AUSTIN OFFICE
11701 Stonehollow Dr.
STE 100
Austin, TX 78758
Phone: 512.821.2081
Fax: 512.821.2085
TBPE Firm Registration No. 812

MEMORANDUM

DATE: August 6, 2020
TO: Andrew Cannon
CC: Luis Diaz
FROM: JD Allen
RE: RGVMPO 2045 MTP – Regional Transit Need Analysis

Introduction

The following memorandum presents an analysis of the Rio Grande Valley Metropolitan Planning Organization (RGVMPO) existing transit systems, transit needs of the community, and opportunities to guide the RGVMPO and planning partners in their prioritization of future transit investments. The most up-to-date data provided by planning partners, federal/state resources, and stakeholder engagement were used to support a Geographical Information Systems (GIS) analysis to inform this memo.

To better understand the state of transit in the RGVMPO, the analysis of existing conditions includes:

1. **Transit Supply**: The location and prevalence of existing transit systems in the region.
2. **Transit Potential**: Areas that have the potential to support transit in the region based on concentrations of people and jobs.
3. **Transit Need**: The need for transit is represented by demographic subgroups that have a higher need for transit such as non-driving population, population with limited English proficiency, minority populations, populations with disabilities, those in poverty, and population without access to a personal automobile.
4. **Transit Destinations**: The ability to access destinations using transit in the region including schools, healthcare facilities, grocery stores, government and public services, retail, restaurants and more.
5. **Transit Gaps**: Areas with high transit demand or with high potential transit demand compared to the transit supply available to those areas.

Data Sources and Assumptions

The following section defines the data and assumptions used for the transit existing conditions analysis. The region for analysis is the Rio Grande Valley Metropolitan Area Boundary (RGVMAB), which consists of Cameron and Hidalgo counties. The definition of service coverage for the analysis of transit in the RGVMAB assumes that most people are willing to walk up to 0.25 mile to access public transportation. There is a wide variety of transit service within the RGVMAB, including some routes that function with route deviations to pick up riders.

Using a 0.25-mile buffer around transit route alignments as the transit service walkshed allows for a consistent method to be used for each transit system in the region and allows for comparisons to be made across systems. Some transit routes extend outside the study area; the existing conditions analysis only considers data within the RGVMAB.

Demographic Data

Many demographic characteristics were used to determine the location and characteristics of people in the region. The analyses focused on existing populations and their demographic characteristics. The analyses relied primarily on 2014-2018 American Community Survey (ACS) data. ACS data is based on a sample population measured at the block group level. Employment data is derived from the work-based LEHD Origin-Destination Employment Statistics (LODES) for 2017, which is similarly an aggregate dataset based on the census block group geography.

Destination Data

Data for destinations in the region was collected using the ArcGIS Business Analyst Web Business and Facilities Search Feature. This data is extracted from a comprehensive list of businesses licensed from InfoGroup. The data includes an estimate of total employees and categories for the business locations using North American Industry Classification System (NAICS) codes. The NAICS codes are typically six-digit codes that identify the type of business; however, these codes have been adjusted to 8 digits for this feature set by InfoGroup. The 8-digit codes provide a greater level of detail than the traditional six-digit codes. Business categories were developed from these NAICS codes to provide comparisons for different types of businesses, which were used in the analysis of transit access to destinations in the RGVMAB. Businesses with no employees were excluded from this analysis. Only a subset of the available business location data (roughly 44%) was complete enough to be categorized for this analysis.

Travel Demand Model (TDM) Data

Using the Lower Rio Grande Valley's (LRGV) Travel Demand Model (TDM), the 2019 and 2045 Traffic Analysis Zones (TAZ) demographic inputs, "current" and future population and employment values were developed to inform the analysis of transit potential. Existing transit propensity was analyzed in terms of spatial distribution of population and employment density estimated for 2019. Future transit propensity was based on the population and employment density forecasted for 2045. The socio-economic data necessary to run the model was gathered from a mixture of sources. The datasets included public domain data sources, published commercial datasets, stakeholder input via a Delphi Process, table-top GIS analysis, and limited field review of the study area.

Transit Supply

The RGVMPO contains an intricate and interrelated transit system comprised of several different service providers. In order to identify system strengths and weaknesses, it is critical to create an existing inventory of current transit provider's services in the region. This level of understanding helps inform the processes and methodologies used to create locally sensitive solutions which address existing gaps and duplications in service. The following section identifies provider information or location of transit in the region and the types of services that each agency provides. Each of the transit agencies functions in a different market environment.

It is important to draw comparisons of transit coverage in the context of the cities or regions they serve as each agency faces different challenges and meets different needs.

As mentioned previously this section also includes a summary of statistics including transit potential, transit need, and destinations served, for the region or the city and within the transit walkshed. The estimate of population and target transit rider population are measures that were estimated from the 2014-2018 ACS dataset. The employment data comes from the work-based LODES.

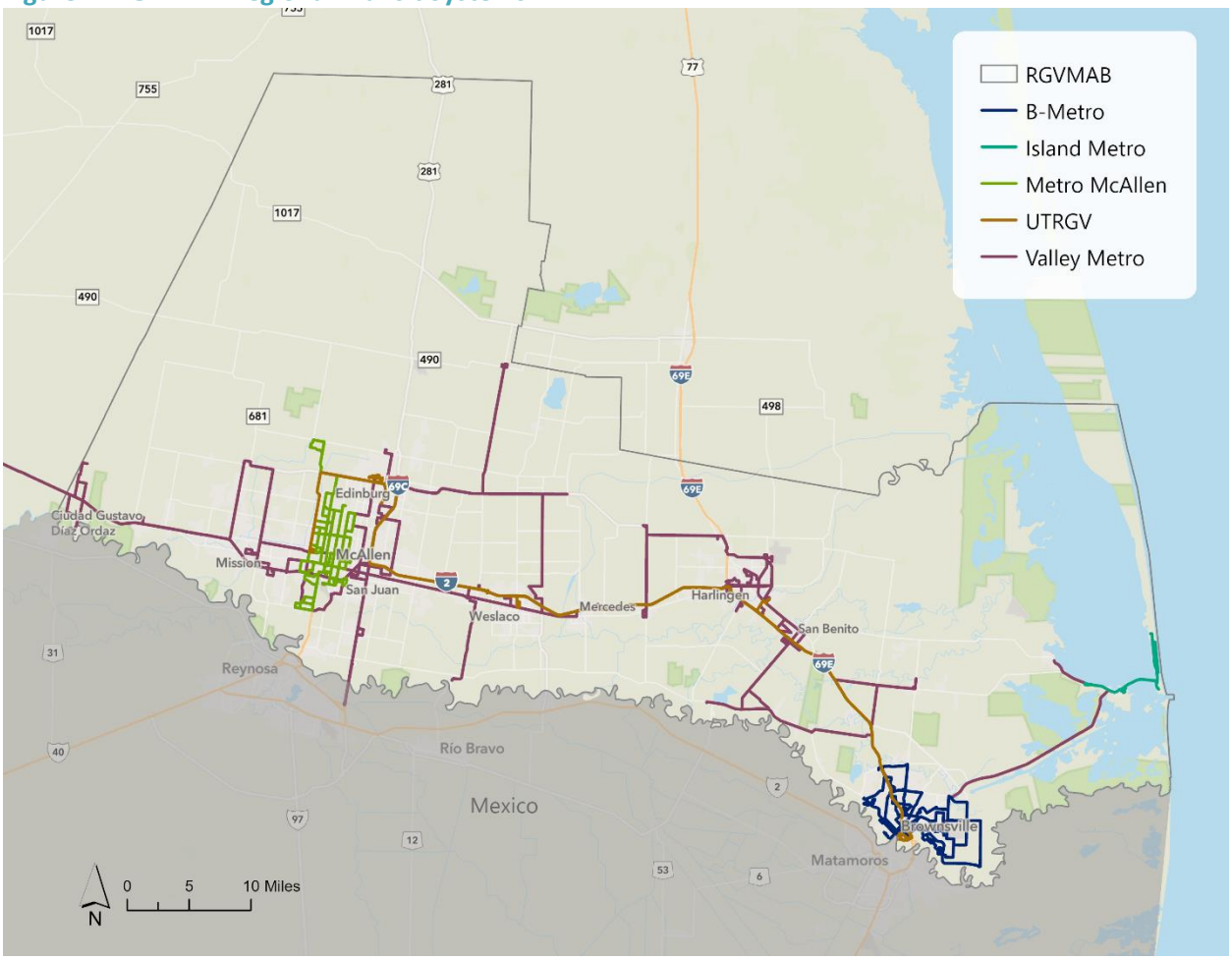
The destinations dataset is produced from ArcGIS Business Locations data which is licensed by InfoGroup. The methodology used to analyze each of these datasets and measures will be discussed in greater detail throughout this memo.

RGV Regional Transit

Regional Provider Service Information

The RGVMAB contains five major transit providers: B Metro, Island Metro, Metro McAllen, UTRGV Transit, and Valley Metro. Figure 1 displays current transit routes in the region:

Figure 1: RGVMAB Regional Transit Systems



Regional Summary Statistics

The RGVMAB has a population of 1,271,139. It is estimated that 478,554 people (38% of the population) have access to transit. Transit access at the regional level is defined as 0.25-mile distance to at least one of the regional provider routes.

Around 60% of employment is accessible by transit in the region. It is estimated that 39% of target transit riders and 67% of all businesses in the region are within this 0.25-mile buffer. Table 1 displays a high-level summary of the coverage for each of these measures at the regional level.

Table 1: RGVMPO Transit Summary

Measure		RGVMAB	Within Regional Transit Walkshed	% Covered by Transit
Transit Potential	Population	1,271,139	478,554	38%
	Employment	384,205	229,571	60%
Transit Need	Target Transit Rider Population	1,472,664	572,526	39%
Destinations	All Businesses	32,149	21,556	67%
	Key Destinations	895	566	63%

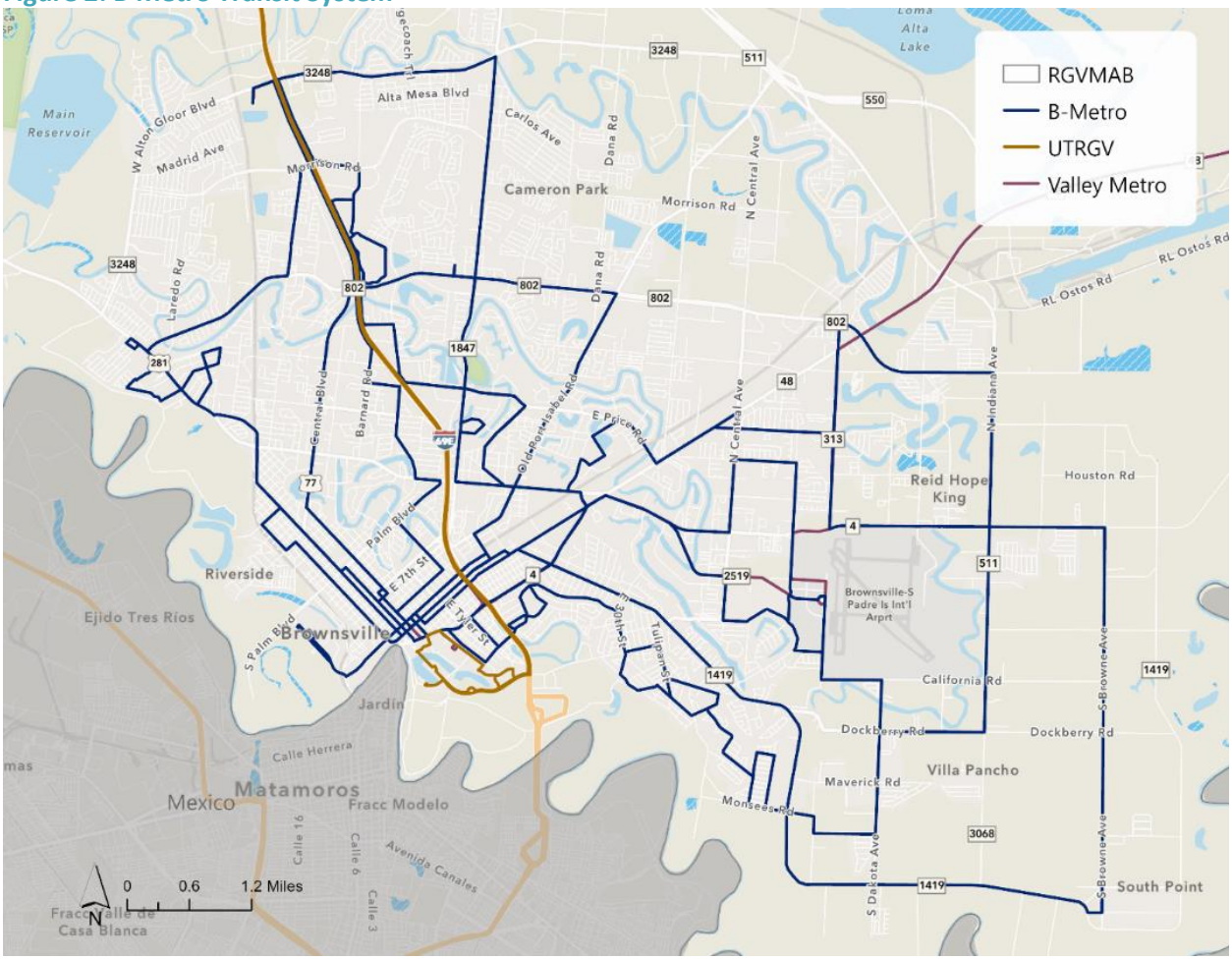
B Metro

B Metro Information

B Metro provides fixed route service throughout Brownsville through thirteen (13) bus routes (Figure 2). Most routes originate from the Brownsville Multimodal Terminal at La Plaza in downtown Brownsville, which also provides connections to multiple intercity bus providers with bus service to cities throughout the United States and Mexico.

All B Metro fixed route vehicles are fully accessible to persons who use mobility aids. Service hours are from 6:00 am to 8:00 pm from Monday through Saturday. Most routes are scheduled to provide trips at the top of the hour. B Metro also operates curb-to-curb paratransit service on a next-day reservation basis for people with disabilities who are not able to ride fixed route transit.

Figure 2: B Metro Transit System



B Metro Summary Statistics

B Metro provides service coverage to approximately 63% of the population of the city of Brownsville with 116,327 people living within a reasonable walkshed of B Metro routes. B Metro service is estimated to provide transit access to 76% of employment within the City of Brownsville. Transit access is available to approximately 71% to target transit riders and 72% of all businesses in Brownsville. Table 2 displays a summary of existing service coverage for B Metro.

Table 2: B Metro Transit Summary

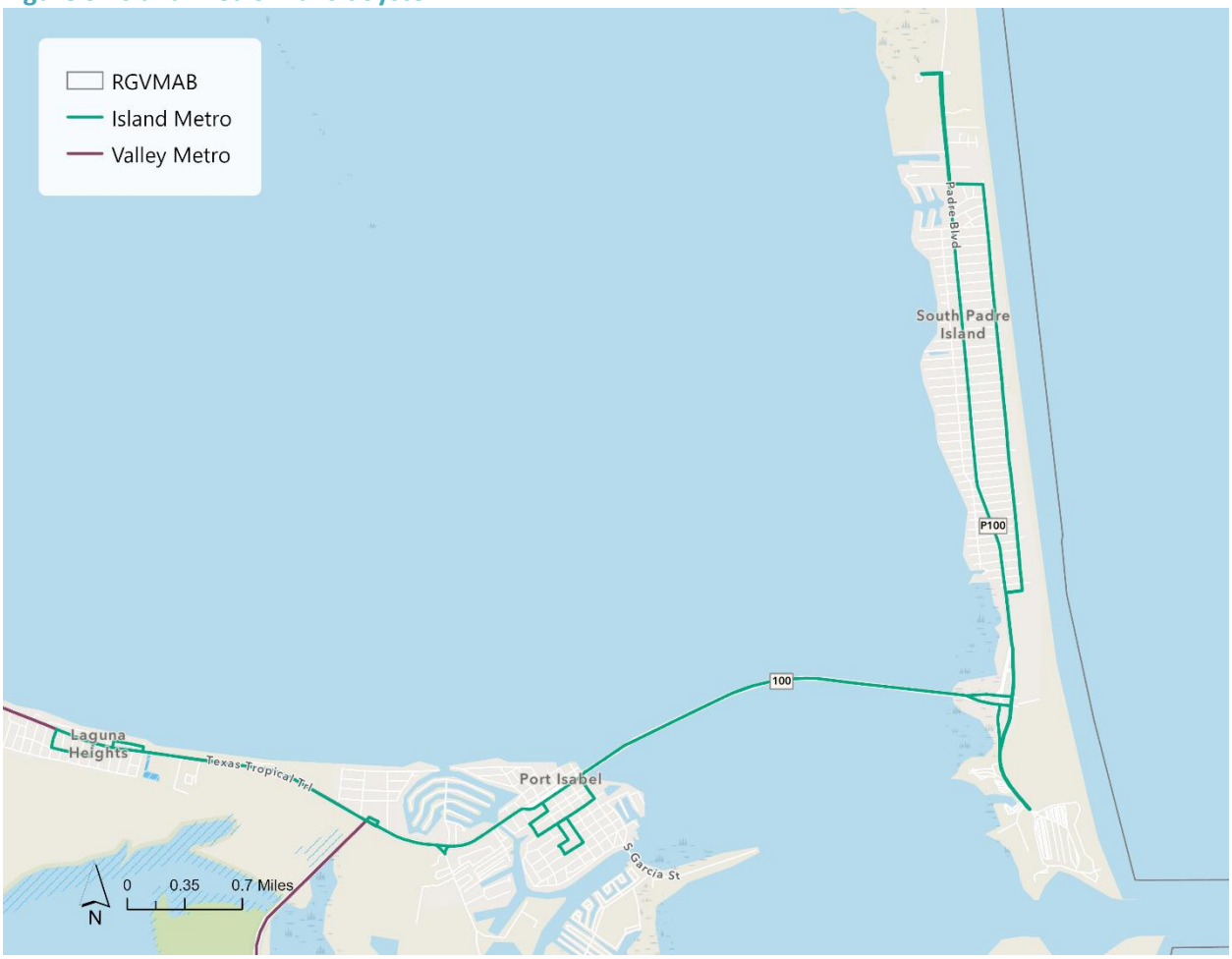
Measure		City of Brownsville	Within B Metro Transit Walkshed	% Covered by Transit
Transit Potential	Population	185,610	116,327	63%
	Employment	62,305	47,529	76%
Transit Need	Target Transit Rider Population	204,727	144,492	71%
Destinations	All Businesses	5,275	3,796	72%
	Key Destinations	144	115	80%

Island Metro

Island Metro Information

Island Metro is a free, fixed route shuttle system that provides daily service within South Padre Island (SPI) and Port Isabel/Laguna Heights. Stops provide access to amenities such as beach access points, hotels, restaurants, commercial areas, and other points of interest.

Figure 3: Island Metro Transit System



Island Metro Summary Statistics

The cities of SPI and Port Isabel which are served by Island Metro have a combined population of 4,247. It is estimated that 51% of the population has access to Island Metro routes. About 31% of employment is accessible by transit. It is estimated that 69% of target transit riders, 75% of all businesses, and 62% of key destinations are within this 0.25-mile access to routes. Table 3 displays a summary of existing service coverage for Island Metro.

Table 3: Island Metro Transit Summary

Measure		City of South Padre Island and Port Isabel	Within Island Metro Transit Walkshed	% Covered by Transit
Transit Potential	Population	4,247	2,160	51%
	Employment	2,451	764	31%
Transit Need	Target Transit Rider Population	4,290	2,956	69%
Destinations	All Businesses	820	611	75%
	Key Destinations	13	8	62%

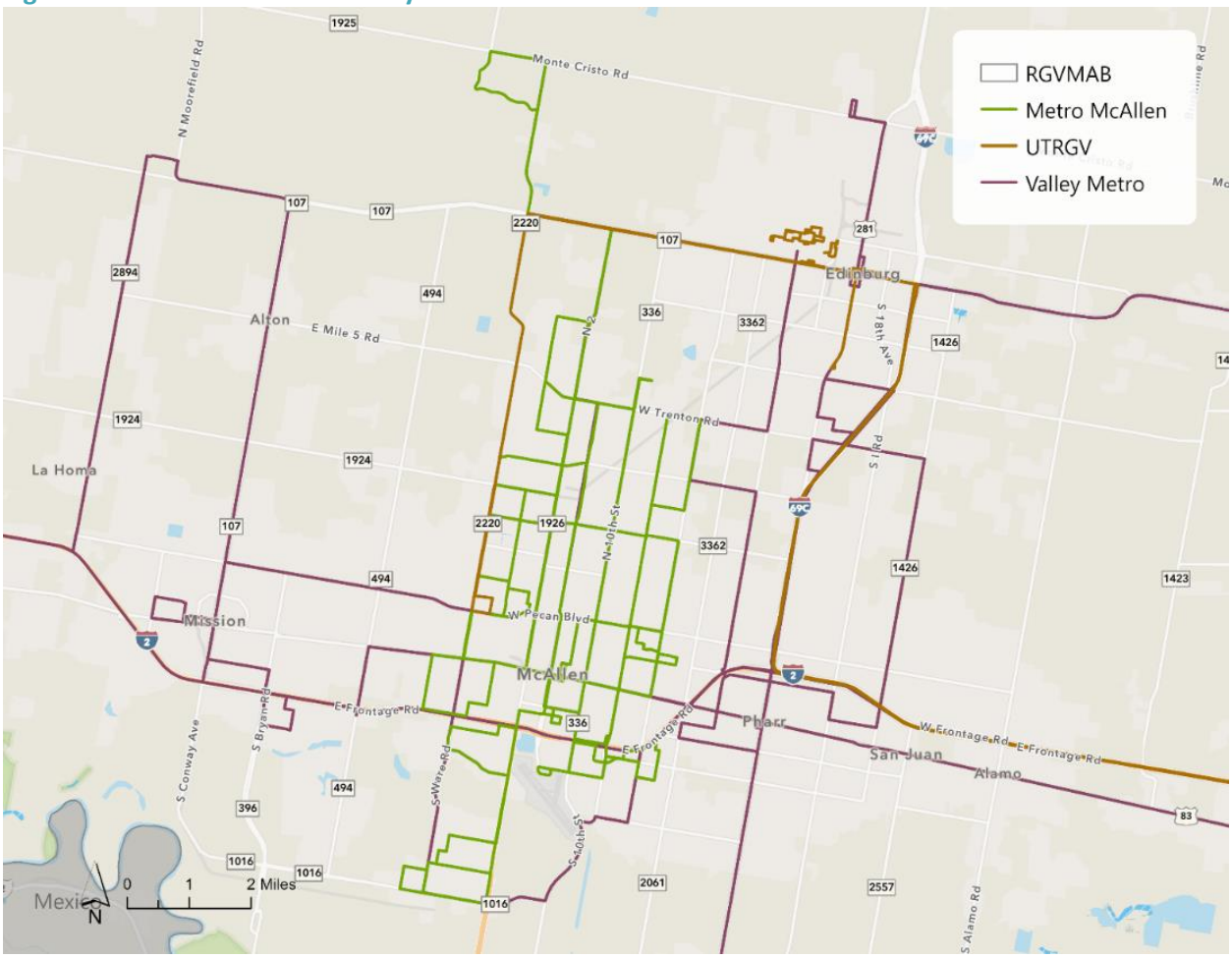
Metro McAllen

Metro McAllen Information

Metro McAllen currently operates nine (9) weekday fixed routes and complementary paratransit services. Fixed route services operate from 6:00 am to 9:00 pm Monday through Saturday. Sunday routes operate from 8:00 am to 6:00 pm, and 7:00 am to 5:00 pm on certain holidays.

Paratransit service is operated Monday through Saturday from 6:00 am to 9:00 pm and Sundays from 8:00 am to 6:00 pm to provide ADA accommodation commensurate with fixed route schedules.

Figure 4: Metro McAllen Transit System



Metro McAllen Summary Statistics

Metro McAllen provides service coverage to approximately 81% of the population of the city of McAllen with 109,731 people living within a reasonable walkshed (0.25 mile) of routes. Metro McAllen is estimated to provide service to 82% of employment. Transit access is available to approximately 90% of target transit riders and 87% of all businesses in McAllen. Transit is accessible to 97% of key destinations. Table 4 displays a high-level summary of existing service coverage for Metro McAllen. It should be noted that Metro McAllen provides service mostly within the city of McAllen but also has a route which extends into Edinburg.

Table 4: Metro McAllen Transit Summary

Measure		City of McAllen	Within Metro McAllen Transit Walkshed	% Covered by Transit
Transit Potential	Population	136,207	109,731	81%
	Employment	81,137	66,672	82%
Transit Need	Target Transit Rider Population	163,109	147,353	90%
Destinations	All Businesses	7,162	6,240	87%
	Key Destinations	110	107	97%

Valley Metro and UTRGV

Valley Metro Information

Valley Metro is a regional public transportation provider and currently operates twenty-six (26) flex routes and four (4) demand response services. Flex route service operates in Hidalgo County, Cameron County and Starr County. Weekday Demand Response service operates in Willacy County from 7:00 am to 4:00 pm, Starr County from 7:00 am to 4:00 pm, and Zapata County from 8:00 am to 5:00 pm. As mentioned above, Valley Metro has partnered with UTRGV to provide service to RGVMAB transit hubs with main UTRGV campuses in Brownsville and Edinburg.

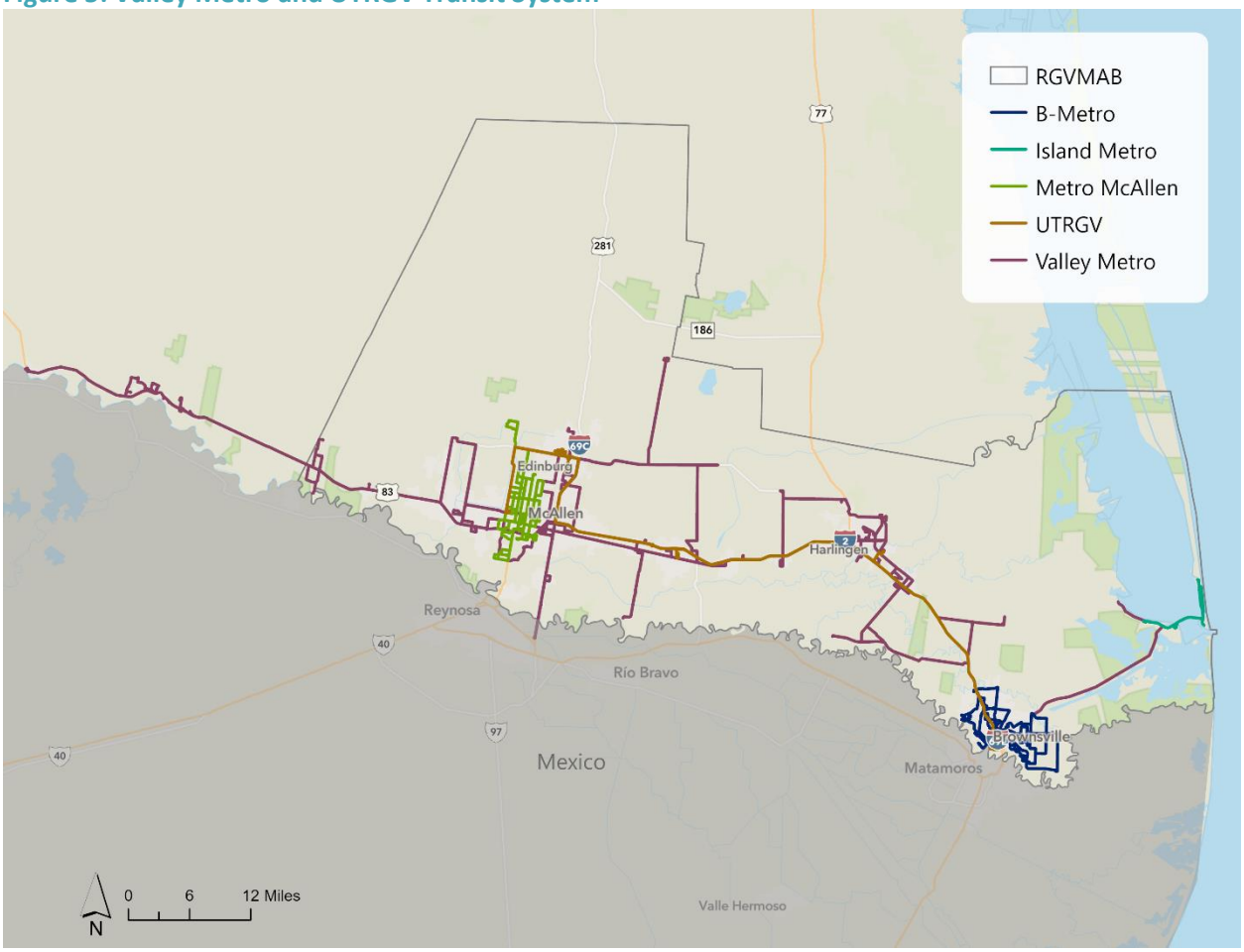
UTRGV Transit Information

UTRGV has several campuses and satellite facilities located in the RGVMAB (McAllen, Edinburg, Weslaco, Harlingen, Brownsville, Port Isabel, SPI), and provides transit service to increase connectivity between facilities. All service is free and open to the public. UTRGV accomplishes this through two main services – the Vaquero Express and VOLT. The Vaquero Express operates service on the Brownsville and Edinburg campuses, and provides connections to campuses in Harlingen and Weslaco. It also serves the Visual Arts Building in Edinburg, McAllen Teaching Site, and Rio Grande City. Service hours range from 6:00 am to 8:10 pm.

VOLT is a micro mobility program sponsored by Valley Metro that provides transportation service for intercampus mobility needs (Edinburg and Brownsville campuses). VOLT is comprised of a fleet of 23 electric/zero-emission vehicles containing ITS allowing users to track and request rides at the push of a button. VOLT incorporates “circuits”, which are route alignments for the electric vehicles that circulate the campuses. The service also has “call stops” which deviate from the circuit routes provided the user makes a reservation ahead of time. VOLT provides frequencies as low as every 5 minutes. UTRGV has partnered with other regional transit providers for additional connectivity throughout the RGVMAB. Accordingly, students may use B Metro and Valley Metro at no cost and use McAllen Metro at a reduced fare.

Valley Metro also provides Metro Express, a service designed to connect Brownsville, Harlingen, and McAllen public transit terminals to the UTRGV Brownsville and Edinburg campuses.

Figure 5: Valley Metro and UTRGV Transit System



Valley Metro and UTRGV Summary Statistics

Valley Metro and UTRGV Transit provide service coverage to approximately 26% of the RGVMAB population with 327,232 people living within a reasonable walkshed (0.25 mile) of routes. The two services are estimated to provide public transportation to 43% of employment. Transit access is available to approximately 32% of area target transit riders and 48% of all businesses. Table 5 displays a summary of existing service coverage for the two systems. It should be noted that the transit statistics include both systems.

Table 5: Valley Metro and UTRGV Transit Summary

Measure		RGVMAB	Within Valley Metro and UTRGV Transit Walkshed	% Covered by Transit
Transit Potential	Population	1,271,139	327,232	26%
	Employment	384,205	163,391	43%
Transit Need	Target Transit Rider Population	1,472,664	477,154	32%
Destinations	All Businesses	32,149	15,455	48%
	Key Destinations	895	414	46%

Transit Potential

The RGVMAB is a fast-growing region with expected sustained economic and population growth. Development and land use that has a mix of jobs, retail and housing indicate areas with high activity and potential for supporting transit use. One method for identifying transit potential is looking at locations that have the potential to support transit service. For this study, transit potential is measured through examining population and employment density, or transit propensity.

Transit Propensity is displayed at the traffic analysis zone (TAZ) level using a per square mile measurement. Milestone year (2019) RGVMPO TDM outputs, and forecast year (2045) population and employment were analyzed to represent current and future transit potential in the study area. Areas with higher transit propensity can be indicative of development and land uses that support transit use (Figure 6 through Figure 10).

Areas with Medium-High Density also represent areas with noteworthy transit propensity (Figure 11 through Figure 13). Areas with low transit propensity are areas with dispersed, low-density development and land uses that increase walking distances to the point that fixed route transit is not an accessible option. Understanding where the higher propensity areas are located and the type and mix of land use within them can help identify where to focus future transit investments and how to gauge and appropriately deliver transit services across the region, including demand response, fixed route, and micro-mobility solutions.

Figure 6 through Figure 13 are intended to illustrate a small sample of the current medium-high propensity areas in the RGVMAB.

Figure 6:High Propensity: Medical Center in Harlingen

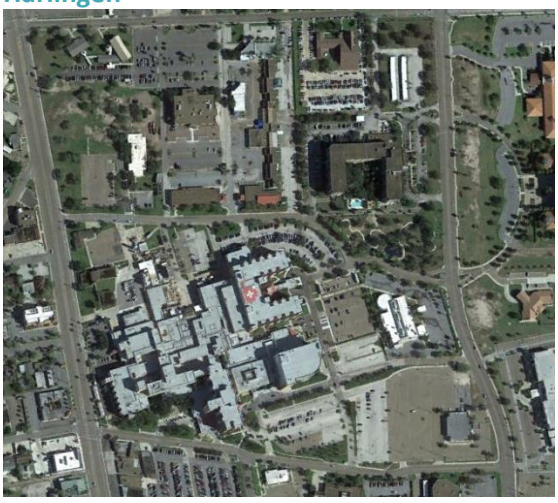


Figure 7:High Propensity: Downtown McAllen

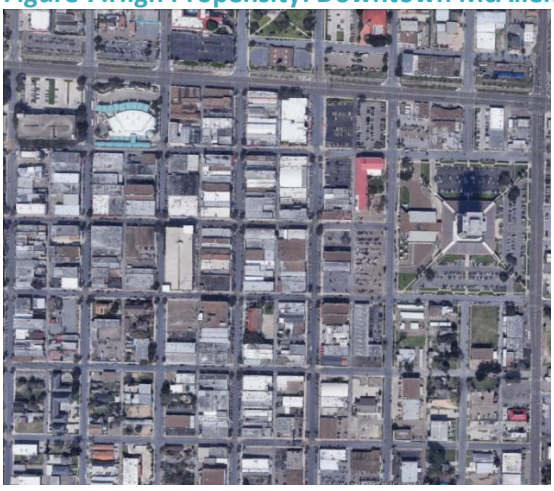


Figure 8:High Propensity: Downtown Harlingen

Figure 9:High Propensity: La Plaza Mall in McAllen

Figure 10: High Propensity: Downtown Brownsville and Campus Area

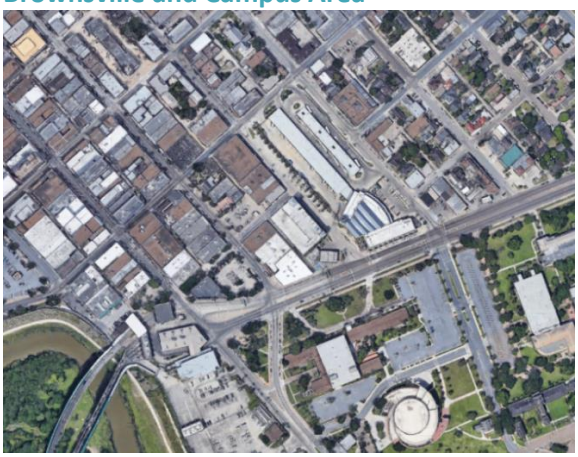


Figure 11: Medium-High Propensity: Brownsville Neighborhood

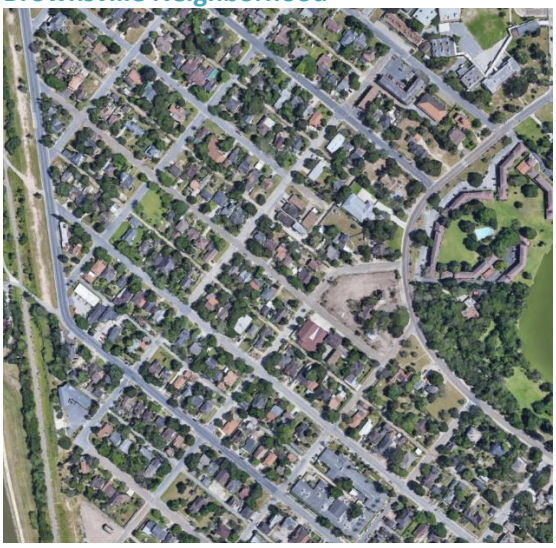
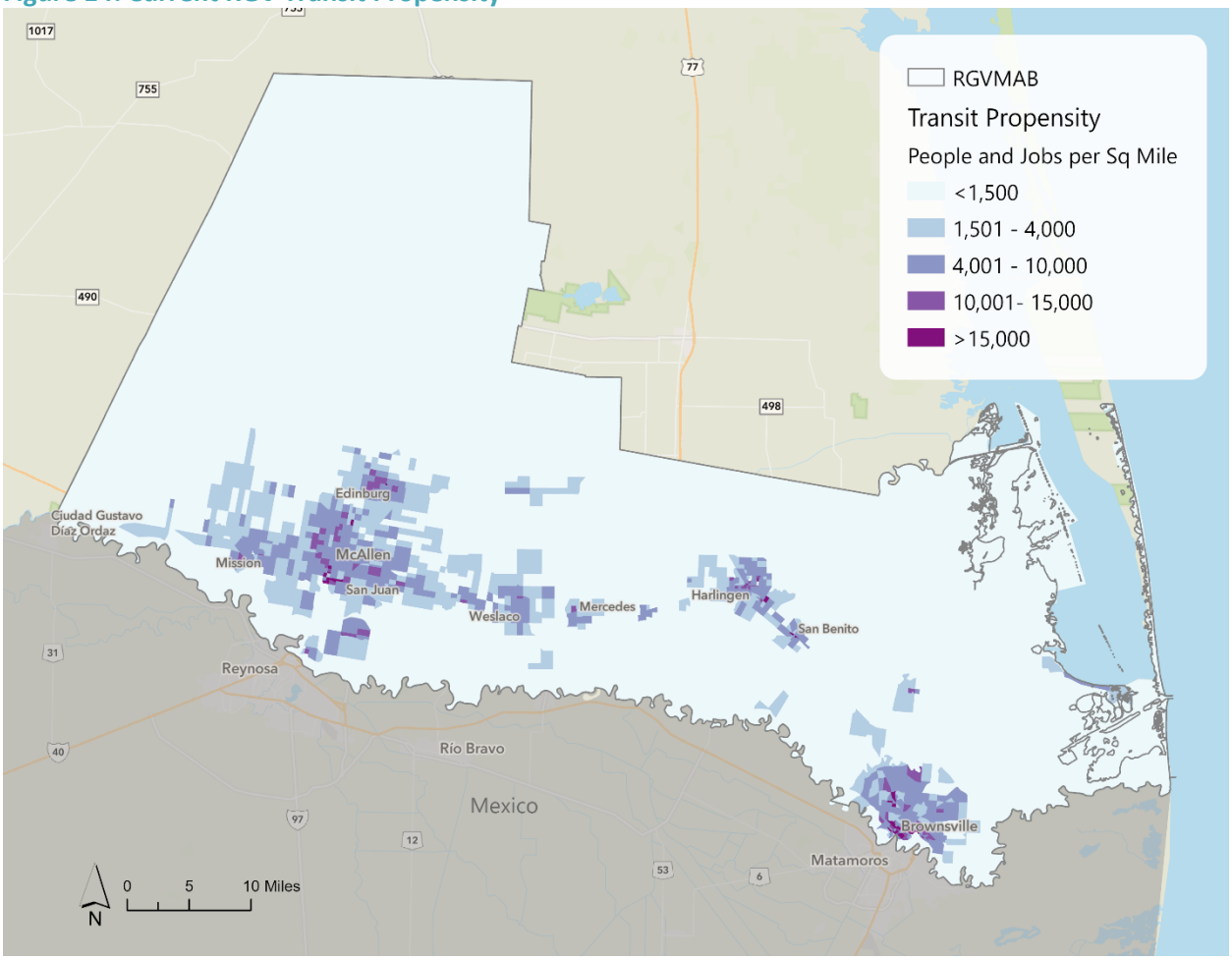


Figure 12: Medium-High Propensity: Harlingen Neighborhood

Figure 13: Medium-High Propensity: McAllen Neighborhood

Figure 14 displays the dispersion of transit propensity within the RGVMAB.

Figure 14: Current RGV Transit Propensity



Future growth areas and the areas with the greatest change expected in regards to propensity can be identified in Figure 15 and

Figure 16.

Figure 15: Future RGV Transit Propensity

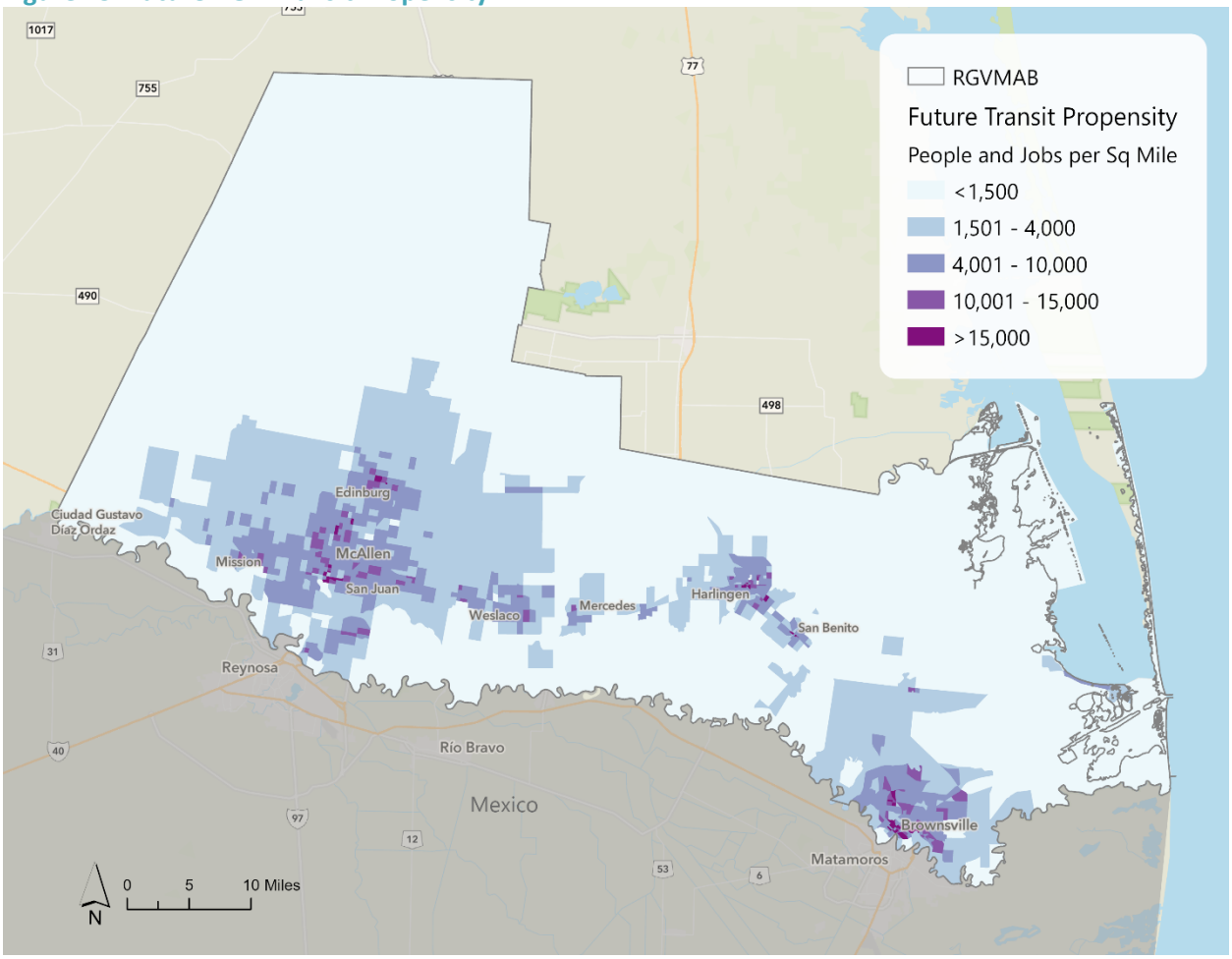
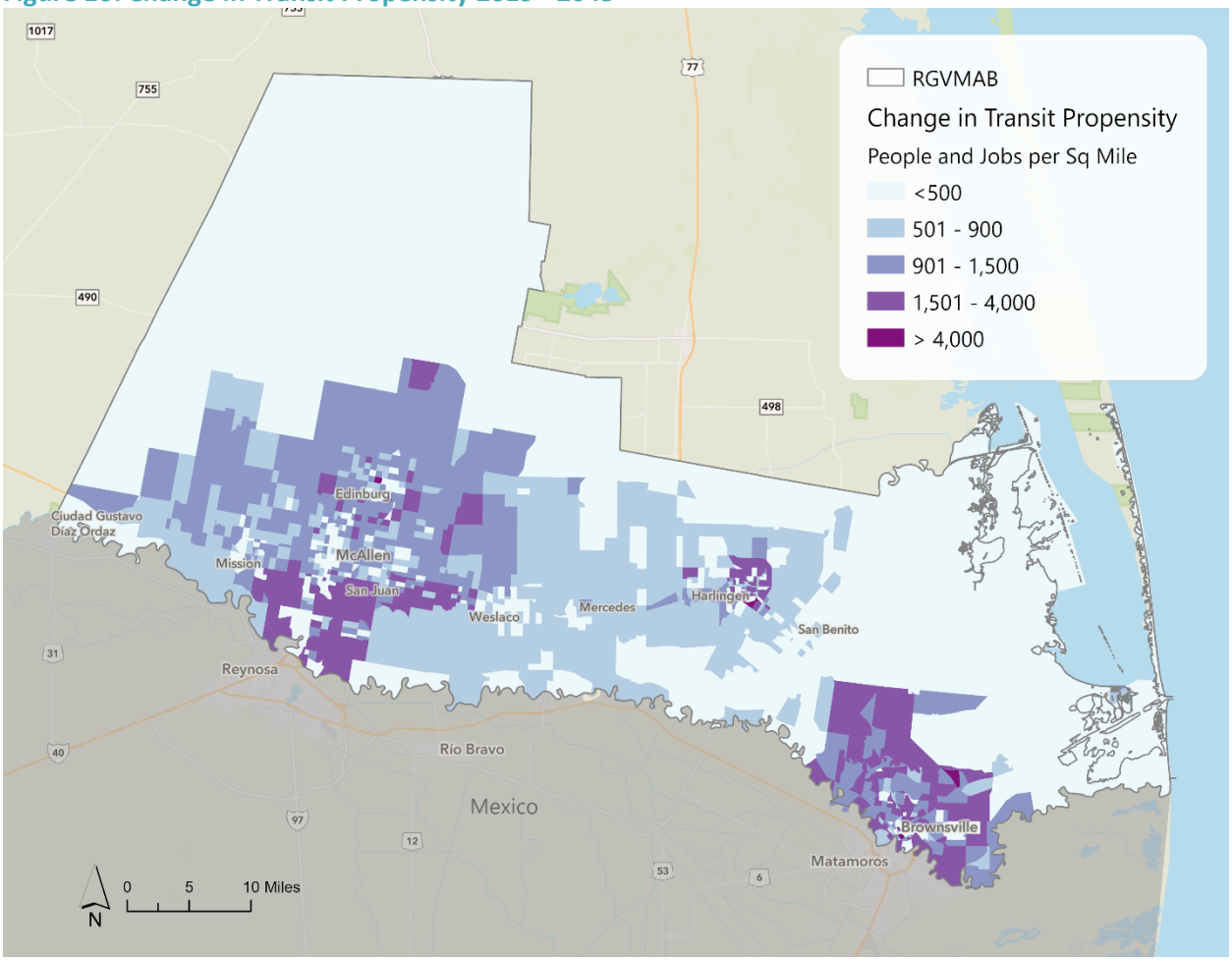


Figure 16: Change in Transit Propensity 2019 - 2045

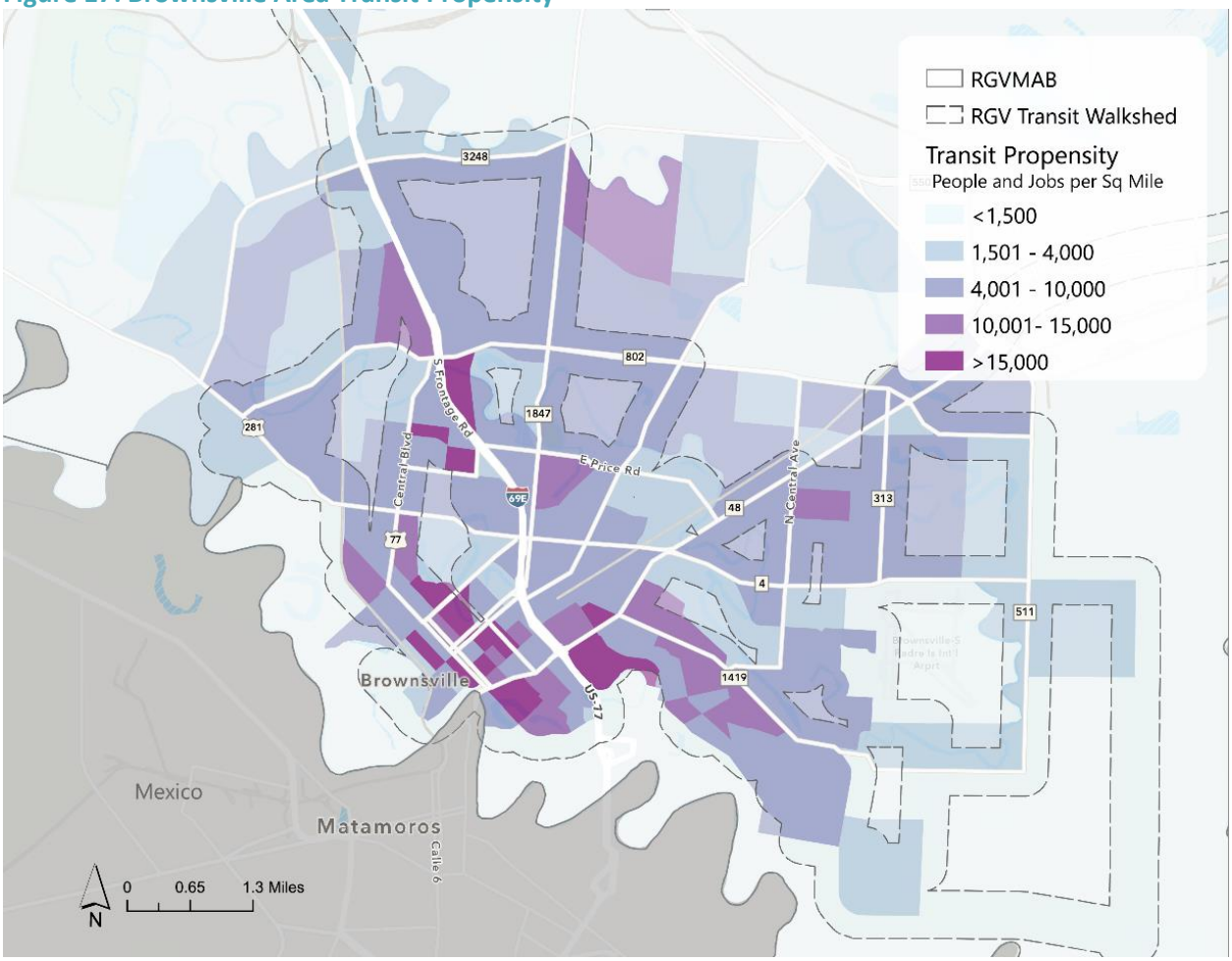


The most change from 2019 to 2045 in estimated propensity occurs across medium-low propensity areas with 156% increase in people and jobs. The high propensity areas experience the least expected change from 2019 to 2045 at 39%.

These areas with initial high propensity tend to experience less proportional growth in transit potential over time as the land within these TAZs is often already developed near or at the limits allowed by zoning or code. This data is also displayed for urban areas to be able to more clearly identify where these high propensity areas are located Figure 17 through Figure 22.

Figure 17 displays the Brownsville area current propensity for transit. Many of the TAZs with the highest propensity for transit are within the regional transit service walkshed including Texas Southmost College and UTRGV, the neighborhood near the intersection of I-69 and SH 4, downtown Brownsville, and other high propensity neighborhoods.

Figure 17: Brownsville Area Transit Propensity



In the future, propensity for transit within the current regional transit walkshed increases, Figure 18. Many of the highest propensity areas remain, and more medium-high areas arise. In particular, the area along Southmost Blvd or FM 1419 southeast of SH 4 has TAZs with more medium-high propensity. Another area with growth is near the main branch of the Brownsville Public Library north of Price Rd near I-69.

Figure 18: Brownsville Area Future Transit Propensity

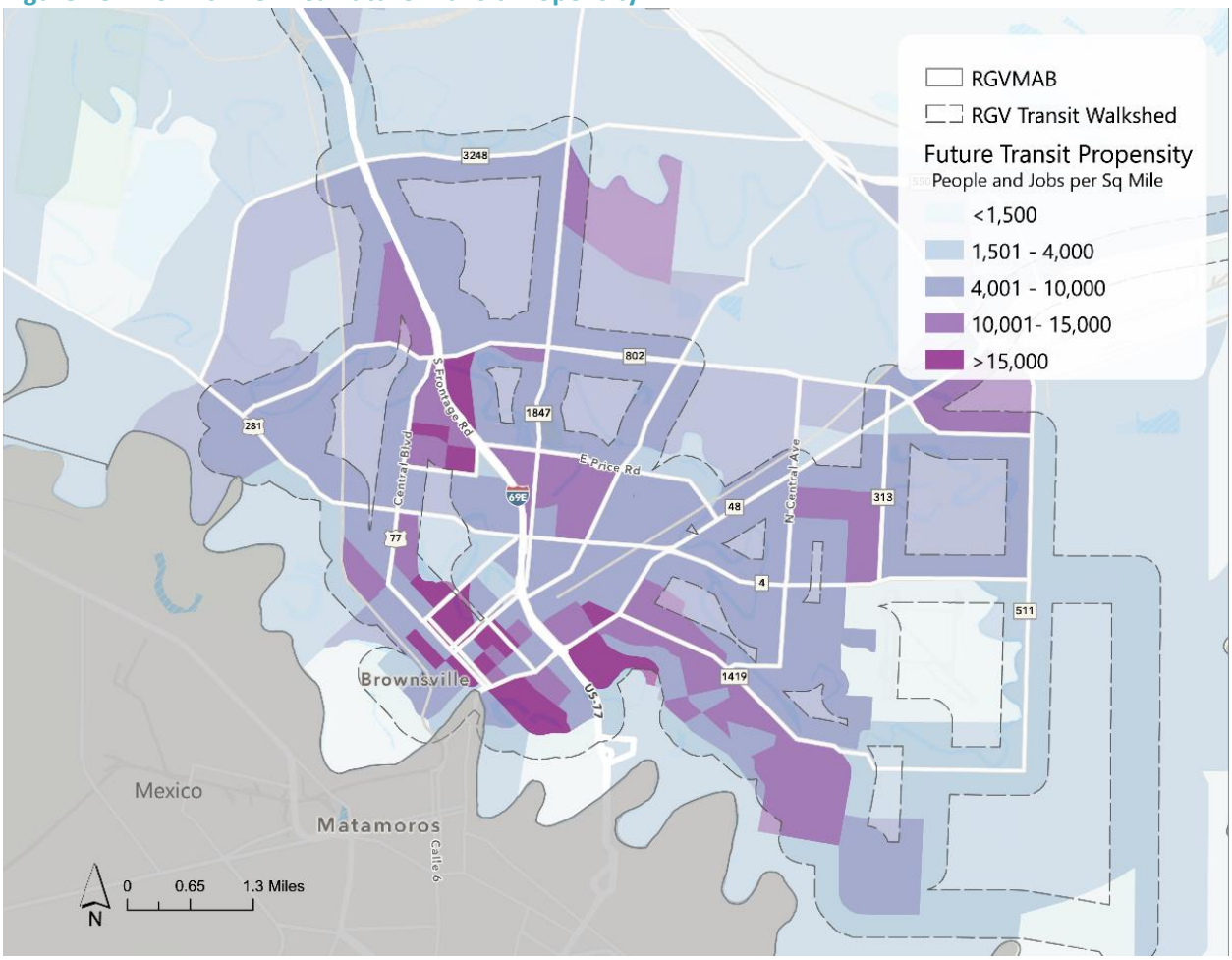
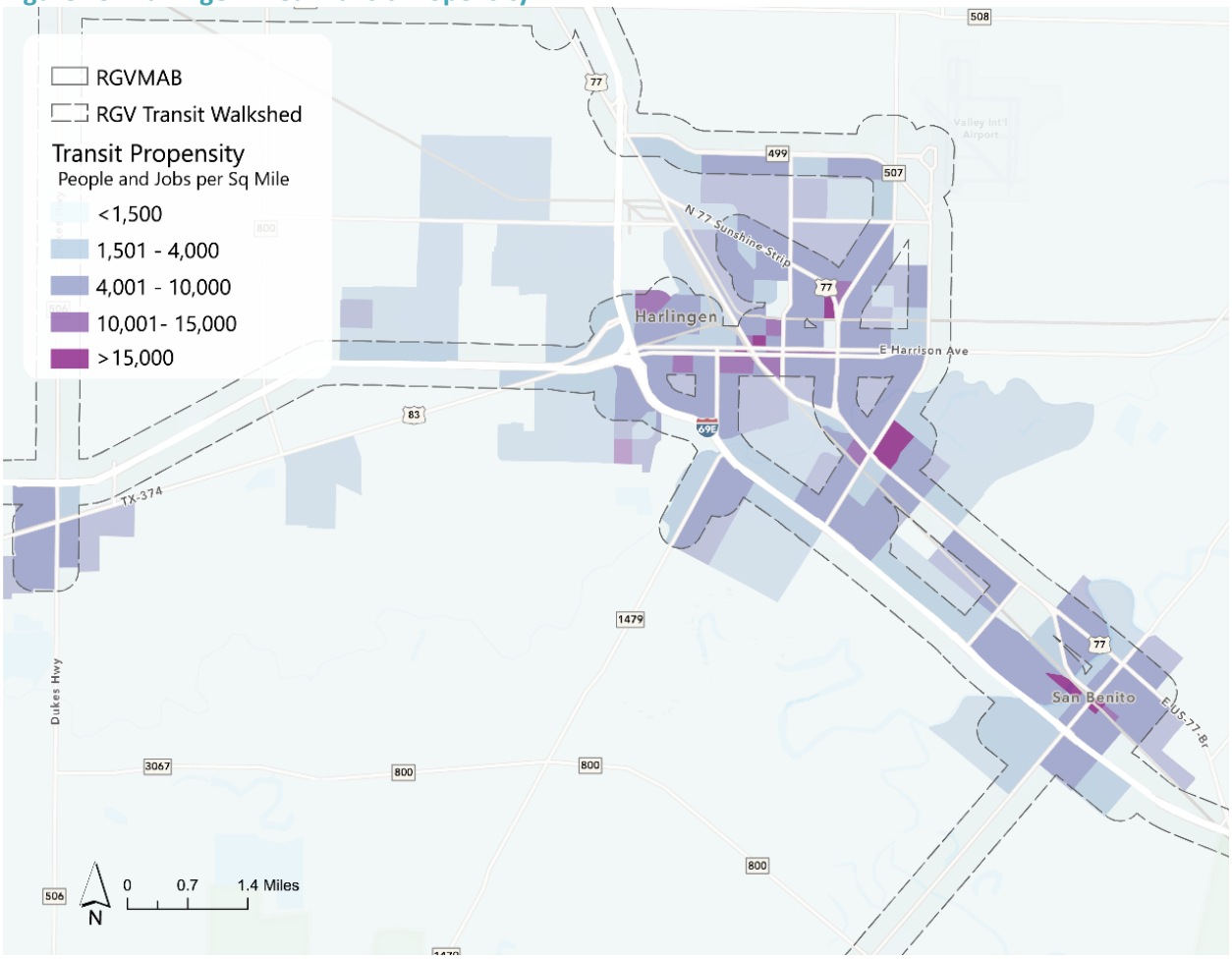


Figure 19 displays the current propensity for transit in the area near Harlingen and San Benito. The TAZs with the highest propensity for transit include the Sun Valley Plaza shopping mall off BUS 77, downtown Harlingen, the Valley Baptist Medical Center in southeast Harlingen, and downtown San Benito. Currently, these are within the regional transit walkshed.

Figure 19: Harlingen Area Transit Propensity



The future propensity for transit near Harlingen increases with neighborhoods just south of downtown Harlingen attaining a high propensity measure, Figure 20. Areas within the current transit walkshed along major corridors experience increases for propensity for transit. Some areas west and northwest Harlingen increase in propensity that are not currently within the regional transit service coverage.

Figure 20: Harlingen Area Future Transit Propensity

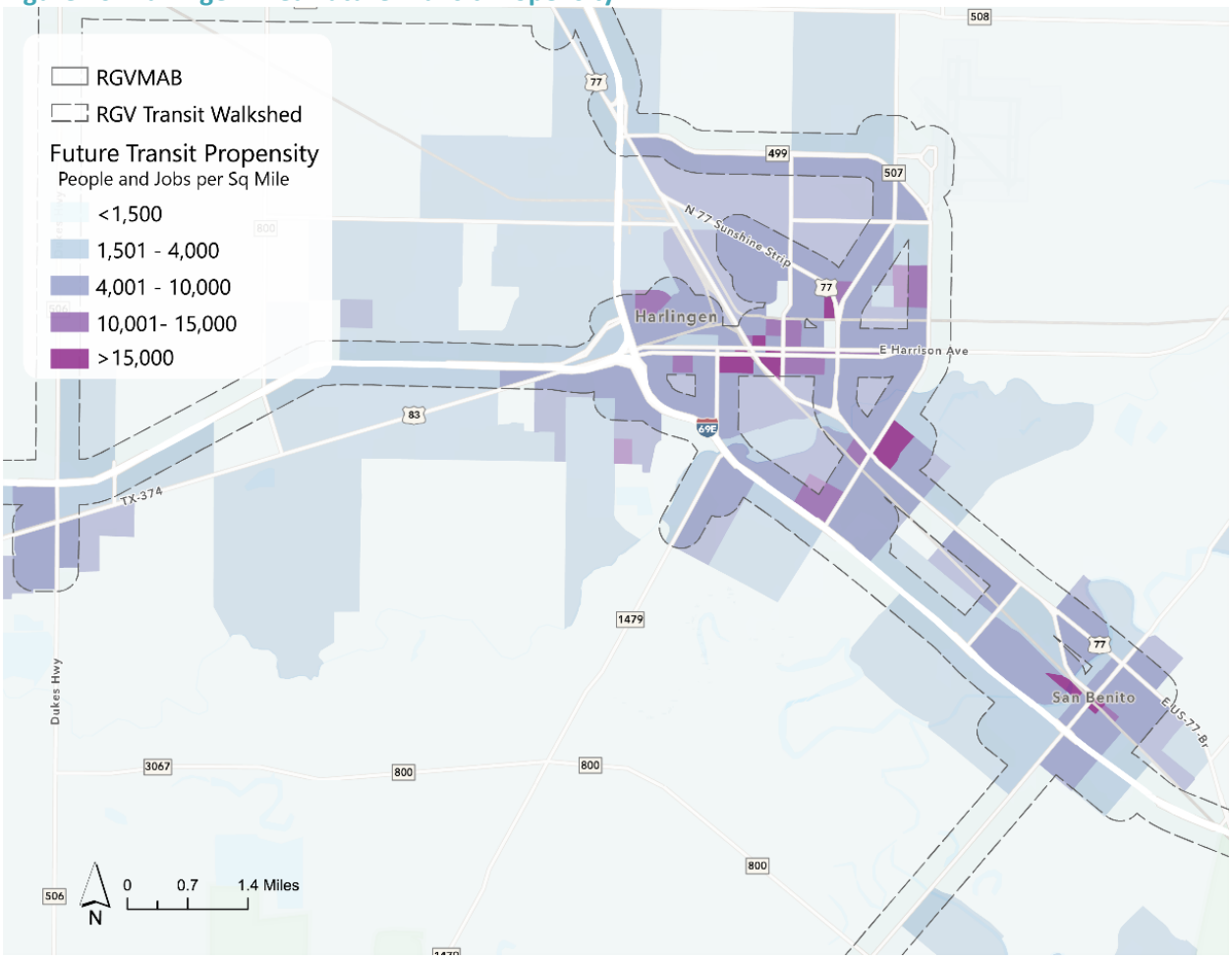
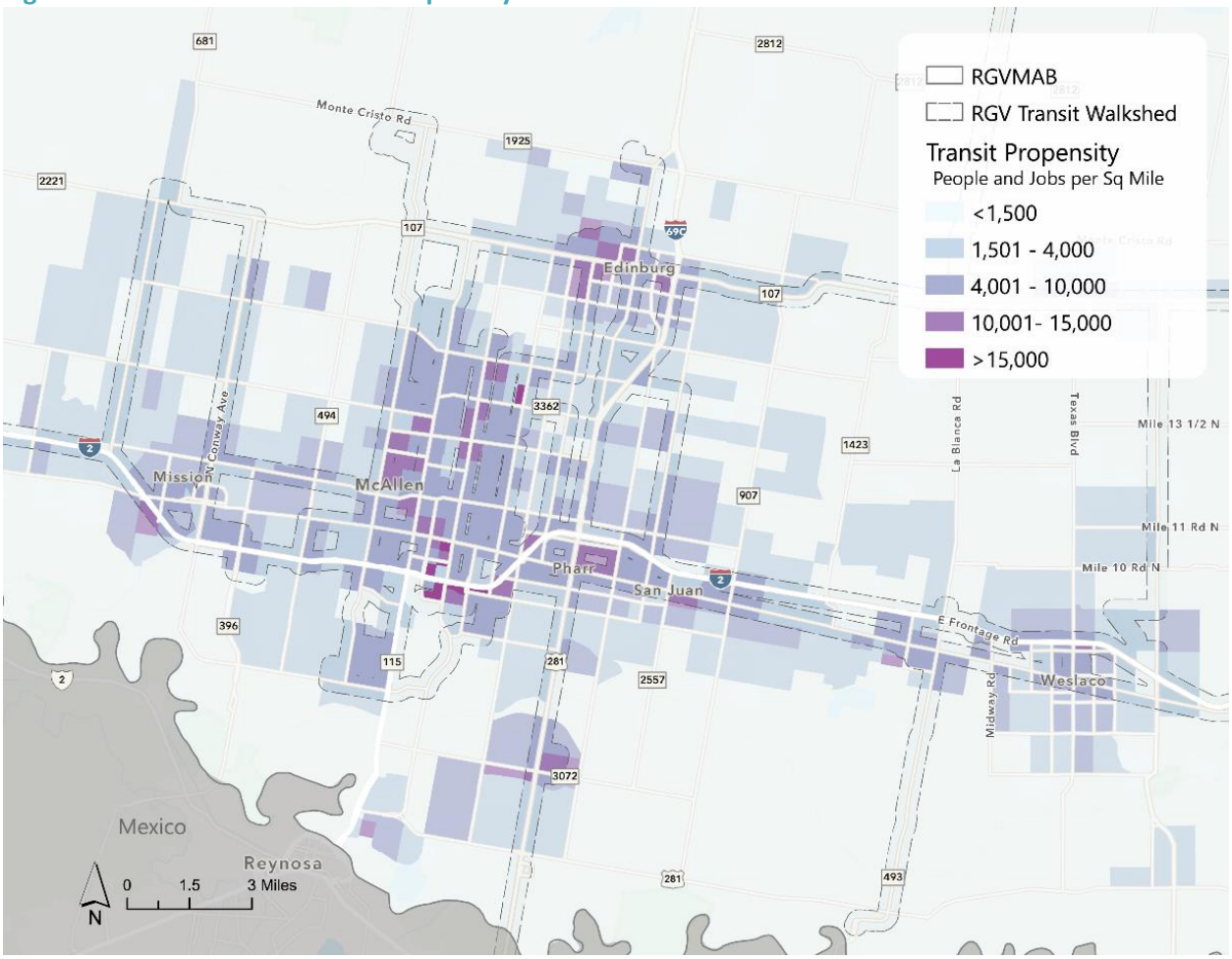


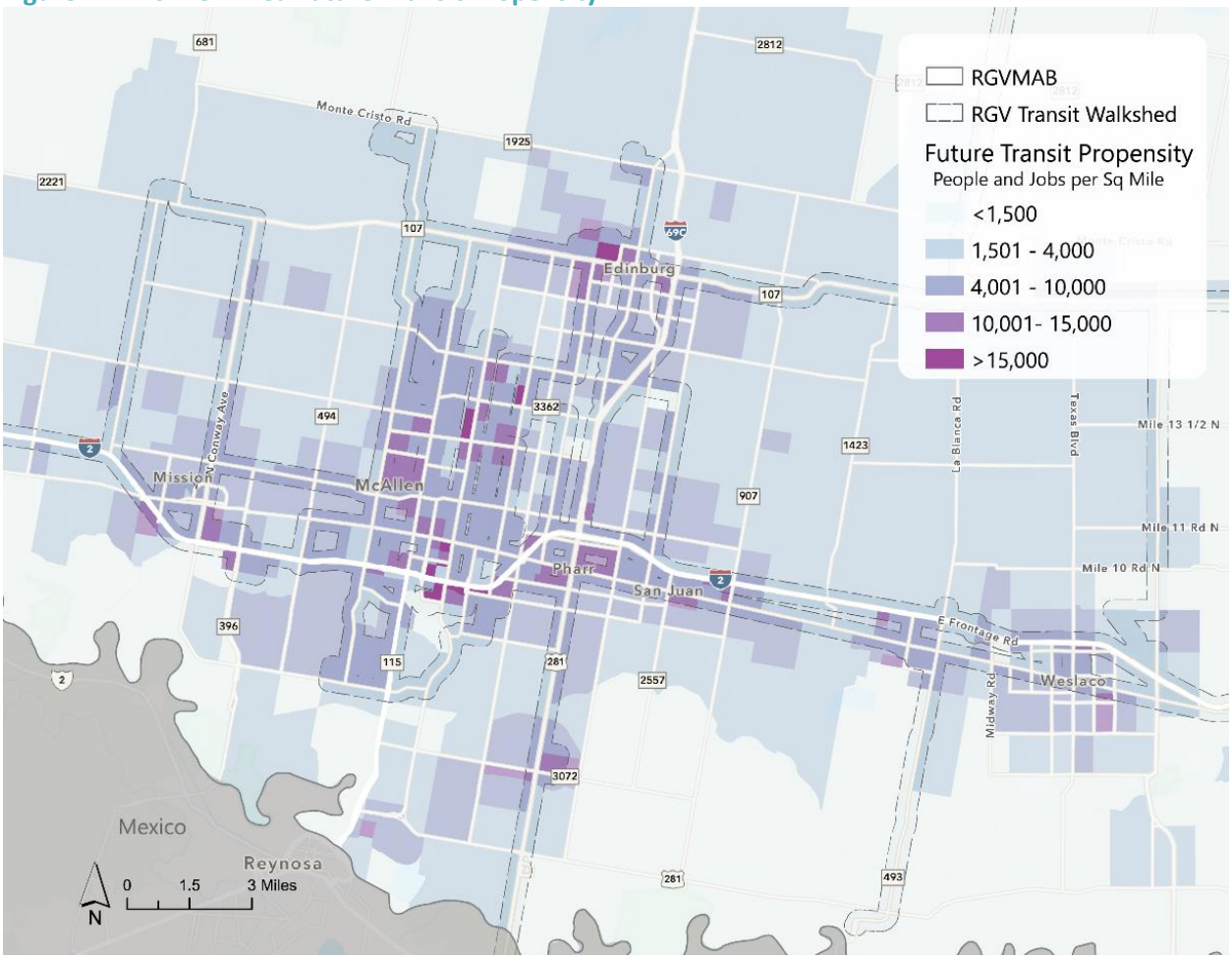
Figure 21 displays the current propensity for transit near McAllen, Mission, Edinburg, and Weslaco. The highest propensity TAZs are within the regional transit walkshed including the shopping areas along I-2 in south McAllen and the South Texas Children's Health Center on the edge of McAllen and Edinburg on Dove Ave. Many of the medium-high propensity neighborhoods are along north-south corridors in McAllen that have access to transit, including along 32nd St, 23rd St, Bicentennial Blvd, 10th St, and N Main St. Medium-high propensity areas exist near central Edinburg, Pharr, and Mission.

Figure 21: McAllen Area Transit Propensity



In the future, propensity for transit increases along many of the major north-south corridors in McAllen and in the other urban areas near McAllen including central Edinburg, Mission, Pharr, and Weslaco, Figure 22. In particular, near downtown Edinburg and the UTRGV campus and near Northcross Shopping Center there are TAZs expected to grow to a high propensity area in the future.

Figure 22: McAllen Area Future Transit Propensity



Transit Need

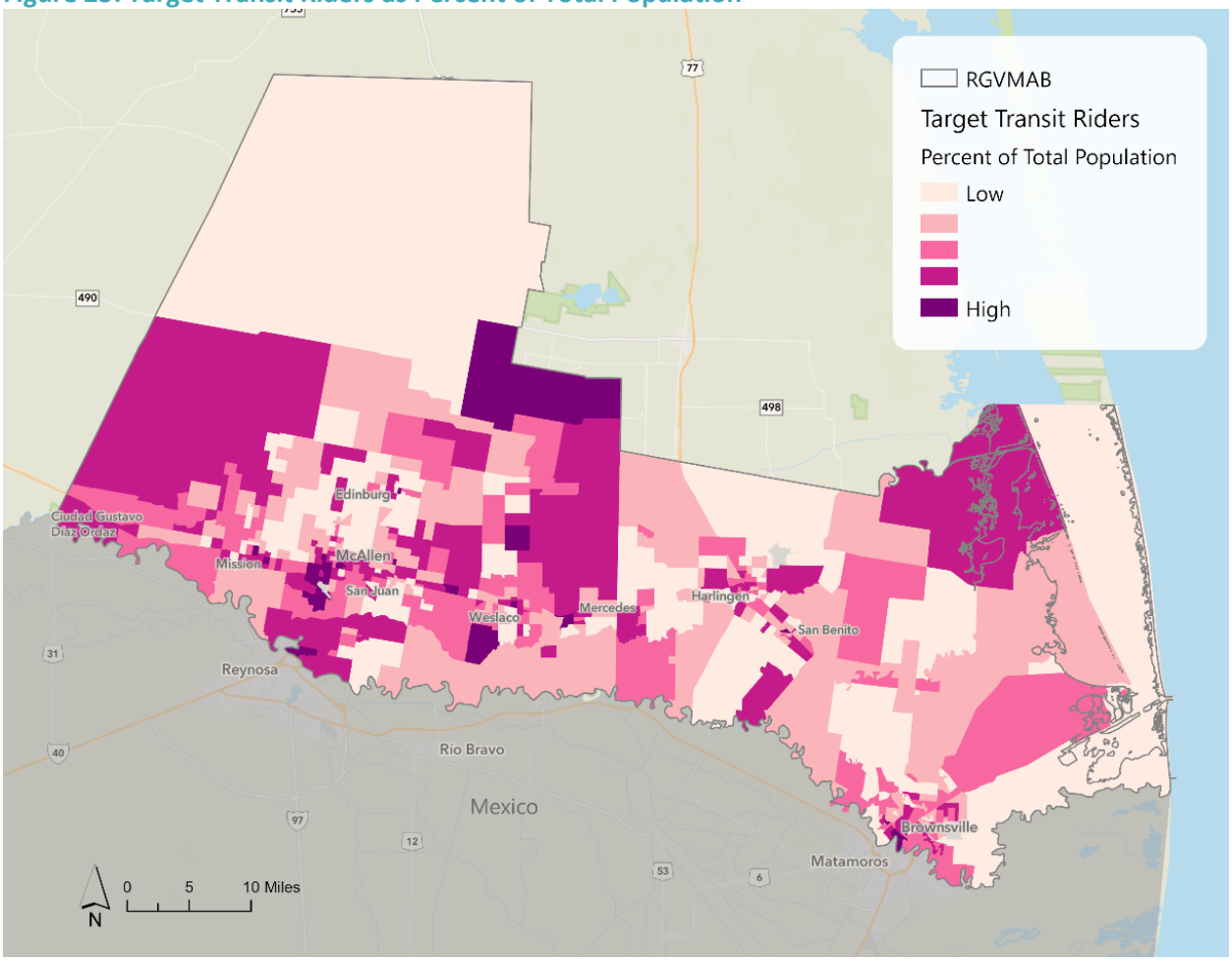
An analysis of target transit riders can help to identify the locations which have a higher need for transit service and help to prioritize transit adjustments to better support the community. A target transit rider (TTR) includes the following demographic subgroups:

- Non-driving population (Youth under 18, and Elderly over 65)
- Population with limited English proficiency (LEP)
- Minority populations
- Populations with disabilities
- Population living in poverty, and
- Population without access to a personal automobile.

It is generally assumed that individuals in these demographic subgroups are more likely to rely on public transportation for their mobility needs. Locating the areas in which these subgroups are concentrated can help ensure that the people with the highest need for services have access to reliable and effective transit. For the remainder of this section, these demographic subgroups are considered as categories of transit need for the analysis.

It should be noted that a person might be counted in more than one of the categories of transit need. For example, someone who is 16 years of age, speaks limited English, and lives in a household without a vehicle would register in three of the demographic subgroups. This inclusion of individuals in multiple categories benefits the analysis because it ensures that locations with people who have multiple needs (or a higher index of transit need) are highlighted prominently in the analysis. A graphic representation of the analysis of TTR for the region can be found in Figure 23.

Figure 23: Target Transit Riders as Percent of Total Population



TTR Subareas

The TTR analysis compares the percent of target transit riders relative to the total population (Figure 23), and provides insight into where these populations are concentrated. To further understand the areas with greatest transit need, TTR subareas were developed. These TTR subareas were selected from the locations determined to have higher concentrations of target transit riders from the TTR analysis

and are based on U.S. Census block group delineations. The process for selecting and comparing the relative need of the TTR subareas followed four steps.

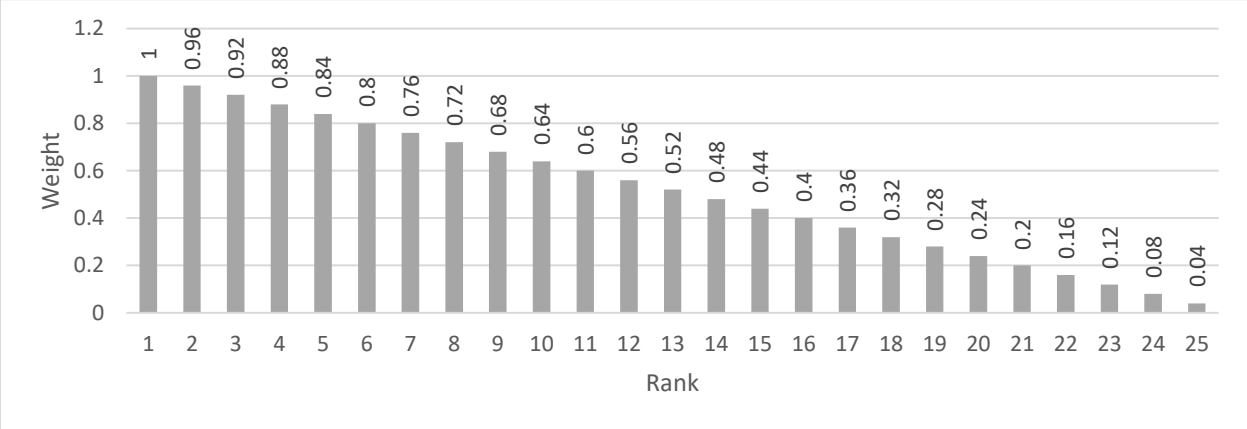
Step 1: Identify potential TTR subareas.

A block group was reviewed as a potential TTR subarea if that block group were in the top 25 for any of the six transit need categories for the region by percentage of population in that block group.

Step 2: Develop Weights by Rank for Each Category.

Rank weights were developed by applying an ordinal scale of 0 to 1 to the top 25 ranks for each transit need category. This top 25 rank-based weighting is illustrated in Figure 24 and is used to emphasize the regionally relative need index within each TTR subarea for each possible category. Where a TTR subarea had more than one category, multiple weights were applied.

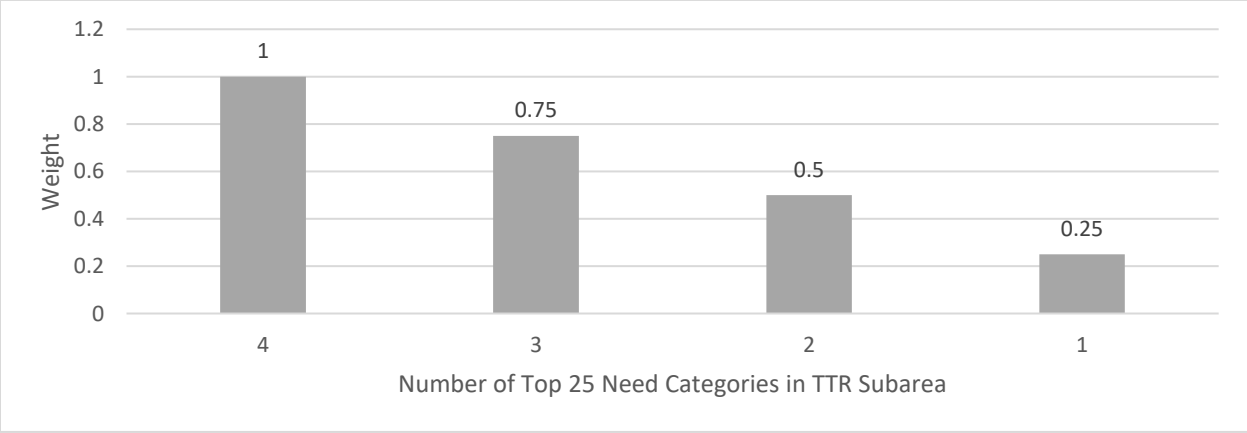
Figure 24: Transit Need Weight by Rank for Top 25 TTR Categories



Step 3: Develop Concurrent Category Weighting for TTR Subareas.

A secondary incremental weight scale of 0 to 1 was based on the number of transit need categories within a TTR subarea. This weighting is used to emphasize where block groups hold a concurrence for more than one identified top 25 concentration of one of the transit need categories. As no TTR subarea had more than four concentrations within the top 25 ranking the 0 to 1 scale occurs in increments of 0.25. This is illustrated in Figure 25

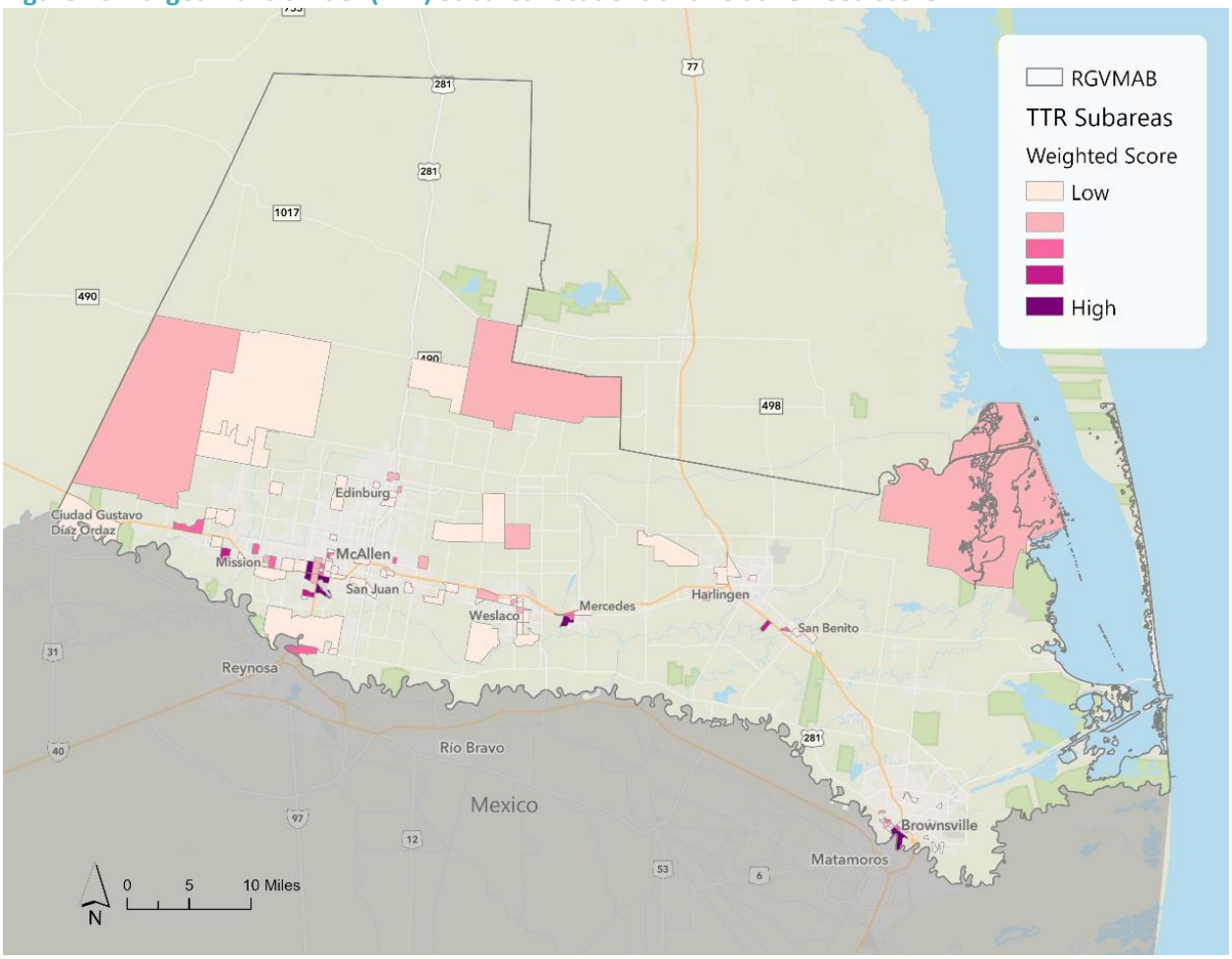
Figure 25: Weighting for Concurrent Top 25 Transit Need Category Concentrations



Step 4: Generate Weighted Score in TTR Subarea.

The weight considerations and the proportion of population within each TTR subarea to which these demographic transit need categories applied were used to generate a score and rank the TTR subareas. Figure 26 illustrates the resulting weighted scores for the TTR Subareas.

Figure 26: Target Transit Rider (TTR) Subarea locations and relative need score



TTR Top 3 Subareas

A total of 104 TTR Subareas exist in the RGVMAB. For a closer look into the TTR subareas, the top three TTR Subareas were selected for each demographic subgroup for more detailed statistics. The 15 selected subareas can be found in Table 6 and are labeled on the maps for the areas near Brownsville, Harlingen, and McAllen (Figure 27). The percent of each group compared to total population, (i.e. rank from 1-25), and the overall rank and weighted final score are also presented in Table 6. The majority of these top three subareas by demographic subgroup are completely within or partially within the regional transit walkshed (0.25 mile). Subarea 9 near Harlingen, which has a large proportion of non-driving population and subarea 32, with a large proportion of minority population near McAllen are not within the transit walkshed. Subarea 7, of which has 100% non-driving population, is only partially within the regional transit walkshed, but appears to be comprised of RV parks and a children's home. Subarea 8, with a large percentage of non-driving age individuals and disability population is also only partially within the walkshed to transit.

Figure 27: Top Three TTR Subareas in Relation to Transit Coverage

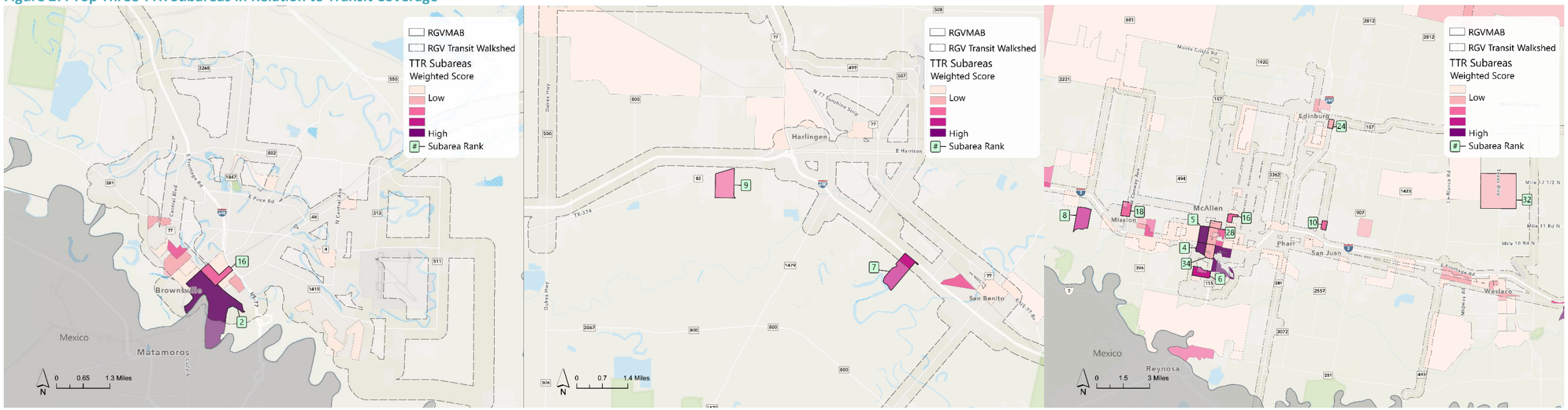


Table 6: Top Three TTR Subareas; Demographic Transit Need and Weighted Score

Overall Rank (Map ID)	Non-Driving Population		Population with Limited English Proficiency		Minority Population		Disability Population		Population Below Poverty		Households without Vehicles		Weighted Score
	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	
2	0	56%	12	37%	0	7%	13	32%	17	63%	**1**	51%	2.70
4	14	65%	0	29%	16	41%	0	16%	**2**	72%	0	0%	1.61
5	0	51%	**3**	46%	0	18%	**3**	39%	0	49%	14	29%	1.60
6	0	43%	**2**	47%	0	27%	14	30%	0	36%	5	36%	1.54
7	**1**	100%	0	0%	0	0%	4	38%	0	11%	0	0%	1.26
8	**3**	86%	0	5%	0	0%	**1**	43%	0	20%	0	6%	1.18
9	**2**	93%	0	0%	0	20%	7	35%	0	9%	0	0%	1.00
10	0	48%	**1**	48%	0	28%	**2**	39%	0	40%	0	7%	0.84
11	0	40%	18	36%	0	6%	0	11%	19	63%	**3**	46%	0.81
16	0	40%	11	38%	0	22%	0	20%	0	18%	**2**	50%	0.55
18	19	62%	0	26%	0	15%	0	15%	**3**	72%	0	16%	0.50
24	0	51%	0	24%	0	6%	0	5%	**1**	93%	0	18%	0.23
28	0	37%	0	30%	**1**	60%	0	14%	0	12%	0	0%	0.15
32	0	41%	0	18%	**2**	55%	0	10%	0	46%	0	9%	0.13
34	0	46%	0	29%	**3**	54%	0	20%	0	25%	0	3%	0.11

Transit Destinations

The analysis of existing conditions considered the accessibility to destinations, especially key destinations by transit within the RGVMAB. As stated in the data sources and assumptions section, the destinations data was collected using an ArcGIS Business Facilities Search Tool. A total of 32,149 businesses were discovered in the RGVMAB. From this total, roughly 44% could be categorized for this analysis. Accessibility to many amenities can ensure that residents who rely on transit are able to access the basic goods and services for "daily" life. The following major categories were used to organize the destinations dataset:

- Government and Public Services: post offices, libraries, food banks, homeless shelters, government offices, and community centers, etc.
- Healthcare Facilities: physicians, pharmacies, dentists, clinics, childcare, hospitals, etc.
- Grocery Stores: major grocery stores, convenience stores, food markets, and health food stores.
- Schools: nurseries, public schools (K-12), colleges and universities, and tutoring services.
- Financial: banks, financial planning, tax return preparation services, accountants, etc.
- Retail: locations for shopping and errands including clothing, general retail, sporting goods, electronics, beauty salons, pet care, etc.
- Social and Recreational: includes movie theaters, restaurants, bars, hotels, campgrounds, etc.

Although it is important for transit riders to have access to many goods and services throughout their communities, some services are essential for "daily" life. There are 895 key destinations identified in the RGVMAB, including:

- Government Facilities: Community and Recreation Centers, Post Offices, Libraries, and Social Service and Welfare
- Hospitals and Medical Centers
- Major Grocery Stores
- Public Schools and Colleges

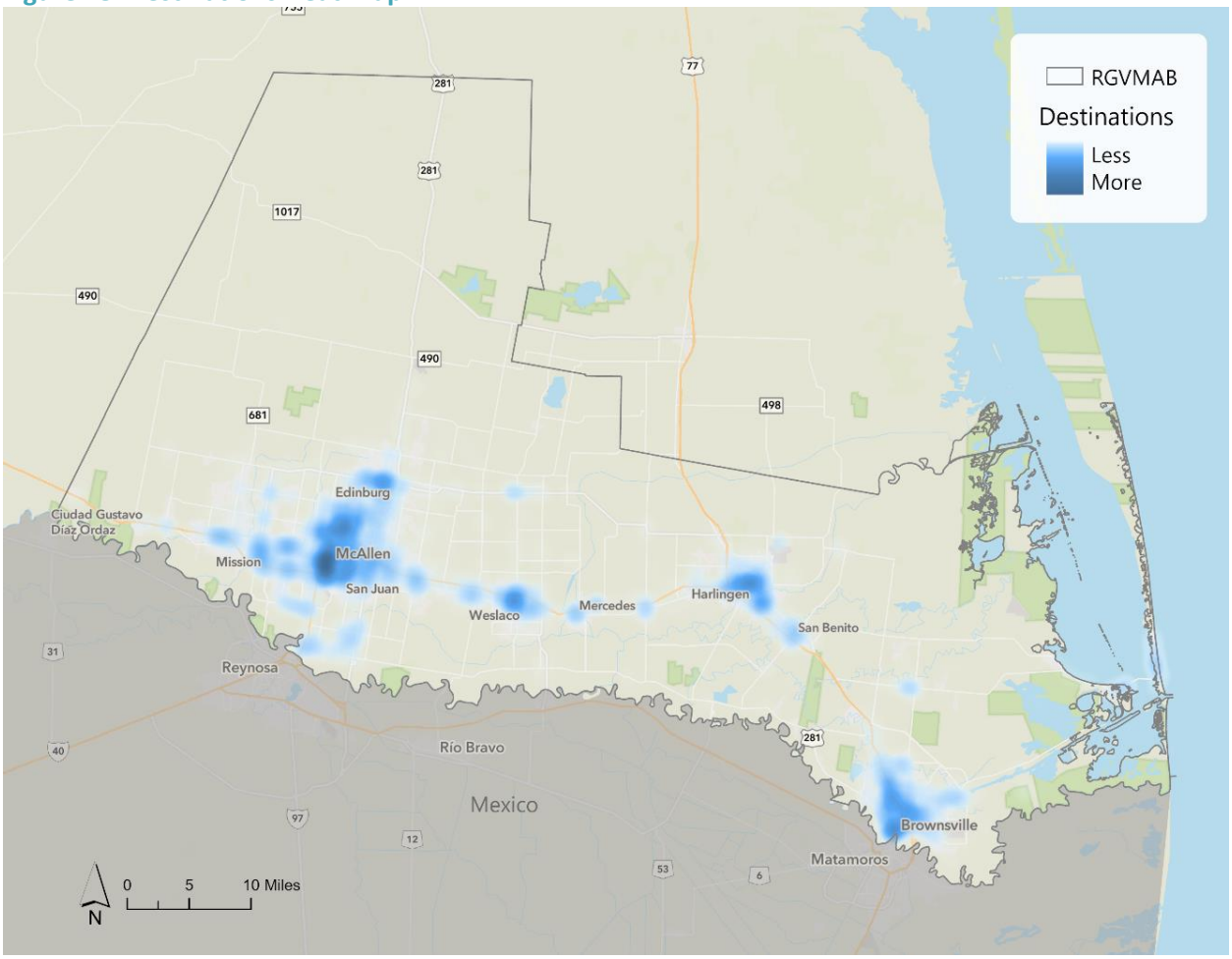
Destinations

The distribution of destinations in the region can provide insight into areas which require transit services. Many of the businesses in the region are concentrated in the major urban areas or along major corridors within the RGVMAB (Figure 28). Among the types of destinations, most are within the 0.25-mile walkshed to a regional transit route. Healthcare, financial, retail and locations for social & recreational activities are highly accessible with more than 80% of destinations in the RGVMAB within access to a transit route (Table 7).

Table 7: Regional Transit Coverage of Destinations by Category

Destination Category	RGVMAB	Within Regional Transit Walkshed	% Covered by Transit
Government	577	438	76%
Healthcare	2,074	1,754	85%
Grocery Stores	599	432	72%
Schools	643	351	55%
Financial	1,909	1,632	85%
Retail	3,599	3,013	84%
Social & Recreational	2,593	2,123	82%

Figure 28: Destinations Heat Map



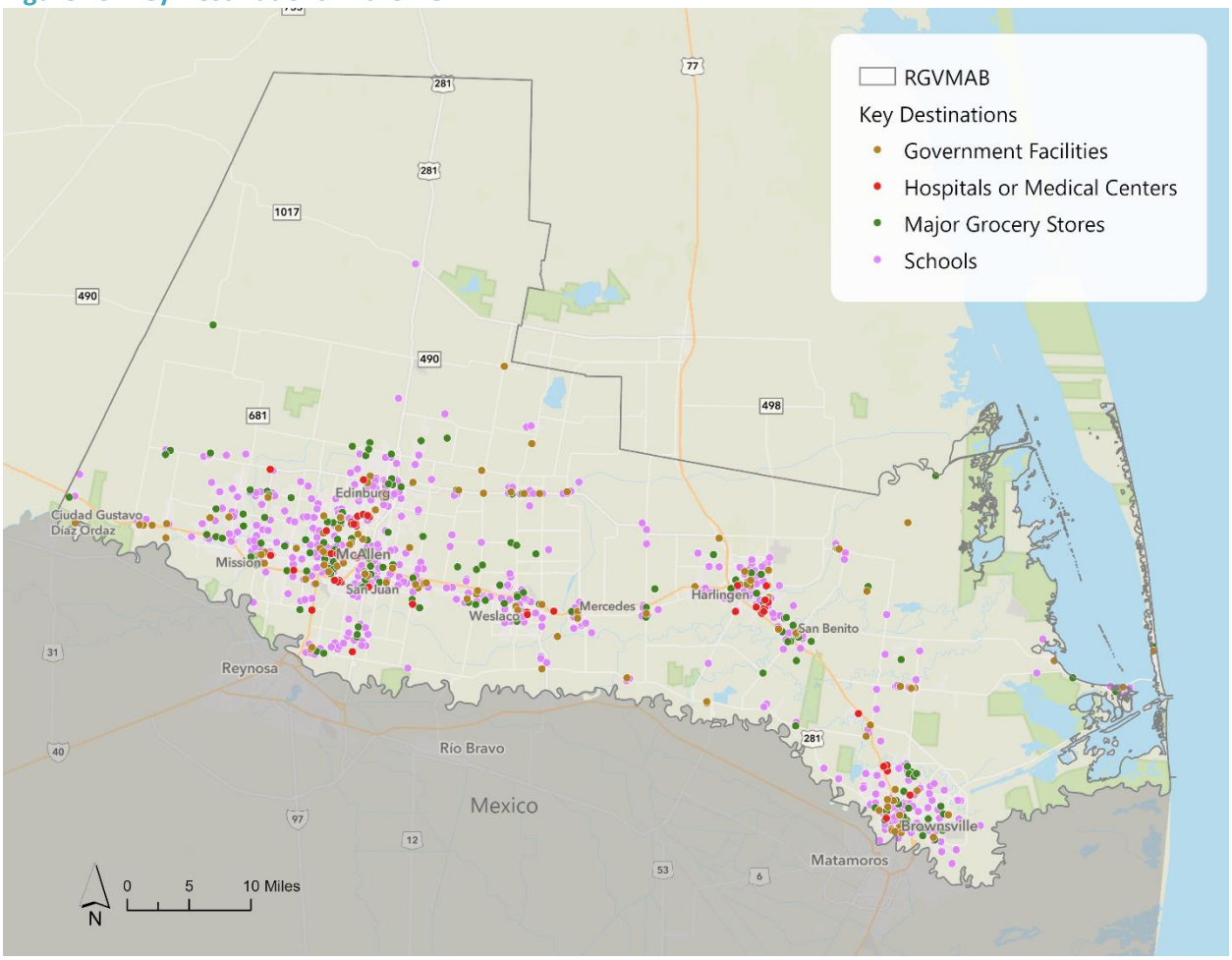
Key Destinations

Accessibility to key destinations in the region for transit is crucial to ensuring that transit users can access their daily needs (Figure 29). Out of the categories of key destinations, 96% of the region's hospital and medical centers can be accessed by a regional transit route (Table 8). If school buses are not considered in the analysis, only 51% of schools are within transit coverage; school locations are dispersed throughout the region, possibly because K-12 school districts are typically anchoring residential areas.

Table 8: Regional Transit Coverage of Key Destinations by Category

Key Destination Category	RGVMAB	Within Regional Transit Walkshed	% Covered by Transit
Government	122	97	80%
Hospitals/Medical	51	49	96%
Major Grocery Stores	169	130	77%
Schools	570	290	51%

Figure 29: Key Destinations in the RGVMAB



City Destinations

The accessibility of key destinations can also be analyzed within major RGVMAB urban areas. Comparing which destinations are located within a city or subarea and the coverage of transit can provide further insight into what is happening in different parts of the region. Figure 30 through Figure 32 present maps for the Brownsville, Harlingen, and McAllen to provide detailed spatial analysis of existing destination coverage.

Table 9 suggests major cities contain many of region's destinations. The city of Brownsville, Harlingen, McAllen, and Edinburg contain the most destinations compared to other cities, with a combined total of 18,720 businesses and 415 key destinations.

Many of the destinations within these areas have access to transit, however some destination hot spots are outside the transit walkshed and could be considered when future transit investments and recommendations take place.

Table 9: Destinations by City

Category	City of Brownsville	City of Harlingen	City of McAllen	City of Edinburg
Key Destinations	144	73	110	88
Government	19	10	17	7
Hospitals/Medical	5	12	12	11
Major Grocery Stores	28	9	22	17
Schools	92	42	59	53
All Destinations	5,275	3,008	7,162	3,275

Figure 30 displays the density of destinations as well as locations of key destinations in relation to the transit walkshed. Many of the destinations are within the regional transit walkshed as seen on the map, and 72% are located within the B Metro transit walkshed specifically. Most key destinations are accessible by transit in Brownsville, including many schools and colleges, major grocery stores and hospitals.

Figure 30: Brownsville Area Destinations

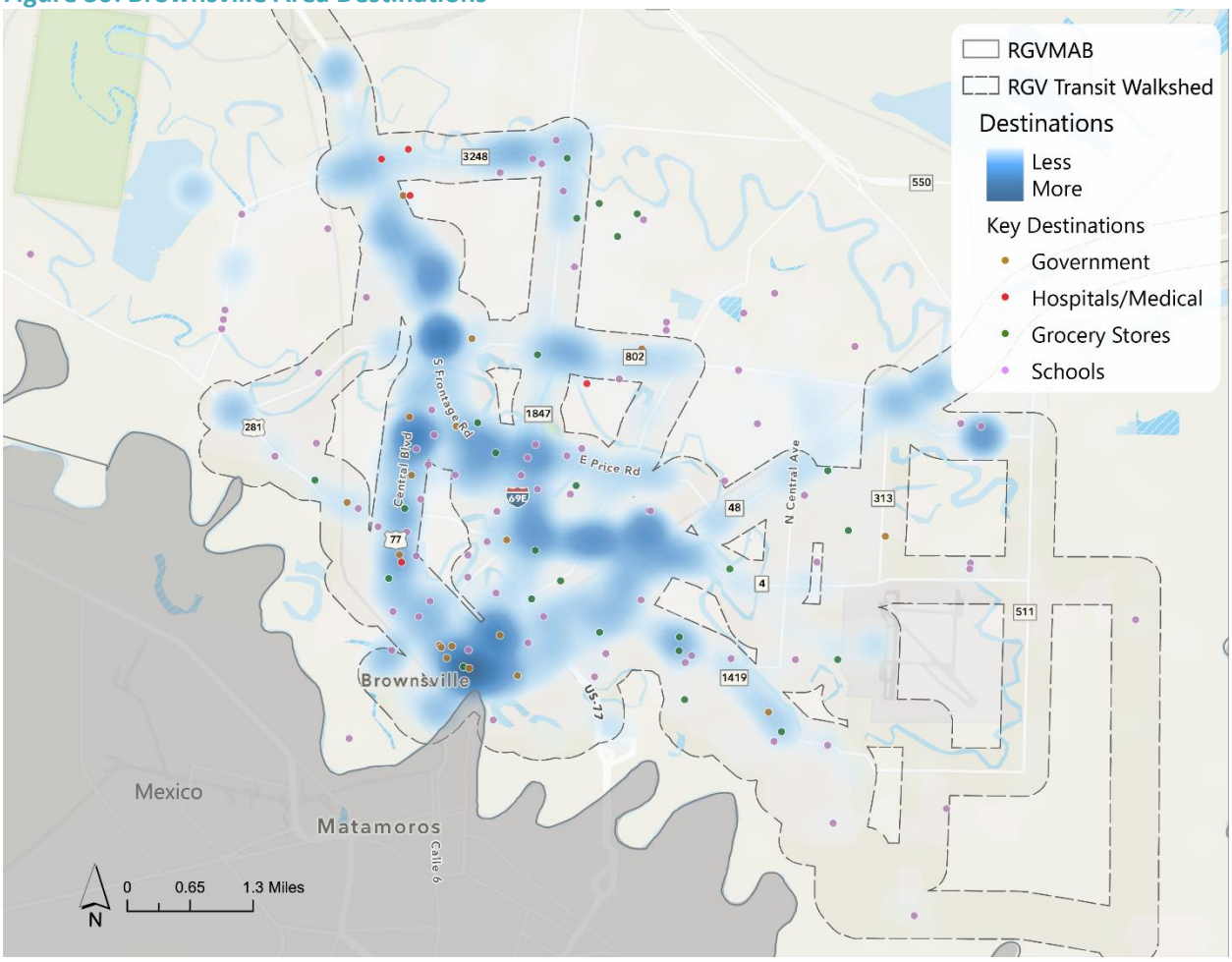


Figure 31 displays the location and prevalence of destinations and key destinations near Harlingen. Many of the destinations are concentrated near regional transit.

Figure 31: Harlingen Area Destinations

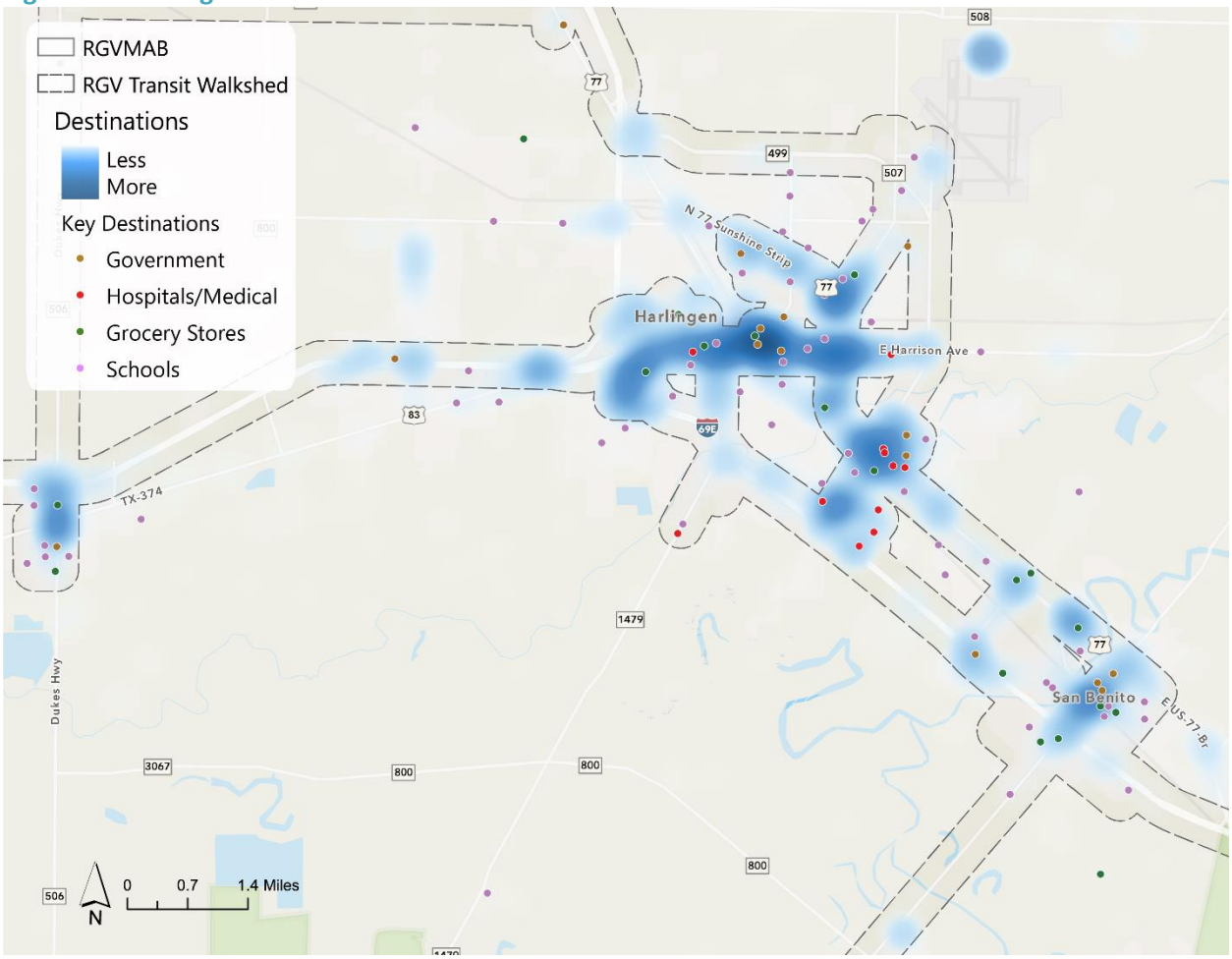
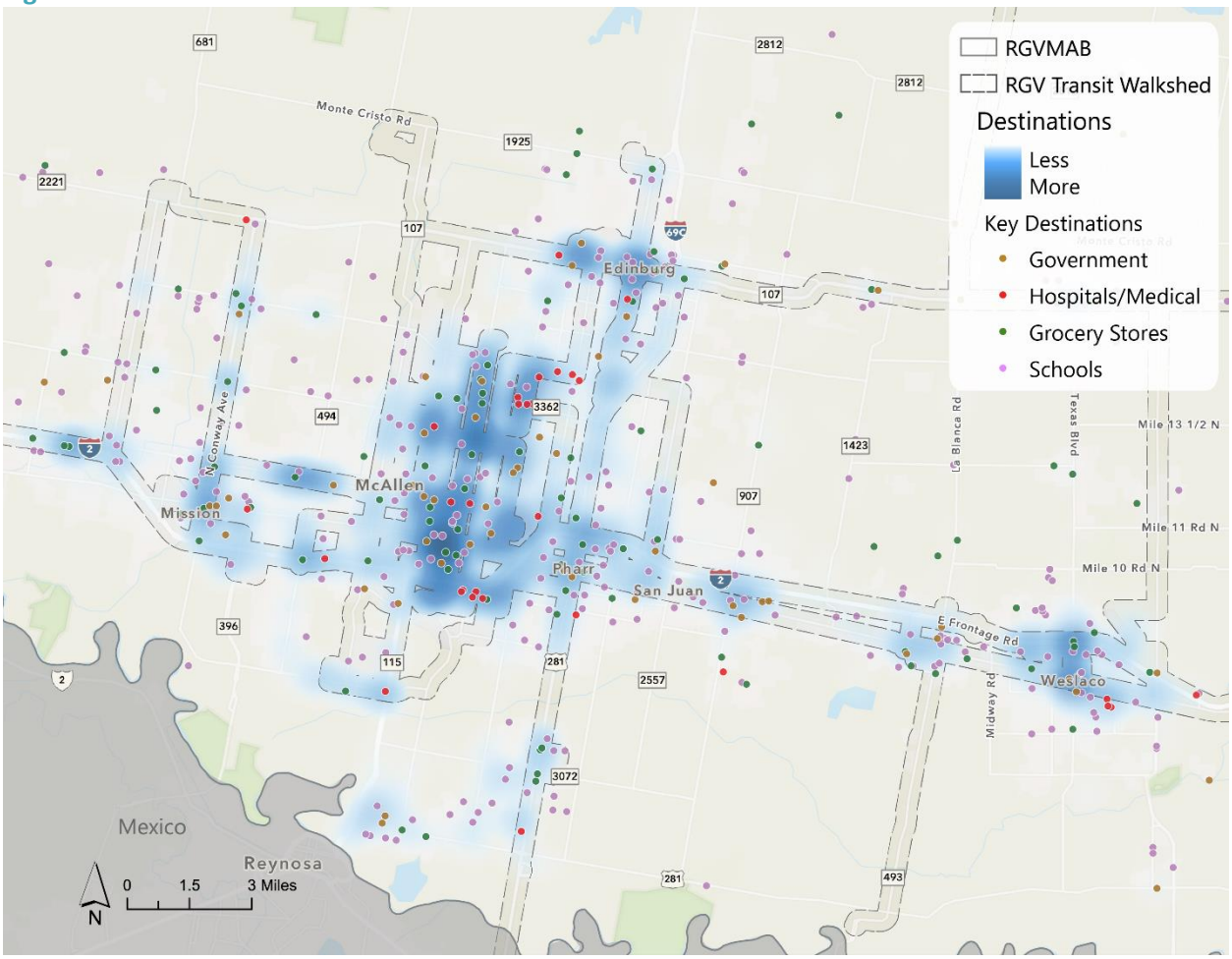


Figure 32 displays the location of destinations near McAllen, Mission, Edinburg, and Weslaco. Many destinations and key destinations are within the regional transit walkshed, and 87% of the destinations in the city of McAllen are within the Metro McAllen walkshed. Near Hidalgo near the US-Mexico border across from Reynosa there are destinations without access to transit including schools, government facilities an grocery stores.

Figure 32: McAllen Area Destinations



Transit Gaps

Locations of people and jobs which have the potential to support transit, populations in need of transit, and desirable destinations to be served by transit all indicate and contribute to the demand for transit in the region. Identifying locations that have high potential demand and inadequate transit supply can assist in the prioritization of future transit investments. For this part of the analysis, criteria from the previous sections were selected, standardized, and scored to provide a cumulative look at transit demand in relation to the transit supply. This identifies gaps where demand is not met with current transit supply. This analysis will help with route design in future stages of the accompanying Transit Development Plan (TDP).

Two criteria were identified from each of the three analyses of transit demand (potential, need, and destinations). The criteria selected from the existing conditions analysis are presented in Table 10.

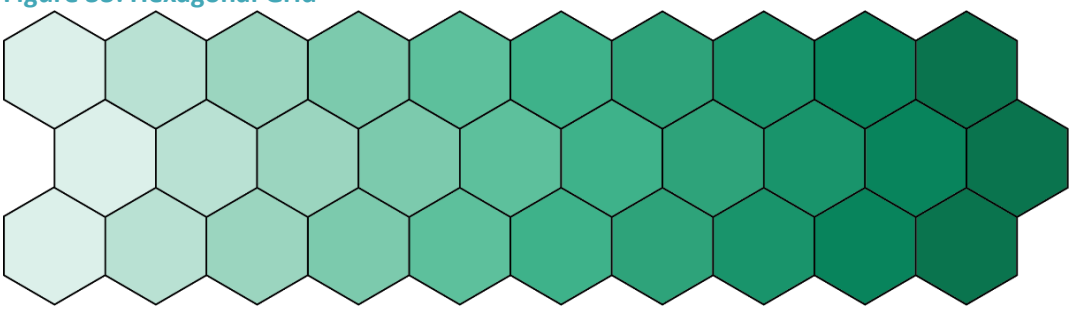
Table 10: Transit Demand Score Criteria

	Criteria	Description	Geography
Transit Potential	Propensity	Estimated number of people and employment per square mile in 2019	Traffic Analysis Zones (TAZ)
	Future Propensity	Forecasted number of people and employment per square mile in 2045	Traffic Analysis Zones (TAZ)
Transit Need	Target Transit Riders (TTR)	Percent of estimated target transit riders relative to total population	Census Block Groups
	TTR Subareas	Comparison of the relative need of the highest need locations	Census Block Groups
Transit Destinations	Destinations	Location of all destinations including schools, shopping, healthcare, banks, social and recreational, and tourism related locations.	Point Data (X and Y)
	Key Destinations	Location of "essential" locations only, or those more crucial to transit riders as described in the destinations section	Point Data (X and Y)

In order to make it easier to draw comparisons between these criteria the data was standardized. The first method for creating a standard unit of measurement was to develop one identical unit of geography as each of these datasets have different geographies (TAZ, Census BG, Point Data). One method is to use hexagon grids to aggregate and compare data. This helps reveal patterns in the data and is suitable for both shape-based and point-based data For this analysis the region was divided into hexagons that are 0.25 square miles each, (Figure 33).

Each criterion was aggregated to the hexagonal grid, using a spatial join in GIS. For shape-based data like the TAZ and Census block groups, a criterion was averaged where a hexagon overlapped more than one shape.

Figure 33: Hexagonal Grid



In order to finalize the standardization process, the project team converted the criteria to a 100-point scale. Each measure was normalized through scoring assignments based on a scale of 0 - 100 for each hexagon. Hexagons with the highest scores contain a value of 100, while the lowest contain a value of 0. For example, a hexagon with a propensity value that is higher than 90% of other propensity hexagons is assigned a value of 90 out of 100. Once each measure was scaled from 0 -100, the measures were aggregated to generated final combined scores (Figure 34). Final scores were then normalized on a scale from 0 -100. This final combined score is a transit demand score which indicates the demand for transit based on the cumulation of these measures, (Figure 35).

Figure 34: Development of Transit Demand Score

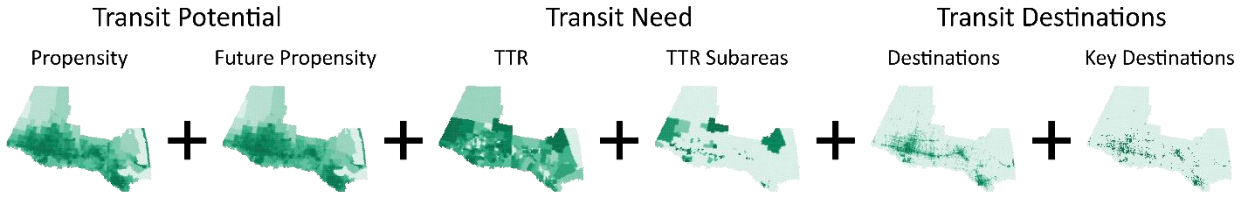
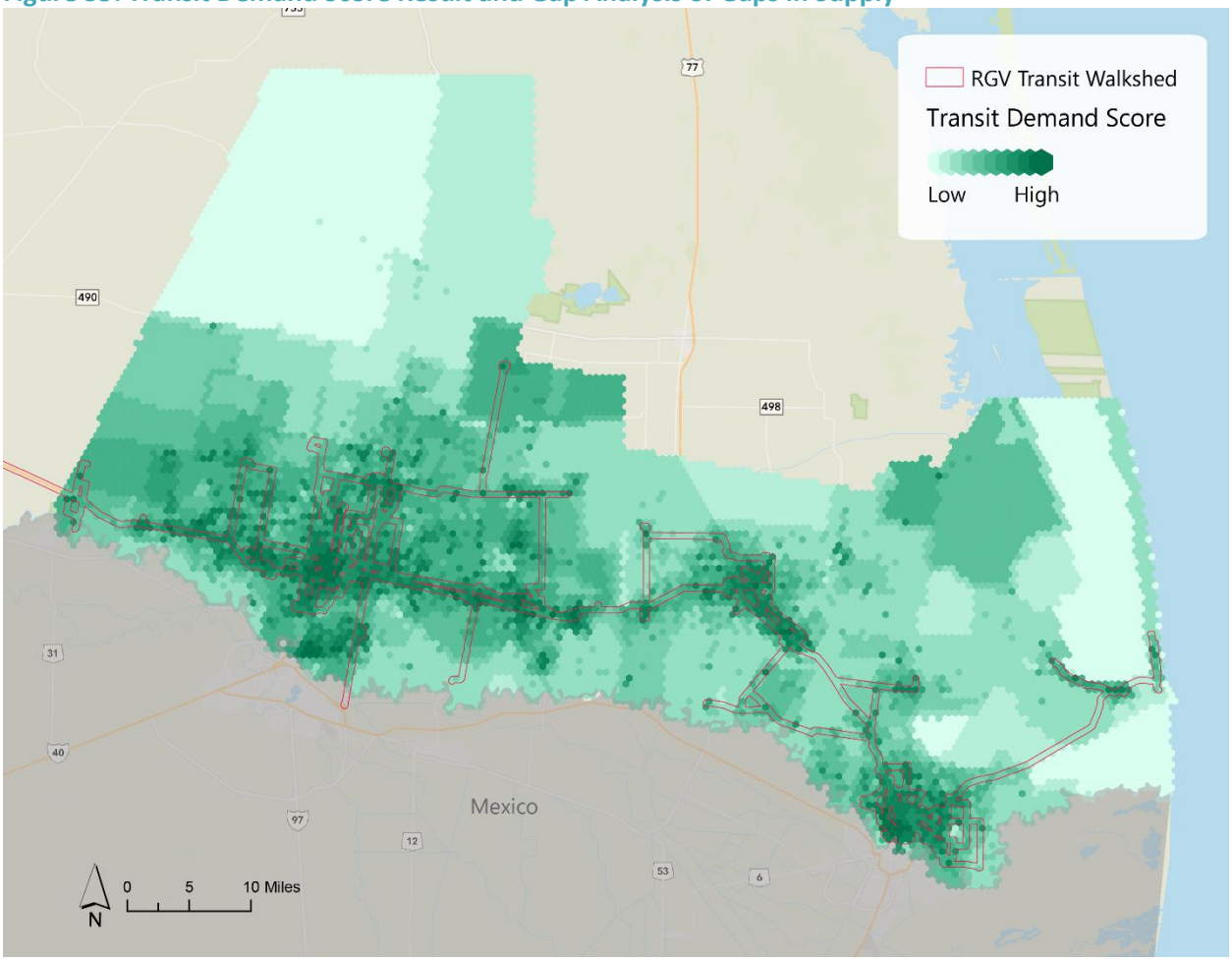


Figure 35: Transit Demand Score Result and Gap Analysis of Gaps in Supply



Conclusion

The RGVMPO contains an intricate and interrelated regional transit system comprised of several different service providers. This analysis of existing conditions of transit included a comprehensive review of where transit demand exists and potential gaps in transit services. While extremely technical in nature this analysis is exhaustive and inclusive of each community in the subarea and will ensure all recommendations regarding transit investment are data driven.

This analysis provides and objective resource that can be used to guide future recommendations and investments in transit for the RGVMPO and planning partners.

The following summarizes the key findings from the transit existing condition assessment:

- There are five major regional public transportation providers: B Metro, Island Metro, Metro McAllen, UTRGV Transit, and Valley Metro.
- Approximately, 478,600 people or 38% of the population in the RGVMAB are within a 0.25-mile walkshed to a regional transit route. Roughly 60%, or 229,600 jobs can be found within this walkshed.
- Areas with higher transit propensity (10,000 or more people and jobs per square mile) are located near downtowns, higher density neighborhoods, medical centers, and shopping centers in the region. These areas have land uses that can support transit.
- Target transit riders or people with a need for transit are spread out across the region. However, when the subareas of highest need are compared, many of the highest ranked locations are near regional transit. A low number of subareas do not have current access to transit and their mobility options should be considered in the future recommendations.
- Regarding access to destinations, much of the destinations are accessible by transit. Healthcare facilities display the best accessibility to transit. Schools are more dispersed in the region and have less access to transit than other categories.
- Indicators for transit potential, need, and destinations were combined to represent transit demand for the region to analyze gaps in service. Much of the areas with the highest demand are currently served by transit, however there are some areas that should be considered in future transit investments including:
    - Hidalgo near the US-Mexico border across from Reynosa and the border crossing south of McAllen
    - Northwest of Edinburg
    - Near Weslaco and Mercedes east of McAllen
    - Northwest of Harlingen near Primera
    - South of I-2 west of Harlingen
    - Northeast Brownsville near Cameron Park

Overall, RGVMAB transit providers substantially cover key locations and/or populations representative of transit demand. As the region continues to grow, coordination between agencies and the RGVMPO will be crucial in ensuring that needs of the region are being met for the many types of transit users. Riders are not overly concerned with which transit agency is providing the services, only that they are able to get from point a to point b in a safe and timely manner. It is important that transit service is frequent, reliable, and easy to ride. Coordinated fare structure, seamless transit user communication, and service delivery across transit providers in the region will improve connectivity, maximize access and minimize travel time. Avoiding duplication of services provided by agencies can help in making more funding available to adding frequency or new service coverage in the future. The recommendations for transit will be explored further in the RGV Transit Development Plan (TDP) which will build upon this regional analysis.