARC) was established to help low-income individuals facing transportation challenges and develop projects that will better serve their transportation needs. JARC funding sources are set to expire or have already expired and future funding sources are not certain. The Congestion Mitigation Air Quality (CMAQ) program was developed to support transportation projects that contribute to improving air quality. This funding is awarded on a yearly basis making it difficult to determine the future of the programs it supports. Both JARC and CMAQ fund several transportation projects operated by human services in the region. Alternative funding sources need to be identified to continue these projects.

## GEOSPATIAL ANALYSIS

A geospatial analysis was conducted to measure if, and to what extent, the rural transit and Sun Metro's transit served health care and social assistance destinations. Data on health care and social assistance destinations were collected and compared to the transit network. By overlaying the region's transit services over the services provided in the region, it is possible to see where services are accessible by transit, and where they are not accessible by transit. This showed a significant number of services that are not located near rural fixed route transit.  To use services located in the city center, users must transfer from the El Paso County rural fixed-route transit system to Sun Metro, long commutes and inconsistency in payment systems create difficulties for rural residents to reach services.

Figure 3.26 shows the healthcare and social services providers that are located outside of the transit system coverage area, while Figure 3.27 compares existing transit system coverage to transit-dependent population concentrations and the location of existing rural transit stops.

FIGURE 3.26. SERVICE PROVIDER DESTINATIONS

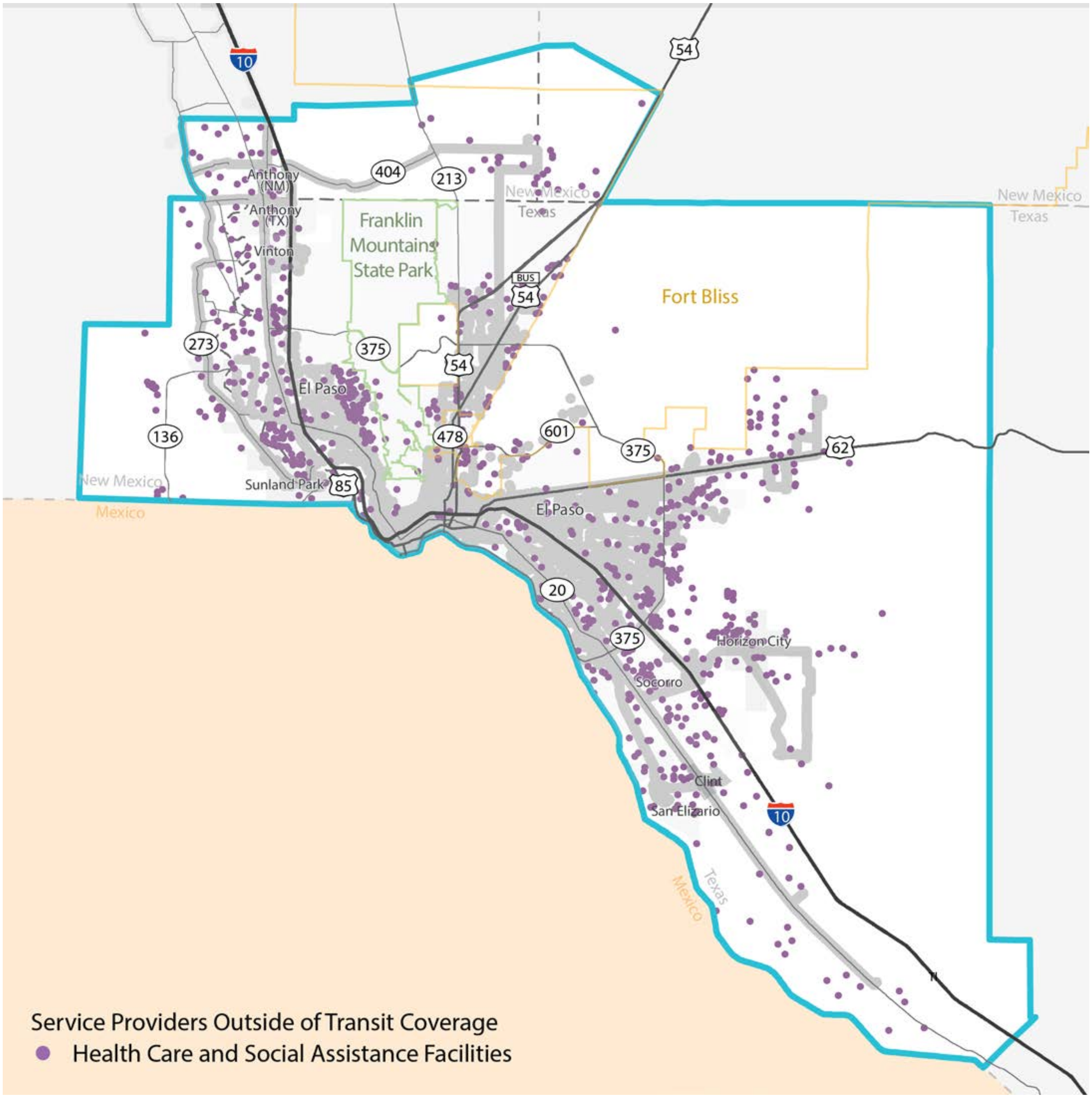
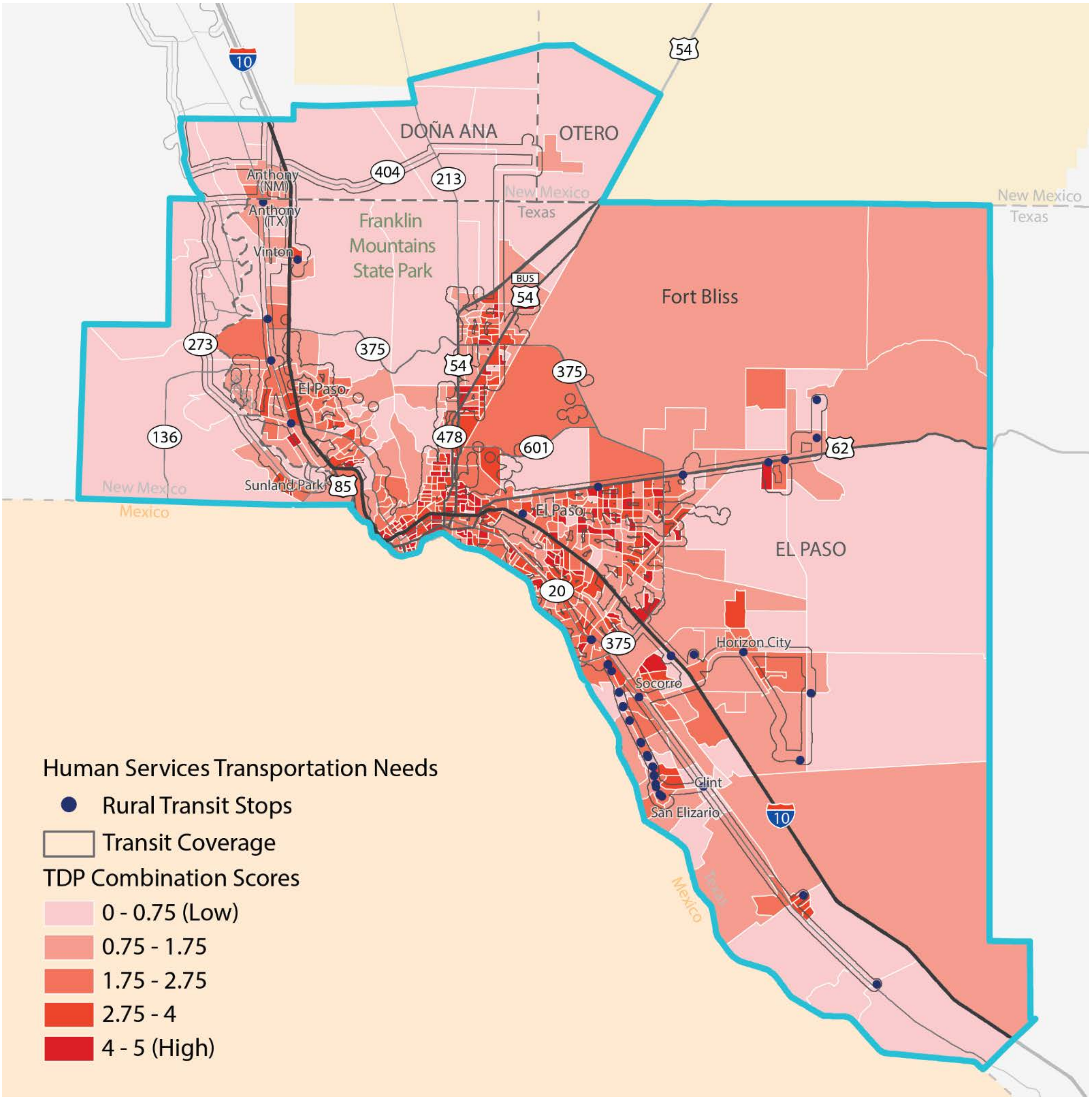


FIGURE 3.27: TRANSIT COVERAGE, RURAL TRANSIT, AND TRANSIT DEPENDENT POPULATION CONCENTRATION



## SUMMARY

Stakeholders and user surveys revealed several needs in human service and demand-responsive transportation. The HSPTCP used this feedback to create strategies to address these needs and reduce service duplication. El Paso MPO should use these recommendations to improve coordination throughout the region. Improvements in fixed-route transit could help reduce the need for costly demand-response responses. Creating a uniform payment system with Sun Metro and El Paso County fixed-route systems could reduce the need for demand-response service by establishing consistency for users. Demand-response providers should increase efforts to provide same-day services to improve mobility throughout the region. Better coordination between demand-response and rural transit providers can also eliminate service redundancy and reduce costs to providers. Finally, increased awareness of services for potential users could also help to ensure that services are being used to maximum capacity and efficiency. The MPO could lead a coordinated effort with human service transportation providers to market the services they offer. Marketing efforts should include multiple avenues of communication to ensure that the community is made aware of an array of transportation options.

Stakeholders for the HSPTCP and Destino 2045 can use survey data to include users in the planning process and better inform future coordination efforts. The previously mentioned goals and objectives are a crucial starting point to ensure that coordination efforts are inclusive of the entire community.

# 4. ACTIVE TRANSPORTATION

## INTRODUCTION

The active transportation network primarily consists of sidewalks and bicycle infrastructure – such as bike lanes or paths – and helps to facilitate the use of non-single-occupancy-vehicle (SOV) modes of transportation. Encouraging walking and cycling can help to create healthy communities as well as a stronger, more effective transit network and address the “first/last mile problem” by providing better connections between transit stops and trip origins and destinations. This section explores the existing conditions of the El Paso region’s active transportation network through a comprehensive analysis of walkability and cycling accessibility. The section also identifies walking and bicycling infrastructure gaps in the region. The results of this analysis identify areas where improvements to the active transportation network can be most effective.

## ANALYSES

### WALKABILITY ANALYSIS

A geospatial analysis was done to measure the availability of pedestrian infrastructure and other walkability indicators within the El Paso MPO study area. Data on sidewalks, intersection density, parks, schools, and other walking destinations (restaurants, bars, pharmacies, grocery stores, etc.) were collected, measured, and aggregated to come up with an overall walkability score.

#### *Methodology*

The cumulative length of sidewalks in an area was compared against the cumulative length of the roadway network in the same area to get a relative ratio of sidewalk feet to roadway feet. A ratio of 2:1 indicates that there are twice as many sidewalk feet as roadway feet in an area. This could indicate that a roadway has sidewalks on both sides of the street. A ratio of 1:1 means that there are just as many sidewalk feet as roadway feet. This could mean that a roadway has sidewalks on at least one side of the road. A ratio of 1:2 means that there are half as many sidewalk feet as roadway feet in an area. This could mean sporadic sidewalk coverage. Some streets might have sidewalks on one side, other streets might not have sidewalks. It should be noted that only streets that would have sidewalks were considered in this measurement. Freeways and ramps were removed from the roadway network because there would normally not be sidewalks on these roads. A score of 1-5 was assigned to each area depending on the ratio of sidewalk feet to roadway feet. The final walkability or walk score was calculated utilizing a variety of different scores. Figure 4.1 illustrates the sidewalk to road ratio for the City of El Paso (which was the only municipality for which sidewalk data was available). Red colors illustrate locations with few sidewalks in relation to roadways, whereas, blue and green colors illustrate more comprehensive sidewalk networks.

Intersection density (Figure 4.2) was used as another measurement of walkability. An area with more intersections has shorter block lengths that result in slower automobile travel speeds, which creates a safer and more pleasant walking environment. In addition, smaller block lengths generally equate to denser and more walkable land uses that enhance the pedestrian environment. Similar to the sidewalk ratio measurement, only walkable roads are considered when looking at intersection density (Intersections with freeways and ramps were not considered). Areas were given a score of 1-5 depending on the density of intersections, and this score was factored into the final walkability score.

Scores were also assigned to areas based on the relative number of nearby destinations or points of interest. Areas with more destinations within a five-minute walk (1/4 mile) were given higher scores, and areas with fewer destinations within a five-minute walk were given lower scores. Other destinations such as parks (Figure 4.3) and schools (Figure 4.4) were also taken into consideration. Areas received points when a school or park were located within a five-minute walk. Parks and schools were considered separately from restaurants, bars, pharmacies, and grocery stores because trips to parks and schools often differ from other trips and often involve children. Other points of interest are shown in Figure 4.5.

Once all factors were measured and scored, the scores were summed together to create a master walkability score. This score was then adjusted to a 1-5 scale with 5 indicating excellent walkability and 1 indicating poor walkability.

FIGURE 4.1: SIDEWALK TO ROAD RATIO

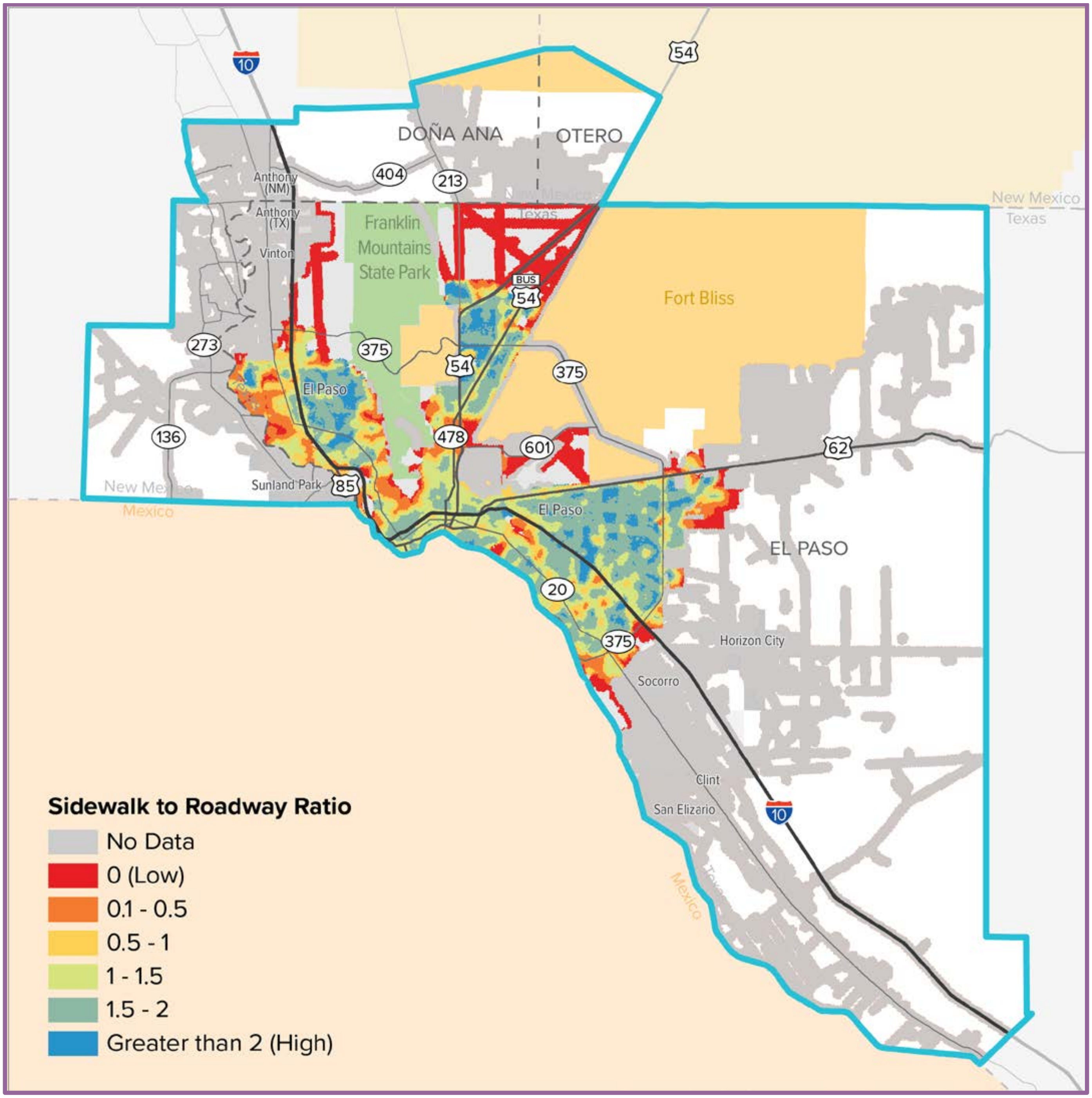


FIGURE 4.2: INTERSECTION DENSITY

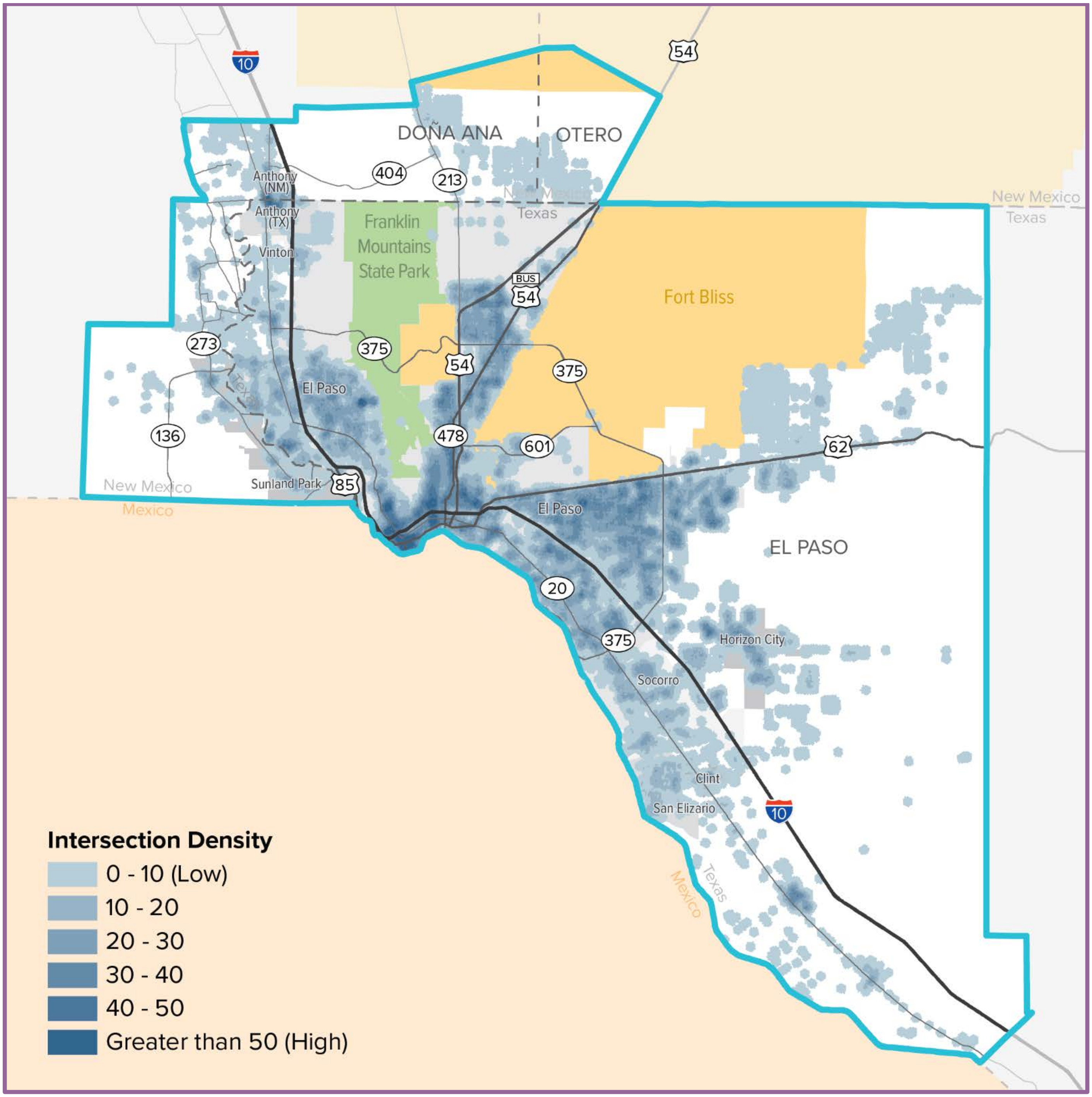


FIGURE 4.3: PARKS

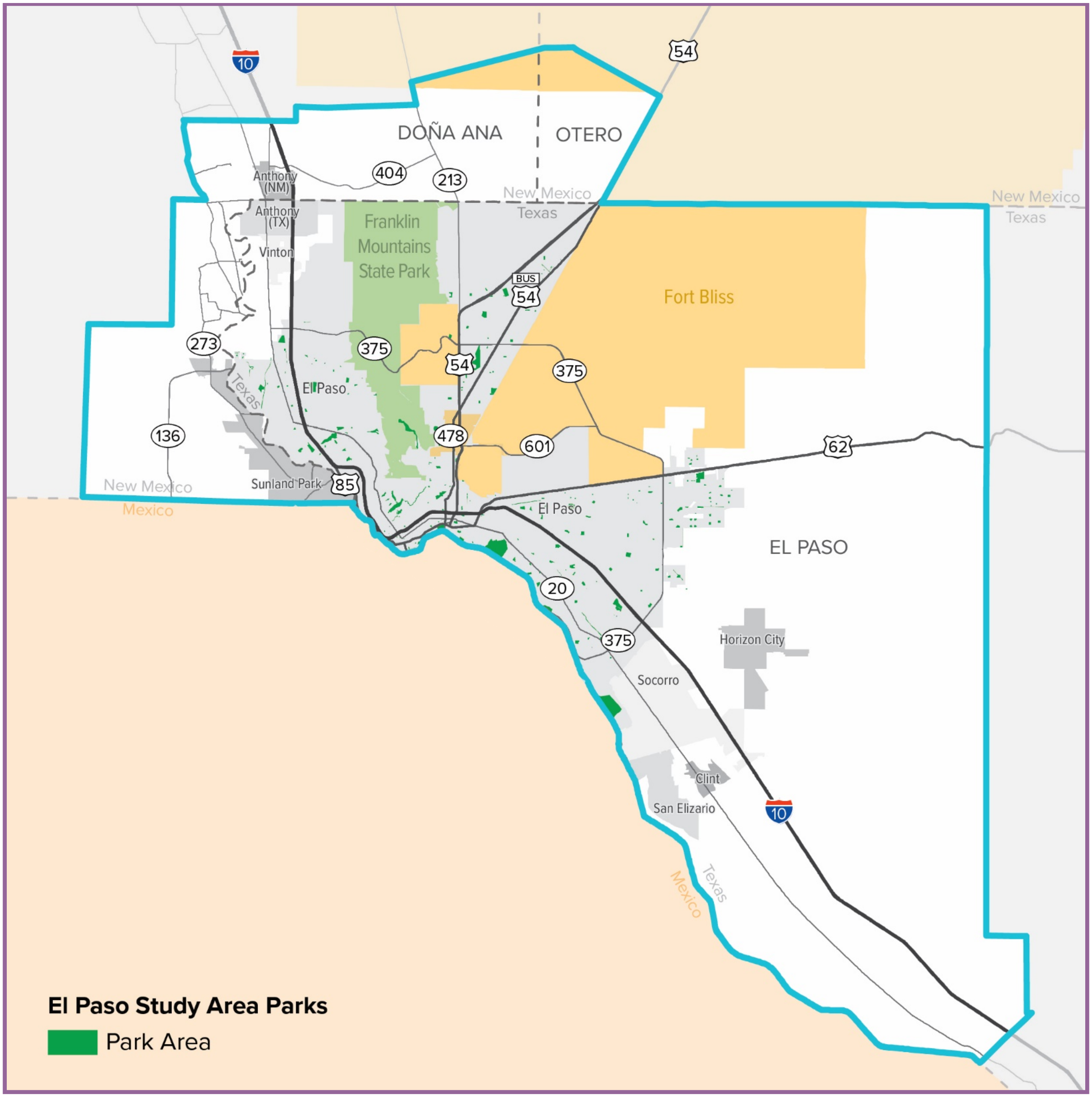


FIGURE 4.4: SCHOOLS

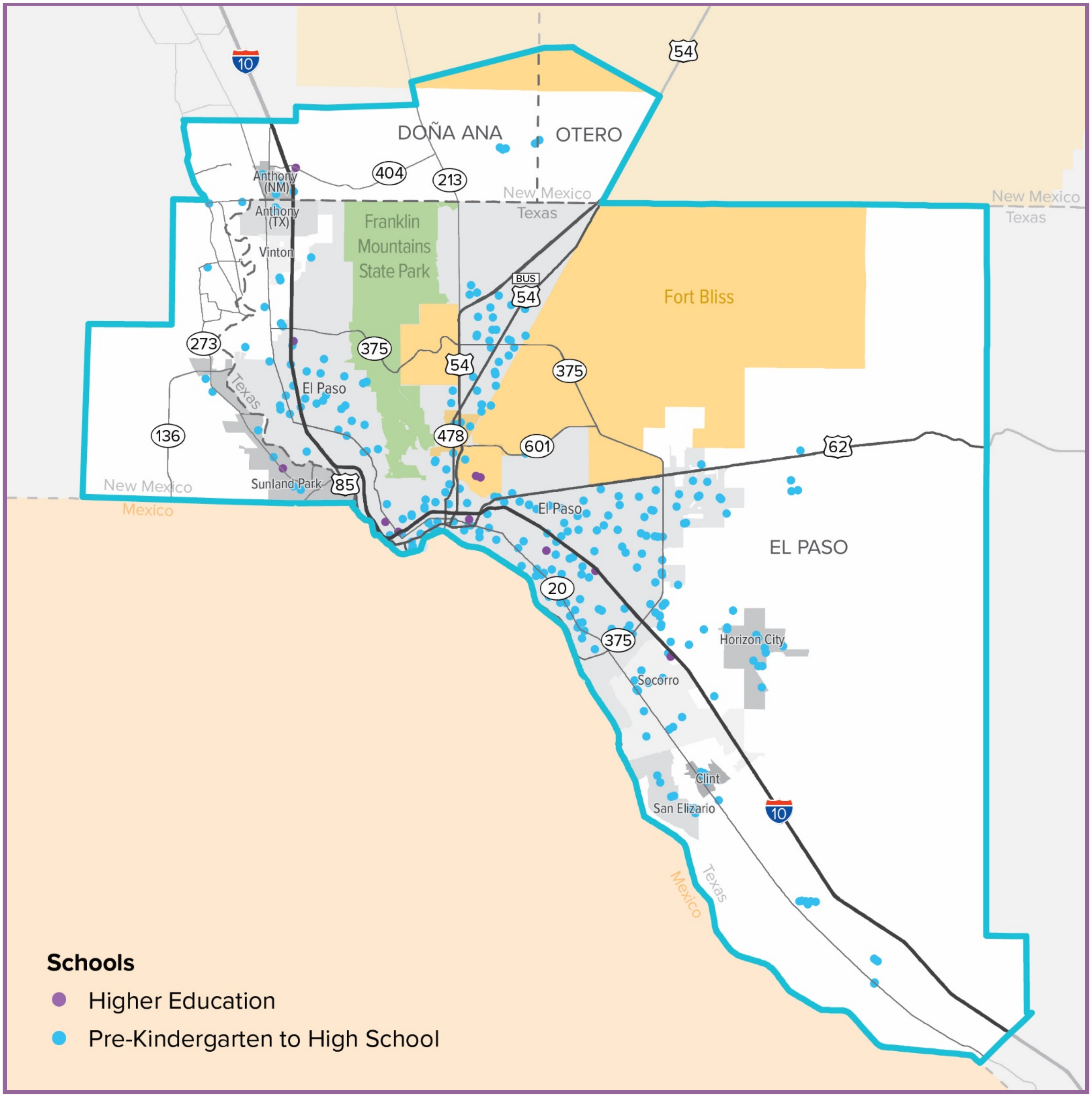
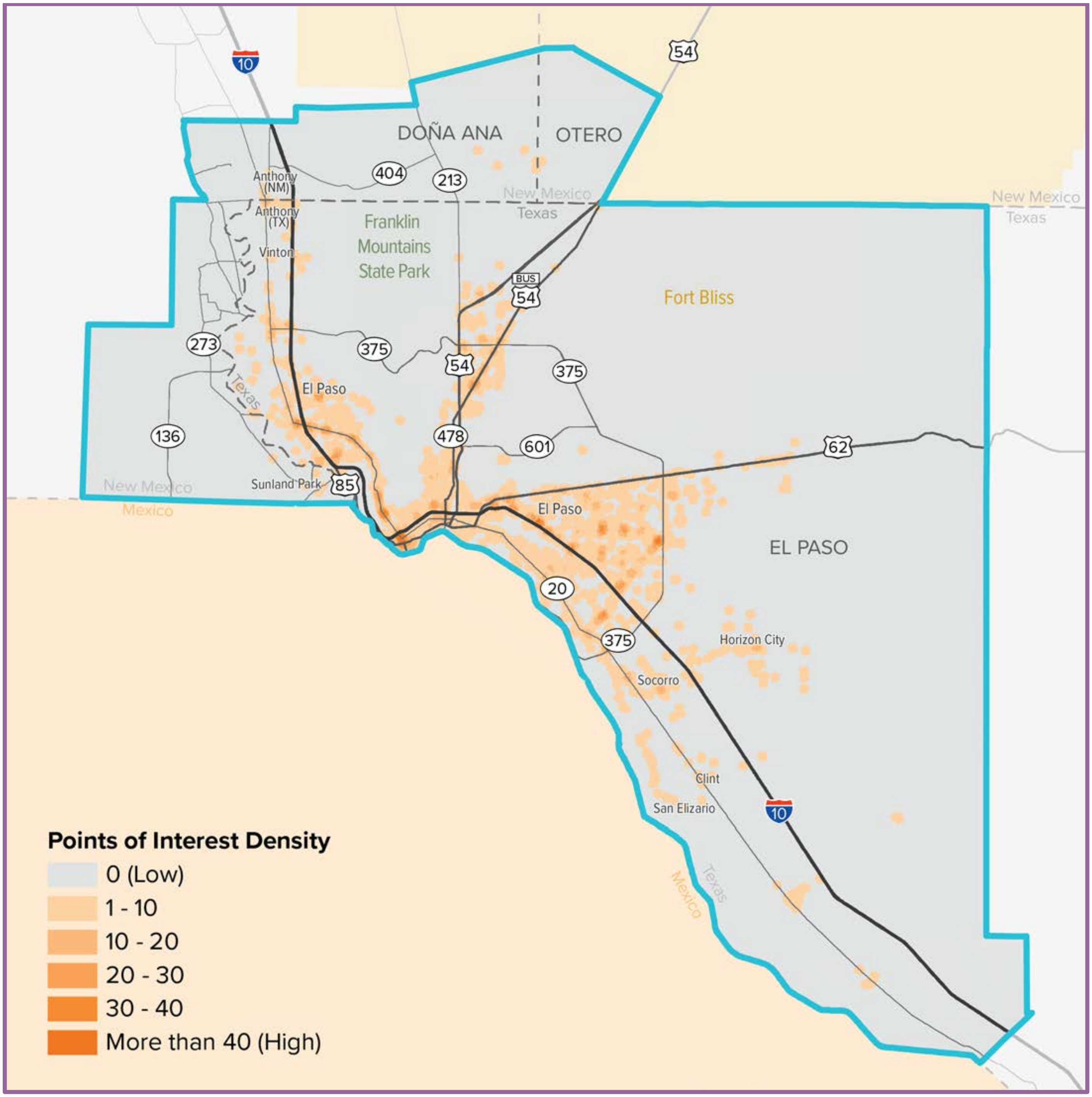


FIGURE 4.5: OTHER POINTS OF INTEREST



### *Analysis Results*

The individual walkability criteria were combined to produce a walkability score at the Traffic Analysis Zone (TAZ) level ranging from 1 (poor walkability) to 5 (high walkability), as shown in (Figure 4.6). Some areas lacked enough data to produce a score, which is reflected in Figure 4.6 as well. Population, employment, and transit access were compared to the walkability score to provide insight into what proportion of the region's population and jobs are in relatively walkable and non-walkable areas.

FIGURE 4.6: WALKABILITY SCORES

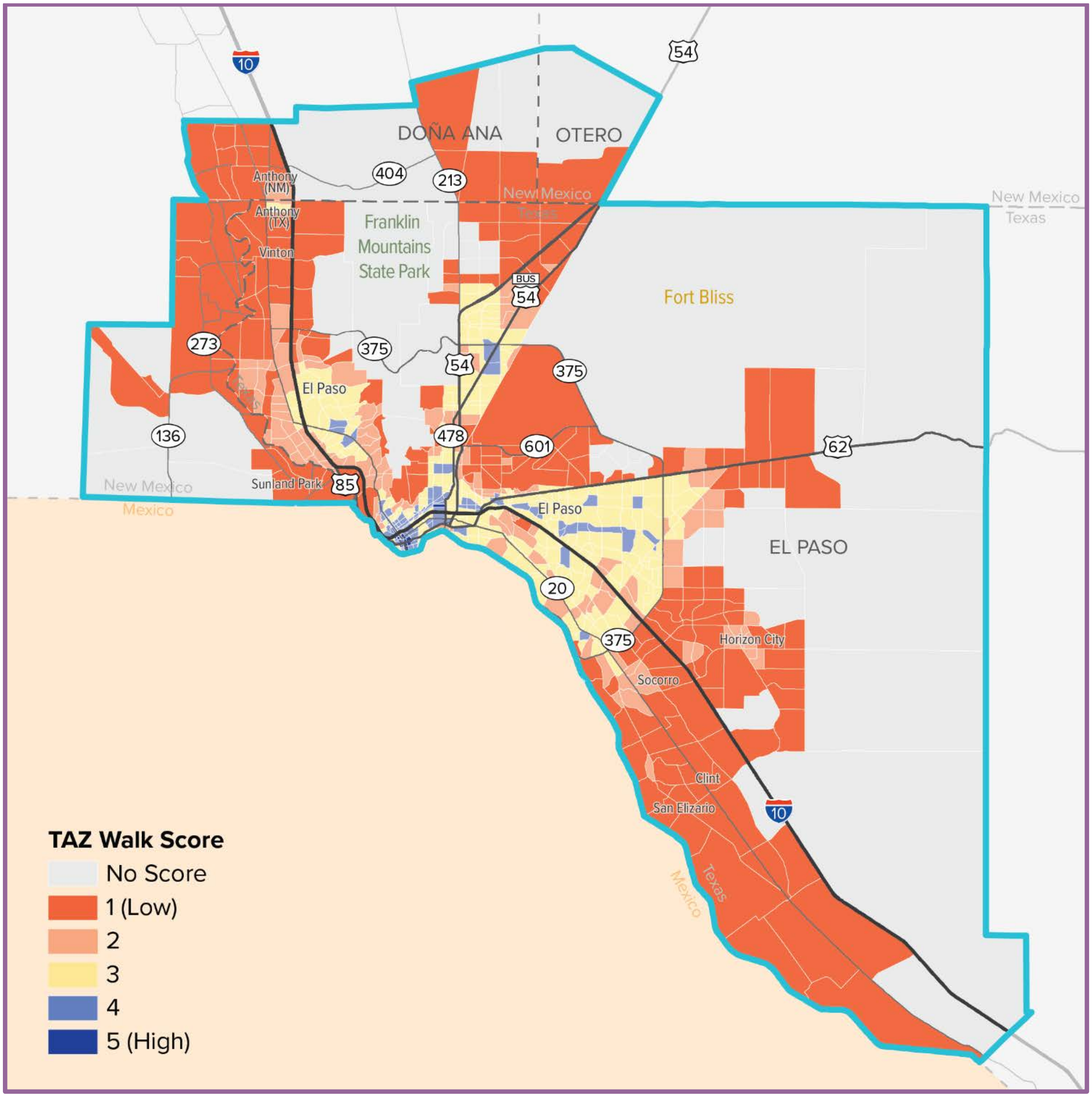


Table 4.1 below show that most of the region's population and employment is in an area with a walkability score of 3, meaning that the area is moderately walkable, or above. For the most part, only a small percentage of the population and jobs are in areas with the highest walkability. Roughly 20% of the population is in an area with a walkability score of 1, which indicates very poor walking conditions. Only 1% of the region's population is in an area with excellent walking conditions (walkability score of 5).

TABLE 4.1: POPULATION AND EMPLOYMENT BY WALKABILITY SCORE

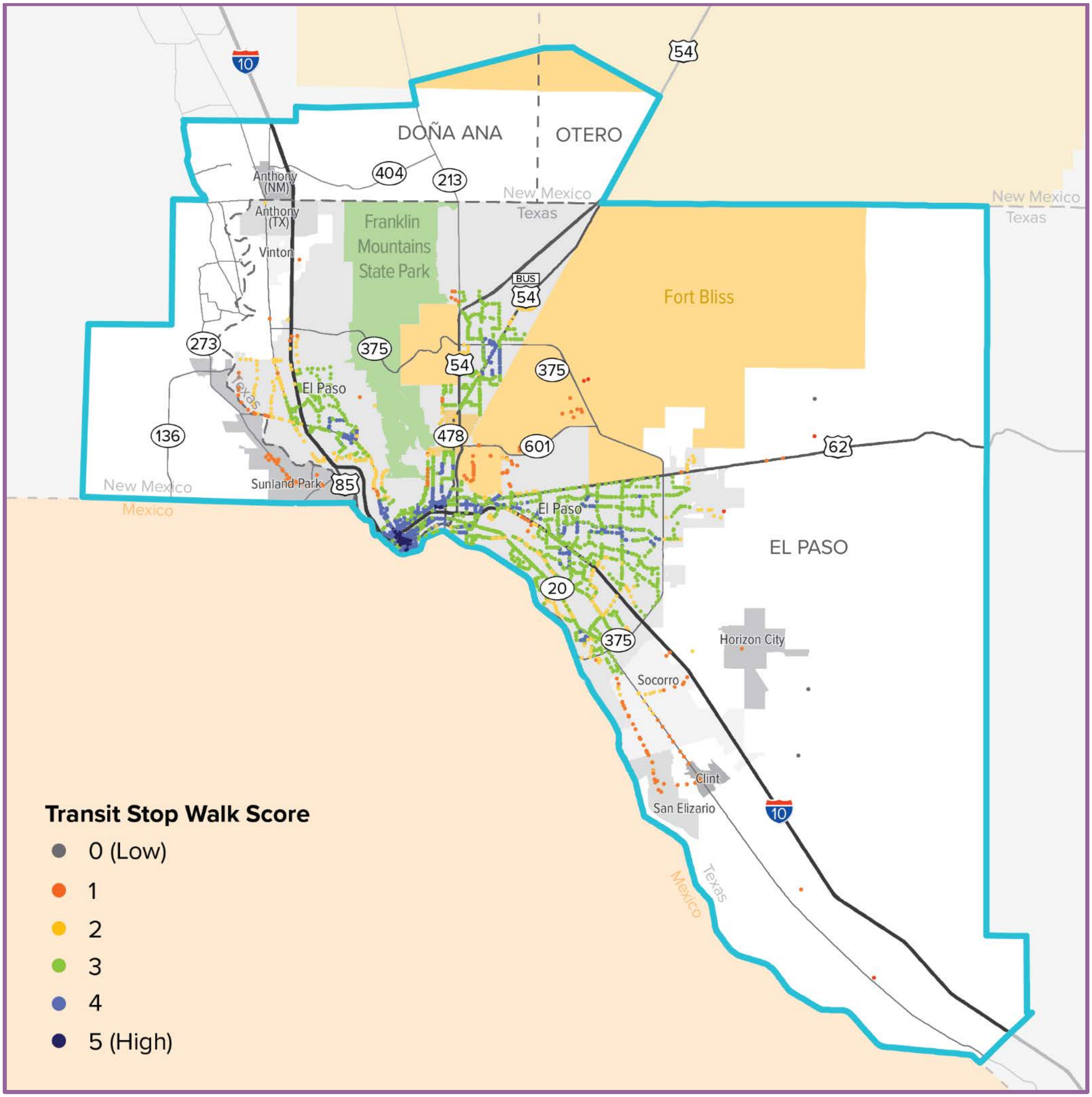
| SCORE | POPULATION | PERCENT | EMPLOYMENT | PERCENT |
|---|---|---|---|---|
| 1 | 174,911 | 20% | 39,342 | 12% |
| 2 | 185,914 | 21% | 86,208 | 26% |
| 3 | 378,113 | 43% | 120,725 | 37% |
| 4 | 128,290 | 15% | 58,846 | 18% |
| 5 | 4,999 | 1% | 13,130 | 4% |

A closer look at walkability near transit stops reveals that roughly a third of transit stops are in areas with a high walkability score (4 or 5), and that only 4% of transit stops are in areas with very poor walkability. It is important that the areas surrounding transit stops are walkable since almost all transit trips start and end with a walking trip. Figure 4.7 shows transit stops based on their relative walkability.

TABLE 4.2: TRANSIT STOPS BY WALKABILITY SCORE

| SCORE | TRANSIT STOPS | PERCENT |
|---|---|---|
| 1 | 106 | 4% |
| 2 | 378 | 13% |
| 3 | 1,501 | 52% |
| 4 | 806 | 28% |
| 5 | 81 | 3% |

FIGURE 4.7: TRANSIT STOPS BY WALK SCORE



## BICYCLE ACCESSIBILITY ANALYSIS

The bicycle analysis was conducted in a manner similar to the walkability analysis. A geospatial analysis was done to measure the availability of bicycle infrastructure and other indicators of bicycle accessibility throughout the MPO. Some of the same indicators that were used in the walkability analysis – such as intersection density, parks, schools, and destinations – were also used in the bicycle analysis.

### *Methodology*

A bicycle network was created to measure the coverage of bicycle infrastructure throughout the region. The bicycle network consists of residential roads, bike lanes, roads with shoulders, and shared-use paths. Residential roads were included in the network because these are roads that typically have very light traffic, low traffic speeds and are generally receptive to cycling. Like what was done in the walkability analysis, the ratio of residential roads to the total roadway network in an area was measured. This measurement shows what percent of roads in an area are receptive to cycling. For example, if the ratio is 1:1 (or 1), then an area is made up entirely of residential roads that are all receptive to cycling. If the ratio is 1:2 (or .5), then half of the roads in an area are residential roads that are receptive to cycling (Figure 4.8). Areas are given a score of 1-5 based on the ratio of residential roads to all roads in the roadway network. Additional points were given to areas with more bicycle infrastructure, such as bike lanes (Figure 4.9), shared-use paths (Figure 4.10), or wide shoulders (Figure 4.11).

Bike sharing stations were also factored into the analysis. The presence of a bike sharing station within an area resulted in an additional point being factored into the final cycling accessibility score, which also included other measurements such as intersection density, parks, schools, and other destinations.

Once all factors were measured and scored, the scores were summed together to create a master bicycle accessibility score. This score was then adjusted to a 1-5 scale with 5 indicating good cycling accessibility and 1 indicating poor cycling accessibility.

FIGURE 4.8: RESIDENTIAL ROAD RATIO

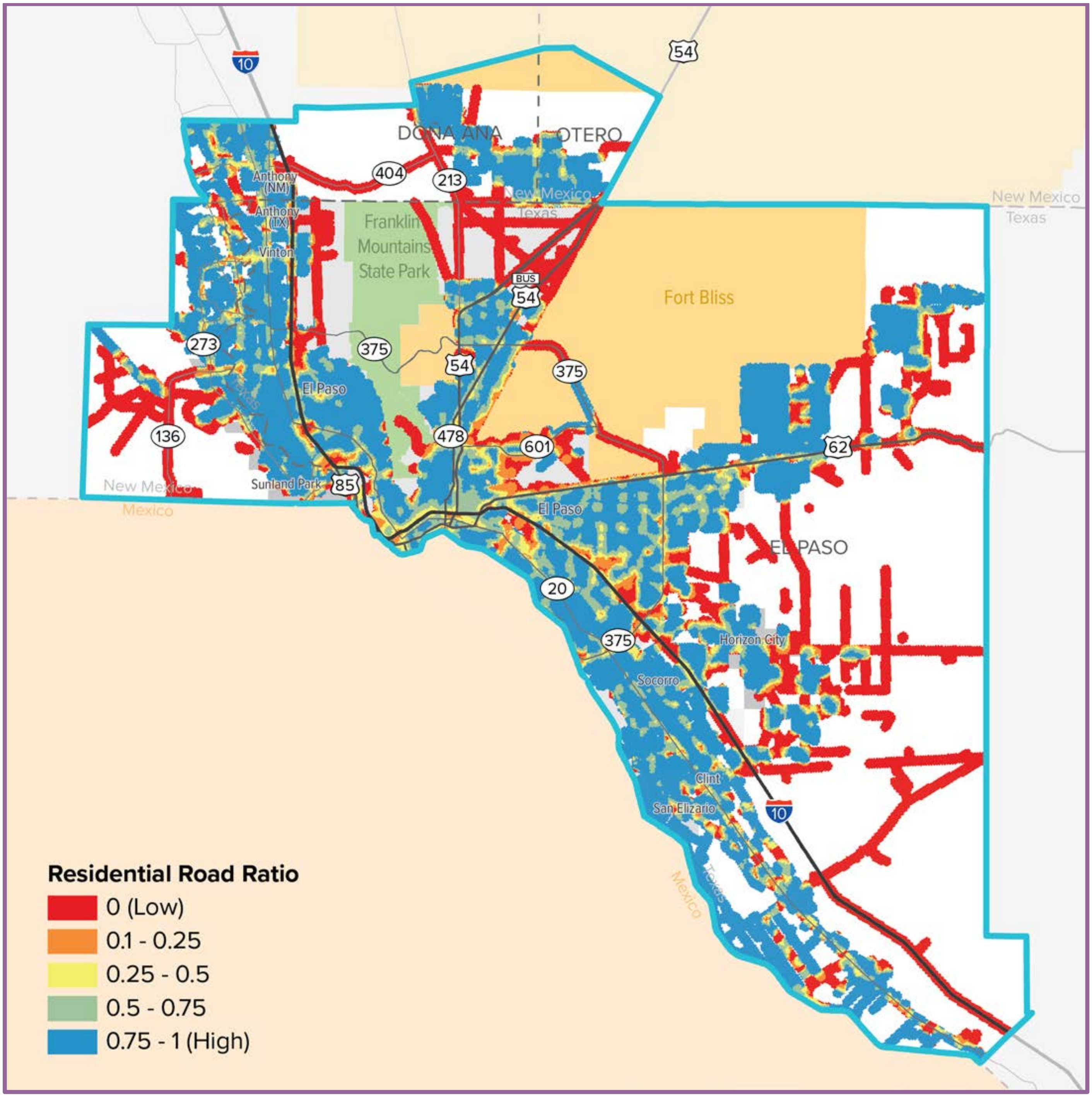


FIGURE 4.9: EXISTING BIKE LANES

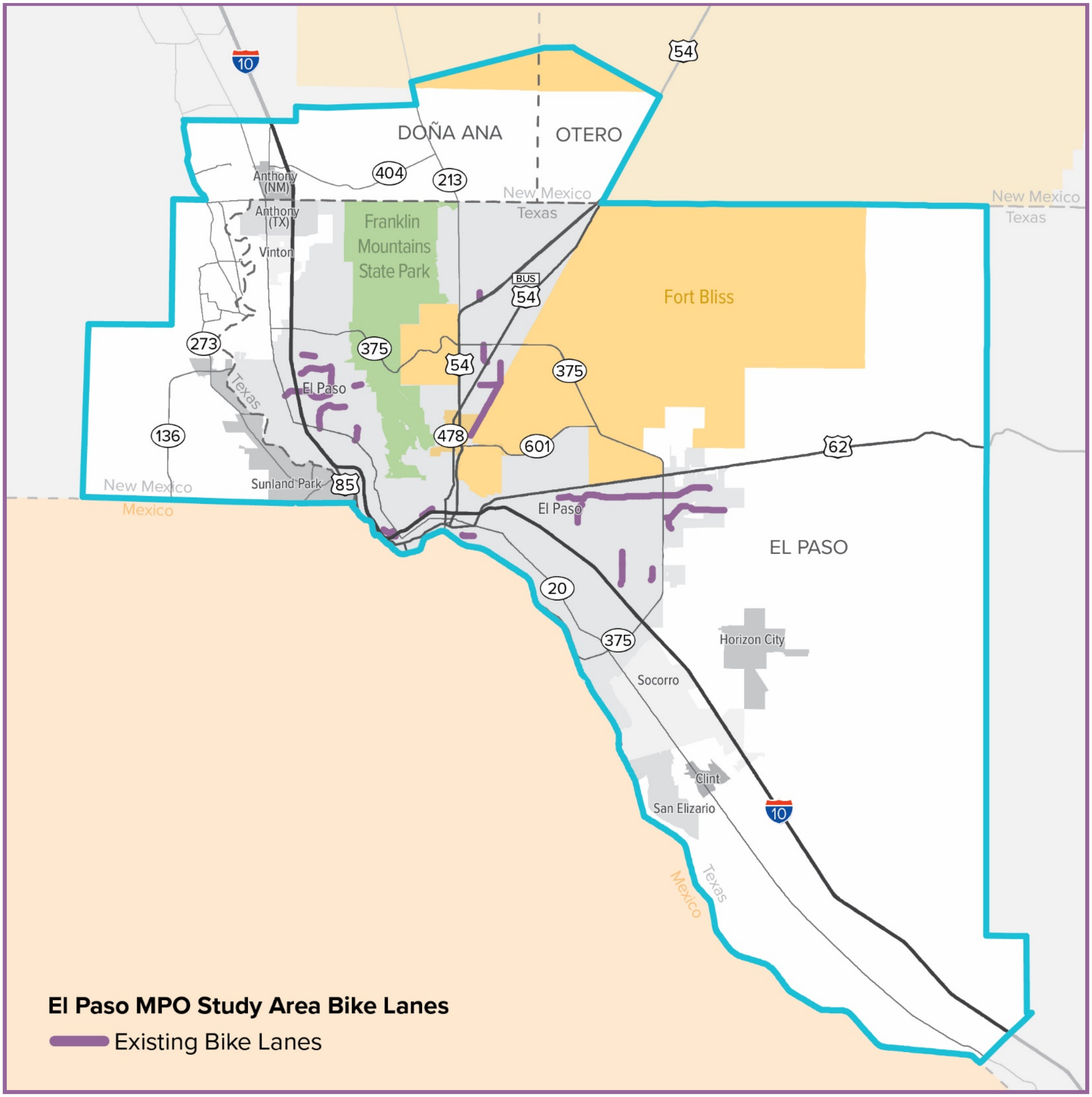


FIGURE 4.10: SHARED USE PATHS

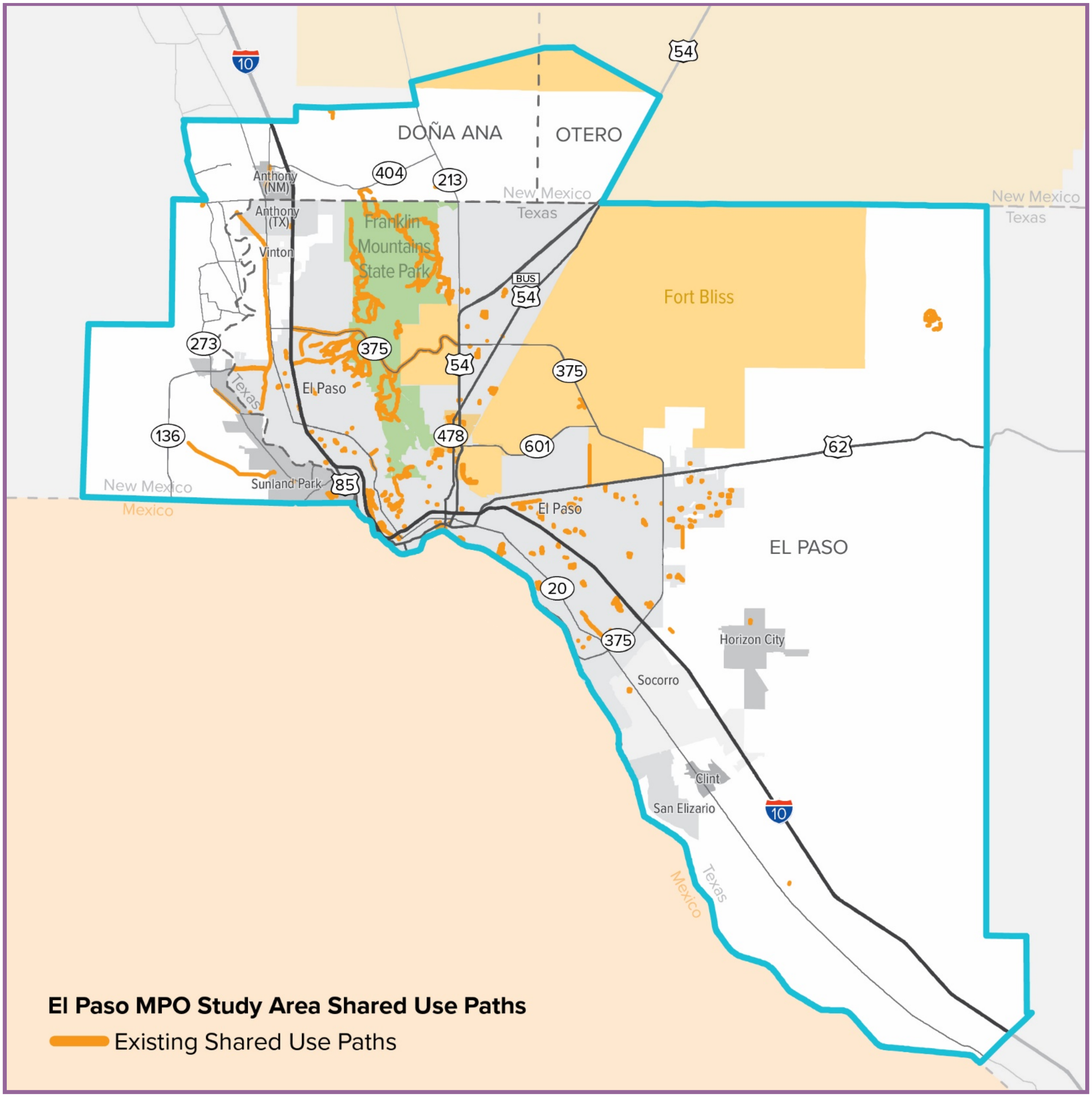
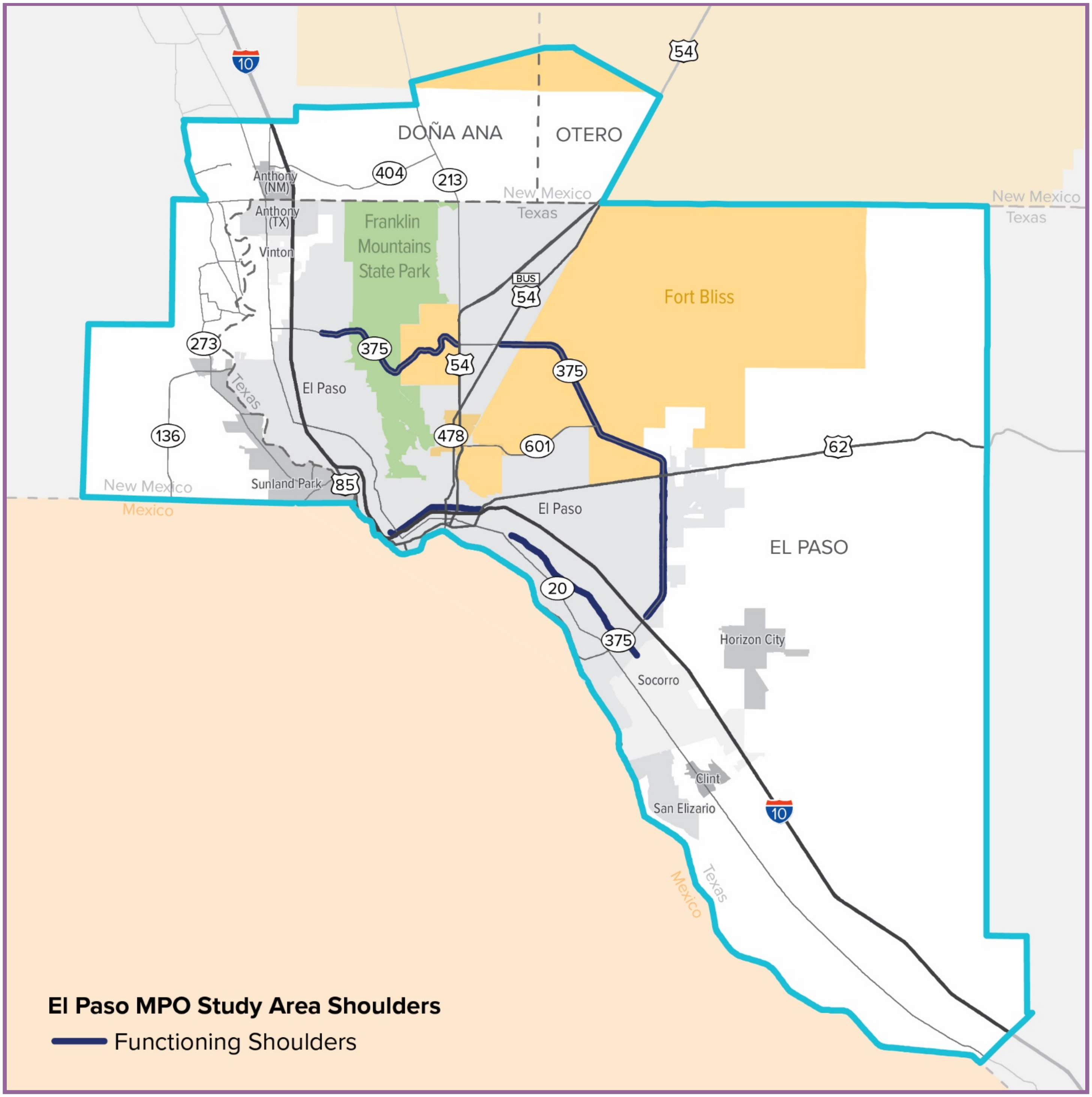


FIGURE 4.11: WIDE SHOULDERS



### *Analysis Results*

Utilizing the analysis described in the previous section, bicycle accessibility scores were assigned to each TAZ. Scores ranged from 1-5, with some zones receiving no score due to a lack of data, and can be seen in Figure 4.12. A score of 1 illustrates low bicycle accessibility, while a score of 5 illustrates high bicycle accessibility. Population, employment, and transit access were measured within each of these zones to better understand how many of the region's population and jobs are in areas with relatively high and low bicycle accessibility.

FIGURE 4.12: BICYCLE ACCESSIBILITY SCORES

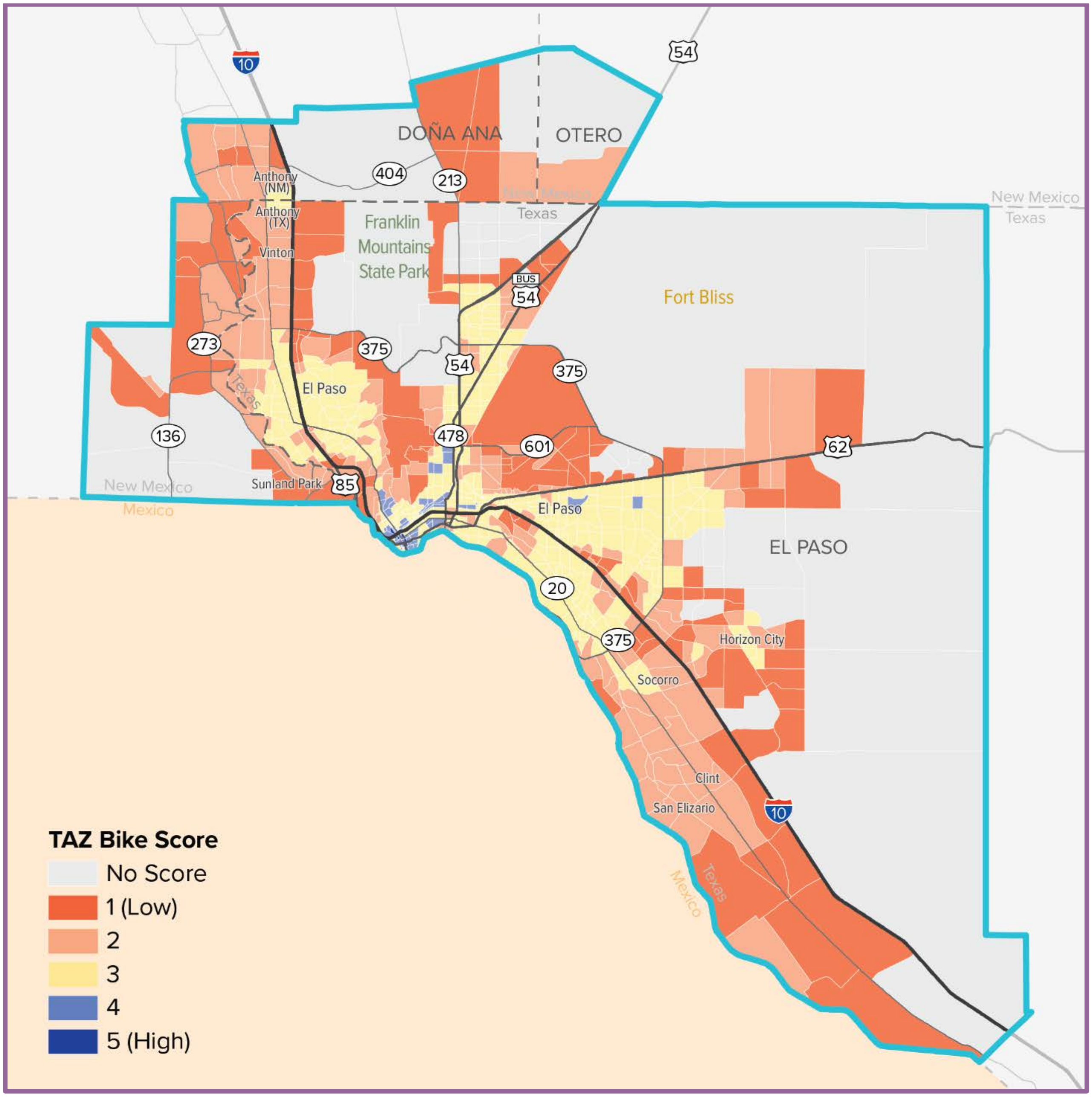



Table 4.3 shows that most of the population lives in an area with a score of 3. The distribution of population by bike score is similar to the distribution of population in the walkability analysis, however, there are some key differences. The main difference is that the proportion of the population living in areas with a very poor bicycle accessibility score is much smaller than the proportion of the population living in areas with a very poor walkability score. This is likely because it's not common for people to live in parts of the region that lack the low-traffic, residential roads that are generally conducive to cycling, but that may not have a well-connected sidewalk network. On the other hand, there are many places where people live that lack sidewalks and have poorly connected road networks.

TABLE 4.3: POPULATION AND EMPLOYMENT WITHIN BICYCLE ACCESS ZONES

| SCORE | POPULATION | PERCENT | EMPLOYMENT | PERCENT |
|---|---|---|---|---|
| 1 | 63,216 | 7% | 53,519 | 16% |
| 2 | 208,086 | 24% | 94,436 | 29% |
| 3 | 532,161 | 61% | 134,525 | 41% |
| 4 | 65,558 | 8% | 24,945 | 8% |
| 5 | 3,206 | 0% | 10,660 | 3% |

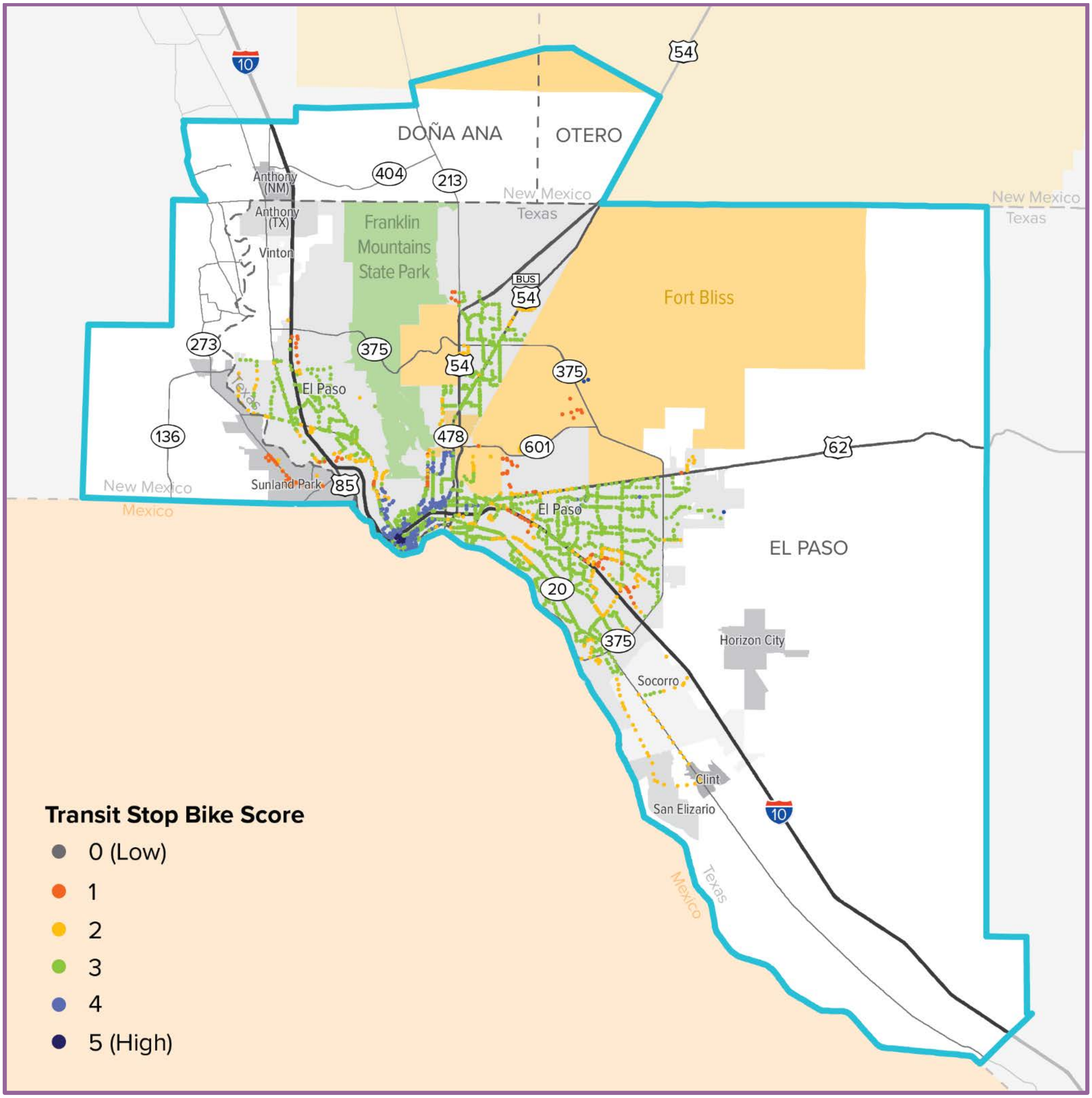
The distribution of employment by bicycle accessibility score closely resembles the distribution of employment by walkability. Roughly 40% of jobs are in an area with a bicycle accessibility score of 3 and a little more than 50% of jobs are in an area with a bicycle accessibility score of 3 or higher. Highly bike-able employment is overwhelmingly concentrated in the central part of El Paso, which is more conducive to bicycle access due to the abundance of low-speed, highly connected roads. Relatively few bike lanes currently exist in El Paso, but most of the ones that do exist are in the central part of the city.

Table 4.4 shows the number of transit stops within the different bicycle accessibility zones. Figure 4.13 shows transit stop locations symbolized by their bicycle accessibility score. Only 16% of transit stops are in an area with a bicycle accessibility score of 4 or 5. While it is not always practical to complete the first or last leg of a transit trip on a bicycle due to most buses having limited room for bicycles, improved cycling accessibility near transit can help strengthen the link between a bike share network and a transit system.

TABLE 4.4: TRANSIT STOPS WITHIN BICYCLE ACCESS ZONES

| SCORE | TRANSIT STOPS | PERCENT |
|---|---|---|
| 1 | 120 | 4% |
| 2 | 362 | 13% |
| 3 | 1,919 | 67% |
| 4 | 412 | 14% |
| 5 | 59 | 2% |

FIGURE 4.13: TRANSIT STOPS BY BIKE SCORE



## WALKING AND BIKING GAP ANALYSIS

### *Active Transportation Mode Share*

Mode share refers to the type of transportation mode chosen per trip by an individual; this section focuses on bike and walk trips occurring in the El Paso MPO Region. The El Paso MPO 2045 Travel Demand Model (TDM) produces estimates of mode shares for several trip purposes using travel surveys and observed trends to generate an informed calculation. The following maps (Figures 4.14 and 4.15) illustrate future bike and walk trip density for home based work trips (HBW) by traffic analysis zones characterized by majority origin, majority destination, or zones with a balance of both trip types. These maps provide context on how future active transportation demand will be distributed throughout the area, based on trip density by mode. Bike trip density is seen in East El Paso, downtown, and along the Mesa Street Corridor. Walk trip density is most prominent in the central business district, and seen moderately in East El Paso and along the Mesa Street Corridor.

FIGURE 4.14: 2045 BICYCLE TRIP DENSITY BY TAZ

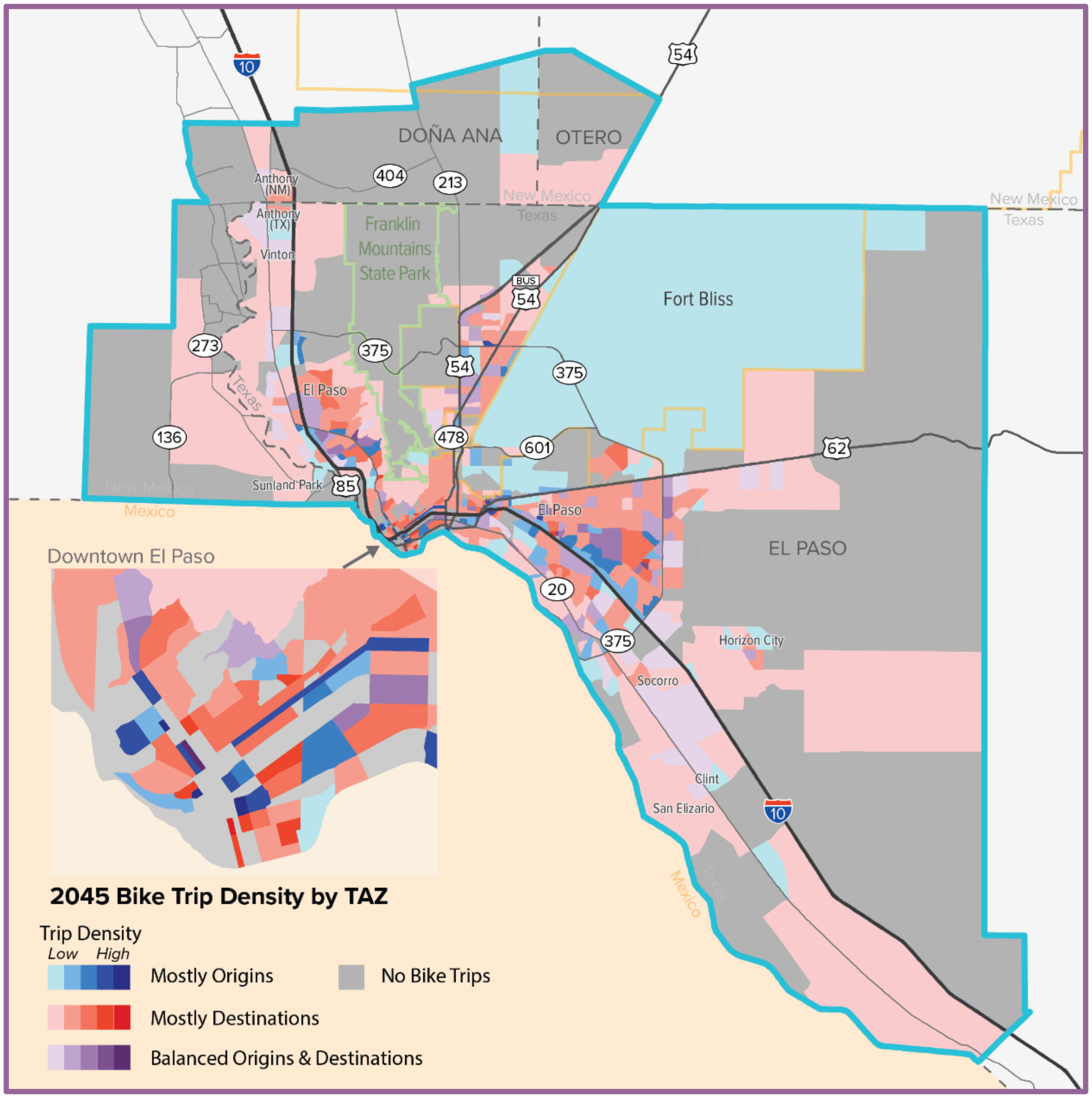
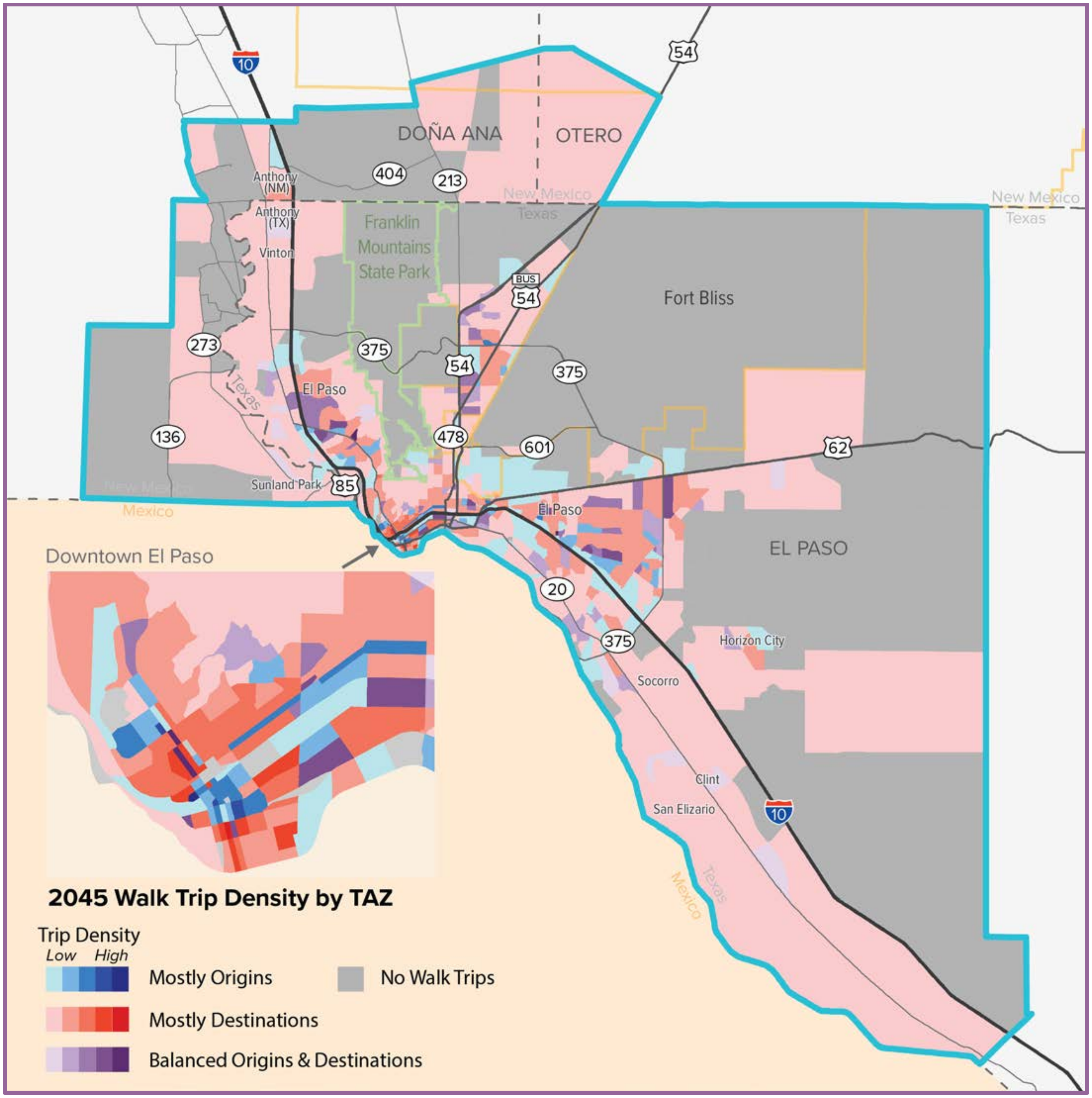


FIGURE 4.15: WALK TRIP DENSITY BY TAZ



### *Walk Gaps*

Analyzing existing conditions provides the framework for preparing the walking and biking gaps analysis as it identifies existing infrastructure deficiencies. To identify gaps in the walking and bicycling network, the project team utilized the El Paso 2045 Travel Demand Model (TDM) and the walk and bike scores noted previously. Origin and destination TAZs were evaluated to represent regional demand for walk trips  Figures 4.16 and 4.17 illustrate origin and destination TAZ walk demand. Gaps were identified by comparing low walk score TAZs to high walk demand TAZs, which shows locations where a high walk demand is not adequately served by pedestrian infrastructure (Figure 4.18). These areas should be prioritized when planning future pedestrian infrastructure projects. Providing pedestrian infrastructure in deficient areas will improve the overall walkability and connectivity of the region, and can support the region’s goals towards reducing emissions and increasing the number of safe, affordable transportation options other than single occupant vehicles.

FIGURE 4.16: WALK ORIGIN DEMAND

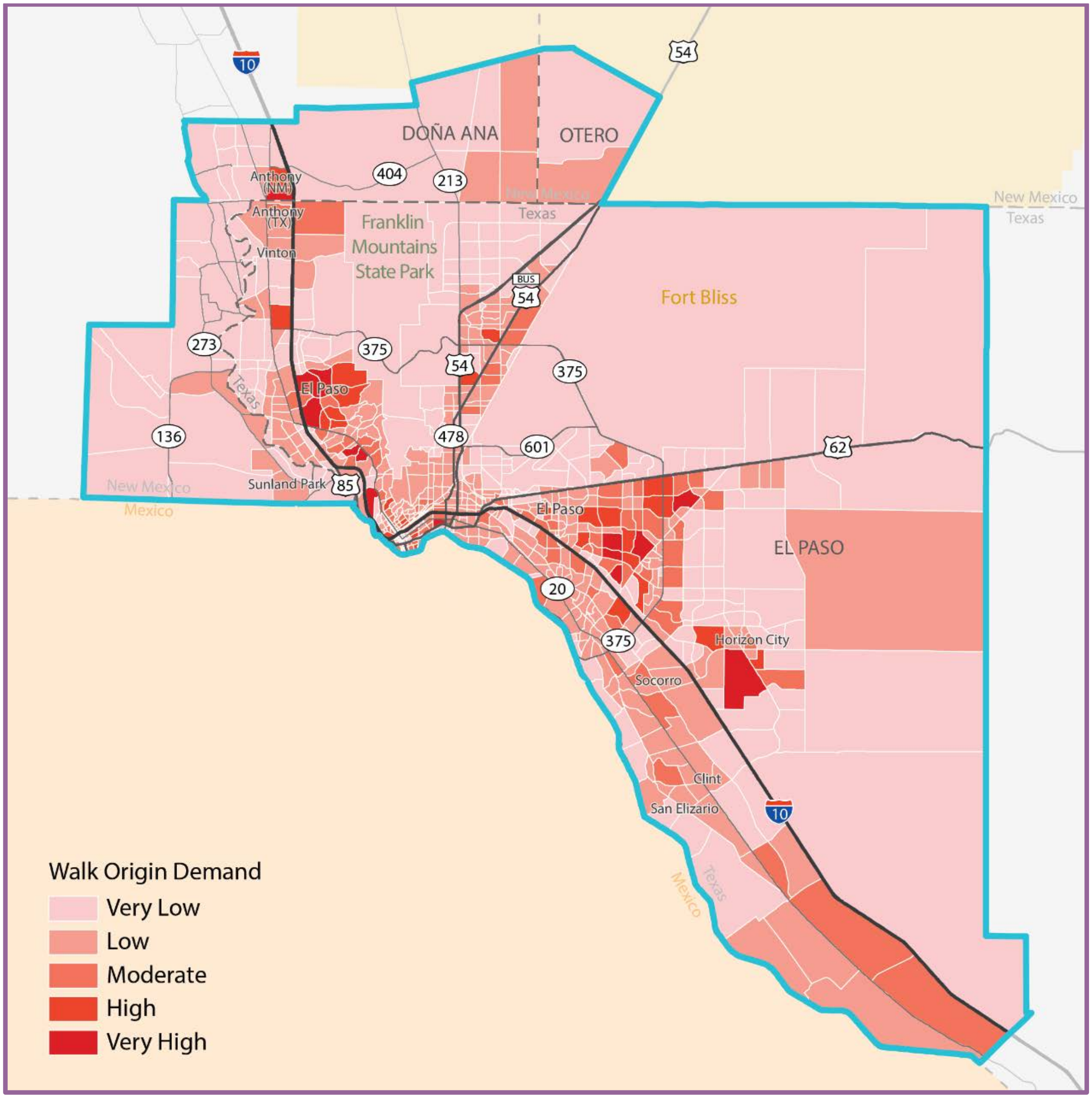


FIGURE 4.17: WALK DESTINATION DEMAND

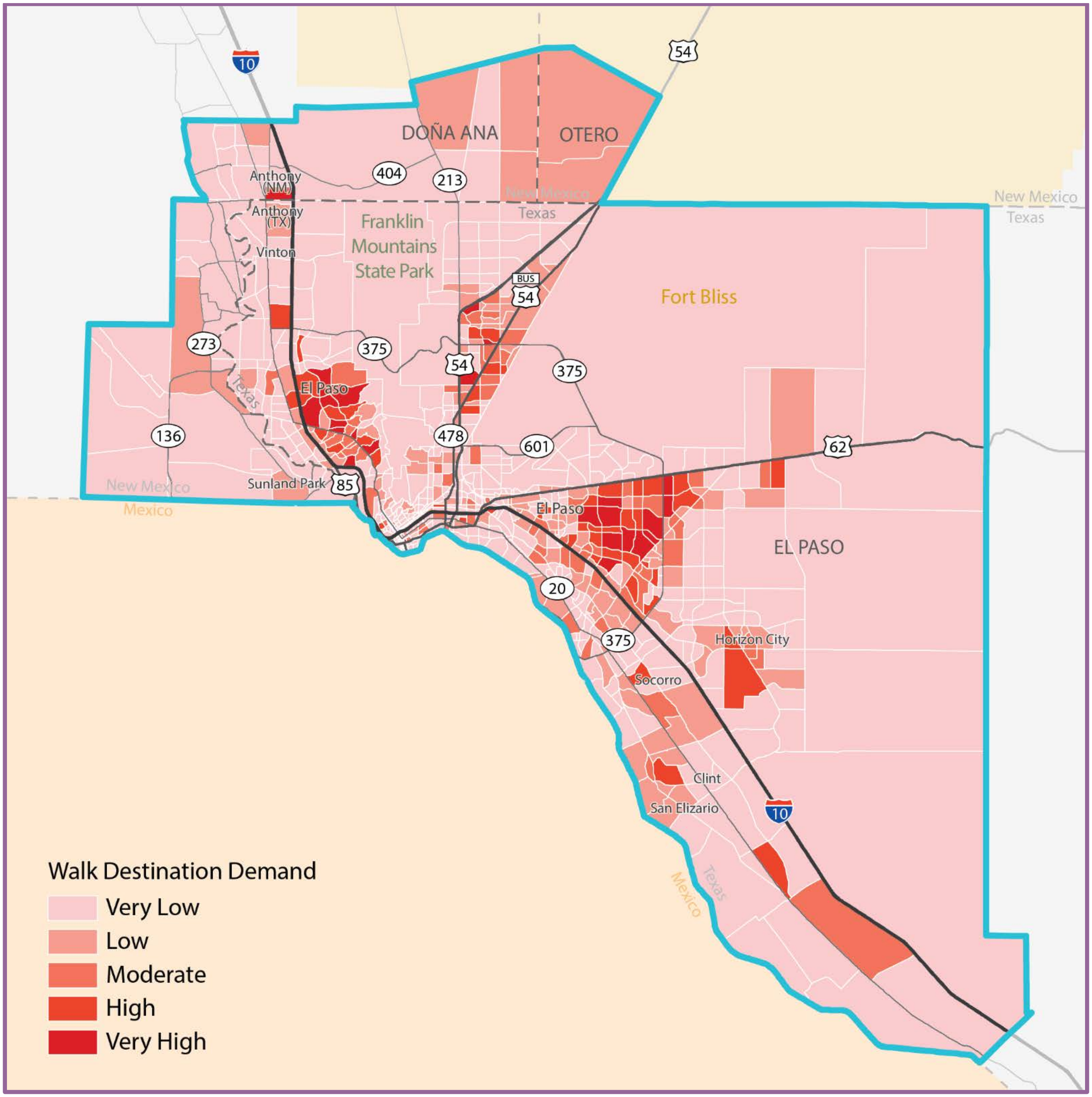
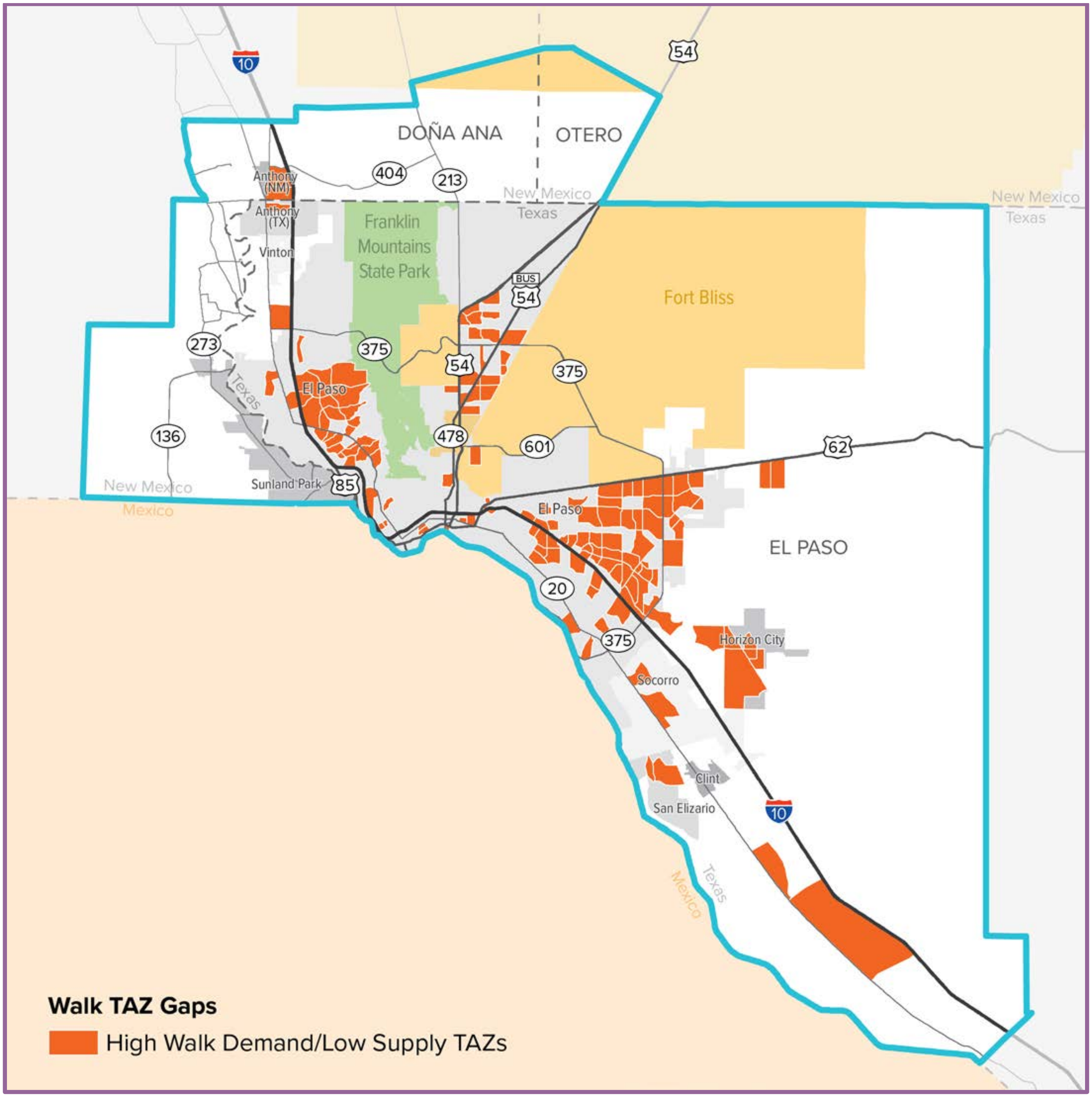


FIGURE 4.18: WALK GAPS



### *Bicycle Gaps*

Bicycle infrastructure gaps are classified multiple different ways. The first type of gap identifies areas with high bicycle demand per the El Paso 2045 TDM but that have poor bicycle accessibility scores. Figures 4.19 and 4.20 illustrates bicycle origin and destination demand based on the El Paso 2045 TDM. Figure 4.21 illustrates intersecting areas where high bicycling demand is met by low bicycling accessibility scores, indicating a disconnect between bicycling demand and the facilities provided within that TAZ. Bicycle demand is represented by origin and destination scores weighted by trip count and trip percentage. The second way to identify future bicycle gaps is to review the future Regional Active Transportation Network against high bicycling demand TAZs. Figure 4.22 shows high bicycle demand TAZs that are not connected to the region via the future Regional Active Transportation Network. Lastly, comparing bicycle demand against the future regional network and local planned bicycle facilities remove gaps that can be addressed by local bicycle infrastructure investment. Figure 4.23 shows potential bicycle gaps where high bicycle demand is not met by either the future Regional Active Transportation Network or existing/planned bicycle facilities. This map illustrates that the future Regional Active Transportation Network and planned El Paso bike facilities form a comprehensive network that results in a much more connected region, but that some gaps still exist. It should be emphasized that the future bike facilities are simply proposed and that further coordination towards implementation is essential for creating a comprehensive and connected bicycle network.

FIGURE 4.19: BIKE ORIGIN DEMAND

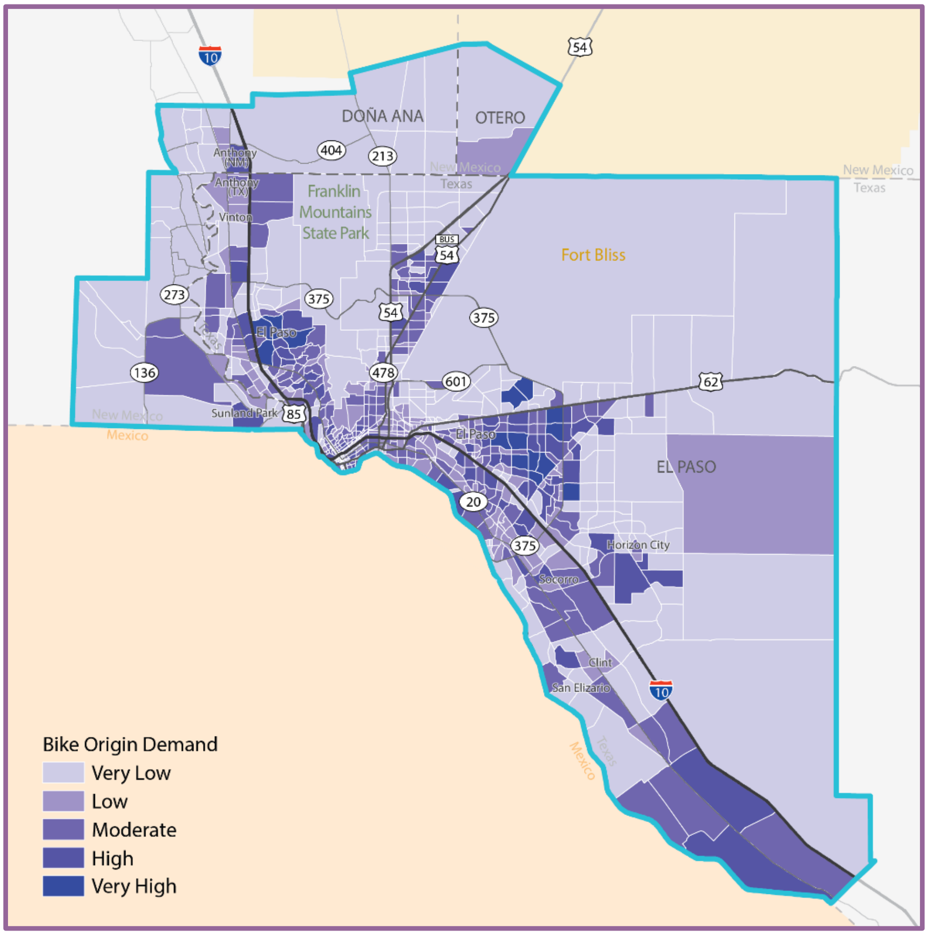


FIGURE 4.20: BIKE DESTINATION DEMAND

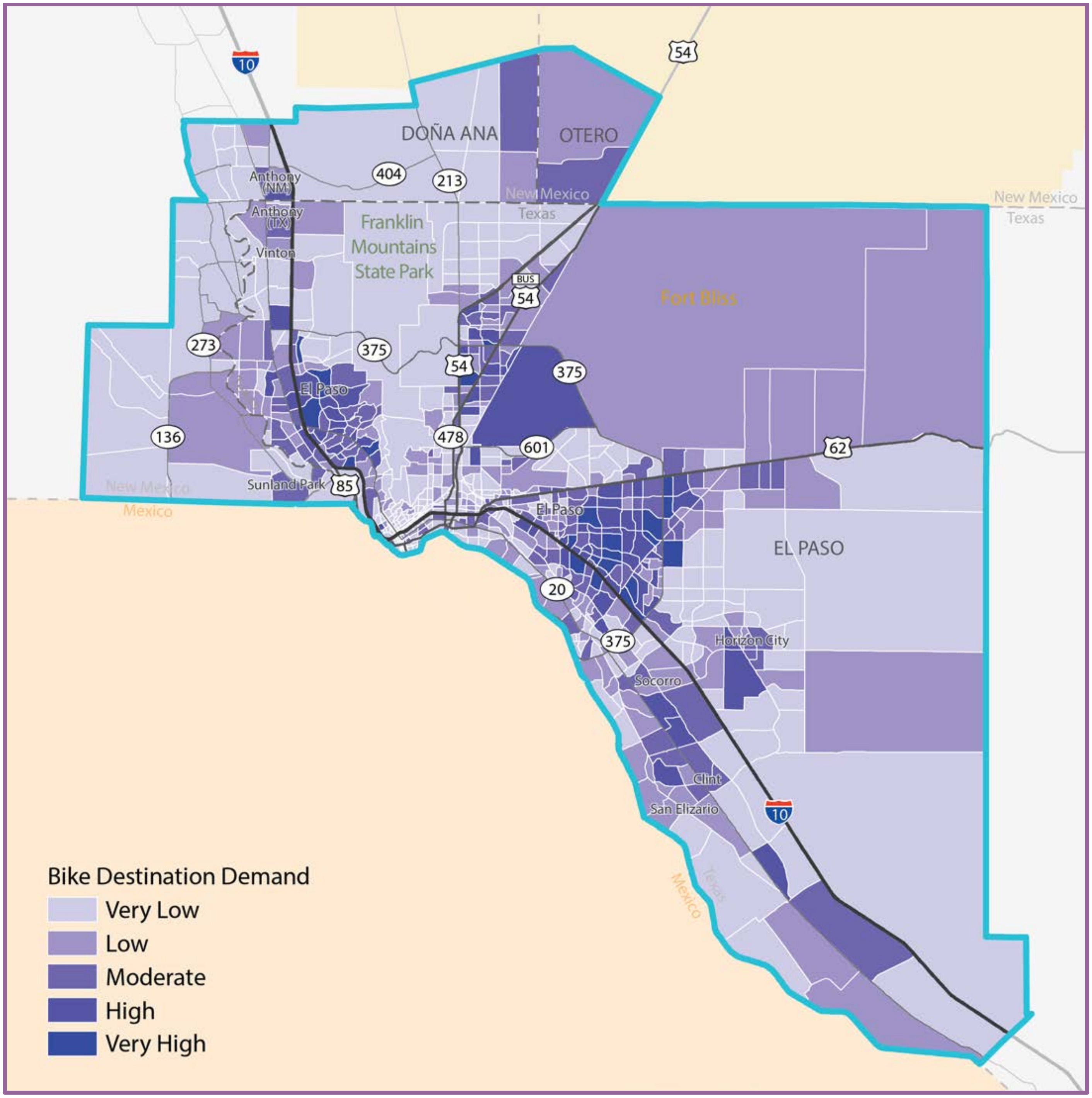


FIGURE 4.21: BIKE GAPS BASED ON BIKE SCORES

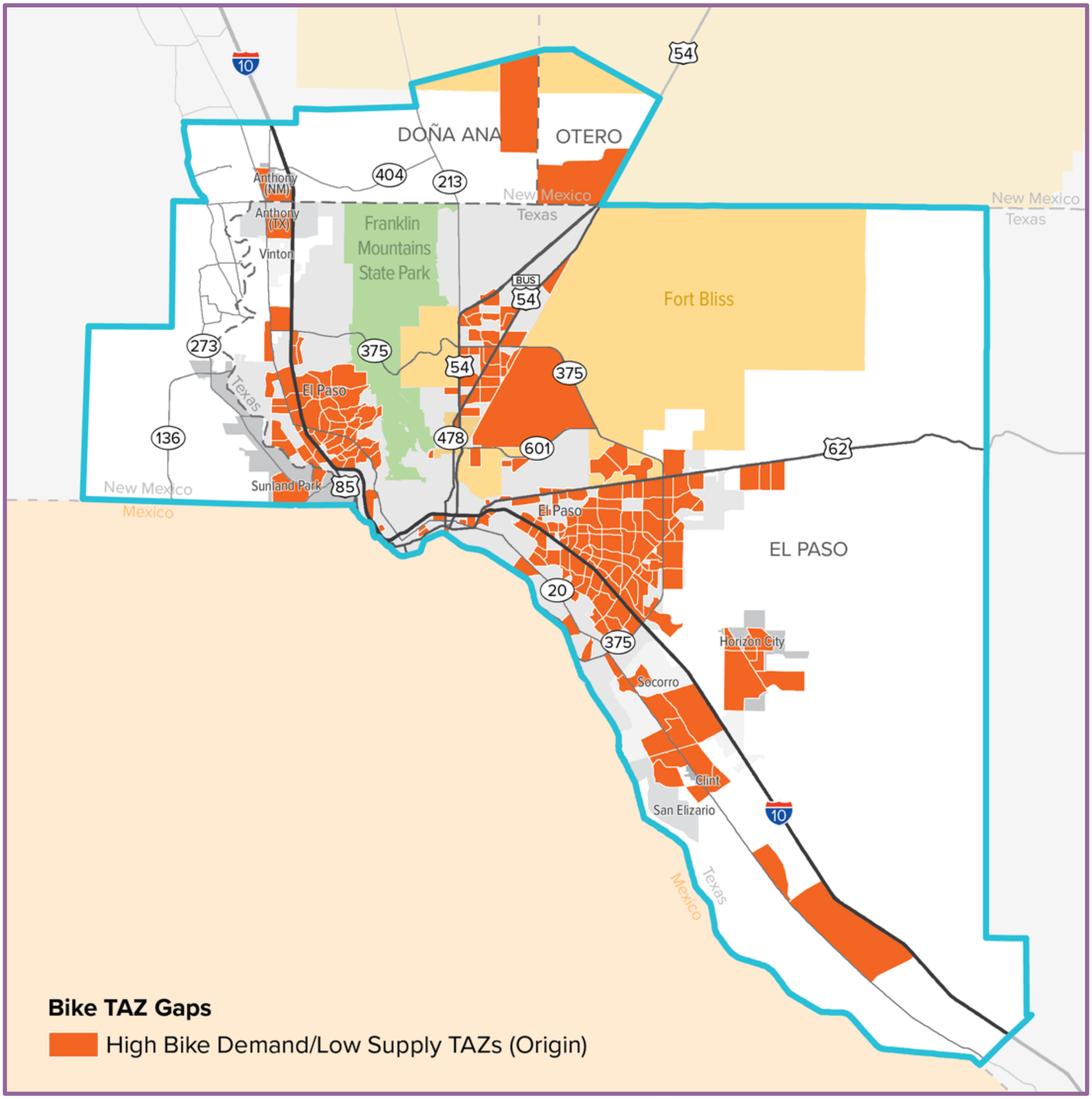


FIGURE 4.22: REGIONAL ACTIVE TRANSPORTATION NETWORK GAPS

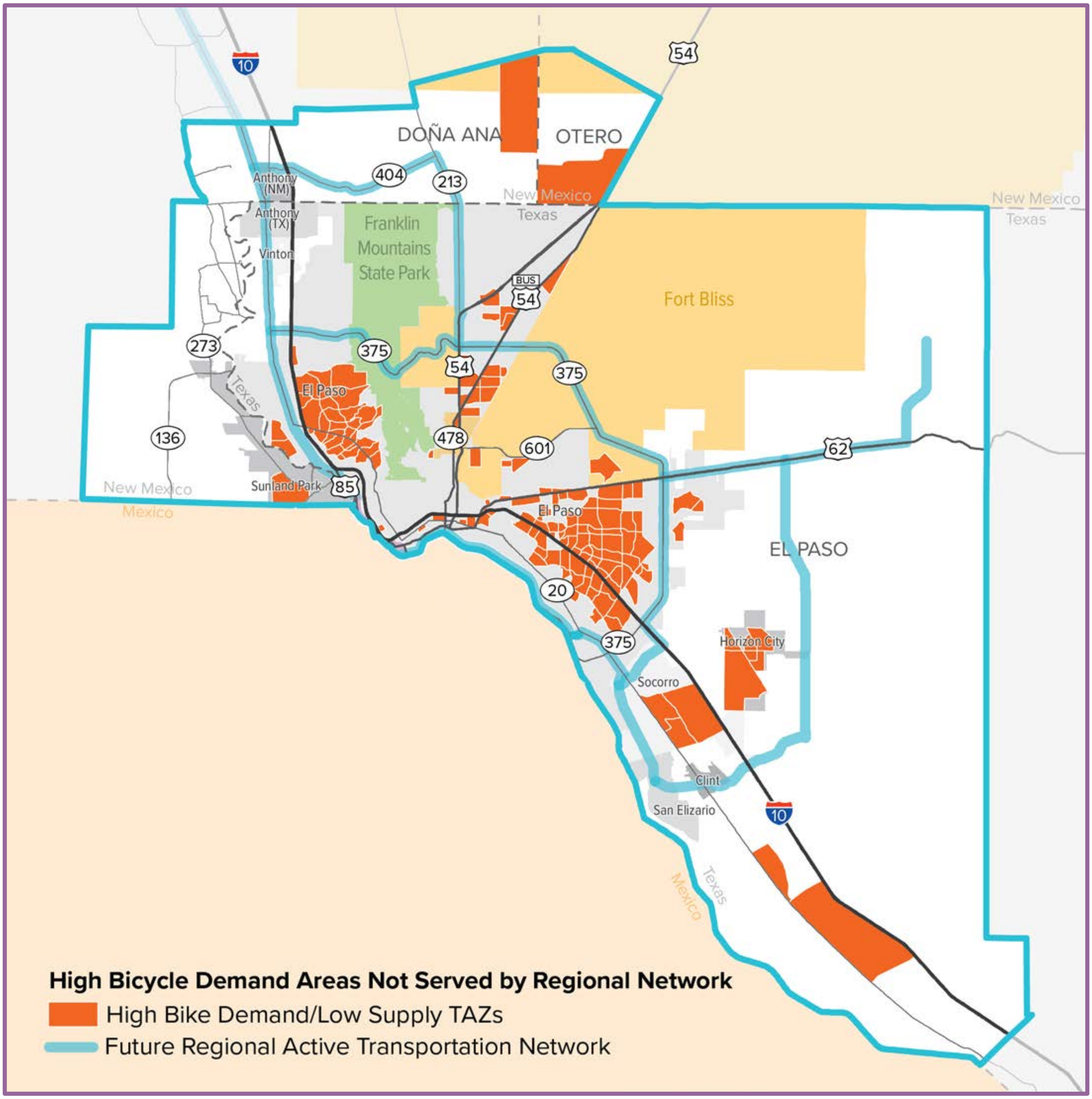
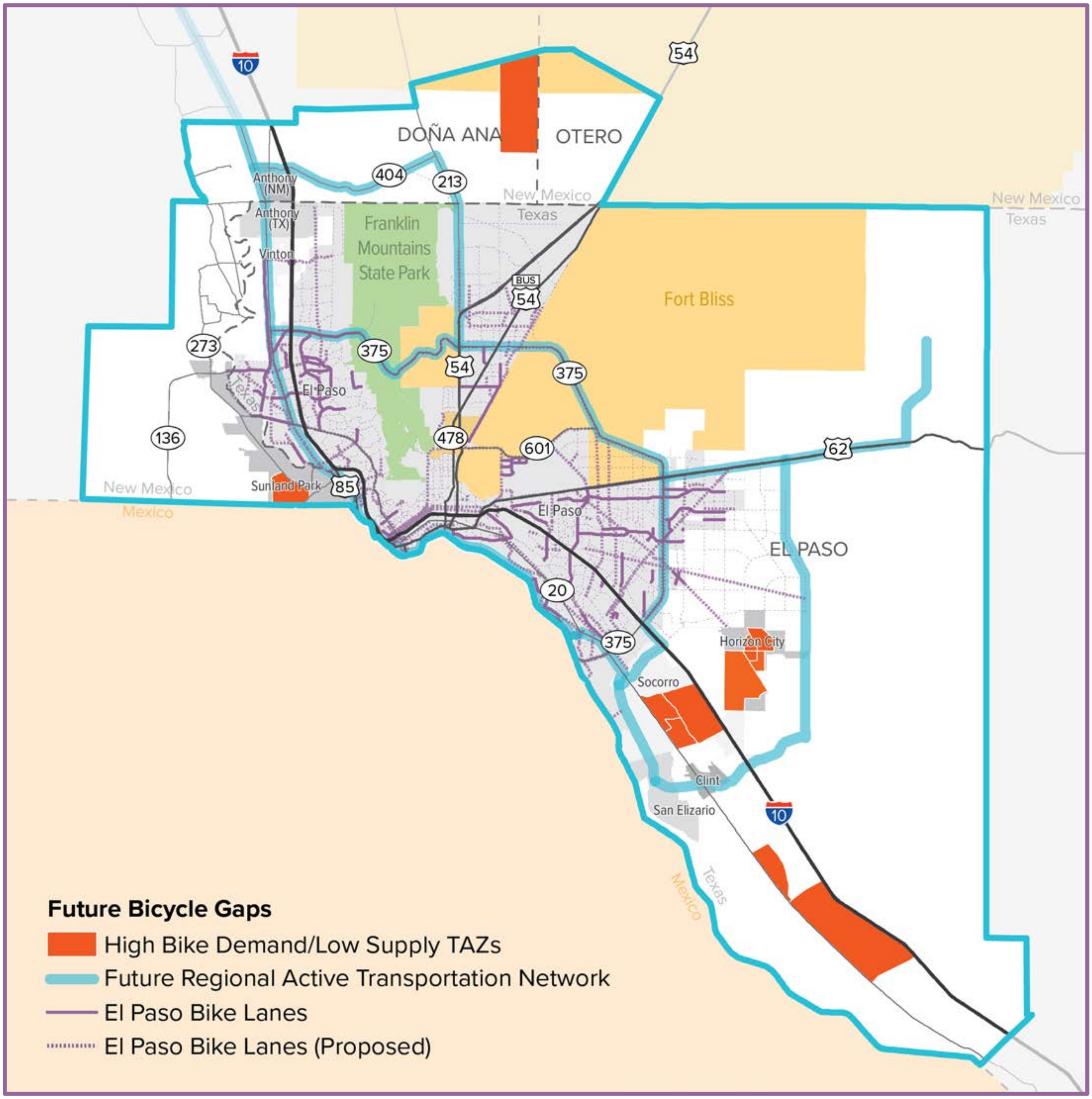


FIGURE 4.23: FUTURE BICYCLE FACILITY GAPS




## SUMMARY

Analyzing and scoring the walking and cycling conditions throughout the region has revealed that some areas are more walkable or more accessible by bicycle than other areas. Some areas have excellent walking or cycling conditions, and other areas have very poor walking or cycling conditions. It is not completely necessary for all areas to have excellent walking or cycling conditions. The results of the active transportation gaps analysis identified specific locations where investment and development of both bicycle and pedestrian facilities can improve regional connectivity. Several of the shared-use paths proposed by the City of El Paso's 2016 Bicycle Master Plan address significant gaps in the regional active transportation network, and the MPO should consider updating the RATP to include these facilities where appropriate.

# 5. PORTS OF ENTRY

## INTRODUCTION

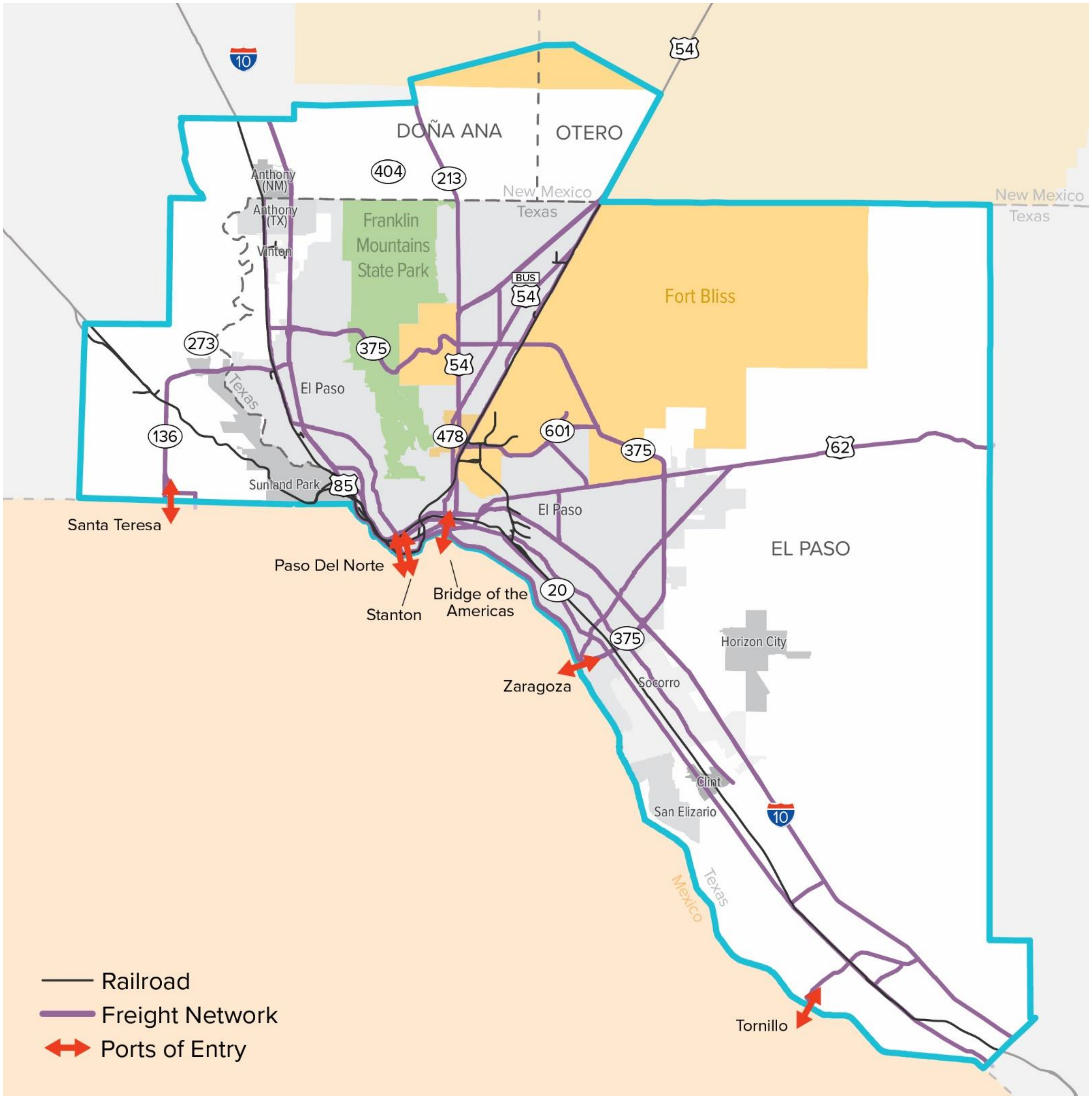
The El Paso MPO region is one of the most significant border crossing regions in the United States. Known as the world's largest international border metroplex, traffic and freight flow between the Texas/New Mexico-Mexico border impacts economies at local, regional, and national scales. Accordingly, Destino 2045 investigates traffic crossing the region's ports of entry (POEs) and the economic implications of congestion and long wait times at these facilities. The region contains six POEs, listed in Table 5.1 and shown in Figure 5.1. This section looks at general traffic trends, wait times, and congestion at these POEs to determine how well they are performing and to identify potential deficiencies near these facilities. The section will also provide observations of each POE and how they support different multimodal traffic.

**TABLE 5.1: EL PASO MPO REGION PORTS OF ENTRY INFORMATION**

| POE NAME | MODES | MAX # OF LANES | CONNECTIONS |
|---|---|---|---|
| Santa Teresa | Passenger/Commercial Vehicle; Pedestrian | Passenger: 3<br>Commercial: 4<br>Pedestrian: 2 | Pete Domenici Memorial Hwy to IH 10 |
| Paso Del Norte (PDN, Santa Fe) | Passenger Vehicle (into the United States only); Pedestrian | Passenger: 12<br>Pedestrian: 14 | El Paso St. to W. Paisano Dr. & IH 10 |
| Stanton Street | Passenger Vehicle; Pedestrian | Passenger: 3 (to Mexico)<br>Passenger: 1 DCL (into US)<br>Pedestrian: 2 | Stanton St. to W. Paisano Dr. & IH 10 |
| Bridge of the Americas (BOTA) | Passenger/Commercial Vehicle, Pedestrian | Passenger: 14<br>Commercial: 6<br>Pedestrian: 4 | IH 110 to US 62 and IH 10 |
| Ysleta-Zaragoza (Zaragoza) | Passenger/Commercial Vehicle, Pedestrian | Passenger: 5 (1 DCL)<br>Commercial: 4 (1 FAST) | Zaragoza Rd. to Loop 375 |
| Tornillo | Passenger Vehicle, Pedestrian | Passenger: 4<br>Pedestrian: 2 | Tornillo Guadalupe Rd. to FM 3380 to IH 10 |

**DCL – Dedicated Commuter Lane; FAST – Free and Secure Trade lanes*

FIGURE 5.1: EL PASO MPO REGION PORT OF ENTRY LOCATIONS



## ECONOMIC IMPACT

The El Paso MPO region's POEs facilitate import/export trade flows between the United States and Mexico, creating jobs and wealth for both Texas and New Mexico, as well as the United States. Texas' POEs have played a major role in supporting roughly $356 billion in international trade, and El Paso's border crossings alone have accounted for nearly 20% of this total (Texas Comptroller, 2015). Additionally, trade activities associated with the region's POEs create an estimated 128,500 jobs for Texas, further indicating how important these facilities are for the region's vitality. Table 5.3 through 5.5 break down import and export trade activity values—collected from the Texas Center for Border Economic & Enterprise Development—for El Paso, Tornillo, and Santa Teresa POEs.

### TABLE 5.3: EL PASO MPO POE EXPORT VALUES

| YEAR | EL PASO | TORNILLO | SANTA TERESA | REGION TOTAL |
|---|---|---|---|---|
| 2014 | $30,988,235,312 | $4,278,975 | $9,875,868,643 | $41,235,248,649 |
| 2015 | $30,607,675,201 | $2,319,477 | $10,299,357,659 | $41,247,555,399 |
| 2016 | $30,668,623,128 | $163,621,351 | $10,754,393,114 | $41,742,655,783 |

### TABLE 5.4: EL PASO MPO POE IMPORT VALUES

| YEAR | EL PASO | TORNILLO | SANTA TERESA | REGION TOTAL |
|---|---|---|---|---|
| 2014 | $35,499,068,213 | $70,322 | $9,521,543,808 | $45,135,404,028 |
| 2015 | $38,614,997,856 | - | $11,685,087,941 | $50,383,468,154 |
| 2016 | $40,127,488,871 | - | $11,949,149,618 | $52,176,459,045 |

### TABLE 5.5: EL PASO MPO POE TRADE VALUE TOTALS

| YEAR | EL PASO | TORNILLO | SANTA TERESA | REGION TOTAL |
|---|---|---|---|---|
| 2014 | $66,487,303,525 | $4,349,297 | $19,397,412,451 | $86,370,652,677 |
| 2015 | $69,222,673,057 | $2,319,477 | $21,984,445,600 | $91,631,023,553 |
| 2016 | $70,796,111,999 | $163,621,351 | $22,703,542,732 | $93,919,114,828 |

The POE facilities within El Paso (e.g. Zaragoza and BOTA) facilitate the most trade in the region, with over 75% of total trade activity value being attributed to these POEs. Since reconstruction in 2016, Tornillo POE has experienced a large upswing in export activity, reaching a total value of roughly $163 million, but still represents a very small value of goods movement compared to the other regional POEs. Santa Teresa POE trade activity was valued at roughly $22.7 billion in 2016. Regional trade activity value totals have consistently increased over the past three years, growing by 8.7% between 2014 and 2016.

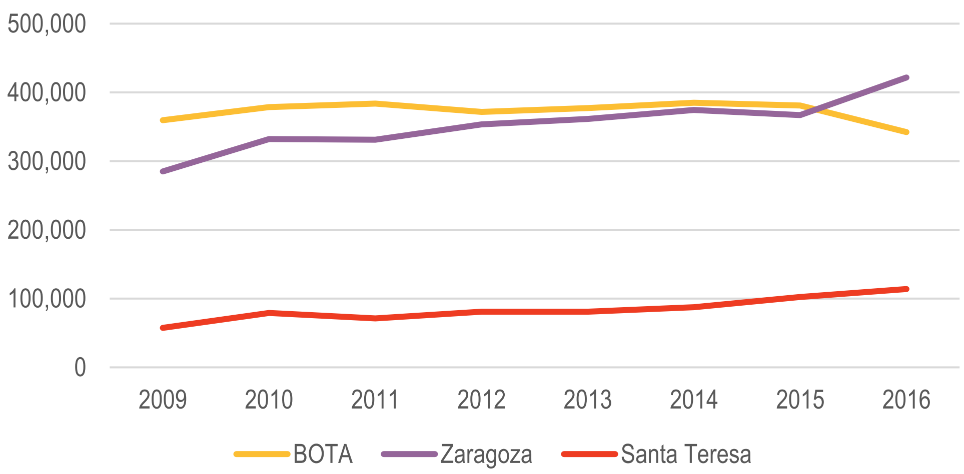
## PORT OF ENTRY TRAFFIC

Data compiled from the Bureau of Transportation Statistics, U.S. Customs and Border Protection, and the City of El Paso provides POE traffic information by mode. This information provides a general overview of how much and what type of traffic is experienced at each of the POEs.

### COMMERCIAL

Figure 5.2 displays commercial traffic from 2009 to 2016 for the region's POEs that allow commercial traffic to cross the border, excluding the Tornillo POE which opened in early 2016 but closed its commercial operations due to relatively low demand (authorities have indicated that commercial traffic may resume at any time when demand warrants). Data shows that most commercial traffic occurs at the BOTA (the only toll-bridge in El Paso) and Zaragoza border crossings, with the Zaragoza POE overtaking BOTA in total freight volume handled in 2015. In total, commercial traffic at these POEs increased by 25% (roughly 176,000 vehicles) between 2009 and 2016, with Santa Teresa experiencing the largest percentage increase at 98%.

FIGURE 5.2: PORT OF ENTRY COMMERCIAL TRAFFIC; 2009-2016



## PASSENGER

Figure 5.3 displays passenger vehicle traffic for five of the six POEs found in the MPO region—Paso Del Norte (PDN) POE only provides data for pedestrian traffic. BOTA experiences substantial annual passenger vehicle traffic in comparison to the other POEs; in 2016, the BOTA POE had 8.5 million passenger vehicles crossings, which is roughly 3 million more than other POEs combined. Zaragoza POE experiences the second largest amount of traffic annually, with nearly 3-million vehicles passing through the facility in 2016. Stanton, Santa Teresa, and Tornillo POEs display annual passenger traffic fluctuating between the 250,000 to 1-million vehicles a year.

## PEDESTRIAN

Figure 5.4 illustrates annual pedestrian traffic volumes for all six of the region's border crossings. The BOTA and PDN POEs experience the highest levels of annual pedestrian traffic, with 2.6 million and 3.2 million pedestrian crossings in 2016 respectively. Zaragoza (528,802 pedestrian crossings) and Stanton (630,740 pedestrian crossings) POEs make up the second tier in terms of pedestrian traffic. While Stanton POE experiences the third most traffic compared to the other regional POEs, pedestrian crossings at this facility have declined by 53% between 2009 and 2016. Santa Teresa (159,687 pedestrian crossings) and Tornillo (31,957 pedestrian crossings) POEs are located in mostly rural or industrial areas where there is little pedestrian traffic, which is reflected in the relatively low number of pedestrian crossings made at these facilities. While the number of crossings at the Santa Teresa POE is relatively low, this facility has seen a significant increase in the amount of pedestrian traffic using this facility; from 2009 to 2016, pedestrian crossings have increased by 184% or over 100,000 crossings.

FIGURE 5.3: PORT OF ENTRY PASSENGER VEHICLE TRAFFIC

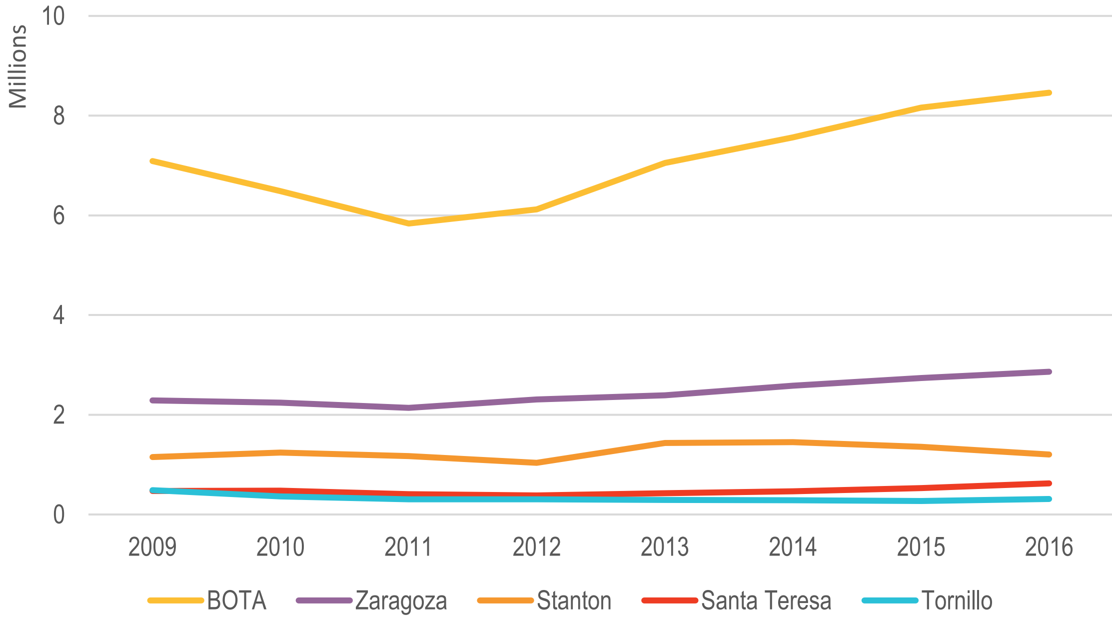
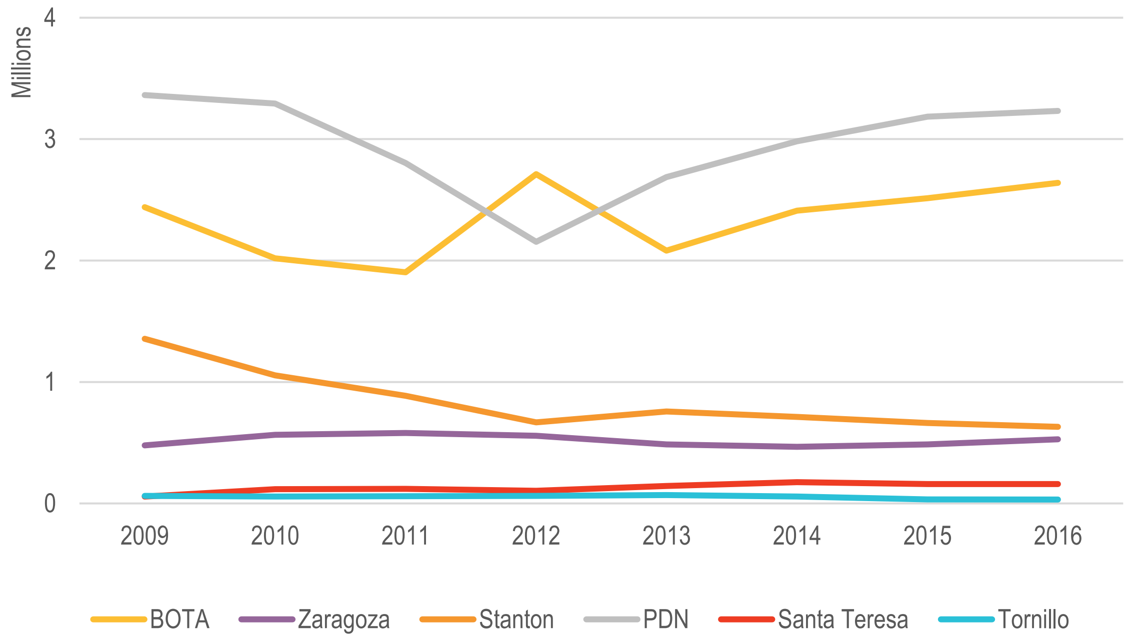


FIGURE 5.4: PORT OF ENTRY PEDESTRIAN TRAFFIC



## PORT OF ENTRY ROADWAY ACCESS PERFORMANCE

While traffic to/from the POEs is typically impacted by the wait times for processing at border crossings, the roadways providing access to the POEs are equally as important to consider. For the POEs to operate more efficiently, congestion and delay along the roadways feeding traffic to these facilities must be minimized. As in other roadway analyses performed in this needs assessment, Destino 2045 analyzes forecasted traffic congestion using outputs from the 2045 El Paso Horizon TDM to identify deficiencies in the roadway network providing POE access. Table 5.2 shows which roadway facilities provide access to each POE.

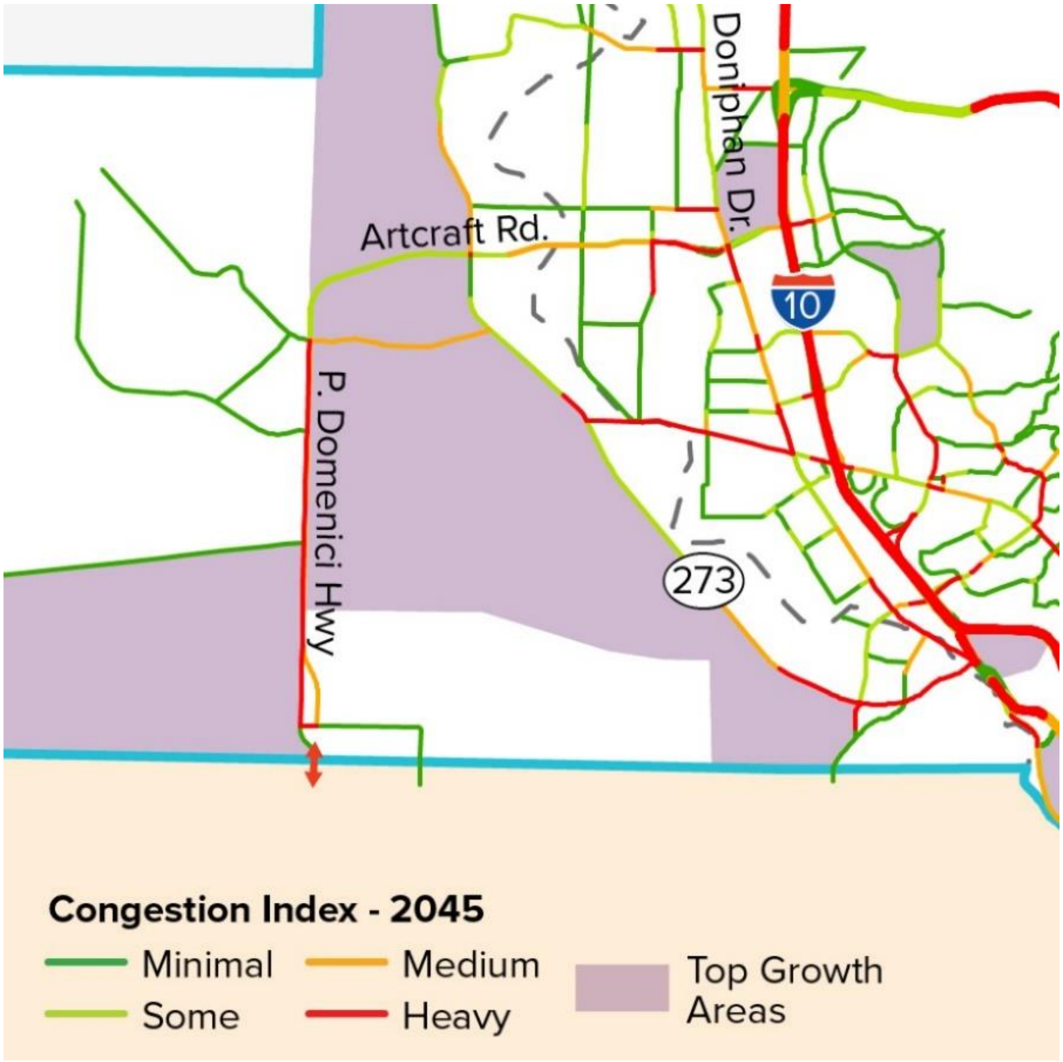
**TABLE 5.2: EL PASO MPO REGION PORTS OF ENTRY ACCESS ROADWAYS**

| POE NAME | ACCESS ROADWAYS |
|---|---|
| Santa Teresa | Pete Domenici Highway |
| Paso Del Norte (PDN, Santa Fe) | W. Paisano Dr./US 62<br>El Paso St. |
| Stanton Street | W. Paisano Dr./US 62<br>Stanton St. |
| Bridge of the Americas (BOTA) | E. Paisano Dr./US 62<br>IH 110 |
| Ysleta-Zaragoza (Zaragoza) | Zaragoza Rd.<br>Loop 375 |
| Tornillo | Middle Island Rd.<br>M.F. Aguilera Rd. |

## SANTA TERESA

Figure 5.5 shows 2045 roadway congestion index for the network providing access to the Santa Teresa POE. By 2045, both Pete Domenici Highway and parts of Artcraft Road are expected to experience heavy congestion. Furthermore, IH 10 and Doniphan Drive, which are major regional roadways that provide connection to Pete Domenici Highway are also anticipated to experience medium to heavy congestion. The increased levels of traffic and congestion are likely spurred by increased activity at the POE but also by high population and employment growth in the area. Other major roadways in the area, Country Club Road and McNutt Road, also show heavy congestion for large portions of those roadways.

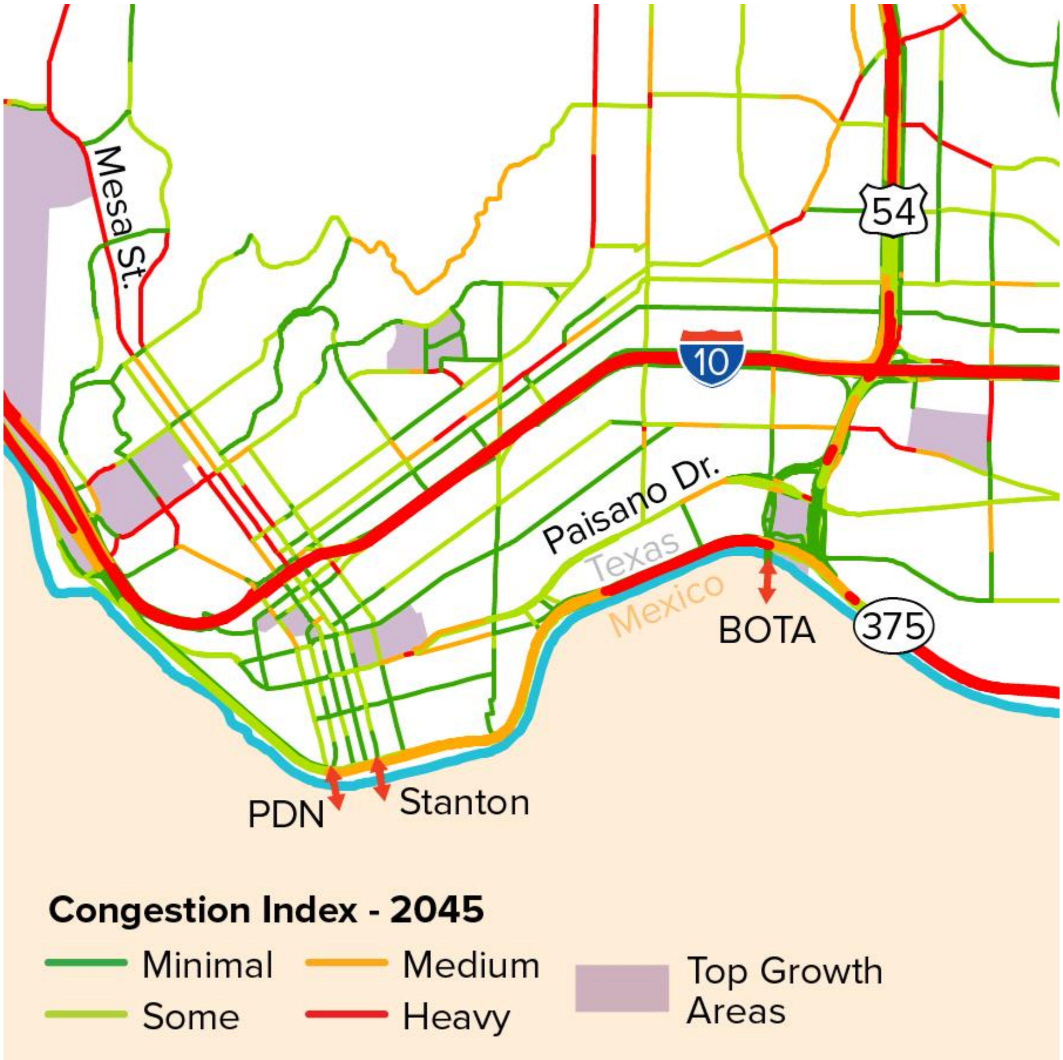
FIGURE 5.5: SANTA TERESA POE ACCESS CONGESTION INDEX; 2045



### DOWNTOWN (PDN, STANTON STREET, BOTA)

Figure 5.6 shows 2045 congestion index for the three POEs located near downtown El Paso: Paso Del Norte (PDN), Stanton Street, and Bridge of the Americas (BOTA). The PDN POE only allows passenger vehicle traffic coming into the United States (northbound) and only has direct connection to Paisano Drive/US 62 via El Paso Street. Stanton Street, which provides direct access to the Stanton Street POE, also directly connects to Paisano Drive/US 62 and provides relatively easy access to IH 10. As a major facility providing access to the PDN and Stanton Street POEs, Paisano Drive/US 62 shows relatively low anticipated levels of congestion in downtown El Paso near these facilities. In fact, much of the local road network in downtown El Paso providing access to these facilities shows relatively little forecasted peak period congestion. IH 10 on the other hand is anticipated to experience heavy peak period congestion in the forecast year (2045), which may impact accessibility and increase delays for those trying to cross the border at these POEs. The same congestion observations are also seen at the BOTA POE—relatively low congestion along Paisano Drive and lower functional class roadways providing POE access and heavy congestion along the major facilities (e.g. IH 10 and US 54). Although there is medium to heavy congestion along Loop 375 near these POEs, the roadways connecting to the POEs do not interchange with Loop 375.

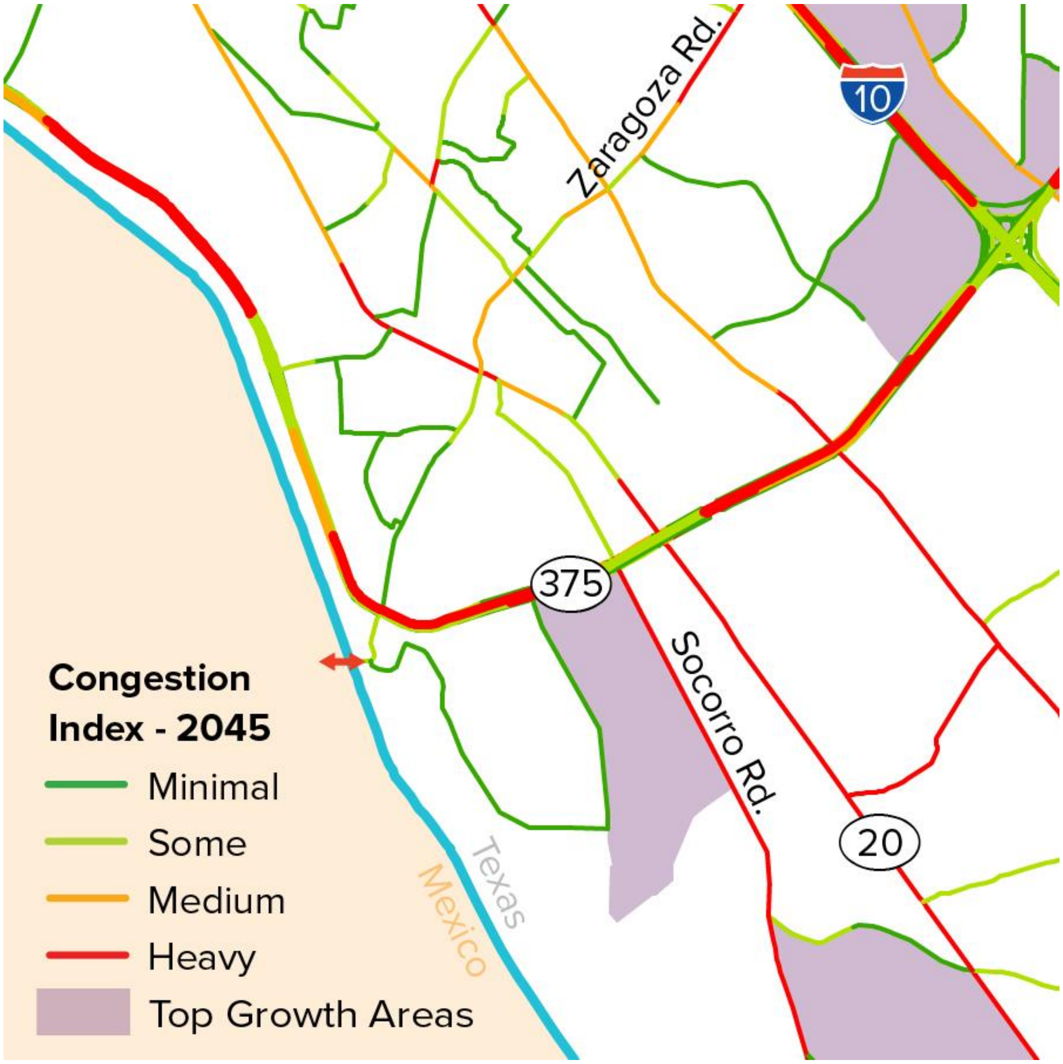
FIGURE 5.6: DOWNTOWN EL PASO POE ACCESS CONGESTION INDEX; 2045



### ZARAGOZA

Figure 5.7 shows heavy congestion for major roadways connecting to the Zaragoza POE in 2045. Both Loop 375 and IH 10 have large segments of roadway that are anticipated to experience heavy congestion. As a facility that generates the largest amount of commercial vehicle traffic, it can be assumed that these major regional connectors will be heavily utilized by commercial freight vehicles carrying freight throughout the region and United States. As a result, congestion along Loop 375 and IH 10 could have a significant negative impact on the region's freight industry. For local access to the POE, the congestion index shows heavy congestion along major corridors in the area. Both Socorro Road and Alameda Avenue are anticipated to experience heavy congestion, particularly south of Loop 375. Zaragoza Road intersections with major roadway facilities also show relatively high levels of congestion.

FIGURE 5.7: ZARAGOZA POE ACCESS CONGESTION INDEX; 2045



## TORNILLO

Figure 5.8 shows that there is relatively little congestion near the Tornillo POE. While some of the roadways connecting to IH 10 (Fabens Rd. and OT Smith Rd.) are expected to experience heavy congestion, the facilities providing direct access to the POE are not expected to be heavily congestion during peak periods in the future.

FIGURE 5.8: TORNILLO POE ACCESS CONGESTION INDEX; 2045

## WAIT TIMES

While increased trade activity at the region's POEs is typically a positive indicator for economic vitality, it also means that congestion and wait times at these facilities are likely to increase if no operational improvements are made. This is especially true as the border crossing process becomes more complicated because of more thorough inspections, particularly for vehicles entering the United States. If delays at the region's POEs become too long, economic development facilitated by the POEs may stagnate due to decreased competitiveness in moving goods. It is crucial for the region's economic vitality that these POE facilities operate as efficiently as possible.

Table 5.6 provides average commercial vehicle wait times at two of the major POEs in the region, Zaragoza and BOTA, between 2013 and 2016. Wait times were calculated using TTI's Border Crossing Information System (BCIS) data query tool. At both POEs vehicle wait times increased every year between 2013 and 2015, until there was a significant decrease in 2016. Over the four-year period, the wait times at the Zaragoza and BOTA POEs increased by 8% and 40% respectively. If this trend continues, the movement of goods throughout the region will be hindered, potentially resulting in additional transportation costs and negative effects on the local economy.

**TABLE 5.6: POE AVERAGE COMMERCIAL VEHICLE WAIT TIME (MINUTES); 2013-2016**

| YEAR | ZARAGOZA | BOTA |
|---|---|---|
| 2013 | 36 | 35 |
| 2014 | 42 | 45 |
| 2015 | 45 | 57 |
| 2016 | 39 | 49 |

Passenger vehicle and pedestrian wait times are also important to consider when evaluating the performance of POEs, as the POEs provide access across the United States-Mexico border which can lead to additional opportunities for those living and working in the El Paso MPO region. Although the BCIS does not provide detailed data for these wait times, review of historical wait time estimates show that passenger vehicles could expect to wait anywhere from 10 minutes to an hour at some of the region's POEs. On the other hand, pedestrian wait times were shown to typically not exceed more than a few minutes. Air quality is another important consideration when discussing wait times. As vehicles sit idle in traffic waiting to cross the border, they are releasing emissions. The longer vehicles have to wait at the POEs, the more emissions that are being released into the atmosphere.

In order minimize wait times, El Paso POE operators have begun investing in intelligent transportation and real-time information systems to expedite inspections and traffic. Examples include Dedicated Commuter Lanes (DCL) and the Secure Electronic Network for Travelers' Rapid Inspection (SENTRI), where designated lanes work in conjunction with an organized network to channel applicable travelers into specified flows of traffic with streamlined inspection processes. The Free and Secure Trade Program (FAST) allows expedited commercial vehicle processing for trusted shippers carrying low-risk shipments. Ultimately, these programs work to achieve more streamlined travel lanes and reduced border wait times.

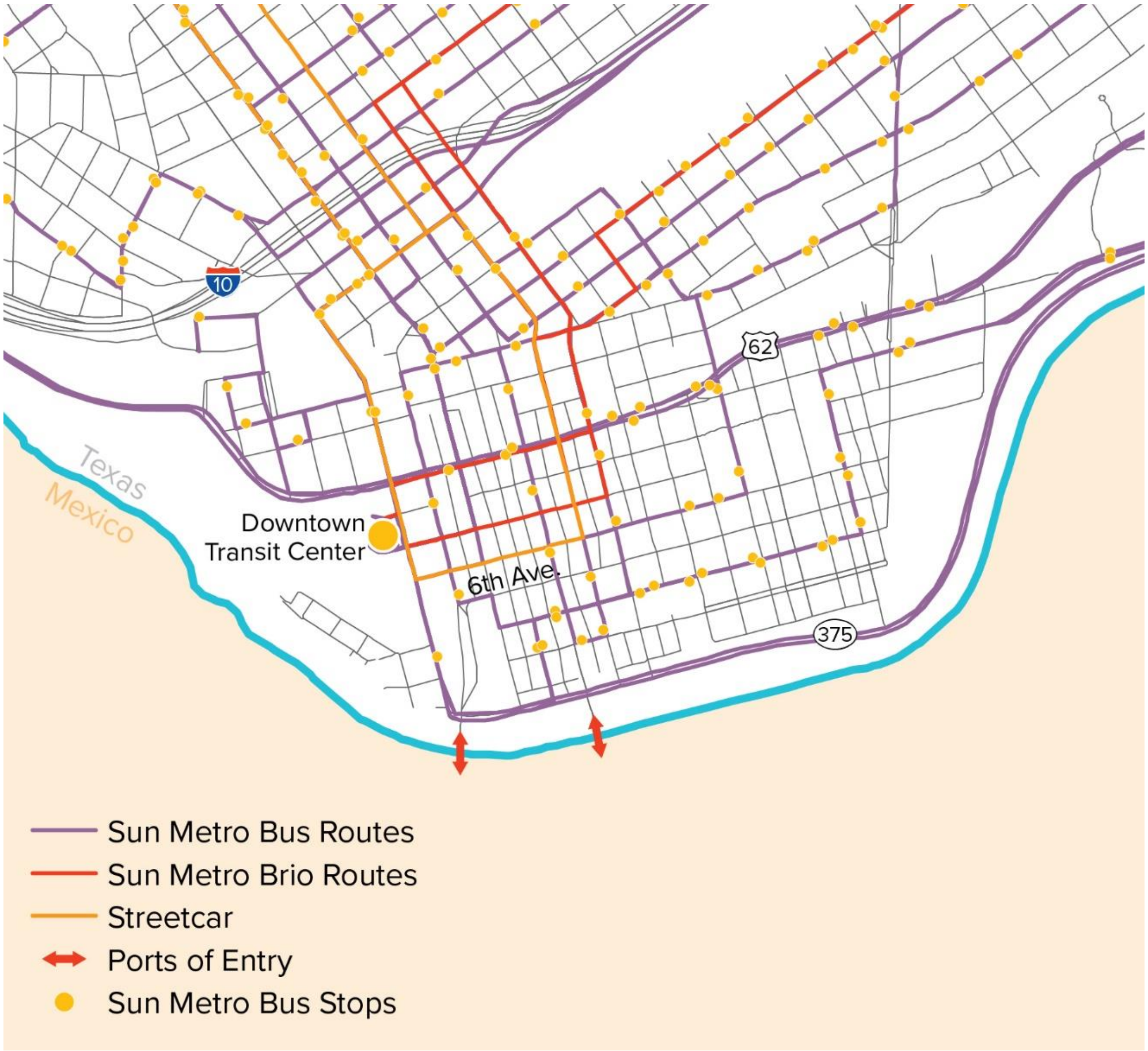
## MULTIMODAL POE ACCESS

For pedestrians crossing the United State-Mexico border at the region's POEs, transit and bike/ped infrastructure provide accessibility to the rest of the El Paso region. In turn, this provides increased opportunities for those without a vehicle.

### TRANSIT ACCESS

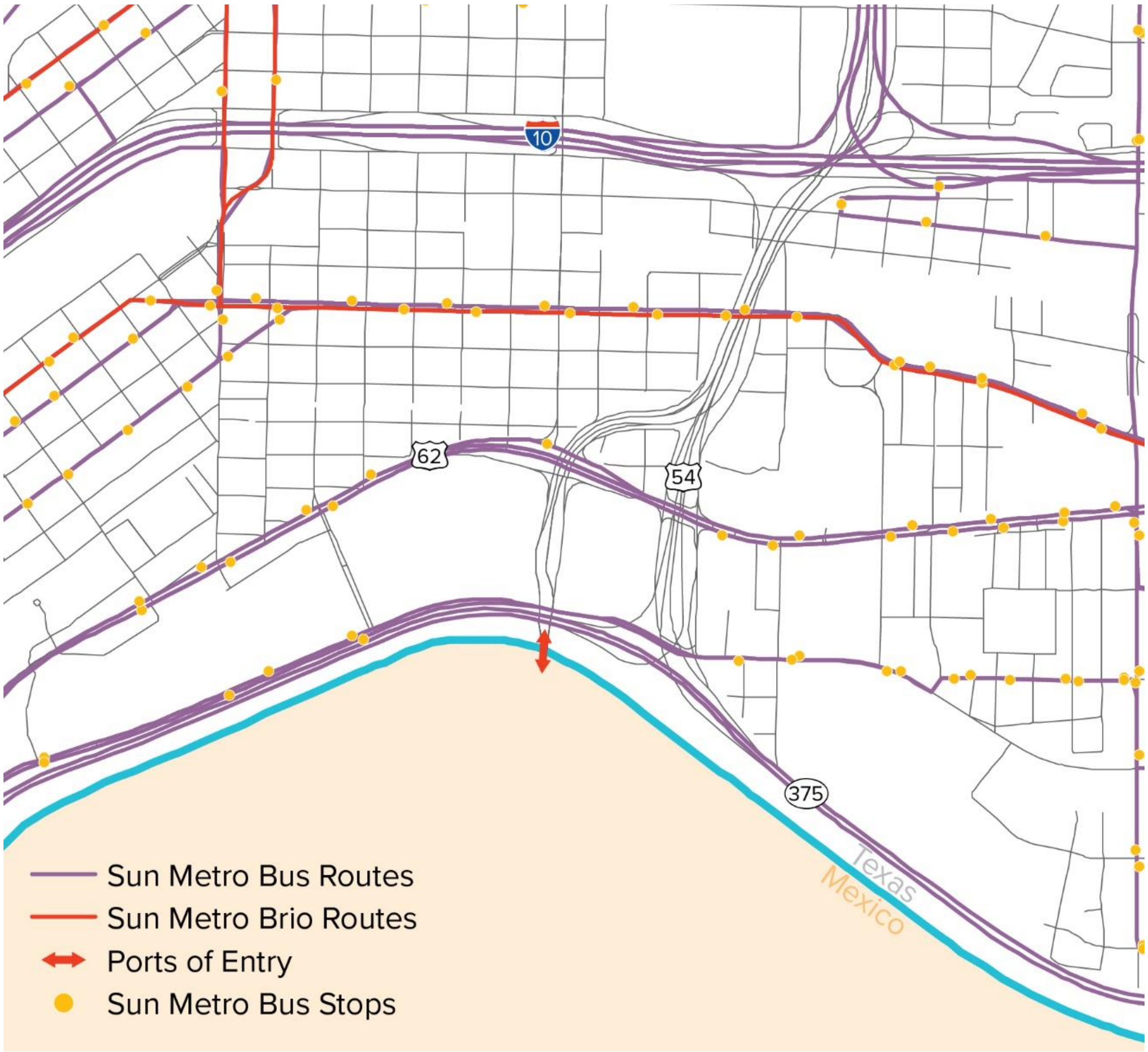
Both the Santa Teresa and Tornillo POEs are located in rural parts of the El Paso MPO region and do not provide access to transit. On the other hand, the PDN and Stanton Street POEs, which are located in downtown El Paso, provide easy access to a variety of high quality transit options. Figure 5.9 shows the location of local transit stops and routes relative to the PDN and Stanton Street POEs. From the PDN POE, the Downtown Santa Fe Transfer Center is only a 0.2 mile (about 5 minutes) walk. This major transfer center provides access to over 26 different Sun Metro bus routes, as well the Sun Metro Dyer Brio route and future streetcar route. The walk from the Downtown Santa Fe Transfer Center to the Stanton Street POE is 0.5 miles (about 11 minutes). There are also several other bus stops within easy walking distance (less than 5 minutes) from each of these POEs.

FIGURE 5.9: TRANSIT ACCESS AT PDN AND STANTON STREET POES



Access to transit is much more difficult at the BOTA POE (Figure 5.10) compared to the other POEs. There are only two transit stops (providing access to two bus routes) within 0.5 miles of the POE entrance/exit and both require pedestrians to walk across and along major highways. Sidewalks and signalized crosswalks are located along the paths to these transit stops, though, which allows for pedestrians to access transit more safely and comfortably. As the POE with the second highest amount of pedestrian traffic, the lack of transit access nearby limits where pedestrians can travel once they cross the border.

FIGURE 5.10: TRANSIT ACCESS AT BOTA POE



Transit access is similar at the Zaragoza POE (Figure 5.11). There is only one bus stop within walking distance that serves two routes. Again, sidewalks and signalized crosswalks are present along the path between the POE and bus station, but it requires pedestrians to cross a major highway (Loop 375).

**FIGURE 5.11: TRANSIT ACCESS AT ZARAGOZA POE**

Additionally, for both the BOTA and Zaragoza POEs, the closest transit stops to these facilities appear to have few or inadequate amenities. Figure 5.12 and 5.13 show the conditions of the transit stops nearest these two POEs.

**FIGURE 5.12 AND 5.13: BOTA TRANSIT STOP AND ZARAGOZA TRANSIT STOP**



## BIKE/PED INFRASTRUCTURE

Similar to findings discussed in the Transit Access section, the PDN and Stanton Street POEs provide more pedestrian-friendly infrastructure by virtue of being located in a downtown urban environment. However, there is little dedicated active transportation (bicycling or walking) infrastructure at these POEs, mostly sidewalks, pedestrian islands, and non-signalized crosswalks. There also does not appear to be any bike infrastructure (outside basic bike racks) and minimal signage warning drivers of pedestrians crossing. Figure 5.14 shows a street level view of the PDN POE El Paso Street entrance/exit. For the POE that experiences the highest amount of pedestrian traffic (over three million pedestrians a year) in the region, the current infrastructure at this entry point does little to prevent conflict points between vehicles and pedestrians or optimize how vehicle and pedestrian traffic interact with each other.

**FIGURE 5.14: BIKE/PED CONDITIONS AT PDN POE EL PASO ST. ENTRY**

Figure 5.15 shows a street level view of the PDN POE Santa Fe Street entrance/exit, which provides more active transportation infrastructure and is in general more attractive for pedestrians crossing the border. For example, this access point provides an entrance plaza and flashing beacon signaling to drivers to watch for pedestrians.

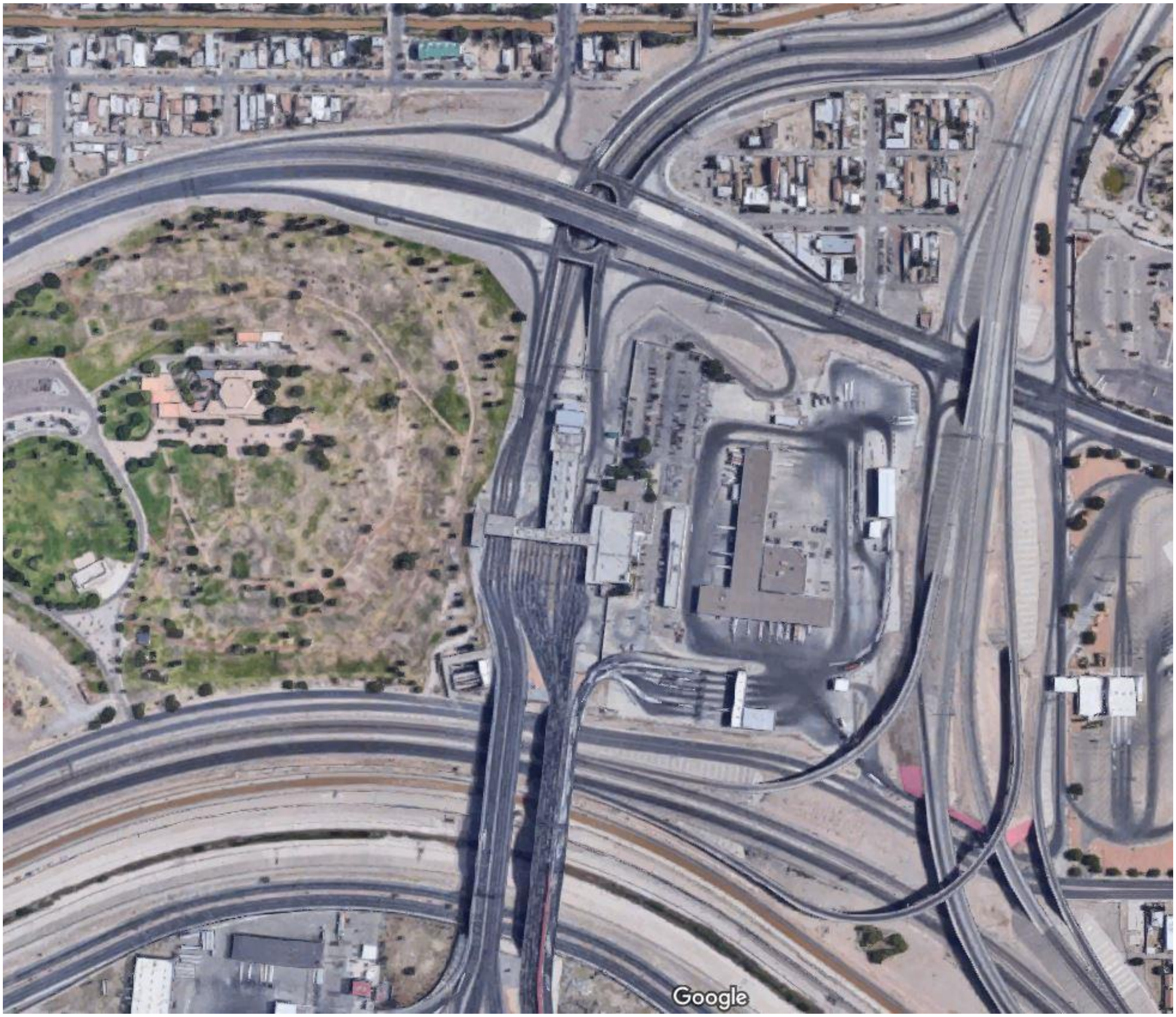
**FIGURE 5.15: BIKE/PED CONDITIONS AT PDN POE SANTA FE ST. ENTRY**

Figure 5.16 shows a street level view of the Stanton Street entrance/exit. This POE access point includes a covered entrance plaza, a pedestrian island, a bike rack, and higher quality pedestrian infrastructure.

**FIGURE 5.16: BIKE/PED CONDITIONS AT STANTON STREET POE ENTRY**

For the BOTA POE, the biggest issue is that the POE access point for pedestrians and bicyclists is surrounded on two sides (to the north and east) by major highways (US 62 and US 54). While there are sidewalks and crosswalks along these facilities, there are few destinations within a short walking distance as these major roadways and the POE facilities take up much of the space in the area. Also, crossing and walking along high-speed roadways is typically stressful for pedestrians. Conversely, to the west of the POE there is a large park which provides an environment that is more conducive to bicycling and walking and leads to better crossing locations away from the major highway interchanges. Figure 5.17 is an aerial image showing how the major highways separate the POE from more developed, walkable areas.

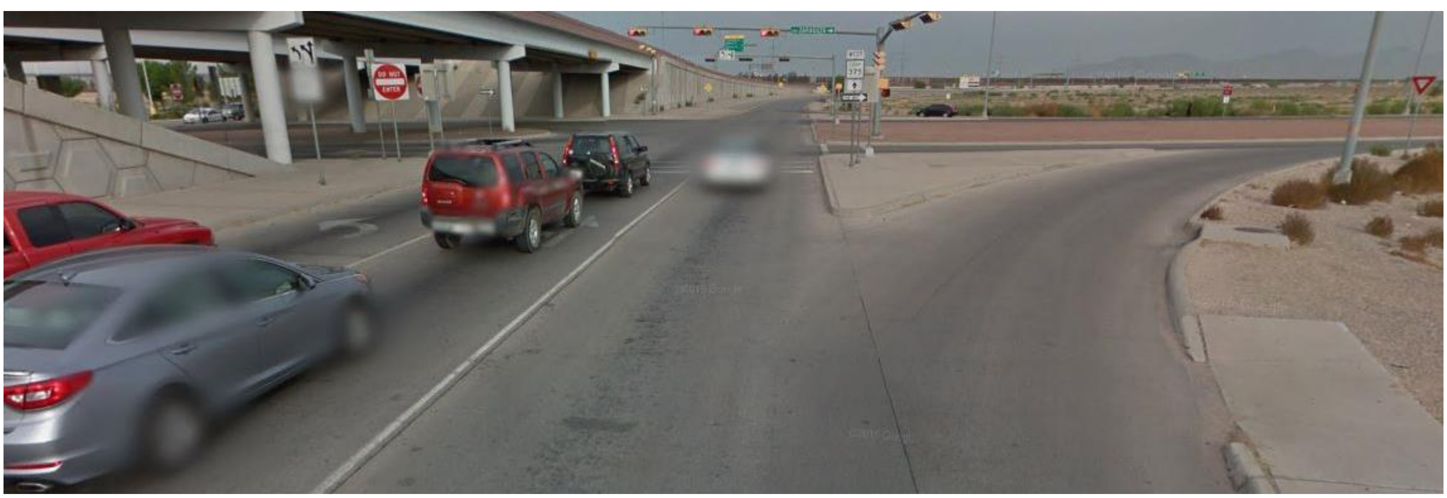
**FIGURE 5.17: BIKE/PED CONDITIONS AT BOTA POE ENTRY**



The Zaragoza POE provides basic pedestrian infrastructure (e.g. signalized crosswalks and sidewalks) and no bike infrastructure. Though 500,000 pedestrians cross the border at the POE annually, there are virtually no destinations nearby that would be considered within walking distance. The lack of nearby destinations and review of aerial photography suggest that many of those who cross the border at this location utilize transit or are picked up by someone in a personal vehicle. For example, Figure 5.18 shows a line of cars, which is consistently present in historical photos of the area as well, waiting in a pull-out bay at a sidewalk leading to the POE. Figure 5.19 shows one of the intersections transit riders must cross to access the bus stop at the Zaragoza POE. Though there is a signalized crosswalk, it does not include the high-speed turn lane onto Zaragoza Road and does not appear to be ADA accessible. The sidewalk also ends before reaching the crossing.

FIGURE 5.18: BIKE/PED CONDITIONS AT ZARAGOZA POE ENTRY

FIGURE 5.19: BIKE/PED CONDITIONS AT ZARAGOZA POE BUS STOP



## CONCLUSION

Millions of people cross the United States-Mexico border within the El Paso MPO region every year. The POEs that facilitate traffic across the border play a vital role in the economic vitality of the region and quality of life for those living in the region. For the POEs to continue to support movement across the border in the future as traffic levels increase, Destino 2045 must address transportation deficiencies identified at these facilities. These deficiencies include:

- Congestion along major highways (IH 10, P. Domenici Hwy, Loop 375) connecting to roadways that provide direct access to the POEs
- Increasing commercial vehicle wait times
- Minimal transit access, with the exception of the PDN and Stanton Street POEs
- Lack of bike infrastructure and minimal pedestrian infrastructure

# 6. FREIGHT

## INTRODUCTION

Transportation systems not only move people throughout a region, but they also support the movement of goods in the form of freight, which is a vital component of the region's economy and quality of life. For a freight system to perform well, delays along the transportation system that freight relies on should be minimized and traffic should be predictable. The impacts of a system that allows freight vehicles to move efficiently throughout the region include improved mobility, as freight trucks are a major source of traffic, and improved economic vitality. Destino 2045 considers not only the freight roadway network but airports, railroads, and intermodal facilities as well, as all play a major role in freight movement in and out of the region.

The Destino 2045 roadway freight analysis focuses on identifying the amount of delay along a locally-defined freight network. The El Paso MPO regional freight network is based on a combination of other freight networks established by FHWA and TxDOT, as well as roadways in the region which experience large amounts of current or forecasted freight traffic. The networks that serve as the basis of the Destino 2045 freight roadway network include the primary highway freight system (PHFS) from FHWA's national highway freight network (NHFN) and TxDOT's Highway Freight Network. Using the El Paso TDM network, which includes an estimate of freight vehicle usage along every link in the region, additional road segments were added to the Destino 2045 freight network if the 2045 forecasted truck traffic was greater than 4,000 daily trucks and/or truck traffic was more than 50% of total daily traffic. Roads providing connectivity to ports of entry (POE) and other major corridors were also included. The findings associated with analysis of the freight network serve to indicate how the freight system is currently performing and is expected to perform in the future in terms of congestion and annual delay. The analysis also serves to locate freight network deficiencies throughout the region.

Figure 6.1 displays the Destino 2045 freight network symbolized by the amount of daily forecasted freight traffic for the 2045 forecast year. Major highway facilities such as IH 10, US 54, and Loop 375 are forecasted to experience the most substantial freight traffic in 2045. Global Reach Drive and Sergeant Major Boulevard, providing connectivity to Fort Bliss, also are forecasted to produce high levels of freight traffic compared to other roadways in the region. There is a significant drop off in freight volume outside of the major highway facilities; however, emphasis corridors such as Zaragoza Road, Mesa Street, Horizon Boulevard, Alameda Avenue, and Dyer Street experience notable levels of freight traffic.

Figure 6.2 shows freight generators in the region based on employment data for industries that typically produce freight traffic, such as natural resources extraction, utilities, construction, manufacturing, wholesale trade, and transportation/warehousing, in relation to freight facilities. The majority of the 267 miles of railroad in the region is owned by BNSF and Union Pacific, with only a small portion in Fort Bliss owned by United States Gypsum. The region also includes three public airports that serve freight traffid in addition to Biggs Army Airfield in Fort Bliss. El Paso International Airport (EPIA) is the largest of the airports handling over 510 million pounds of air cargo in 2016. In comparison to the 13 other major airports in Texas and New Mexico for which cargo data is collected, EPIA handles the sixth highest amount of cargo.

FIGURE 6.1: EL PASO MPO REGION FREIGHT NETWORK TRUCK FLOWS; 2045

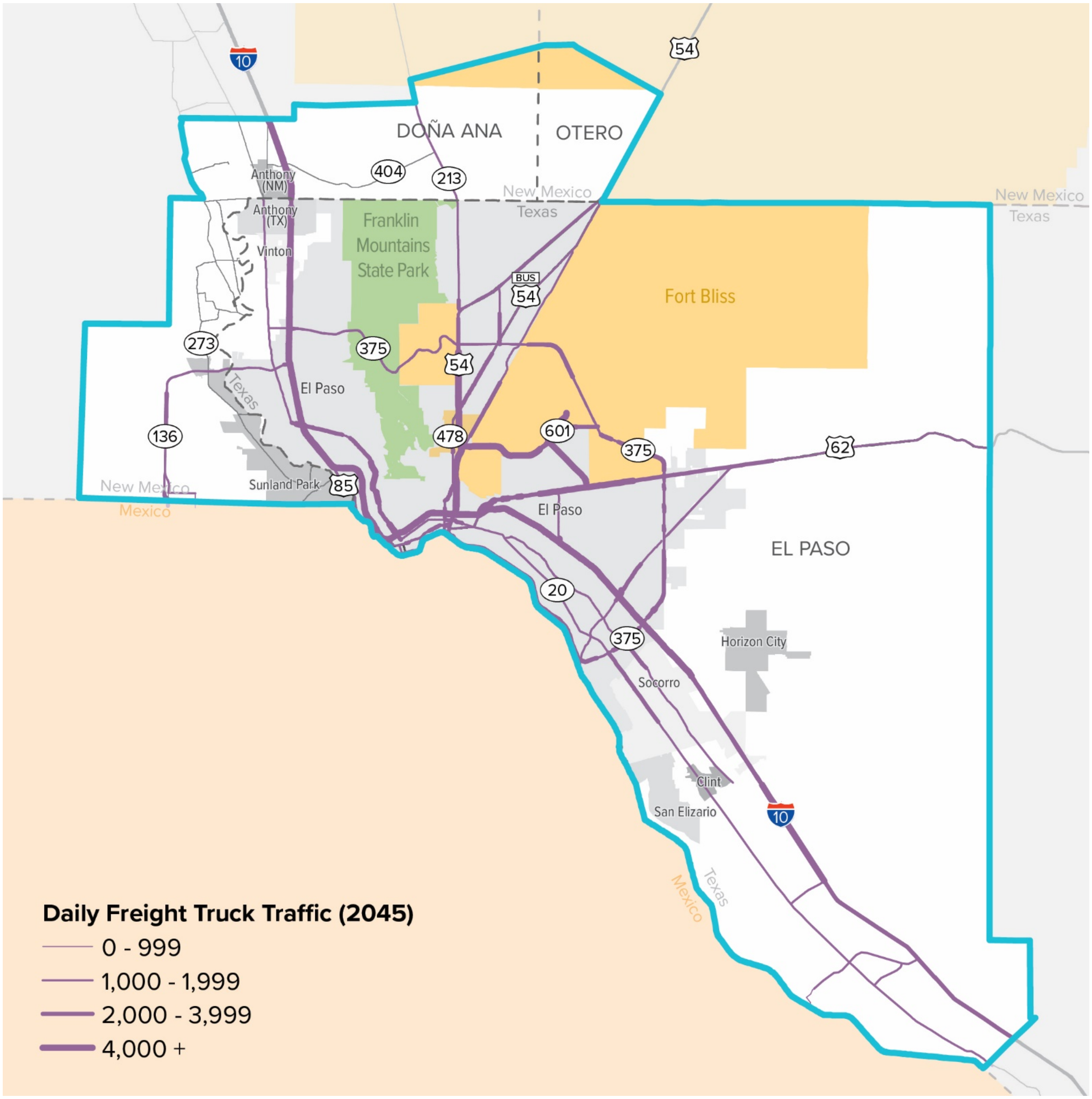
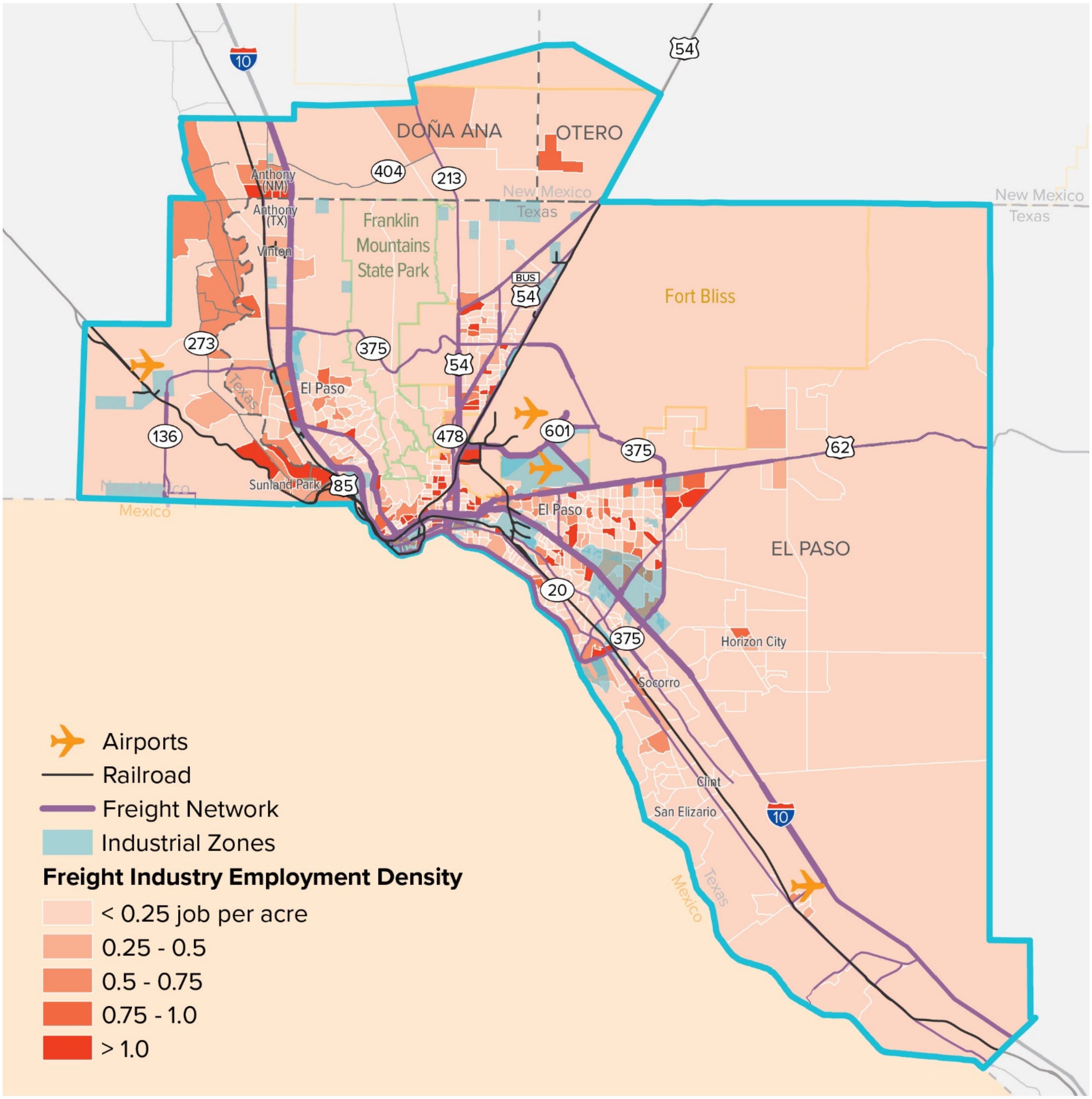


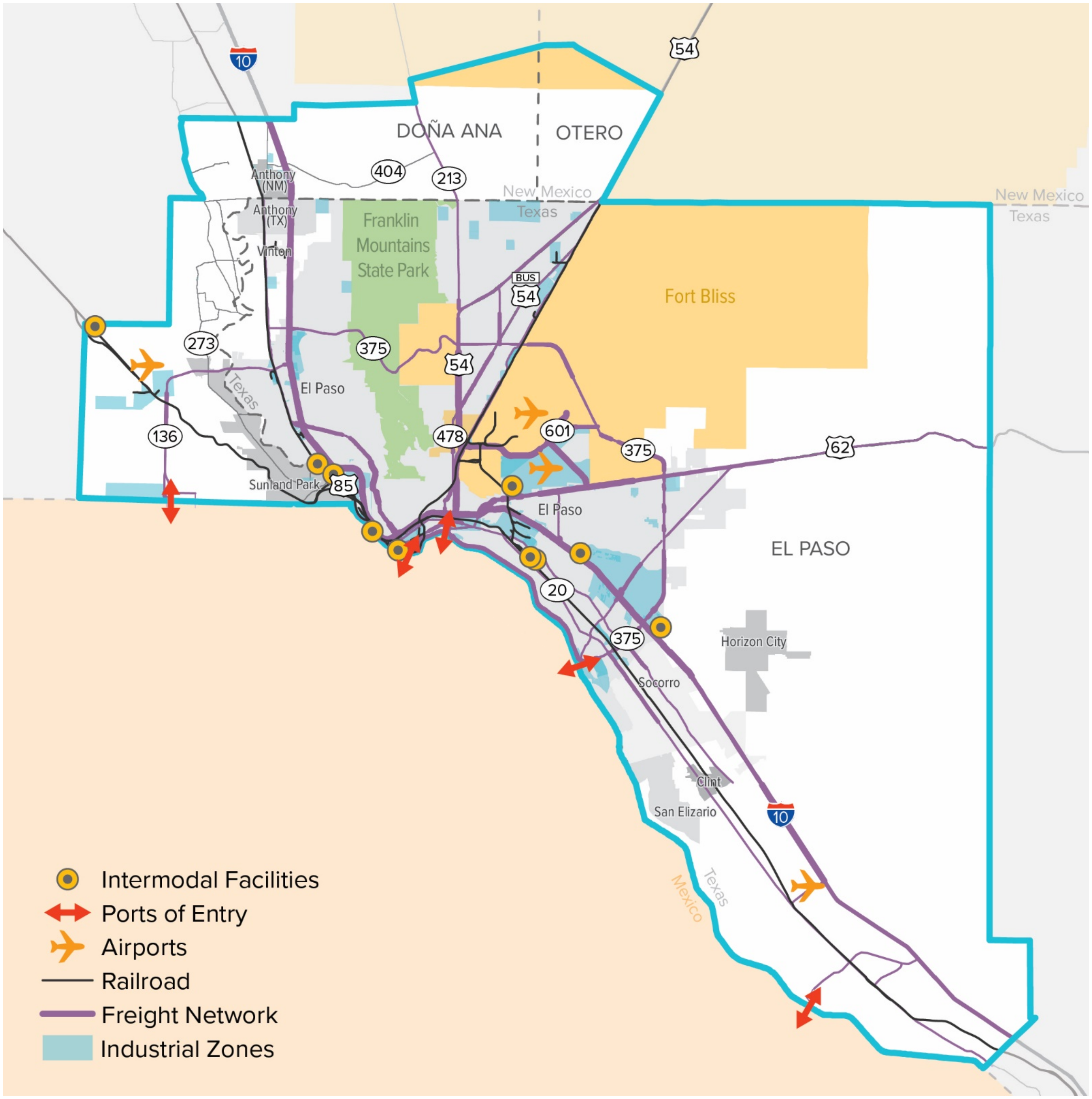
FIGURE 6.2: REGIONAL FREIGHT GENERATORS



## INTERMODAL FACILITIES

Intermodal freight facilities are defined as facilities where freight is transferred from one mode of transportation to another without handling the freight itself. A typical example of an intermodal facility would be a railyard where shipping containers are unloaded from trains onto freight trucks. Figure 6.3 displays intermodal facilities in relation to major freight generators, industrial and manufacturing zones, and freight transportation facilities in the El Paso MPO region. Intermodal terminal facilities are primarily concentrated along IH 10, SH 20, and Loop 375. Intermodal facilities are also well connected with ports of entry (POE) along the Mexico border. All intermodal facilities are rail and truck transfer facilities except for El Paso International Airport which has air and truck transfers. Therefore, transfer facilities are substantially concentrated along the rail lines throughout the region.

FIGURE 6.3: INTERMODAL FACILITIES AND PORTS OF ENTRY



## FREIGHT ROADWAY NETWORK CONGESTION ANALYSIS

The Destino 2045 freight network congestion analysis uses peak period congestion measures produced from the 2045 El Paso Travel Demand Model (TDM) to identify congestion hotspots and determine the amount of delay forecasted to occur along the freight roadway network. The congestion index for both the 2012 and 2045 freight networks (Figures 6.4 and 6.5) shows how peak period congestion along the freight roadway network is anticipated to change over time if no improvements are made to the system. Compared to areas with high industrial/manufacturing employment growth for the region, the figures show that increases in congestion generally correlate with large increases in employment.

When comparing the freight network congestion index from 2012 to 2045, congestion is anticipated to become significantly worse throughout the entire freight roadway network by 2045, assuming no improvements are made to the roadway system beyond existing and committed projects. In fact, delay along the freight network is forecasted to increase by 16.4 million vehicle hours between 2012 and 2045. In the forecast year, virtually the entire length of IH 10—the primary freight corridor in the region—from Socorro to Vinton is expected to experience heavy congestion during peak periods. Table 6.1 below shows truck traffic and congestion statistics compared to the entire freight network, revealing that this portion of IH 10 is more congested than the rest of the freight network on average during the peak period. The table also shows that roughly 34% of the delay on the freight network occurs on IH 10.

TABLE 6.1: IH 10 FREIGHT TRAFFIC AND CONGESTION STATISTICS; 2045

| ROAD | SEGMENT | % TRUCK VMT | AVG. MAX V/C RATIO | ANNUAL DELAY (VEHICLE HOURS) |
|---|---|---|---|---|
| Freight Network | - | 11% | 0.81 | 21,234,460 |
| IH 10 | Eastlake Blvd. - Vinton Rd. | 12% | 0.95 | 7,189,780 |

Other highly congested roadway segments along the freight network are shown in Table 6.2. These segments were identified by taking the top 10% most congested portions of the freight network and aggregating adjacent congested segments. Single segments that were not connected to other congested segments and segments with less than 10,000 truck VMT were not included in this selection. This list of segments is meant to show where there is significant congestion on the freight network on facilities that experience relatively high amounts of freight traffic.

TABLE 6.2: TOP CONGESTED FREIGHT NETWORK SEGMENTS; 2045

| ROAD | SEGMENT | % TRUCK VMT | AVG. MAX V/C RATIO | ANNUAL DELAY (VEHICLE HOURS) |
|---|---|---|---|---|
| Sergeant Major Blvd. | Global Reach Dr. - Anzio Way | 26% | 2.42 | 572,520 |
| Loop 375 | Spur 601 - Montana Ave. | 9% | 1.72 | 1,512,160 |
| Global Reach Dr. | Spur 601 - Montana Ave. | 17% | 1.55 | 675,220 |
| Montana Ave. | Hawkins Blvd. - Lee Trevino Dr. | 9% | 1.55 | 792,220 |
| Loop 375 | Railroad Dr. - Sergeant Major Blvd. | 11% | 1.47 | 567,580 |

FIGURE 6.4: FREIGHT NETWORK CONGESTION INDEX; 2012

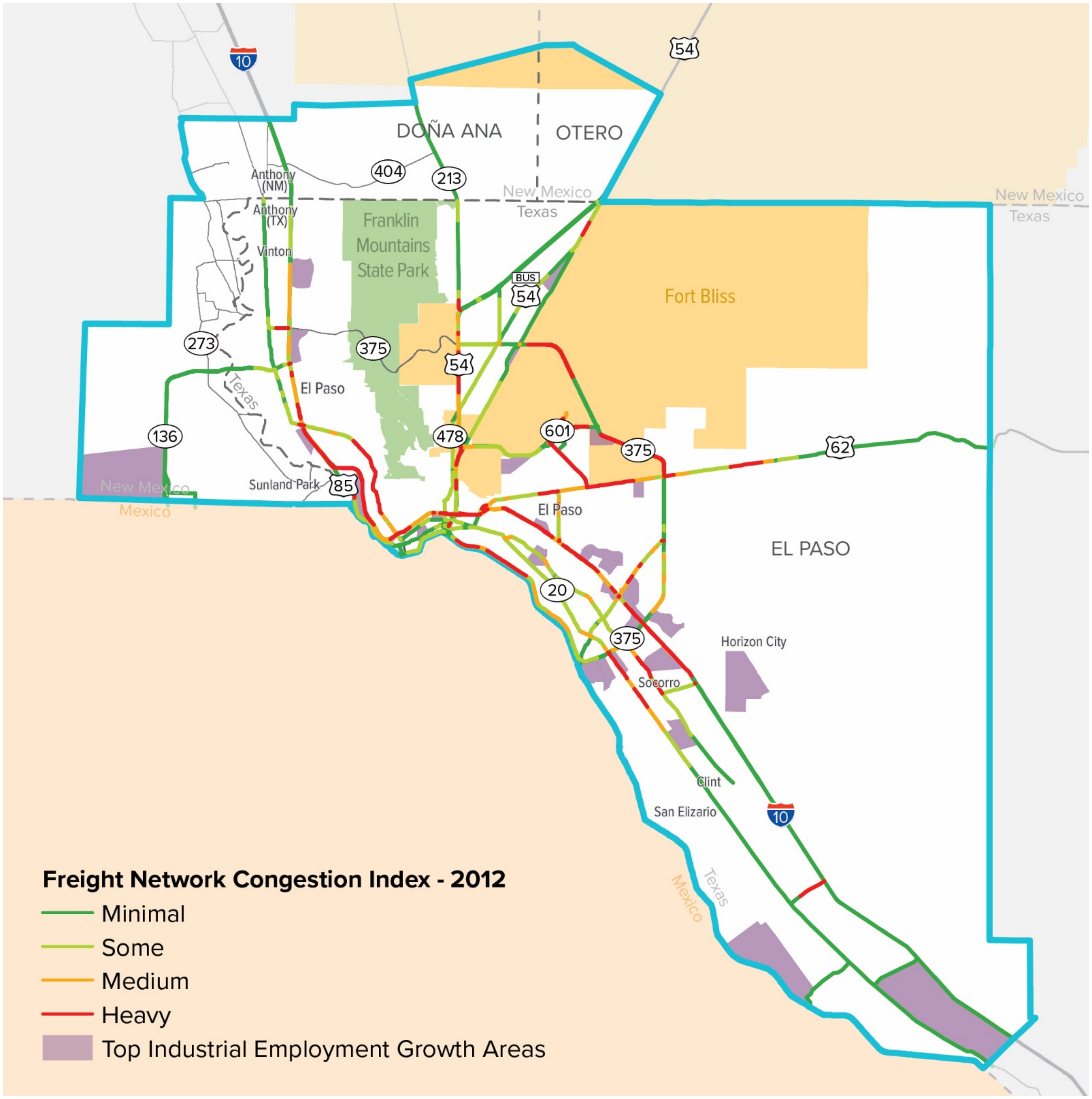
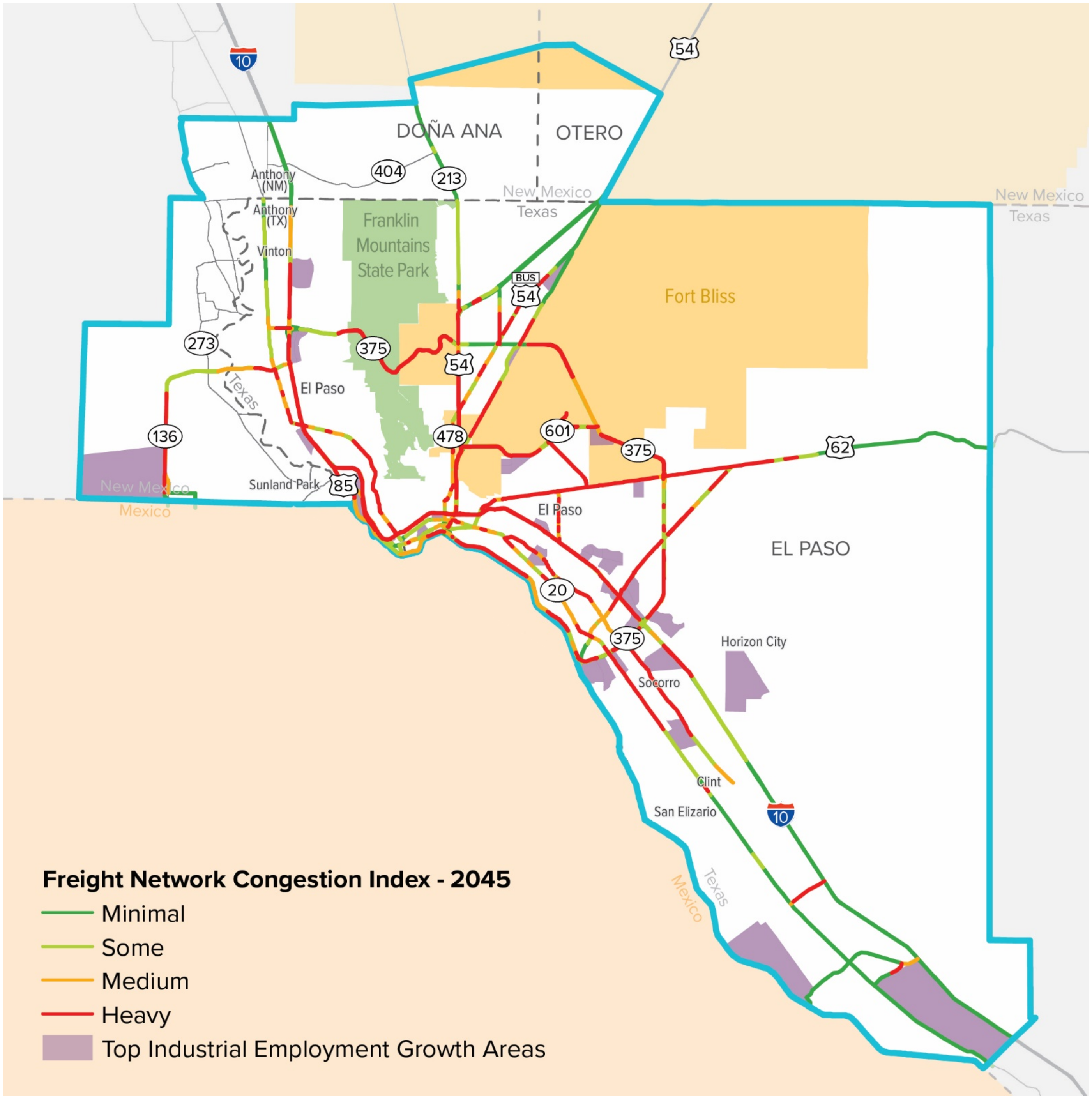


FIGURE 6.5: FREIGHT NETWORK CONGESTION INDEX; 2045



Comparing changes in vehicles hours of delay between time periods shows which facilities along the freight network are expected to experience higher increases in congestion relative to other facilities. Figure 6.6 shows the change in annual delay between 2012 and 2045 for major regional highways, while Figure 6.7 shows the same for other facilities included in the freight roadway network. These figures reveal that Doniphan Drive, Global Reach Drive., Pete Domenici Memorial Highway, and Sergeant Major Boulevard are anticipated to experience the highest percentage increases in delay by 2045. Among the major highways, Loop 375 is shown to experience the biggest increase in delay; however, IH 10 is still estimated to experience roughly 3 million more vehicle hours of delay in 2045, comparatively.

FIGURE 6.6: MAJOR HIGHWAY ANNUAL VEHICLE HOURS OF DELAY; 2012 TO 2045

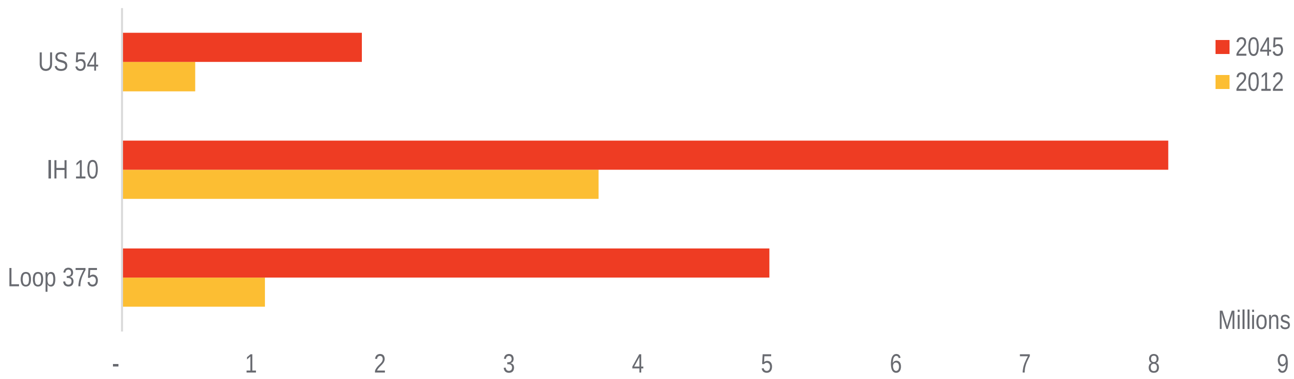
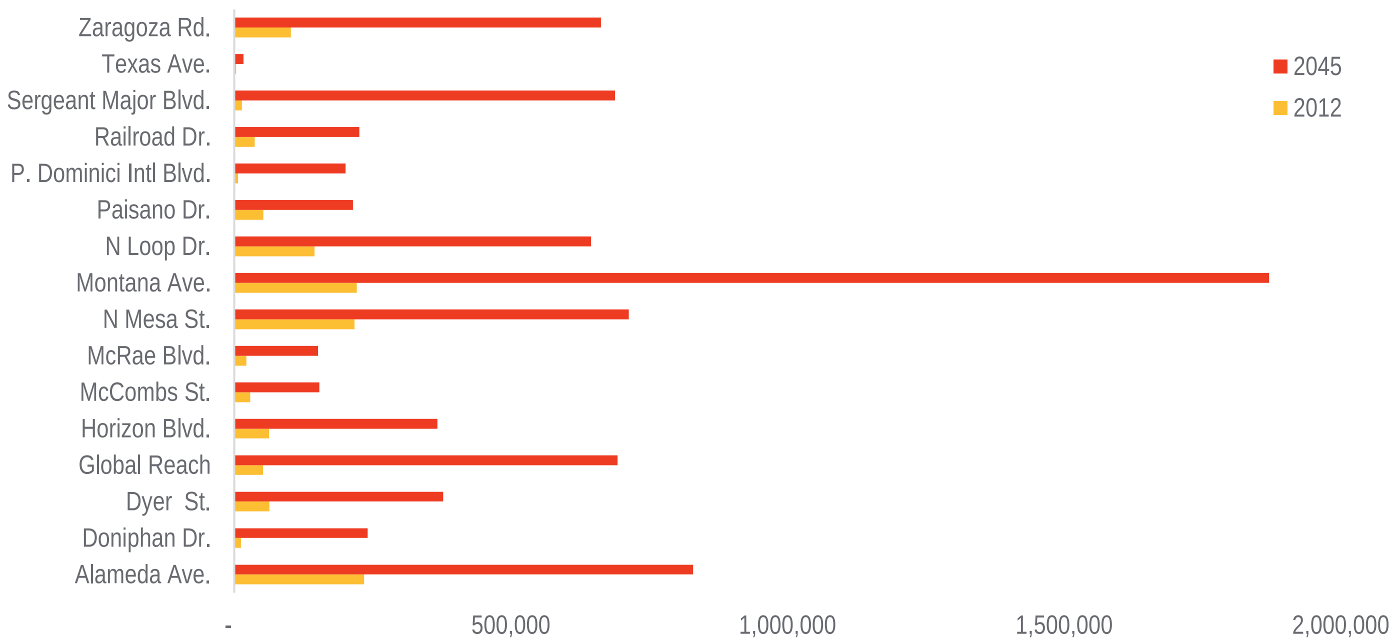



FIGURE 6.7: FREIGHT ROADWAY NETWORK ANNUAL VEHICLE HOURS OF DELAY; 2012 TO 2045



## CONCLUSIONS

The El Paso MPO Region is one of the most active land port regions in the United States and serves as a critical transfer point for goods crossing the United States-Mexico border. Accordingly, addressing current and future freight transportation issues is crucial to the region's economic success. Specific issues revealed in this freight analysis include congestion and delays along IH 10, Loop 375, Global Reach Dr., Montana Ave., and Sergeant Major Blvd. Forecasts reveal that congestion is expected to become a major issue along freight corridors near EPIA and the southwestern portion of Fort Bliss, which are major freight terminals that also include intermodal transfer facilities. Some of this congestion is likely due to significant population and employment growth in the area. For the freight system to improve and continue to support regional economic vitality, it is crucial that projects selected as a part of Destino 2045 address these identified freight issues, as well as others highlighted in this analysis.

# 7. OPERATIONS & MAINTENANCE

## INTRODUCTION

Operation and maintenance analysis provides an assessment of El Paso MPO region's roadway pavement conditions, deficient bridges, and transit assets. Developing a comprehensive understanding of the condition of the region's transportation assets helps identify areas of need in the roadway network and illustrates how well public transit in the area measures up to current Federal regulations. Accordingly, Destino 2045 utilizes data from several sources, including the Federal Highway Administration's (FHWA) National Bridge Inventory (NBI), Texas Department of Transportation (TxDOT), New Mexico Department of Transportation (NMDOT), and the Federal Transit Administration's (FTA) National Transit Database (NTD), to complete the various operations and maintenance analyses included in the needs assessment.

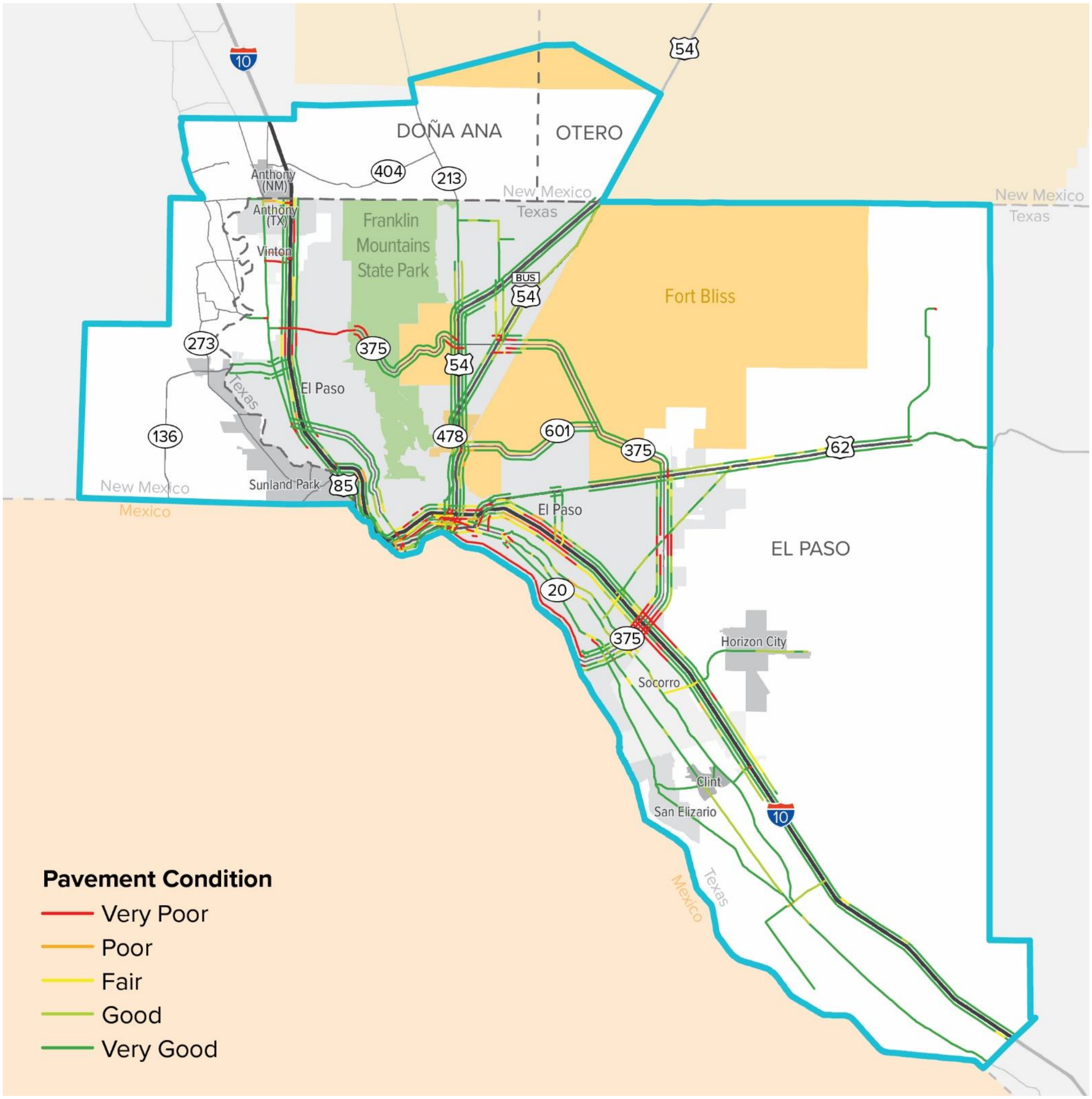
## ROADWAY PAVEMENT CONDITIONS

For roadway pavement conditions analysis, TxDOT's Pavement Management Information System (PMIS)—taken from the 2016 TxDOT Statewide Planning Map—supplies condition scores for highways and other major roadways in the region. Condition scores represent the overall condition of pavement on a given road segment, in terms of both ride quality and pavement distress. Scores are represented on a 1 (worst) to 100 (best) scale. Figure 7.1 shows the conditions scores for roadways in the region where data was available. Overall, the region's roadway network is shown to be in relatively good condition, as the majority of the roadways (82% of roadway miles) in the study area have "good" or "very good" condition scores (i.e. light or dark green in Figure 7.1). Conversely, 13% (83.5 miles) of roadways for which data was collected in the El Paso MPO region were identified as being in "poor" or "very poor" condition (i.e. deficient). Many of the segments identified as being deficient or in poor condition are major roadways that typically experience large amounts of traffic and are located where emphasis corridors intersect major highways (e.g. Loop 375 and IH 10). Table 7.1 shows the total and percentage of roadway miles by condition score for roadways in the region included in the TxDOT PMIS.

**TABLE 7.1: ROADWAY MILES BY CONDITION SCORE; TXDOT PMIS; 2016 TXDOT STATEWIDE PLANNING MAP**

| CONDITION SCORE | DESCRIPTION | MILES | % OF TOTAL MILES |
|---|---|---:|---:|
| 1-34 | Very Poor | 71.7 | 11% |
| 35-49 | Poor | 11.7 | 2% |
| 50-69 | Fair | 36.2 | 5% |
| 70-89 | Good | 85.0 | 13% |
| 90-100 | Very Good | 462.4 | 69% |

FIGURE 7.1: ROADWAYS BY CONDITION SCORE; TXDOT PMIS; 2016 TXDOT STATEWIDE PLANNING MAP



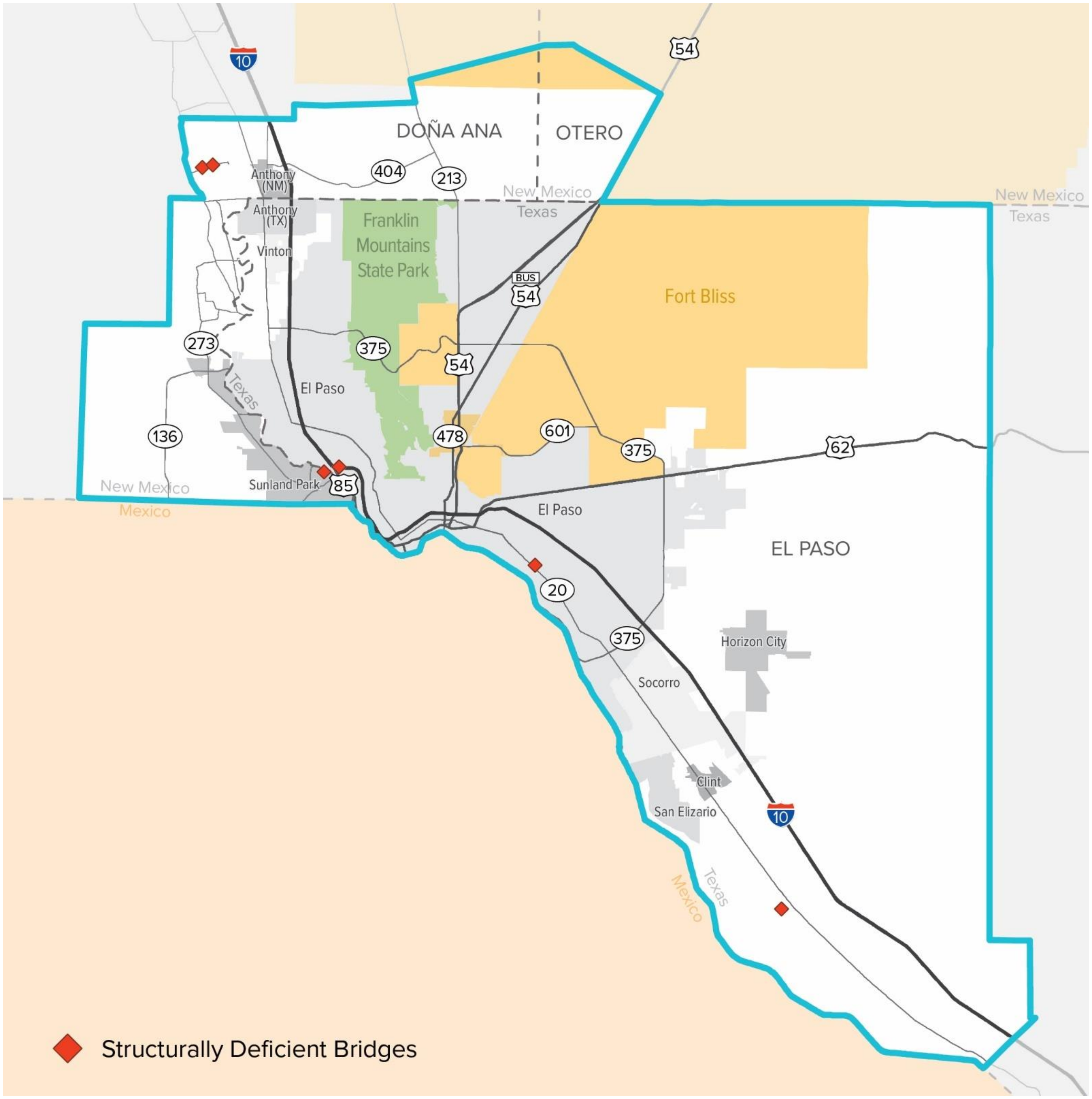
## BRIDGE DEFICIENCY

A structurally deficient bridge is defined as a bridge that has structural defects which require rehabilitation and/or monitoring and which may require speed or weight limits. Destino 2045 identifies the number of deficient bridges in the El Paso MPO region using the 2016 FHWA NBI. The NBI provides an inventory of over 600,000 bridges located on roadways throughout the United States. Included in the NBI are condition ratings for different structural elements of the bridges (e.g. deck, superstructure, substructure) that are used to determine whether a bridge is structurally deficient based on criteria provided in FHWA's *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*. Applying the criteria to the NBI data for the region, six bridge structures were identified as being structurally deficient. Table 7.2 lists the roadway facilities that the deficient bridges carry as well as general location descriptions. Figure 7.2 shows the location of the deficient bridges in the El Paso MPO region.

**TABLE 7.2: EL PASO MPO REGION NBI STRUCTURALLY DEFICIENT BRIDGES**

| ROADWAY | CITY | LOCATION DESCRIPTION |
|---|---|---|
| FM 76 | Fabens | .12 miles SW of SH 20 |
| Vista Hill Drive | El Paso | At IH 10 crossing |
| N. Carolina Drive | El Paso | At UP railroad crossing |
| NM 186 | West of Anthony | .7 miles E of NM 28 |
| NM 186 | West of Anthony | 1.2 miles E of NM 28 |
| NM 498 | Sunland Park | .15 miles SW of Doniphan Drive |

FIGURE 7.2: NBI STRUCTURALLY DEFICIENT BRIDGES (2016)



## SUN METRO TRANSIT ASSET MANAGEMENT

The Transit Asset Management (TAM) model was established by MAP-21 to create a system to monitor/manage public transportation assets. In order to accomplish this objective, TAM uses the condition of current assets to guide optimal prioritization of funding within a transit agency. The following assesses Sun Metro's most recently available NTD asset information and summarizes the agency's current transit standing regarding TAM regulations.

Table 7.3 displays a snapshot of Sun Metro's 2015 fleet vehicle asset inventory. The table displays total fleet vehicles by mode (i.e. demand response or motor bus), type (i.e. bus, van, etc.), and built year, creating 15 separate fleet vehicle groupings. All fleet vehicles (292) were in use and ADA accessible in 2015. Average miles per vehicle indicates the usage of each vehicle in a fleet and was calculated using the total fleet group mileage and dividing it by the total number of vehicles in the fleet. Comparing this value for each fleet group to the average lifetime mileage for vehicle type produced a percentage of lifetime mileage used. This metric shows the average usage of each vehicle in the fleet group and helps to estimate the useful life remaining. The data shows that only 16% of the vehicles in the entire Sun Metro fleet have an average usage greater than 80% of their lifetime mileage. In other words, the Sun Metro fleet is in relatively good condition in terms of how many more miles the fleet vehicles are expected to last.

**TABLE 7.3: 2015 SUN METRO FLEET ASSET INVENTORY**

| FLEET GROUP | MODE | TOTAL | USED | TYPE | BUILT YEAR | REBUILD YEAR | ADA | AVG MI PER VEHICLE | AVERAGE LIFETIME MILEAGE | % OF MILEAGE USED |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DR | 22 | 22 | Bus | 2008 | - | 22 | 1,357 | 258,702 | 1% |
| 2 | DR | 1 | 1 | Van | 2012 | - | 1 | 2,703 | 33,460 | 8% |
| 3 | DR | 34 | 34 | Bus | 2012 | - | 34 | 41,506 | 159,126 | 26% |
| 4 | DR | 3 | 3 | Cutaway | 2014 | - | 3 | 29,872 | 36,262 | 82% |
| 5 | DR | 25 | 25 | Cutaway | 2014 | - | 25 | 53,201 | 66,448 | 80% |
| 6 | MB | 13 | 13 | Bus | 1994 | - | 13 | 4,894 | 680,135 | 1% |
| 7 | MB | 24 | 24 | Bus | 2004 | 2011 | 24 | 42,310 | 471,693 | 9% |
| 8 | MB | 35 | 35 | Bus | 2007 | - | 35 | 32,268 | 444,051 | 7% |
| 9 | MB | 25 | 25 | Bus | 1991 | 2006 | 25 | 713 | 773,591 | 0% |
| 10 | MB | 40 | 40 | Bus | 2008 | - | 40 | 57,068 | 416,293 | 14% |
| 11 | MB | 20 | 20 | Bus | 2007 | - | 20 | 49,158 | 459,619 | 11% |
| 12 | MB | 8 | 8 | Bus | 2010 | - | 8 | 52,641 | 247,286 | 21% |
| 13 | MB | 13 | 13 | Articulated Bus | 2014 | - | 13 | 45,902 | 51,191 | 90% |
| 14 | MB | 22 | 22 | Bus | 2014 | - | 22 | 70,040 | 97,470 | 72% |
| 15 | MB | 7 | 7 | Cutaway | 2014 | - | 7 | 47,784 | 51,055 | 94% |

Another component of assessing condition of transit assets is age of vehicles. Tables 7.4 and 7.5 show Sun Metro vehicles grouped by age for buses and vans from 2010 to 2014, as reported in the NTD. Comparing the 2014 average fleet age for both bus and van to the corresponding Default Useful Life Benchmark (ULB) from FTA, both categories of vehicles are well below their useful life, on average. For bus the ULB is 14 year and for van it is 8. The low average fleet ages relative to given ULBs indicate that Sun Metro vehicles, on average, should be in operation for several more years before requiring replacement. However, since the provided data is not available for the time period Destino 2045 is being developed, it is important to note that unless Sun Metro has recently purchased new vehicles, the average fleet age has increased by about three years. This means that the fleet vehicles will likely have gotten closer to hitting their ULB. Assuming that no vehicles have been purchased between 2014 and 2017, though, the average fleet ages—10.9 for buses and 7.5 for vans—would still remain below their ULB. While the average bus in the fleet would still have about three years of useful life, the average van would likely be hitting its ULB in the next few months.

### TABLE 7.4: ACTIVE BUSES BY AGE GROUPING (YEARS); 2010-2014

| YEAR | 5 OR LESS | 6 TO 11 | 12 TO 15 | 16 TO 20 | 21 TO 25 | MORE THAN 25 | TOTAL | AVG. AGE OF FLEET |
|---|---|---|---|---|---|---|---|---|
| 2014 | 64 | 145 | 0 | 13 | 25 | 0 | 285 | 7.9 |
| 2013 | 163 | 80 | 0 | 13 | 25 | 0 | 281 | 6.7 |
| 2012 | 159 | 57 | 0 | 13 | 25 | 0 | 254 | 7.3 |
| 2011 | 128 | 64 | 0 | 38 | 0 | 0 | 230 | 7.4 |
| 2010 | 120 | 65 | 0 | 39 | 0 | 0 | 224 | 6.7 |

### TABLE 7.5: ACTIVE VANS BY AGE GROUPING (YEARS); 2010-2014

| YEAR | 5 OR LESS | 6 TO 11 | 12 TO 15 | 16 TO 20 | 21 TO 25 | MORE THAN 25 | TOTAL | AVG. AGE OF FLEET |
|---|---|---|---|---|---|---|---|---|
| 2014 | 6 | 0 | 2 | 0 | 0 | 0 | 8 | 4.5 |
| 2013 | 12 | 4 | 0 | 0 | 0 | 0 | 16 | 3.5 |
| 2012 | 6 | 0 | 0 | 0 | 0 | 0 | 6 | 0 |
| 2011 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2010 | 0 | 8 | 0 | 0 | 0 | 0 | 8 | 8 |

Performance failure is another component of assessing transit asset conditions, which provides an understanding of the quality of assets and how well they are maintained. Table 7.6 shows performance failure counts for bus fleet vehicles from 2011 to 2015 from NTD. Major failures are considered to be serious mechanical failures that prohibit any vehicle usage, and all other problems are categorized as other failures. In all categories vehicle failures have dropped significantly by about 85% within the five-year timeframe.

**TABLE 7.6: BUS FAILURES; 2011 TO 2015**

| YEAR | MAJOR FAILURES | OTHER FAILURES | TOTAL FAILURES |
|---|---|---|---|
| 2015 | 87 | 4 | 91 |
| 2014 | 150 | 6 | 156 |
| 2013 | 207 | 59 | 266 |
| 2012 | 217 | 26 | 243 |
| 2011 | 536 | 53 | 589 |

While bus failures have decreased, demand response vehicle failures have actually increased over the same time period (Table 7.7). This is mostly due to a large increase in the number of "other failures". Major failures over the period decreased by about 8% for demand response vehicles over the five-year time period.

**TABLE 7.7: DEMAND RESPONSE FAILURES; 2011 TO 2015**

| YEAR | MAJOR FAILURES | OTHER FAILURES | TOTAL FAILURES |
|---|---|---|---|
| 2015 | 56 | 54 | 110 |
| 2014 | 11 | 70 | 81 |
| 2013 | 71 | 21 | 92 |
| 2012 | 41 | 21 | 62 |
| 2011 | 61 | 3 | 64 |

# 8. INTERREGIONAL PASSENGER TRAVEL

## INTRODUCTION

While the primary focus of Destino 2045 concerns travel within the El Paso region, it is also important to understand how the existing transportation system interfaces with the larger State and National transportation context. Interregional passenger travel usually consists of fixed passenger rail, commercial airways/airports, and long-distance charter bus services (e.g. Greyhound). The El Paso MPO region is served by an Amtrak route stretching southeast to northwest, an international airport, and several private charter bus companies. The following analysis provides an overview of each type of service provided in the region and assesses current ridership trends.

## INTERREGIONAL PASSENGER TRAVEL SERVICES AND TRENDS

### AMTRAK

El Paso's Amtrak station is centrally located and serves two passenger train routes: the Sunset Limited (connecting California to Louisiana) and the Texas Eagle (connecting California to Illinois). These two trains operate three times a week. The Amtrak terminal is located in downtown El Paso, as show in Figure 8.2. This provides Amtrak passengers with excellent multimodal connectivity to the rest of the region upon arrival in El Paso, with several local bus lines, bike share stations, and the future El Paso Streetcar all within walking distance of the terminal.

El Paso's Amtrak serves roughly 820,000 passengers within 25 miles of the station and 980,000 passengers within 50 miles of the station annually. Trips departing from the station average anywhere between 800 to 899 miles, and typically connect to other urbanized areas within the southwest region of the United States. Recent data shows that the El Paso station experienced a total of 14,440 arrivals/departures in 2016, with an average trip of 831 miles and average fare of $110. Figure 8.1 shows the Amtrak ridership to/from the El Paso station between 2010 and 2016 and shows an increase in ridership by roughly 41% over that period.

FIGURE 8.1: EL PASO STATION AMTRAK RIDERSHIP; 2010-2016

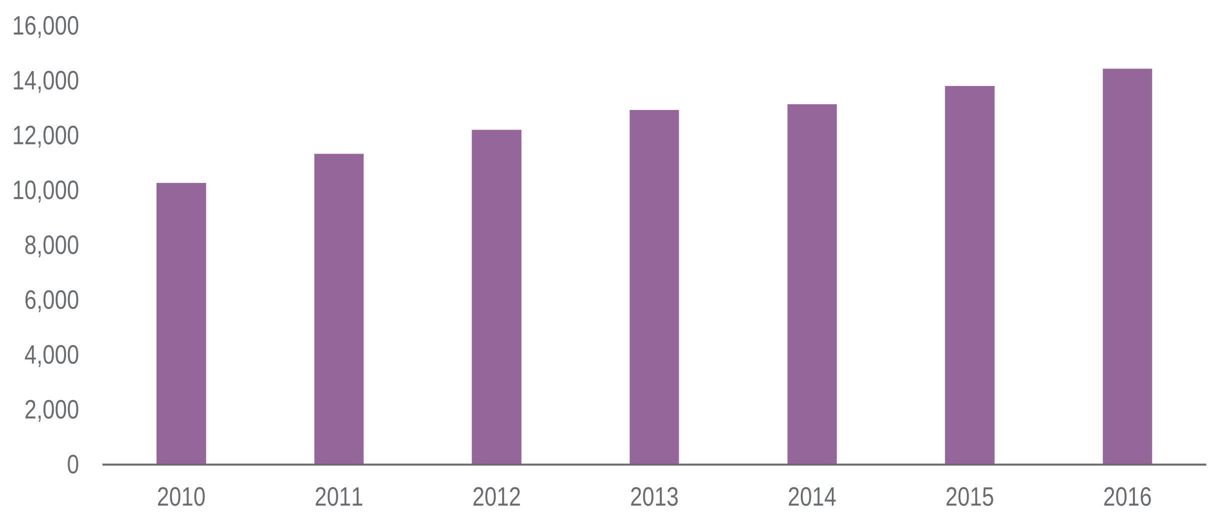
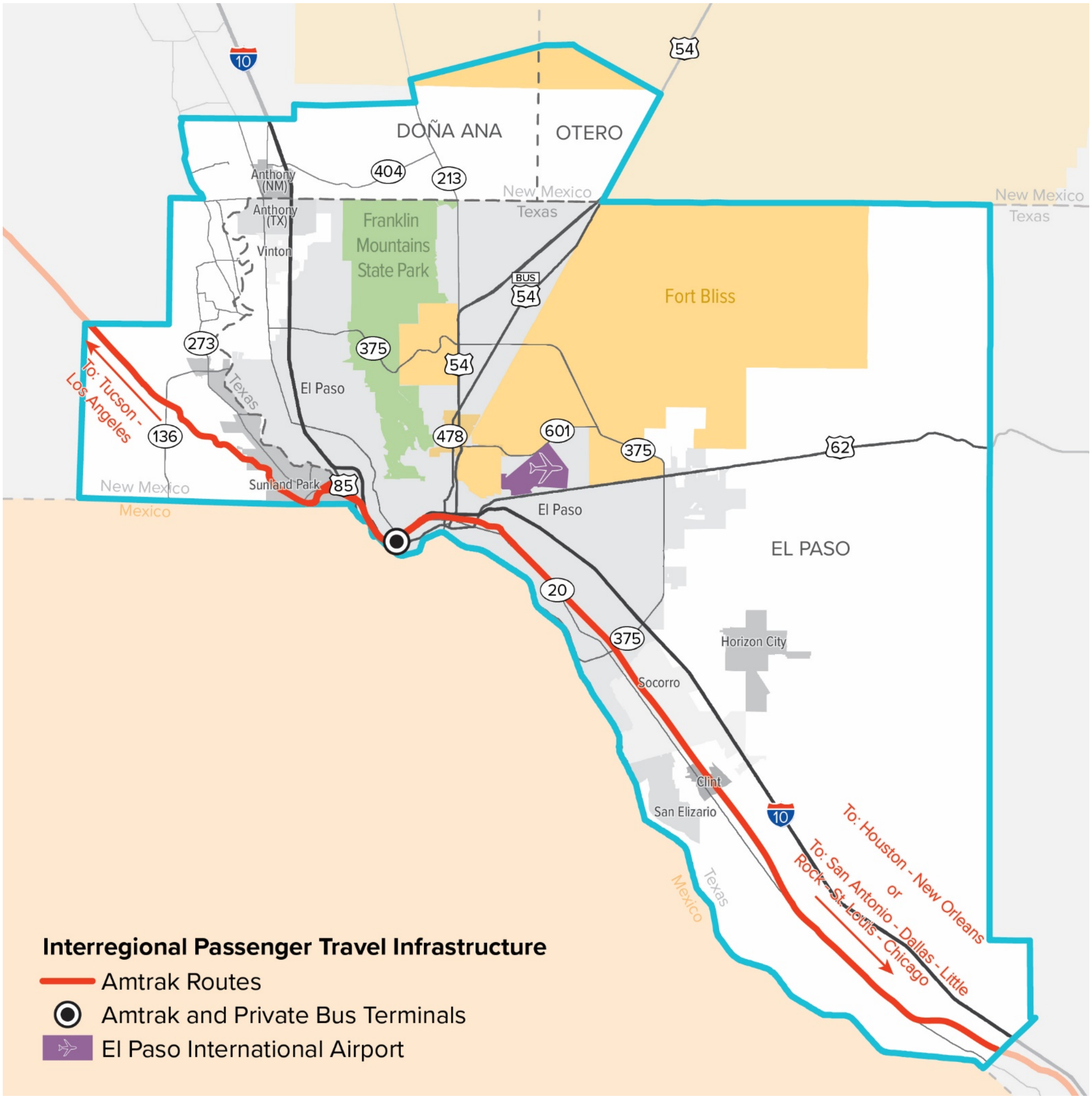


FIGURE 8.2: EL PASO MPO INTERREGIONAL PASSENGER TRANSPORTATION

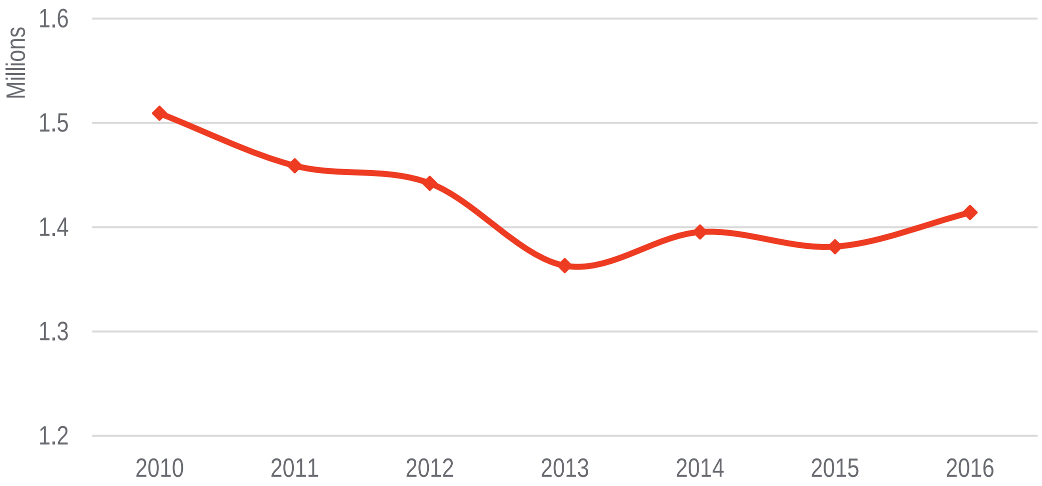


## EL PASO INTERNATIONAL AIRPORT

The El Paso MPO region contains six airports; however, the El Paso International Airport (EPIA) is the focus of the analysis as it is the only airport with significant commercial service (see Figure 8.2 above). EPIA offers commercial, air cargo, and general aviation services to the region and averages roughly 7,700 passengers a day. The facility offers 45 daily flights with non-stop service to ten different destinations within the United States.

The airport is located east of downtown less than two miles from IH 10 and US 54, making EPIA highly accessible to those living within and outside of the city. Currently the airport is served by ground transportation in the form of automobiles (parking, drop-off, and rental cars) as well as two local bus routes. Given its central location, future connectivity with the region's passenger transportation network should remain central to airport planning as the region grows. Figure 8.3 reveals a significant decrease in passenger enplanements from 2010 to 2016. EPIA has experienced a decrease of roughly 100,000 enplanements, which is decrease of 6%, over this timespan. There were 1.4 million enplanements at EPIA in 2016.

FIGURE 8.3: EL PASO INTERNATION AIRPORT ENPLANEMENTS; 2010-2016




## INTERREGIONAL CHARTER BUS SERVICE

The El Paso MPO region is also served by several private transportation services offering interregional travel. These services include private charter bus companies such as Greyhound, Tornado Bus Co., and El Paso-Los Angeles Limousine Express. Figure 8.2 displays the central location of the private bus terminals, located in downtown El Paso near the Amtrak terminal and the Paso Del Norte port of entry (POE). The El Paso Greyhound service provides regional coverage with routes connecting to Southern California, Central Colorado, and throughout Texas. Tornado Bus Company provides services throughout the southeast and midwest and offers limited coverage to the northeast. Service more frequently extends to Texas, Florida, Georgia, Mississippi, North Carolina, and South Carolina. Limousine Express offers around 20 daily schedule bus trips to California, New Mexico, Colorado, Arizona, and Mexico.