RGV MPO

Transit Development Plan

December 2020

This document was prepared in cooperation with:

The Rio Grande Valley Metropolitan Planning Organization

and

The Texas Department of Transportation

The document was reviewed and approved by:

The Rio Grande Valley Metropolitan Planning Organization – Transportation Policy Board

On 12/10/2020

Rio Grande Valley Planning Organization (RGVMPO)

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Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d-1) and 49 CRF part 21; The Older Americans Act, as amended (42 U.S.C. 6101), prohibiting discrimination on the bases of age in programs or activities receiving Federal financial assistance; and Section 324 of title 23 U.S.C. regarding the prohibition of discrimination based on gender;

The RGVMPO is committed throughout the development of its plans and programs to ensure that no person on the grounds of age, gender, race color or national origin is excluded from participation in, denied the benefits of, or subjected to discrimination under any program receiving federal financial assistance. No plans, programs or policies developed or implemented by the RGVMPO will have a disproportionately high adverse human health or environmental effect on minority and low-income populations. The RGVMPO plans continue to work on improving the accessibility of employment to the identified protected populations. Further, many of the current MPO public meetings are held in minority and low-income communities in the region and are located near accessible public transit facilities. Funding is allocated as part of the Unified Planning Work Program for a Title VI Plan to maintain an analytical approach that produces procedures that meet Title VI requirements by ensuring that federally-funded transportation projects adequately consider effects on low-income and minority segments of the population.

In order to be processed, signed original complaint forms must be mailed or hand delivered to:

Rio Grande Valley Metropolitan Planning Organization ATTN: Title VI Coordinator 510 South Pleasantview Drive Weslaco, Texas 78596

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The RGVMPO follows the TXDOT DBE Plan. Funding is allocated as part of the Unified Planning Work Program to maintain an analytical approach that produces procedures that meet Environmental Justice requirements by ensuring that federally-funded transportation projects adequately consider effects on low-income and minority segments of the population.

Americans with Disabilities Act of 1990: The provision of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) and 49 CFR parts 27, 37, and 38; and Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) and 49 CFR part 27 regarding discrimination against individuals with disabilities.

It is the policy of the RGVMPO to ensure that all agency programs and services are accessible to people with disabilities and are in compliance with the applicable regulations as a condition of receiving Federal financial assistance from the Department of Transportation. The RGVMPO will make reasonable accommodations to a qualified individual with a disability who attends on-site meetings and meeting facilities meet this requirement. Every effort is made to ensure that meeting facilities off-site are ADA accessible. A notice is published in advance of all MPO public meetings that reasonable accommodations will be provided for meeting locations on and off-site with a phone number and contact persons listed to provide assistance if needed. In addition, the RGVMPO staff is actively involved in various ADA-related initiatives which are being carried out as part of the Unified Planning Work Program including Elderly and Disabled Planning, the Job Access/Reverse Commute Program, and the review of ADA compliance documents developed by the region's transit and paratransit agencies, all of which focus on ensuring that transportation program and services across the region are accessible to those citizens with disabilities.

Restrictions on influencing certain federal activities: CFR 29, Part 20;

It is the policy of the RGVMPO that no state or federal funds received by the agencies shall be paid to any person for the purpose of influencing the award of a federal contract, grant, or loan or the entering into of a cooperative agreement. NO state or federal funds received by the agencies shall be used directly or indirectly to influence any member of Congress, any member of the State Legislature, or any local elected official to favor or oppose the adoption of any prosed legislation pending before any federal, state, or local legislative body.

Credit/Disclaimer Statement

"The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation."

Questions or other interest regarding the plan may be directed to:

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1 TRANSIT EXISTING CONDITIONS ANALYSIS

The newly formed RGVMPO is working collaboratively with regional transit providers to develop a Transit Development Plan (TDP) as a major component of the RGVMPO 2045 MTP. This section will help tell the transit story of the RGV community. The development and delivery of tools and strategies will empower the MPO and the regional transit providers to evaluate, coordinate, and deliver transit on behalf of the community. This will build on the recent and successful coordination efforts among all the project partners, such as the formation of the Lower Rio Grande Valley Regional Transit Advisory Panel (RTAP).

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INTRODUCTION

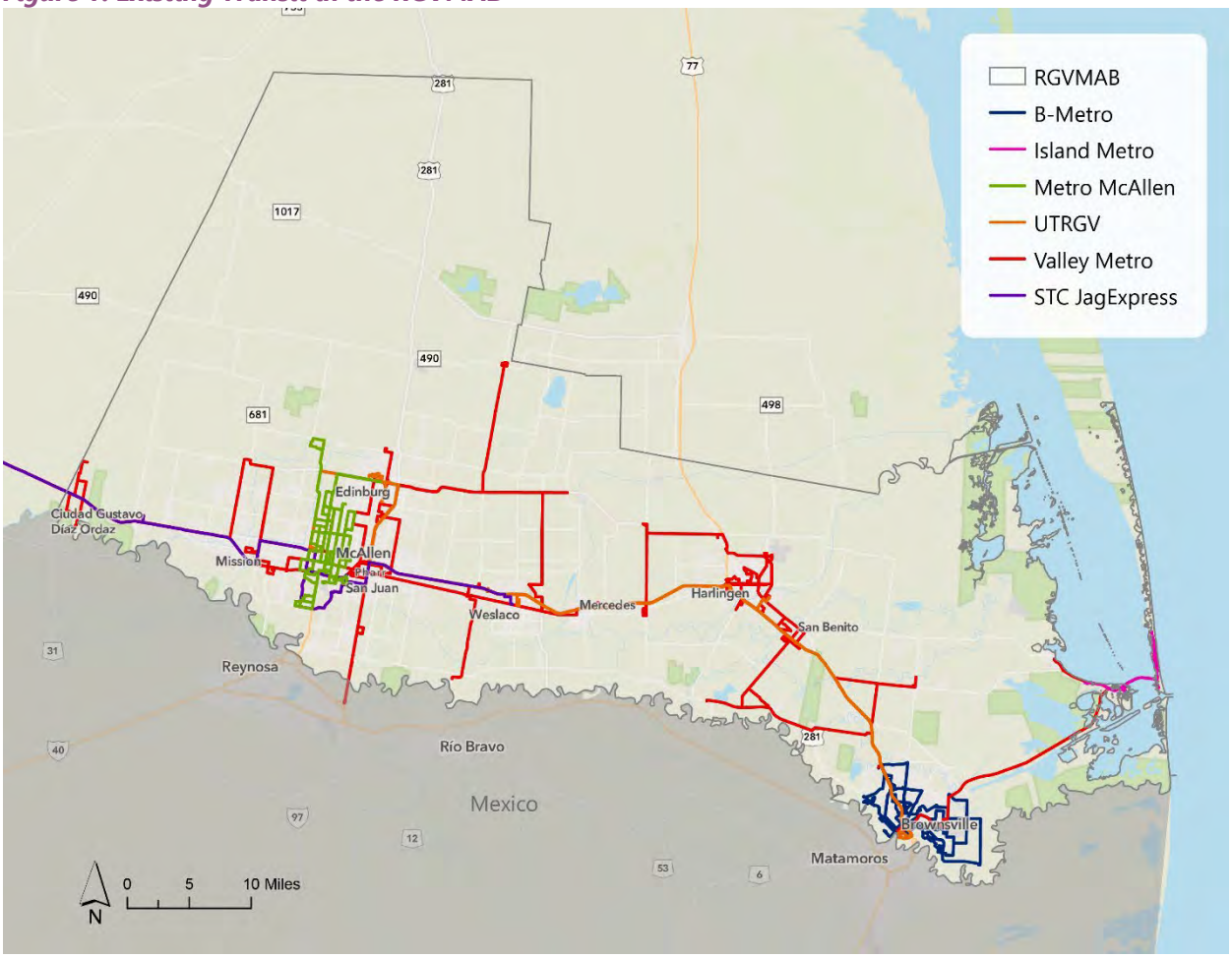
As a major component of the RGVMPO 2045 MTP, the newly formed MPO is working collaboratively with regional transit providers to develop a Transit Development Plan (TDP). This plan will help tell the transit story of the RGV community. The development and delivery of tools and strategies will empower the MPO and the regional transit providers to evaluate, coordinate, and deliver transit on behalf of the community. This will build on the recent and successful coordination efforts among all the project partners, such as the formation of the Lower Rio Grande Valley Regional Transit Advisory Panel (RTAP).

The plan will provide the following key components:

- Operational Analysis
- Market Analysis
- Origins and Destinations/Ridership Analysis
- Regional Service Standards
- Route and Service Recommendations
- Implementation Plan

The region for analysis is the Rio Grande Valley Metropolitan Area Boundary (RGVMAB), which consists of Cameron and Hidalgo Counties. The RGVMAB contains an intricate, interrelated transit system comprised of several different service providers and a wide variety of transit service options, shown in Figure 1. To identify system strengths and weaknesses, it is critical to create an inventory of current transit providers' services in the region. This level of understanding helps inform the processes and methodologies used to develop locally sensitive solutions that will address existing gaps and duplications in service. While the TDP analysis only considers data within the RGVMAB, project partners will be able to deploy these tools, solutions, and strategies wherever they provide service, even where this extends beyond the study area.

Figure 1: Existing Transit in the RGVMAB



OPERATIONAL ANALYSIS

The first step in developing the TDP is to establish a baseline and understand the state of transit as it operates today. Understanding the existing system will help establish thresholds used for the development of the regional service. The operational analysis also reveals what aspects of the existing transit system work well and identifies opportunities for improvements, which will in turn inform the development of recommendations such as route alignment modifications and service level adjustments. This process helps pinpoint the strengths and eliminate the weaknesses of the system in a manner that improves transit for existing passengers and positions it to attract new passengers.

Provider Profiles

The provider profiles below offer an introduction to the detailed operations for Valley Metro, Brownsville Metro, Metro McAllen, Island Metro, and Valley Metro's FTA-funded partnerships with University of Texas Rio Grande Valley (UTRGV) and South Texas College (STC).

VALLEY METRO

SERVICE PROVIDER

The Lower Rio Grande Valley Development Council provides public transportation in urbanized and non-urbanized areas of the lower Rio Grande Valley through its transit department, Valley Metro. Valley Metro operates service in Hidalgo County, Cameron County, Willacy County, Starr County, and Zapata County.

ROUTES

Valley Metro funds and/or operates 36 routes and demand response services:

20 Valley Metro Routes
1 Metro Express Route
4 UTRGV Vaquero Express Routes
5 UTRGV VOLT Routes
1 UTRGV EVABL Route
3 South Texas College Routes
2 Demand Response Areas

PEAK VEHICLE

30 vehicles deployed at peak service times

SERVICE TYPES

Fixed route local bus, commuter bus, flexible transit service, demand response

OPERATING HOURS

Schedules vary by route

Monday - Saturday
6:00 am - 9:00 pm

Sunday
8:00 am - 6:00 pm

MAJOR DESTINATIONS

McAllen Central Station
UT Rio Grande Valley (Edinburg)
South Texas College Pecan Campus
UTRGV Academic Health Center
Valley International Airport
La Plaza Bownsville
UT Rio Grande Valley (Brownsville)
Brownsville SPI International Airport
Port Isabel

ANNUAL DATA

6,384,393 Passenger Miles
709,226 Unlinked Trips
2,195,682 Vehicle Revenue Miles
101,291 Vehicle Revenue Hours
0.3 Unlinked Trips/Revenue Mile
7.0 Unlinked Trips/Revenue Hour

OPERATING EXPENSES

$3.16 per Vehicle Revenue Mile
$68.41 per Vehicle Revenue Hour
$1.09 per Passenger Mile
$9.77 per Unlinked Passenger Trip

Funding Sources

	OPERATING	CAPITAL
Fares	$4,145	$5,912
Local	$1,741,959	$448,608
State	$1,255,988	$0
Federal	$3,946,253	$3,334,603
Total	$6,948,345	$3,789,123

VALLEY METRO

SERVICE PROVIDER

Valley Metro

LEAVING FOR WORK

The most frequent times people leave for work are between:

1st 7:00am-7:30am

2nd 7:30am-8:00am

3rd 8:00am-8:30am

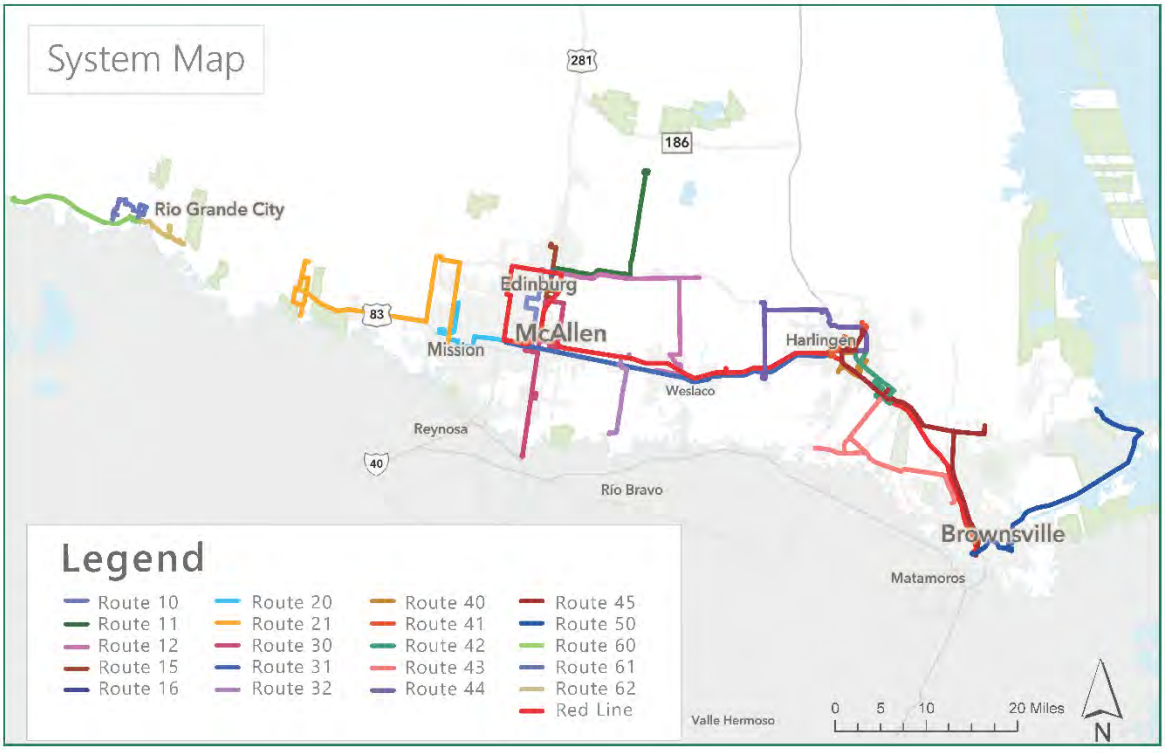
*within Cameron and Hidalgo Counties

TRAVEL TIME

22.5% travel >30 minutes

3.6% travel >60 minutes

*of approximately 450,000 people surveyed within Cameron and Hidalgo Counties



VALLEY METRO

SERVICE PROVIDER

Mission
Foy's Supermarket
Mission Station

McAllen/San Juan
South Texas College Pecan Campus
McAllen Central Station
STC Nursing & Allied Health Center
San Juan Station

Edinburg
UT Rio Grande Valley Visitor's Center
UTRGV Visual Arts Building
Hidalgo County Courthouse
Edinburg Transit Terminal

Donna/Weslaco
Donna City Square Park
Donna Park & Ride
Weslaco Transit Center

Harlingen/San Benito
Harlingen Transit Terminal & Greyhound Station
UTRGV Regional Academic Health Center
San Benito City Hall

Brownsville
La Plaza Terminal

South Padre Island
Port Isabel
Laguna Heights

Raymondville
Raymondville Park & Ride

La Feria
La Feria City Hall

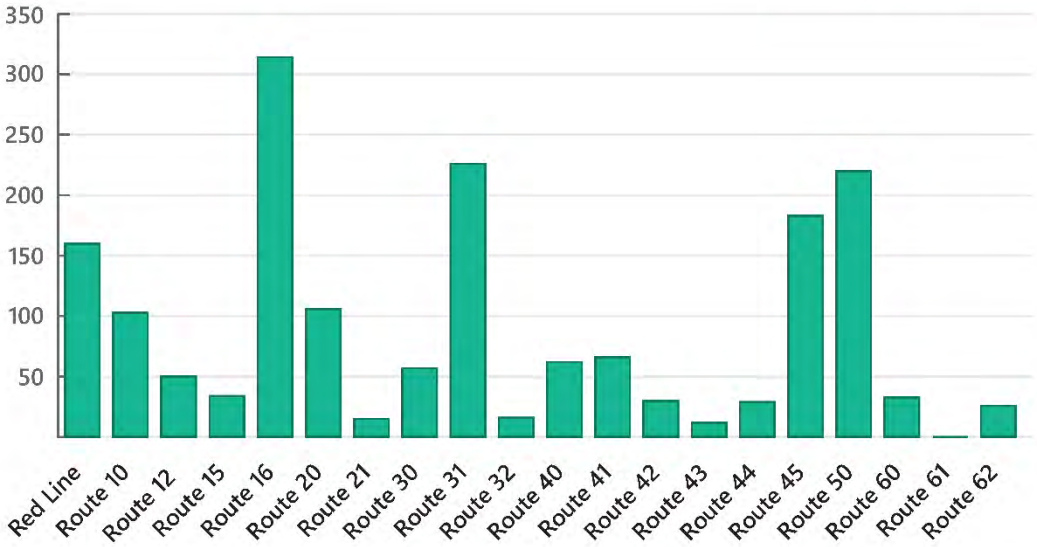
VALLEY METRO

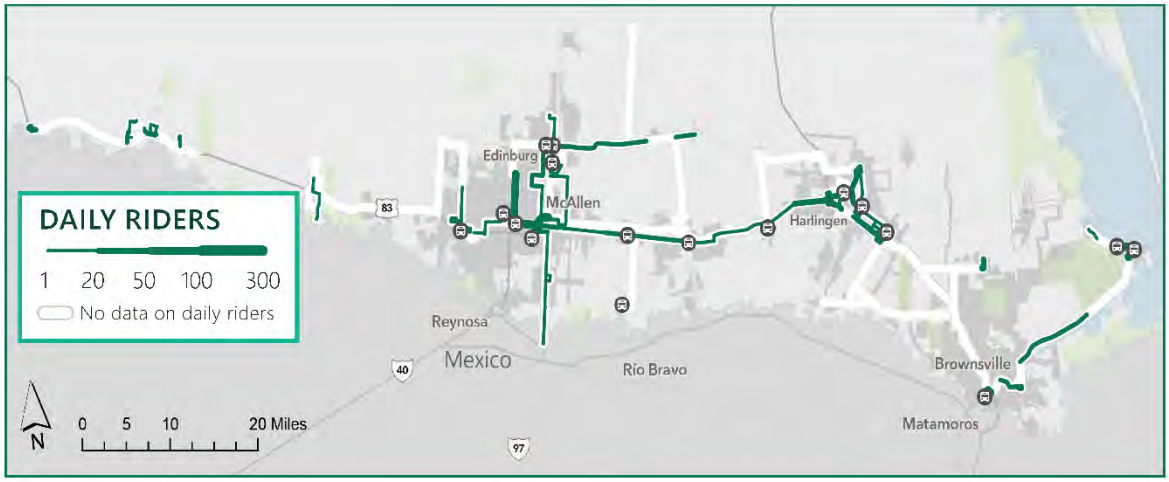
SERVICE PROVIDER

Valley Metro

DAILY RIDERSHIP

1,759 Avg Daily Riders



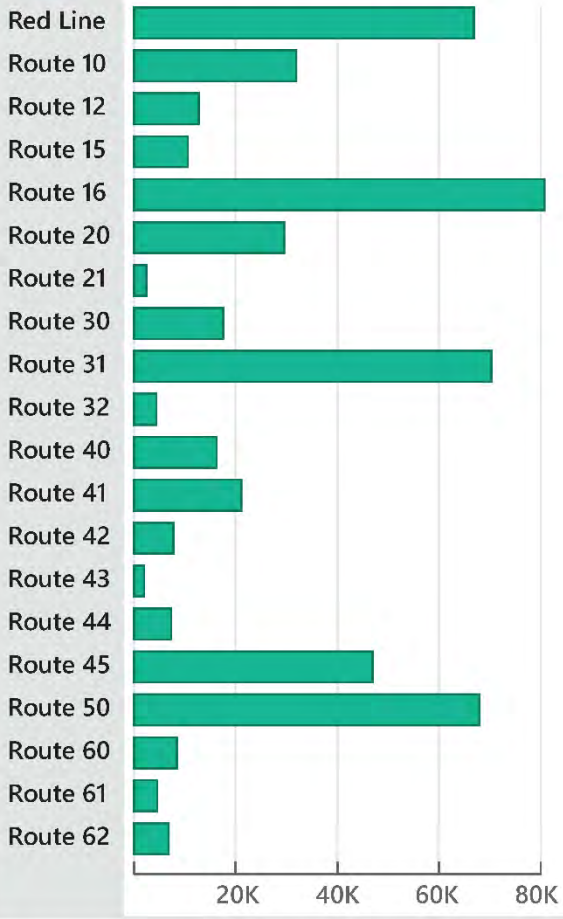


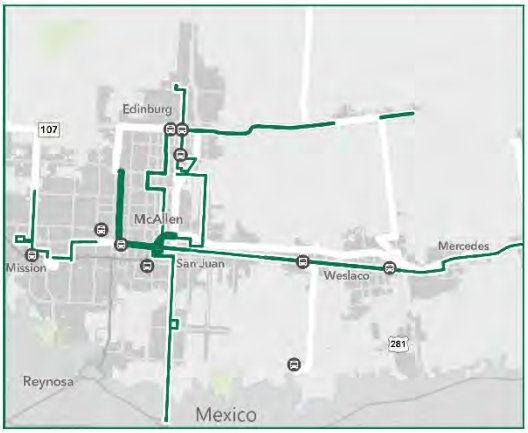
VALLEY METRO

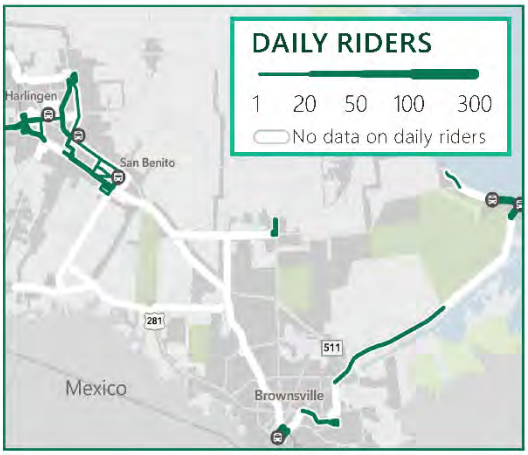
SERVICE PROVIDER

Valley Metro

ANNUAL RIDERSHIP





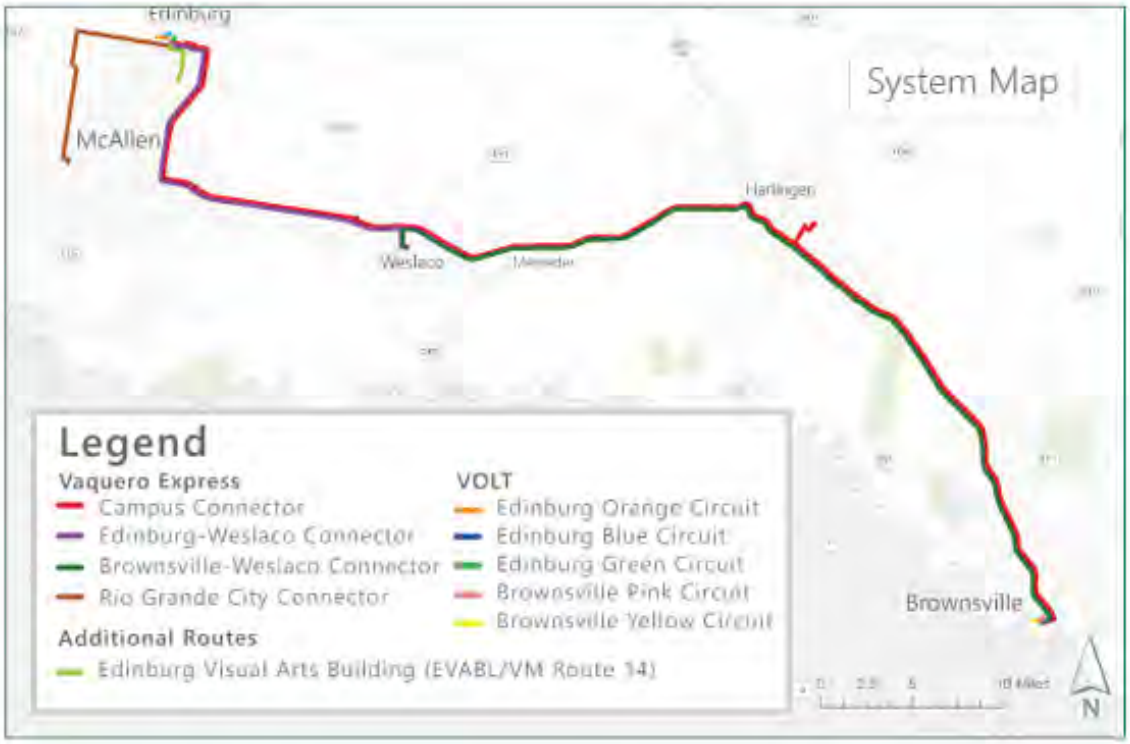


515,900 Annual Riders

UT RIO GRANDE VALLEY

SERVICE PROVIDER

The University of Texas Rio Grande Valley provides transit service to students, faculty, staff, and the general public through a partnership with Valley Metro. UTRGV receives FTA funding as a subrecipient of Valley Metro and operates a route system that links campuses across the Valley under the Vaquero Express brand. Additional intracampus transit is provided in Brownsville and Edinburg through electric transport carts running flexible routes under the VOLT brand. All routes operated by the University are free and open to the general public.

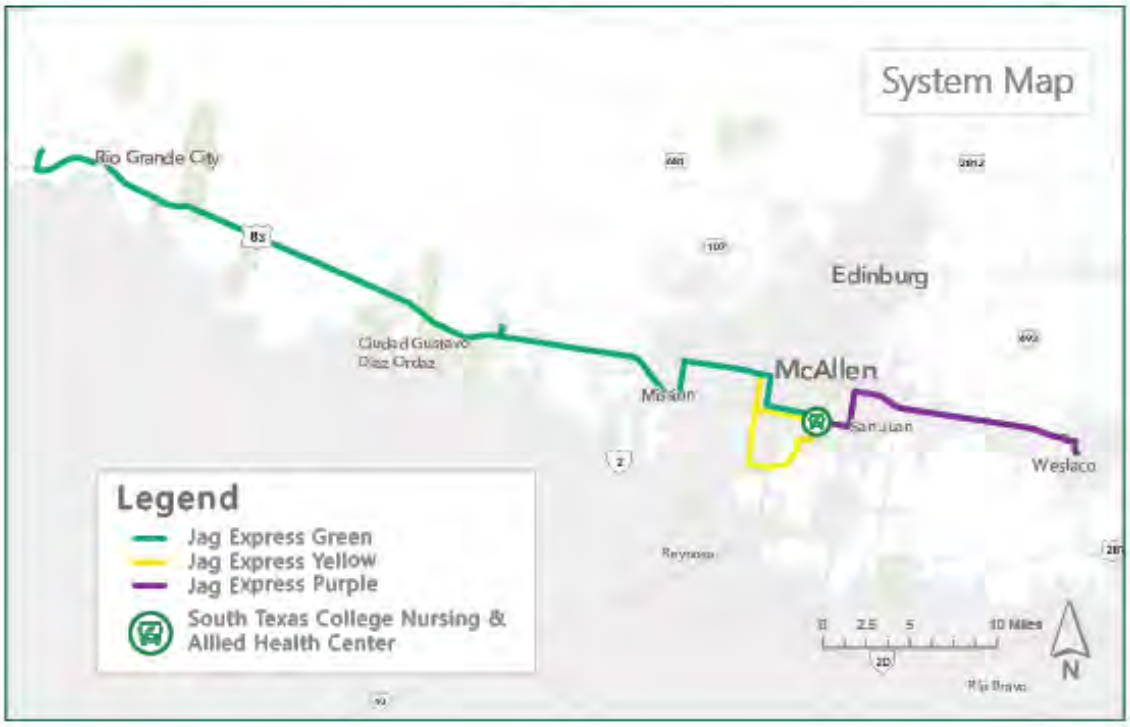


JAGEXPRESS

SERVICE PROVIDER

SOUTH TEXAS COLLEGE

South Texas College partners with Valley Metro to provide service to campuses. There are three routes that serve South Texas College which are branded as the JagExpress. In addition to serving the South Texas College campuses, the Jag Express connects nearby communities and resources.



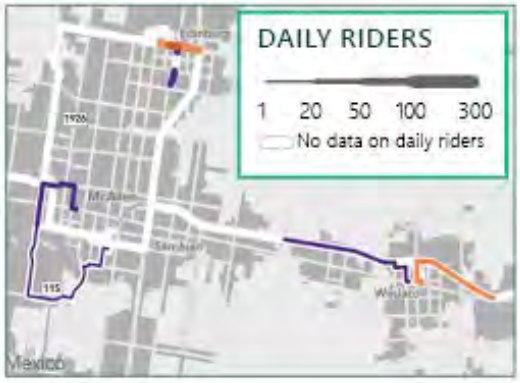
UTRGV AND STC

SERVICE PROVIDERS

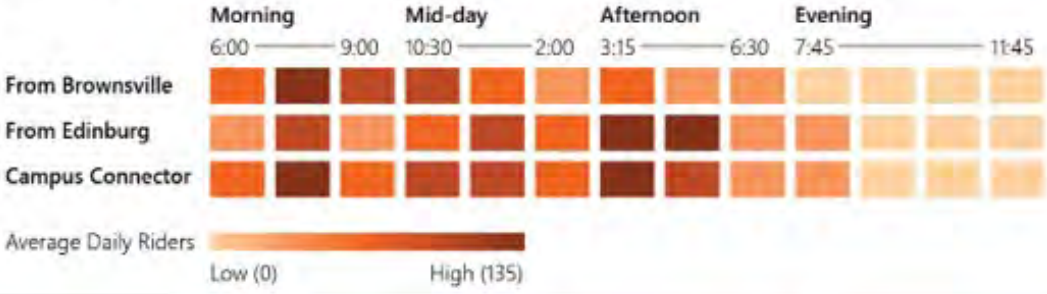
RIDERSHIP

UT Rio Grande Valley carries an average of **1,457** daily riders and **298,916** riders annually, **97%** of which are students.

South Texas College carries an average of **59** daily riders and **14,421** riders on the Jag Express annually.



UTRGV CAMPUS CONNECTOR TRIP RIDERSHIP



B METRO

SERVICE PROVIDER

The City of Brownsville offers public transit through its provider, B Metro, operating within Cameron County. B Metro provides service within the Brownsville City limits, connecting at the primary multimodal terminal downtown called La Plaza, and a smaller secondary hub called the Northside Transit Station.

ROUTES

B Metro currently operates 13 routes in addition to a paratransit demand response service.

Route 1 Westend
Route 2 Jefferson/Central
Route 3 Rockwell
Route 5 Alton Gloor
Route 6/6A Southmost
Route 7 Billy Mitchell
Route 8 Lemon
Route 9 Austin
Route 11 Old Port Isabel
Route 13 Pablo Kisel
Route 14 Scorpion Connector
Route 20 North
Route 30 Southeast

MAJOR DESTINATIONS

Brownsville SPI International Airport
Olivieira Arnulfo Memorial Library
Sunrise Mall
Gateway International Bridge
Gladys Porter Zoo
Valley Baptist Medical Center
Valley Regional Medical Center
Valley Grand Manor Nursing Home
Wal-Mart Supercenter

TRAVEL TIME

22.0% travel >30 minutes

3.1% travel >60 minutes

*of approximately 85,300 people surveyed within the City of Brownsville

LEAVING FOR WORK

The most frequent times people leave for work are between:

1st 7:30am-8:00am
2nd 7:00am-7:30am
3rd 8:00am-8:30am

*within the City of Brownsville

B METRO

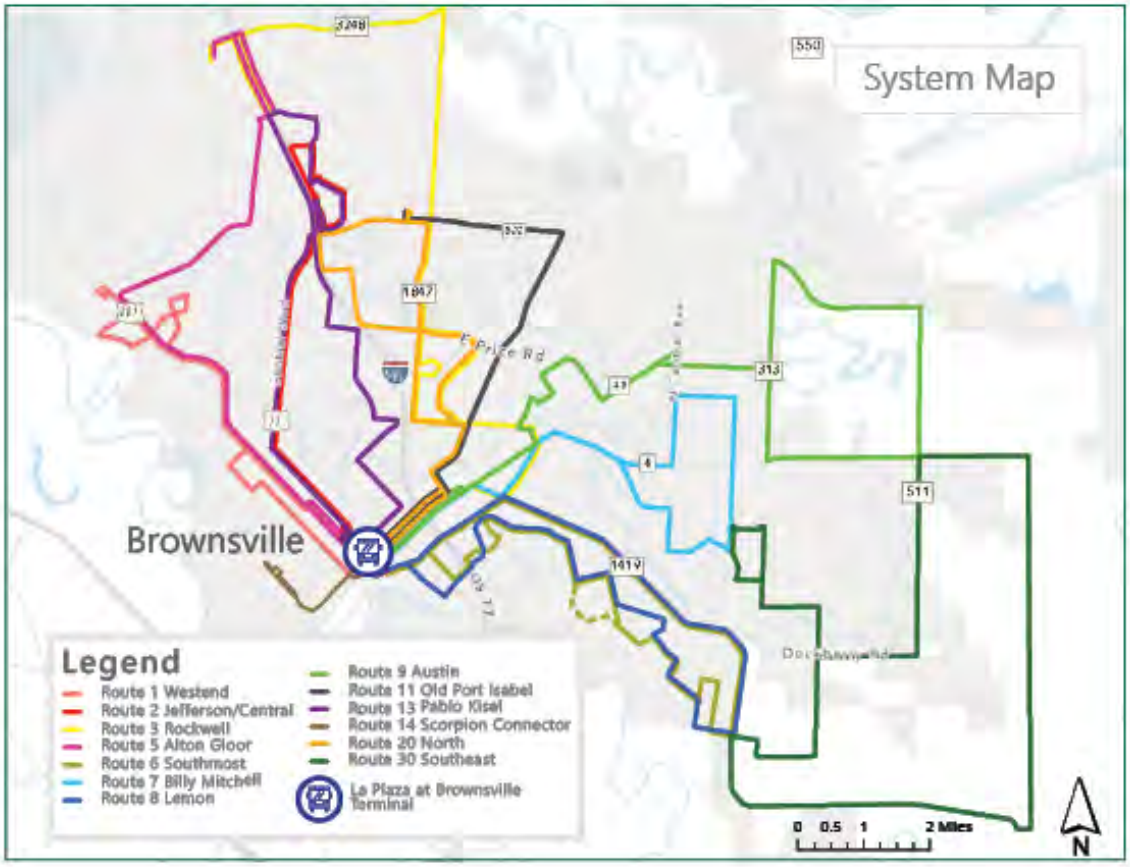
SERVICE PROVIDER

OPERATING HOURS
Schedules vary by route
Monday - Saturday
6:00 am - 8:15 pm

SERVICE TYPES
Fixed route local bus,
demand response paratransit

CONNECTIONS
Valley Metro
43 San Benito - Brownsville
45 Cameron Career Connection
Blue Line/Route 50 Brownsville-Port Isabel
Metro Express Red Line

PEAK VEHICLE
17 vehicles deployed at peak times



B METRO

SERVICE PROVIDER

ANNUAL DATA

12,504,691 Annual Passenger Miles
1,582,769 Unlinked Trips

1,543,303 Vehicle Revenue Miles
93,844 Vehicle Revenue Hours

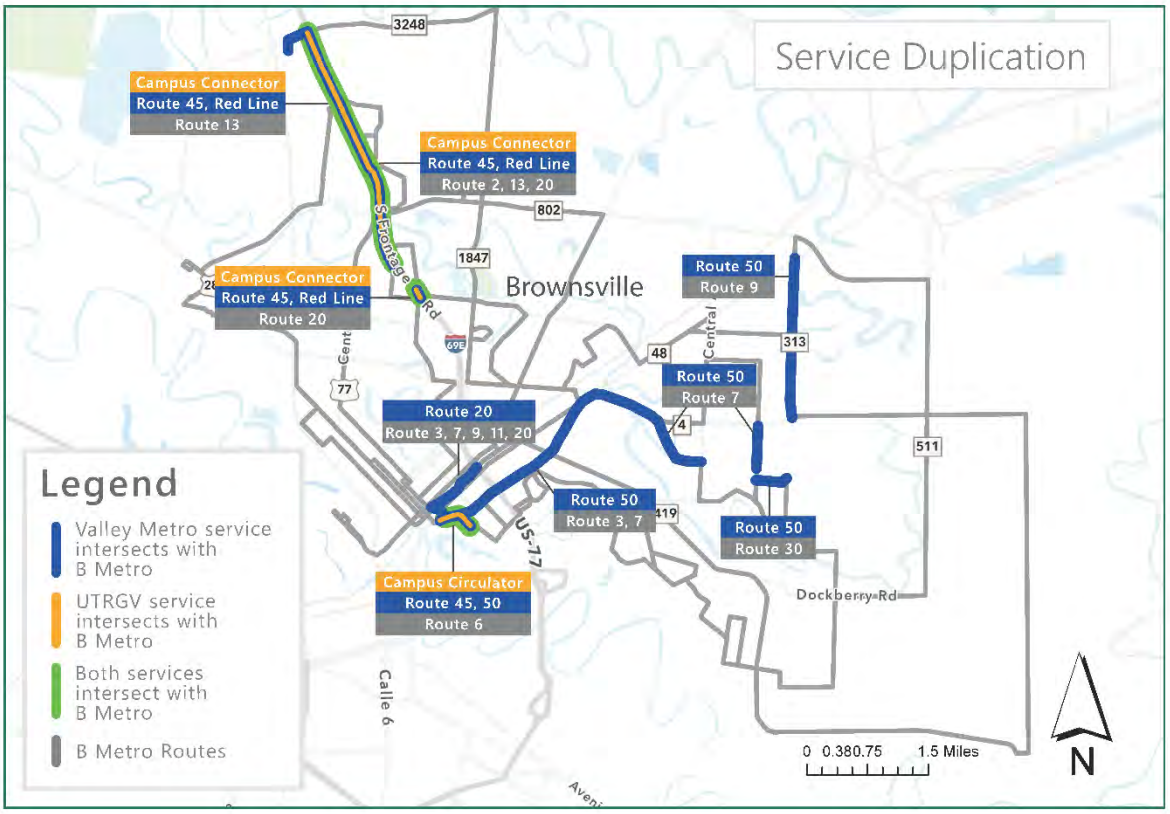
1.0 Unlinked Trips/Revenue Mile
16.9 Unlinked Trips/Revenue Hour

EXPENSES

$5.12 per Vehicle Revenue Mile
$84.23 per Vehicle Revenue Hour
$0.63 per Passenger Mile
$4.99 per Unlinked Passenger Trip

Funding Sources

	OPERATING	CAPITAL
Fares	$2,062,024	$178,113
Local	$2,190,626	$82,446
State	$563,947	$0
Federal	$3,087,997	$9,597
Total	$7,904,594	$270,156

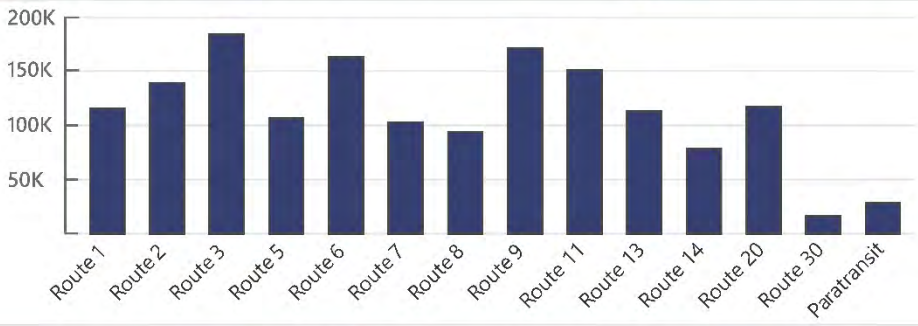


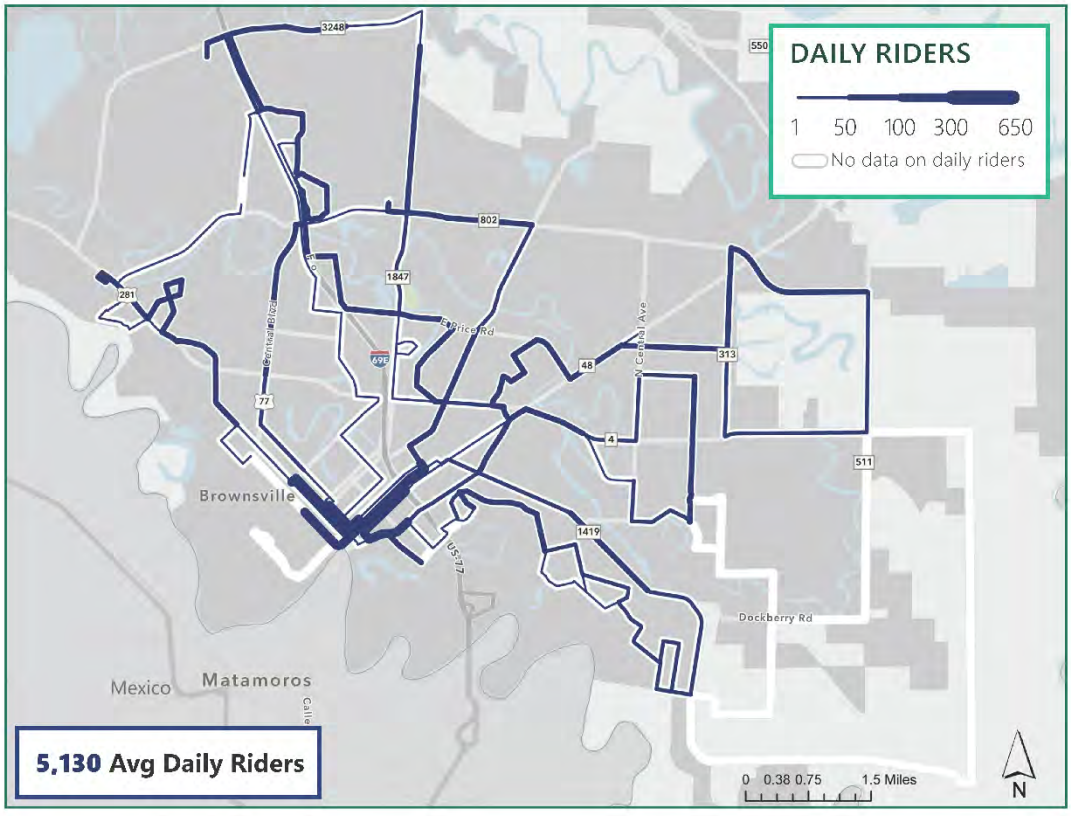
B METRO

SERVICE PROVIDER

ANNUAL RIDERSHIP

1,578,247 Annual Riders





5,130 Avg Daily Riders

METRO MCALLEN

SERVICE PROVIDER

SUBRECIPIENT OF LRGVDC
VALLEY METRO

metro

The City of McAllen's Transit Department was created in 2001 in order to manage and maintain Central Station, the City's International Transit Terminal Facility. Metro McAllen currently operates nine (9) intracity bus routes and a paratransit bus service for eligible patrons. The bus system hub is the downtown terminal facility, Central Station, where passengers can connect to an array of international, national, regional and intracity destinations. McAllen is a community characterized by land use and destinations that support transit with multiple universities in the service area, a well defined urban core, and access to regional, national and international connectivity at the Central Station and the International Airport.

ROUTES

Metro McAllen currently operates 9 routes:

- Route 1
- Route 2
- Route 3
- Route 4
- Route 5
- Route 6
- Route 7
- Route 8
- Route 9

MAJOR DESTINATIONS

- McAllen Miller International Airport
- South Texas College Main Campus
- UTRGV Edinburg Campus
- Texas A&M Higher Education Center
- New Hope Children's Center
- McAllen Heart Hospital
- Cornerstone Regional Hospital
- McAllen Medical Center
- Life Care Hospitals of South Texas
- HEB Plus
- Wal-Mart Supercenter

TRAVEL TIME

74.6% travel >30 minutes

40.9% travel >60 minutes

*of approximately 85,500 people surveyed within the City of McAllen

LEAVING FOR WORK

The most frequent times people leave for work are between:

1st 7:30am-8:00am

2nd 7:00am-7:30am

3rd 8:00am-8:30am

*within the City of McAllen

METRO MCALLEN

SERVICE PROVIDER

metro

HOURS
Schedules vary by route

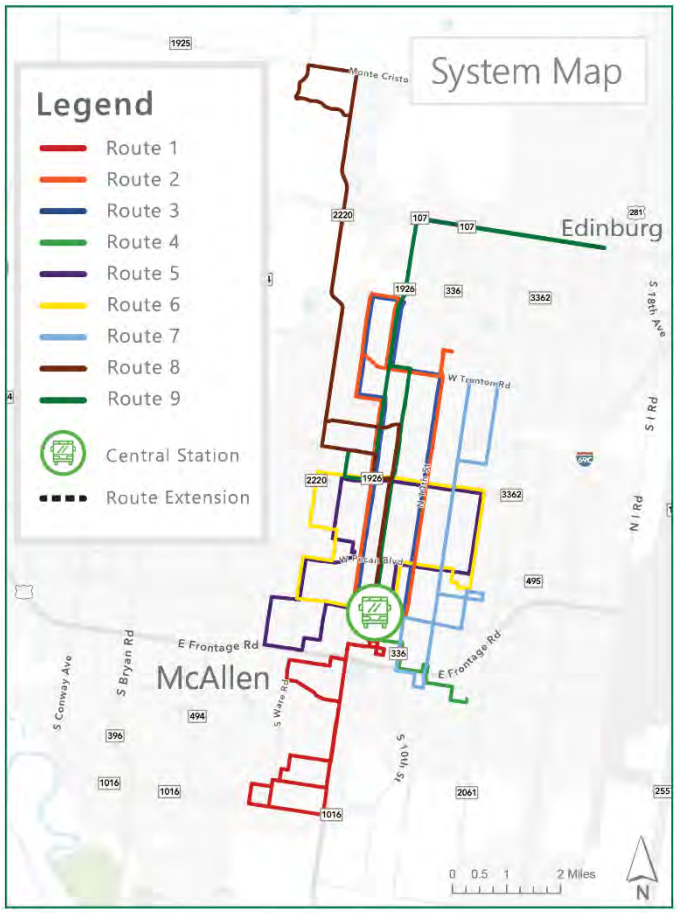
Monday - Saturday
6:00 am - 9:00 pm
Sunday
8:00 am - 6:00 pm

SERVICE TYPES
Fixed route local bus, circulator, paratransit

PEAK VEHICLE
12 vehicles deployed at peak service times

CONNECTIONS
Valley Metro
10 Edinburg-McAllen
20 Mission-McAllen
31 Business 83
Metro Express Red Line

Valley Metro does not stop in McAllen other than at Central Station and the South Texas College campus.



METRO MCALLEN

SERVICE PROVIDER

metro

ANNUAL DATA

617,926 Unlinked Trips
544,510 Vehicle Revenue Miles
39,284 Vehicle Revenue Hours

1.1 Unlinked Trips/Revenue Mile
15.7 Unlinked Trips/Revenue Hour

EXPENSES

$4.02 per Vehicle Revenue Mile
$55.73 per Vehicle Revenue Hour

$3.54 per Unlinked Passenger Trip

Funding Sources

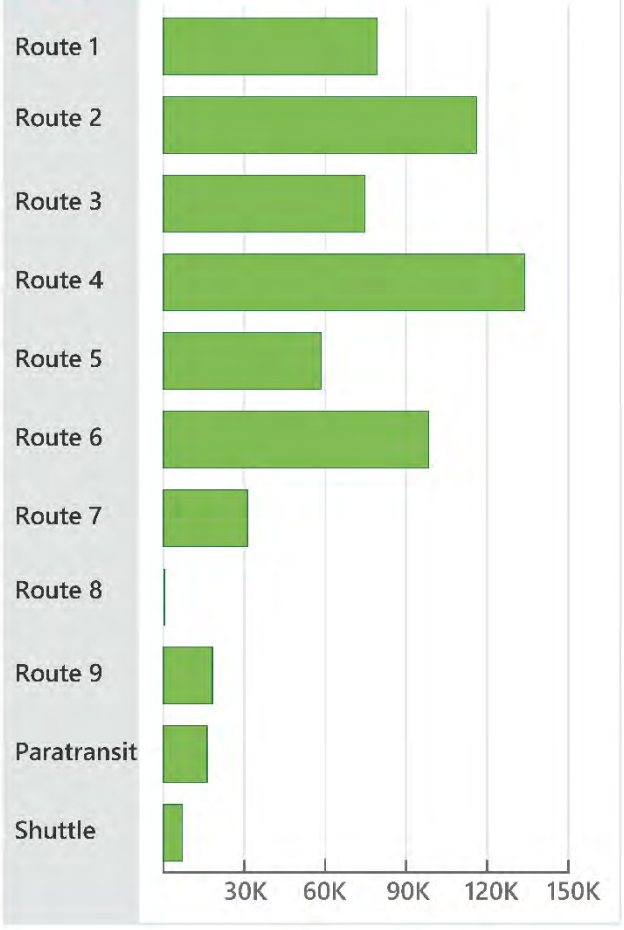
	OPERATING	CAPITAL
Fares	$348,733	$0
Local	$843,540	$20,523
State	$315,500	$0
Federal	$681,667	$778,079
Total	$2,189,440	$798,602

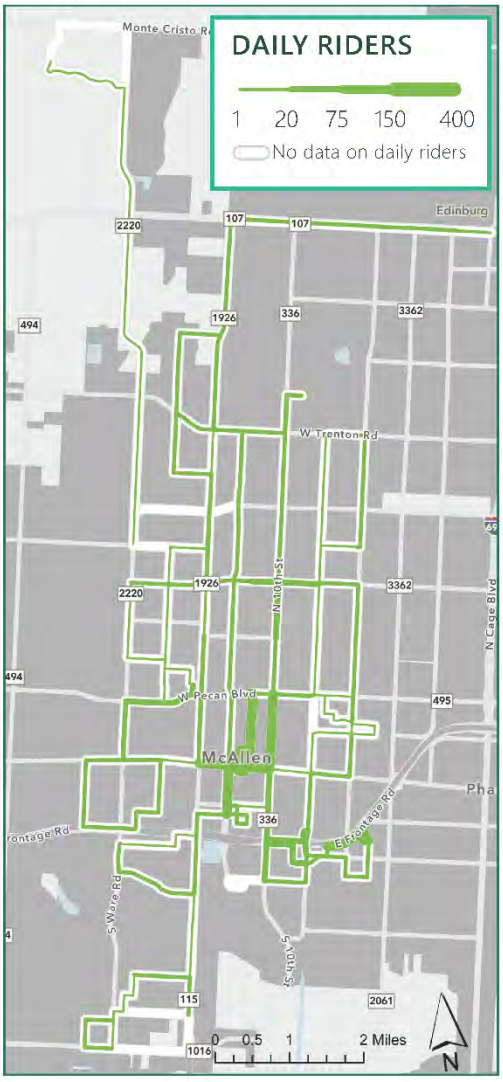
METRO MCALLEN

SERVICE PROVIDER

metro

ANNUAL RIDERSHIP





3,300 Avg Daily Riders

633,495 Annual Riders

ISLAND METRO

SERVICE PROVIDER

Island Metro is a free fixed route system that operates within the City of South Padre Island and Port Isabel, developed by the South Padre Island City Council. The fare-free system operates seven days per week and is funded by the Texas Department of Transportation section 5311 Rural Transit Program, the City of South Padre Island, and the City of Port Isabel Economic Development Corporation.

ROUTES

Island Metro operates **4** routes in Port Isabel and South Padre Island:

Route 1 P.I. / N-Gulf / S-Padre
Route 2 P.I. / N-Gulf / S-Padre
Route 3 P.I. / Laguna Heights
Route 4 S.P.I. / N-Padre / S-Gulf

MAJOR DESTINATIONS

South Padre Island City Office
Queen Isabella Memorial Park
SPI Convention Center
Port Isabel Museum
Las Palmas Shopping Center
HEB
Wal-Mart Supercenter

TRAVEL TIME

80.5% travel >30 minutes

19.3% travel >60 minutes

*of approximately 4,800 people surveyed within the Cities of South Padre Island and Port Isabel

LEAVING FOR WORK

The most frequent times people leave for work are between:

1st 8:00am-8:30am
2nd 7:00am-7:30am
3rd 9:00am-10:00am

*within the Cities of South Padre Island and Port Isabel

ISLAND METRO

SERVICE PROVIDER

HOURS
Schedules vary by route

Monday - Sunday
7:00 am - 9:00 pm

PEAK VEHICLE
9 vehicles deployed
at peak service times

SERVICE TYPES
Fixed route local bus

CONNECTIONS
Valley Metro
50 Brownsville Port Isabel
Metro Express Blue Line

ISLAND METRO

SERVICE PROVIDER

ANNUAL DATA

417,009 Unlinked Trips

360,723 Vehicle Revenue Miles

20,434 Vehicle Revenue Hours

1.2 Unlinked Trips /Revenue Mile

20.4 Unlinked Trips /Revenue Hour

EXPENSES

$3.93 per Vehicle Revenue Mile

$69.30 per Vehicle Revenue Hour

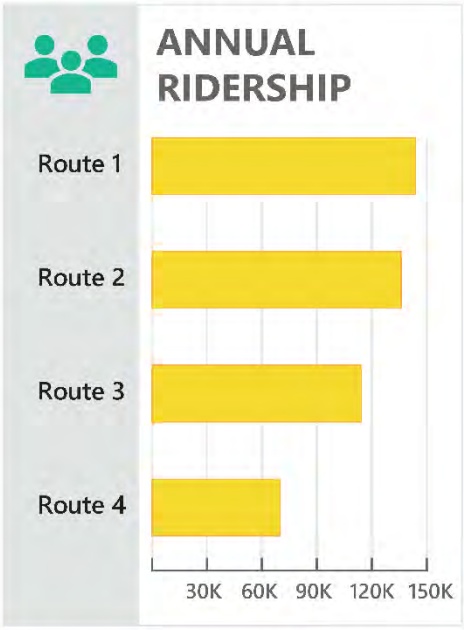
$3.40 per Unlinked Passenger Trip

Funding Sources

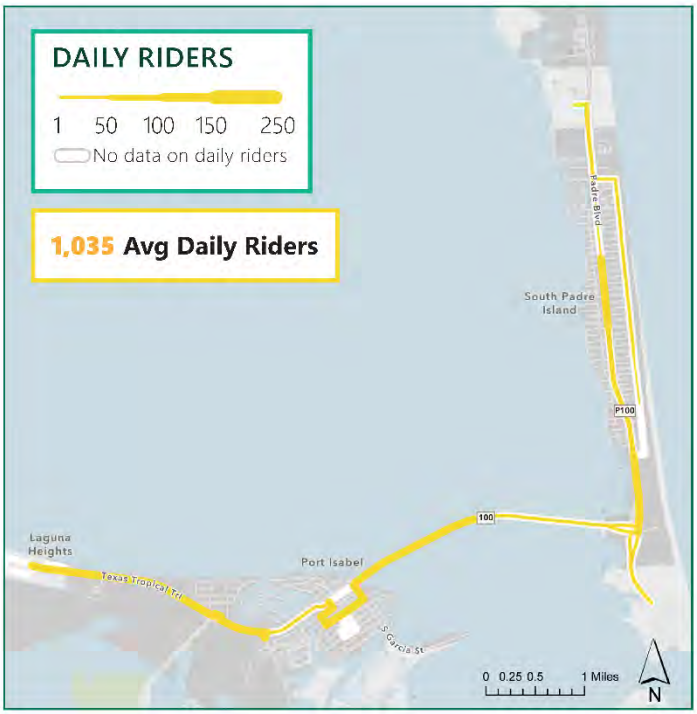
	OPERATING	CAPITAL
Fares	$0	$0
Local	$295,082	$4,186
State	$432,719	$110,233
Federal	$688,278	$944,017
Total	$1,416,079	$1,058,436

ISLAND METRO

SERVICE PROVIDER

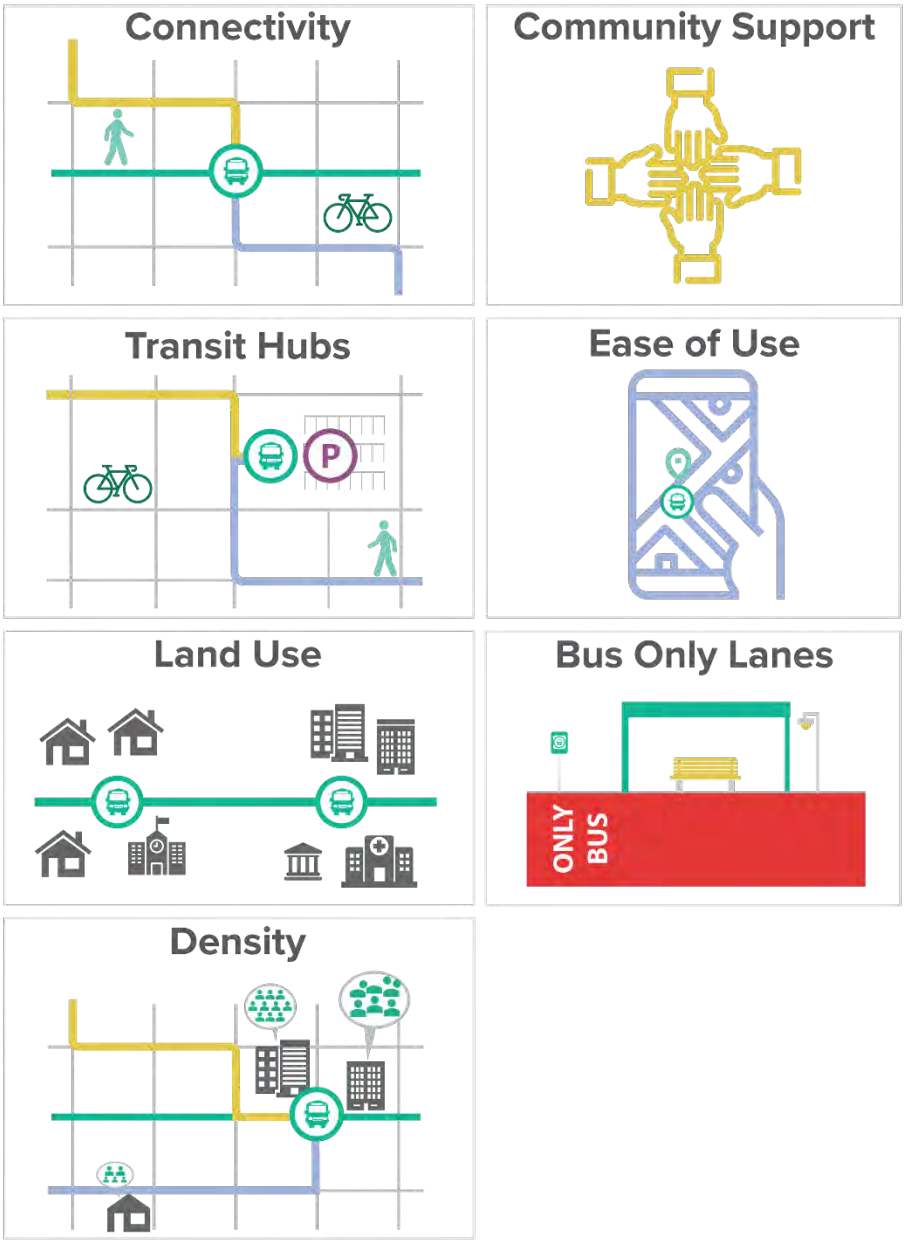


463,926 Annual Riders



MARKET ANALYSIS

Understanding how transit service operates throughout the region is only part of the transit story. It is just as important to understand the community that transit serves. Transit is most successful when the community it operates in is comprised of transit-supportive land uses with dense populations of people who are compelled or need to use transit. It is important that the road network is also designed and built to support transit vehicles and foster multimodal connectivity, and that areas with active transportation networks compliment transit and help to provide seamless transitions between modes.



Transit passengers are normally characterized as either choice or captive riders. As the name implies, a choice rider is defined by the fact that they choose to ride transit even though they have the option of another viable mode by which to travel, normally a car. Captive riders represent a group whose only viable option is to use transit. This term often carries a negative connotation, as it implies riding the bus is something a person is forced into doing and that if given the opportunity, they would likely choose another mode.

The problem with viewing transit through this lens is that the resulting analysis and recommendations usually end up falling into similar categories. Analyses focused on captive riders will look at where the 'need' or 'dependence' in the community is concentrated by identifying population groups characterized by low income, the elderly, or people with disabilities, while analysis that focuses on choice riders will isolate the population and employment densities so that they can maximize the greatest 'potential' or 'propensity.' When recommendations are formed in a mindset that distinguishes between these two groups, questions of prioritizing efficiency vs. coverage often arise. Solutions with choice riders in mind tend to be more focused on efficiency, which may be characterized by frequent routes running intuitive alignments, while conclusions about captive riders may lead to higher-coverage solutions, such as less frequent circulator routes that serve a larger area.

The market analysis and subsequent recommendations of this plan will not fall into one specific category. Instead, they are based on a holistic look at the community and an understanding of all the micro markets that drive transit, whether they be from need or potential. This regional market analysis will help tell the transit story of the RGV and inform recommendations that will make transit better for everyone in the community. By developing an in-depth understanding of all the markets in the region, the project team will be able to develop tailored solutions that match service delivery tools with the appropriate markets.

By reviewing the region in layers made up of transit potential, need, and destinations, the project team provides a better understanding of the Transit Market. The following section describes the methodology used by the project team to identify the Transit Markets of the RGVMAB.

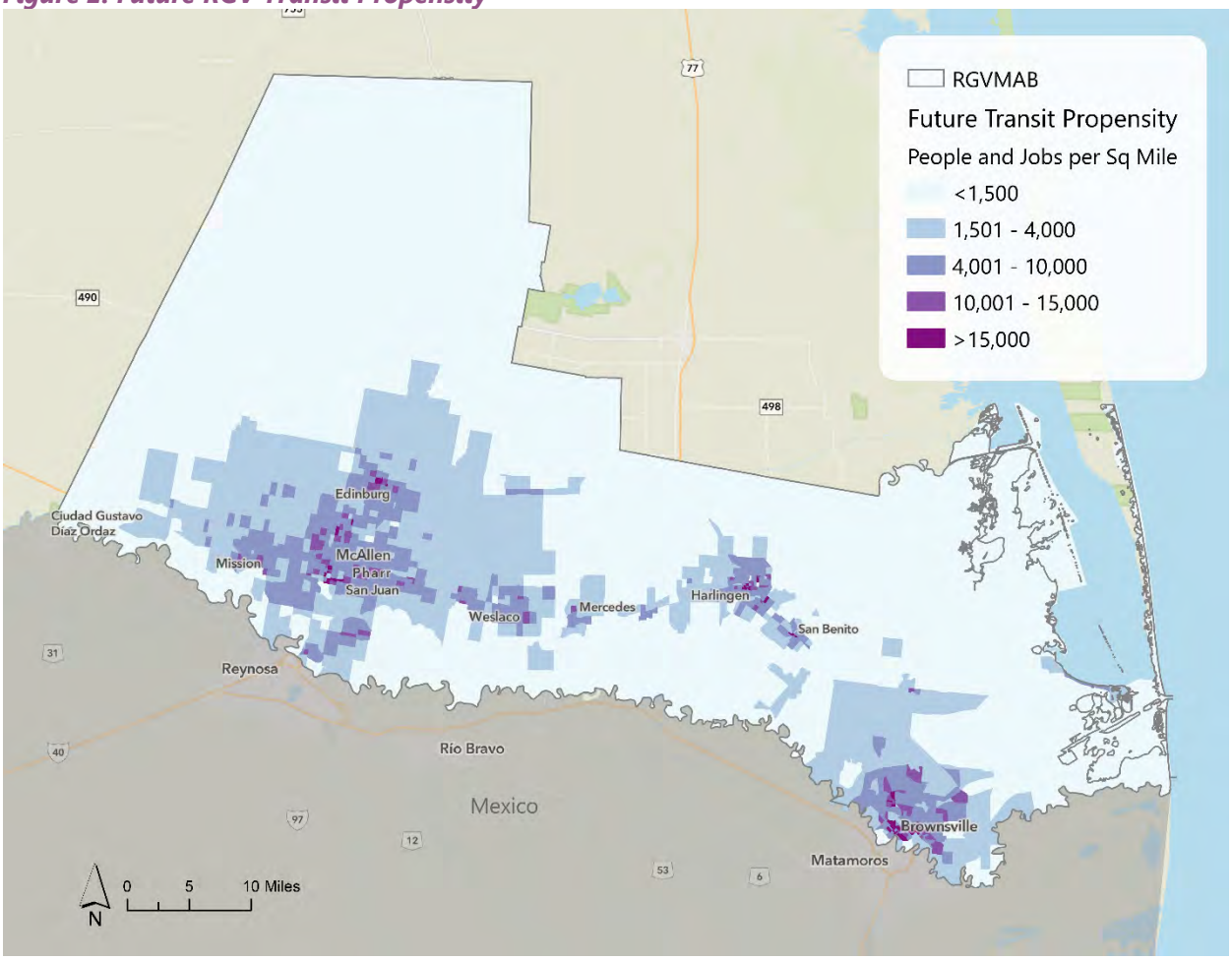
The final product provides transit market scores found within the RGVMAB that help the team understand which areas support and need transit. Market scores consist of individual scores provided to demographic subgroups which represent areas in need of transit service or service improvements. All data was derived from the 2018 American Community Survey (ACS) database. Each demographic subgroup was analyzed by density per square mile to create a standardized scale for scoring. The following subsections discuss the transit measures comprising the scoring method.

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. This highlights existing and future areas that have the potential to generate high ridership as people need to travel between places they live, work, shop, and conduct any recreational activities. One method for identifying transit potential is looking at locations that could support transit service. For this study, transit potential is identified 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) and forecast year (2045) RGVMPO TDM outputs for 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, presented in Figure 2.

Figure 2: Future RGV Transit Propensity



Transit Need

Transit need represents citizen groups who may require special accommodations when it comes to transportation. This includes measuring population densities of those in the non-driving age population, with limited English-speaking proficiency (LEP), people representing minority populations, people with disabilities, and those with low income/under the poverty line. The consideration of these populations creates a robust understanding of existing transit need in the RGVMAB.

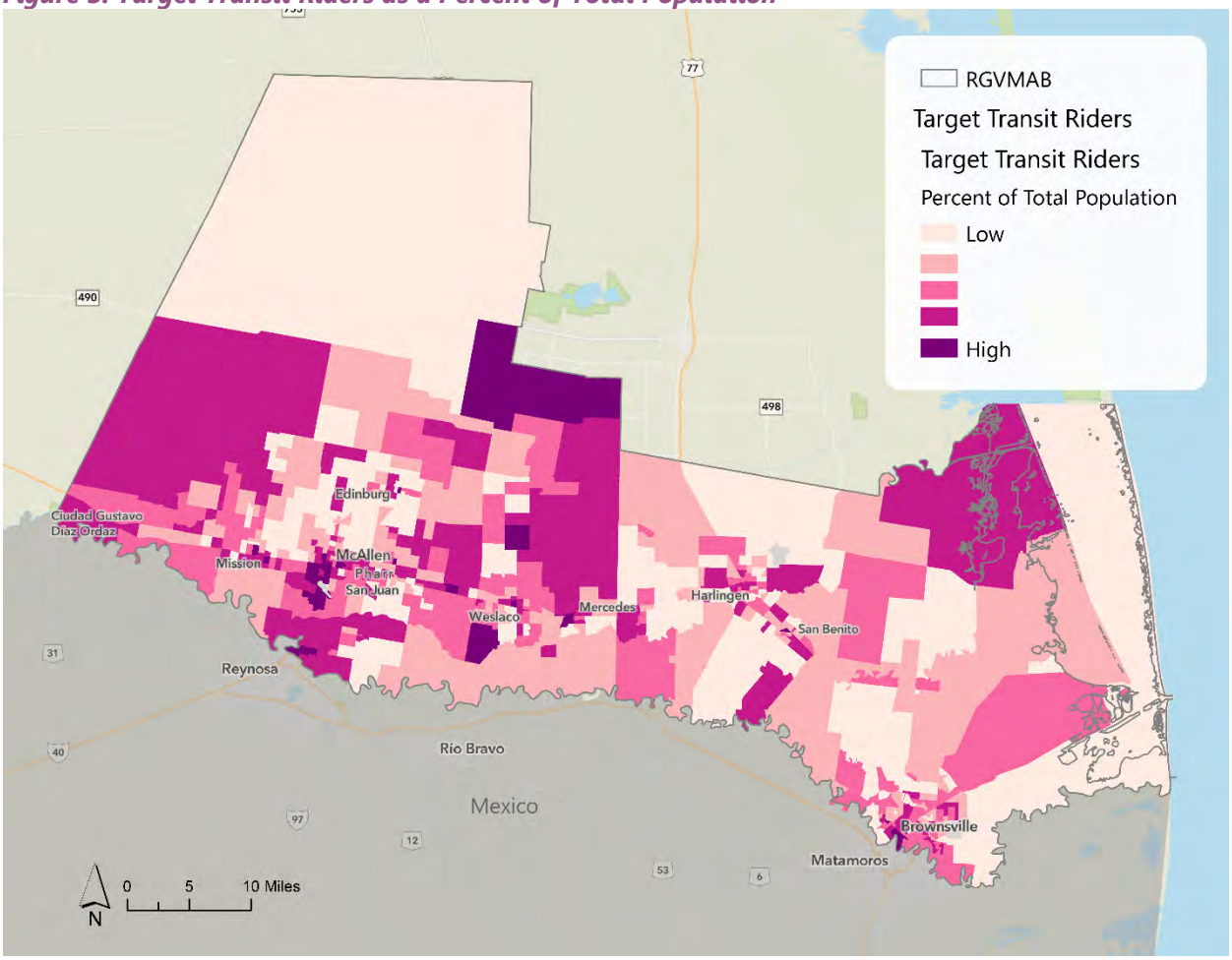
An analysis of target transit riders can help to identify the locations which have a higher need for transit service and help to prioritize transit adjustments to better support the community. A target transit rider (TTR) includes the following demographic subgroups:

- 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. It should be noted that a person might be counted in more than one category of need. For example, someone who is 16 years of age, speaks limited English, and lives in a household without a vehicle would be counted 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 factors limiting their mobility are highlighted prominently in the analysis. A graphic representation of the analysis of TTR for the region is presented in Figure 3.

Figure 3: Target Transit Riders as a Percent of Total Population



Transit Destinations

The analysis of existing conditions considered access to destinations, especially key destinations by transit within the RGVMAB. A total of 32,149 businesses were identified 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, 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 running errands including clothing, general retail, sporting goods, electronics, beauty salons, pet care, etc.
- Social and Recreational: 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

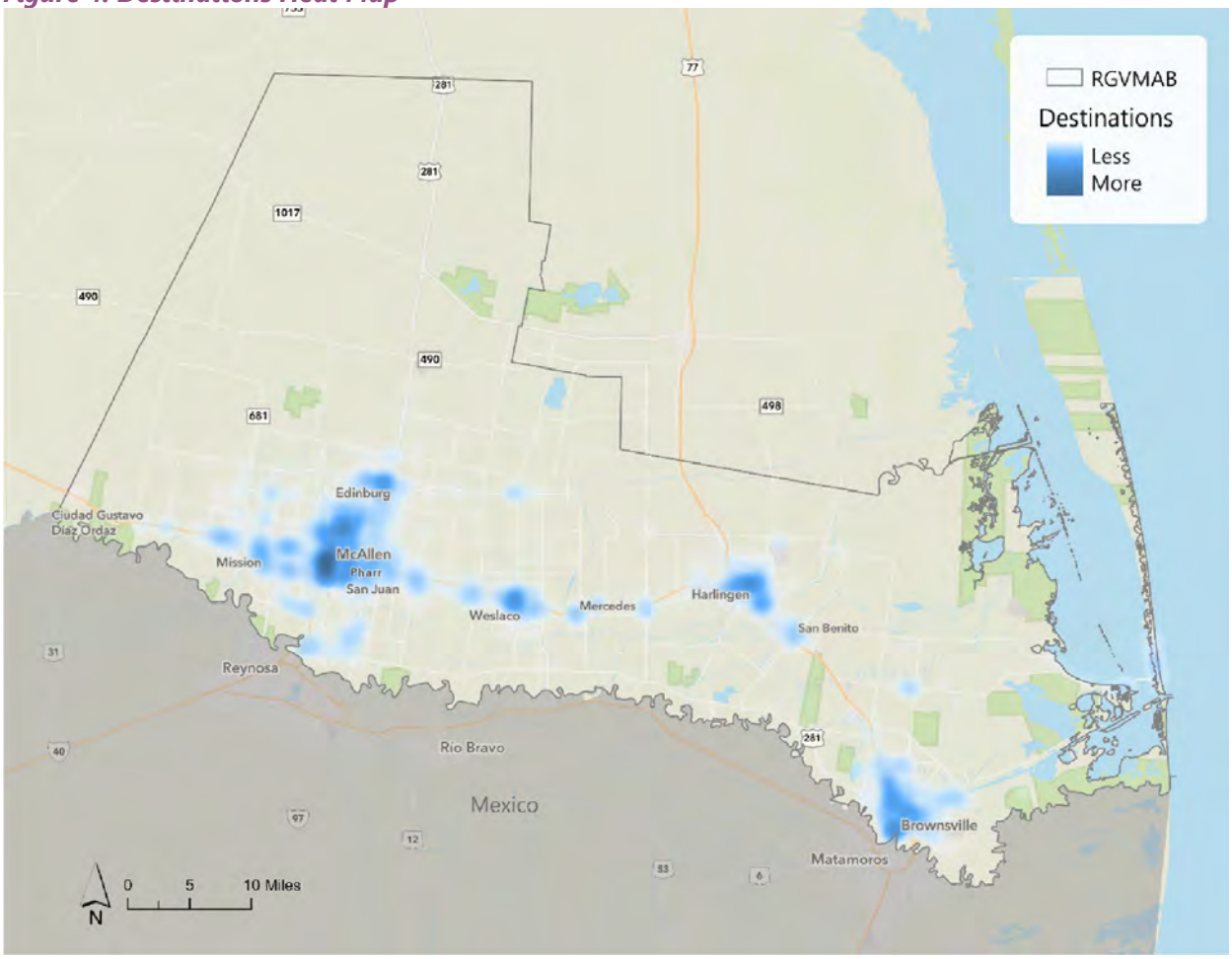
Distribution of Destinations

The distribution of destinations in the region can provide insight into areas that require transit services. Many of the businesses in the region are concentrated in the major urban areas or along major corridors within the RGVMAB, presented in Figure 4. Among the types of destinations, most are within the 0.25-mile walkshed to a regional transit route. Healthcare, financial services, retail, and locations for social and recreational activities are highly accessible with more than 80% of destinations in the RGVMAB within access to a transit route, shown in Table 1.

Table 1: 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 and Recreational	2,593	2,123	82%

Figure 4: Destinations Heat Map



A Region in Layers – Transit Market

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 market for transit in the region. Identifying locations that have high potential markets 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 compared to the transit supply. This identifies gaps where demand is not currently met and will help with route design in future stages of the Transit Development Plan (TDP).

Two criteria were identified from each of the three analyses of the transit market (potential, need, and destinations). The criteria selected from the existing conditions analysis are shown in Table 2.

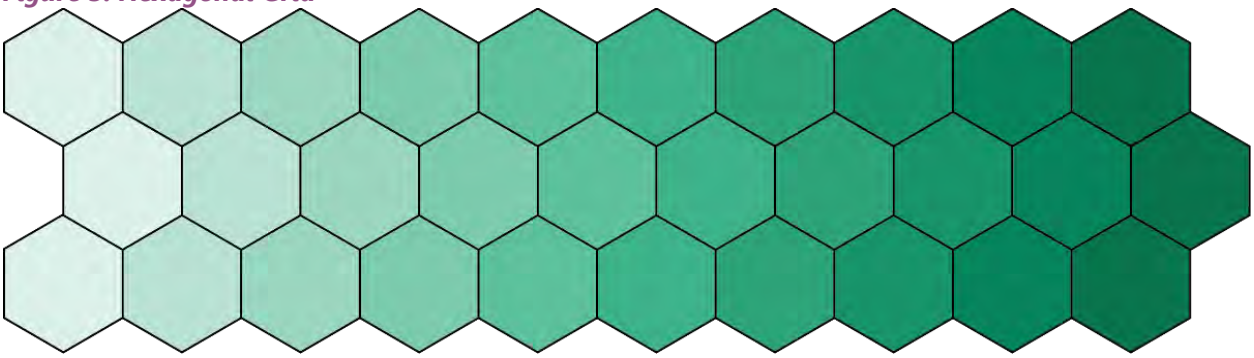
Table 2: Transit Market Score Criteria

	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)

The criteria were standardized in order to make it easier to draw comparisons. 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 block groups, 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, shown in Figure 5.

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 5: Hexagonal Grid



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 generate final combined scores, shown in Figure 6. Final scores were then normalized on a scale from 0 - 100. This final combined score is a transit market score which indicates the demand for transit based on the cumulation of these measures, shown in Figure 7.

Figure 6: Development of Transit Market Score

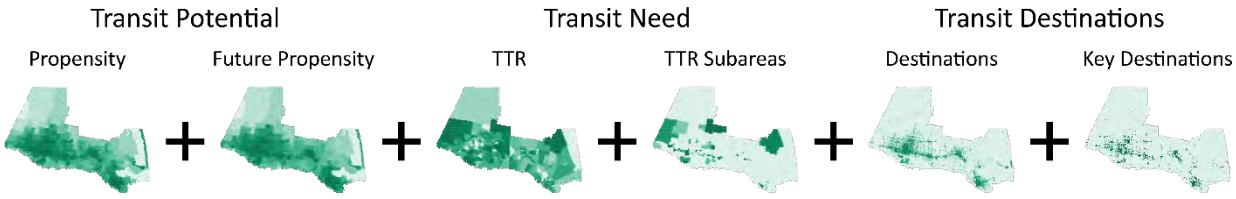
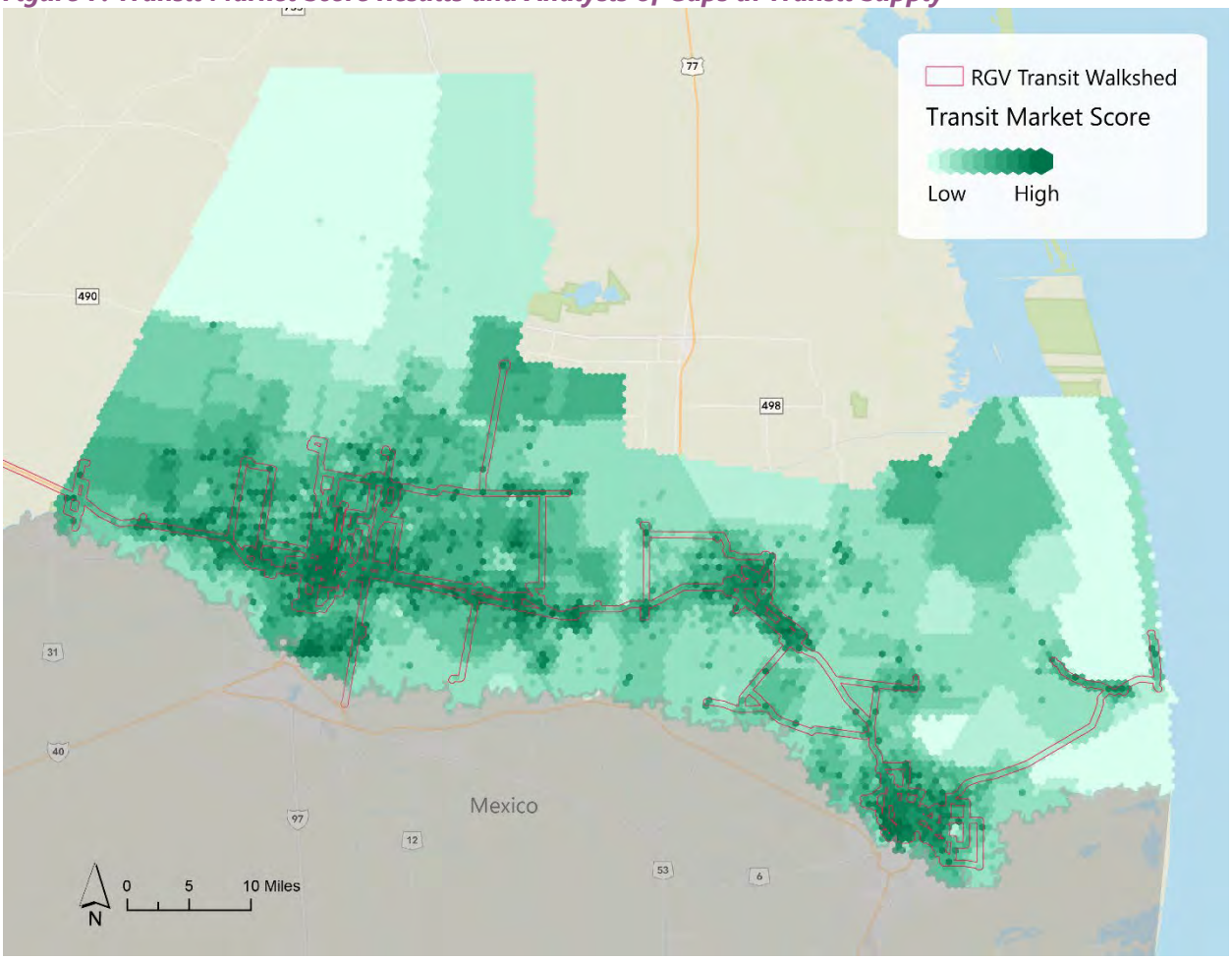


Figure 7: Transit Market Score Results and Analysis of Gaps in Transit Supply



RGVMAB Key Findings

The following lists key findings resulting from a GIS spatial analysis conducted on the finalized transit market scores for the RGVMAB:

- High scoring block groups tend to be settled around the main urban areas of the RGVMAB.
    - McAllen, Edinburg, Harlingen, San Benito, and Brownsville
- High scoring block groups also tend to be in smaller area cities, especially along interstate/highway infrastructure, namely I-2.
    - Mission, Pharr, San Juan, Alamo, Donna, Weslaco, and La Feria
- The spatial distribution of market scores puts emphasis on the need for interagency coordination.
    - To achieve a regional voice, agencies will need to collaborate to create an effective and efficient transit system.
    - Accordingly, local transit systems must meet their needs internally and provide connections to regional service (Valley Metro)
- Regional service needs to extend to smaller municipalities lacking local services using regional transportation infrastructure.
- Regional connectivity between smaller urban areas and larger municipal amenities (e.g. healthcare, higher education, etc.) needs to increase.

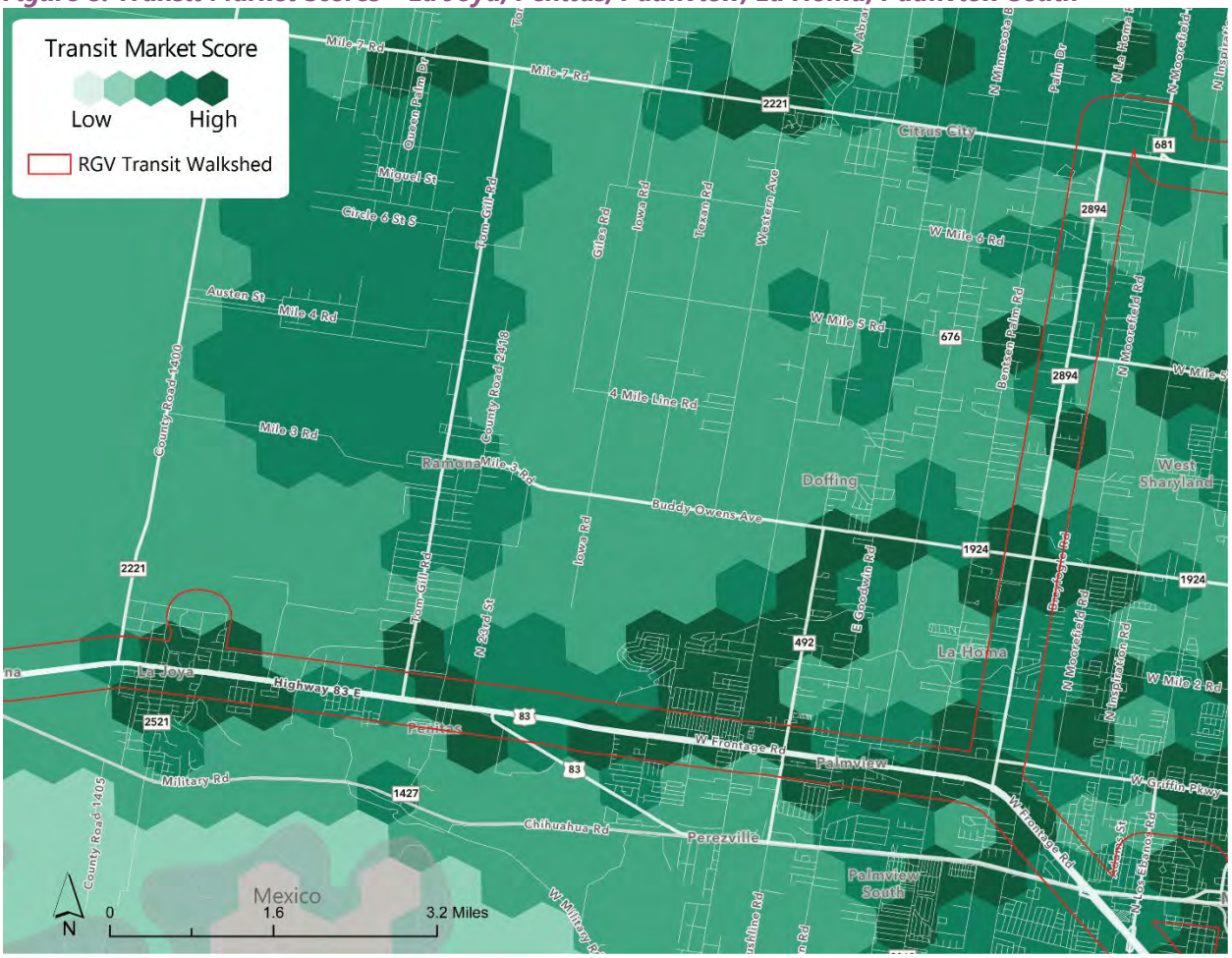
Sub-Region Findings

The following sections will provide more detail on the GIS analysis for specific sub-regions of the RGVMAB.

Hidalgo County I-2/I-69C Corridors

West Hidalgo County contains high-scoring hexagons along the US 83/I-2 corridor intersecting La Joya, Penitas, and Palmview. High-scoring hexagons deviate to the north and south near La Homa and Palmview South (Figure 8).

Figure 8: Transit Market Scores – La Joya, Penitas, Palmview, La Homa, Palmview South



The area extending from Mission to Alamo (west to east) and Edinburg to Pharr (north to south) displays a zone with contiguous high-scoring hexagons, suggesting a mixture of transit potential and need in the area, shown in Figure 9 and Figure 10. The following describes key findings for McAllen, Mission, Pharr, and Edinburg, shown in Figure 9, and the key findings for Donna, Weslaco, and Mercedes, shown in Figure 10.

McALLEN

The City of McAllen displays transit markets extending north from FM 1016 to West Trenton Road near Tuscan Estates. As the most expansive transit potential/needs area (based on market scores) within the I-2 and I-69C corridors, the area effectively encapsulates the following municipal districts:

- La Paloma
- McAllen Historic Business Redevelopment zone
- De Palmas Historic District
- Westway Avenue
- Las Villas/Emerald Point
- Tuscan Estates

It is important to note the presence of a strong existing transit service provider in Metro McAllen. Moving forward, it will be important to emphasize connectivity with regional services such as Valley Metro to support the RGVMPO's regional vision.

MISSION

Areas with high market scores in Mission exist throughout the municipal boundary, including Mission City Hall, the Mission Police Department, and the Mission Housing Authority.

PHARR

High scoring hexagons tend to cluster along the US 281 corridor. The contiguous area extends north from Ridge Road to FM 3461 and contains destinations such as Liberty Middle School, PSJA Stadium, Food Bank of the Rio Grande Valley, and HEB Plus. The second cluster is located south of downtown Pharr.

EDINBURG

Edinburg presents high-scoring hexagons just west of the central business district (CBD), including Altamira West Number 2 Colonia and Wood Colonia. Specific destinations include the University of Texas Rio Grande Valley (UTRGV) – Edinburg, the W. University Drive Walmart Supercenter, and Region One Education Center. Other areas of high potential/need include hexagons containing the Hidalgo County Courthouse, Apollo Park and the Sacred Heart Catholic Church, and the area surrounding I-69C south of E. University Drive containing Lyndon B. Johnson Elementary.

DONNA

The City of Donna contains two significant clusters regarding transit potential and need. The first occurs west of central Donna and spans from I-2 to South Avenue, and contains destinations such as Big Valley Trailer Park, HEB, and the Holy Cross Center. The second exists southeast of the Hooks Avenue and S FM 493 intersection and contains St. Joseph Catholic Church, Guzman Elementary School, Kwik Pantry Food Mart, Dolphin Motel and RV Park, and Boyce Memorial Park.

WESLACO

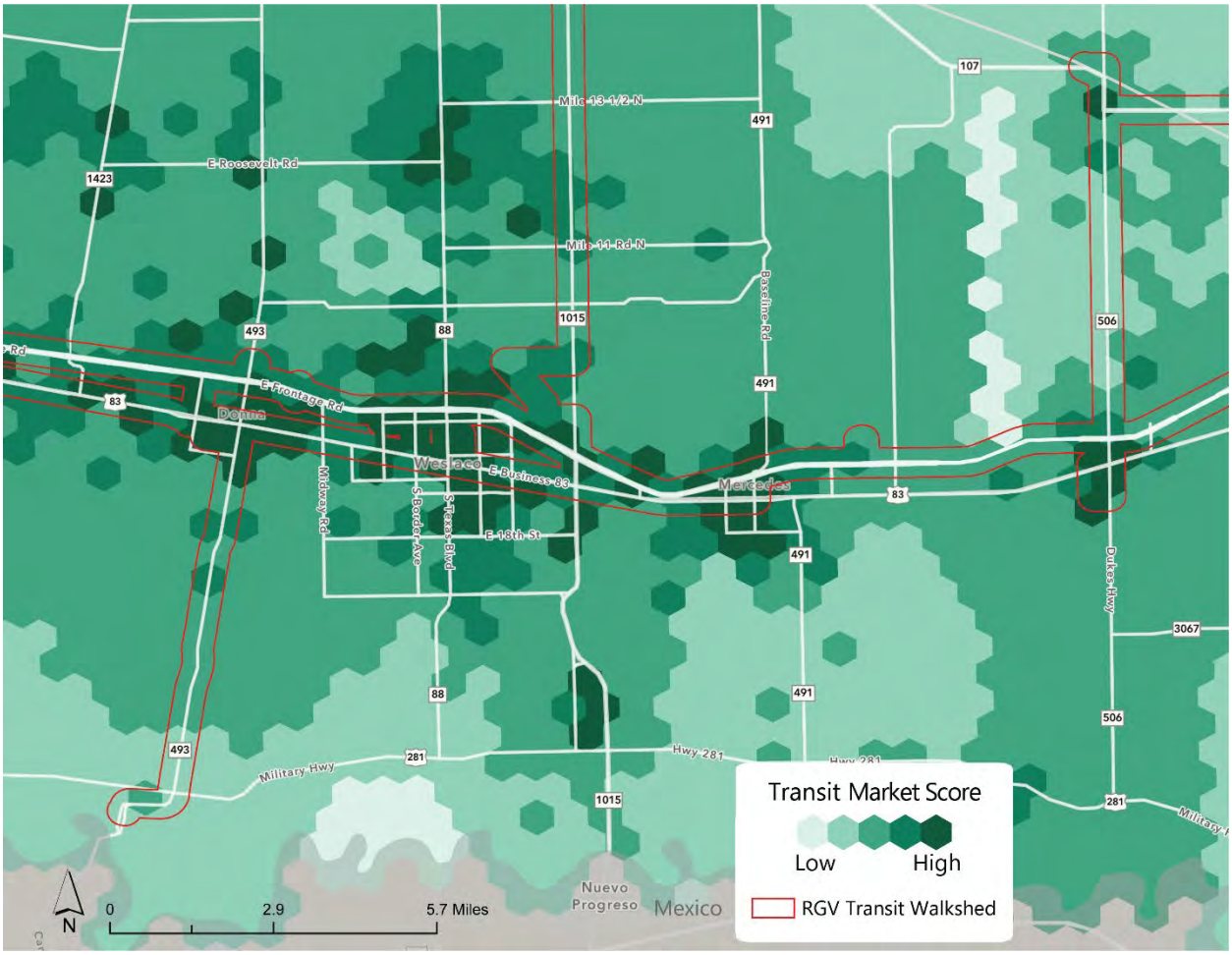
High-scoring hexagons exist between E. Business 83 and I-2 and contain major retail centers and destinations such as Weslaco High School, South Texas College – Mid-Valley Campus, and HEB. High-scoring areas also extend south of E. Business 83 along S. Texas Boulevard and contain destinations such as Knapp Medical Center and Weslaco East High School.

MERCEDES

The majority of West Mercedes contains high scoring transit potential/need hexagons. The Rio Grande Valley Premium Outlets are also located east of FM 491 along I-2 and should be considered for future transit improvements.

Figure 9: Transit Market Scores - Mission, McAllen, Edinburg, Pharr

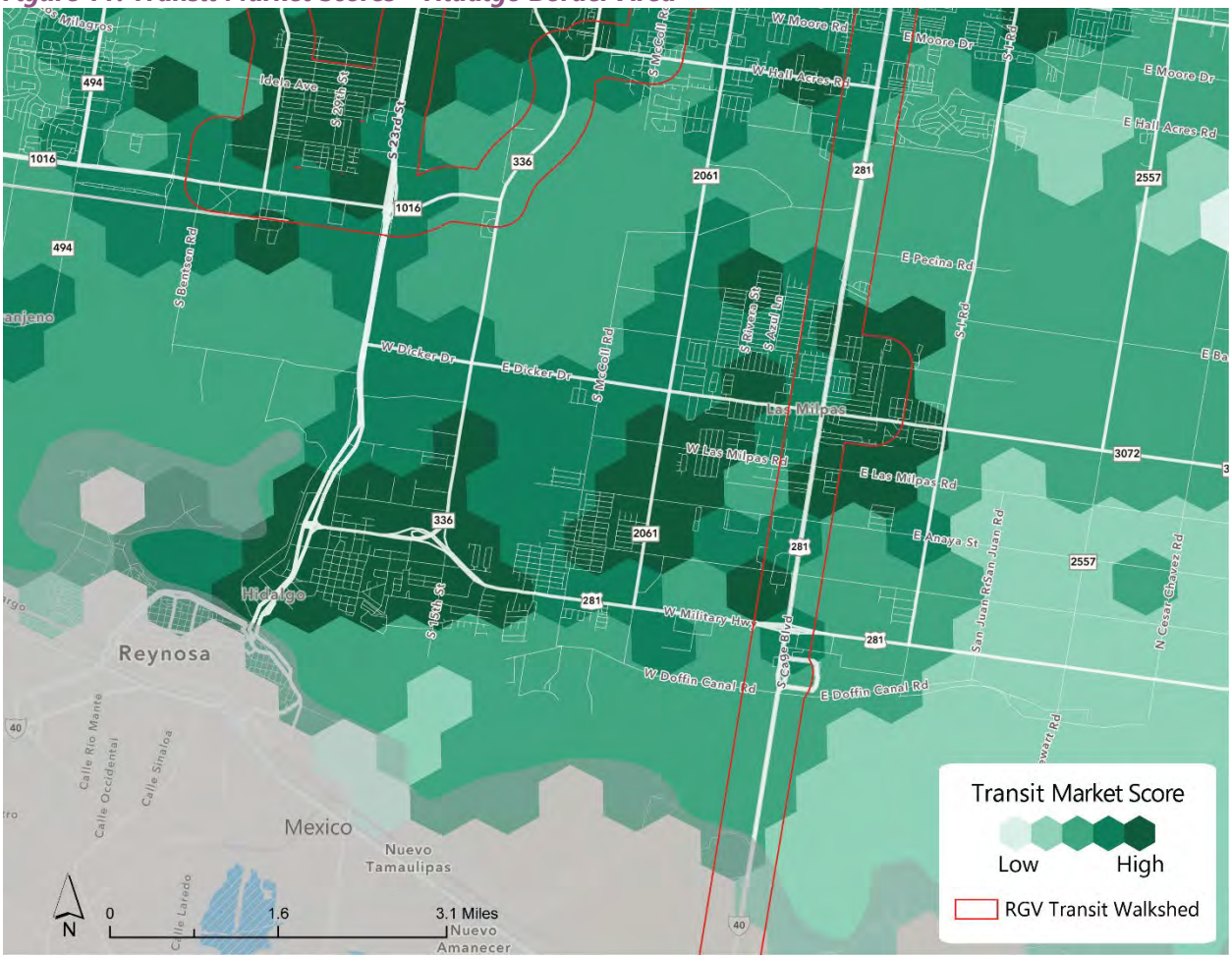
Figure 10: Transit Market Scores - Donna, Weslaco, Mercedes



Hidalgo Border Area

The Hidalgo border area, anchored by the McAllen-Hidalgo International Bridge, contains dense clusters of transit potential/need directly along the border, along the US 281 corridor, and surrounding Las Milpas. This is an important area for consideration as it borders the dense city of Reynosa, Mexico, and provides an opportunity to provide critical connections to established transit systems such as Valley Metro and Metro McAllen. Currently, jitney service is currently provided by private agencies connecting the cities of Hidalgo and McAllen, and Valley Metro provides a vehicle to Hidalgo for elderly transportation. See Figure 11.

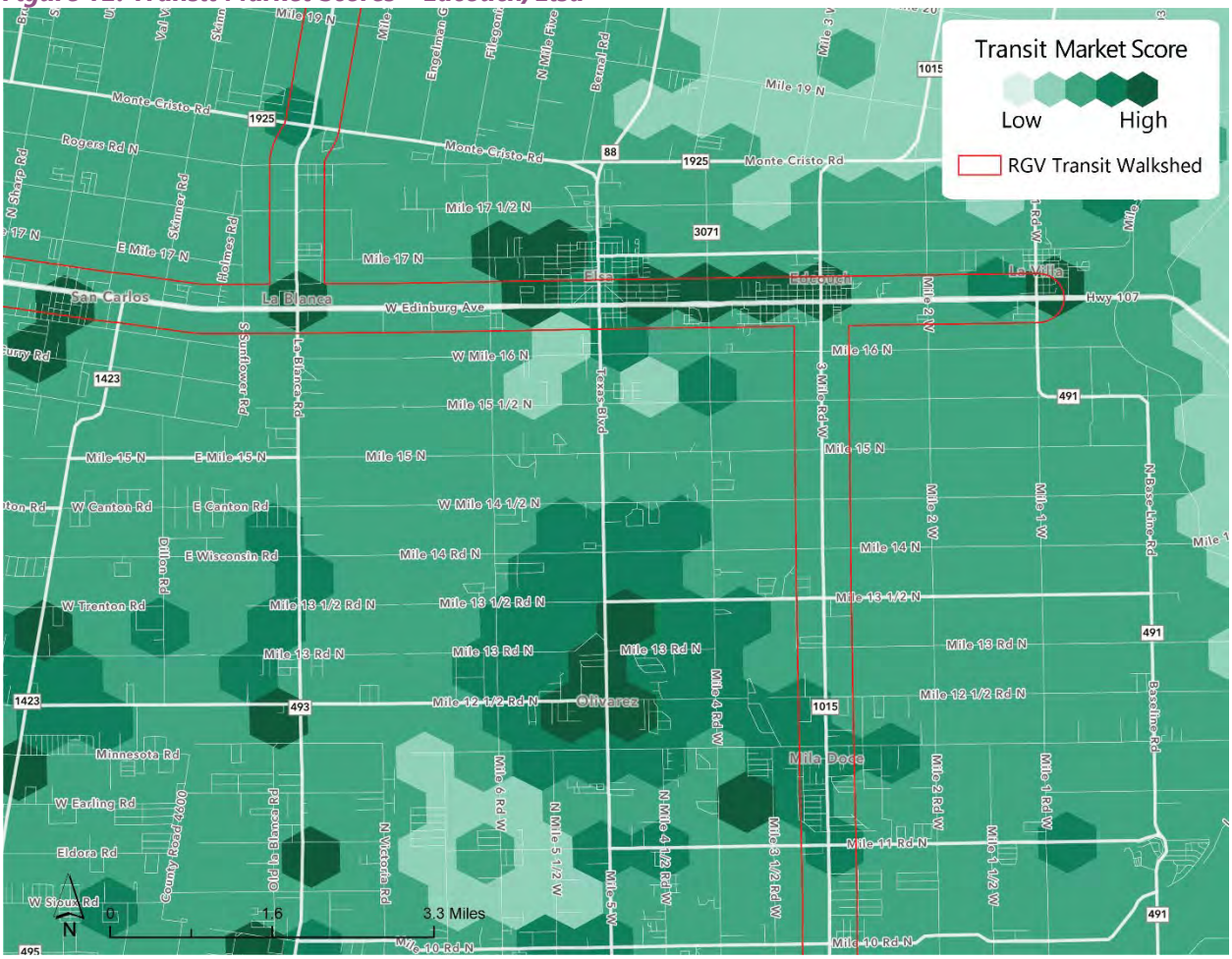
Figure 11: Transit Market Scores – Hidalgo Border Area



Edcouch/Elsa Area

While scores in this area are not as densely clustered as other major municipal areas, the Edcouch/Elsa municipal area is important to consider for potential transit moving forward, shown in Figure 12. While population and employment densities are generally lacking in comparison to other regional jurisdictions, contiguous high-scoring hexagons in the area tend to be in municipal areas and along rural highways and major arterials. This suggests that these areas contain significant transit needs populations (i.e. elderly, disabled, impoverished, etc.). To create a thriving region, consideration must be made for more rural areas.

Figure 12: Transit Market Scores – Edcouch/Elsa



Harlingen/San Benito Area

The Harlingen municipal area contains critical interstate and highway infrastructure for the RGVMAB, as well as the Valley International Airport (VIA) which contributes to the movement of people and goods throughout the area. It also represents an area with high population and employment densities bridging the gap between McAllen and Brownsville, shown in Figure 13. Because of this, it is critical for the RGVMPO TDP to emphasize both regional and local transit services.

HARLINGEN

Like McAllen, the Harlingen municipal area contains contiguous hexagons containing high scores, extending northeast along I-69E and US 77. The following areas should be considered highly when creating transit alternatives:

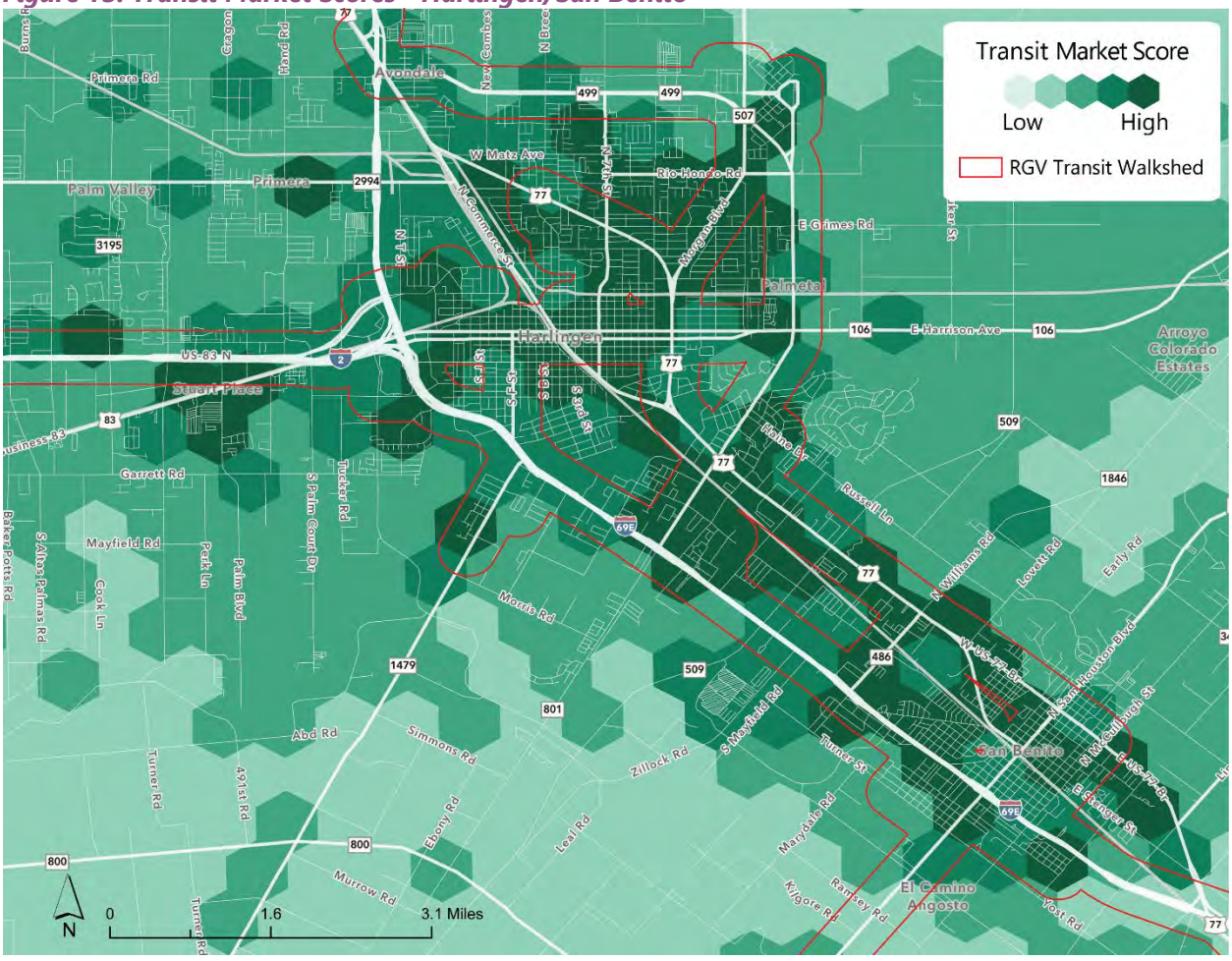
- The area adjacent (east) of I-69E containing the Central Park shopping mall, serving as a major commercial hub for the region.
    - This is also adjacent to the Valle Vista Mall, Walmart Supercenter, and Bass Pro Shops.
- Central Harlingen, surrounding the commercial and residential areas located along Harrison and Tyler Avenues, which contains local business district Jackson Avenue.

- North Harlingen extending northeast from north Commerce Street and Business Hwy 77 (Sunshine Strip).
    - This includes Zavala Elementary School, the Texas Department of Public Safety (DPS), Harlingen High School, Jane W. Long Elementary School, and the Keys Academy.
- Valley International Airport (VIA) and its surrounding area.
- Block groups south of Arroyo Colorado, including destinations such as Rangerville Park, Bee First Primary Home Care and Hospice, Harlingen Nursing and Rehabilitation Center, Valley Baptist Medical Center – Harlingen, and Harlingen Medical Center.

SAN BENITO

- The City of San Benito contains clusters of high-scoring hexagons surrounding downtown San Benito and just east/northeast of the city center across from the Heavin Resaca Trail. The highest scoring areas tend to surround I-69E and US 77 and lead into the Harlingen municipal area.

Figure 13: Transit Market Scores - Harlingen/San Benito



Brownsville/Cameron Park Area

The Brownsville/Cameron Park area presents a unique opportunity for transit as it shares a border with the city of Matamoros, Mexico, and has dense development patterns radiating out from the Gateway International Bridge Port of Entry (POE). Accordingly, these locational characteristics and land use

development trends generate dense areas of transit potential and need throughout the region, shown in Figure 14.

BROWNSVILLE

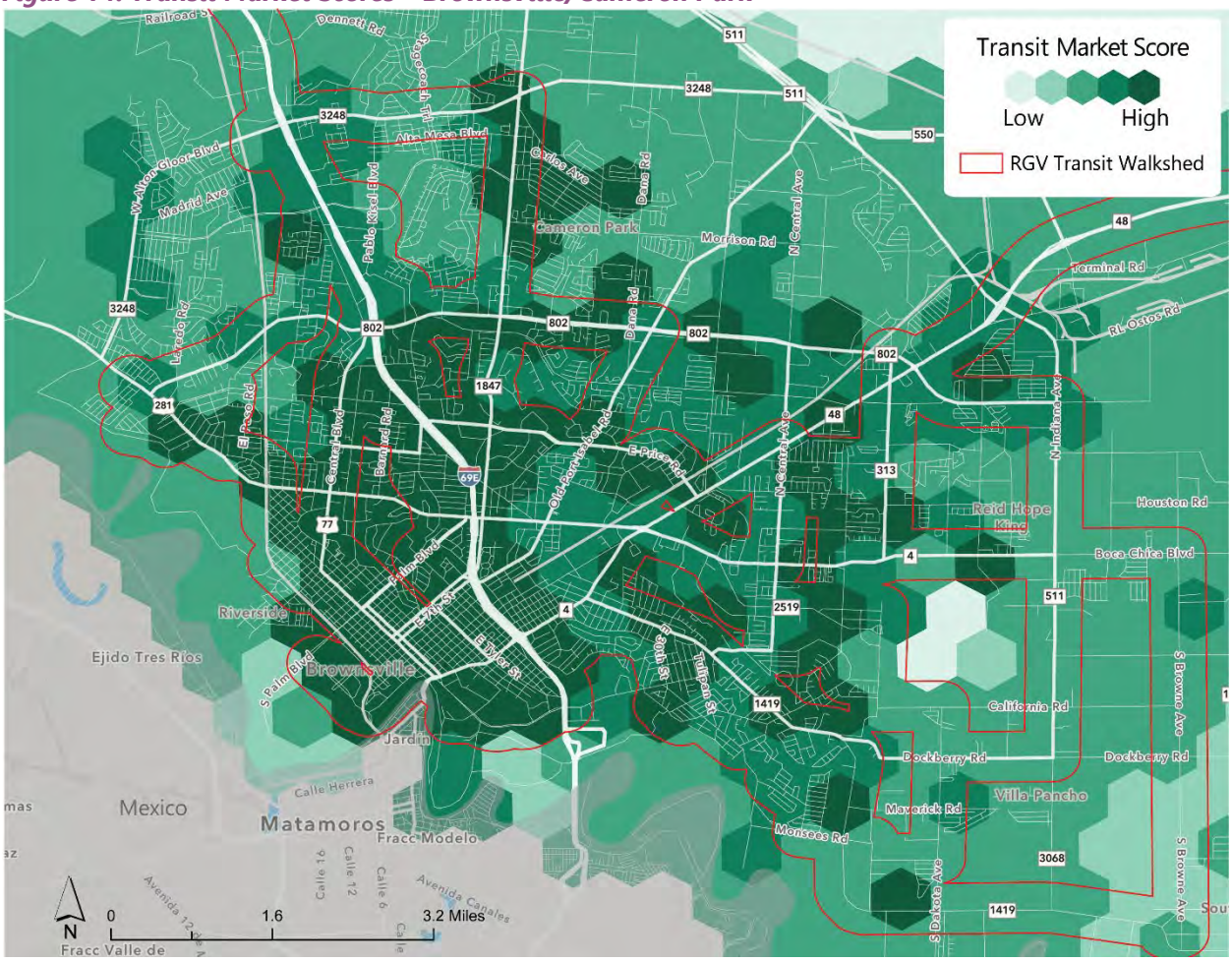
Brownsville contains dense development of both population and employment, containing local businesses, large commercial developments, higher education facilities, and healthcare facilities. At a high level, hexagons with significant scores vary throughout the Brownsville municipal boundary, extending north from the US–Mexico border to FM 802 and east to west from roughly El Paso Road to the Brownsville-SPI International Airport. The following areas should be considered as high priority areas moving forward:

- Downtown Brownsville and the Brownsville border area.
- The immediate area northwest of downtown, containing destinations such as Sams Memorial Stadium, Valley Baptist Medical Center – Brownsville, Adult Continuing Education, and Central Middle School.
- The immediate area northeast of downtown, containing dense residential development, Cameron County Detention Center, Cameron County Courthouse, and Southern Pacific Linear Park.
- The area extending southeast between Tyler Street and UTRGV – Brownsville, containing Longoria Elementary School and UTRGV Casa Bella Apartments.
- The Southmost Blvd. region of the City of Brownsville, specifically following 14th Street/Southmost Boulevard containing a mixture of residential and commercial land uses, including HEB.
- North Brownsville east of I-69E, containing Rockwell Manor Apartments, La Villita Apartments, Rockwell Grocery, and Perez Elementary School. This area is also adjacent to retail development including Sunrise Mall, Las Tiendas Plaza, and the Walmart Supercenter.
- Hexagons surrounding Boca Chica Boulevard and Billy Mitchell Boulevard with destinations such as Waterside Apartments, Boca Palma Townhomes, and Conquistador Apartments
- Northeast Brownsville, which is largely residential and contains Perkins Middle School and Sunset Palms RV and Mobile Home Park.

CAMERON PARK

Cameron Park is a colonia not annexed by the City of Brownsville that contains largely residential developments and is seeing growth (Figure 14). Large subdivisions surrounding FM 1847 display high transit market scores and should be considered throughout the TDP process.

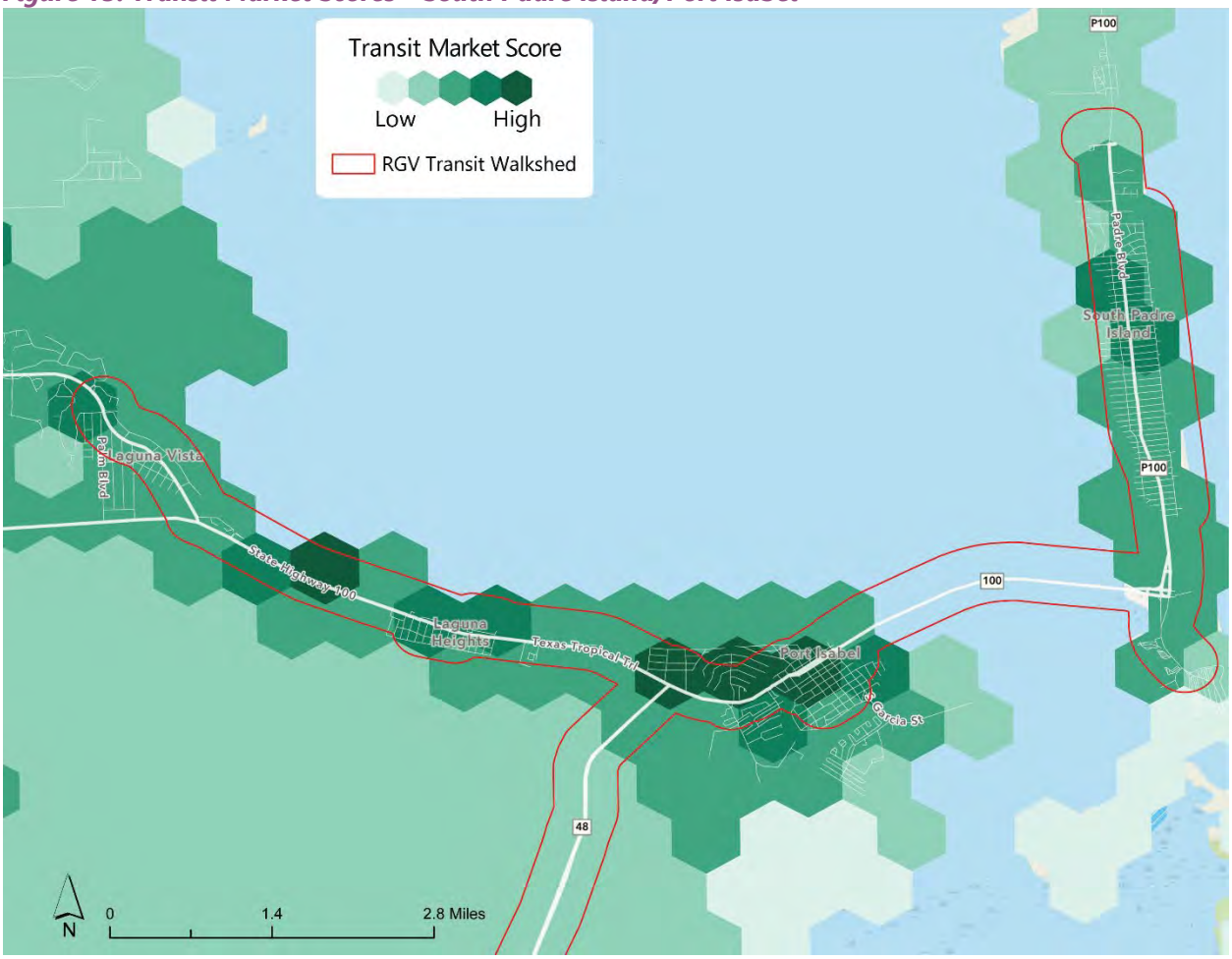
Figure 14: Transit Market Scores – Brownsville/Cameron Park



South Padre Island/Port Isabel

Clusters of transit potential and need follow the SH 100 corridor, showing prominent transit market scores in Laguna Vista, Laguna Heights, Port Isabel, and north South Padre Island, shown in Figure 15.

Figure 15: Transit Market Scores – South Padre Island/Port Isabel



Border Crossings

The RGVMAB contains 11 border crossings (including roadway, railway, and ferry infrastructure) that facilitate the movement of goods and people between the region and Mexico. Due to the large quantity of border crossing assets, as well as proximity to densely populated cities in Mexico, the RGVMAB serves as a critical region for border transportation activity.

Accordingly, it is important to understand current conditions of the RGVMAB's border crossing facilities as border movement presents an opportunity to provide public transportation and increase accessibility and mobility throughout the RGVMAB. Table 3 below presents border crossing modes from the 2019 TxDOT-TPP Texas-Mexico International Bridges and Border Crossings Study.

Table 3: RGVMAB Border Crossing Modes and Change in Truck Volume (2008 to 2018)

Border Crossing	POV	Ped	Bus	Rail	Truck
Texas-Mexico Border Region	X	X	X	X	X
Los Ebanos Ferry	X	X			
Anzalduas Int. Bridge	X		X		
McAllen-Hidalgo Int. Bridge	X	X	X		
Pharr-Reynosa Int. Bridge	X	X	X		X
Donna Int Bridge	X				
Weslaco-Progreso Int. Bridge	X	X	X		X
Free Trade Bridge	X	X	X		X
Brownsville West Rail Bridge				X	
B&M Bridge	X	X			
Gateway Int. Bridge	X	X	X		
Veterans Int. Bridge at Los Tomates	X	X	X		X

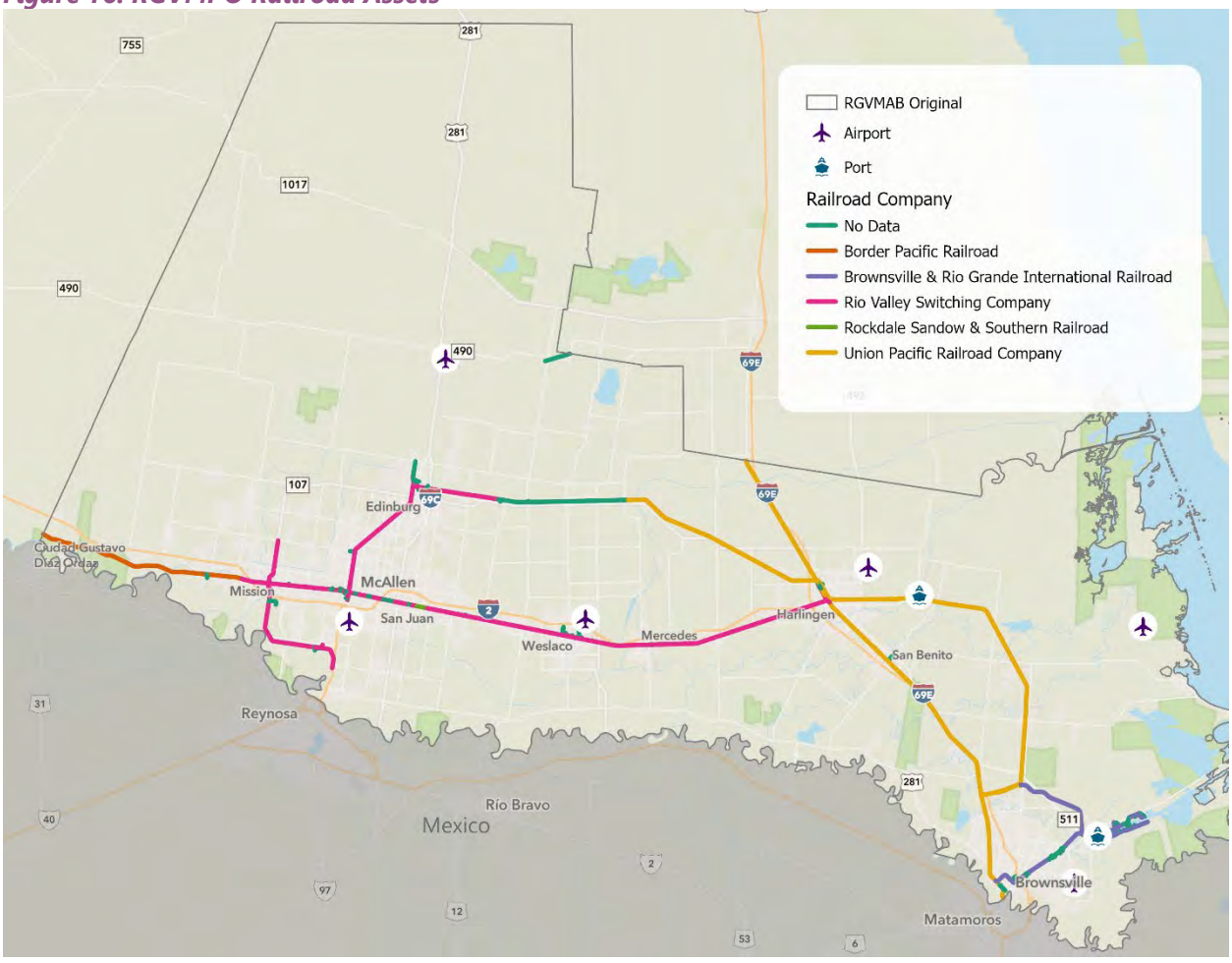
Out of the 11 total border crossings in the RGVMAB, seven allow bus traffic and eight allow pedestrian crossings. In 2018 alone, the Rio Grande Valley border crossing region experienced 65,876 passenger bus crossings, along with 7.2 million pedestrian crossings. Further, TDM outputs show high daily trip counts crossing the border (to and from the RGVMAB) in the Hidalgo/Reynosa and Brownsville/Matamoros border crossing areas (see the Desire Line Analysis section below), suggesting cross border travel to be a prominent daily activity in the region.

Railroad Network

RGV's inland and border location creates opportunity for the region, as the area has become a crossover station for both international and domestic rail freight traffic (specifically east-west traffic in the United States), shown in Figure 16. Both the Union Pacific Railroad (UP) and BNSF Railway (BNSF) connect with the Ferrocarril Mexicano Railroad (FXE) in Ciudad Juarez and Chihuahua, Mexico, producing 11% of all border crossing rail freight in Texas annually. Two bridges exist on either side of the Paso Del Norte Border Crossing Bridge. While both train traffic volume and loaded container counts have decreased significantly overall since 2007, both measures have steadily increased over the last 5-6 years.

The RGV region contains roughly 535 miles of railroad facility, 8 miles of rail bridges, and 6 railyards. The UP line stretches throughout the RGVMAB, with the Sunset route connecting the region to Southern California, Houston, Dallas, and Chicago. The BNSF facility begins in the RGV and extends north into New Mexico, where a terminal exists to direct traffic further north or onto an east-west route. Most of the freight that passes through the RGV is directed outside of the region, primarily to the west coast (90%). It is important to take stock of these facilities as the region becomes more 'transit-ready' and begins exploring High Capacity Transit (HCT) options.

Figure 16: RGVMPO Railroad Assets

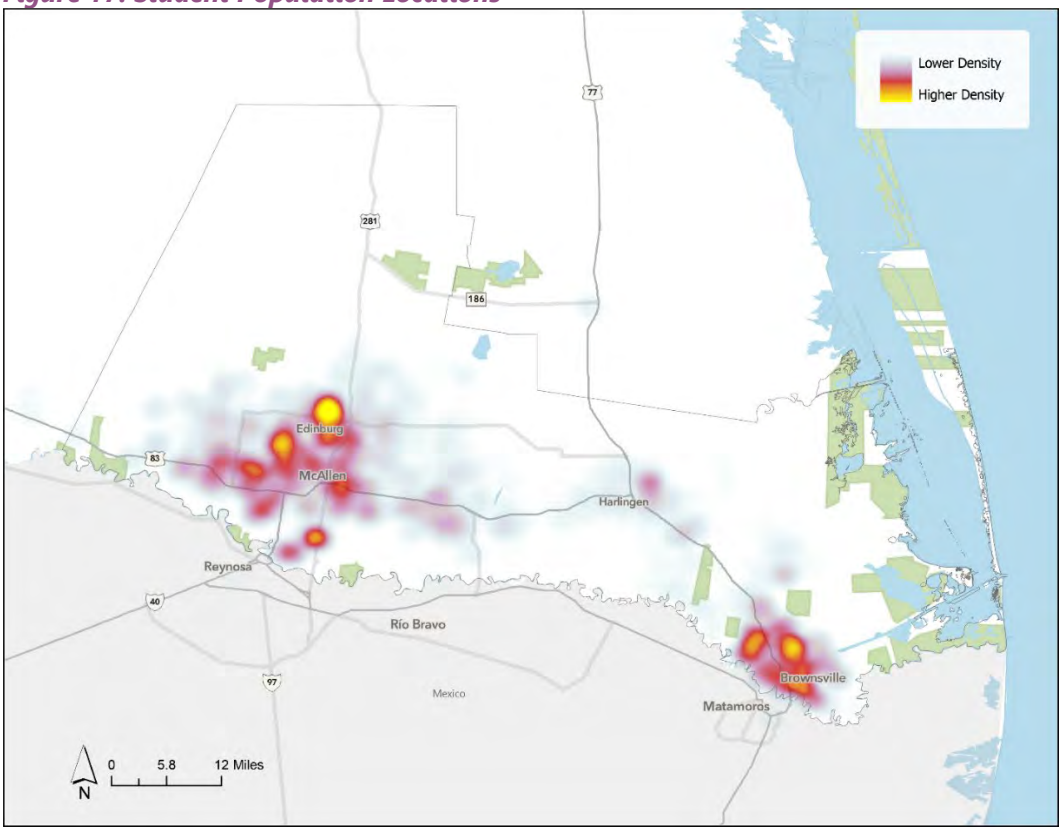


University Markets

The RGV region is also home to several colleges and universities, including the University of Texas Rio Grande Valley. With nearly 33,000 students and six campuses, UTRGV is one of the larger branches of the UT system. The RGV student population is a considerable demographic that overlaps with many of those that are used to define transit dependence and need as described above. Students often do not own their own cars, and many are employed off-campus full- or part-time. Additionally, given that there are multiple campuses throughout the region, it is not uncommon for students to regularly commute between locations in different cities. Student housing conditions reflect this, and are unique in that residences are largely dispersed, the pattern of which is geographically consistent with the transit demand analysis in the previous section.

For these reasons, it is important to consider how the regional transit system serves students and ways it can be made more accessible to them. The student demographic was used in developing the Transit Market scores described previously. As the regional transit system evolves, particular attention may be paid to connection points between Valley Metro, UTRGV, and South Texas College transit services, other partnerships such as the one between B Metro and Texas Southmost College, as well as to areas with higher densities of the student population. These areas are shown in Figure 17, which will be used to inform route and service level recommendations to ensure that system improvements increase connectivity and minimize students' commute times.

Figure 17: Student Population Locations



Desire Line Analysis

The most common transportation mode in the RGV is the automobile. Understanding where most of the population in the RGV is traveling will reveal the most heavily used travel patterns or 'desire lines' in the region. Identifying these desire lines will allow the project team to develop route recommendations that mimic this behavior and position the system to attract new passengers and cause a mode shift toward transit usage. The RGVMAB desire line analysis is shown in Figure 18.

At the regional level, the desire lines show the strongest attractions in the McAllen area. Figure 18 shows the regional relationship between the Harlingen and Brownsville subareas.

Figure 20 shows a more localized desire line example and shows the heavily utilized travel pattern between South Padre Island and Laguna Heights.

Figure 18: RGVMAB Desire Line Analysis

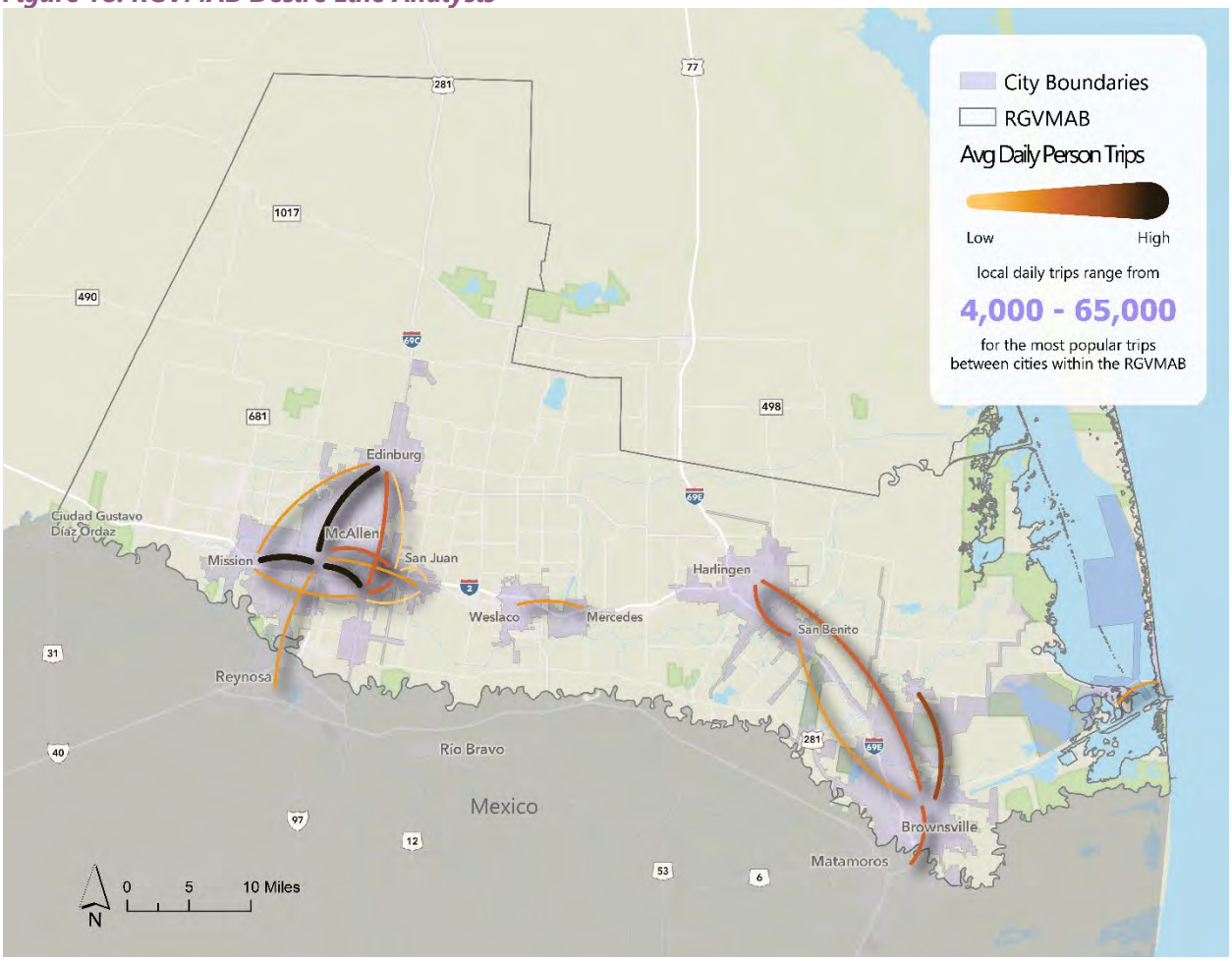


Figure 19: Central RGVMAB Desire Line Analysis

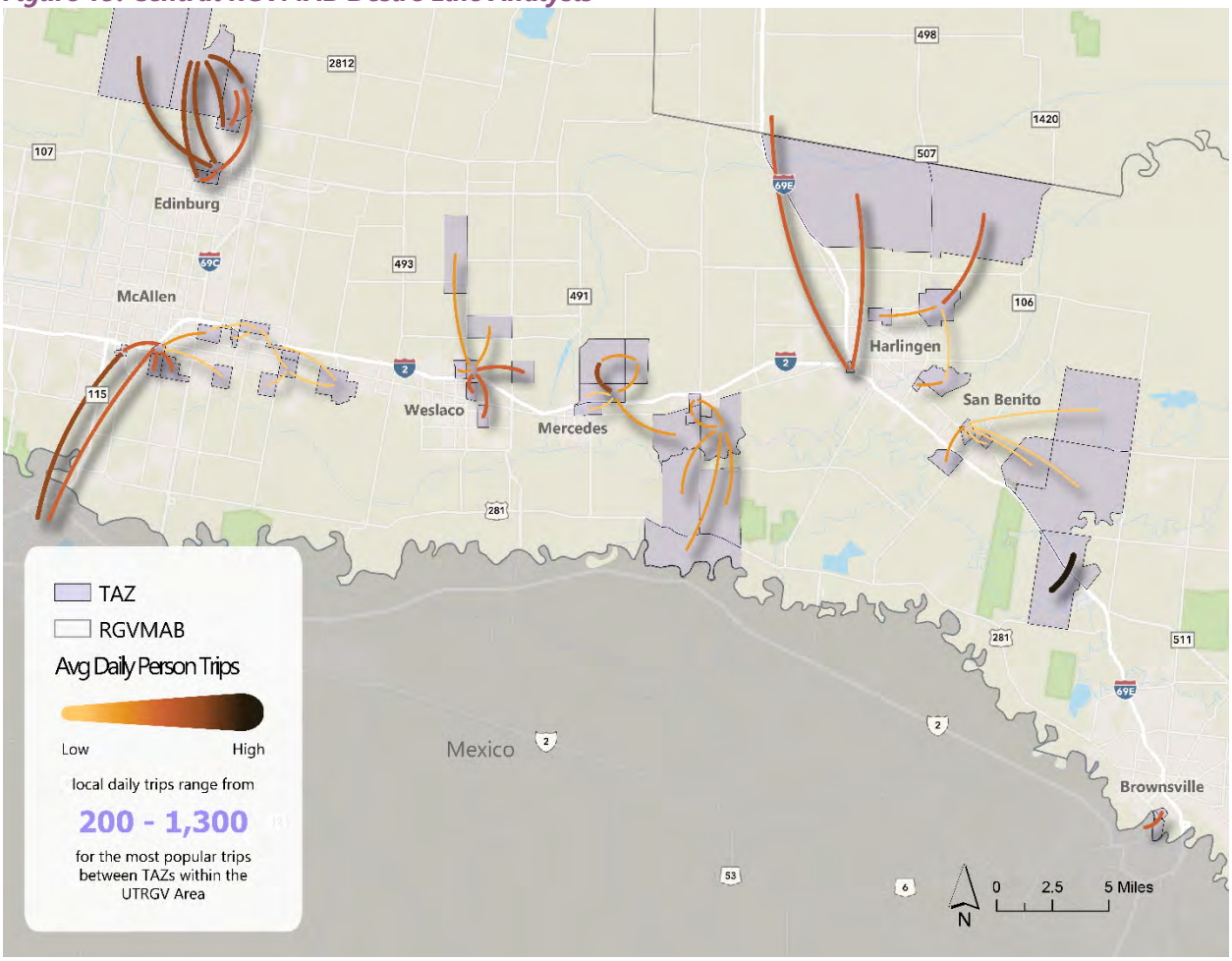
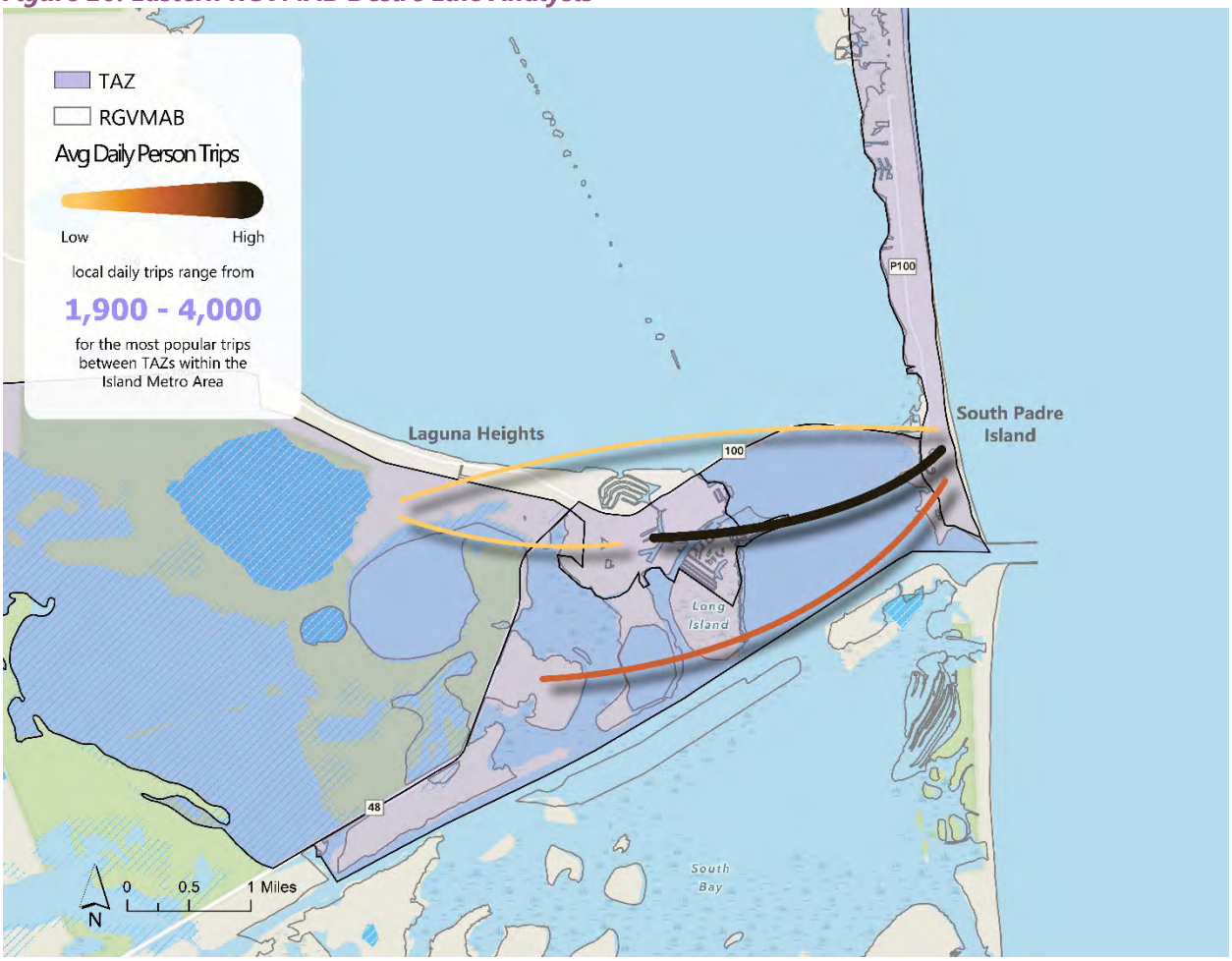


Figure 20: Eastern RGVMAB Desire Line Analysis



ORIGINS AND DESTINATIONS/RIDERSHIP ANALYSIS

Dikita conducted rider surveys of the six transit providers operating in the RGVMAB: Valley Metro, which also works with the UT Rio Grande Valley and South Texas College transit services; Metro McAllen; B Metro; and Island Metro. Transit agencies typically conduct these surveys to gather travel pattern information about their passengers. The RGVMPO requested two types of these surveys, a boarding and alighting counts (B&A) survey and an onboard origin and destination (OD) survey. The B&A and OD surveys were completed simultaneously by teams of one counter and one-to-three interviewers. Both surveys were completed between February 17 and March 12, 2020.

The boarding and alighting survey counted the number of passengers boarding and exiting the bus at every stop for each original trip where interviews transpired. The origin and destination onboard survey instrument was a series of questions administered via personal interviews using tablet computers. One-to-three surveyors boarded buses at the beginning of trips, randomly chose passengers to interview, and interviewed those that were willing to participate. Over the course of the project, a total of 3,007 surveys were collected. After processing, 2,146 (71%) of those surveys were deemed valid.

Ridership Analysis

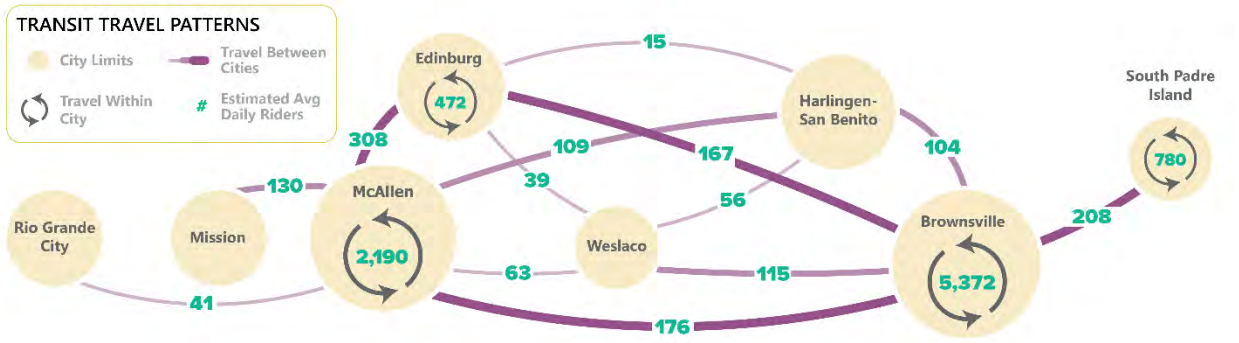
To provide a closer approximation of the responses from surveys in terms of ridership, the origin and destination survey data was expanded to an estimate of average daily riders using the ridership provided for February 2019 – 2020 provided by each agency. This process contributes to an understanding of where riders are traveling in the region. Also, this allowed for the project team to estimate ridership by segment which were mapped in the provider and route profiles.

Regional Travel Patterns

The origin and destination data set, which was expanded into estimates of average daily riders can help to identify the current regional transit travel patterns (Figure 21). The location of the start of a rider's trip (origin) and end of their trip (destination) were summarized at the city level. Cities were combined with nearby cities to demonstrate travel to areas within the region. Travel desire lines between cities were included if there were at least 10 daily riders making a trip between the urban areas. Travel within cities were shown for the top 4 urban areas. The following urban areas are summarized and combined in Figure 21:

- **Rio Grande City (RGC)**: Roma, Rio Grande City, Sullivan City, and La Joya
- **Mission**: Palmhurst, Mission, Alton, and Granjeno
- **McAllen**: McAllen, Pharr, San Juan, Alamo, and Hidalgo
- **Edinburg**: Edinburg and La Villa
- **Weslaco**: Donna, Weslaco, Mercedes, La Feria, and Progreso
- **Harlingen-San Benito (HSB)**: Harlingen and San Benito
- **Brownsville**: Rancho Viejo, Brownsville, Los Fresnos
- **South Padre Island (SPI)**: Port Isabel and South Padre Island

Figure 21: Regional Transit Travel Patterns



For a more detailed understanding, we can look at the number of riders traveling to (origin) vs from (destination) each city or area in the region. For instance, on average, 176 riders travel between McAllen and Brownsville daily. However, 140 of those riders are traveling to McAllen, while only 36 are traveling to Brownsville. Between Edinburg and McAllen, 221 riders travel from Edinburg, while 87 travel from McAllen. The daily travel by origin and destination cities are presented in Table 4.

Table 4: Regional Travel Patterns by Origin and Destination City

		Destination (Traveling to)							
	City	RGC	Mission	McAllen	Edinburg	Weslaco	HSB	Brownsville	SPI
Origin (Traveling From)	RGC	**77**	5	35	-	-	-	-	-
	Mission	-	**16**	50	4	-	-	-	-
	McAllen	6	81	**2,190**	87	25	75	36	-
	Edinburg	-	-	221	**472**	-	3	76	-
	Weslaco	-	-	38	39	**19**	12	115	-
	HSB	-	-	34	12	43	**109**	76	-
	Brownsville	6	6	140	91	-	28	**5,372**	132
	SPI	-	-	-	-	-	-	76	**780**

Rider Characteristics

Another result of the origin and destination survey are responses that can provide more context into the types of transit riders being served in the RGVMAB. It is important to study the demographics and travel behaviors of transit riders. This can help to identify the needs of current riders and guide the recommendations. In particular, the project team was interested in:

- Trip Purpose: where riders are traveling to (home, work, shopping, etc.)
- Accessing Transit Stops: mode used in the first and last mile of a trip
- Alternative Mode: how would a rider make the trip if transit were unavailable
- Demographic Characteristics: Age, Gender, Driver's License, Language, Household Income, and Time Using Transit

TRIP PURPOSE

Asking transit riders about their purpose for making a trip, or what their destination is, helps to identify the ways people are currently using transit in the region. The most common purpose for trips taken on transit for the surveyed riders in the RGVMAB are trips home (24%) and to work (23%). Riders also commonly use transit for shopping (15%), to get to a K-12 school or college (14%), for personal business (8%), and for recreation (7%). Medical appointments, sightseeing, childcare, and other trip purposes were less common on transit (3% or less).

There are some noticeable differences in the destinations for trips when looking at the different providers in the region. The most common trips taken on the regional service provider, Valley Metro, are often trips to home (28%) and to work (28%). The other main types of trips taken on Valley Metro are recreation (11%), personal business (11%), to college (10%), or shopping (8%). Trips taken using Metro McAllen are commonly to home (32%), shopping (22%), or work (17%). B Metro trips are most often taken to work (24%), home (23%), shopping (16%), and to K-12 schools and colleges (15%). Island Metro trips are often to work (29%), shopping (22%), sightseeing (20%), and personal business (15%).

ACCESSING TRANSIT STOPS

How people access their transit stop in the first and last mile of a trip is an important measure in determining the connections between transit and other modes. In the RGVMAB, 80% of surveyed riders walked to their stop to get on the bus, and 89% walked from where they got off the bus to their destination. The other ways in which riders reached their stop in the first mile included dropped off or carpooled (15%), drove alone and parked (3%), used a rideshare service (1%), or used a bike or scooter (1%). In the last mile, or where they got off the bus, the use of other modes were similar – dropped off or carpooled (6%), drove alone and parked (3%), used a rideshare service (1%), or used a bike or scooter (1%). For the regional transit provider, Valley Metro, most transit users walk to the location where they get on the bus (71%) and to their destination when they get off the bus (77%). The other common methods used to access a stop for boarding included dropped off or carpool (17%) or drove alone (7%). When alighting the bus, about 8% of riders carpooled, 7% drove alone, 3% used rideshare, 3% used a bike or scooter, and 2% used a mobility aid or wheelchair to reach their destination.

Within each agency in the region, there were some differences in the modes commonly used to access transit stops in the first and last mile of a trip, but most riders walked to and from their transit stops. Metro McAllen had the largest percentage of riders that carpooled or were dropped off at their stop (28%). On B

Metro, 91% of riders walked to their stop and 97% walked to their destination when they got off the bus. For Island Metro, 97% of riders walked to or from their transit stop.

ALTERNATIVE MODES

Passengers were also asked what alternative mode they would have used to make their trip in the instance that transit was not available. 32% of respondents reported that that they would have been driven and dropped off at their destination by someone else. Other common alternatives included walking with 18%, carpooling with 17%, using rideshare with 11%, driving alone with 8%, and using a bike or scooter with 5%. Additionally, 9% of riders would not have made the trip at all if transit were unavailable. B Metro and Metro McAllen had the highest portion of riders who would have been dropped off by someone else, with 37% and 38% respectively. Island Metro had the highest number of respondents that would have driven alone with 18%, compared to 4% of Valley Metro riders, 7% of B Metro riders, and 5% of Metro McAllen riders. Riders surveyed on Valley Metro were most likely to have used a rideshare service as an alternative, with 17% responding that they would choose this option. Notably, only 5% of respondents across all providers reported that they would have used a bike or scooter in the absence of transit.

Responses about alternative mode choices suggest that many current transit riders do not have reliable access to a personal vehicle and need access to transit to be able to get around. When these findings are considered in tandem with responses about trip purpose, it can be concluded that users in RGV require transit service to accomplish many tasks in daily life.

AGE

The data collected showed that the most prominent age group for transit riders in the RGV was 41-64 years old. 45% of Valley Metro riders, 25% of B Metro riders, 42% Metro McAllen riders, and 48% Island Metro riders are in this group. The second highest age group was found to be 25-40 years old. 20% of Valley Metro riders, 21% of B Metro riders, 22% of Metro McAllen riders, and 17% of Island Metro riders make up this group. These two age groups represent the core riders for transit service in the RGVMAB.

It is also important to consider the riders that may have limited access to a vehicle due to age or ability. Across all transit service within the RGVMAB, 28% of riders were either under 18 years old or above 65 years old. Survey participants in these age groups comprised 16% of the surveys for Valley Metro, 35% for B Metro, 24% for Metro McAllen, and 31% for Island Metro. This demographic is often heavily reliant on transit service and is shown in the results of this survey to represent almost a third of transit ridership in the region.

GENDER

The rider survey in the RGVMAB found that 54% of the survey participants were female. By provider, Valley Metro riders were 42% female, B Metro riders were 54% female, Metro McAllen riders were 57% female, and Island Metro riders were 65% female.

DRIVER'S LICENSE

Respondents were also asked if they have a driver's license. Across the RGVMAB, 71% of participants do not have a driver's license. Though it has become more common for younger people to not obtain a driver's license as soon as they turn 16 and opt for other transportation options, this result likely expands beyond those individuals who could drive but choose not to and may reflect lack of access to personal vehicles among transit riders. The number of survey participants who responded that they do not have a driver's license was 69% for Valley Metro, 80% for B Metro, 73% for Metro McAllen, and 42% for Island Metro.

HOUSEHOLD LANGUAGE

Among all survey participants, a majority primarily speak Spanish at home. This trend is reflective of the large Hispanic/Latino community living in the valley. Respondents from B Metro reported the largest number of Spanish speakers, with 90% answering that it is their primary household language, followed by Metro McAllen with 75% and Valley Metro with 51%. Only 40% of Island Metro respondents responded that Spanish is their primary language, a disparity that can likely be explained by the high concentration of tourists that travel from other parts of Texas, many of which have a smaller Hispanic/Latino demographic than the RGV, and utilize the transit system in South Padre Island and Port Isabel. When respondents were asked if they were visitors to the RGV region, 50% of Island Metro riders answered yes, compared to only 20% of the respondents on all systems.

INCOME

Survey participants were asked to choose the range in which their annual household income falls. Among all participants, 72% earn less than $35,000 per year, while 10% earn more than $35,000. Though 18% of respondents declined to answer this question, the trend is similar across respondents from all four transit providers. 80% of B Metro riders, 75% of Valley Metro riders, 66% of Metro McAllen riders, and 43% of Island Metro riders reported earning less than $35,000 per year.

The median household incomes for Cameron and Hidalgo Counties are approximately $37,100 and $38,300, respectively,[1] meaning the data collected indicates that many transit riders in the RGV earn less than the median household income. This finding is significant, as it is more common for lower income families not to own a personal vehicle and instead rely primarily on public transit for daily travel. Individuals in this demographic represent the transit need of the market, which, as described in previous sections, are an important part of the holistic process of planning for a system that suits the needs of the community.

TIME USING TRANSIT

Survey results depicted that 49% of surveyed riders had been using the transit service for more than 2 years. Of that 49%, there were 19% of participants who stated that they had been using the service for more than 5 years. By provider, the portion of riders surveyed who used transit for more than 2 years was 58% from Valley Metro, 48% from B Metro, 45% from Metro McAllen, and 43% from Island Metro.

Though having dedicated riders who use the service regularly is an important quality of a transit system, it is just as important to attract new riders and provide service that can easily be used by occasional riders when they need or want to use it. Survey results showed that B Metro and Metro McAllen had the largest number of newer riders. 32% of riders surveyed on B Metro and 35% of riders surveyed on Metro McAllen had used the service for 6 months or less, compared to 16% of Valley Metro riders and 18% of Island Metro riders. These results may be due to recent investments and improvements in transit services within the City of Brownsville and the City of McAllen. It is also notable that 35% of Island Metro participants described themselves as not using transit regularly, compared to only 1% on the other systems. This trend is likely related to the 50% of Island Metro respondents who reported being visitors to the region and who are likely using Island Metro while away from their vehicle.

[1] census.gov/quickfacts/cameroncountytexas; census.gov/quickfacts/hidalgocountytexas

2 REGIONAL SERVICE STANDARDS

A goal of the RGVMPO Transit Development Plan is to establish guidelines that help the six independent transit providers in the region collaborate effectively and promote a connected regional transit system. The RGV Regional Service Standards provide baseline recommendations and evaluation metrics that focus on aligning and improving existing and future service to better serve the community in the RGVMAB.

INTRODUCTION

As the RGVMAB grows, it is crucial that transit service is continually evaluated to ensure it is meeting the needs of the community. A successful transit system will help mitigate traffic congestion and connect people to destinations and resources throughout the region. While each of the transit providers in the RGVMAB has independent leadership, policies, and procedures, when a passenger is traveling from point A to point B, they are often less concerned with who is providing the trip then they are with making it to their destination in a safe and timely manner. The interconnected socioeconomic and cultural landscape of the RGVMAB and cities therein make it important to approach system evaluation and planning from the perspective of the region as a whole.

Service standards are areas of focus for transit providers to consider when evaluating service performance and setting goals for future improvements. While not exhaustive, these standards provide guiding recommendations that outline goals for the regional transit service. A core set of standards will allow providers to ensure consistent, high-quality service throughout the regional transportation network.

Progress towards meeting and exceeding service standards may be assessed in different ways. Key Performance Indicators (KPIs) are metrics that may be applicable in measuring a provider's adherence to a service standard. These targets are quantifiable and may be set based on service type. Recommendations are actionable steps that, when implemented, help the transit provider meet one or multiple standards.

Purpose

The regional service standards below have been developed for the RGVMAB as part of the 2030 Transit Development Plan. Currently, there are six transit providers operating in the region, each with distinct service types, administrative procedures, and planning goals. The list of standards and accompanying evaluation metrics are intended to create a unified approach and shared best practices that will bring consistency to the regional transit system. They are rooted in nationwide best practices for transit service planning and adapted to meet the needs of the local context in the RGVMAB, offering a unique set of service provision types, technology standards, and system designs that can be implemented throughout the region. Existing transit service by all providers in the region should be measured on an annual basis to track progress towards a system that complies with these standards.

The following sections detail the Rio Grande Valley regional service standards and provide specific measures and recommendations for each. It should be noted that these represent minimum standards that providers should aim to achieve, and that it is possible that parts of existing service meet or exceed these targets. The service standards offer a guide to make high-quality transit present throughout the RGVMAB. It is also important to understand that all targets represent goals for peak hour service. Standards and their metrics were created to be realistic for a regional transit system and represent targets that all providers in the region can work towards achieving in tandem.

Title VI Disclaimer

It should be recognized that any system alteration that results in a change in service of 25% or greater will be considered a major service change and require a Title VI analysis. For example, if there are 20 existing trips and 5 trips are altered, it would constitute a 25% change in service and require further analysis in accordance with Title VI of the Civil Right Act of 1964.

Complementary Paratransit

In accordance with Part 37 of the Americans with Disabilities Act, Transportation Services for Individuals with Disabilities, all public entities who operate a fixed route system will provide paratransit service that is both comparable and complementary to the fixed route service to all eligible patrons. Complementary paratransit must provide service to any origin or destination within 3/4 mile on all sides of any route corridor in the system.

Route Classifications

Service standards in the RGVMAB are not intended to be 'one size fits all.' For service standards to be implemented and evaluated effectively, they should account for the variety of transit services currently being operated across the region and proposed in the future. Implementation of service enhancements may be tailored to the level appropriate for different service types; for example, regional routes may require stops to be spaced farther apart than local routes due to the nature of the service. Many of the recommendations provided in this document are accompanied by measures that can be applied differently to the different types of route classifications shown below. Existing routes in the RGVMAB have been classified based on their contexts and can be found in Appendix B.

Figure 2-1: Route Classifications

LOCAL - URBAN

Fixed route service that operates in more urban areas where demand and destinations are concentrated.

LOCAL - RURAL

Fixed route service that operates in mostly rural areas.

REGIONAL - EXPRESS

Service that travels city to city with limited stops, offering coverage of multiple urban areas.

REGIONAL - URBAN

Service with stops at key destinations in multiple urban areas throughout the region.

CAMPUS

Service that is limited to a particular university campus. Service is open to students and the general public.

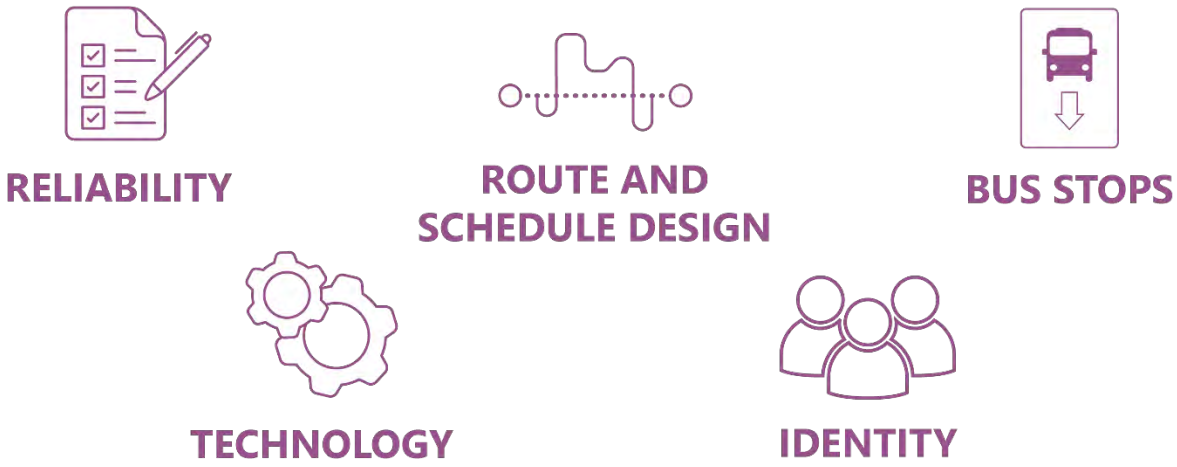
MOBILITY ZONES

Designated areas with demand response service available, set in the place of unproductive fixed routes & deviations.

Regional Service Standards

Service standards for the RGVMAB regional transit system have been identified as shown in Figure 2.

Figure 2: RGV Regional Service Standards



These standards have been determined as areas of focus for the regional transit system and are presented with Key Performance Indicators and Recommendations that will guide the changes needed to meet them. This information is intended to document a shared vision for transit in the RGVMAB and to inform all relevant transit agencies of the recommended goals and how they may be measured. The standards are presented in a way that is meant to be intuitive and easy to refer to as the regional system evolves over time.

The standards are one component of the Regional TDP and need to be implemented in coordination with the recommendations, implementation plan and transit investment strategy. Expanded operational and capital funding will be needed to meet many of the thresholds of the Regional Service Standards.

RELIABILITY

RGV REGIONAL SERVICE STANDARDS

KPIs

On-Time Performance

Bus Stops	75% On Time
Time Points	85% On Time
Transit Centers	**90% On Time**

Trips are 'on time' when they depart less than 5 minutes late & do not depart early. Flexible Route OTP may be measured at timepoints determined by provider.

Frequency

Route frequencies should fall within these ranges during peak demand periods based on service type and demand.

Local – Urban	Every 15-30 minutes
Local – Rural	Every 30-60 minutes
Regional – Express	Every 15-30 minutes
Regional – Urban	Every 15-60 minutes
Campus	Every 15-30 minutes

Clock-Face Scheduling

Service should be scheduled to run at regular intervals that fall at memorable times.
A bus should always depart from the terminus at :00, :15, :30, or :45 after the hour. This ensures service is consistent and easy for riders to remember while making it easier to transfer between routes and providers. It also provides opportunities for interlining.

Recommendations

Span

The span of service should adhere to one of the levels below based on demand.

Standard	*7:00am – 8:00pm*
Shortened	*7:00am – 6:00pm*
Extended	*6:00am – 10:00pm*
Campus	*As appropriate based on demand*

Days of Service

Minimum Recommended Days of Service: Monday-Friday
Weekend service should be considered and implemented where appropriate.

Time Points

All routes should be assigned time points.
Time points are identified at major stops along a route that the bus uses to maintain schedule. These locations are designated along a route to control the spacing of buses (bus headway), creating the route schedule for passengers. Time points should be placed at strategic points such as major intersections, major trip generators, and at destinations where the highest boarding activity is recorded. Timepoints should be an average of 10 minutes apart.

ROUTE AND SCHEDULE DESIGN

RGV REGIONAL SERVICE STANDARDS

Recommendations

Connectivity

Where appropriate, fixed routes should make connections to other routes within the same system or to routes in other systems.

Connection stops should be clearly marked, especially where multiple providers' services connect.

Route Patterns

Minimize the number of patterns or variations a route has.

Route patterns or variations describe when a fixed route stops in alternate places than its typical design on certain days or times. This can become confusing for riders and should be avoided. When considering adding an alternate pattern to a route, there should be a clear purpose for doing so and clear communication to riders.

Flexible Service

Minimize routes with flexible service. Implement only in areas with lower demand.

Service Duplication

Minimize service duplication between providers.

Coordinate and align service to contribute to the overall network connectivity. Avoid running service on the same alignment and schedules.

Transfer Time

Transfers should occur within a 15-minute window.

Propensity & Need

Consider data on the transit market to inform route expansion and alterations.

When evaluating existing and potential service, ensure that there are high enough densities of population (passengers) and employment (destinations) to justify service. Identify Census block groups that have large portions of population and employment to make sure these areas are served by existing routes and stops.

Additionally, consider where service is provided in areas with substantial populations of Targeted Transit Riders, or citizens who generally have higher need to use transit due to various limitations to personal mobility such as age, income level, disability, race, ethnicity, and access to a personal vehicle.

Productivity

Measure and evaluate service based on route productivity.

Productivity (boardings per mile per hour) provides insight into ridership trends and relative route performance. Set benchmarks and evaluate over time.

Recommendations

Travel Time

Evaluate service using a travel time measurement tool.
Travel time is a necessary component of service to track. Transit providers should strive to improve how far passengers can travel within a given amount of time by adjusting the frequency of service and placement of bus stops.
Travel time benchmarks in the RGVMAB will vary by transit provider.

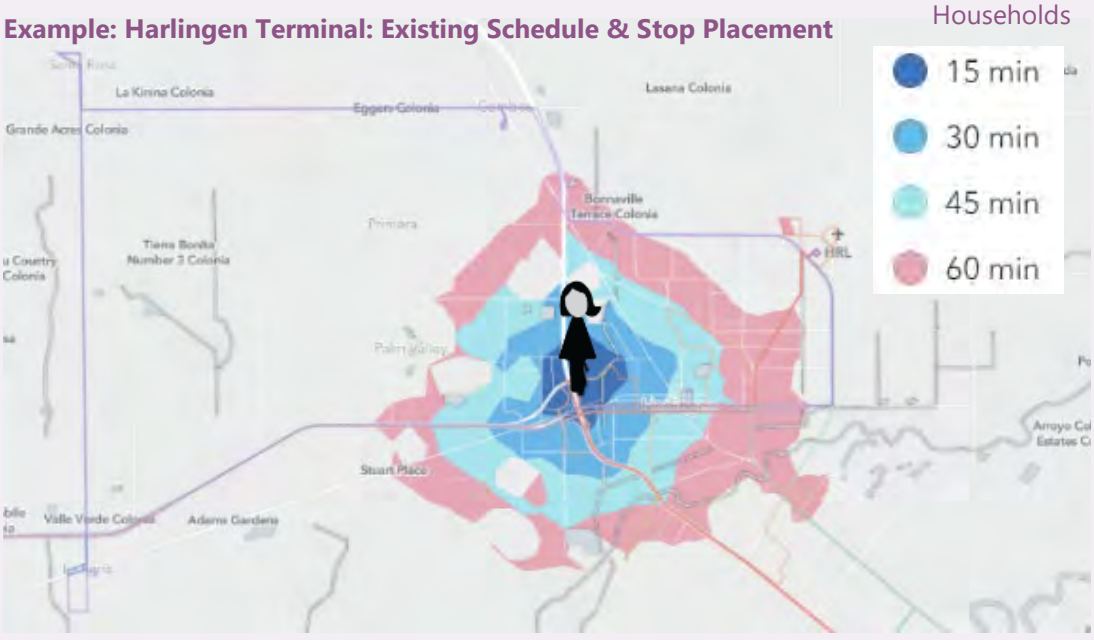
Meet Jane
Measuring Travel Time

Increasing efficiency and convenience of travel by transit is important to improving quality of life for existing passengers as well as attracting new ones. Improved travel times may be the result of increasing route frequencies, adjusting the distance between bus stops, and expanding the operating hours of a service, as well as overall decreases in congestion in the region. Transit providers in the RGVMAB should monitor these qualities and make changes with the goal of improving travel times and coverage for passengers.

When accurate schedules, route alignments, and stop locations are recorded in Remix, placing 'Jane' at a transit station will show how far passengers can travel in different increments of time.
Coverage can also be measured using demographic metrics. Providers should utilize these filters to evaluate how service is interacting with the transit market:

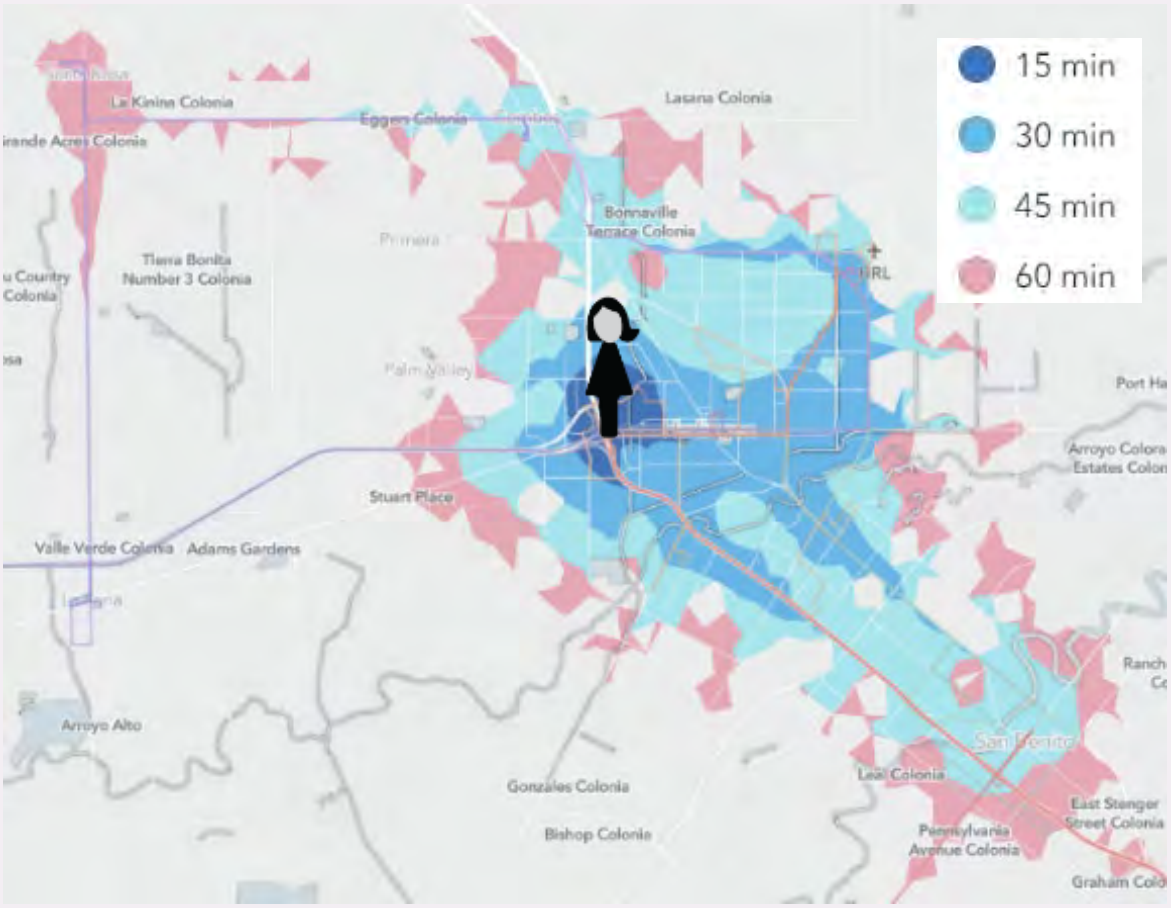
- Population
- Jobs (CTPP)
- Minority Population
- Living with A Disability
- Age 65+ and 17-
- Car-Free Households

Example: Harlingen Terminal: Existing Schedule & Stop Placement



Route and Schedule Design Standards – Continued

Example: Harlingen Terminal: Potential Schedule & Stop Placement



Time	Population Coverage *Current Schedule & Stops*	Population Coverage *Potential Schedule & Stops*
15 min	2,263	3,389
30 min	8,222	27,765
45 min	20,751	65,809
60 min	47,747	81,006

BUS STOPS

RGV REGIONAL SERVICE STANDARDS

KPIs

Stop Spacing

Stop spacing is important to maintaining efficiency and convenience of service. Well-spaced stops help buses adhere to schedules and reduce dwell time.

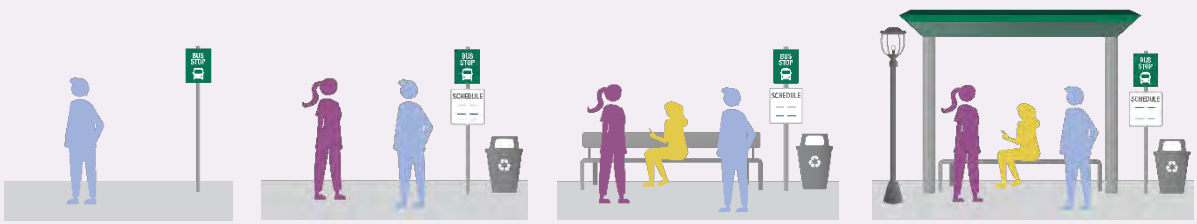
Route Classification	**Average Spacing**
Local – Urban	¼ Mile
Local – Rural	½ Mile
Regional – Express	Key destinations
Regional – Urban	1 Mile

Campus route stops may be spaced as appropriate depending on environment.

Stop Design

Amenities should be considered based on stop-level ridership. All stops should be safe, visible, and accessible. Using stop-level ridership can ensure that stop amenities are distributed equitably depending on available funding. As each provider in the region has different total ridership, stop-level ridership should be ranked relative to other stops in that provider's system. For example, if a system had 100 stops and used the percentiles below to distribute amenities, it would mean that the top 10 most-frequented stops based on daily ridership would be given Level 4 amenities.

Regional System Bus Stop Standards – Continued



Level 1	Level 2	Level 3	Level 4
Below 50th Percentile	50th-74th Percentile	75th-89th Percentile	90th Percentile

Recommendations

Stop Environment

Bus stop facilities should be integrated within existing pedestrian and bike networks.

Space to wait for the bus should be well connected to the sidewalk network, making it easy for riders to continue their trip beyond the bus stop. Stops should be clearly discernable, with bilingual signage that reinforces the identity of the transit service.

TECHNOLOGY

RGV REGIONAL SERVICE STANDARDS

Recommendations

Vehicle Technology

Automatic Vehicle Locator: Tracks geographic location and speed of vehicles to measure on-time performance (OTP).
Automatic Passenger Count: Collects boarding and alighting numbers to gather accurate stop-level ridership data.
Installing these capabilities on all vehicles helps improve service performance and allows for more in-depth analysis of route ridership and bus stop use.

Planning Software

Agencies should use software that allows for route and schedule planning.
The software's capabilities should include storage of route alignments and stop locations, scheduling functions that allow for the input of frequencies, recovery times, and span of operation by route, and a mapping function that integrates Census data to overlay population, employment, and socioeconomic data.
As much as possible, providers in the region should use the same platform for consistency and ease of collaboration. Most systems currently use **Remix**.

Real-Time Location

Agencies should utilize a platform that allows passengers to view real-time vehicle locations.
This capability enhances service for riders and makes vehicle dispatch and OTP tracking easier for transit providers.
As much as possible, providers in the region should use the same platform for consistency and ease of collaboration. Most providers currently use **Ride Systems**.

Needs Assessment

Review existing transit software annually to determine whether it is meeting the agency's needs.
Recommended software capabilities:

- Fixed route and bus stop mapping
- Scheduling function
- Cost of service
- Real-time location tracking
- Mapping that integrates Census data for analysis
- Ridership by stop, time of day, and trip

IDENTITY

RGV REGIONAL SERVICE STANDARDS

Recommendations

Regional Transit System

Communicate service information using a design philosophy that characterizes transit service in the RGV as a regional system and that emphasizes clarity, ease of use, and consistency. Apply this philosophy to all service in the region to promote continuity in the regional system. Develop and maintain a visual identity for the regional transit system that complements those of individual providers. Create a branding scheme including a consistent color palette and font, logo, design aesthetic, and document templates. While individual transit providers may maintain their autonomous branding on agency-specific websites and facilities, the regional brand identity should be applied wherever possible in public-facing materials. This will provide the region-wide system with a consistent identity that the public easily associates with the RGV transit system and its services.

To ensure that the regional transit system is legible and easy to use, consistent design motifs should be used in all wayfinding and informational materials. Use a uniform color for each provider on materials including bus stop signage, route/service area maps, service schedules, and lists of transfers, throughout the region.

Standardized Provider & Route Identity

Transit Provider	Color Identity	Route Naming Convention
Valley Metro	**RED**	Routes 100-199
B Metro	**BLUE**	Routes 200-299
Island Metro	**YELLOW**	Routes 300-399
Metro McAllen	**GREEN**	Routes 400-499

Website

Update the Valley Metro website.

Valley Metro information should be hosted on a clearly branded website independent from the LRGVDC. The website should include an interactive, system-wide map where riders can zoom in and view routes and stop information. PDF schedule documents may be updated and migrated to this site as well.

A map showing all regional service and links to the webpages of the other RGV transit providers is also recommended.

Sample System Map – Valley Metro System

Sample Route Schedule

ROUTE 10

06:30 - 17:30 · Every 132 min · 12 trips (6 Outbound, 6 Inbound)

	0	+5.0	+15.0	+10.0	+25.0
A	06:30	06:35	06:50	07:00	07:25
A	08:30	08:35	08:50	09:00	09:25
A	10:30	10:35	10:50	11:00	11:25
A	13:30	13:35	13:50	14:00	14:25
A	15:30	15:35	15:50	16:00	16:25
A	17:30	17:35	17:50	18:00	18:25

	0	+25.0	+10.0	+15.0	+5.0
A	07:30	07:55	08:05	08:20	08:25
A	09:30	09:55	10:05	10:20	10:25
A	11:30	11:55	12:05	12:20	12:25
A	14:30	14:55	15:05	15:20	15:25
A	16:30	16:55	17:05	17:20	17:25
A	18:30	18:55	19:05	19:20	19:25

OUTCOMES

Implementing strategies to meet and exceed the regional service standards will help improve service as well as create and reinforce the presence of transit in the RGVMAB. Maintaining cohesivity within the regional system will lead to a more convenient, positive user experience, as well as a more streamlined, collaborative relationship among the region's transit providers.

Intended Outcomes of Regional Service Standards

Reliability

- Transit in the RGV is a more dependable mode of transportation and people use it regularly.
- Ridership increases across all providers.
- More riders feel comfortable using transit as their primary mode of transportation.

Route and Schedule Design

- Service is more efficient and tailored to the needs of riders and markets being served.
- Transit trips are faster, decreasing the amount of time passengers spend commuting.
- Transit takes people where they want to go, when they want to go there.

Bus Stops

- Transit users are easily able to locate bus stops and information about their trip.
- Riders feel safe and comfortable at transit stops and throughout trips.
- Transit providers deliver faster and more reliable service associated with fixed route service as opposed to the variability of deviated fixed route or on-demand service.

Technology

- Transit providers can more easily assess route performance, rider satisfaction, and service issues.
- Providers have a centralized way to store service details and view data about the community.
- Collaborating with other providers is more convenient.
- Transit users can easily access information on their bus, making trip planning more intuitive.
- Transit providers understand the dynamic travel patterns of the region and can adapt their service to meet the everchanging needs of the transit markets they serve.

Identity

- Transit riders have more confidence when transferring between different providers' service.
- New riders are more willing to try transit.
- User perception of transit is improved, and the system is seen as more cohesive and recognizable.
- Travel between cities in the region is more comfortable.

3 RECOMMENDATIONS AND ALTERNATIVES

The recommendations and alternatives for Valley Metro service are comprised of route alignment and service level recommendations intended to improve transit and to provide coordination opportunities among all transit providers in the RGVMAB. This chapter explores two alternatives for the future of regional transit and provides measures for how the alternatives perform. The two alternatives were developed based on public input, regional service standards, and the evaluation of existing transit markets.

INTRODUCTION

A transit route or network is defined by identifying where a bus goes, how it gets there, and how long it takes to reach its destination. The definition of any of these three components determines how effective transit service delivery is and how well it serves the underlying transit markets. Building off the Existing Conditions Analysis and the Regional Service Standards, the TDP lays out recommendations and two redesign alternatives that define route alignments and service level changes. These changes address the key findings of the transit market analysis as well as the public input gathered from stakeholder interviews and the development of a community vision for the future of transportation. Implementing the recommendations and alternatives of this TDP in coordination with the Regional Service Standards will result in a new regional transit framework that improves service for existing passengers and positions the regional transit network to attract new passengers moving forward.

Methodology

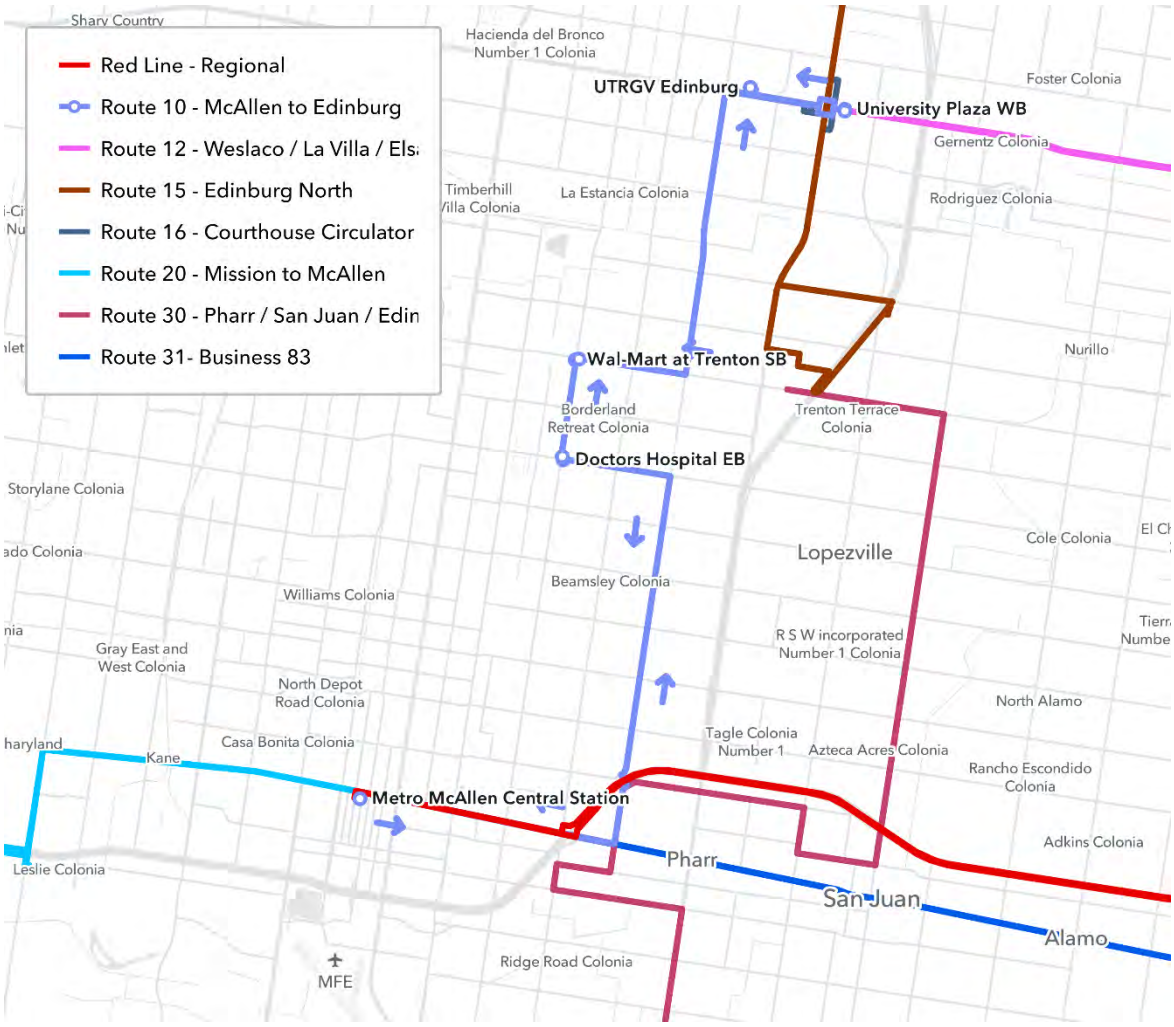
Designing route alignments and service delivery strategies involves the synthesis of multiple data sets and resources. The data and resources listed below informed the customized recommendations and alternatives of the RGV TDP:

- Public and stakeholder input
- Transit provider input
- Previous transit plans
- Transit market analysis
- Regional service standards
- Origins and destinations study

An example of this methodology is the redesign concept for the McAllen and Edinburg area. The Origins and Destinations survey revealed the McAllen and Edinburg trip interchange as one of the major patterns of travel which accounted for 20% of total regional transit trips. The automobile travel patterns revealed a similar common path of travel occurring between the two cities. The existing Valley Metro Route 10 provides a service between McAllen Central Station and UTRGV in Edinburg with trips occurring every 2 hours, as shown in Figure 1. The significant demand for this trip pattern warranted the increase in service frequency, conversion from a flexible local service to a fixed route, and potentially a more direct route design.

For both alternatives, the route was renamed to match the recommendation of the regional service standards that Valley Metro routes range from 100-199. For alternative A, the deviation which serves the Doctor's hospital at Renaissance, Cornerstone Regional, and the Walmart at Trenton, was eliminated to create a more direct and frequent service between the two cities. These key destinations are serviced by planned Metro McAllen routes, so the service to these destinations in this alternative would not be eliminated. In alternative B, the deviation is maintained to match the current route alignment as the route has 103 daily riders and would likely see an increase with the addition of more frequency and a transition to a fixed route service.

Figure 3-1: Existing Route 10 – McAllen to Edinburg with Timepoints



Measuring Performance of Alternatives

To measure the differences between existing Valley Metro services and recommendations of the two potential alternatives, existing and future routes were drawn using Remix™, a route sketch planning tool. Remix™ was also used to estimate stop locations. Performance measures can be used from Remix to provide a comparison of the service options being considered, presented in Table 1.

Table 3-1: Performance Measures for Alternatives

Measure	Description	Assumptions
Number of Fixed Routes	Number of Valley Metro bus routes in the system	Includes deviated fixed route for existing and fixed route for future alternatives
Number of Frequent Bus Routes (30 min or better)	Number of Valley Metro bus routes in the system with 30 min or better frequency	Includes deviated fixed route for existing and fixed route for future alternatives
Number of Peak Buses	The estimated number of buses required to run the route or system based on estimated travel time and frequency of services	If implemented, more detailed travel times will be required to accurately estimate requirements for vehicle purchases
Full-Service Coverage	The number of people and jobs within a quarter mile of Valley Metro service.	Stops were estimated about every quarter mile to provide an equivalent comparison of existing and future routes; however, the existing services are deviated fixed routes, so the service might be smaller/larger in reality
Hourly Service Coverage (60 min or better)	The number of people and jobs within a quarter mile of Valley Metro routes with service at least every 60 minutes	
Frequent Service Coverage (30 min or better)	The number of people and jobs within a quarter mile of Valley Metro routes with service at least every 30 minutes	
Annual Service Hours	Estimated annual service hours based on schedules and frequencies of routes	Actual annual service hours might fluctuate; for example, COVID-19 reduced service which impacted 2020 total hours of service
Annual Operating Cost Estimate	Estimated annual service cost using existing average cost per hour ($69 for Fixed Route - Urban and $73 for Fixed Route – Rural)	Operating cost estimates provide an idea of the compared costs of scenarios and will need further refinement in the implementation process
Travel Time Improvements near Major Hubs for Transit	Measured using people and jobs within the walkshed of transit hubs broken out by travel time ranges	This can be affected by location of stops, frequency of routes, and the design of routes

Stakeholder and Public Engagement

Understanding the needs of current and potential transit riders is crucial to the development of service alternatives that meet the needs of the community. The process for soliciting input from the public for the TDP faced a particular challenge due to safety concerns for in-person gatherings due to the COVID-19 pandemic. Due to these unforeseen circumstances, the visioning exercise and stakeholder interviews were conducted online. Community members were notified of the opportunities to get involved through social media posts and by email. By listening to input from the public, decision makers can better understand the community's transportation needs and goals.

The following sections in this chapter summarize the public engagement and stakeholder feedback solicited to aid in the preparation of these service alternatives for a regional transit system.

Public Engagement

The RGVMPO conducted multiple public outreach efforts to better understand the community's transportation challenges, needs, and opportunities. The participants' responses provided insight into their vision for the future of the transportation system and their goals for transit in the RGVMAB by 2030. Public engagement included an online visioning process.

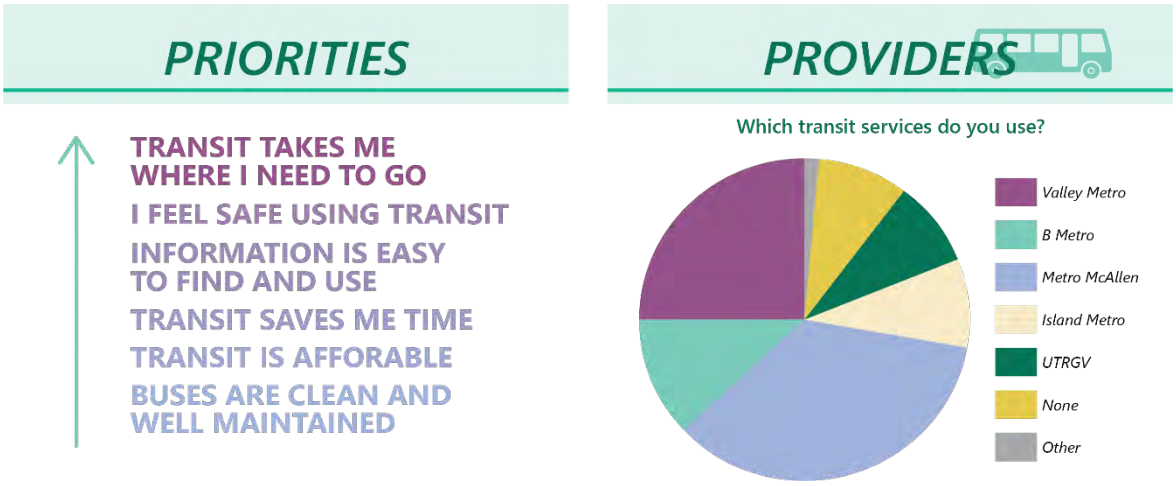
ONLINE VISIONING PROCESS

The digital visioning process was custom-built for the development of the MTP and included questions specific to the TDP. The tool consisted of modules that both educated the public about the plan development process and requested feedback about community values and existing conditions in the region. The online visioning survey was opened on April 1, 2020 and closed on July 20, 2020. During this time, the tool received a total of 83 survey responses and 200 comments on the interactive map. Accessibility for the online visioning tool was prioritized throughout the design process, starting with responsive web design. The structure of the tool included three main parts: a brief description of the visioning process, a survey that gathered basic information about the participants and their transportation usage, and an interactive map of the region where participants could place comments in exact locations regarding specific needs or issues related to transportation at those locations.

The results of the online visioning process showed repeated concerns that transit routes were fragmented, and many participants expressed a desire for a regional transit connection that travels the length of the RGVMAB. Participants in the visioning process voiced interest in significant investment in feasible and relevant projects that support the long-term resilient growth of the region. Other than improved regional connections via bus routes, regional light rail transit was another common aspiration mentioned. Respondents also noted the transit-dependent population has limited access to many places in the RGVMAB: "It's focused on people with personal vehicles. We are the poorest region in the state yet make it very difficult for people to get around with limited transit, walking, and cycling options." The other survey results are summarized in Figure 2 and Figure 3 below.

Figure 3-2: Transit Feedback from Visioning Process

Figure 3-3: Transit Feedback of Priorities and Most Used Services from Visioning Process



Stakeholder Engagement

The RGVMPO conducted interviews with stakeholders from a diverse and wide-ranging set of communities across the RGVMAB. The stakeholder groups included environmental groups, transit providers, municipal and county governments, educational institutions, freight industry leaders, port authorities, law enforcement and emergency services, bicycle and pedestrian advocacy organizations, and community interest groups.

The purpose of the interviews was to listen and record regional transportation issues,opportunities and challenges facing stakeholders. Similar to the Online Visioning Process, stakeholder interviews were conducted online via Microsoft Teams due to concerns amid the COVID-19 pandemic. Staff recorded notes during the meetings and summarized a comprehensive list of topics discussed. The feedback from stakeholders regarding transit have been summarized below.

STAKEHOLDER INTEVIEWS

Many stakeholders indicated that there is a large need for improved transit services in the RGVMAB, and they believe that the creation of a regional transit authority will be beneficial to this effort. Such an organization would also be able to implement increased education for riders to learn about services in their area and how they connect to the regional transit system.

It was mentioned that the transit connection between UTRGV and South Texas College campuses has been helpful for student populations. This, combined with the fact that UTRGV bus services are free for students, has helped improve ridership.

Stakeholders also shared anecdotes that highlighted the safety concerns of the RGVMAB's transit system. Many described the risks created when bus service ends early in the evening. If someone gets off work just as the last bus departs, they may end up having to walk home alone in the dark if they miss the bus. This is a reality for many people who have jobs or other responsibilities that require them to commute home after the last bus of the day.

Some stakeholders described the general attitude toward transit throughout the region as one of negativity or confusion, and many others discussed difficulty navigating the different providers and systems. Stakeholders expressed that reliable and accessible service is important, and efforts to help users feel comfortable depending on them is important as well. The existing services were cited as having the following issues:

- Limited hours of operation
- Lacking amenities for carrying groceries and laundry
- Inconvenient ticket sales
- Limited intercity services lacking proper capacity
- Limited transit coverage outside of core cities
- Long distances to bus stops
- Unsheltered bus stops with no protection from severe weather
- Many stops are not accompanied by sidewalks, or proper lighting and signage
- Service information is not provided in Spanish
- Messaging is confusing when there are language barriers
- Some fleet vehicles are past useful life
- There is not a current seamless fare option across the valley
- Service standards vary across the valley

TRANSIT PROVIDER COORDINATION

Each of the six transit providers in the region deliver transit services to different areas and different markets. Many of these services overlap, which can result in the services complimenting one another or unnecessary service duplication. The mix of services form a regional transit network, and because of this, the project team worked with each agency to develop an understanding about their services. This information was detailed in the existing conditions chapter and helped the project team understand the opportunities and challenges experienced by the different providers. The project team attended the Regional Public Transportation Advisory Panel (RTAP) on Tuesday, August 25, 2020 to discuss the priorities and goals of the Regional TDP. At this meeting and through stakeholder meetings, the project team learned about previous coordination efforts and identified potential opportunities and challenges for each transit provider and for the region. The alternatives and recommendations of the Regional TDP position Valley Metro and the other RGVMAB transit providers to capitalize on available opportunities and mitigate potential challenges.

Service Alternatives & Recommendations

The service alternatives are comprised of route alignment and service level recommendations intended to improve transit offered by Valley Metro and to provide coordination opportunities among all transit providers in the RGVMAB. The transit market analysis and public engagement effort identified the priorities for the Regional TDP, and the project team used these to inform, guide, and develop the service alternatives. Identified priorities are listed as follows:

- Improve connectivity and transfer opportunities at the Regional Transit Centers
- Preserve productive route segments
- Improve service in areas with high transit market scores driven from transit need, propensity, and key destinations
- Eliminate "loop riding" and out-of-direction travel
- Provide bi-directional service where possible and simplify route configurations to make navigating the transit system more intuitive
- Provide transit that saves passengers time through increased frequency, direct routing, and reliable schedules
- Design, deliver, and promote transit that is easy to find and use

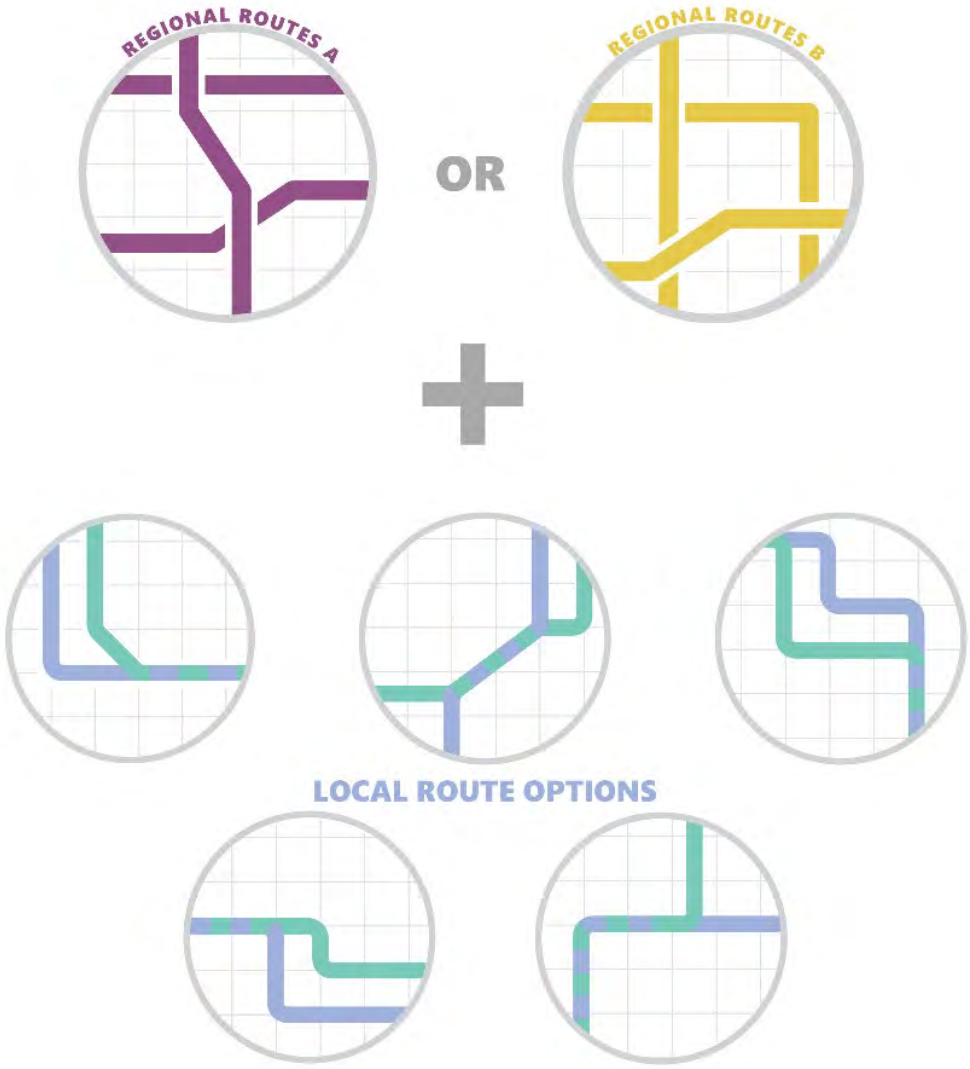
The recommendations fall into three categories:

1. **Universal Recommendations** – strategies and recommendations that should be implemented regardless of the final alternative
2. **Regional Alternatives** – route alignments, service levels, and strategies aimed at moving passengers at the regional level
3. **Local Alternatives** – route alignments, service levels and strategies aimed at moving passengers at the local level

The regional and local options can be thought of as interchangeable components that can be mixed and matched to form service alternatives. For the purposes of this chapter and to provide comparative performance measures the project team has developed two alternatives. Each alternative has a local and regional option that were arranged in a way that best complement one another. The goal of this chapter is not to present an 'either or scenario' but to present the service recommendations in a way that allows Valley Metro to observe how the varied recommendations work as a network.

This approach will allow Valley Metro to isolate strengths and eliminate the weaknesses of each alternative and thus end up with an optimized and preferred alternative. Both alternatives are presented with base level frequencies with the intent to add service to the routes in a phased, prioritized, and sustainable manner once a funding plan is identified and established in the Transit Investment Chapter. Figure 4 shows the versatility and adaptability of organizing and presenting the alternatives in this manner.

Figure 3-4: Interchangeable Components for Building RGV Transit Alternatives



Universal Recommendations

While the alternatives vary by route design, there are several universal recommendations that hold true for both alternatives:

- **Coordination** – There are opportunities to reduce service duplication, increase frequency, and eliminate forced transfers by coordinating with other transit providers. Strategies such as alternating departure times on routes that share common termini can result in increased frequency. For example, both Valley Metro and Metro McAllen have recommendations to operate 30-minute service between UTRGV in Edinburg and Central Station in McAllen. While these routes do not have the same alignment, they do have similar cycle times. If schedules and departure times were coordinated to successfully alternate, it would result in a combined frequency of 15 minutes which essentially doubles the service being offered.
- **Service Standards:** The Regional Service Standards provided standards that are recommended as universal recommendations for both alternatives.
    - **Fixed Bus Stops and Timepoints** – Eliminating deviated fixed route service and only boarding passengers at designated bus stops will result in a more reliable and safer service. Timepoints are identified at major stops along a route and the bus uses them to stay on schedule. The scheduled passing times for these timepoints are the time at which a bus will never leave early and will help ensure transfers between routes and providers.
    - **Eliminate Route Patterns**: A focus of these alternatives is to make the experience simpler for the user. The Regional Service Standards defined that one way to improve the experience of riders is through eliminating route patterns. This means that riders will be able to identify where they can get on and off the bus without it changing for different trips throughout the day.
    - **Consistency of Service Span and Days**: Another standard prioritized in these alternatives is providing consistent span of service with each route providing services between 7:00 am – 8:00 pm Monday through Friday. Many routes were also recommended to provide Saturday service. Currently, no Sunday services are recommended.
- **Fare Structure** – Fares should be streamlined and coordinated across all transit providers. Fares should also be commensurate with the service being provided. The service alternatives include recommendations for express services between regional destinations intended for passengers who prefer a direct and rapid trip. There are also regional urban routes that may offer the same connection as the express service but with more stops and a longer travel time. These services offer different options and serve different markets. No transfer fee should be charged when transferring from one service type to another of equal or lesser fare. In certain situations, fees should be waived when transferring from one provider to another. Table 2 is the recommended fare structure for Valley Metro:

Table 3-2: Proposed Fare Structure for Valley Metro

Service Type	One-Way	Day Pass	30-Day Pass
Regional Express	$5	$9	$90
Regional Urban	$3	$5	$75
Local	$1.75	$3	$50

- **Micro Transit** - Micro Transit service is also a resource in the alternative development process. These corridors are recommended to connect specific markets to the fixed route system with demand response service. This allows for unproductive routes in high demand areas to maintain service coverage, but in a more cost-effective manner (i.e. switching out deviated fixed route service to Micro Transit service).
- I**nternational Connectivity** – Both alternatives present new connections to international bridges currently not served by public transit in both Hidalgo and Progreso. These bridges served some of the most significant pedestrian crossings occurring in the RGVMAB. The McAllen-Hidalgo International Bridge reported 2,170,334 observed northbound pedestrian crossings in 2018 and the Weslaco-Progreso International Bridge reported 1,034,129 observed northbound pedestrian crossings in 2018.

Alternative A

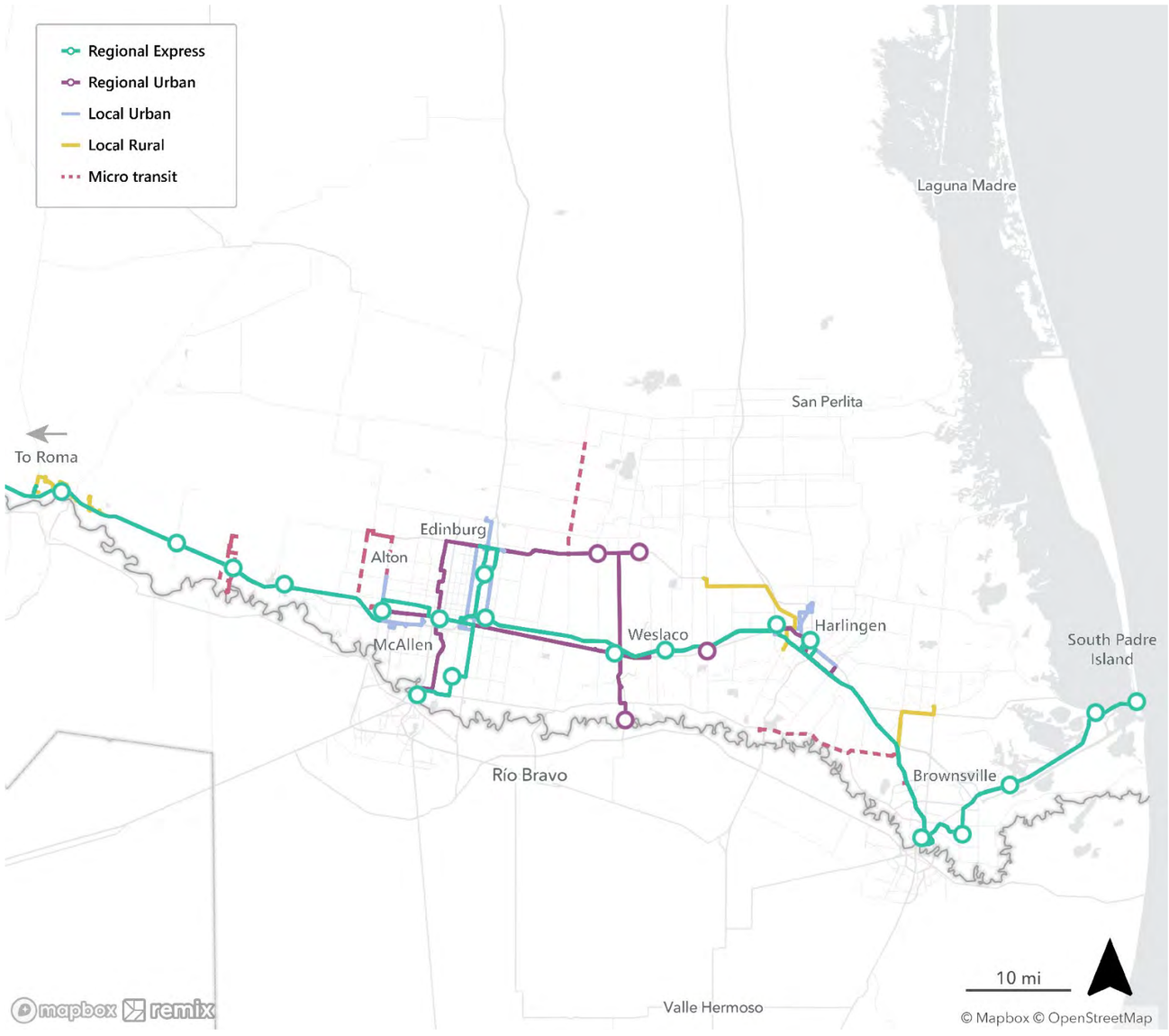
Alternative A presents a transit network focused on targeted express service that reduces travel time and optimizes service to mimic the regional and local travel patterns of both current transit users and potential future passengers. The key feature of Alternative A is the focus on expanding coverage and service levels for transit markets throughout the RGVMAB. This means a more balanced distribution of service focusing on transit need, propensity, and destinations as opposed to service designed around overall population coverage with infrequent and inadequate service. Alternative A has 23 recommended fixed routes; 6 Regional-Express routes, 5 Regional-Urban routes, and 12 Local routes (Figure 5). Also included are 5 Micro transit routes.

Table 3 shows the performance measures for Alternative A for the System as well as the Regional and Local routes. In Alternative A 226,532 people and jobs will have transit service through Valley Metro that comes at least every hour. Alternative A is estimated to provide 173,491 service hours annually and cost approximately $12,100,000 per year in operating costs for the fixed routes. Because these alternatives prioritize getting the fixed routes to hourly service, only 2 out of 23 routes have frequent service at 30 minutes or better. However, in planning for improvements in coordination with other service providers, higher frequency service can be provided to riders through alternating schedules from major transit stations.

Table 3-3: Alternative A Performance

Measure	Regional-Express	Regional-Urban	Local	Total System
Number of Fixed Routes	6	5	12	23
Number of Frequent Routes	1	0	1	2
Peak Buses	21	16	18	58
People and Jobs in Full-Service Coverage	29,397	126,161	149,527	249,618
People and Jobs in Hourly Service Coverage	29,397	113,687	130,683	226,532
People and Jobs in Frequent Service Coverage	7,753	-	6,179	12,174
Annual Service Hours	57,460	56,371	59,660	173,491
Annual Operating Cost Estimate	$3,960,000	$3,950,000	$4,170,000	$12,100,000

Figure 3-5: Alternative A System Map Overview



ALTERNATIVE A REGIONAL ROUTES

The regional routes of Alternative A focus on direct and optimized service to mimic current and future travel patterns. The focus is on strategically delivering service by time of day to eliminate transfers and provide more direct and quick travel times. Regional routes provide service between the many urban centers in the RGVMAB. The regional routes recommended in Alternative A are indicated in purple and blue-green as seen in Figure 6. For details about the regional routes, review Table 4 and Table 5.

Table 3-4: Alternative A Regional-Express Routes

Route Name*	Start Termini	Major Stops	End Termini	Peak Headway
MetroExpress 100	McAllen Central Station	STC Pecan Campus, Mission Station, La Joya, Sullivan City, Alto Bonito, Rio Grande City, STC Starr County, Escobares City Hall	Roma City Hall	60 min
MetroExpress 101	La Plaza - Brownsville	UTRGV Harlingen, Harlingen Terminal, Weslaco	McAllen Central Station	60 min
MetroExpress 104	La Plaza - Brownsville	Brownsville Airport, AMFELS at Port Brownsville, Port Isabel	Island Metro Transit Center	60 min
MetroExpress 107	Edinburg Transit Terminal	The Shoppes at RGV, Pharr Town Center, Downtown Pharr, HEB at Cage, Walmart, Downtown Hidalgo	Hidalgo Border Crossing	60 min
MetroExpress 108	La Plaza - Brownsville	None	McAllen Central Station	60 min
MetroExpress 109	La Plaza - Brownsville	UTRGV Brownsville, UTRGV Harlingen	UTRGV Edinburg	30 min

Routes that are **highlighted are the same in both Alternative A and B*

Figure 3-6: Alternative A Regional Routes

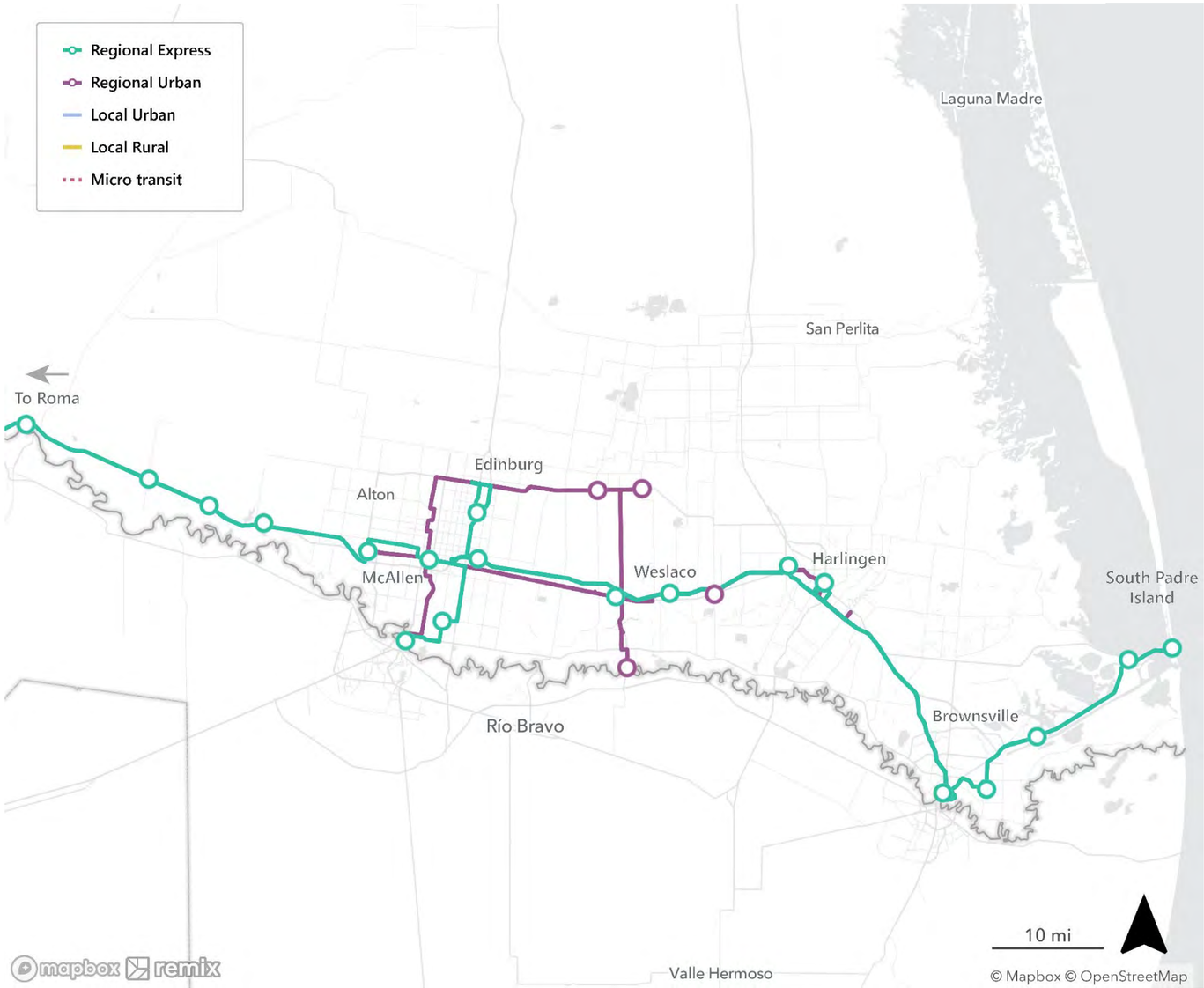
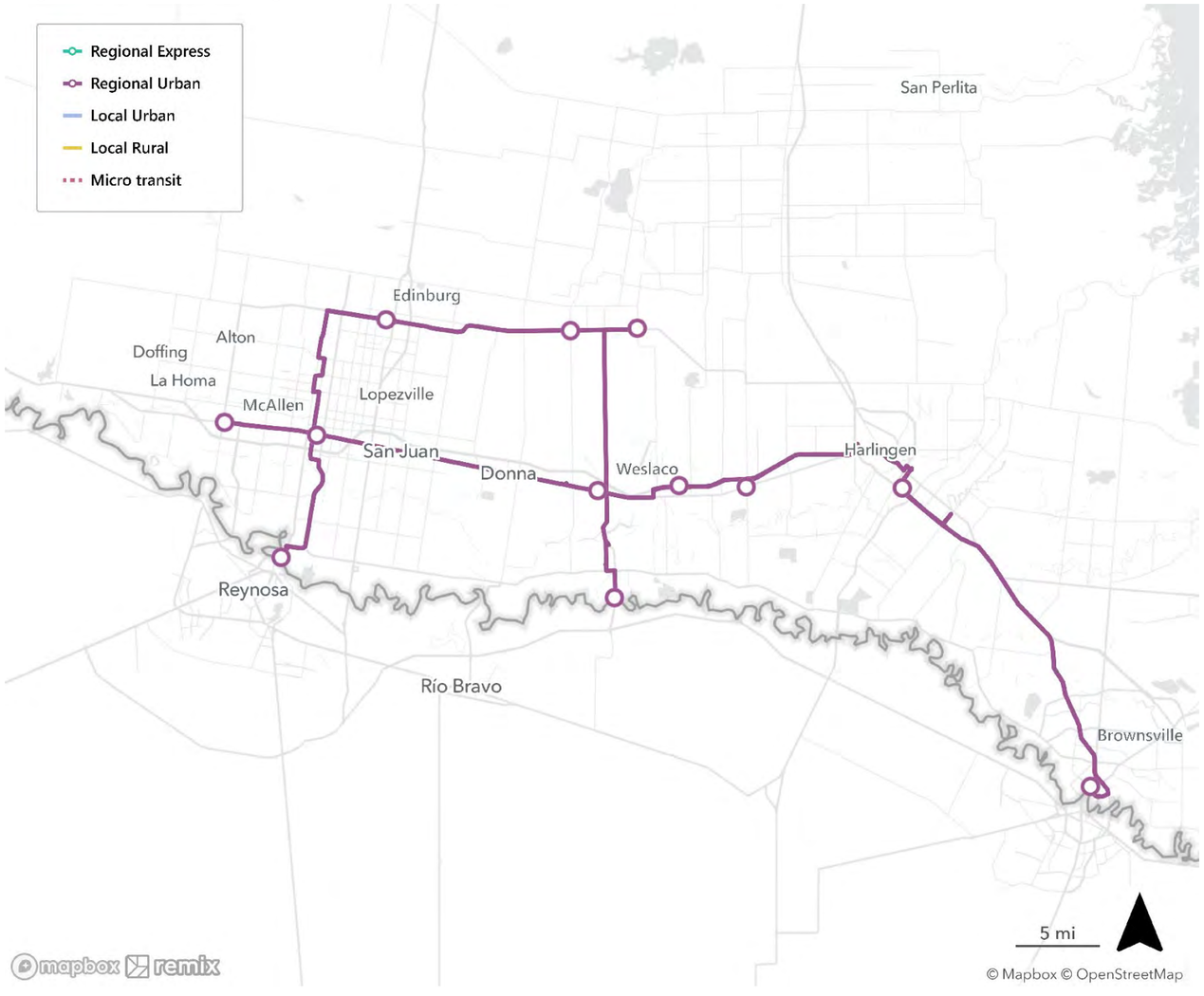


Table 3-5: Alternative A Regional-Urban Routes

Route Name*	Start Termini	Major Stops	End Termini	Peak Headway
Route 111	La Plaza - Brownsville	UTRGV Brownsville, Harlingen Medical Center, UTRGV Harlingen, Valley Baptist Medical Center, Harlingen Terminal, La Feria, Mercedes, Weslaco Transit Center, Weslaco, Donna, Alamo, San Juan, Pharr, McAllen Central Station	Mission Station	60 min
Route 131	UTRGV Edinburg	1/4 mile spacing, McAllen North Station, McAllen International Airport	Hidalgo Border Crossing	60 min
Route 136	UTRGV Edinburg	1/4 - 1/2 mile spacing through towns/urban areas	La Villa City Hall	90 min
Route 150	Weslaco Transit Station	Edcouch, Elsa, 1/2 mile along International Blvd.	La Villa City Hall	60 min
Route 151	Downtown Weslaco	Weslaco Transit Station, 1/4 - 1/2 mile spacing through towns/urban areas	Weslaco-Progreso Bridge	60 min

Routes that are **highlighted are the same in both Alternative A and B*

Figure 3-7: Alternative A Regional-Urban Routes



ALTERNATIVE A LOCAL ROUTES

Local routes provide services within and between urban and rural areas. In Rio Grande City, local routes remain unchanged from the existing service. In the Mission, McAllen, and Edinburg area some of the unproductive routes or route segments were converted to Micro transit areas or corridors. These areas will maintain service to the fixed route system through connecting riders using an on-demand service. In Harlingen, the local route network achieves increased frequency through the banding of local routes along the Harrison and Tyler couplet forming a transit corridor in the densest area of the City.

Local routes in Alternative A present a network designed to allow Valley Metro to systematically and strategically increase service frequency along the most productive segments of the network. This network would rely more heavily on coordinated transfers moving forward. The local routes recommended in Alternative A are indicated in yellow and light blue in Figure 8 and Figure 9. For details about the local routes, review Table 6 and Table 7.

Table 3-6: Alternative A Local-Urban Routes

Route Name*	Start Termini	Major Stops	End Termini	Peak Headway
Route 130	McAllen Central Station	McAllen Convention Center, 1/4 mile spacing	Palmhurst - Conway at Mile 3	60 min
Route 132	McAllen Central Station	1/4 mile spacing along Sugar Ave, Edinburg Terminal	Edinburg - University Plaza	60 min
Route 133	North Edinburg - Lull	1/4 - 1/2 mile spacing in North Edinburg, Hidalgo County Courthouse, HEB at Ebony, UTRGV Transit Connection at Closner, The Shoppes	Downtown Pharr	60 min
Route 134	Edinburg- Hidalgo County Courthouse	Key destinations and parking	Edinburg- Hidalgo County Courthouse	10 min
Route 135	Jackson Rd.	UTRGV, Edinburg- Hidalgo County Courthouse, Edinburg Transit Terminal	Raul Longoria Rd.	60 min
Route 161	HEB on S. P St.	Vista Mall, Cameron Crossing, Harlingen Transit Center, 1/4 mile spacing	Valley International Airport	60 min
Route 162	Harlingen Transit Center	1/4 mile spacing	Valley International Airport	60 min
Route 163	Harlingen Transit Center	1/4 - 1/2 mile spacing	San Benito Downtown	60 min

Routes that are **highlighted are the same in both Alternative A and B*

Figure 3-8: Alternative A Local Routes McAllen Area

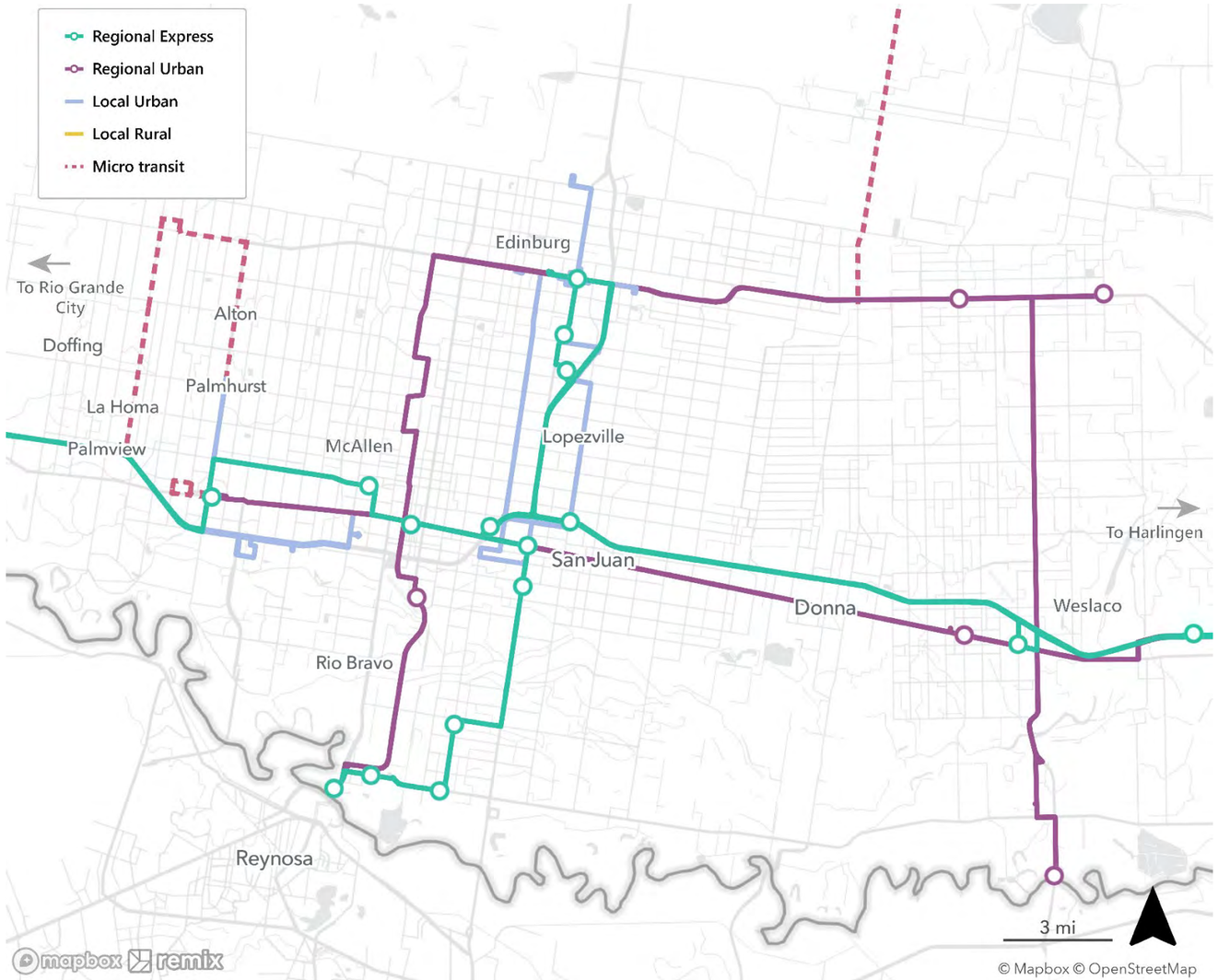
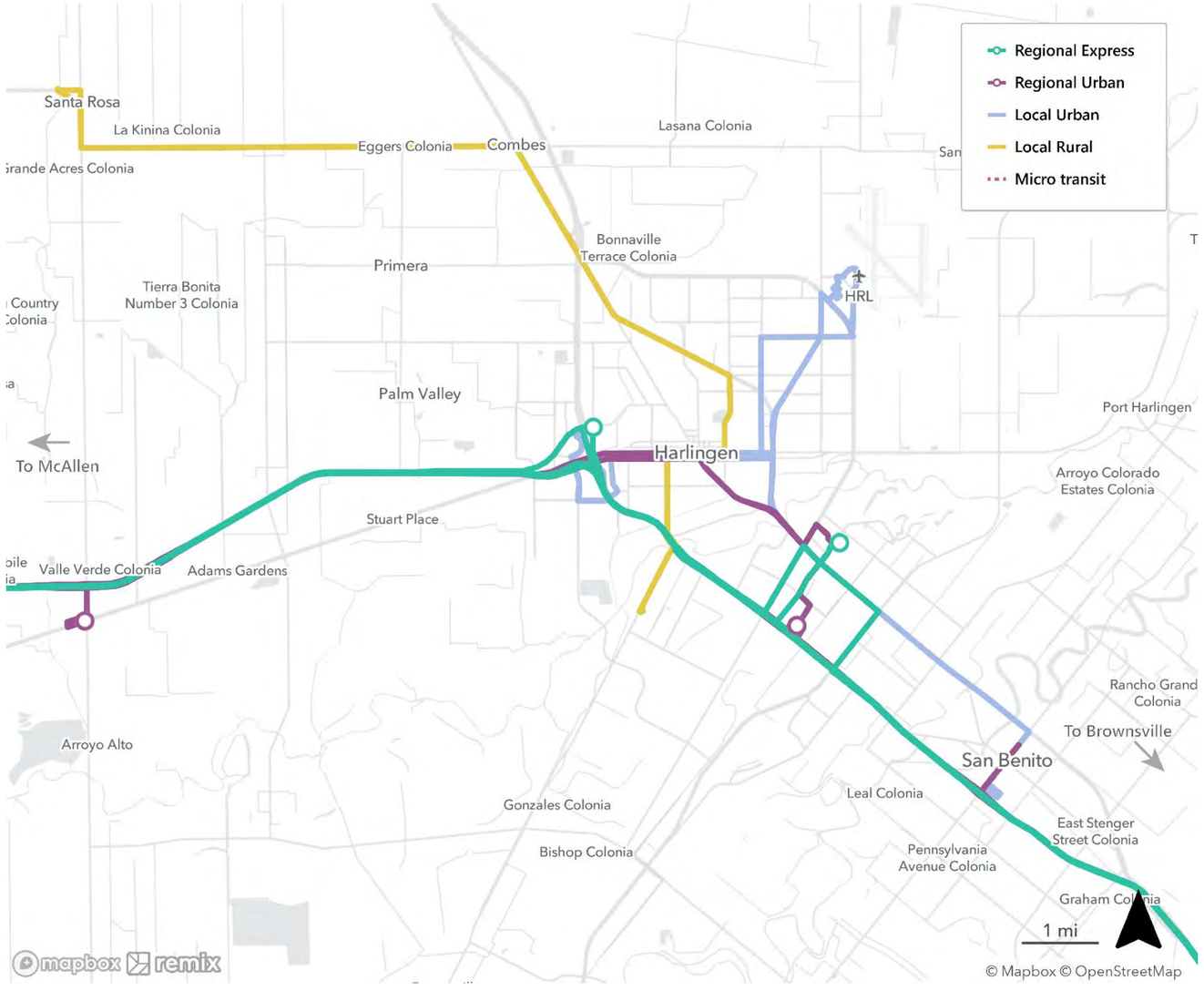


Table 3-7: Alternative A Local-Rural Routes

Route Name*	Start Termini	Major Stops	End Termini	Peak Headway
Route 120	Rio Grande City Station	Post Office, County Courthouse, Palma & El Sauz, STC Starr County Campus	Starr County Courthouse Annex	60 min
Route 121	Rio Grande City Station	Bus & Santa Cruz, Alto Vista Park, Walmart off 2nd, HEB on Pete Diaz	La Puerta - Business at Gervaras Rd.	60 min
Route 160	Santa Rosa City Hall	1/4 - 1/2 mile spacing	Rio Grande State Center	120 min
Route 170	La Plaza - Brownsville	1/4 - 1/2 mile spacing in Los Fresnos	Los Fresnos Memorial Park	120 min

Routes that are **highlighted are the same in both Alternative A and B*

Figure 3-9: Alternative A Local Routes Harlingen Area



Alternative B

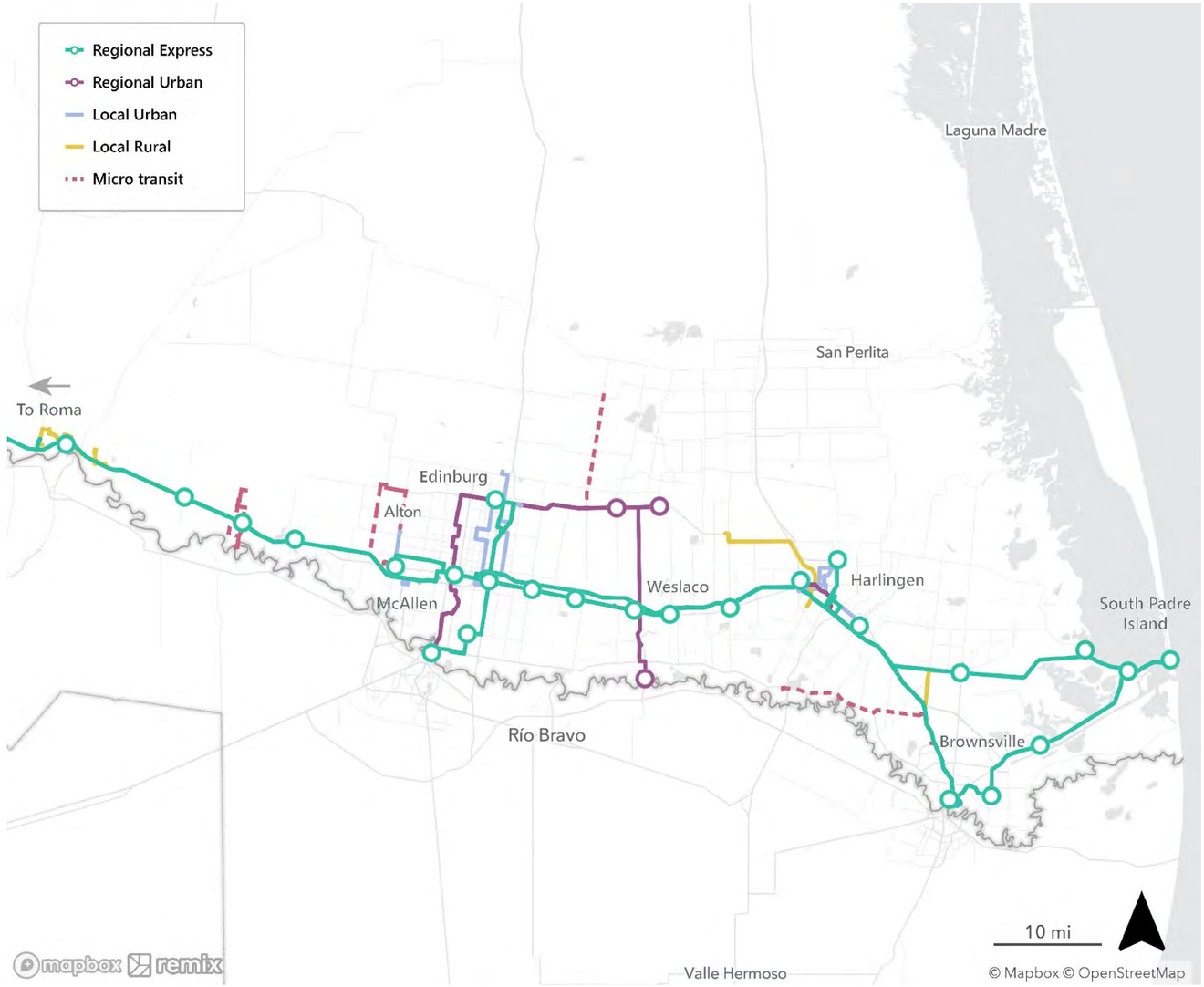
Alternative B presents a transit network focused on increasing connectivity and expanding targeted coverage for both population and jobs. Coordinated transfers will play a key role in the success of this alternative and provide an array of travel pattern options. This alternative provides the most service and thus requires a more significant transit investment than alternative A. Alternative B has 29 recommended fixed routes; 10 Regional-Express routes, 5 Regional-Urban routes, and 14 Local routes (Figure 10). Also included are 5 Micro transit routes.

Table 8 shows Alternative B performance measures for the System as well as the Regional and Local routes. In Alternative B, 238,570 people and jobs will have transit service on Valley Metro that comes at least every hour. Alternative B is estimated to provide 193,975 service hours annually and cost approximately $13,500,000 per year in operating costs for the fixed routes. Because these alternatives prioritize getting the fixed routes to hourly service, only 2 out of 29 routes have frequent service at 30 minutes or better. However, in planning for improvements in coordination with other service providers, higher frequency can be provided to riders through alternating schedules from major transit stations.

Table 3-8: Alternative B Performance

Measure	Regional-Express	Regional-Urban	Local	Total System
Number of Fixed Routes	10	5	14	29
Number of Frequent Routes	1	0	1	2
Peak Buses	27	15	21	67
People and Jobs in Full-Service Coverage	41,336	118,248	162,614	255,983
People and Jobs in Hourly Service Coverage	41,336	104,094	148,434	238,570
People and Jobs in Frequent Service Coverage	7,753	-	4,213	10,725
Annual Service Hours	72,773	53,735	67,466	193,975
Annual Operating Cost Estimate	$5,020,000	$3,770,000	$4,720,000	$13,500,000

Figure 3-10: Alternative B System Map Overview



ALTERNATIVE B REGIONAL ROUTES

The regional routes of Alternative B focus on targeting specific commute patterns throughout the study area and allow for Valley Metro to prioritize and increase service for the most common commutes. This would result in more service for the most heavily used connections but produce longer commutes and more transfers for some of the less common regional commute trips. The regional routes recommended in Alternative B can be found below, and are indicated in purple and blue-green (Figure 11 and Figure 12). For details about the regional routes, review Table 9 and Table 10.

Table 3-9: Alternative B Regional-Express Routes

Route Name*	Start Termini	Major Stops	End Termini	Peak Headway
Metro Express 100	McAllen Central Station	STC Pecan Campus, Mission Station, La Joya, Sullivan City, Alto Bonito, Rio Grande City, STC Starr County, Escobares City Hall	Roma City Hall	60 min
Metro Express 101	McAllen Central Station	Pharr, San Juan, Alamo, Donna, Weslaco	Weslaco Transit Center	60 min
Metro Express 102	Weslaco Transit Center	Mercedes, RGV Outlets, La Feria	Harlingen Transit Center	60 min
MetroExpress 103	Harlingen Transit Center	UTRGV Harlingen, San Benito City Hall	La Plaza - Brownsville	60 min
Metro Express 104	La Plaza - Brownsville	Brownsville Airport, AMFELS at Port Brownsville, Port Isabel	Island Metro Transit Center	60 min
Metro Express 105	Mission Station	McAllen Central Station, UTRGV Edinburg	Edinburg Transit Terminal	60 min
Metro Express 106	Valley International Airport	Los Fresnos Memorial Park, Laguna Vista, Port Isabel	Island Metro Transfer Center	60 min
Metro Express 107	Edinburg Transit Terminal	The Shoppes at RGV, Pharr Town Center, Downtown Pharr, HEB at Cage, Walmart, Downtown Hidalgo	Hidalgo Border Crossing	60 min
Metro Express 108	La Plaza - Brownsville	none	McAllen Central Station	60 min
Metro Express 109	La Plaza - Brownsville	UTRGV Brownsville, UTRGV Harlingen	UTRGV Edinburg	30 min

Routes that are **highlighted are the same in both Alternative A and B*

Figure 3-11: Alternative B Regional Routes

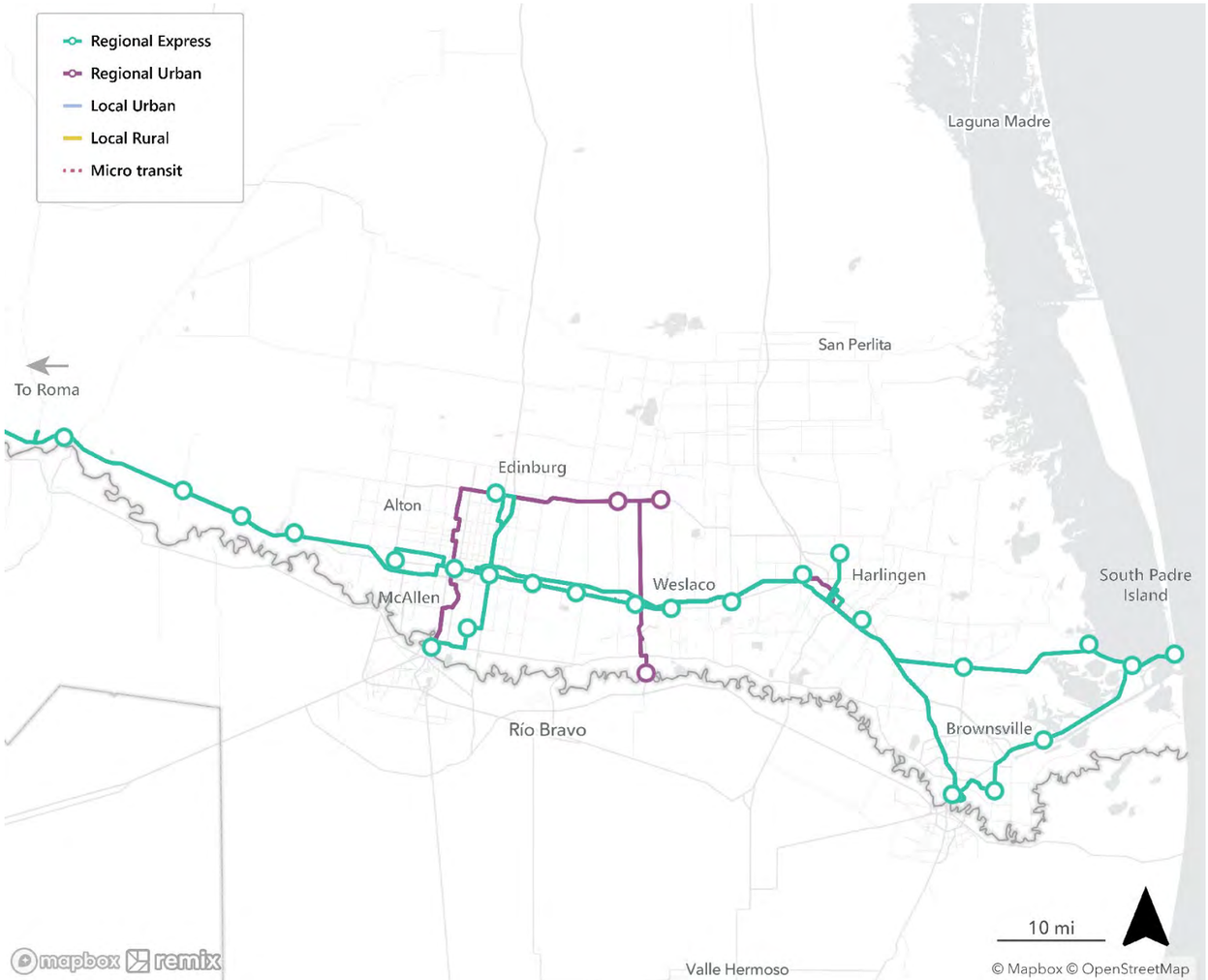
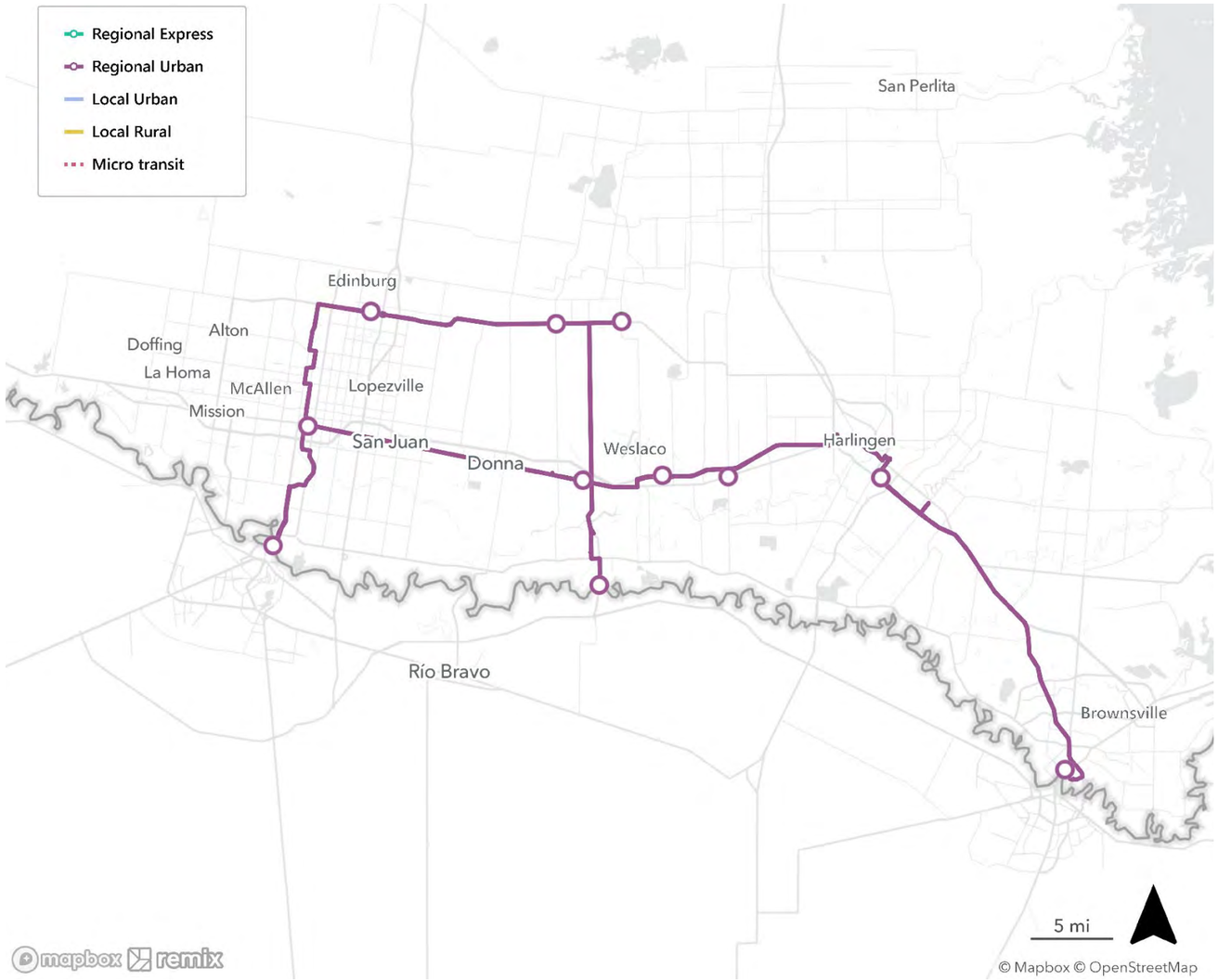


Table 3-10: Alternative B Regional-Urban Routes

Route Name*	Start Termini	Major Stops	End Termini	Peak Headway
Route 111	La Plaza - Brownsville	UTRGV Brownsville, Harlingen Medical Center, UTRGV Harlingen, Valley Baptist Medical Center, Harlingen Terminal, La Feria, Mercedes, Weslaco Transit Center, Weslaco, Alamo, San Juan, Pharr	McAllen Central Station	60 min
Route 131	UTRGV Edinburg	1/4 mile spacing, McAllen North Station, McAllen International Airport	Hidalgo Border Crossing	60 min
Route 136	UTRGV Edinburg	1/4 - 1/2 mile spacing through towns/urban areas	La Villa City Hall	90 min
Route 150	Weslaco Transit Station	Edcouch, Elsa, 1/2 mile along International Blvd.	La Villa City Hall	60 min
Route 151	Weslaco Transit Station	1/4 - 1/2 mile spacing through towns/urban areas	Nuevo Progreso Bridge	60 min

Routes that are **highlighted are the same in both Alternative A and B*

Figure 3-12: Alternative B Regional-Urban Routes



ALTERNATIVE B LOCAL ROUTES

Local routes provide services within and between urban and rural areas. In Harlingen, the local route network achieves increased coverage through the spacing of local routes in north/south and east/west patterns. Connectivity is maximized through connecting all local routes at the Harlingen Transit Center. In the western portion of the study area local routes in Alternative B present a network design with some changes to Alternative A, including dividing up a north-south route through North Edinburg to Pharr. The local routes recommended in Alternative B can be found below and are indicated in yellow and light blue (Figure 13 and Figure 14). For details about the local routes, review Table 11 and Table 12.

Table 3-11: Alternative B Local-Urban Routes

Route Name*	Start Termini	Major Stops	End Termini	Peak Headway
Route 130	McAllen Central Station	McAllen Convention Center, 1/4 mile spacing	Palmhurst - Conway at Mile 3	60 min
Route 132	McAllen Central Station	1/4 mile spacing along Sugar Ave., Edinburg Terminal	Edinburg - University Plaza	60 min
Route 133 N	North Edinburg - Lull	1/4 - 1/2 mile spacing in North Edinburg,	Edinburg-Hidalgo County Courthouse	60 min
Route 133 S	Edinburg-Hidalgo County Courthouse	HEB at Ebony, UTRGV Transit Connection at Closner, The Shoppes, 1/4 - 1/2 mile into Pharr	Downtown Pharr	60 min
Route 134	Edinburg-Hidalgo County Courthouse	loop through parking lots	Edinburg-Hidalgo County Courthouse	10 min
Route 135	Jackson Rd.	UTRGV, Edinburg- Hidalgo County Courthouse, Edinburg Transit Terminal, Closner Blvd., The Shoppes	Raul Longoria Rd.	60 min
Route 161	HEB on S. P St.	Vista Mall, Cameron Crossing, Harlingen Transit Center, 1/4 mile spacing	Valley International Airport	60 min
Route 162	Harlingen Transit Center	1/4 mile spacing	Valley International Airport	60 min
Route 163	Harlingen Transit Center	1/4 - 1/2 mile spacing	San Benito Downtown	60 min

Routes that are **highlighted are the same in both Alternative A and B*

Figure 3-13: Alternative B Local Routes McAllen Area

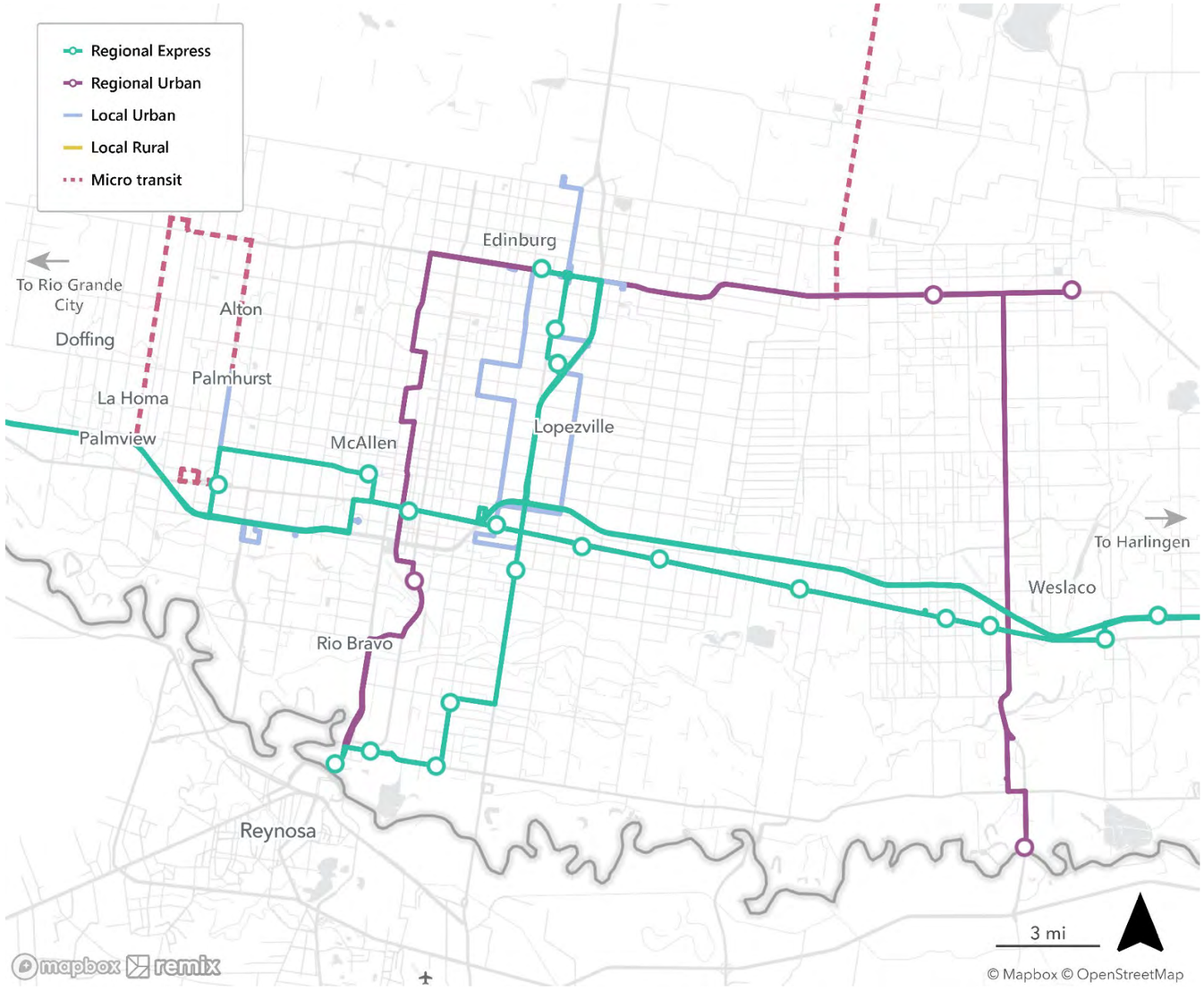
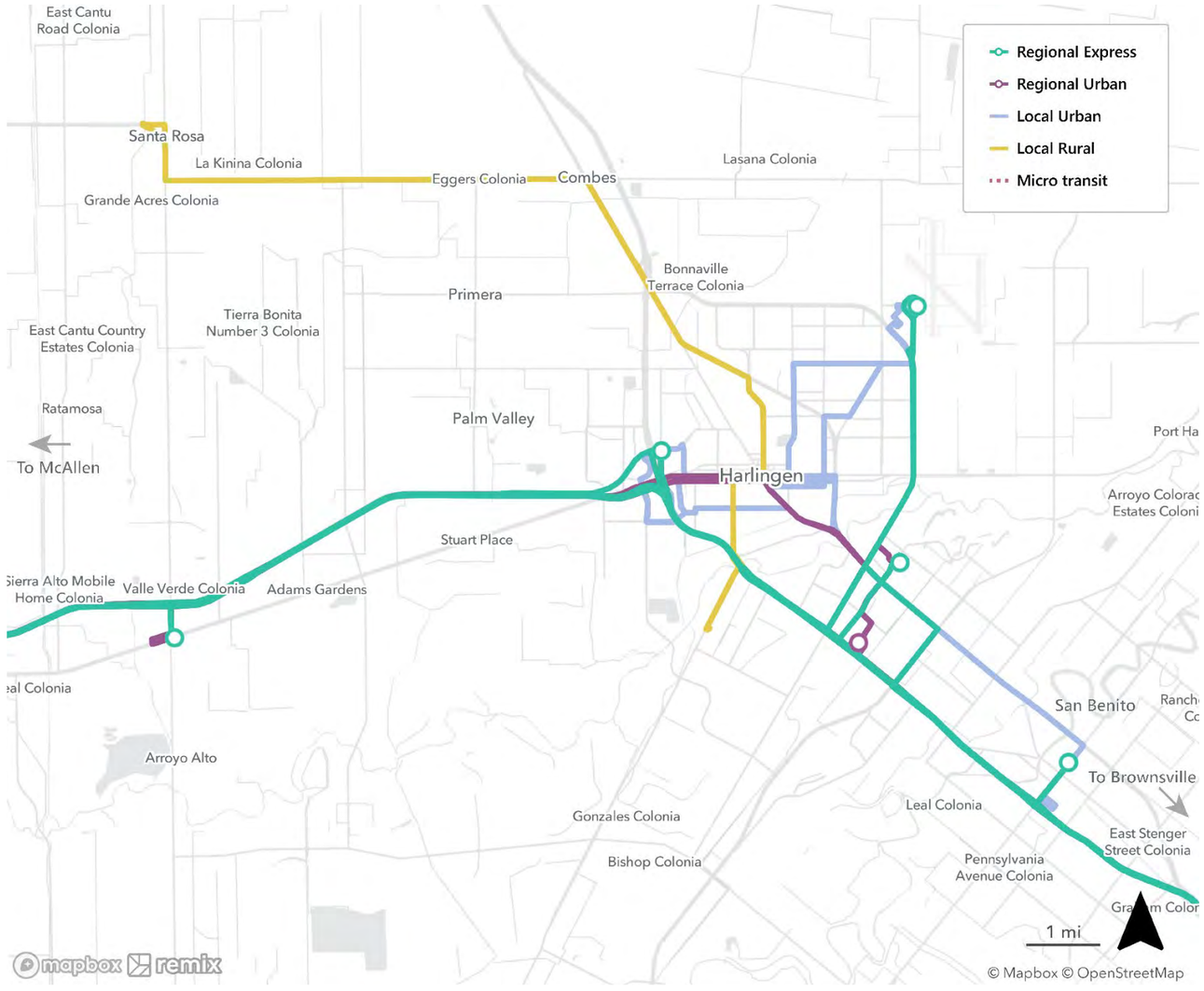


Table 3-12: Alternative B Local-Rural Routes

Route Name*	Start Termini	Major Stops	End Termini	Peak Headway
Route 120	Rio Grande City Station	Post Office, County Courthouse, Palma & El Sauz, STC Starr County Campus	Starr County Courthouse Annex	60 min
Route 121	Rio Grande City Station	Bus & Santa Cruz, Alto Vista Park, Walmart off 2nd, HEB on Pete Diaz	La Puerta - Business at Gervaras Rd.	60 min
Route 160 N	Santa Rosa City Hall	1/4 - 1/2 mile spacing	Harlingen Transit Center	120 min
Route 160 S	Harlingen Transit Center	1/4 - 1/2 mile spacing	Rio Grande State Center	60 min
Route 170	La Plaza - Brownsville	1/4 - 1/2 mile spacing in Los Fresnos	Los Fresnos Memorial Park	120 min

Routes that are **highlighted are the same in both Alternative A and B*

Figure 3-14: Alternative B Local Routes Harlingen Area



Conclusion

Each of the alternatives represent a set of service recommendations comprised of several routes that appear in both alternatives as well as unique routes serving different markets through alternative alignments and service levels. Both alternatives present route alignment modifications and service level adjustments intended to improve transit for those traveling into, within, and out of the RGVMAB.

Table 13 displays the differences when compared to the existing Valley Metro service. Comparing the performance measures provides insights into how the alternatives compare to one another as well as how they compare to the existing service. The performance metrics show the annual cost of operations, number of routes, annual service hours, number of frequent routes, peak buses, and people and jobs served by full-coverage, hourly coverage, and frequent coverage. One of the most significant measures in the table is the number of people and jobs served by transit. While this critical measure is lower for the full-service coverage in both alternatives when compared to the existing service, it is important to note the amount of service being delivered and the transit markets being served. Most of the routes in the existing system are providing infrequent service in areas with extremely low ridership and would not meet many of the standards identified in the Regional Service Standards.

Both alternatives present an optimized transit network that would increase service levels and deliver viable transit options appropriate for the markets being served. By looking at the Hourly Service Coverage, we can see a vast improvement in service for either of these alternatives compared to existing Valley Metro service with as much as a 209% to 225% increase in people and jobs with access to an hourly service coverage area.

Table 3-13: Alternative Performance Comparison

Measure	Existing Total	Alternative A Total	Alternative B Total
Number of Routes	20	23	29
Number of Frequent Routes	1	2	2
Peak Buses	30	58	67
People and Jobs in Full-Service Coverage	273,420	249,618	255,983
People and Jobs in Hourly Service Coverage	73,320	226,532	238,570
People and Jobs in Frequent Service Coverage	4,213	12,174	10,725
Annual Service Hours	82,189	173,491	193,975
Annual Operating Cost Estimate	$5,810,000	$12,100,000	$13,500,000

Another method for comparing these alternate solutions for future transit recommendations is utilizing the 'Jane' tool by Remix™ to determine service coverage by different travel times along the pedestrian street network. Harlingen Transit Terminal is a major transit connection for routes for existing service and the future alternatives, so it is an appropriate way to compare the approximate differences in travel time benefits between alternatives. Table 14 shows the number of people and jobs within each travel time zone from Harlingen Transit Station. Although the 15- and 30-minute coverage is similar between the three networks, the future alternatives show an improvement in the number of people and jobs within a 45- to 60-minute travel time to Harlingen Transit Station.

Table 3-14: People and Jobs in Travel Time Zones from Harlingen Transit Station

Travel Time Zone	Existing System	Alternative A	Alternative B
15 minutes	3,262	3,286	3,294
30 minutes	11,637	12,847	12,883
45 minutes	28,652	46,685	46,545
60 minutes	65,905	91,501	94,841

Screenshots of the Jane tool from Remix™ are included for each alternative to show the difference in the coverage (see Figure 15, Figure 16, and Figure 17). This tool can be used to compare the alternatives from other stations, time of day, and service days to get a full picture of how the alternatives compare. Moving forward, as more frequency is added to routes in the phased implementation of these recommendations, this information will be a helpful tool to compare the travel time improvements for implementation of services.

Figure 3-15: Existing System Travel Time from Harlingen Transit Station

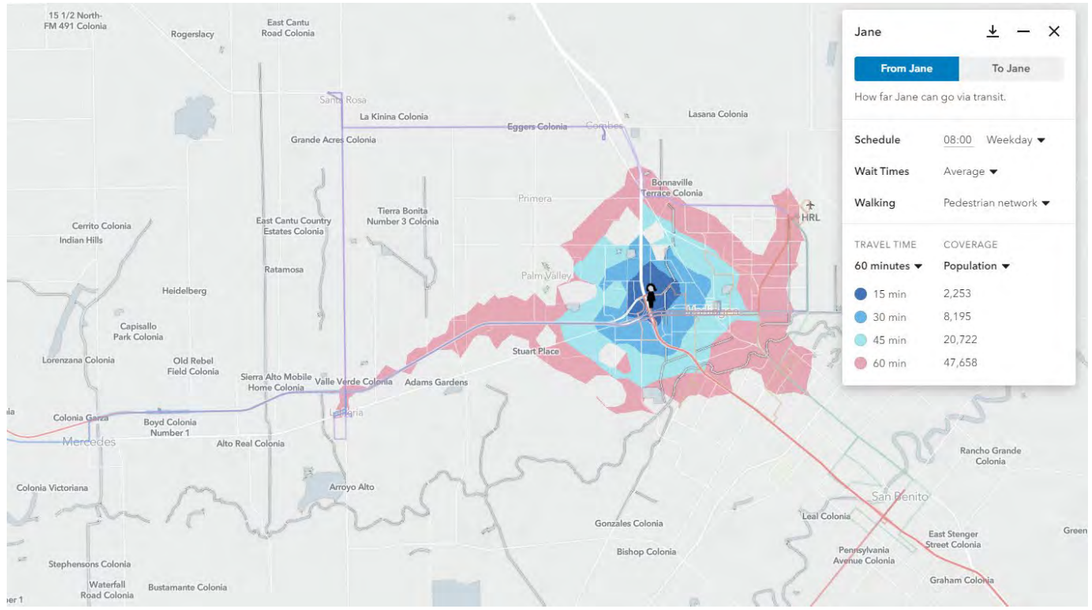


Figure 3-16: Alternative A System Travel Time from Harlingen Transit Station

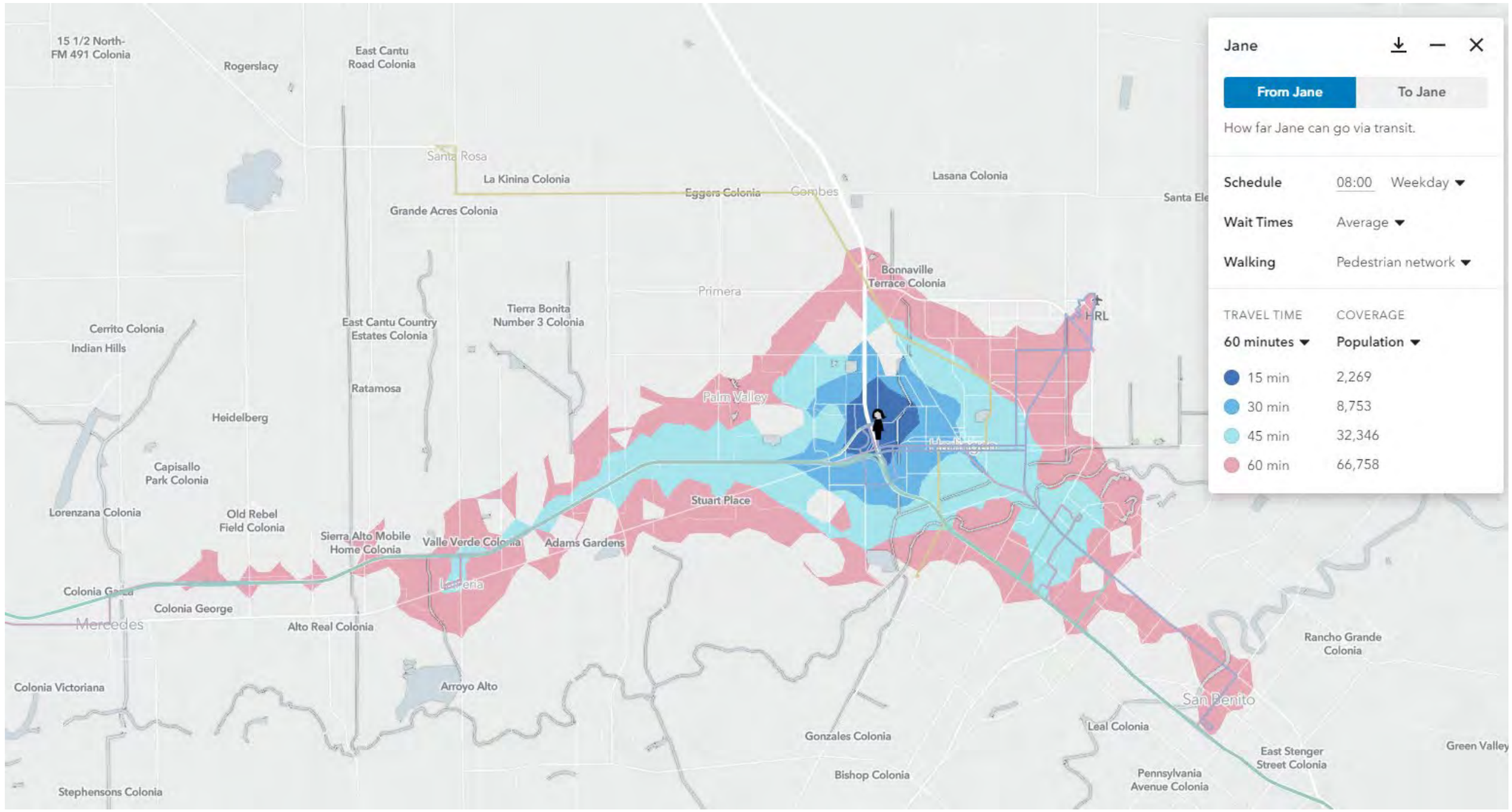
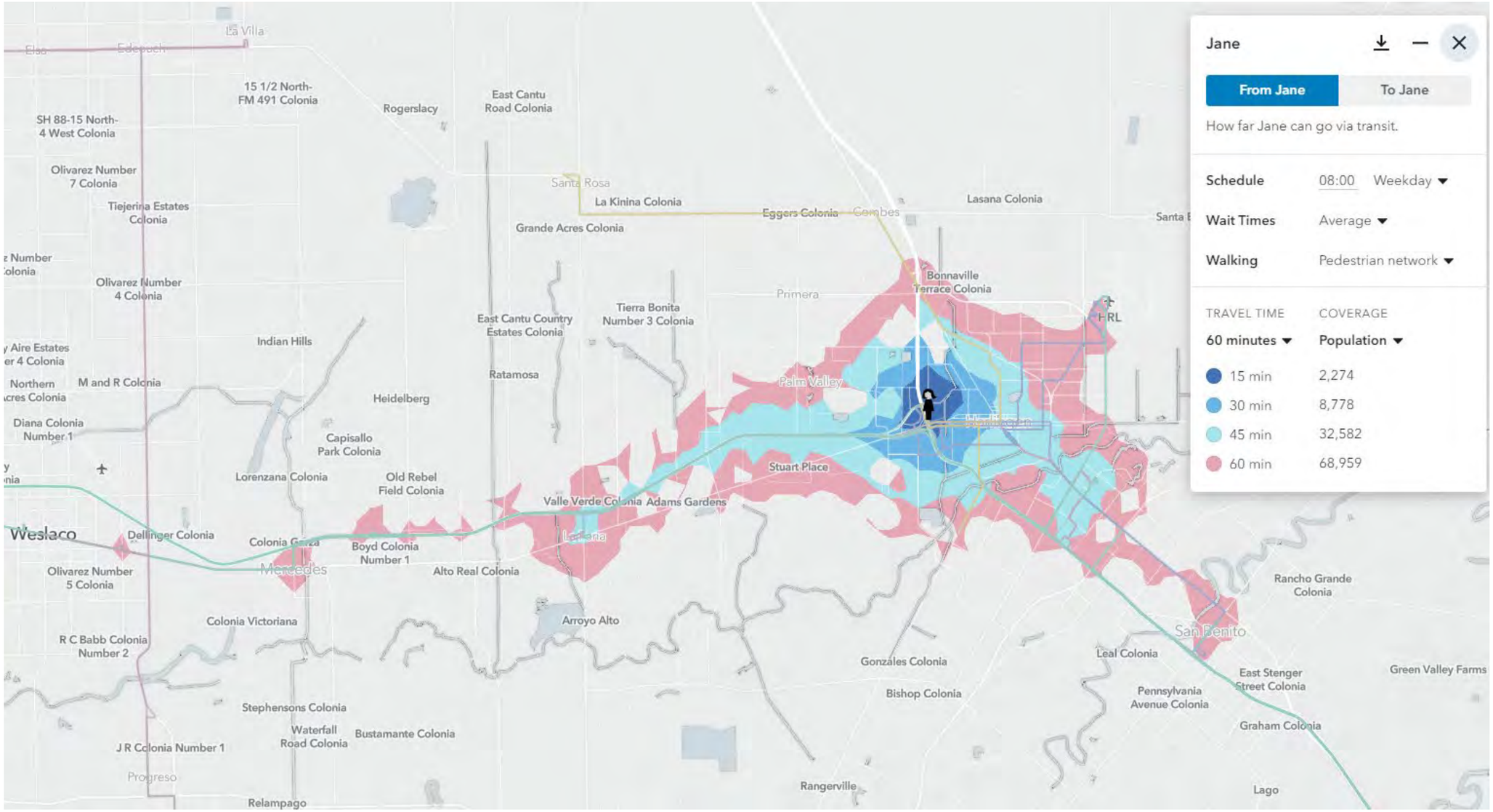


Figure 3-17: Alternative B System Travel Time from Harlingen Transit Station



4 IMPLEMENTATION PLAN

The implementation plan for Valley Metro service described in this chapter recommends two transit service alternatives phased across the 10-year TDP horizon. Cost estimates are provided for the implementation of transit services. Route prioritization is also provided to help guide the decisions in each phase for when to implement the various routes and groups of routes.

INTRODUCTION

The TDP Recommendations and Alternatives as described in Chapter 3 will be implemented in phases based on the input of technical analyses, regional coordination efforts, and public and staff input. The implementation plan outlines the costs and recommendations for phasing both service alternative A and alternative B for Valley Metro. This phased approach will work in tandem with the Regional Service Standards to implement the recommendations successfully and sustainably for high quality transit throughout the RGVMAB. Regional coordination with other transit providers will be an important consideration throughout the phased implementation. This approach will begin with the service currently on the ground and incrementally enhance service throughout the region. The implementation plan is separated into three phases:

- Phase 1 (1 to 2 years): Small enhancements to the system through the implementation of routes and groups of routes with high priority and costs that are close to consistent with existing service.
- Phase 2 (Years 2 to 5): Implementation of recommended routes at existing service levels.
- Phase 3 (Years 5 to 10): Adjust new routes to meet regional service standards.

These phases aim to help disperse cost and prioritize sustainable, phased changes throughout the 10-year horizon of this plan. Within the phases there are recommendations for prioritizing the implementation of routes.

Cost Estimation

All costs represented in the Implementation Plan are shown in 2020 dollars to be able to easily compare the costs accrued in different phases. However, depending on when the elements of the plan are implemented, it can be expected that costs will increase due to inflation. Regarding operation cost assumptions, Valley Metro's services for a fixed route in an urban area is approximately $69 per hour, while a fixed route in a rural area costs approximately $73 per hour. These costs were used for estimating the cost to operate fixed route services in each phase. The cost of operation for UTRGV and STC routes were also estimated using Valley Metro's cost per hour for an equal comparison.

To estimate the potential costs for acquiring new buses or bus stops, estimates were created from reviewing peer cities that operate fixed route services. A cost of $75 per bus stop was used to estimate the cost of a basic sign and pole to designate a stop. However, if Valley Metro considers adding bus shelters to major stops in the future, this would cost in the range of $6,000 - $9,000 per sheltered stop. For this plan, a cost of $400,000 was assumed for acquiring a new bus and $100,000 for a cutaway or a van. Lastly, the initial startup fee for the software required to run Micro transit or on-demand pickup services is a one-time fee of approximately $25,000 for the service and $6,000 per zone.

Route Groups

In order to determine route phasing, it is important to understand the various dependencies that exist in the recommended routes within the Valley Metro service alternatives. Route recommendations were separated into route groups, which contain routes that would best be implemented in conjunction. Routes were grouped by considering the existing service in the area, the route being replaced, as well as any route dependencies, such as transfers, expected interlining, technology

availability, and transit agency coordination requirements. In both alternatives there were six logical route groupings:

- **Regional Core**: The core group of regional routes which connect major cities and services and rely on well-timed transfers and major transit connections in the region.
- **Harlingen**: The local transit service for the City of Harlingen.
- **Edinburg**: The major regional routes in Edinburg that require coordination of both express and local services.
- **Weslaco**: The regional urban routes that function in and out of the Weslaco Transit Center and require coordination in implementation with schedules for transfers.
- **Rio Grande City**: The local transit service for the Rio Grande City.
- **Micro transit**: Routes, or sections taken from existing routes that are recommended for operation as on-demand micro transit service, when available.

Prioritization

Routes and route groups were used to further prioritize and phase recommendations. Three main components informed the prioritization process and ensured that the process supports the vision of this plan. The following list details the metrics used for the prioritization process:

- **Transit Propensity**: Where will transit work? Transit propensity represents the sum of population and employment within a quarter mile route buffer of each stop.
- **Target Transit Riders**: Who depends on Transit? Target transit riders represent the sum of non-driving population, limited-English population, minorities, population living with disabilities, population living in poverty, and no car households (refer to Chapter 1 Existing Conditions) found within the same quarter mile stop buffer used to capture transit propensity.
- **Ridership**: How many people will be using the service? Ridership estimates were generated through the Federal Transit Administration (FTA) Simplified Trips On Project Software (STOPS) model, which compares ridership generated for existing routes and future route recommendation alternatives.

These metrics, (ridership, transit propensity, and target transit riders), were analyzed to evaluate each route or route group. The routes and route groups were given metric scores which compared the performance of the route(s) in that metric category against the other routes/groups in the system. These scores were combined to get a final score for the route which informed the final prioritization for each phase. Ridership, transit propensity, and target transit riders were weighted equally in this ranking.

Phased Implementation

This section illustrates the two alternatives using a phased implementation. Tables 1 through 4 provide information about the route groups for implementation, prioritization of routes, and phasing with estimated costs for each route and the service as a whole. Additionally, information about route miles, service hours, and needed vehicles is included. Phases for both alternatives are similar.

Phase 1 in both Alternative A and B includes the implementation of Metro Express 109 – UTRGV Connector, and the Regional Core Metro Express Routes. The remaining service consists of existing

routes, with routes that have similar coverage to 109 and the Regional Core routes removed. The routes that will be retired from the existing service include the Red Line, Route 50, Route 60, STC Green Line, UTRGV Campus Connector, and UTRGV Rio Grande City Connector.

Phase 2 in both Alternatives A and B includes the implementation of the new route system with current headways. Coordination with STC and UTRGV will be needed for replacement of the STC Purple Line service and the UTRGV Brownsville to Weslaco, Edinburg to Weslaco, and EVABL services.

Phase 3 in both Alternatives A and B includes the full implementation of both the new systems and the new service standards. Since Phase 3 includes the implementation of new service standards, it is also an appropriate time to transition from route deviations to a true fixed route system with complementary paratransit. Without previous paratransit service in the area for a true comparison, similar systems expend an additional 20-30% of the budget on paratransit service depending on specific characteristics of the region.

Alternative A

Alternative A presents a transit network focused on targeted express service that reduces travel time and optimizes service to mimic the regional and local travel patterns of both current transit users and potential future passengers. Alternative A has 28 recommended routes: 6 Regional-Express routes, 5 Regional-Urban routes, 12 Local routes, and 5 Micro transit routes. Refer to Chapter 4 Recommendations and Alternatives for the details and maps which describe this alternative.

ROUTE GROUPS

As mentioned, there were 6 logical groupings for routes in the RGVMAB which will need to be considered to plan for the implementation of Alternative A. There are 8 routes which were not grouped for implementation. The route groupings for Alternative A can be found in Table 1 (immediately to the right). Highlighted cells represent routes that require some additional coordination for implementation with routes outside their group, or with another transit agency. See Table 2 below for details.

Table 4-2: Alternative B Additional Route Coordination

Route or Group	Coordination
Metro Express 100	Coordination with South Texas College (STC) on consolidation of the Green Line
Metro Express 109	Coordination with University of Texas at Rio Grande Valley (UTRGV) on consolidation of the Campus Connector
Route 111	Takes a portion of existing local services in Harlingen and along Route 170 (known as Route 45 for existing)
Route 131	Requires coordination with Metro McAllen as it largely runs in the City of McAllen
Route 130	Requires the availability of Micro transit service as a part of the route, in Mission, is recommended to be converted to on-demand service
Route 132	Requires coordination with Metro McAllen to ensure adequate service to the major medical centers on McColl & Dove, and McColl & Trenton.
Harlingen: 160, 161, 162, 163	Requires coordination with the implementation of Route 111 to avoid gaps in services.
Route 170	Requires coordination with the implementation of Route 111 to avoid gaps in services.

Table 4-1: Alternative A Route Groups

Route Class	Route Name*	Regional Core	Harlingen	Edinburg	Weslaco	Rio Grande City	Micro transit	No Group
Regional Express	Metro Express 100	**100**						
	Metro Express 101	**101**						
	Metro Express 104	**104**						
	Metro Express 107			**107**				
	Metro Express 108							**108**
	Metro Express 109							**109**
Regional Urban	Route 111							**111**
	Route 131							**131**
	Route 136				**136**			
	Route 150				**150**			
	Route 151				**151**			
Local Urban	Route 130							**130**
	Route 132			**132**				
	Route 133			**133**				
	Route 134							**134**
	Route 135							**135**
	Route 161		**161**					
	Route 162		**162**					
	Route 163		**163**					
Local Rural	Route 120					**120**		
	Route 121					**121**		
	Route 160		**160**					
	Route 170							**170**
Micro transit	Route 190						**190**	
	Route 191						**191**	
	Route 192						**192**	
	Route 193						**193**	
	Route 194						**194**	

Routes that are **highlighted represent routes with additional coordination required for implementation, see Table 2*

PRIORITIZATION

Table 3 shows the prioritization results for Alternative A. It is important to note that these prioritization scores and subsequent rankings are representative of potential demand, service to key locations and existing markets, and transit serving disadvantaged populations. However, there may be other considerations that impact the ability to implement service throughout the phased implementation plan including regional coordination with other providers, availability of Micro transit technology, and availability of funding. For Phase 1, this prioritization can be used to select routes to roll out. In Phase 2, this prioritization should guide what services to prioritize when rolling out new services. Finally, using this prioritization in Phase 3 should guide the implementation of adding more frequency on routes.

Table 4-3: Alternative A Prioritization Results

Route/Group	Propensity Score	Target Riders Score	Ridership Score	Final Score	Rank
Metro Express 109	2	5	2	9	1
Regional Core: 100, 101, 104	6	4	1	11	2
Metro Express 108	1	1	12	14	3
Edinburg: 107, 132, 133	7	9	5	21	4
Weslaco: 136, 150, 151	11	6	4	21	5
Route 111	9	10	3	22	6
Route 134	4	11	7	22	7
Route 130	8	8	9	25	8
Route 131	5	14	6	25	9
Route 135	3	12	11	26	10
Rio Grande City: 120, 121	13	2	13.5	28.5	11
Route 170	12	7	10	29	12
Micro transit: 190, 191, 192, 193, 194	14	3	13.5	30.5	13
Harlingen: 160, 161, 162, 163	10	13	8	31	14

BUSES AND AMENITIES

Alternative A will require the acquisition of new vehicles with the additional services, as well as bus stops as Valley Metro transitions to a fixed route system. These estimated costs are a one-time fee, and therefore are not included in the estimation of the annual costs for each phase. The costs are estimated in 2020 dollars. Another cost is the initial startup fee for the software to run micro transit or on-demand pickup services. The initial startup fee for the software required to run Micro transit or on-demand pickup services is a one-time fee of approximately $25,000 for the service and $6,000 per zone.

Table 4-4: Alternative A Cost for Buses and Bus Stops

Phase	New Buses	New Cutaways	New Bus Stops	Micro Transit Software	Cost Estimate
Phase 1	6	-	-	-	$2,400,000
Phase 2	1	-	-	1	$455,000
Phase 3	16	5	1,219	-	$6,991,425

PHASE 1

The route or route group prioritization shows that Metro Express 109 UTRGV Connector and the Regional Core routes (Metro Express 100, 101, and 104) are the highest-ranking. They are also affordable to implement, when introduced at service levels similar to existing routes. Therefore, Phase 1 in Alternative A is recommended to maintain the existing Valley Metro service, except for routes that have coverage similar to routes 100, 101, 104, and 109. This means the existing routes: the Red Line, Route 50, Route 60, STC Green Line, UTRGV Campus Connector, and UTRGV Rio Grande City Connector, are recommended for replacement in Phase 1. The configuration for Alternative A - Phase 1 can be found in Table 5. The total cost for these initial 1-2 years is estimated to be around $6,967,930 annually. This is relatively close to existing costs for Valley Metro service, estimated to be around $5,810,000. Coordination with STC and UTRGV allows for an additional $1,179,334 in funding with the replacement of the STC Green Line service, the UTRGV Campus Connector, and the UTRGV Rio Grande City Connector service.

Table 4-5: Alternative A Phase 1

Route*	Annual Miles	Annual Hours	Peak Buses	Cost
Metro Express 100	218,431	5,716	2	$751,307
Metro Express 101	297,780	8,386	3	$1,016,635
Metro Express 104	178,528	6,754	3	$562,868
Metro Express 109	429,831	8,193	3	$717,876
Route 10	51,883	3,410	1	$235,290
Route 12	79,459	2,954	1	$203,809
Route 15	40,549	2,511	1	$173,259
Route 16	58,779	4,246	2	$292,957
Route 20	62,452	3,503	1	$241,707
Route 21	38,748	1,063	1	$77,563
Route 30	59,821	3,488	2	$240,638
Route 31	198,810	7,936	3	$547,584
Route 32	47,425	2,333	2	$160,994
Route 40	46,061	3,468	2	$239,292
Route 41	66,541	3,596	1	$248,124
Route 42	48,792	2,270	2	$156,596
Route 43	55,279	1,938	1	$141,474
Route 44	69,753	2,508	1	$173,018
Route 45	169,077	6,324	3	$436,356
Route 61	44,043	2,465	1	$179,945
Route 62	36,166	2,338	1	$170,638
Phase 1 Total	**2,298,207**	**85,397**	**36**	**$6,967,930**

Routes that are **highlighted in green represent a new route implemented in Phase 1*

Figure 4-1: Alternative A Phase 1 Map

PHASE 2

Phase 2 for Alternative A proposes to implement the Valley Metro recommended routes and route groups with close to existing service levels. The configuration for Alternative A - Phase 2 can be found in Table 6. The total cost once fully implemented in the 2-5-year timeframe is estimated to be around $8,209,163 annually, in 2020 dollars. Coordination with STC and UTRGV can provide an additional $878,695 annually with the replacement of the STC Purple Line service and the UTRGV Brownsville to Weslaco, Edinburg to Weslaco, and EVABL, services. The cost of operation for these routes were estimated using service hours and the Valley Metro cost per hour of $69 per hour.

Table 4-6: Alternative A Phase 2

Route*	Annual Miles	Annual Hours	Peak Buses	Cost
Metro Express 100	218,431	5,716	2	$394,436
Metro Express 101	297,780	8,386	3	$578,658
Metro Express 104	178,528	6,754	3	$466,009
Metro Express 107	72,958	3,079	1	$212,460
Metro Express 109	429,831	8,193	3	$565,327
Route 111	408,865	17,901	5	$1,235,140
Route 120	44,043	2,678	2	$195,458
Route 121	36,166	2,550	1	$186,150
Route 130	66,962	3,955	1	$272,883
Route 131	121,809	6,396	2	$441,329
Route 132	51,159	3,581	1	$247,055
Route 133	66,335	4,291	1	$296,091
Route 134	30,917	3,060	1	$211,140
Route 135	32,504	2,532	1	$174,685
Route 136	59,401	3,906	1	$285,138
Route 150	62,353	3,291	1	$240,255
Route 151	80,789	3,906	1	$285,138
Route 160	65,032	4,139	1	$302,167
Route 161	51,487	3,674	1	$253,472
Route 162	53,832	3,978	1	$274,505
Route 163	79,433	4,195	1	$289,478
Route 170	79,634	4,177	1	$304,939
Micro transit	NA	16,575	5	$497,250
Phase 2 Total	**2,588,249**	**126,913**	**37**	**$8,209,163**

Routes that are **highlighted in gray represent routes with no changes from Phase 1*

Figure 4-2: Alternative A Phase 2 Map

PHASE 3

In Phase 3 for Alternative A it is recommended to improve the frequency of service on all of the Valley Metro routes and route groups to bring the services in line with the recommendations set forth in Chapter 3 Regional Service Standards. Also, Phase 3 includes the addition of Metro Express 108, which is a direct service between Brownsville and McAllen. The configuration for Alternative A - Phase 3 can be found in Table 7. The total cost once fully implemented in the 5-10-year timeframe is estimated to be around $12,587,724 annually, in 2020 dollars.

Table 4-7: Alternative A Phase 3

Route*	Annual Miles	Annual Hours	Peak Buses	Cost
Metro Express 100	436,861	11,433	4	$788,872
Metro Express 101	542,728	15,471	4	$1,067,466
Metro Express 104	223,380	8,574	3	$591,637
Metro Express 107	170,236	6,997	2	$482,807
Metro Express 108	213,689	4,061	3	$280,200
Metro Express 109	573,107	10,924	5	$753,770
Route 111	686,923	30,074	8	$2,075,125
Route 120	44,043	2,678	2	$195,458
Route 121	36,166	2,550	1	$186,150
Route 130	133,923	7,910	2	$545,766
Route 131	189,481	9,949	3	$686,512
Route 132	102,317	7,161	2	$494,109
Route 133	132,669	8,582	2	$592,182
Route 134	61,060	6,044	2	$417,002
Route 135	32,504	2,532	1	$174,685
Route 136	89,101	5,859	2	$427,707
Route 150	124,706	6,582	2	$480,510
Route 151	80,789	3,906	1	$285,138
Route 160	65,032	4,139	1	$302,167
Route 161	80,091	5,714	2	$394,289
Route 162	53,832	3,978	1	$274,505
Route 163	79,433	4,195	1	$289,478
Route 170	79,634	4,177	1	$304,939
Micro transit	NA	16,575	5	$497,250
Phase 3 Total	**4,231,706**	**190,066**	**58**	**$12,587,724**

Routes that are **highlighted in gray represent routes with no changes from Phase 2*
Routes that are **highlighted in green represent a new route implemented in Phase 3*

Figure 4-3: Alternative A Phase 3 Map

Alternative B

Alternative B presents a transit network focused on increasing connectivity and expanding targeted coverage for both population and jobs. Coordinated transfers will play a key role in the success of this alternative and provide an array of travel pattern options. This alternative provides the most service and thus requires a more significant transit investment than alternative A. Alternative B has 34 recommended bus routes: 10 Regional-Express routes, 5 Regional-Urban routes,14 Local routes, and 5 Micro transit routes. Refer to Chapter 4 Recommendations and Alternatives for the details and maps which describe this alternative.

ROUTE GROUPS

As mentioned, there were 6 logical groupings for routes in the RGVMAB which will need to be considered to plan for the implementation of Alternative B. There are 10 routes which were not grouped for implementation. The route groupings for Alternative B can be found in Table 8 (immediately to the right). Highlighted cells represent routes that require some additional coordination for implementation with routes outside their group, or with another transit agency. See Table 9 below for details.

Table 4-9: Alternative B Additional Route Coordination

Route or Group	Coordination
Metro Express 100	Coordination with South Texas College (STC) on consolidation of the Green Line
Metro Express 109	Coordination with University of Texas at Rio Grande Valley (UTRGV) on consolidation of the Campus Connector
Route 111	Takes a portion of existing local services in Harlingen and along Route 170 (known as Route 45 for existing)
Route 131	Requires coordination with Metro McAllen as it largely runs in the City of McAllen
Route 130	Requires the availability of Micro transit service as a part of the route, in Mission, is recommended to be converted to on-demand service
Route 132	Requires coordination with Metro McAllen to ensure adequate service to the major medical centers on McColl & Dove, and McColl & Trenton.
Harlingen: 160N, 160S, 161, 162, 163	Requires coordination with the implementation of Route 111 to avoid gaps in services.
Route 170	Requires coordination with the implementation of Route 111 to avoid gaps in services.

Table 4-8: Alternative B Route Groups

Route Class	Route Name*	Regional Core	Harlingen	Edinburg	Weslaco	Rio Grande City	Micro transit	No Group
Regional Express	Metro Express 100	**100**						
	Metro Express 101	**101**						
	Metro Express 102	**102**						
	Metro Express 103	**103**						
	Metro Express 104	**104**						
	Metro Express 105							**105**
	Metro Express 106							**106**
	Metro Express 107			**107**				
	Metro Express 108							**108**
	Metro Express 109							**109**
Regional Urban	Route 111							**111**
	Route 131							**131**
	Route 136				**136**			
	Route 150				**150**			
	Route 151				**151**			
Local Urban	Route 130							**130**
	Route 132			**132**				
	Route 133N			**133N**				
	Route 133S			**133S**				
	Route 134							**134**
	Route 135							**135**
	Route 161		**161**					
	Route 162		**162**					
	Route 163		**163**					
Local Rural	Route 120					**120**		
	Route 121					**121**		
	Route 160N		**160N**					
	Route 160S		**160S**					
	Route 170							**170**
Micro transit	Route 190						**190**	
	Route 191						**191**	
	Route 192						**192**	
	Route 193						**193**	
	Route 194						**194**	

Routes that are **highlighted represent routes with additional coordination required for implementation, see Table 8*

PRIORITIZATION

Table 10 shows the final prioritization results for Alternative B. It is important to note that these prioritization scores and subsequent rankings are representative of potential demand, service to key locations and existing markets, and transit serving disadvantaged populations. However, there may be other considerations that impact the ability to implement service throughout the phased implementation plan including regional coordination with other providers, availability of micro transit technology, and availability of funding. For Phase 1, this prioritization can be used to select routes to roll out. In Phase 2, this prioritization should guide what services to prioritize when rolling out new services. Finally, using this prioritization in Phase 3 should guide the implementation of adding more frequency on routes.

Table 4-10: Alternative A Prioritization Results

Route/Group	Propensity Score	Target Riders Score	Ridership Score	Final Score	Rank
Metro Express 109	3	6	2	11	1
Regional Core: 100, 101, 102, 103, 104	6	5	1	12	2
Metro Express 105	1	3	10	14	3
Metro Express 108	2	1	14	17	4
Edinburg: 107, 132, 133N, 133S	8	12	3	23	5
Route 134	5	11	7	23	6
Route 111	11	8	4	23	7
Weslaco: 136, 150, 151	12	7	5	24	8
Route 131	7	14	6	27	9
Route 130	9	10	9	28	10
Harlingen: 160N, 160S, 161, 162, 163	10	13	8	31	11
Route 135	4	15	13	32	12
Rio Grande City: 120, 121	15	2	15.5	32.5	13
Route 170	13	9	12	34	14
Micro transit: 190, 191, 192, 193, 194	16	4	15.5	35.5	15
Metro Express 106	14	16	11	41	16

BUSES AND AMENITIES

Alternative B will require the acquisition of new vehicles with the additional services, as well as bus stops as Valley Metro transitions to a fixed route system. These estimated costs are a one-time fee, and therefore are not included in the estimation of the annual costs for each phase. The costs are estimated in 2020 dollars. Finally, the initial startup fee for the software to run Micro transit or on-demand pickup services. The initial startup fee for the software required to run Micro transit or on-demand pickup services is a one-time fee of approximately $25,000 for the service and $6,000 per zone.

Table 4-11: Alternative A Cost for Buses and Bus Stops

Phase	New buses	New Cutaways	New Bus Stops	Micro transit software	Cost Estimate
Phase 1	6	-	-		$2,400,000
Phase 2	5	-	-	1	$2,055,000
Phase 3	21	5	1,264	-	$8,994,800

PHASE 1

The route or route group prioritization shows that Metro Express 109 UTRGV Connector and the Regional Core routes (Metro Express 100, 101, 102, 103, and 104) are the highest ranking. They are also affordable to implement, when introduced at service levels similar to existing routes. In Alternative B in Phase 1, existing Valley Metro service should be maintained, except for the replacement of the Red Line, Route 50, Route 60, STC Green Line, UTRGV Campus Connector, and UTRGV Rio Grande City Connector. Alternative B - Phase 1 can be found in Table 12. The total cost for these initial 1-2 years is estimated to be around $6,881,283. This is relatively close to existing costs for Valley Metro service, estimated around $5,810,000 annually. Coordination with STC and UTRGV would make an additional $1,179,334 available.

Table 4-12: Alternative B Phase 1

Route*	Annual Miles	Annual Hours	Peak Buses	Cost
Metro Express 100	218,431	5,716	2	$751,307
Metro Express 101	154,189	4,131	1	$260,096
Metro Express 102	169,474	4,123	1	$259,532
Metro Express 103	268,293	6,286	2	$410,360
Metro Express 104	178,528	6,754	3	$562,868
Metro Express 109	429,831	8,193	3	$717,876
Route 10	51,883	3,410	1	$235,290
Route 12	79,459	2,954	1	$203,809
Route 15	40,549	2,511	1	$173,259
Route 16	58,779	4,246	2	$292,957
Route 20	62,452	3,503	1	$241,707
Route 21	38,748	1,063	1	$77,563
Route 30	59,821	3,488	2	$240,638
Route 31	198,810	7,936	3	$547,584
Route 32	47,425	2,333	2	$160,994
Route 40	46,061	3,468	2	$239,292
Route 41	66,541	3,596	1	$248,124
Route 42	48,792	2,270	2	$156,596
Route 43	55,279	1,938	1	$141,474
Route 44	69,753	2,508	1	$173,018
Route 45	169,077	6,324	3	$436,356
Route 61	44,043	2,465	1	$179,945
Route 62	36,166	2,338	1	$170,638
Phase 1 Total	**2,592,383**	**91,551**	**36**	**$6,881,283**

Routes that are **highlighted in green represent a new route implemented in Phase 1*

Figure 4-4: Alternative B Phase 1 Map

PHASE 2

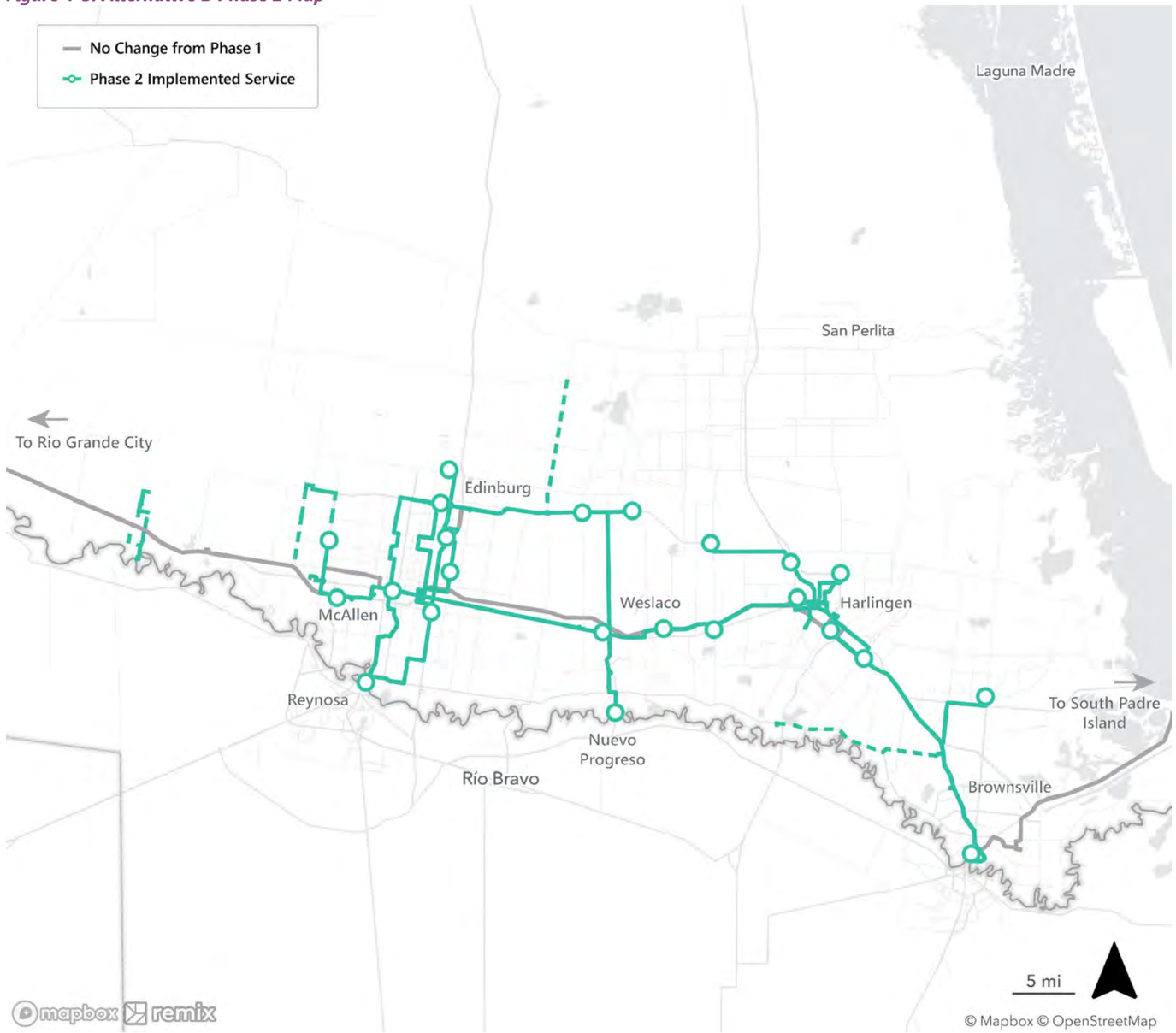
In Phase 2 for Alternative B it is recommended to implement the Valley Metro recommended routes and route groups with close to existing service levels. The configuration for Alternative B - Phase 2 can be found in Table 13. The total cost once fully implemented in the 2-5-year timeframe is estimated to be around $8,903,338. Coordination with STC and UTRGV can provide an additional $878,695 per year.

Table 4-13: Alternative B Phase 2

Route*	Annual Miles	Annual Hours	Peak Buses	Cost
Metro Express 100	218,431	5,716	2	$394,436
Metro Express 101	154,189	4,131	1	$285,051
Metro Express 102	169,474	4,123	1	$284,487
Metro Express 103	268,293	6,286	2	$433,734
Metro Express 104	178,528	6,754	3	$466,009
Metro Express 107	72,972	3,079	1	$212,460
Metro Express 109	429,831	8,193	3	$565,327
Route 111	376,881	16,513	5	$1,139,367
Route 120	44,043	2,678	2	$195,458
Route 121	36,166	2,550	1	$186,150
Route 130	77,145	4,556	1	$314,381
Route 131	118,160	6,201	2	$427,853
Route 132	60,530	4,215	1	$290,851
Route 133N	14,796	1,121	1	$77,361
Route 133S	51,831	3,400	1	$234,577
Route 134	21,182	2,210	1	$152,490
Route 135	79,492	5,772	1	$398,280
Route 136	59,401	3,906	1	$285,138
Route 150	62,353	3,291	1	$240,255
Route 151	80,789	3,906	1	$285,138
Route 160N	58,832	3,763	1	$274,709
Route 160S	32,957	2,604	1	$190,092
Route 161	52,560	3,767	1	$259,889
Route 162	44,372	3,162	1	$218,178
Route 163	79,433	4,195	1	$289,478
Route 170	79,634	4,177	1	$304,939
Micro transit	NA	16,575	5	$497,250
Phase 2 Total	**2,922,275**	**136,844**	**41**	**$8,903,338**

Routes that are **highlighted in gray represent routes with no changes from Phase 1*

Figure 4-5: Alternative B Phase 2 Map



PHASE 3

In Phase 3 for Alternative B frequency improvements should be made on all routes. Also, Metro Express 105, 106 and 108 will be implemented. Alternative B - Phase 3 can be found in Table 14, with the total cost around $14,010,006 annually.

Table 4-14: Alternative B Phase 3

Route*	Annual Miles	Annual Hours	Peak Buses	Cost
Metro Express 100	436,861	11,433	4	$788,872
Metro Express 101	154,189	4,131	1	$285,051
Metro Express 102	169,474	4,123	1	$284,487
Metro Express 103	268,293	6,286	2	$433,734
Metro Express 104	223,380	8,574	3	$591,637
Metro Express 105	151,055	7,934	3	$547,468
Metro Express 106	314,798	8,309	3	$573,333
Metro Express 107	170,267	6,997	2	$482,807
Metro Express 108	213,689	4,061	3	$280,200
Metro Express 109	573,107	10,924	5	$753,770
Route 111	633,188	27,742	7	$1,914,220
Route 120	44,043	2,678	2	$195,458
Route 121	36,166	2,550	1	$186,150
Route 130	154,289	9,113	2	$628,763
Route 131	183,805	9,646	3	$665,550
Route 132	121,060	8,430	2	$581,701
Route 133N	29,591	2,242	1	$154,721
Route 133S	103,663	6,799	2	$469,154
Route 134	41,833	4,365	2	$301,168
Route 135	79,492	5,772	1	$398,280
Route 136	89,101	5,859	2	$427,707
Route 150	124,706	6,582	2	$480,510
Route 151	80,789	3,906	1	$285,138
Route 160N	58,832	3,763	1	$274,709
Route 160S	32,957	2,604	1	$190,092
Route 161	81,760	5,859	2	$404,271
Route 162	69,023	4,919	2	$339,388
Route 163	79,433	4,195	1	$289,478
Route 170	79,634	4,177	1	$304,939
Micro transit	NA	16,575	5	$497,250
Phase 3 Total	**4,798,478**	**210,548**	**67**	**$14,010,006**

Figure 4-6: Alternative B Phase 3 Map

Routes that are **highlighted in gray represent routes with no changes from Phase 2*
Routes that are **highlighted in green represent a new route implemented in Phase 3*

Conclusion

This phased implementation plan will serve as a guide and a tool for the region to use as it expands and improves transit service delivery. This tool is intended to be adaptable and Valley Metro should move forward expanding transit where opportunities arise through coordination, partnerships, and strategic funding initiatives. The success of this Implementation Plan is dependent on using it in coordination with the Regional Service Standards and the subsequent Transit Investment Chapter. Without identifying a dedicated local funding source, the plan cannot be implemented in its entirety.

5 TRANSIT INVESTMENT

As the transit providers in the RGVMAB move forward to implement the recommendations described in this plan, it is important to identify additional funding opportunities. This chapter reviews current and potential funding sources for transit that can supplement Federal and State grants and offset increased operating and capital costs that will accompany service expansion and improvement.

INTRODUCTION

Transit in the RGVMAB is funded through a variety of sources. Valley Metro is currently operated by the Lower Rio Grande Valley Development Council (LRGVDC), which receives funding from the Federal Transit Administration (FTA) to operate service and uses the maximum allowable amount of the funding available for operating expenses. The project team identified and evaluated potential additional sources of revenue that can supplement FTA funding and help grow the transit program in the future.

As Valley Metro moves forward to implement recommendations from this plan, it is necessary to identify and secure predictable and sustainable local funding sources. This section describes sources that are available in the region and can be used to fund transit.

EXISTING FUNDING

There are many funding sources used to maintain the operations of transit in the RGVMAB. The following section describes the sources and uses of funding that the transit agencies in the region receive annually.

LRGVDC Funding Sources

Federal Formula Grants

The LRGVDC is the recipient of FTA funding for both the urban and rural portions of their service area. FTA 5307 funding, known as the Urbanized Area Formula Grant Program, allocates funding to the McAllen and Harlingen Urbanized Areas.

MCALLEN URBANIZED AREA 5307 FUNDING

The McAllen Urbanized Area has a population of over 200,000. This and the fact that the fleet during peak hours is fewer than 75 vehicles mean that the percentage of 5307 Formula federal funding that can be used for operating assistance under current FTA rules is 75% of the total allocation. The remaining 25% can be used for administration of the program (up to 10%) and for capital projects.

Both the LRGVDC and the City of McAllen operate transit service within the McAllen Urbanized Area through Valley Metro and Metro McAllen, respectively. These two agencies share the FTA allocation. Currently, the allocation is shared equally between the two organizations, with each agency drawing down 50% of the FTA funding. The 2020 FTA grant for the LRGVDC in the McAllen Urbanized Area is shown in Table 1. The calculations in Table 1 assume the current practice of using as much funding as possible for operating assistance.

Table 5-1: Federal Funding Allocation and Distribution for Valley Metro, McAllen Urbanized Area

Total Federal Allocation to Valley Metro	*Operating Assistance*		*Capital Assistance*	
	Federal Amount Eligible (75%)	Needed Local & State Match	Federal Amount Remaining	Needed Local Match
$3,565,185	$2,673,889	$2,673,889*	$891,296	$222,824

**State funding accounts for $301,522 of the 2020 local match for operating assistance*

HARLINGEN URBANIZED AREA 5307 FUNDING

The LRGVDC receives the entire 5307 Formula allocation for the Harlingen Urbanized Area. Because the Harlingen Urbanized Area is classified as a small Urbanized Area, the agency is allowed to use 100% of the federal allocation for operating assistance. The 2020 FTA allocation for the Harlingen Urbanized Area is shown in Table 2. The calculations in Table 2 assume the current practice of using as much funding as possible for operating assistance.

Table 5-2: Federal Funding Allocation and Distribution for Valley Metro, Harlingen Urbanized Area

Total Federal Allocation to Valley Metro	*Operating Assistance*		*Capital Assistance*	
	Federal Amount Eligible (75%)	Needed Local & State Match	Federal Amount Remaining	Needed Local Match
$2,152,283	$2,152,283	$2,152,283	$0	$0

**State funding accounts for $384,146 of the local match for operating assistance*

Since 2015, the Harlingen Urbanized Area has seen a growth of $184,214 in the 5307 Formula grant. The allocation has increased from $1,968,069 in 2015 to $2,152,283 in 2020, with an average growth of $15,351.17 per year. The region can assume a continued limited growth in the program in the future, with the entirety of the funding going to the LRGVDC.

FUTURE 5307 FUNDING CONSIDERATIONS

The boundaries of Urbanized Areas are adjusted after each decennial Census. Given the growth in the region since 2010, it is possible that the several Urbanized Areas in the RGVMAB – McAllen, Harlingen, and Brownsville – could be merged in the future. If these Urbanized Areas are consolidated, the amount of federal funding able to be put toward operating assistance, as opposed to capital projects and administration, may be reduced. The percentage of federal funding that a transit provider is allowed to put toward operating expenses is based on the total vehicles used during peak hours. As the number of vehicles increases, the portion of FTA funding that can be used for operating costs decreases.

For example, as long as the three UZA's remain separate, the number of peak vehicles needed to implement Phase 3 alternatives for Valley Metro falls slightly under the threshold of '75 or fewer buses,' which means that 75% of the federal share of funding could be used for operating support. Additionally, Harlingen is currently classified as a small Urbanized Area, which can use 100% of their federal funding for operating support.

However, if the three UZA's were consolidated, including McAllen and Brownsville fleets in the total number of peak vehicles would place the total number of vehicles in peak service in the category of '75-100 buses.' This peak service fleet size would reduce the allowable percentage to 50%. If the peak vehicles in service rose to '101 or more buses,' the allowable percentage available for operating costs falls to 0%.

NON-URBANIZED AREA 5311 FUNDING

The LRGVDC receives federal funding for the non-urbanized portions of its service area from the Texas Department of Transportation (TxDOT) through the FTA Section 5311 Program, Formula Grants for Rural Areas. Valley Metro competes with 38 other rural transit providers in Texas to receive funding through this

program, which is allocated based on budgets submitted by agencies. In 2020, Valley Metro received a $773,421 grant from the TxDOT 5311 program for operating assistance.

In addition to the funding provided through the general 5311 program, TxDOT also grants funding for intercity bus projects. These projects are intended to support access and connections to the national intercity bus network in rural areas. Funding for this program is awarded biannually through a discretionary call for projects. Currently, the LRGVDC uses intercity bus funding to operate regional Valley Metro bus services.

5310 PROGRAM FUNDING

The LRGVDC receives FTA Section 5310 Program funds, Enhanced Mobility of Seniors and People with Disabilities, from the FTA for urbanized areas and through TxDOT for rural areas. In urbanized areas, Valley Metro participates in a regional call to select 5310 projects. In the rural areas, Valley Metro competes in a statewide call for projects. Awarded projects include contracted operations, mobility management, and fleet purchases.

State and Local Funding

TXDOT

Valley Metro receives both State Urban and State Rural grant funding that can be used for federal funding local match as well as additional operating, capital, administration, and planning expenses. TxDOT grants these funds according to a formula. State funding is split, with 65% allocated to rural transit districts and 35% allocated to state-funded urban transit districts.

The LRGVDC receives formula-based funding for both the Harlingen and McAllen Urbanized Areas. Like the FTA 5307 Formula funding, Valley Metro splits the McAllen State Urban grant equally with the City of McAllen. The LRGVDC receives a formula-based allocation for the non-urbanized service area under the State Rural program.

TOLL DEVELOPMENT CREDITS

Toll Development Credits (TDCs) are accrued when capital investments are made in federally approved toll facilities. TDCs are generally used to meet federal matching share requirements. The benefit of TDCs is that they are credits already being accrued by TxDOT's investment in toll facilities. This allows agencies to leverage federal funding at a higher level (up to 100% federal funding).

In Texas, 75% of the TDCs accrued are allocated to the MPO in the region where the toll is collected. The remaining 25% is allocated on a statewide competitive basis. The LRGVDC currently receives TDC allocations through the statewide competitive program. However, because there are toll facilities within the region, it is possible that the region could be eligible to participate in the MPO accrual program. The Cameron County Regional Mobility Authority has many corridors between Brownsville and Harlingen in operation or under construction. Being able to use 75% of the TDCs from the investments in these corridors would provide a consistent distribution of TDCs annually and allow the region to leverage federal funds at a higher rate. This is especially important for the purchase of fleet and facilities for transit because most of the FTA grants are currently being used for operating expenses.

LOCAL FUNDING

According to the 2018 National Transit Database report for the LRGVDC, the agency spent $1,741,959 in local funds for transit operations, which equaled 25.1% of their total expenditure on operations. This funding was a mixture of contract revenue and funding from local governments.

Other Transit Agencies in the Region

The other transit agencies that operate in the RGVMAB receive funding from a combination of federal and state sources as well.

City of Brownsville

The City of Brownsville's transit program, Brownsville Metro, receives funding directly from FTA through the 5307 Formula program. In 2020, the allocation to the Brownsville Urbanized Area was $2,686,492. The agency also receives State Urban grant funding to match the FTA allocation and has received intercity bus program funding in previous years.

South Texas College

South Texas College (STC) has a contract with Valley Metro in which STC operates the JagExpress Yellow Line and Park and Ride routes with federally funded vehicles and Valley Metro reimburses STC 50% of the operation and 80% of the maintenance. The current funding year contract is $429,470. Valley Metro operates other routes in the region that serve the STC population, the JagExpress Green and the Purple Lines.

University of Texas Rio Grande Valley

The University of Texas Rio Grande Valley (UTRGV) and Valley Metro have a contractual relationship to transport students, faculty, staff, and guests, improve mobility and accessibility to education and employment, and to connect remote parking areas on campus. Stipulated in this contract, Valley Metro leases federally funded vehicles to UTRGV, conducts maintenance on these vehicles, and claims the ridership for the service operated on these vehicles. In turn, the University pays Valley Metro the local match on the purchase of federal funded vehicles and maintenance and Valley Metro pays the University the local match for operations. The current year contract between Valley Metro and UTRGV is $387,107 for operations and $17,025 for maintenance.

POTENTIAL FUNDING SOURCES

In order to offset the cost of service enhancements and investments identified in this plan, it is necessary for Valley Metro to identify and secure additional funding sources. The following section describes funding sources that should be considered to finance the operations of additional transit service.

Contract Revenue

Contracts are funding agreements between the transit agency and another organization to provide transportation services. The organization, which may be a local government, a non-profit organization, an employer, or a university, pay the provider on behalf of their clients. This means that the contract revenue

is not considered fare revenue, and therefore does not offset federal funding. Contracts include revenues from regularly provided transit service, which differentiate this type of revenue from charter service.

Student Transportation Fees

Valley Metro currently has a contractual relationship with both UTRGV and South Texas College. Currently, this service is funded by the LRGVDC FTA grant and university general revenues, including a designated portion of student tuition fees. For a consistent revenue source, a student fee could be leveraged for transit.

For example, a university of similar size to UTRGV would have a fall 2020 enrollment of 32,000, with the average student taking 20 credit hours during the academic year (fall and spring semesters). At one dollar per credit hour, a student transportation fund would generate $640,067 that year, allowing for growth in service to the university and surrounding community.

Regional Transit Authorities and Similar Organizations

The state of Texas allows Regional Transit Authorities (RTAs), city transit departments (CTDs), county transit authorities (CTA) and advanced transit districts (ATD) to impose a sales and use tax. There are currently ten agencies that have state and local approval to levy transit sales and use tax.

In 2019, the 86th Texas Legislature passed House Bill 71, which enables the creation of a regional transit authority for "(1) a county that is contiguous to the Gulf of Mexico or a bay or inlet opening into the gulf and that borders the United Mexican States; and (2) a county that borders a county described by subdivision (1)."[1] If the region created a Regional Transit Authority, the organization could form a board of directors and evaluate revenue generation through taxation.

Bridge Crossing Revenues

In addition to enabling he creation of a Regional Transit Authority, HB 71 identified the following parameters for toll bridges as a financing mechanism (in addition to existing tolls):

- Not more than $1 for passenger vehicles
- Not more than $2 for commercial motor vehicles
- Not more than $0.25 for pedestrians

In order to collect this fee, the bridge operator must have a written agreement with the transit authority that identifies the strategy for collection and remittance. Additional fees that are collected must be distributed as follows:

- 25% to the Regional Transit Authority for transportation projects and complementary transportation services
- 50% for a rail mass transit system
- 25% for regional high capacity transit

[1] Texas House Bill 71. 5-25-19. https://legiscan.com/TX/text/HB71/id/2015682/Texas-2019-HB71-Enrolled.html.

There are nine border crossing bridges in the Rio Grande Valley. Each of these bridges generates revenue through tolls and is owned and operated by either a municipal unit or a private company. Table 3 identifies the bridges in the study area, their ownership, and their current toll.

Table 5-3: Current Texas-Mexico Internal Bridges and Border Crossings in the Rio Grande Valley[2]

Name	Ownership	Current Toll
Anzaldúas International Bridge	Cities of Hidalgo, McAllen, and Mission	$3.00 – passenger vehicles $1.00 – pedestrians $3.00 – motorcycles $7.00 – 2-axle buses $9.00 – 3-axle buses $3.00 per axle – motorhomes, machinery, trailers
McAllen-Hidalgo International Bridge	City of McAllen	$3.50 – passenger vehicles $1.00 – pedestrians $7.00 – 2-axle commercial vehicles $9.00 – 3-axle commercial vehicles $16.75 – 4-axle commercial vehicles $21.75 – 5-axle commercial vehicles $24.75 – 6-axle commercial vehicles $3.50 – motorcycles $7.00 – 2-axle buses $9.00 – 3-axle buses
Pharr-Reynosa Bridge on the Rise	City of Pharr	$3.50 – passenger vehicles $11.25 – 2-axle commercial vehicles $15.25 – 3-axle commercial vehicles $17.25 – 4-axle commercial vehicles $22.25 – 5-axle commercial vehicles $25.25 – 6-axle commercial vehicles
Donna International Bridge	City of Donna	$3.50 – passenger vehicles $0.50 – pedestrians $20.00 – recreational vehicles
Weslaco-Progreso International Bridge	B&P Bridge Company of Weslaco	$3.00 – passenger vehicles $0.50 – pedestrians
Free Trade Bridge	Cameron County (50%), City of San Benito (25%), City of Harlingen (25%) (Operated by Cameron County International Bridge System)	$3.25 – passenger vehicles $1.00 – pedestrians $8.50 – 2-axle commercial vehicles $3.50 per axle for commercial vehicles

[2] Texas Department of Transportation Freight and Trade Section. Texas-Mexico International Bridges and Border Crossings. Texas Department of Transportation, 2015. https://ftp.txdot.gov/pub/txdot-info/iro/international-bridges.pdf.

Name	Ownership	Current Toll
B&M Bridge	Brownsville & Matamoros Bridge Company	$3.00 – passenger vehicles $1.00 – pedestrians
Gateway International Bridge	Cameron County (Operated by Cameron County International Bridge System)	$3.25 – passenger vehicles $1.00 – pedestrians
Veterans International Bridge at Los Tomates	Cameron County and City of Brownsville (Operated by Cameron County International Bridge System)	$3.50 – passenger vehicles $1.00 – pedestrians $8.50 – 2-axle commercial vehicles $3.50 per axle for commercial vehicles

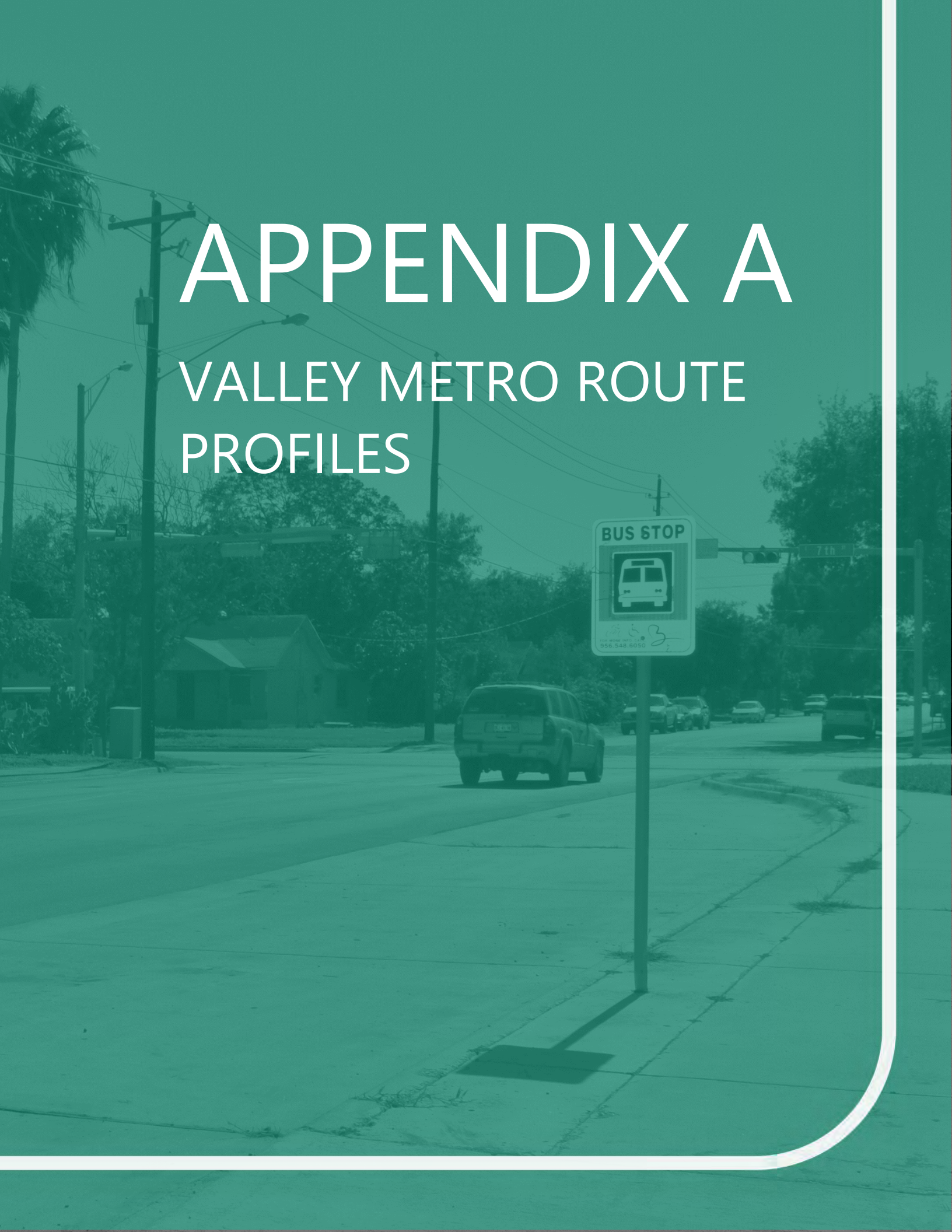
FUNDING RECOMMENDATIONS

In order to implement this plan over the next ten years, it is essential that additional local funding be secured to supplement federal and state sources. The most viable path forward is to implement the Regional Transit Authority with the financing tool of additional bridge tolls at as many of the region's bridges as possible. Because many of the bridges experience more than 1,000,000 passenger vehicle crossings per year, increasing tolls at just one of these bridges would bring $250,000 annually, given that 25% of the revenue would go to the regional transit authority for transportation projects and complementary transportation services. In this same example, an additional $500,000 would be available for rail mass transit and $250,000 for regional high capacity transit such as Bus Rapid Transit (BRT). Strategy development for implementation should begin as soon as possible, because it may require multiple years before revenue can be generated.

In order to generate revenue for the Phase 2 investments, it is recommended that Valley Metro work with UTRGV and South Texas College to implement student fees related to transit. Enhancements of projects that directly support the two universities can be timed to these investments. Additionally, Valley Metro should identify and evaluate other potential service contract opportunities within the region to make up the balance between existing funding and Phase 2 costs.

APPENDIX A

VALLEY METRO ROUTE PROFILES



RED LINE

VALLEY METRO

ROUTE DETAILS

The Red Line is a commuter route connecting major cities in the Rio Grande Valley, spanning from Brownsville through Weslaco to McAllen. It operates Monday-Sunday from 6:30am to 9:00pm.

KEY DESTINATIONS

CONNECTION

UTRGV Edinburg Campus
Central Station McAllen
Harlingen Bus Terminal
La Plaza Brownsville Multimodal Terminal

SCHOOL

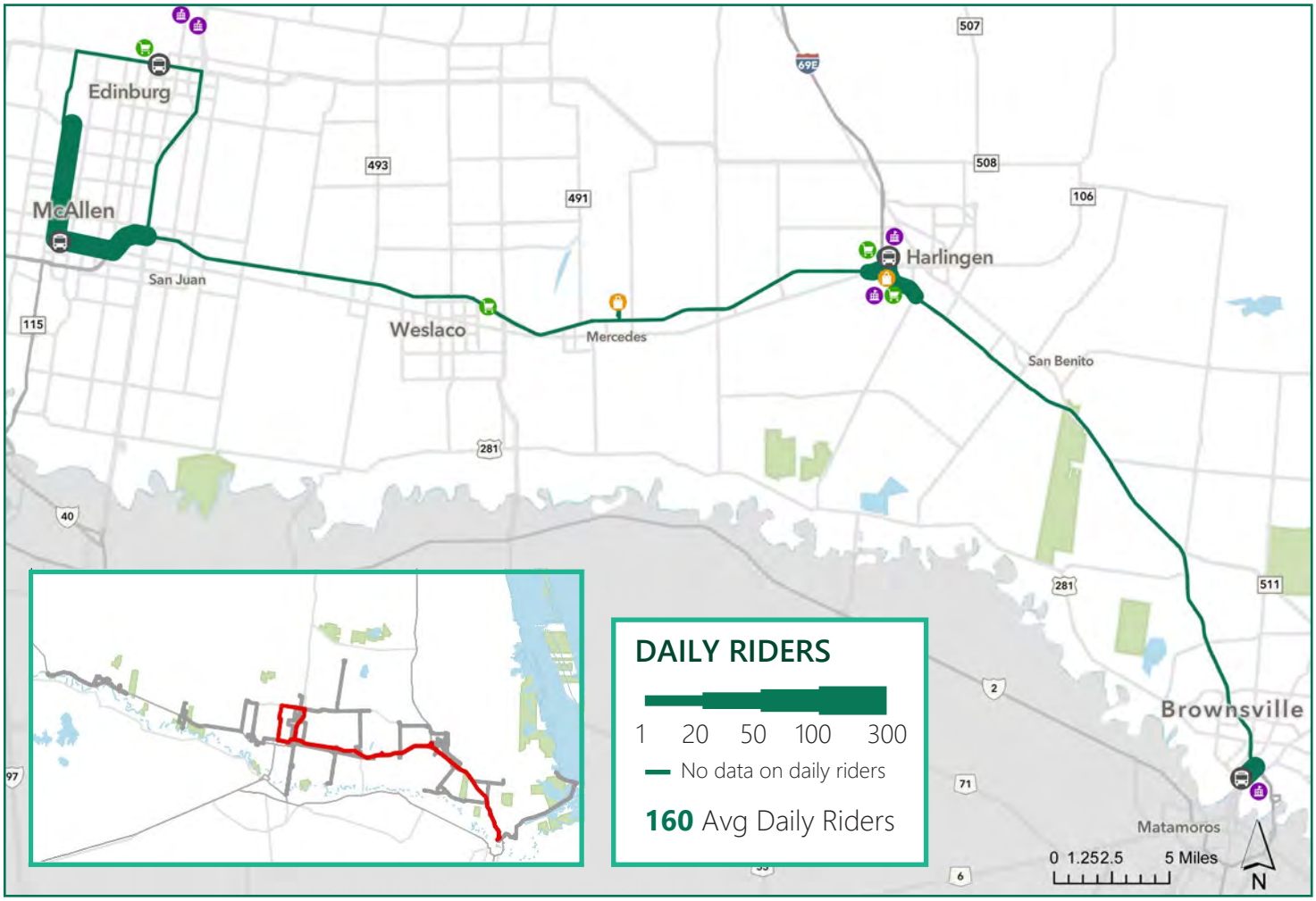
UTRGV Edinburg Campus
Edinburg North High School
IDEA Edinburg College Prep
Dr Abraham Cano Freshman Academy
Harlingen HS South
UTRGV Brownsville Campus

GROCERY

WalMart (University)
Super WalMart Harlingen

SHOPPING

Valle Vista Mall
RGV Premium Outlets



ROUTE 10

VALLEY METRO

ROUTE DETAILS

Route 10 connects McAllen and Edinburg, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. It operates Monday-Saturday from 6:30am to 5:30pm.

KEY DESTINATIONS

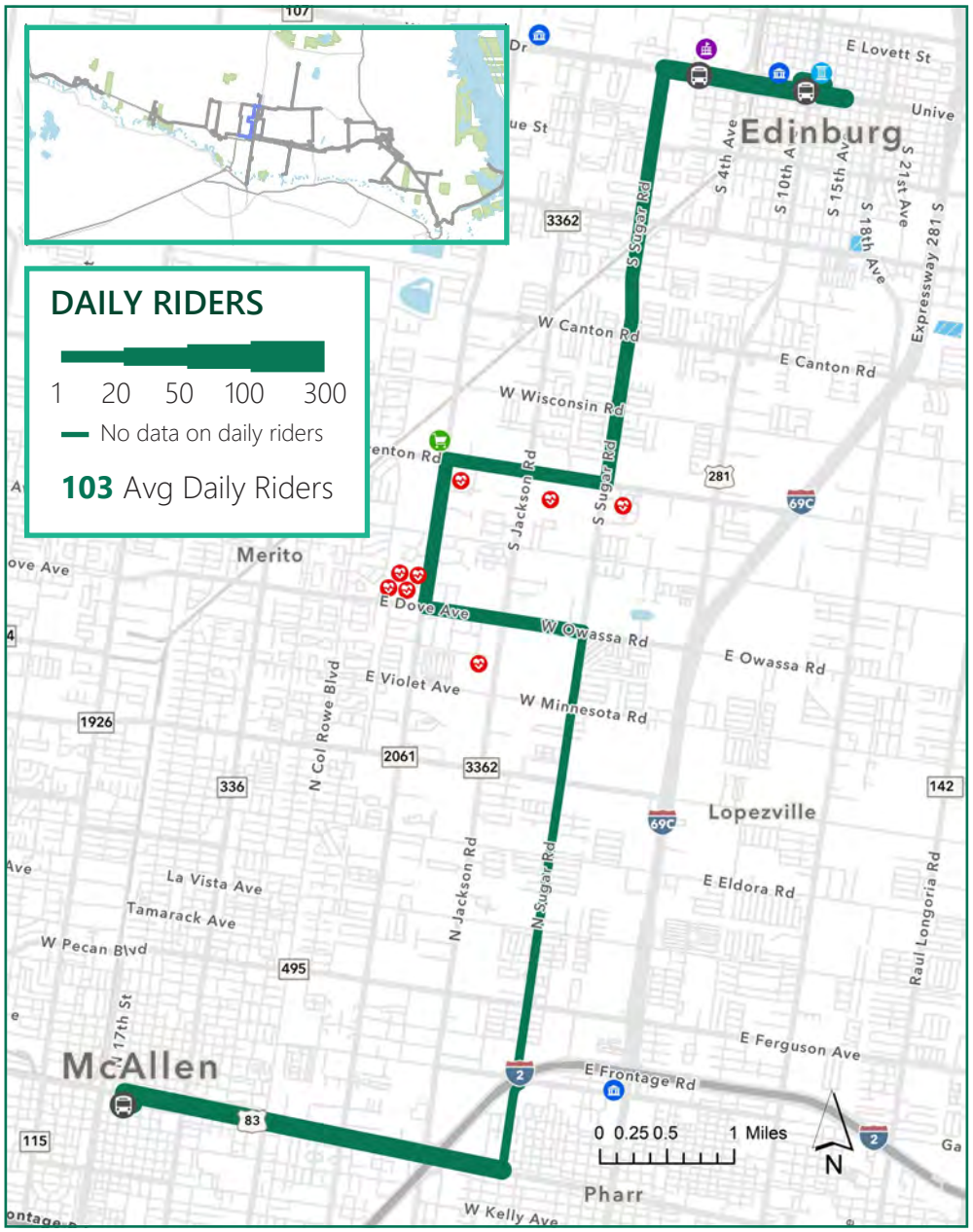
CONNECTION
Hidalgo County Courthouse
McAllen Central Station

SCHOOL
University Plaza
UTRGV Edinburg Campus

GROCERY
WalMart - University
WalMart - Trenton

GOVERNMENT
Hidalgo County Courthouse
Edinburg City Hall
Workforce Solutions
Pharr Housing Authority

MEDICAL
Edinburg Regional Medical Center
Doctor's Hospital at Renaissance
South Texas Behavioral Health Center
Solara Hospital McAllen
Cornerstone Regional Hospital
Lifecare Hospitals of South Texas



*Daily ridership was estimated from origin & destination surveys as stop-level ridership is not available for all routes.

ROUTE 11

VALLEY METRO

ROUTE DETAILS

Route 11 demand response service may be accessed by scheduling a ride at least one day in advance via phone. Trips can be scheduled within a half mile of the route during the hours of 6:00am-2:00pm on Wednesdays.

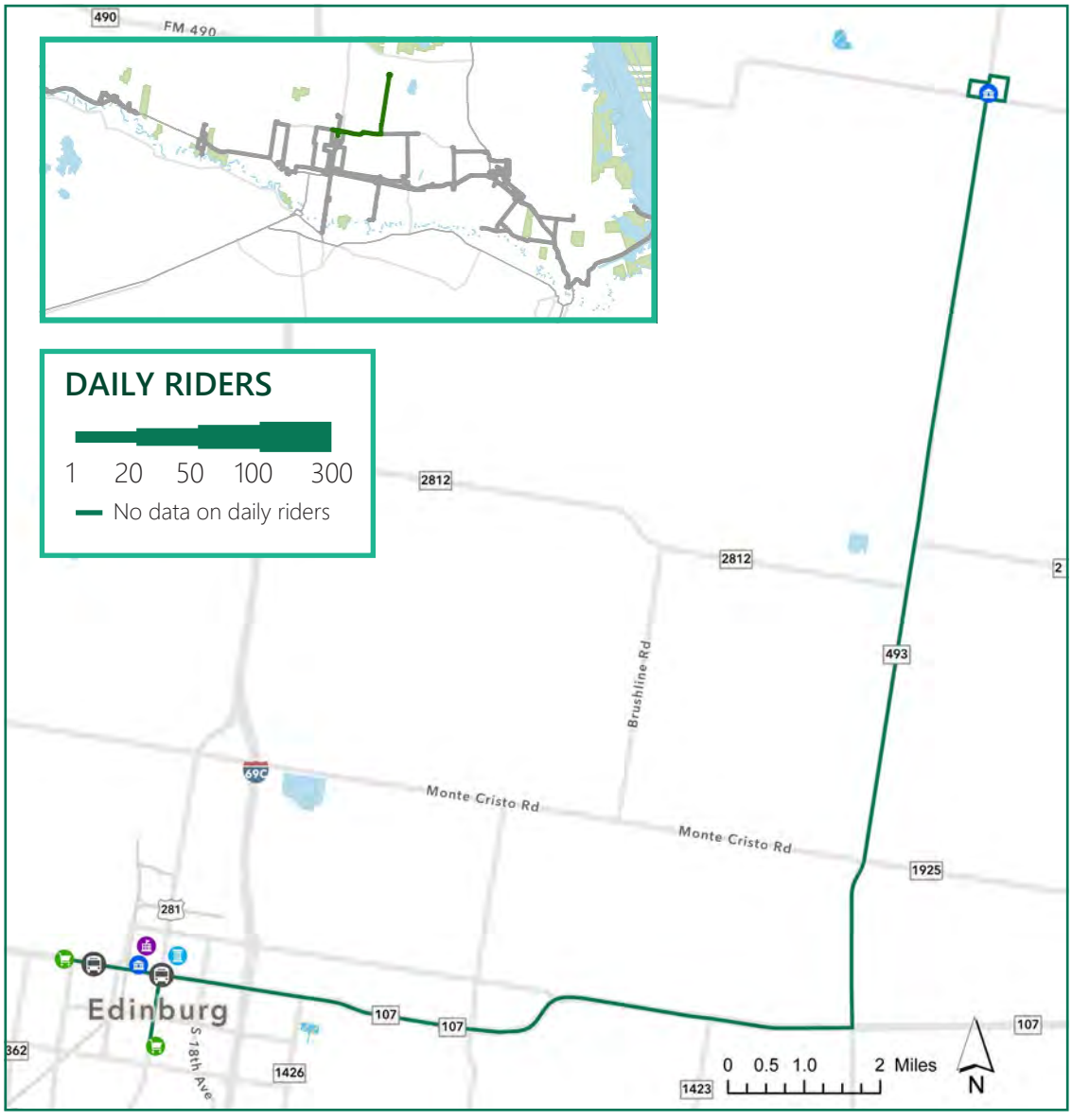
KEY DESTINATIONS

SCHOOL
UTRGV Edinburg
Hargill Elementary
Edinburg CISD Admin

GROCERY
El Tigre Mart
WalMart - University
HEB (Closner)

GOVERNMENT
Hidalgo County Courthouse
Edinburg City Hall
Hargill Post Office

MUSEUM
Museum of South Texas History



ROUTE 12

VALLEY METRO

ROUTE DETAILS

Route 12 connects Weslaco to Edinburg following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. It operates Monday-Friday from 7:00am to 6:50pm.

KEY DESTINATIONS

SCHOOL
- UTRGV Edinburg
- STC Mid Valley
- Weslaco HS
- Weslaco 21st Century High School
- Edcouch Elsa HS

GROCERY
- Mercado Delta
- HEB - Elsa
- WalMart - University
- HEB Weslaco
- HEB Plus

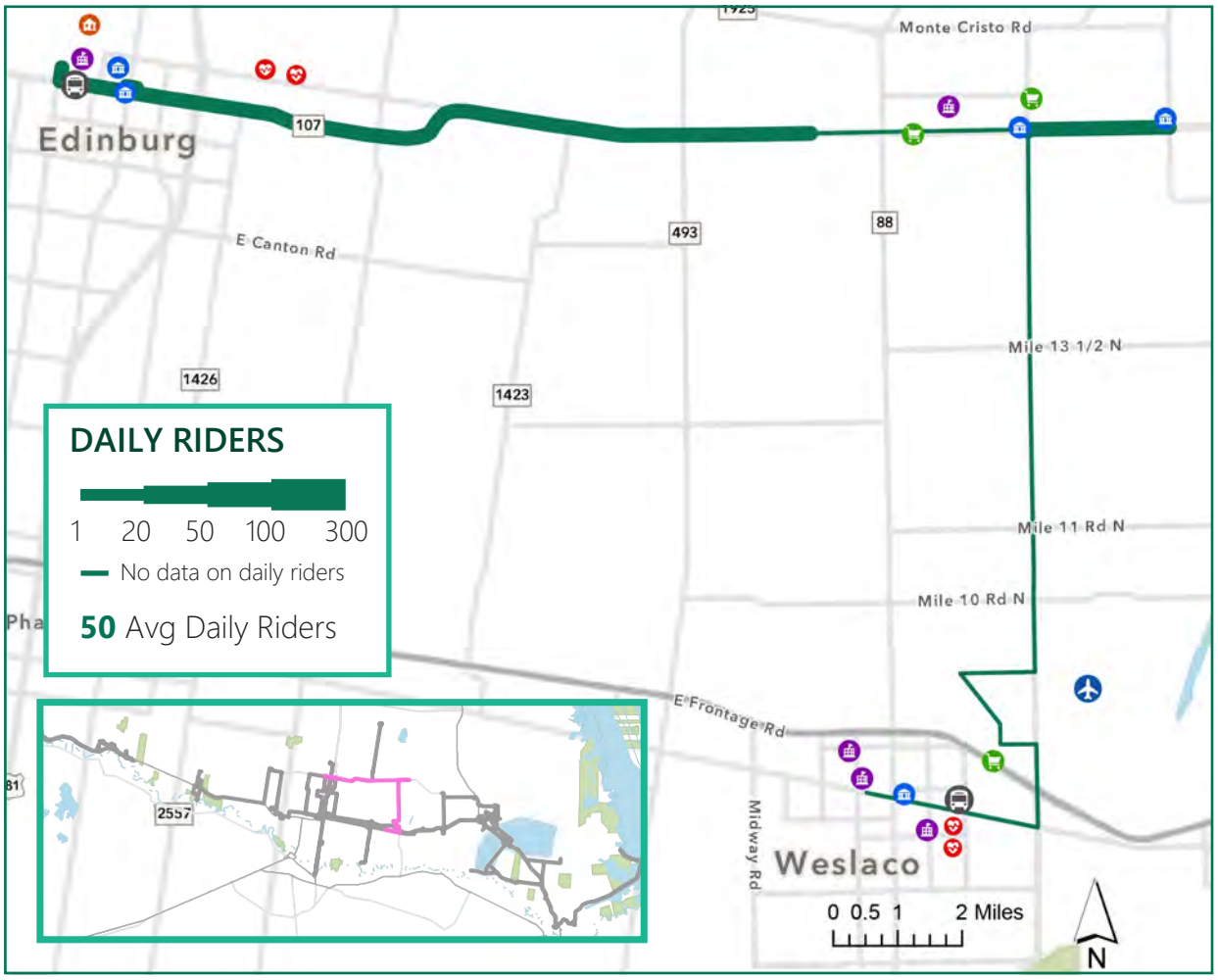
GOVERNMENT
- Edcouch City Hall
- La Villa City Hall
- WIC Clinic
- Hidalgo County Courthouse
- Edinburg City Hall

MEDICAL
- Knapp Medical Center
- Weslaco Rehab Hospital
- John Austin Memorial Center

CONNECTION
- UTRGV Edinburg Campus
- Weslaco Transit Center

COMMUNITY
- Hidalgo County Headstart

AIRPORT
- Mid Valley Airport



ROUTE 15

VALLEY METRO

ROUTE DETAILS

Route 15 connects North Edinburg following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 15 operates Monday-Saturday from 7:00am to 5:00pm.

KEY DESTINATIONS

CONNECTION
UTRGV Visual Arts Building

SCHOOL
UTRGV Visual Arts Building
IDEA Edinburg College Prep
Edinburg North High School
Edinburg CISD Admin Building

GROCERY
WalMart
HEB (Closner)

SHOPPING
The Shoppes at Rio Grande Valley

GOVERNMENT
Health & Human Services
Edinburg City Hall
Hidalgo County Courthouse
Probation Office
Auto License Office

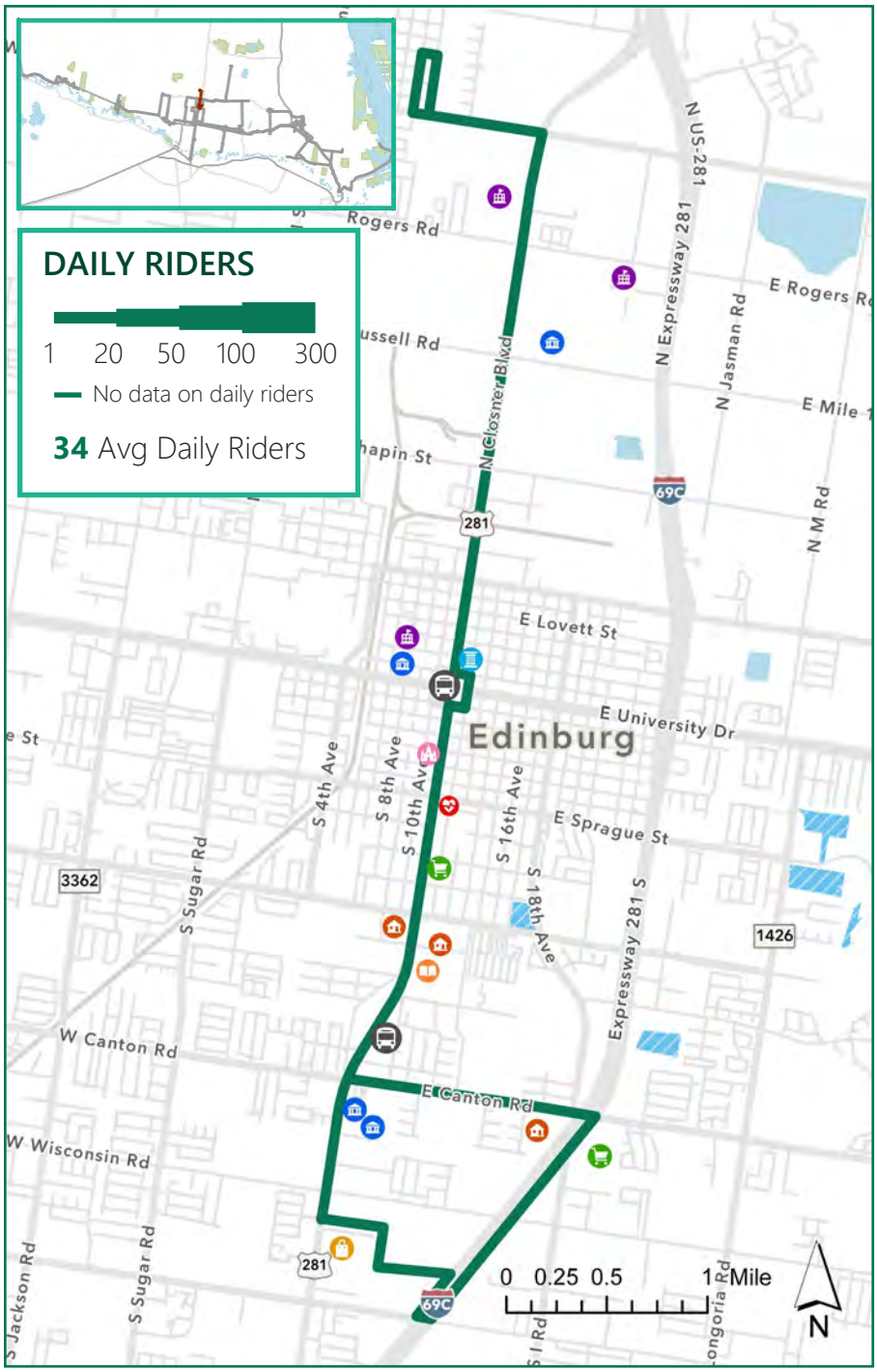
MEDICAL
Women's Clinic of South Texas

MUSEUM
Museum of South Texas History

COMMUNITY
Teleperformance
Carmike Cinemas

CHURCH
Capilla San Jose

LIBRARY
Dustin Sekula Memorial Library



ROUTE 16

VALLEY METRO

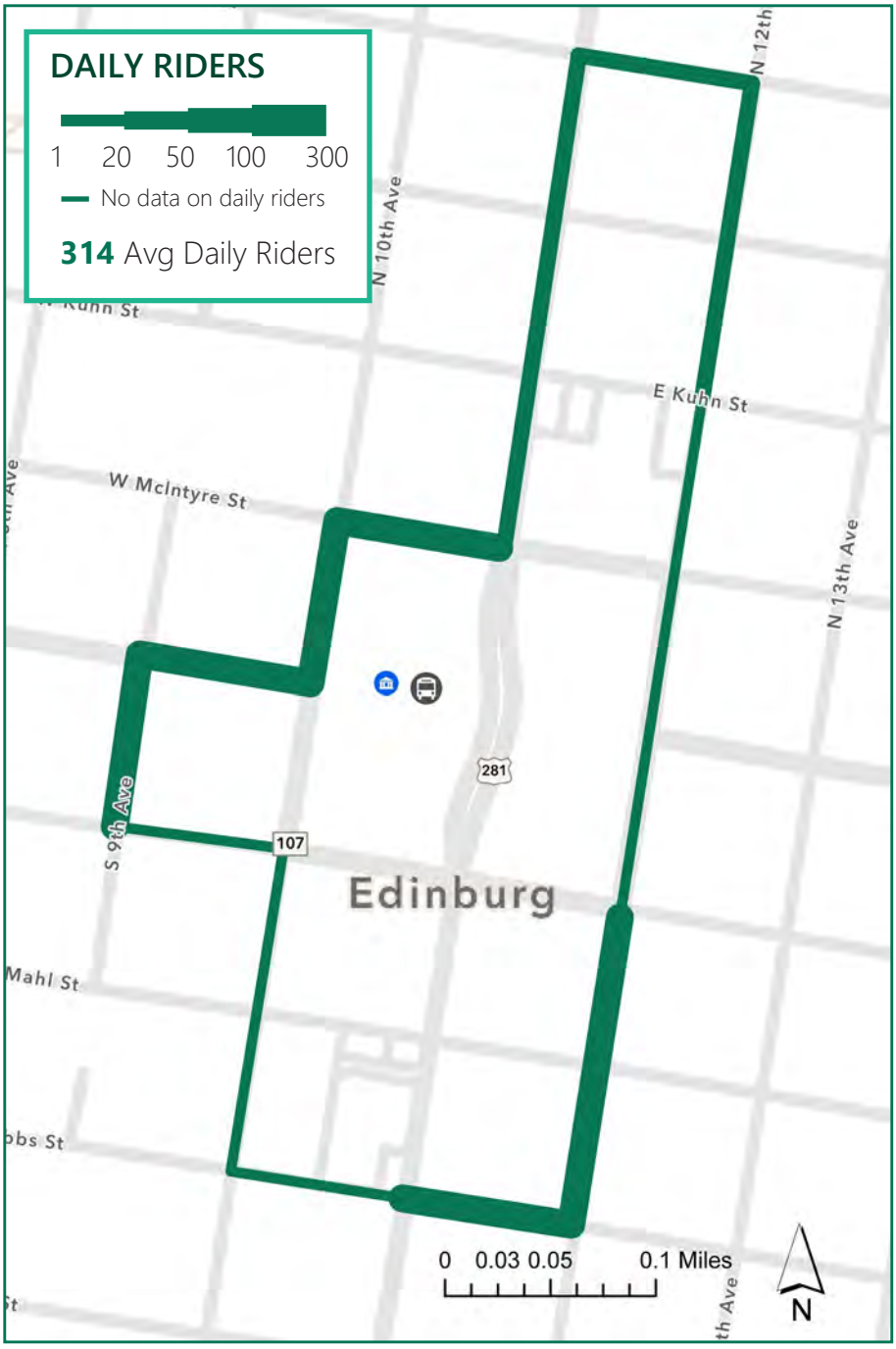
ROUTE DETAILS

Route 16 circulates the county courthouse and adjacent parking lots. The route stops briefly at each location on all trips. Passengers may request to stop at other locations. The circulator operates Monday-Friday from 7:00am to 6:00pm.

KEY DESTINATIONS

GOVERNMENT
Hidalgo County Courthouse

CONNECTIONS
Hidalgo County Courthouse



ROUTE 20

VALLEY METRO

ROUTE DETAILS

Route 20 services Mission and McAllen, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 20 operates Monday-Saturday from 6:30am to 5:30pm.

KEY DESTINATIONS

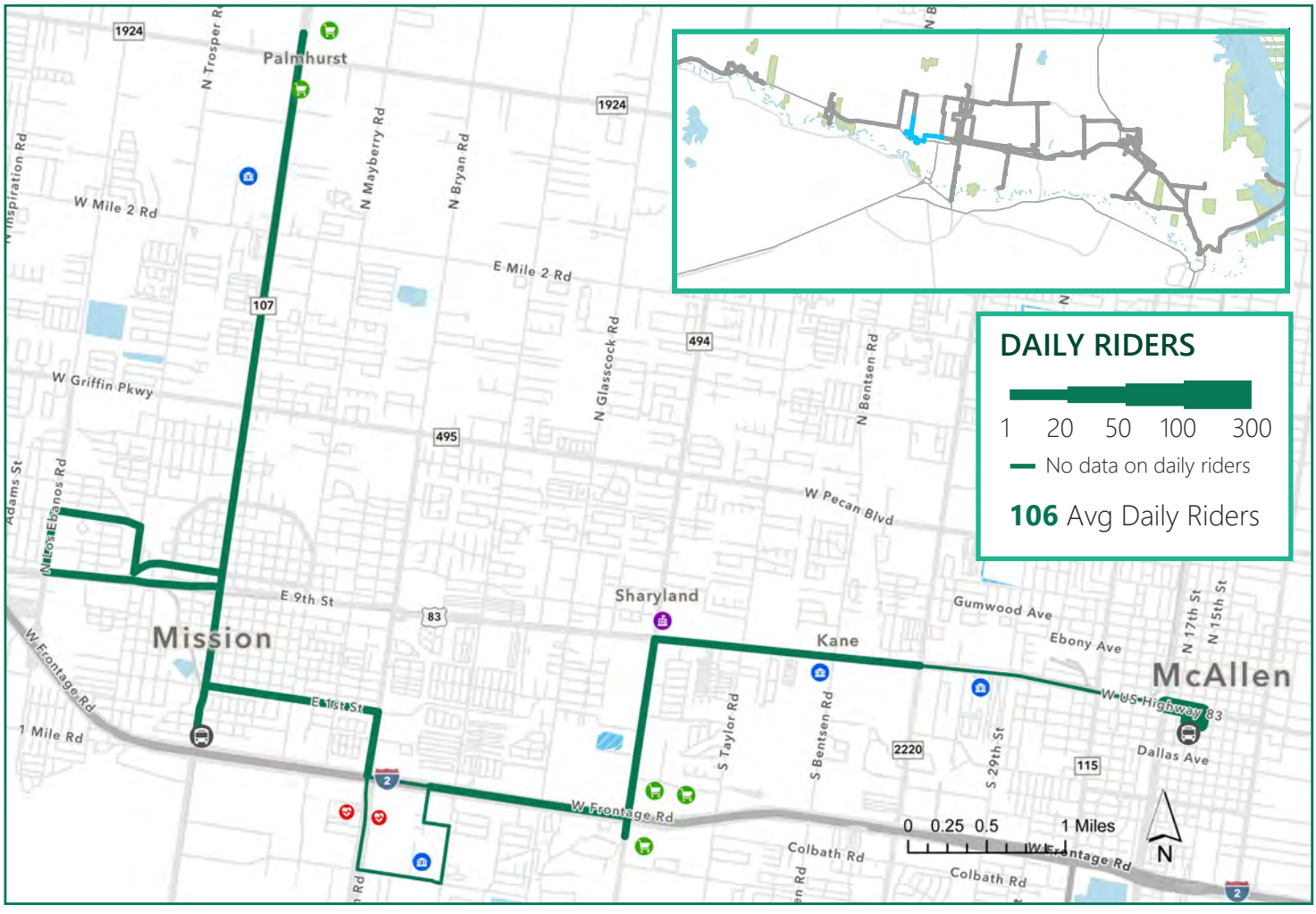
CONNECTION
McAllen Central Station
Foy's Supermarket

GOVERNMENT
Health & Human Services (McAllen)
Health & Human Services (Mission)
Workforce Solutions
Workforce Solutions Main Office

GROCERY
Walmart (Mile 3)
Foy's Supermarket
HEB
Target

SCHOOL
Sharyland Advanced Academy

MEDICAL
Mission Regional Medical Center
Mission Nursing and Rehab Center



ROUTE 21

VALLEY METRO

ROUTE DETAILS

Route 21 services Mission and Sullivan City, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 21 departs at 7:40am and at 2:00pm each Monday Wednesday, and Friday.

KEY DESTINATIONS

CONNECTION
Foy's Supermarket

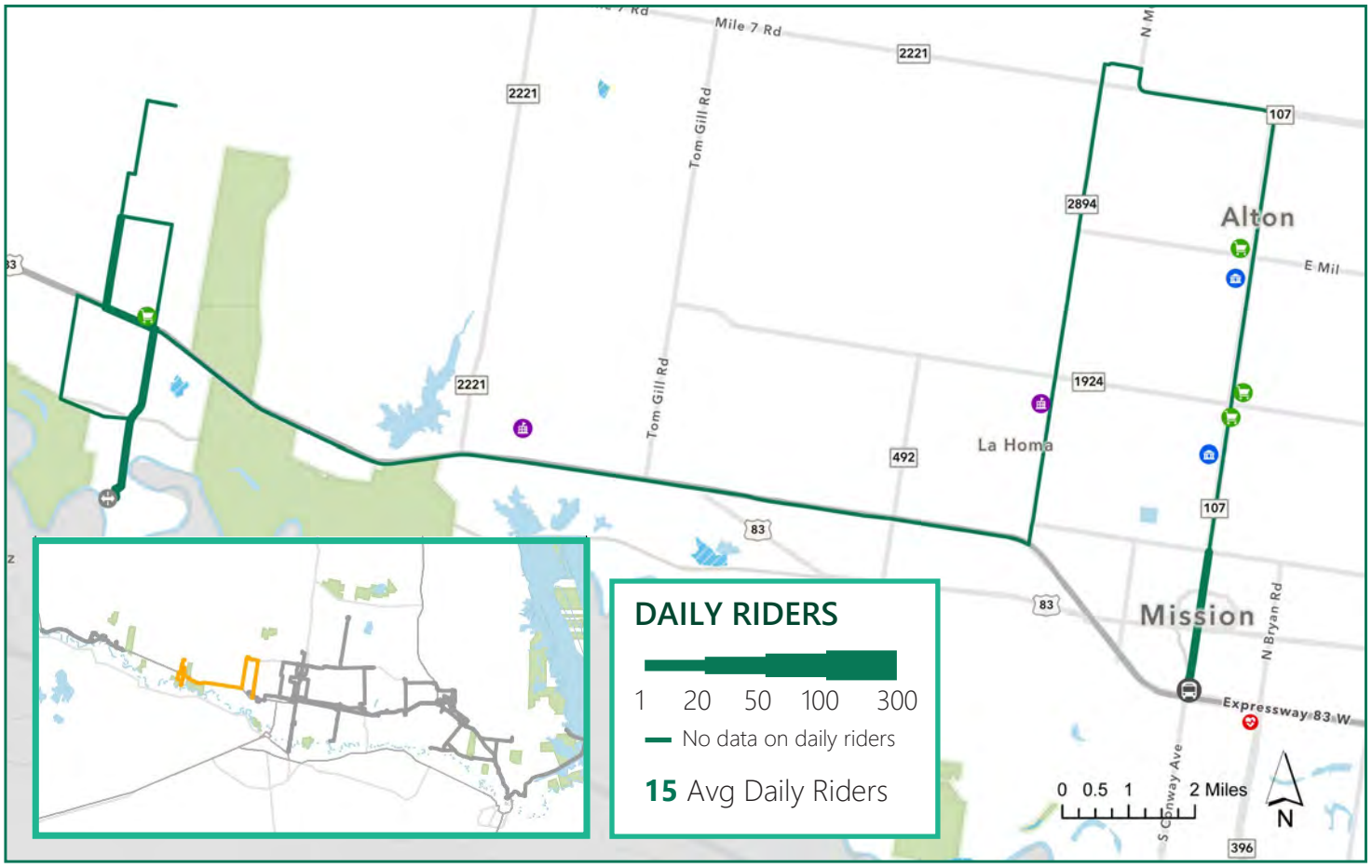
SCHOOL
La Joya High School
Palmview High School

GROCERY
Foy's Supermarket
WalMart - Peñitas
Jessie's Store
Junior's Supermarket
WalMart - Palmhurst
HEB - Mission

GOVERNMENT
Alton City Hall
Health & Human Services

MEDICAL
Mission Regional Medical Center

BORDER CROSSING
Los Ebanos Ferry



ROUTE 30

VALLEY METRO

ROUTE DETAILS

Route 30 services Pharr, San Juan and Edinburg, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 30 operates Monday-Saturday from 6:20pm until 4:50pm.

KEY DESTINATIONS

SCHOOL
PSJA Southwest Early College
High School
IDEA College Prep

SHOPPING
The Shoppes at Rio Grande Valley

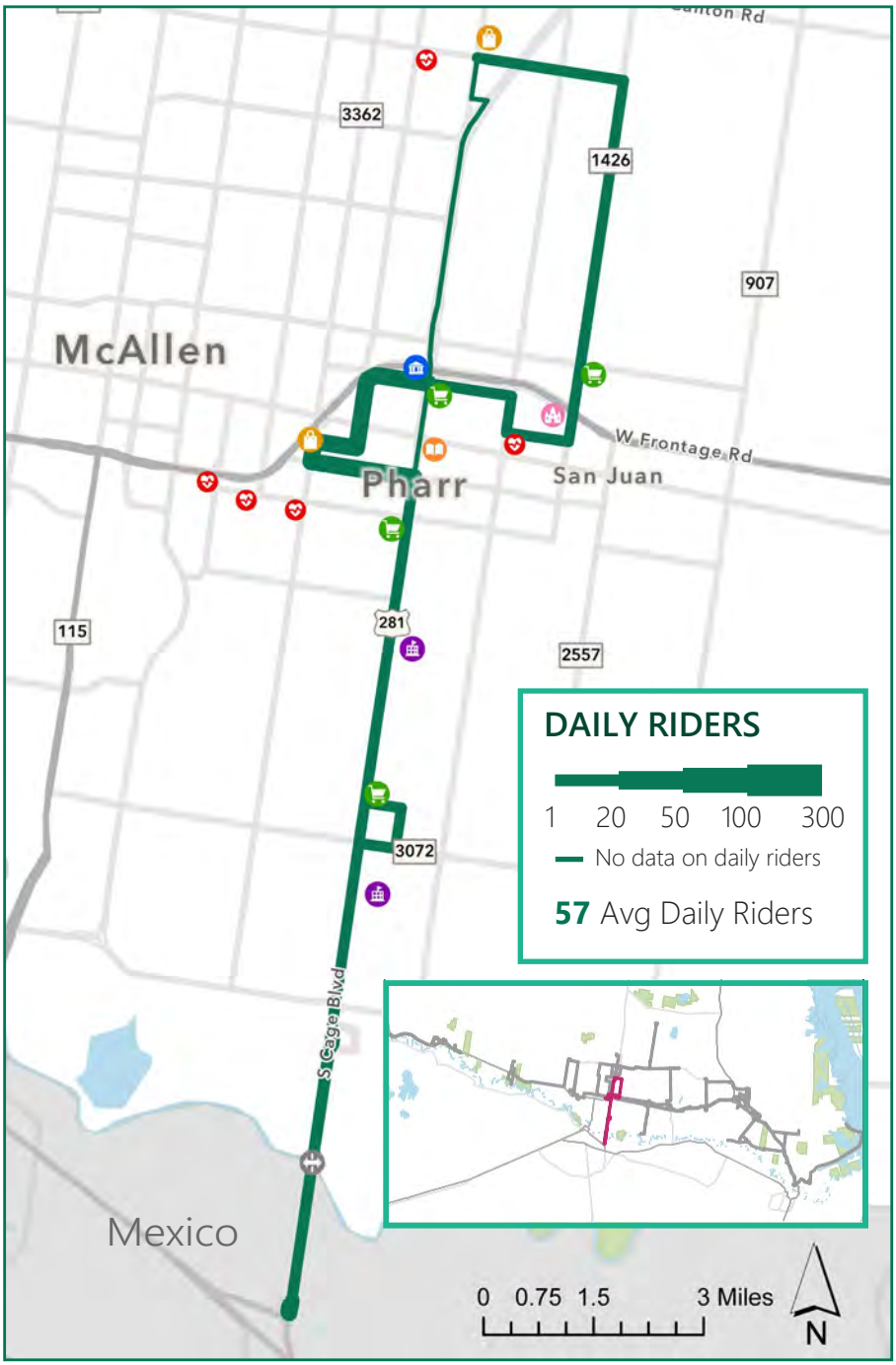
GROCERY
Junior 's (Cage)
Junior 's (San Juan)
M. Rivas
WalMart
HEB (Ridge)

GOVERNMENT
Pharr Housing Authority

MEDICAL
Nuestra Clinica del Valle
McAllen Medical Center
McAllen Heart Hospital
Edinburg Regional Medical Center

CHURCH
Our Lady of San Juan Basilica

BORDER CROSSING
Pharr International Bridge



ROUTE 31

VALLEY METRO

ROUTE DETAILS

Route 31 services the cities along Business 83 from Harlingen to McAllen, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. The route operates Monday-Saturday from 6:00am to 6:00pm.

KEY DESTINATIONS

CONNECTION
McAllen Central Station
Donna City Square Park
Harlingen Terminal
Weslaco Transit Center

MEDICAL
Knapp medical Center
Weslaco Rehab Hospital
Nuestra Clinica Del Valle

SHOPPING
RGV Premium Outlets
Dollar General

PARK
Donna City Square Park

GOVERNMENT
Weslaco City Hall

LIBRARY
Pharr City Library

SCHOOL
STC Mid Valley Campus
La Feria High School
Weslaco 21st Century Early College High School
3D Academy - Donna
College Career & Technology Academy

ROUTE 32

VALLEY METRO

ROUTE DETAILS

Route 32 services the City of Donna and connects to the Donna International Bridge, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 32 runs Monday-Friday from 8:00am to 5:00pm.

KEY DESTINATIONS

CONNECTION
Donna City Square Park
Donna Park & Ride

GROCERY
HEB
Donna WalMart

SHOPPING
Dollar General
Autozone
O'Reilly Auto Parts

GOVERNMENT
Donna Post Office

COMMUNITY
Mesa Apartments

PARK
Donna City Square Park

LIBRARY
Donna Public Library

BORDER CROSSING
Donna International Bridge

ROUTE 40

VALLEY METRO

ROUTE DETAILS

Route 40 services southern Harlingen, stopping at several medical facilities and following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 40 operates Monday-Friday from 6:30am until 5:30pm.

KEY DESTINATIONS

CONNECTION
Regional Academic Health Center

GROCERY
HEB
Sam's Club

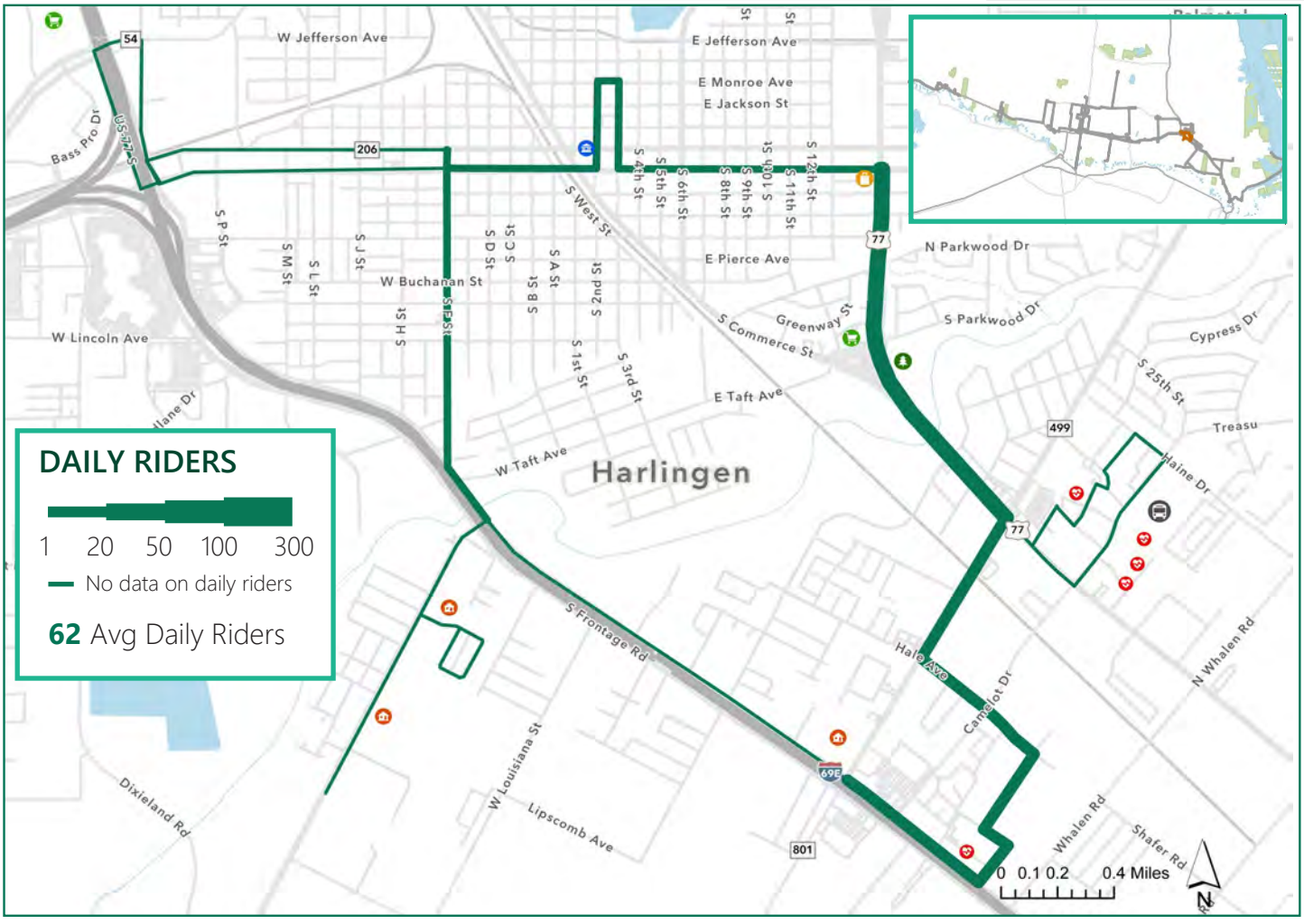
SHOPPING
Walgreens

COMMUNITY
Good Samaritan Center
Bonita Park Headstart
Boys and Girls Club

GOVERNMENT
City of Harlingen Offices

PARK
McKelvey Park

MEDICAL
Valley Baptist Medical Center
Harlingen Medical Center
Su Clinica Familiar
Ronald McDonald House
South TX VA Healthcare Center
Regional Academic Health Center



DAILY RIDERS

1 20 50 100 300

No data on daily riders

62 Avg Daily Riders

2030 TRANSIT DEVELOPMENT PLAN

ROUTE 41

VALLEY METRO

ROUTE DETAILS

Route 41 services many retail locations in north Harlingen, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 41 operates Monday-Saturday from 6:30am until 5:30pm.

KEY DESTINATIONS

SCHOOL
Texas State Technical College

GOVERNMENT
Harlingen City Hall
Social Security Office

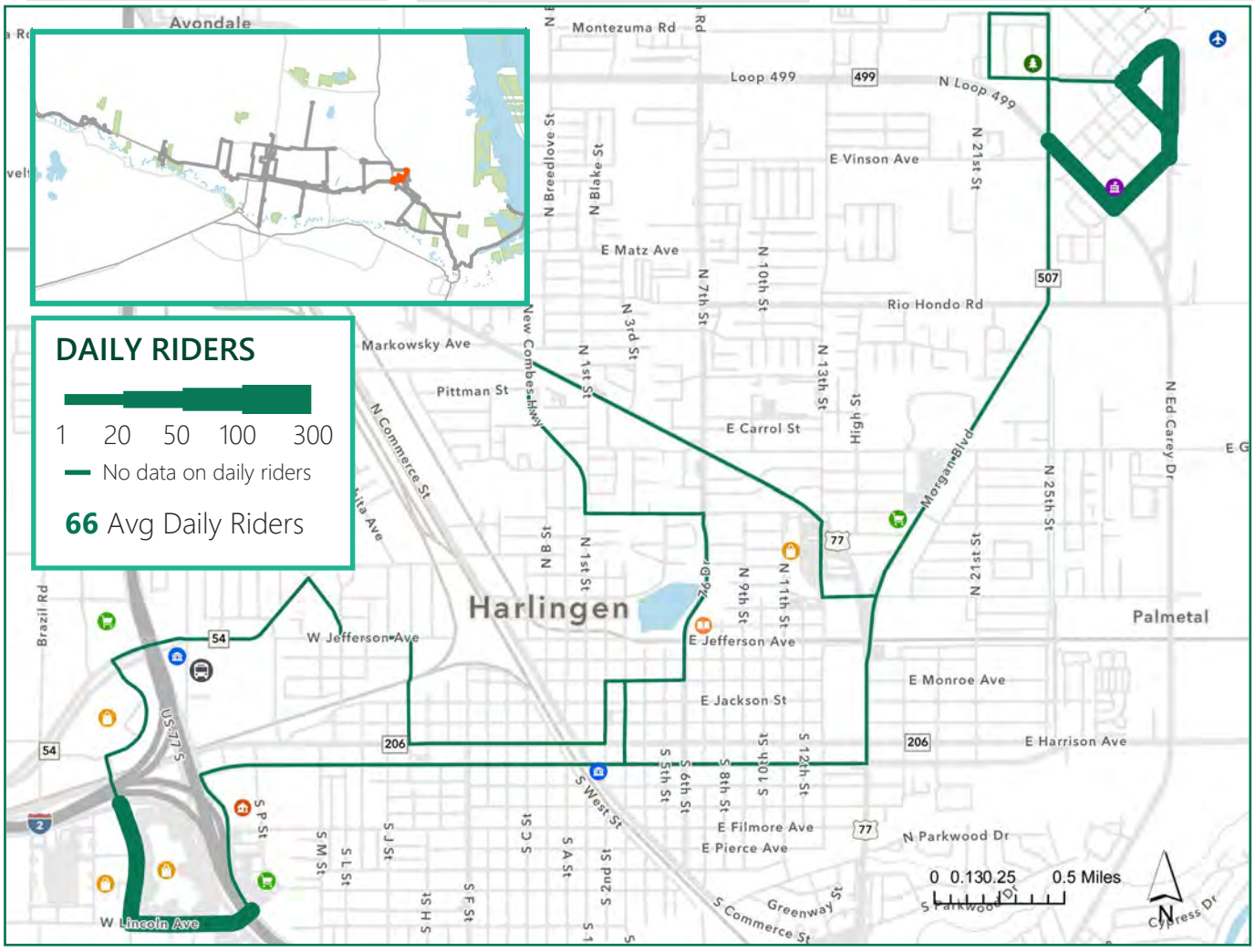
AIRPORT
Valley International Airport

GROCERY
HEB (Morgan)
Sam's Club
WalMart
HEB (Frontage)

COMMUNITY
Cinemark Theater

SHOPPING
Sun Valley Plaza Mall
Bass Pro Shop
Valle Vista Mall
Target

LIBRARY
Harlingen Public Library



ROUTE 42

VALLEY METRO

ROUTE DETAILS

Route 42 connects San Benito and Harlingen, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. This route operates Monday-Friday from 6:35am until 3:43pm.

KEY DESTINATIONS

CONNECTION
- Harlingen Terminal
- San Benito City Hall

SCHOOL
- San Benito High School
- Mid Valley Academy
- Gateway to Graduation Academy

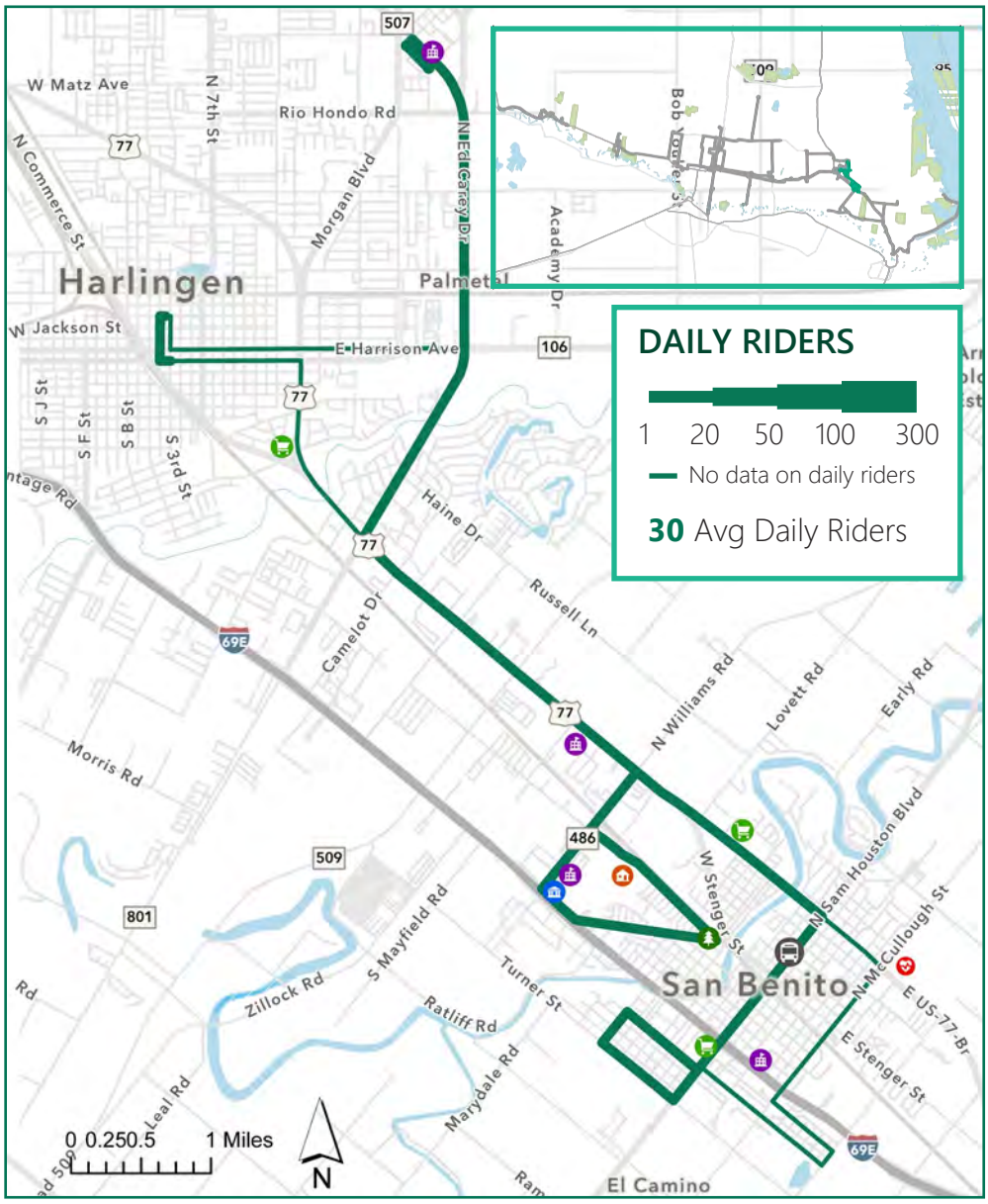
GROCERY
- Lopez Supermarket
- Super WalMart
- HEB
- WalMart

GOVERNMENT
- Cameron County Annex
- San Benito City Hall

MEDICAL
- US Renal Care - San Benito

COMMUNITY
- Bobby Morrow Stadium

PARK
- Resaca Trail



ROUTE 43

VALLEY METRO

ROUTE DETAILS

Route 43 connects San Benito to Brownsville, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. This route operates each Monday, Wednesday, and Friday from 8:00am until 2:45pm.

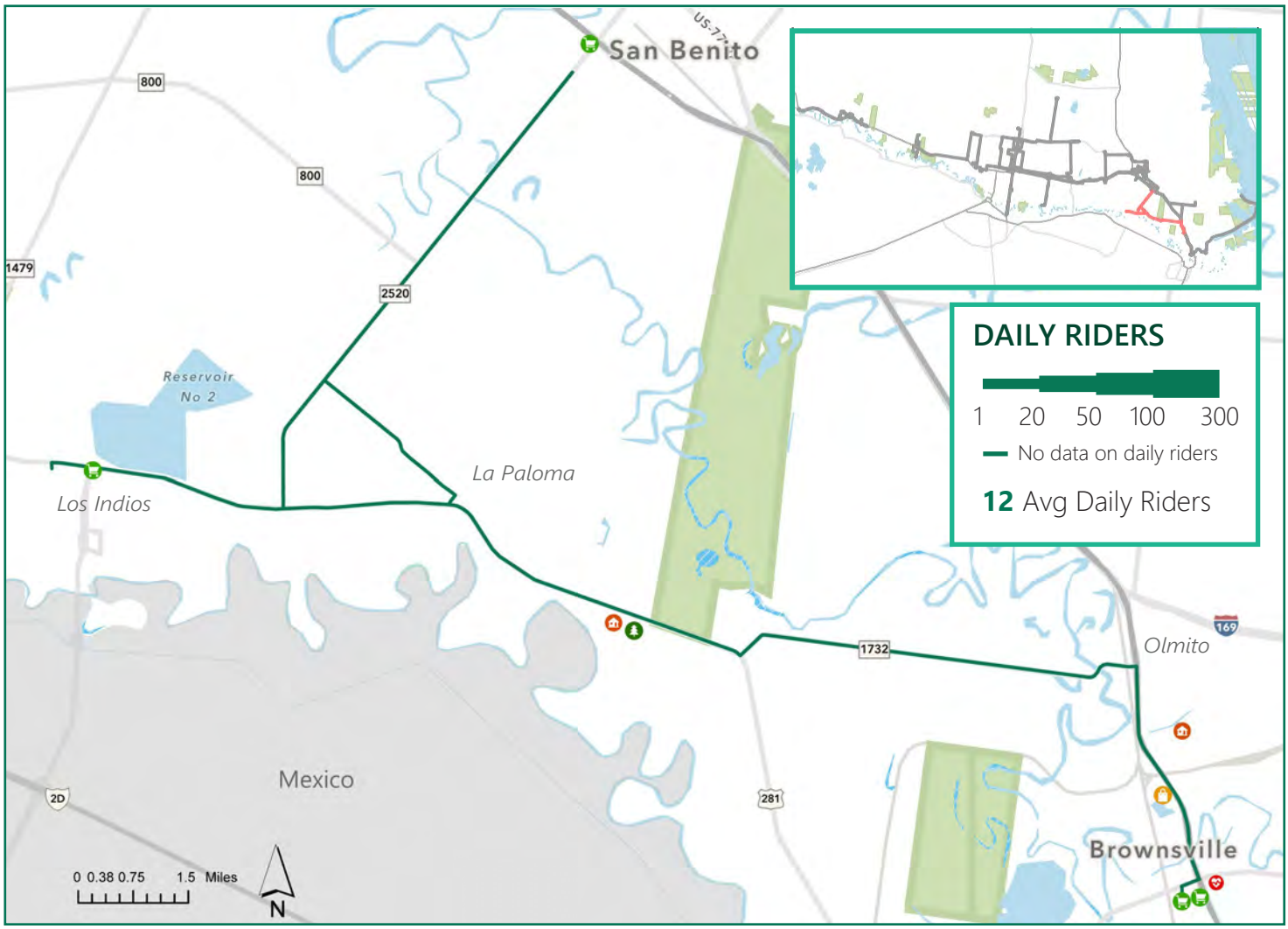
KEY DESTINATIONS

GROCERY
Stripes - FM 509
WalMart (Brownsville)
Sam's Club (Brownsville)
Lopez Supermarket

SHOPPING
77 Flea Market

MEDICAL
Valley Regional Medical Center

COMMUNITY
Brownsville Sports Park
El Ranchito Headstart



ROUTE 44

VALLEY METRO

ROUTE DETAILS

Route 44 services La Feria, Santa Rosa, and Combes, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 44 operates Monday-Friday from 6:30am until 4:30pm.

KEY DESTINATIONS

CONNECTION
Harlingen Terminal
La Feria City Hall

GROCERY
El Centro Foods

SHOPPING
Dollar General
Walgreens

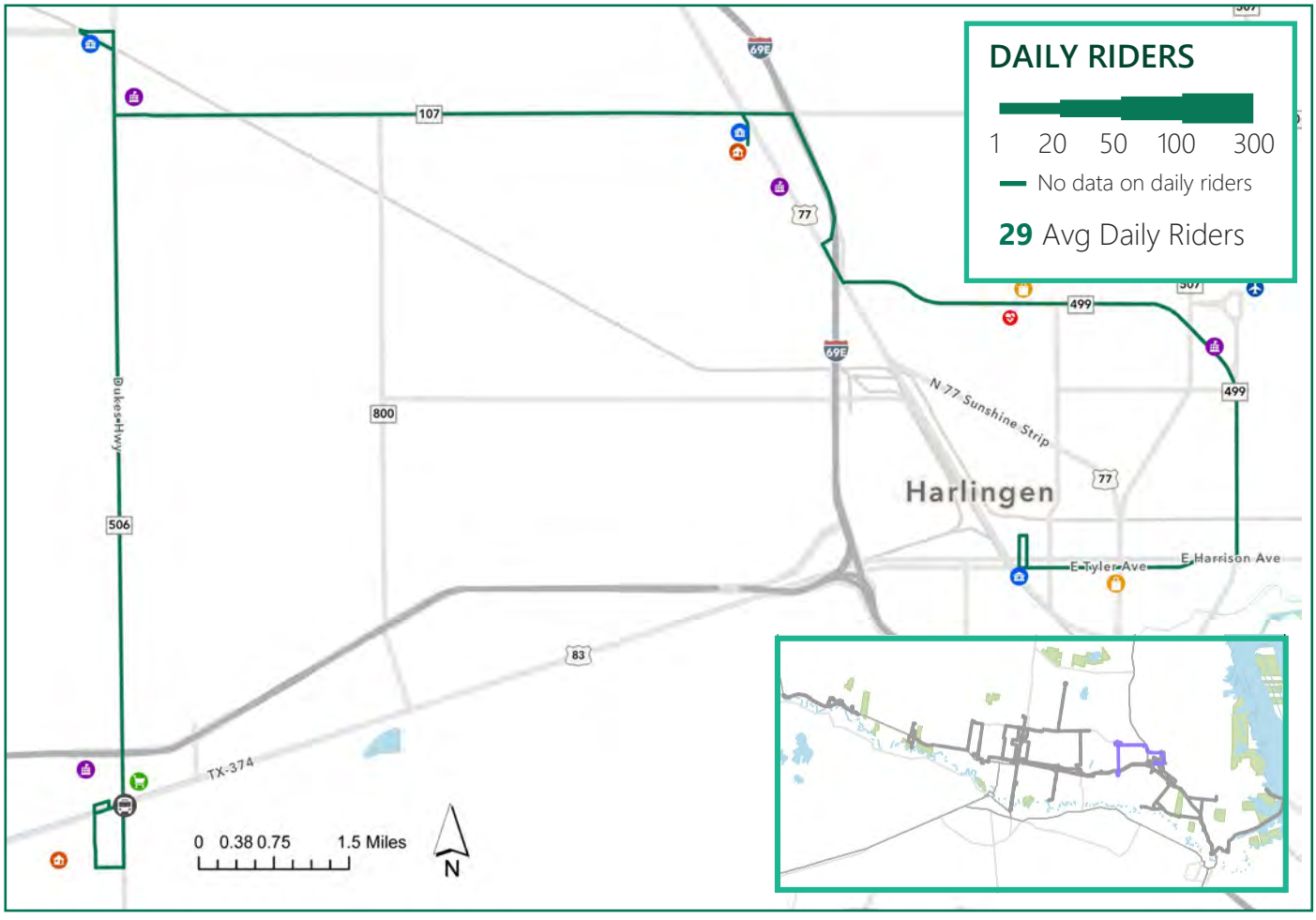
SCHOOL
Santa Rosa High School
Texas State Technical College
La Feria High School
Southwest Key High School

MEDICAL
Tropical Texas Behavioral Health

AIRPORT
Valley International Airport

GOVERNMENT
Combes City Hall
Santa Rosa City Hall
La Feria City Hall
Harlingen City Hall

COMMUNITY
La Feria Sports Complex
Combes Community Center



ROUTE 45

VALLEY METRO

ROUTE DETAILS

Route 45 services employment hubs between Brownsville and Harlingen, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 45 operates Monday-Friday from 6:25am until 5:30pm.

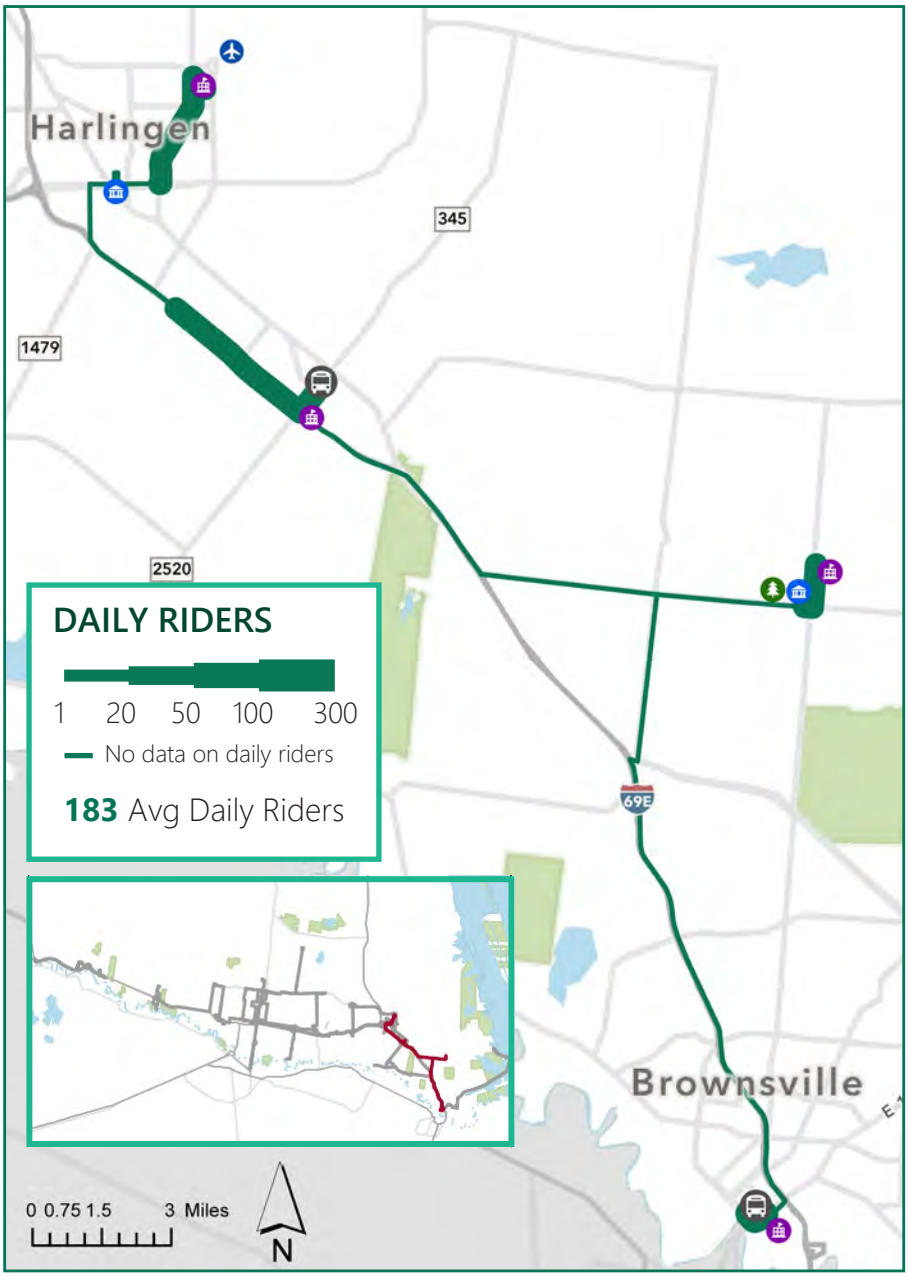
KEY DESTINATIONS

CONNECTION
La Plaza Brownsville Multimodal Terminal

SCHOOL
Texas State Technical College
UTRGV Brownsville Campus
Los Fresnos High School
Gateway to Graduation High School

GOVERNMENT
San Benito City Hall
Los Fresnos City Hall
Harlingen City Hall

PARK
Los Fresnos City Park



RGV MPO

2030 TRANSIT DEVELOPMENT PLAN

ROUTE 50

VALLEY METRO

ROUTE DETAILS

Route 50 services Brownsville, Port Isabel, and Laguna Vista, following a fixed route. This route is free for all passengers and operates Monday-Saturday from 6:00am to 6:30pm, and Sundays from 6:00am to 6:10pm.

KEY DESTINATIONS

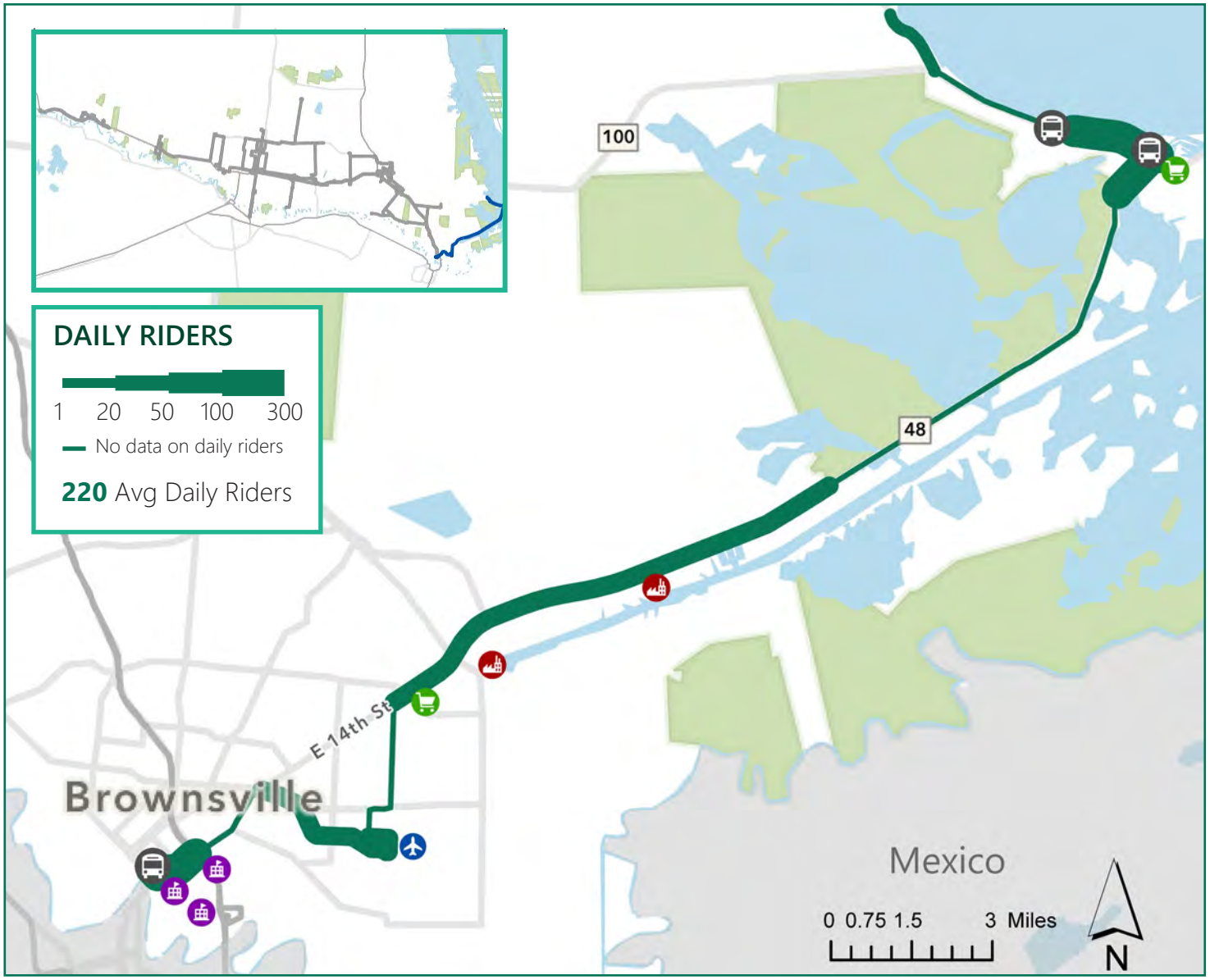
CONNECTION
- La Plaza Brownsville Multimodal Terminal
- Port Isabel
- Laguna Heights

SCHOOL
- UTRGV Brownsville Campus
- Texas Southmost College
- Lincoln Park High School

AIRPORT
- Brownsville-SPI Airport

GROCERY
- WalMart (Brownsville)
- WalMart (Port Isabel)

INDUSTRIAL
- Keppel AmFELS
- Port of Brownsville



ROUTE 60

VALLEY METRO

ROUTE DETAILS

Route 60 services Roma and Rio Grande, following a fixed route and stopping briefly at each scheduled stop. This is an extension of the free South Texas College Jag Express - Green Line. It operates Monday-Friday from 7:10am to 5:00pm.

KEY DESTINATIONS

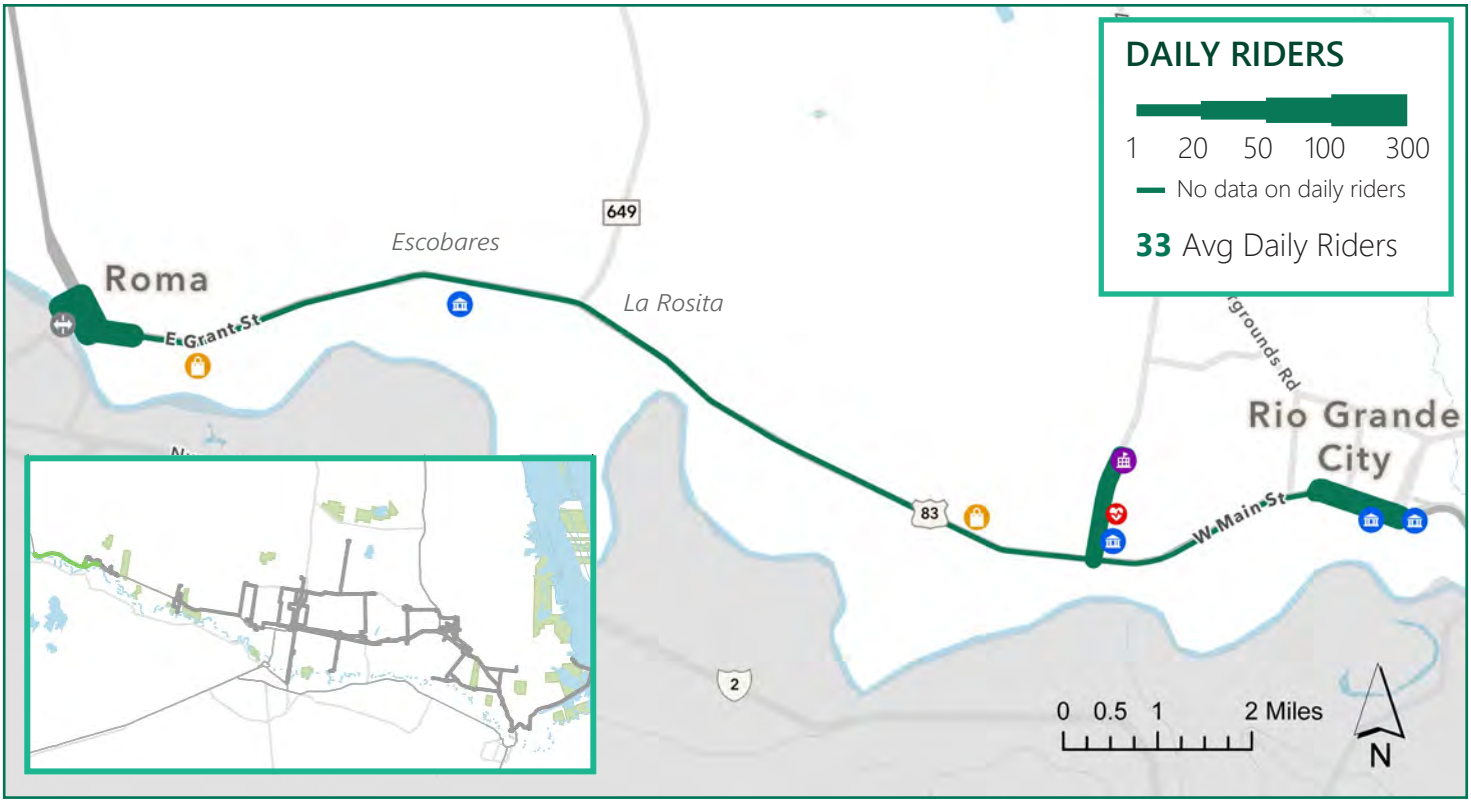
GOVERNMENT
Roma City Hall
Rio Grande City Fire Department
Rio Grande City Police Department
Escobares City Hall

SCHOOL
South Texas College Starr County Campus

SHOPPING
Dollar Tree
Dollar General

MEDICAL
Starr County Memorial Hospital

BORDER CROSSING
Roma-Ciudad Miguel Alemán International Bridge



ROUTE 61

VALLEY METRO

ROUTE DETAILS

Route 61 services western Rio Grande City, following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 61 operates Monday-Friday from 7:00am until 5:00pm.

KEY DESTINATIONS

SCHOOL
South Texas College Starr County Campus

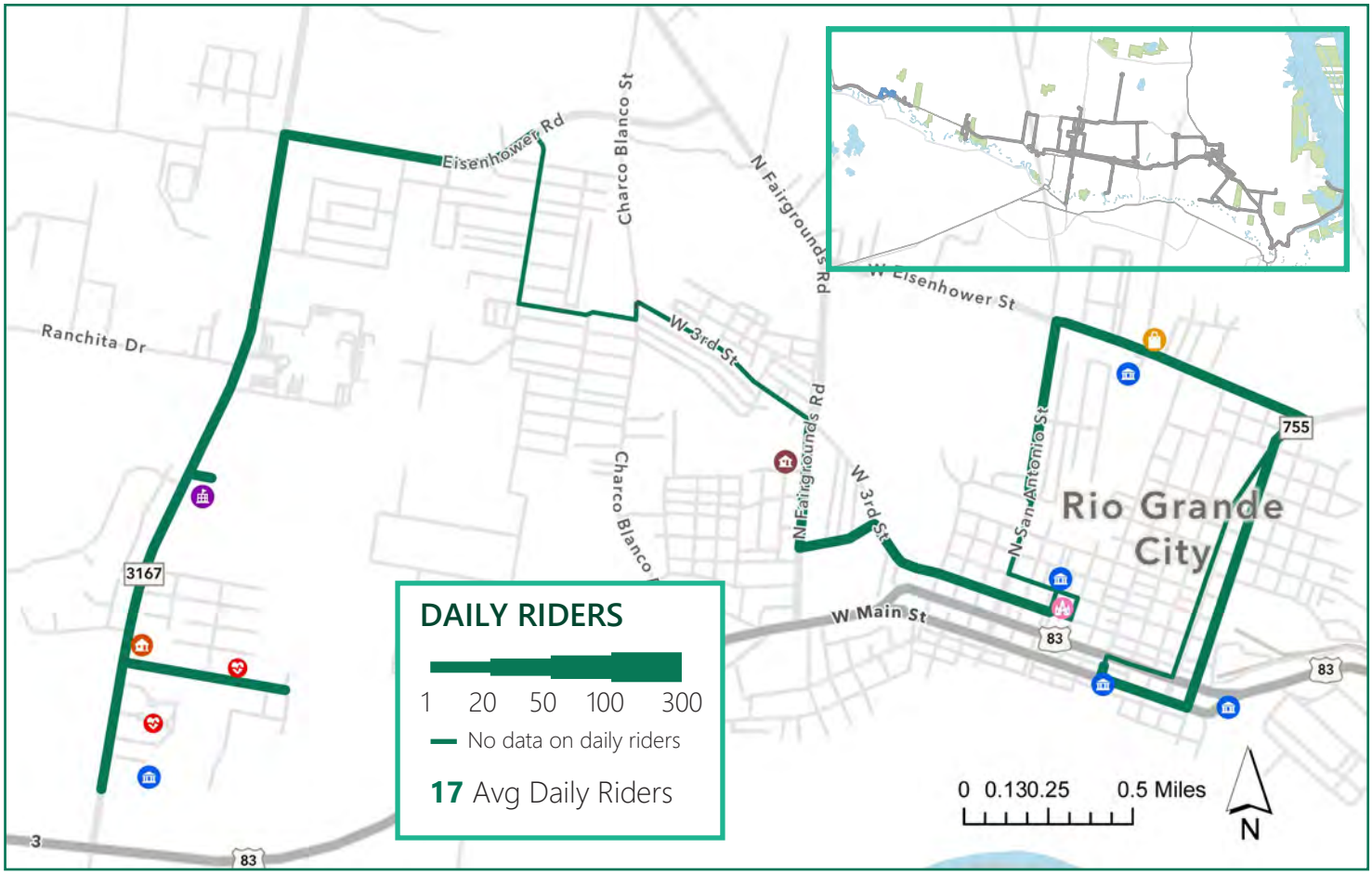
SHOPPING
Dollar General

MEDICAL
Rio Grande City Nursing & Rehabilitation Center

COMMUNITY
Villa Vallarta Apartments
Central Plaza

GOVERNMENT
Rio Grande City Post Office
Starr County Courthouse
County Courthouse Annex

CHURCH
Immaculate Conception Catholic Church



ROUTE 62

VALLEY METRO

ROUTE DETAILS

Route 62 services eastern Rio Grande City, Las Lomas, and Santa Cruz following a fixed route unless passengers within a half mile of the route request pickup via phone at least one day in advance. The bus will leave the route, pick up the passenger, then return to the route to continue service. Route 62 operates Monday-Friday from 7:00am until 5:00pm.

KEY DESTINATIONS

GROCERY
- WalMart
- HEB Plus
- Mendoza Grocery
- A&A Grocery

GOVERNMENT
- City Hall - Rio Grande City
- WIC Clinic
- Workforce Solutions
- Rio Grande City Police & Fire Departments

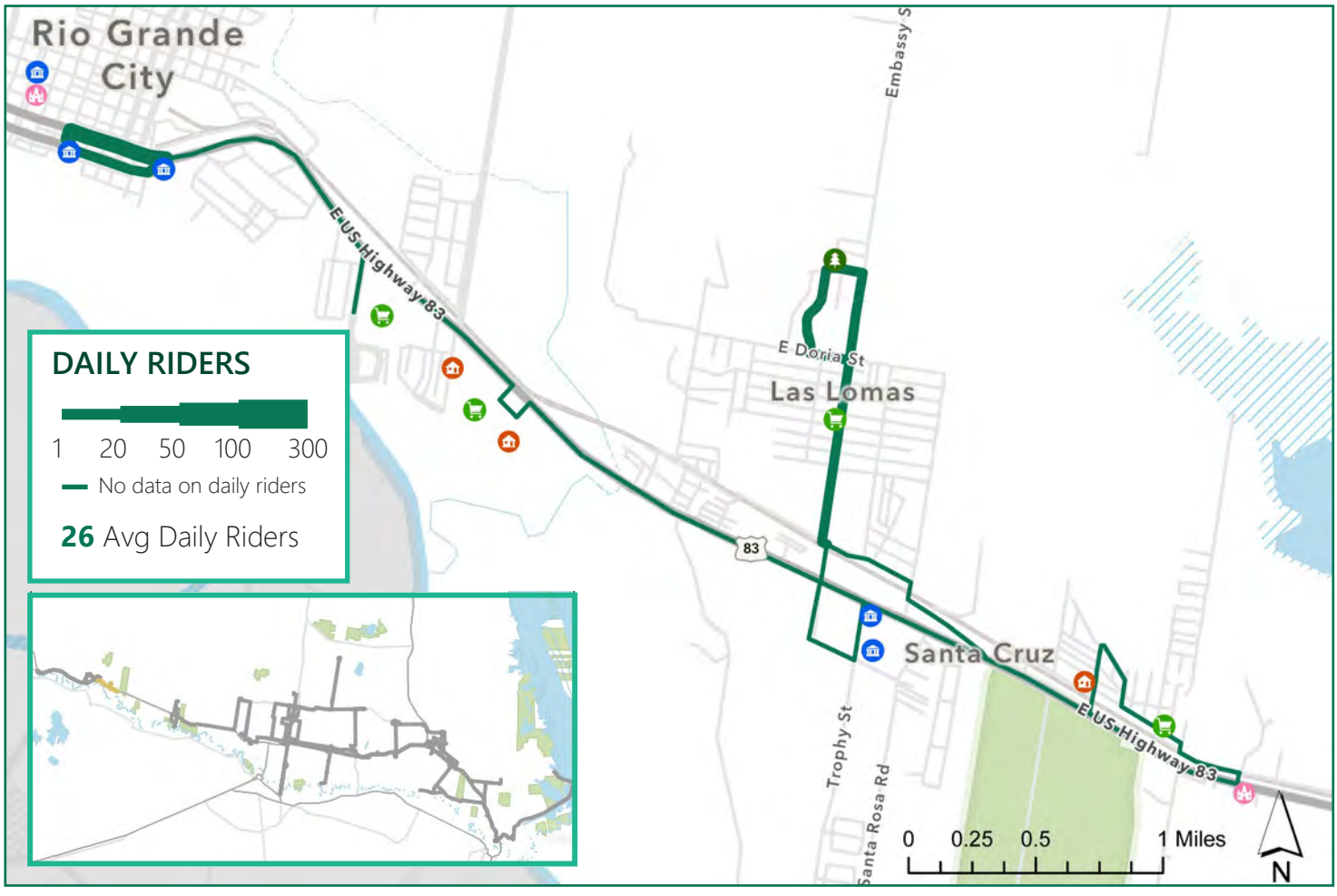
COMMUNITY
- Starplex Theatre
- Julabe Event Center
- IBC Bank

MEDICAL
- Santa Cruz Medical Plaza

SHOPPING
- Dollar General

CHURCH
- San Pablo Apostol Church

PARK
- Poke Park



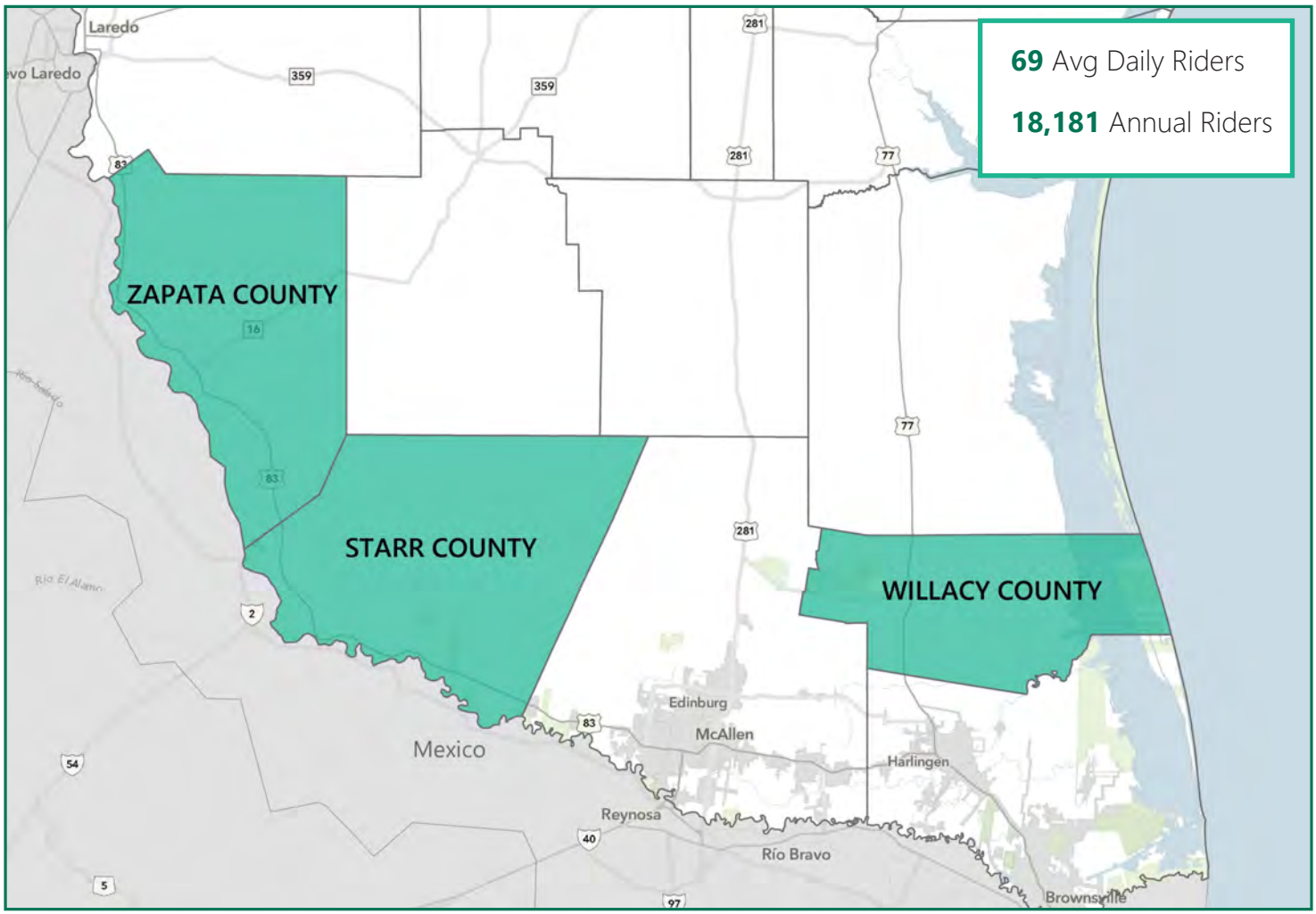
DEMAND RESPONSE SERVICE

VALLEY METRO

SERVICE DETAILS

Valley Metro's demand response service is a reservation-based program that operates on weekdays between 7:00 AM and 5:00 PM in Starr County, between 7:00 AM and 4:00 PM in Willacy County, and between 8:00 AM and 5:00 PM in Zapata County. Reservations should be made one day in advance for trips beginning and/or ending in those counties.

Trips from the Zapata town site may also be scheduled for cities outside the county boundary, including McAllen, Harlingen, Laredo, and Weslaco.



CITIES SERVICED

Zapata County
Zapata
Falcon Mesa

Starr County		
Alto Bonito	Midway	Rio Grande City
La Grulla	La Rosita	Roma
Garciasville	Garceno	Los Saenz
La Casita	Escobares	Fronton

Willacy County	
San Perlita	Sebastian
Port Mansfield	
Raymondville	
Lyford	

CAMPUS CONNECTOR

UTRGV VAQUERO

ROUTE DETAILS

UTRGV has branded the Campus Connector as a UTRGV Vaquero Express route. The Campus Connector connects the UTRGV Brownsville, Edinburg, and Harlingen campuses. Harlingen stops that are not scheduled may be requested upon boarding. The Campus Connector route operates Monday-Friday. The first bus from Edinburg is at 6:00am and the last is at 10:30pm. The first bus from Brownsville is at 6:00am and the last is at 11:45pm. Last departure on Friday is at 6:00pm.

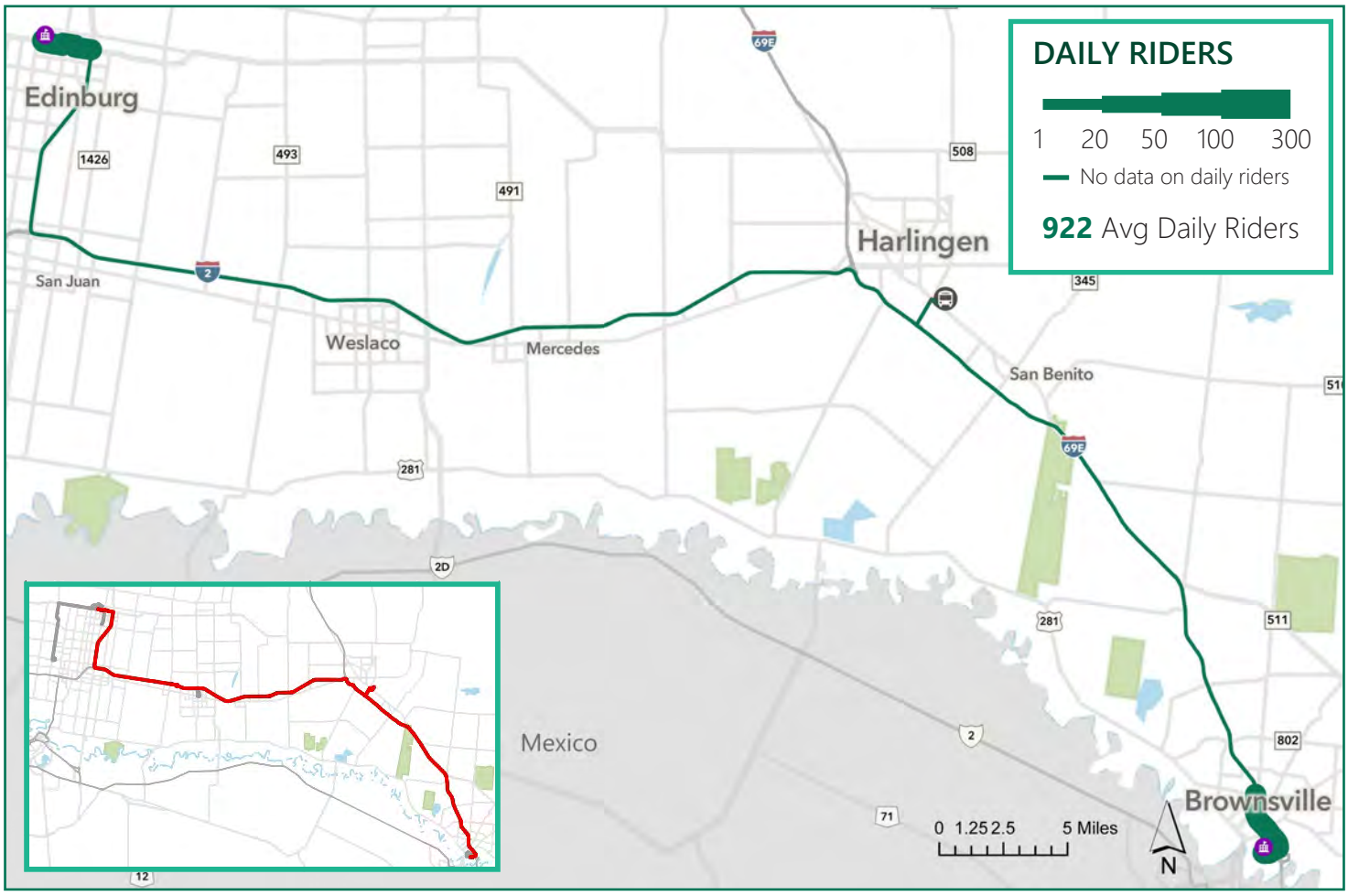
KEY DESTINATIONS

CONNECTION

UT Regional Academic Health Center

SCHOOL

UTRGV Edinburg Campus
UTRGV Brownsville Campus



EDINBURG-WESLACO CONNECTOR

UTRGV VAQUERO

ROUTE DETAILS

UTRGV has branded the Edinburg-Wesalco Connector as a UTRGV Vaquero Express route. The Edinburg to Weslaco Connector connects the UTRGV Edinburg campus to Weslaco and operates Monday-Friday. The first bus departs from Edinburg at 8:00am and the last departure is at 6:30pm. The last departure from Weslaco is at 7:30pm. On Friday the last departure is at 3:30pm.

KEY DESTINATIONS

SCHOOL
UTRGV Edinburg Campus

GOVERNMENT
Weslaco City Hall

BROWNSVILLE-WESLACO CONNECTOR

UTRGV VAQUERO

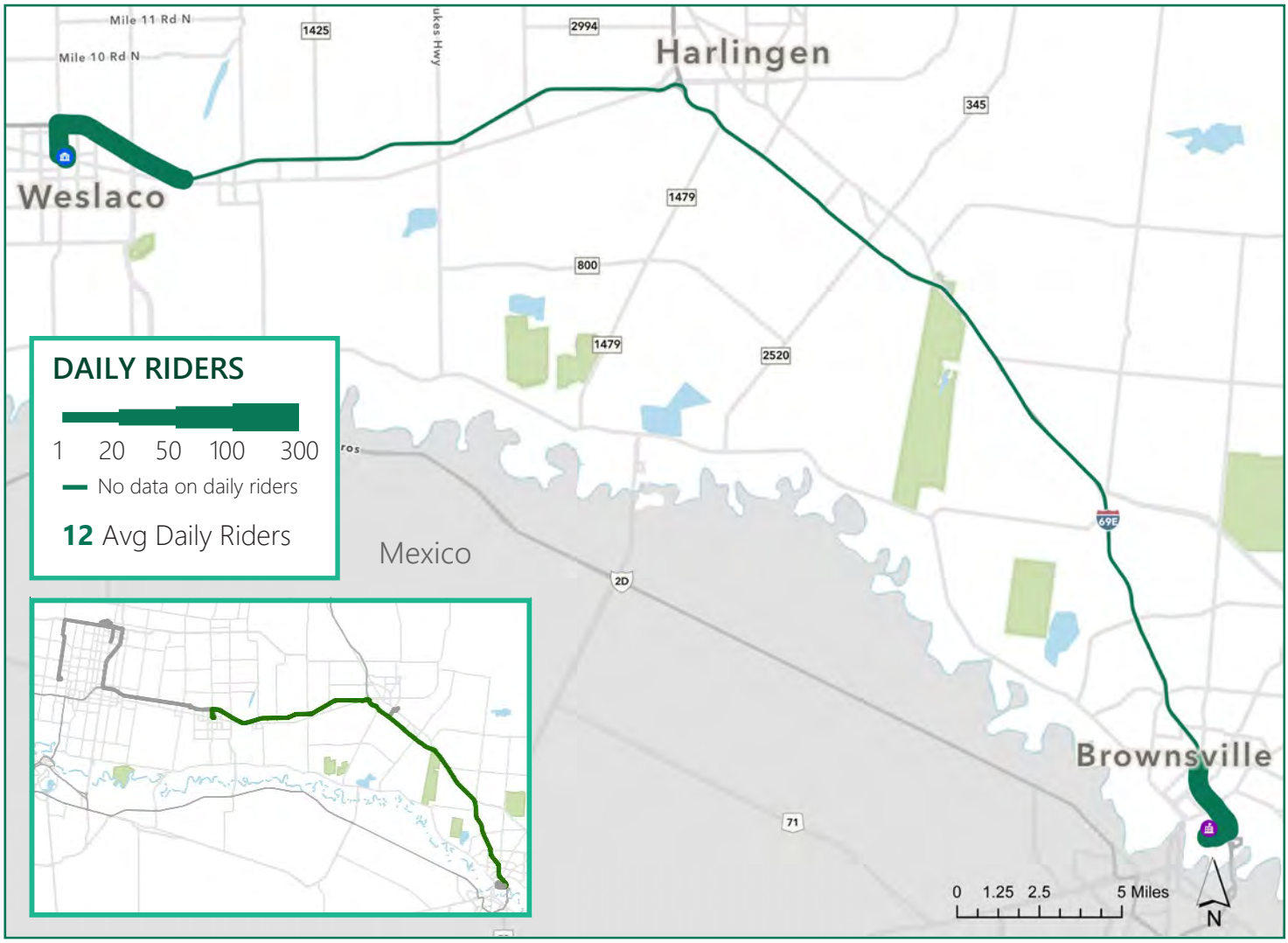
ROUTE DETAILS

UTRGV has branded the Brownsville-Weslaco Connector as a UTRGV Vaquero Express route. The Brownsville - Weslaco Connector connects the UTRGV Brownsville campus to Weslaco and operates Monday-Friday. The first bus departs from Brownsville at 8:00am and the last departure is at 6:30pm. The last departure from Weslaco is at 7:30pm. The last departure on Friday is at 3:30 P.M.

KEY DESTINATIONS

SCHOOL
UTRGV Brownsville Campus

GOVERNMENT
Weslaco City Hall



RIO GRANDE CITY-MCALLEN CONNECTOR

UTRGV VAQUERO

ROUTE DETAILS

UTRGV has branded the Rio Grande City-McAllen Connector as a UTRGV Vaquero Express route. The Rio Grande - McAllen Connector connects the UTRGV Edinburg Campus to Rio Grande City via the STC Jag Express Green Line. Passengers must transfer buses at South Texas College Cooper Center in McAllen. This route is available Monday-Thursday departing from Rio Grande City to Edinburg at 6:05am, and departing from Edinburg to Rio Grande City at 4:45pm.

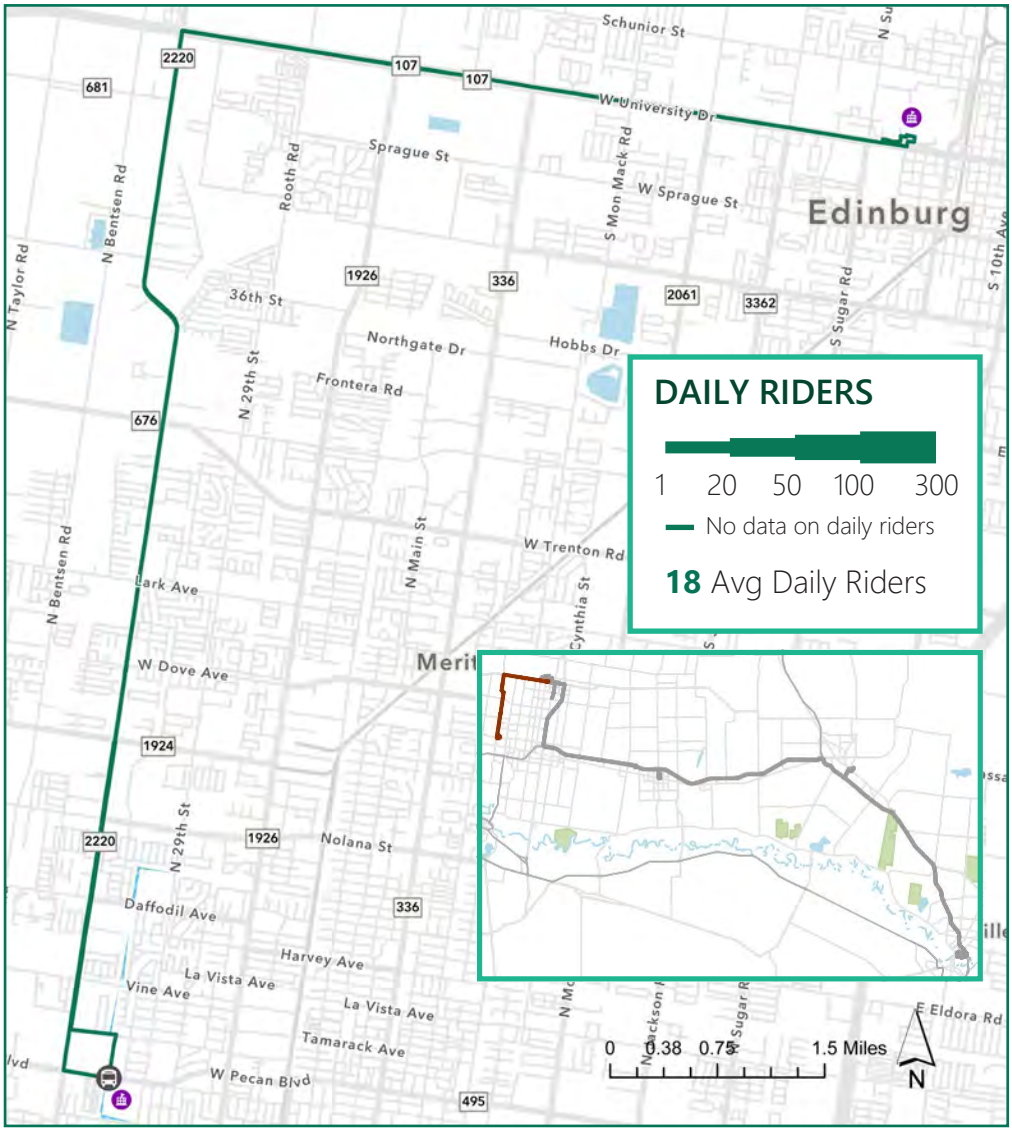
KEY DESTINATIONS

CONNECTION

South Texas College
Pecan Campus

SCHOOL

UTRGV Edinburg Campus
South Texas College
Pecan Campus



EVABL

UTRGV VAQUERO

ROUTE DETAILS

The EVABL route provides flexible service between the UTRGV Edinburg Campus Visitors Center and UTRGV Edinburg Visual Arts Building (EVAB). Passengers within a half mile of the route can request pickup via phone one day in advance. This route operates Monday-Friday from 7:30am until 10:30pm, providing service to City Hall, the Courthouse, and HEB upon request between 8:30pm and 10:30pm. Valley metro operates the route until 8:30pm, after which UTRGV runs the service.

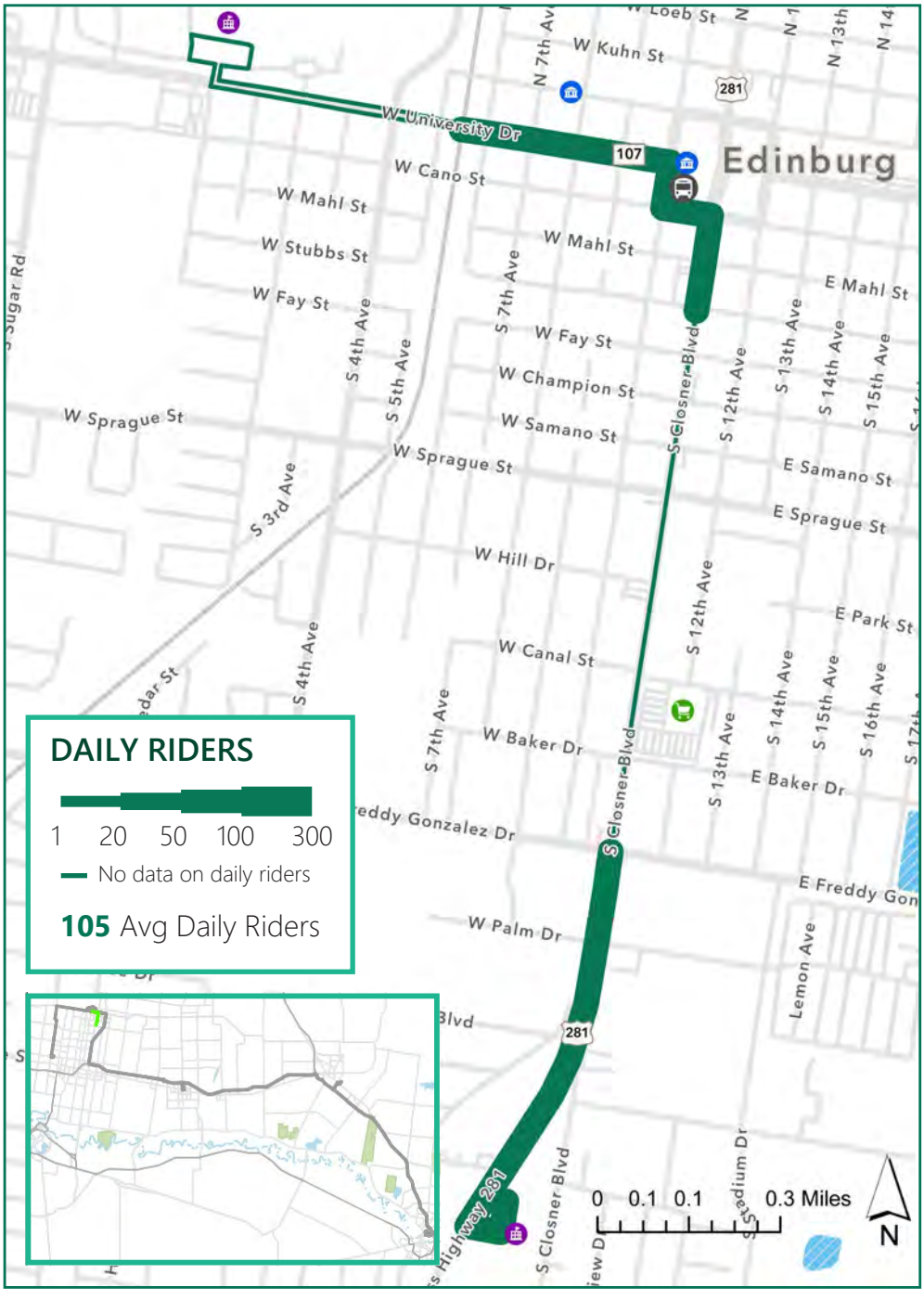
KEY DESTINATIONS

CONNECTION
Hidalgo County Courthouse

SCHOOL
UTRGV Edinburg Campus
UTRGV Visual Arts Building

GROCERY
HEB (Closner)

GOVERNMENT
Hidalgo County Courthouse
Edinburg City Hall



ORANGE, BLUE, AND GREEN CIRCUITS

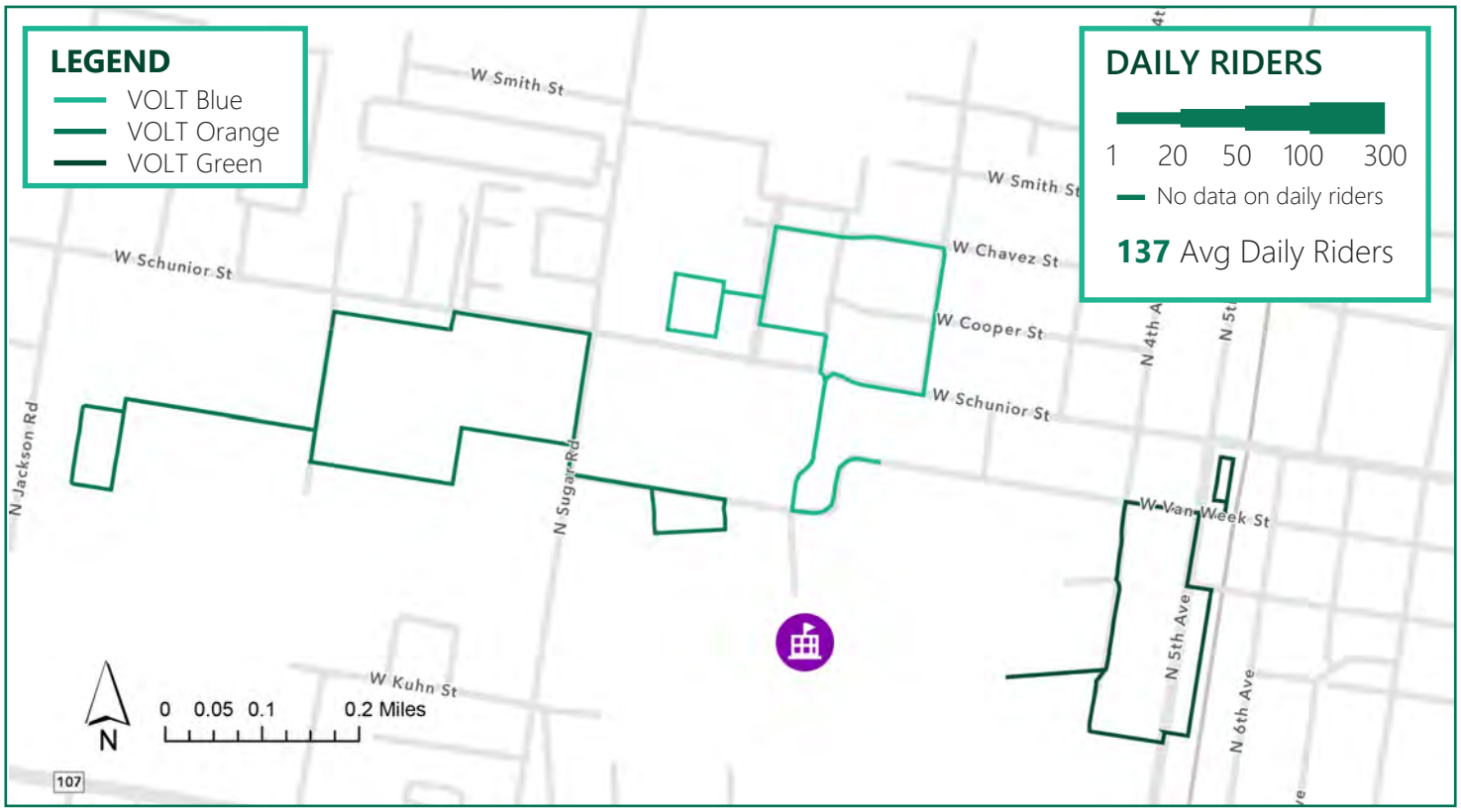
UTRGV VOLT

SERVICE DETAILS

UTRGV has branded the campus electric vehicle as the VOLT Circuits, which are operated through a partnership with Valley Metro. The Orange, Blue, and Green VOLT Circuits provide service in and around the Edinburg Campus. VOLT service also offers the convenience of call stops, which provide service outside the circuit alignments by reservation. The circuits operate Monday-Friday from 7:30am until 5:00pm.

STOPS

ORANGE	Lot E9 Lot E10 Lot E34 Soccer Field The Village Apartments Parking & Transportation Services	BLUE	Lot E12 Lot E31 Lot E32 Lot E33 Aaronson Library	GREEN	Lot E21 - A Lot E21 - B Lot E23 Sundial



PINK AND YELLOW CIRCUITS

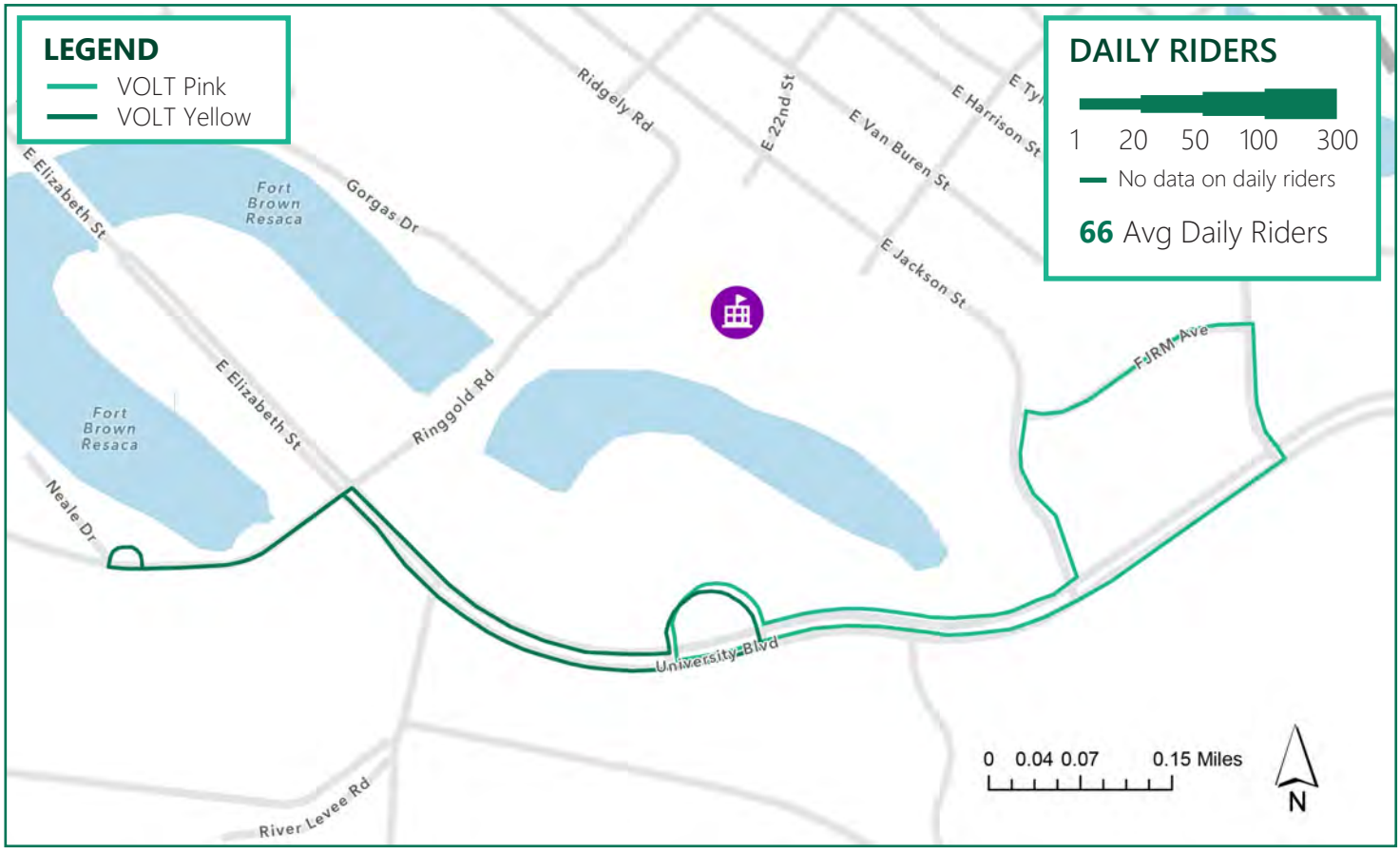
UTRGV VOLT

SERVICE DETAILS

UTRGV has branded the campus electric vehicle as the VOLT Circuits, which are operated through a partnership with Valley Metro. The Pink and Yellow VOLT Circuits provide service in and around the Brownsville Campus. VOLT service also offers the convenience of call stops, which provide service outside the circuit alignments by reservation. The circuits operate Monday-Friday from 7:30am until 5:00pm.

STOPS

YELLOW	Lot B1 Brownsville Early College High School	PINK	Lot B1 Lot B4



GREEN LINE

SOUTH TEXAS COLLEGE

ROUTE DETAILS

Valley Metro provides funding to South Texas College to operate the Green Line. The South Texas College Routes are branded as the Jag Express. The Jag Express Green Line, operated by Valley Metro, provides fixed route service that connects STC Starr County and STC Pecan Campus. Multiple buses operate Monday-Thursday with only one bus on Fridays from 6:00am until 5:00pm. Transfer to Valley Metro Route 60 to Roma is available in Rio Grande City.

KEY DESTINATIONS

CONNECTION
South Texas College Pecan Campus
South Texas College Nursing & Allied Health Center

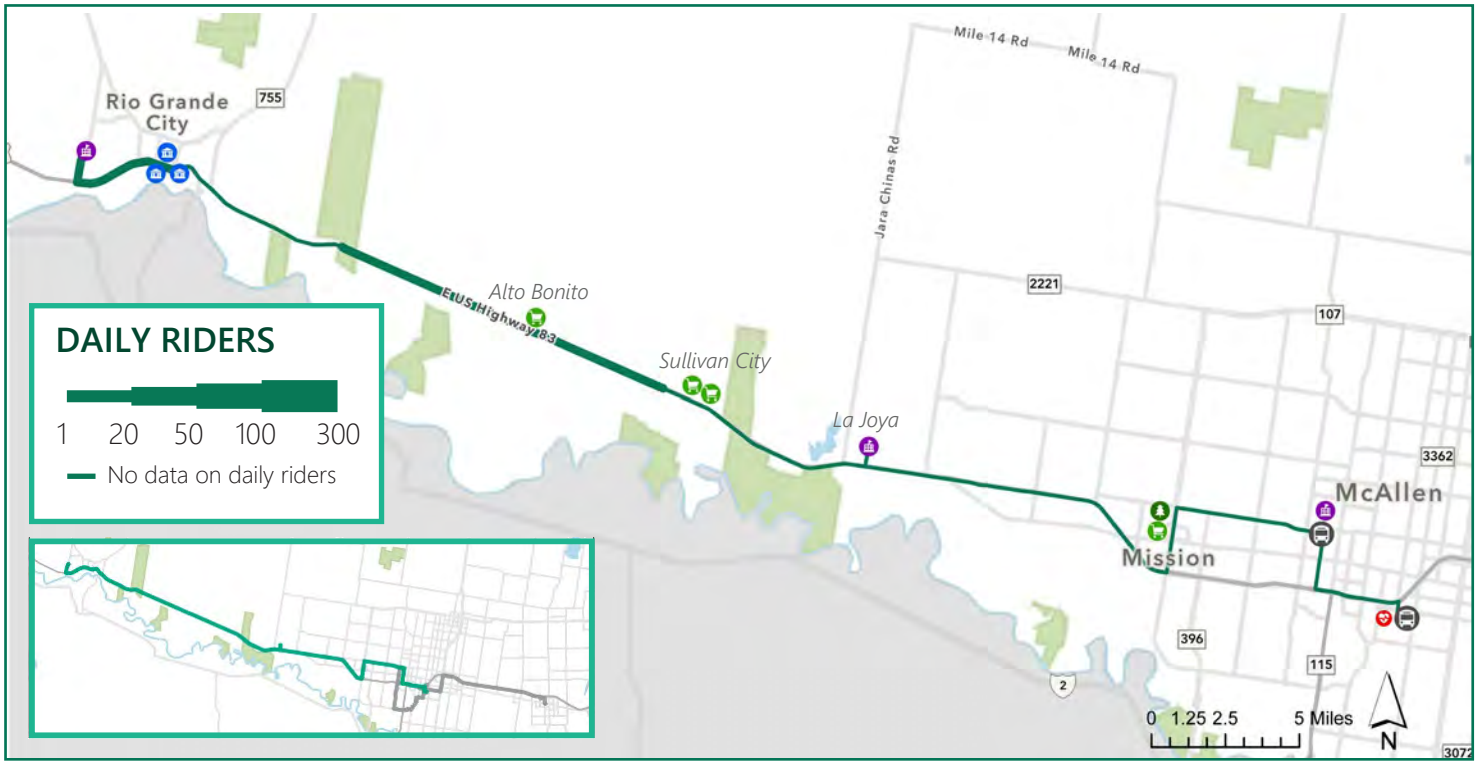
SCHOOL
South Texas College Pecan Campus
South Texas College Starr County Campus
La Joya Higher Ed Center

GROCERY
HEB (Mission)
Stripes (Alto Bonito)
Stripes (Sullivan City)
Jesse's Meat Market

GOVERNMENT
City Hall - Rio Grande City
Rio Grande City Police & Fire Departments

MEDICAL
South Texas College Nursing & Allied Health Center

PARK
Leo Peña Placita Park



YELLOW LINE

SOUTH TEXAS COLLEGE

ROUTE DETAILS

Valley Metro provides funding to South Texas College to operate the Yellow Line. The South Texas College Routes are branded as the Jag Express. The Jag Express - Yellow Line, operated by STC, provides fixed route service that connects all STC campuses. The Yellow Line has five routes that serve alternate stops. Route 1 and 2 serving mainly Pecan and Tech operate Monday-Thursday from 7:00am to 7:00pm. Route 3 and 4 serving mainly Pecan and NAH operate Monday - Thursday from 7:00am to 4:20pm. Route 5 serving Tech and NAH operates Monday - Thursday from 7:20am to 5:00pm. On Friday only Route 1 operates from 7:00am to 5:00pm.

KEY DESTINATIONS

CONNECTION

South Texas College Pecan Campus
South Texas College Nursing & Allied Health Center

SCHOOL

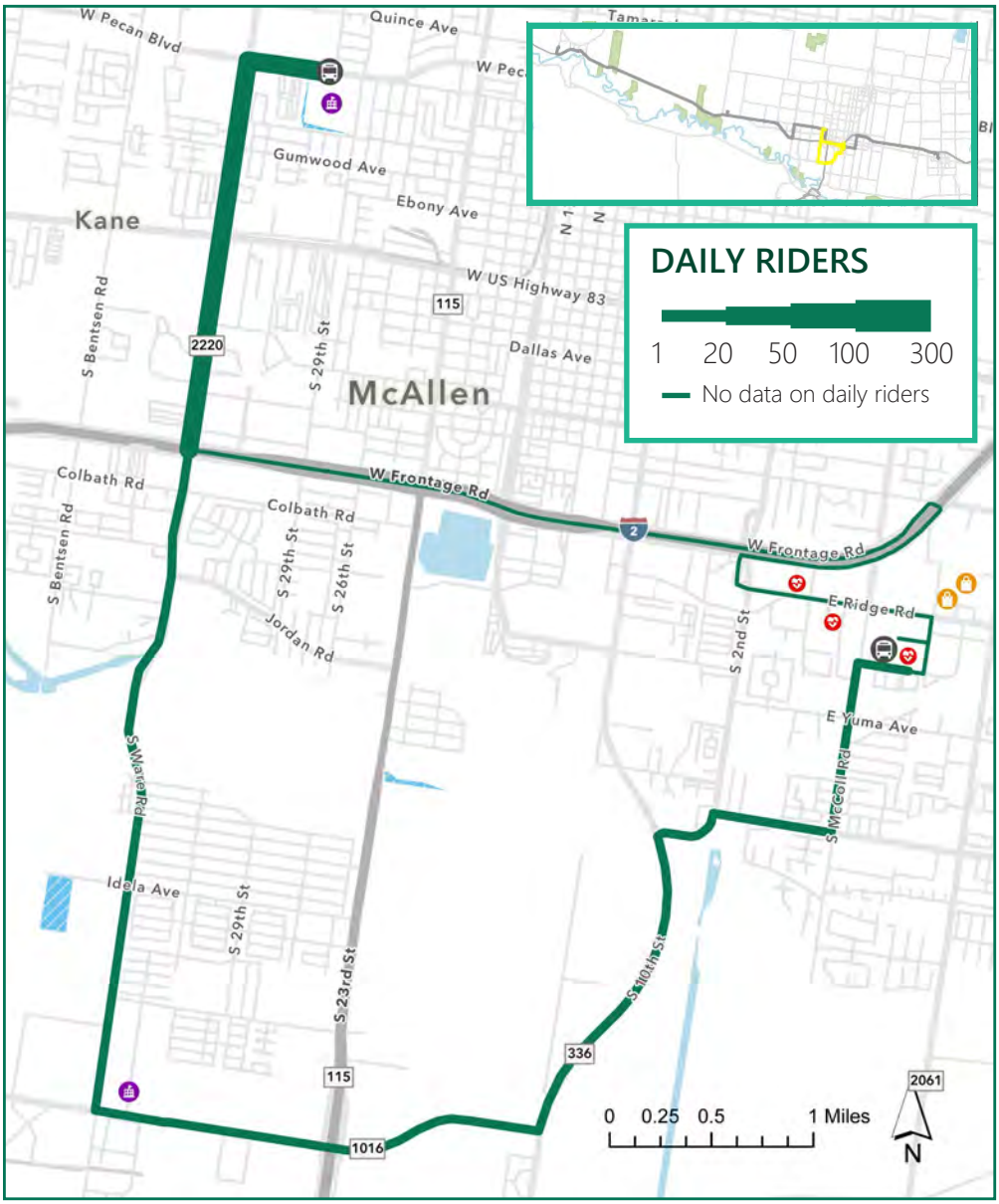
South Texas College Pecan Campus
South Texas College Technology Campus

SHOPPING

Walgreens
Target

MEDICAL

South Texas College Nursing & Allied Health Center
McAllen Heart Hospital
Rio Grande Regional Hospital
McAllen Medical Plaza



PURPLE LINE

SOUTH TEXAS COLLEGE

ROUTE DETAILS

Valley Metro provides funding to South Texas College to operate the Purple Line. The South Texas College Routes are branded as the Jag Express. The Jag Express - Purple Line, operated by Valley Metro, provides fixed route service that serves Pharr, the Weslaco Mid-Valley Campus, and Nursing & the Allied Health Center. The Purple Line operates Monday-Friday from 6:40am until 7:15pm.

KEY DESTINATIONS

CONNECTION
South Texas College Nursing & Allied Health Center

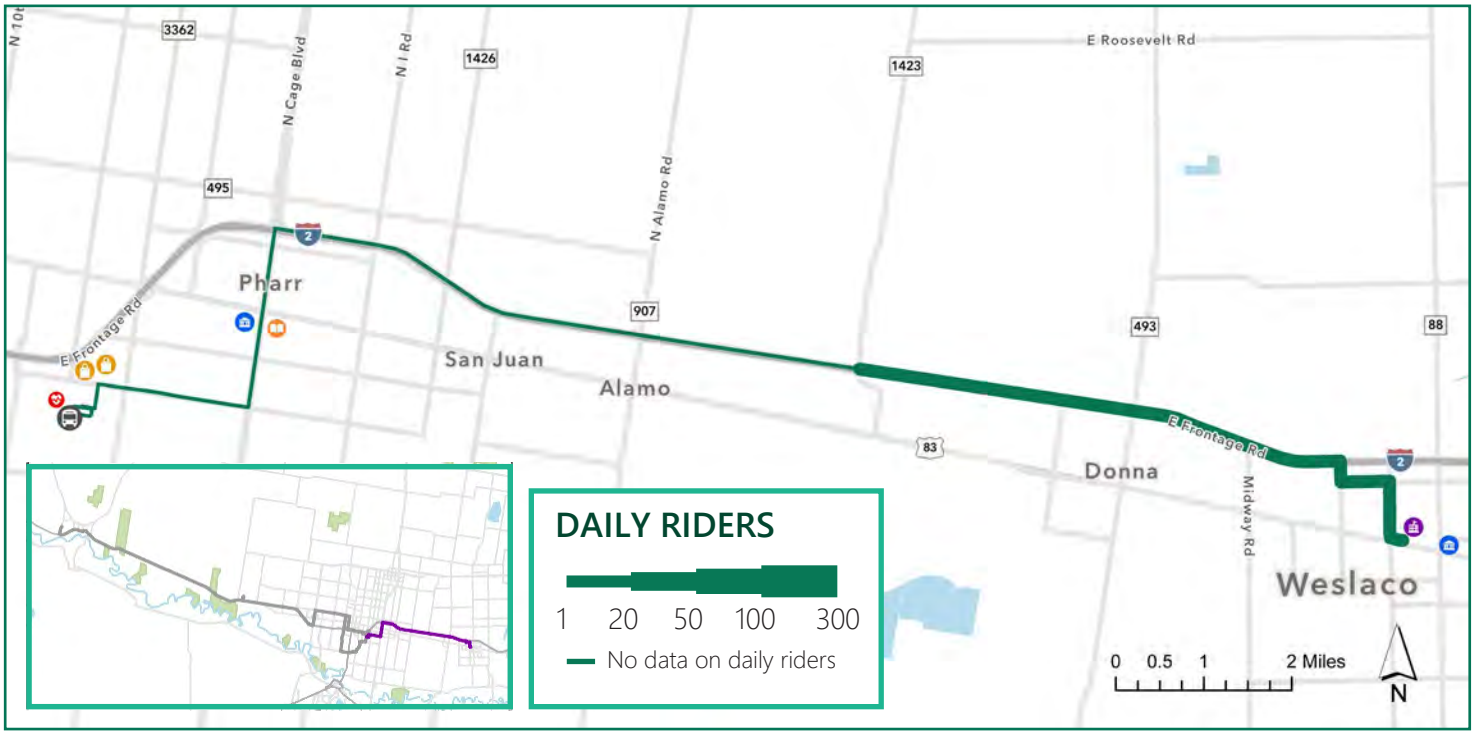
SCHOOL
South Texas College Mid Valley Campus

SHOPPING
Walgreens
Target

GOVERNMENT
Pharr City Hall
Weslaco City Hall

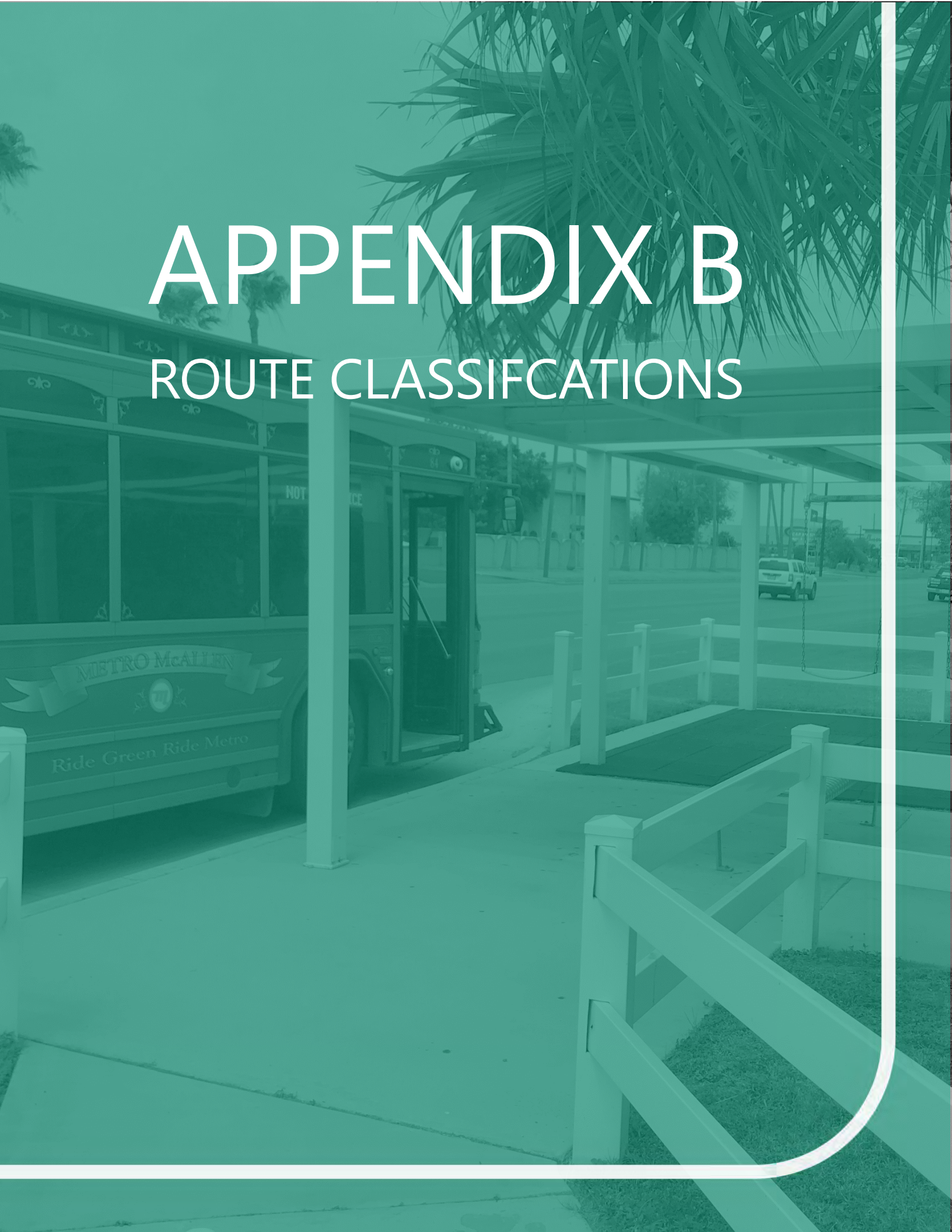
MEDICAL
South Texas College Nursing & Allied Health Center

LIBRARY
Pharr Memorial Library



APPENDIX B

ROUTE CLASSIFCATIONS



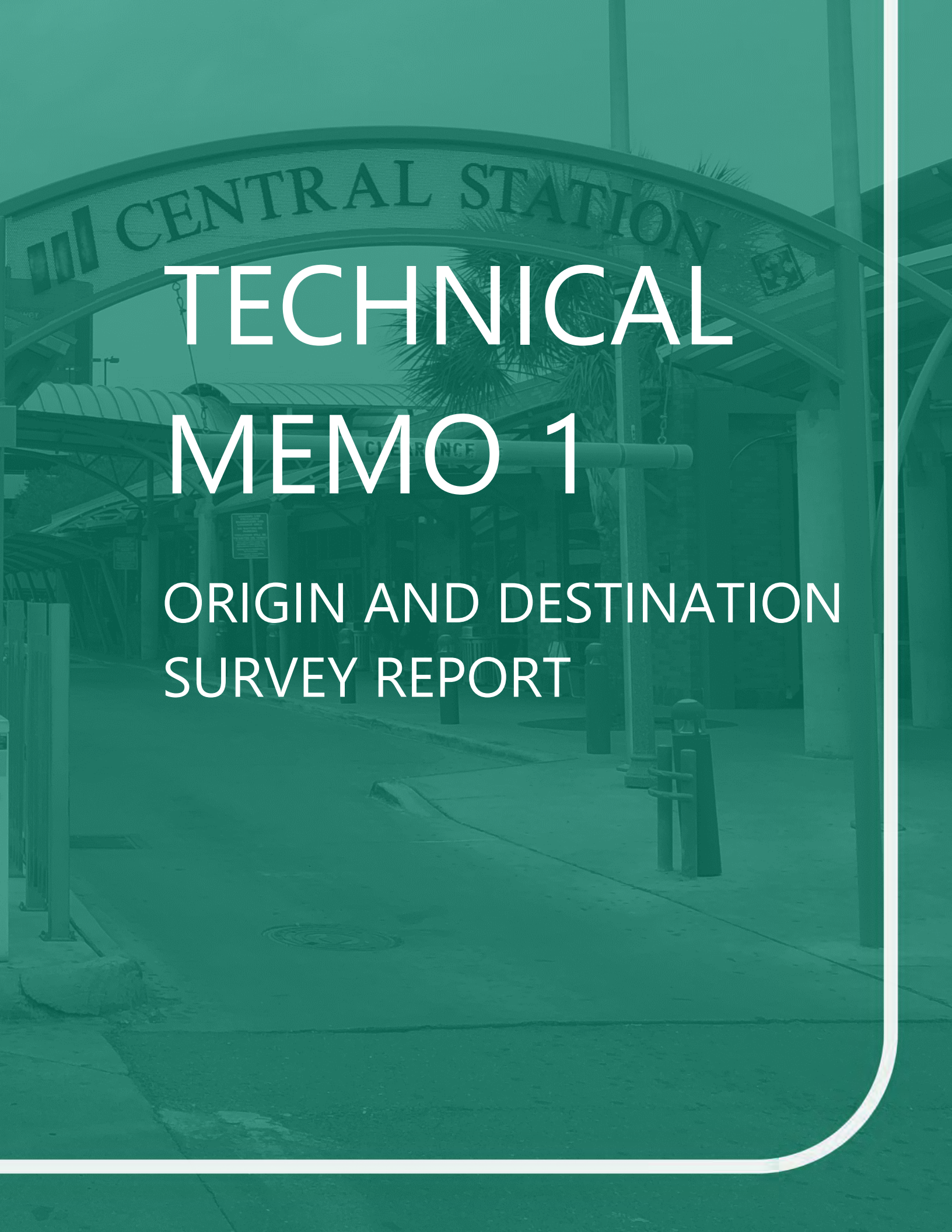
RGVMAB ROUTE CLASSIFICATIONS

Existing routes in the RGVMAB have been classified based on their service type. Route classifications may be subject to change over time due to changes in demand and local context. Routes added following the 2030 TDP process should be classified based on service type and local context.

Table B-1: RGVMAB Route Classifications

Provider	Route Name	Classification
Valley Metro	Route 10	Local – Urban
Valley Metro	Route 11	Local – Rural
Valley Metro	Route 12	Local – Urban
Valley Metro	Route 15	Local – Urban
Valley Metro	Route 16	Local – Urban
Valley Metro	Route 20	Local – Urban
Valley Metro	Route 21	Local – Rural
Valley Metro	Route 30	Local – Urban
Valley Metro	Route 31	Regional – Urban
Valley Metro	Route 32	Local – Urban
Valley Metro	Route 40	Local – Urban
Valley Metro	Route 41	Local – Urban
Valley Metro	Route 42	Local – Urban
Valley Metro	Route 43	Local – Rural
Valley Metro	Route 44	Local – Urban
Valley Metro	Route 45	Regional – Urban
Valley Metro	Route 50	Regional – Express
Valley Metro	Route 60	Local – Rural
Valley Metro	Route 61	Local – Rural
Valley Metro	Route 62	Local – Rural
Valley Metro	Red Line	Regional – Express
B Metro	Route 1	Local – Urban
B Metro	Route 2	Local – Urban
B Metro	Route 3	Local – Urban
B Metro	Route 4	Local – Urban
B Metro	Route 5	Local – Urban
B Metro	Route 6	Local – Urban
B Metro	Route 7	Local – Urban
B Metro	Route 8	Local – Urban
B Metro	Route 9	Local – Urban
B Metro	Route 11	Local – Urban
B Metro	Route 14	Local – Urban
B Metro	Route 30	Local – Rural

Provider	Route Name	Classification
Island Metro	Route 1	Local – Urban
Island Metro	Route 2	Local – Urban
Island Metro	Route 3	Local – Rural
Island Metro	Route 4	Local – Urban
Metro McAllen	Route 1	Local – Urban
Metro McAllen	Route 2	Local – Urban
Metro McAllen	Route 3	Local – Urban
Metro McAllen	Route 4	Local – Urban
Metro McAllen	Route 5	Local – Urban
Metro McAllen	Route 6	Local – Urban
Metro McAllen	Route 7	Local – Urban
Metro McAllen	Route 8	Local – Urban
Metro McAllen	Route 9	Local – Urban
South Texas College	JagExpress Purple Line	Local – Urban
South Texas College	JagExpress Yellow Line	Local – Urban
South Texas College	JagExpress Green line	Regional – Urban
UT Rio Grande Valley	Campus Connector	Regional – Express
UT Rio Grande Valley	Edinburg-Weslaco Connector	Regional – Urban
UT Rio Grande Valley	Brownsville-Weslaco Connector	Regional – Urban
UT Rio Grande Valley	Rio Grande City-McAllen Connector	Local – Urban
UT Rio Grande Valley	EVABL	Local – Urban
UT Rio Grande Valley	VOLT Orange	Campus
UT Rio Grande Valley	VOLT Blue	Campus
UT Rio Grande Valley	VOLT Green	Campus
UT Rio Grande Valley	VOLT Pink	Campus
UT Rio Grande Valley	VOLT Yellow	Campus



TECHNICAL MEMO 1

ORIGIN AND DESTINATION SURVEY REPORT

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Introduction

The scope of this project involved an integral part for the development of a 2020-2045 Metropolitan Transportation Plan Update for the Rio Grande Valley MPO Metropolitan Area Boundary (MAB). In general, the Plan is envisioned to consist of recommendations for a community-supported comprehensive network of multi-modal transportation options to connect neighborhood users to special generators and key destinations. Dikita Management Services provided survey administration services as a subcontractor to Alliance Transport Group. Dikita performed two surveys – one conducting weekday onboard origin and destination surveys and the second simultaneously collecting boarding and alighting counts at each stop of each sampled trip. Both surveys were completed between February 17 and March 12, 2020.

Local Transit Systems Surveyed

Dikita collected surveys from six different systems within the Rio Grande Valley MPO's MAB. The results, which are described in more detail in a subsequent section, are found in Table 1.

Table 1 Summary of collected data

Transit System	Reported Average Weekday Ridership	Total Valid Surveys Collected	Total Boarding Observed	Total Alighting Observed
Brownsville Metro*	4786	1016	3875	3845
UTRGV*	1007	167	1174	1174
Island Metro*	1035	37	433	413
Valley Metro	1983	264	858	821
Metro McAllen	3300	630	1891	1889
South Texas College (STC)	239	32	68	68
Total	9380	2146	8299	8210

* Represents the eastern study areas

The scope of services included:

1. Develop data collection method that collects data to accurately reflect the six agencies' passengers' travel patterns including starting location and ending location in order to obtain linked trip data by time of day.
2. Coverage of all fixed weekday route or route segment as defined by the sampling plan.
3. Data collection that will allow Valley Metro to determine walkshed and mode of travel to bus stops.
4. Methodology that will be able to record and geocode boarding/alighting location if passenger uses flag-a-stop.
5. Methodology that captures transfer activity.
6. Data collection to determine if a passenger boarded/alighted at a bus stop or at a flag-a-stop location.
7. Coordination with other transit agencies to verify transfer activity data between Valley Metro and local providers such as B-Metro and Metro McAllen that was collected through the survey.
8. Statistical tabulation capability to include data cross-tabulation of any data collected, and other relevant industry standard data comparisons.
9. Provide a simple, user-friendly interface for querying cross-tabulations of data and an instructional manual.

10. Ensure the O&D study will be able to inform and update future versions of the LRGV TDM to have a mode choice component.

2. Project Planning

During our project planning stage, we initiated our plans to:

1. Get familiar with the Stakeholders and their concerns
2. Understand the client expectations
3. Familiarize the team about each transit system
4. Communicate directly with the stakeholders on the project needs
5. Collect crucial data from the transit authority such as headways sheets, GTFS feeds, bus stop coordinate data, schedule, routes, passenger profiles, fare types, etc.
6. Develop a strategy to collect data from flag stops

Emails were sent mid-December to the Lower Rio Grande Valley (LRGV) providers notifying them of all data needs required to begin planning and by December 23rd Dikita was introduced as the firm responsible for data collection services. Due to the holiday schedule, an extended deadline of January 10th was established for providers to reply to all data requests.

Dikita strategically developed a plan based on the specifics of scope, quality control, available data supplied by each agency, and expected deliverables. A stakeholder informational meeting was held on January 23, 2020 between Dikita, ATG, and various representatives from five of the six agencies. It included introductions, explanation of data needs, purpose of the survey, and discussions about foreseeable challenges and expectations. The key topic discussed was the urgent need for route, stop, and scheduling data from each agency. Each offered to supply whatever they could, but most acknowledged did not have the necessary data to orchestrate a full-blown in-field geocoded onboard survey. Dikita committed to working with the data that could be supplied and developing other data as needed on their own.

Study Areas

The six agencies were divided into Eastern and Western areas of concentration. The eastern half of the service area included Brownsville Metro, UTRGV, and Island Metro, while the western half was comprised of Valley Metro, Metro McAllen, and STC. Dikita utilized Express Employment Professionals to staff the Eastern and Western and Readymen Staffing to assist with providing a team for the Western area only. Both staffing agencies were extremely hands-on with the recruiting efforts, especially when collaborating in finding qualified candidates and screening for bilingual candidates.

The determining factor in deciding staffing levels was based on a sampling plan created by Dikita for all six providers within the LRGV MAB. The sampling plan dictated a total need of 16-20 surveyors to work daily for each of five of the six providers, with just eight surveyors scheduled for the STC system.

3. Sampling Plan

The sampling plan was derived by reviewing the average daily ridership, daily trips per time periods, and revenue hours. The sampling plan was a developed to achieve a 95% confidence factor with a +/- 5% accuracy level at the system level. This was determined to be the best methodology considering the size of the systems, budget, and uncertainty of the data provided.

The sampling plans for each agency is as follows:

Brownsville Metro

Routes	Reported Average Weekday Boardings	Weekday Revenue Hours	Weighted Average	Planned Sample Size
9	610	13.25	13%	102
3	605	12.55	13%	101
6	559	12.05	12%	93
2	488	13.1	10%	82
1	409	12.55	9%	68
13	398	13.1	8%	67
7	378	12.55	8%	63
20	378	12.95	8%	63
5	347	14.15	7%	58
8	313	12.3	7%	52
11	301	12.55	6%	50
Total	**4786**		**100%**	**800**

Island Metro

Routes	Reported Average Weekday Boardings	Weekday Revenue Hours	Weighted Average	Planned Sample Size
Route 1	312	13.56	30%	83
Route 2	287	14	28%	76
Route 3	311	13.58	30%	83
Route 4	125		12%	33
Total	**1035**			**275***

* or best effort

South Texas College (STC) - JagExpress

Routes	Reported Average Weekday Boardings	Weekday Revenue Hours	Weighted Average	Planned Sample Size
Yellow Line	72	13	30%	23
Purple Line	35	13.85	15%	11
Green Line	38	14	16%	12
Park & Ride	94	13	39%	29
Total	**239**			**75**

MetroMcAllen

Routes	Reported Average Weekday Boardings	Weekday Revenue Hours	Weighted Average	Planned Sample Size
1	434	12.25	13%	79
2	578	12.25	18%	105
3	416	9.2	13%	76
4	674	12	20%	123
5	347	10.6	11%	63
6	502	12.75	15%	91
7	245	10.2	7%	45
8	6	9.17	0%	1
Green Line	98	13	3%	18
Total	**3300**	**101.42**	**100%**	**600**

Valley Metro

Route Number(if applicable)	Reported Average Weekday Boardings	Weekday Revenue Hours	Weighted Average	Planned Sample Size
50	356	14.35	17.95%	72
16	287	11	14.47%	58
31	228	14	11.50%	46
	172	15.05	8.67%	35
45	168	14.15	8.47%	34
20	143	12.95	7.21%	29
14	107	13	5.40%	22
10	87	12.95	4.39%	18
41	67	11.95	3.38%	14
30	64	12.9	3.23%	13
40	61	11.9	3.08%	12
12	57	12.25	2.87%	11
15	38	10.55	1.92%	8
60	33	11	1.66%	7
42	31	10.67	1.56%	6
44	30	12	1.51%	6
32	25	10	1.26%	5
61	16	10.55	0.81%	3
21	8	8.97	0.40%	2
43	5	9	0.25%	1
11		8	0.00%	0
Total	**1983**			**402**

UTRGV

Routes	Reported Average Weekday Boardings	Weekday Revenue Hours	Weighted Average	Planned Sample Size
RGC Connector - Morning	8	2		0
RGC Connector - Afternoon	4	1.25		0
Campus Connector	958	73		179
Weslaco Connector	37	27.25		0
Total	**1007**	**103.5**		**179**

4. Survey Instruments

Transit agencies typically conduct surveys to gather travel pattern information about their passengers. The RGVMPO requested two types of surveys -- the first survey was a boarding and alighting counts (B&A) survey and the second survey was an onboard origin and destination (OD) survey. Both surveys were completed simultaneously, where every original assignment had one counter and one to three interviewers.

Boarding and Alighting Survey Instrument

The scope included counting the number of passengers boarding and alighting at every stop for each original trip where interviews transpired. If a trip was rescheduled due to insufficient number of valid surveys the interviewer(s) re-did the trip alone without a counter.

The passenger counts were conducted using a cellular device loaded with a web-based mobile application. Functionalities were designed to record boarding and alighting at every stop while simultaneously capturing the latitude and longitude data of the activity. Each time the counter initiated a stop, the latitude and longitude coordinates were recorded via GPS. The data was recorded at each stop with activity only.

The surveyor's primary responsibility using the mobile application included:

- Recording beginning load, if necessary
- Recording how many passengers boarded at each stop
- Recording how many passengers alighted at each stop
- Verify total number of passengers onboard at each timepoint
- Storing other housekeeping data used for quality control and categorization, such as route, surveyor ID, time of day, assignment ID, etc.

Onboard Survey

The onboard survey instrument was a series of questions administered via personal interviews using tablet computers. A modified version of eTRIP, Dikita's proprietary tablet software application, was used to conduct these surveys. Utilizing pre-programmed route information, our customized application incorporated questions that inquired about:

- Trip purpose
- Transfer information including route numbers
- Origin & destination addresses
- Access mode/distance from the origin to the boarding stop
- Boarding & alighting locations of the intercept bus
- Egress mode/distance from the last stop to destination
- Fare type used on the trip
- Frequency and duration of the passengers' bus usage
- Driver license status
- Alternative transportation methods passenger would have used if bus service was not available
- Household size
- Vehicle availability
- Employment status
- Age
- Ethnicity, including Hispanic or Latino descent
- Gender
- English speaking ability
- Household language
- Household income
- Resident vs. visitor status

Other data that was stored with each survey included pre-programmed elements such as:

- Date of survey
- Route, block, and trip numbers
- Trip Direction
- Trip Start and End times
- Trip time period
- Surveyor name
- Vehicle number recorded by surveyor at boarding

Unfortunately, many built-in features and imbedded validation routines that are performed by eTrip were not immediately useful due to the of the lack of GTFS feeds or agency-provided data from certain systems. Therefore, in order to use eTrip, Dikita gathered and created certain "missing" elements such as block number, tripID, timepoints, direction, trip start and end time/locations, and bus stops. Additionally, the Dikita team also created a list of common landmarks, schools, malls, grocery stores, hotels, etc. to reference. The software is primarily designed to capture in-field geocoding during the interview with the passenger. In cases where some or all locations were not geocoded via the stop or landmark list, manual verification was completed during data post-processing through lookup routines using a Google maps application. Access and egress modes were manually reviewed in accordance with boarding and alighting locations.

A print formatted copy of the survey instrument can be found at the end of this report.

5. Data Collection Methodology

Boarding and Alighting Survey

With the exception of counts conducted at the two college campuses, passenger counts were recorded manually by the counter (surveyor) via electronic cellular devices. The designated counter observed and recorded all activity, using a software application to simply record the on and off counts and simultaneously collect latitudinal and longitudinal data at each stop. The designated counter continued this process for all trips that were a part of their assignment.

Onboard Survey

The origin destination survey was largely performed via personal interviews using pre-programmed tablets. On most of the systems, paper surveys were provided as back-up only when necessary and were limited in distribution. A web-based survey was deployed at the college campuses and paper surveys were used for Island Metro.

One to three surveyors boarded buses at the beginning of trips, randomly chose passengers to interview, and interviewed those that were willing to participate. As discussed in the training sessions, surveyors waited until all passengers had boarded and eliminated anyone who appeared to be on the age of 16. Once the trip began, the surveyors approached every third seated or standing passenger. As the surveyors were working in teams, each stayed within their designated zone on the bus.

Each surveyor was equipped with a tablet and sat next to the respondent and recorded their answers. Survey data was uploaded to the Dikita server every night and was ready for processing daily.

6. Quality Control Plan

Boarding and Alighting Survey

Processing boarding and alighting counts involved reviewing all data collected during each assignment at the trip level. Multiple measures were taken to ensure the data was accurate and precise enough to meet client expectations and Dikita has developed special filters that help to identify any issues. The following steps were included in quality control procedures:

1. Conducted 8-hour training for all counters, which covered software/hardware and procedures
2. Counter attendance confirmed for every assignment and every team
3. Counter equipment checked prior to departure
4. Confirmed scheduled assignments were completed
5. Confirmed data uploads were completed
6. Confirmed accuracy of assignment/trips observed/vehicle number/surveyor name/trip time
7. Confirmed recording of boarding and alighting counts at stops
8. Checked counts for errors, such as duplicate boarding/alighting counts, excessive amount of activity at one stop, etc.
9. Checked latitude-longitude of stops for nearness to the route
10. Compared boarding/alighting counts to onboard survey collection
11. Checked loads at end of line for balance
12. Noted and documented any errors found in boarding/alighting counts

Data collection began on Thursday February 20th and Dikita began examining the first few days' worth of data over the weekend to assess the accuracy and efficiency of the staff.

Onboard Survey

During the survey questionnaire's design, key questions deemed essential from a modeling and data analysis perspective were identified. Answers were required for the key questions in order for a survey to be considered complete.

Therefore, the next stage in the project was to conduct a thorough analysis of the survey data collected, assess the quality of the records, and to perform survey editing. The number of total surveys collected by route was also reviewed to ensure that the data represented daily boarding averages. For the purposes of tracking the progress of field collection, a daily report detailing the number of completed surveys by route, trip, and time of day was generated from Dikita's data portal. This report detailed two key survey categories -- valid and discard.

Surveys that contained answers for one or more of the key questions that were blank or could not be immediately verified as reasonable were marked as "discard." These surveys were then reviewed to determine what information was missing to flag those surveys as invalid. In a lot of cases, Dikita's quality check identified minor issues that could be fixed and moved to valid status. These minor issues included misspelled street names, refusal to answer the income question, missed intercept vehicle information, etc. Any surveys that could not be validated remained in discard status. To summarize the QC process, Dikita spent a great deal of time finalizing data for delivery. During this process the QC team managed to geocode both valid and discards surveys that met the criteria.

Additionally, the team used a GIS programming application to visualize the OBAD data points. A link was created and forwarded to ATG and the client. The link expired after 90 days.

7. Survey Staff

Temporary staffing agencies were used to recruit and hire bilingual surveyors for this project. Every surveyor who worked on the project fluently spoke and read in both Spanish and English.

Temporary Staffing

Due to the vast service area that the RGVMPO serves, Dikita utilized two temporary staffing agencies to conduct data collection – Express Employment Professionals based in Brownsville, TX and Readymen Staffing in Pharr, TX.

One of the surveyors hired also functioned as a lead and assisted the Field Supervisors with deploying/collecting materials, monitoring, and aiding newer surveyors if refresher training was needed.

Recruitment and Training

Dikita constructed a comprehensive training schedule that included interviewing, classroom training, and field training, as well as retraining as needed. All staff were bi-lingual (as a requirement for the job).

Express Employment Professionals was the source of the staff surveying the Eastern side of the service area, which consisted of B-Metro, UTRGV, and Island Metro. The interview process there started on February 17th and aimed to hire 15 to 20 for the first half of the collection effort. In the end, Dikita selected 20 surveyors to attend the first training. Classroom training followed on February 18th and

February 19th and each day consisted of 4 hours of classroom training with testing and 4 hours of field training. Express Employment Professionals was very instrumental in successfully staffing this area and attended training sessions for additional accountability.

In addition to utilizing Express Employment Professionals, Readymen Staffing was brought on board to provide staffing in the Western side of the service area that included the Metro McAllen, Valley Metro, and STC agencies. A second training session was held on February 28th and February 29th following the same training procedures used on Eastern side.

Dikita performed two different types of surveys that required separate trainings. The first day of training was for the onboard survey. The second day of training detailed how to accurately count boarding and alighting of passengers at each stop using mobile devices. The team of surveyors were trained how to approach passengers to conduct a personal interview using tablets. They also were trained to comprehend the survey questions in order to interpret and gauge the accuracy of the response.

The training manual created by Dikita included the following information:

- General project information
- Who is Dikita
- RGVMPO and agency information
- Types of data being collected
- Method used to collect data
- When will data be collected
- Surveyor qualifications
- Dress code
- Expectations
- Terminology
- Scheduling
- Assignment

An abridged version of the training manual used can be found at the end of this report.

Supervisory Staff

Dikita always uses a trained staff of supervisors. All three supervisors and the project manager have a minimum of 12 years of survey experience at Dikita. Each had specific roles in supervising, scheduling, providing in-field oversight, disciplining, quality control and/or reviewing, and managing the collected data.

8. Scheduling and Itinerary Development (Assignments)

The scheduling began as the receipt of each transit system's data was received. Some agencies provided more data than others and the most comprehensive dataset was provided by Brownsville. Dikita also creatively utilized the public schedules and maps to develop logistically sound assignments that returned every surveyor back to his/her original starting location once their assignment was complete.

Itineraries

Assignments were scheduled in 4-8-hour blocks of trips on a single bus. Each originally scheduled trip included a person designated to count passenger (counter) and one to three surveyors were assigned to interview passengers. The work was often broken up into "AM days" and "PM days" (i.e., one day all AM assignments, the next midday to PM assignments). This allowed Dikita to efficiently schedule the required number of surveyors and hardware to collect data each weekday, with the intention on covering the sample of routes and their associated trips as quickly as possible.

Assignments were scheduled by geographic location within the service area and agency to simplify logistics. For example, when scheduling Valley Metro assignments, all routes originating from the McAllen Central Station were completed on the same day. This allowed the Dikita supervisors to stage in a single location with all surveyors reporting to that location. After the second week, the supervisors split into two teams, one team remained in the eastern study area while the other team began the systems in the western area.

Dates of Survey Collection

The table below outlines the dates of field collection.

Agency	Collection Dates	Total Number of weekdays
N/A – Training	2/18 to 2/19 2/28 to 2/29	4
Brownsville Metro	2/20 to 2/21 2/24 to 2/28	7
UTRGV	2/25 2/28 3/3	3
Island Metro	2/26	1
Metro McAllen	3/2 to 3/4	3
STC	3/2 3/6 3/12	3
Valley Metro	3/4 to 3/6 3/9 to 3/10 (missed assignments)	5

9. Survey Results

RGVMPO desired to include all six providers in the Rio Grande Valley. The participating providers included:

Brownsville Metro

Brownsville Metro was very responsive to questions, concerns, and data requests during the planning phase of the project. Dikita conducted surveys on 11 of their routes. Since Dikita scheduled B-Metro as the first agency of the project, the team arrived in Brownsville on February 16th to get familiar with the area and locate bus stops/transit centers.

The data collection for B-Metro began on February 20th and was completed on February 28th. The initial schedule called for four days in Brownsville but was extended by an additional three days due field adjustments, coaching, and projected goals. Total target number of surveys for the agency was 800 and the final achieved number was 1,016 valid surveys.

Brownsville Metro

Routes	Target According to Sampling Plan	Total Valid Surveys	Total Discarded Surveys	Total Collected Surveys	Variance	% of ADR*
9	102	127	53	180	25	21%
3	101	152	53	205	51	25%
6	93	111	41	152	18	20%
2	82	92	27	119	10	19%
1	68	76	28	104	8	19%
13	67	77	12	89	10	19%
7	63	63	33	96	0	17%
20	63	85	12	97	22	22%
5	58	101	28	129	43	29%
8	52	76	13	89	24	24%
11	50	56	22	78	6	19%
Totals	**800**	**1016**	**322**	**1338**	**216**	**21%**

*** ADR is average daily ridership (weekday)**

Island Metro

Island Metro was initially challenging because of a lack of electronic scheduling data. Dikita overcame this by creating schedules by using website information and the public schedules. Surveys were conducted in a 7-hour period with a total of four surveyors covering the four routes starting 7am and ending at 2pm. As the ridership that Dikita observed conflicted with the reported ridership, the original total target number of surveys for Island Metro was 275, but the achieved number was 37.

Island Metro

Routes	Target According to Sampling Plan	Total Valid Surveys	Total Discarded Surveys	Total Collected Surveys	Variance	% of ADR
Route 1	83	11	21	10	(72)	4%
Route 2	76	14	22	8	(62)	5%
Route 3	83	4	10	6	(79)	1%
Route 4	33	8	20	12	(25)	6%
Totals	**275**	**37**	**73**	**36**	**(238)**	**4%**

UTRGV

Upon arrival in Brownsville and preparation for the UTRGV data collection process, Dikita met with representatives from UTRGV to understand their processes, buses, routes, and times. Please note that the scope of the onboard survey only included the connector routes and no surveys were completed on the circulator routes. The sampling plan target goal was 179 and the achieved number was 167 valid surveys.

UTRGV

Routes	Target According to Sampling Plan	Total Valid Surveys	Total Discarded Surveys	Total Collected Surveys	Variance	% of ADR
RGC Connector - Morning	0	0	0	0	0	0
RGC Connector - Afternoon	0	0	0	0	0	0
Campus Connector	179	163	163	326	(16)	17%
Weslaco Connector	0	4	0	4	4	11%
Totals	**179**	**167**	**163**	**330**	**(12)**	**17%**

Valley Metro

Since Dikita did not receive a GTFS feed or any electronic data for Valley Metro, it was necessary to manually program routes, trips, and bus stops into our application. This meant that most of the stops recorded were from latitude and longitude coordinates, rather than preassigned and pre-programed run and cross streets. The data collection process started on March 4th and was completed on March 10th. The sampling plan target goal was 400 surveys and the achieved number was 264.

Valley Metro

Route Number (if applicable)	Target According to Sampling Plan	Total Valid Surveys	Total Discarded Surveys	Total Collected Surveys	Variance	% of ADR
10	18	23	13	36	5	26%
11	0	0	0	0	0	
12	11	2	2	4	(9)	4%
14	22	2	3	5	(20)	2%
15	8	22	8	30	14	58%
16	58	50	4	54	(8)	17%
20	29	27	8	35	(2)	19%
21	2	2	2	4	0	25%
30	13	15	1	16	2	23%
31	46	70	28	98	24	31%
32	5	0	0	0	(5)	0%
40	12	4	5	9	(8)	7%
41	14	2	12	14	(12)	3%
42	6	8	2	10	2	26%
43	0	0	5	5	0	0%
44	6	0	2	2	(6)	0%
45	34	11	10	21	(23)	7%
50	72	13	22	35	(59)	4%
60	7	2	5	7	(5)	6%
61	3	4	1	5	1	25%
62	0	2	4	6	2	
Red Line	35	5	3	8	(30)	3%
Totals	**401**	**264**	**140**	**404**	**(137)**	**14%**

Metro McAllen

Dikita arrived in McAllen on February 29th to train new surveyors and begin data collection on March 2nd and was completed on March 4th. The sampling plan target goal was 600 and the achieved number was 630 valid surveys.

Metro McAllen

Routes	Target According to Sampling Plan	Total Valid Surveys	Total Discarded Surveys	Total Collected Surveys	Variance	% of ADR
1	79	53	33	86	(26)	12%
2	105	112	49	161	7	19%
3	76	91	24	115	15	22%
4	123	114	22	136	(9)	17%
5	63	48	13	61	(15)	14%
6	91	85	16	101	(6)	17%
7	45	49	13	62	4	20%
8	1	1	2	3	(0)	17%
Green Line	18	77	7	84	59	79%
Totals	**600**	**630**	**179**	**809**	**30**	**19%**

South Texas College (STC)

Dikita performed data collection at STC on three different days. Extensive research was involved to locate the bus routes, starting points, and schedules. The logistics included scheduling surveyors in two different cities -- McAllen and Weslaco. The original sampling goal was 75 until the team visited the campus. Based upon in-field observation of ridership, the goal was reduced to 45 and the achieved number was 32 valid surveys.

South Texas College (STC)

Routes	Target According to Sampling Plan	Total Valid Surveys	Total Discarded Surveys	Total Collected Surveys	Variance	% of ADR
Yellow Line	23	18	22	4	(5)	25%
Purple Line	11	9	18	9	(2)	26%
Green Line	12	5	8	3	(7)	13%
Park & Ride *	n/a					0%
Totals	**45**	**32**	**48**	**16**	**(14)**	**16%**

Over the course of the project a total of 3,007 surveys were collected. After processing, 2,146 (71%) of those surveys were deemed valid while 861 (29%) were discarded. The remainder were discarded for reasons described in Section 6 (Quality Control) of this report.

Total Passenger Counts

As discussed in Section 8, assignments were created in 4-8 blocks of time and all bus trips in the assignment were ridden in their entirety. The first time an assignment was scheduled, passenger counts were conducted on every trip surveyed. If an assignment was sampled a second time due to lack of surveys, a counter was not scheduled. Total passenger counts that were observed are as follows:

Brownsville Metro Routes	Total Boardings	Total Alightings
BM01	239	239
BM02	246	246
BM03	226	226
BM3A	121	121
BM05	340	340
BM06	600	572
BM07	194	194
BM08	250	250
BM09	596	596
BM9A	120	118
BM11	294	294
BM13	305	305
BM20	344	344
TOTAL	**3875**	**3845**

Island Metro Routes	Total Boardings	Total Alightings
IM01	93	93
IM02	127	120
IM03	126	123
IM04	87	77
TOTAL	**433**	**413**

Metro McAllen Routes	Total Boardings	Total Alightings
MA01	204	192
MA02	470	471
MA03	329	332
MA04	221	220
MA05	259	259
MA06	132	132
MA07	148	152
MA08	2	2
MA09	126	129
TOTAL	**1891**	**1889**

Valley Metro Routes	Total Boardings	Total Alightings
VM10	98	98
VM14	8	8
VM15	19	12
VM16	69	69
VM20	99	99
VM30	30	30
VM31	105	98
VM32	1	1
VM40	118	118
VM41	35	35
VM42	19	0
VM43	8	8
VM44	17	17
VM45	98	98
VM50	87	87
VM60	34	33
VMRED	21	11
TOTAL	**866**	**822**

Stop-by-stop counts were not collected for the UTRGV and STC agencies; however, the following departing loads were recorded for each trip surveyed:

UTRGV Routes	Departing Loads
Combined Campus Connectors	1174

STC Routes	Departing Loads
PURPLELINE	18
YELLOWLINE	49
TOTAL	**67**

Challenges in Processing

One main challenge Dikita faced was researching the discarded surveys and trying to find patterns to identify the underlying issues. Early findings indicated several errors that were resolved with minor corrections. Other errors were more complicated and took more time to resolve. As expected, some errors could not be resolved, and those surveys were not included in the final sample. Some of the underlying issues found to cause surveys to be discarded included missing boarding/stops, misspelled streets, and refusals to answer certain demographic questions.

As processing continued, Dikita was met with the unforeseen emergence of COVID-19. All field survey activity was completed by early March but then in mid-March all Dikita employees were mandated to work from home. The change of working environment caused a brief delay, but processing quickly resumed.

Cross-Tabulations and Statistics

Attached as Appendixes A – D are various analyses of selected responses grouped by category.

- Appendix A – Valid Survey Statistics
- Appendix B – OBAD (Origin, Boarding, Alighting & Destination) Responses
- Appendix C – Transit Dependency Responses
- Appendix D -- Demographics

Dikita has also created an interactive dashboard for each category above. Links for those are as follows:

- Valid Survey Statistics -- https://analytics.zoho.com/open-view/2215421000000032031
- OBAD -- https://analytics.zoho.com/open-view/2215421000000368099
- Transit Dependency -- https://analytics.zoho.com/open-view/2215421000000127713
- Demographics -- https://analytics.zoho.com/open-view/2215421000000123987

Each of the dashboards can be filtered by agency (select one or more in the dropdown box in the upper left corner). To view or export the underlying data supporting the tables or charts, hover over any tables/chart and click the vertical ellipsis in the upper right corner. Additionally, click on any item in the table or chart to view the underlying data specific to that particular field. Specific to the charts, click on any portion of the chart and there will be an option to "drill down" further into the data. This allows the responses to be further filtered by their relationship to another question's response.

PURPOSE & DESTINATION ***REQUIRED***

1. What is the **purpose** of your trip you are making right now? I am going….

☐ 1 Home
☐ 2 Work
☐ 3 Sightseeing
☐ 4 Recreation or social activity
☐ 5 College (student only)
☐ 6 K-12 (student only)
☐ 7 Shopping
☐ 8 Medical/Dental appointment
☐ 9 Personal Business banking, job interview, paying bills, etc.)
☐ 10 Childcare
☐ 11 Other *(Specify:)*_____

TRANSFER ***REQUIRED***

2. Please list the **routes** (and Provider) **<u>in the order</u>** you will complete the trip you are making right now?

Provider 1._____ 2._____ 3._____4._____

Routes 1. _____ 2._____ 3._____4._____

ORIGIN ***REQUIRED***

3. Where did you START this ONE-WAY trip? (mark best answer)

☐ 1 Home
☐ 2 Work
☐ 3 Sightseeing
☐ 4 Recreation or social activity
☐ 5 College (student only)
☐ 6 K-12 (student only)
☐ 7 Shopping
☐ 8 Medical/Dental appointment
☐ 9 Personal Business banking, job interview, paying bills, etc.)
☐ 10 Childcare
☐ 11 Other *(Specify:)*_____

ACCESS ***REQUIRED***

4. How did you **get from** [response from 3-ORIGIN] **to** your **boarding** location on route [first route in response from 2-TRANSER]?

☐ 1 Walked
☐ 2 Biked/scooter
☐ 3 Drove alone & parked
☐ 4 Used rideshare (e.g. Uber)
☐ 5 Was dropped off /carpool
☐ 6 Used mobility aid/wheelchair

5. If passenger walked, "How many **minutes** did it take to walk from [response in 3- ORIGIN] to your first bus stop on route [response from 2-TRANSFER]? [type in]

EGRESS ***REQUIRED***

6. When you get off of your **LAST** bus on route [last bus from response in 2-TRANSFER], how will you get to [response from 1-PURPOSE]?

☐ 1 Walked
☐ 2 Biked/scooter
☐ 4 Used rideshare (e.g. Uber)
☐ 5 Was dropped off /carpool

☐ 3 Drove alone & parked ☐ 6 Used mobility aid/wheelchair

7. If passenger walked, "How many **minutes** will it take to walk from your LAST bus stop to [response from 1-PURPOSE]? [type in]

ORIGIN ADDRESS ***REQUIRED***

8. What was the address of your original **beginning** place [restate the response from 3- ORIGIN] [GEOCODED]?
    - Address (number, street, city, and zip):
    - Intersection (two cross streets)
    - Landmark (list a pull down or use google map with an autocomplete).

BOARDING ***REQUIRED*** GEOCODED

9. At what bus stop or location did you get on **THIS** bus you are riding **NOW**? [LIST OF possible bus stop] – if this list is inadequate or unavailable then we need to type in cross streets.

ALIGHTING ***REQUIRED*** GEOCODED

10. Where will you get off **THIS** bus you are riding **NOW**? [LIST OF possible bus stops] - if this list is inadequate or unavailable then we need to type in cross streets.

DESTINATION ADDRESS ***REQUIRED***

11. What is the address of your final **Destination** [response from 1-PURPOSE] [GEOCODED]
    - Address (number, street, city, and zip):
    - Intersection (two cross streets)
    - Landmark (list a pull down or use google map with an autocomplete.

Note: All geographic locations will be geocoded in the field if we have correct data, including bus stop data, origin and destination. Walking distances from/to origin and destination locations are measured by time and flagged if unreasonable. The closest possible distances between transfers are evaluated (if all bus stop lists are valid) and flagged if more than a .5 mile

Demographics SECTION

12. How did you pay for **THIS** Trip, including all transfers? **REQUIRED**

☐ 1 I paid cash
☐ 2 It was free
☐ 3 I used a pass

13. How **often** do you ride the Bus?

☐ 1 5 or more days per week
☐ 2 2-4 days per week
☐ 4 About once a month
☐ 5 A few times a year

14. How **long** have you been riding the bus? ***[validated against frequency]***

- ☐ 1 More than 5 years
- ☐ 2 2 to 5 years
- ☐ 3 6 to 12 months
- ☐ 4 Less than 6 months
- ☐ 5 I am not a regular bus passenger

15. Do you have a **valid driver's license**? ☐ 1 Yes ☐ 2 No **REQUIRED**

16. If the bus system were not available, how would you have made this trip? ***[validated against driver's license]*** ***REQUIRED***

- ☐ 1 Drive Alone
- ☐ 2 Driven & dropped off
- ☐ 3 Walk
- ☐ 4 Carpool
- ☐ 5 Bike or Scooter
- ☐ 6 Rideshare (e.g. Uber/Lyft)
- ☐ 7 Rental Car
- ☐ 8 Would not have made trip
- ☐ 9 Other *(Specify:)* _____

17. How many people **live** in your **household**? **RECOMMENDED**

- ☐ 1 I'm a college student living on campus
- ☐ 2 I live alone
- ☐ 3 Two including me
- ☐ 4 Three including me
- ☐ 5 Four including me
- ☐ 6 Five or more

18. How many working vehicles are owned or leased by your household? ***[validated against driver's license and # in household]*** ***REQUIRED***

- ☐ 1 One
- ☐ 2 Two
- ☐ 3 Three
- ☐ 4 Four or more
- ☐ 5 None

19. Please mark all of the following that apply to you. Are you….?

CHECK ALL THAT APPLY ***[validated college student in household question]***

- ☐ 1 Employed (do not work from home)
- ☐ 2 Employed (work from home)
- ☐ 3 Student - work part-time off campus
- ☐ 4 Student – do not work
- ☐ 5 Homemaker (do not work for pay)
- ☐ 6 Retired
- ☐ 7 Unemployed
- ☐ 8 Disabled
- ☐ 9 Other *(Specify:)* _____

20. What is your **age**?

- ☐ 1 Under 16
- ☐ 2 16 - 18
- ☐ 3 19 - 24
- ☐ 4 25 - 40
- ☐ 5 41 - 64
- ☐ 6 65 - 75
- ☐ 7 Over 75
- ☐ 8 Refused to answer

21. Are you of **Hispanic** or Latino descent? ☐1 Yes ☐2 No

22. What is your **Ethnic** background? CHECK ALL THAT APPLY

☐1 Mexican
☐2 White/Caucasian
☐3 Asian
☐4 Black or African American
☐5 Native Indian
☐6 Native Hawaiian or Pacific Islander
☐7 Caribbean, Central or South American
☐8 Other *(Specify:)* _____

23. Do you identify as? ☐1 Male ☐2 Female ☐3 Other

24. How well do YOU **SPEAK English**?

☐1 Very Well ☐2 Well ☐3 Not Well ☐4 Hardly

25. What **language** do you **MOST** often speak at home?

☐1 English ☐2 Spanish ☐3 Other _____

26. What is your total annual **HOUSEHOLD income**? REQUIRED

☐1 UNDER $15,000
☐2 $15,000 to $24,999
☐3 $25,000 to $34,999
☐4 $35,000 to $49,999
☐5 $50,000 to $74,999
☐6 $75,000 or more
☐7 Refused to answer

27. Are you a visitor to the area? ☐1 No ☐2 Yes

POLICIES, PROCEDURES AND DATA COLLECTION TRAINING MANUAL

2020 Onboard Survey

February 19 thru March 6, 2020

Sponsored By:

This guide is designed to answer any questions you may have about why you're here, what we expect of you, how to do your job, and to familiarize you with the materials you will use to accurately complete your assignment.

General Information

Who is Dikita and what is their relationship to RGVMPO?

We are Dikita Enterprises, Inc. dba **Dikita Management Services (DMS)**. DMS has conducted data collection and analysis and market research projects for transit agencies all over the US for more than 30 years. Our projects have included bus, light rail, and commuter rail.

Rio Grande Valley Metropolitan Planning Organization (RGVMPO) The RGVMPO is a federally funded program that works with Rio Grande Valley communities and the Texas Department of transportation to plan for the region's future transportation needs. The RGVMPO is responsible for the regional planning process for all modes of transportation. They have hired us to collect transit data to improve mobility for the region.

Who do you work for?

You are employees of **either Express Pro or Readymen Staffing. You are not** employees of **RGVMPO or DMS**. DMS has contracted with these staffing agencies for your services. They are responsible to pay you and withhold any taxes as applicable.

What data are we collecting?

All passenger transit agencies collect certain trip level data to assist them in service planning and improvement. As a normal practice agencies want to know:

- How many passengers board and get off at each stop
- Where passengers are coming from – Their Origin
- Where they are going – Their Destination
- Where they got on and off the bus
- How often they take the bus
- How many times they transferred
- If they had a choice of transportation options
- Certain demographic information

How will we collect this data?

We will collect the passenger counts using a cell phone app and collect the passengers travel patterns by personally interviewing passengers and recording their answers on a tablet. Each day we will board buses and ride for 4-8 hours counting and interviewing passengers. One person will count while another interviews. The counter is conducting a boarding and alighting survey and the interviewer is conducting a onboard survey.

The onboard survey gathers information about **the route they were on when we interviewed them, where they came from, where they are going, travel frequencies and demographics.** Our survey has 27 questions and should take no more than 10-minutes to complete.

When will this data be collected?

Data will be collected from certain randomly selected trips on each route operated by six transit providers – **1. Brownsville Metro, 2. Island Metro, 3. UTRGV(operated by Vaquero Express), 4. McAllen Metro, 5. Valley Metro and 6. JagExpress** who operates the transit for South Texas College. These systems run services from typically between 6AM to 8PM and we will collect data between these hours on **weekdays only**. Each surveyor will normally have a 4-8 hour work assignment each day. Some workdays may be longer or shorter; and some assignments may be split shifts between AM peak hours and PM peak hours.

Surveyor Qualifications

Before we describe your job responsibilities, it is important to first explain some of our general rules and requirements. Please keep these in mind.

- Minimum age, 18
- Minimum Education – HS Diploma or GED
- Must have a car or other means of reliable transportation that provides the ability to get you to your report location on time. Must be able to pay for parking.
- Must be reliable, attendance and punctuality are critical
- Must be able to operate a hand-held computer (after training)
- Must be able to communicate to passengers the purpose of the survey and the importance of completing it
- Must be able to recognize where you are at all times while riding the bus

- Must be self motivated, have a positive attitude, outgoing personality, be willing to interact with the passengers, and be customer service oriented
- Must be assertive without being pushy
- Must be able to ride without motion sickness or incontinence
- Must wear or carry a watch while working
- Must be flexible with your working hours

Dress Code

Dikita enforces a very strict dress code for its surveyors. Management makes random spot checks for dress code violations. Those found to be in violation will be removed from service until the established criteria is met.

- Must be presentable, neatly groomed and professional
- Must **not** exhibit any extremes in hair style, clothing, jewelry or makeup
- **No** unnatural hair color (purple, green, orange, pink, etc.)
- **No** visible extreme body piercings other than normal ear piercings
- **No** visible extreme or excessive tattoos

Surveyors are expected to wear a plain white or solid colored shirt or blouse, preferably with a collar, **nothing** printed on the shirt or blouse; neatly ironed slacks, khakis or jeans **(no holes)**, and rubber soled shoes.

- **No** Tank Tops, or Sleeveless Blouses or Shirts
- **No** T-shirts
- **No** Baseball Caps
- **No** Sports Jerseys
- **No** Shorts
- **No** Short Skirts
- **No** Leggings
- **No** Flip Flops
- **No** Sagging Pants

"There are four ways, and only four ways, in which we have contact with the world. We are evaluated and classified by these four contacts: what we do, how we look, what we say, and how we say it." ~ Dale Carnegie

What is my job?

Your job title is **Surveyor**; your basic job involves boarding buses at specific locations, usually at the garage, transit center, or at a relief point, either count or

interview passengers as they ride the bus; and counter surveyor will record the number of passengers who board at each bus stop.

It is important that you master what we are teaching you today because the accuracy of the data you collect is very important to the agency's service planning and decision making. **Your attention to detail is critical**.

What are DIKITA's expectations?

The **ideal surveyor** is someone who:

- records data accurately and completely;
- convinces the passengers, without being overly pushy, to complete the survey;
- is flexible, reliable, assertive,
- eager to work, available anytime, and always prompt.

We often refer to this individual as an **"A" performer**. Recording data accurately, convincing passengers to complete the survey and being prompt and reliable are the top three characteristics everyone who works on this project must possess.

Punctuality and Absenteeism - It is essential that you report to work at your scheduled ***Report Time***, which is 20 minutes prior to your scheduled ***Start Time***, and meet your bus or bus driver as scheduled; you will be paid for this time. If you fail to show up or you're late, it will be noted on your record and will affect your job security. Those who fail to report on time more than once may be dismissed. If you are **late two times** during the project, you will be terminated. If you **are absent without proper notification more than once**, you may be subject to disciplinary measures, including termination. If you have difficulty making your scheduled assignment, you must notify your DIKITA Survey Supervisor within 24 hours prior to your scheduled ***Report Time***. If you are sick the day you are scheduled, you must notify your DIKITA Survey Supervisor immediately.

Inclement Weather – You are expected to report to work regardless of the weather. If the buses are running we are working.

Audio Devices - The use of iPods, cell phone music, or any other distractions are not allowed. You are **not allowed to wear ear buds or headphones** while you are working. Your DIKITA Survey Supervisor is authorized to take these instruments and return them at the end of the assignment or at the next scheduled meeting. Violation of this rule may result in disciplinary action.

Distractions and Alertness – You are expected to help passengers understand the questions on the survey if necessary; but often passengers will want to converse with you. Although, we do not want to appear impolite, it is important to avoid distractions that may keep you from doing your job accurately. Please refrain from carrying on extensive conversations with anyone, including the bus operator, friends and passengers.

In addition to being distracted by people, you may be surprised at how easy it may be to fall asleep during periods of slow activity. If you find yourself falling asleep and cannot continue, get in touch with your DIKITA Survey Supervisor and let him/her know you cannot continue. You cannot continue working if you cannot stay alert. You will not be penalized for being proactive. You will however, be penalized if you have been reported asleep while on duty. Keep in mind that today's technology typically includes onboard cameras. It's better to make the work up at a later time than to inaccurately record data.

Use of Cell Phones -As previously stated, use of cell phones, other than the one issued to you, while working is prohibited unless you are communicating with your DIKITA Survey Supervisor or for emergency purposes. **Cell phones should be programmed to vibrate only while on the bus and any calls initiated or taken while working is prohibited.**

Personal Breaks - Longer assignments may have built in meal breaks. Take your break when the operator takes one. Onboard a bus, the operator may or may not take a formal break, and if he/she does it may not be more than 10 minutes.
Remember, the bus operator is the captain of the ship and can make your assignment easier if you are courteous and cooperative. You are welcome to bring your lunch or snacks to eat during the breaks at the end of the line.

TERMINOLOGY/GLOSSARY

Some terms we frequently use are defined below. Please become familiar with them.

Alighting – to get off the bus

Arrival Time – The time the bus arrives at a stop or transit center

Assignment – A surveyor's schedule of work for the day

Block – is the assignment that that vehicle will have for the whole day, unless goes back to the garage and is later assigned another block number. A block may have many drivers (runs), multiple routes, many trips, and stop at many bus stops.

Boarding Location – It is a bus stop or transit station where a passenger starts their trip or ***gets on*** the bus

Bus Stop - Pre-defined location or could be a flagged stop for passengers to board and/or alight the bus, typically at the curb, or in a median, sometimes a Park-n- Ride or Transit station

Cross Street – Is the street that the bus is intersecting; i.e. Fourth Avenue and Main Street, Main Street is the Cross Street. When referring to an intersection, the cross street is listed second. See Run street below.

Deadhead (Miles and Hours) - The miles and hours that a transit vehicle travels when out of revenue service. Deadhead includes:

- Leaving or returning to the garage or yard facility
- Changing routes
- When there is no expectation of carrying revenue passengers

Departure Time – The time the bus leaves the bus stop

Destination – The final destination that a passenger may be going. It does not include intermediate stops or transfers between routes. Usually his home, work, school, shopping, etc.

Direction – The direction of a route; for example, north, south, east, or west. Sometimes the direction is referred to as inbound or outbound. A route that goes in a loop is said to go clockwise or counterclockwise.

Dispatcher – the person at the garage who gives the drivers there assignments and tells them which bus they are driving. He or she is the central point of communication with the drivers in the field and in the garage.

End Location – The place, usually a garage or dispatch location where a surveyor completes their assignment

End Time – The time a surveyor will stop distributing surveys and recording data at the end of their assignment

Geocode – coordinates used to place locations on a map. These are called latitudes and longitudes**.**

Origin – The place where a passenger began his trip. Usually his home, work, school, shopping, etc.

Passenger to survey – An individual at **least 16-years old** who is on board, boarding or de-boarding a revenue service vehicle. This excludes operators, transit employees and contractors

Pullout – The time the bus pulls out of the garage, may also be the ***Start Time*** on your schedule

Pull In – The time the bus pulls into the garage

Report Time - The time a surveyor will report to work for their assignment; pay usually begins at this time.

Report End Time - The time the surveyor is officially off the clock; pay usually ends at this time.

Report End Location – The place where you will hand over your paperwork to your DIKITA Survey Supervisor, the garage in mostly all cases.

Report Location – The place a surveyor reports to work for their assignment; The garage in most cases.

Route - The geographical path followed by a bus from start to finish for a given trip. A route may have many runs

Route Number – The number assigned to a specific route. Look for this number and the Block Number to locate your bus

Run -A schedule of bus trips that are considered an operator's assignment for the day. A run has many trips. For survey purposes, a run may be your assignment. A run may have several routes.

Run Street – Is the street that the bus is traveling on; i.e. Fourth Avenue and Main Street, Fourth Avenue is the Run Street. This is the most important concept you will learn. When referring to an intersection, the run street is listed first. See cross street above.

Start Time – The time the bus officially leaves the garage if pulling out. If not pulling out of the garage, the start time is the time it leaves from the bus stop at a relief point.

Trip - A one-way movement of a bus from the beginning of a route to the end of the same route. A trip has many bus stops

Vehicle Number – A unique number painted on the outside of the bus, used for identification.

UNDERSTANDING YOUR ASSIGNMENT SHEET (SEE ATTACHMENT A)

Assignment Sheet - Your Assignment Sheet or **Schedule** tells you when, where and how to work. The assignment sheet contains a number of data elements; however we will discuss only those fields that are important to you doing your job.

The long rows of data tell you where and when you begin and end your assignment

a) **Block Number** - The block number is shown in the front window of the bus; use this number to locate the correct bus for your assignment
b) **Assignment Number** – Is the Agency plus one a number plus a time period which could be:
   a. EA = Early AM
   b. AM = AM Peak Hours (6am to 9am)
   c. MD = Midday Peak Hours (9am to 3pm)
   d. PM = PM Peak Hours (3pm to 6pm)
   e. NT = After 6:00PM

For example, Assignment Number BM01AM is Brownsville Metro, assignment 01, AM start.

- **Report Time** - Time to be IN YOUR ASSIGNED LOCATION AT THE TRANSIT CENTER, THE GARAGE or OTHER report location as written on your assignment sheet, 20 minutes before your Start Time
- **Start Time** – Is the time the bus leaves the Start Location; and when you begin to hand out surveys; 1st trip start time
- **Start Location** – Is the place where you begin handing out surveys
- **End Time** – Is the time your assignment ends, and the end time of your last trip; work stops here
- **End Location** – Is the place where you complete your assignment, stop handing out surveys and get off the bus
- **Sign-out Time** – **May** or may not be the same as End Time
- **Surveyor** – That's you; if there's another name on your Assignment Sheet you either have the wrong assignment sheet or you're working someone else's assignment
- **Trips** – Is the number of Trips for that assignment
  - **Route Number –** Is the number assigned to the route you are working
  - **Direction** – Tells you the direction of travel for that Trip
  - Here **Start Time** and **End Time** are the times you begin and end **THIS** Trip or segment of your assignment

- **Layover** – Is the number of minutes between Trips
- **Start Time/Location** – For each Trip
- **End Time/Location** – For each Trip

What do I need to do my job?

You **MUST** carry a Texas state or government issued photo I.D. on you at all times while working. In addition you will need the following in order to complete your assignment.

- Assignment Sheet (Surveyor Schedule by Date)
- Badge (You can't board the bus without it)
- Tablet or cellular phone
- Watch
- Extra emergency surveys
- Note pad (this is for counter)

For example, if a surveyor brought back a bundle with 12 surveys left, bearing serial numbers 15039 thru 15050, then your first deck would begin with 15039.

Survey – Surveys will be recorded using a tablet. Each completed survey is stored on the hard-drive of the tablet until it is synced to our main server. Surveys are your work product.

Refusal - Ideally we want each passenger over the age of 16 to complete the survey. Use your best judgment when determining the passenger's age, but do not ask, and do not approach those you believe to be under 16.

There will be those who refuse to accept the survey. Each time a passenger refuses the survey it must be recorded on the tablet. You will see later in the training how that works.

Where do I report each day?

Most of your assignments will begin and/or end at the garage locations or common centers; others will begin and/or end in the field. Your DIKITA Survey Supervisor will provide individual instructions, and arrange transportation for those whose assignments do not begin and/or end at the garage. In these instances you will ride with the driver if he is being relieved or relieving another.

Remember that it is **CRITICAL** that you notify your **DIKITA Survey Supervisor Anita at (773) 814-5295** as early as possible if you cannot report for work.

Getting to and Parking at RGVMPO Base Locations Make it easy on yourself; please carpool whenever possible! ***What do I do when I arrive?***

1. Immediately find your DIKITA Survey Supervisor and **Sign-in**
2. **Verify** your name, assignment number, date, start and end times, **pick up your material**
3. Make sure you **understand your assignment**
4. **Verify when and where to get off** the bus at the end of your assignment
5. If your assignment is beginning or ending in mid-trip
6. **Verify** what's on your **assignment** sheet
7. **Synchronize your watch** with your cell phone
8. Be sure you're **wearing your I.D**. Badge where it can easily be seen
9. **Locate your bus/driver**. The DIKITA Survey Supervisor will assist you. Your bus will display the Block Number, Route Number and Route Name and unique Vehicle Number. (Be aware that bus drivers sometimes leave early. Visiting with other surveyors, and trips to the vending machine or restroom should be made before you report for your shift.)
10. Make certain you are boarding the right bus, show the driver your assignment sheet to **verify** that the **Block Number**, the Route Number, and the Trip Time agrees with your assigned trip times. It is very important that you board the bus to which you are assigned. Data collected on a bus other than the one to which you are assigned is of no value to this survey, and you will be deemed as not following instructions.

11. After you have found the right bus, **verify the bus number** (usually a four digit number painted in several places on the exterior of the bus.) You will need to put this number into your computer devices.
12. **Check In with Driver** - Gaining the cooperation of the bus driver will make your job easier. When you are boarding the bus, politely introduce yourself, and explain who you are and why you're there.

I've found the right bus and introduced myself to the driver; now what?

- **Verify that your computer** is functioning properly and you are able to select your assignment.
- **Record the vehicle number** in your computer devices
- **Choose your assignment (this will be discussed further in the technical training)**

FREQUENTLY ASKED QUESTIONS

What if the bus breaks down?

If your bus breaks down and another is sent to relieve it,

- Record the time of the break down and the length of the delay
- Collect all of your materials
- Call your DIKITA Survey Supervisor
- Board the relief bus
- Record the vehicle number of the relief vehicle in your computer
- Continue with your surveying
- Always follow the driver; if he goes back to the garage, you go with him

What if I miss a trip?

If you miss your assigned bus or an assigned trip because you're assigned bus does not come to the location as scheduled, or because the bus you rode to get to your Report Location is so late that you cannot make your connection, call the DIKITA Survey Supervisor for instructions.

Who will assist me if I have a problem?

Your DIKITA Survey Supervisors will be on duty during all shifts. Your DIKITA Survey Supervisor will meet you at the garage to supply you with your work schedules, computers and materials, and to collect these items after your shift is complete.

Although the DIKITA Survey Supervisor on duty may not be present during your entire shift, he or she will spot check regularly to resolve any problems that may arise, and is always reachable by phone. **Your DIKITA Survey Supervisors for this project are Anita Stewart (773) 814-5295 and Larry Stewart (773) 844-0052**. Your DIKITA Survey Supervisor may ride with you from time to time to review your work and ensure that you are following the required survey procedures. You will always report to the garage to begin your shift. You may or may not pull out or back in with your bus or bus driver.

What if I have an emergency?

If you are on assignment and have an emergency that will affect the completion of your assignment, immediately contact the DIKITA Survey Supervisor.

If you have an emergency and are not going to be able to come to work, please call the DIKITA Survey Supervisor as soon as you know you are going to miss your assignment, EVEN IF IT IS DURING THE NIGHT.

ONBOARD SAFETY

While onboard any bus, please note the following for a safer and more enjoyable trip:

- Use seat backs and handrails while walking through a moving bus
- Watch your step when boarding and de-boarding the bus
- Be sure to step over the gap between the bus and curb
- Wear shoes with rubber soles
- Never attempt to board or exit a moving bus

ABOUT THE SURVEY (See Attachment C)

- The survey has 27 questions. Passengers who complete the survey will be registered for a drawing to win one of ten, valued at $50 each, and a grand prize of an iPhone 5. We will go through the survey so that you understand each question. You are not responsible to personally interview the passengers, however, you are responsible to explain any question. You are also responsible to ensure that they have completed it correctly. This is critical.

OTHER HELPFUL INFORMATION

Your DIKITA Survey Supervisors for this project are Anita Stewart (773) 814-5295 and Larry Stewart (773) 844-0052.

Attachment A – Assignment Sheet

Surveyor Schedule by Surveyor

From	To
2/19/2020	2/21/2020

Lower Rio Grande Valley

2/14/2020 11:54 AM

Barnett, Gary (469) 506-4340 2

Week 8

Block	Assignment	Car	Schedule Date		Report Time	Start Time	Start Location	End Time	Signout Time	End Location	Trips	Asgn Adj	Asgn Time	Schd Adj	Sched Time	
															Time	Num
BM01	TRNG021920-01	Z	2/19/2020	Wed	**12:00 PM**	12:00 PM	Downtown Terminal	3:55 PM	**3:55 PM**	Downtown Terminal	4	0	3:55	0	3:55	3.92
BM01	BM01AM	A	2/20/2020	Thu	**5:40 AM**	6:00 AM	Downtown Terminal	11:55 AM	**11:55 AM**	Downtown Terminal	6	0	6:15	0	6:15	6.25
BM01	BM01MD	B	2/21/2020	Fri	**11:40 AM**	12:00 PM	Downtown Terminal	6:55 PM	**6:55 PM**	Downtown Terminal	7	0	7:15	0	7:15	7.25
Total for wk 8					0:40				0:00		17	0	17:25	0	17:25	17.42
Total for Barnett, Gary					0:40				0:00		17	0	17:25	0	17:25	17.42

TECHNICAL TRAINING

Random Sampling

We must randomly survey each passenger to avoid bias. The process includes waiting for passengers to board the bus before selection. All passengers over the apparent age of 16 are eligible.

Once the bus doors close, count every 3rd passenger starting with the first seated or standing passenger. If you are working with a team of surveyors, work your assigned area. Smile and approach the passenger and your introduction.

HOW TO GET PEOPLE TO TAKE THE SURVEY

Getting people to answer a survey is tricky.

1. You must **respect their space** and on the bus, their space is limited. Leave a distance of at least 2 feet at first until you gain their confidence.

2. You must **avoid asking them when they are busy** on their cell or preoccupied.

3. You need to get **eye contact**. When you look them in the eyes and they look at you back, your eyes need to "smile".

4. **With a BIG smile,** you should try to make a friend in 20 seconds, so that they might feel a little reluctant to be rude or not want to participate in your survey. Size them up, so you can see if they are uncomfortable with your coming into their space, then take the plunge, offering to shake their hand.

5. **Ask them "Would they be interested in helping to improve the bus system?"** This is typically a "yes" type question. If you ask them if they want to take a survey, the answer is "no".

6. **Ask if they have 5-7 minutes left before they get off of the bus.** Again, we have not asked about taking the survey.

7. **Now your line.**

    a. *I am working with the Valley transportation systems to help improve mobility in the area. We are conducting a survey that will take about 5 minutes. We will ask questions about your travel today and some*

demographic questions. We will not need your name and will not give this data to anyone other than transit planners.

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Valid Surveys by Agency (Table)

Agency	Survey Count
BM	1016
IM	37
MA	630
STC	32
UT	167
VM	264

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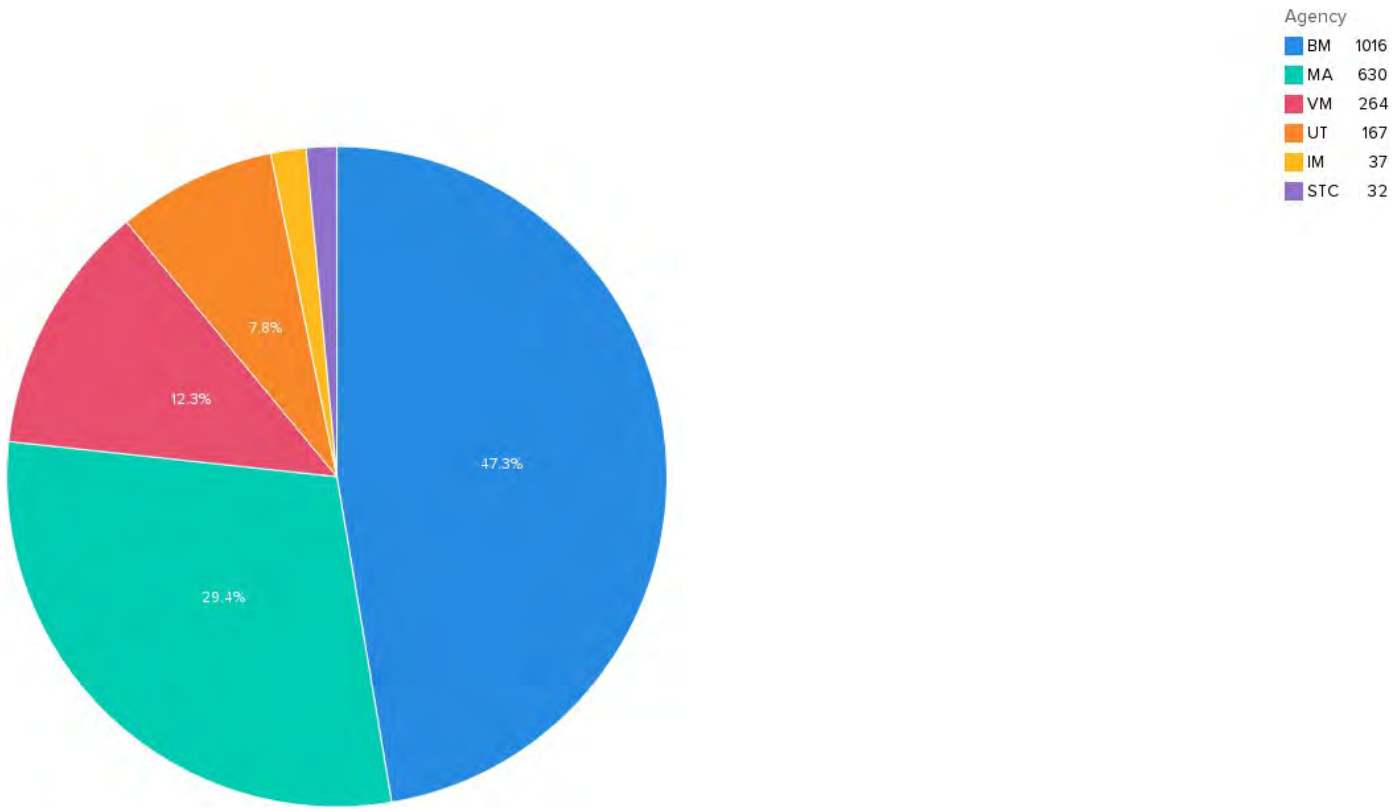
Valid Surveys by Agency (Chart)



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Valid Surveys by Route

Agency	Route No	Survey Count
BM	BM01	76
	BM02	92
	BM03	152
	BM05M-T	101
	BM06	59
	BM06A	52
	BM07	63
	BM08	76
	BM09	63
	BM09A	64
	BM11	56
	BM13	77
	BM20	85
IM	Route 1 SPI	11
	Route 2 SPI	14
	Route 3 LAG	4
	Route 4 NPI	8
MA	MA01	53
	MA02	112
	MA03	91
	MA04	114

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Agency	Route No	Survey Count
	MA05	48
	MA06	85
	MA07	49
	MA08	1
	MA09	77
STC	VMGREEN	5
	VMPURPLE	9
	VMYELLOW	18
UT	UTRGV Campus Connector	163
	UTWCB	4
VM	VM10	23
	VM12	2
	VM14	2
	VM15	22
	VM16	50
	VM20	27
	VM21	2
	VM30	15
	VM31	70
	VM40	4
	VM41	2
	VM42	8

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Agency	Route No	Survey Count
	VM45	11
	VM50	13
	VM60	2
	VM61	4
	VM62	2
	VMRED	5

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Q01_Destination (Table)

Agency	Route No	Home	Work	Sightseeing	Recreation or social activity	College (student only)	K - 12 (student only)	Shopping	Medical/ Dental appointment	Personal Business (banking, job interview, paying bills, etc.)	Childcare	Other	No Answer	Survey Count
BM	BM01	25	18		5	2	12	9		1		4		76
	BM02	28	28		7	6		13	3	7				92
	BM03	30	27		5	6	39	31	5	5	1	3		152
	BM05M-T	8	15	1	4	4	42	24	1	2				101
	BM06	20	13	2		2	1	11	2	6	1	1		59
	BM06A	15	10		5	2	4	9	1	5	1			52
	BM07	12	20	1	3		10	4	7	3	3			63
	BM08	26	7		10	3	7	13	2	4	1	3		76
	BM09	5	17	3	6	7	14	3	3	4	1			63
	BM09A	29	9		7		8	6		5				64
	BM11	8	24	3	5			4	2	10				56
	BM13	12	29	3	3	3	2	17	5	2		1		77
	BM20	19	15		6	2	5	24	3	2	1	7	1	85
BM		**237**	**232**	**13**	**66**	**37**	**144**	**168**	**34**	**56**	**9**	**19**	**1**	**1016**
IM	Route 1 SPI	1	2	1	1			2		3		1		11

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Agency	Route No	Home	Work	Sightseeing	Recreation or social activity	College (student only)	K - 12 (student only)	Shopping	Medical/ Dental appointment	Personal Business (banking, job interview, paying bills, etc.)	Childcare	Other	No Answer	Survey Count
	Route 2 SPI	1	4	3	1			5						14
	Route 3 LAG		2					1		1				4
	Route 4 NPI	1	1	6										8
IM		**3**	**9**	**10**	**2**			**8**		**4**		**1**		**37**
MA	MA01	19	13		4	2		6	4	3	1	1		53
	MA02	37	21	1	5	3		30	2	8		5		112
	MA03	27	26		11	4	1	15	4	1		2		91
	MA04	30	7	1	4			57	9	6				114
	MA05	22	4		1	6		4	3	4		4		48
	MA06	24	10		4	8		11	4	19		5		85
	MA07	8	19		2	1		5	9	2		3		49
	MA08	1												1
	MA09	40	7			27		2		1				77
MA		**208**	**107**	**2**	**31**	**51**	**1**	**130**	**35**	**44**	**1**	**20**		**630**
STC	VMGREEN	1				4								5

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Agency	Route No	Home	Work	Sightseeing	Recreation or social activity	College (student only)	K - 12 (student only)	Shopping	Medical/ Dental appointment	Personal Business (banking, job interview, paying bills, etc.)	Childcare	Other	No Answer	Survey Count
	VMPURPLE					9								9
	VMYELLOW	4				14								18
STC		**5**				**27**								**32**
UT	UTRGV Campus Connector	8	2			153								163
	UTWCB		2			2								4
UT		**8**	**4**			**155**								**167**
VM	VM10	8	3		1	6		1	1	2		1		23
	VM12	1						1						2
	VM14		1		1									2
	VM15	12						4		6				22
	VM16	23	18		1					8				50
	VM20	3	8					7	2	6		1		27
	VM21		1					1						2
	VM30	3	3		2			2	2	3				15
	VM31	35	8	2	7	7		4	1	6				70

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Agency	Route No	Home	Work	Sightseeing	Recreation or social activity	College (student only)	K - 12 (student only)	Shopping	Medical/ Dental appointment	Personal Business (banking, job interview, paying bills, etc.)	Childcare	Other	No Answer	Survey Count
	VM40	1	2									1		4
	VM41		1							1				2
	VM42	2				1		2	1	2				8
	VM45		4		2	2			1	2				11
	VM50	6	3	1	1	1		1						13
	VM60					2								2
	VM61	3				1								4
	VM62		2											2
	VMRED	1	1		1	1		1						5
VM		**98**	**55**	**3**	**16**	**21**		**24**	**8**	**36**		**3**		**264**
Grand Count		**559**	**407**	**28**	**115**	**291**	**145**	**330**	**77**	**140**	**10**	**43**	**1**	**2146**

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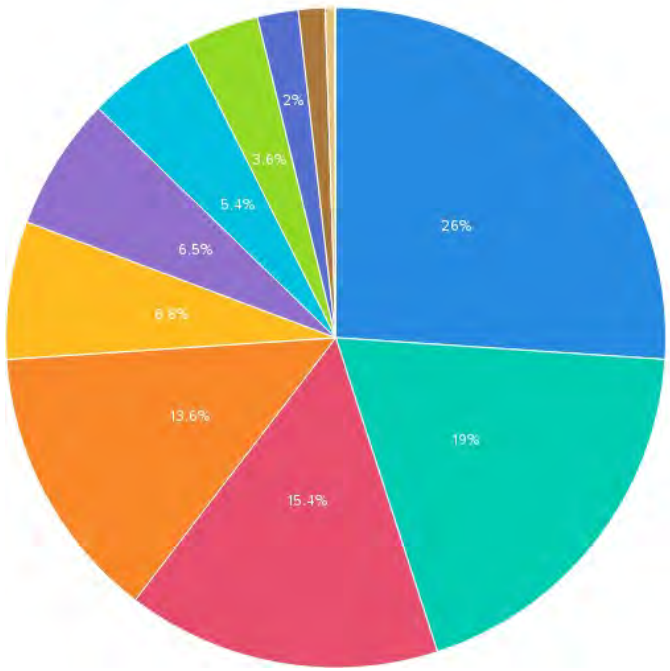
Q01_Destination (Chart)



What is the purpose of the trip you are makin...

Home	559
Work	407
Shopping	330
College (student only)	291
K - 12 (student only)	145
Personal Business (banking, job interview,...	140
Recreation or social activity	115
Medical/Dental appointment	77
Other	43
Sightseeing	28
Childcare	10
No Answer	1

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Q03_Origin (Table)

Agency	Route No	Home	Work	Sightseeing	Recreation or social activity	College (student only)	K - 12 (student only)	Shopping	Medical/Dental appointment	Personal Business (banking, job interview, paying bills, etc.)	Childcare	Other	Survey Count
BM	BM01	46	5	1	1	3	9		1	2		8	76
	BM02	53	15	2	3	1		11	1	3		3	92
	BM03	91	10	1	6	3	8	6	2	2		23	152
	BM05M-T	77	2		3			5	1		2	11	101
	BM06	28	11	2	1	4	2	3	2	4	1	1	59
	BM06A	35	1		3	2		6	2	3			52
	BM07	47	6			2	1	2	2		2	1	63
	BM08	44	9		3	1	1	3	5	3	1	6	76
	BM09	51	5	1	1		1		3			1	63
	BM09A	33	10		6		7	3	2	2		1	64
	BM11	37	3		4		2	3	1	6			56
	BM13	55	5		1	2		6		8			77
	BM20	53	5				2	7	3	1		14	85
BM		**650**	**87**	**7**	**32**	**18**	**33**	**55**	**25**	**34**	**6**	**69**	**1016**
IM	Route 1 SPI	5	1	1								4	11

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Agency	Route No	Home	Work	Sightseeing	Recreation or social activity	College (student only)	K - 12 (student only)	Shopping	Medical/Dental appointment	Personal Business (banking, job interview, paying bills, etc.)	Childcare	Other	Survey Count
	Route 2 SPI	11			1			1		1			14
	Route 3 LAG	3	1										4
	Route 4 NPI	3		1				1				3	8
IM		**22**	**2**	**2**	**1**			**2**		**1**		**7**	**37**
MA	MA01	22	8	2				8	4	2	1	6	53
	MA02	58	10	2	5	3		22	1	6		5	112
	MA03	63	11	2	4			8	1	1		1	91
	MA04	63	9	1	2	2		32	4	1			114
	MA05	23	8		3	5	1	2	1	3		2	48
	MA06	49	13		2	3		9	5	1		3	85
	MA07	39	4					2	1	1		2	49
	MA08		1										1
	MA09	30	5	1	1	40							77
MA		**347**	**69**	**8**	**17**	**53**	**1**	**83**	**17**	**15**	**1**	**19**	**630**
STC	VMGREEN	2				2				1			5

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Agency	Route No	Home	Work	Sightseeing	Recreation or social activity	College (student only)	K - 12 (student only)	Shopping	Medical/Dental appointment	Personal Business (banking, job interview, paying bills, etc.)	Childcare	Other	Survey Count
	VMPURPLE	1				8							9
	VMYELLOW	3				14						1	18
STC		**6**				**24**				**1**		**1**	**32**
UT	UTRGV Campus Connector	32	5			124						2	163
	UTWCB	3	1										4
UT		**35**	**6**			**124**						**2**	**167**
VM	VM10	10	2			5		3		2		1	23
	VM12					1				1			2
	VM14	1				1							2
	VM15	6						6	5	4		1	22
	VM16	20	16		1					13			50
	VM20	22	1					3	1				27
	VM21	1								1			2
	VM30	12			1				1	1			15
	VM31	28	12		4	3		16	1	5		1	70

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Agency	Route No	Home	Work	Sightseeing	Recreation or social activity	College (student only)	K - 12 (student only)	Shopping	Medical/Dental appointment	Personal Business (banking, job interview, paying bills, etc.)	Childcare	Other	Survey Count
	VM40	1							2			1	4
	VM41	1			1								2
	VM42	6						2					8
	VM45	9	1		1								11
	VM50	7	2				3			1			13
	VM60	1										1	2
	VM61	1				1		1		1			4
	VM62	2											2
	VMRED		1									4	5
VM		**128**	**35**		**8**	**11**	**3**	**31**	**10**	**29**		**9**	**264**
Grand Count		**1188**	**199**	**17**	**58**	**230**	**37**	**171**	**52**	**80**	**7**	**107**	**2146**

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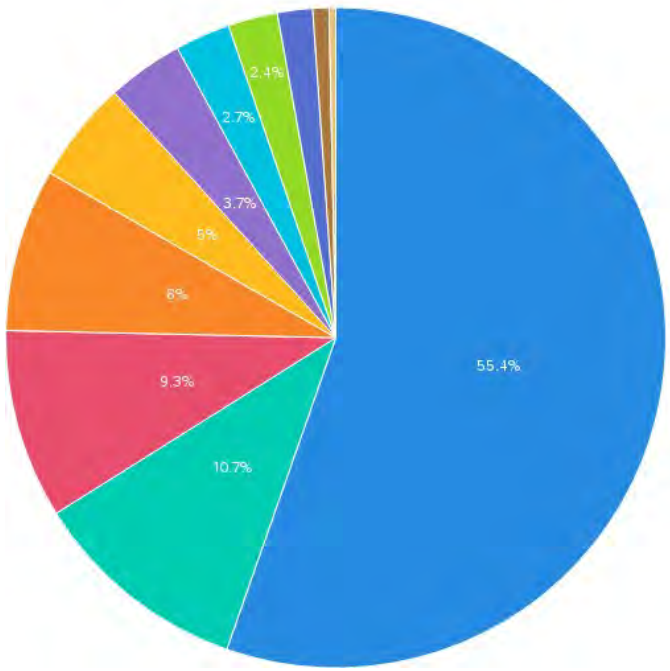
Q03_Origin (Chart)



Where did you start this one-way trip?

Home	1188
College (student only)	230
Work	199
Shopping	171
Other	107
Personal Business (banking, job interview,...	80
Recreation or social activity	58
Medical/Dental appointment	52
K - 12 (student only)	37
Sightseeing	17
Childcare	7

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Q04_Access (Table)

Agency	Route No	Walked	Biked/Scooter	Drove alone & parked	Used rideshare (e.g. Uber)	I was dropped off / carpool	Used mobility aid / wheelchair	Survey Count
BM	BM01	71				5		76
	BM02	82				10		92
	BM03	136	4			12		152
	BM05M-T	90	1			10		101
	BM06	51	2			6		59
	BM06A	44				8		52
	BM07	56	1	1		5		63
	BM08	71				5		76
	BM09	62				1		63
	BM09A	58	1			5		64
	BM11	49			1	6		56
	BM13	68	1			8		77
	BM20	82	1			2		85
BM		**920**	**11**	**1**	**1**	**83**		**1016**
IM	Route 1 SPI	10			1			11
	Route 2 SPI	14						14
	Route 3 LAG	4						4
	Route 4 NPI	8						8
IM		**36**			**1**			**37**
MA	MA01	38	2			12	1	53

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Agency	Route No	Walked	Biked/Scooter	Drove alone & parked	Used rideshare (e.g. Uber)	I was dropped off / carpool	Used mobility aid / wheelchair	Survey Count
	MA02	90			1	21		112
	MA03	74			3	14		91
	MA04	69	1		2	42		114
	MA05	32			3	13		48
	MA06	54	2		3	26		85
	MA07	19			1	29		49
	MA08	1						1
	MA09	44	1			32		77
MA		**421**	**6**		**13**	**189**	**1**	**630**
STC	VMGREEN	3				2		5
	VMPURPLE	1		1		7		9
	VMYELLOW	2		2	1	13		18
STC		**6**		**3**	**1**	**22**		**32**
UT	UTRGV Campus Connector	17	2	90	2	52		163
	UTWCB					4		4
UT		**17**	**2**	**90**	**2**	**56**		**167**
VM	VM10	14			1	8		23
	VM12	1				1		2
	VM14	2						2
	VM15	17				5		22

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Agency	Route No	Walked	Biked/Scooter	Drove alone & parked	Used rideshare (e.g. Uber)	I was dropped off / carpool	Used mobility aid / wheelchair	Survey Count
	VM16	29		20	1			50
	VM20	10				17		27
	VM21	1				1		2
	VM30	15						15
	VM31	33	4			33		70
	VM40	2				2		4
	VM41	1					1	2
	VM42	7				1		8
	VM45	10				1		11
	VM50	11	1		1			13
	VM60	2						2
	VM61	2				2		4
	VM62	1				1		2
	VMRED	5						5
VM		**163**	**5**	**20**	**3**	**72**	**1**	**264**
Grand Count		**1563**	**24**	**114**	**21**	**422**	**2**	**2146**

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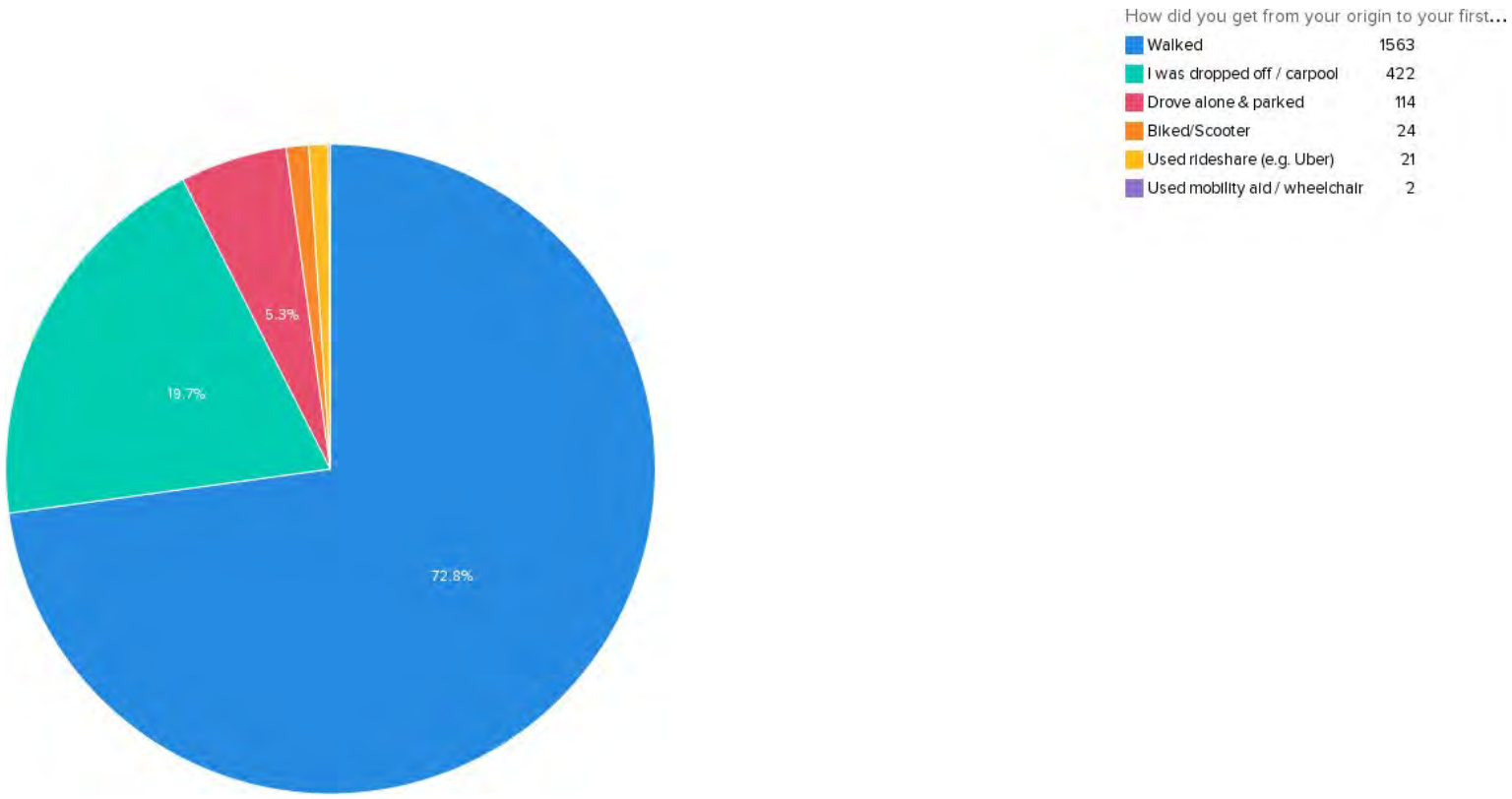
Q04_Access (Chart)



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Q06_Egress (Table)

Agency	Route No	Walk	Bike/scooter	Drive alone & park	Use rideshare (e.g. Uber)	Will be dropped off / carpool	Use mobility aid / wheelchair	Survey Count
BM	BM01	72			1	3		76
	BM02	92						92
	BM03	144	6			2		152
	BM05M-T	100	1					101
	BM06	56	2			1		59
	BM06A	50			1	1		52
	BM07	59	1	1		2		63
	BM08	75			1			76
	BM09	62			1			63
	BM09A	59	1			4		64
	BM11	55				1		56
	BM13	75	1			1		77
	BM20	83	2					85
BM		**982**	**14**	**1**	**4**	**15**		**1016**
IM	Route 1 SPI	10				1		11
	Route 2 SPI	14						14
	Route 3 LAG	4						4
	Route 4 NPI	8						8
IM		**36**				**1**		**37**
MA	MA01	50	2				1	53

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Agency	Route No	Walk	Bike/scooter	Drive alone & park	Use rideshare (e.g. Uber)	Will be dropped off / carpool	Use mobility aid / wheelchair	Survey Count
	MA02	109		1	1	1		112
	MA03	89	1			1		91
	MA04	87	1	2	1	23		114
	MA05	39			3	6		48
	MA06	81	1		3			85
	MA07	46			1	2		49
	MA08	1						1
	MA09	45	5		6	21		77
MA		**547**	**10**	**3**	**15**	**54**	**1**	**630**
STC	VMGREEN	4		1				5
	VMPURPLE	6		1		2		9
	VMYELLOW	7		1		10		18
STC		**17**		**3**		**12**		**32**
UT	UTRGV Campus Connector	53		73		37		163
	UTWCB			1		3		4
UT		**53**		**74**		**40**		**167**
VM	VM10	19			1	3		23
	VM12	2						2
	VM14	2						2
	VM15	21		1				22

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Agency	Route No	Walk	Bike/scooter	Drive alone & park	Use rideshare (e.g. Uber)	Will be dropped off / carpool	Use mobility aid / wheelchair	Survey Count
	VM16	26	2	22				50
	VM20	20	1		2	4		27
	VM21	1				1		2
	VM30	12	2			1		15
	VM31	50	4		1	15		70
	VM40	4						4
	VM41	1					1	2
	VM42	8						8
	VM45	9			1	1		11
	VM50	11	1			1		13
	VM60	2						2
	VM61	4						4
	VM62	2						2
	VMRED	3			1	1		5
VM		**197**	**10**	**23**	**6**	**27**	**1**	**264**
Grand Count		**1832**	**34**	**104**	**25**	**149**	**2**	**2146**

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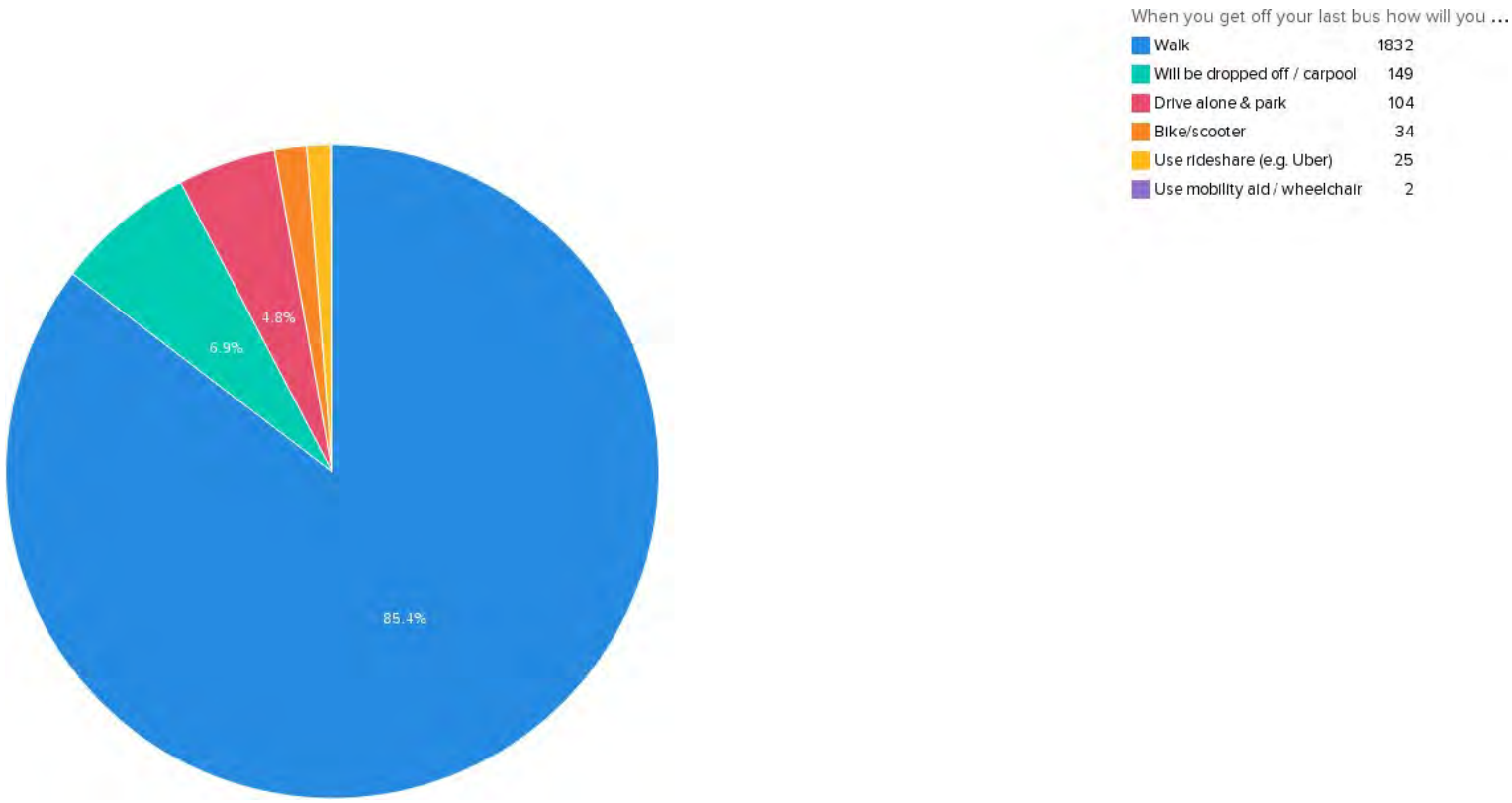
Q06_Egress (Chart)



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Home to Work Trips (Table)

Agency	Route No	Work
BM	BM01	18
	BM02	25
	BM03	22
	BM05M-T	14
	BM06	10
	BM06A	9
	BM07	17
	BM08	7
	BM09	17
	BM09A	9
	BM11	21
	BM13	26
	BM20	12
BM		**207**
IM	Route 1 SPI	2
	Route 2 SPI	4
	Route 3 LAG	1
	Route 4 NPI	1
IM		**8**
MA	MA01	9
	MA02	19

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Agency	Route No	Work
	MA03	25
	MA04	4
	MA05	3
	MA06	10
	MA07	17
	MA09	2
MA		**89**
UT	UTRGV Campus Connector	1
	UTWCB	1
UT		**2**
VM	VM10	1
	VM16	12
	VM20	8
	VM21	1
	VM30	3
	VM31	7
	VM40	1
	VM41	1
	VM45	3
	VM50	3
	VM62	2
VM		**42**

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Agency	Route No	Work
Grand Count		**348**

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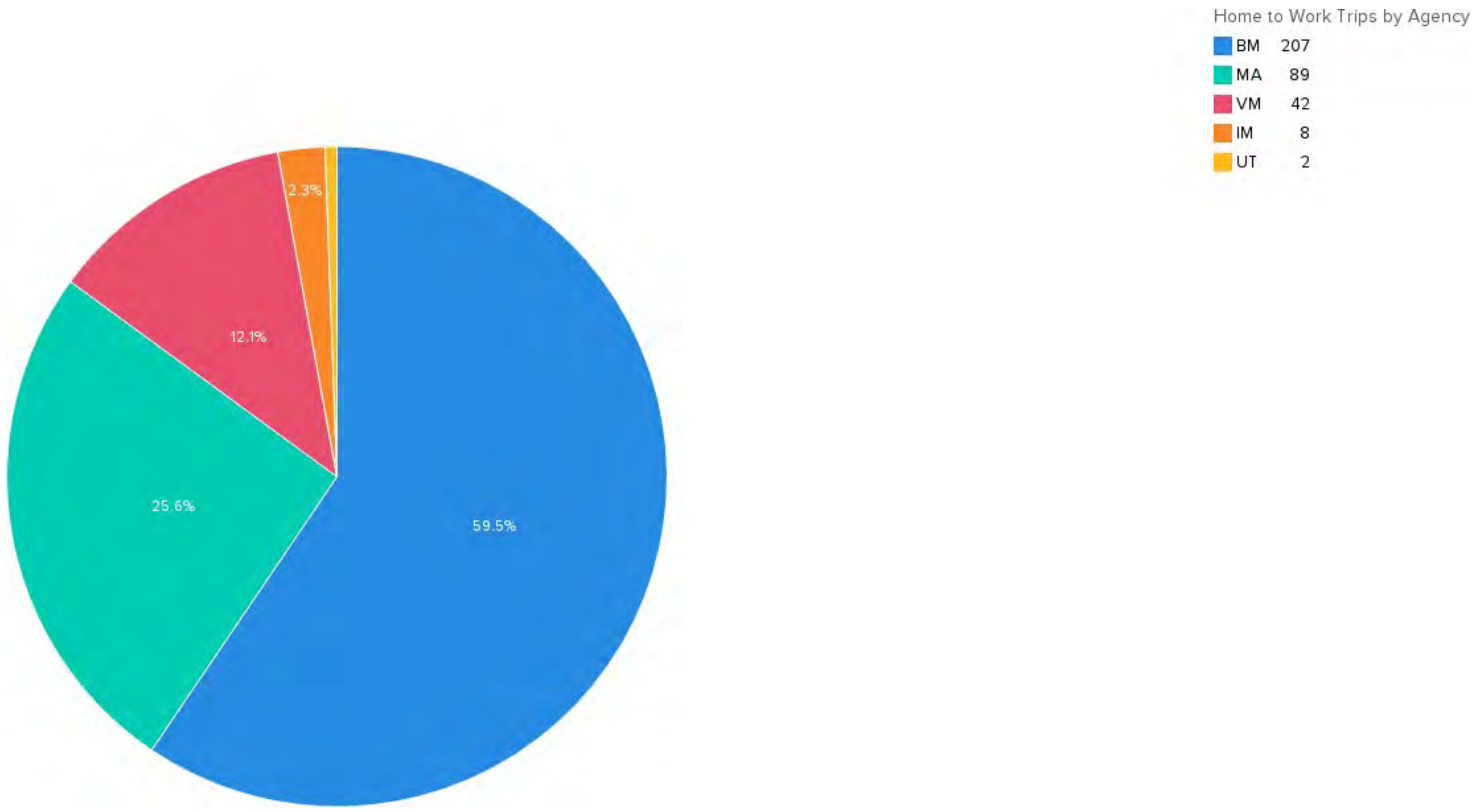
Home to Work Trips (Chart)



Powered by ZOHO Reports

Home to School Trips (Table)

Agency	Route No	College (student only)	K - 12 (student only)	Survey Count
BM	BM01	2	9	11
	BM02	5		5
	BM03	4	24	28
	BM05M-T	4	32	36
	BM06	2	1	3
	BM06A	2	4	6
	BM07		10	10
	BM08	3	6	9
	BM09	6	12	18
	BM09A		8	8
	BM13	3	2	5
	BM20	2	5	7
BM		**33**	**113**	**146**
MA	MA01	2		2
	MA02	3		3
	MA03	4	1	5
	MA05	5		5
	MA06	7		7
	MA07	1		1
	MA09	25		25
MA		**47**	**1**	**48**

Powered by ZOHO Reports

Agency	Route No	College (student only)	K - 12 (student only)	Survey Count
STC	VMGREEN	2		2
	VMPURPLE	1		1
	VMYELLOW	3		3
STC		**6**		**6**
UT	UTRGV Campus Connector	31		31
	UTWCB	2		2
UT		**33**		**33**
VM	VM10	6		6
	VM31	5		5
	VM42	1		1
	VM45	2		2
	VM50	1		1
	VM60	1		1
	VM61	1		1
VM		**17**		**17**
Grand Count		**136**	**114**	**250**

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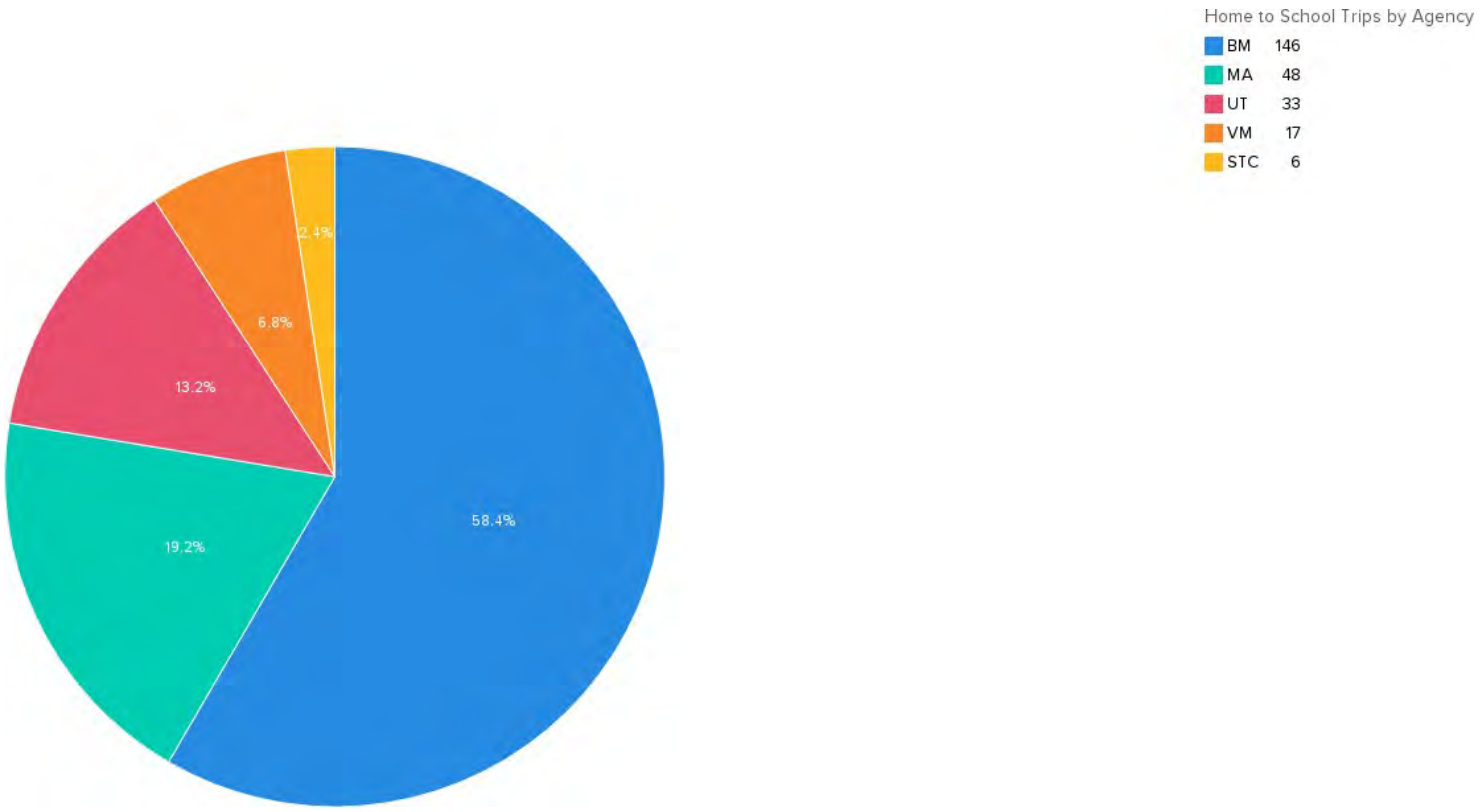
Home to School Trips (Chart)



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Work to Home Trips (Table)

Agency	Route No	Home
BM	BM01	5
	BM02	10
	BM03	8
	BM05M-T	2
	BM06	6
	BM06A	1
	BM07	4
	BM08	7
	BM09	3
	BM09A	8
	BM11	1
	BM13	4
	BM20	3
BM		**62**
IM	Route 1 SPI	1
IM		**1**
MA	MA01	8
	MA02	8
	MA03	8
	MA04	5
	MA05	7

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Agency	Route No	Home
	MA06	11
	MA07	3
	MA08	1
	MA09	5
MA		**56**
UT	UTRGV Campus Connector	2
UT		**2**
VM	VM16	8
	VM20	1
	VM31	11
	VM50	2
	VMRED	1
VM		**23**
Grand Count		**144**

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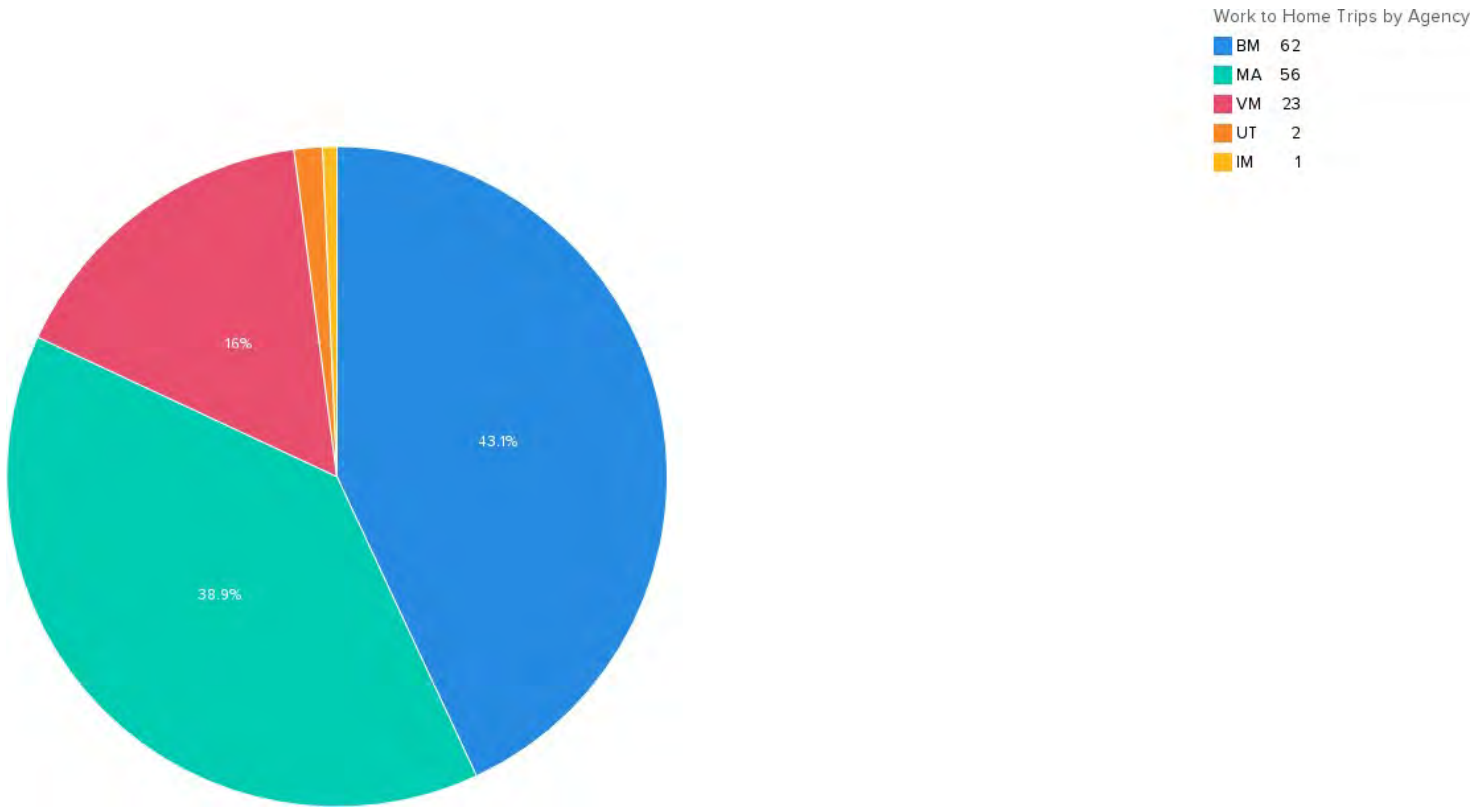
Work to Home Trips (Chart)



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School to Home Trips (Table)

Agency	Route No	College (student only)	K - 12 (student only)	Survey Count
BM	BM01	3	9	12
	BM02	1		1
	BM03	2	7	9
	BM06	4	1	5
	BM06A	2		2
	BM07	2	1	3
	BM08	1	1	2
	BM09A		7	7
	BM11		2	2
	BM20		2	2
BM		**15**	**30**	**45**
MA	MA02	1		1
	MA04	1		1
	MA05	5	1	6
	MA06	1		1
	MA09	34		34
MA		**42**	**1**	**43**
STC	VMGREEN	1		1
	VMYELLOW	4		4
STC		**5**		**5**
UT	UTRGV Campus Connector	6		6

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Agency	Route No	College (student only)	K - 12 (student only)	Survey Count
UT		**6**		**6**
VM	VM10	5		5
	VM12	1		1
	VM31	3		3
	VM50		3	3
	VM61	1		1
VM		**10**	**3**	**13**
Grand Count		**78**	**34**	**112**

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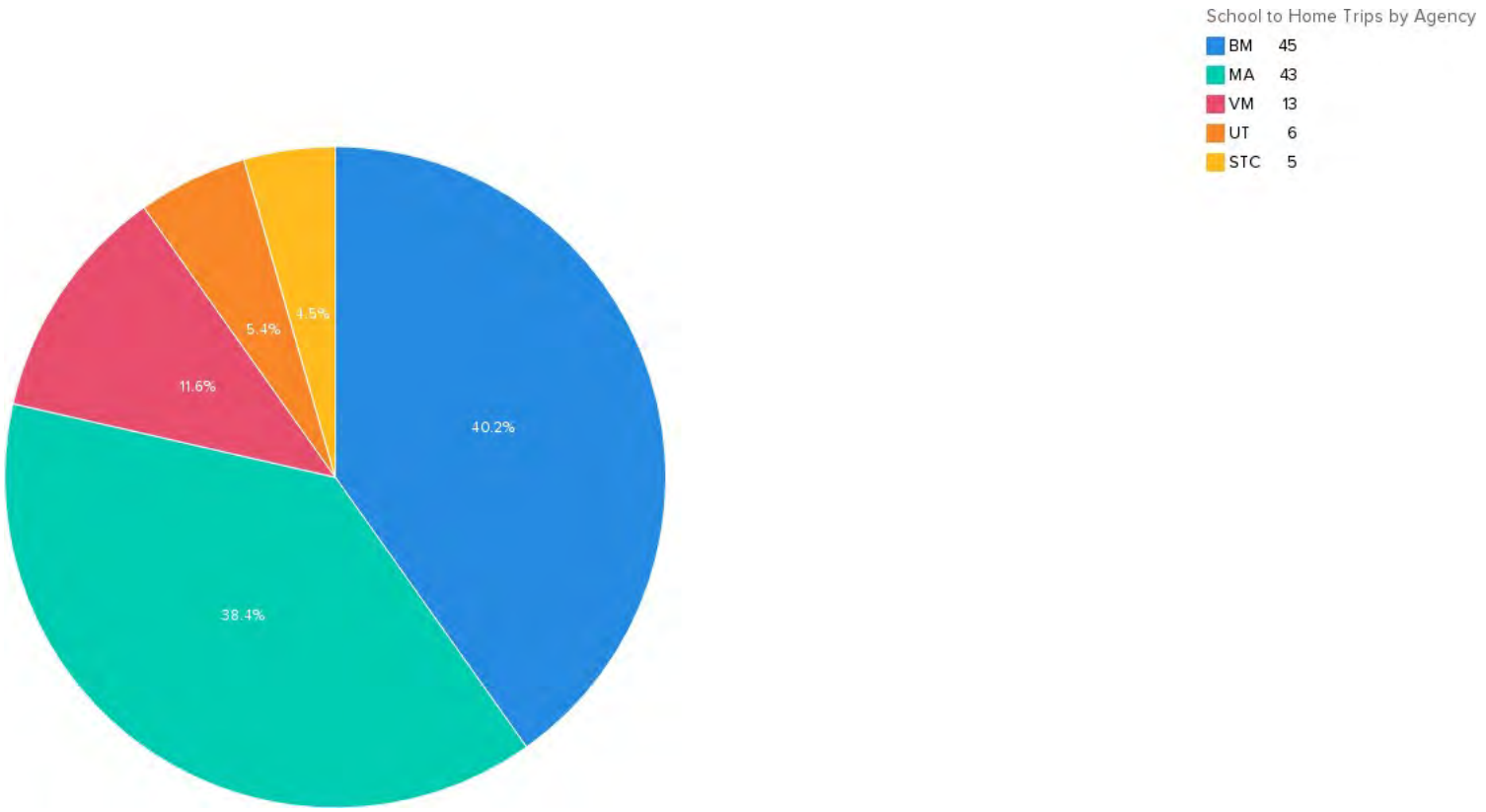
School to Home Trips (Chart)



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Q13_Frequency (Table)

Agency	Route No	5 or more days a week	2 - 4 days a week	About once a month	A few times a year	No Answer	Survey Count
BM	BM01	42	24	7	3		76
	BM02	46	30	5	8	3	92
	BM03	87	41	17	4	3	152
	BM05M-T	66	24	5	4	2	101
	BM06	31	18	4	4	2	59
	BM06A	19	21	9	2	1	52
	BM07	38	19	3	3		63
	BM08	49	19	6	2		76
	BM09	36	18	2	2	5	63
	BM09A	42	17	2	3		64
	BM11	28	14	8	1	5	56
	BM13	38	25	9	3	2	77
	BM20	32	37	14		2	85
BM		**554**	**307**	**91**	**39**	**25**	**1016**
IM	Route 1 SPI	4	2	1	4		11
	Route 2 SPI	4	5	1	4		14
	Route 3 LAG	2	2				4
	Route 4 NPI	1	1	1	5		8
IM		**11**	**10**	**3**	**13**		**37**
MA	MA01	19	23	8	2	1	53

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Agency	Route No	5 or more days a week	2 - 4 days a week	About once a month	A few times a year	No Answer	Survey Count
	MA02	65	38	8		1	112
	MA03	55	28	6	1	1	91
	MA04	39	37	20	11	7	114
	MA05	26	18	2	1	1	48
	MA06	39	32	5	9		85
	MA07	23	19	2	2	3	49
	MA08	1					1
	MA09	28	47	1		1	77
MA		**295**	**242**	**52**	**26**	**15**	**630**
STC	VMGREEN	2	3				5
	VMPURPLE		9				9
	VMYELLOW	4	14				18
STC		**6**	**26**				**32**
UT	UTRGV Campus Connector	36	123	2	1	1	163
	UTWCB	3	1				4
UT		**39**	**124**	**2**	**1**	**1**	**167**
VM	VM10	12	10	1			23
	VM12	1	1				2
	VM14	1		1			2
	VM15	10	10	2			22

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Agency	Route No	5 or more days a week	2 - 4 days a week	About once a month	A few times a year	No Answer	Survey Count
	VM16	25	9	3	12	1	50
	VM20	11	7	4		5	27
	VM21	1	1				2
	VM30	5	8	2			15
	VM31	22	33	10	3	2	70
	VM40	1	2			1	4
	VM41	1		1			2
	VM42		6	2			8
	VM45	5	3	2		1	11
	VM50	10	2		1		13
	VM60	1	1				2
	VM61	3	1				4
	VM62	2					2
	VMRED	3		1	1		5
VM		**114**	**94**	**29**	**17**	**10**	**264**
Grand Count		**1019**	**803**	**177**	**96**	**51**	**2146**

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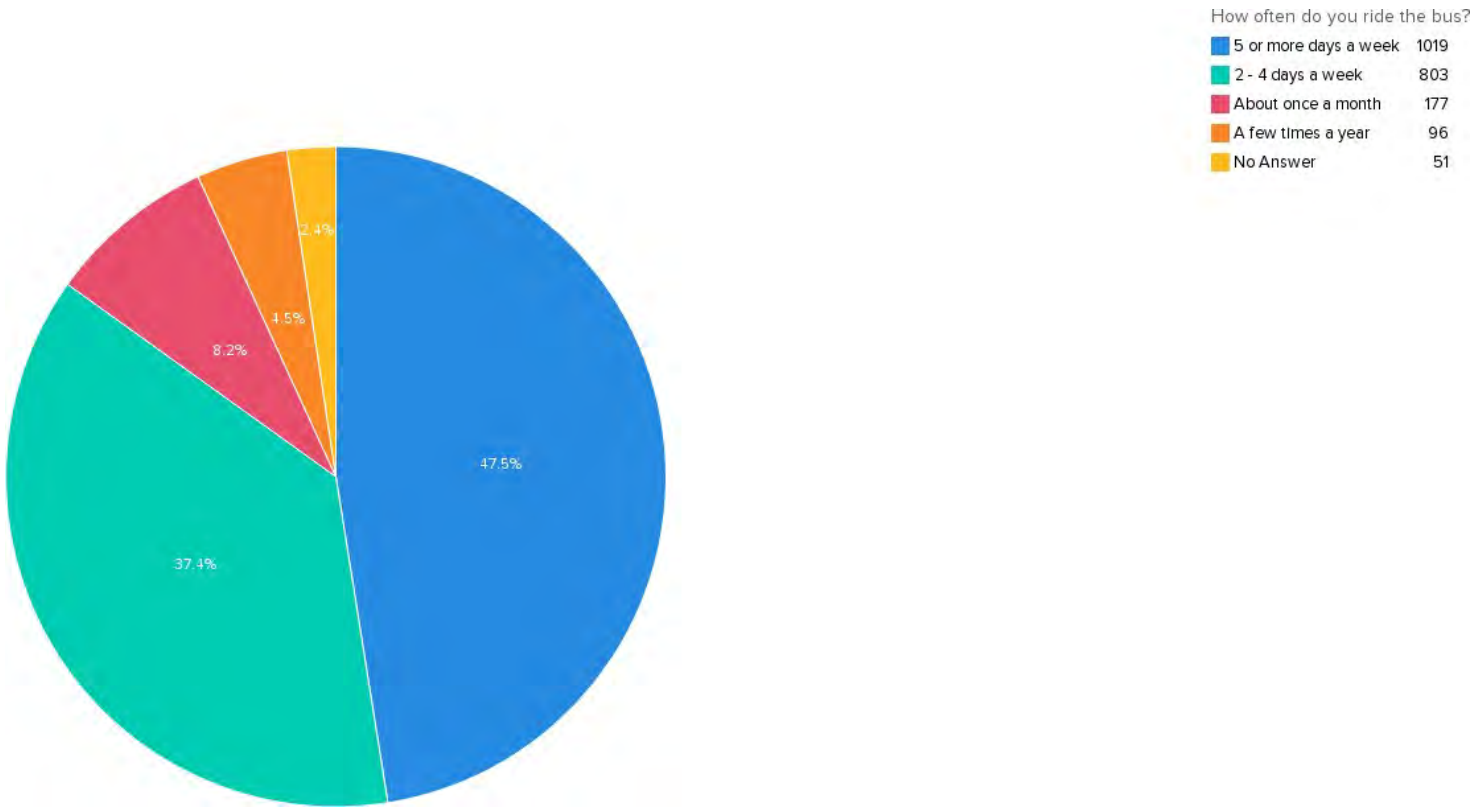
Q13_Frequency (Chart)



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Q14_Rider Status (Table)

Agency	Route No	More than 5 years	2 to 5 years	6 to 12 months	Less than 6 months	I am not a regular bus passenger	No Answer	Survey Count
BM	BM01	11	18	26	21			76
	BM02	18	15	23	36			92
	BM03	23	60	25	44			152
	BM05M-T	17	42	20	22			101
	BM06	21	20	6	12			59
	BM06A	7	15	5	24		1	52
	BM07	26	14	10	12		1	63
	BM08	15	17	9	35			76
	BM09	8	17	16	22			63
	BM09A	11	25	8	20			64
	BM11	11	12	9	24			56
	BM13	21	14	16	26			77
	BM20	12	27	21	22		3	85
BM		**201**	**296**	**194**	**320**		**5**	**1016**
IM	Route 1 SPI	3	1		2	5		11
	Route 2 SPI	1	3	2	2	6		14
	Route 3 LAG	1	2		1			4
	Route 4 NPI	1	1		1	5		8
IM		**6**	**7**	**2**	**6**	**16**		**37**

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Agency	Route No	More than 5 years	2 to 5 years	6 to 12 months	Less than 6 months	I am not a regular bus passenger	No Answer	Survey Count
MA	MA01	11	20	10	11		1	53
	MA02	12	23	15	61		1	112
	MA03	14	33	14	30			91
	MA04	19	25	14	54		2	114
	MA05	6	20	11	9	1	1	48
	MA06	7	28	21	28		1	85
	MA07	6	16	11	16			49
	MA08		1					1
	MA09	17	37	20	3			77
MA		**92**	**203**	**116**	**212**	**1**	**6**	**630**
STC	VMGREEN		2	3				5
	VMPURPLE	1	4	2	2			9
	VMYELLOW		3	6	8	1		18
STC		**1**	**9**	**11**	**10**	**1**		**32**
UT	UTRGV Campus Connector	1	71	38	51	1	1	163
	UTWCB		3	1				4
UT		**1**	**74**	**39**	**51**	**1**	**1**	**167**
VM	VM10	3	6	7	7			23
	VM12		1	1				2
	VM14	1			1			2

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Agency	Route No	More than 5 years	2 to 5 years	6 to 12 months	Less than 6 months	I am not a regular bus passenger	No Answer	Survey Count
	VM15	6	10	5	1			22
	VM16	9	15	14	10	2		50
	VM20	8	5	7	7			27
	VM21		2					2
	VM30	1	6	4	3	1		15
	VM31	13	25	21	10		1	70
	VM40	1	2	1				4
	VM41	1	1					2
	VM42		4	3	1			8
	VM45	1	3	5	2			11
	VM50	8	3	1	1			13
	VM60		2					2
	VM61	1	2	1				4
	VM62	1	1					2
	VMRED	2	1	2				5
VM		**56**	**89**	**72**	**43**	**3**	**1**	**264**
Grand Count		**357**	**678**	**434**	**642**	**22**	**13**	**2146**

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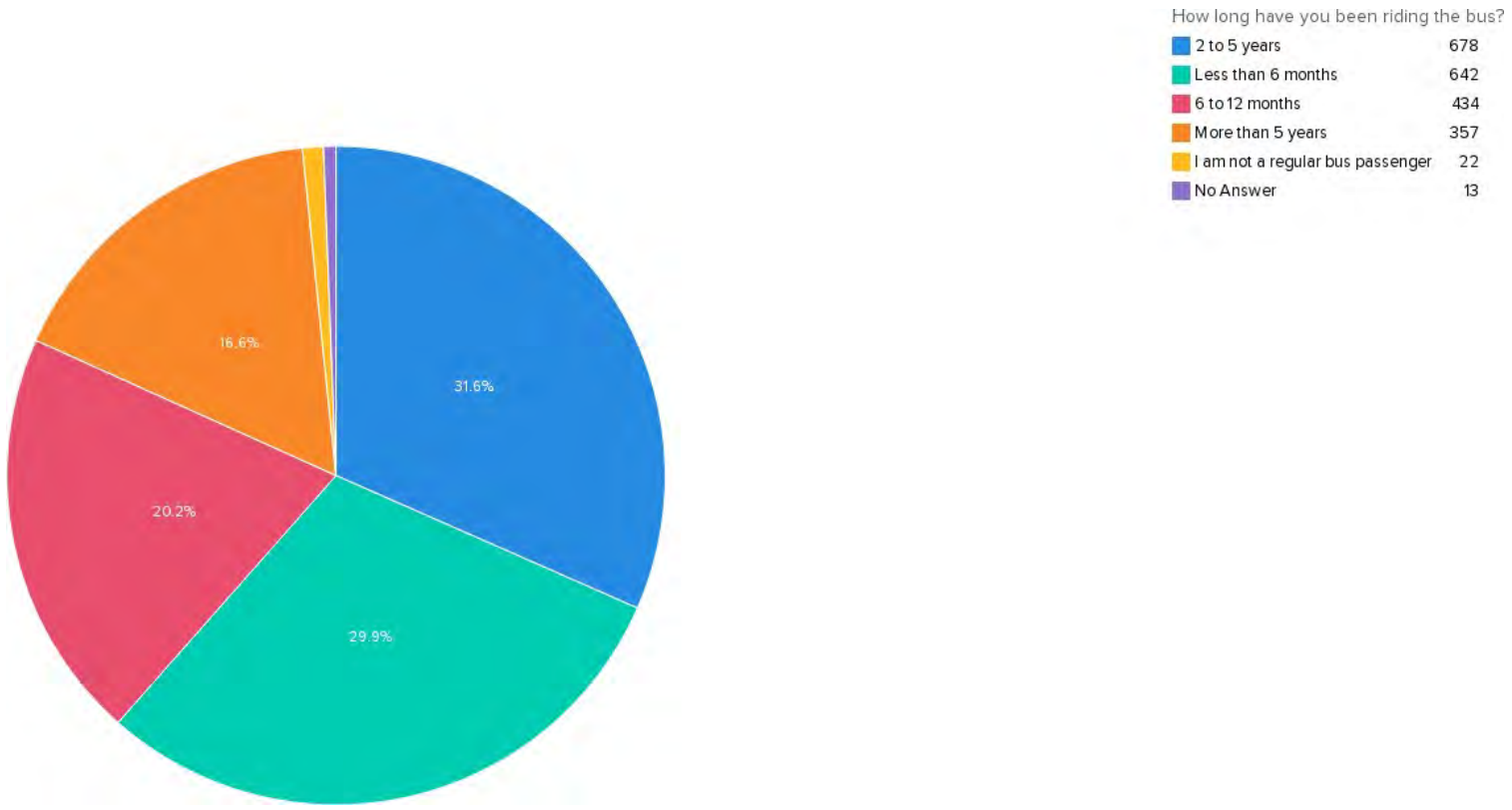
Q14_Rider Status (Chart)



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Q15_Drivers License (Chart)

Agency	Route No	Yes	No	No Answer	Survey Count
BM	BM01	9	67		76
	BM02	18	74		92
	BM03	24	128		152
	BM05M-T	15	86		101
	BM06	19	40		59
	BM06A	10	42		52
	BM07	21	42		63
	BM08	10	66		76
	BM09	19	44		63
	BM09A	8	56		64
	BM11	11	45		56
	BM13	24	53		77
	BM20	12	72	1	85
BM		**200**	**815**	**1**	**1016**
IM	Route 1 SPI	7	4		11
	Route 2 SPI	7	7		14
	Route 3 LAG	2	2		4
	Route 4 NPI	6	2		8
IM		**22**	**15**		**37**
MA	MA01	8	44	1	53
	MA02	28	84		112

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Agency	Route No	Yes	No	No Answer	Survey Count
	MA03	18	73		91
	MA04	39	75		114
	MA05	15	32	1	48
	MA06	25	60		85
	MA07	11	38		49
	MA08	1			1
	MA09	21	56		77
MA		**166**	**462**	**2**	**630**
STC	VMGREEN	1	4		5
	VMPURPLE	3	6		9
	VMYELLOW	7	11		18
STC		**11**	**21**		**32**
UT	UTRGV Campus Connector	121	41	1	163
	UTWCB	2	2		4
UT		**123**	**43**	**1**	**167**
VM	VM10	10	13		23
	VM12		2		2
	VM14		2		2
	VM15	7	14	1	22
	VM16	48		2	50
	VM20	5	22		27

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Agency	Route No	Yes	No	No Answer	Survey Count
	VM21		2		2
	VM30	3	12		15
	VM31	12	58		70
	VM40		4		4
	VM41		2		2
	VM42	1	7		8
	VM45	2	9		11
	VM50		13		13
	VM60		2		2
	VM61		4		4
	VM62	1	1		2
	VMRED	3	2		5
VM		**92**	**169**	**3**	**264**
Grand Count		**614**	**1525**	**7**	**2146**

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Q15_ Drivers License (Chart)

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Q16_Alternative Transportation Method (Table)

Agency	Route No	Drive alone	Driven & dropped off	Walk	Carpool	Bike or Scooter	Rideshare (e.g. Uber/Lyft)	Rental Car	Would not make trip	Other	No Answer	Survey Count
BM	BM01	2	37	15	11	5	2	1	2		1	76
	BM02	10	16	14	23	4	15		10			92
	BM03	8	77	5	38	8	7		9			152
	BM05M-T	6	45	4	26	5	6		9			101
	BM06	13	6	12	12	6	7		3			59
	BM06A	1	34	6	4	1	4		2			52
	BM07	8	15	15	13	2	6		3		1	63
	BM08	2	25	9	22	2	5		11			76
	BM09	3	19	9	9	2	7		14			63
	BM09A		5	9	26	6	11		7			64
	BM11	1	27	10	1	3	11		3			56
	BM13	8	25	12	6	6	13		6		1	77
	BM20	5	42	8	20	1	5		3		1	85
BM		**67**	**373**	**128**	**211**	**51**	**99**	**1**	**82**		**4**	**1016**
IM	Route 1 SPI	3	2	1	2	1	1	1				11
	Route 2 SPI	3	2	6	1	1	1					14
	Route 3 LAG			1		1			2			4
	Route 4 NPI	2		5		1						8

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Agency	Route No	Drive alone	Driven & dropped off	Walk	Carpool	Bike or Scooter	Rideshare (e.g. Uber/Lyft)	Rental Car	Would not make trip	Other	No Answer	Survey Count
IM		**8**	**4**	**13**	**3**	**4**	**2**	**1**	**2**			**37**
MA	MA01	2	10	3	29	4	2		2	1		53
	MA02	11	27	7	37	1	14		15			112
	MA03	7	48	21	1	1	10		3			91
	MA04	1	57	22	2	2	19		11			114
	MA05	4	19	5	6	2	3		8		1	48
	MA06	3	31	15	1	3	24	1	6		1	85
	MA07	1	17	9	3	5	4		10			49
	MA08	1										1
	MA09	3	44	1	6	9	14					77
MA		**33**	**253**	**83**	**85**	**27**	**90**	**1**	**55**	**1**	**2**	**630**
STC	VMGREEN	1	1		3							5
	VMPURPLE	1	7						1			9
	VMYELLOW	4	9	1	2				1	1		18
STC		**6**	**17**	**1**	**5**				**2**	**1**		**32**
UT	UTRGV Campus Connector	69	24		13				51	5	1	163
	UTWCB		2		2							4
UT		**69**	**26**		**15**				**51**	**5**	**1**	**167**

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Agency	Route No	Drive alone	Driven & dropped off	Walk	Carpool	Bike or Scooter	Rideshare (e.g. Uber/Lyft)	Rental Car	Would not make trip	Other	No Answer	Survey Count
VM	VM10	1	11	2	3		3		3			23
	VM12			2								2
	VM14			1			1					2
	VM15		7	13		1					1	22
	VM16		2	47			1					50
	VM20		17	5		4	1					27
	VM21		1		1							2
	VM30		5	1	1	3	4		1			15
	VM31	3	18	6	27	3	8		5			70
	VM40		2		1		1					4
	VM41								2			2
	VM42				8							8
	VM45		6	1			2		2			11
	VM50			3	4		4		1	1		13
	VM60				1		1					2
	VM61		2	1	1							4
	VM62				2							2
	VMRED	2	1				1		1			5
VM		**6**	**72**	**82**	**49**	**11**	**27**		**15**	**1**	**1**	**264**
Grand Count		**189**	**745**	**307**	**368**	**93**	**218**	**3**	**207**	**8**	**8**	**2146**

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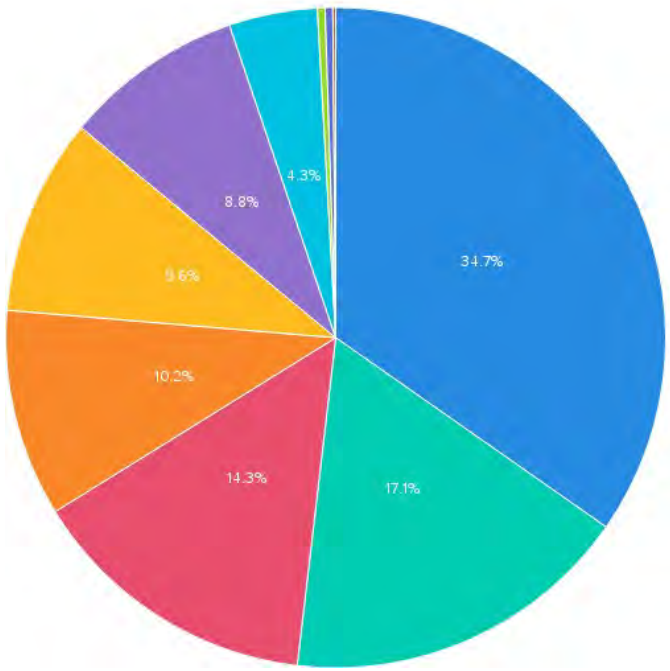
Q16_Alternative Transportation Method (Chart)



If the bus system were not available, how wo...

Driven & dropped off	745
Carpool	368
Walk	307
Rideshare (e.g. Uber/Lyft)	218
Would not make trip	207
Drive alone	189
Bike or Scooter	93
Other	8
No Answer	8
Rental Car	3

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Q17_Household Size (Table)

Agency	Route No	I'm a college student living on campus	I live alone	Two including me	Three including me	Four including me	Five or more	No Answer	Survey Count
BM	BM01	1	3	19	27	15	11		76
	BM02	3	20	35	15	9	10		92
	BM03		13	32	58	35	13	1	152
	BM05M-T		11	14	37	22	17		101
	BM06	2	10	15	12	5	14	1	59
	BM06A		8	9	16	9	10		52
	BM07		10	6	19	12	16		63
	BM08		8	25	24	10	9		76
	BM09		7	12	17	13	14		63
	BM09A		9	10	19	6	20		64
	BM11		4	12	16	11	13		56
	BM13	1	8	13	29	13	13		77
	BM20		15	31	23	9	7		85
BM		**7**	**126**	**233**	**312**	**169**	**167**	**2**	**1016**
IM	Route 1 SPI		1	6	2	2			11
	Route 2 SPI		4	6	4				14
	Route 3 LAG		1		2	1			4
	Route 4 NPI			3	4	1			8
IM			**6**	**15**	**12**	**4**			**37**

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Agency	Route No	I'm a college student living on campus	I live alone	Two including me	Three including me	Four including me	Five or more	No Answer	Survey Count
MA	MA01		12	24	11	2	2	2	53
	MA02		33	34	30	7	8		112
	MA03	2	14	20	22	24	8	1	91
	MA04		24	26	32	17	15		114
	MA05		12	11	8	9	7	1	48
	MA06		20	24	19	10	10	2	85
	MA07		8	16	11	9	5		49
	MA08						1		1
	MA09		7	14	18	28	10		77
MA		**2**	**130**	**169**	**151**	**106**	**66**	**6**	**630**
STC	VMGREEN				1	2	2		5
	VMPURPLE		1		2	2	4		9
	VMYELLOW		1	2	2	5	7	1	18
STC			**2**	**2**	**5**	**9**	**13**	**1**	**32**
UT	UTRGV Campus Connector	15	6	15	29	48	48	2	163
	UTWCB				1	1	2		4
UT		**15**	**6**	**15**	**30**	**49**	**50**	**2**	**167**
VM	VM10		6	4	4	6	3		23
	VM12						2		2

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Agency	Route No	I'm a college student living on campus	I live alone	Two including me	Three including me	Four including me	Five or more	No Answer	Survey Count
	VM14		2						2
	VM15		8	3	9	2			22
	VM16		10	9	9	16	6		50
	VM20		8	5	4	10			27
	VM21		1				1		2
	VM30		5	3	2	2	3		15
	VM31	1	8	27	14	14	5	1	70
	VM40		1	1	1	1			4
	VM41		2						2
	VM42			4	3	1			8
	VM45		1	3	2	1	4		11
	VM50		2	1	7	2	1		13
	VM60					2			2
	VM61			2	2				4
	VM62		1		1				2
	VMRED	1	1			1	2		5
VM		**2**	**56**	**62**	**58**	**58**	**27**	**1**	**264**
Grand Count		**26**	**326**	**496**	**568**	**395**	**323**	**12**	**2146**

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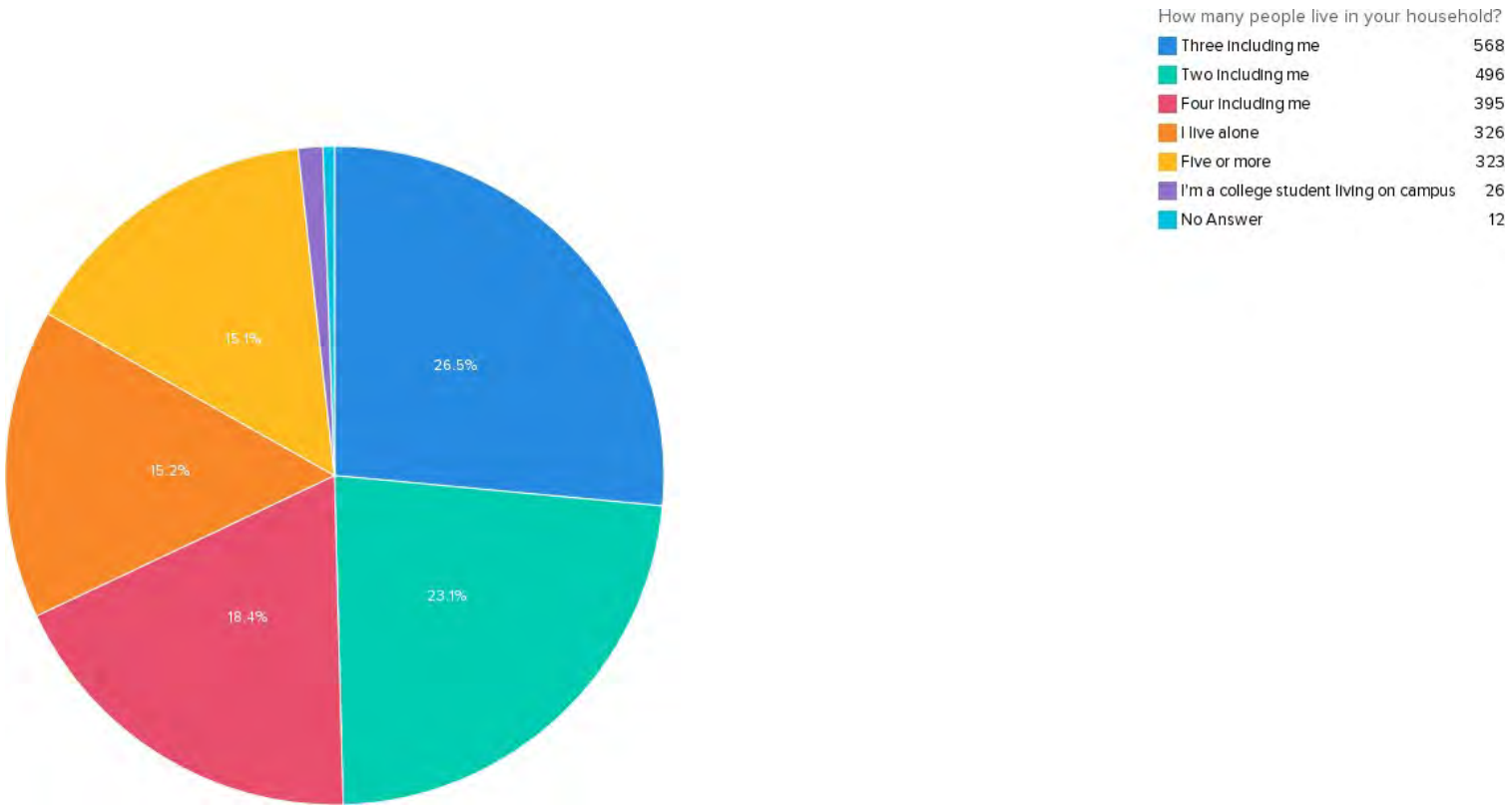
Q17_Household Size (Chart)



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Q18_HH Vehicles (Table)

Agency	Route No	One	Two	Three	Four or more	None	No Answer	Survey Count
BM	BM01	33	14	6	1	22		76
	BM02	41	8	6		37		92
	BM03	74	33	2	1	42		152
	BM05M-T	47	29	1		24		101
	BM06	32	12	1	1	12	1	59
	BM06A	25	8	2		17		52
	BM07	26	11	2	1	22	1	63
	BM08	31	13			32		76
	BM09	28	11	3		21		63
	BM09A	14	13	1	1	35		64
	BM11	24	14	2	1	15		56
	BM13	34	14	2	1	26		77
	BM20	37	11	1	1	35		85
BM		**446**	**191**	**29**	**8**	**340**	**2**	**1016**
IM	Route 1 SPI	1	4	2	1	3		11
	Route 2 SPI	8	2			4		14
	Route 3 LAG	1	2			1		4
	Route 4 NPI	3	5					8
IM		**13**	**13**	**2**	**1**	**8**		**37**
MA	MA01	20	1	2		27	3	53
	MA02	35	7	2		68		112

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Agency	Route No	One	Two	Three	Four or more	None	No Answer	Survey Count
	MA03	57	7	2		25		91
	MA04	33	23	3	3	52		114
	MA05	14	10	6	1	16	1	48
	MA06	33	7	2	1	42		85
	MA07	25	3			21		49
	MA08	1						1
	MA09	45	10	7	1	14		77
MA		**263**	**68**	**24**	**6**	**265**	**4**	**630**
STC	VMGREEN	1	3	1				5
	VMPURPLE	1	5	2	1			9
	VMYELLOW	4	9	3		1	1	18
STC		**6**	**17**	**6**	**1**	**1**	**1**	**32**
UT	UTRGV Campus Connector	27	57	41	29	7	2	163
	UTWCB	2	2					4
UT		**29**	**59**	**41**	**29**	**7**	**2**	**167**
VM	VM10	10	5	1		7		23
	VM12	1				1		2
	VM14					2		2
	VM15	6	5			10	1	22
	VM16	12	26	11			1	50
	VM20	4	1	1	1	20		27

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Agency	Route No	One	Two	Three	Four or more	None	No Answer	Survey Count
	VM21	1				1		2
	VM30	5	1			9		15
	VM31	33	10			27		70
	VM40					4		4
	VM41					2		2
	VM42	3				5		8
	VM45	4	2			5		11
	VM50	6	2			5		13
	VM60	1	1					2
	VM61	3				1		4
	VM62	1				1		2
	VMRED	1		2		2		5
VM		**91**	**53**	**15**	**1**	**102**	**2**	**264**
Grand Count		**848**	**401**	**117**	**46**	**723**	**11**	**2146**

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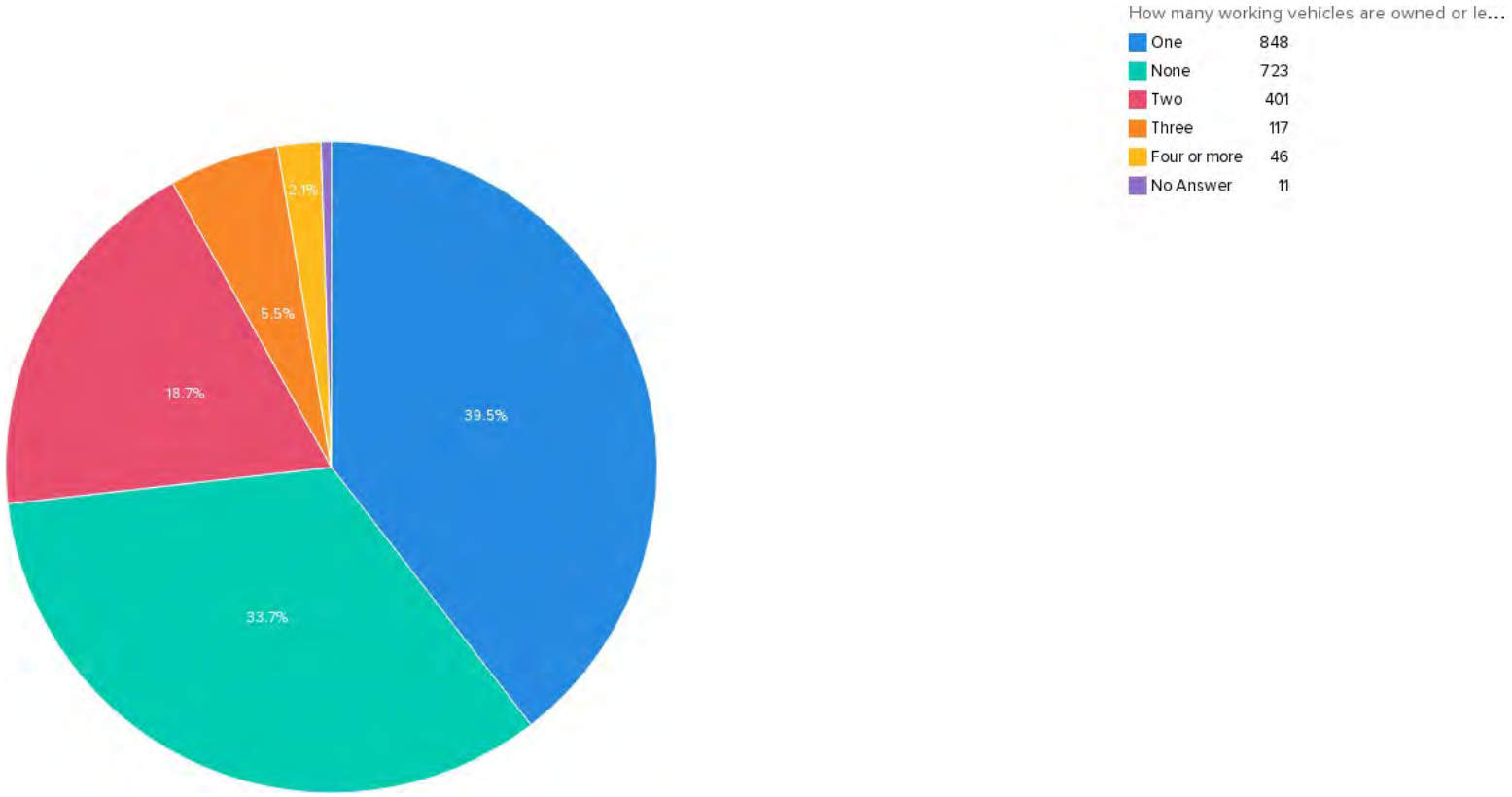
Q18_HH Vehicles (Chart)



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Q19_Employment Status (Table)

Response 1	Response 2	Survey Count
Disabled		37
Employed (do not work from home)		931
	Disabled	3
	Employed (work from home)	1
	Retired	4
	Student - do not work	1
	Student - work part-time off campus	2
Employed (work from home)		53
Homemaker - do not work for pay		83
	Disabled	1
	Employed (work from home)	1
	Retired	1
No Answer		34
Retired		271
	Disabled	10
Student - do not work		360
	Disabled	1
	Homemaker (do not work for pay)	1
Student - work part-time off campus		147
Unemployed		199
	Disabled	5

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Q20_Age (Table)

Agency	Route No	Under 16	16 - 18	19 - 24	25 - 40	41 - 64	65 - 75	Over 75	No Answer	Survey Count
BM	BM01		21	14	13	16	12			76
	BM02		2	21	23	22	21	2	1	92
	BM03	2	45	21	14	44	26			152
	BM05M-T		45	11	11	20	11	3		101
	BM06		5	15	16	14	8	1		59
	BM06A		6	5	14	11	16			52
	BM07		12	9	17	15	9		1	63
	BM08		6	8	13	34	14		1	76
	BM09		14	8	20	16	4	1		63
	BM09A		16	10	21	13	3	1		64
	BM11		3	12	14	15	12			56
	BM13	1	2	17	18	23	14	2		77
	BM20	2	5	21	18	18	21			85
BM		**5**	**182**	**172**	**212**	**261**	**171**	**10**	**3**	**1016**
IM	Route 1 SPI				2	5	3	1		11
	Route 2 SPI				3	8	3			14
	Route 3 LAG				1	2	1			4
	Route 4 NPI				1	3	4			8
IM					**7**	**18**	**11**	**1**		**37**
MA	MA01		1	6	7	21	16	1	1	53

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Agency	Route No	Under 16	16 - 18	19 - 24	25 - 40	41 - 64	65 - 75	Over 75	No Answer	Survey Count
	MA02			8	25	50	27	1	1	112
	MA03		4	14	21	38	12	1	1	91
	MA04		5	8	16	60	19	4	2	114
	MA05		2	12	12	15	5	1	1	48
	MA06	1	2	17	8	36	16	3	2	85
	MA07		1	2	8	24	14			49
	MA08					1				1
	MA09		6	56	9	5	1			77
MA		**1**	**21**	**123**	**106**	**250**	**110**	**11**	**8**	**630**
STC	VMGREEN			5						5
	VMPURPLE		1	8						9
	VMYELLOW		6	10		1			1	18
STC			**7**	**23**		**1**			**1**	**32**
UT	UTRGV Campus Connector		11	134	13	3			2	163
	UTWCB		1	1	1	1				4
UT			**12**	**135**	**14**	**4**			**2**	**167**
VM	VM10		4	7	1	6	5			23
	VM12			1		1				2
	VM14					2				2
	VM15				1	21				22

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Agency	Route No	Under 16	16 - 18	19 - 24	25 - 40	41 - 64	65 - 75	Over 75	No Answer	Survey Count
	VM16		1	1	16	29	2		1	50
	VM20		1	1	3	16	6			27
	VM21					1	1			2
	VM30			3	4	3	4		1	15
	VM31		1	12	19	27	10	1		70
	VM40		1			1	1		1	4
	VM41					2				2
	VM42		1	2		3	2			8
	VM45			2	3	4	2			11
	VM50	2	1	1	5	2	1	1		13
	VM60			2						2
	VM61			2		2				4
	VM62				1	1				2
	VMRED			2	2	1				5
VM		**2**	**10**	**36**	**55**	**122**	**34**	**2**	**3**	**264**
Grand Count		**8**	**232**	**489**	**394**	**656**	**326**	**24**	**17**	**2146**

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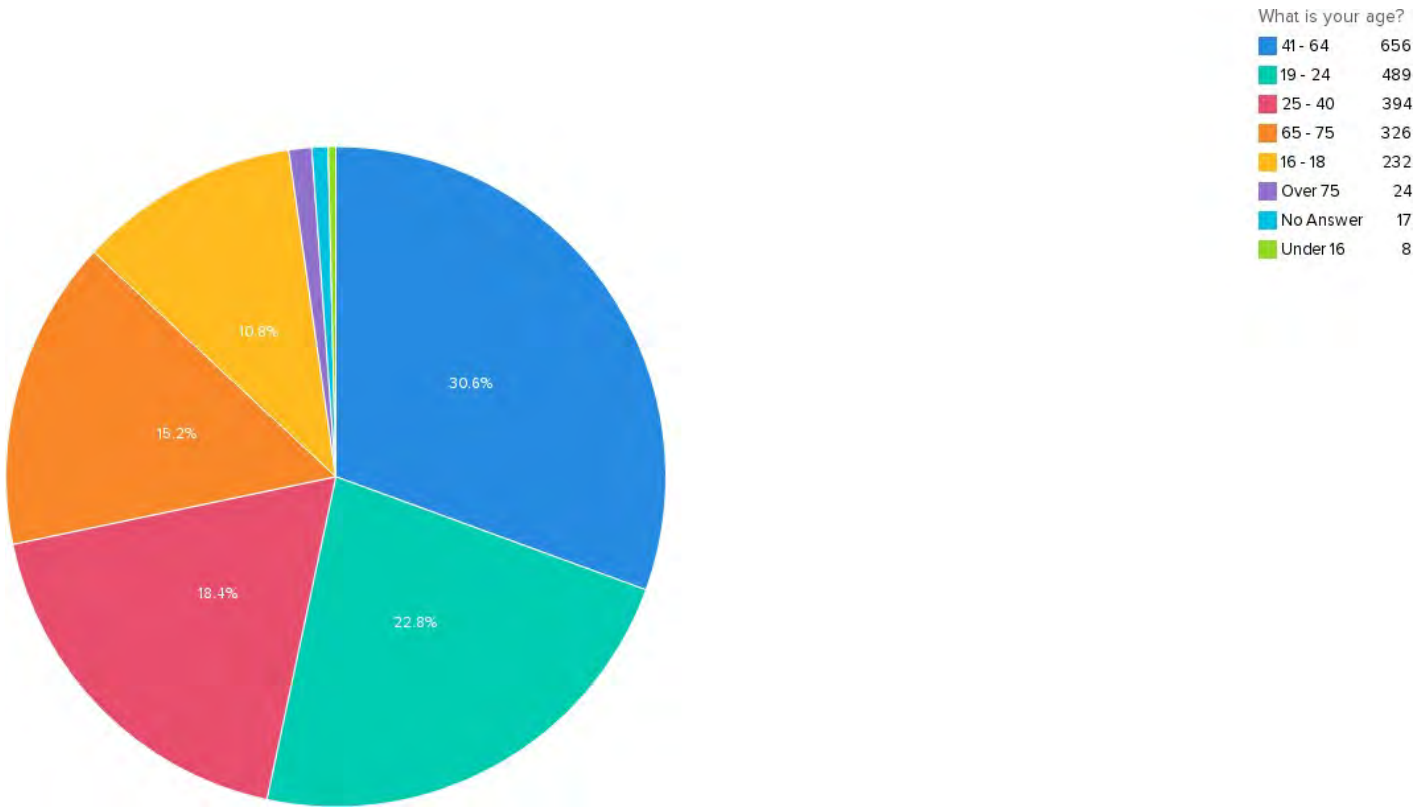
Q20_Age (Chart)



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Q21_Hispanic/Latino Descent (Table)

Agency	Route No	Yes	No	No Answer	Survey Count
BM	BM01		76		76
	BM02	2	90		92
	BM03	2	150		152
	BM05M-T	20	81		101
	BM06	3	56		59
	BM06A		52		52
	BM07	32	31		63
	BM08	5	71		76
	BM09	1	62		63
	BM09A	2	62		64
	BM11	1	55		56
	BM13	8	69		77
	BM20	4	81		85
BM		**80**	**936**		**1016**
IM	Route 1 SPI	5	5	1	11
	Route 2 SPI	7	7		14
	Route 3 LAG	4			4
	Route 4 NPI	3	5		8
IM		**19**	**17**	**1**	**37**
MA	MA01	4	49		53
	MA02	16	96		112

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Agency	Route No	Yes	No	No Answer	Survey Count
	MA03	10	81		91
	MA04	3	111		114
	MA05	6	42		48
	MA06	4	81		85
	MA07	2	47		49
	MA08	1			1
	MA09	7	70		77
MA		**53**	**577**		**630**
STC	VMGREEN	5			5
	VMPURPLE	8	1		9
	VMYELLOW	16	1	1	18
STC		**29**	**2**	**1**	**32**
UT	UTRGV Campus Connector	155	6	2	163
	UTWCB	4			4
UT		**159**	**6**	**2**	**167**
VM	VM10	4	19		23
	VM12	2			2
	VM14	2			2
	VM15	12	9	1	22
	VM16	38	4	8	50
	VM20	1	26		27

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Agency	Route No	Yes	No	No Answer	Survey Count
	VM21	2			2
	VM30	14	1		15
	VM31	6	64		70
	VM40	1	3		4
	VM41		2		2
	VM42		8		8
	VM45		11		11
	VM50	8	5		13
	VM60	2			2
	VM61	4			4
	VM62	2			2
	VMRED		5		5
VM		**98**	**157**	**9**	**264**
Grand Count		**438**	**1695**	**13**	**2146**

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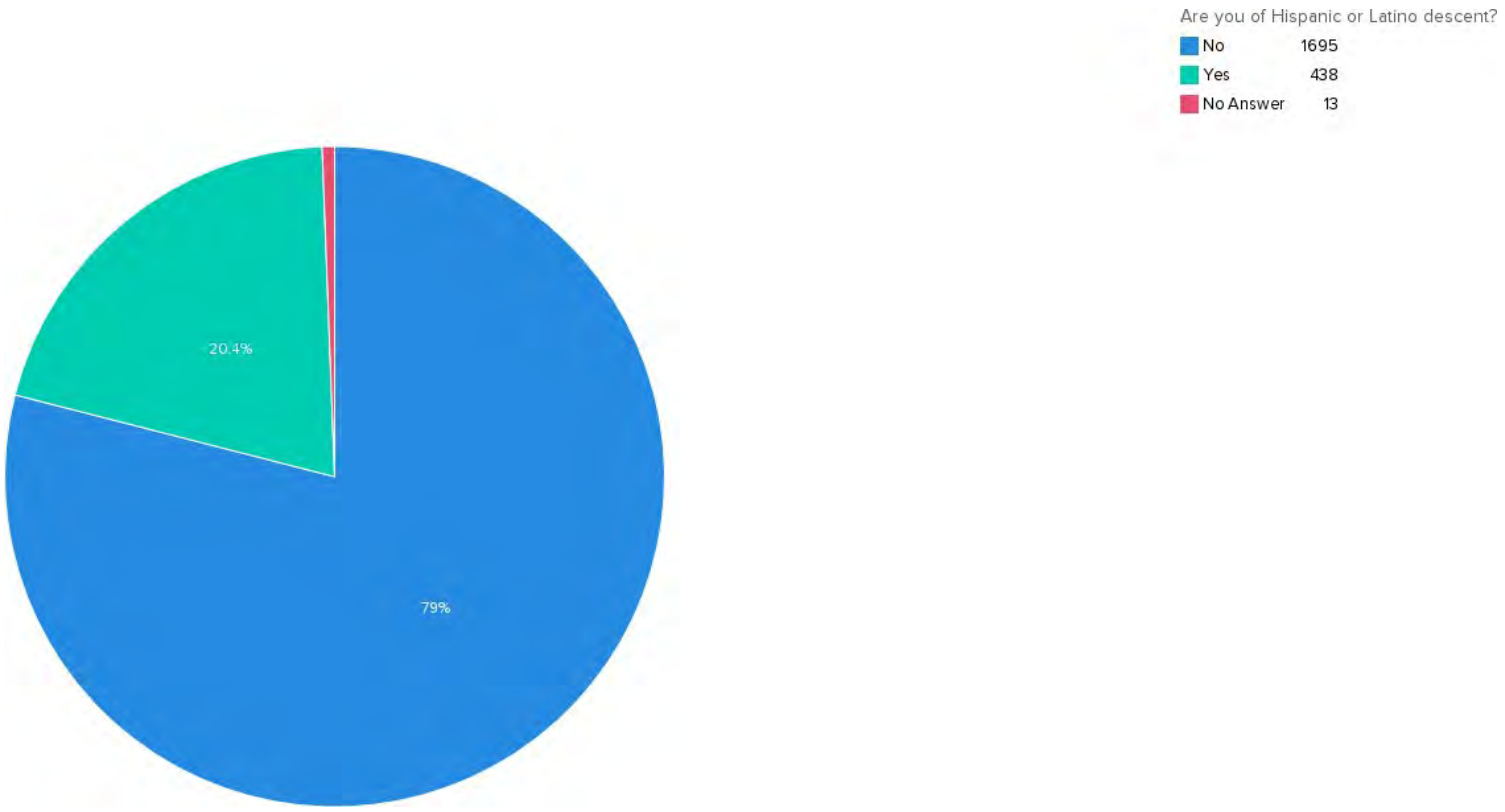
Q21_Hispanic/Latino Descent (Chart)



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Q22_Ethnic Background (Table)

Response 1	Response 2	Response 3	Survey Count
Asian			7
Black or African American			12
	Caribbean, Central or South American		1
Canadian			1
Mexican			1818
	Asian		1
	Black or African American		1
		Native Indian	1
	Caribbean, Central or South American		1
	Native Hawaiian or Pacific Islander		1
	Native Indian	Caribbean, Central or South American	1
	White/Caucasian		110
		Native Indian	4
Native Indian			1
No Answer			7
Other			5
White/Caucasian			171
	Caribbean, Central or South American		1
	Native Indian		1
	Other		1

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Q23_Gender (Table)

Agency	Route No	Male	Female	Other	No Answer	Survey Count
BM	BM01	27	49			76
	BM02	45	46		1	92
	BM03	67	85			152
	BM05M-T	42	56		3	101
	BM06	34	23	1	1	59
	BM06A	17	35			52
	BM07	29	31		3	63
	BM08	27	49			76
	BM09	38	25			63
	BM09A	37	27			64
	BM11	23	31	1	1	56
	BM13	29	47	1		77
	BM20	40	45			85
BM		**455**	**549**	**3**	**9**	**1016**
IM	Route 1 SPI	4	7			11
	Route 2 SPI	5	9			14
	Route 3 LAG	1	3			4
	Route 4 NPI	4	4			8
IM		**14**	**23**			**37**
MA	MA01	25	28			53
	MA02	48	64			112

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Agency	Route No	Male	Female	Other	No Answer	Survey Count
	MA03	32	59			91
	MA04	55	59			114
	MA05	24	24			48
	MA06	36	49			85
	MA07	12	37			49
	MA08		1			1
	MA09	42	35			77
MA		**274**	**356**			**630**
STC	VMGREEN	3	2			5
	VMPURPLE	8	1			9
	VMYELLOW	7	10		1	18
STC		**18**	**13**		**1**	**32**
UT	UTRGV Campus Connector	55	106		2	163
	UTWCB	1	2	1		4
UT		**56**	**108**	**1**	**2**	**167**
VM	VM10	10	12	1		23
	VM12	2				2
	VM14	2				2
	VM15	14	8			22
	VM16	13	37			50
	VM20	12	15			27

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Agency	Route No	Male	Female	Other	No Answer	Survey Count
	VM21	1	1			2
	VM30	7	8			15
	VM31	36	34			70
	VM40	2	2			4
	VM41	2				2
	VM42	5	3			8
	VM45	3	8			11
	VM50	10	3			13
	VM60	1	1			2
	VM61	2	2			4
	VM62		2			2
	VMRED	5				5
VM		**127**	**136**	**1**		**264**
Grand Count		**944**	**1185**	**5**	**12**	**2146**

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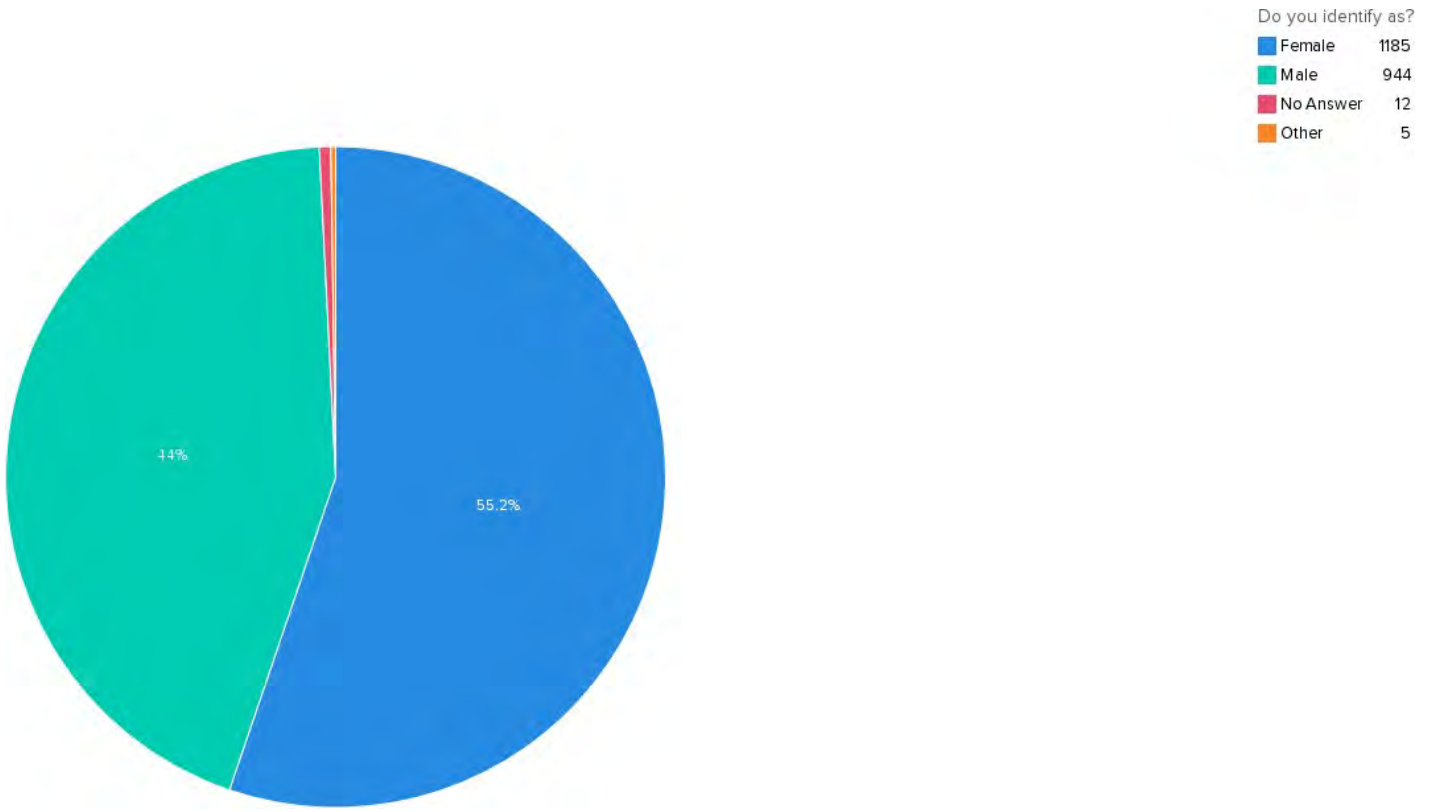
Q23_Gender (Chart)



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Q24_English-Speaking Ability (Table)

Agency	Route No	Very Well	Well	Not Well	Hardly	No Answer	Survey Count
BM	BM01	9	18		15	34	76
	BM02	15	30	1	21	25	92
	BM03	17	36	12	54	33	152
	BM05M-T	19	40	9	22	11	101
	BM06	25	12		16	6	59
	BM06A	9	3	1	4	35	52
	BM07	17	21	11	9	5	63
	BM08	12	15	4	32	13	76
	BM09	9	25		11	18	63
	BM09A	5	33		15	11	64
	BM11	15	6	4	14	17	56
	BM13	21	17		14	25	77
	BM20	12	21	11	18	23	85
BM		**185**	**277**	**53**	**245**	**256**	**1016**
IM	Route 1 SPI	8		2	1		11
	Route 2 SPI	8	3	1	2		14
	Route 3 LAG		4				4
	Route 4 NPI	6		1	1		8
IM		**22**	**7**	**4**	**4**		**37**
MA	MA01	18	4	2	14	15	53
	MA02	24	25		8	55	112

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Agency	Route No	Very Well	Well	Not Well	Hardly	No Answer	Survey Count
	MA03	25	17		11	38	91
	MA04	27	12		16	59	114
	MA05	18	13		7	10	48
	MA06	34	8		15	28	85
	MA07	14	4		5	26	49
	MA08				1		1
	MA09	59	7		2	9	77
MA		**219**	**90**	**2**	**79**	**240**	**630**
STC	VMGREEN	4	1				5
	VMPURPLE	7	2				9
	VMYELLOW	15	2			1	18
STC		**26**	**5**			**1**	**32**
UT	UTRGV Campus Connector	139	22			2	163
	UTWCB	4					4
UT		**143**	**22**			**2**	**167**
VM	VM10	9	7		3	4	23
	VM12	1	1				2
	VM14	2					2
	VM15	19		1	2		22
	VM16	43	1	1	5		50
	VM20	8	1		2	16	27

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Agency	Route No	Very Well	Well	Not Well	Hardly	No Answer	Survey Count
	VM21		1		1		2
	VM30	7	1	1	6		15
	VM31	33	9	1	6	21	70
	VM40	4					4
	VM41	2					2
	VM42	7				1	8
	VM45	5			1	5	11
	VM50	8		3	2		13
	VM60	1				1	2
	VM61	1		1	2		4
	VM62	1		1			2
	VMRED	4			1		5
VM		**155**	**21**	**9**	**31**	**48**	**264**
Grand Count		**750**	**422**	**68**	**359**	**547**	**2146**

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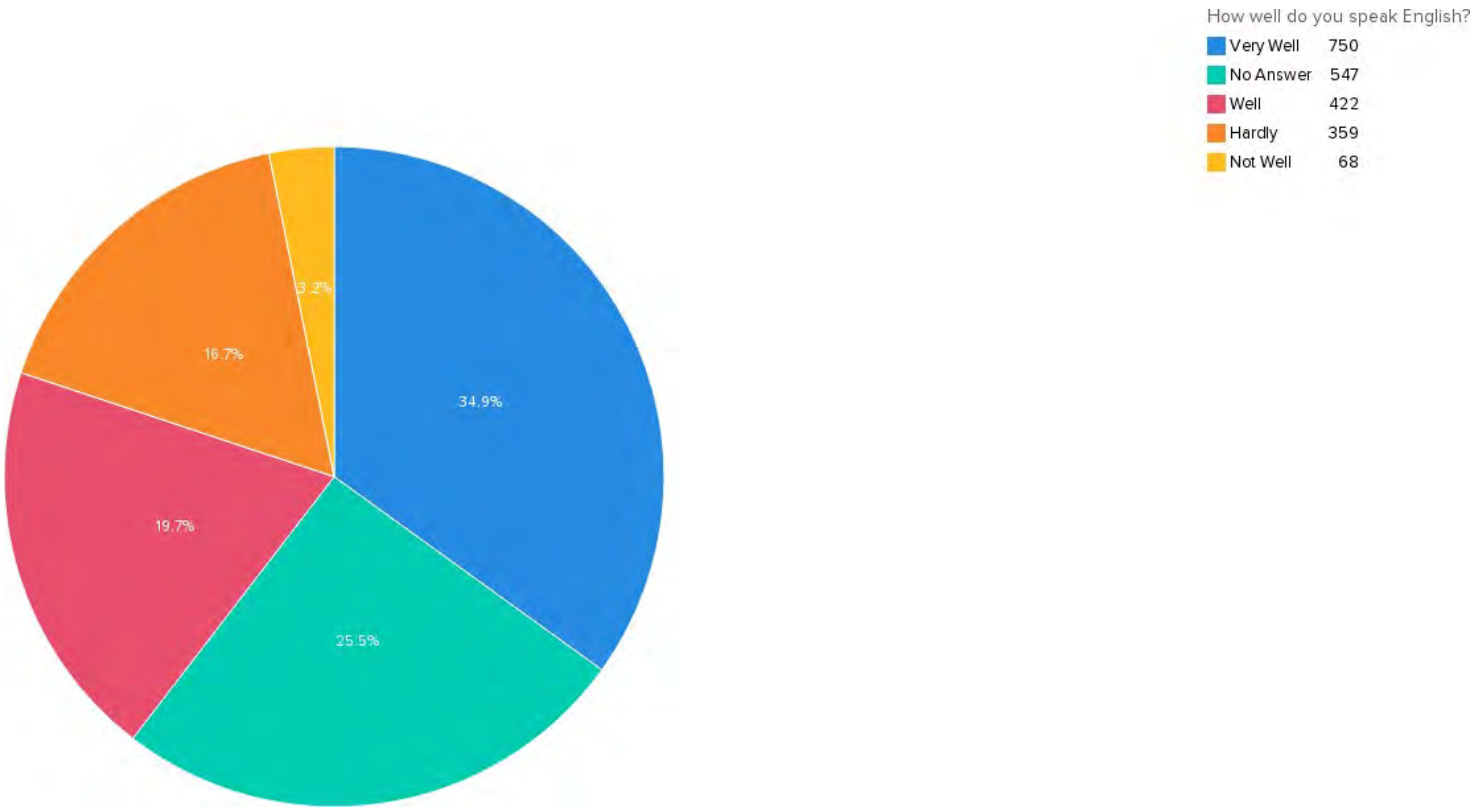
Q24_English-Speaking Ability (Chart)



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Q25_HH Language (Table)

Agency	Route No	English	Spanish	Other	Both English and Spanish.	Persian	No Answer	Survey Count
BM	BM01	3	73					76
	BM02	9	83					92
	BM03	8	144					152
	BM05M-T	8	93					101
	BM06	14	44	1				59
	BM06A	2	50					52
	BM07	8	51	1			3	63
	BM08	4	72					76
	BM09	9	54					63
	BM09A	3	61					64
	BM11	4	51				1	56
	BM13	8	68	1				77
	BM20	8	77					85
BM		**88**	**921**	**3**			**4**	**1016**
IM	Route 1 SPI	7	4					11
	Route 2 SPI	8	5	1				14
	Route 3 LAG	2	2					4
	Route 4 NPI	5	3					8
IM		**22**	**14**	**1**				**37**
MA	MA01	12	41					53

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Agency	Route No	English	Spanish	Other	Both English and Spanish.	Persian	No Answer	Survey Count
	MA02	32	79	1				112
	MA03	19	72					91
	MA04	22	91				1	114
	MA05	13	35					48
	MA06	19	65	1				85
	MA07	12	36				1	49
	MA08		1					1
	MA09	33	44					77
MA		**162**	**464**	**2**			**2**	**630**
STC	VMGREEN	2	3					5
	VMPURPLE	6	3					9
	VMYELLOW	9	8				1	18
STC		**17**	**14**				**1**	**32**
UT	UTRGV Campus Connector	78	78		4	1	2	163
	UTWCB	3	1					4
UT		**81**	**79**		**4**	**1**	**2**	**167**
VM	VM10	5	18					23
	VM12	1	1					2
	VM14	2						2
	VM15	18	3				1	22

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Agency	Route No	English	Spanish	Other	Both English and Spanish.	Persian	No Answer	Survey Count
	VM16	41	9					50
	VM20	6	21					27
	VM21		2					2
	VM30	8	7					15
	VM31	28	41				1	70
	VM40	4						4
	VM41		2					2
	VM42	4	4					8
	VM45	1	10					11
	VM50	3	10					13
	VM60	1	1					2
	VM61		4					4
	VM62		2					2
	VMRED	3	2					5
VM		**125**	**137**				**2**	**264**
Grand Count		**495**	**1629**	**6**	**4**	**1**	**11**	**2146**

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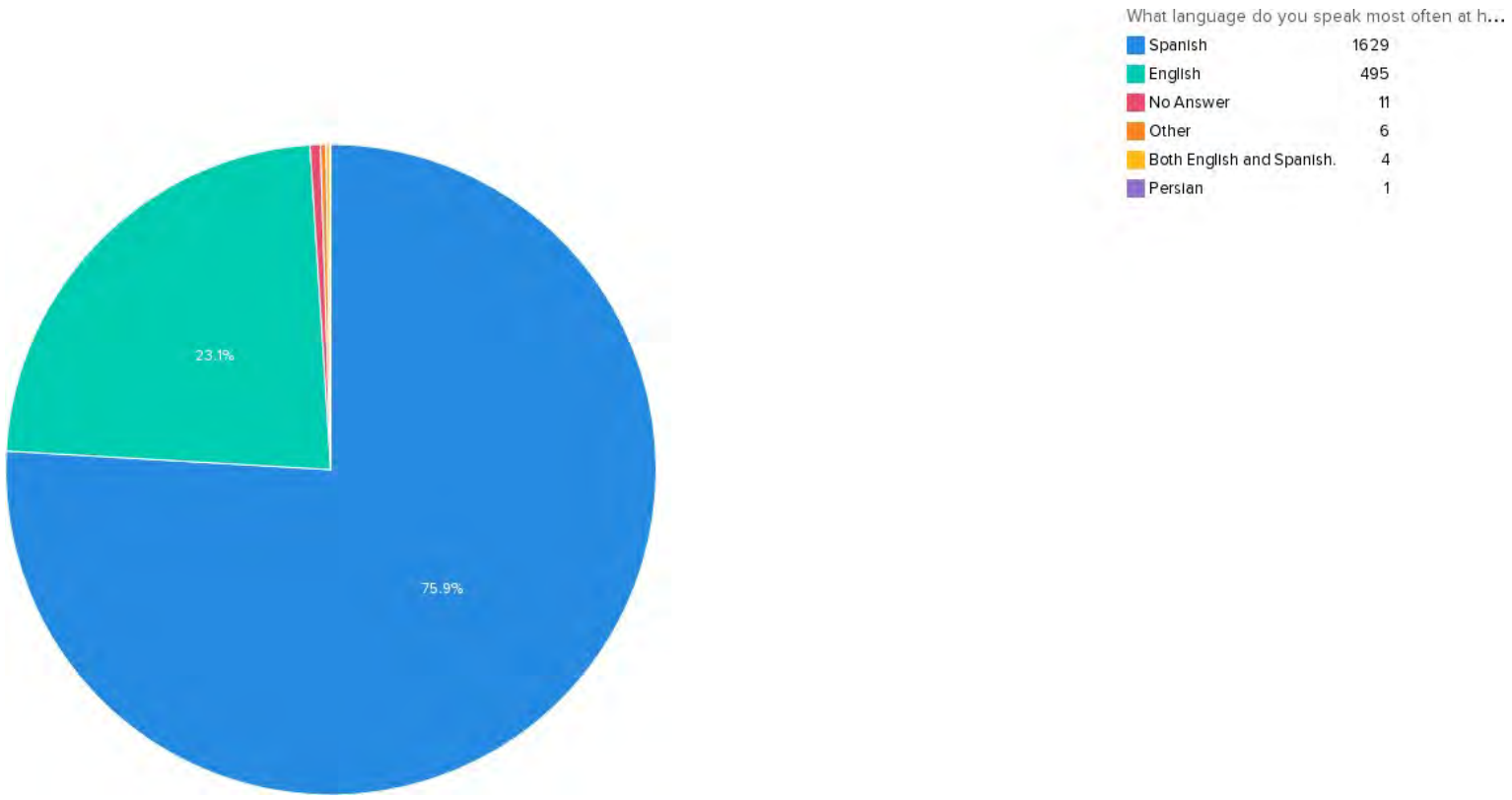
Q25_HH Language (Chart)



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Q26_HH Income (Table)

Agency	Route No	UNDER $15,000	$15,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 to $74,999	$75,000 or more	I Refuse to answer	No Answer	Survey Count
BM	BM01	24	38	6	5	3				76
	BM02	35	18	7	3				29	92
	BM03	52	69	15	3	3	1		9	152
	BM05M-T	47	30	13	4	1			6	101
	BM06	31	9	7	3	3	1		5	59
	BM06A	20	24	7	1					52
	BM07	40	11	6	3				3	63
	BM08	26	26	1	1				22	76
	BM09	22	15	4	2				20	63
	BM09A	8	1	10	3	2			40	64
	BM11	28	14	6	5	2			1	56
	BM13	50	15	5	5				2	77
	BM20	34	25	14	3	3			6	85
BM		**417**	**295**	**101**	**41**	**17**	**2**		**143**	**1016**
IM	Route 1 SPI	2	1		1	1			6	11
	Route 2 SPI	1	1			1			11	14
	Route 3 LAG	1		3						4
	Route 4 NPI			2		6				8
IM		**4**	**2**	**5**	**1**	**8**			**17**	**37**
MA	MA01	18	28	2	1				4	53

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Agency	Route No	UNDER $15,000	$15,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 to $74,999	$75,000 or more	I Refuse to answer	No Answer	Survey Count
	MA02	42	31	4					35	112
	MA03	53	24	6	1				7	91
	MA04	48	33	5	3	1	1		23	114
	MA05	3	2		3				40	48
	MA06	23	9	10	9	2			32	85
	MA07	19	14	10	5	1				49
	MA08								1	1
	MA09	24	3	19	3				28	77
MA		**230**	**144**	**56**	**25**	**4**	**1**		**170**	**630**
STC	VMGREEN			1	4					5
	VMPURPLE	1	1	1				6		9
	VMYELLOW	4	4	1	1	1	1	5	1	18
STC		**5**	**5**	**3**	**5**	**1**	**1**	**11**	**1**	**32**
UT	UTRGV Campus Connector	39	25	8	14	18	19	38	2	163
	UTWCB	1		1			1		1	4
UT		**40**	**25**	**9**	**14**	**18**	**20**	**38**	**3**	**167**
VM	VM10	6	13			1			3	23
	VM12								2	2
	VM14	1	1							2
	VM15	7	3	7	5					22

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Agency	Route No	UNDER $15,000	$15,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 to $74,999	$75,000 or more	I Refuse to answer	No Answer	Survey Count
	VM16	1	6	4	13	23	3			50
	VM20	7	6	9	1				4	27
	VM21	1		1						2
	VM30	5	4	6						15
	VM31	31	20	15	2				2	70
	VM40	2			1				1	4
	VM41	1							1	2
	VM42	2	6							8
	VM45	7	2		1				1	11
	VM50	12	1							13
	VM60		2							2
	VM61	4								4
	VM62	1	1							2
	VMRED	5								5
VM		**93**	**65**	**42**	**23**	**24**	**3**		**14**	**264**
Grand Count		**789**	**536**	**216**	**109**	**72**	**27**	**49**	**348**	**2146**

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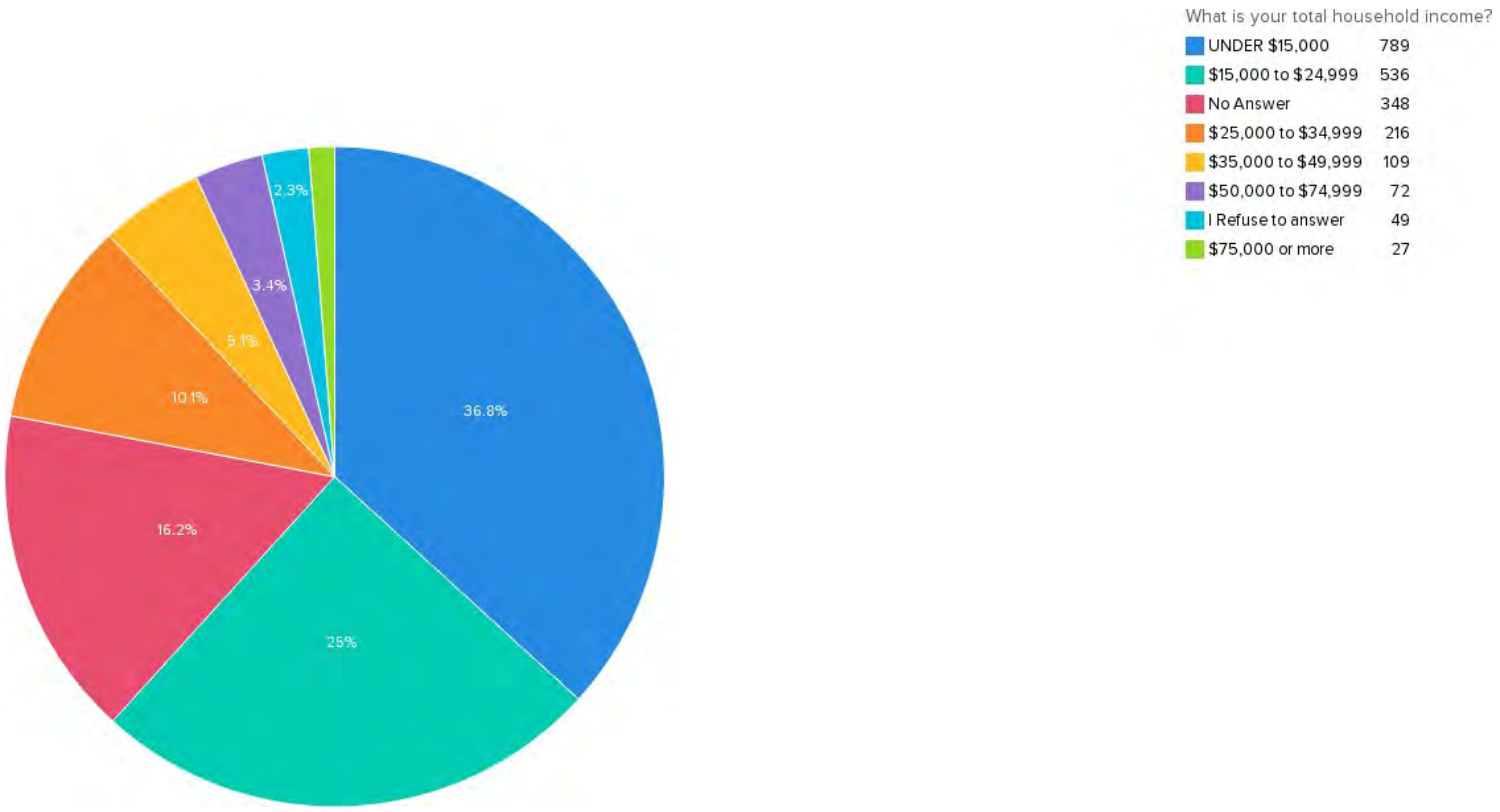
Q26_HH Income (Chart)



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Q27_Area Visitor (Table)

Agency	Route No	No	Yes	No Answer	Survey Count
BM	BM01	65	8	3	76
	BM02	48	43	1	92
	BM03	135	16	1	152
	BM05M-T	73	27	1	101
	BM06	48	10	1	59
	BM06A	39	13		52
	BM07	56	6	1	63
	BM08	63	13		76
	BM09	48	15		63
	BM09A	41	23		64
	BM11	42	14		56
	BM13	59	18		77
	BM20	61	23	1	85
BM		**778**	**229**	**9**	**1016**
IM	Route 1 SPI	1	10		11
	Route 2 SPI	7	7		14
	Route 3 LAG	4			4
	Route 4 NPI	3	5		8
IM		**15**	**22**		**37**
MA	MA01	48	5		53
	MA02	97	11	4	112

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Agency	Route No	No	Yes	No Answer	Survey Count
	MA03	75	13	3	91
	MA04	82	32		114
	MA05	45	3		48
	MA06	70	15		85
	MA07	48	1		49
	MA08		1		1
	MA09	75	2		77
MA		**540**	**83**	**7**	**630**
STC	VMGREEN	5			5
	VMPURPLE	7	2		9
	VMYELLOW	15	2	1	18
STC		**27**	**4**	**1**	**32**
UT	UTRGV Campus Connector	145	16	2	163
	UTWCB	4			4
UT		**149**	**16**	**2**	**167**
VM	VM10	21	1	1	23
	VM12	2			2
	VM14	2			2
	VM15	22			22
	VM16	49	1		50
	VM20	25	2		27

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Agency	Route No	No	Yes	No Answer	Survey Count
	VM21	2			2
	VM30	9	4	2	15
	VM31	61	8	1	70
	VM40	4			4
	VM41	1	1		2
	VM42	8			8
	VM45	8	3		11
	VM50	12	1		13
	VM60	2			2
	VM61	4			4
	VM62	2			2
	VMRED	5			5
VM		**239**	**21**	**4**	**264**
Grand Count		**1748**	**375**	**23**	**2146**

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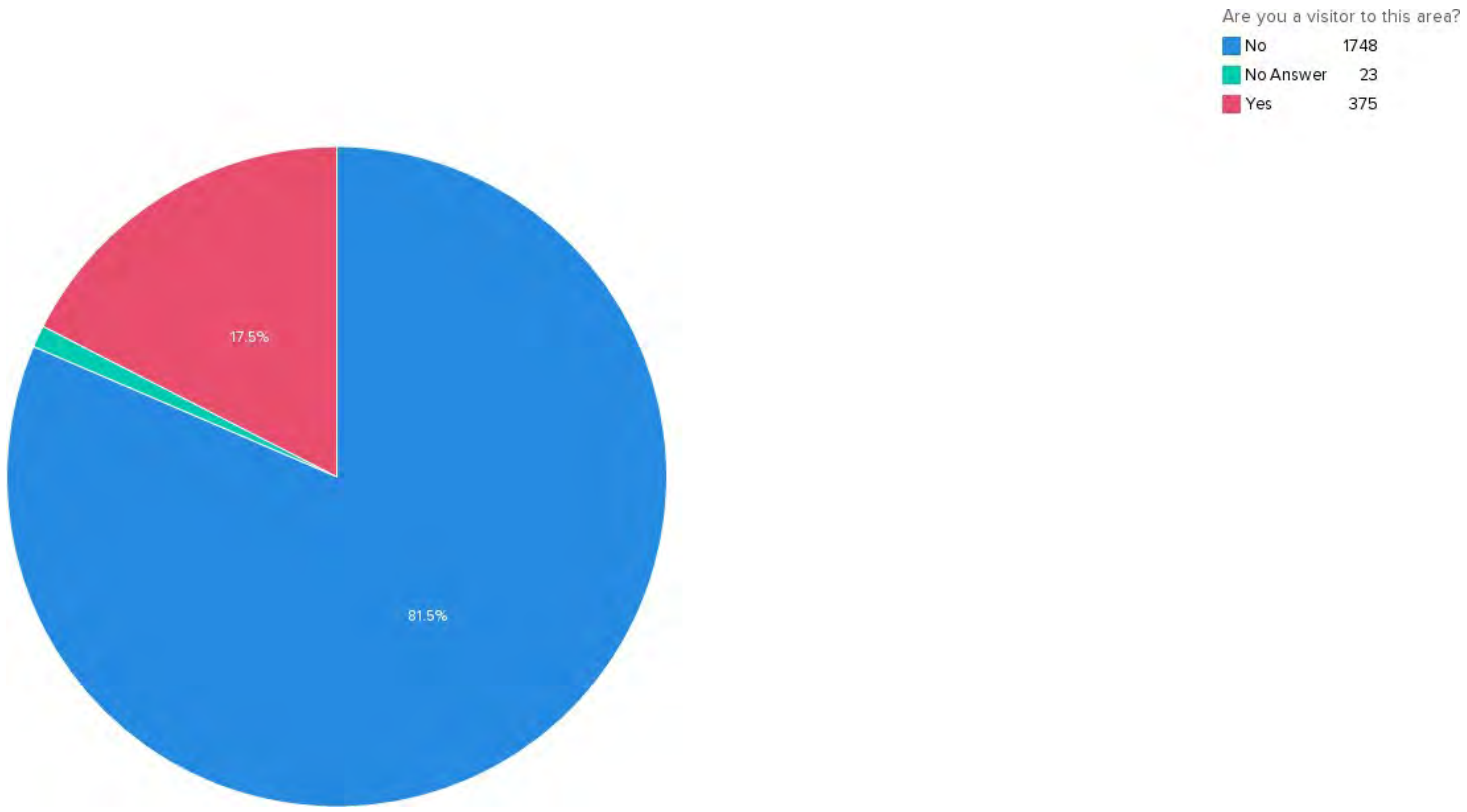
Q27_Area Visitor (Chart)



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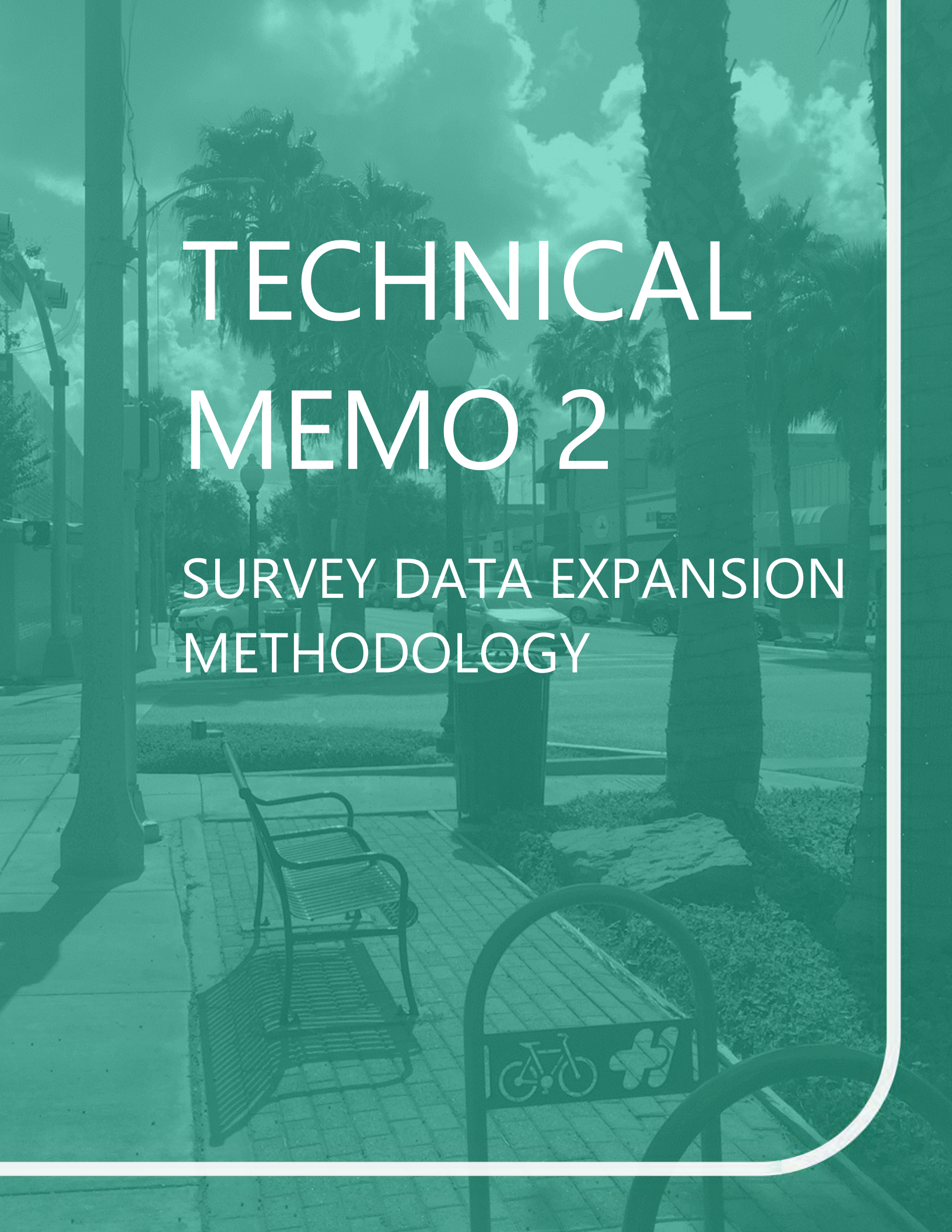


TECHNICAL MEMO 2

SURVEY DATA EXPANSION METHODOLOGY

METHODOLOGY OVERVIEW

The following process was used to develop weighting factors to expand transit on-board survey responses collected by Dikita to the total transit ridership in the Rio Grande Valley region. In order to correctly represent the total trips taken in the study area, two types of expansion processes were conducted.

- The unlinked trip expansion process was used to expand the completed surveys to the actual number of boardings in the region
- The linked trip expansion process was used to adjust the total number of boardings to one-way trips to account for transfers

Unlinked Trip Expansion

On-board survey records can be expanded based on route, time of day, and direction. In this case, there were not enough responses to summarize results based on time of day in a way that would produce significant results for individual routes. For the routes with very high volumes, the expansion factors were further developed by boarding locations. Specifically, the unlinked trip expansion factor for these routes was developed through the following steps:

1. Routes were segmented based on observed distribution of boarding and alighting using the collected boarding and alighting counts
2. The total number of boardings was estimated for each segment
3. Expansion factors were calculated by dividing total boarding on each segment of the route by the number of completed surveys for the segment

For low volume bus routes, the expansion factor was calculated by dividing number of boardings by the number of completed surveys in each direction of a route.

Linked Trip Expansion

The linked trip expansion factor is used to account for the impact of transfers on the total number of boardings. The expansion factor is inversely proportional to the number of transfers.

Available Data

- Origin and Destination Survey produced by Dikita including 2,146 valid results (71%).
- Boarding counts from February 2019 - 2020 for Valley Metro routes, UTRGV and STC routes, Metro McAllen routes, B Metro routes, and Island Metro routes.

EXPANSION PROCEDURE

The project team did not have the boarding and alighting distribution data, so the survey was expanded based on number of boardings. The following procedures were used to expand the origin and destination survey to ridership estimates.

Re-Organize and Process Boarding and Alighting Data

Survey data included the origins and destinations of trips, as well as the approximate location of boarding and alighting. This data was then assigned to route segments to produce ridership estimates by location on the route, as boarding and alighting data was not available by stop for all transit providers in the region.

1. Manually assign segments for each route by splitting each route into major segments and combining some smaller or non-fixed stops together to make a few major segments of the route for both inbound and outbound. These segments are in sequential order.
    a. Identify major stops, direction changes, land use changes, major roadways, distance, deviations, and professional judgement to segment routes.
    b. Apply segment ID format:
        i. X-XX-X-XX
        ii. "System Number" – "Route Number" – "Direction" – "Segment"
        iii. System Number is maintained as provided by Dikita report
        iv. Route ID should match Route Number
        v. Assign Direction ID using 1 for Outbound or 2 for Inbound
        vi. Segment Number:
            1. Start at the beginning of the route Outbound
            2. Count up in increments of five: 0, 5, 10, 15, 20, etc.
            3. Inbound starts around halfway on a loop or at the "turn around" point of the route
            4. On the switch to Inbound, start back at 0 and count up again by fives.
        vii. Example:
            1. Segment ID = 1001101
            2. System ID = 1 = 1 Metro McAllen
            3. Route ID = 1 = 1 Route 1
            4. Direction ID = 1 = 1 Outbound
            5. Segment Number = 0 = First segment on the Route
2. Associate segment information with the boarding and alighting data records.
    a. Based on each record's boarding location and alighting location, assign the appropriate segment ID.
3. For the same route, aggregate the boarding and alighting data by segment which gives the boarding and alighting distribution among segments and route.
4. Calculate total boarding per segment by route and total alighting per segment by route.
5. Calculate percent of total boarding per segment by route and percent of total alighting per segment by route.
6. Calculate total activity, or boarding and alighting combined, for each segment for an overview of ridership activity for maps.

Example

Major raw boarding and alighting info is found in Table 1. Note that a different trip for the same route has different Stop ID, which needs to be aggregated using common Segment ID later on.

Table T2-1: Raw Boarding/Alighting Info

Route	Stop ID	Bus On	Bus Off	Time

The above raw data (Table 1) can be transformed to Table 2:

Table T2-2: Boarding/Alighting Data Transformation

Route	Segment ID	Aggregated Bus on	Aggregated Bus off	Total Activity	Time Period	% of on to total boarding of this route	% of off to total alighting of this route

Calculate Ridership Expansion Target

1. Find the total ridership by route (Table 3).
2. Apply percent of total boarding per segment by route to total ridership by route to get the target boarding by segment by route (Table 4).

Table T2-3: Raw Ridership Data

Route	Avg Daily Ridership

Table T2-4: Target Ridership Data

Route	Off Segment ID	On Ridership Target	Time Period

Route	Off Segment ID	On Ridership Target	Time Period

Reorganize Survey Data

The Boarding Stop ID and Alighting Stop ID in the survey data are different from the Stop ID in the boarding and alighting survey data.

1. Assign boarding Segment ID and alighting Segment ID for the survey Boarding Stop ID and Alighting Stop ID, respectively. The Segment ID needs to be consistent with the Segment ID used in the target ridership data and the boarding and alighting data.
2. Count the number of surveys conducted for the segment pair of the route.
3. Using the On Ridership Target expansion value from the Table 4, divide the On Ridership Target by the number of surveys for each route segment to derive the expansion factor.
4. Assign the expansion factor to each survey record (Table 10) for same segment on/off pairs.
5. Summarize the expansion factors by route and segment pair from Table 10 to get the final ridership by route and segment pair.

Table T2-5: Raw Survey Data

Survey ID	route	Boarding Stop ID	Alighting Stop ID	Time

Table T2-6: Raw Survey Data with Segment_ID

Survey ID	Route	Boarding Stop ID	Alighting Stop ID	Time Period	On Segment ID	Off Segment ID

After the conversion, aggregate survey records.

Table T2-7: Aggregate Survey Records

Route	On Segment ID	Off Segment ID	Number of Surveys	Time Period

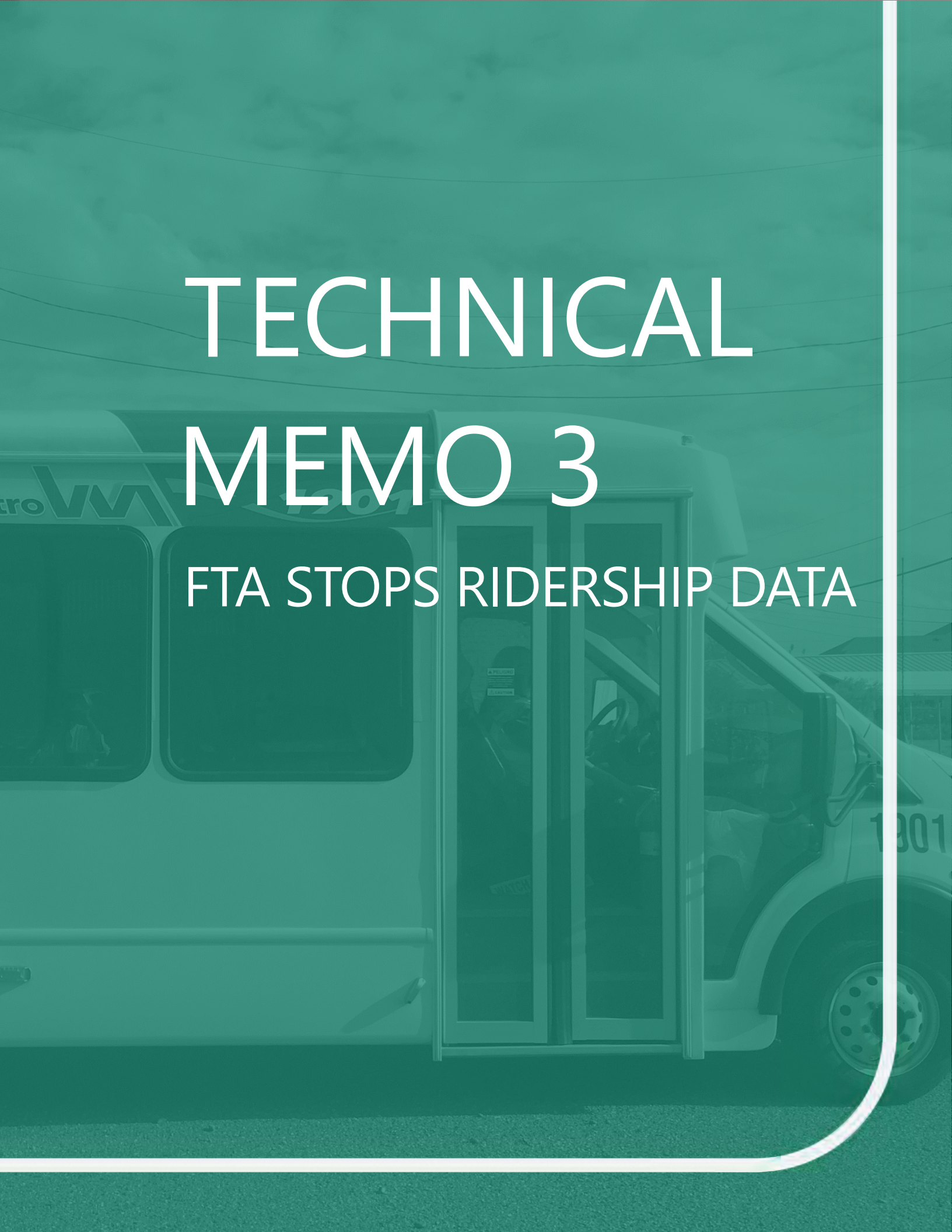
After calculate expansion factor, the results are as shown below:

Table T2-8: Calculate Expansion Factors

Route	On Segment ID	Off Segment ID	Expansion Factor	Time Period

Table T2-9: Append Segment Expansion Factors to Back to Stops

Route	Boarding Stop ID	Alighting Stop ID	Expansion Factor	Time Period



TECHNICAL MEMO 3

FTA STOPS RIDERSHIP DATA

INTRODUCTION

The Federal Transit Authority (FTA) Simplified Trips-On-Project Software, otherwise referred to as STOPS, is a ridership model created by FTA to evaluate new transit projects. STOPS is a sketch planning tool that is similar to a conventional four-step travel demand model that evaluates travel markets based on zone-level socio-economic characteristics. The STOPS model uses actual ridership experience from fixed guideway transit projects across the United States including bus rapid transit (BRT), light rail transit (LRT), commuter rail and streetcar modes to inform forecast results. STOPS uses available census data, transit ridership and schedules, origin and destination survey data, and demographic growth forecasts to produce forecasts of transit ridership. The Rio Grande Valley (RGV) STOPS model was run in incremental mode for this effort, which uses more detailed transit travel information to match to the original Transit Origin-Destination (OD) Survey for calibration. The RGV STOPS model also uses Census Transportation Planning Products (CTPP) Journey-to-Work (JTW) data to inform non-transit travel behavior.

Data Inputs

Data inputs for the STOPS model include transit operational characteristics for modeled bus routes, existing ridership estimates, and demographic information. Using standardized data inputs such as the Census Transportation Planning Products (CTPP) Journey-to-Work (JTW) and General Transit Feed Specification (GTFS) data means that STOPS has consistent information across all metro areas regarding regional travel patterns and transit services. The following section defines the data inputs used in the STOPS model for RGV.

Census Data

The STOPS model uses CTPP JTW data from the 2006-2010 American Community Survey (ACS) that provides worker flows as well as the share of transit trips. STOPS also uses 2010 census data to inform the model about the built environment, density, and the pedestrian environment throughout the study area. The CTPP data is available for download from the FTA website organized by state. STOPS uses this demographic data from Cameron and Hidalgo Counties to understand existing development and to assist in growth projections in the region.

GTFS

GTFS data was created by the project team using existing and recommended route alignments, bus schedules, and estimated stops using Remix™, a sketch planning software. The project team compiled routes, stops, and schedules, into Remix™ for Valley Metro and the other five regional transit agencies in RGV to create GTFS inputs for the STOPS model. Valley Metro operates a largely deviated fixed route system, which means that riders can go to a designated stop or timepoint for pick-up or they can request a pick-up within ¾ mile of a route. However, STOPS does not currently have a way to simulate this type of service. Therefore, stops were estimated along deviated fixed routes about every ¼ to ½ mile to simulate stops for the model. While Valley Metro typically does not make this many stops along these routes with this close of spacing, this step was helpful in determining the potential locations for pickup in modeling the service and access locations. Also, the Micro transit recommendations were not included in the model due to the limitations of the software to forecast on-demand services.

Ridership

The STOPS model can be calibrated based on average daily boarding counts at the route- or station-level. As station-level data was not available for all the transit agencies in the RGV, the STOPS ridership forecasting effort for RGV was enhanced through using existing route average daily boardings for all six (6) transit providers in the RGVMAB for February 2019 – February 2020. The STOPS model was run in Incremental Mode, which is informed by the detailed location data collected in the Transit OD Survey in February 2020. Therefore, using existing ridership is an optional calibration step which can improve the results of the ridership forecasts.

Origin and Destination Survey

Dikita Management Services provided survey administration services as a subcontractor to Alliance Transportation Group in order to complete the Transit OD Survey between February 17 and March 12, 2020. This survey was processed to produce zone-to-attraction zone transit linked trips to inform the STOPS model about the detailed transit travel patterns in the region. This survey also provided insight into the trip purpose and household automobile ownership of transit riders to inform the STOPS model.

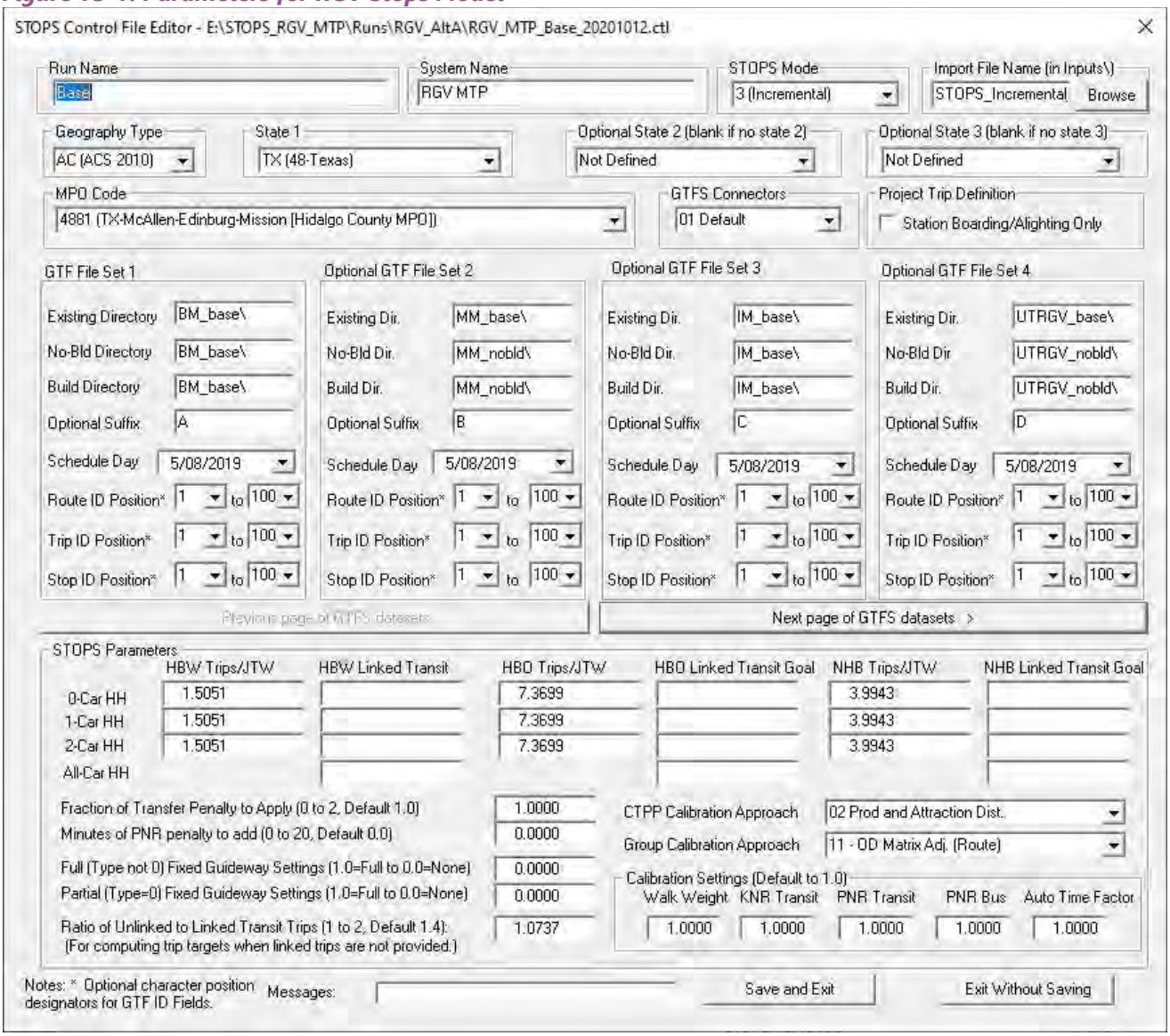
RGV MPO Travel Demand Model Data

The local RGV Travel Demand Model (TDM) informed the STOPS model through the use of zonal socio-economic forecasts and zone-to-zone peak period automobile travel time (minutes) and distance (miles) matrices. The zonal socio-economic forecasts provide an estimation of the total population and employment in 2019 and 2045 scenario years to be input into the STOPS model to assist in the estimation of future ridership. The zone-to-zone peak period automobile travel time and distance matrices communicate the total, optimal time or distance it takes to travel between zone pairs throughout the RGV TDM during the congested peak period. These matrices assist in determining the likelihood that a traveler may opt to use a transit service as part of their travel route.

Model Calibration

Before running the STOPS model, several parameters must be determined to ensure the model will provide the best possible results given the available data. The option exists to use default STOPS model parameters, but parameters estimated based on locally available information assists in calibrating the STOPS model to better reflect the travel characteristics of the RGV region. STOPS model parameters were primarily estimated using the RGV TDM, which was developed as the product of local travel surveys for the RGV region, and the 2020 Transit OD Survey. Multiple iterations of the STOPS model were tested as part of calibration to achieve a ridership estimation that closely related to the collected average daily route boarding counts for the RGV transit services. Figure 1 shows the parameters used for the RGV STOPS model.

Figure T3-1: Parameters for RGV Stops Model



Assumptions

The STOPS model was used to first establish the baseline in order to compare the incremental effects of the transit investments detailed in Chapter 3 Recommendations and Alternatives. It was also important to evaluate the potential ridership results in conjunction with the other 5 transit providers in the region to evaluate the systemwide effects of each scenario. An Existing system model was run for the base year, 2019 and was calibrated to represent the current transit system, ridership, and demographics. This was a crucial step in calibrating the STOPS model to ensure that it would be able to produce reasonable future ridership forecasts. The route assumptions for the existing baseline are in Table 1.

Table T3-1: Existing 2019 Run Assumptions

Systems	Routes
Valley Metro	Red Line, 10, 12, 15, 16, 20, 21, 30, 31, 32, 40, 41, 42, 43, 44, 45, 50, 60, 61, 62
Metro McAllen	1, 2, 3, 4, 5, 6, 7, 8, 9
UTRGV Transit	Campus Connector, Brownsville-Weslaco Connector, Edinburg-Weslaco Connector, EVABL, McAllen-Edinburg Connector, Rio Grande City Connector, VOLT: Blue, Green, Orange, Pink, Yellow
STC Transit	Green Line, Purple Line, Yellow Line
Brownsville Metro	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 14, 20, 30
Island Metro	1 & 2, 3, 4

Next, a No-Build 2045 scenario was run based on the full implementation of Phase 3 assumptions for both Alternatives A and B. The existing service assumptions use transit route alignments and schedules for RGV transit services from early 2020, see Table 2. No alterations were made to consider service reductions during the COVID-19 pandemic. In the 2045 alternatives, UTRGV and STC routes that had similar service to the proposed Valley Metro routes were excluded from the model as coordination is expected with these agencies as to who would ultimately run the services to reduce service duplication. Metro McAllen's Locally Preferred Alternative (LPA), as defined in their Short-Range Transit Plan, completed in 2019 was used for the future alternatives. Brownsville Metro and Island Metro services were maintained the same as their existing services for future alternatives. As mentioned in the GTFS section above, it is important to note that the STOPS model is currently not able to model on-demand bus services such as Micro transit; therefore, these routes were not included in the forecasted ridership.

Table T3-2: STOPS GTFS Assumptions

Alternative	Systems	Routes
No Build Alt A 2045	Valley Metro	100, 101, 104, 107, 108, 109, 111, 131, 136, 150, 151, 130, 132, 133, 134, 135, 161, 162, 163, 120, 121, 160, 170
	Metro McAllen	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
	UTRGV Transit	McAllen-Edinburg Connector, VOLT: Blue, Green, Orange, Pink, Yellow
	STC Transit	Yellow Line
	Brownsville Metro	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 14, 20, 30
	Island Metro	1 & 2, 3, 4
No Build Alt B 2045	Valley Metro	100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 111, 131, 136, 150, 151, 130, 132, 133N, 133S, 134, 135, 161, 162, 163, 120, 121, 160N, 160S, 170
	Metro McAllen	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
	UTRGV Transit	McAllen-Edinburg Connector, VOLT: Blue, Green, Orange, Pink, Yellow
	STC Transit	Yellow Line
	Brownsville Metro	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 14, 20, 30
	Island Metro	1 & 2, 3, 4

Route Groups

In order to understand the results and how they differ in the RGV region, it is important to review the results at a route or route group level. As discussed in Chapter 4 Implementation Plan, some routes are more easily understood when reviewed as a group of routes rather than how they function as individual routes. The route groups include:

- **Regional Core**: The core group of regional routes which connect major cities and services and rely on well-timed transfers and major transit connections in the region.
- **Harlingen**: The local transit service for the City of Harlingen.
- **Edinburg**: The major regional routes in Edinburg that require coordination of both express and local services.
- **Weslaco**: The regional urban routes that function in and out of the Weslaco Transit Center and require coordination in implementation with schedules for transfers.
- **Rio Grande City**: The local transit service for the Rio Grande City.
- **Micro transit**: Routes, or sections taken from existing routes that are recommended for operation as on-demand micro transit service, when available.

It is important to note that the STOPS model is currently not able to model on-demand bus services such as Micro transit, therefore these routes were not modeled to forecast ridership. These groups were not inputs used in the STOPS model; however, they are a tool that is helpful for understanding the results of the ridership forecast.

Ridership Results

The STOPS System Ridership Results for the Existing 2019, Alternative A 2045, and Alternative B 2045 can be found in Table 3. For Alternative A, it can be expected that ridership might increase 67% in the RGV in comparison to Existing 2019 ridership. For Alternative B, there was a slightly larger increase in comparison to existing, at 83%. All STOPS ridership results were rounded to the nearest ten where applicable.

There are a few considerations when making comparisons for different transit agencies within the RGV. Metro McAllen might be expected to experience an increase of 72% in ridership for either alternative with the implementation of their LPA and Valley Metro service improvements by 2045. Brownsville Metro might expect an increase of 45% for either alternative. Island Metro can be expected to have a significant increase as much as 143% - 148% with the implementation of these service alternatives.

Table T3-3: RGV System Ridership Results

	Existing 2019	Alternative A 2045	Alternative B 2045
Valley Metro	2,210	6,580	8,610
UTRGV Transit	1,060	40	40
STC Transit	590	250	220
Metro McAllen	3,320	5,710	5,720
Brownsville Metro	5,140	7,450	7,450
Island Metro	650	1,580	1,610
Total	**12,950**	**21,610**	**23,650**

Valley Metro coordination of route services will be required with UTRGV and STC as some route recommendations can be run by any of these agencies, so the ridership changes for these services should be reviewed as the impact experienced to all three agencies. As shown in Table 4, the combined ridership for Valley Metro, UTRGV, and STC in 2019 was 3,860. For Alt A 2045, the total ridership increased 78% to 6,870 riders, while in Alt B, it increased 130% to 8,870 riders.

Table T3-4: Valley Metro Ridership Results

	Existing 2019	Alternative A 2045	Alternative B 2045
Valley Metro	2,210	6,580	8,610
UTRGV Transit	1,060	40	40
STC Transit	590	250	220
Total	**3,860**	**6,870**	**8,870**

Alternative A

For Alternative A, which is described in detail in Chapter 3 Recommendations and Alternatives, there are some noticeable improvements in ridership in the STOPS Results with the implementation of this alternative for the Valley Metro System. Table 5 shows the Valley Metro route and route groups ranked in the order of the prioritization results for Alternative A (Refer to Chapter 4 Implementation Plan) and displays the projected ridership from STOPS. With the implementation of a coordinated UTRGV Connector service, i.e. Metro Express 109, it can be expected that ridership on this route would increase 93% by 2045. Also, creating a simplified and closely coordinated regional core of express services connecting the region from west to east can expect an increase in ridership of 133% by 2045.

Although most routes and route groups show a notable increase for Alternative A by 2045, there are a few decreases and oddities to note. First, the Harlingen route group appears to decrease; however, some of the local coverage, i.e. Valley Baptist Medical Center, will be covered by Route 111 in the future as opposed to a Harlingen specific route. Therefore, the minor decrease in ridership might be accounted for with this redistribution of service. In both the existing and future alternatives, the Rio Grande City route group contains routes that are outside the RGVMAB, and there are no recommended changes to these routes. The model does not show ridership on these routes, although today there are around 43 daily riders. There will likely continue to be demand for these local services.

Another observation is that routes that have shared stops or services that compete to receive riders from the same locations are difficult to model. The model seems to be unable to determine if a rider will prefer one bus route over another, likely because STOPS is a tool better fit to estimate a project with a fixed guideway. For instance, Metro Express 108, which is a direct service between Brownsville and McAllen, has shared stops with Metro Express 101. Metro Express 108 would be a high-quality service option for riders and the travel patterns from the Origin and Destination survey show that 11% of trips in the region are between these two cities. However, the model does not allocate many riders to this route, likely because it appears to be a competing service with Metro Express 101. This is a great example that illustrates why these ridership forecasts should be considered in conjunction with other important measures such as propensity for transit (population and employment density) and target transit riders, as seen with the prioritization in Chapter 4.

Table T3-5: Alternative A Valley Metro Route and Route Group Ridership Results

Recommended Route or Route Group	Previous Route or Routes	Avg Daily Riders 2019	Avg Daily Riders 2045
Metro Express 109	UTRGV Campus Connector	840	1,620
Regional Core: 100, 101, 104	Red Line, Route 50, Route 60, STC Green Line	840	1,960
Metro Express 108	none	-	3
Edinburg: 107, 132, 133	Route 10, Route 15, Route 30	270	440
Weslaco: 136, 150, 151	Route 12, Route 32	50	470
Route 111	Route 31	270	1,150
Route 134	Route 16	340	190
Route 130	Route 20	110	160
Route 131	none	-	390
Route 135	none	-	10
Rio Grande City: 120, 121	Route 61, Route 62	0	0
Route 170	Route 45	210	30
Micro transit: 190, 191, 192, 193, 194	Route 21, Route 43	2	-
Harlingen: 160, 161, 162, 163	Route 40, Route 41, Route 42, Route 44	200	160
Total		**3,120**	**6,580**

Alternative B

For Alternative B, which is described in detail in Chapter 3 Recommendations and Alternatives, there are expected increases in ridership when compared to existing and in comparison to Alternative A. Table 6 shows the Valley Metro route and route groups ranked in the order of the prioritization results for Alternative B (Refer to Chapter 4 Implementation Plan) and displays the projected ridership from STOPS. With the implementation of a coordinated UTRGV Connector service, i.e. Metro Express 109, it can be expected that ridership on this route would increase 90% by 2045. Also, creating a simplified and closely coordinated regional core of express services connecting the region from west to east can expect an increase in ridership of 371% by 2045. Similar to Alternative A, there are some oddities when considering STOPS ridership forecasting for individual bus routes that should be kept in mind when reviewing route-level ridership statistics. This demonstrates the importance of considering other measures, i.e. propensity for transit and target transit riders, when prioritizing and reviewing the performance of specific bus routes.

Table T3-6: Alternative B Valley Metro Route and Route Group Ridership Results

Recommended Route or Route Group	Previous Route or Routes	Avg Daily Riders 2019	Avg Daily Riders 2045
Metro Express 109	UTRGV Campus Connector	840	1,600
Regional Core: 100, 101, 102, 103, 104	Red Line, Route 50, Route 60, STC Green Line	840	3,960
Metro Express 105	none	-	130
Metro Express 108	none	-	3
Edinburg: 107, 132, 133N, 133S	Route 10, Route 15, Route 30	270	650
Route 134	Route 16	340	370
Route 111	Route 31	270	480
Weslaco: 136, 150, 151	Route 12, Route 32	50	450
Route 131	none	-	420
Route 130	Route 20	110	160
Harlingen: 160N, 160S, 161, 162, 163	Route 40, Route 41, Route 42, Route 44	200	280
Route 135	none	-	10
Rio Grande City: 120, 121	Route 61, Route 62	0	0
Route 170	Route 45	210	30
Micro transit: 190, 191, 192, 193, 194	Route 21, Route 43	2	-
Metro Express 106	none	-	90
Total		**3,120**	**8,610**

Travel Time Savings

One of the most significant improvements that can be realized from the implementation of either alternative a or b for transit riders in the RGVMAB is the travel time savings. Travel time savings can be thought of as the difference in time it would take to travel via transit between the alternatives and the existing transit service. The figures in this technical memo show the significant travel time savings to various key locations (McAllen CBD, Harlingen CBD, and Brownsville CBD) from all the surrounding TAZs in the service area. You may notice many TAZ do not show any travel time savings. This does not necessarily indicate that there would not be any travel time savings for users within those TAZs, only that the model did not have any existing trips to model from this zone.

The FTA STOPS model creates the travel time difference using the No-Build and Build scenarios. For this application, the existing served as the No-Build and the future alternatives served as the Build. The difference in travel time in 2045 from existing service to both future alternatives were for:

- All transit trips
- Walk or Kiss-and-Ride (KNR) access
- All trip purposes
- All households

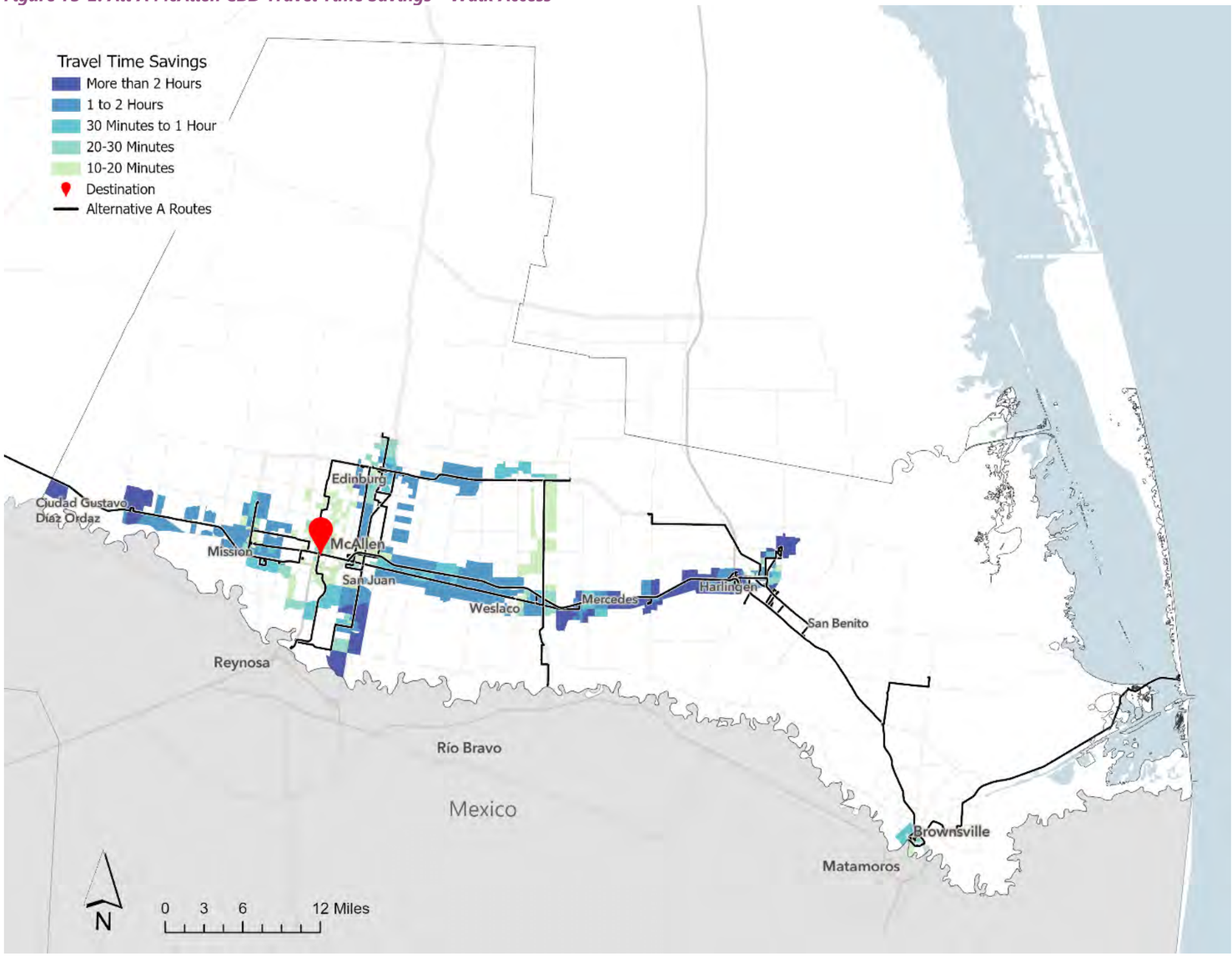
Alternative A

As discussed in Chapter 4 Recommendations and Alternatives, Alternative A presents a transit network focused on targeted express service that reduces travel time and optimizes service to mimic the regional and local travel patterns of both current transit users and potential future passengers. Alternative A has 28 recommended routes: 6 Regional-Express routes, 5 Regional-Urban routes, 12 Local routes, and 5 Micro transit routes. Refer to Chapter 4 Recommendations and Alternatives for the details and maps which describe this alternative.

MCALLEN CENTRAL BUSINESS DISTRICT – WALK ACCESS

Travel time savings to McAllen CBD in Alternative A for those who walk to reach their transit stop can be found in Figure T3-2. The highest travel time savings are concentrated along the US 83 / I-2 corridor east to west through McAllen to Harlingen. Also, there are expected time savings in south McAllen towards Hidalgo.

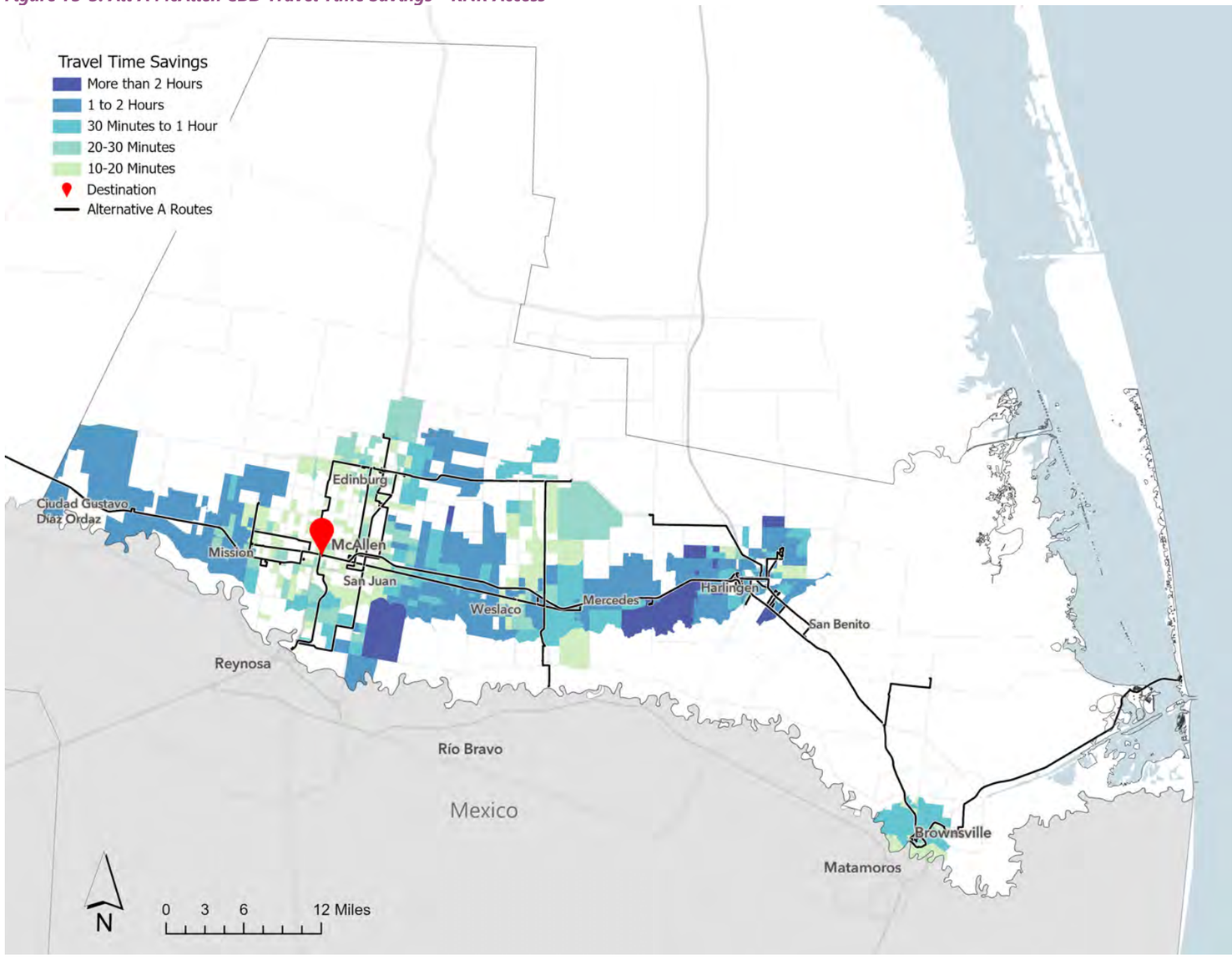
Figure T3-2: Alt A McAllen CBD Travel Time Savings – Walk Access



MCALLEN CENTRAL BUSINESS DISTRICT – KNR ACCESS

Travel time savings to McAllen CBD in Alternative A for those who drive and park to ride within a 3-mile access to reach their transit stop can be found in Figure T3-3. The highest travel time savings are concentrated along the US 83 / I-2 corridor east to west through McAllen to Harlingen. Also, there are expected time savings in south McAllen towards Hidalgo.

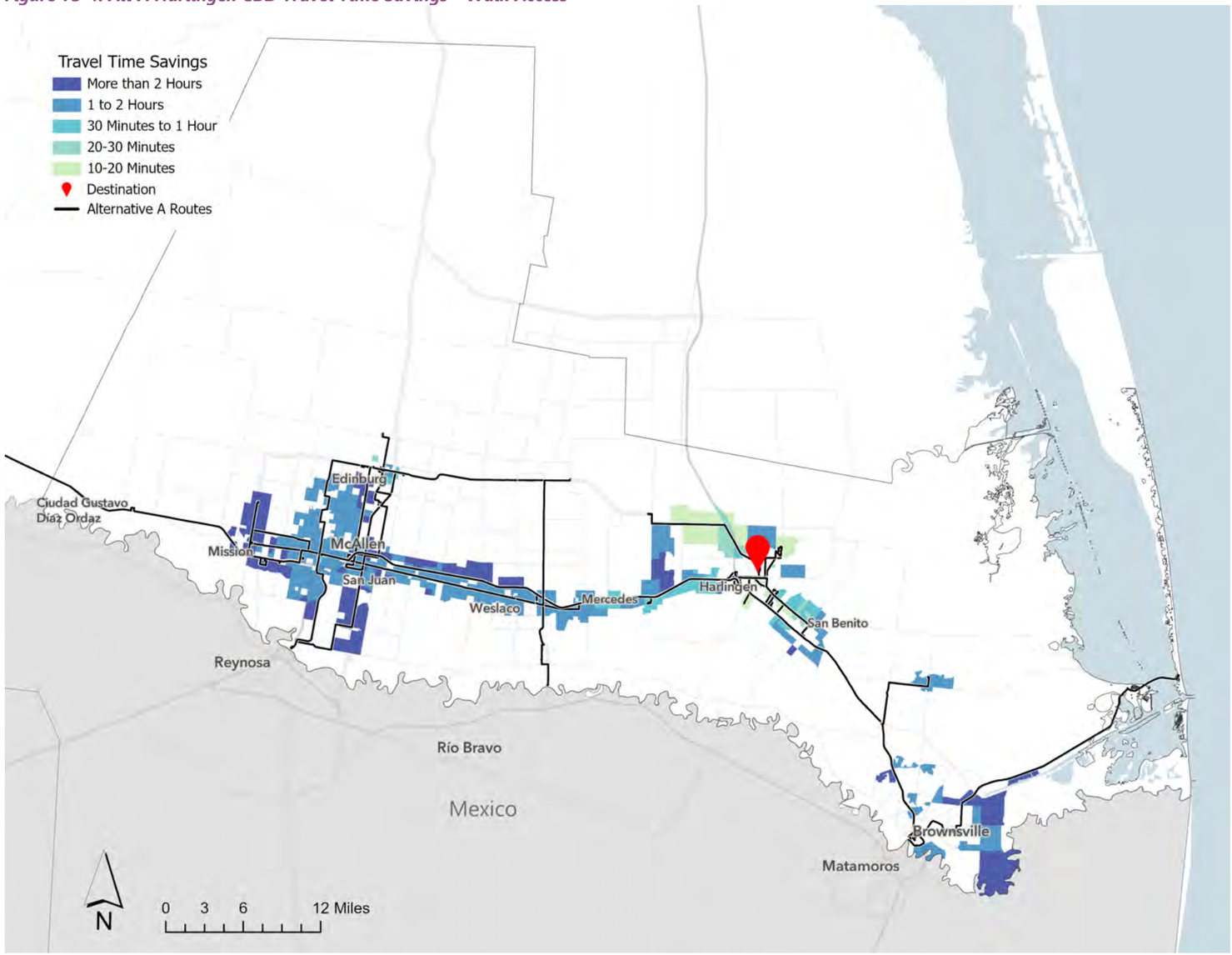
Figure T3-3: Alt A McAllen CBD Travel Time Savings – KNR Access



HARLINGEN CENTRAL BUSINESS DISTRICT – WALK ACCESS

Travel time savings to Harlingen CBD in Alternative A for those who walk to reach their transit stop can be found in Figure T3-4. The highest travel time savings in the region are dispersed in the RGVMAB in and around Mission, McAllen, Weslaco, and the outskirts of Brownsville.

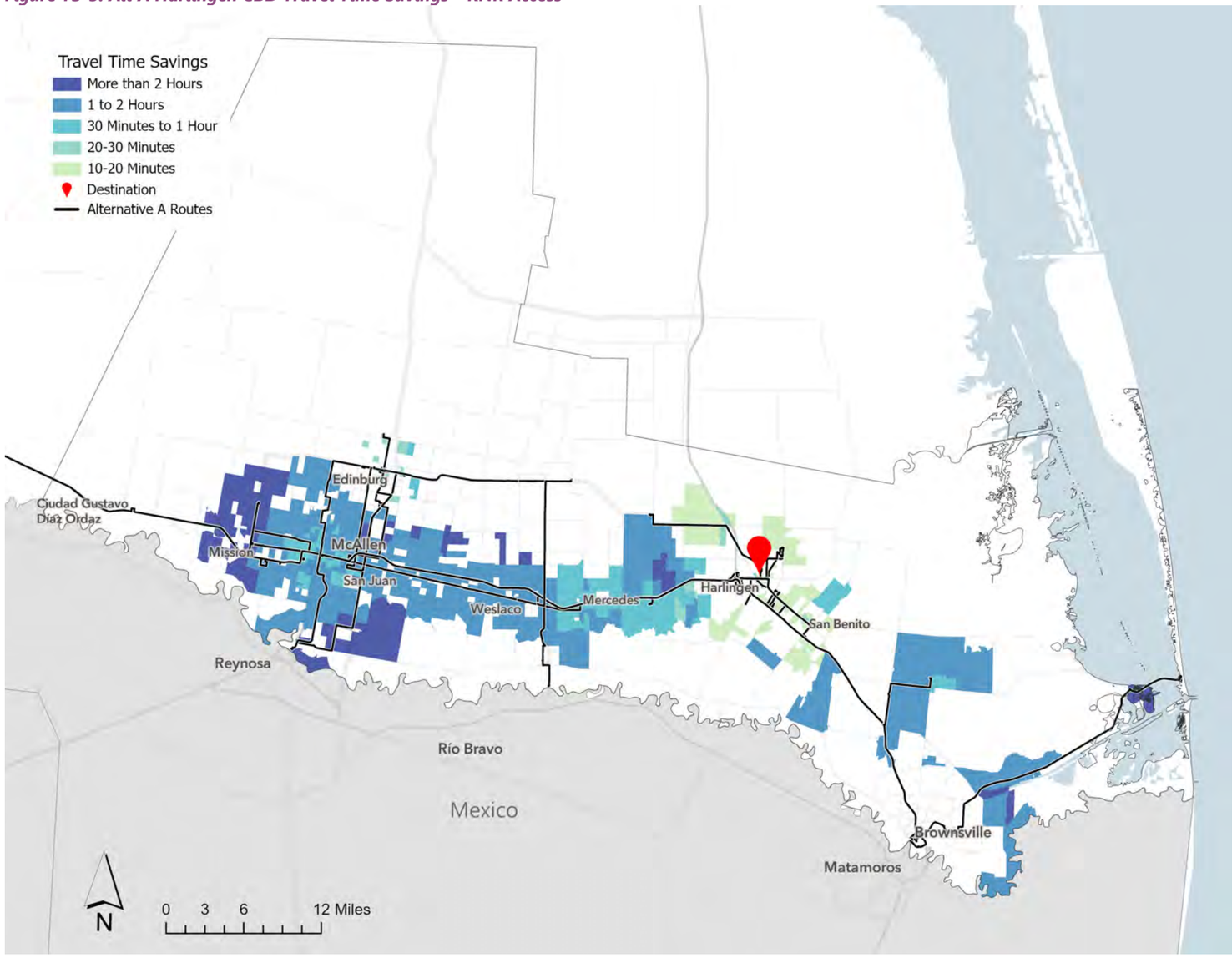
Figure T3-4: Alt A Harlingen CBD Travel Time Savings – Walk Access



HARLINGEN CENTRAL BUSINESS DISTRICT – KNR ACCESS

Travel time savings to Harlingen CBD in Alternative A for those who drive and park to ride within a 3-mile access to reach their transit stop can be found in Figure T3-5. The highest travel time savings in the region are dispersed in the RGVMAB in and around Mission, McAllen, Weslaco, and the outskirts of Brownsville.

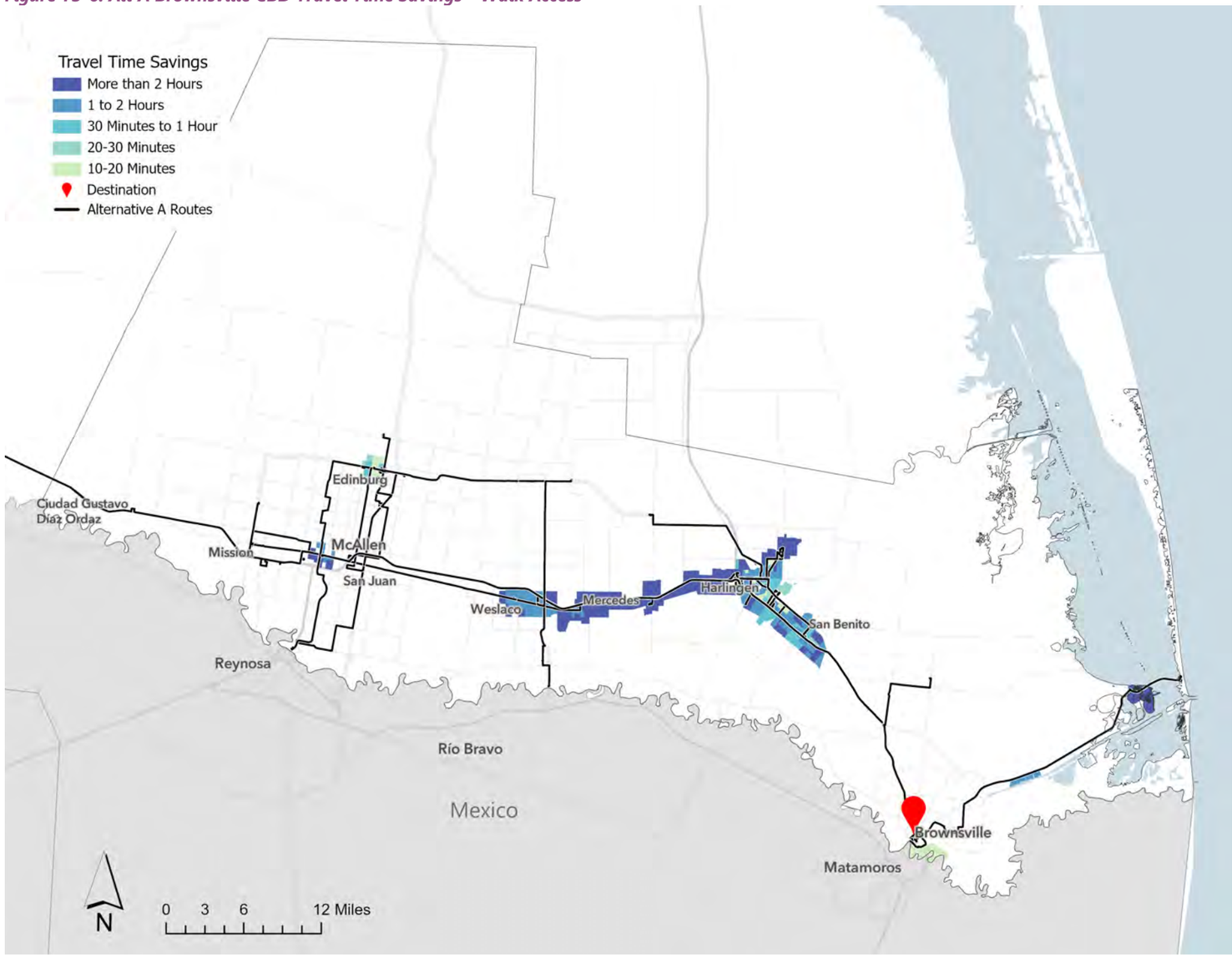
Figure T3-5: Alt A Harlingen CBD Travel Time Savings – KNR Access



BROWNSVILLE CENTRAL BUSINESS DISTRICT – WALK ACCESS

Travel time savings to Brownsville CBD in Alternative A for those who walk to reach their transit stop can be found in Figure T3-6. The highest travel time savings in the region are concentrated along US 83 / I-2 from Weslaco to San Benito. Also, there are travel time savings of more than 2 hours in Port Isabel.

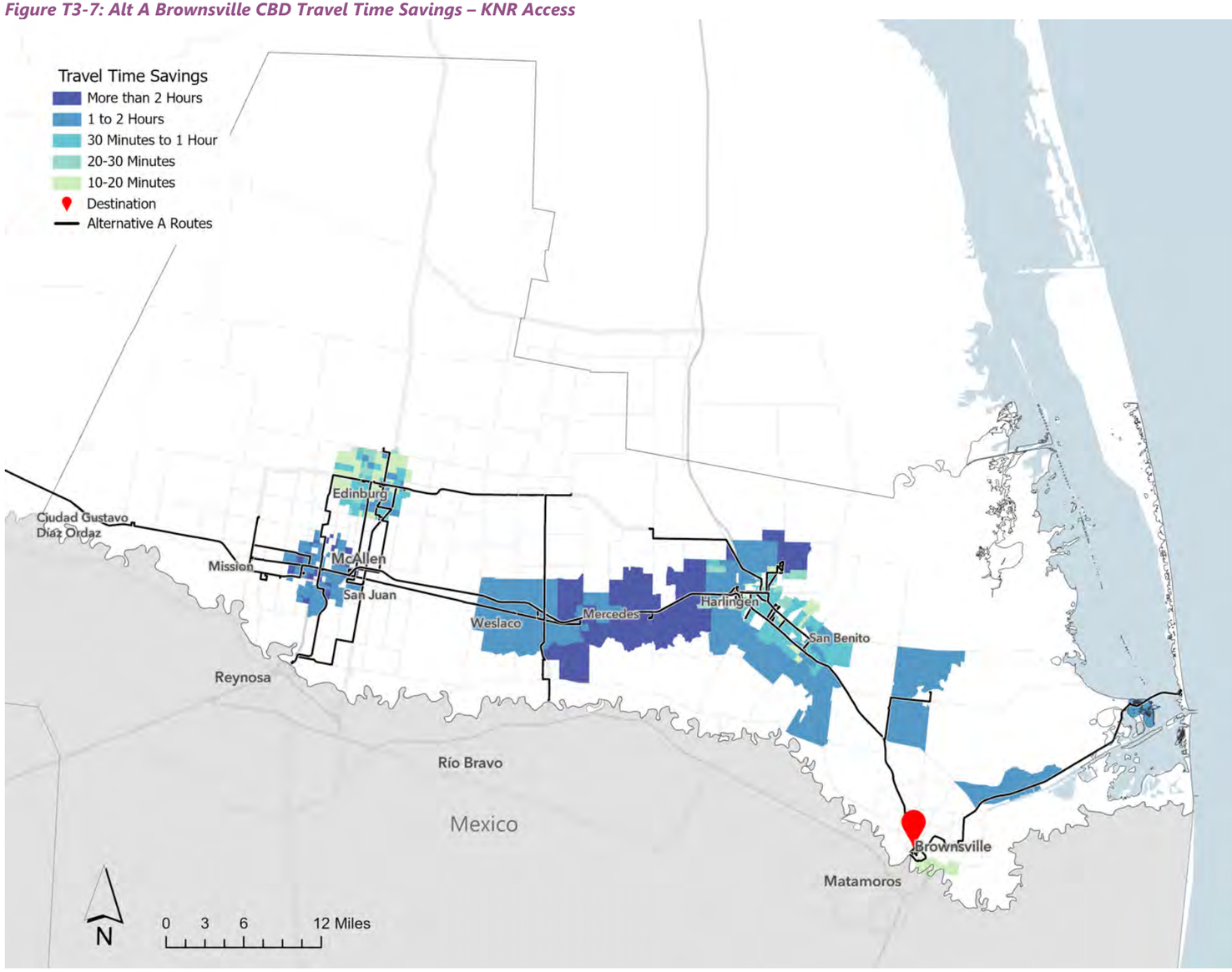
Figure T3-6: Alt A Brownsville CBD Travel Time Savings – Walk Access



BROWNSVILLE CENTRAL BUSINESS DISTRICT – KNR ACCESS

Travel time savings to Brownsville CBD in Alternative A for those who drive and park to ride within a 3-mile access to reach their transit stop can be found in Figure T3-7. The highest travel time savings in the region are concentrated along US 83 / I-2 from Weslaco to San Benito. Also, there are travel time savings around McAllen and Edinburg.

Figure T3-7: Alt A Brownsville CBD Travel Time Savings – KNR Access



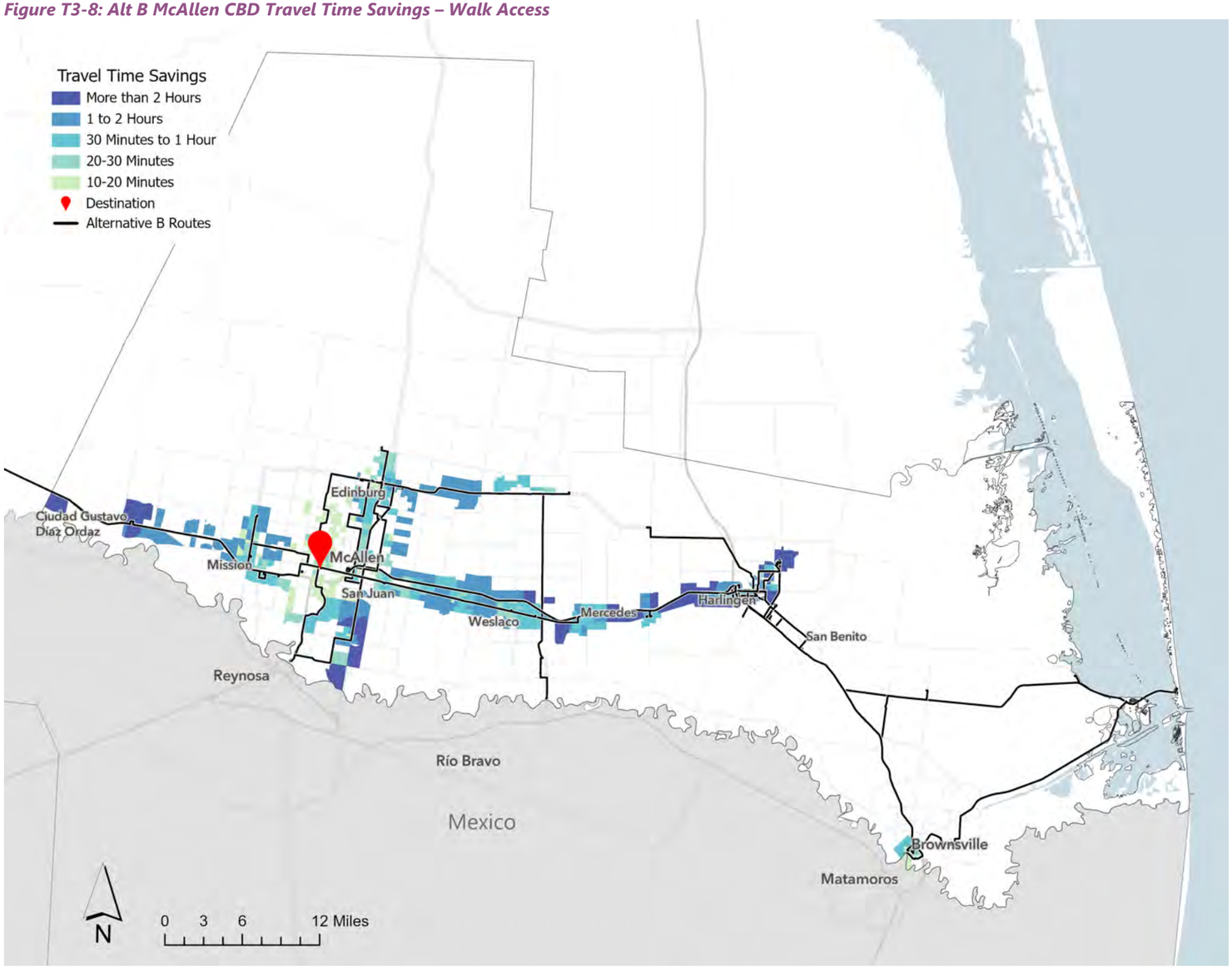
Alternative B

Alternative B presents a transit network focused on increasing connectivity and expanding targeted coverage for both population and jobs. Coordinated transfers will play a key role in the success of this alternative and provide an array of travel pattern options. This alternative provides the most service and thus requires a more significant transit investment than alternative A. Alternative B has 34 recommended bus routes: 10 Regional-Express routes, 5 Regional-Urban routes,14 Local routes, and 5 Micro transit routes. Refer to Chapter 4 Recommendations and Alternatives for the details and maps which describe this alternative

MCALLEN CENTRAL BUSINESS DISTRICT – WALK ACCESS

Travel time savings to McAllen CBD in Alternative B for those who walk to reach their transit stop can be found in Figure T3-8. The highest travel time savings are concentrated along the US 83 / I-2 corridor east to west through McAllen to Harlingen. Also, there are expected time savings in south McAllen towards Hidalgo.

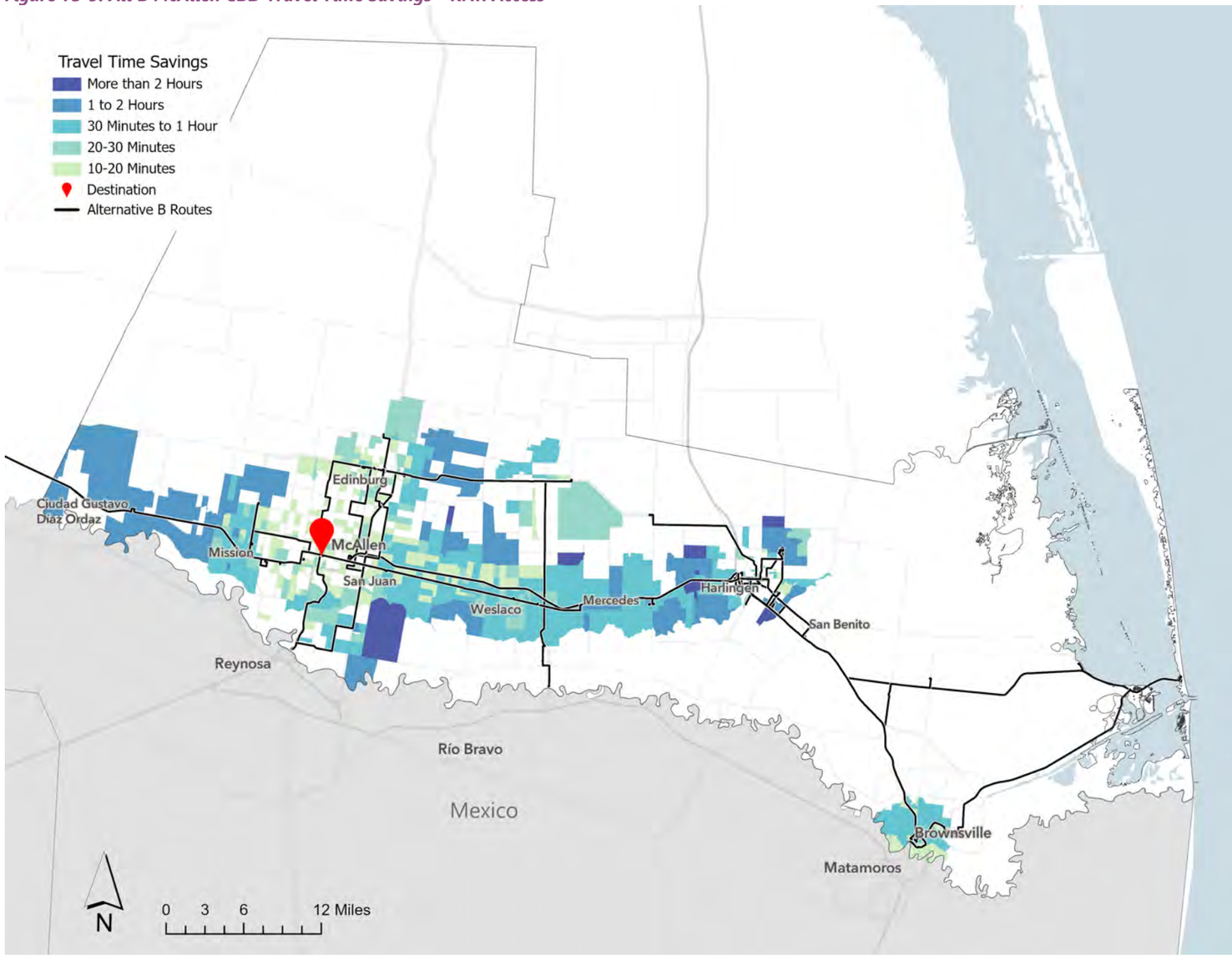
Figure T3-8: Alt B McAllen CBD Travel Time Savings – Walk Access



MCALLEN CENTRAL BUSINESS DISTRICT – KNR ACCESS

Travel time savings to McAllen CBD in Alternative B for those who drive and park to ride within a 3-mile access to reach their transit stop can be found in Figure T3-9. The highest travel time savings are concentrated along the US 83 / I-2 corridor east to west through McAllen to Harlingen. Also, there are expected time savings in south McAllen towards Hidalgo.

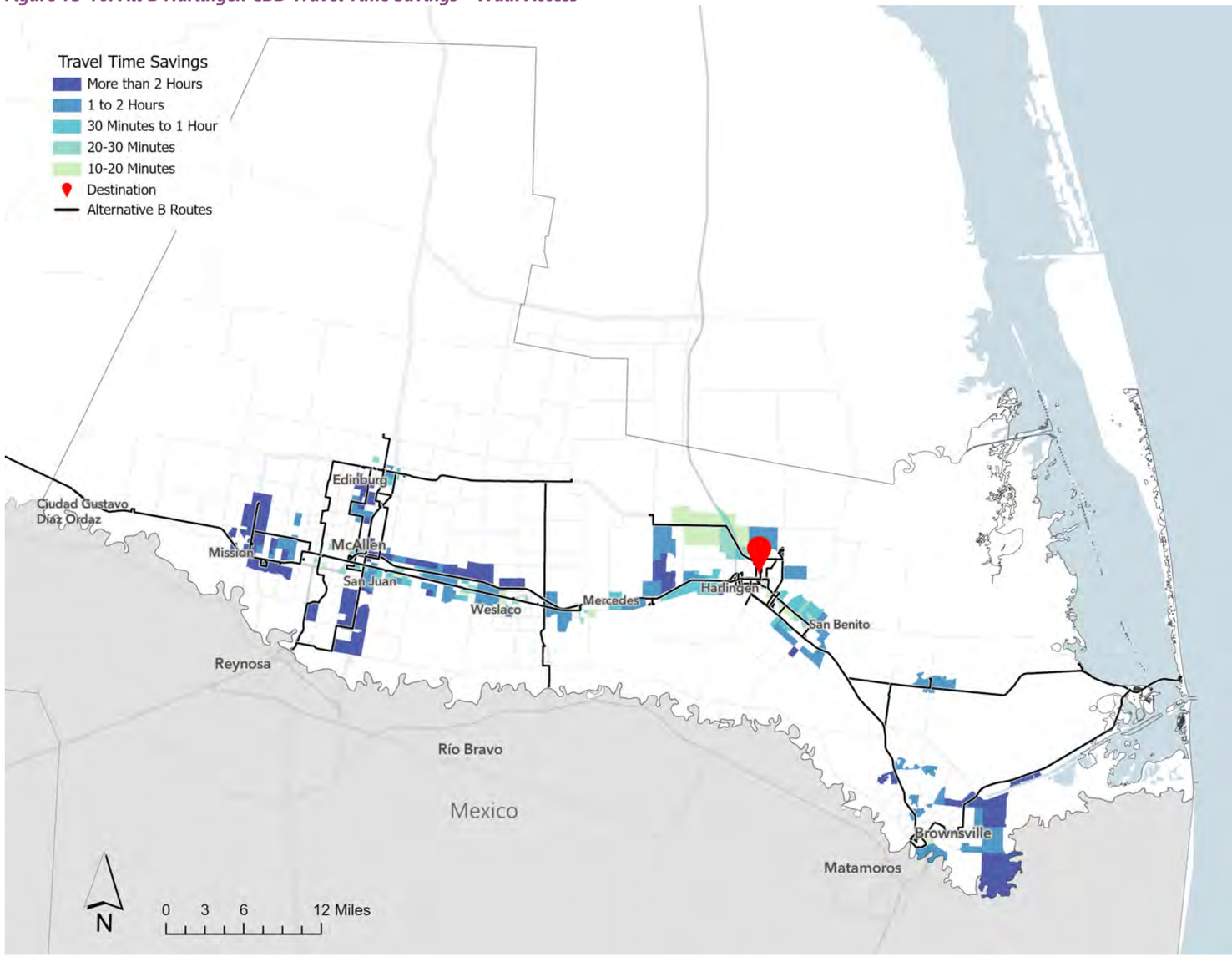
Figure T3-9: Alt B McAllen CBD Travel Time Savings – KNR Access



HARLINGEN CENTRAL BUSINESS DISTRICT – WALK ACCESS

Travel time savings to Harlingen CBD in Alternative B for those who walk to reach their transit stop can be found in Figure T3-10. The highest travel time savings in the region are dispersed in the RGVMAB in and around Mission, South McAllen, Weslaco, and the outskirts of Brownsville.

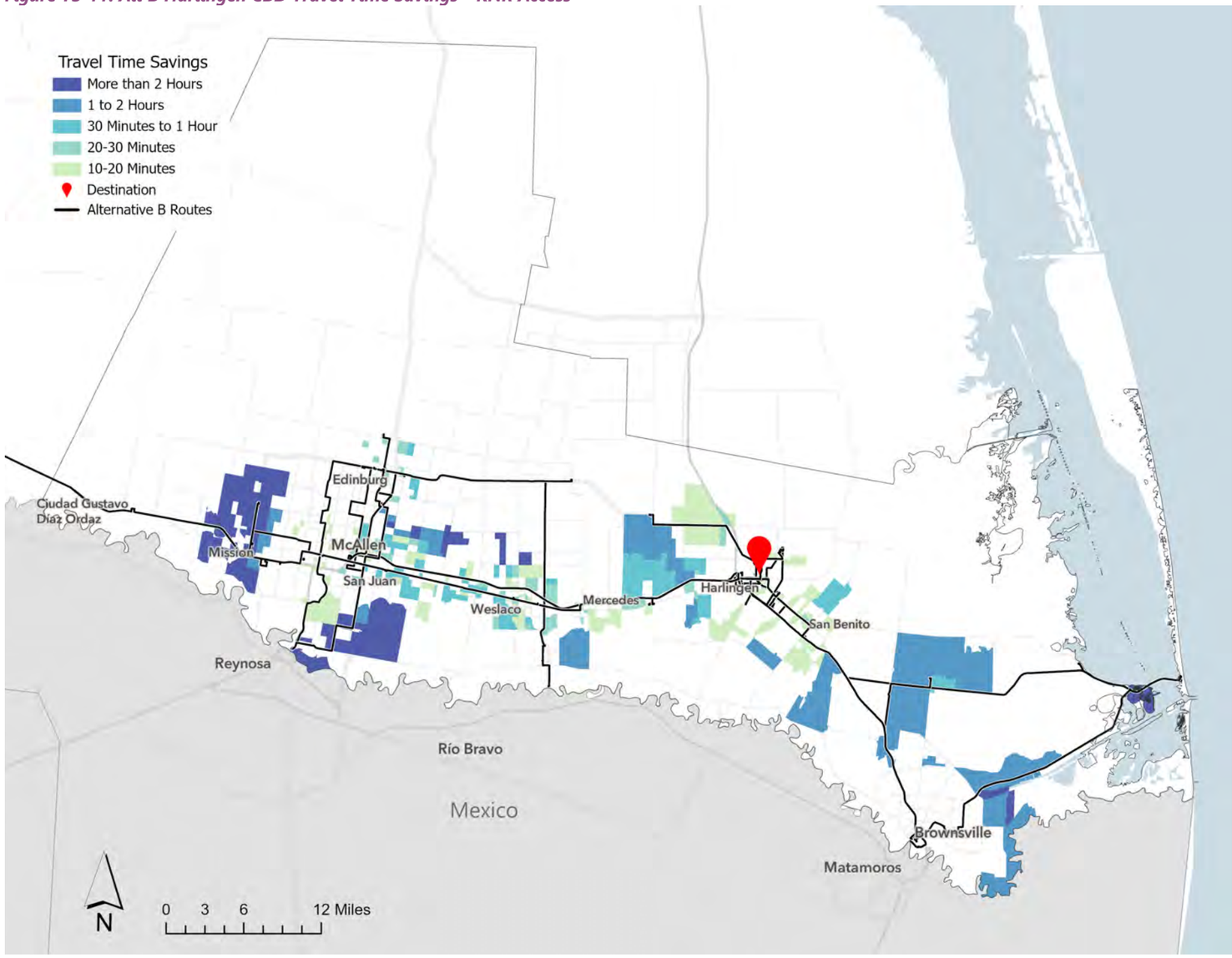
Figure T3-10: Alt B Harlingen CBD Travel Time Savings – Walk Access



HARLINGEN CENTRAL BUSINESS DISTRICT – KNR ACCESS

Travel time savings to Harlingen CBD in Alternative B for those who drive and park to ride within a 3-mile access to reach their transit stop can be found in Figure T3-11. The highest travel time savings in the region are dispersed in the RGVMAB in and around Mission, South McAllen, Weslaco, Port Isabel and the outskirts of Brownsville.

Figure T3-11: Alt B Harlingen CBD Travel Time Savings – KNR Access



BROWNSVILLE CENTRAL BUSINESS DISTRICT – WALK ACCESS

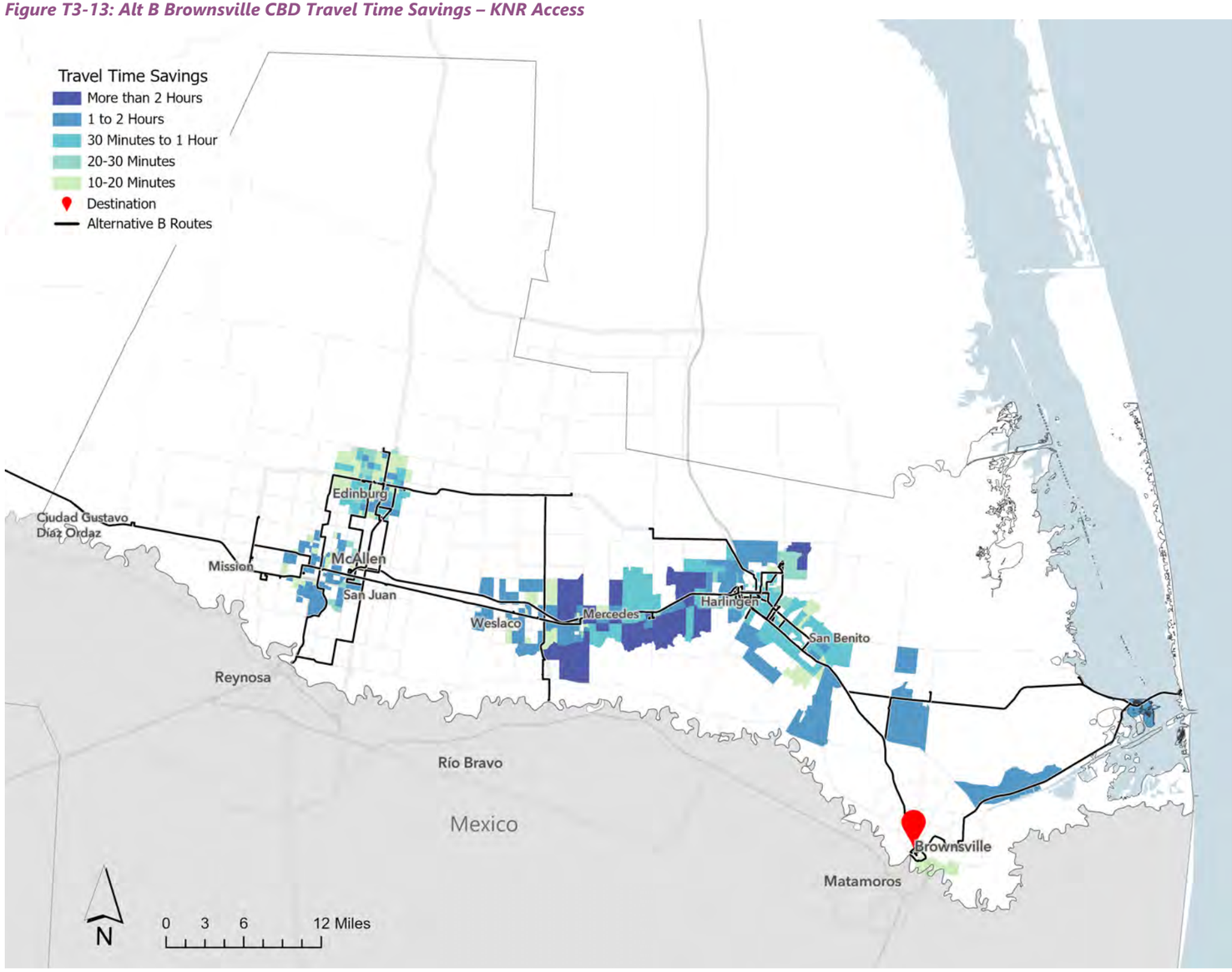
Travel time savings to Brownsville CBD in Alternative B for those who walk to reach their transit stop can be found in Figure T3-12. The highest travel time savings in the region are concentrated along US 83 / I-2 from Weslaco to San Benito. Also, there are travel time savings of more than 2 hours in Port Isabel.

Figure T3-12: Alt B Brownsville CBD Travel Time Savings – Walk Access

BROWNSVILLE CENTRAL BUSINESS DISTRICT – KNR ACCESS

Travel time savings to Brownsville CBD in Alternative B for those who drive and park to ride within a 3-mile access to reach their transit stop can be found in Figure T3-13. The highest travel time savings in the region are concentrated along US 83 / I-2 from Weslaco to San Benito. Also, there are travel time savings around McAllen and Edinburg.

Figure T3-13: Alt B Brownsville CBD Travel Time Savings – KNR Access



Conclusion

The FTA STOPS model uses available census data, transit ridership and schedules, origin and destination survey data, and demographic growth forecasts to produce forecasts of transit ridership. The RGV STOPS model was run in incremental mode for this effort, which uses more detailed transit travel information to match to the original Transit OD Survey for calibration. The STOPS System Ridership Results for the Existing 2019, Alternative A 2045, and Alternative B 2045, show an overall increase in transit ridership for the RGV in the range of 67% - 83% depending on the chosen alternative. For Valley Metro in particular, it is recommended that results be summarized with the addition of UTRGV and STC ridership. For Alternative A, the ridership for Valley Metro (with UTRGV and STC) is expected to increase 78%, while Alternative B is expected to increase 130% by 2045. The ridership for other transit agencies in the region remains relatively consistent whether Valley Metro implements Alternative A or B. Metro McAllen can expect to see an increase of 72% by 2045, Brownsville Metro can expect to see an increase of 45%, and Island Metro as much as 143% - 148% with the implementation of these alternatives.

In considering the potential performance of Valley Metro routes in 2045, it is recommended that other measures be considered including propensity for transit (population and employment density) and target transit riders. STOPS ridership forecasts are a helpful tool, especially in looking at the potential for fixed guideway transit service (Light Rail or Bus Rapid Transit), though STOPS does have limitations in estimating ridership for fixed route buses. However, for both alternatives, many of the routes or route groups experienced an increase in ridership with the implementation of the recommendations found in both alternatives. A high demand for service was seen on the Metro Express 109 UTRGV Connector, which connects UTRGV in Brownsville to UTRGV in Harlingen and Edinburg, and also for a strong regional core express service that connects the major urban areas from west to east.

In regard to estimated travel time savings for those who walk or drive and park from around 3-miles to their transit stop, it appears that the implementation of Alternative A has a slight advantage over Alternative B. As Alternative B uses a series of regional core express services to connect the region, for those traveling across the entire region, it forces a rider to make a transfer. Although these can be well coordinated to avoid much wait time for riders, it can be expected the travel time savings would be impacted which might account for some of the higher savings seen in the series of figures for Alternative A. Overall, both alternatives present opportunities for travel time savings for transit riders throughout the region that are a significant improvement to the existing service.

RGV MPO

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