

FORT WORTH

TRANSIT MASTER PLAN



STATE OF THE SYSTEM 2019

TRANSIT
MOVES FORT
WORTH

N
NELSON
NYGAARD



Table of Contents

Introduction.....	05
Transit in Fort Worth Today.....	09
The Market for Transit in Fort Worth	41
Summary and Opportunities.....	76



CKSBORO HWY

1122

RIDE TRINITY METRO.org

LEAD ON!
BIG THINKERS

TRINITY METRO

TRINITY METRO

LA GRA

1109

TRINITY METRO

TEXAS
131-1



Introduction

About Transit Moves | Fort Worth &**06**
the State of the System



Why Transit?.....**07**

What is Transit Moves | Fort Worth?

The City of Fort Worth seeks to increase transit's role in the city's transportation system. Transit Moves | Fort Worth is the City of Fort Worth Transit Master Plan (TMP) laying out strategies to make transit service more convenient, efficient, and attractive. A comprehensive long-range plan for improving the City's transit system, Transit Moves | Fort Worth comprises the following four elements:

1. A transit vision for Fort Worth to guide improvements through 2045;
2. Specific improvements that should be implemented to achieve the vision;
3. Identification of potential new sources of funding for the improvements; and
4. Governance changes recommended to facilitate implementation of the plan and improve transit service delivery.

About the State of the System Report

The State of the System report provides a starting point for Transit Moves | Fort Worth. To inform a transit master plan for the city, this document provides an overview of:

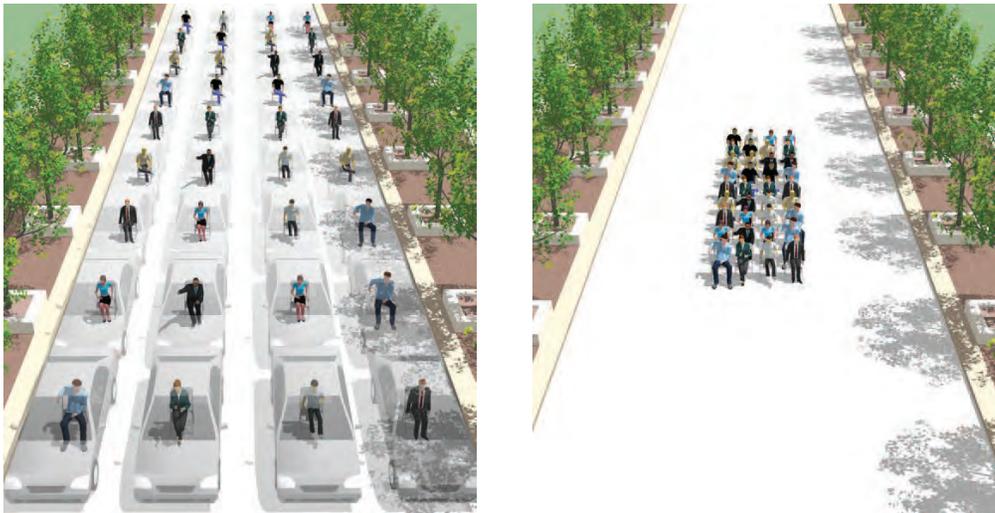
- Current (2019) transit services and operating characteristics
- Major transit facilities
- Current ridership levels by route and stop
- Ridership trends over the past 10 years
- A market analysis that examines the underlying demand for transit service through 2045
- An analysis of how well existing transit services meet current and future demand
- A description of issues, opportunities, and next steps



Why Transit?

Transit has the promise of being a safe, affordable, and convenient travel option for people of all ages and abilities. Transit is the most affordable mode for travel in Fort Worth; whereas an annual transit pass costs as \$1,920 for unlimited rides on all regional transit service (or \$576 for a reduced-cost regional annual pass), annual automobile ownership and gas costs in the city of Fort Worth average over \$12,800 a year (H&T Index). Well-functioning transit can remove a significant cost burden for many people, especially the more than 140,000 Fort Worth residents living in poverty (US Census). When a region invests in quality transit, it can allow for greater upward mobility for its residents, as lessening the burden of transportation costs can allow for those resources to be spent on other needs like education, savings, or purchases of goods and investments.

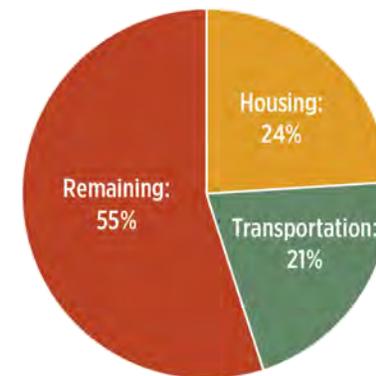
Moreover, in an urban environment where street space is limited, transit is the most efficient mode to transport people. Cars use more space than buses to move people; the combined effect of thousands of cars on the road with only one or two people inside result in significant congestion during peak travel periods. Transit vehicles can carry many more people down a street using a fraction of the space required to move those same people in cars.



Space used by people in cars versus space used by the same number of people in a bus.

Travelling by transit is also safer and more environmentally-friendly compared to travelling in a private automobile. According to the Centers for Disease Control and Prevention, communities with more transit use suffer fewer per-capita traffic-related deaths, and transit use reduces per capita greenhouse gas emissions and pollution (source: "Transportation Recommendations" <https://www.cdc.gov/transportation/recommendation.htm>).

Annual Transportation Costs as a Proportion of Household Earnings in Fort Worth



Source: H + T Index 2018

Annual Transportation Costs in Fort Worth



Source: H + T Index 2018. Based on the average annual cost of a household's gas, depreciation, finance charges, insurance, license, and registration for private vehicle(s).





Transit in Fort Worth Today

- Overview of Existing Transit Service.....**10**
- Transit System Network Design.....**12**
- Frequency and Span of Service.....**18**
- Transit-Supportive Facilities.....**28**
- Ridership by Route.....**34**
- Ridership by Stop Location.....**36**
- Recent Ridership Trends.....**37**

Fort Worth is Currently Served by 48 Bus and Rail Routes

Transit service in Fort Worth is primarily provided by Trinity Metro (formerly known as the T), and existing services include a network of fixed-route bus service, door-to-door paratransit service, and commuter rail service via the recently completed TEXRail. Trinity Metro also jointly operates the Trinity Railway Express (TRE) through a partnership with Dallas Area Rapid Transit (DART). All Trinity Metro services either originate or terminate within the City of Fort Worth.

Trinity Metro also maintains a number of passenger facilities associated with these services. These include the Fort Worth Intermodal Transportation Center (ITC) in downtown Fort Worth, which serves as the hub of the Trinity Metro System and provides connections to 24 bus routes, TRE, TEXRail, Greyhound buses, and Amtrak service. Other facilities include 10 transfer centers, 2,000 bus stops, 16 park and ride lots, and 15 rail stations serving TEXRail and the TRE within Tarrant County.



Existing Transit Service in Fort Worth



39 Local Bus Routes

provide fixed-route bus service in and around Fort Worth



7 Express Bus Routes

connect Fort Worth to regional activity centers



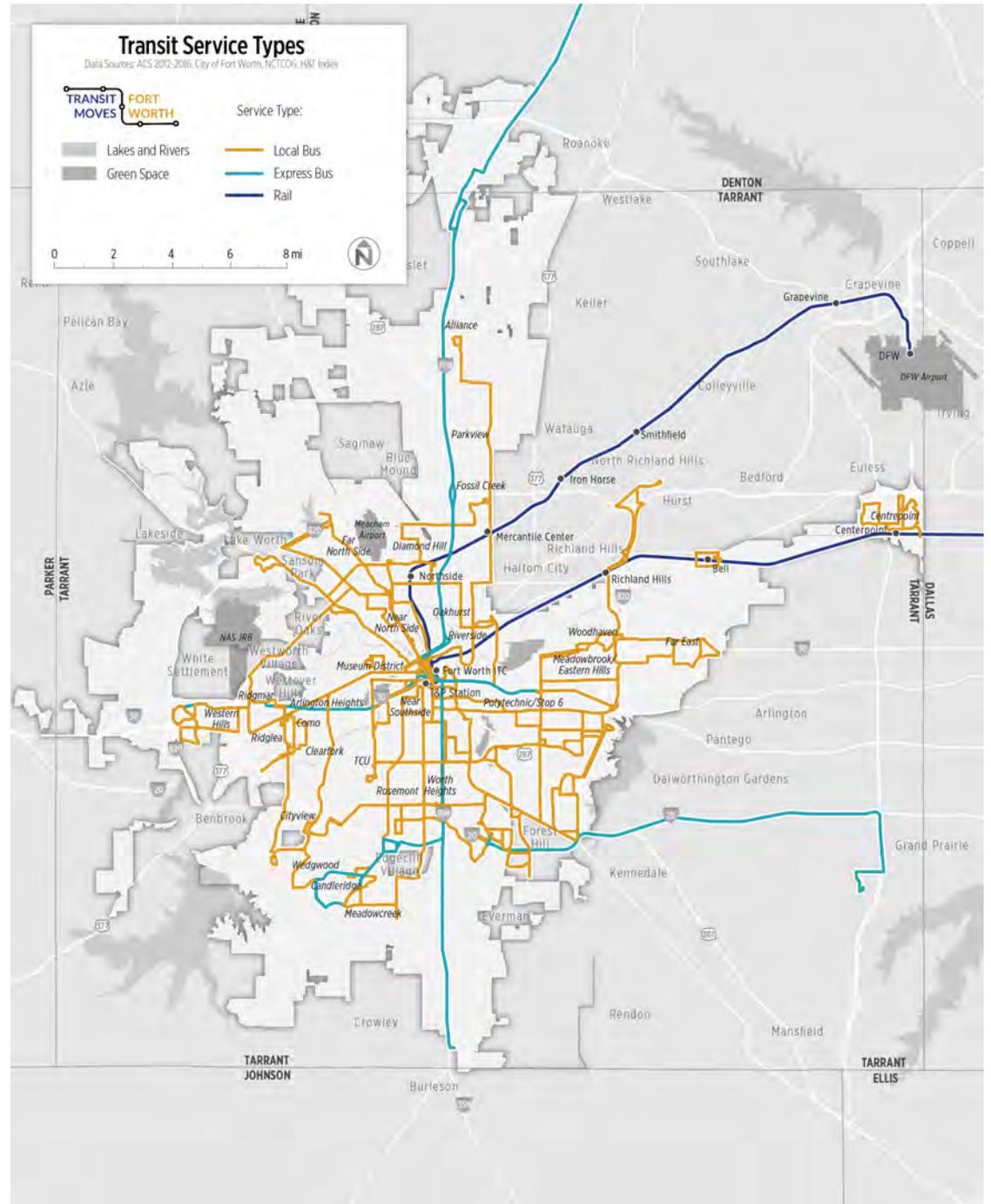
Paratransit Service

is available through Trinity Metro's door-to-door ACCESS program



2 Regional Rail Lines

provide commuter service via Trinity Railway Express (TRE) and TEXRail



Most Service Operates to and from Downtown Fort Worth

Transit systems are more than a collection of individual routes—they are designed to function as a mutually-supportive network of services. The schedule, alignment, and span of service of each route may vary depending on the service goals of the network as well as rider needs and preferences.

The transit network in Fort Worth includes four primary types of routes: radial routes, feeder routes, circulator routes, and crosstown routes. Generally, these routes are arranged in a hub-and-spoke system primarily oriented towards serving the downtown core of Fort Worth.

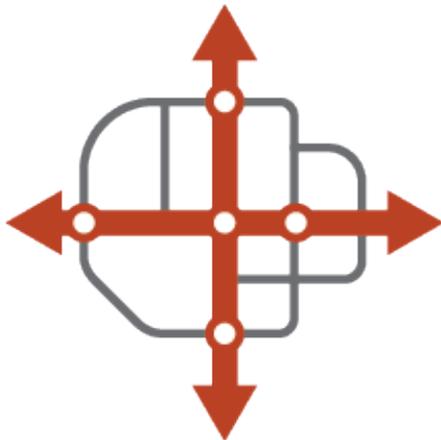
- **Radial routes** act as the spokes of the network and are designed to move large numbers of riders along major travel corridors. These include both local corridor bus routes as well as regional express bus and rail routes.

- **Feeder routes** are designed to provide a connection to other transit services and transportation options, such as radial routes on major travel corridors. They expand the coverage of the transit network.
- **Circulator routes** provide frequent local service within major activity centers. These routes may offer service all day long, or may be limited to peak travel periods.
- **Crosstown routes** create opportunities to connect between neighborhoods and activity centers without requiring a trip through downtown. These routes can help reduce the number of transfers riders are required to make.

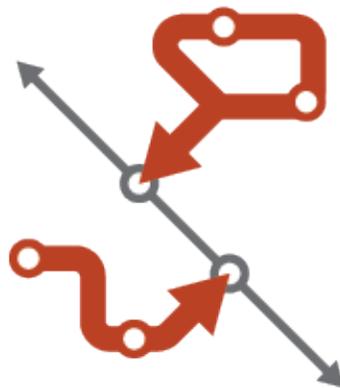
In 2018, Trinity Metro expanded service to Forest Hill, TCC Northeast, and TCC Southeast.

Types of Transit Routes

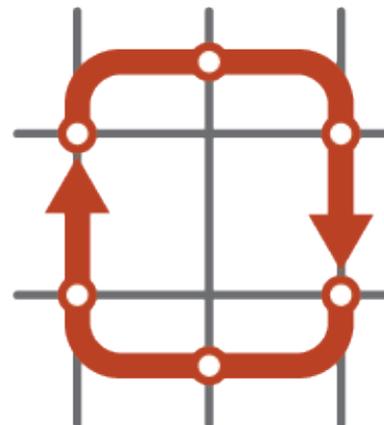
Radial Routes



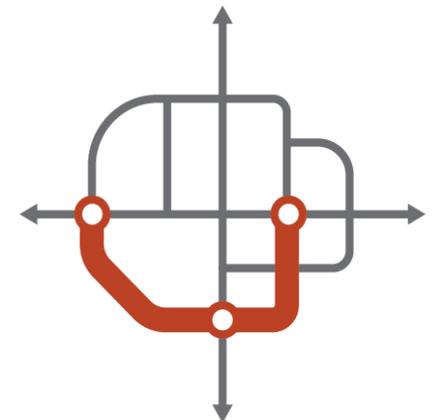
Feeder Routes



Circulator Routes



Crosstown Routes



Radial Routes

Radial routes include local bus routes, express routes, and commuter rail service. 23 radial routes currently operate to and from Downtown Fort Worth:

Local Routes

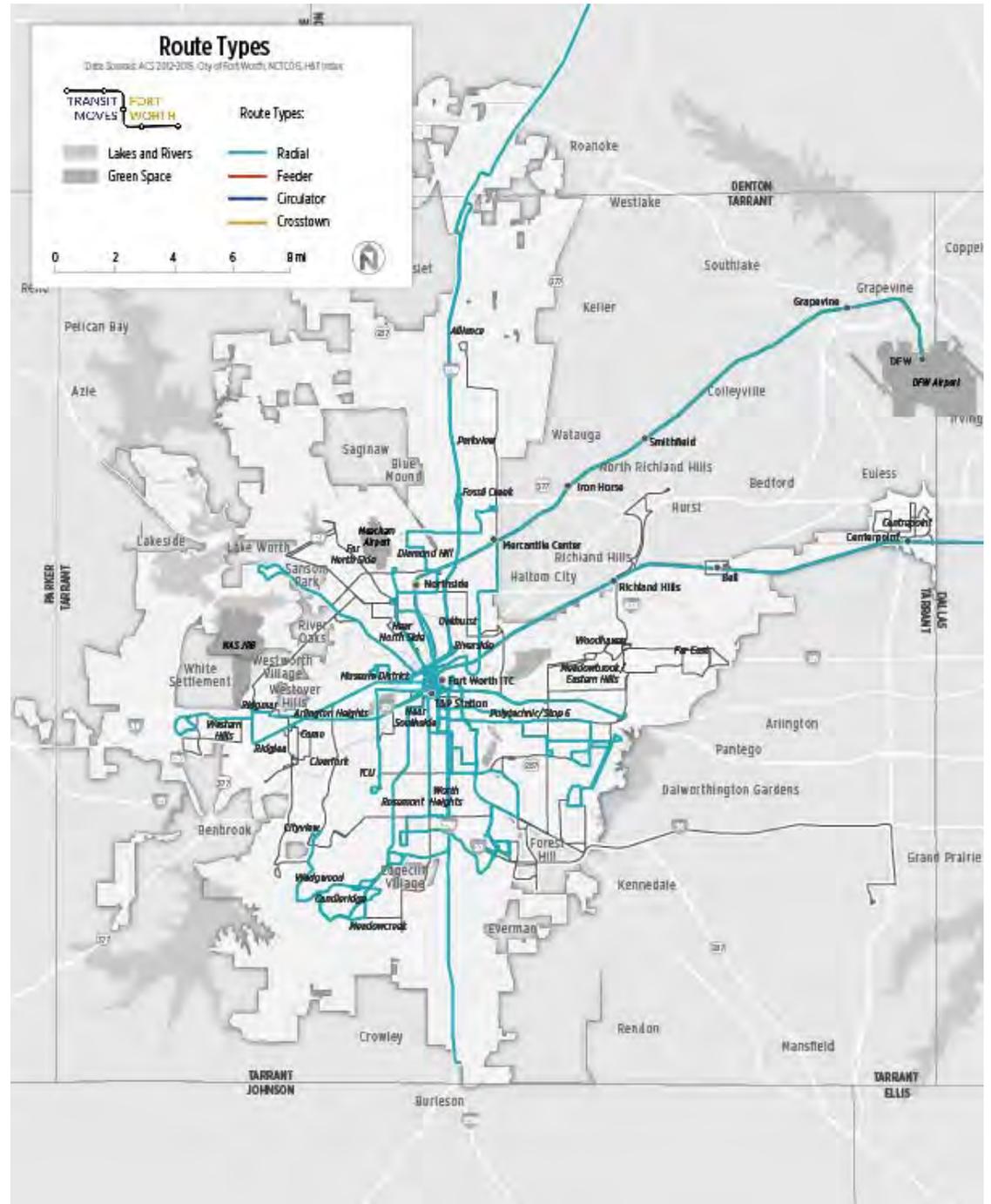
- 1 - Hemphill
- 2 - Camp Bowie
- 3 - South Riverside/TCC
- 4 - East Rosedale
- 5a/b - Evans Avenue and Glen Garden
- 6 - 8th Avenue/McCart
- 7 - University
- 8 - Riverside/Evans
- 9 - Ramey/Vickery
- 10 - Bailey
- 11 - North Beach/Mercantile Center
- 12 - Samuels/Mercantile Center
- 15 - Stockyards/North Main
- 46 - Jacksboro Highway
- 89 - SPUR East Lancaster

Express Routes

- 60X - East Lancaster Express
- 61X - Normandale Express
- 63X - North Park & Ride
- 64X - North Texas Xpress
- 65X - South Park & Ride
- 66X - Candleridge/Alta Mesa

Commuter Rail

- Trinity Railway Express (TRE)
- TEXRail



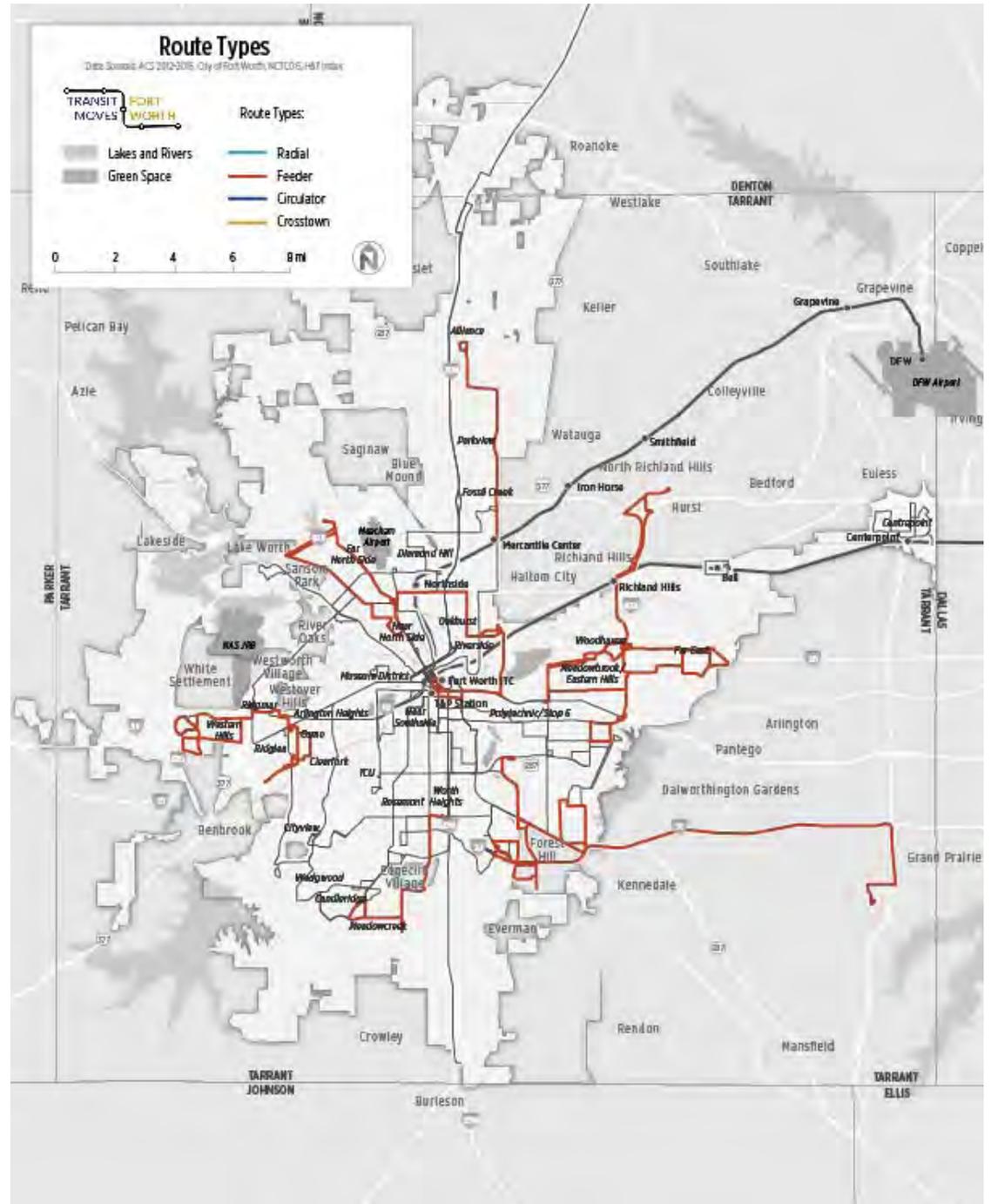
Feeder Routes

Feeder routes include local bus routes that provide connections to other transit services or activity centers. Fort Worth is served by 14 feeder routes:

- 14 - Riverside
- 16 - Alliance Town Center/Mercantile Center
- 20 - Handley/Stop Six
- 21 - Boca Raton
- 22 - Meadowbrook
- 23 - TCC Northeast Campus/TRE
- 26 - Ridgmar Mall/Normandale
- 27 - Como
- 28 - Mansfield Highway
- 44 - Central/Azle Ave
- 45 - TCC NW/Angle Ave
- 71 - Forest Hill
- 72 - Hemphill/Sycamore School

Express Routes

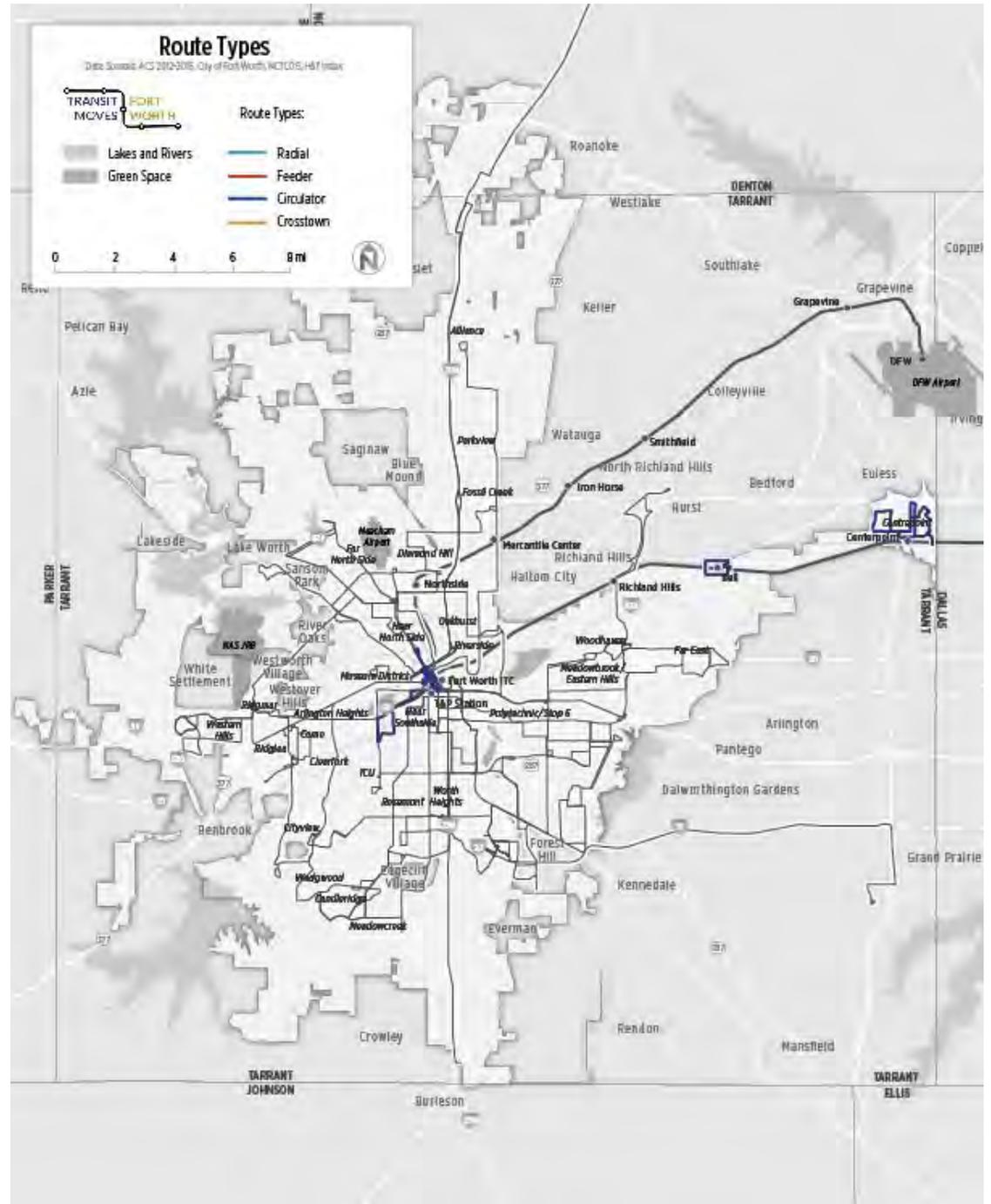
- 67X - TCC Southeast Campus Xpress



Circulator Routes

Circulator routes include local bus routes that provide service within an activity center or station area. Trinity Metro operates six circulator routes within Fort Worth:

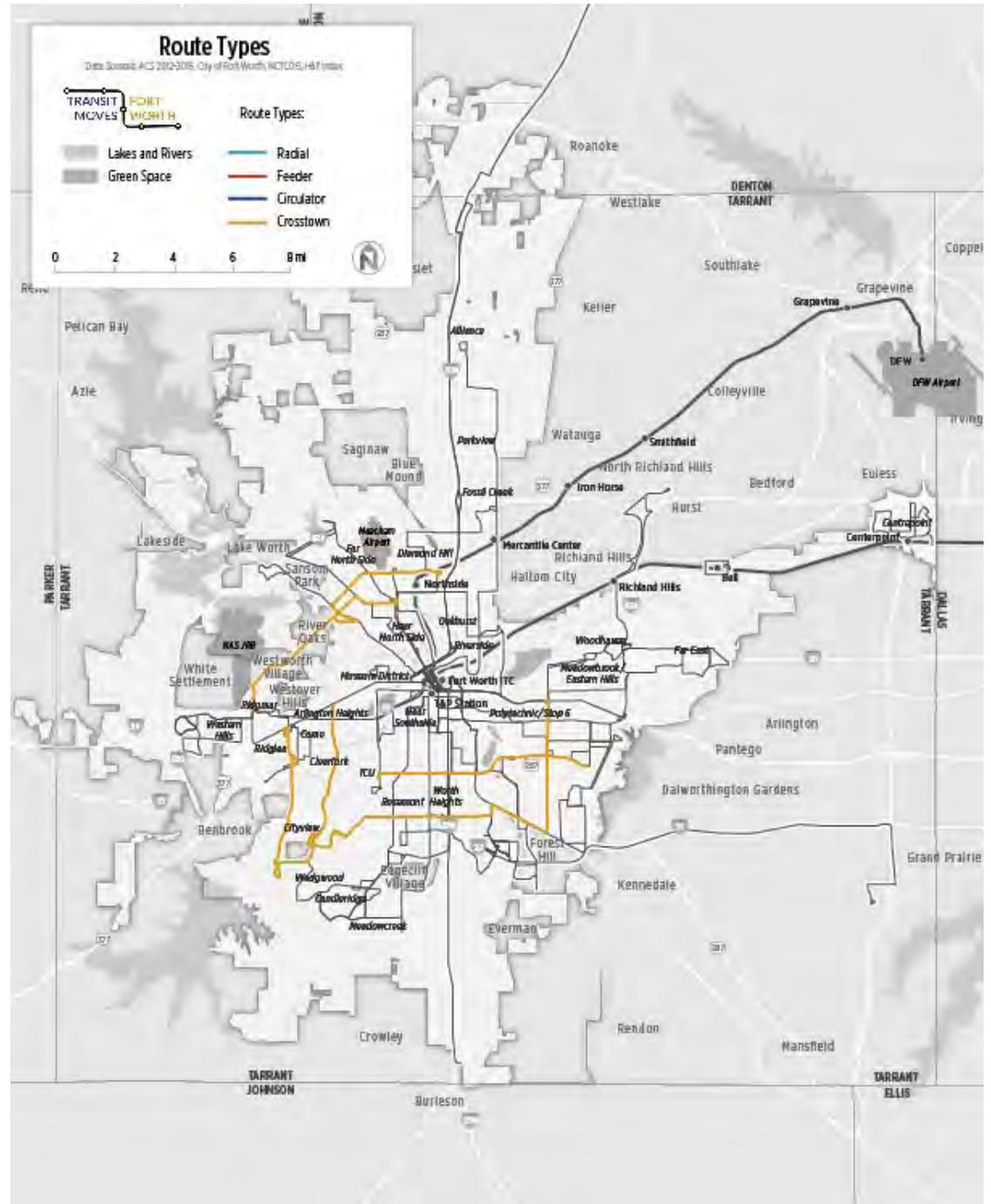
- 18X - Safari Express (May through September)
- 19 - Molly the Trolley, within Downtown Fort Worth
- 30 - CentrePort Circulator
- 111 - Bell
- 113 - Lunch Line in Downtown Fort Worth
- 991 - Juror Shuttle, connecting remote juror parking north of Downtown Fort Worth with the Tarrant County Justice Center



Crosstown Routes

Crosstown routes provide service between neighborhoods and activity centers without traveling through the downtown area. There are five crosstown routes:

- 24 - Berry
- 25 - Crosstown
- 32 - Bryant Irvin
- 90 - Long Avenue
- 91 - Ridgmar Mall/Stockyards



Service that Operates More Frequently for Longer Hours is More Convenient

Transit service span and frequency are two of the most important factors that influence the convenience and usefulness of a transit system. The span of transit service—or the hours of the day that a service operates—impacts when and for which types of trips riders can use transit to meet their daily travel needs. The frequency of transit service—or how often transit vehicles make trips along a given route—impacts wait times and trip planning flexibility for users.

Transit service that runs for more hours of the day is more convenient and more reliable for riders. While the morning and afternoon peak periods are high-volume travel times, many Fort Worth residents and workers have transportation needs during the early morning, evening, or late night periods. If the span of transit service is too short, it may not be useful for helping potential transit riders get both to and from their destination.

Transit service that runs more often and provides more frequent trips offers riders more flexibility and predictability. Frequent transit service can better compete with the convenience and flexibility of the personal vehicle. Infrequent transit service may offer an unsatisfying user experience that is more disrupted by schedule disruptions or missed connections.

Service Span



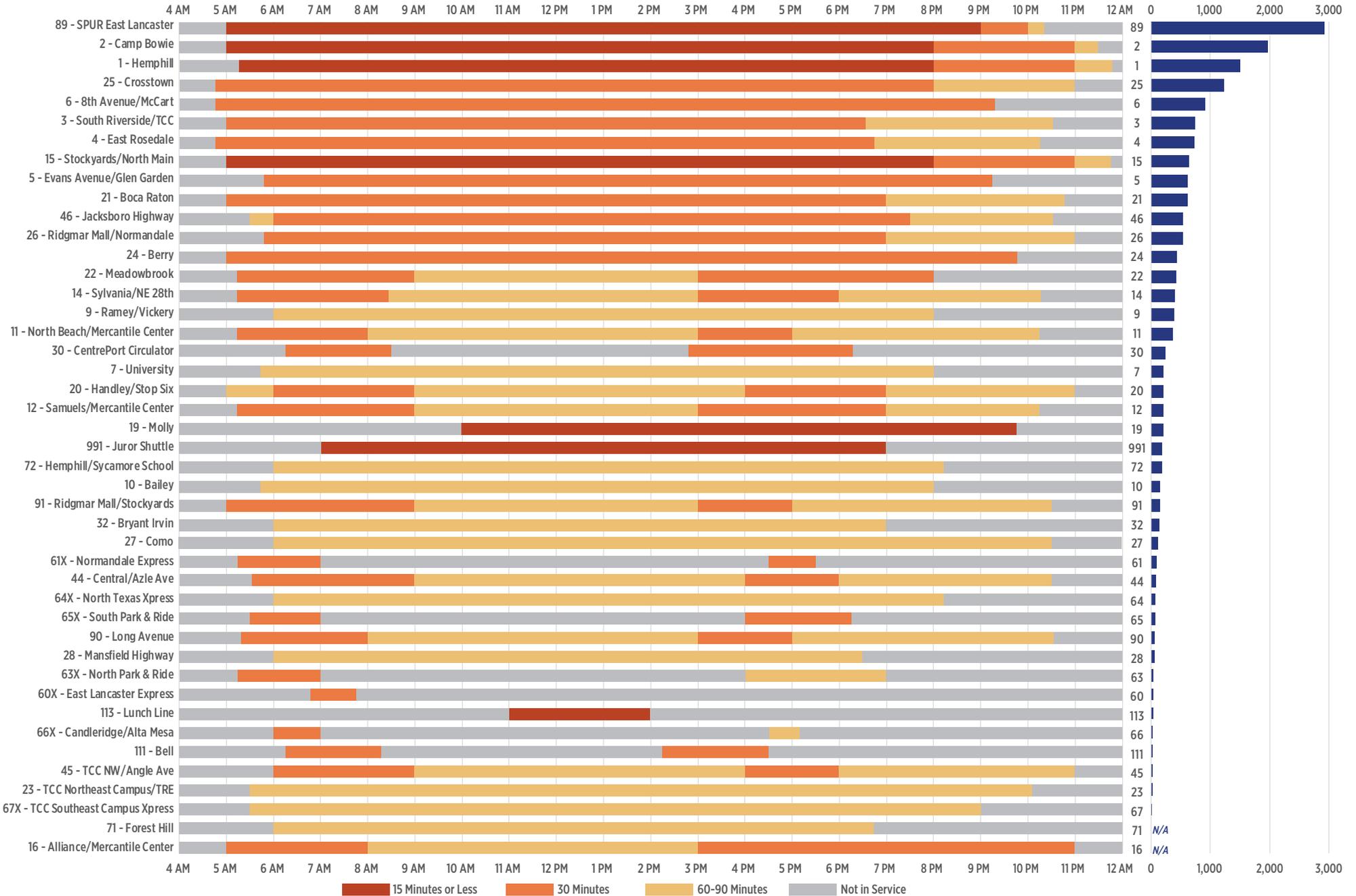
Service Frequency



17 bus routes and 2 rail routes (40% of all routes) offer meaningful late-night service

Only 5 bus routes offer continuous 15 minute frequencies or less on weekdays between 6AM to 6PM

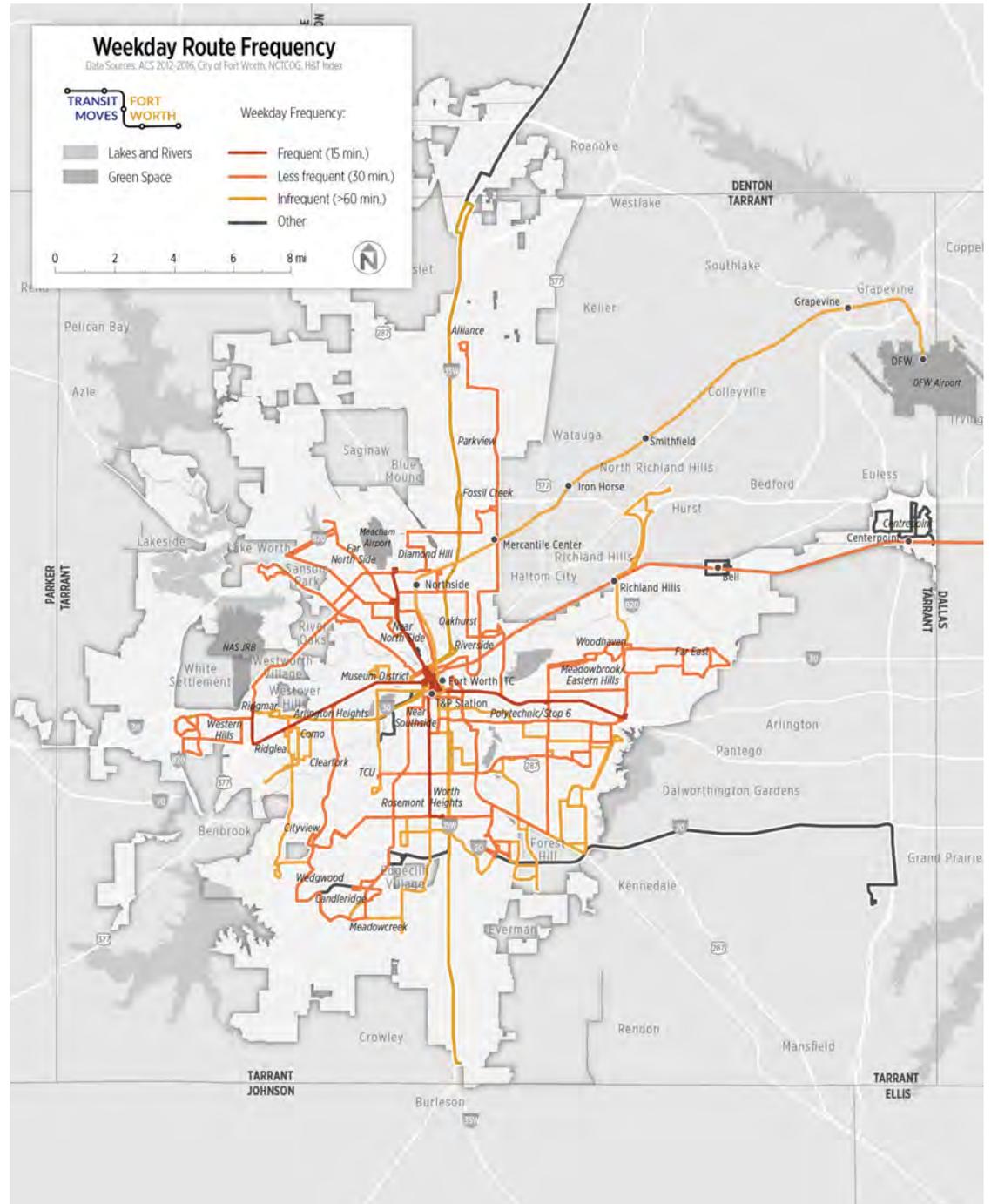
Weekday Frequency, Span of Service, and Ridership



Only Seven Routes Provide Frequent Service

On weekdays, Trinity Metro operates seven routes with a frequency of 15 minutes or better. Of these seven high-frequency routes, only four of them—Routes 1 - Hemphill, 2 - Camp Bowie, 15 - North Main/Stockyards, and 89 - The SPUR—provide all-day high-frequency service between 6 AM and 8 PM. The other three high-frequency services—Molly the Trolley, the Lunch Line, and Route 991/Juror Shuttle—are circulator services that operate for shorter windows of time.

Seven routes provide service every 30 minutes from 6 AM to 6 PM. 18 additional routes provide service every 30 minutes only during all or part of the morning and afternoon peak periods, with 60 minute headways or no service offered during other parts of the day. This peak-oriented service design may work well for commuters traveling to and from downtown during regular weekday business hours, but may make using transit during early morning, midday, evening, or late night periods difficult or impossible.

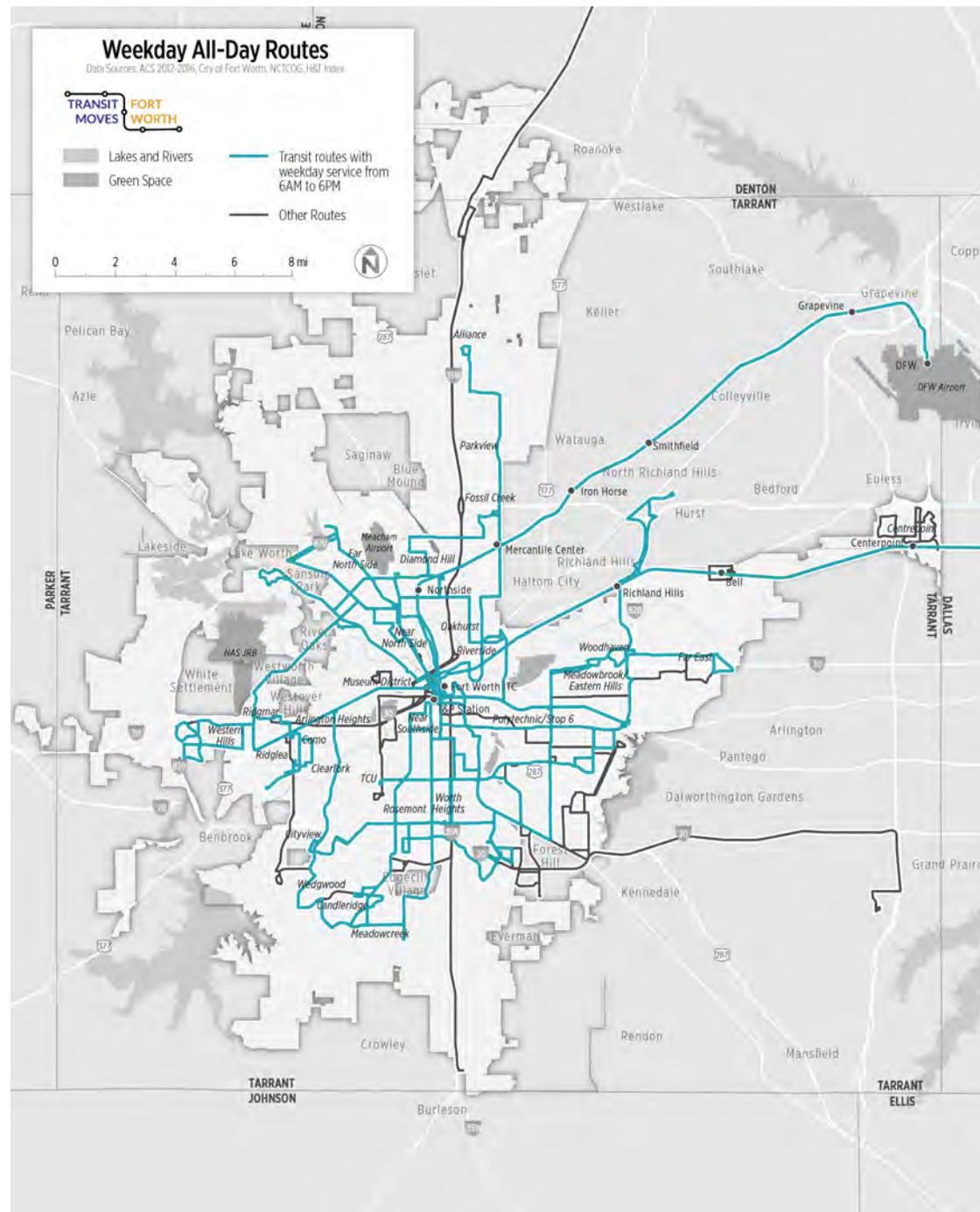


Spans of Service Vary Greatly

Of Trinity Metro's local bus routes, 28 begin service between 5 AM and 6 AM. Five more local routes begin weekday service with a late start between 6 AM and 7 AM. Of the 33 local routes that operate continuously between 6 AM and 6 PM, only 23 (70%) continue to operate until at least 9 PM. Service on these evening routes ceases at varying times, with only three routes making final weekday trips after 11 PM.

12 express routes and circulator routes operate during limited spans of service on weekdays. These routes generally offer service during the morning and afternoon peak periods, with limited, very infrequently, or no service during other daytime periods.

The large variation in spans of service across all Trinity Metro routes may make regular transit use difficult for some riders. While focusing higher-quality services during the busiest times of the day helps accommodate the needs of peak-period travelers, the irregular schedule of the system may not accommodate small disruptions to daily routines or last-minute changes in user travel plans.

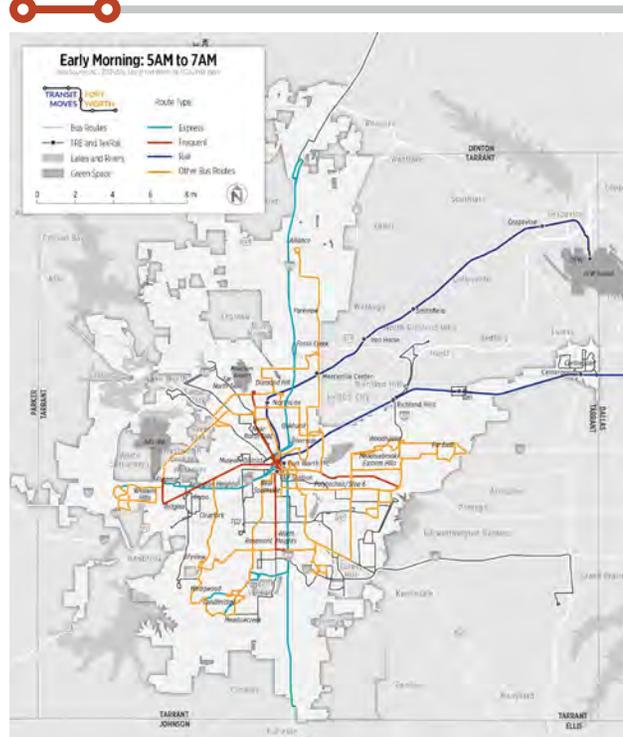


A Typical Weekday of Trinity Metro Service

Early Morning

Early morning trips can support the needs of early work commuters, especially service industry workers with earlier shift start times. Most transit service in Fort Worth operates for the majority of the early morning period, including TRE and TEXRail.

5AM 7AM

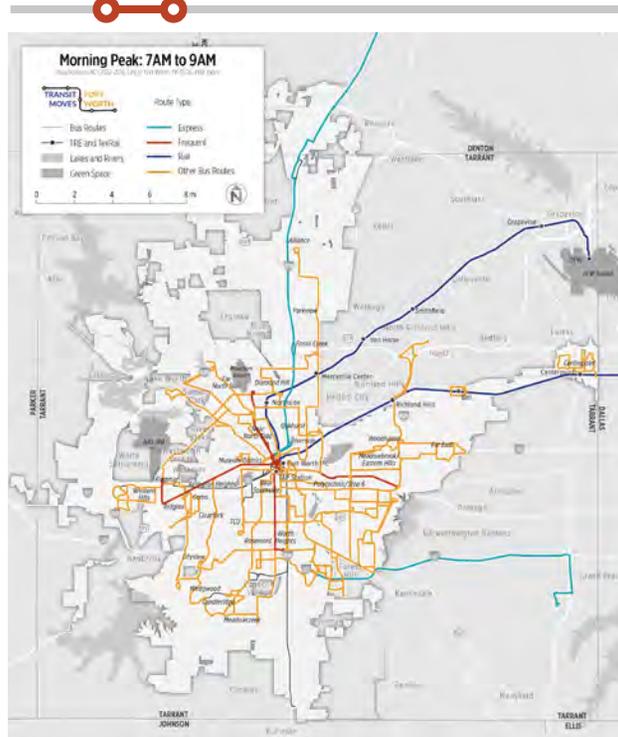


4 Frequent Routes
5 Express Routes
2 Rail Routes
19 Other Routes

Morning Peak

The morning peak on weekdays is one of the busiest travel times of the day. Most bus routes in Fort Worth operate during this period, including commuter-focused express bus services. 5 routes provide service with frequencies of 15 minutes or less during the weekday morning peak.

7AM 9AM

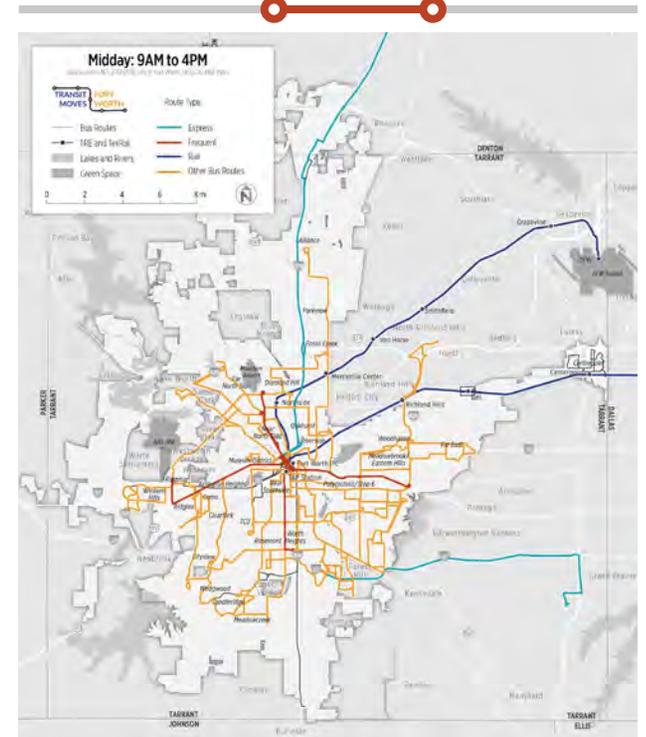


5 Frequent Routes
3 Express Routes
2 Rail Routes
31 Other Routes

Midday

The midday period on weekdays is typically slightly less busy than the morning peak period. While most Fort Worth buses operate during this period, many of the non-frequent routes run less often during midday than during the morning and afternoon peak periods.

9AM 4PM



7 Frequent Routes
2 Express Routes
2 Rail Routes
33 Other Routes

Afternoon Peak

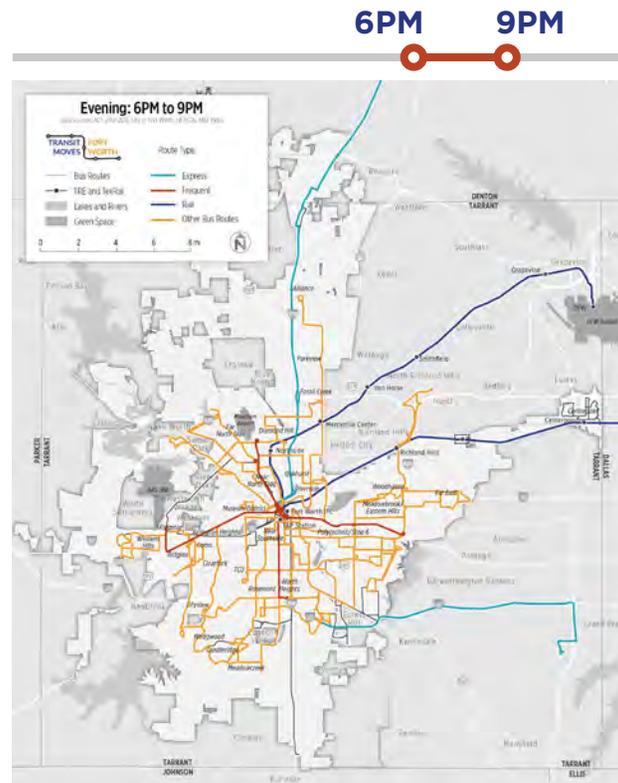
Like the morning peak, the afternoon peak is a busy travel time for commuters on weekdays. Most bus routes in Fort Worth operate during this period, including express bus services. Some routes provide more frequent service during the afternoon peak than they do during other non-peak periods.



6 Frequent Routes
5 Express Routes
2 Rail Routes
33 Other Routes

Evening

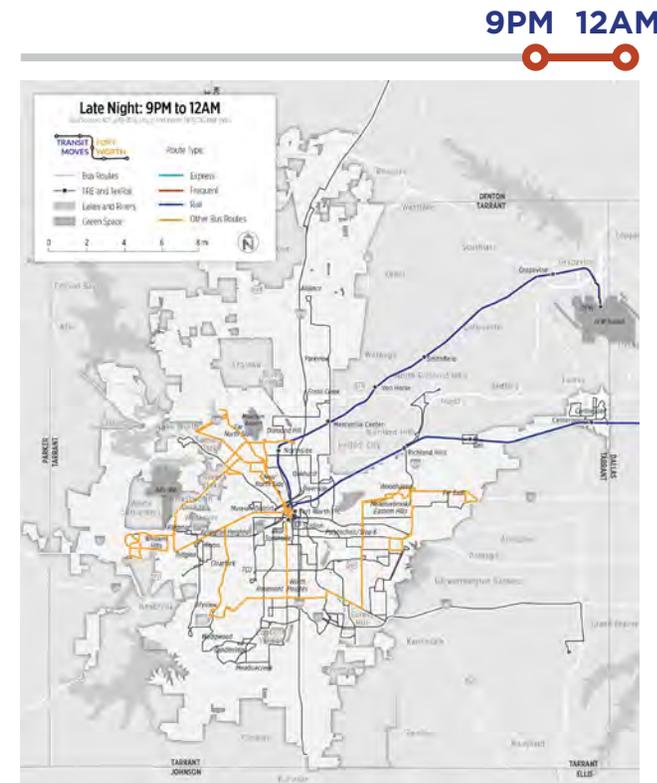
Service during the evening period on weekdays is highly variable, with many routes ceasing service during this period and others offering less frequent service or service in one direction only.



5 Frequent Routes
2 Express Routes
2 Rail Routes
22 Other Routes

Late Night

Most transit service in Fort Worth ceases before 9 PM or 10 PM on weekdays, with only 12 routes offering service through most of the late night period. 10 other bus routes provide service during part of the late night period, but cease service before 10:30 PM. There is no frequent service during this period



0 Frequent Routes
0 Express Routes
2 Rail Routes
12 Other Routes

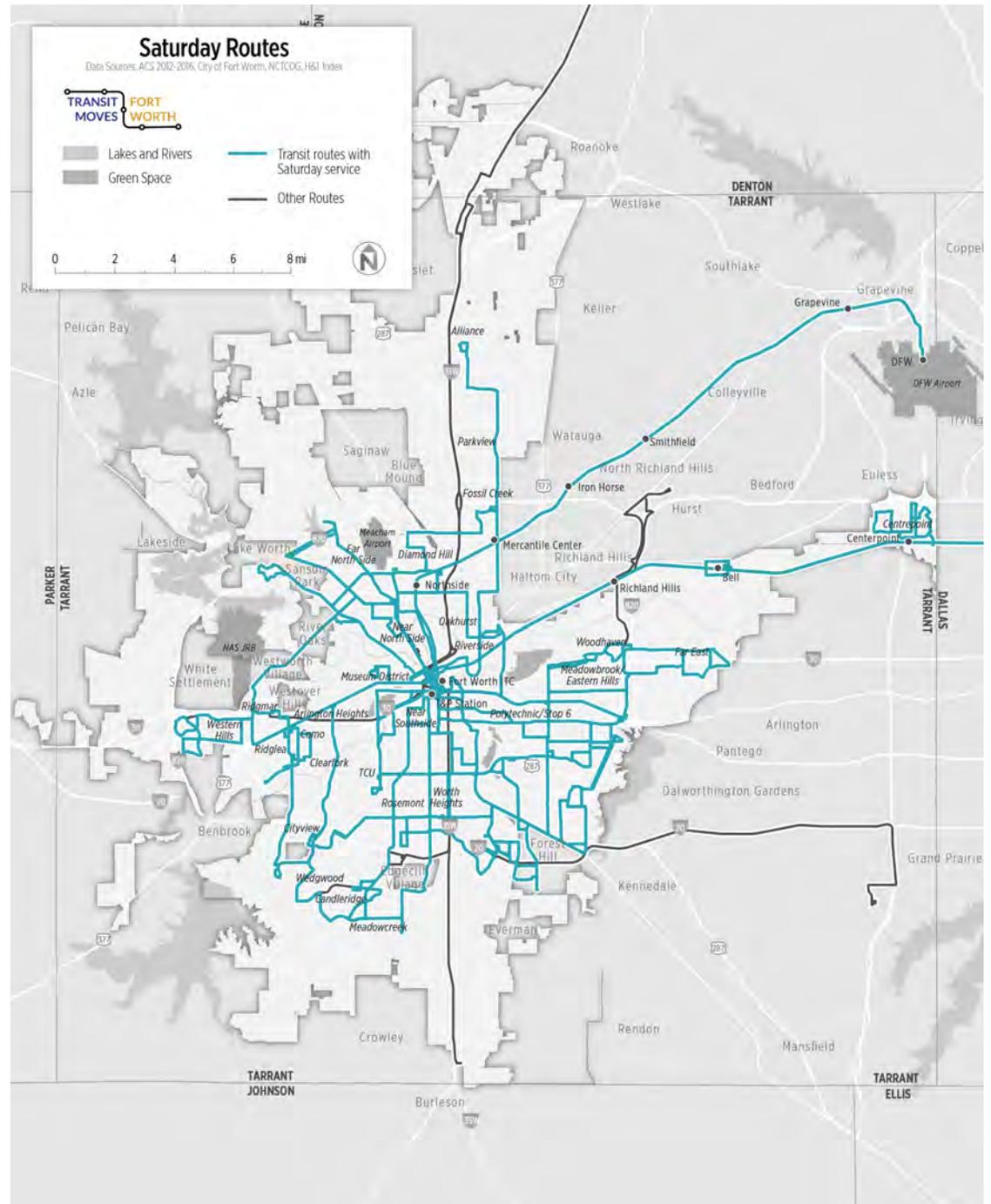
Methodology: Routes are considered to operate during a period if its operates consistent departures through at least half of the period's span. For example, 12 "Other Routes" operate through 10:30 pm or later during the late night period. 10 routes not counted here end before 10:30 PM.

32 Routes Operate on Saturdays

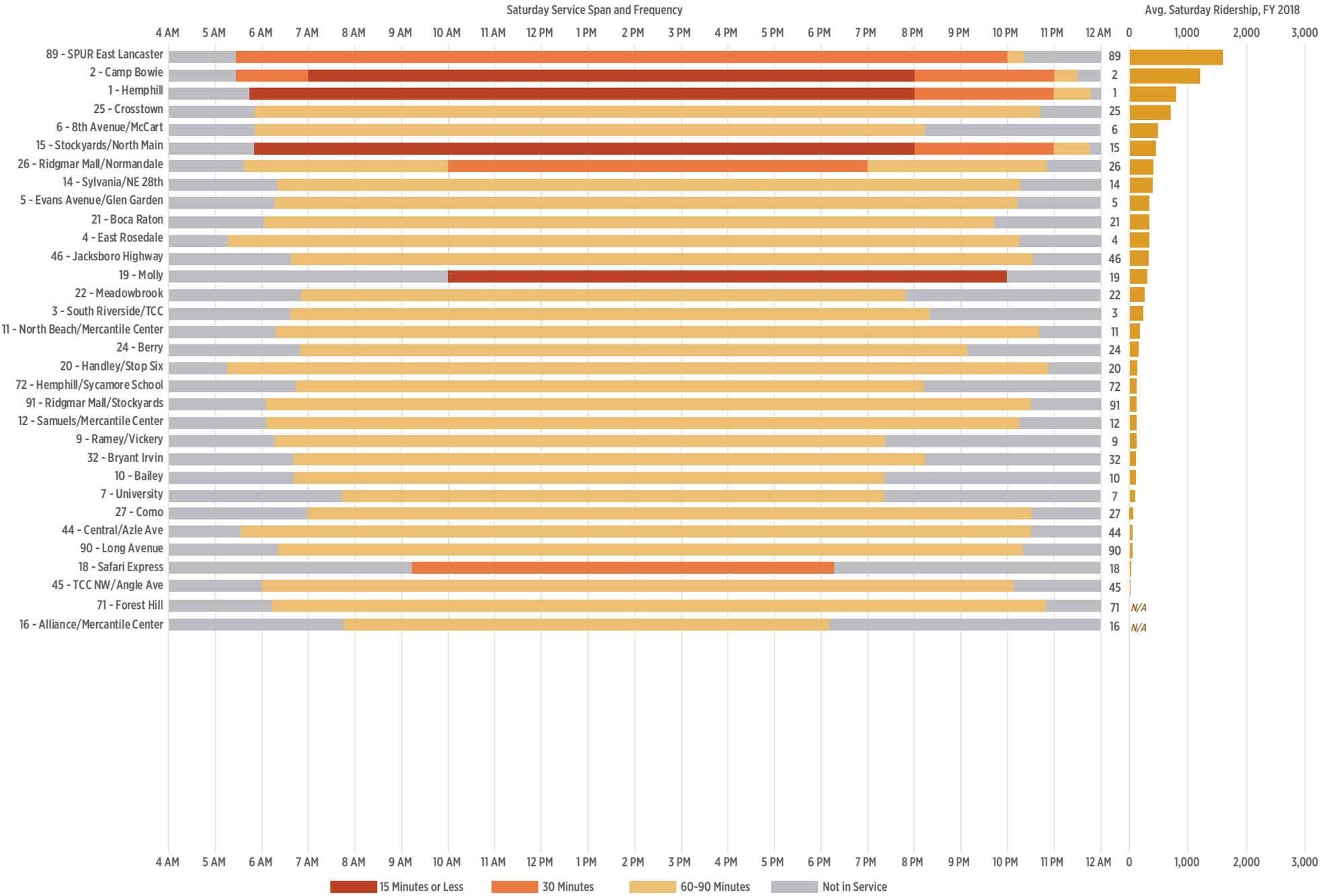
On Saturdays, Trinity Metro’s operations scale back substantially. Three routes operate frequently (every 15 minutes) from approximately 6 AM to 8 PM - Routes 1 - Hemphill, 2 - Camp Bowie, and 15 - North/Main Stockyards. Molly the Trolley operates frequently from 10 AM to 10 PM. Route 89 - the SPUR operates at 30 minute frequencies from 6 AM to 9 PM. Route 26 - Normandale operates at 30 minute frequencies for part of the day, although the route operates as a one-way loop.

In addition to the previously mentioned routes, Route 18X - Safari Express operates at 30 minute frequencies and only runs on Saturdays between Memorial Day and Labor Day. Every other regular service route that operates on Saturdays runs at a frequency of one bus per hour.

Routes that do not operate on Saturdays include Route 23 - Northeast Campus/TRE, Route 28 - Mansfield Highway, all Xpress routes other than the Safari Express, and most Circulator routes (with the exception of Molly the Trolley).



Saturday Frequency, Span of Service, and Ridership

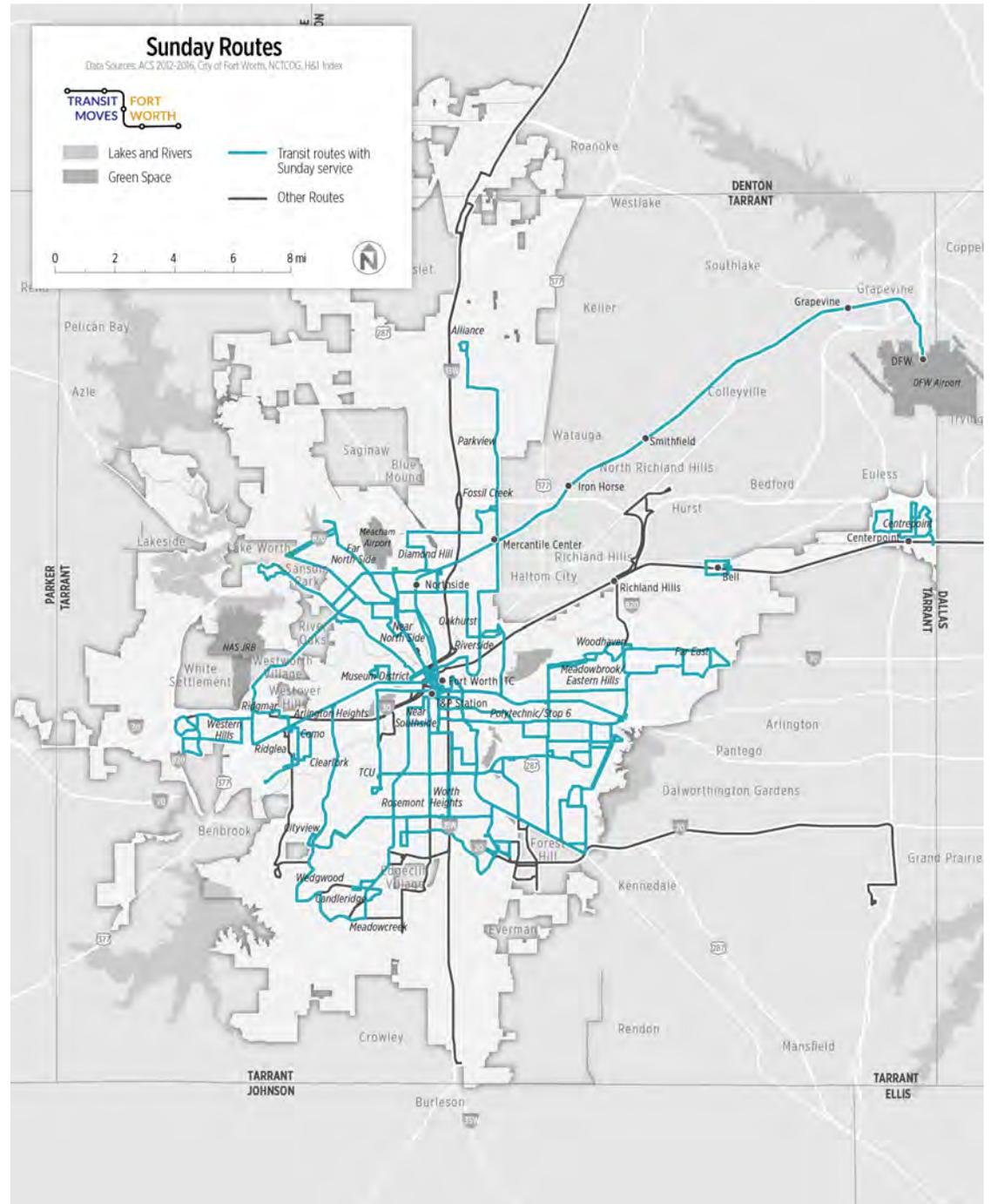


25 Routes Operate on Sundays

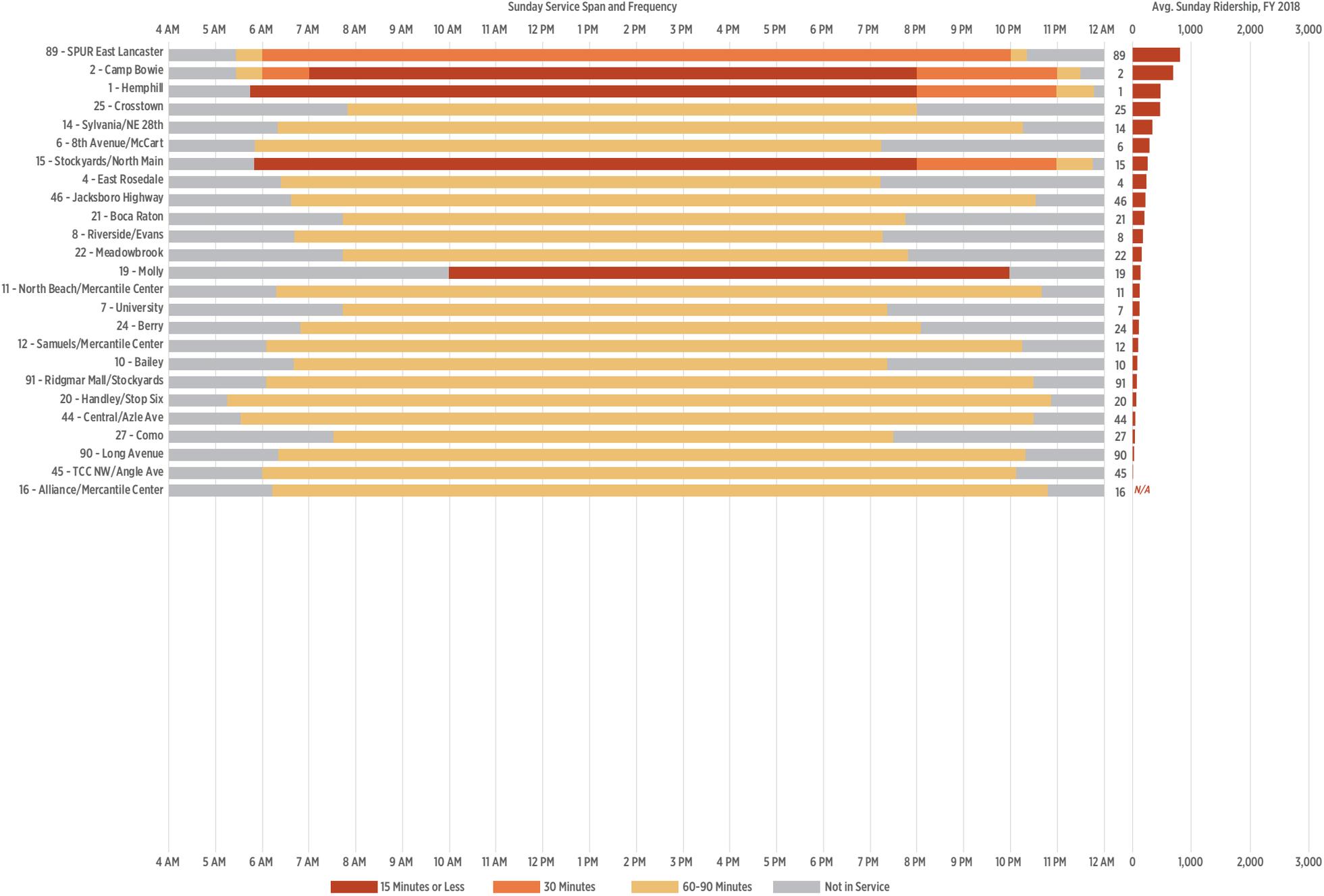
Sunday service on Trinity Metro is further limited beyond the Saturday operating pattern. The same three routes that operate frequently on Saturday - Routes 1 - Hemphill, 2 - Camp Bowie, and 15 - North Main/Stockyards - maintain their span and frequency on Sunday. Molly the Trolley also runs the same frequent schedule on Sunday from 10 AM to 10 PM. Route 89 - the SPUR and Route 26 - Normandale maintain their 30 minute frequencies and spans as well.

All other routes that operate on Sunday operate at hourly frequencies, and typically start service one to two hours later than on Saturday. While many routes operate until 10 or 11 PM, some routes - such as Routes 4 - Rosedale, 25 - Crosstown, 21 - Boca Raton, and 27 - Como - end earlier, typically by 8 PM.

Route 8 - Riverside/Evans is the only route that operates only on Sundays. Conversely, routes 5 - Evans/Glen Garden, 9 - Ramey/Vickery, 32 - Bryant Irvin, 71 - Forest Hill, and 72 - Hemphill/Sycamore School Road run every other day of the week except Sundays. As with Saturdays, Xpress routes and Circulators (other than Molly the Trolley) do not operate.



Sunday Frequency, Span of Service, and Ridership



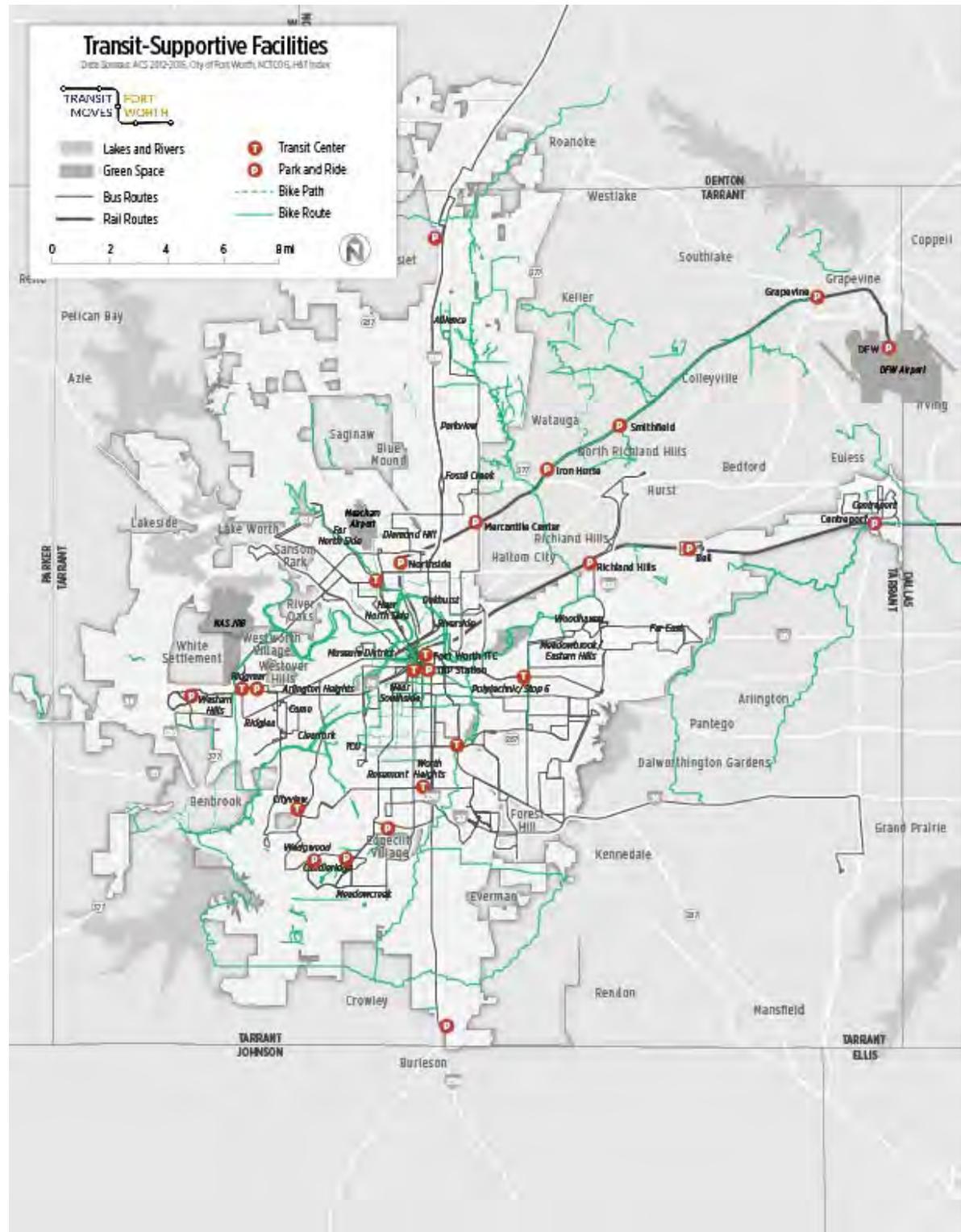
Transit Facilities Provide Places to Connect with Transit and Transfer Between Routes

In addition to transit routes and services, transit facilities such as bus stops, park and rides, or bike infrastructure can play an important role in supporting the needs of riders. While some transit riders may live very close to bus or rail routes, most will typically need to walk, bike, or drive to a bus stop or train station to access the transit network.

Transit facilities can be very influential in creating a positive and enjoyable rider experience. Facilities which are unsafe, poorly lit, or difficult to access will discourage riders from using transit if they have more appealing travel options available. Frustration or dissatisfaction from waiting for infrequent service or making inconvenient transfers can be greatly exacerbated if bus stops, train stations, or transfer centers lack rider amenities.

Transit Facilities

The transit network in Fort Worth includes a variety of transit facilities for connecting to, from, or between bus services. The Intermodal Transit Center (ITC) in downtown Fort Worth is owned and operated by Trinity Metro, and provides connections to 24 different bus routes as well as TRE and TEXRail service. There are 17 Park and Ride lots where riders can connect with Trinity Metro services. 10 of these park and ride lots are at rail stations. Seven of these park and ride lots allow for connection to bus services only: 4 area churches, the North and South Park and Rides, and Texas Health Presbyterian Hospital in Denton. Other transit centers and transfer centers include both on and off-street facilities outfitted with varying levels of amenities, including basic shelters, benches, way-finding, and lighting.



Fort Worth Intermodal Transportation Center (ITC)

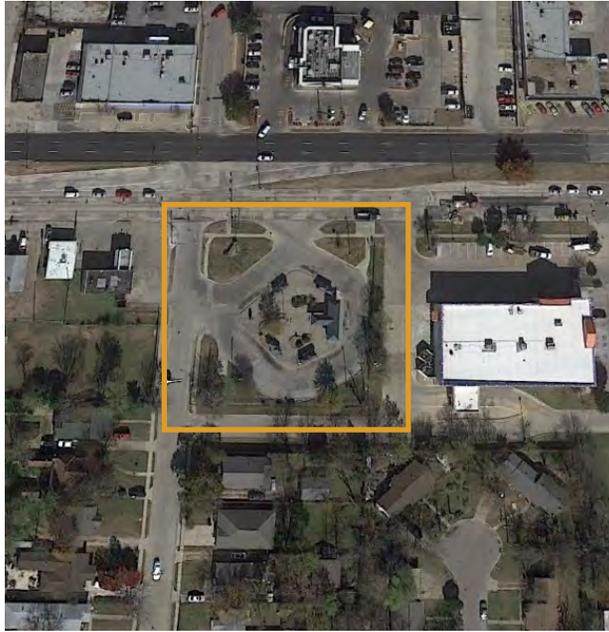


Fort Worth ITC

The Intermodal Transportation Center opened in 2002 following the extension of the TRE service to downtown Fort Worth. The ITC is located at the intersection of 9th Street and Jones Street in downtown Fort Worth. The transportation center was developed to provide a convenient and centralized hub for multiple forms of public transportation with indoor waiting facilities and customer counters, including a staffed Customer Relations kiosk.

The ITC is Trinity Metro's largest transfer center, and it functions as a hub for the transit agency's routes that serve downtown Fort Worth. This facility also offers access to the regional TRE service and national Amtrak service, Greyhound bus service, taxi and TNC service, Enterprise Rent-A-Car, and two Fort Worth B-Cycle bikeshare stations.

East Fort Worth Transfer Center



East Fort Worth Transfer Center

The East Fort Worth Transfer Center is an off-street transfer facility located off South Sargent Street in East Fort Worth. The transfer center has four bus shelters and a canopy that covers two benches. The East Fort Worth Transfer Center is served by 5 routes including the Spur*.

La Gran Plaza Transfer Center



La Gran Plaza Transfer Center

La Gran Plaza Transfer Center is an off-street transfer center located just south of the La Gran Plaza shopping mall, north of East Seminary Drive in south Fort Worth. The transfer center consists of six bus bays and is served by four routes.

Ridgmar Mall Transfer Center



Ridgmar Mall Transfer Center

The Ridgmar Mall Transfer Center is located on Mall Circle just east of Ridgmar Mall. The transfer center is a stop with a bus shelter and space for three buses to layover. It is served by five routes.

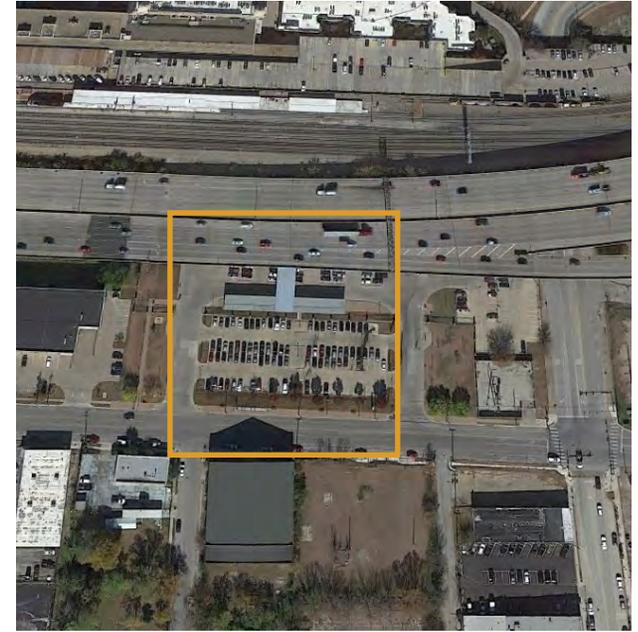
Stockyards Transfer Center



Stockyards Transfer Center

The Stockyards Transfer Center is located on the east side of North Houston Street in north Fort Worth in the Stockyards area. The transfer center is essentially a bus stop with four adjoining bus shelters located two blocks west of North Main Street. North Main Street is the center of most area activity. This transfer center is served by six routes.

Vickery Boulevard Transfer Center



Vickery Boulevard Transfer Center

The Vickery Boulevard Transfer Center is located at the Texas & Pacific (T&P) Station. Buses stop within the station, where there is a sheltered waiting area. T&P Station also has a B-Cycle bike share station and is served by two routes.

Sierra Vista Transfer Center



Sierra Vista Transfer Center

The Sierra Vista Transfer Center is an off-street transfer facility located south of East Berry Street near the intersection of Riverside Drive in southeast Fort Worth. The transfer center contains four bus shelters and is served by four routes.

Other Transit-Supportive Facilities

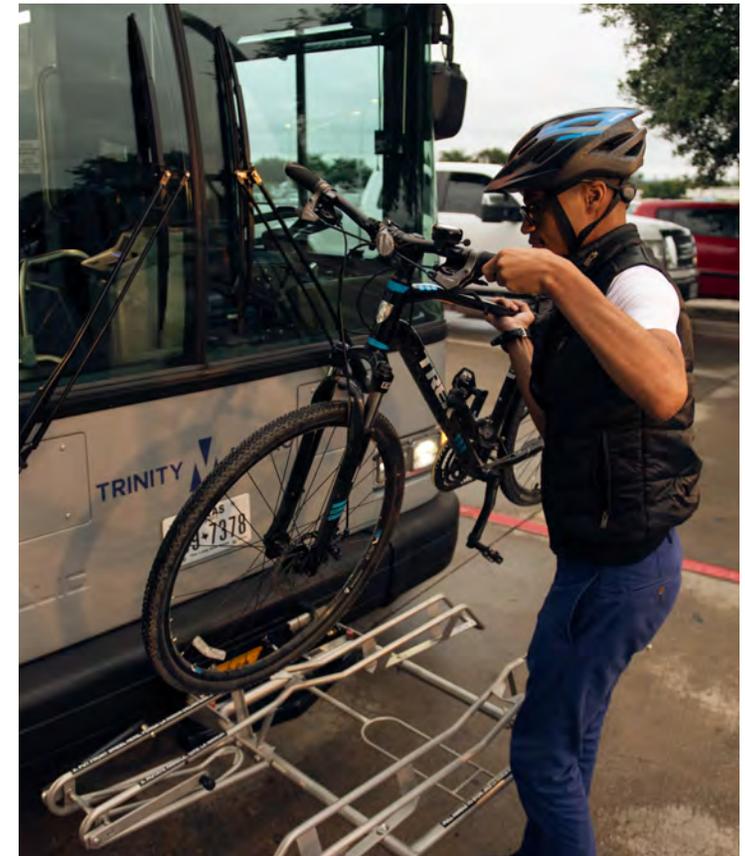
Aside from the ITC, most transit centers, transfer centers, and park and rides are located in lower-density areas with limited pedestrian access or nearby amenities. While some are located near large shopping centers, bus access points at these sites are located in peripheral areas far from activities and amenities.

Nonetheless, several of these transit centers have the highest average daily ridership outside of downtown. After the ITC, the Trinity Metro bus stops with the highest ridership in FY 2018 were the Ridgmar Mall Transfer Center, the East Fort Worth Transfer Center, and La Gran Plaza Transfer Center.

Bicycle Infrastructure

Fort Worth is home to an increasingly robust network of bicycle routes and trails. Like transit centers, transfer centers, and park and rides, bicycle facilities can provide opportunities for potential transit riders to access bus and rail services. Safe, secure bicycle facilities—including bike lanes and places to lock bikes near transit services—are important for encouraging transit riders to use bikes for making first- and last-mile connections to transit. Riders may be more likely to use a bicycle to connect to frequent, higher-quality transit services than to basic bus services.

Cyclists are permitted to bring their bikes on TEXRail and TRE trains. TEXRail trains include on-board bike racks, while TRE trains include designated areas for riders to stand with bikes. All buses on Trinity Metro routes include folding bicycle racks on the front of vehicles. While some bus stops in the downtown area are located near on-street bike racks, few bus facilities in other parts of the city provide on-street opportunities for securing bicycles.

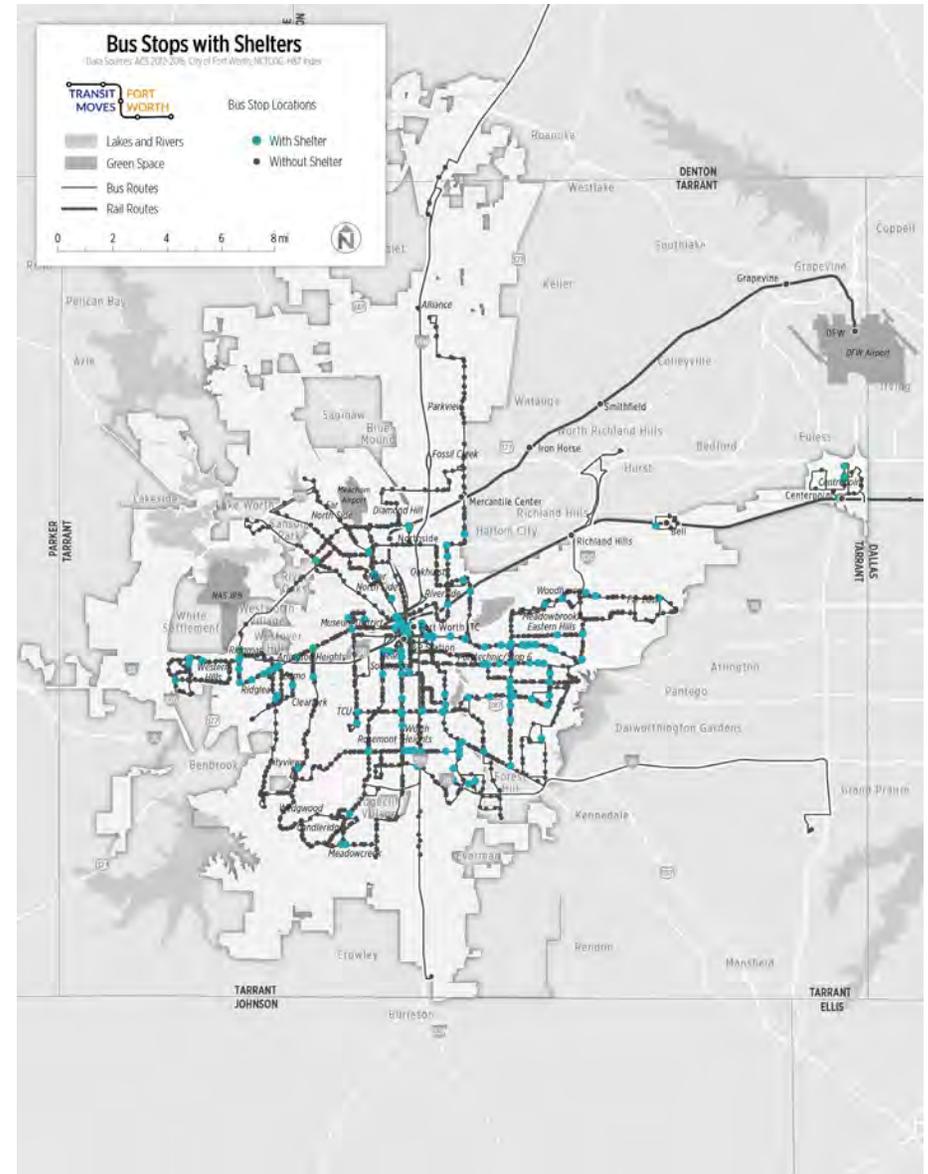


Bus Stop Amenities

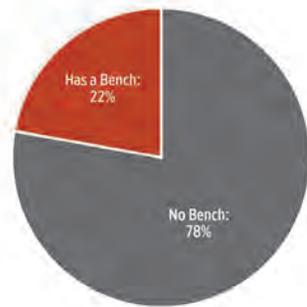
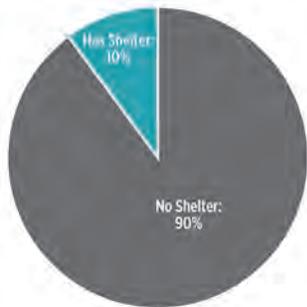
Most bus stops in the Trinity Metro network lack shelters, seating, or lighting. Many stops are marked with a simple signpost and lack any rider amenities. Others present accessibility challenges for riders with physical disabilities, often because of a lack of accessible curbs, sidewalks and ramps, and/or stop pads..

Stops which do include shelters, benches, lighting, and way-finding provide a much more appealing rider experience. Trinity Metro has recently made improvements to on-street bus stops at a variety of locations in Fort Worth, with shelters that better support riders who are waiting for less-frequent service.

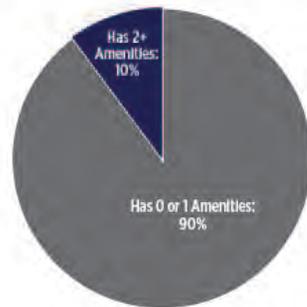
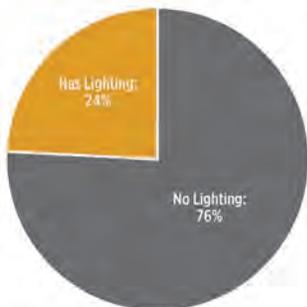
Bus Stops with a Shelter



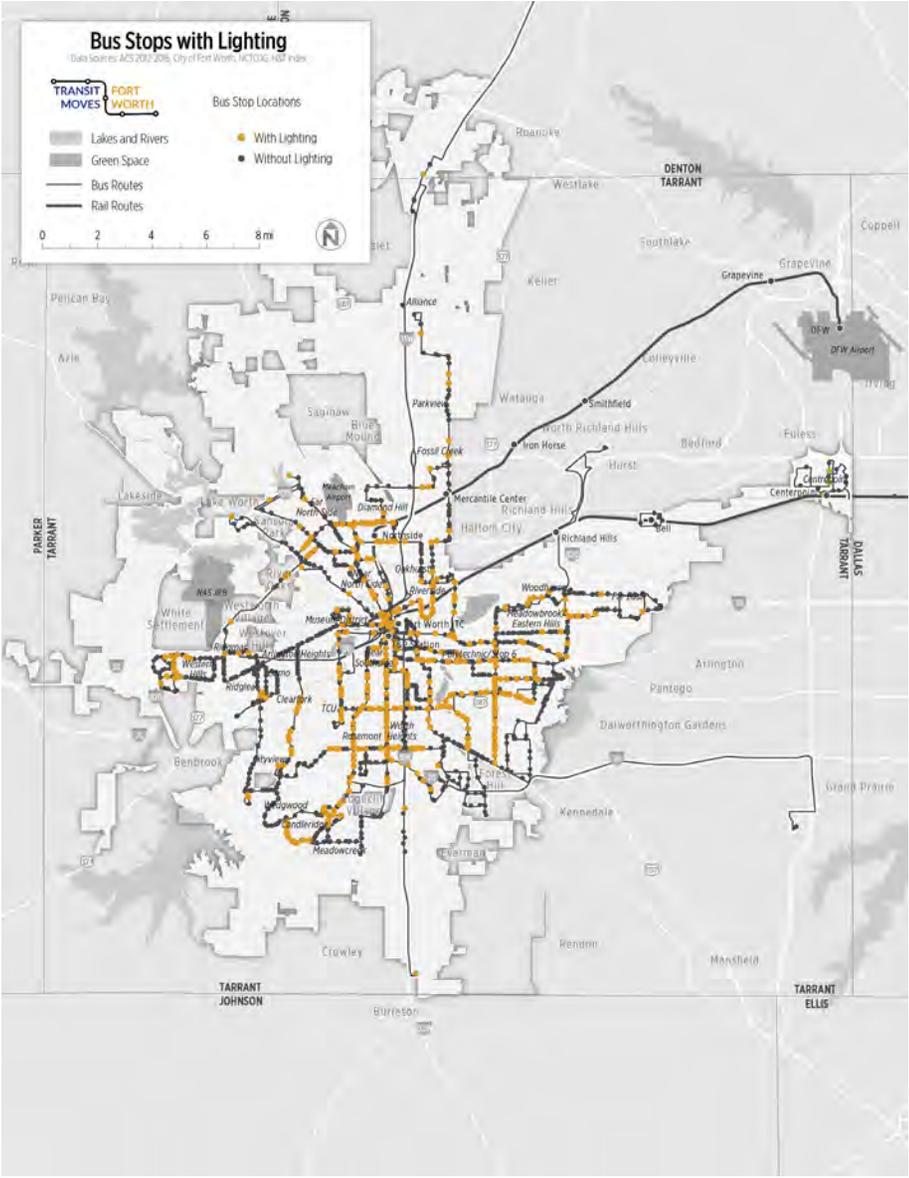
Bus Stops with a Shelter Bus Stops with a Bench



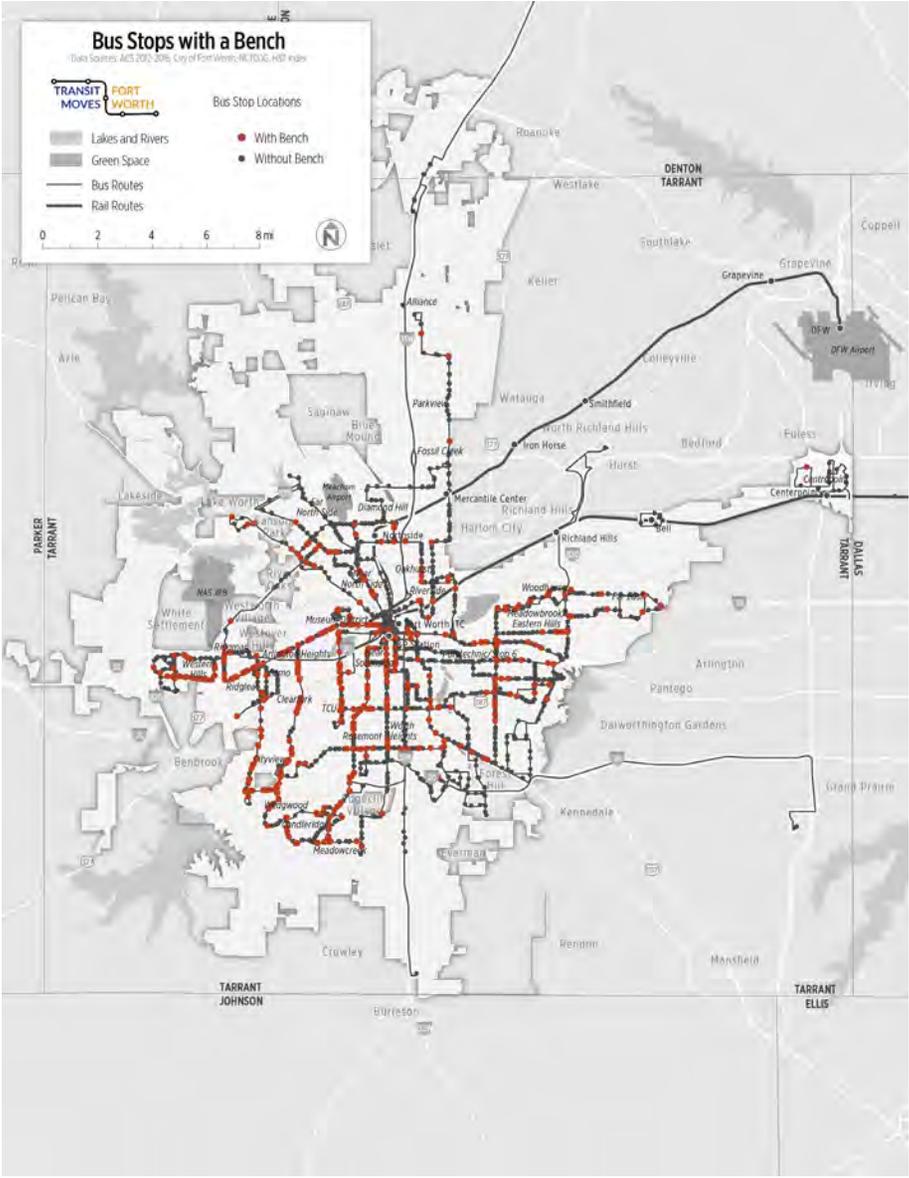
Bus Stops with Lighting Bus Stops with 2+ Amenities



Bus Stops with Lighting



Bus Stops with a Bench



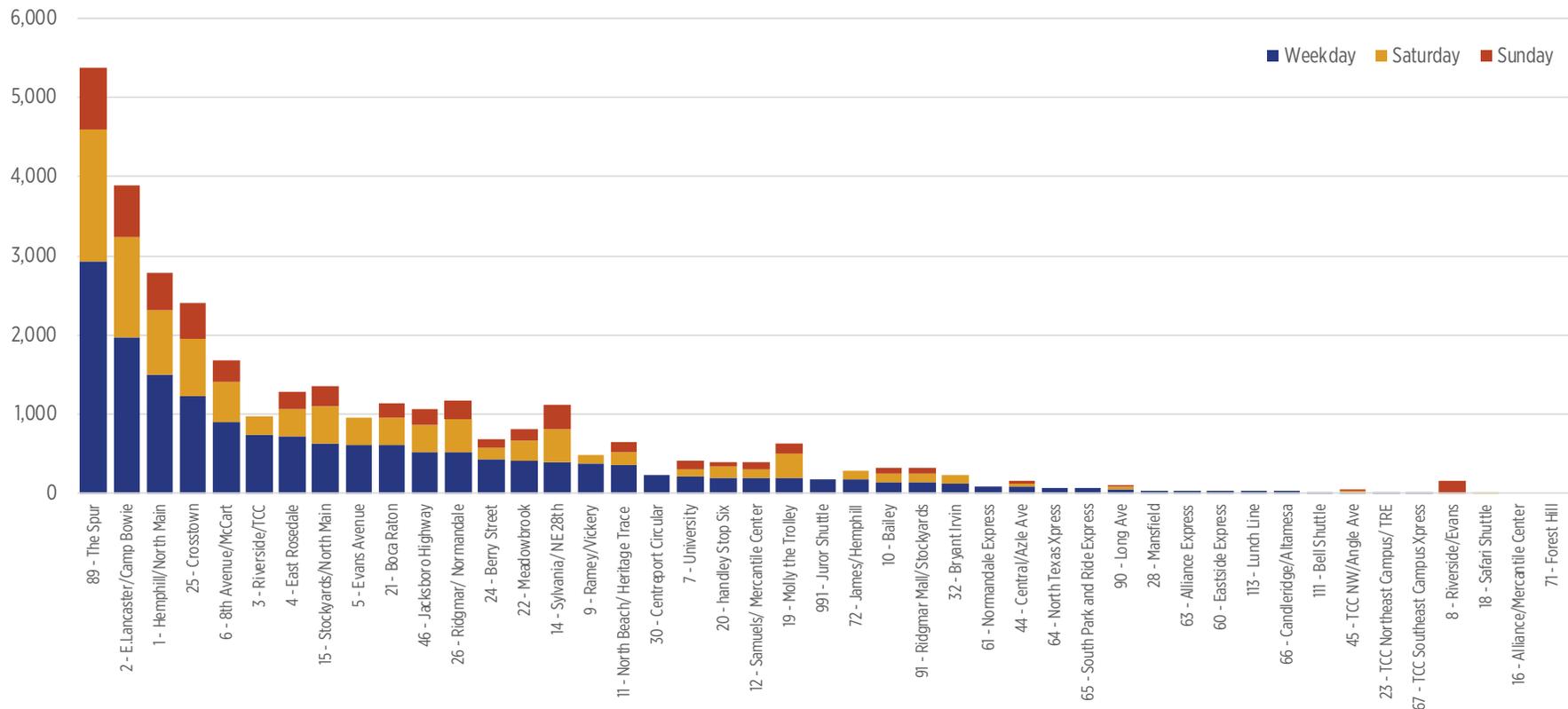
Ridership by Route Ranges from Very High to Very Low

In Fiscal Year 2018, approximately 18,000 riders boarded Trinity Metro routes on a typical weekday. Ridership on most routes corresponded to the level of service provided. Typically, routes that offer frequent, all-day service tended to have higher daily ridership totals than routes which operate less frequently or for less time during the day. Ridership also varied between typical weekdays, Saturdays, and Sundays. System-wide ridership averaged 10,200 on Saturdays and 5,000 on Sundays.

By a large margin, the highest ridership route on any given day is Route 89 - The SPUR, which is Fort Worth's only "Rapid Bus" service offering. In FY 2018, nearly 3,000 riders boarded The SPUR on an average weekday. The two next highest ridership routes - the 2 -Camp Bowie and the 1 - Hemphill- also operate frequent, all-day service 7 days a week. The only other route with more than 1,000 average weekday riders was the Route 25 - Crosstown.

Most other Radial, Feeder, and Crosstown routes generally carried between 100 and 1,000 riders on a typical weekday in FY 2018. Saturday and Sunday ridership generally totaled half of typical weekday ridership on routes that operate weekend service, with a few notable exceptions. Route 14 - Sylvania/ North Main carried more riders on a typical Saturday than it did on weekdays, as did Molly the Trolley.

Average Weekday, Saturday, and Sunday Ridership, FY 2018



NOTE: Ridership numbers are not available for Route 16, Route 71, and the Safari Shuttle. TCC Express services and the Bell Shuttle average fewer than 25 riders per day.

Ridership Is Concentrated at Transfer Centers

Examining boardings by stop reveals further nuance to ridership patterns throughout the system and across routes. Trinity Metro’s system is heavily reliant on transfer centers to facilitate longer trips, which is why the eight transfer centers accounted for 42% of daily boardings in FY 2018.

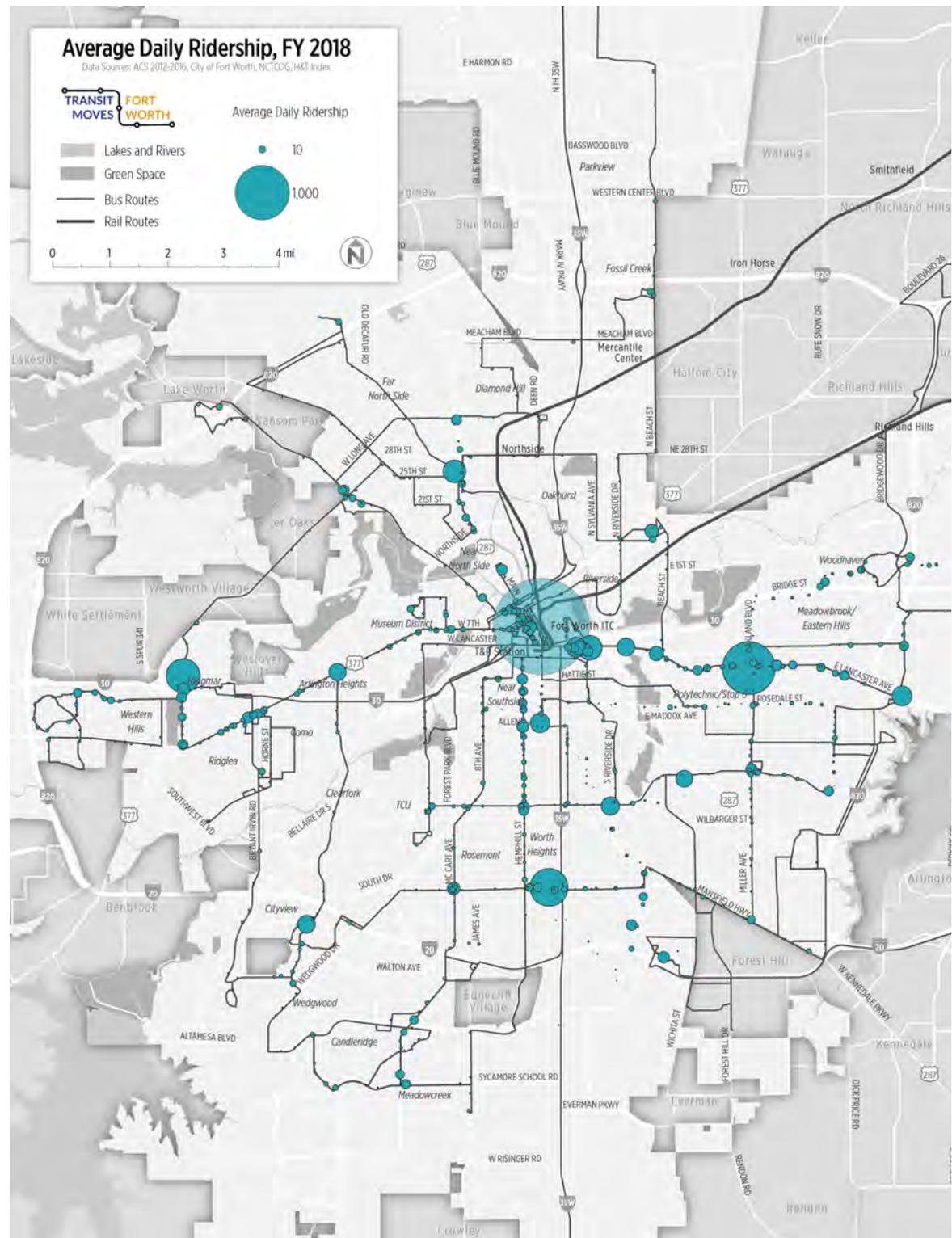
The Intermodal Transportation Center (ITC) is by far the busiest bus station in the Trinity Metro system. More than three times as many riders (3,200) boarded buses at the ITC than on the next busiest stop - the East Fort Worth Transfer Center - where almost 1,000 passengers boarded per day on average in FY 2018. La Gran Plaza and Ridgmar Mall Transfer Centers saw approximately 500 average boardings per day. Lancaster & Pine, which serves Route 89 - the SPUR and Route 14 - Sylvania/North Main, was the fifth busiest stop in FY 2018 - and the busiest non-transfer center stop in the city.

Rounding out the top 10 stops in the system are the Stockyards TC, Sierra Vista TC, two additional stops along The SPUR route (Halbert & Kerr, Lancaster & Cedar/Poplar), and the stop serving JPS Hospital on routes 4 - East Rosedale, 5 - Evans/Glen Garden, and 8 - Riverside/Evans (Main & St. Joseph).

Within Central Fort Worth, boarding activity is concentrated outside of downtown (with the exception of the ITC). The downtown bus stops other than the ITC served 500 daily boardings on average in FY 2018, and 85% of downtown bus boardings occurred at the ITC.

Beyond the major transfer centers, ridership is fairly dispersed at stops throughout the city. Some notable concentrations of boarding activity occur near major retail/employment destinations - such as Walmarts at Renaissance Square, Beach Street, and Jacksboro Highway/183 - as well as civic destinations such as the TCC South Campus.

Other concentrations of boarding activity occur along frequent transit routes in many of Fort Worth’s designated Urban Villages. Examples include: Camp Bowie Blvd. in Ridglea, Hemphill Street in Near Southside, and East Lancaster in Stop Six/Handley.



Ridership Has Declined Since Reaching a Peak in 2014

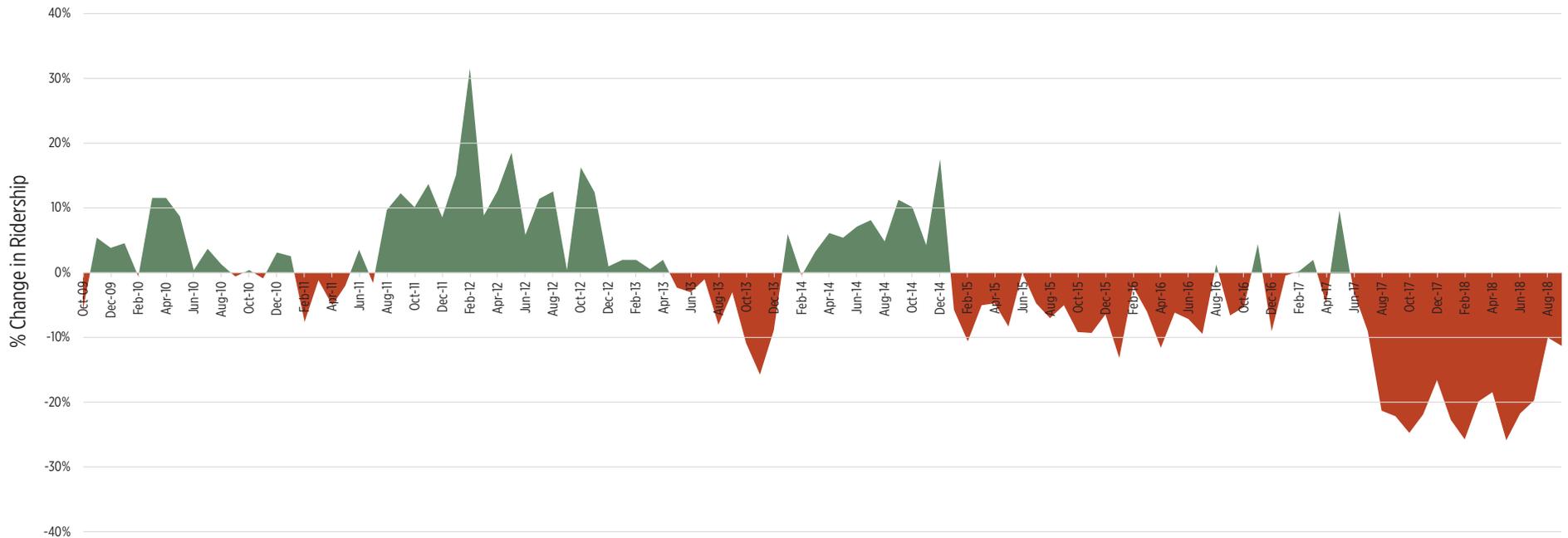
Ridership on Trinity Metro’s system has seen uneven changes over the past 8 years. In general, ridership in FY 2018 was down on Weekdays and Saturdays compared to FY 2010, while Sunday ridership had increased slightly. Weekday ridership was down 22%, Saturday ridership was down 16%, and Sunday ridership was up 14%. Total system ridership in FY 2018 was approximately 5.2 million, while in FY 2010 it was approximately 6.5 million - a decrease of 20%.

However, looking at the range of ridership trends throughout the 8 year time frame reveals that

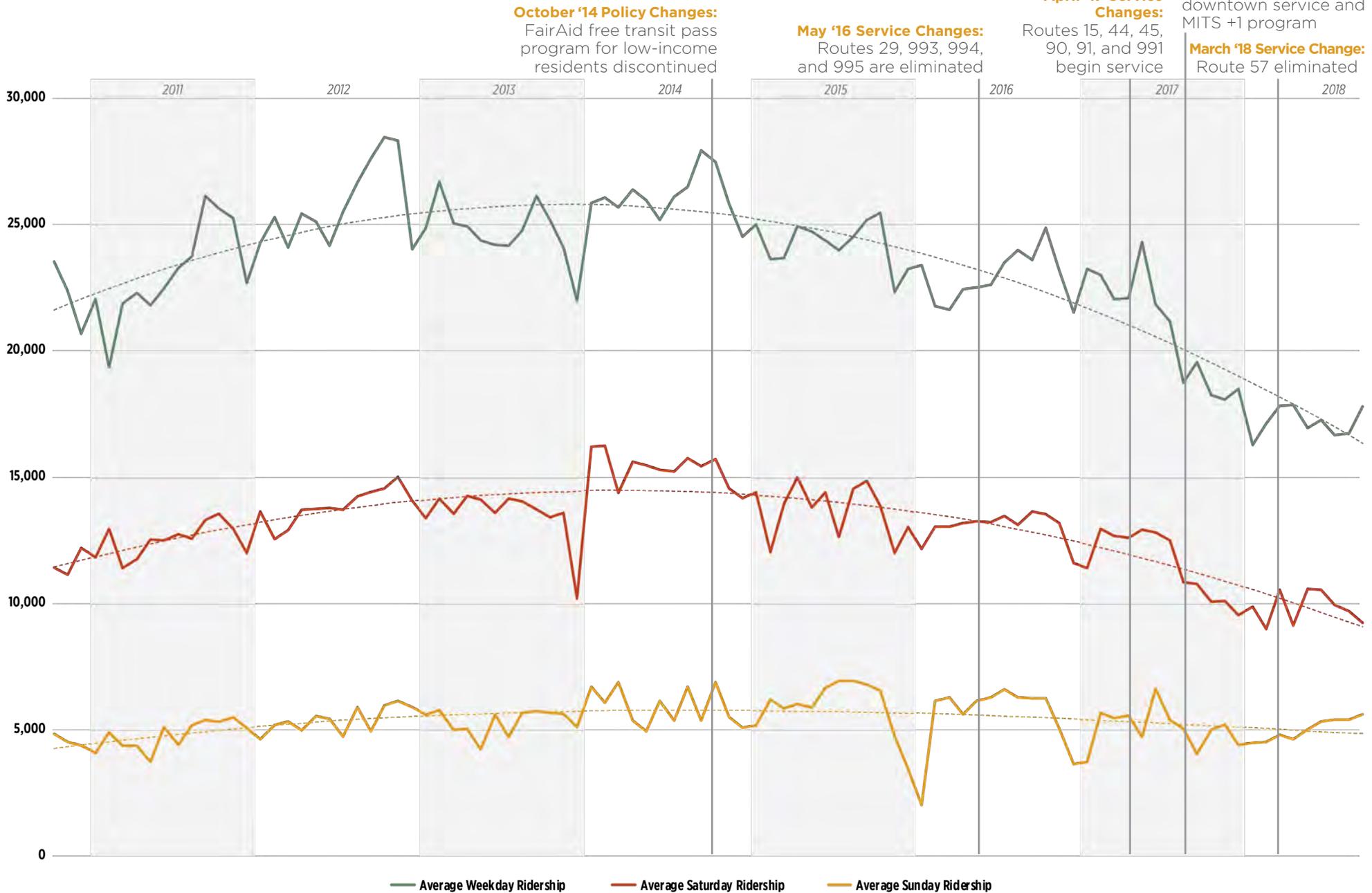
ridership actually peaked above the FY 2010 totals before declining. System-wide ridership peaked in FY 2014, when 7.6 million riders boarded Trinity Metro buses. When breaking down annual ridership by month, the steepest decline in ridership occurred during 2017. In January 2017, monthly ridership system-wide was 537,000. By December 2017, monthly ridership dropped to 439,000 - a loss of nearly 100,000 average monthly riders. Towards the end of FY 2018, weekday and Saturday ridership started to stabilize, while Sunday ridership increased.

Ridership also tends to fluctuate month-to-month over the course of a typical year. In general, most years experience the highest ridership on weekdays in October (the busiest month in the system over the last 8 years occurred in October 2012). Ridership tends to be lowest during the winter months and higher from approximately May through October.

Year-Over-Year Change in Monthly Ridership, FY 2010 to FY 2018



Trinity Metro Monthly Ridership, 2011-2018

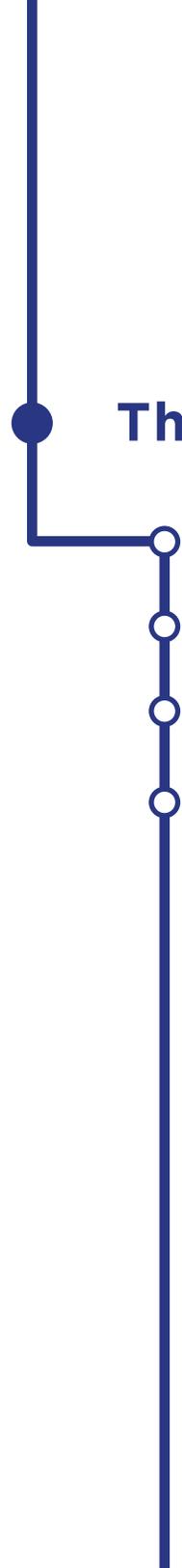






CIRQUE
THEATRE

DOWNTOWN CENTRAL BUS STOP TRAVEL GUIDE



The Market for Transit in Fort Worth

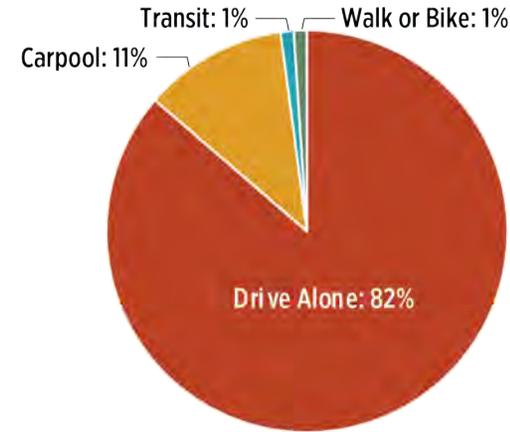
Underlying Local Transit Demand.....	42
Major Activities Centers.....	59
Looking Forward to 2045	62
Travel Patterns.....	69

Transit Use in Fort Worth

In character with most of the country, traveling alone in a personal vehicle is the dominant way people move in Fort Worth. Overall, 82% of Fort Worth residents drive alone to work, 11% carpool, 1% walk or bike, and 1% take transit. In dispersed areas, people are more likely to own more vehicles and rely upon driving them farther distances. Making transit an attractive, reliable, and convenient way to travel relies on concentrating viable and high-quality transit service where there is appropriate demand for service. This market analysis focuses on understanding where there exists demand for transit, so that transit improvements can be implemented where they will be most successful.

How Fort Worth Residents Commute to Work

Source: 2013-2017 American Community Survey 5-Year Estimates



Underlying transit demand is strongly related to six factors:



Population and Population Density: Since transit relies on having more people in close proximity to service, higher population density makes it feasible to provide higher levels of service.



Socioeconomic Characteristics: Different people have different likelihood to use transit, with differences related to socioeconomic characteristics. For example, households with low incomes are much more likely to use transit.



Employment and Employment Density: The location and density of jobs is also a strong indicator of transit demand, as traveling to and from work often accounts for the most frequent type of transit trip.



Development Patterns: In all cities, there is a strong correlation between development patterns and transit ridership. In areas with denser development, mixed-use development, and a good pedestrian environment, transit can become very convenient, making it attractive and well used.



Major Activity Centers: Large employers, universities, tourism destinations, and other high-activity areas attract large volumes of people and can generate a large number of transit trips.



Travel Flows: Travel flows provide information on the trips that people make along with the mode of travel, allowing for broad conclusions of where people from certain locations need to travel inside and outside an area on various travel modes.

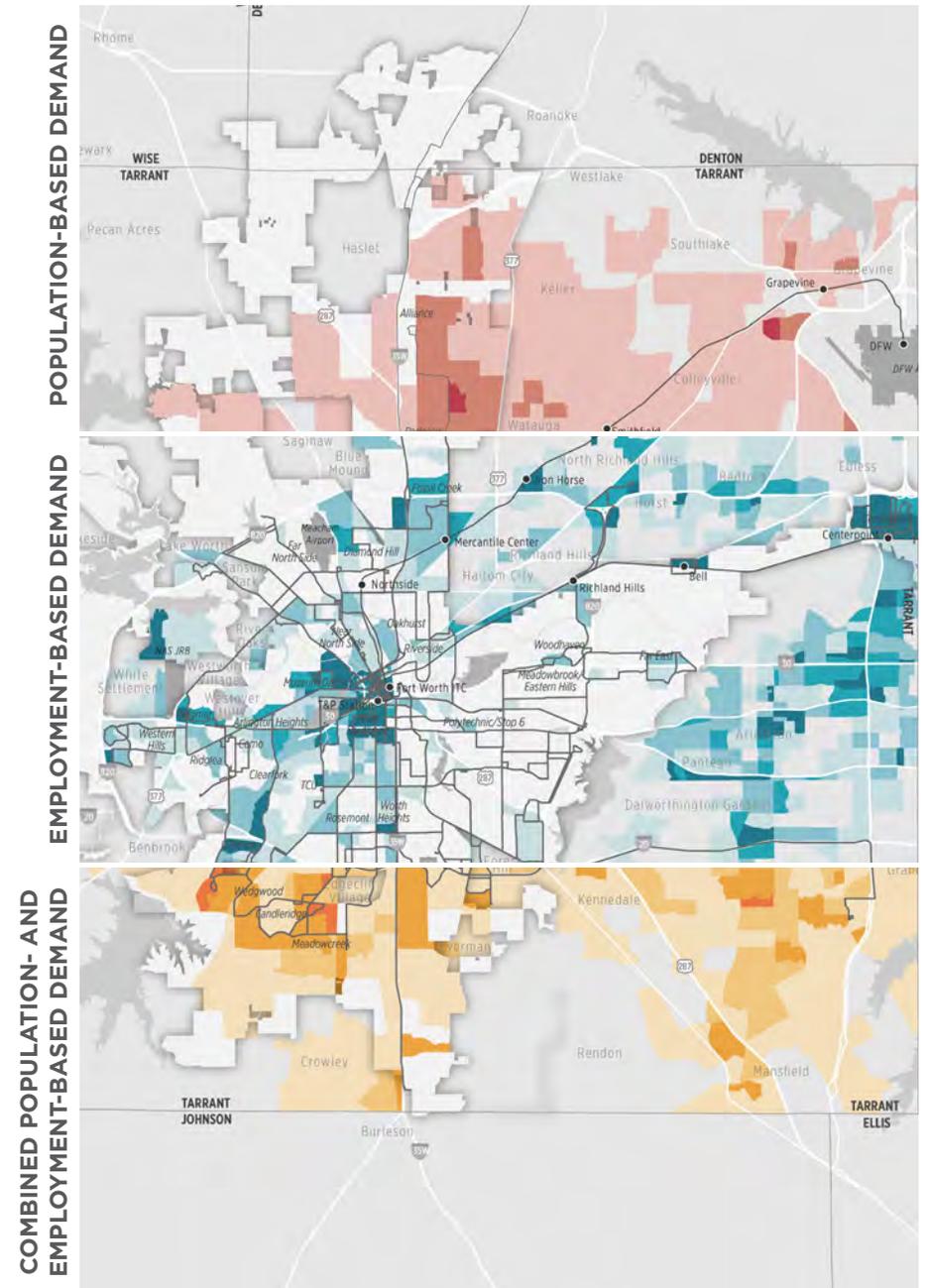
Overview of Transit Demand

More than any other factor, **population and employment density** will determine the underlying demand for transit. This is because:

- The reach of transit is generally limited to within one-quarter mile of the bus stop or station. As a result, the size of the travel market is directly related to the density of development in that area.
- Transit service frequencies, in turn, are closely related to market size. Bigger markets support more frequent service. Conversely, smaller markets can only support less frequent service.
- To attract travelers who have other transportation options, such as private automobiles, transit service must be relatively frequent and get riders to their destination in a time and at a cost competitive with a private vehicle. Infrequent service is inconvenient, and thus will largely serve residents and workers who cannot drive.

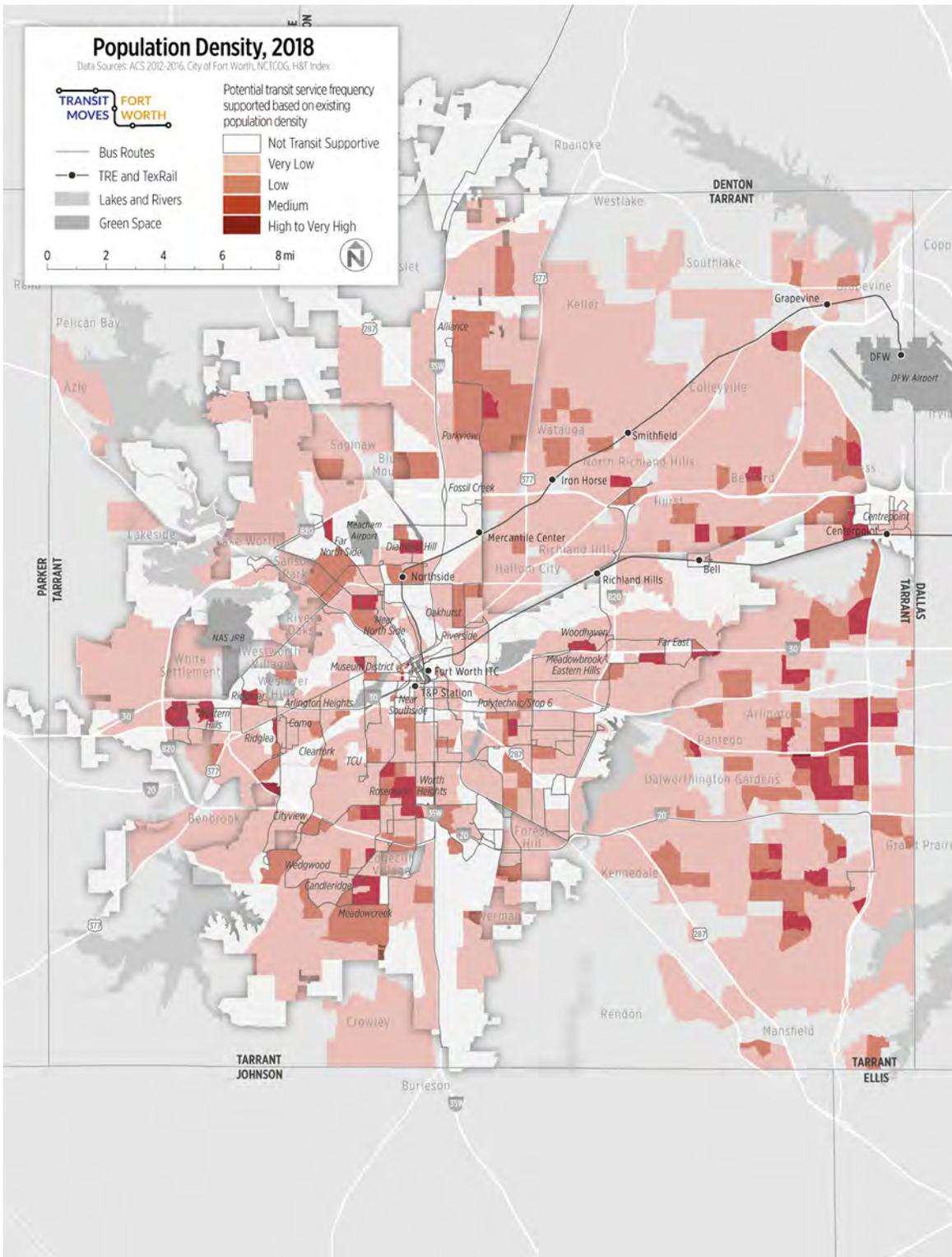
Frequent service is clearly desirable, but because of the operating costs involved, and to avoid empty buses, travel service levels must be matched to demand. For example, an area with 15 households per acre and/or more than 15 jobs per acre can support transit service operating every 30 minutes. Demand can accumulate along corridors to produce demand for more frequent service than the densities alone would indicate, while isolated clusters of demand will not produce sufficient demand for transit alone.

It is important to recognize that areas that do not have at least ten residents and/or five jobs per acre or a combination thereof—generally lower density communities made up of single-family neighborhoods—do not provide an environment where fixed-route transit can generate enough ridership to succeed. At these low densities, only infrequent transit service can be sustained. Service that runs less often than every 30 minutes is generally so uncompetitive with other forms of transportation that it is not practical to operate. In these instances, this plan calls for alternative types of transit—specifically microtransit, ridesharing, and shared mobility solutions—to connect low density areas to the core transit network.



Transit-Supportive Land Use and Density

LAND USE				TRANSIT	
Land Use Type	Example	Residents per Acre	Jobs per Acre	Appropriate Types of Transit	Frequency of Service
 Downtowns & High Density Corridors		>45	>25	   	 10 mins or better
 Urban Mixed-Use		30-45	15-25	  	 10-15 minutes
 Neighborhood & Suburban Mixed-Use		15-30	10-15		 15-30 minutes
 Mixed Neighborhoods		10-15	5-10	 	 30-60 minutes
 Single Family Neighborhoods		<10	<5	 	On-demand to infrequent



Population-Based Demand

Population Density

Population density is one of the most important factors in determining underlying demand for transit. Density indicates both where there are many people in close proximity, as well as land use types best suited for transit. Denser areas tend to be more walkable and less automobile-oriented, with limited access to parking and less reason and incentive to own a private automobile.

The City of Fort Worth, as of 2017, is home to 875,000 people, composing a large portion of Tarrant County’s total population of just over 2 million. Where and how these residents concentrate throughout the city vary widely. Areas shown with medium or higher population densities can support some level of fixed-route transit, ranging from peak-only service to frequent service operating every 15 minutes or better.

Areas with the highest population concentrations within the City of Fort Worth are:

- Rosemont and Worth Heights in South Fort Worth
- Meadowcreek and adjacent neighborhoods in far south Fort Worth
- Ridgmar
- Western Hills
- Near North Side and Diamond Hill in northern Fort Worth
- Parkview in far north Fort Worth
- CentrePort in far east Fort Worth
- Polytechnic
- Downtown, Upper West Side, and Museum District

Residents with a High Propensity for Transit Use

In addition to population density, socioeconomic characteristics influence an individual's propensity toward transit use. National research shows that many population groups often have a higher propensity for transit use than the overall population. These include:

Zero Vehicle Households: People with limited or no access to a personal vehicle, either by choice or by necessity, are more likely to rely on transit. In some large cities, many residents choose to not have an automobile because transit is available, car ownership is a hassle, and there are plentiful options such as taxis, car sharing, and car rentals for the times when a car is desired or needed. In Fort Worth, an urban area largely oriented toward automobile travel, people without automobiles largely consist of those with lower incomes or those who do not drive. According to the US Census

Bureau, 6% of Fort Worth city households (about 17,100 households) do not have access to a vehicle. In Fort Worth, residents living in zero-vehicle households are 11 times more likely to take transit.

Low Income Residents: Residents with lower incomes tend to use transit to a greater extent because it is less expensive than owning and operating a personal vehicle; they may rely on transit as their primary mode of transportation. In Fort Worth, the median household income is \$57,309. About 12% of households earn less than \$15,000 per year, 9% of households earn between \$15,000 and \$25,000 per year, and 23% earn between \$25,000 and \$50,000 per year. Residents of city households earning less than \$25,000 are slightly more than 2 times as likely to take transit. Those earning between \$25,000 and \$50,000 are 1.8 times as likely to take transit. Residents earning

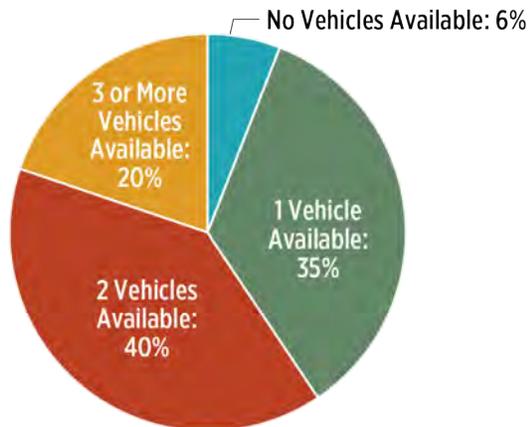
more than \$50,000 are only 0.27 times as likely to take transit as the typical Fort Worth resident.

Minorities: Black residents of Fort Worth use transit more often than white non-Hispanic residents because they tend to have more limited resources for transportation and locate in denser neighborhoods closer to the city center. The provision of effective transit service to minority populations is particularly important to the Federal Transit Administration and is a requirement under Title VI of the Civil Rights Act of 1964. In Fort Worth, 40% of residents are white non-Hispanic, 25% are Hispanic or Latino, 18% are black, and 4% are Asian. Black residents of Fort Worth are 3.4 times more likely to use transit. White non-Hispanics and Hispanics are 0.6 times as likely to take transit, and Asians are 0.4 times as likely.

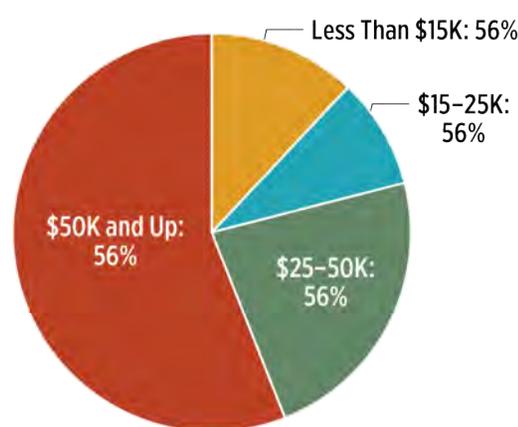
Residential Demographics in Fort Worth

Source: 2013-2017 American Community Survey 5-Year Estimates

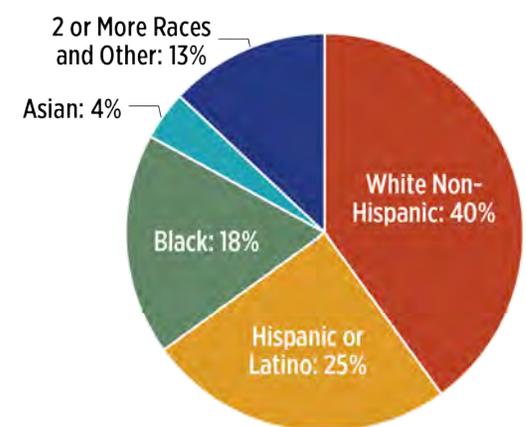
Vehicle Ownership



Household Income



Race and Ethnicity



Demographics and Resident-Based Transit Propensity

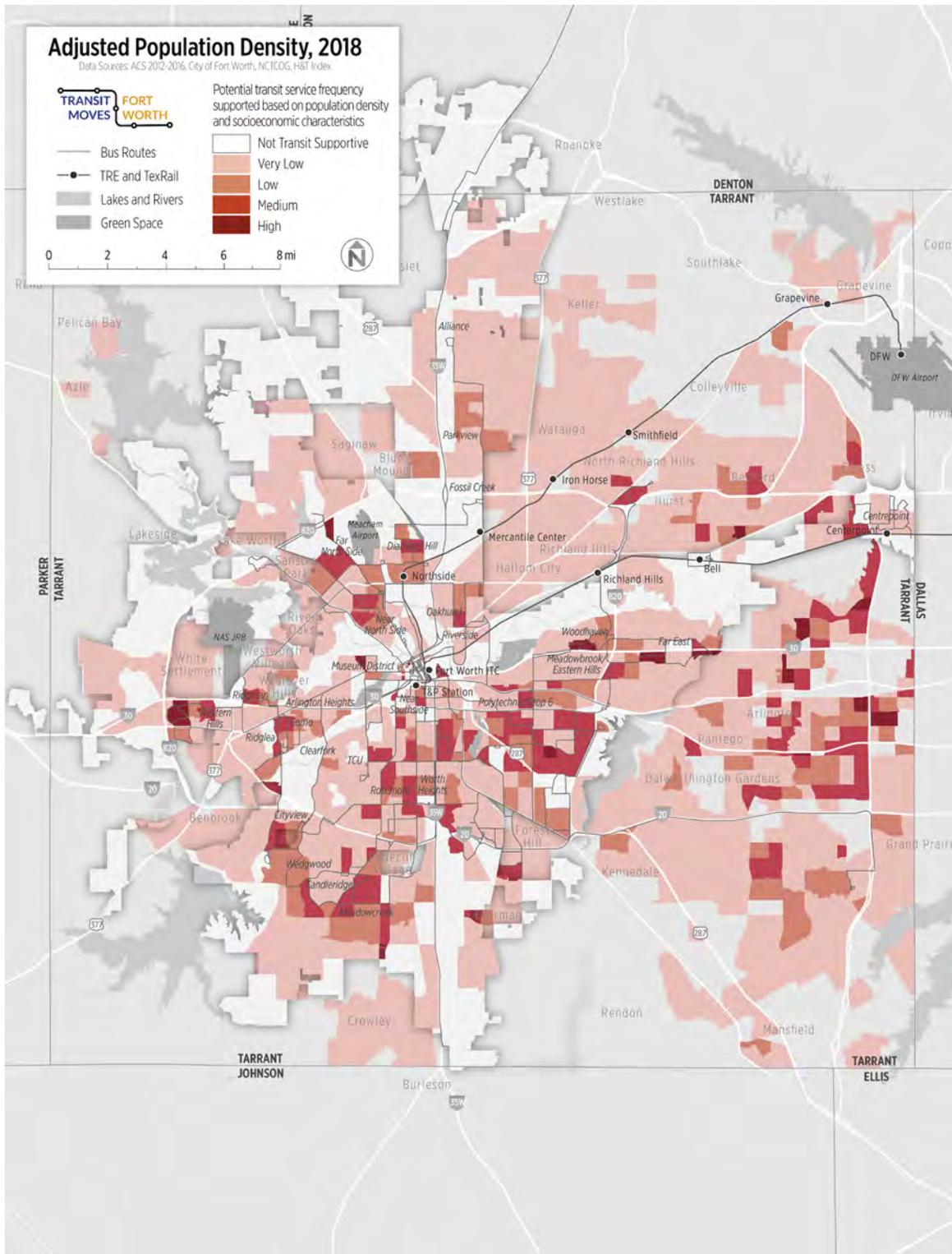
When significant numbers of individuals and households from these high-transit propensity groups cluster together, they can influence the underlying demand for transit to an extent that is not captured when only considering total population. In a given location, groups of people from transit-supportive demographic groups may be too small individually to indicate significant demand for transit service, but their clustering may result in potentially high levels of transit use. Similarly, in a location where transit-supportive demographic groups have low representation, the level of potential transit demand may actually be lower than total population density alone would indicate.

To take this into account, a measure called the **transit propensity adjustment factor** was developed in order to measure relative demand for transit in different areas as compared to the region. This factor takes into account demographic characteristics for the population aged 16 and over who are employed. These factors measure the likelihood of certain demographic groups to use transit to commute to work relative to the study area's general population. Any demographic group with a transit propensity adjustment factor greater than 1 is more likely than the general population to use transit. Differences in transit propensity are based on vehicle ownership, race and ethnicity, and annual income.

Transit Propensity Adjustment Factors

Demographic Group	Transit Propensity
Race and Ethnicity	
<i>White non-hispanic</i>	0.60
<i>Black</i>	3.43
<i>Asian</i>	0.42
<i>Hispanic</i>	0.59
<i>Other Race</i>	0.04
Income	
<i>Under \$25,000</i>	2.08
<i>\$25,000-50,000</i>	1.80
<i>\$50,000 or more</i>	0.27
Vehicle Ownership	
<i>0 vehicles</i>	11.40
<i>1 vehicle</i>	1.10
<i>2+ vehicles</i>	0.32





Adjusted Population-Based Demand

In general, when socioeconomic characteristics are considered with density, it tends to intensify the demand in urban areas and diminish the demand in more outlying areas. Areas that, when demographic characteristics are factored, have a very high underlying demand for transit within the City of Fort Worth are:

- Rosemont and Worth Heights in south Fort Worth
- Candleridge-adjacent areas along Hulen St, Sycamore School Rd and McCart Ave in Far South Fort Worth
- Cityview and River Park in Southwest Fort Worth
- Western Hills, Rigmar, Ridglea Village, and Como in West Fort Worth
- Near Northside, Far Northside, and Diamond Hill in North Fort Worth
- Woodhaven in eastern Fort Worth
- CentrePort in far east Fort Worth
- Morningside, Polytechnic Heights, and Stop Six in southeastern Fort Worth

Just as important as recognizing which areas show strong demand for transit is the understanding that **a large swath of Tarrant County and the City of Fort Worth do not show population-based demand for transit service.** Areas shown without any shades of red will not support any kind of transit or microtransit. Areas shown with very low or low demand will support microtransit, ridesharing, or peak-only service at best.

Matching Population-Based Demand to Transit Service Types and Frequencies

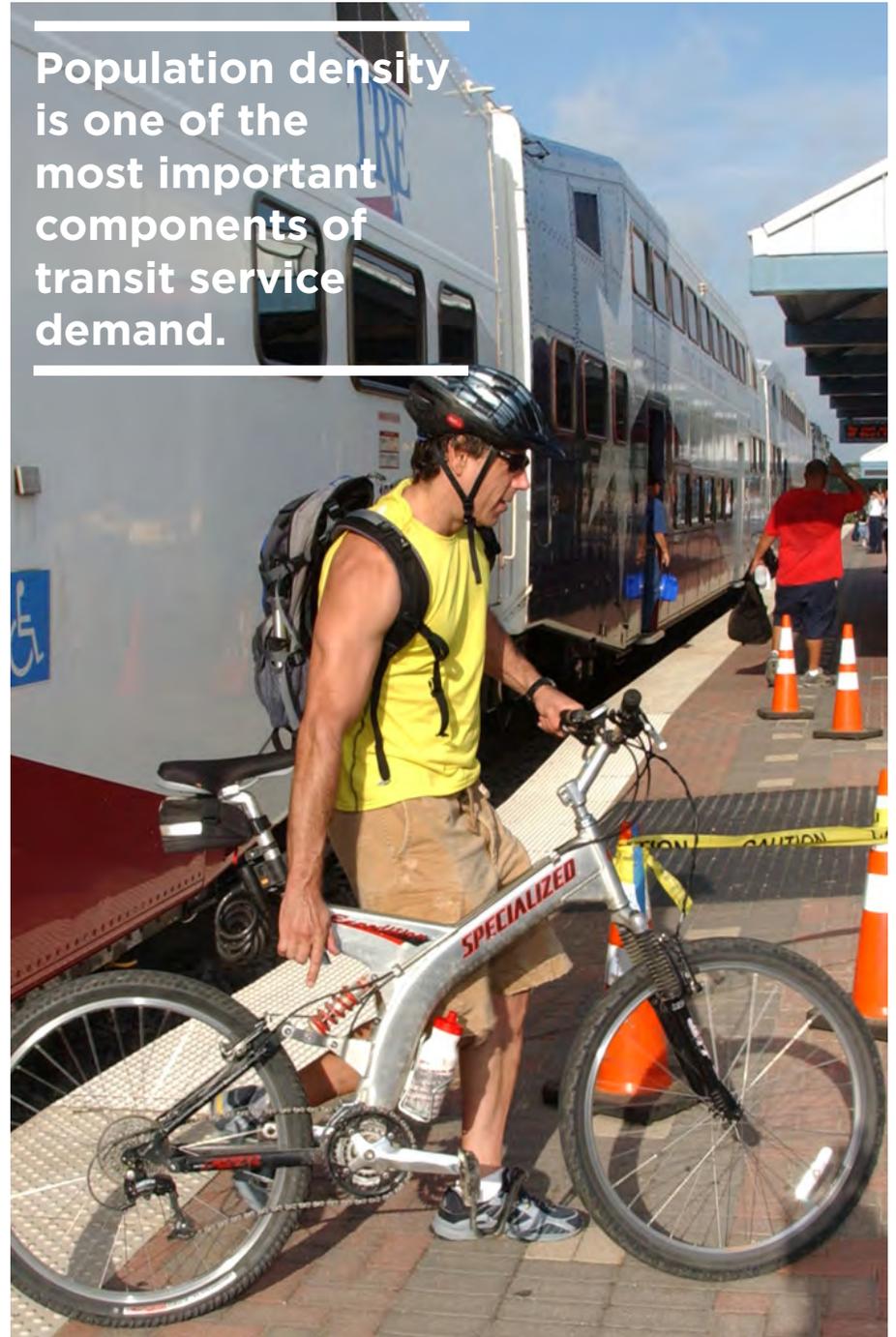
Population densities alone provide an indication of the underlying population-based demand for transit in terms of the type and frequency of service that would be appropriate. As densities grow, the demand for transit grows, particularly with respect to more frequent service. There must be 10 to 15 residents per acre to produce demand for hourly service, which is the lowest level of service that is considered to be acceptable to support fixed-route service. Population densities higher than 30 residents per acre generate demand for frequent services (every 15 minutes or less) and premium services like bus rapid transit.

Transit Supportive Population Densities

Transit Mode/ Service Frequencies	Population per Acre
Flex Bus	0.5
Community Circulator	2
Local Bus	
60 minutes	10-15
30 minutes	15-30
15 minutes	30-45
10 minutes	45-90
≤ 5 minutes	>90
Bus Rapid Transit	25-50
Light Rail Transit	30-80

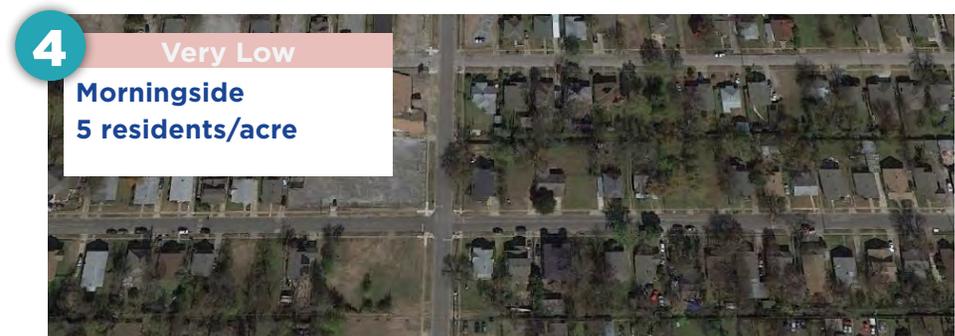
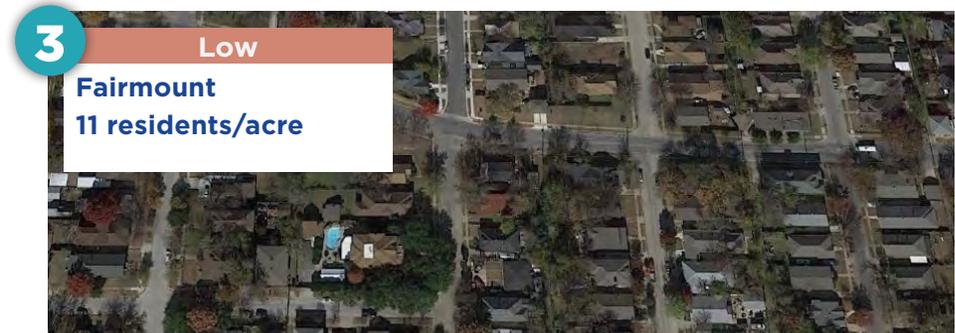
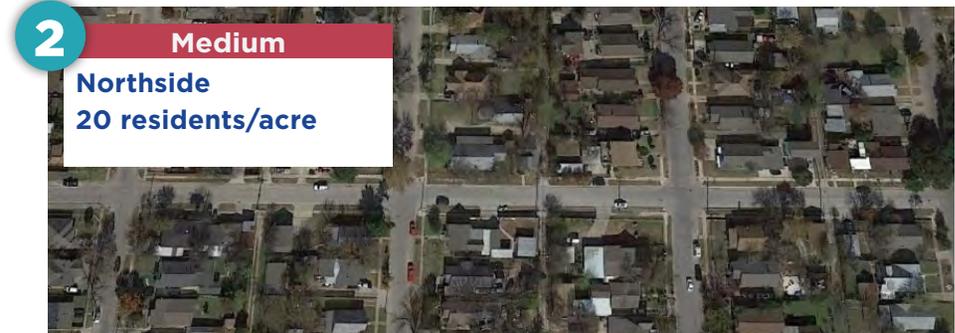
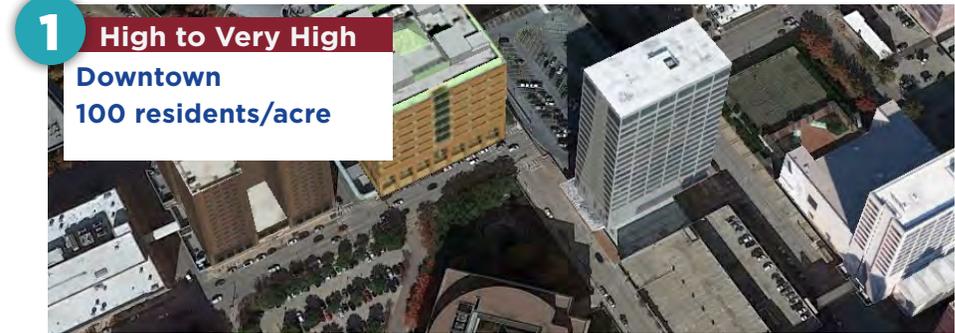
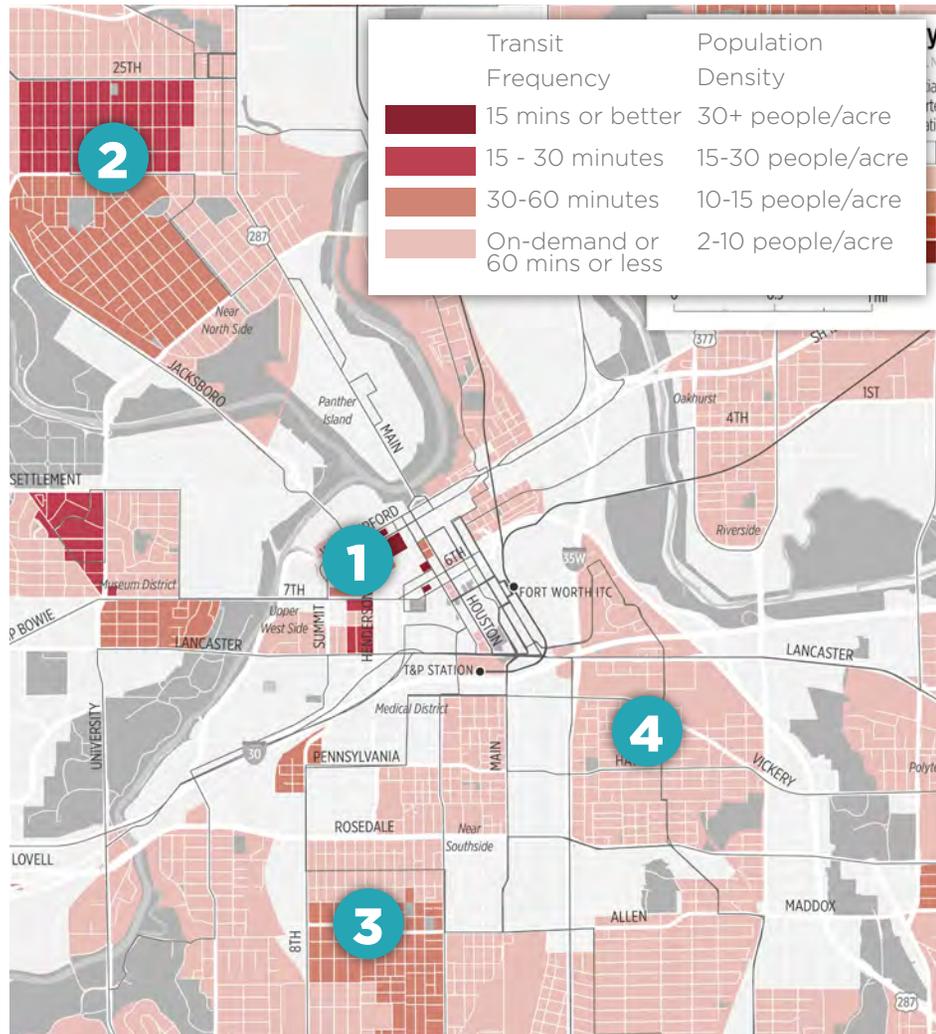
The above table does not consider factors other than population density, so to get a more complete understanding of population-based demand for transit, the baseline population density of Tarrant County was adjusted by the transit propensity adjustment factor. The adjusted population demand map provides an understanding of population-based demand for transit adjusted by the likelihood of different demographic groups to take transit. For example, an area with a transit propensity factor of 1.5 effectively has a population density 1.5 times higher than it actually does, based on its demographic composition and the level of transit service it may support.

Population density is one of the most important components of transit service demand.



Visualizing Population Density

Visualizing density can be a helpful way to understand what different land uses look like as they relate to potential transit demand. More people in an area often means taller buildings or closely-spaced homes. The population density of Downtown's high-rise residential towers and the residential area of the North Side north of 21st Street can support more frequent transit service than that of Fairmount and Morningside, where dispersed, single-family homes dominate.



Employment-Based Demand

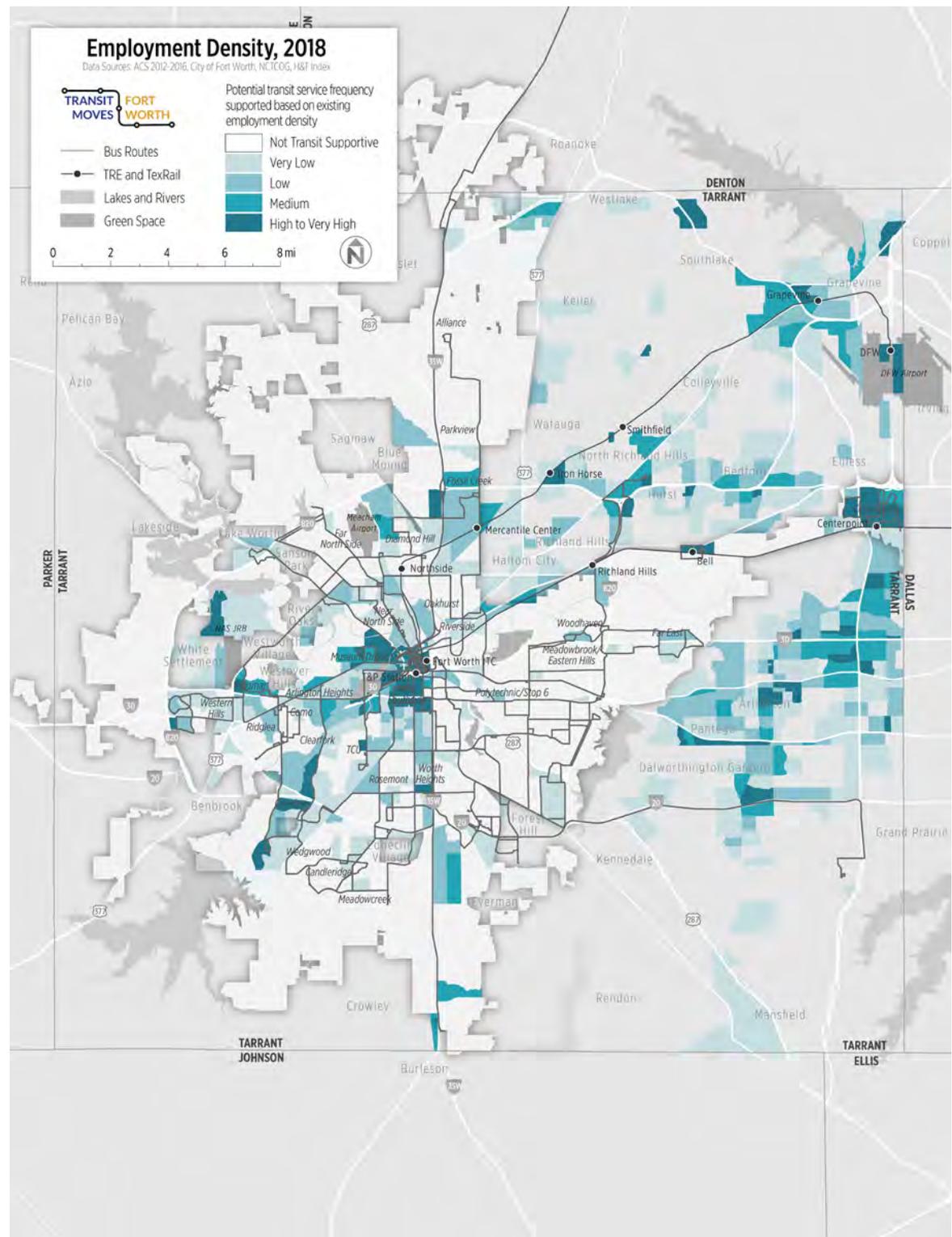
Employment Density

In the same manner as population densities, employment densities provide a strong indication of underlying employment based demand for transit. Commutes are the most common and consistent reason for people to take transit. Employment density is another major source of transit demand. Job density also indicates demand for travel activity unrelated to commutes. For example, where restaurant and retail employees need to travel are also where customers are traveling; the same goes for hospital employees and patients.

As of 2018, there are about 1.28 million jobs in Tarrant County. Where and how much these jobs concentrate throughout the region vary widely. As job densities increase, the demands for transit service grow, particularly in terms of service frequency. A density of two to five jobs per acre is typically produce enough demand for hourly bus service. Employment densities higher than around 15 jobs per acre produce demand for frequent service (every 15 minutes or better) and premium services like bus rapid transit

Areas with the highest job concentrations within the City of Fort Worth are:

- Downtown
- Museum/Cultural District
- Cityview/Hulen Mall
- Near Southside
- Texas Christian University
- Ridgmar
- Lockheed Martin
- CentrePort
- Around Bell Station



Jobs with a High Propensity for Transit Use

In addition to job density, socioeconomic characteristics of employed people influence an individual's propensity toward transit use to travel to work. These socioeconomic characteristics are strongly related to an individual's likelihood to use transit to travel to work:

Low Salary Workers: Jobs paying less money are more likely to be reached by workers taking transit. In Fort Worth, jobs paying less than \$15,000 per year are 2.3 times more likely to be reached by transit. Jobs paying between \$15,000 and \$40,000 are 1.2 times more likely to be reached by transit. Relatively higher paid jobs (paying more than \$40,000) are only 0.4 percent as likely as a typical job to be reached by transit.

Minorities: Jobs worked by certain racial and ethnic minorities are more likely to be reached by transit, because some minorities tend to have more limited resources for transportation. In Fort Worth, jobs worked by black residents are 3.7 times more likely to be reached by transit. Jobs worked by Asian residents are 1.5 times more likely to be reached by transit, and jobs worked by Hispanic or latino residents are 0.7 times less likely to be reached by transit. Jobs held by whites are only 0.6 times as likely to be reached by transit.

Demographics and Jobs-Based Transit Propensity

To take socioeconomic factors into account, an employee transit adjustment factor was applied to adjust employment-based demand by the likelihood of those jobs to be reached by transit. This factor is similar to the resident-based transit adjustment factor except applied to job sites rather than homes. Any employee demographic group with an employment transit index factor greater than 1 is more likely than the typical worker to use transit to reach their job.

As the table to the right shows, differences in employment transit propensity are based on race and ethnicity and annual income.



Employee Transit Adjustment Factors

Demographic Group	Transit Propensity
Race and Ethnicity	
<i>White non-hispanic</i>	0.60
<i>Black</i>	2.72
<i>Asian</i>	1.53
<i>Hispanic</i>	0.72
<i>Other Race</i>	0.98
Income	
<i>Under \$25,000</i>	2.33
<i>\$25,000-50,000</i>	1.20
<i>\$50,000 or more</i>	0.43

Employee Transit Propensity Adjustment

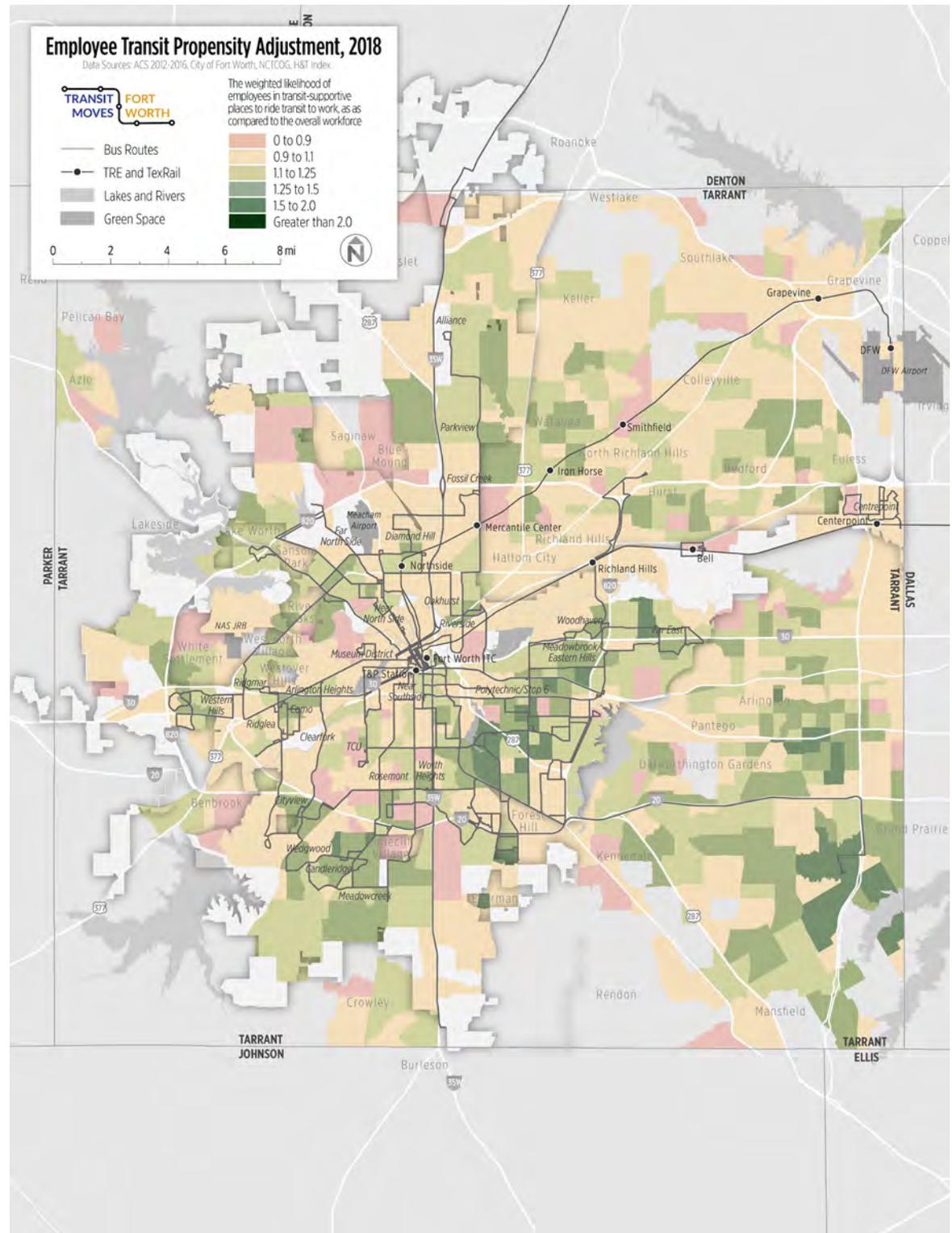
When considering the concentration and distribution of the different jobs worked by people more likely to take transit to reach those jobs, it becomes clear that jobs located in the urban core in general have a higher adjustment factor (shades of green) and those in Tarrant County north of the loop have a lower factor (red) as compared to the county average. In Fort Worth, high transit propensity jobs tend to be located just outside of the urban core, with a particularly prominent pocket of high transit propensity jobs in the southeast quadrant of the city (surrounding Renaissance Square shopping center). Arlington and Grand Prairie also tend to have jobs held by people who are more likely to take transit to get to work.

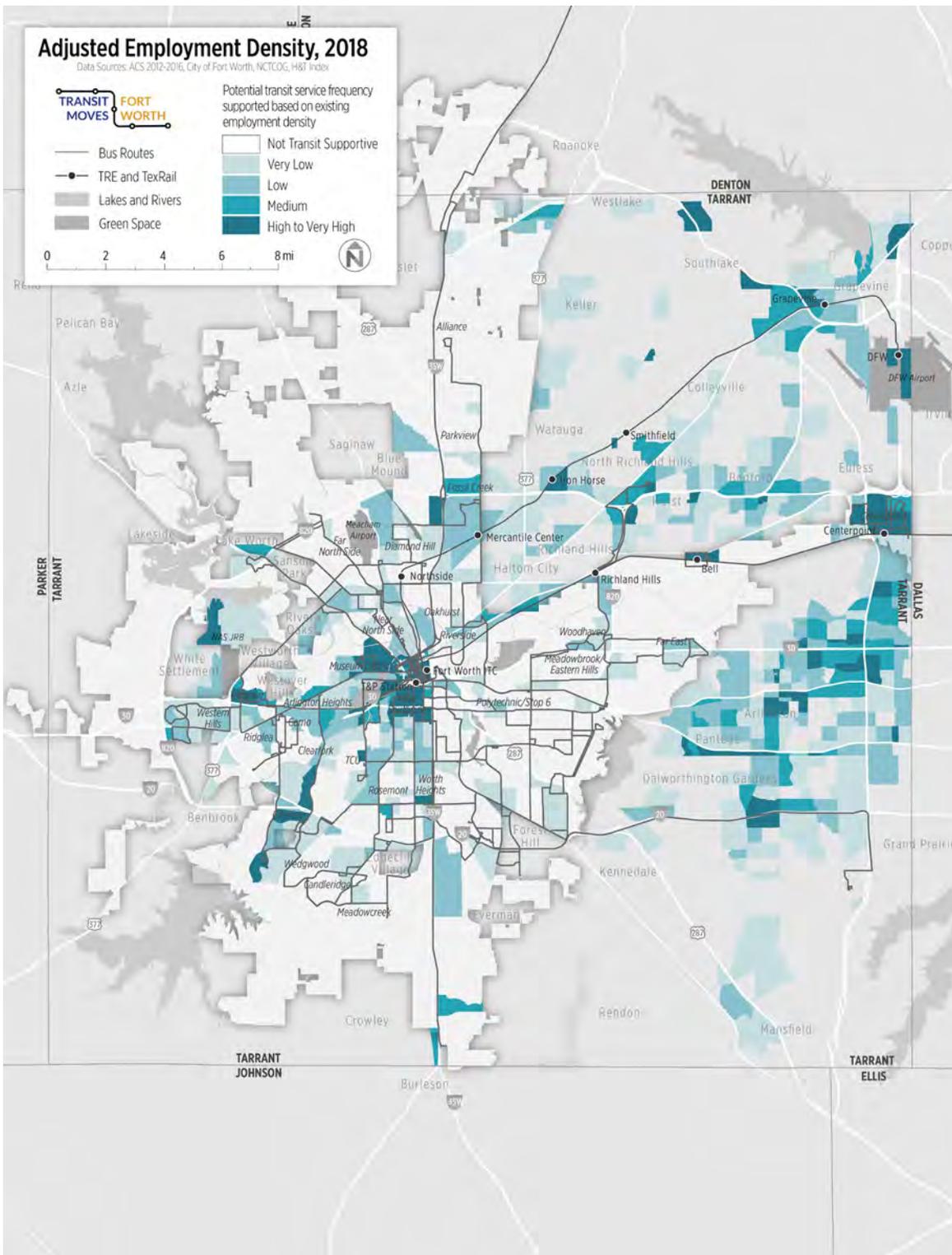
In addition to Arlington and Grand Prairie, areas with high employee transit index factors are:

- Wedgwood
- Renaissance Square in southwestern Fort Worth (south of Polytechnic/Stop 6
- Polytechnic and Stop Six
- Meadowbrook/Eastern Hills
- Far East Fort Worth

Areas with low employee transit index factors are:

- Alliance Airport
- South industrial center southeast of I-35 and I-20
- Crestwood/Monticello northwest of Museum/Cultural District





Adjusted Employment-Based Demand

When employment density is adjusted by the likelihood of those jobs to be reached by transit, a fuller picture of employment-based transit demand emerges, although the shifts in density are not as significant as with the adjusted population-based demand.

Areas with a high level of employment-based transit demand within the City of Fort Worth are:

- Downtown
- Cultural/Museum District
- Cityview/Hulen Mall
- Near Southside
- Ridgmar
- Lockheed Martin
- CentrePort

As with population densities, some areas have such low job density that transit will never be successful or cost-effective to provide there. Areas shown with without any shades of blue will not support any kind of transit or microtransit. Areas shown with very low or low job-based demand will support microtransit, ridesharing, and/or peak-only service.

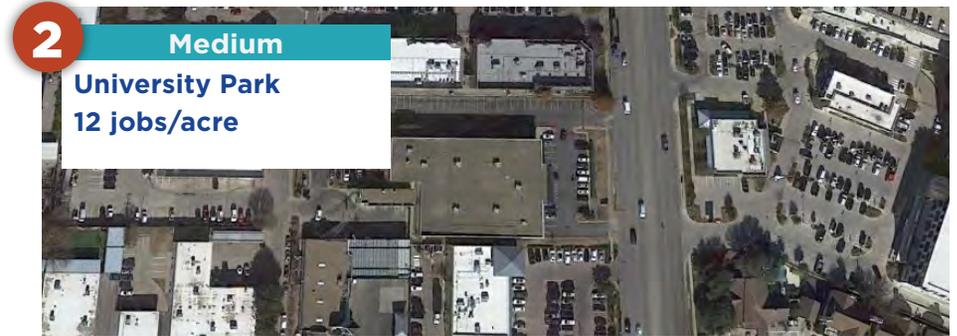
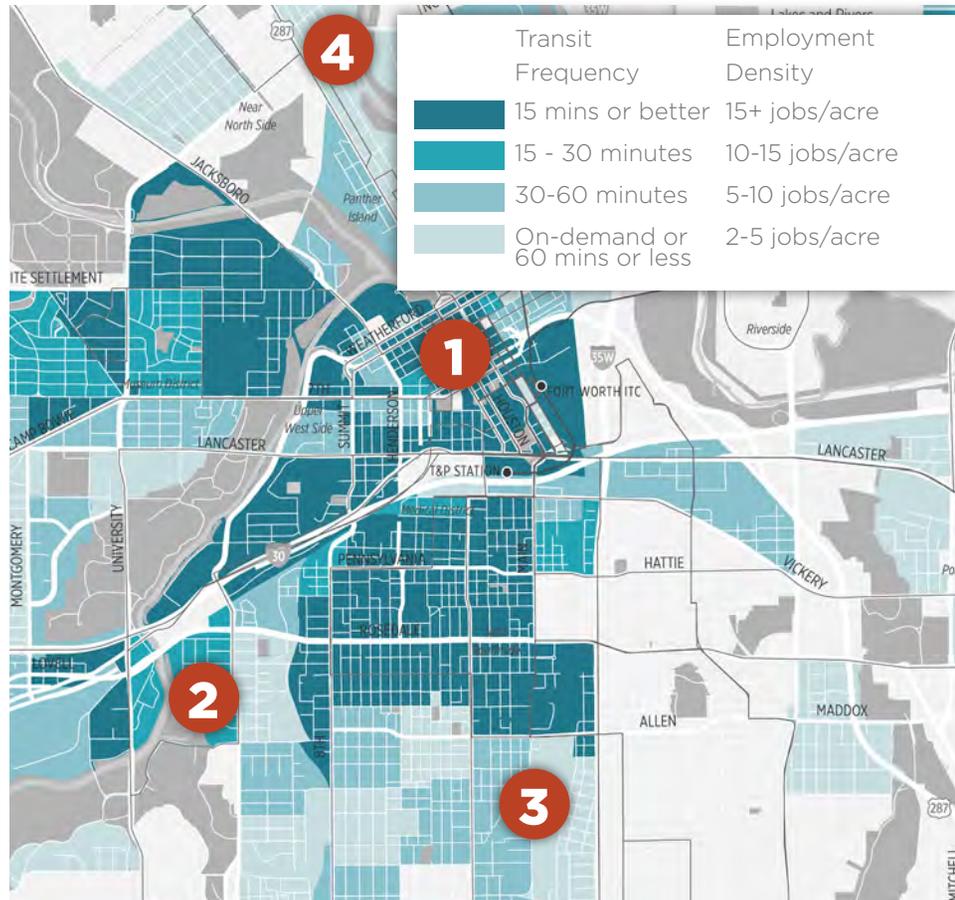
Transit Supportive Employment Densities

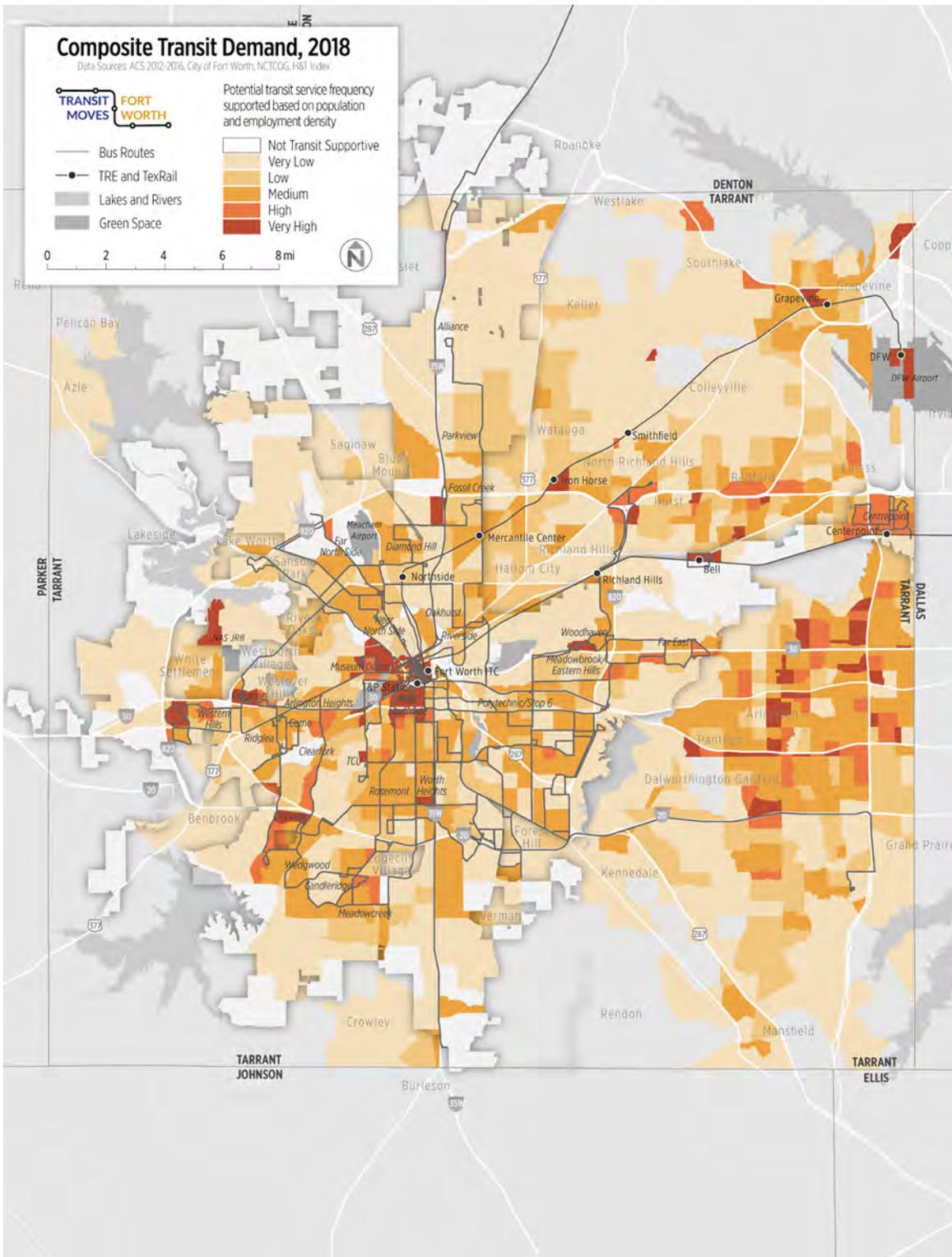
Transit Mode/ Service Frequencies	Jobs per Acre
Local Bus	
60 minutes	5-10
30 minutes	10-15
15 minutes	15-25
10 minutes	25-45
≤ 5 minutes	>45
Bus Rapid Transit	>13
Light Rail Transit	>15

Visualizing Employment Density

Just as with residents, density is the most important component when serving jobs with the appropriate level of fixed-route transit service. Jobs tend to be more concentrated than residents.

Sometimes, one employer like a large hospital in the Medical District can produce enough job density in a small area to warrant more frequent levels of service. Areas like downtown (aerial image 1 to the right) or the Medical District with many office buildings, stores, and other diverse forms of employment spaced closely together are the strongest producers of demand for frequent transit service. Shopping areas with large surface parking lots (aerial 2), strip development (aerial 3), and warehouses or distribution centers are examples of progressively less dense employment areas.





Composite Demand

The previous sections have described how population density, socioeconomic characteristics, and employment density separately produce demand for transit. Looking at them combined is the best way to get a complete understanding of the underlying demand as none of these three aspects of demand exist in isolation from one another.

Combined Population, Demographic, and Employment-Based Demand

When considered together, it is clear that the underlying demand for transit is very high in the urban core of Fort Worth, west along I-30, and in parts of CentrePort, Arlington, and Grapevine. However, currently much of the county, and almost the entirety of the extreme north and northwest parts of Fort Worth, show virtually no demand for fixed route transit service.

In Fort Worth, transit service is concentrated where composite demand for transit is highest. In adjacent regions of Tarrant County, notably Arlington, Pantego, Hurst, Bedford, and Grapevine, Trinity Metro currently does not provide service. Transit can play a more significant role in getting people from where they live to jobs located outside of Fort Worth city limits.

Composite demand for transit is highest in the following areas within the City of Fort Worth:

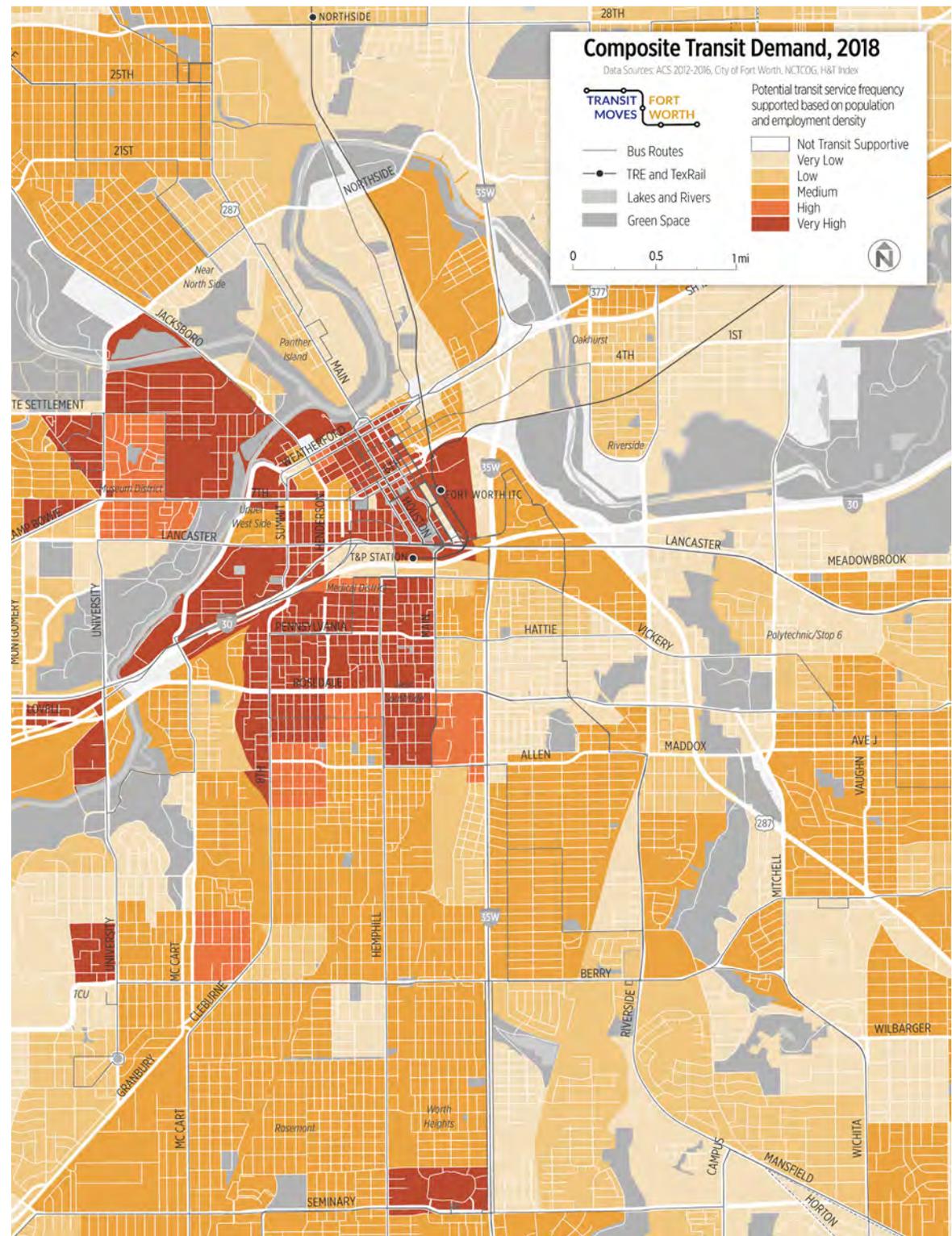
- Urban Core
- Cityview/Hulen Mall
- Ridgmar
- Lockheed Martin
- Western Hills
- Woodhaven and Far East Fort Worth

Nearly all of the urban core shows high demand for transit: Downtown corridors where demand is high enough to merit frequent service include:

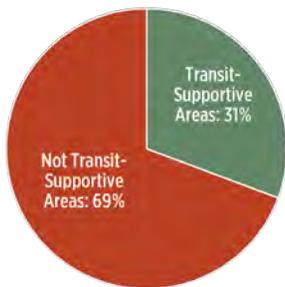
- Downtown
- Upper West Side
- West 7th Street
- Bailey Avenue
- Camp Bowie Boulevard
- University Drive
- Medical District
- TCU
- Rosedale Street
- Hemphill Street
- Pennsylvania Avenue

Area Supportive of Transit Service

As of 2018, 31% of the City of Fort Worth’s land area and 26% of Tarrant County’s land area is dense enough to support some level of fixed transit service. These transit-supportive areas have minimum 10 residents per acre and/or 5 jobs per acre, supporting hourly service operated by a local bus or microtransit. The areas shown in dark brown are dense enough, with their 45 or more residents per acre and/or 35 or more jobs per acre, to support frequent and premium service. As Fort Worth expands and densifies, these transit supportive areas will intensify in terms of their demand, and transit service should change to meet these growing needs.



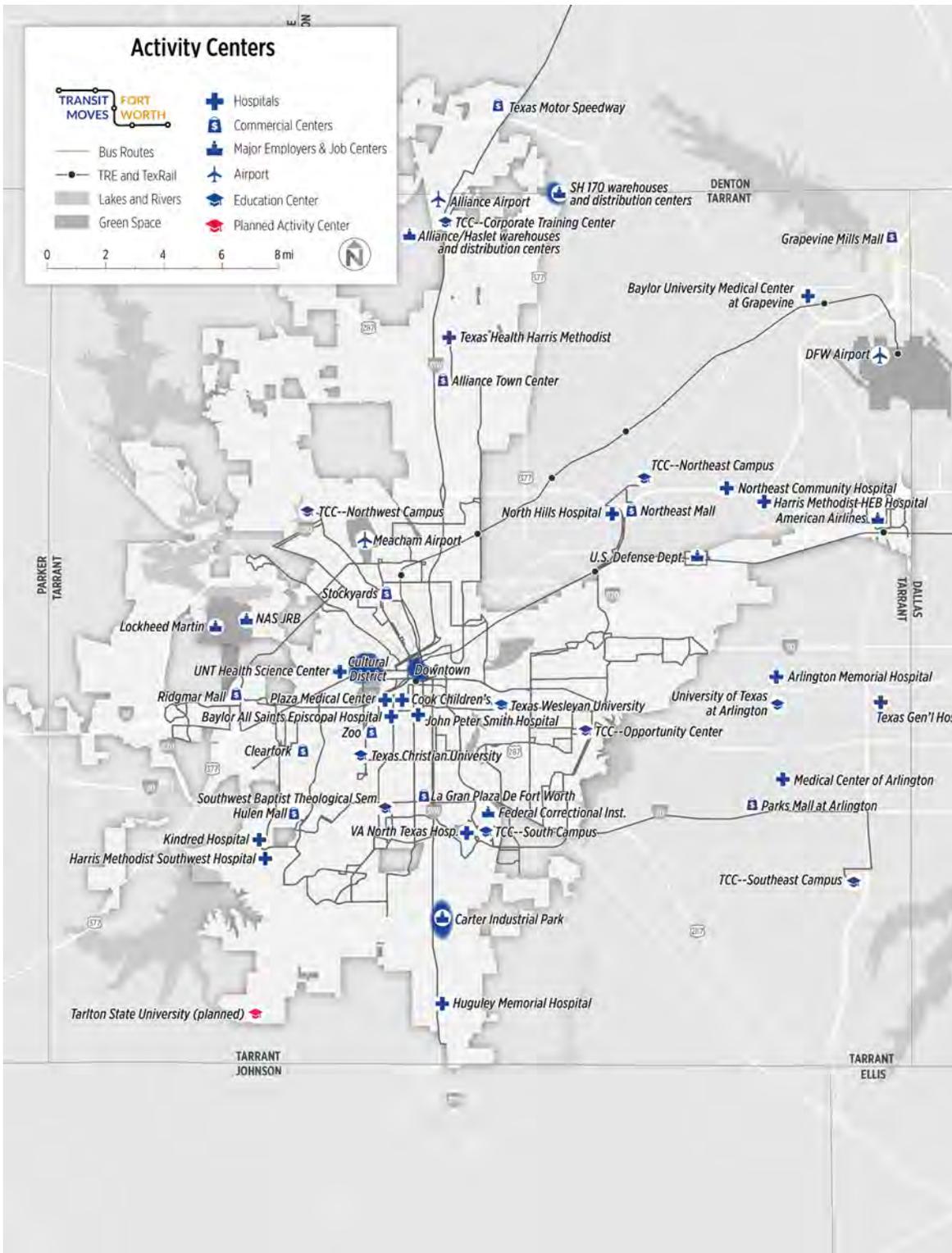
Acres of Transit-Supportive Land, 2018



Fort Worth



Tarrant County



Major Activity Centers

Some activity centers generate additional demand for transit. Most of these places – large employers, shopping malls and retail centers, hospitals, and town centers – generate relatively consistent demand for transit throughout the year. Other activity centers like colleges and universities are significant transit demand generators only during certain seasons of the year.

Many major employment centers in the exurban regions of Fort Worth are located on isolated campus-like settings, like Huguley Memorial Hospital, the planned Tarlton State University campus, and defense-oriented employers like Lockheed Martin, the Department of Defense, and the Naval Air Station Joint Reserve Base.

Activity centers in Fort Worth with more than 1,000 on-site jobs include:

- Texas Christian University
- Ridgmar Mall
- Plaza Medical Center
- John Peter Smith Hospital
- Hulen Mall
- Huguley Memorial Hospital
- Baylor All Saints Episcopal Hospital
- Arlington Memorial Hospital
- American Airlines
- Lockheed Martin
- NAS Fort Worth JRB

Other important activity centers are regions with large concentrations of certain jobs, like downtown, the Cultural District/museums west of downtown, and major regional industrial centers in Alliance, South Fort Worth, and along SH 170 in far north Fort Worth. The outlying industrial zones are less dense but could be good candidates for service by a transportation management association (see next page).

Alternatives to Fixed Route Service

Traditional fixed-route bus services, including circulator service, should operate in areas that have sufficient density and socioeconomic conditions to support it. However, there are many types of public transportation services, including flexible services like flexible “flex” routes, demand response, and/or ridesharing services (see figure on next page).

Local Circulators and Feeders

Local circulator services typically operate on an hourly headway and are designed to directly serve important destinations and corridors.

Feeder services are designed to provide an easy connection to transit stations or high frequency transit services.

Flex Routes

Flex services are a hybrid between fixed route and demand response service. Flex routes travel along a fixed alignment with scheduled start times, but can deviate from the route up to 1/4 mile to directly serve a destination if requested by a rider. Passengers may also “flag” a bus at any safe point along the fixed route rather than having to walk to a specific stop.

Demand Response

Demand response services (sometimes called Dial-A-Ride) provide door-to-door trips within a specified service area using smaller transit vehicles. These services typically operate in lower density suburban and rural communities.

Rideshare Services (TNCs)

Private rideshare companies, or Transportation Network Companies (TNCs) like Uber and Lyft, compete directly with transit and evidence suggests they play a role in declining transit ridership across the country. However, public-private partnerships with these companies can also help serve as a way for individuals to reach fixed route services on demand and be integrated into a transit system rather than competing by serving trips in low-density areas that are not efficiently served by traditional transit.

While density, more than raw numbers, matters most to traditional fixed route or frequent service, office parks and warehouses, which employ many

people in one area, are often a priority for a region to serve with transit. Often employees of these areas are lower income or work second and third shift times and may have fewer resources to put toward transportation. Large employers often take an interest in how their employees get to work and are more likely to have the resources to invest in their employees’ commutes. Areas such as the South Fort Worth Industrial Center between I35, Oak Grove, Everman and Altamesa—where there are many jobs but distributed less densely across the area and segregated by large surface parking lots—make them a better candidate for other types of service.

Transportation Management Associations

Employment areas like that lack concentrated density but still form a congregation of employers are prime targets for Transportation Management Associations (TMAs), public-private partnerships between transit agencies and local employers who run shuttles or van services that coordinate with public transit services. Schedules and drop off points can be coordinated to get employees to and from the main sites of a service area. This type of service is much more efficient than a fixed-route looping bus service. Coordinated partnerships can help get employees to their destinations faster, and they can help a transit agency run more productively.



Houston Downtown Management District TMA

The Houston Downtown Management District works with Central Houston, Inc. to provide TMA services to employers and employees in the downtown Houston, Texas area.



The following areas in Tarrant County are traditionally less dense but do represent large employment areas. They could be well suited to be served by a TMA.

- Carter Industrial Park
- Alliance Gateway
- Alliance Airport/Westport Intermodal
- North Fort Worth Industrial Center (Mercantile, Fossil Creek, Meacham)
- CentrePort

Microtransit

Microtransit is a term often used to describe private companies or branches of transit agencies that use vans or small transit vehicles, often in conjunction with on demand service applications generally accessed through smartphones. When run by private companies, routes are often determined based on demographic information and crowdsourced data and may only operate during peak periods primarily as a commuter service. Much like TMAs, there is a potential to partner with microtransit companies to offer a suite of services with the recognition that one size doesn't fit all when it comes to transit. Microtransit run by transit agencies can be a demand-response service that helps transport individuals to the nearest fixed route. This service may pick up individuals at the location they request, or have fixed "nodes" that serve as pickup or drop-off points. Microtransit is one way to address "first-mile/last-mile" connectivity issues.

Blue Zones and Complete Streets

Another strategy to enhancing access to transit is to improve the built environment to facilitate access to planned transit stops and stations. These improvements can include building sidewalks or bike paths to facilitate access to planned transit capital improvements or expanding the available passenger amenities with items like bus stop signage, bike racks, benches, and shelters.

Together with Blue Zones Project, the City of Fort Worth is working to improve the safety of the city's streets for all users, abilities and ages by assuring Complete Street policies are adopted. Complete Streets support active transportation, improving bicycle and pedestrian infrastructure to encourage people to move naturally. Blue Zones Project's mission is to make healthy transportation choices easier, among many other health-related opportunities throughout the City.

TRANSIT SERVICE TYPES FOR LOW DENSITY AREAS

Service Type	Diagram	Benefits and Challenges	Vehicle Type
LOCAL CIRCULATOR		<p>BENEFITS Stops are close together, requiring less walking. Provides good coverage, serving a wide variety of destinations.</p> <p>CHALLENGES Routes can be circuitous and make frequent stops, causing longer travel times. Riders have less flexibility about when they travel. Longer travel times which attracts fewer riders than other fixed-route services.</p>	
FEEDER		<p>BENEFITS The schedule of these services is tied to the arrivals and departures of high-frequency transit service. Alignments are direct in order to make the trip as fast as possible to riders. Cost effective way to allow riders to make long distance trips on transit.</p> <p>CHALLENGES Feeder services are for passengers planning to connect to another transit service and must be very reliable to ensure that passengers make their connection.</p>	
FLEX ROUTE		<p>BENEFITS Flex service can meet requirements for complementary ADA paratransit service without traditional demand response service. Riders can get door-to-door service if their trip starts and ends within the 1/4 mile boundary.</p> <p>CHALLENGES Riders may not know when the bus is coming. Travel is indirect and trips can take a long time due to deviations requested by riders.</p>	
DEMAND RESPONSE		<p>BENEFITS Provides service in areas that lack the population density to support fixed-route bus service. Improves the mobility of residents without other travel options.</p> <p>CHALLENGES Often requires 24 hour advance reservations, reducing service convenience. High cost per passenger than other transit services.</p>	
TNC		<p>BENEFITS Provides service in areas that lack the population density to support fixed-route bus service. Improves the mobility of residents without other travel options.</p> <p>CHALLENGES Providing only a subsidy of TNC trips could result in passengers paying high fares. Difficult to set restrictions on trips.</p>	

Looking Forward to 2045

By 2045, population and employment will have increased significantly, resulting in a marked intensification and expansion of areas supportive of more frequent transit service.

Planning for the Future

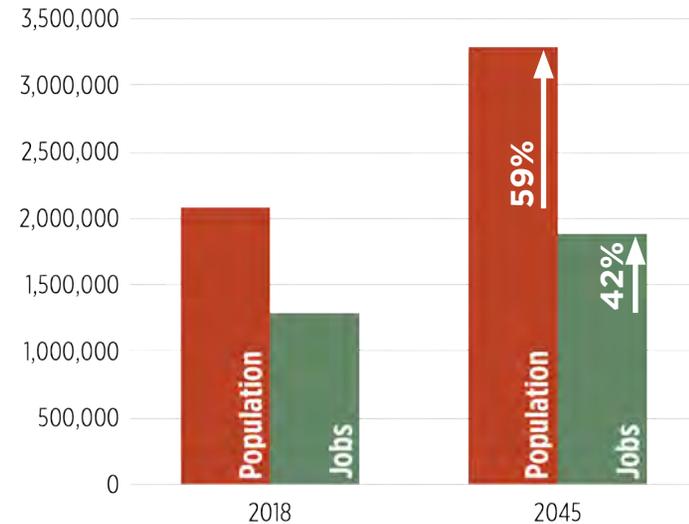
As most transit improvements are long-term investments, it is as important to understand future developments and changes in population, employment, and land use as understanding existing conditions. Looking ahead to 2045, the population of Tarrant County is projected to increase by 59% and jobs are expected to increase by 46%.

What goes into the Forecasts

The North Central Texas Council of Government’s travel flows model assumes some important regional transit investments are operational in 2045. Travel following regional rail and high-capacity bus lines are shown on 2045 transit travel forecast maps:

- Mansfield Rail Line from Fort Worth ITC to Midlothian
- Cleburne Rail Line from Fort Worth ITC to Cleburne Intermodal Transportation Depot
- Southwest TEX Rail from Fort Worth T&P Terminal to McPherson
- IH 35W Express Bus from Fort Worth ITC to Texas Health Presbyterian Park & Ride in Denton
- IH 30 Express Bus from Fort Worth ITC to Lamark Park & Ride in Arlington

Projected Population and Job Growth in Fort Worth

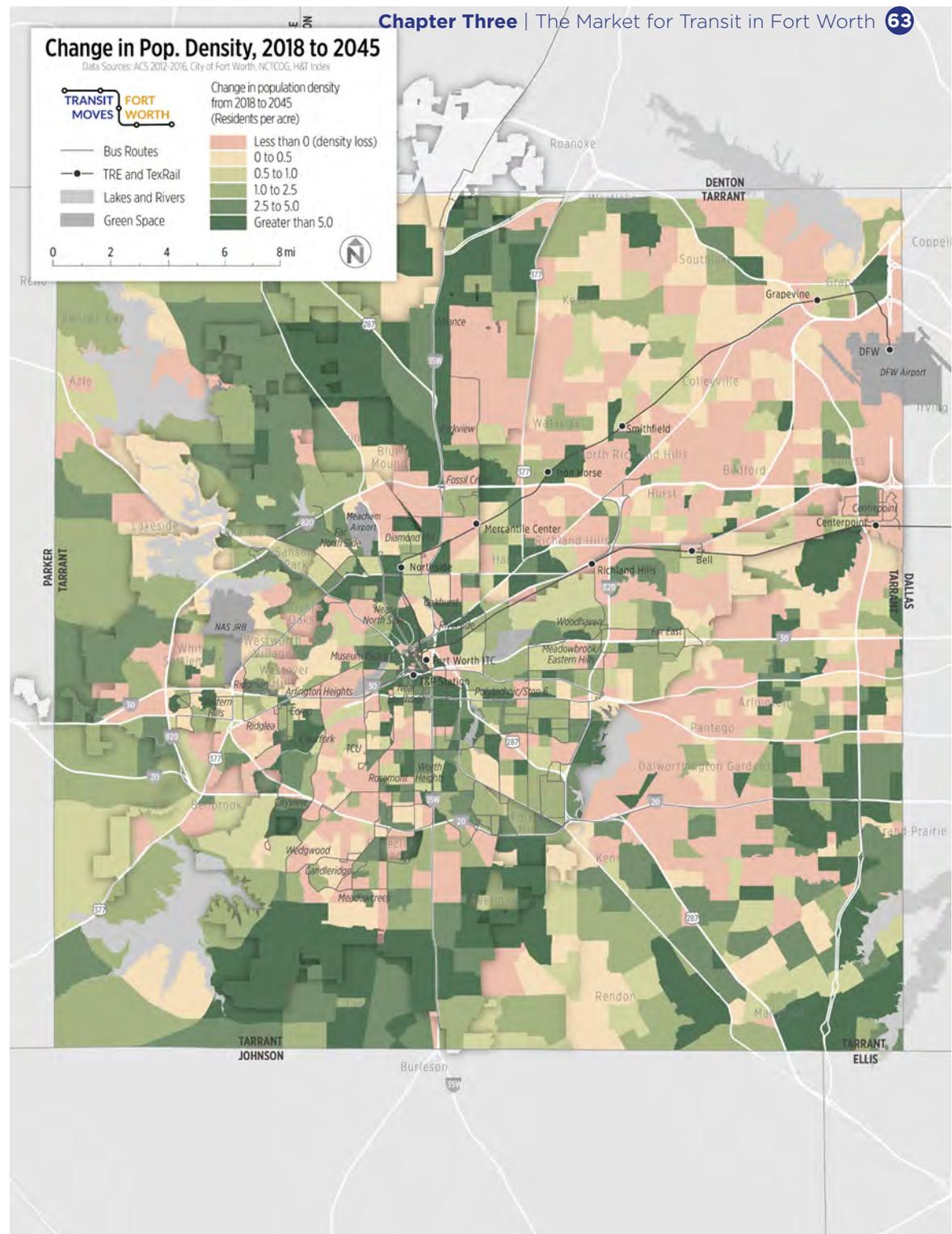


Population Growth 2018 - 2045

A 59% increase in population by 2045 will bring Tarrant County's population to about 3,264,000 people from its current population of 2,066,000. With this expected population growth, as this map shows, population densities will increase in currently developed areas as well as in other areas with less demand for transit today.

Areas where the most growth is expected to occur within the City of Fort Worth are:

- Near Southside
- Rosemont
- Far south & southwestern Fort Worth
- Clearfork
- Western Hills
- Ridglea
- Museum District
- Stockyards/Near Northside
- Downtown and adjacent neighborhoods
- Riverside/Oakhurst
- Fossil Creek
- Alliance Town Center
- Far north & northwestern Fort Worth
- Polytechnic Heights
- Stop Six



Population Density, 2045

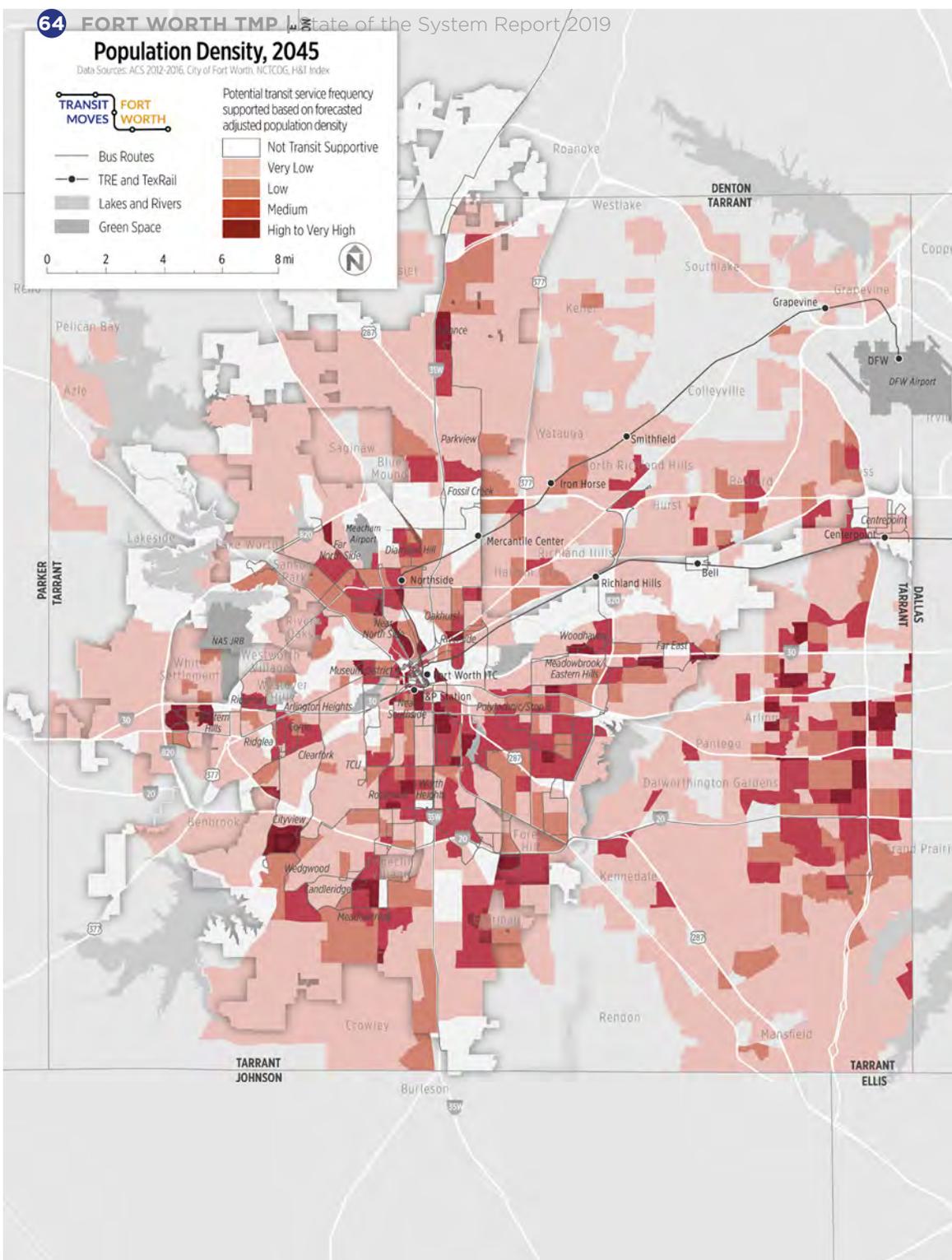
Data Sources: ACS 2012-2016, City of Fort Worth, NCTCOG, H&I Index



Potential transit service frequency supported based on forecasted adjusted population density

- Not Transit Supportive
- Very Low
- Low
- Medium
- High to Very High

- Bus Routes
- TRE and TexRail
- Lakes and Rivers
- Green Space



Population Density 2045

As a result of this increased density, these areas will see a significant increase in demand for transit service. The highest population densities will be in downtown Fort Worth, areas to the northeast and east, and a few areas to the west:

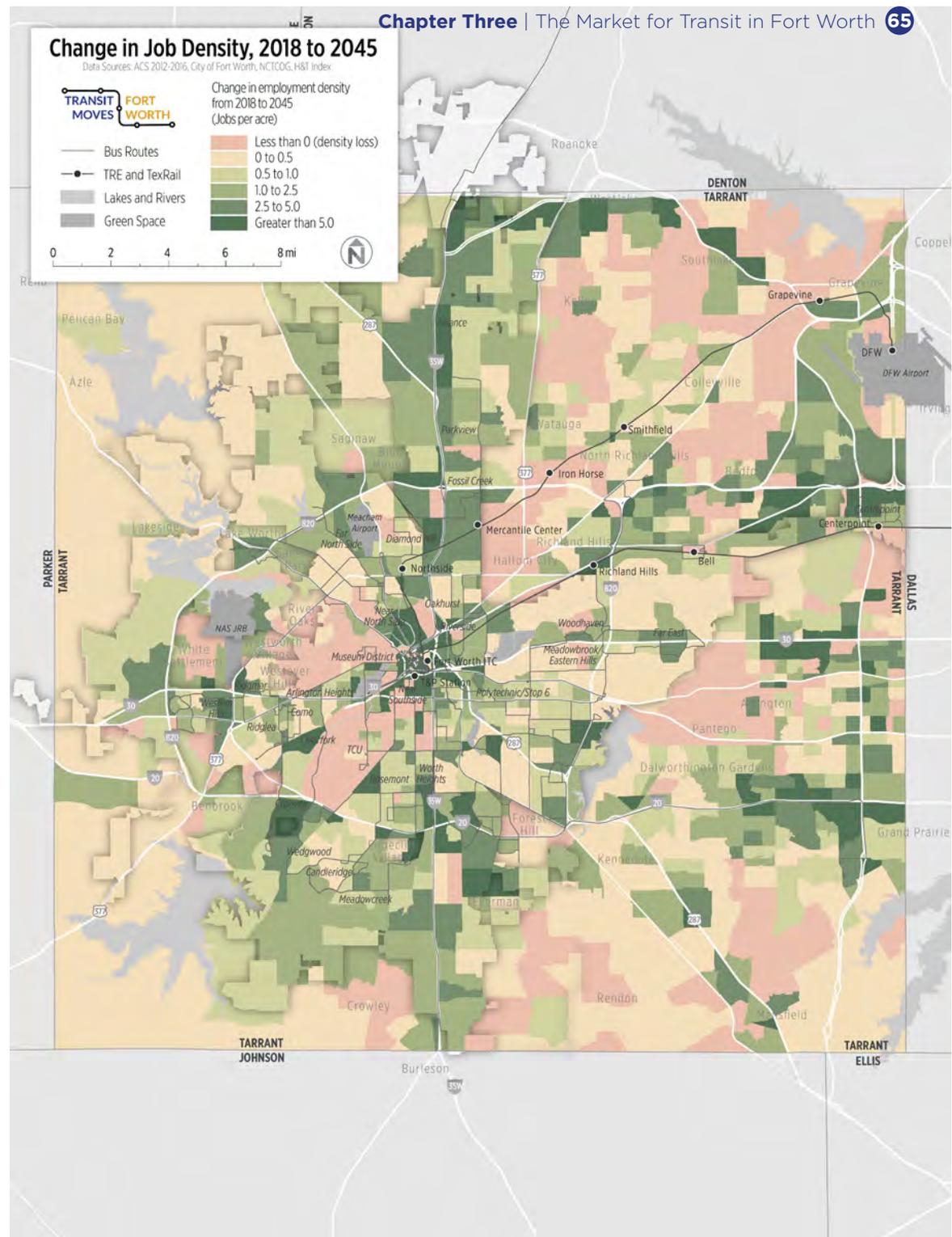
- Downtown and adjacent neighborhoods
- Near Southside
- Museums/Cultural District
- Rosemont & Worth Heights in southern Fort Worth
- Meadowcreek and Candleridge West in far south Fort Worth
- Cityview in Southwest Fort Worth
- Western Hills, Ridgmar, and Como in West Fort Worth
- Near Northside/Stockyards in northern Fort Worth
- Alliance Town Center in far north Fort Worth
- Riverside in northeastern Fort Worth
- Woodhaven in east Fort Worth
- Polytechnic Heights and Stop Six in Southeast Fort Worth
- Around Everman in far southeastern Fort Worth

Employment Growth 2018-2045

As with population, employment growth in Fort Worth will increase significantly in areas where there is already high-to-medium underlying demand, and some new areas of employment density are expected to emerge. By 2045, the number of jobs in Tarrant County is projected to expand from about 1,282,000 jobs today to 1,872,000 jobs, a 46% increase.

Areas where the most growth is expected to occur within the City of Fort Worth are:

- Downtown
- Medical District/Near Southside
- Museums/Cultural District
- Near Northside
- Worth Heights
- Clearfork
- Western Hills
- Ridgmar
- Fossil Creek
- Alliance Town Center
- Along I-35 in far north Fort Worth
- CentrePort
- Along I-820 west of Lake Arlington
- Around intersection of I-20 and I-35 in southern Fort Worth



Employment Density, 2045

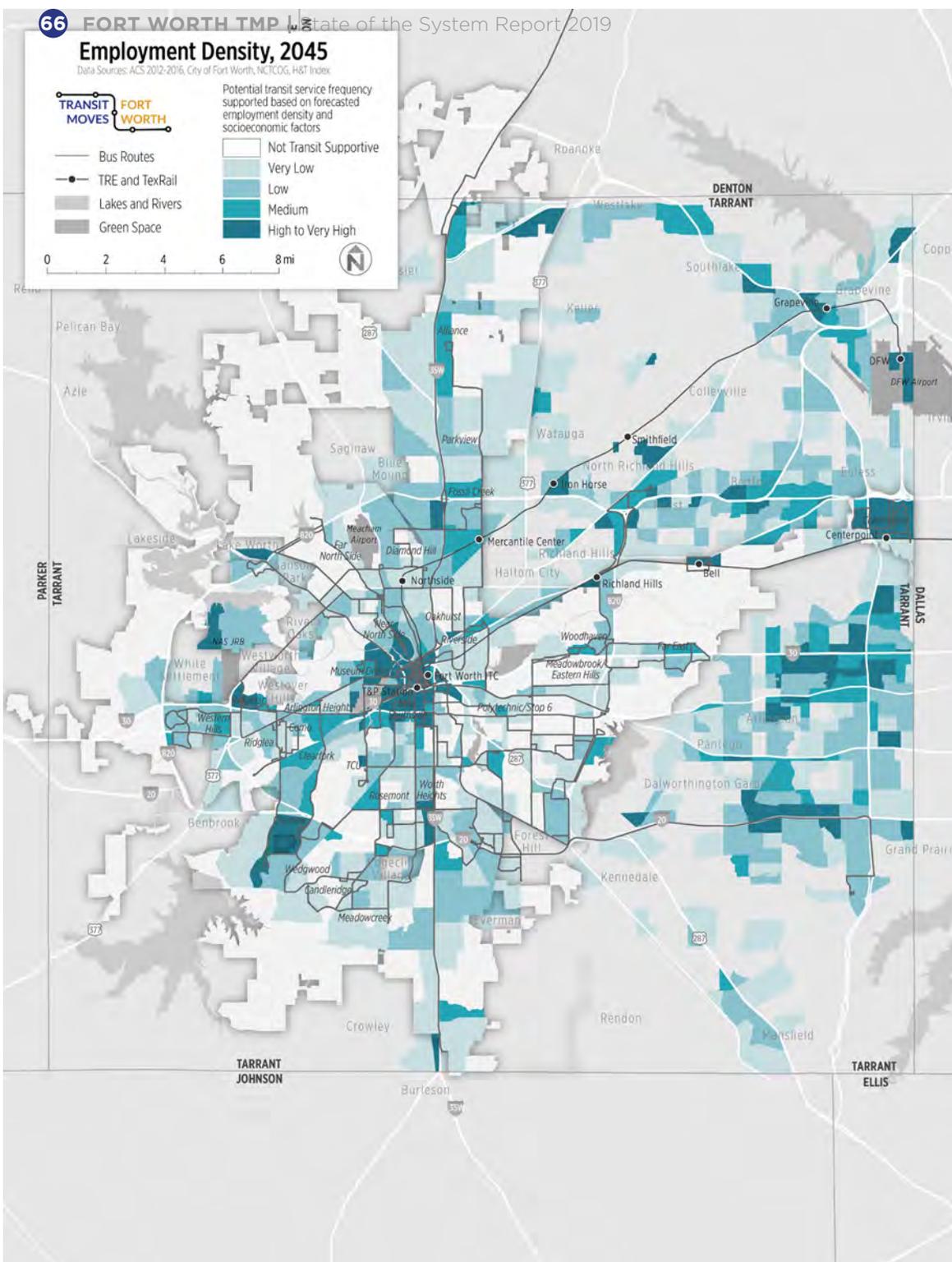
Data Sources: ACS 2012-2016, City of Fort Worth, NCTCOG, H&T Index



Potential transit service frequency supported based on forecasted employment density and socioeconomic factors

- Bus Routes
- TRE and TexRail
- Lakes and Rivers
- Green Space

- Not Transit Supportive
- Very Low
- Low
- Medium
- High to Very High



Employment Density 2045

Areas where there will be much higher or new significant demand for transit include:

- Downtown Fort Worth
- To the north along I-35W
- Throughout most of Arlington and surrounding communities
- Many areas along I-820, including Forest Hill, White Settlement, and Westworth Village (Naval Air Station/ Joint Reserve Base)
- Areas to the northeast, including Richland Hills and Grapevine

With the exception of areas within the I-820 loop, most of these areas are either currently unserved by transit or have only very limited service.

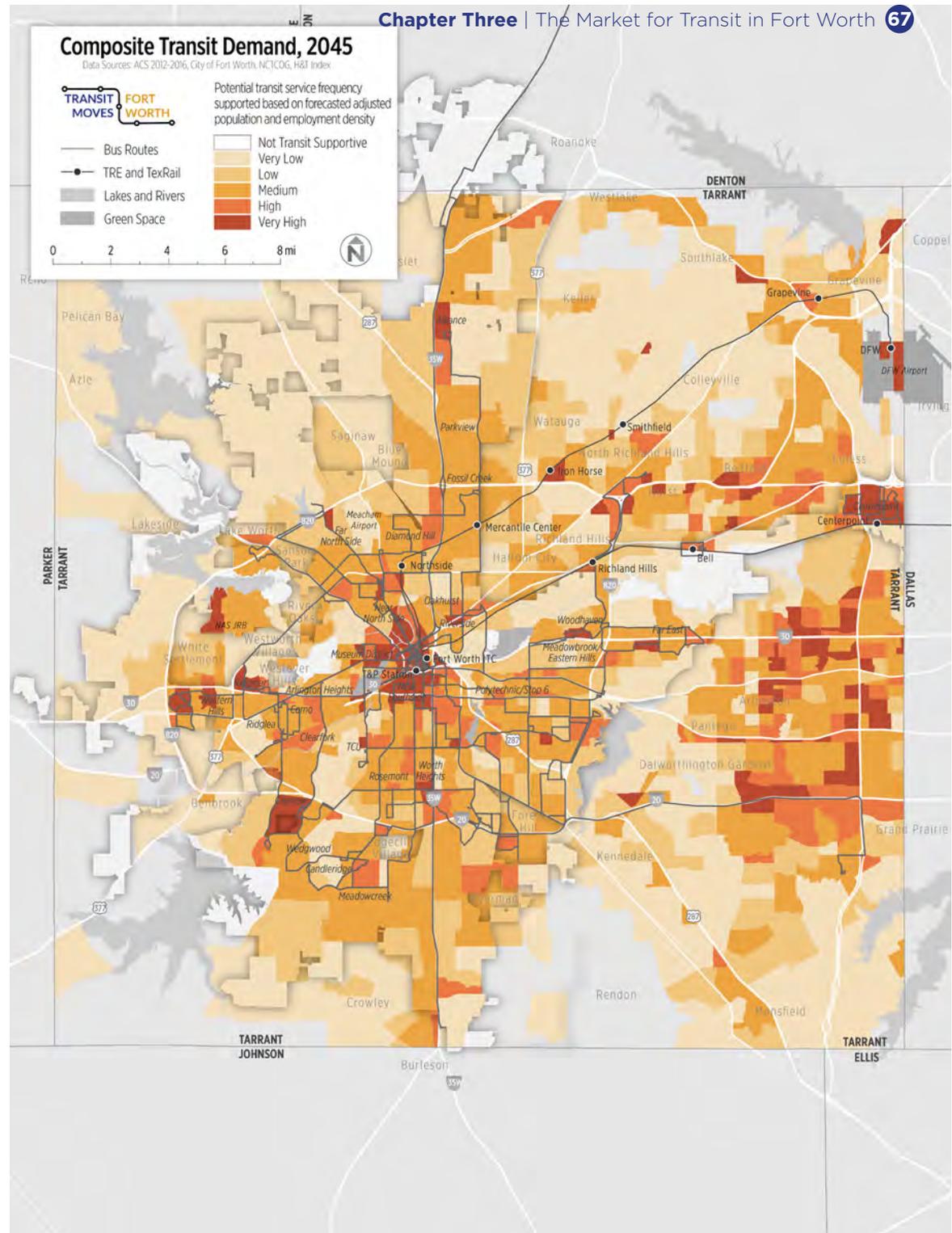
Composite Demand 2045

When considering both population and employment-based future demand, it becomes clear there will be significant underlying transit demand throughout much of Tarrant County. As this map shows, the percentage of land area in Fort Worth that will be supportive of fixed-route transit will increase and intensify.

New areas that will be able to support frequent fixed route transit within the City of Fort Worth include:

- Cityview
- Alliance Town Center
- Near North Side and Panther Island
- Riverside in northeastern Fort Worth

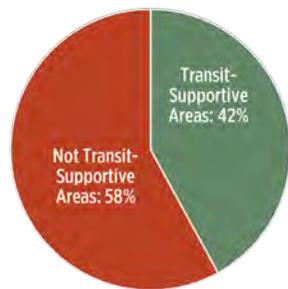
By 2045, 57% of the City of Fort Worth’s land area is expected to have residential and/or job densities high enough to support service operating at least every hour (minimum 10 residents per acre and/or 5 jobs per acre). 42% of Tarrant County’s land area will support fixed route transit service.



Acreage of Transit-Supportive Land, 2045



Fort Worth



Tarrant County

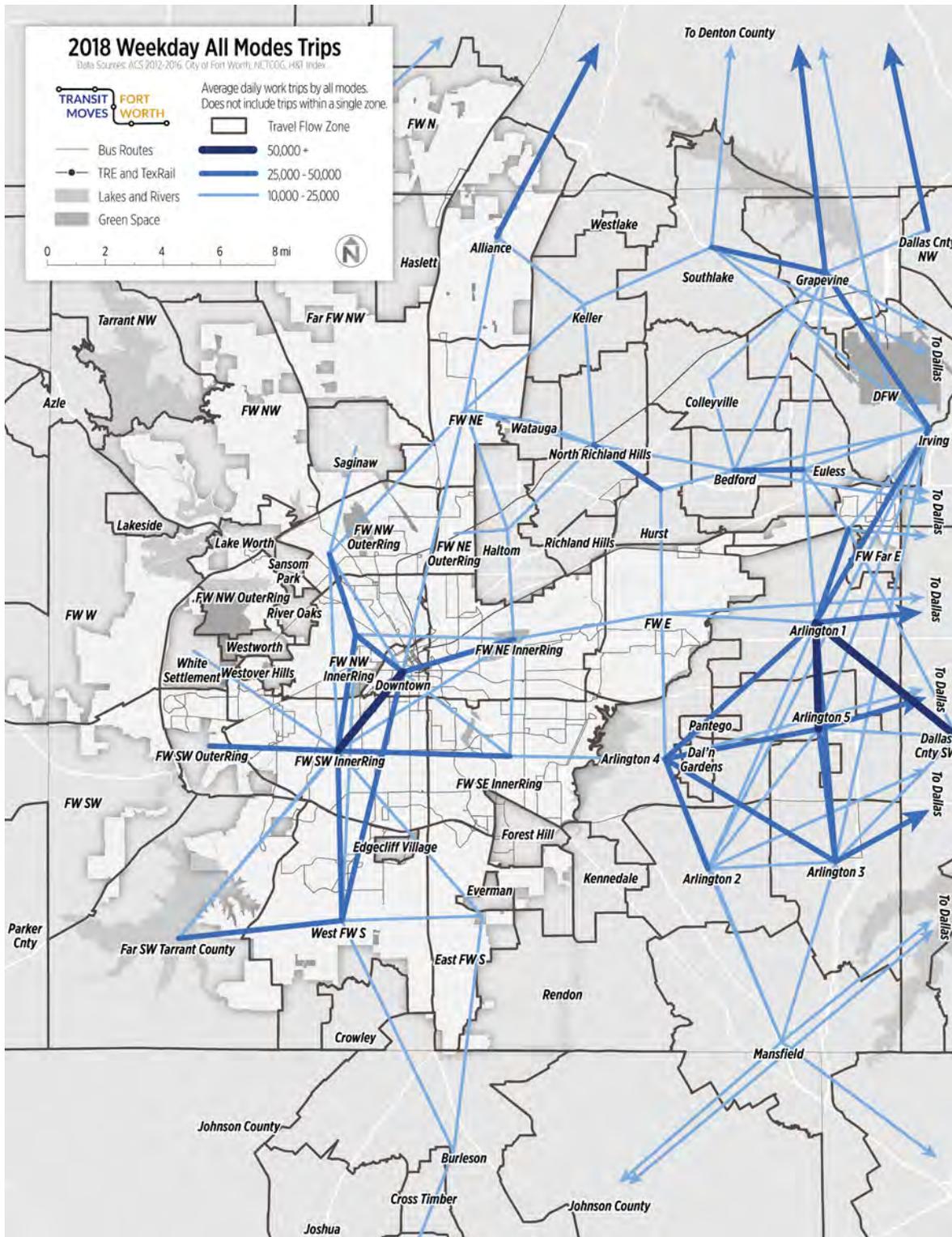


Travel Flows 2018 - 2045

Travel flows show the places that people travel between, within, and outside of Tarrant County. They are one resource useful for determining where direct or relatively easy connections should be made within the Fort Worth region.

For this analysis, Tarrant County was divided into travel zones based on neighborhoods, the existing road network, and boundaries used in existing model data. This study examines existing and forecasted weekday travel flows between areas throughout both Tarrant County and the surrounding counties. This analysis compares present and future transit trips to trips by all modes in order to provide an understanding of which existing automobile trips can be captured by transit.





2018 Average Weekday All Modes Travel Flows

Existing inter-zone travel flows maps show that the heaviest travel flows are centered on the core of Fort Worth, as well as southwest of downtown Fort Worth and eastern Tarrant County.

- The greatest travel flows are between downtown Fort Worth and the areas southwest and northwest of downtown.
- There are major travel flows in the east and around Arlington
- Relatively intense travel occurs between most urbanized regions of southwest Fort Worth
- There is a large flow of travel to the northeast of Loop 820, around Hurst and North Richland Hills
- Grapevine and Alliance are significant hubs of travel, with some heavy travel flows to adjacent areas including Denton County

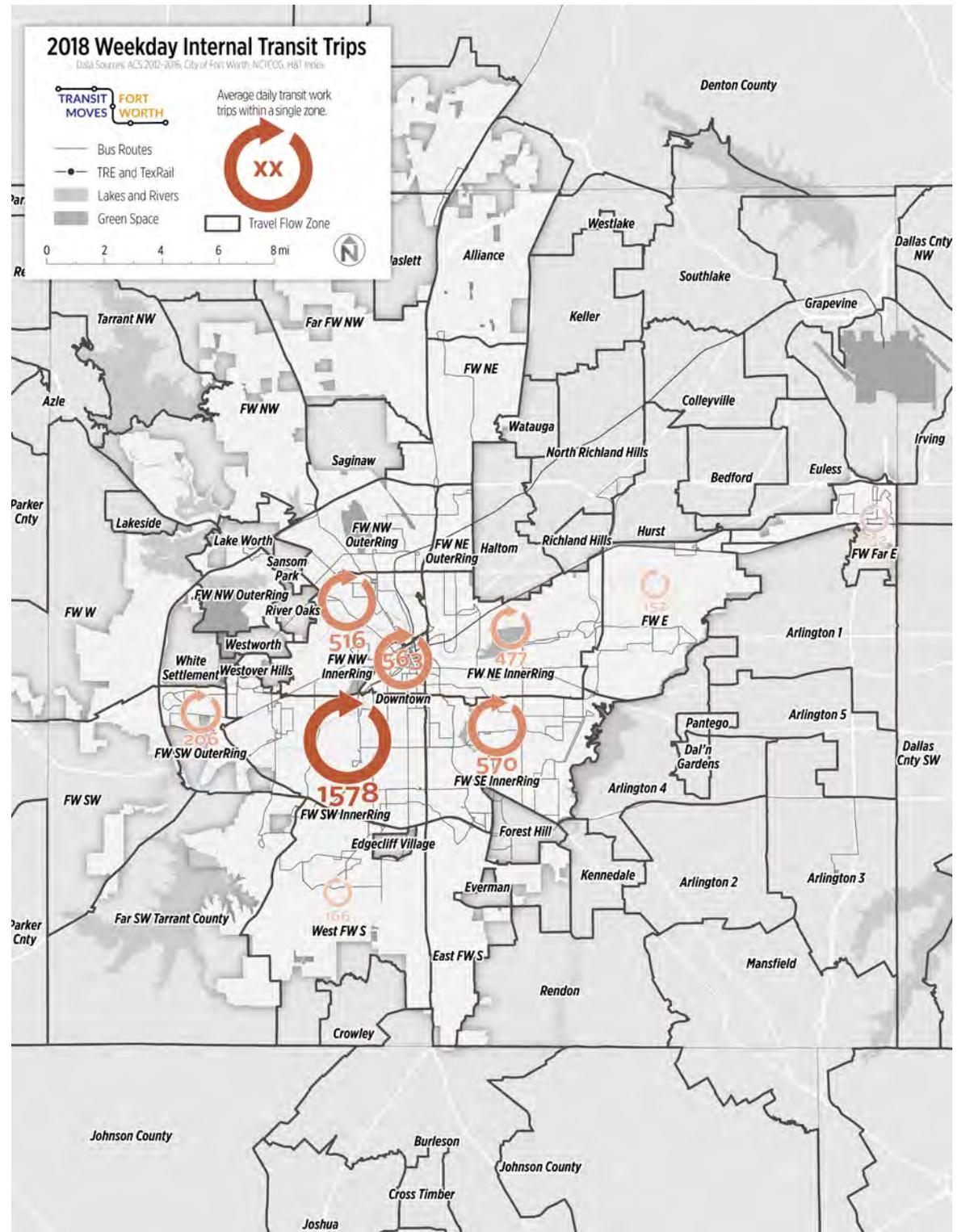
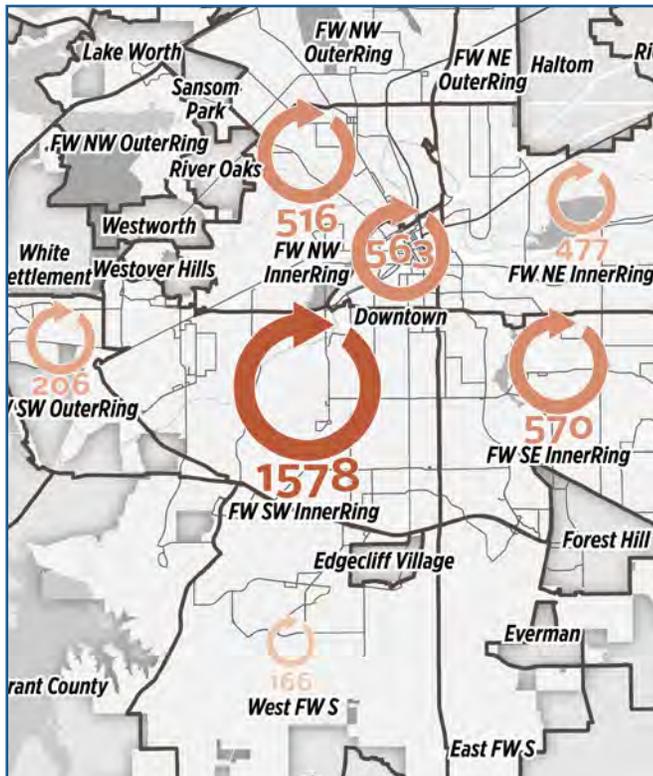
Existing Transit Travel Flows

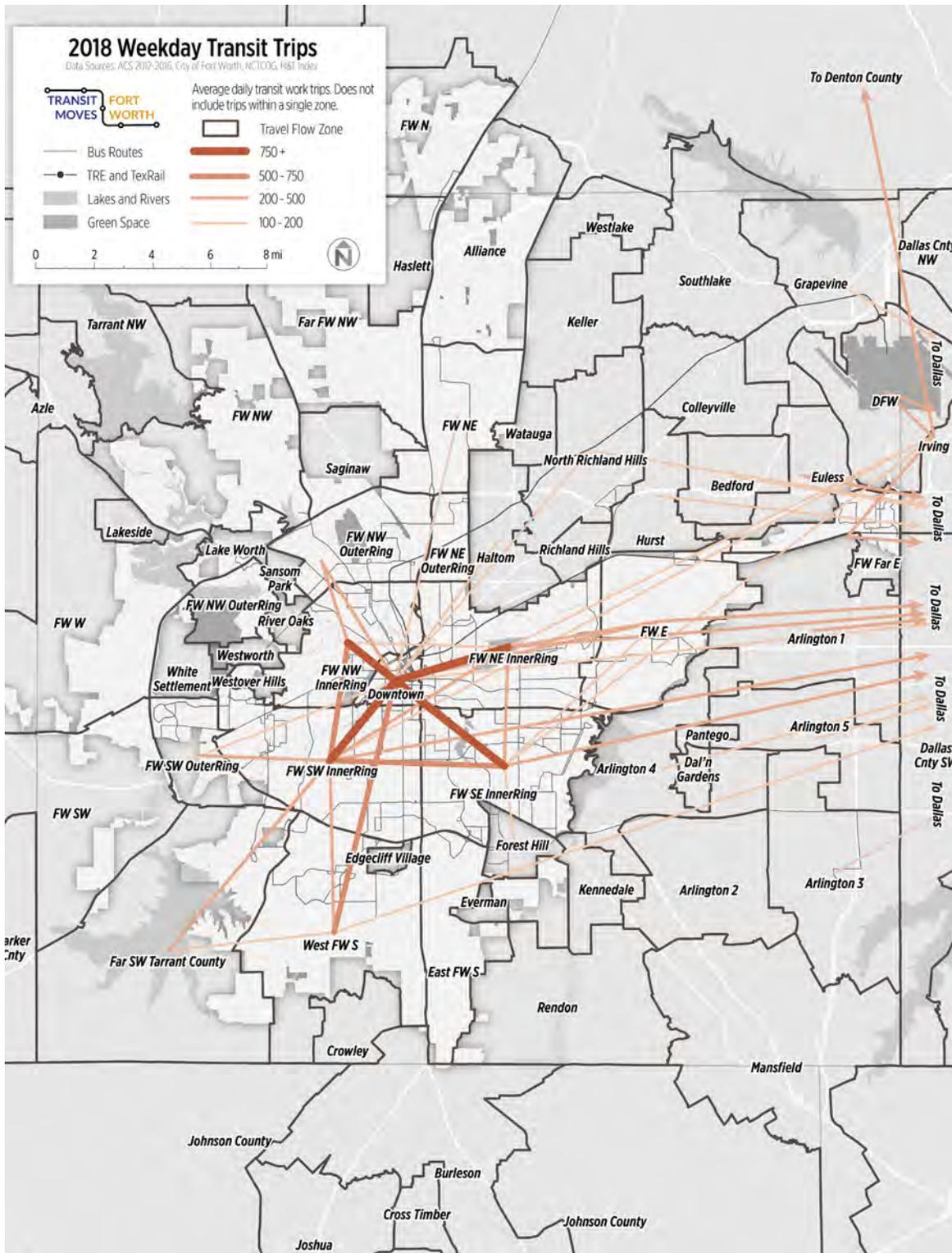
2018 Average Weekday Intra-zone Transit Trips

Today, Downtown Fort Worth, the Fort Worth medical district, and the inner loop neighborhoods of Fort Worth create most activity for existing transit trips.

Within travel zones, the most transit activity occurs in the southwest inner loop region of Fort Worth, followed by Downtown, southeast Fort Worth, and northwest Fort Worth with more than 500 daily internal transit trips.

Activity drops off as one moves farther out from the urban core, with about 150 daily transit trips in the western part of far south Fort Worth, about 200 trips west of 183 and east of Loop 820, and fewer than 200 trips in the far eastern travel zones of Fort Worth.





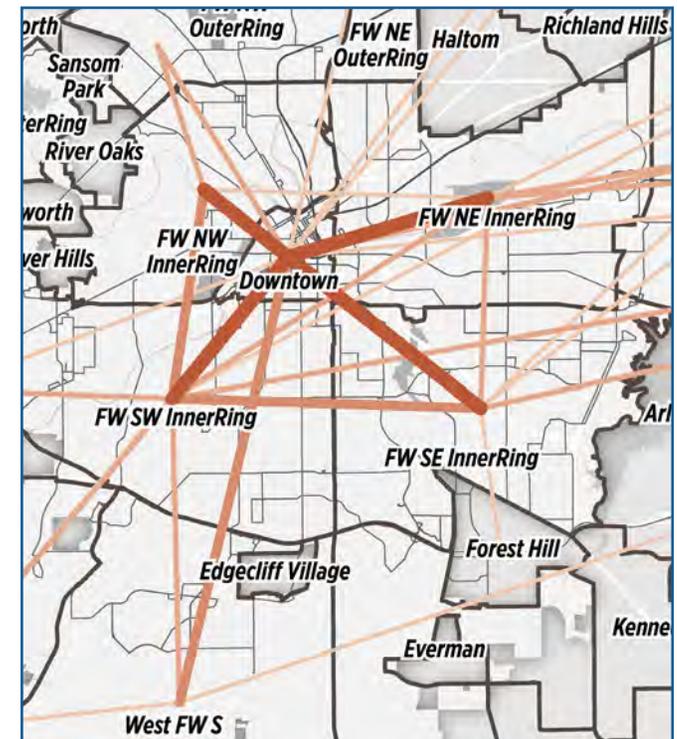
2018 Average Weekday Transit Travel Flows

Reflecting the radial design of Trinity Metro’s bus services, the largest transit trip volumes are generally oriented to and from downtown Fort Worth. Trip pairs that have more than 750 trips per weekday are all oriented toward downtown to and from the neighborhoods within Loop 820.

In addition to downtown-oriented trips, there are several large travel flows crosstown between the areas of Fort Worth within the loop. These larger travel flows (500-750) daily trips occur between:

- Near Southwest and Near Southeast Fort Worth
- Near Northwest and Near Southwest Fort Worth
- Far Southwest and Near Southwest Fort Worth
- West Fort Worth South and Downtown

Note that this map does not include transit trips taken on TEXRail, since NCTCOG data is current as of December 2018, before TEXRail began operating in early 2019.



Future All Modes Travel Flows

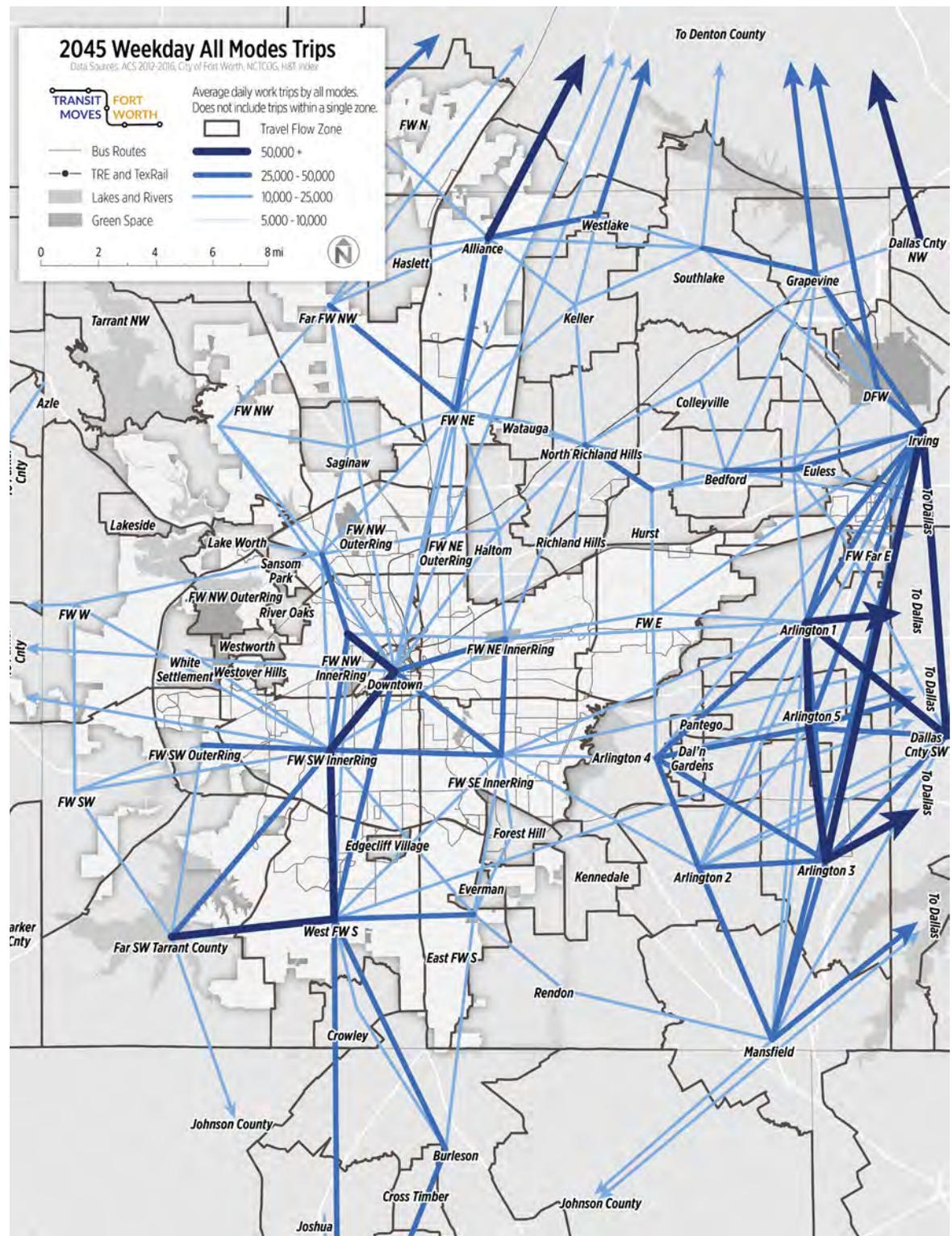
2045 Average Weekday All Modes Travel Flows

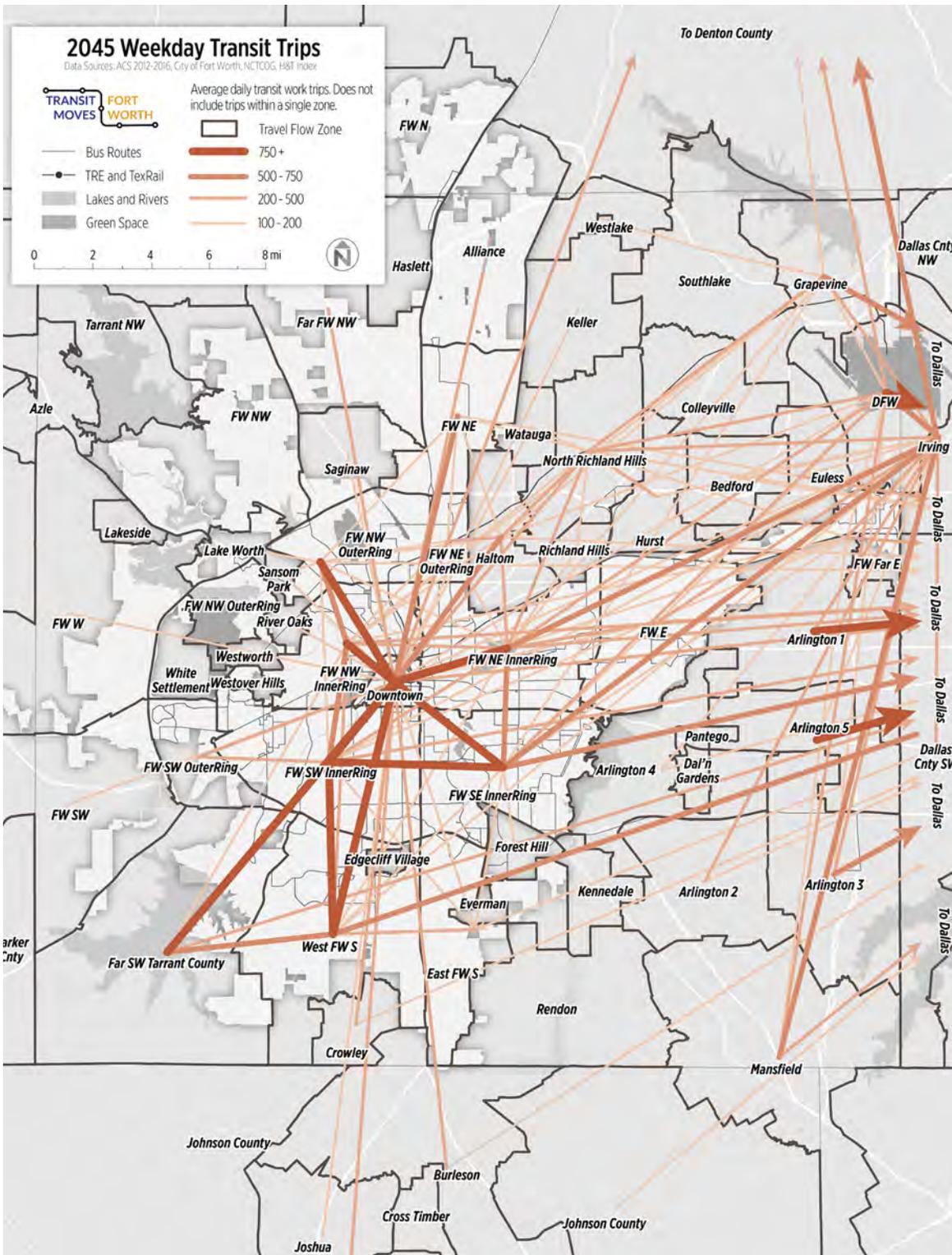
A significant increase in travel flows across the region will accompany the large increase of people and jobs in Tarrant County. All flows will become heavier over time, and the largest travel flows continue to be located around:

- The core of Fort Worth
- East-west across Fort Worth
- To the east of Fort Worth around Arlington.

Additional travel flows that will increase include:

- East-west travel between Fort Worth and Arlington
- Increased travel in eastern Tarrant County, including in Arlington and between Arlington and communities immediately surrounding the city.
- Growing north-south travel to and from Fort Worth, particularly between southeastern Fort Worth and northern Fort Worth around the Alliance area
- Travel in northeastern Tarrant County around North Richland Hills and Hurst
- Between the far southwestern regions of Tarrant County





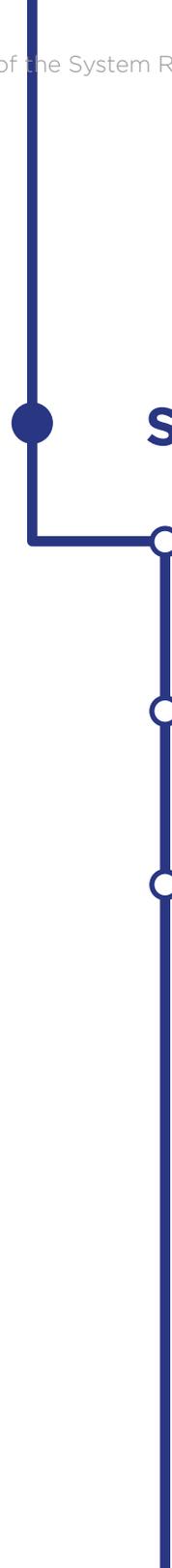
Future Transit Travel Flows

2045 Average Weekday Transit Travel Flows

All transit flows between all inner loop zones, especially to and from Downtown Fort Worth, are projected to increase in volume.

By 2045, trips between Downtown and both far northeast Fort Worth (FW NE) and the northwest outer loop area emerge as very large volume flows (750+). New very large (750+) transit trip flows also emerge crosstown, between the SW and SE inner loop areas, and southwest across the loop to southwest and south suburban Fort Worth.

In addition to these Fort Worth-centered future transit trips, intercity trips between Fort Worth and the mid-cities (Irving, Arlington, Grand Prairie, Grapevine, etc.) increase significantly in volume due to the expected growth of TEXRail ridership. Grapevine, Irving, and Arlington emerge as major regional transit trip centers for activity to and from Dallas.



Summary and Opportunities

Existing and Future Demand for Transit	78
What Should be Done to Meet the Demand for Transit?	86
Next Steps	95

Summary

The demand for transit within Fort Worth is based on a number of factors, the most important of which are:



Population and Population Density: Large numbers of people living and working close together are needed to enable the provision of convenient, productive, and cost-effective transit.



Socioeconomic Characteristics: Different groups are more or less likely to use transit.



Employment and Employment Density: Trips to and from work typically comprise the largest proportion of transit trips.



Development Patterns: Areas with denser development, mixed-use development, and good pedestrian environments make taking transit much more convenient, attractive, and well used.



Major Activity Centers: Large employers, universities, tourism destinations, and other high-activity areas attract large volumes of people and can generate a large number of transit trips.



Travel Flows: Transit needs to be able to get people to the places they are going.



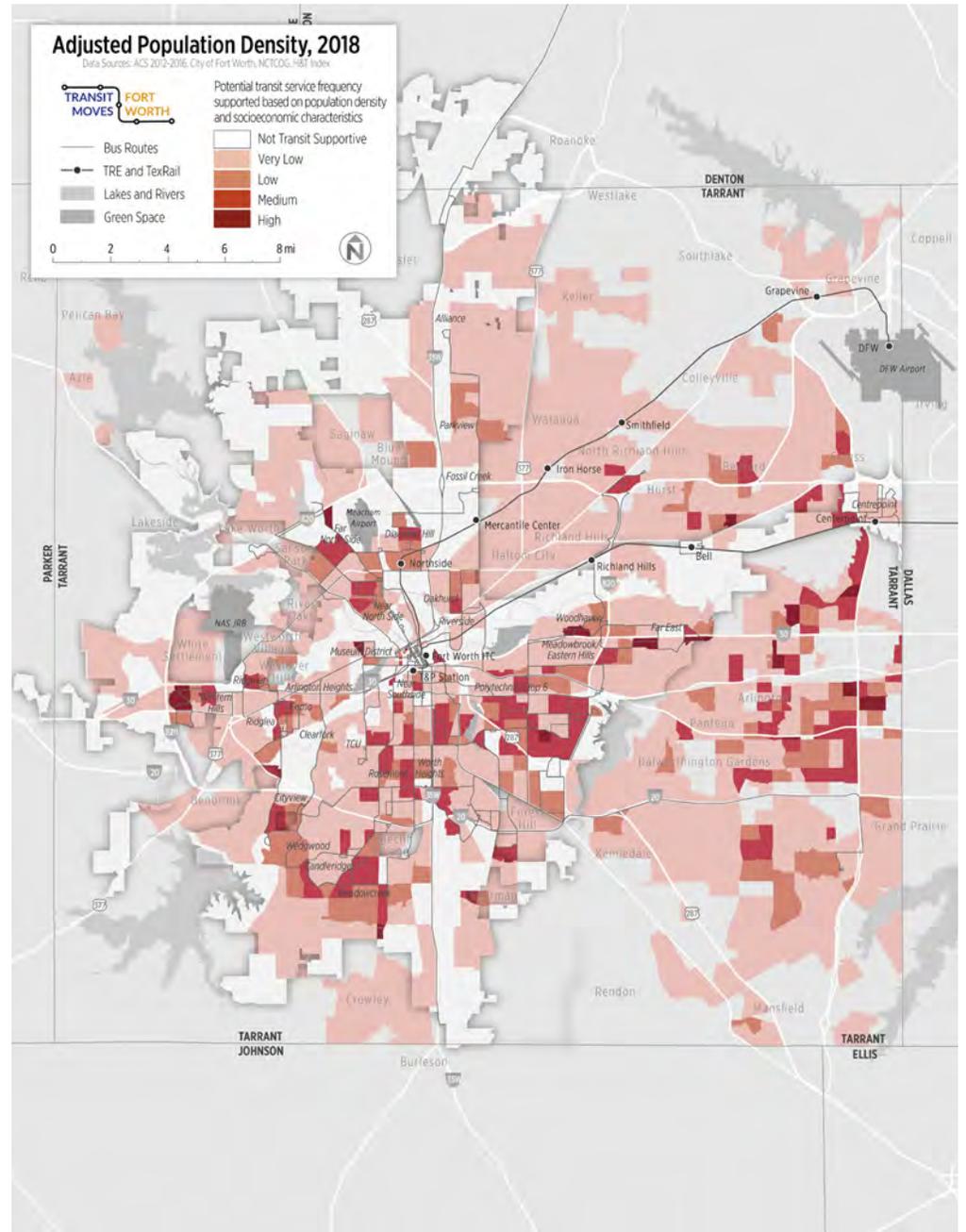
Existing (2018) Demand for Transit

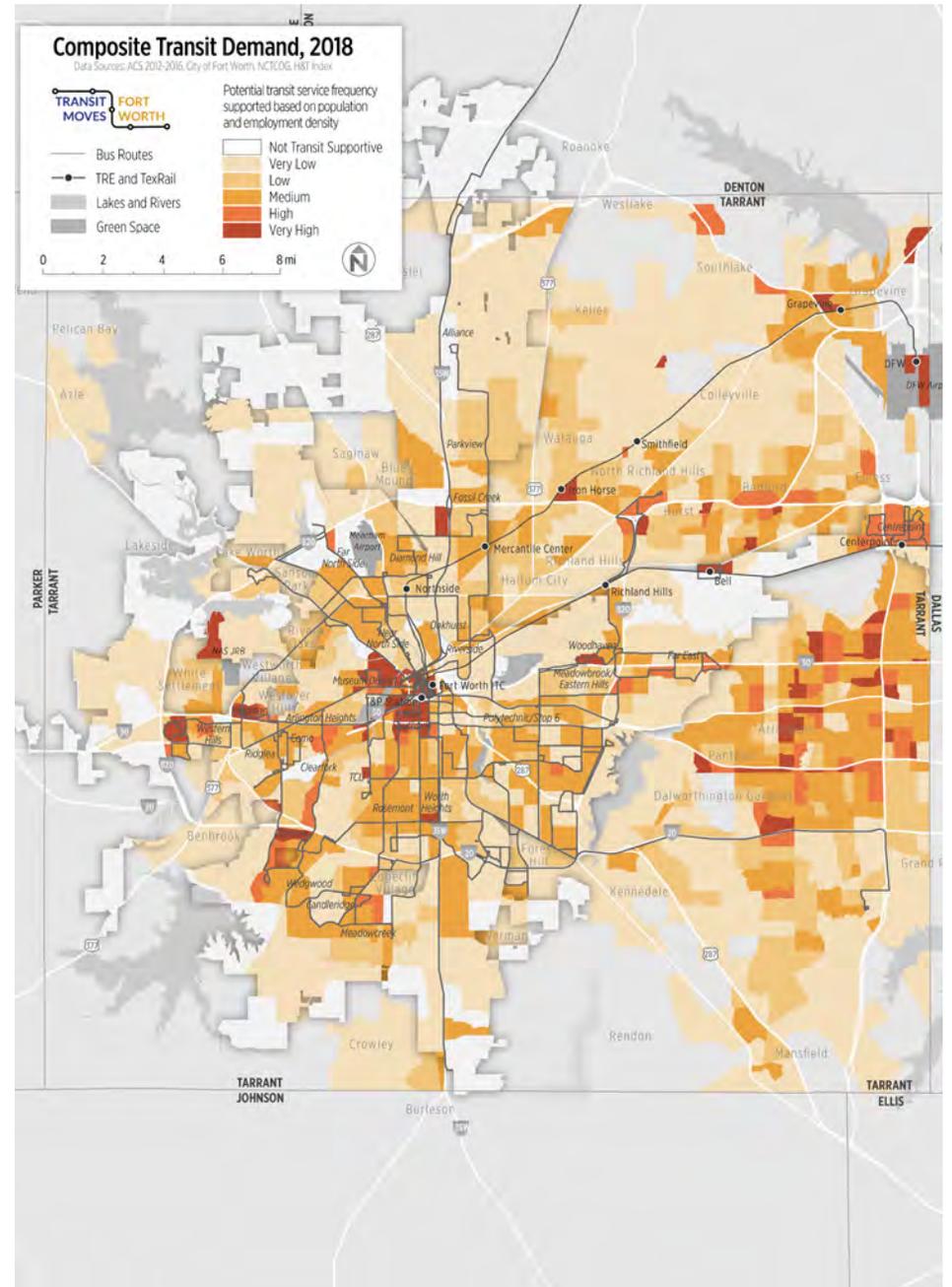
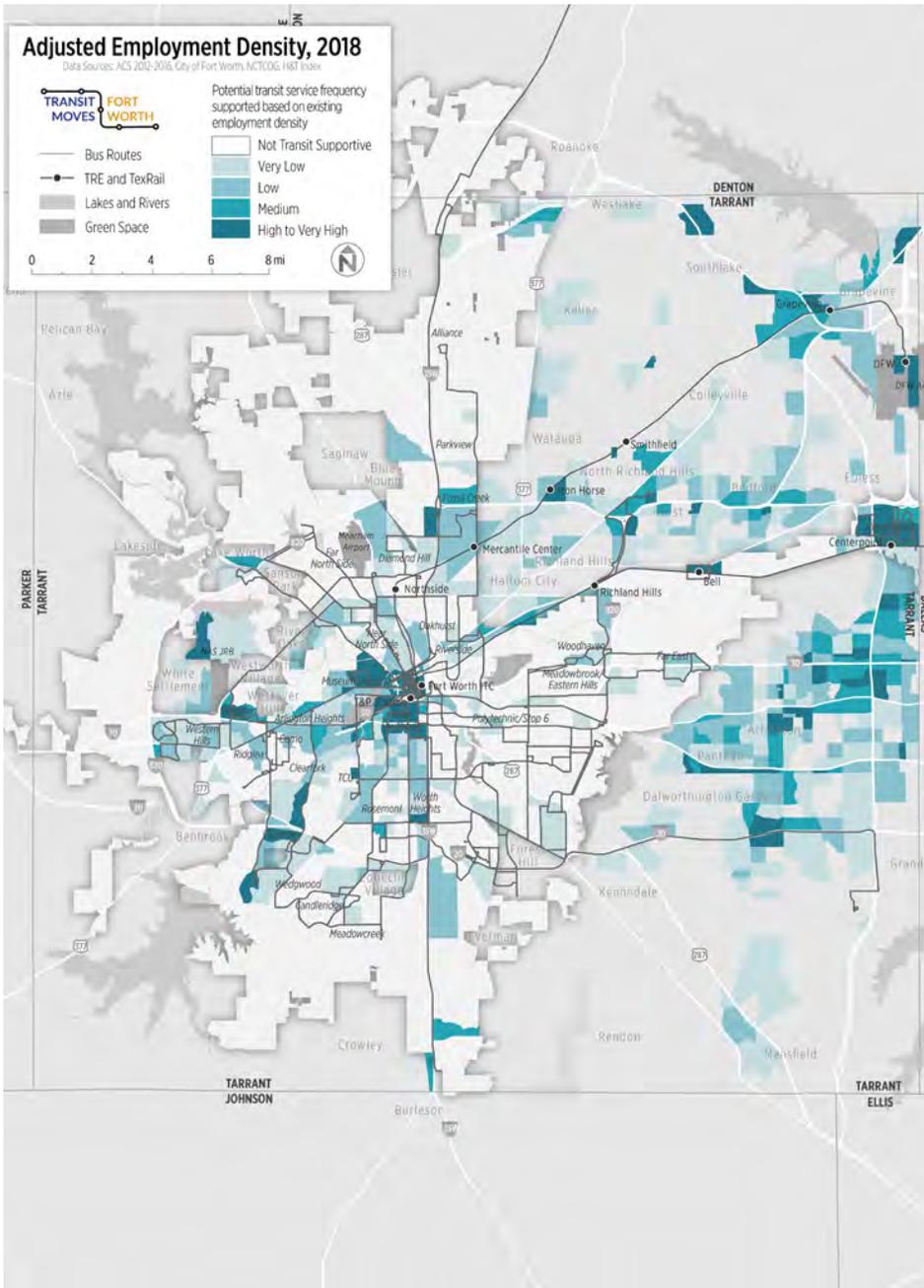
Today, transit demand within Fort Worth varies from very high to very low. It is generally highest in the Southside, TCU, Far Southwest, Northside, and Northeast areas and moderate to low elsewhere. In more detail, neighborhoods with the highest levels of transit demand include:

- Rosemont, Worth Heights, Hemphill Heights, and Paschal/Frisco Heights in the Southside
- Candleridge and adjacent areas along Hulen St, Sycamore School Rd and McCart Ave in Far Southwest
- Cityview and River Park in Wedgwood
- Las Vegas Trail, Rigmar, Ridglea Village, and Como in the Western Hills
- Near Northside, Far Northside, and Diamond Hill in the Northside
- Woodhaven, Eastchase, and CentrePort in the Eastside
- Morningside, Polytechnic Heights, and Stop Six in the Southeast

Job-related transit demand is more concentrated than residential-based demand with the highest levels of demand to and from:

- Downtown Fort Worth
- The Museum District west of downtown
- The Medical District south of downtown
- Cityview/Hulen Mall in Wedgwood
- Ridgmar in the Western Hills
- The Naval Air Station Joint Reserve Base, where Lockheed Martin Aeronautical is located
- CentrePort in the Eastside





Future (2045) Demand for Transit

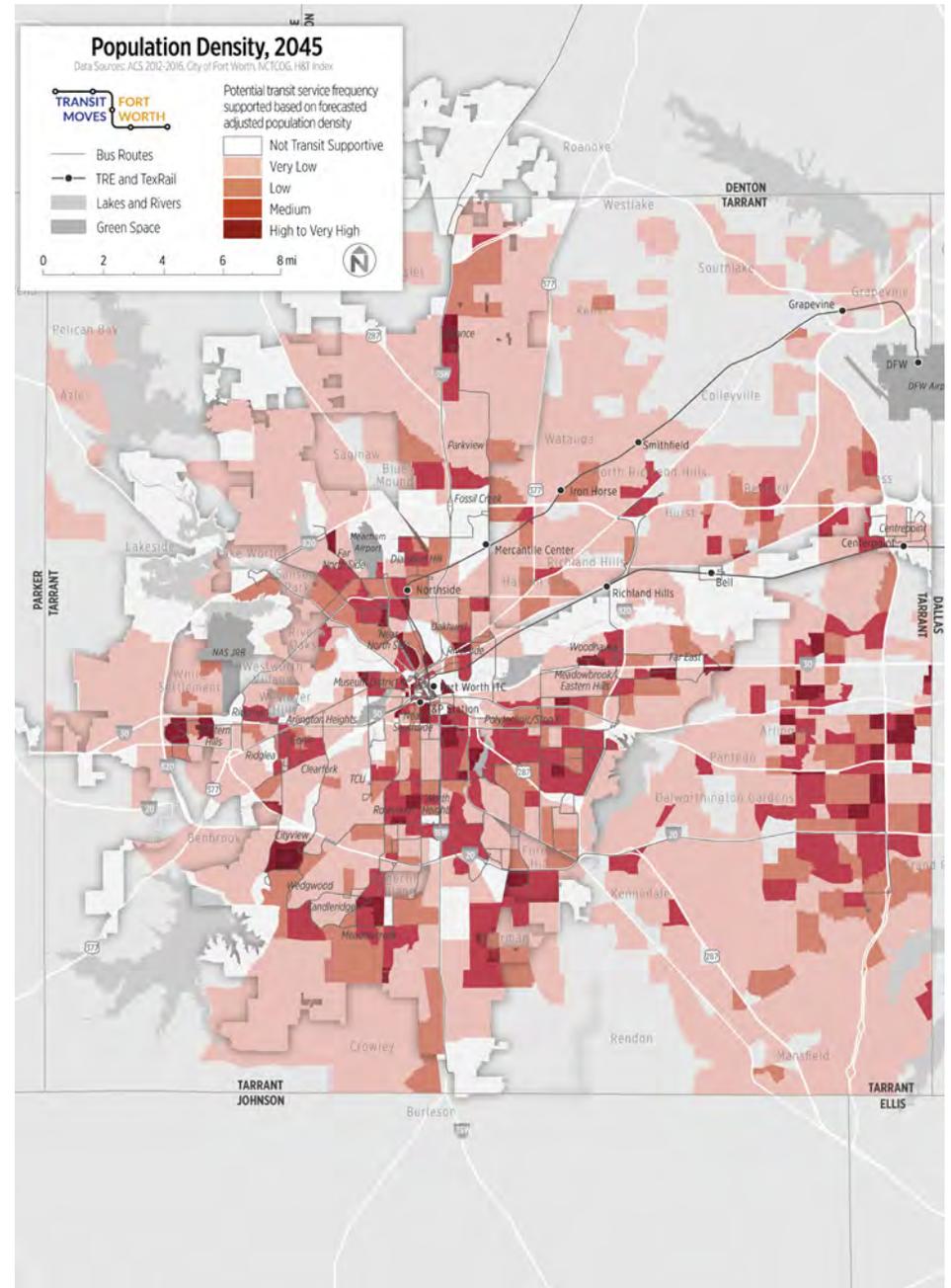
Looking forward to 2045, Fort Worth's population is projected to grow by 59% and employment by 46%. There will be more people and jobs in areas where demand is already high, and in new areas a demand for transit will emerge. Underlying demand for transit service will grow even faster than population and employment. This is because transit demand is more related to density than absolute numbers, and denser areas produce proportionately more demand for transit. In addition, societal changes, such as greater preferences among Millennials to use transit and the desire by Baby Boomers to remain independent, will also increase the market for transit.

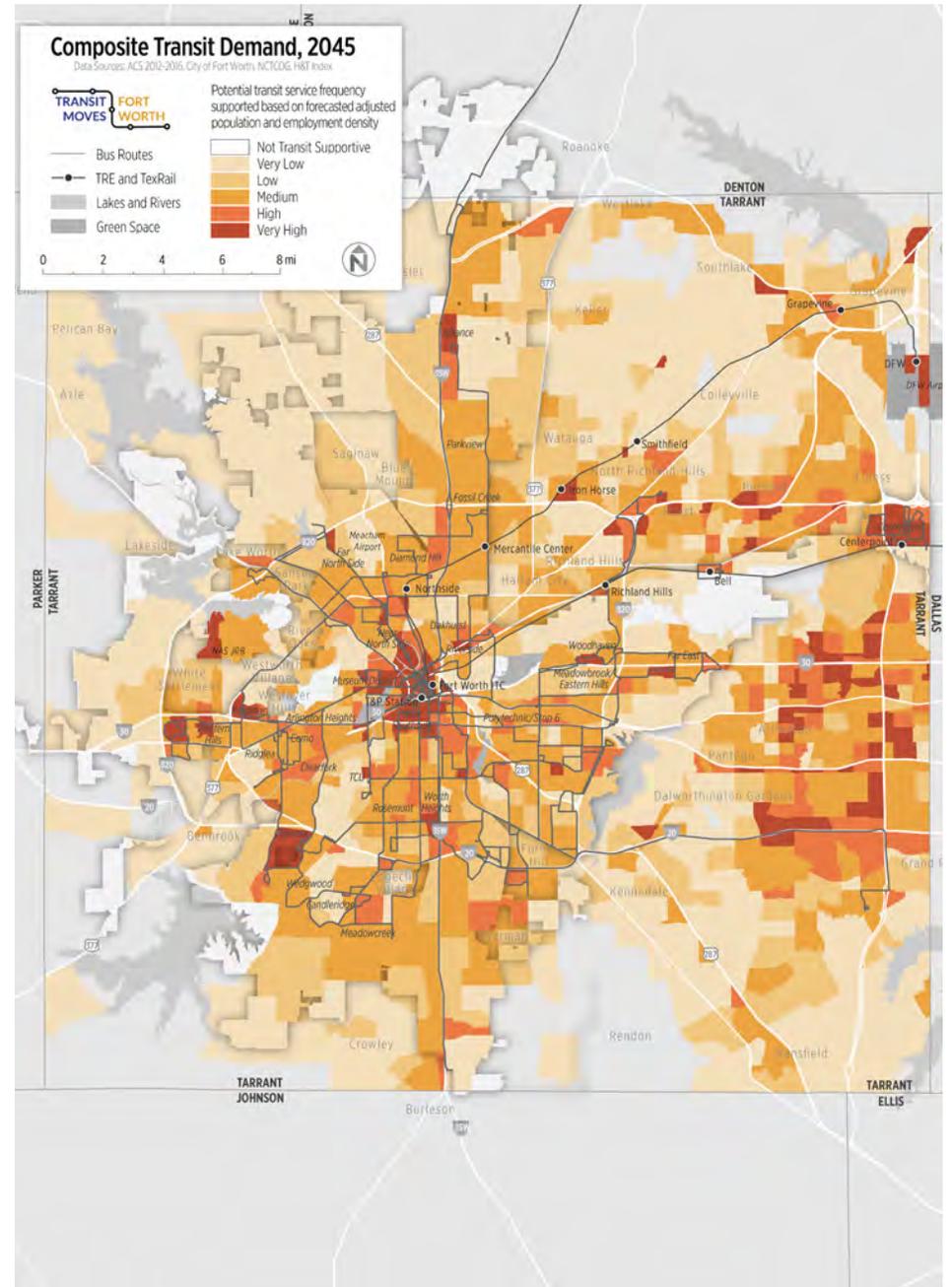
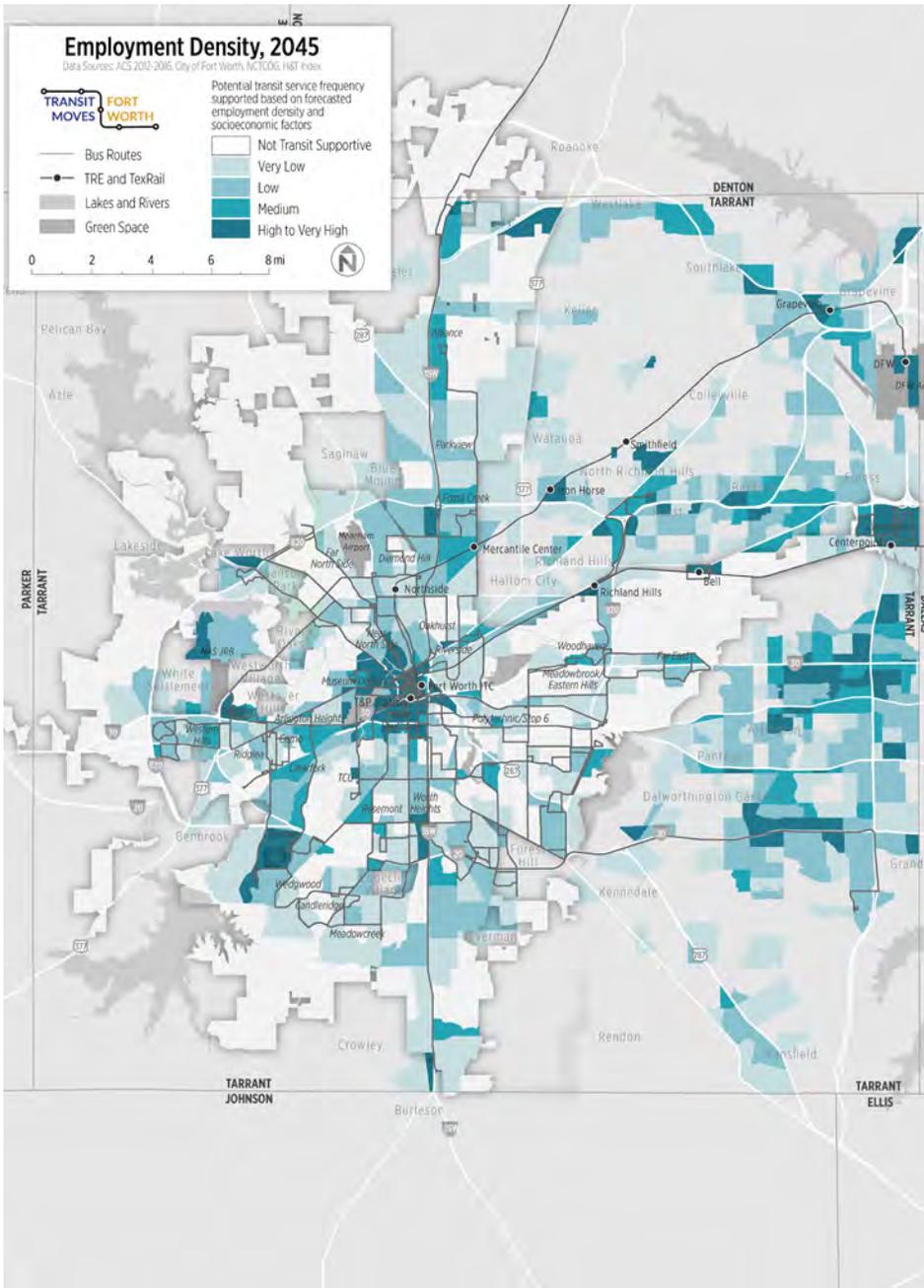
Through 2045, residential-based transit demand will grow to be high to very high in many areas throughout Fort Worth. This will include:

- In and around downtown, including the Near Southside, Panther Island, and the Museum District
- Most or much of the Eastside, and large portions of the Southeast, Southside, TCU, Sycamore, the Far Southwest, and the Northside
- Around Hulen Mall and much of Como, and the Western Hills, the Northeast and the Far North.

Employment will grow outward, and especially in the Far North along I-35W. Altogether, demand will be high to very high in:

- Downtown Fort Worth
- An expanding ring around downtown encompassing Panther Island and parts of the Northeast, the Northside, and Southside
- In the Northeast and Far North, mostly along the east side of I-35W, and particularly in the Alliance Town Center area
- In TCU, Arlington Heights, and the Western Hills along I-30
- In the Southside, Sycamore, and the Far South along I-35W

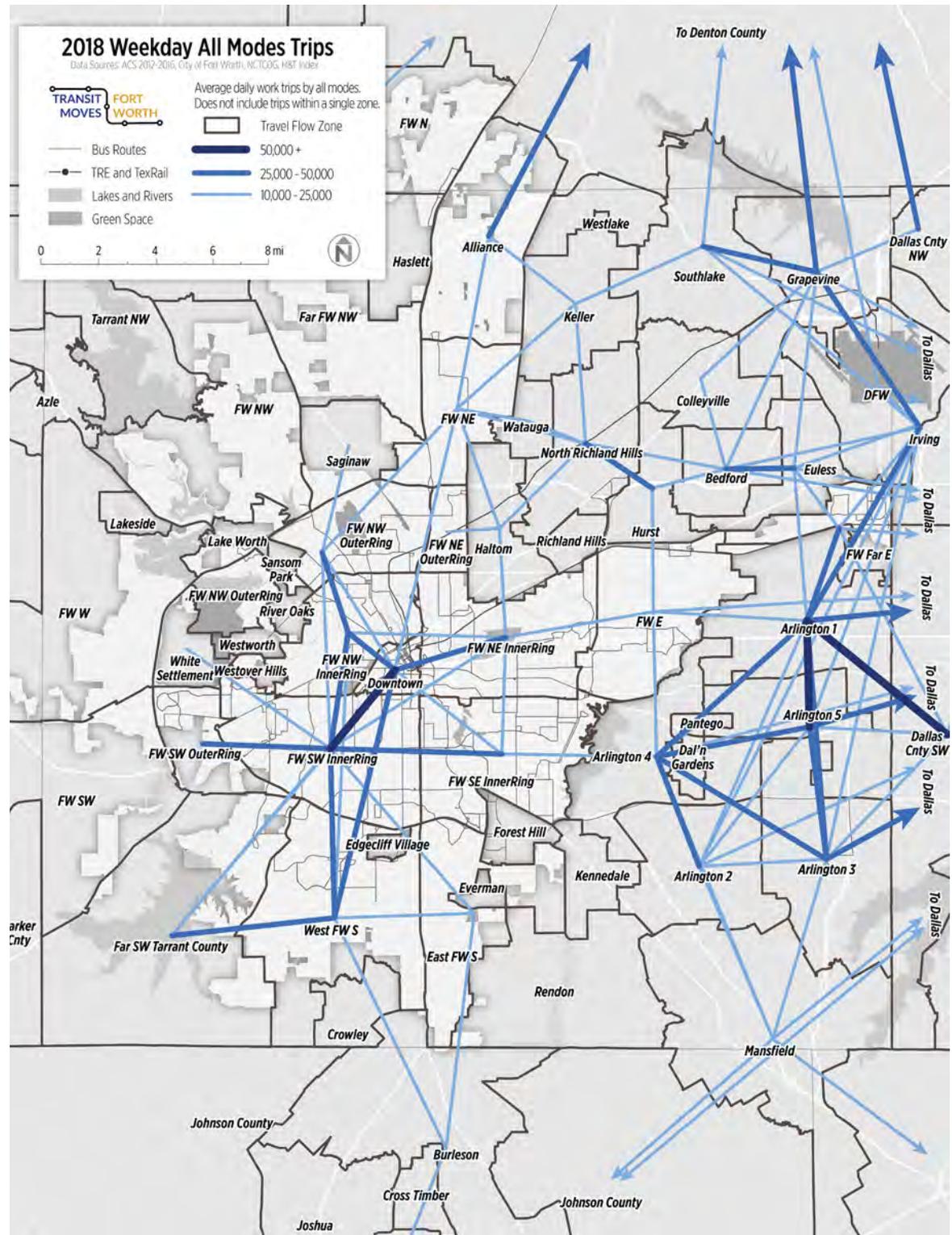


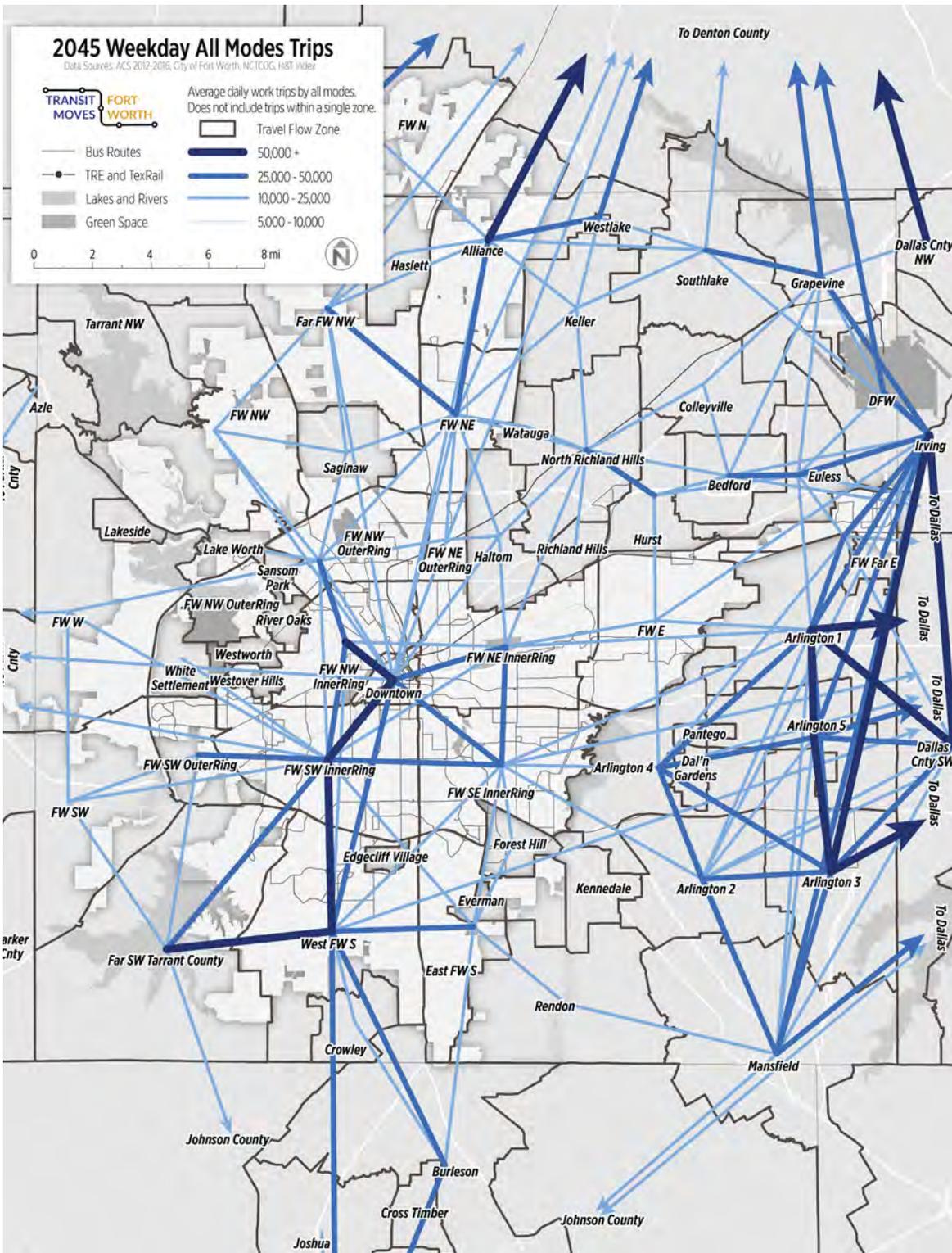


Future (2045) Demand for Transit

In addition to increasing demand within Fort Worth, demand will increase significantly in neighboring areas that residents and workers travel to and from, particularly:

- Arlington and immediately surrounding areas will increase dramatically, and there will be demand for frequent service in and around downtown and UTA.
- Areas to the northeast, including Richland Hills, North Richland Hills, Euless, Bedford, and Grapevine, including DFW.
- Many areas along I-820, including North Richland Hills, White Settlement, and Far Southwest Tarrant County.
- Several communities northeast of Fort Worth, including Hurst, North Richland Hills, and Bedford.





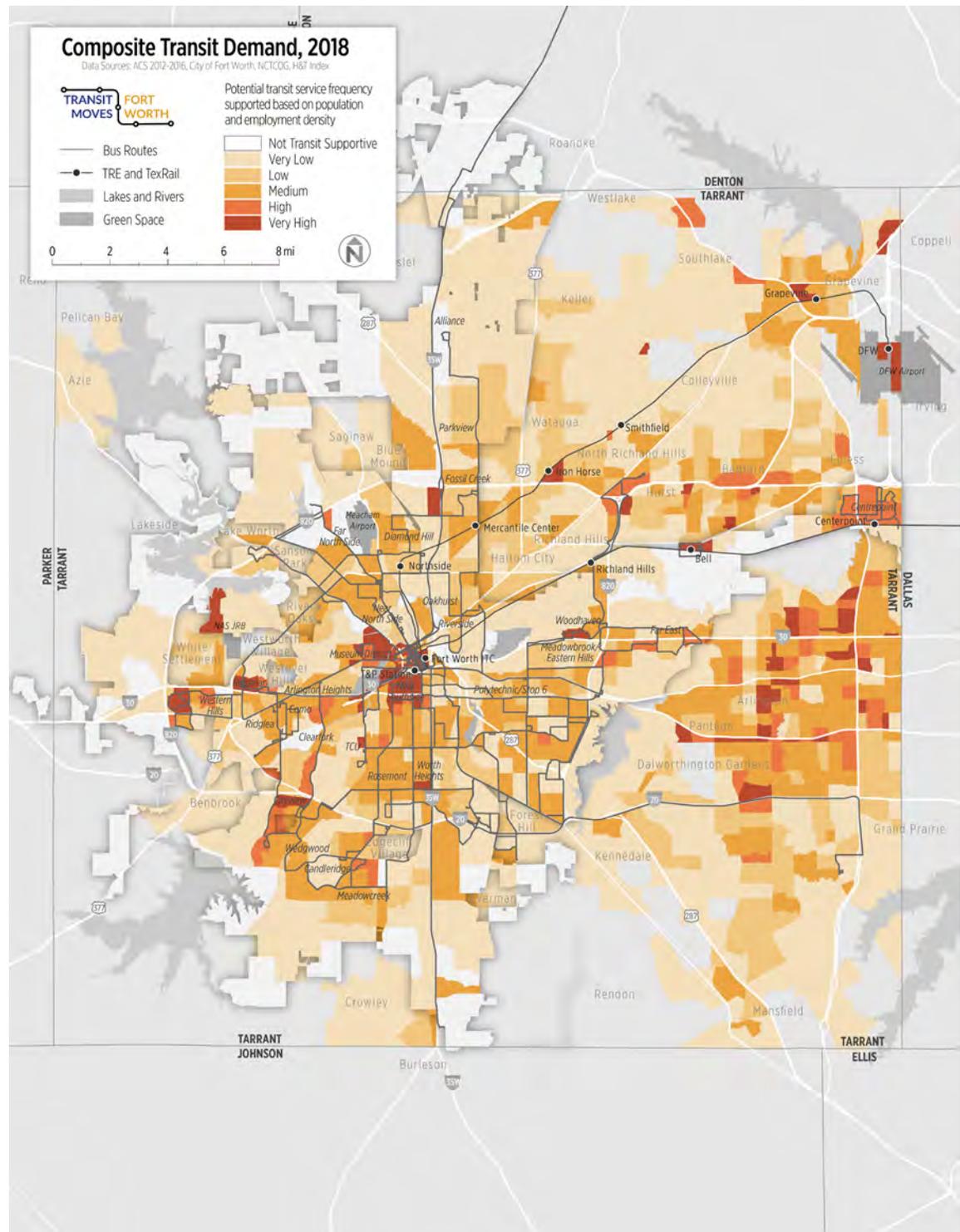
Overall, current transit demand in Fort Worth can be characterized as moderate to very high in some areas, but moderate to low in most. However, demand will increase rapidly as population and employment increase. The city's expected growth points to the need for a much more robust transit system.

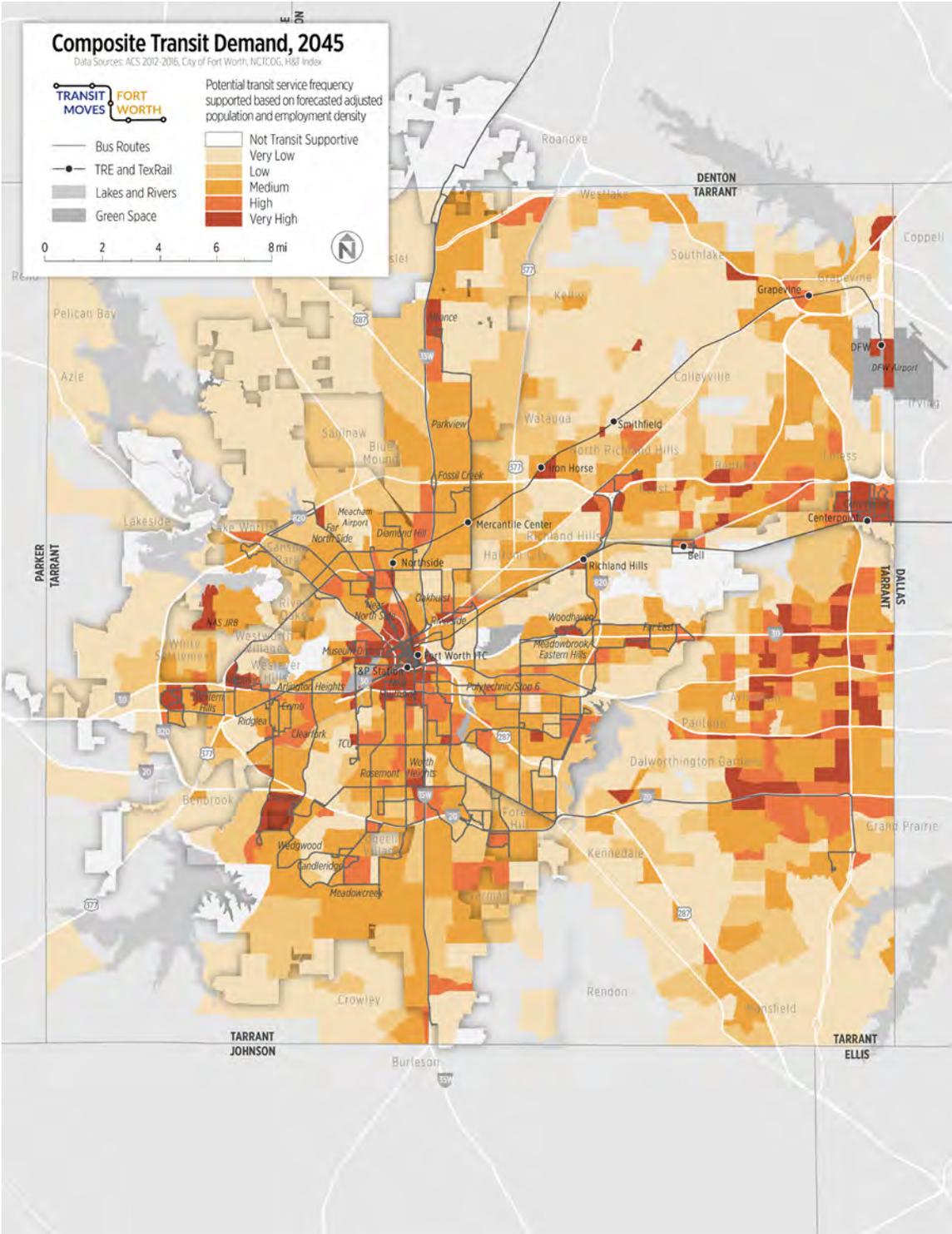
Existing Services Do Not Meet Market Demand

Trinity Metro current serves Fort Worth with 41 local bus routes, seven express routes, and two commuter rail lines (one of which is operated jointly with DART). Broadly speaking and although there are exceptions, most of Trinity Metro’s service is within the I-820 loop, and this is currently where transit demand is highest. However, much of this service operates relatively infrequently and for short service spans and there is market demand for much better service.

In addition, the overwhelming majority of service is provided with local bus routes. Exceptions are TRE and TEXRail, and the Spur, which provide Rapid Bus-like service. Elsewhere in the United States, including in Dallas, there has been an emphasis on developing faster, more convenient, and more comfortable services such as light rail, Bus Rapid Transit, Rapid Bus, and more. There is also market demand for these types of services in many parts of Fort Worth.

Looking forward, as Fort Worth continues to grow rapidly, the demand for transit will grow outward and beyond the geographical reach of current services. Demand will also grow to much higher in areas where it is already high. To meet both existing and future demand, improvements will need to be made to existing services, and new services will need to be developed.





Without an expansion of transit service, the gap between market demand and service will grow much wider.

Potential Transit System-Related Improvements

The next phase of this project will examine the specific improvements designed to better meet current needs as well as future needs. This work will consist of further examining differences between the market demands described in this briefing book and the services now being provided, adopting best practices from elsewhere in the United States, brainstorming, and input from stakeholders and the public. In no particular order, the types of improvements that will be examined include:

Potential City-Led Efforts

-  **Service Buy-Ups**
-  **Complete streets with an emphasis on transit service**
-  **Transit priority**
-  **Transit Emphasis Corridors**
-  **Better bus stop facilities**
-  **Neighborhood mobility hubs**
-  **Improved pedestrian access**
-  **First mile\last mile connections**

Potential Trinity Metro-Led Efforts

-  **More frequent service for longer hours**
-  **New and improved regional services**
-  **Rail**
-  **Streetcar**
-  **BRT**
-  **Rapid Bus**

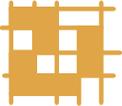
Potential Joint City & Trinity Metro Efforts



Development of new services in city rights-of-way such as light rail, BRT, and Rapid Bus



Bus stop improvements

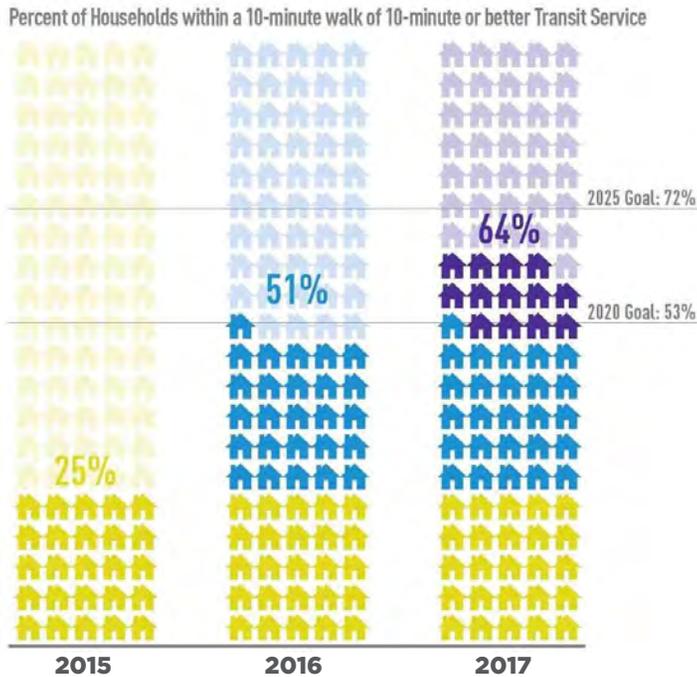


Bus stop optimization to provide a better balance between walk times and bus speeds



Service Buy-Ups

All transit systems have finite resources and cities often desire more service than they are able to provide. One approach to this issue is for individual cities to “buy-up” to better service. The City of Seattle has aggressively used this strategy to improve and expand service. It is currently providing \$50 million per year for additional service and \$4 million for speed and reliability improvements, and has provided \$300 million toward the development of Rapid Bus service. Transit ridership has increased by 60% since 2002, and more recently when ridership has been decreasing nationwide, it is still growing rapidly in Seattle.

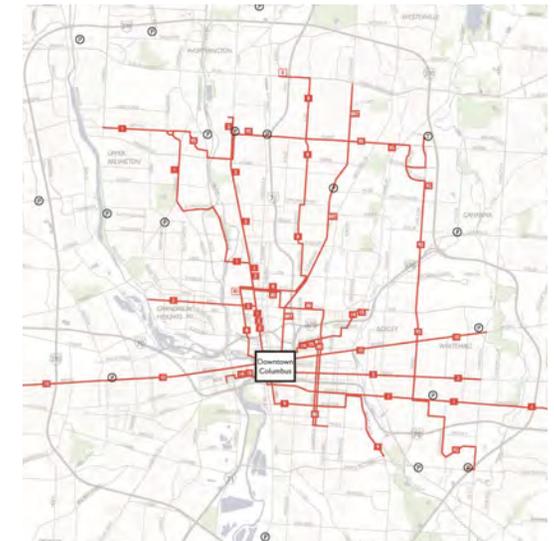
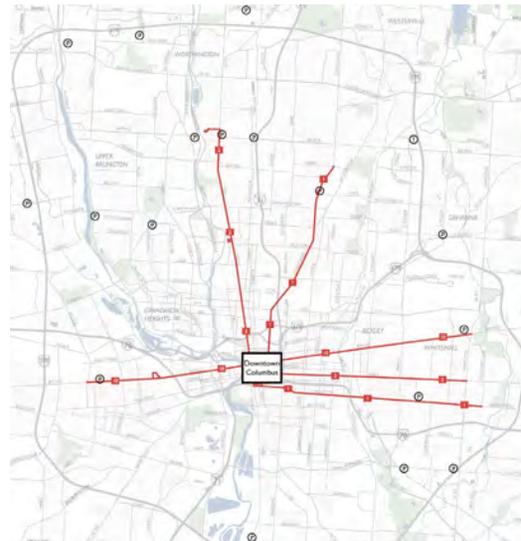


Infographic illustrating the increase in the proportion of Seattle residents with convenient access to frequent transit service as a result of service buy-ups.

Frequent Transit Network

Transit is most attractive to potential riders when it is frequent enough that people don't need to consult a timetable and can instead go to a stop and expect a train or bus to arrive shortly. Nearly all major transit systems operate networks of frequent services that stretch out in all directions from the central hub. Frequent transit networks are designed to provide convenient service between a region's most important destinations and therefore should consist of a number of inter-related qualities:

- **All Day Frequency:** Frequent service, typically every 10 to 15 minutes or less from the beginning of the morning peak to early evening or later.
- **Connected:** A sufficient number of routes to create a network that serves all high-demand locations
- **Direct:** A sufficient number of routes to create a network that serves all high-demand locations
- **Memorable:** A sufficient number of routes to create a network that serves all high-demand locations



Columbus, Ohio's existing and proposed future frequent transit network. All lines show in red operate with 15 minutes or better frequencies every day of the week.

Complete Streets with an Emphasis on Transit

Complete streets are designed to provide a better balance between automobiles and other uses, and in particular, walking, biking, and transit. Following the vision recently set forth in its Master Thoroughfare Plan to develop more complete streets, as the city upgrades and improves its roadways, there will be significant opportunities to improve access to transit and provide transit priority to make it faster and reduce delays.



A rendering of a complete street with dedicated transit infrastructure.

Transit Priority/Faster Service



Full-Time Bus Lanes



Off-board Fare Payment



Part-Time Bus Lanes



Level Boarding



Queue Jump Lanes



Transit Signal Priority

In Fort Worth, one of the major reasons that more people don't use transit is that it is almost slower than driving. To the extent that the travel time differences can be decreased, more people will use transit. There are a number of ways in which transit can be made faster. These include:

- **Full-time bus lanes** that allow buses to avoid traffic congestion at all times.
- **Part-time bus lanes** that typically consist of the use of parking lanes during peak periods to provide priority to transit when delays are greatest and allow use for parking at other times.
- **Queue jump lanes** that are short sections of bus lanes – typically curbside lanes leading up to intersections that allow buses to bypass queued traffic at signalized intersections.
- **Off-board fare payment** that reduces the delays caused by people paying their fares on-board buses.
- **Level boarding**, which is faster than boarding via steps, and much faster for those with disabilities.
- **Transit signal priority**, which lengthens green cycles to allow buses to pass through signalized intersections with fewer delays.

Consolidate Bus Stops

Bus stops are one of the most significant reasons that transit service is slower than automobile travel. The spacing and placement of stops also greatly impact transit travel times and reliability, as well as the types of facilities and amenities that can be provided, and often accessibility. With more stops, it is easier for passengers to get to and from transit, but many stops also slow service and degrade reliability. With fewer stops, it takes some passengers longer to get to and from the stop, but service is faster and more reliable.

Many transit systems, including Trinity Metro, have too many stops. This is often due to an accumulation of stops over time, as transit agencies receive and grant requests for new stops on the basis that “one more stop” won’t significantly degrade service. However, over time, “one more stop” makes service slower and slower and unattractive for those with other choices. To make Trinity Metro service more attractive to more people, it will be essential to achieve a better balance between walk distances and travel times.



For more information on stop consolidation, see the TransitCenter’s Bus Stop Balancing video at: <https://vimeo.com/240382367>

Neighborhood Mobility Hubs

Neighborhood mobility hubs can provide a neighborhood-based focal point for transit and other alternative transportation choices, as well as for placemaking. They would be located in neighborhood centers where along major transit routes and provide:

- Connections between transit routes
- Connections to first mile/last mile connections such as carshare, bikeshare, scootershare, and ridesharing
- Trip planning information
- Ancillary services such as retail and package pick-up
- Community spaces



Mobility hub schematic. Source: San Diego Association of Governments.

Better Bus Stop Facilities

Transit riders want stops to be comfortable places to wait, and riders' perceptions of transit is in part related to the quality of their local bus stop. Well-designed bus stops enhance the transit experience, decrease perceived wait times for transit services, and can contribute to increased ridership.

Conversely, poorly designed bus stops can decrease customer satisfaction, make transit less attractive to potential new customers, and potentially make waiting at stops unsafe for riders. Investing in high quality bus stops is often a low-cost, high-reward strategy for transit operators.

No matter how many riders use a bus stop on a given day, each stop requires certain design elements to be safe, accessible, reliable, and comfortable. As ridership at a given stop increases, agencies can install additional amenities that enhance the overall transit experience. Shelters provide a level of comfort and security to customers while giving the route a degree of permanence and providing a means of displaying service information. Typically, more facilities are provided at stops with higher volumes of boarding passengers and fewer at stops with lower volumes. A secondary benefit of stop consolidation, described above, is that more passengers are concentrated at fewer stops, which can both justify the provision of better amenities and reduce the number of stops that need to be improved.

Most transit systems, including Trinity Metro, struggle to provide attractive and comfortable bus stops everywhere. This is the case for many reasons, including a lack of ownership and control over the places where stops are located. A partnership between the City and Trinity Metro could eliminate many of the current impediments to better bus stops.



Best practice bus stop and transit center types. Source: Nelson\Nygaard.

New Service Types

As new transportation options emerge, the relative convenience of regular local bus service has declined. However, better types of service can be provided, and local bus services can be upgraded to provide higher quality service. The primary ways in which this can be done is to upgrade local bus service to:

- Light rail
- Streetcar
- BRT
- Rapid Bus

While light rail and streetcar may have potential, the greatest opportunities mostly likely are the development of BRT and Rapid Bus. The development of BRT and Rapid Bus services were also a major focus of the Trinity Metro Transit Master Plan.

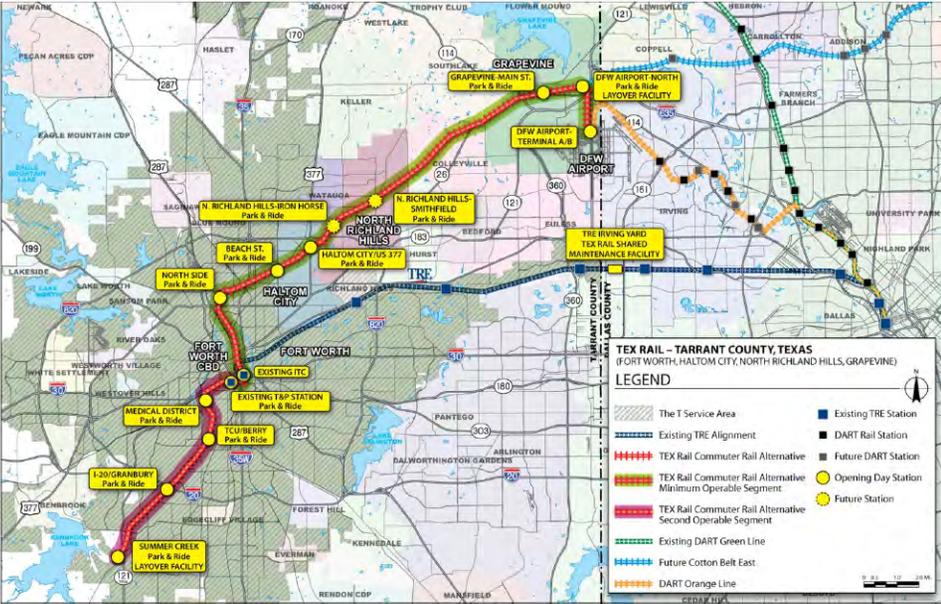
BRT and Rapid Bus projects include many infrastructure elements within City rights-of-way – for example, bus lanes, queue jump lanes, and stations. Other elements such as transit signal priority would be incorporated into the City’s traffic signals. As such, the development of BRT and Rapid Bus service provides many opportunities for the City to partner with Trinity Metro to develop better projects than Trinity Metro could develop on their own.

REGULAR BUS	RAPID BUS	BUS RAPID TRANSIT (BRT)
<p>TYPICAL FEATURES</p> <ul style="list-style-type: none"> • No special branding • Frequent stops • Wide range of stop facilities – from very basic to elaborate • Wide range of service frequencies – from very infrequent to very frequent • Wide range of service spans – from early morning to late night to only a few trips  <p>Trinity Metro local bus service</p>	<p>TYPICAL FEATURES</p> <ul style="list-style-type: none"> • Special branding • Simple service design • Limited stops • Enhanced stops/ stations • Frequent service (at least every 15 minutes) • Service from early morning to late night • Real-time passenger information <p>OTHER COMMON FEATURES</p> <ul style="list-style-type: none"> • Unique vehicles, including high- capacity buses • Queue jump lanes • Transit signal priority • Off- board fare collection  <p>Los Angeles Metro Rapid service</p>	<p>TYPICAL FEATURES</p> <ul style="list-style-type: none"> • Special branding • Simple service design • Limited stops • High quality stations • High- capacity buses • Exclusive bus lanes • Transit signal priority • Very frequent service (at least every 10 minutes) • Service from early morning to late night • Real-time passenger information <p>OTHER COMMON FEATURES</p> <ul style="list-style-type: none"> • Unique vehicles • Level platform boarding • Off- board fare collection  <p>Cleveland Healthline BRT service</p>

Source: Nelson\Nygaard.

New Commuter Rail Services

There will also be new opportunities to expand commuter rail service. One option would be the southwest extension of TEXRail. While commuter rail extensions would be developed by Trinity Metro as regional services, the City will need to weigh the desirability of new commuter rail services against other service priorities.

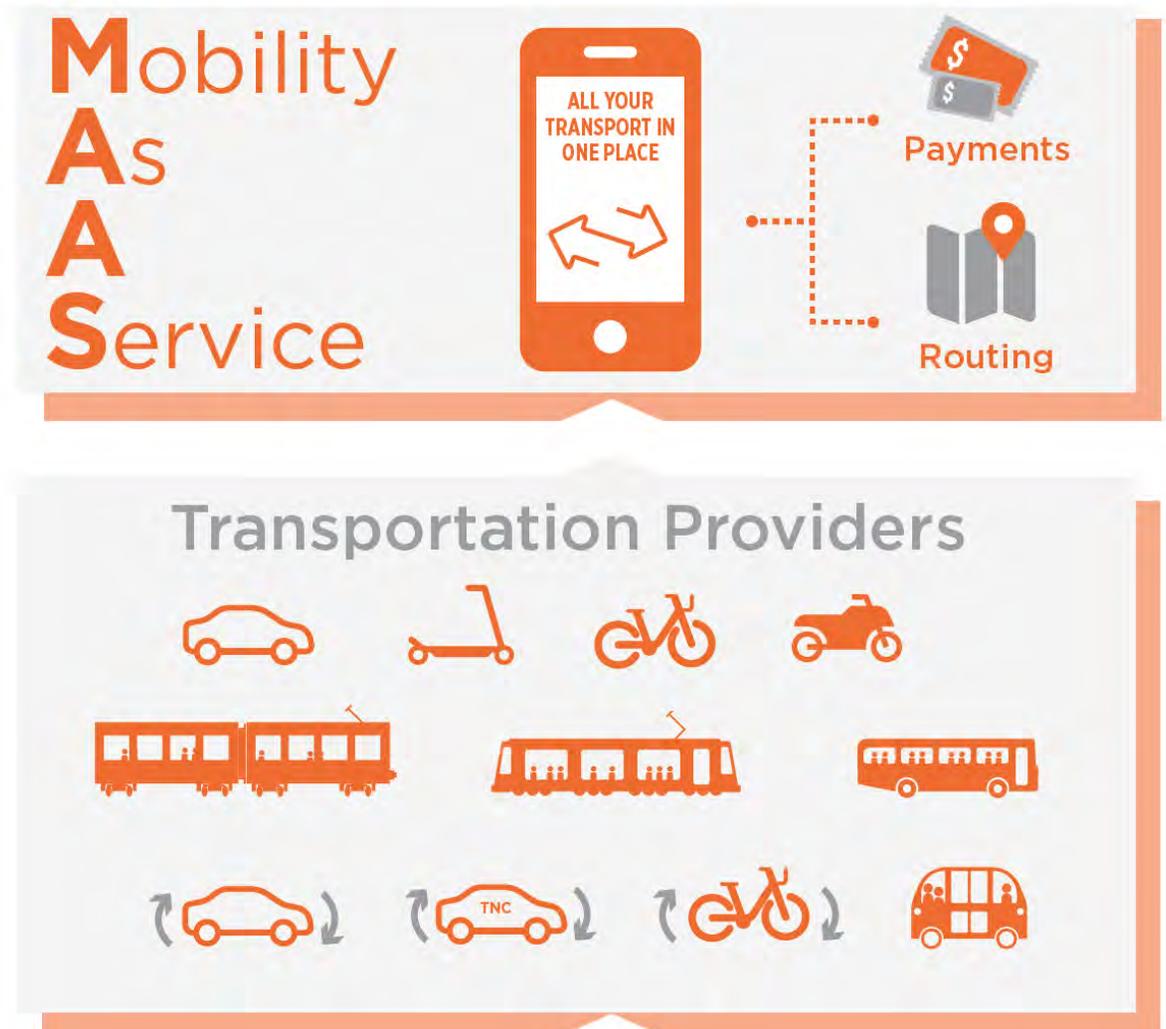


Proposed TEXRail Extension to SW Fort Worth.



Mobility as a Service (MaaS)

As transportation options have become more diverse, the transportation landscape has become more fragmented. For example, a commuter may take TRE to Fort Worth's ITC and then take a scooter to work. However, in the afternoon, if it is raining, he or she may decide to take Lyft back to the ITC. At present, this requires users to learn about each option in different ways, and to purchase different fares. Mobility as a Service, or MaaS, is an approach through which people can plan and purchase transportation on multiple providers in a single place, and also potentially purchase subscription in the same way that people can purchase monthly passes for transit. The major players in the development of these services in Fort Worth will be Trinity Metro and the private providers who are increasingly providing first mile/last mile connections and options for short trips (for example, taxi, rideshare, bikeshare and scootershare). However, private companies compete more than they cooperate and also desire partnerships that exclude their most direct competitors. The City, to the extent that it has or develops regulatory powers governing the private services that operate within the city, could require cooperative MaaS efforts.



Next Steps

The next phase of Transit Moves | Fort Worth will examine the strategies described above in more detail to determine who they could be employed in Fort Worth and which should be pursued. The next phase of this effort will also identify additional strategies. This work will include input from stakeholders and the public with the intent that strategies that would provide the greatest benefits and receive the highest levels of public support would be pursued.



