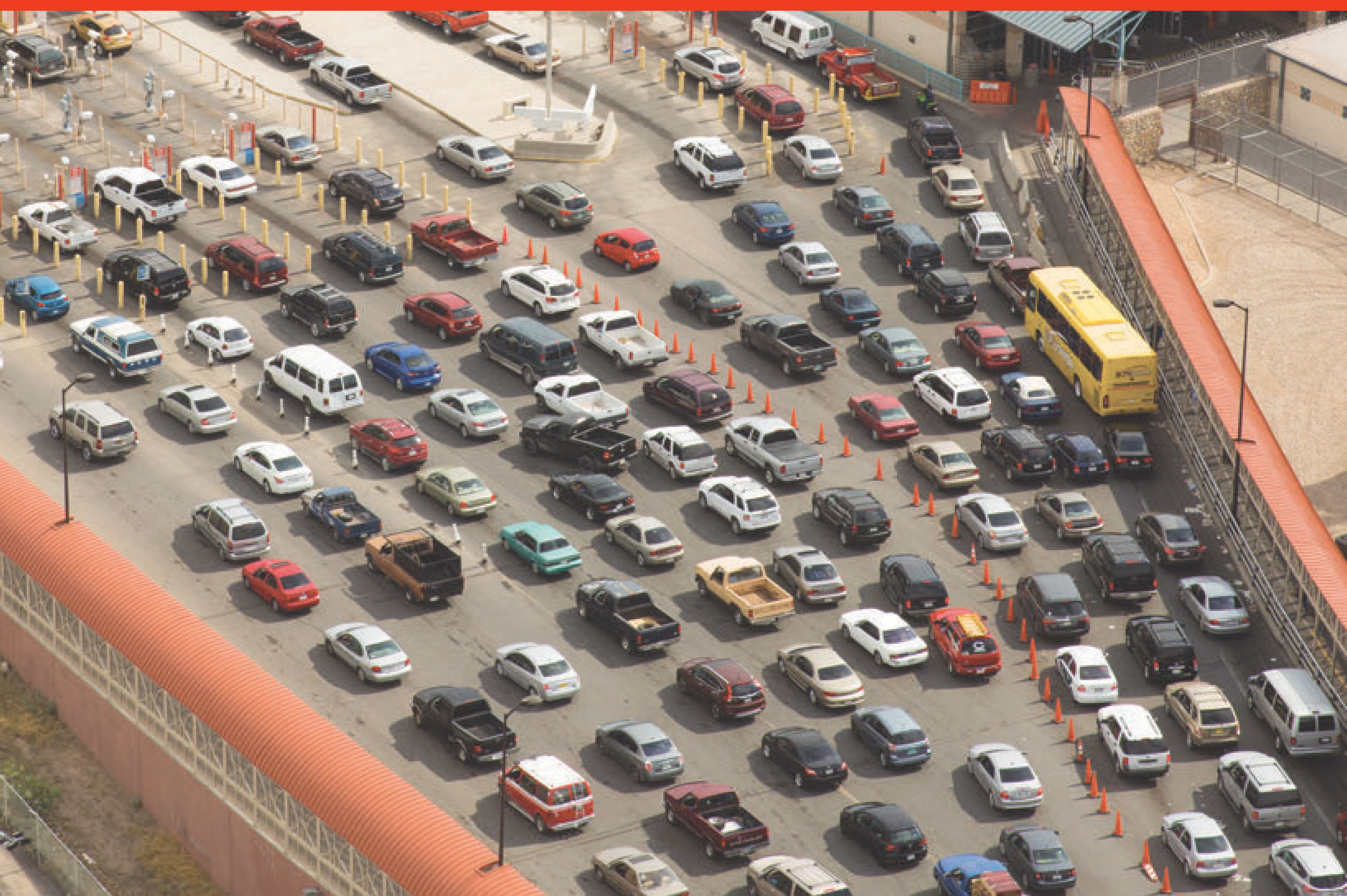
3

REGIONAL TRANSPORTATION NEEDS



3. REGIONAL TRANSPORTATION NEEDS

The study team performed a multimodal needs assessment for Destino 2045 to ensure that the investments recommended by the plan address the needs of the region. The needs that drive the recommendations 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 vision statement, goals, and objectives of Destino 2045, needs were considered for transportation in the following categories:

- Roadway
- Safety
- Transit
- Active Transportation (Pedestrian and Bicycle Travel)
- Ports of Entry
- Freight
- Maintenance & Operations
- Interregional Passenger Travel

METHODOLOGY AND DATA SOURCES

A major component of identifying future transportation needs is understanding future population and employment growth trends for the region. It is important to reiterate that 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 short trips and utilize other modes of transportation such as transit and walking. These considerations of the potential growth trends have direct impact on both the performance of the transportation system as well as how travelers interact with the system.

The study team performed an evaluation of the existing transportation system performance using a variety of information on existing conditions and historic trends. 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 existing travel patterns (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 Destino 2045 Travel Demand Model (TDM). 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 primarily relied on the Destino 2045 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.

Table 3-1 summarizes the results of the analysis for the existing and 2045 performance measures. Note that some measures could only be calculated for the existing conditions depending on the TDM's calculation ability.

TABLE 3-1: SUMMARY OF SYSTEM PERFORMANCE - CURRENT AND 2045 NO-BUILD

GOALS	EXISTING SYSTEM PERFORMANCE MEASURES	CURRENT	2045 NO BUILD	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	Travel Time Index (Actual Travel Time Divided by Non-Congested Travel Time)	1.14	1.21	+ 0.07	+ 6%
	Annual Hours of Delay (millions)	14.74M	31.3M	+ 16.5M	+ 112%
	Commute Times from Environmental Justice Zones (Minutes)	20.17	22.67	+ 2.5	+ 12%
Accessibility & Travel Choice	Percent of Population Within 1/2 Mile of High Quality Transit	4.0%	14.8%	-	+ 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)	10.1%	11.3%	-	+ 12%
	Average Trip Costs (Dollars Per Trip)	$2.14	$2.21	+ $0.07	+ 3%
Sustainability	Estimated Max Daily Co Emissions (Tons/Day)	8.16	2.12	- 5.76	- 73%
	Estimated Max Daily Pm10 Emissions (Tons/Day)	8.39	9.63	+ 1.50	+ 15%
	Daily Vehicle Miles Traveled (VMT)	16.0M	22.8M	+ 7.2M	+ 43%
	Daily VMT Per Capita (Regional)	18.3	16.6	- 1.18	- 9%
Economic Vitality	Annual Hours of Delay Along Major Freight Corridors	6.7M	23.5M	+ 16.8M	+ 249%
	Average Commercial Vehicle Wait Time at POEs (Minutes)	45	-	-	-

ROADWAY

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 most 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 roadway evaluation primarily employs the Destino 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, providing a base year to compare to conditions assuming growth continues as expected but no further transportation improvements are made.

REGIONAL TRENDS

Destino 2045 uses the following performance measures to analyze and project travel trends for the region:

- Vehicle Miles Traveled (VMT) - roadway miles traveled by all vehicles on the system for a specified time period
- Vehicle Hours of Delay - additional hours spent in traffic due to congestion on the roadway network
- Volume Capacity (V/C) Ratio - ratio of traffic flow to maximum allowable traffic flow on a road segment
- Speed Index - ratio of peak hour speed and free-flow speed for a given roadway segment

All four measures utilized TDM outputs to anticipate change through 2045. Congestion measures (V/C and Speed Index) were ranked from 1 (minimal) to 5 (extreme) to display current and future congestion levels within the regional system and were combined to create a "Congestion Index" score for each link in the network.

Figure 3-1 shows estimated average daily VMT growth between 1990 and 2045. Total daily VMT is estimated to reach roughly 23 million miles by 2045, with arterial network daily VMT surpassing freeway daily VMT by roughly 2-million miles. On a per capita basis, however, daily VMT per person is not expected to change much between 2014 and 2045.

FIGURE 3-1: ESTIMATED AVERAGE DAILY VMT GROWTH 1990-2045

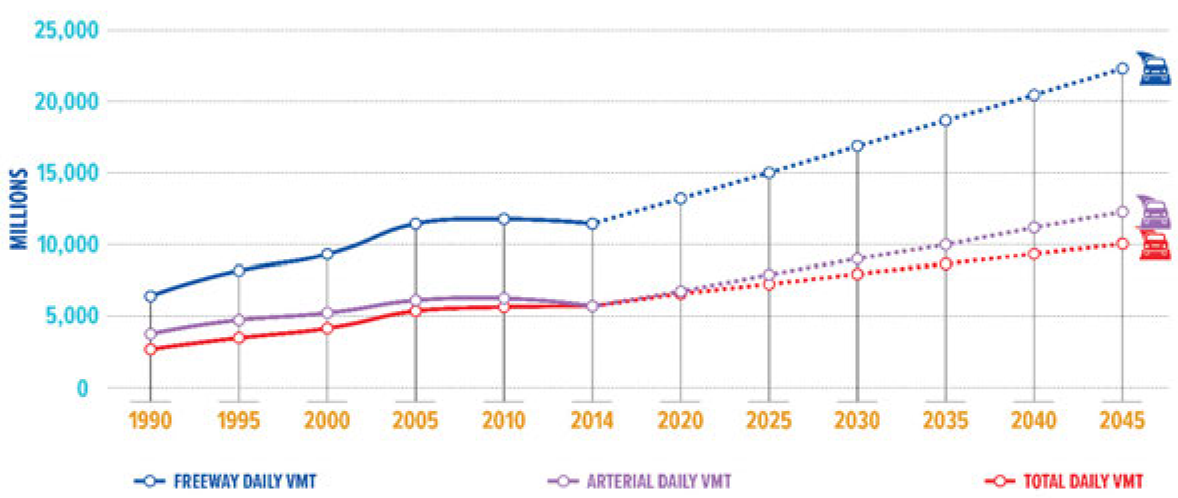


FIGURE 3-2: FORCASTED INCREASE IN DELAY 1990-2045

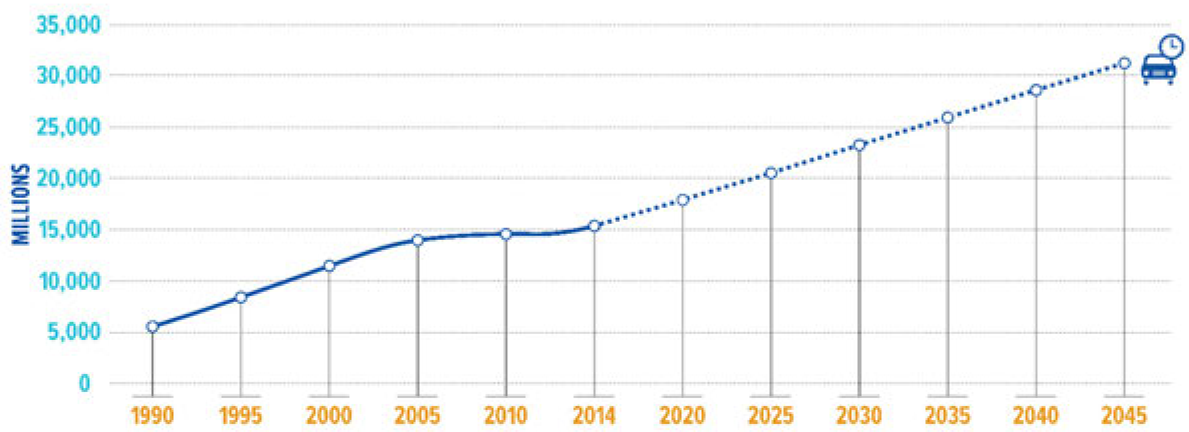


Figure 3-2 above reflects the forecasted increase in delay by 2045, highlighting that congestion is anticipated to be much worse by the horizon year 2045. In fact, the forecast estimates that travelers in the region will experience over 31 million annual vehicle hours of delay by 2045—a 115% increase from 2014.

CONGESTION TRENDS

The 2012 roadway network shows congestion primarily occurring on major highways and regional connectors (**Figure 3-3**). IH 10 displays medium to heavy congestion along most 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 are also displayed in **Figure 3-3**.

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 throughout the network.

In general, forecasted increases in congestion along the network are particularly prevalent along major highways 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. **Figure 3-4** 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.

CONGESTION HOTSPOTS

The segments along the roadway network with the highest amount of delay, highest peak period V/C ratio, most VMT, and lowest speed index in 2045 were identified as potential congestion hotspots. This list was further refined through feedback gathered at the public visioning workshops and corresponding online survey. **Figure 3-5** shows anticipated 2045 congestion hotspots.

FIGURE 3-3: CONGESTION INDEX 2012

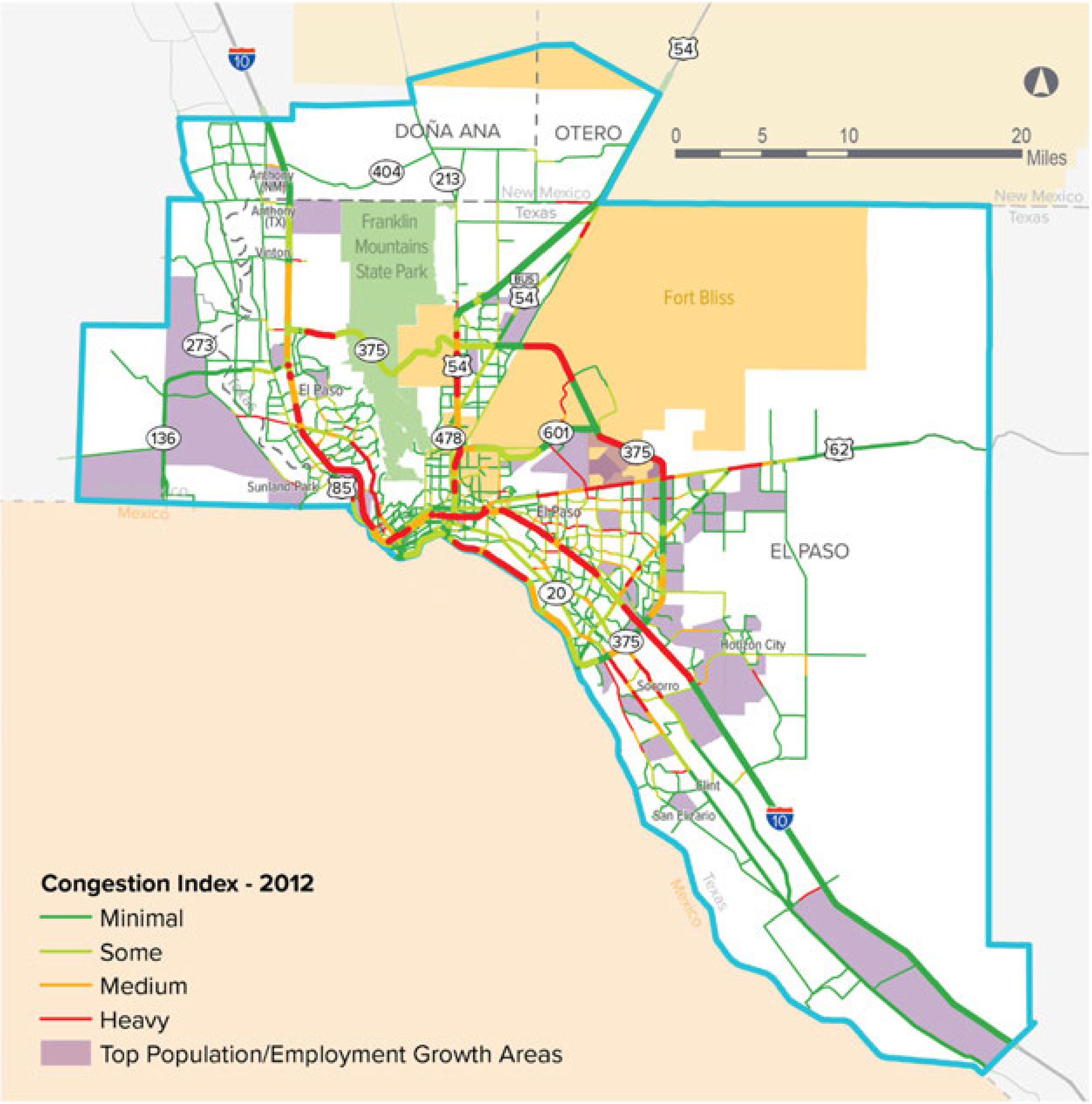


FIGURE 3-4: CONGESTION INDEX 2045

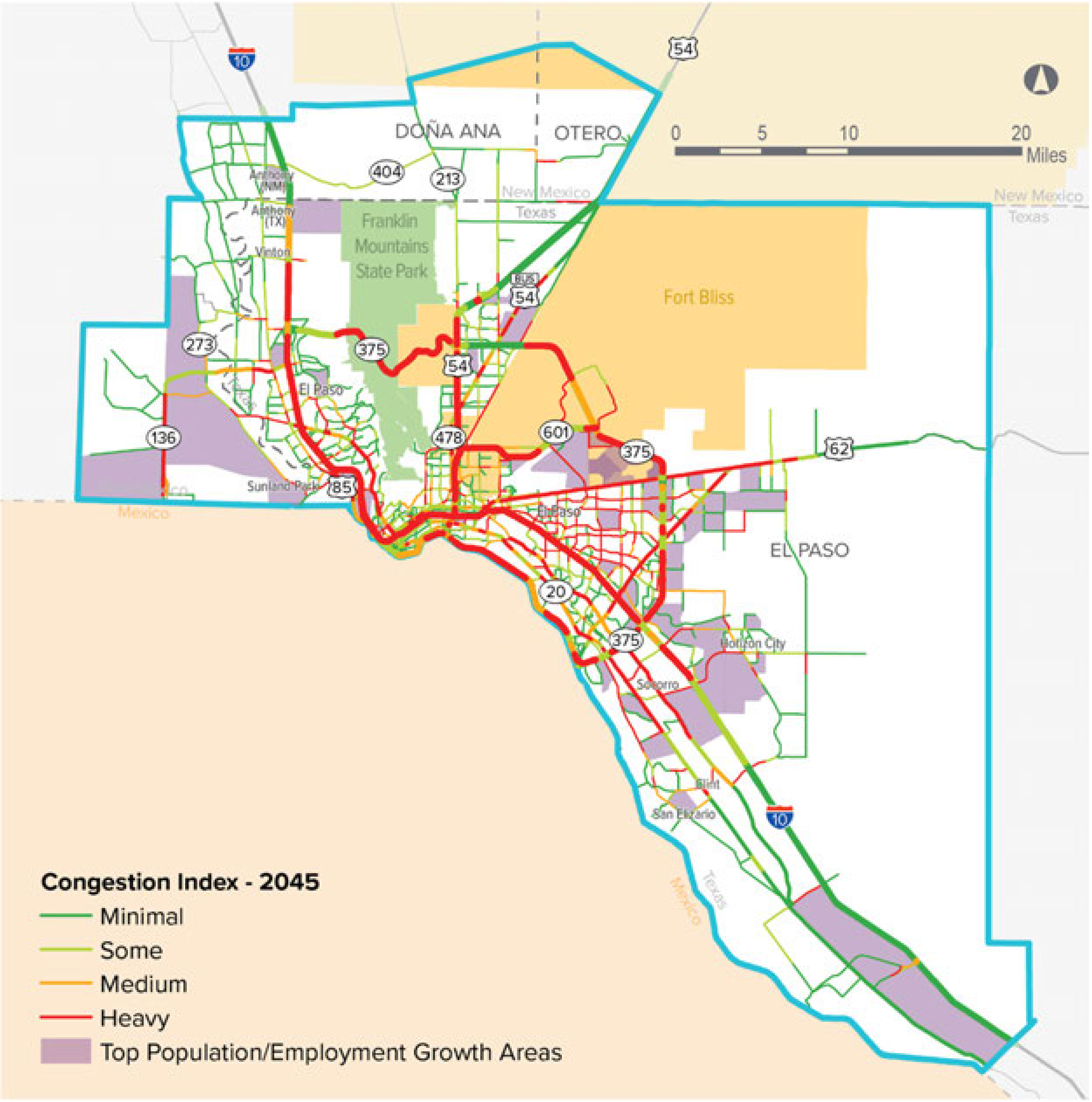
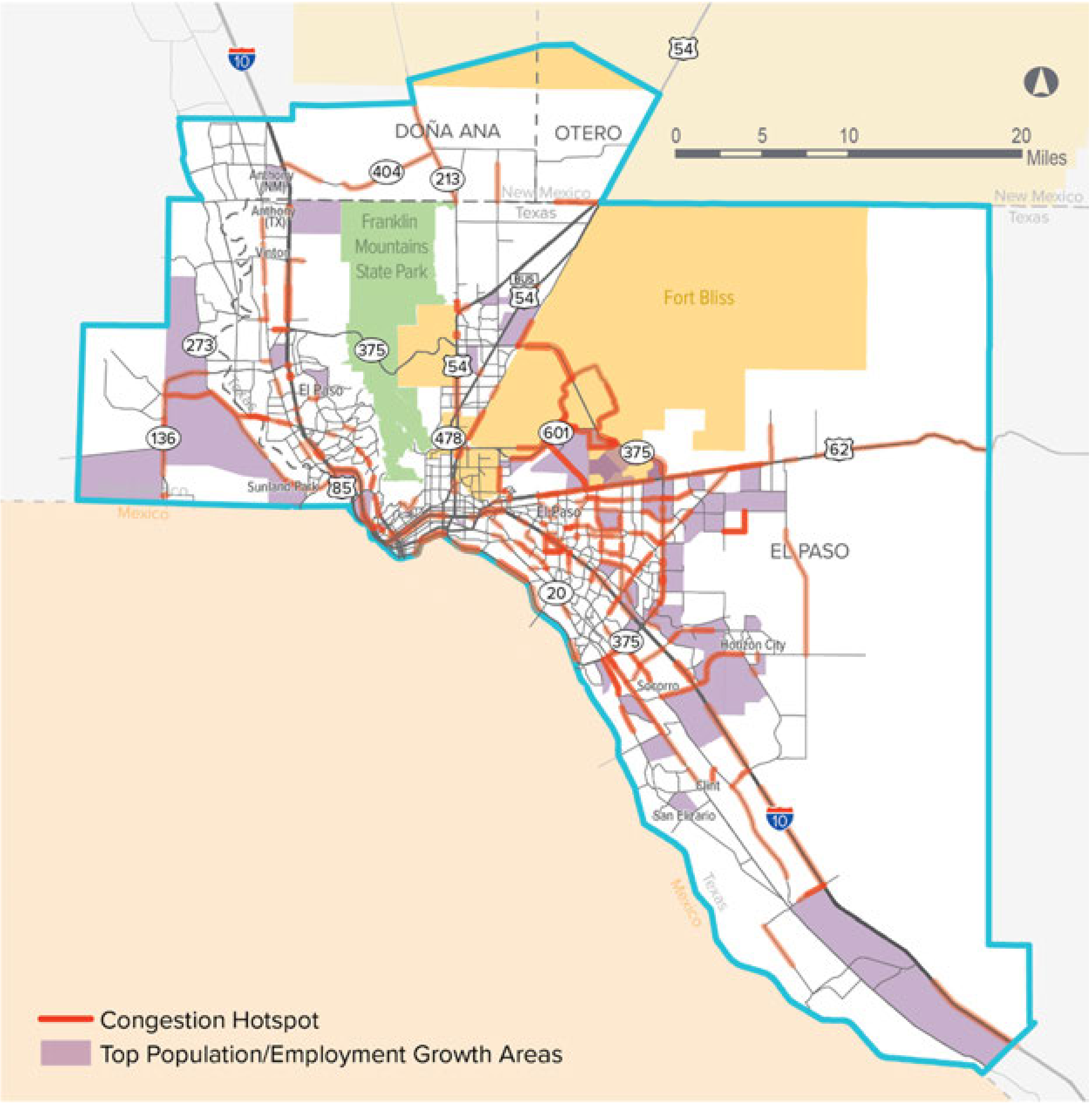


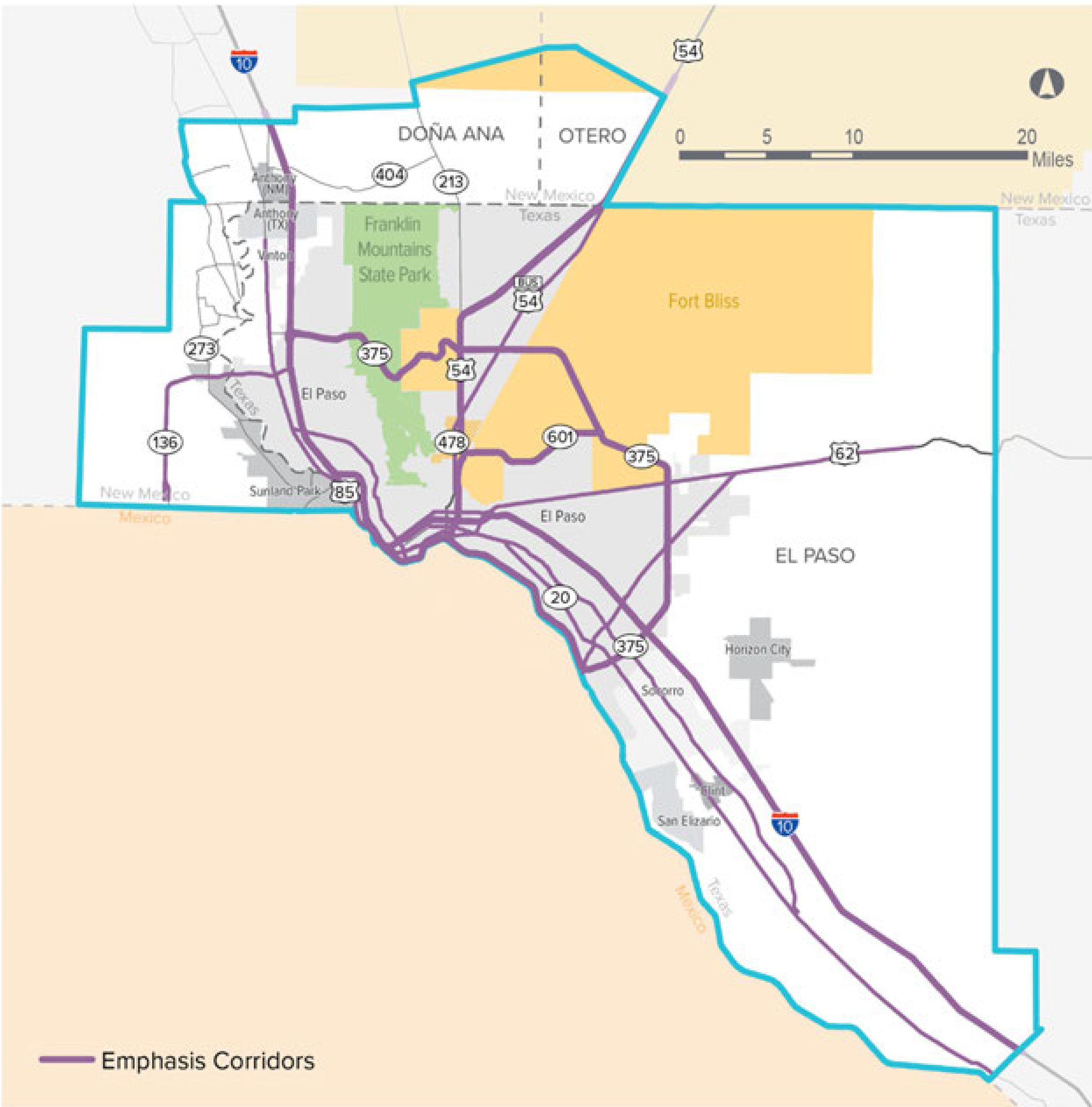
FIGURE 3-5: CONGESTION HOTSPOTS 2045



EMPHASIS CORRIDORS

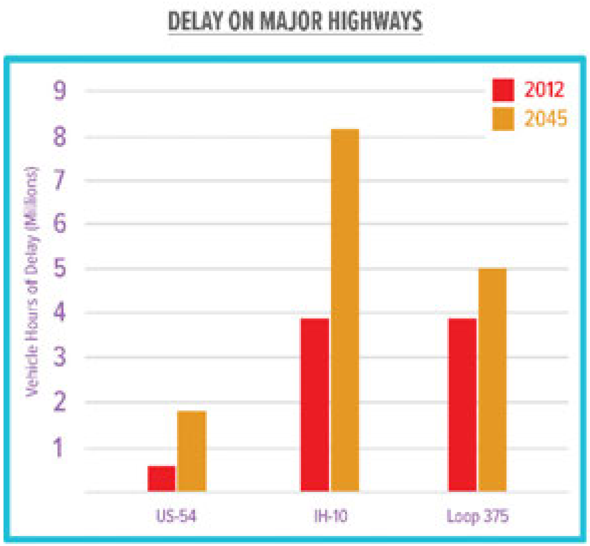
Much of the growth in the El Paso region has followed the paths of the major transportation corridors that connect the region to the rest of the world. These "emphasis corridors" carry the clear majority of the region's automobile travelers, freight traffic, and transit users and form the backbone of 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). The emphasis corridors are mapped in Figure 3-6.

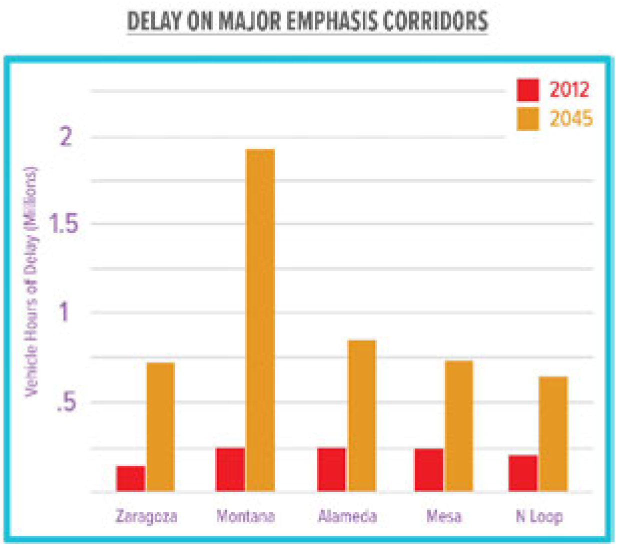
FIGURE 3-6: EMPHASIS CORRIDORS



In addition to analyzing regional trends, the roadway needs assessment also considered each emphasis corridor individually. **Figure 3-7** compares expected change in vehicle delay on the emphasis corridors between 2012 and 2045 if no further transportation investments are made.

FIGURE 3-7: DELAY ON MAJOR EMPHASIS CORRIDORS (2012-2045)





SAFETY

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 the latest five-year period for which data was available (2011 to 2015).

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

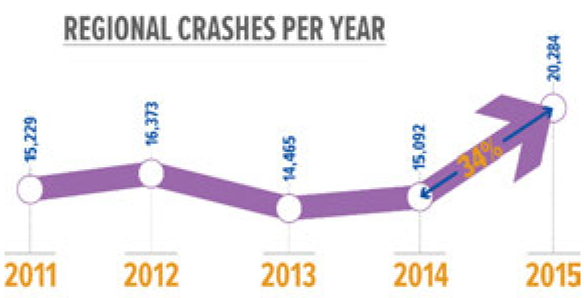
- Crash trends between 2011 and 2015 indicate a fluctuating rise in total number of crashes, with a sharp increase in 2015.
- Most crashes in the region result in no injury or a non-incapacitating injury. However, when compared to the rest of the state, crashes occurring in the MPO study area are more 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.

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.

REGIONAL CRASH TRENDS

Between 2011 and 2015, a total of 81,443 crashes occurred in the Destino 2045 study area. The biggest increase in crashes occurred most recently in 2015. In fact, the region experienced a 34% increase in crashes between 2014 and 2015, pushing the annual crash total over 20,000. Figure 3-8 shows the annual number of crashes in the regions between 2011 and 2015.

FIGURE 3-8: REGIONAL CRASH TRENDS 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 unpredictability of crashes from year to year.

CRASHES BY SEVERITY

Destino 2045 classifies crashes into four crash result categories: no injury, non-incapacitating injury, incapacitating (serious) injury, and fatality. Crash data shows that nearly 28% of crashes in the region result in 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.

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 3-2 shows the total and percentage of crashes involving pedestrians or cyclists. Looking at crash severity, 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 3-9 shows the location of crashes involving cyclists and pedestrians throughout the region between 2011 and 2015.

TABLE 3-2: REGIONAL CRASHES INVOLVING PEDESTRIANS OR BICYCLISTS; 2011-2015

CRASH TYPE	CRASHES	PERCENT OF TOTAL 5-YEAR CRASHES
Involving Pedestrians	1,142	1.40%
Involving Cyclists	394	0.48%
Involving either pedestrians or cyclists	1,536	1.89%
All Crashes	81,443	100%

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. All crash types have been considered in this analysis. Figure 3-10 shows crash hotspots identified through geolocation of the collected crash data.

FIGURE 3-9: REGIONAL CRASHES INVOLVING CYCLISTS AND PEDESTRIANS; 2011-2015

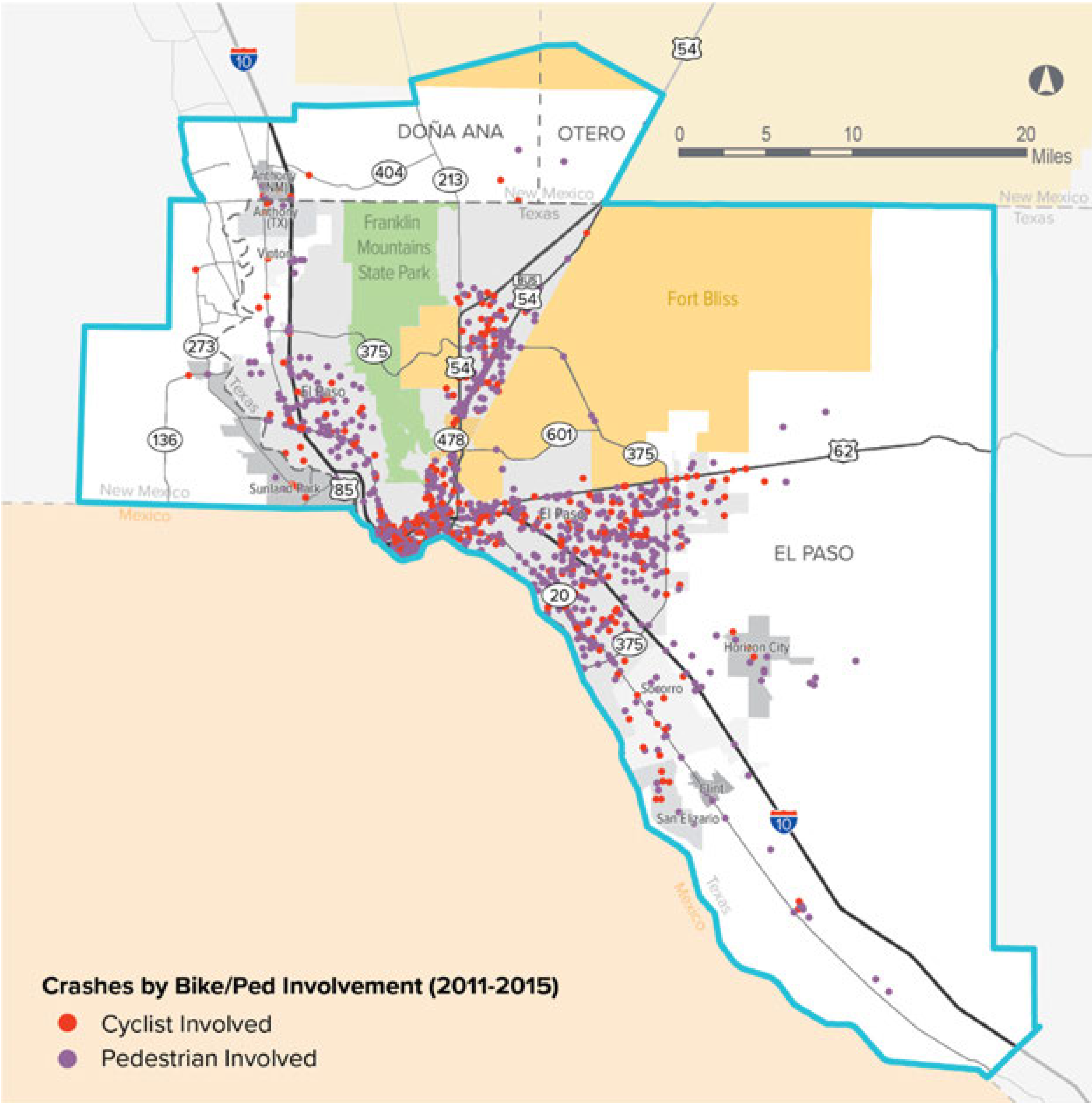
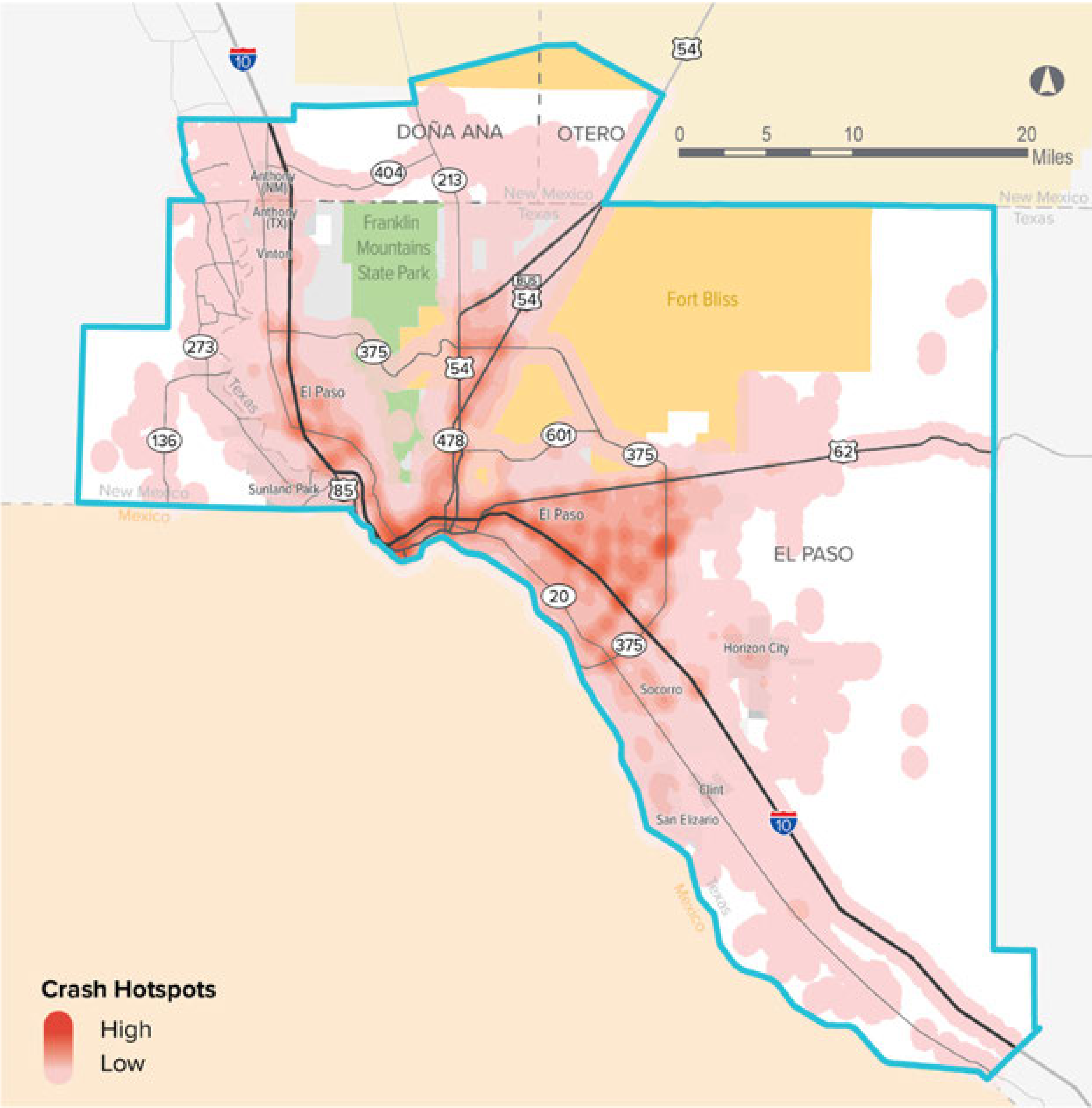


FIGURE 3-10: REGIONAL CRASH HOTSPOTS; 2011-2015



Destino 2045 employed the TDM network and intersection points along the network to conduct proximity analysis that associated intersection crashes to the nearest intersection. Table 3-3 shows the intersections that experienced the most crashes between 2011 and 2015. 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 3-3: 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

TRANSIT

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.

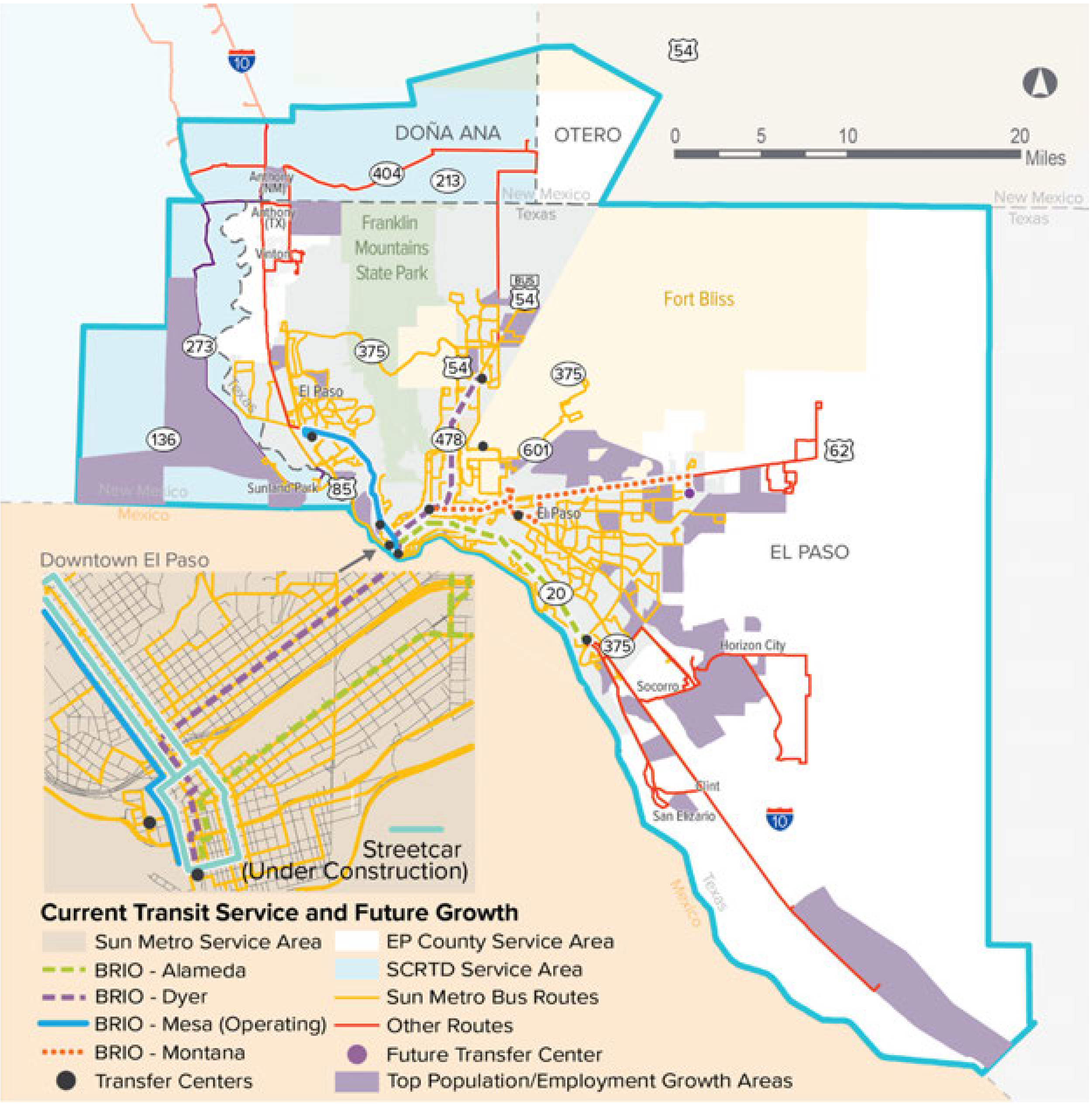
EXISTING TRANSIT SERVICE

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. El Paso County Transit, South Central Regional Transit District (SCRTD) and Sun Metro all provide transit services in the study region. Figure 3-11 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.

SUN METRO TRANSIT

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. Within this service, Sun Metro also provides Bus Rapid Transit (BRT) in the Brio and LIFT, a paratransit service for ADA paratransit eligible clients which provides origin-to-destination service. Current planning efforts aim to implement a total of four Brio corridors and a streetcar system which will enhance downtown transportation connectivity.

FIGURE 3-11: CURRENT AND PLANNED TRANSIT SERVICES



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.

FIGURE 3-12: 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.

FIGURE 3-13: SCRTD PURPLE ROUTE

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 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 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 in 2045 to gain an understanding of where transit demand is currently highest and where additional services may be needed in the future.

For purposes of the gap analysis, transit demand was defined by the amount of transit dependent population (TDP) of an area, a calculation incorporating census block group data of those too old, young, or disabled to drive a personal automobile. Figure 3-14 maps the resulting TDP concentration by both the density and percentage of transit dependent population at the block group level of the El Paso MPO Region, displaying areas within the region with high transit demand.

FIGURE 3-14: POTENTIAL TRANSIT DEMAND (TRANSIT DEPENDENT POPULATION)

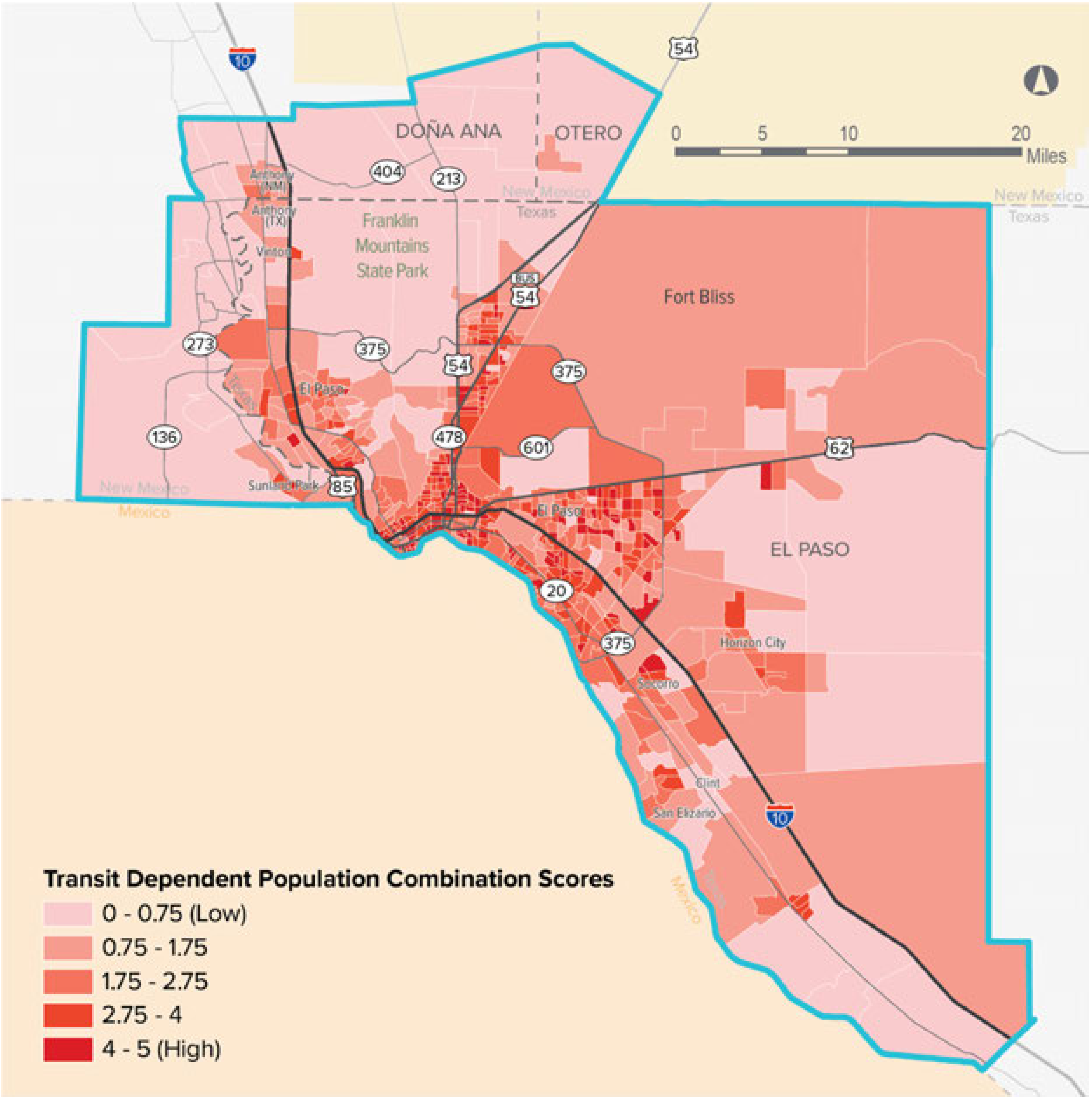
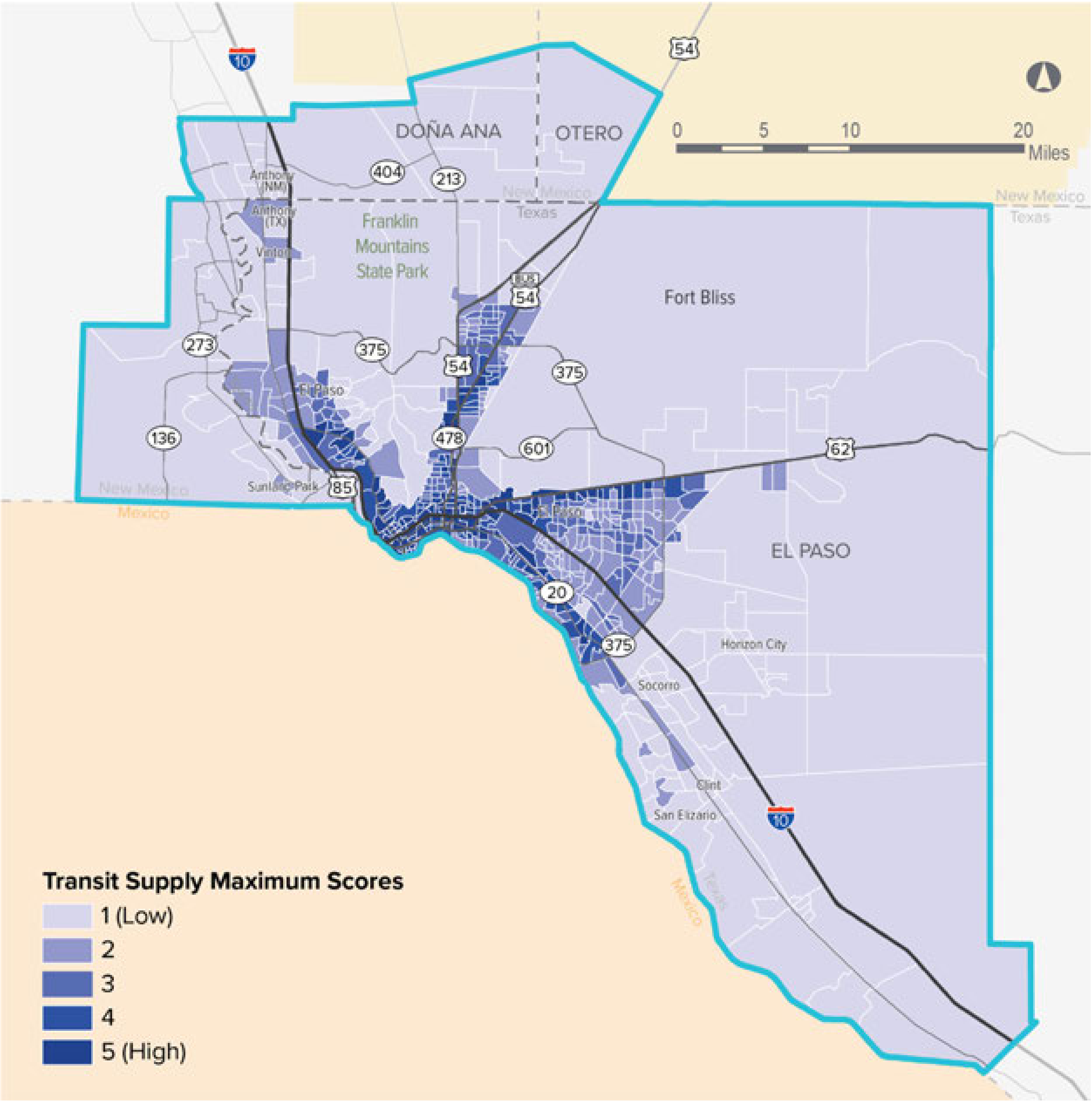


FIGURE 3-15: FIXED ROUTE TRANSIT SUPPLY MAX SCORES



 Alliance Transportation Group, Inc.

TRANSIT 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. Routes/services with higher quality, more overall transit service, and higher quality performance were accordingly given higher supply scores. Scores range from 1 (lowest) to 5 (highest).

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. This analysis can help influence the types of transit projects considered in the future.

El Paso has unique geographic characteristics that limit where development can and cannot occur. Current service does a fairly good job reaching riders in terms of geographic coverage, however, there are still gaps in the service area where people who might benefit from transit do not have easy access to transit or high-quality service. Figure 3-16 on the following page details the existing network's transit gaps. Table 3-4 further breaks down transit demand by attributing TDP population to transit coverage by route score. The analysis further reveals areas that could benefit from comprehensive service evaluation and realignment to better match areas ideal 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 3-4: TRANSIT DEPENDENT POPULATION

ROUTE SCORE	TRANSIT DEPENDENT POPULATION COVERAGE	PERCENT OF TOTAL REGIONAL TDP COVERED BY SCORE
0	106,002	37%
1	493	0%
2	85,840	31%
3	69,488	25%
4	4,460	2%
5	10,116	4%
Total	276,399	100%

TRANSIT SYSTEM PERFORMANCE MEASURE

Proximity to high-quality transit is one of the primary multimodal performance measures included in Destino 2045. Table 3-5 shows the breakdown of population and employment served by future high-quality transit services. 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 3-5: POPULATION AND EMPLOYMENT IN FUTURE HIGH-QUALITY TRANSIT NETWORK

	POPULATION (2045)	EMPLOYMENT (2045)
Total Within Region	1,369,000	467,000
Total Served by any Transit	753,000	365,000
Percent Served by Any Transit	55%	78%
Total Within 1/2 Mile of High Quality Transit	202,000	145,000
Percent of Region Within ½ Mile of High Quality Transit	15%	31%

FIGURE 3-16: EXISTING + COMMITTED NETWORK TRANSIT GAP ANALYSIS

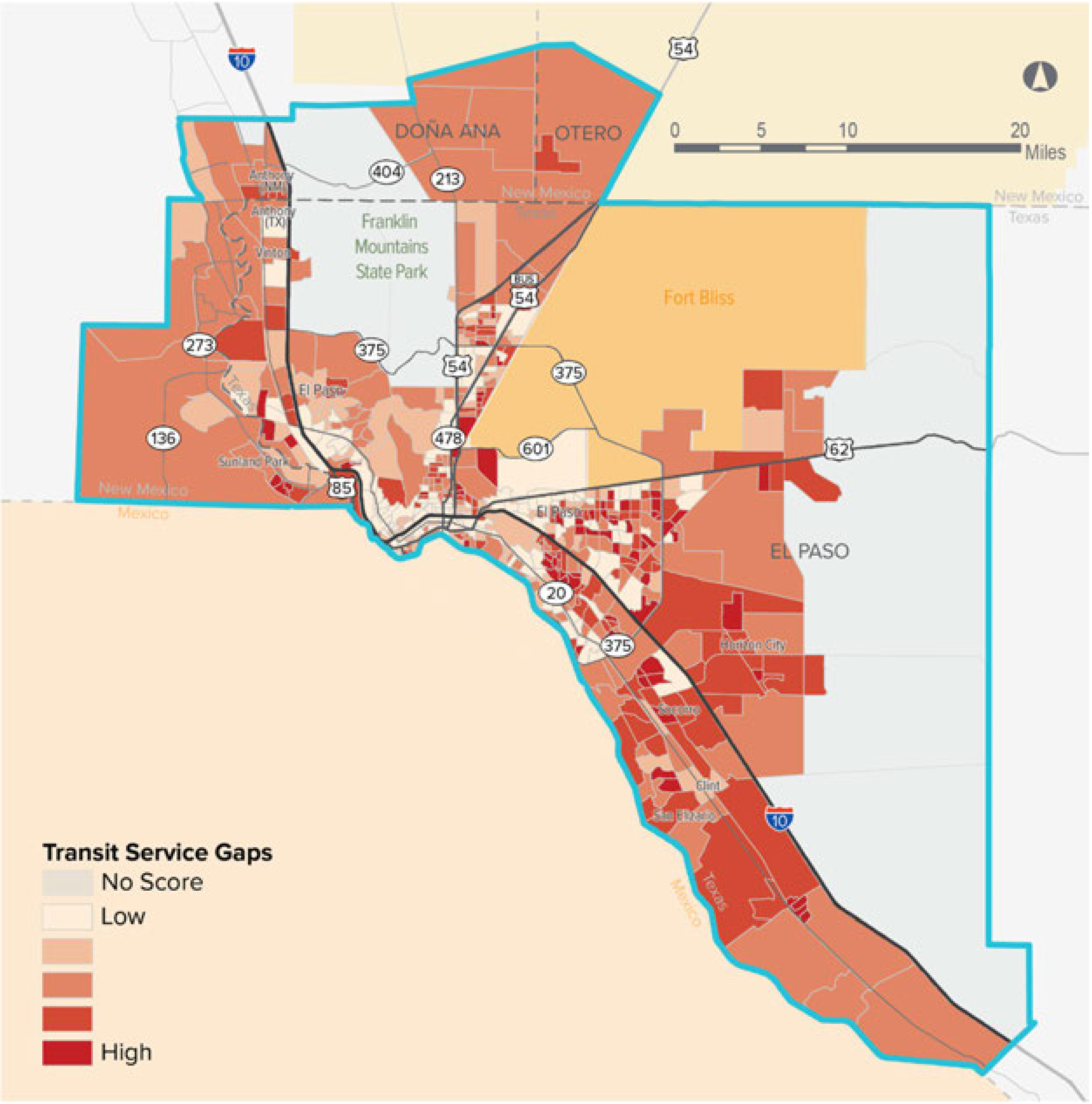
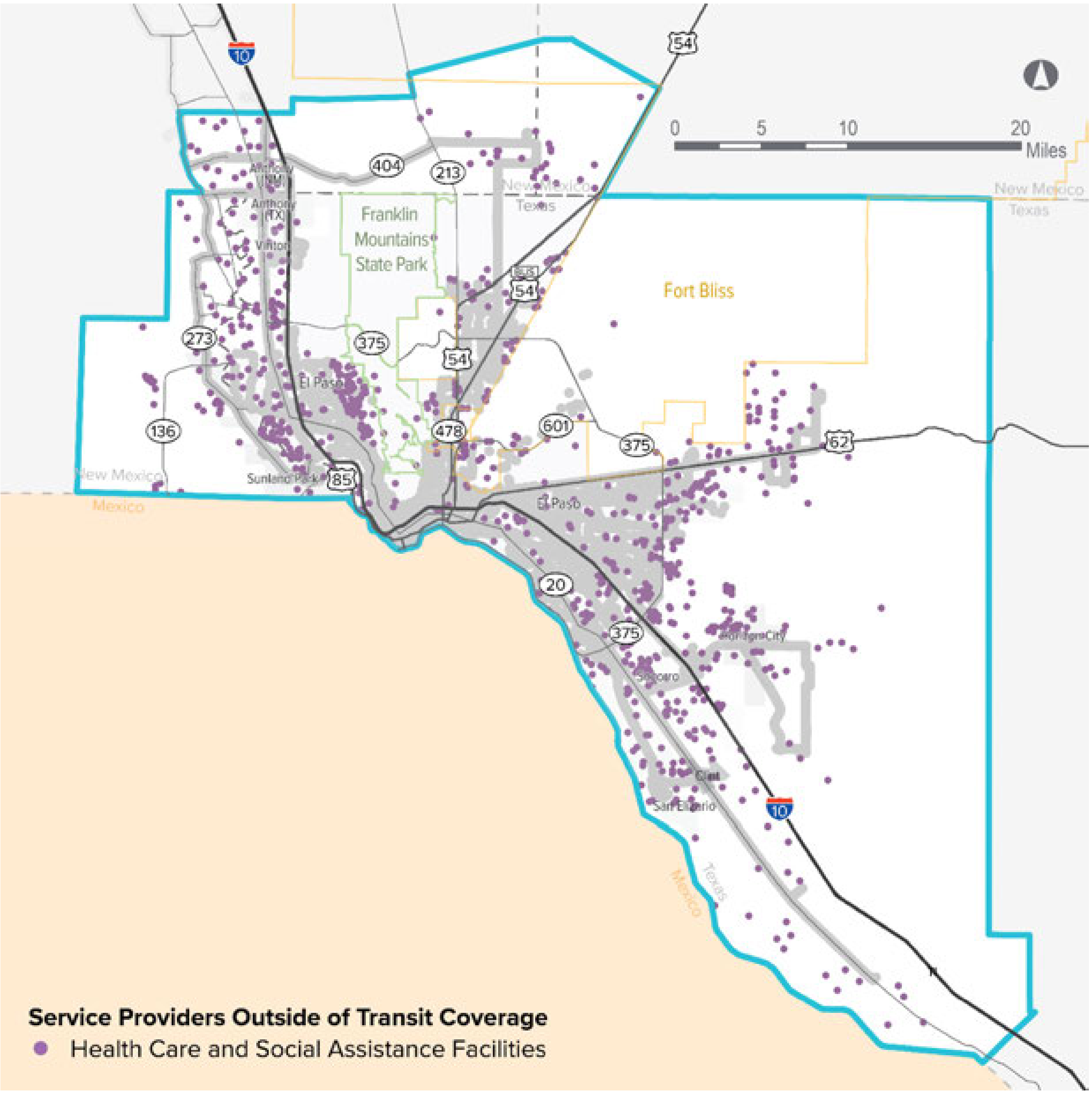


FIGURE 3-17: SERVICE PROVIDER DESTINATIONS



COORDINATED HUMAN SERVICES TRANSPORTATION GAPS

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 (HSPTCP) with feedback gathered through the Destino 2045 public visioning meetings and stakeholder outreach meetings.

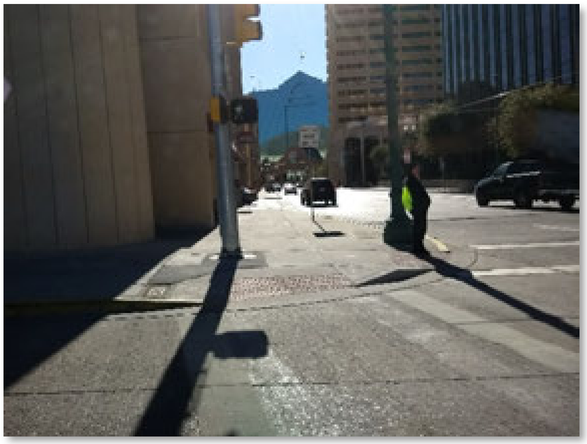
A geospatial analysis was conducted to measure if, and to what extent, rural transit and Sun Metro's transit served health care and social assistance destinations. Figure 3-17 shows the healthcare and social services providers that are located outside of the transit system coverage area.

ACTIVE TRANSPORTATION

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.

PEDESTRIAN ACCESSIBILITY ANALYSIS

A geospatial analysis was performed 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 that describes the "supply" of pedestrian infrastructure throughout the region.



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 3-18**).

The study team used the Destino 2045 TDM to identify Traffic Analysis Zones with high concentrations of walk trips and pinpoint areas of likely walk demand. Gaps were identified by comparing low walk score TAZs to high walk demand TAZs, showing areas not adequately served by pedestrian infrastructure (**Figure 3-19**). These areas should be prioritized when planning for future pedestrian infrastructure projects.

BICYCLE ACCESSIBILITY ANALYSIS

The bicycle analysis was conducted in a manner similar to the walkability analysis. First, 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. A geospatial analysis was done to measure the availability of bicycle infrastructure and other indicators of bicycle accessibility throughout the MPO. Like the walkability analysis, a ratio of residential roads to the total roadway network was created. 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.

Once all factors were measured and scored, the scores were summed together to create a master bicycle accessibility score. A score of 1 illustrates low bicycle accessibility, while a score of 5 illustrates high bicycle accessibility (**Figure 3-20**).

The study team used the Destino 2045 TDM to identify Traffic Analysis Zones with high concentrations of bike trips and pinpoint areas of likely bike demand. Gaps were identified by comparing low bike score TAZs to high bike demand TAZs, showing areas not adequately served by bicycle infrastructure (**Figure 3-21**). These areas should be prioritized when planning for future bicycle infrastructure projects.

FIGURE 3-18: WALKABILITY SCORES

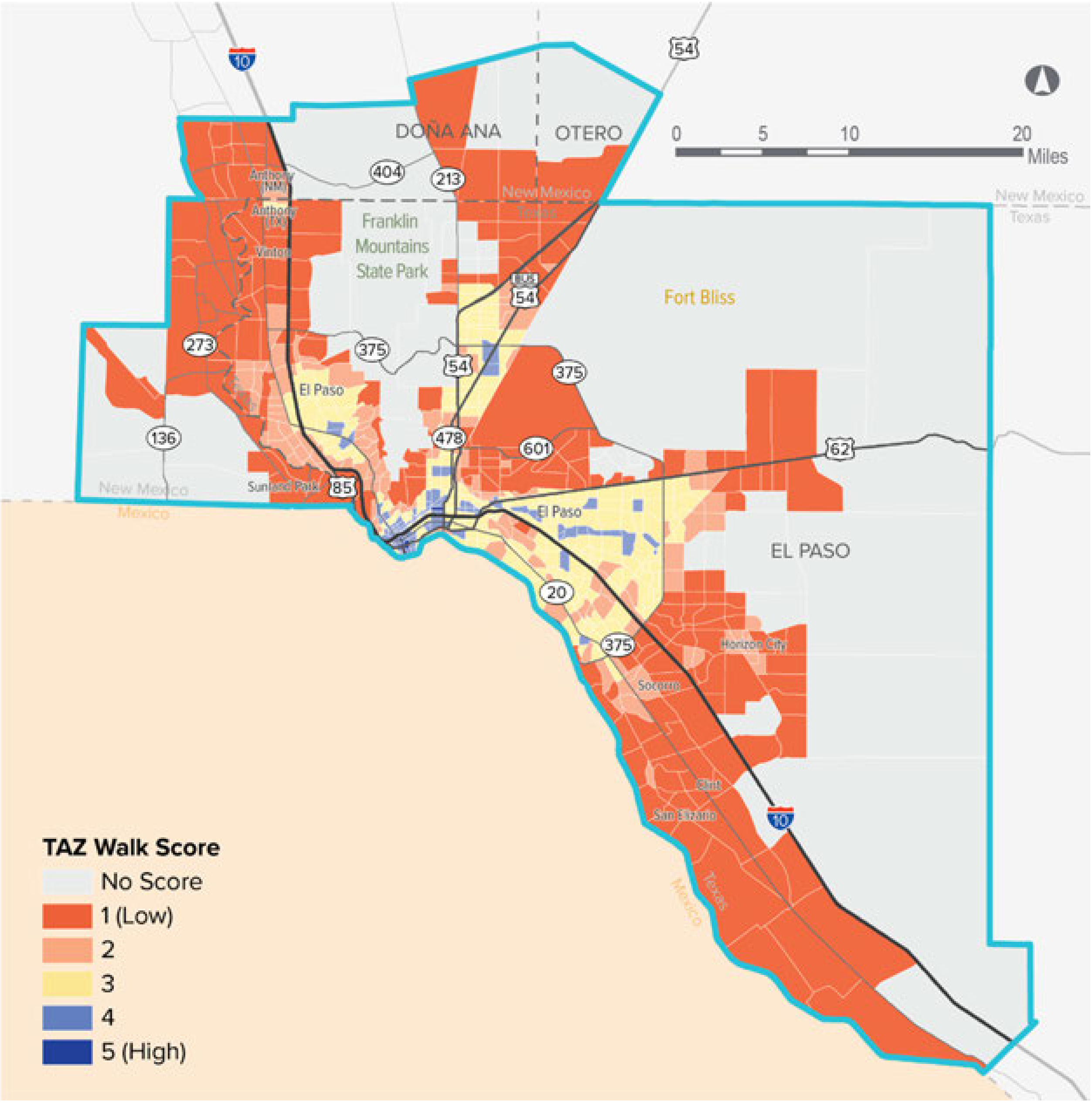


FIGURE 3-19: PEDESTRIAN GAPS

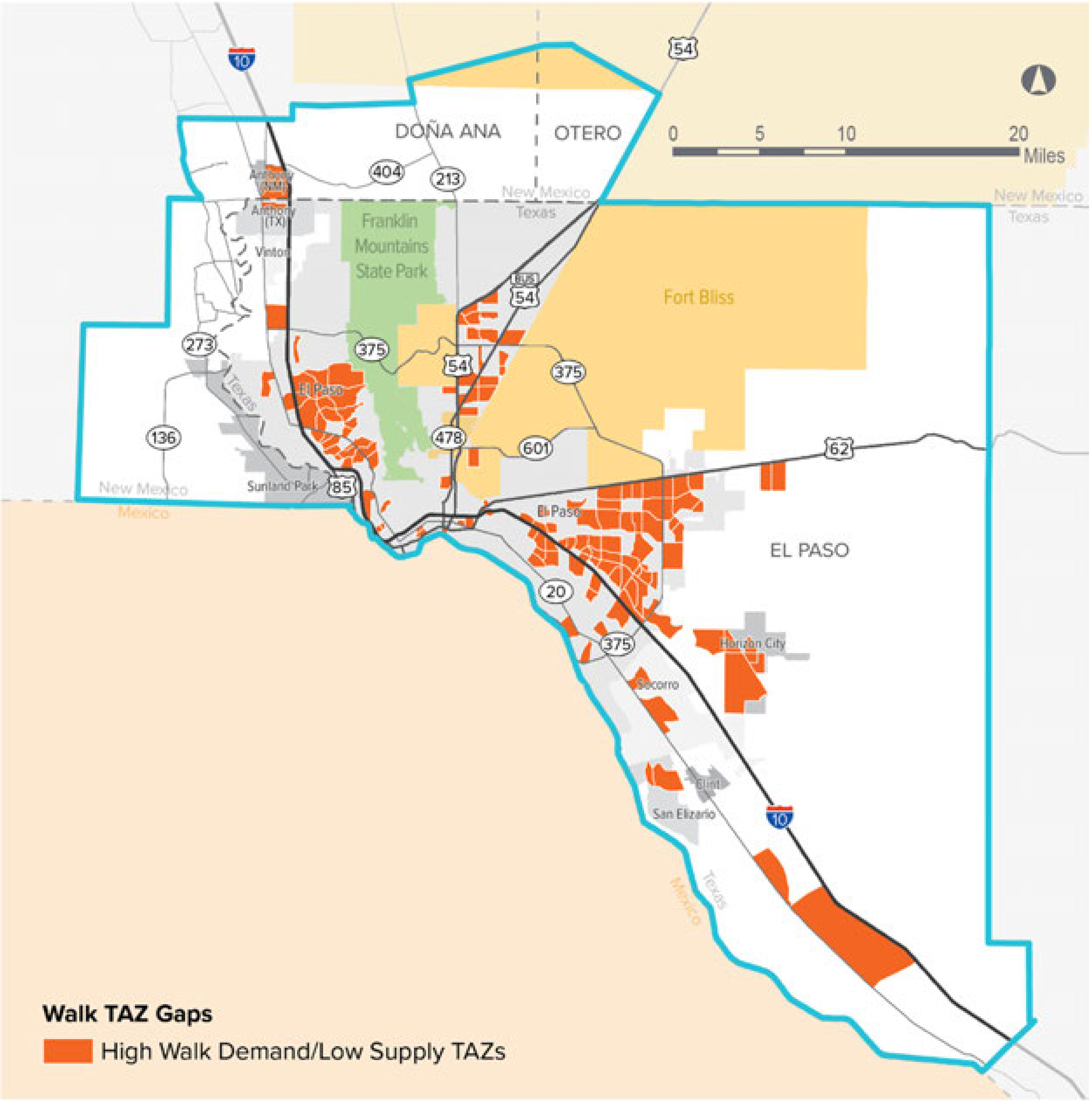


FIGURE 3-20: BICYCLE ACCESSIBILITY SCORES

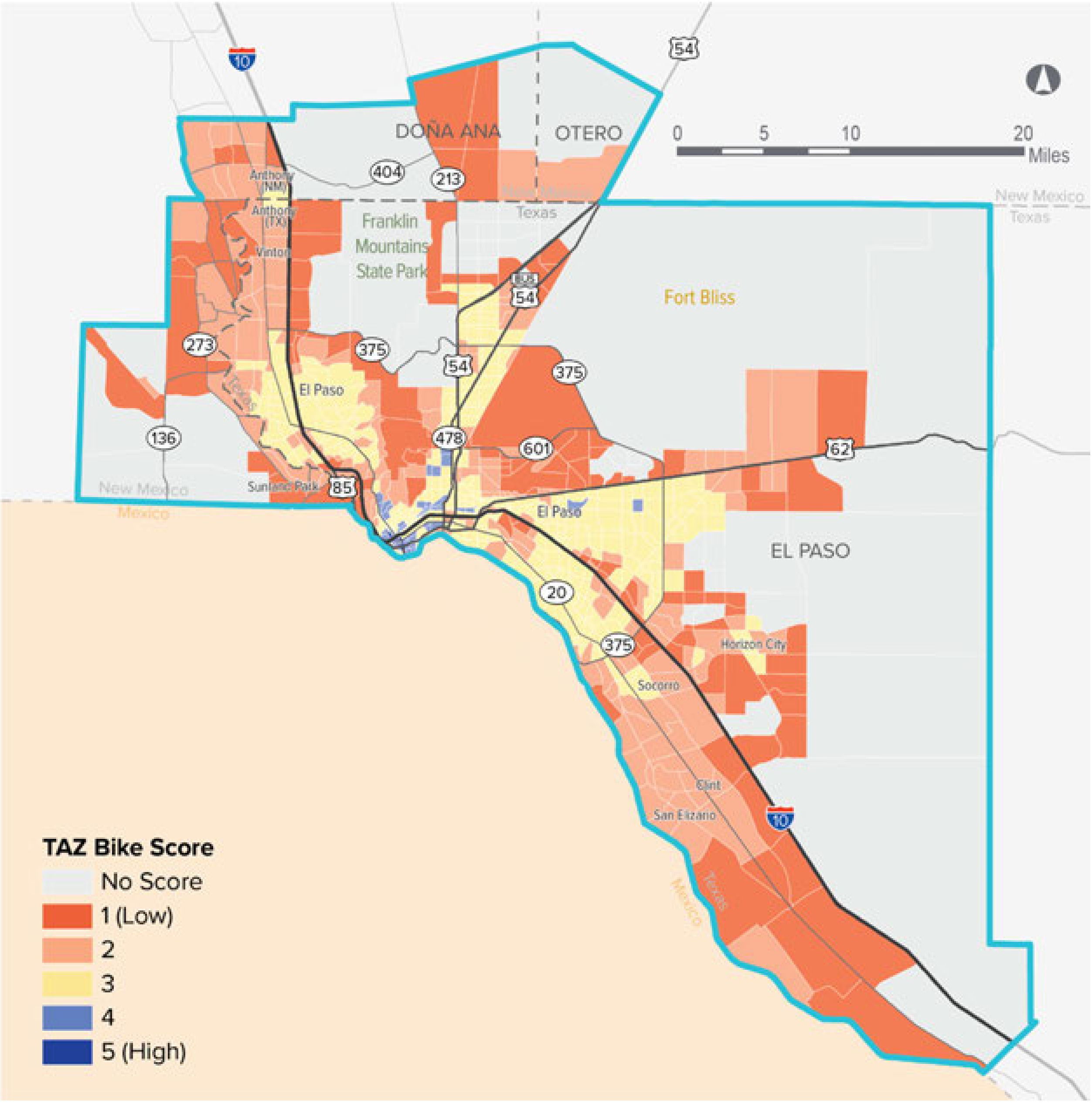
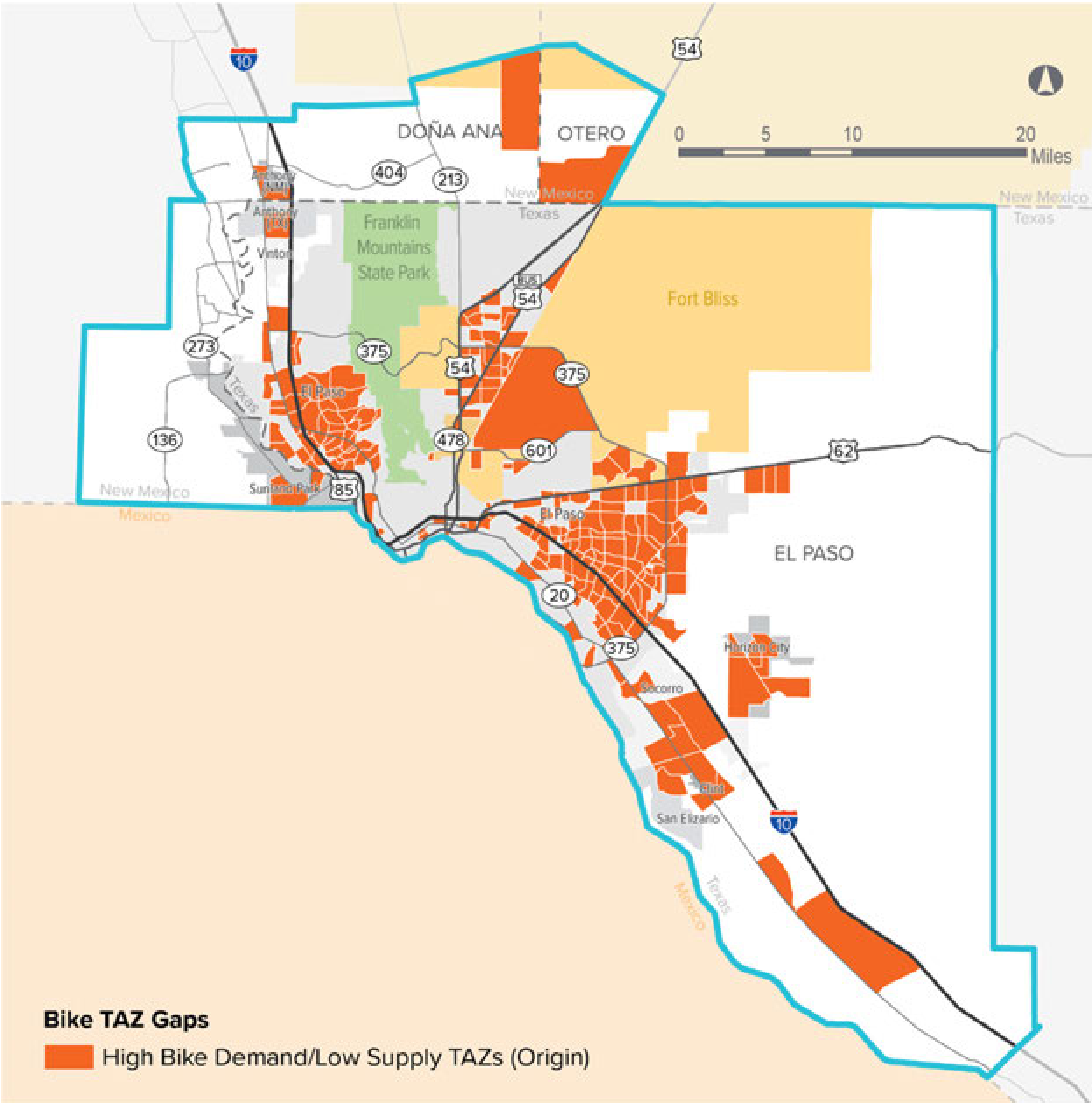


FIGURE 3-21: BICYCLE GAPS



PORTS OF ENTRY

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 facility, traffic and freight flow between the Texas/New Mexico-Mexico border impacts economies at local, regional, and national scales.

Accordingly, Destino 2045 explored the performance of the region's ports of entry (POEs) and the economic implications of congestion and delays at these facilities. The region contains six POEs, listed in Table 3-6 and shown in Figure 3-22.

PORT OF ENTRY CROSSING TRENDS

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. Figures 3-23, 3-24, and 3-25 show traffic at the POEs by type of traffic: passenger, commercial, or pedestrian.

The Bridge of the Americas (BOTA) POE experiences the most traffic overall, with roughly 8.5 million passenger vehicle crossings in 2016. However, in recent years, the Zaragoza POE has surpassed the BOTA POE in terms of commercial traffic and the Paso Del Norte POE has surpassed the BOTA POE in pedestrian traffic. Some of the largest increases in traffic at the POEs, from 2009 to 2016, include a 184% increase in pedestrian traffic at the Santa Teresa POE and a 98% increase in commercial traffic at the Santa Teresa POE.

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. 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 3-6: EL PASO MPO REGION PORTS OF ENTRY INFORMATION

POE NAME	MODES	MAX # OF LANES	CONNECTIONS
Santa Teresa	Passenger/Commercial Vehicle; Pedestrian	Passenger: 3 Commercial: 4 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 Pedestrian: 14	El Paso St. to W. Paisano Dr. & IH 10
Stanton Street	Passenger Vehicle; Pedestrian	Passenger: 3 (to Mexico) Passenger: 1 DCL (into US) Pedestrian: 2	Stanton St. to W. Paisano Dr. & IH 10
Bridge of the Americas (BOTA)	Passenger/Commercial Vehicle, Pedestrian	Passenger: 14 Commercial: 6 Pedestrian: 4	IH 110 to US 62 and IH 10
Ysleta-Zaragoza (Zaragoza)	Passenger/Commercial Vehicle, Pedestrian	Passenger: 5 (1 DCL) Commercial: 4 (1 FAST)	Zaragoza Rd. to Loop 375
Tornillo	Passenger Vehicle, Pedestrian	Passenger: 4 Pedestrian: 2	Tornillo Guadalupe Rd. to FM 3380 to IH 10

FIGURE 3-22: EL PASO AREA PORT OF ENTRY LOCATIONS

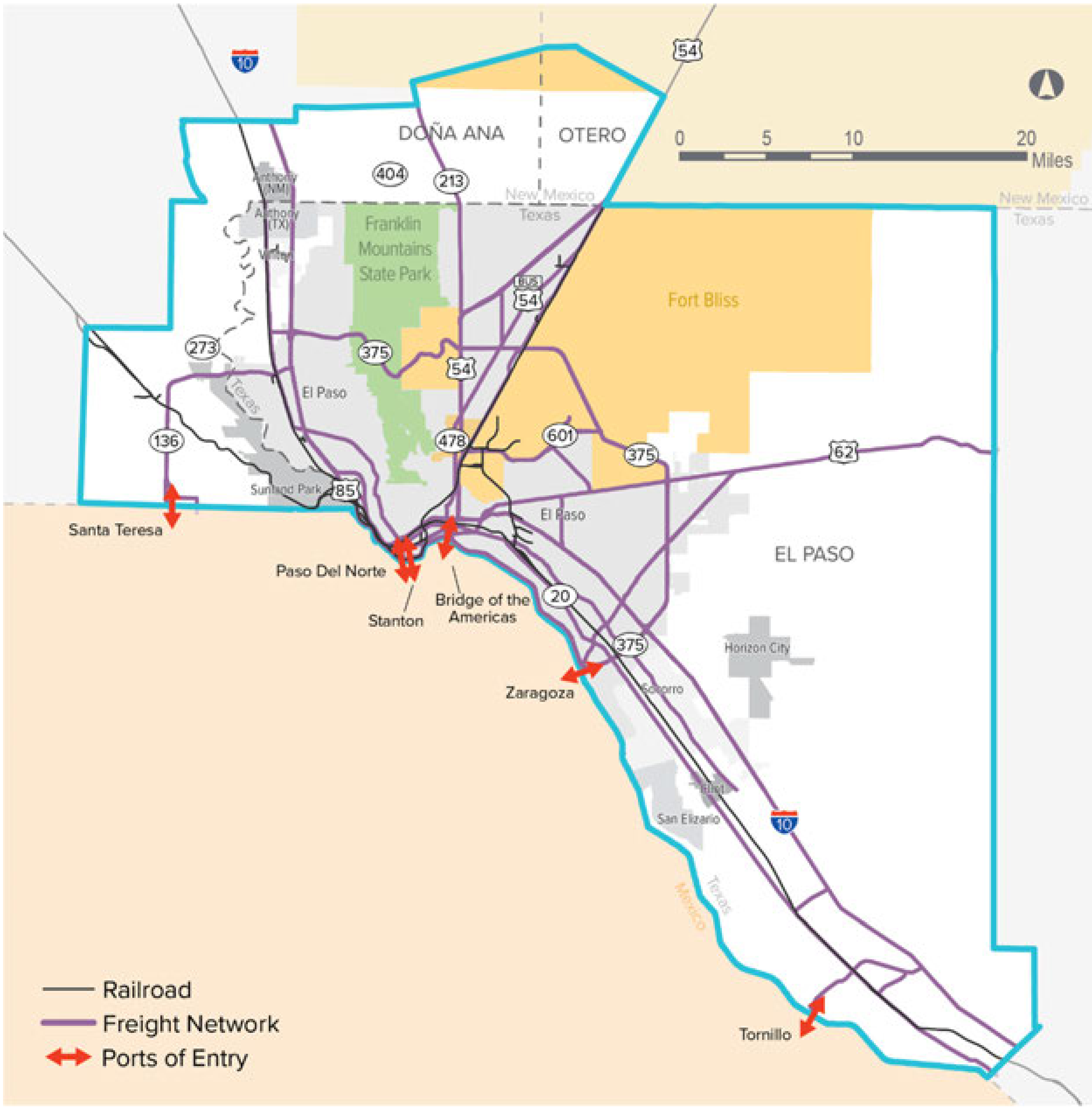


Table 3-7 provides average commercial vehicle wait times (calculated using TTI's Border Crossing Information System) at two of the major POEs in the region, Zaragoza and BOTA, between 2013 and 2016. Over the four-year period, the wait times at the Zaragoza and BOTA POEs increased by 8% and 40% respectively. 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 3-7: POE AVERAGE COMMERCIAL VEHICLE WAIT TIMES (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 must wait at the POEs, more emissions are being released into the atmosphere.

FIGURE 3-23: PORT OF ENTRY PASSENGER VEHICLE TRAFFIC (2009-2016)

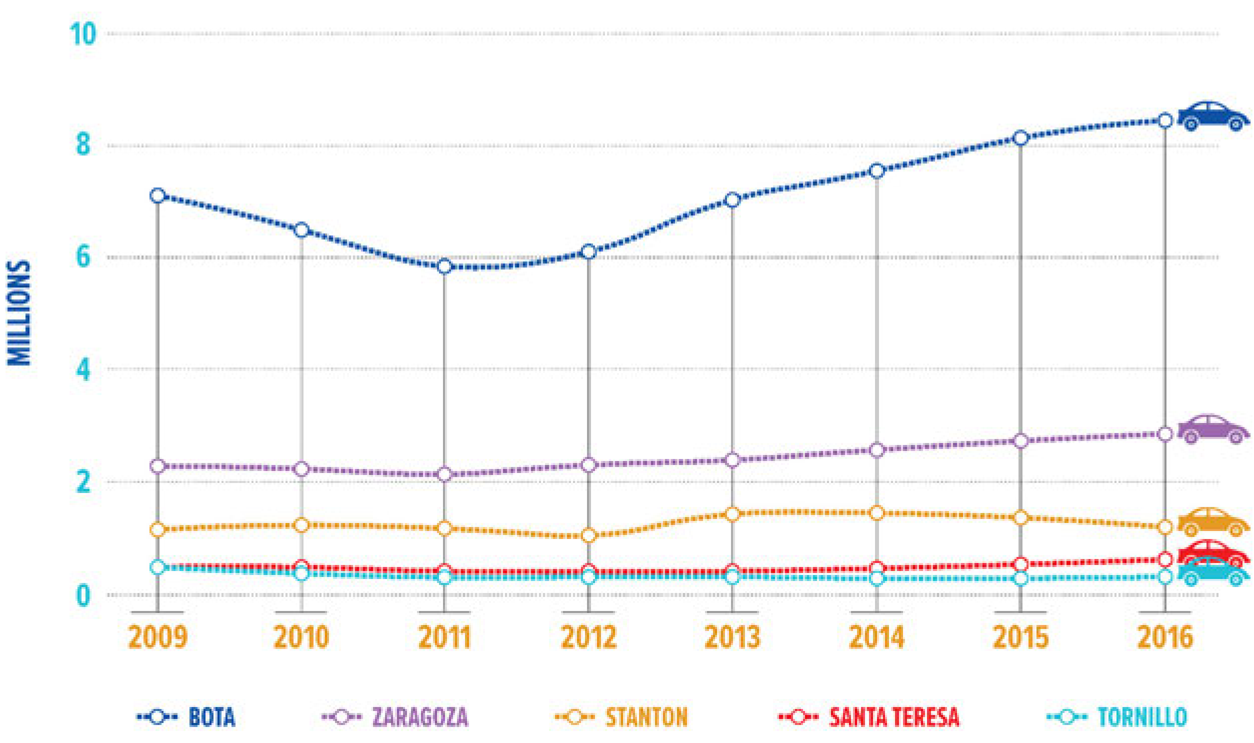


FIGURE 3-24: PORT OF ENTRY COMMERCIAL VEHICLE TRAFFIC (2009-2016)

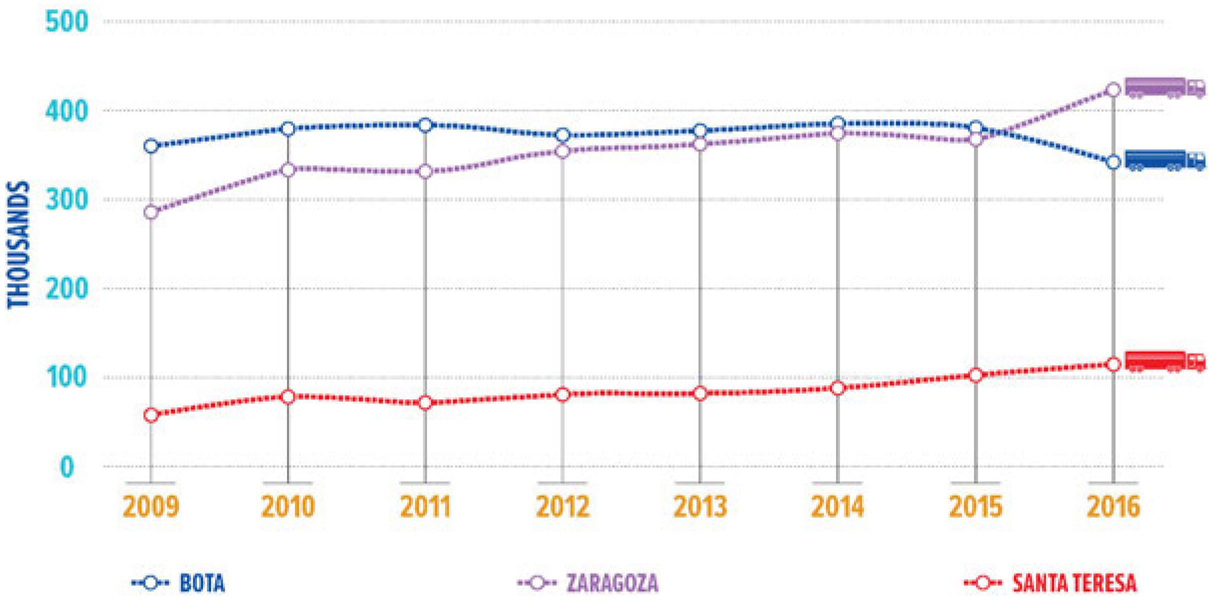


FIGURE 3-25: PORT OF ENTRY PEDESTRIAN TRAFFIC (2009-2016)

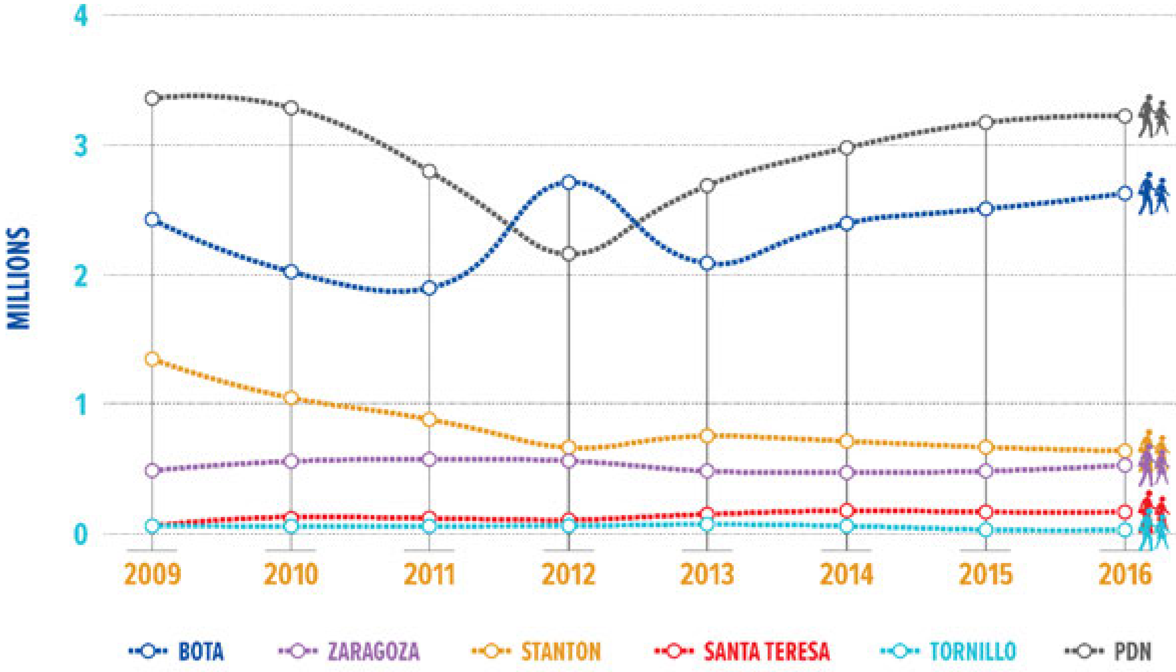


FIGURE 3-26: PORT OF ENTRY COMMERCIAL VEHICLE WAIT TIMES

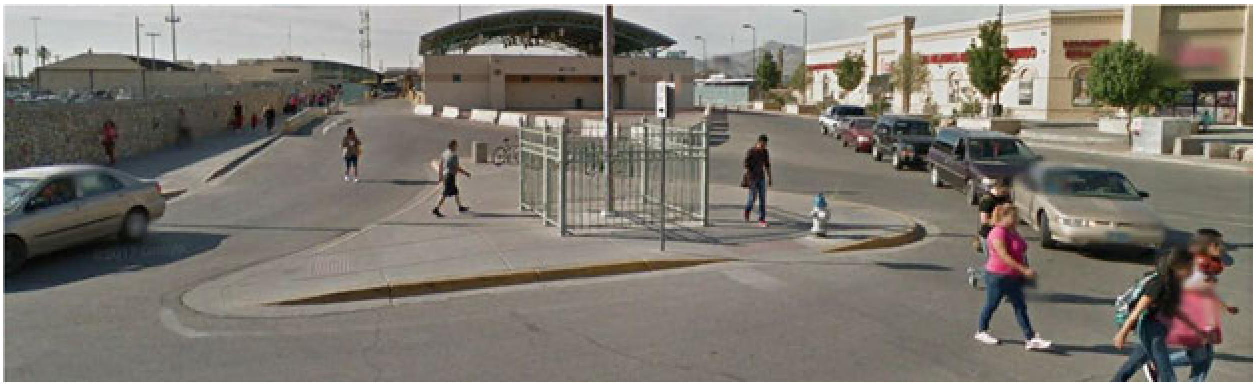
PORT OF ENTRY MULTIMODAL ACCESSIBILITY

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. Congestion hotspots that may impact access to the Ports of Entry include Pete Dominici Memorial Highway, Interstate 10, and Loop 375 (Border Highway).

For pedestrians crossing the United States-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. For transit, the PDN and Stanton Street POEs, which are located in downtown El Paso, provide easy access to a variety of high quality transit options (e.g. Downtown Santa Fe Transfer Center). Transit access at the BOTA and Zaragoza POEs is limited, as there are few bus stops nearby and pedestrians are required to cross major highways/interstates to access transit facilities. The transit stops near these two POEs also have few or inadequate amenities (Figure 3-27 and 3-28).

FIGURE 3-27: BOTA TRANSIT STOP AND ZARAGOZA TRANSIT STOP

FIGURE 3-28BIKE/PED CONDITIONS AT PDN POE EL PASO ST. ENTRY



The PDN and Stanton Street POEs provide more pedestrian-friendly infrastructure by virtue of being located in a downtown urban environment. Most of the infrastructure includes sidewalks, pedestrian islands, and non-signalized crosswalks; however, there is minimal bike infrastructure (outside of basic bike racks) and signage warning drivers of pedestrians crossing. Figure 3-29 above shows a street level view of the PDN POE El Paso Street entrance/exit. 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. Other entrances/exits to the PDN and Stanton Street POEs have higher quality bike/ped infrastructure, but there is still room for improvement.

The biggest issue for the BOTA POE 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), which eliminates accessibility to destinations close by. The Zaragoza POE provides basic pedestrian infrastructure (e.g. signalized crosswalks and sidewalks) and no bike infrastructure. However, 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 (Figure 3-29). Figure 3-30 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 3-29: BIKE/PED CONDITIONS AT ZARAGOZA POE ENTRY

FIGURE 3-30: BIKE/PED CONDITIONS AT ZARAGOZA ST. POE BUS STOP

FREIGHT

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 should be minimized and traffic should be predictable. To understand how freight movement might be impacted by traffic delays, Destino 2045 analyzes congestion along a locally-defined freight roadway network. Airports, railroads, and intermodal facilities are also considered in the analysis, as all play a major role in freight movement in and out of the region.

Source: Wikimedia commons

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. 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.

FREIGHT CONGESTION ANALYSIS

Figure 3-32 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. Major arterials/emphasis corridors also experience notable levels of freight traffic. Figure 3-33 shows the peak period congestion index for the 2045 freight network. Compared to areas with high industrial/manufacturing employment growth for the region, the figure displays increase 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. Figure 3-31 shows top freight congestion segments in 2045.

7 MILLION

hours of vehicle delay per year along the **freight network**. This will increase by 250% by 2045.

FIGURE 3-31: TOP FREIGHT CONGESTION SEGMENTS; 2045

1 **SERGEANT MAJOR BLVD**
from Global Reach Drive to Anzio Way

2 **LOOP 375**
from Liberty Expressway to Montana Avenue

3 **GLOBAL REACH DR**
from Liberty Expressway to Montana Avenue

4 **MONTANA AVE**
from Hawkins Boulevard to Lee Trevino Drive

5 **LOOP 375**
from Railroad Drive to Sergeant Major Boulevard

FIGURE 3-32: EL PASO MPO REGION FREIGHT NETWORK TRUCK FLOWS; 2045

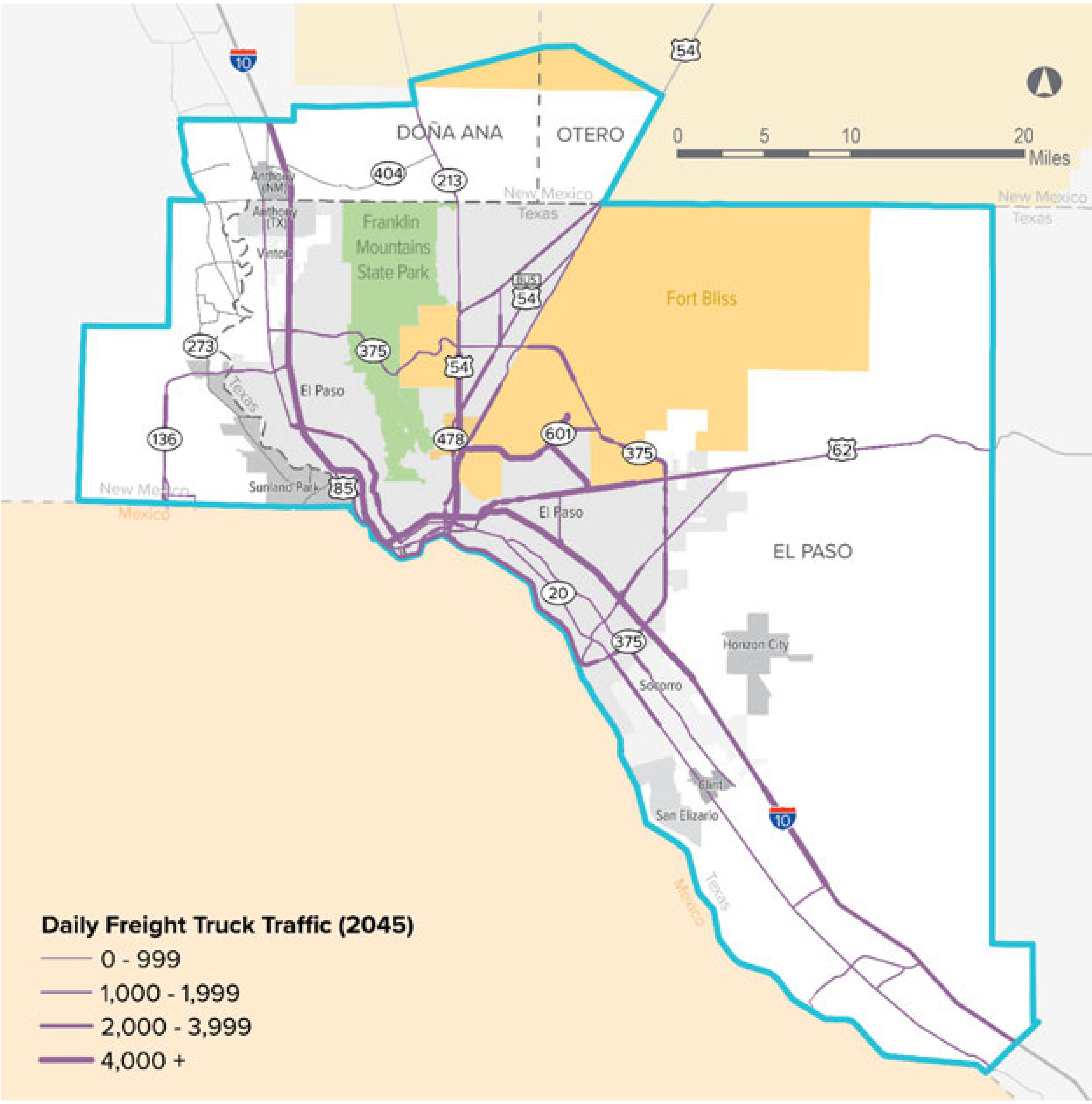
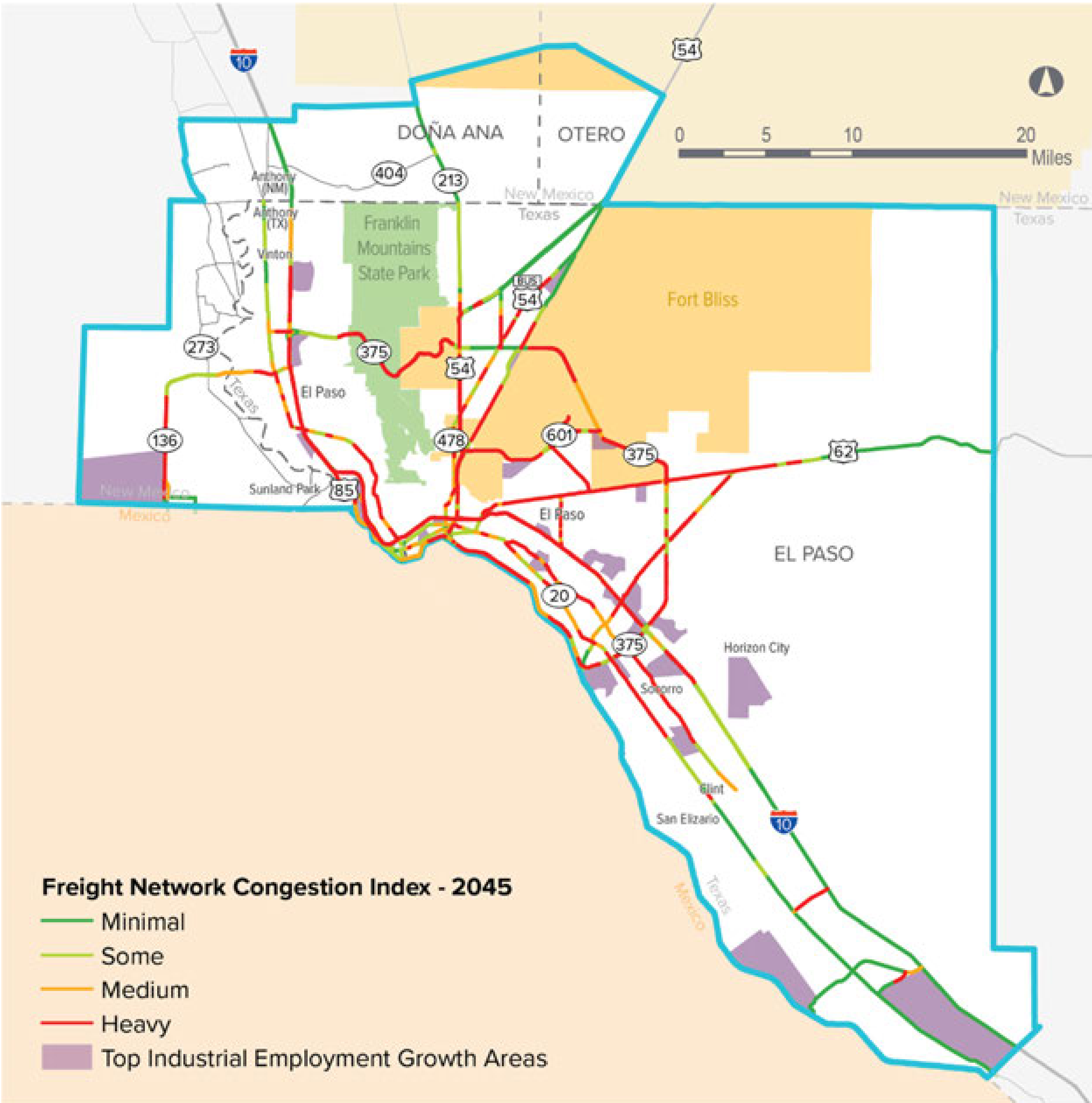


FIGURE 3-33: FREIGHT NETWORK CONGESTION INDEX, 2045



OPERATIONS AND MAINTENANCE

Destino 2045 also considers the needs of maintaining current infrastructure in addition to building new infrastructure. The operations & maintenance analysis provides an assessment of El Paso MPO region's roadway pavement conditions, deficient bridges, and transit assets.

PAVEMENT CONDITIONS

For roadway pavement conditions analysis (**Figure 3-35**), condition scores, where 1 is the worst and 100 is the best, represent the overall condition of pavement on a given road segment, in terms of both ride quality and pavement distress. Overall, the region's roadway network is shown to be in relatively good condition, as the majority of the roadways in the study area have "good" or "very good" condition scores (i.e. light or dark green. 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).

BRIDGE CONDITION

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. **Figure 3-36** shows the locations of the six deficient bridges in the El Paso MPO region.

FIGURE 3-34: ROADWAYS BY CONDITION SCORE; TXDOT PMIS; 2016 TXDOT STATEWIDE PLANNING MAP

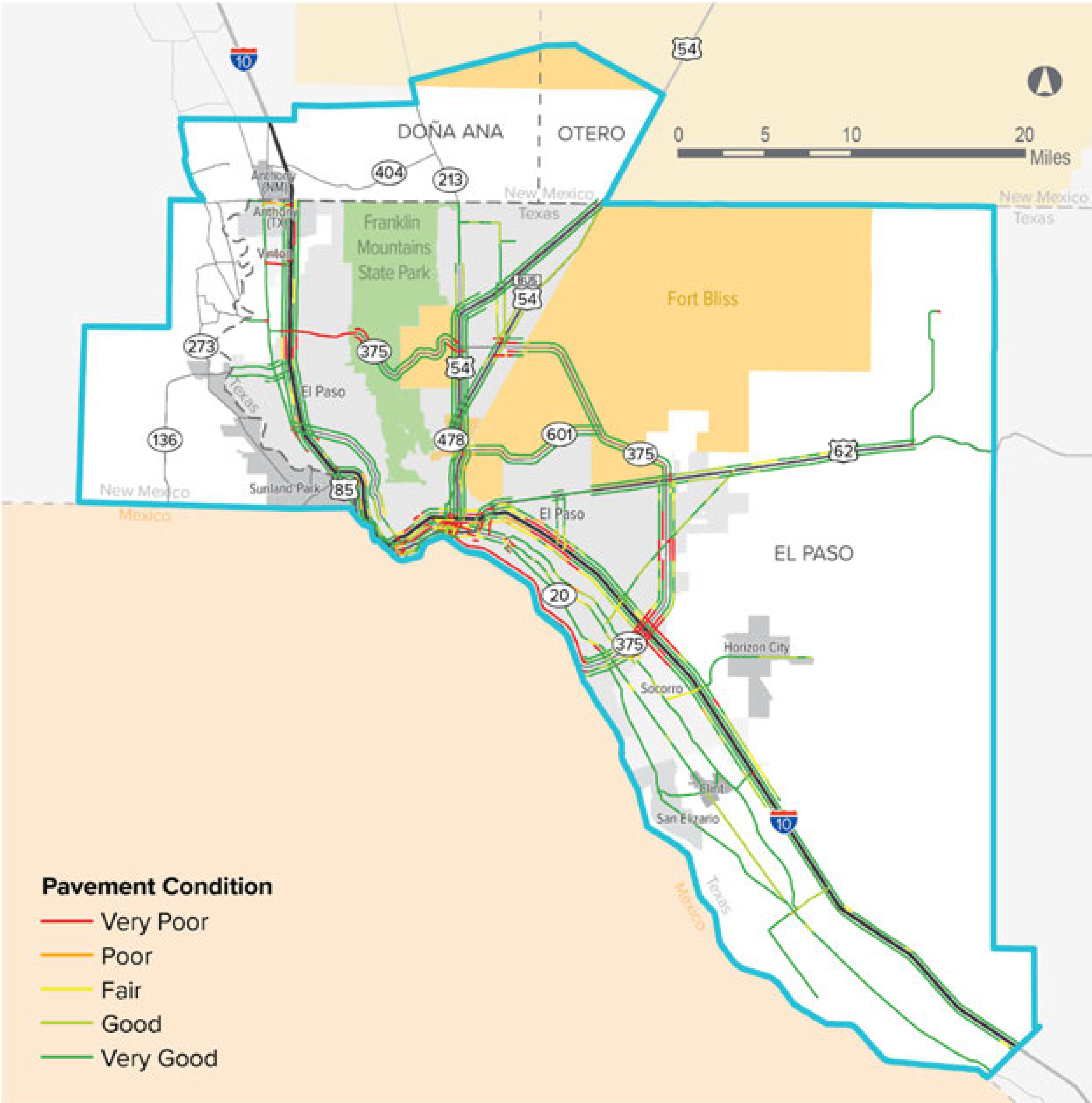
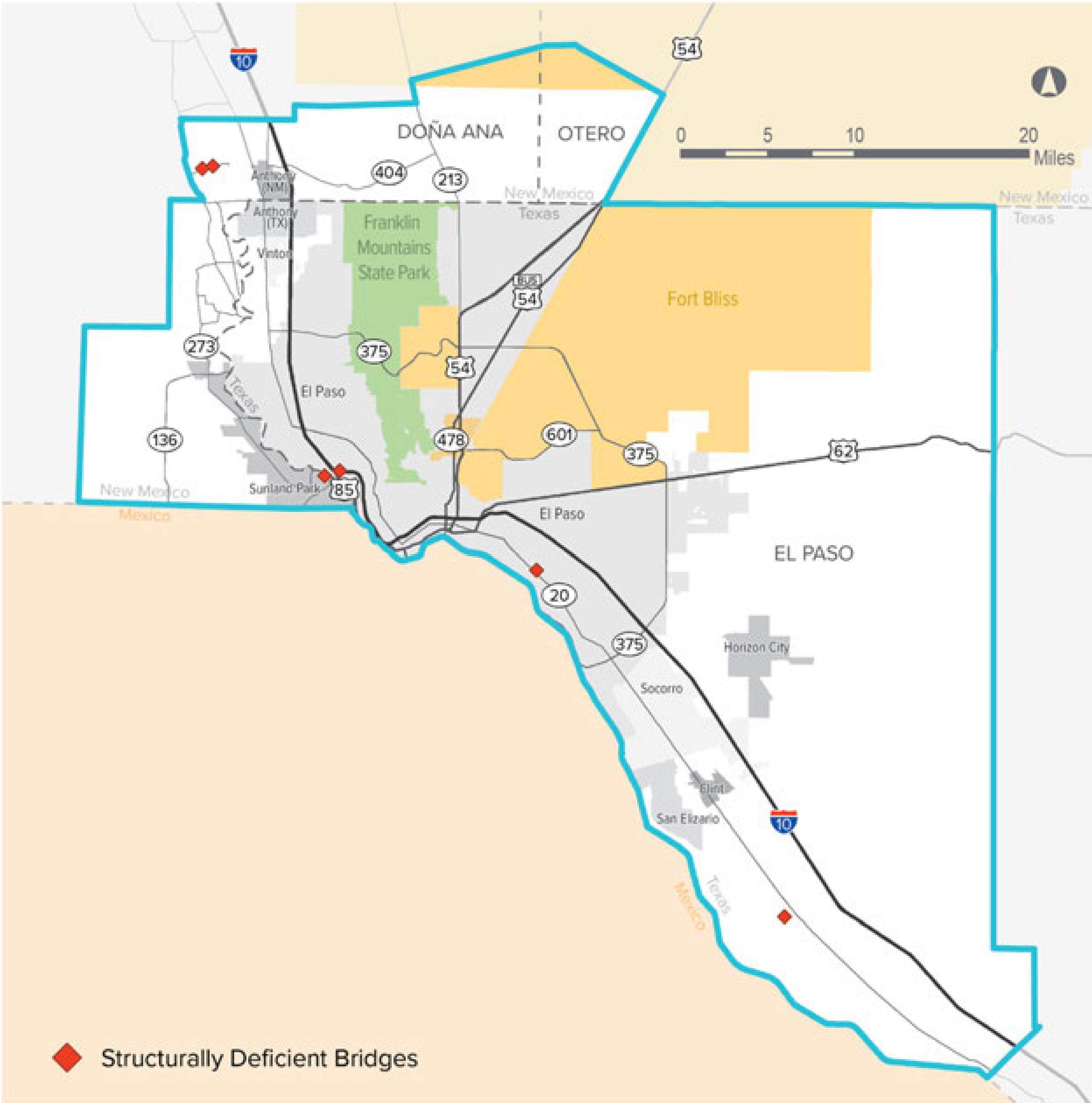


FIGURE 3-35: NBI STRUCTURALLY DEFICIENT BRIDGES (2016)



SUN METRO ASSET MANAGEMENT

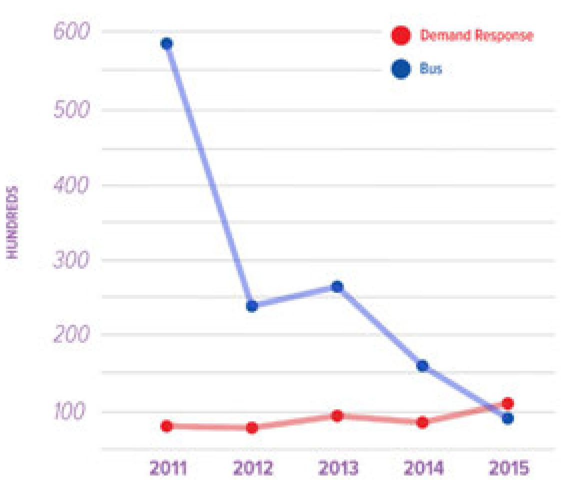
Transit Asset Management (TAM) is a system that monitors/manages public transportation assets through evaluation of the conditions of transit assets. Sun Metro's 2015 fleet vehicle asset inventory reveals that all fleet vehicles (292) were in use and ADA accessible. Only 16% of the vehicles in the entire 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. Looking at the age of the fleet vehicles compared to their useful life benchmark (Table 3-8), it appears that the average Sun Metro bus still has several years of useful life. However, some of the smaller vehicles (e.g. vans) may be approaching their useful life if new purchases have not been made in the past couple of years.

TABLE 3-8: ACTIVE BUSES BY AGE GROUPING (YEARS); 2010-2014

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

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. Figure 3-36 shows performance failure counts for bus and demand response vehicles from 2011 to 2015 from NTD. Major failures are defined as 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. While bus failures have decreased, demand response vehicle failures have increased over the same period. 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 period.

FIGURE 3-36: BUS & DEMAND RESPONSE VEHICLE FAILURES; 2011-2015



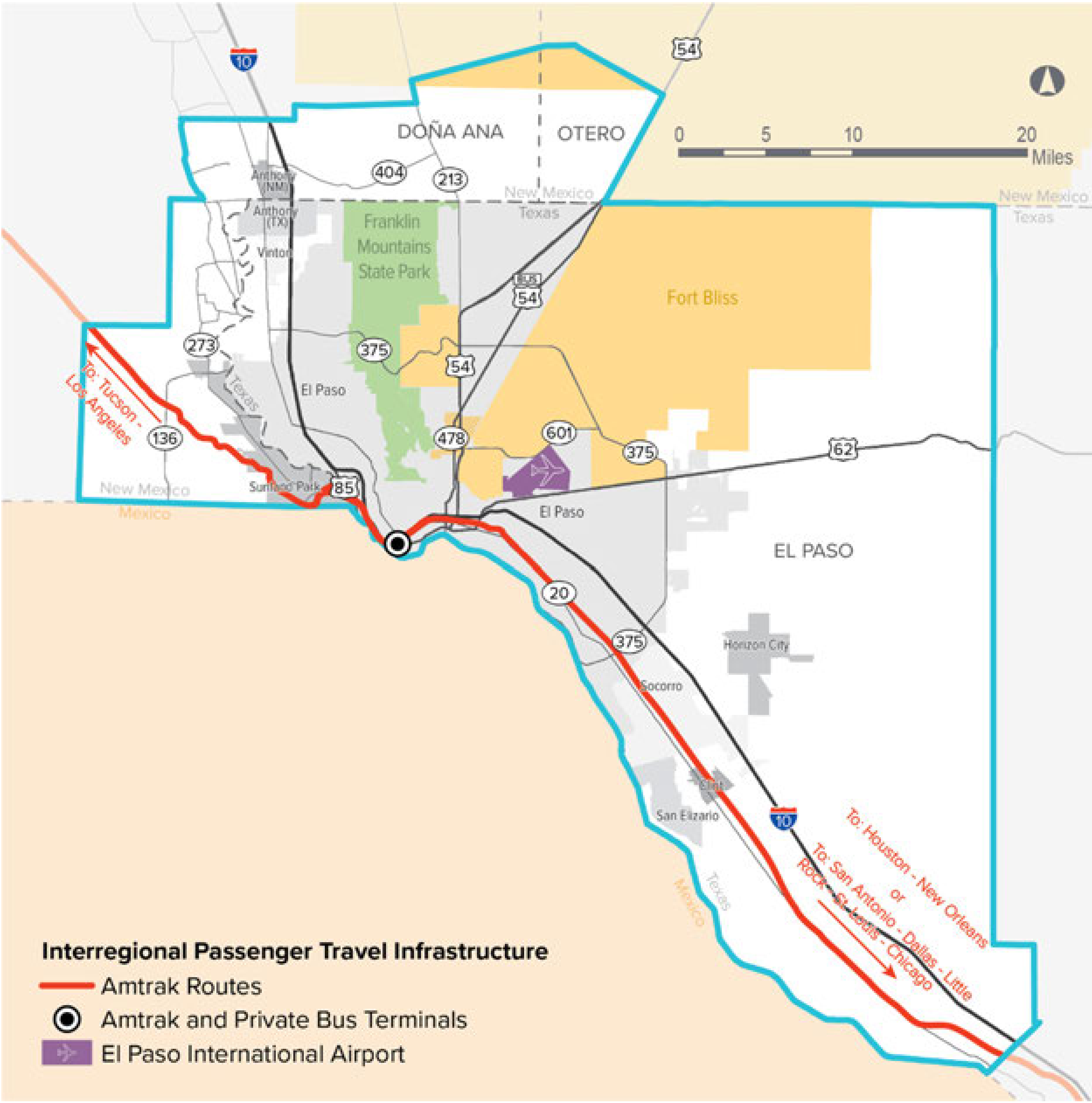
INTERREGIONAL PASSENGER TRAVEL

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 following analysis provides an overview of each type of service provided in the region and assesses current ridership trends.

EL PASO INTERNATIONAL AIRPORT

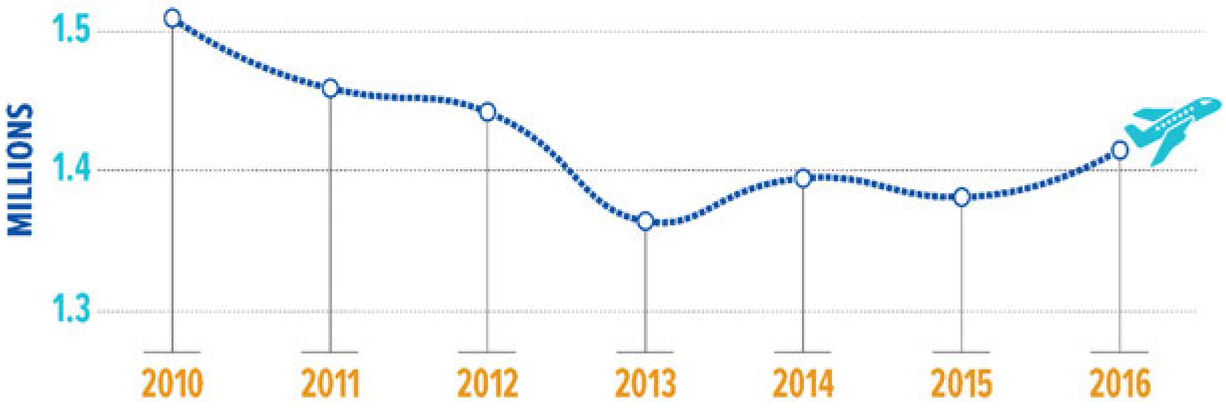
The El Paso MPO region contains six airports; however, the El Paso International Airport (EPIA) is the focus of the analysis as it is the only airport with significant commercial service. EPIA offers commercial, air cargo, and general aviation services to the region and averages roughly 7,700 passengers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

FIGURE 3-37: EL PASO MPO INTERREGIONAL PASSENGER TRANSPORTATION



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 3-38 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 3-38 EL PASO INTL AIRPORT ENPLANEMENTS; 2010-2016



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 shown in Figure 3-39. 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.

FIGURE 3-39: EL PASO STATION AMTRAK RIDERSHIP

INTERREGIONAL 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. A number of private bus terminals are 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 mid-west 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.

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