Demographic Profile

To prepare the 2011 socioeconomic data update for the El Paso MPO, Alliance Transportation Group was contracted. The complete technical memorandum provides a summary of the assumptions and methodology used to prepare the 2011 socioeconomic data. An excerpt from the technical memorandum is presented in the next section.

The revised forecasts were prepared as a synthesis of public outreach, qualitative data gathering, and the analysis of quantitative data. The Forward (FWD) El Paso Delphi Method was a consensus building process that relied upon the wisdom and expertise of community leaders to identify patterns in the growth and development of the community. Specifically, the purpose of the FWD El Paso was to gather information from knowledgeable area leaders to obtain verification of the reasonableness of the MPO study area's control totals, to obtain a thorough understanding of high and low growth areas, and to identify areas with high and low growth potential. From this information, FWD El Paso assisted with developing short and long range population and employment forecasts that will be used in the MPO's regional transportation plans.

Past and Existing Population and Employment

Population

Population counts from the 2010 U.S. Census show that the counties of the MPO study area have grown substantially since the 2000 U.S. Census (see *Table 6*). The U.S. Census Bureau's 2010 population count for El Paso County was 800,647 residents. This growth represents an increase of 121,025 residents or a compounded annual growth rate (CAGR) of 1.65 percent, since 2000. The City of El Paso grew to 649,121 residents in 2010 and at a slightly slower CAGR since 2000. The Texas State Data Center's 2007 population estimate for El Paso County was 747,477 residents, which if accurate, would show that most of the population growth in El Paso County occurred during the later part of the decade. This trend would be compatible with the population growth that occurred as result of Fort Bliss' expansion. The rate of population growth in Doña Ana County between 2000 and 2010 was even greater than El Paso County at a CAGR of 1.82 percent. The total population during the 2010 U.S. Census was 209,233 persons or an increase of 34,551 residents. Otero County, on the other hand experience very modest population growth between 2000 and 2010. The total number of new residents added during this period was 1,498 persons or a CAGR of 0.24 percent. Population estimates for 2007, produced by the New Mexico Bureau of Business and Economic Research (NM BBER), were 205,247 residents for Doña Ana County and 66,906 residents for Otero County. Given that the NM BBER's 2007 population estimates were higher than the 2010 U.S. Census population count for Otero County and near the 2010 population count for Doña Ana County, their 2007 population estimates appear to have been too aggressive.

Table 6: Population Estimates for Counties in the El Paso MPO Study Area

	El Paso County	Doña Ana County	Otero County	City of El Paso
April 1, 2000 Census Count	679,622	174,682	62,299	563,662
TxSDC/NM BBER Estimate – Jul. 1, 2007	747,477	205,247	66,906	609,007
April 1, 2010 Census Count	800,647	209,233	63,797	649,121
Difference 2000 Census - 2007 TxSDC/NM BBER	67,855	30,565	4,607	45,345
Annual Change 2000 Census – 2007 TxSDC/NM BBER	9,359	4,216	635	6,254
Compounded Annual Growth Rate	1.32%	2.25%	0.99%	1.07%
Difference U.S. Census 2000-2009	53,170	3,986	-3,109	40,114
Annual Change U.S. Census 2000-2009	19,335	1,449	-1,131	14,587
Compounded Annual Growth Rate	2.53%	0.70%	-1.72%	2.35%
Difference U.S. Census 2000-2010	121,025	34,551	1,498	85,459
Annual Change U.S. Census 2000-2010	12,103	3,455	150	8,546
Compounded Annual Growth Rate	1.65%	1.82%	0.24%	1.42%

Note: All growth rates are calculated based upon the specific date of the figures. For example, the period between the April 1, 2000 Census and the July 1, 2007 U.S. Census estimate is 7.25 years rather than 7.0 years.

Source: Texas State Data Center, 2009 and 2010, New Mexico Bureau of Business and Economic Research (NM BBER) 2010, and U.S. Census Bureau, 2010.

Employment

Examining employment change by industry reveals that certain sectors have played an important role in the region's economic growth during the past seven years. *Table 7* provides data showing total employment change in each employment sector between 2005 and 2010, as well as between 2007 and 2010 (the current economic downturn). The data in *Table 7* shows that more than 13,600 jobs were created in the El Paso, TX MSA between 2005 and 2010. However, *Table 7* also shows that the region only created 4,700 jobs in the period between 2007 and 2010.

While job growth occurred in most of the El Paso, TX MSA's employment sectors between 2005 and 2010, the education and health services sector led the region with almost 6,400 new jobs, which essentially occurred between 2007 and 2010. Employment in the education component grew steadily because the region's rapid population growth required the construction of new elementary and secondary schools. Public administration was also another major growth sector, adding almost 2,700 jobs between 2005 and 2010 with almost 1,900 jobs between 2007 and 2010. The professional and business services sector added 4,500 jobs between 2005 and 2010, although only 1,000 jobs were gained between 2007 and 2010. Another local employment growth sector has been the hospitality and leisure industry, which increased by almost 2,800 jobs between 2005 and 2010 (including more than 1,700 jobs since 2007).

Unlike most other regions in the nation, El Paso's construction sector has grown (albeit modestly) between 2007 and 2010 with 650 new jobs. Total employment growth between 2005 and 2010 in this sector was 3,200 jobs. It is likely, however, that El Paso's fortunes will begin to mirror the rest of the nation, as major construction projects at Fort Bliss reach completion and as the pace of new soldiers begin stationed at Fort Bliss slows and eventually ends in 2012. The construction of the new Beaumont Army Medical Center should provide a cushion to the job loss, but it is likely that overall employment in the construction sector will decline in the near term and that its recovery will follow national trends.

The data in *Table 7* also show that employment in the manufacturing sector experienced the steepest decline in the El Paso, TX MSA between 2005 and 2010, with more than 6,300 jobs lost. In addition to reduced demand from the national recession and a significant decline in maquiladora manufacturing. Job losses were also the result of some local manufacturing following a global trend and shifting to offshore locations. The trade, transportation, and utilities sector added fewer than 300 jobs between 2005 and 2010, but more than 3,000 jobs were lost between 2007, and 2010, as manufacturing activity in maquiladoras declined in response to the weak U.S. economy. The retail industry accounted for the majority of the employment in this sector (about 59 percent) and actually grew by almost 1,000 jobs between 2005 and 2010 (although it also declined by 770 jobs between 2007 and 2010). Other industries in the El Paso MPO have lost jobs, but the overall impacts on total employment have been modest.

Table 7: QCEW Employment Change in the El Paso, TX MSA by Sector – 2005-2010

	Change 2005-2010		Change 2007-2010	
Employment Sector	**Employment**	**CAGR**	**Employment**	**CAGR**
Education and Health Services	6,376	1.75%	6,622	3.05%
Public Administration	2,685	3.50%	1,883	3.99%
Leisure and Hospitality	2,805	2.04%	1,678	1.99%
Professional and Business Services	4,576	3.18%	990	1.07%
Construction	3,220	4.63%	657	1.42%
Financial Activities	107	0.18%	250	0.71%
Natural Resources and Mining	-53	-1.02%	-39	-1.25%
Unclassified	-182	-14.94%	-79	-13.38%
Information	436	1.74%	-106	-0.66%
Other Services	-278	-0.84%	-271	-1.35%
Trade, Transportation, and Utilities	266	0.09%	-3,008	-1.65%
Manufacturing	-6,326	-6.26%	-3,873	-6.76%
TOTAL	13,632	1.03%	4,704	0.58%

Source: Texas Workforce Commission, 2011.

Socioeconomic Projections

The EPMPO's population is projected to reach one million by 2030 and 1.2 million by 2040. This growth will require an additional 143,000 homes. In addition, the EPMPO is expected to gain nearly 138,000 new jobs, expanding its job base by 47 percent. The forecast shows that job growth is projected to occur at the same rate as population growth. While the forecast may anticipate reasonably strong growth for the El Paso MPO study area through the year 2040, it also accounts for more conservative population growth during the earlier forecast years. Growth occurs at a faster rate, later in the forecast horizon, as the current economic malaise diminishes. (See *Figure 1* and *Table 8* below)

Figure 1: EPMPO Projected Population and Employment Growth

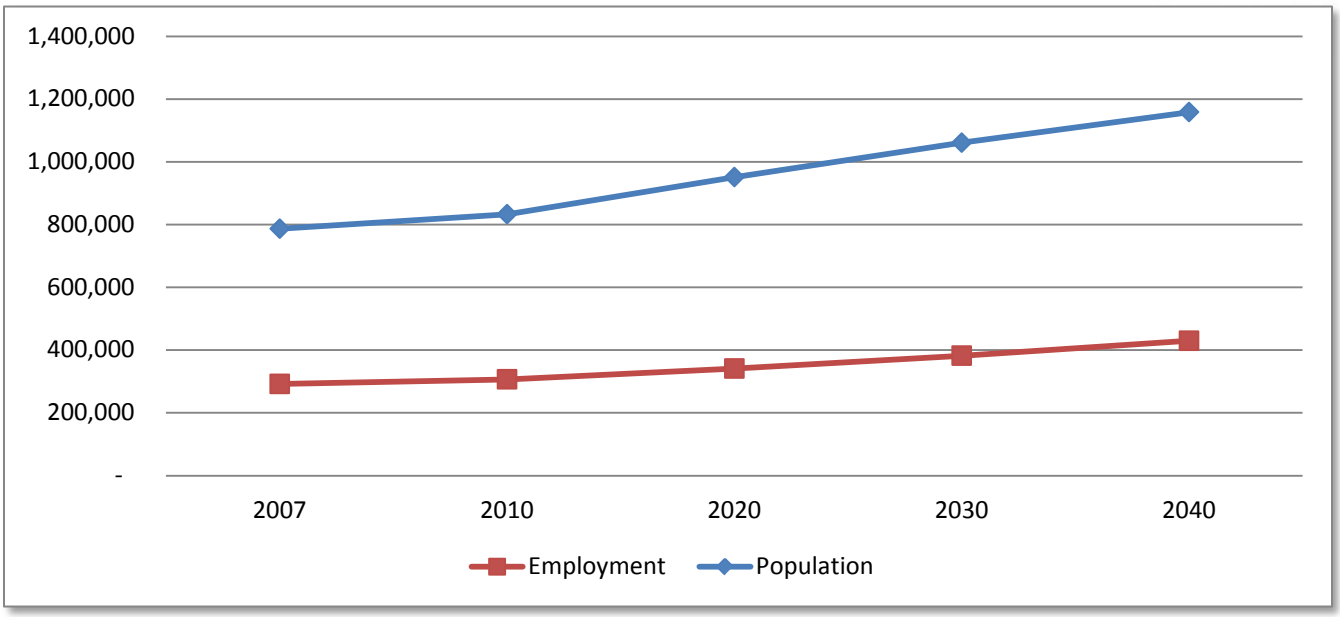


Table 8: Population, Housing and Employment, Current, and Projected

	2007	2010	2020	2030	2040
Population	786,560	832,836	951,072	1,060,674	1,158,195
Housing	256,198	270,326	314,789	358,115	399,153
Employment	291,878	306,656	340,998	382,021	429,455

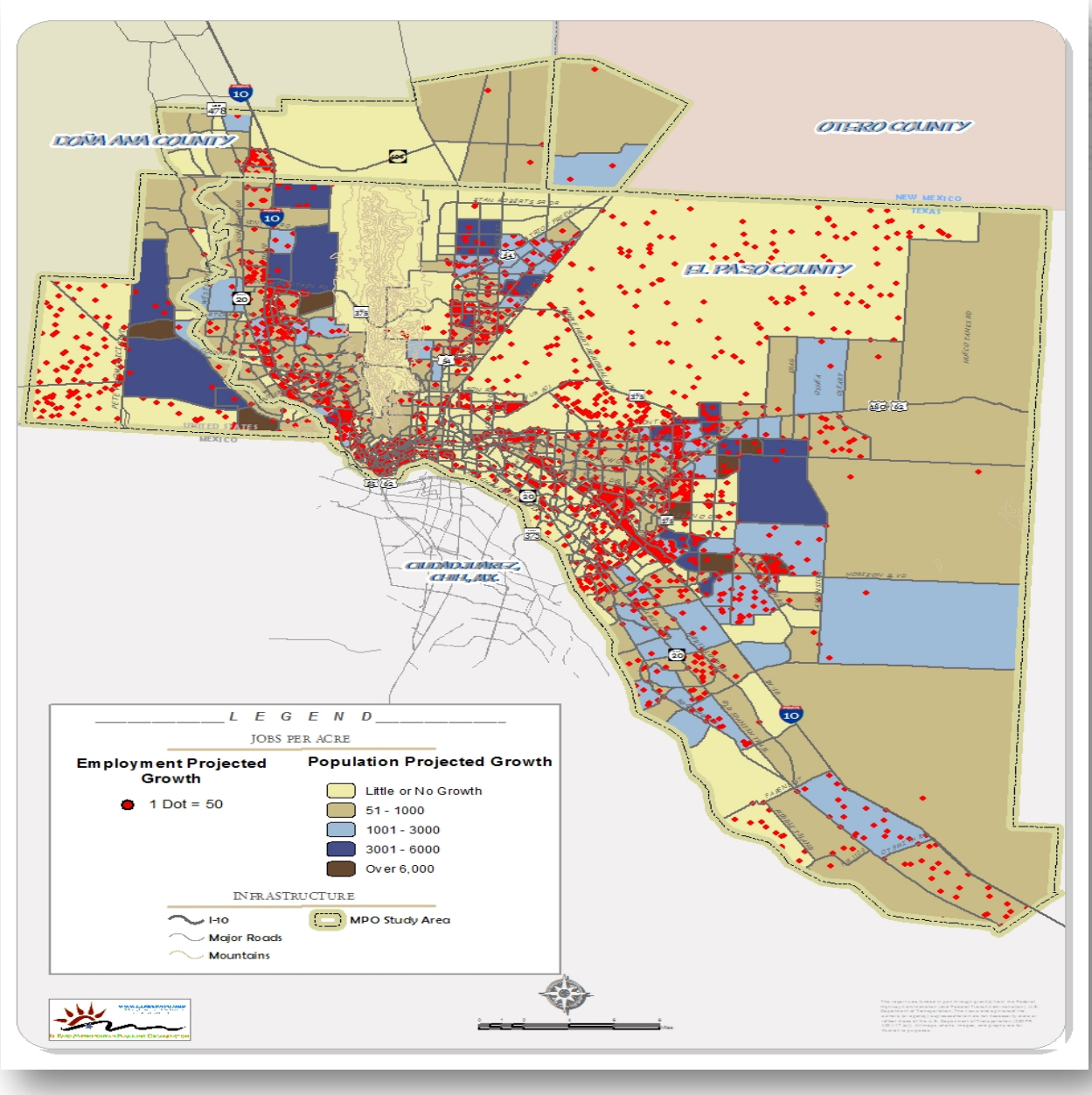
Existing and future influences on growth in the El Paso region were identified during the 2011 demographic update. The redevelopment of Central El Paso is among these. Over the past few years there has been a considerable push by the El Paso City Council to spur redevelopment in the central city. While downtown El Paso already has many elements of New Urbanism, along with a great deal of aesthetic appeal, it also has a considerable degree of building vacancy and underutilization of urban land. In addition to the downtown region, the City of El Paso is pursuing New Urbanism ideas in several other areas of central El Paso. Oregon Boulevard from downtown to the University of Texas at El Paso campus, as well as several large parcels of land near central El Paso are areas that could be developed into new commercial and residential areas, although some of these sites offer their own challenges. The Aldea mixed use (commercial/residential) site is planned for a parcel of land between IH-10 and Mesa Boulevard and north of Executive Center. In general, El Paso's developer community is skeptical, although not entirely dismissive, that New Urbanism strategies in the urban core will lead El Pasoans to make new lifestyle choices. On the other hand, as the price of commuting rises over the long-term and as new amenities in the downtown area are slowly added, it would be reasonable to assume that more residents will consider living in or near the central city.

Another identified influence in the El Paso area is the cross-border trade. Although the manufacturing sector in the United States and Mexico suffered significantly due to the economic downturn between 2008 and 2009. At the time of the demographic update (mid-2011), border trade volumes were improving and this was having a positive effect on the local economy. The 24,000 acre Santa Teresa Industrial Park and master planned community, which is located in southern Doña Ana County along the New Mexico-Mexico border, is in a strong position to become a major growth area for the region by exploiting these trends. An additional prospect for the region is the new Tornillo border crossing in Texas that will replace the existing Fabens-Caseta crossing with a six-lane facility in 2013. It is expected that the new bridge crossing will spur the construction of new warehousing and other industrial facilities near Interstate 10 in the Lower Valley (or Mission Valley) area of El Paso County.

Fort Bliss has grown to become the U.S. Army's second largest installation, playing a major role in training and the deployment of troops from U.S. wars and military exercises around the globe. With the addition of civilian employment, Fort Bliss' total workforce has grown from approximately 22,000 soldiers and employees in 2007 to approximately 41,000 in 2011. One significant upcoming development will be the replacement of the William Beaumont Army Medical Center. Construction began in August 2011 and the facility is expected to open in 2016.

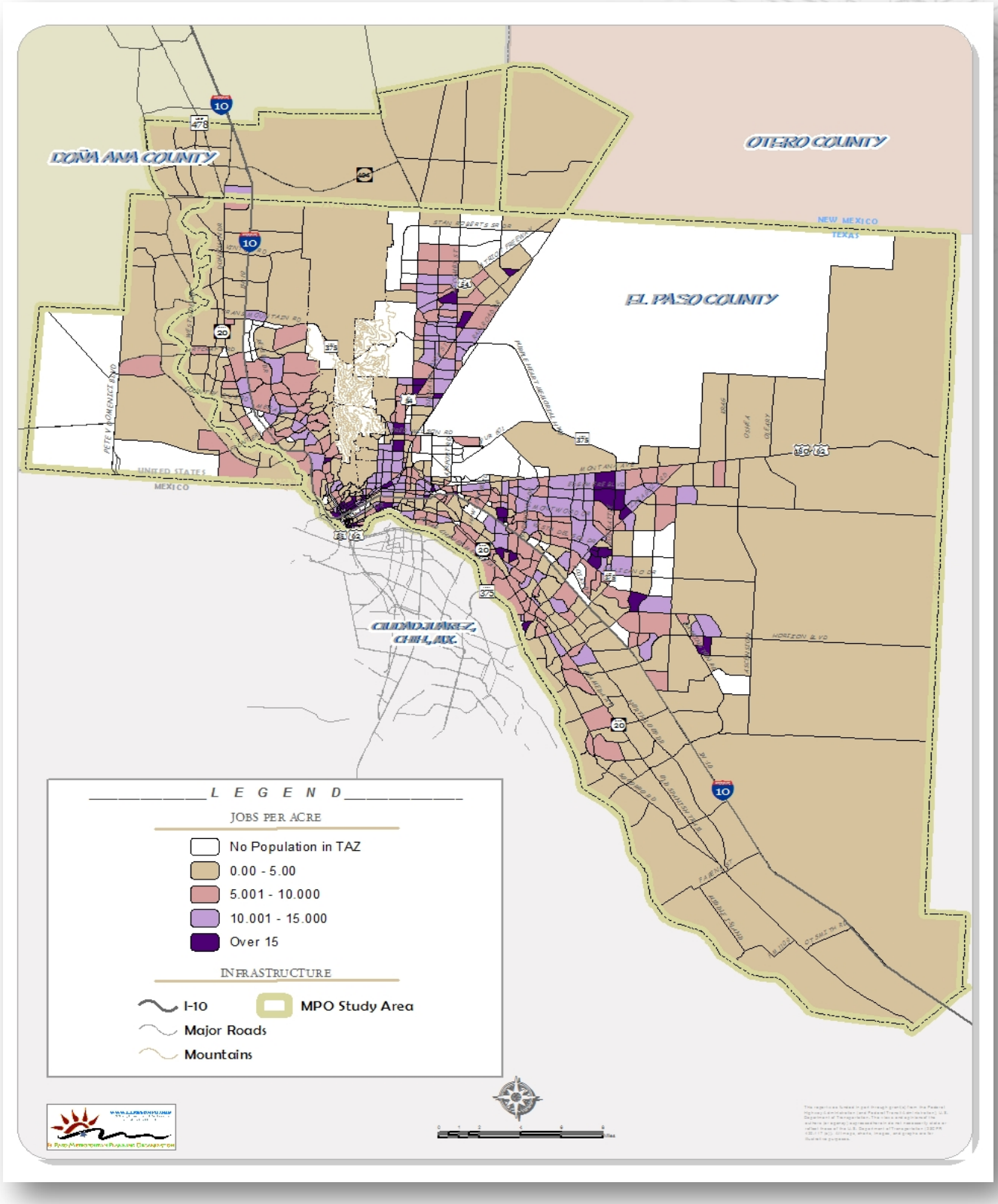
Population and employment forecasts are illustrated by the following three maps. *Map 1* shows where jobs and housing growth are projected to occur and *Map 2* and *Map 3* show projected future population and employment densities, respectively. It is observed that population increase is mostly located outward from the urban core of the EPMPO, primarily in the Northeast, Northwest and far East-Horizon area. However, job concentrations will remain primarily within urban employment centers and corridors. This means people will be required to travel further to places of employment.

Map 1: Population and Employment Growth Projections, 2007-2040

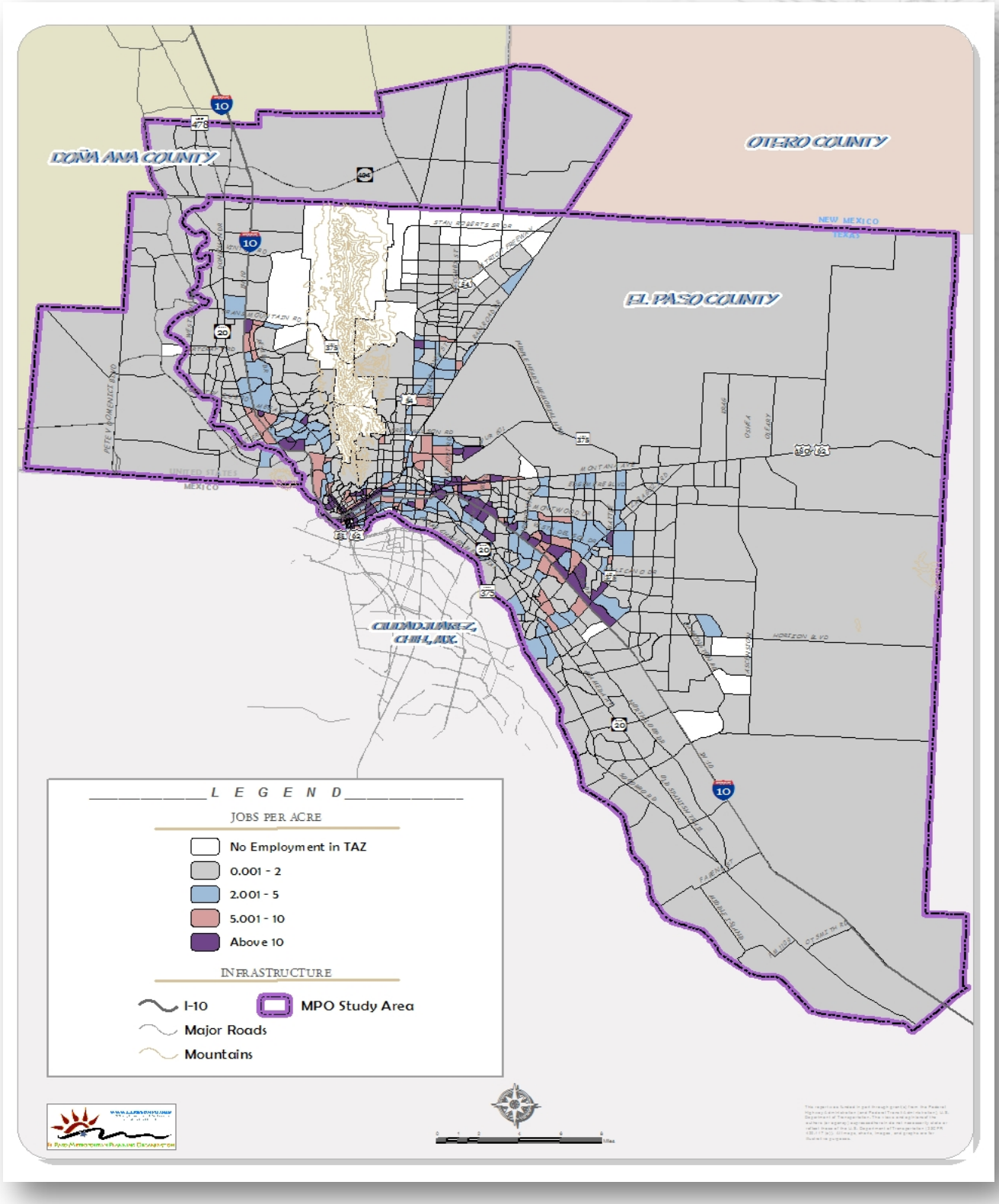


Until very recently, the El Paso MSA avoided the severe downturn that has affected the national economy. However, the region has likely entered into a period of modest economic growth with higher than average unemployment that will probably exist for the next 12 to 36 months. This is because the economic stimulus which helped the region move through the recession relatively unscathed, namely the expansion of Fort Bliss, is coming to an end. The region's longer-term economic growth trends will be tied to military activity and the competitiveness of the U.S.-Mexico border region in global manufacturing. From the current perspective and until the next update of the MPO's socioeconomic data, both of these industries appear to have a stable outlook over the near and medium-term.

Map 2: Population Density, 2040



Map 3: Employment Density, 2040



Network Conditions

Past and Current Travel

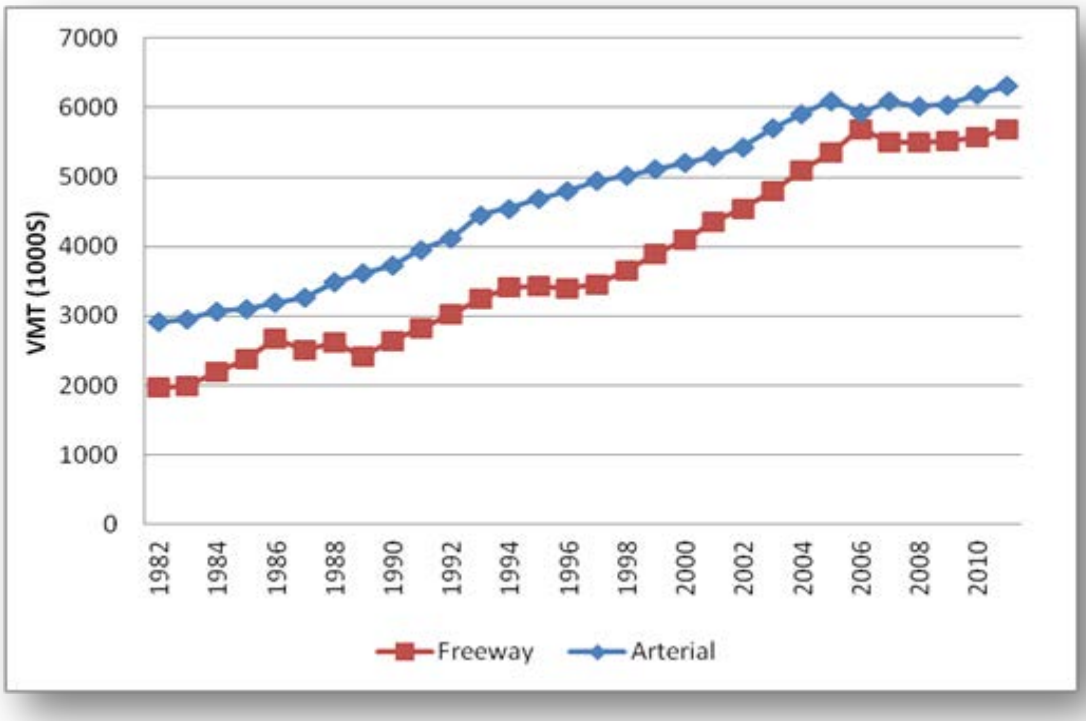
VMT in the El Paso Area

Historic data trends from the annual Urban Mobility Report (UMR), published by the Texas A&M Transportation Institute (TTI) provide a picture of what current and future roadway conditions in the EPMPO area will look like.

The 2012 Urban Mobility Report provides information on the congestion levels in large and small urban areas in urban America. The 2012 Urban Mobility Report is the 3rd prepared in partnership with INRIX, a leading private sector provider of travel time information for travelers and shippers. The data 2012 Urban Mobility report are hundreds of speed data points on almost every mile of major road in urban America for almost every 15-minute period of the average day (1).

A key performance measure reported in the UMR is vehicle miles traveled, which reflects the amount of vehicle travel on the roadway network. *Figure 2* shows the historical trend in daily vehicle miles traveled in the EPMPO from 1982 to present. During most of the 30-year period, EPMPO has seen a steady grow in VMT for both Freeways and Arterial Streets.

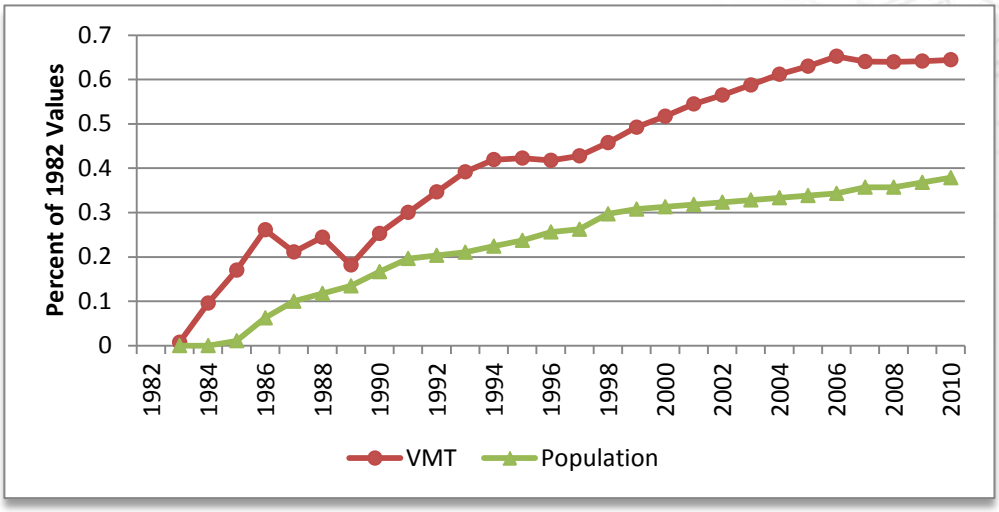
Figure 2: Daily Vehicle-Miles Traveled (1000s) in the EPMPO Area, 1982-2011



Source: TTI's 2012 Urban Mobility Report Powered by INRIX Traffic Data

Figure 3 illustrates changes in VMT and population in the EPMPO Area between 1982 and 2011. Data shows that over the past 30 years the VMT has outpaced population despite interim peaks and valleys in the early years.

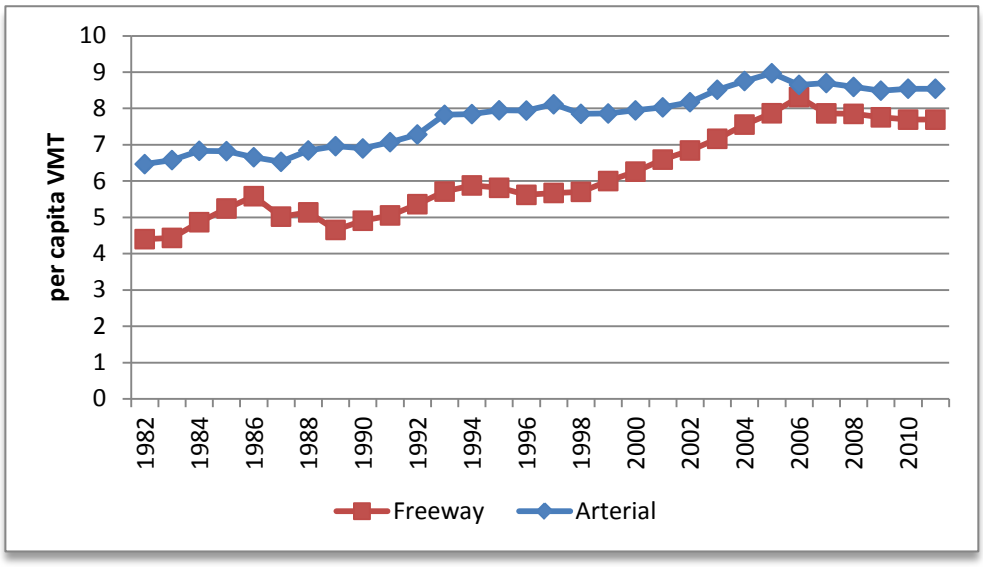
Figure 3: Population vs. VMT in El Paso MPO area



Source: TTI's 2012 Urban Mobility Report Powered by INRIX Traffic Data

Another way to look at VMT trends is to calculate per capita VMT; that is VMT divided by the population. This measure is the average vehicle miles people travel. Although population has been increasing, per capita VMT has been stable since 2007 in both Freeway and Arterial streets. The constant values mean individuals are starting to drive less after a noticeable increase between 1998 thru 2007. Changes in driver behavior are not yet considerable enough to decrease VMT but at least to prevent it from increasing as was the pattern in previous years.

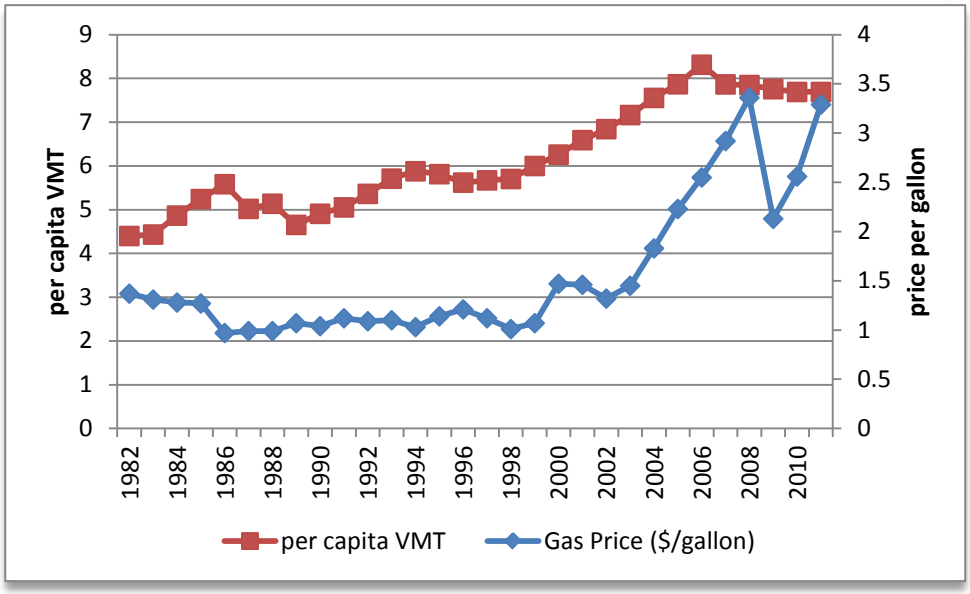
Figure 4: Per capita Annual VMT 1998-2012



Source: TTI's 2012 Urban Mobility Report Powered by INRIX Traffic Data

It appears that gas price is beginning to influence El Paso motorists to take fewer trips, carpooling and using more public transportation. However, stronger efforts to provide multimodal options for travelers are needed to encourage higher changes in driver behavior. The gas price vs. VMT graph in *Figure 5* shows that gas prices and per capita VMT raised beginning in 2002. There was a significant dip observed in 2009 for the gas price followed by a continuous rise. Per capita VMT decreased in 2007 and has been decreasing at a very low rate since.

Figure 5: Gas Price vs. per capita VMT in freeways along El Paso MPO area.



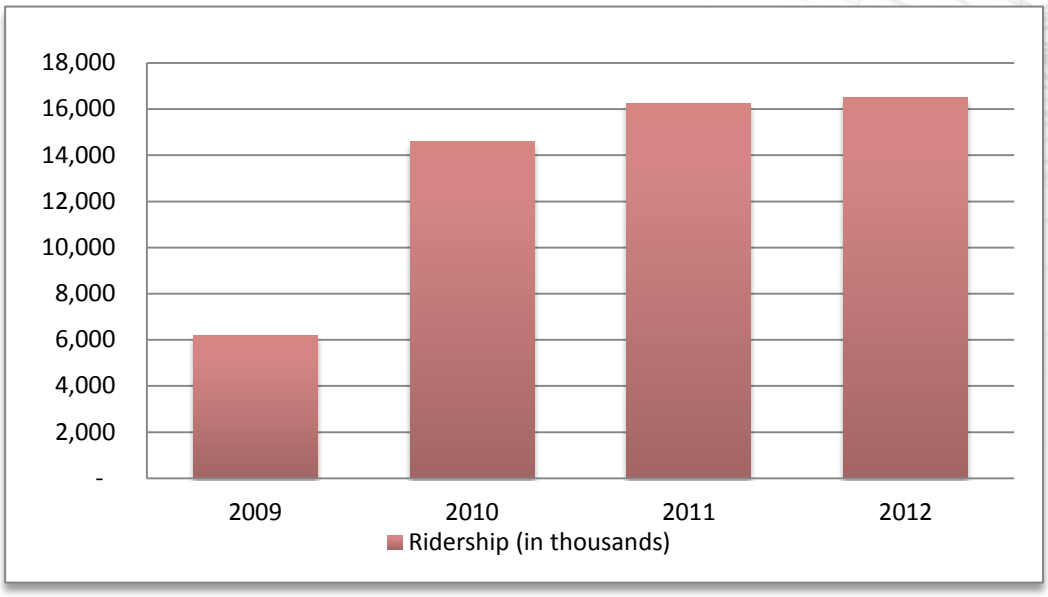
Source: TTI's 2012 Urban Mobility Report Powered by INRIX Traffic Data

Transit Performance Indicators

Public transportation in the city of El Paso is operated by Sun Metro. Today, Sun Metro operates 166 Fixed Route Vehicles, 65 LIFT Route Vehicles, and serves more than 15 million passengers a year, while the paratransit LIFT vehicles provide about 200,000 disabled passenger trips. Sun Metro's new vision is to make transit a more accessible, attractive, and viable travel option and to make El Paso the least car dependent city in the nation.

Sun Metro's 2012 performance indicators year to day (YTD) report (*Table 9*) provides several performance categories that are measured monthly and compared to projected goals. A key performance indicator is ridership; that is the number of customers boarding a system of public transportation. *Figure 6* shows that total ridership per year for fixed routes in El Paso experienced an increase since 2010. According to the American Public Transportation Association (APTA), Sun Metro ridership has increased by 8.15 percent during the first quarter of 2010. Sun Metro has been working on improving on-time performance and providing amenities to make public transportation more attractive and accessible.

Figure 6: Sun Metro ridership



Source: Sun Metro Planning Department

Sun Metro is transitioning from "hub and spoke" to a node system. In order to achieve this, its capital improvement plan included the construction of four mass transit terminals throughout the city.

- The $9 million Glory Road Transfer Center and Parking Garage has 436 parking spaces in seven levels, bus stop bays, waiting areas, offices, public restrooms, retail space and landscape areas.
- The $3 million Mission Valley Transfer Center project includes 3,300 sq. ft. terminal buildings with restrooms, offices and snack bar area, bus stop bays, and public parking areas.
- The $4 million Downtown Transfer Center project has 6,000 sq. ft. terminal buildings, offices, restrooms, a restaurant, retail space, 17 bus stops, landscape areas, public art components, and a public parking lot.
- The $2 million Westside Transfer Center consists of 3,500 sq. ft. buildings including waiting areas, concessionaire space, offices, restrooms, 7 bus bays, and a 175 space parking lot.

Projects were funded with ARRA funds and included the installation of security cameras, Wi-Fi, and fiber optic connections (Source: ECM International.INC., construction manager for the transit terminals).

Table 9: Transit Performance Indicators YTD June 19, 2013

May 2013	Sun Metro LIFT - City vs. MV Performance				
Paratransit	City Performance 2012		MV Performance		
Ridership	May 2012	Nov 2011 - May 2012 YTD	May 2013	Nov 2012 - May 2013 YTD	Goal FY 2013
Total	19,662	134,474	22,459	149,489	220,440
Passengers per Hour	1.80	1.87	1.76	1.61	2.0
Safety					
Collisions per 100,000 Miles	0.9	1.4	1.3	2.5	1.3
Worker's Comp Claims per 100 Employees	2.0	1.8	0.7	0.5	1.0
Maintenance					
Preventative Maintenance	99.0%	98.0%	100.0%	100.0%	100.0%
Revenue Miles Between Road Calls	48,921	65,941	25,687	32,806	35,000
Customer Satisfaction					
On-Time	82.0%	84.0%	88.8%	87.0%	95.0%
Missed Service	0.03%	0.03%	0.06%	0.11%	0.04%
Detailed Bus Cleanings per Month*	155	977	75	537	1,078
Customer Complaints per 10,000 Passengers	7.2	12.74	11.13	18.43	10.00

* MV Contractual bus deep cleanings is 1/bus/month AND thorough daily cleaning. The City was doing it twice a month.

May-13	Sun Metro- El Paso Texas						
Fixed Route	FY 2012		FY 2013		Actual	Goal	Projected
Ridership	Month	YTD	Month	YTD	FY 2012	FY 2013	FY13 Goal
Total (in thousands)	1,378	12,299	1,472	12,452	16,402	17,222	16,735
Passengers per Hour	29.1	28.9	30.5	29.1	28.8	29.1	29.1
Farebox Recovery Ratio	20.62%	22.31%	17.95%	23.63%	22.60%	22.60%	23.50%
Affordability							
Cost per Trip	$2.69	$2.49	$2.91	$2.28	$2.46	$2.88	$2.40
Comparing fares- Full Fare	$1.50	$1.50	$1.50	$1.50	$1.50	$1.50	$1.50
Safety							
Collisions per 100,000 Miles	1.0	2.0	1.2	2.0	2.0	2.0	1.9
Worker's Comp Claims per 100 Employees	1.3	1.3	1.4	1.2	1.3	1.3	1.2
Maintenance							
Preventative Maintenance	100.0%	99.1%	95.0%	97.4%	99.2%	99.0%	98.0%
Road Calls	54	475	22	228	637	637	304
Customer Satisfaction							
On-Time	98.0%	97.1%	97.0%	97.6%	97.3%	97.0%	98.0%
Missed Service	0.03%	0.09%	0.02%	0.02%	0.07%	0.04%	0.02%
Detailed Bus Cleanings per Month	332	3,024	332	2,984	4,020	4,020	3,979
Customer Complaints per 100,000 Passengers	9	10	9	7	9	9	7
Shelters / Bus Stops	304 / 2,884	304 / 2,884	375 / 2,858	375 / 2,858	306/2,884	400/2,884	375/2,884

Source: Sun Metro Planning Department

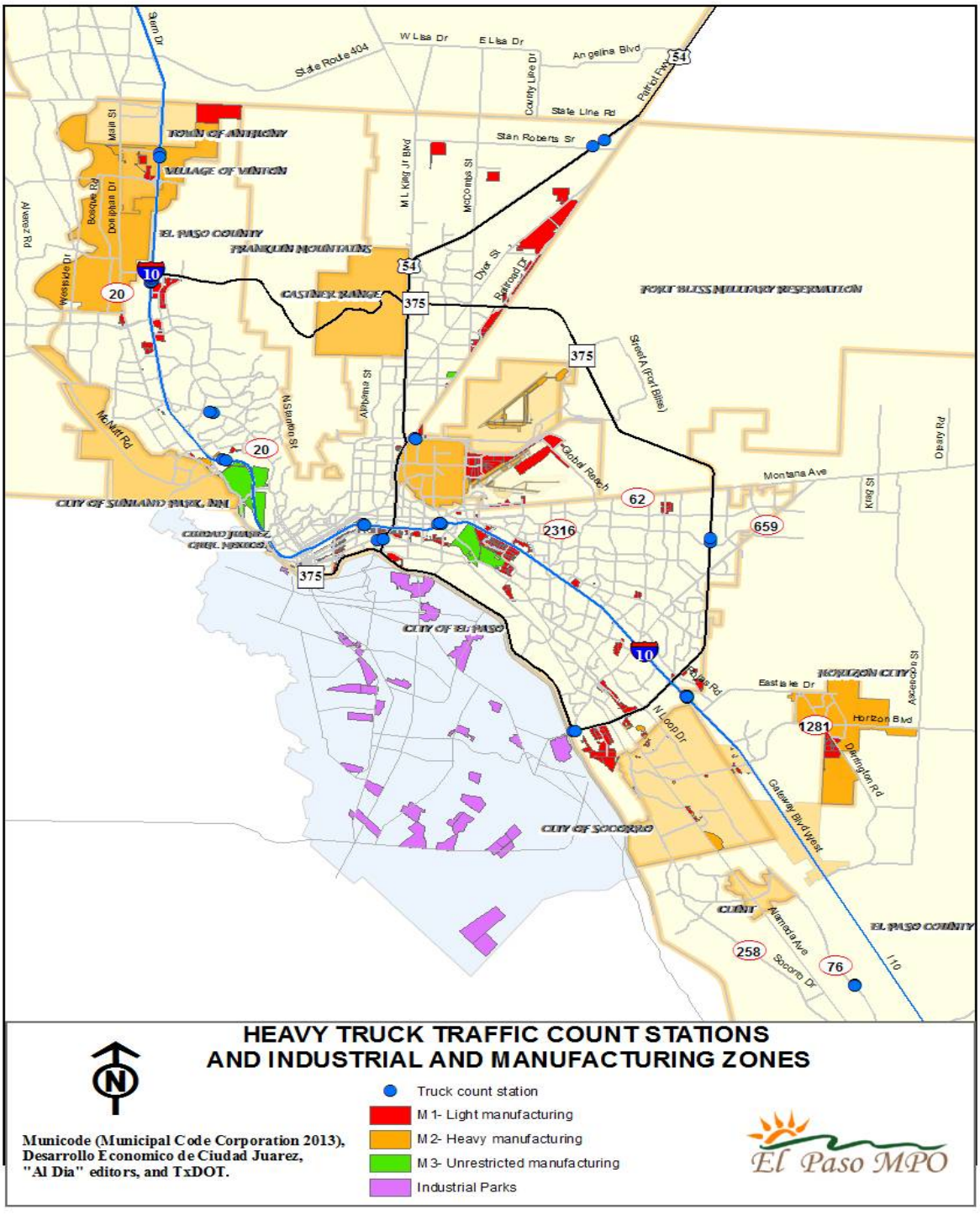
Freight Movement

Freight travel patterns were studied by the University of Texas at El Paso (UTEP) during the development of a research report conducted for El Paso MPO in May 2013. Recent information regarding freight activities and centers of distribution in the El Paso-Juarez border region are reported in this document. *(Warehouse Location and Freight Attraction in the Greater El Paso Region, May 2013).* The objective of the research was to identify potential locations surrounding the greater El Paso-Juarez region that can provide greater accessibility and mobility for increasing freight flows and that are economically feasible.

In order to visualize the location of industrial and manufacturing zones in El Paso and Juarez, *Map 4 shows* the three different zone classifications in El Paso and the industrial parks in Juarez. The first zone called Light Manufacturing District is for light industries related to manufacturing facilities, distribution, and warehousing. This type of district, denoted as M1, is intended to preserve a light industry nature regarding conditions such as noise, smoke, or vibrations. The second zone is named Heavy Manufacturing District is denoted as M2. This zone describes the industrial regions where more conflict regarding hazardous conditions is found. The third zone called Unrestricted Manufacturing District, denoted as M3, has the same characteristics as the Heavy Manufacturing District.

Most of the districts located in El Paso region are classified as Light Manufacturing Districts, or M1. The map also shows how M1 districts are concentrated mainly around the El Paso International Airport, Railroad Drive located on the city's northeast region, and on Desert Boulevard/Artcraft Road located on the far west side of the city. Two additional clusters are located at south of I-10 Freeway at Hawkins Boulevard, and Loop 375 north of Yslete-Zaragoza POE. As it can be seen in the map, M2 classified as Heavy Manufacturing District, is not very popular in El Paso region. The Unrestricted Manufacturing District (M3), is shown to be concentrated close to the POEs, mainly near Paso del Norte Bridge and BOTA. It was noticed that M3 is concentrated along railroads, which suggest that the main transportation mode for freight coming out of this district is trains.

Map 4: Heavy Truck Traffic Count Sites and Industrial and Manufacturing Zones in El Paso-Juarez Area



Traffic count information is collected from TxDOT on a yearly basis along state highways. Count stations are also identified in *Map 4.* Count information is used to identify the major freight corridors in El Paso. From *Figures 7 and 8* below, it is observed that Zaragoza Road at the Port-of-Entry carries the highest percent of truck traffic among the arterial facilities that are studied and Interstate Highway 10 near the Village of Vinton carries a 37% of truck traffic as vehicles exit the El Paso region.

Figure 7: Percent Trucks on Arterial Facilities

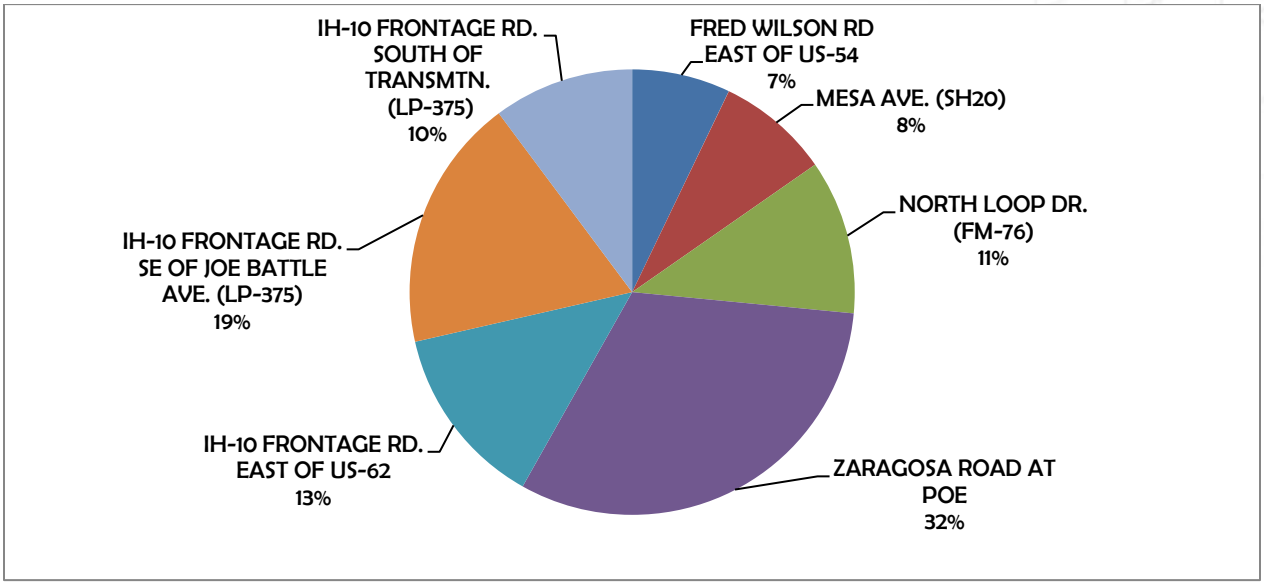
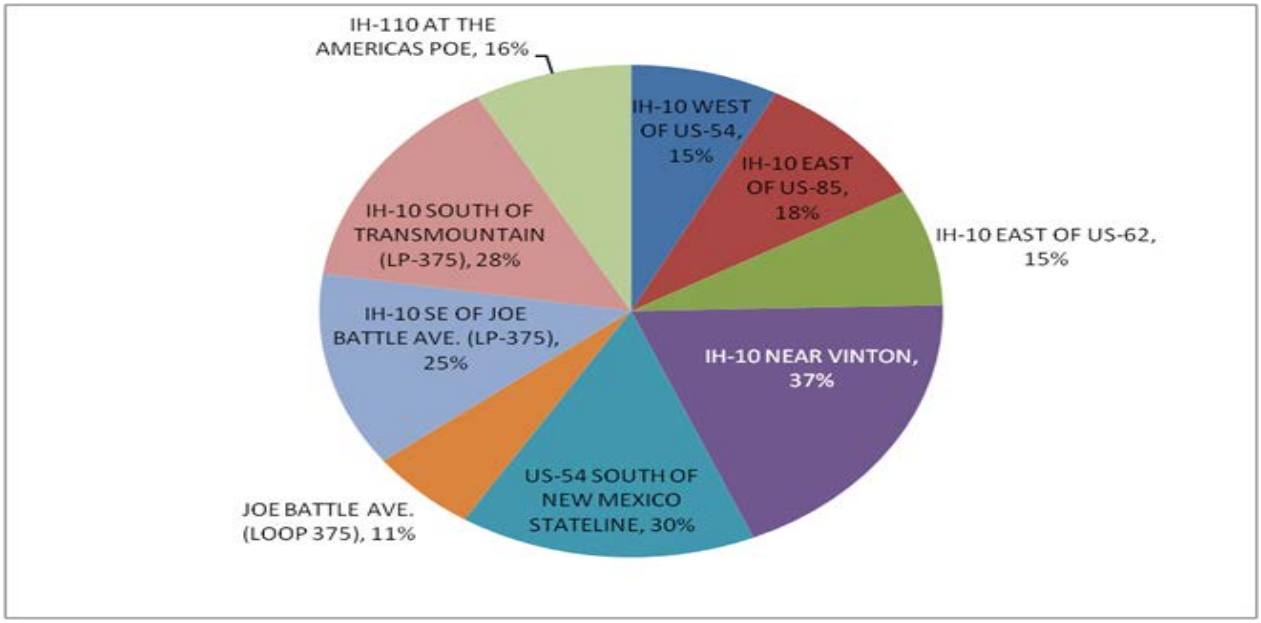


Figure 8: Percent Trucks on Freeway Facilities



Truck Crossings at the Ports-of-Entry

Mexico has big trade agreements all over the world, especially with U.S. Ciudad Juarez, which is one of the largest industrialized cities in Mexico due to its low cost. U.S. companies send raw materials to the maquiladoras in Juarez. The maquiladoras are responsible for manufacturing and/or assembling products to ship back to the U.S. as finished products. Maquiladoras are arranged in different categories such as automotive, electrical, electronics, plastics/metals, medical devices, services, office products and packing material. Some maquiladoras are located in Industrial parks.

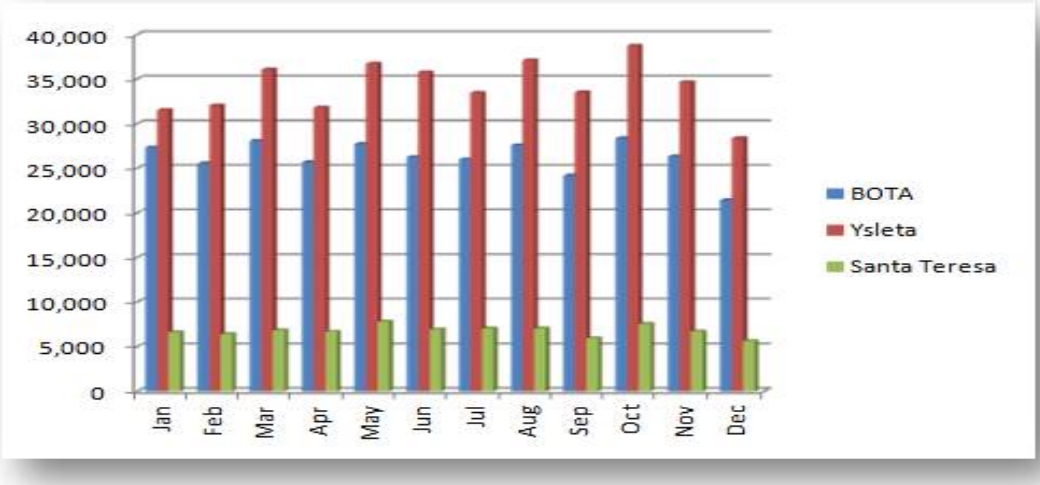
Table 10 and *Figure 8* show the northbound crossings for commercial vehicles in the three ports-of-entry (POEs) that served commercial traffic in 2012. It can be observed that Ysleta-Zaragoza Bridge was preferred among trucking companies during this year. The highest number of crossings occurred in the month of October. The Bridge of the Americas (BOTA) was the second busiest POE. This POE has no access fee, but the limited operational hours and farther location may influence the demand at BOTA. Santa Teresa POE has relatively lesser northbound traffic, almost five times less than Ysleta-Zaragoza POE. The remote access from industrial parks may discourage local users to take advantage of this POE.

Table 10: Northbound Truck Crossing 2012

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BOTA	27,349	25,562	28,090	25,701	27,745	26,280	26,024	27,602	24,199	28,392	26,332	21,454
Ysleta-Zaragoza	31,554	32,044	36,094	31,814	36,744	35,780	33,459	37,131	33,527	38,741	34,655	28,387
Santa Teresa	6,628	6,436	6,832	6,693	7,818	6,949	7,046	7,048	5,969	7,550	6,728	5,642

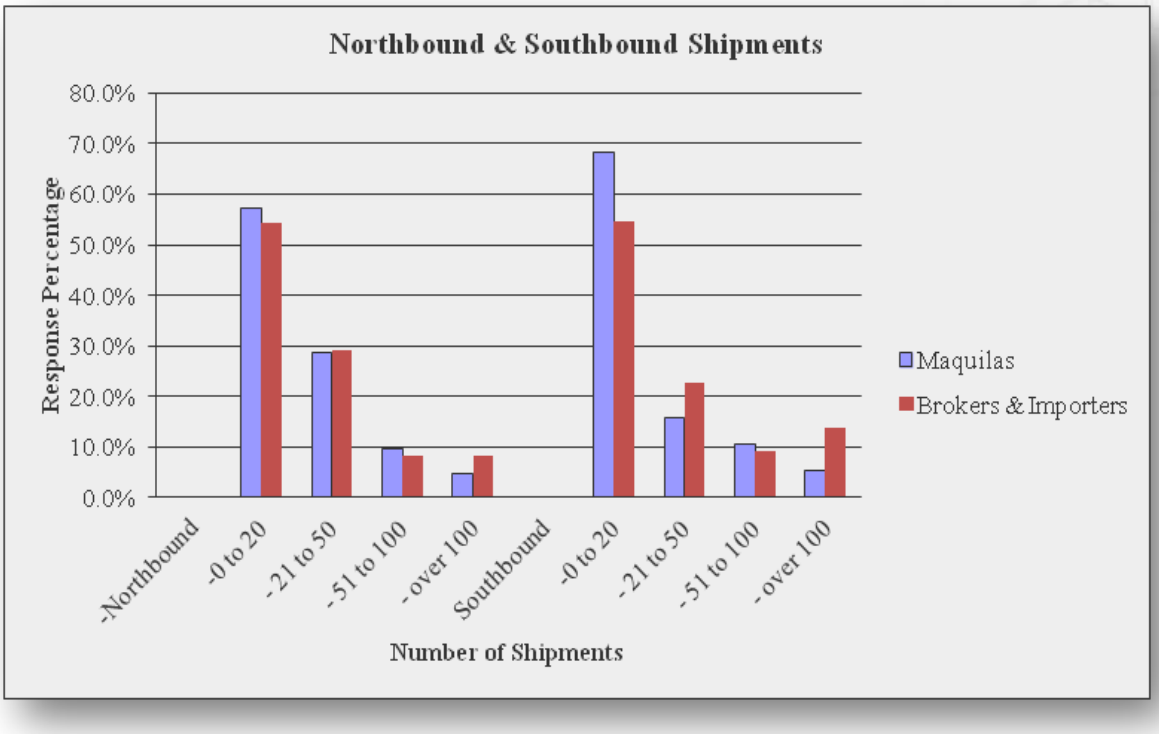
Note: Volume is in number of trucks/month
Source: City of El Paso 2013

Figure 8: Monthly Northbound Truck Crossings



Important findings about the current broker and maquiladora operations are presented in *figures 10* and *11*. *Figure 9* shows the distribution of companies that have different number of shipments, in the northbound and southbound directions, respectively. Each shipment may be approximated as a one one-way trip. Although the majority of the companies surveyed have less than 20 shipments per day; there are a few companies with over 100 shipments per day.

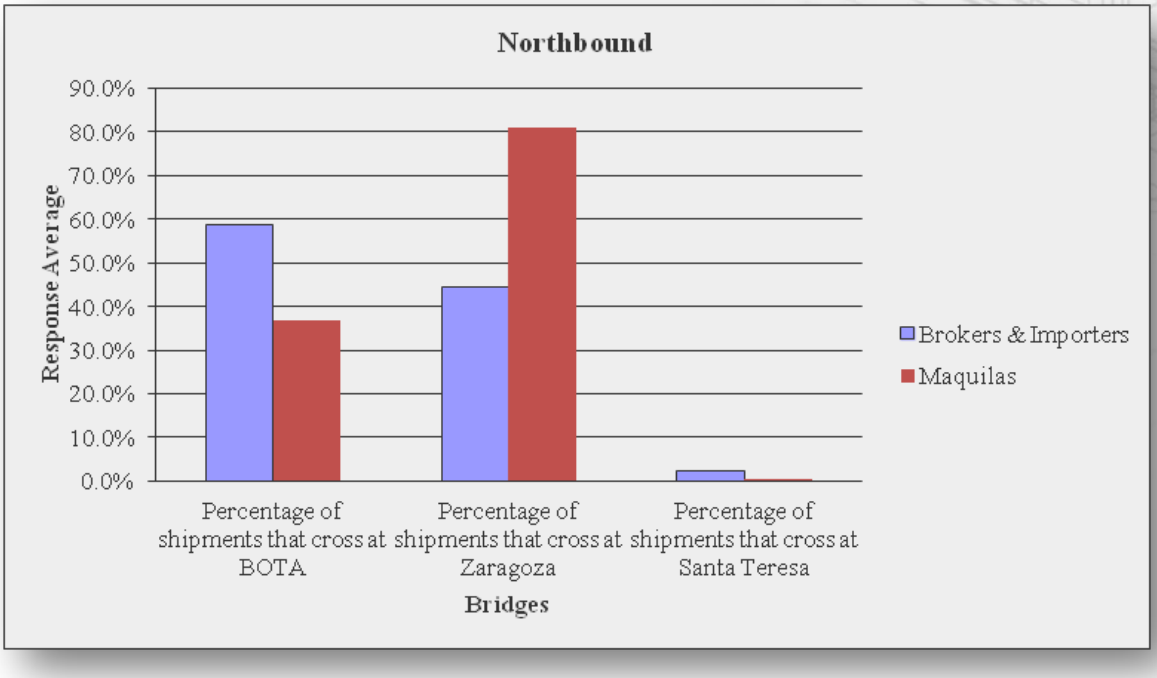
Figure 9: Northbound and Southbound Shipments Crossing on a Daily Basis



Source: (Caviness-Tantimonaco and Hernandez 2013)

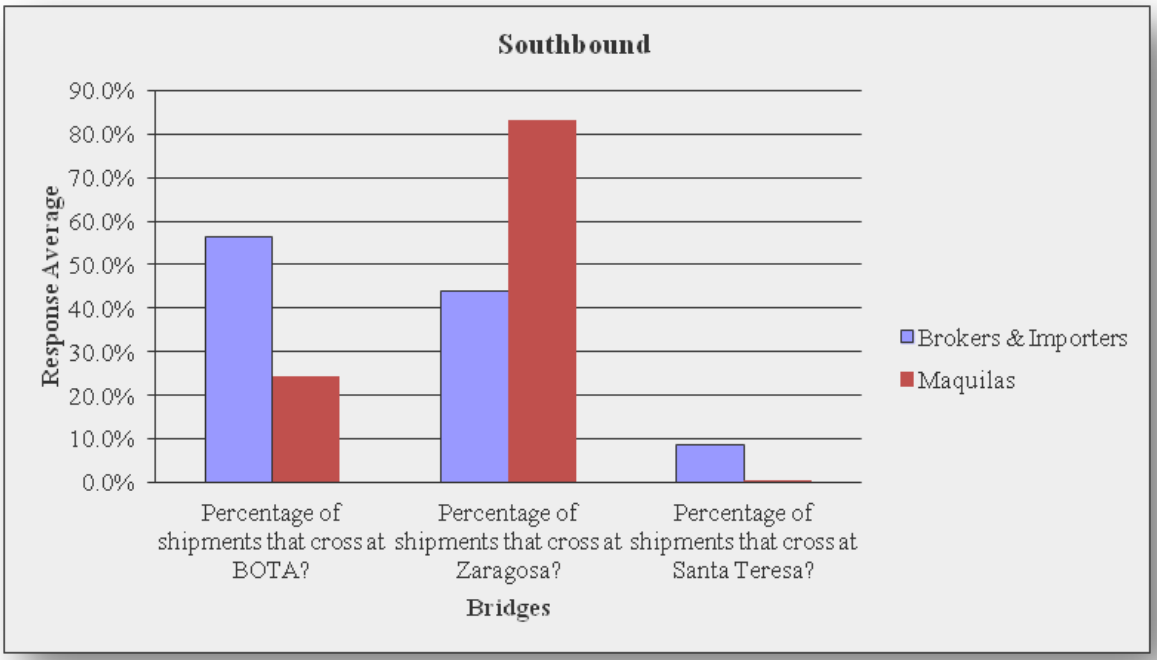
Figures 10 and 11 show the distributions of trips among the three POEs that serve commercial traffic. One noticeable trend is that the majority of the brokers and importers prefer to use BOTA POE while majority of the maquiladoras prefer to use Ysleta-Zaragoza POE.

Figure 10: Daily Northbound Shipments Distributed per Bridge



Source: (Caviness-Tantimonaco and Hernandez 2013)

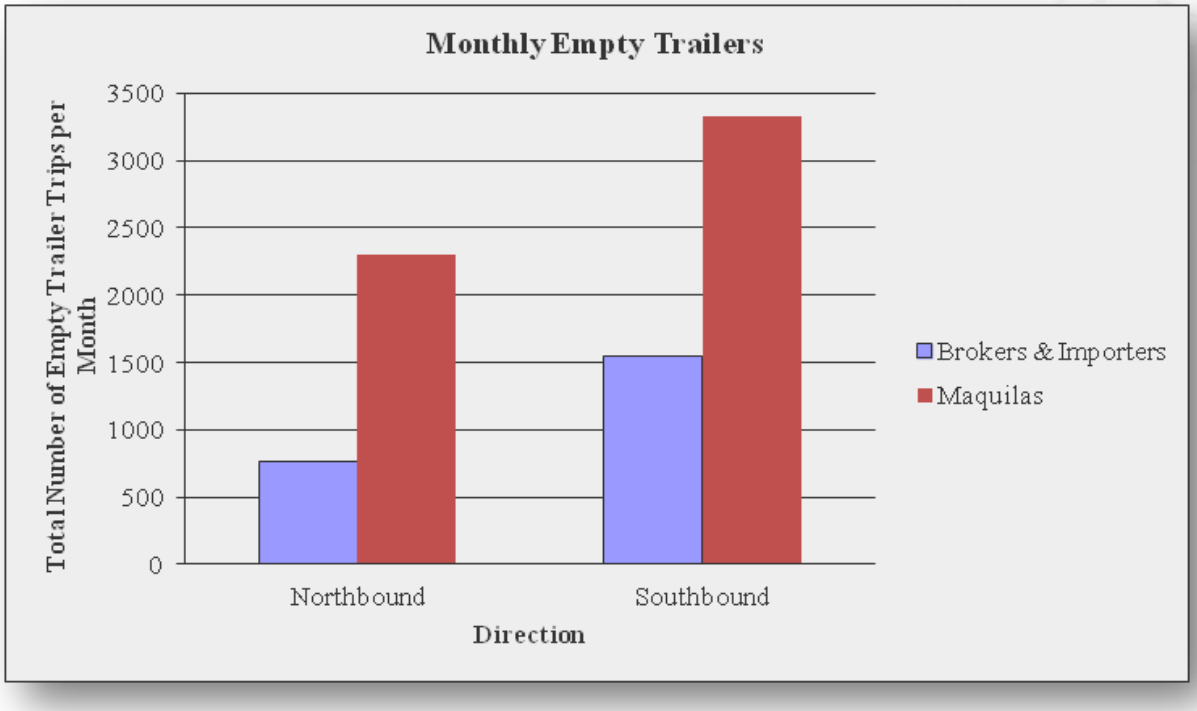
Figure 11: Daily Southbound Shipments Distributed per Bridge



Source: (Caviness-Tantimonaco and Hernandez 2013)

About half of the trailers crossing northbound at the BOTA POE are empty. One suggestion to reduce the number of empty trailer is to set up "empty trailer pools" at strategic locations in Juarez. Shippers could request trailers from the pools as needed. *Figure 12* displays, the total number of empty trailers that are moved across the three POEs by all the respondents. The movements of such empty trailers add to the queue and waiting time of real shipments at POEs.

Figure 12: Empty trailers shipped monthly



Source: (Caviness-Tantimonaco and Hernandez 2013)

Based on the information documented in the research report the following challenges and constraints for freight transportation in El Paso-Juarez region were identified:

- **Delivery Constraints:** The actual border crossing inspection infrastructure in the El Paso-Juarez region is not serving the demand and this results in long waiting times. Time spent in border crossings directly affect the cost of production of sub-assembled and final products manufactured in Ciudad Juarez. The delays increase the operating costs of the maquiladoras. Ultimately, this becomes a challenge for the region's economy.

- **Congestion:** The lack of planned road network infrastructure for freight causes a lengthy movement of goods in Ciudad Juarez. The congestion generated in principal arterials delays freight movement. Industrial parks require better access to deliver raw material and assembled products.

- **Pollution:** In order to overcome delivery constraints, trucking industries must rely on newer vehicle models with higher carrying capacities, better fuel efficiency and mechanical performance. Getting newer tractors and cargo units not only allows a more efficient movement of goods, but also, reduces pollution generated by old cargo trucks. At the same time, long vehicle queues accelerate the emission of greenhouse gases to the atmosphere. Shortening inspection times is a challenge that can benefit the environment.

- **Safety:** Due to the violence in the region many manufacturing companies were closed. The lack of employees is the biggest limitation when maquiladoras try to open more shifts to satisfy their demand.

Network Expansion and Performance

To address the increasing transportation demands in El Paso region, locations where roadway expansion will be needed to serve areas of new growth and address existing and projected capacity deficiencies have been identified by EPMPO using its transportation demand model. Modeling scenarios were generated using future year roadway networks with future year socioeconomic data (SED) to assess how the roadway network will perform in 2040. The roadway scenarios modeled include build and no-build scenarios. The build scenario includes projects programmed in the MTP and therefore represents how the network would perform with planned improvements. While the no-build scenario does not include any transportation projects programmed after 2010 and therefore shows what would happen to the network without any future year investments. Such model-based analysis allows for better understanding of future transportation needs and is an important consideration in determining which projects should be funded.

Network Expansion

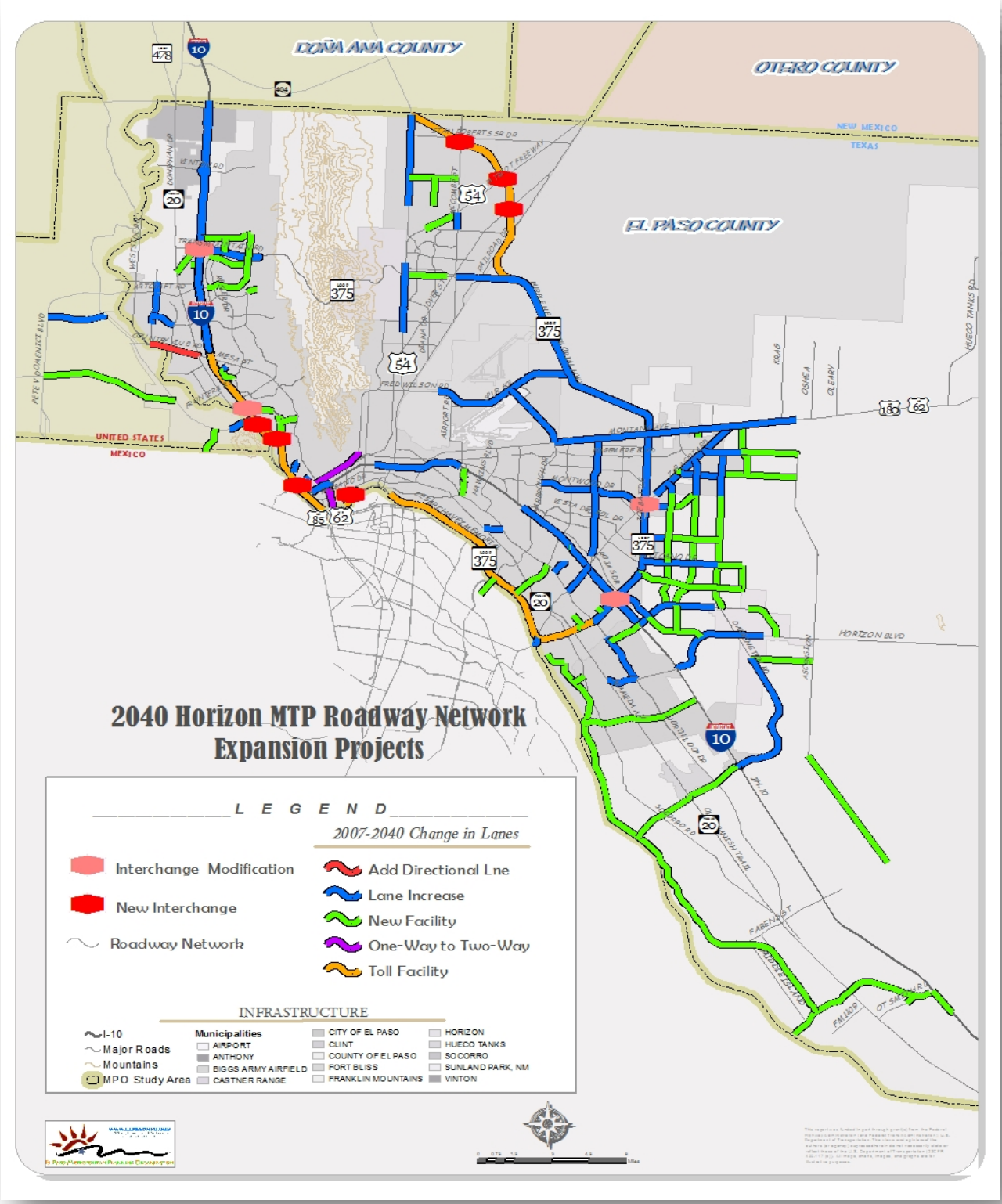
An effective measure of the extent of the roadway network for any given analysis year, as well as growth between years, is the number of total "lane miles" for the region (see *Table 11*). This table also includes anticipated population growth. New roadway expansion projects including new facilities and the expansion of existing facilities programmed for the 2040 MTP are depicted in *Map 5*.

Table 11: Roadway Network lane Miles in the MTP

Year	2007	2010	2040	Percent increase (2010-2040)
Network Lane Miles	3567.38	3663.19	4602.83	26%
Population*	786,560	832,836.00	1,158,195.00	39%

*Excluding group quarters

Map 5: Roadway Network Expansion Projects Included in the 2040 MTP



When compared to the geographic distribution of socioeconomic growth projections, it is clear that roadway projects programmed in the 2040 MTP are generally planned for areas where growth is expected and network expansion needs are greatest. Notable projects include:

- A significant number of east/west capacity enhancement/widening and network connectivity projects including:
    - The connection of Loop 375 (Border Highway West-express toll lanes) between Cesar Chavez Memorial Highway and Interstate 10 at Sunland Park Dr./ Doniphan Dr. new interchange
    - The connection of Loop 375 (SPUR 276) from north of Borderland to west of Interstate 10
    - Collector distributor lanes from Mesa Dr. to Sunland Park Dr.
    - Interstate 10 widening from Sumac Dr. to Eastlake Dr.
    - Interchange improvements at Loop 375 and Interstate 10
    - Loop 375 (Joe Battle Blvd) widening from Interstate 10 to Montana Ave.

- Major facility expansion projects include:
    - New express toll lanes at Americas from Zaragoza Blvd. to Interstate 10
    - New express toll lanes at Interstate 10 from Sunland Park interchange to Loop 375 (Transmountain Rd)
    - New Northeast Parkway facility (express toll lanes)

- Several roadway expansion projects and capacity enhancement/widening in the Far East growth area including:
    - Widening of Eastlake Dr. from Interstate 10 to Darrington Rd.
    - Extension of Pebble Hills Blvd. from John Hayes to Ascencion St.
    - Extension of Montwood Dr. from Tierra Este Rd. to rich Beam Blvd.
    - Extension of Vista del Sol Dr. from Tierra Este Rd. To John Hayes St.
    - Extension of Bob Hope Dr. from Joe Battle Blvd. to Horizon Mesa Blvd.
    - Extension of Rojas Rd. from Eastlake Dr. to Horizon Blvd.
    - Extension of Rich Beam Blvd. from Montwood Dr. to Easltake Dr.

Build and No Build Scenarios

The EPMPO maintains a regional travel demand model which forecasts growth and travel demand using a planned transportation network and anticipated socioeconomic information. For the 2040 MTP, model scenarios of the roadway network were developed to represent the base year 2007, the interim years 2010-2030, and the planning horizon year of 2040.

24 hr roadway segment volume-to-capacity (V/C) ratios for the entire modeling network are shown in *Map 6* and *7*. This measure represents the amount of traffic volume on a segment relative to the available capacity. The 2040 planning horizon *no-build* conditions are shown in *Map 6* which depicts what the transportation system would look like in 2040 if no additional roadway projects were implemented after the 2010 "committed" transportation network.

The 2040 *no-build* volume-to-capacity map show that travel conditions experience "severe congestion" primarily along portions of the interstate mainline and interchanges. At arterial corridors we observe "severe congestion" primarily on the Far East of El Paso west of Loop 375.

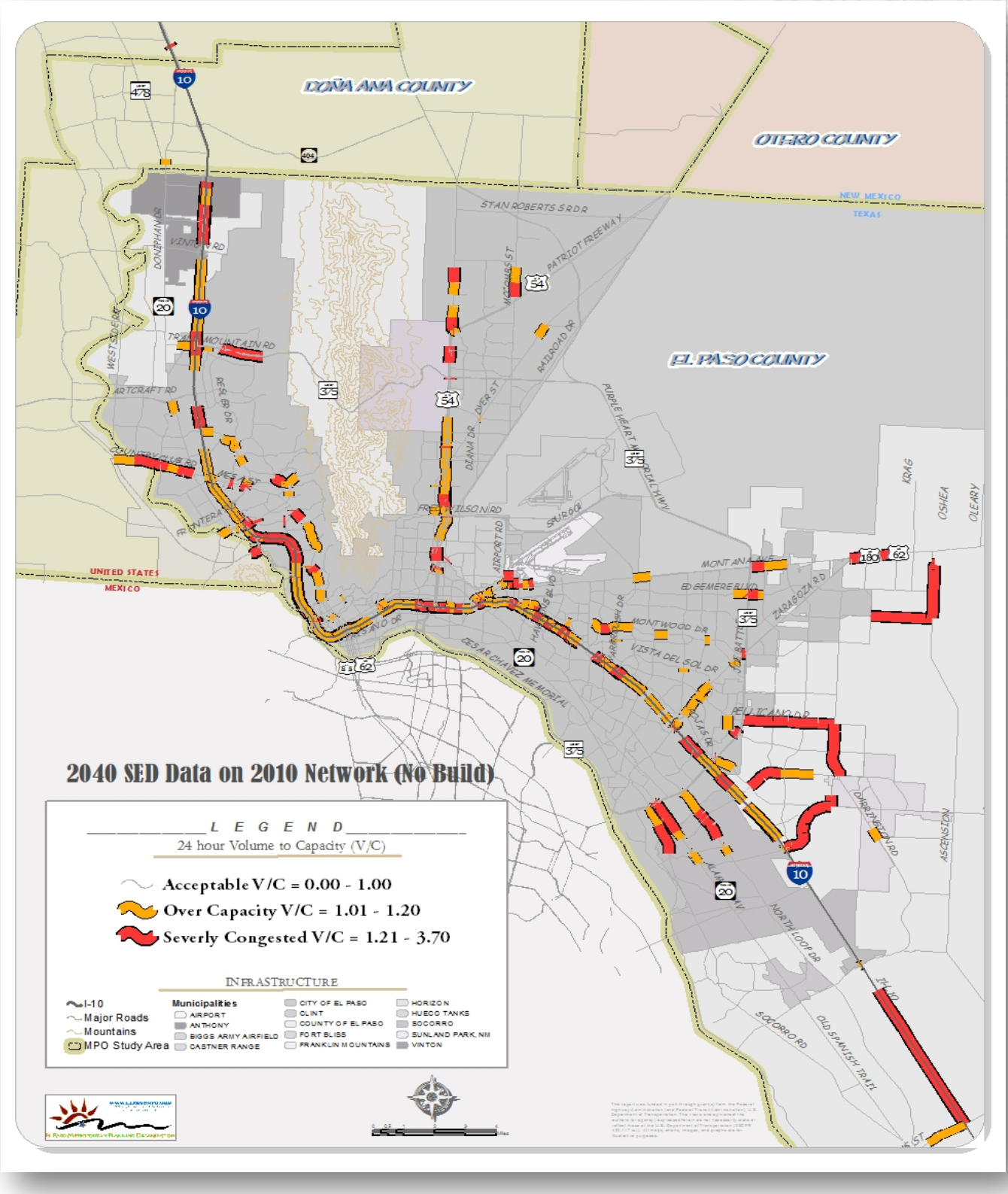
The build scenario *(Map 7)* depicts how the roadway network would perform with the addition of programmed projects. Similar patterns of congestion seen in the *no-build* scenario are exhibited, but in smaller magnitude. A build and *no-build* scenario comparison for the year 2040 is provided below. Conditions for future years are compared against existing conditions in the 2010 interim year.

Roadway Performance Differences for 2010 and 2040 (Build and No-build) Modeling Scenarios

24hr Performance Indicators	2010	2040 No-build	2040 Build	Percent Difference (2040 Build to 2040 No-build)
Vehicle Hours of Travel (VHT)	520,406.80	1,325,186.14	971,561.02	-27%
Vehicle Miles Traveled (VMT)	16,605,447.52	26,895,069.36	26,3384,178.27	-2%

The 2040 build scenario does demonstrate meaningful improvements to the roadway network as vehicle hours of travel are significantly lower in the 2040 build scenario compared to the 2040 *no-build* conditions. However, despite the additional roadway infrastructure and improved roadway capacity, anticipated levels of congestion along portions of the interstate and patriot freeway (US 54) exceed what is considered acceptable by the traveling public, reinforcing the need to explore multi-modal options and other strategies.

Map 6: 2040 No-Build Scenario 24-Hour Volume to Capacity



Map 7: 2040 Build Scenario 24-Hour Volume to Capacity