



JULY 2021

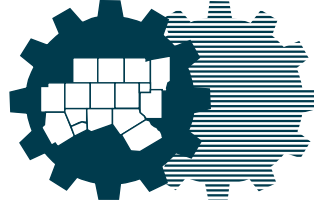
**TARRANT COUNTY  
TRANSIT STUDY**



**North Central Texas  
Council of Governments**

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# TARRANT COUNTY TRANSIT STUDY



## North Central Texas Council of Governments

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Prepared in cooperation with the Regional Transportation Council, NCTCOG, and the Federal Transit Administration. The contents of this report reflect the views of the authors who are responsible for the opinions, findings, and conclusions presented herein. The contents do not necessarily reflect the views or policies of the Regional Transportation Council, NCTCOG, or the Federal Transit Administration.

## Cooperating Agencies and Providers

Dallas Area Rapid Transit • Denton County Transportation Authority  
Federal Transit Administration • Texas Department of Transportation • Trinity Metro  
US Department of Transportation • Via Transportation, Inc.

## Consultant Team

Cambridge Systematics, Inc. • Connetics Transportation Group  
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<https://nctcog.org/transitstudies>

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# TABLE OF CONTENTS

<b>1. EXECUTIVE SUMMARY</b>	<b>1-1</b>
1.1 PUBLIC ENGAGEMENT.....	1-2
1.2 EXISTING CONDITIONS .....	1-4
1.3 SCENARIO DEVELOPMENT.....	1-5
1.4 FUNDING AND FINANCE.....	1-6
1.5 IMPLEMENTATION.....	1-7
<b>2. PUBLIC ENGAGEMENT</b>	<b>2-1</b>
2.1 INTRODUCTION.....	2-1
2.2 PUBLIC MEETINGS.....	2-2
2.3 VIRTUAL OUTREACH .....	2-10
2.4 CONCLUSIONS .....	2-15
<b>3. EXISTING CONDITIONS</b>	<b>3-1</b>
3.1 INTRODUCTION.....	3-1
3.2 THE REGION AND THE STUDY AREA.....	3-3
3.3 TRAVEL PATTERNS.....	3-16
3.4 TRANSIT SERVICE IN TARRANT COUNTY .....	3-38
3.5 CONCLUSIONS AND NEXT STEPS.....	3-77
<b>4. SCENARIO DEVELOPMENT</b>	<b>4-1</b>
4.1 TRANSIT SERVICE NEEDS .....	4-2
4.2 TRANSIT SERVICE SCENARIOS.....	4-9
4.3 SCENARIO EVALUATION.....	4-17
<b>5. FUNDING AND FINANCE</b>	<b>5-1</b>
5.1 INTRODUCTION.....	5-1
5.2 FUNDING OPTIONS.....	5-4
5.3 MUNICIPAL FUNDING TYPOLOGY .....	5-11

5.4 FUNDING MECHANISMS ..... 5-17  
5.5 SCENARIO FUNDING ANALYSIS ..... 5-21  
5.6 CONCLUSIONS ..... 5-23

**6. IMPLEMENTATION PLAN** **6-1**

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6.1 INTRODUCTION..... 6-1  
6.2 SERVICE MODELS..... 6-4  
6.3 IMPLEMENTATION PROCESS FOR MUNICIPALITIES ..... 6-15  
6.4 CONCLUSIONS ..... 6-28



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→ To Fort W.

## EXECUTIVE SUMMARY

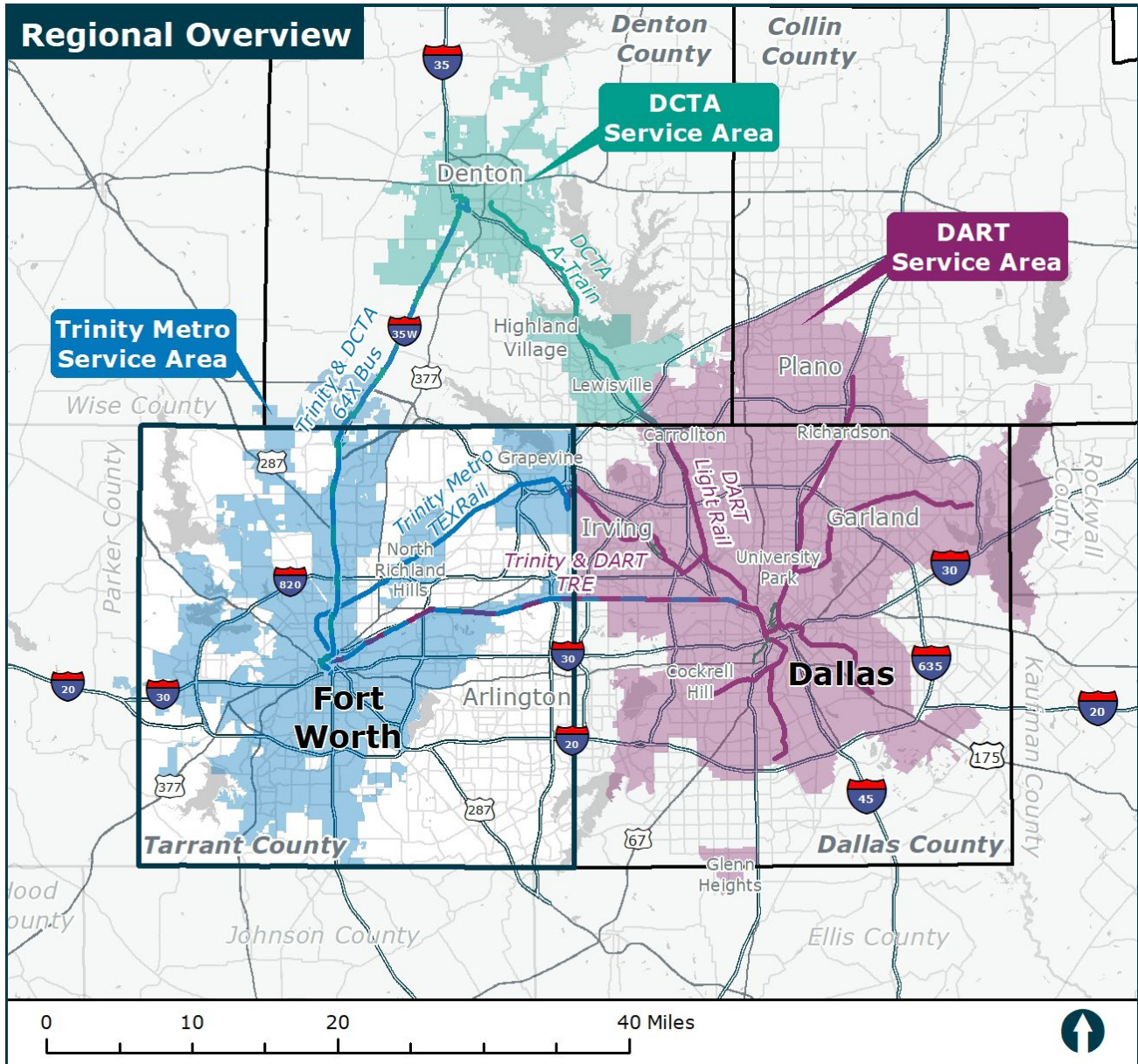
# 1

### **RICHLAND HILLS, TX\***

The Tarrant County Transit Study was conducted by the North Central Texas Council of Governments (NCTCOG) on behalf of the Tarrant County Mayors' Council. The purpose of the study is to explore the transit and shared mobility needs of those who reside in municipalities without general-access transit service.

The study area focuses primarily on the regions of Tarrant County not currently served by fixed route or general purpose demand-response. Tarrant County is primarily served by Trinity Metro fixed route service, with interregional service supplied in conjunction with Dallas Area Rapid Transit (DART) and the Denton County Transit Authority (DCTA); the City of Arlington additionally provides access to demand-responsive service through a public-private partnership.

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## 1.1 PUBLIC ENGAGEMENT

The engagement team assembled a Stakeholder Advisory Group (SAG) and a Technical Advisory group (TAG) to be consulted on both regular and ad-hoc bases. The SAG and TAG were made up of a mix of community leaders and technical experts from across the county.

The engagement team also conducted two general public involvement (PI) meetings to solicit feedback and commentary from the general public. These meetings were conducted over tele-conference, with recordings and records made public on the project website. The engagement team also conducted an online survey.



## ENGAGEMENT SUMMARY

- **The study was conducted during the 2020–2021 COVID-19 pandemic.** While the pandemic did not affect all aspects of the study, it had a significant impact on the types of public engagement that could be conducted safely.
- **Online engagement during the pandemic was an effective method** of reaching the general public during a time when group meetings were limited. Neighborhood and civic groups organized attendance by their members. However, the need remains to aggressively target individuals that may not be represented by these groups.
- Stakeholders—in this case, staff and elected officials from municipalities—were **able to represent the specific needs of their residents** during the advisory group meetings. Most confirmed the needs and opportunities in the shared mobility space, and sought to balance growth with the needs of their existing populations.
- **Stakeholders preferred a balanced approach** to local and regional travel; recognized the need for new funding sources; and looked to leverage the existing partnerships and agencies already present in Tarrant County.



## ENGAGEMENT TIMELINE

### 2020

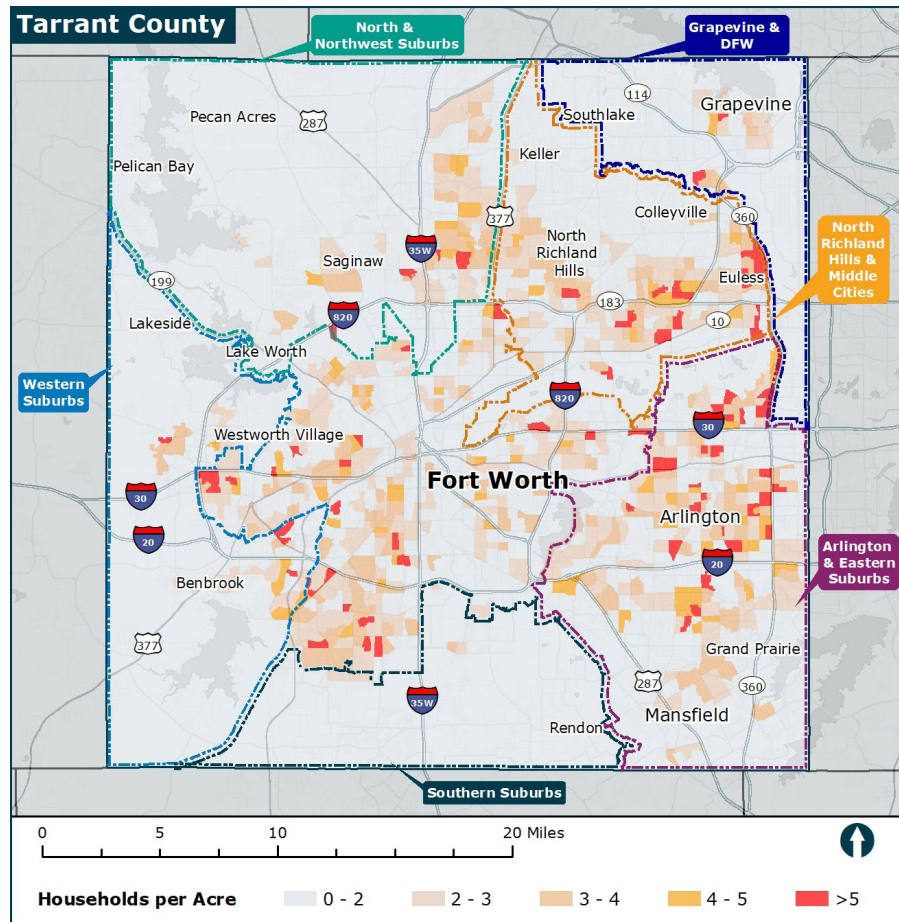


## 1.2 EXISTING CONDITIONS

Tarrant County has a variety of locales, from rural to urban; its travel patterns and infrastructure reflect this, with services from paratransit to commuter rail.

The region’s transportation needs have been the subject of several studies, including Access North Texas, Transit Moves Fort Worth, and Mobility 2045 Long-Range Plan.

The Tarrant County Transit Study examines demographic trends, travel patterns, transit service, and planning efforts across the county and region. Six subregions were identified to assess these patterns in more detail.



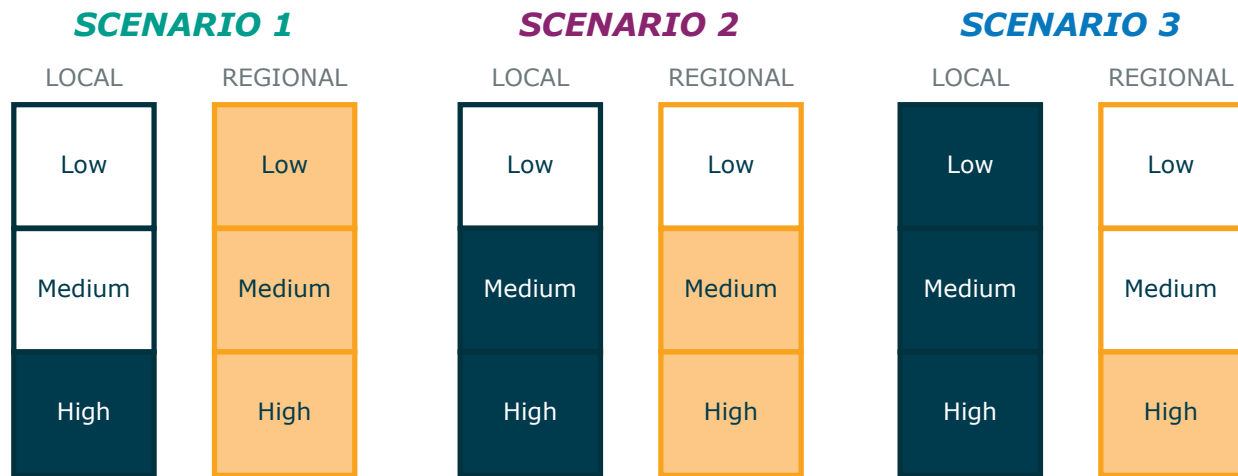
### EXISTING CONDITIONS SUMMARY

- **Most of Tarrant County’s recent growth** has occurred in areas that are not served by existing transit services. This trend is expected to continue.
- **Most travel activity is local**, with 80 percent of trips originating or terminating in central Fort Worth, North Richland Hills (or cities nearby), or Arlington. Three-quarters of trips remain within those three areas of Tarrant County and, of those, 86 percent remain within a single analysis area.
- In addition to fixed route service, **there are many existing on-demand transit services** (ZipZones and Arlington Via), paratransit (ACCESS and Handitran), and demand-response services (such as those operated by the Catholic Charities of Fort Worth Transportation Services). On-demand transit services show potential for providing first-mile/last-mile connectivity with existing and future regional transit hubs.
- **There is a gap in current and future transit service outside of central Fort Worth.** It is unlikely fixed route service could be operated in areas with lower population density, but a mix of fixed route and demand-responsive services could meet the needs of growing communities.

## 1.3 SCENARIO DEVELOPMENT

Countywide scenarios were developed based on a per-capita annual operations and maintenance budget similar to current funding levels in Trinity Metro’s service area and Arlington’s current funding levels of their Via on-demand service.

Areas were identified as having High, Medium, or Low service needs for both local and regional travel. Service needs were identified based on population density and concentration of equity groups (defined in this study as having low median income and/or high racial and ethnic minority population).



Three scenarios were developed: **Scenario 1**, prioritizing regional travel (in a relative sense—the majority of service still reflects the primacy of local trips identified in the existing conditions report); **Scenario 2**, addressing both local and regional travel patterns; and **Scenario 3**, prioritizing local travel.

### SCENARIO DEVELOPMENT SUMMARY

S1	SERVICE TYPE	ANNUAL HOURS	PERCENT OF HOURS	ANNUAL COST	PERCENT OF COST
	Local	245,000	88%	\$13.5 million	74%
Regional	34,300	12%	\$4.6 million	26%	
<b>Total</b>	<b>279,300</b>	<b>100%</b>	<b>\$18.1 million</b>	<b>100%</b>	

S2	SERVICE TYPE	ANNUAL HOURS	PERCENT OF HOURS	ANNUAL COST	PERCENT OF COST
	Local	271,000	92%	\$15.1 million	82%
Regional	24,100	8%	\$3.3 million	18%	
<b>Total</b>	<b>295,200</b>	<b>100%</b>	<b>\$18.4 million</b>	<b>100%</b>	

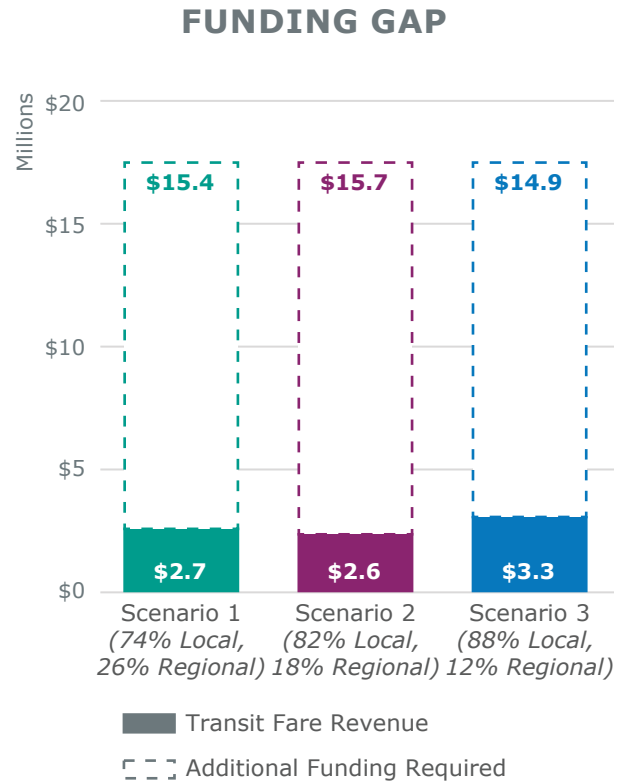
  

S3	SERVICE TYPE	ANNUAL HOURS	PERCENT OF HOURS	ANNUAL COST	PERCENT OF COST
	Local	276,100	94%	\$16.1 million	88%
Regional	16,200	6%	\$2.2 million	12%	
<b>Total</b>	<b>292,300</b>	<b>100%</b>	<b>\$18.3 million</b>	<b>100%</b>	

## 1.4 FUNDING AND FINANCE

Five municipal typologies were identified to contextualize analysis among peer communities: rural, outer, and central communities, based on proximity to existing services; self-sufficient communities who currently provide their own services; and future extension communities, identified in Mobility 2045 as areas for expanded high-capacity transit infrastructure.

Revenue sources including sales tax, general funding options, and value capture were evaluated for their potential to meet funding needs. At the county level, between \$14 and \$16 million in annual operating costs (net of fare revenue) would be needed to provide the services described in the Scenario Development report.



### FUNDING AND FINANCE SUMMARY

- **A variety of funding measures are needed** to meet the needs of Tarrant County’s municipalities. An additional sales tax increment of 0.5 percent comes close to fully funding the operations need for some communities, but in other locations, this option is either politically infeasible or insufficient to meet revenue needs. Alternative funding solutions—or lower-cost services—must make up the difference.
- While services—be they on-demand or fixed route—must be flexible and responsive to meet service demands, **they depend on predictable and consistent revenues** to ensure the continued viability of the mobility program.
- Funding mechanisms based on property value will have **substantial increases over time**, as transit-oriented development occurs within service areas. PIDs and Assessments will continually bring revenue to the table and be a stable income stream.
- **The use of sales tax can become a reliable source** if there is a common practice among communities to use these funds for transit supportive services. Transit fares seem to have a greater impact when fixed route, local service is more readily available.

## 1.5 IMPLEMENTATION

The Implementation Plan provides a framework for Tarrant County municipalities to establish or expand transit service based on the typologies identified in the Scenario Development task. The Implementation Plan is designed as a **flexible, menu-based toolkit** to meet each municipality's needs, priorities, and goals.

**PROVIDER OPERATING AGREEMENT**

**PARTNERSHIP**

**PROCUREMENT WITH CONTRACTED OPERATOR**

**DIRECT OPERATION**

The framework consists of:

- » Service Profile elements that define transit service structure, governance, funding, operations, and administration.
- » Four Service Models that demonstrate how a municipality can establish and run transit service, with a discussion of the benefits and risks of each Model.
- » A series of decision-making questions for municipalities to evaluate Service Profiles and Service Models as part of the transit planning process.
- » A recommended nine-step implementation process, with references to supporting partners and discussions of current practices within the transit sector for each step.
  - Local and regional partners can provide market assessment, community engagement, and funding and financing support.
  - State, Federal, and private partners can provide technical assistance, institutional support, funding, and administrative capacity.

### IMPLEMENTATION SUMMARY

- Aside from Direct Operation, all Service Models require contracting. **Data sharing agreements with the contractor(s) are critical to determining program success.** Areas of negotiation involve level of aggregation, timeliness of data, personally identifiable information, and trade secrets.
- Selecting a Service Profile and Model should be based on the unique travel demands, community needs, land use, geography, available funding, and administrative capacity within each municipality. **The municipality must optimize service and meet program goals under policy constraints and available resources.**
- **FTA regulations related to Title VI and Americans with Disabilities Act (ADA) must be met throughout planning, design, procurement, and operations.** Municipalities should reference tools, practices, and standards used by transit agencies and the City of Arlington for guidance.

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# PUBLIC ENGAGEMENT

2

ARLINGTON, TX\*

## KEY ELEMENTS

Key elements of this chapter include:

- The stakeholder and public engagement strategy;
- Public meeting schedules and summaries;
- The surveying approach and results; and
- Records of web and digital engagement.

## 2.1 INTRODUCTION

Public and stakeholder engagement forms a key part of the Tarrant County Transit Study. Comments, feedback, dialogue, and outreach data help to provide context, drive strategic thinking, foment conversation, and center community needs in the planning process.

A public engagement plan was set up to guide communication between the study team and people in the Tarrant County area.

\* Photo courtesy of sk—<https://www.flickr.com/photos/irisphotos/28348131895/>, CC BY-ND 2.0 license—<https://creativecommons.org/licenses/by-nd/2.0/>

The engagement plan created a timeline of communication and detailed the media through which outreach would occur throughout the study.

The engagement plan helped connect the study team to Tarrant County citizens to discuss ideas and share their feedback. During the study, two stakeholder groups were formed to help better understand the needs of the area and the types of engagement necessary to be successful.

**Two primary types of engagement were used:** public meetings, during which live presentations, polls, and question-and-answer sessions were used to communicate with stakeholders and the public; and virtual outreach, through which social media, online survey tools, and a project website were used to provide asynchronous access for the public and stakeholders to project materials.

## 2.2 PUBLIC MEETINGS

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Traditional public outreach uses public, in-person meetings to provide a forum for education, receipt of feedback, and an opportunity to build support for a study or project in the greater community. While the COVID-19 pandemic precluded in-person meetings, virtual public meetings using teleconference software provide a safe alternative. Virtual public meetings provide some advantages to traditional meetings by mitigating issues of access to transportation, childcare, and other factors.

Virtual meetings were held with two key group types: advisory groups, consisting of experts, staff, and officials from both Government and nonprofits, and the general public.

### ADVISORY GROUPS

Two advisory groups were formed to keep stakeholders apprised of study progress, solicit feedback, and receive input from local experts. The **Stakeholder Advisory Group (SAG)** was formed to engage with the study team on a regular basis at key project milestones, while members of the **Technical Advisory Group (TAG)** were contacted individually as needed to solicit technical input.<sup>1</sup>

The SAG and TAG helped guide the study through:

- » Providing input on the engagement strategy;
- » Developing project goals and objectives; and
- » Supporting outreach and encouraging participation of SAG and TAG's broader networks.

<sup>1</sup> While the TAG was formed at the beginning of the study, it does not represent an exhaustive list of the technical experts contacted over the course of the study. For example, staff from Dallas Area Rapid Transit were consulted with regards to their GoLink program.



Table 2.1 includes a list of the individuals that participated in the SAG and TAG groups.

TABLE 2.1 ADVISORY GROUP MEMBERS

FIRST NAME	ORGANIZATION	SAG	TAG
Alicia Winkelblech	City of Arlington	●	●
Bob Johnson	City of Arlington	●	
Rick White	City of Azle	●	
Rachel Roberts	City of Crowley	●	
James Andrews	City of Denton	●	
Michael Gunderson	City of Everman		●
Jeff Read	City of Everman	●	
Ray Richardson	City of Everman	●	
Craig Spencer	City of Everman	●	●
Venus Wehle	City of Forest Hill	●	
Chad Edwards	City of Fort Worth	●	●
Anthony Flowers	City of Grand Prairie	●	
Walter Shumac	City of Grand Prairie	●	
Bryan Beck	City of Grapevine	●	
Rex Phelps	Haltom City	●	
Clayton Fulton	City of Hurst	●	
Larry Hoover	City of Kennedale	●	
Caroline Waggoner	City of North Richland Hills	●	
Clayton Comstock	City of North Richland Hills		●
Rebecca Barksdale	Tarrant County	●	
Kristen Camareno	Tarrant County	●	●
Devin Sanders	Tarrant County	●	
Matt Jacobs	Catholic Charities Fort Worth	●	
Rebecca Montgomery	Fort Worth Chamber of Commerce	●	

FIRST NAME	ORGANIZATION	SAG	TAG
Mary Anne Weatherred	Metroport Chamber of Commerce	●	
Victor Vandergriff	Tarrant Regional Mobility Coalition	●	
Rachel Albright	Tarrant Transit Alliance	●	●
Brandy O’Quinn	Urban Strategies of Texas		●
Lindsey Baker	Denton County Transit Authority	●	
Tim Palermo	Denton County Transit Authority	●	●
Onyinye Akujuo	Trinity Metro	●	
Phil Dupler	Trinity Metro	●	●
Sandip Sen	Trinity Metro	●	
Kiran Vemuri	Trinity Metro	●	●
Byron Bradford	At-large	●	

## GENERAL PUBLIC

The goal of public engagement is to inform, educate and gather input from the community on the transit planning process, as well as their needs, expectations and concerns. In general, the purpose of this study is to provide resources to the communities of Tarrant County to develop transit options for their residents, a process which includes direct, targeted public engagement to members of those communities.

However, almost any planning process should be accessible for the general public in order to educate the public on the process, build trust, and solicit feedback on plan content. To this end, two engagement meetings targeted at the general public were conducted during the course of the study.

## ENGAGEMENT EVENTS

Engagement events happened in two phases. Phase 1 of the public engagement process helped to introduce both stakeholders and the general public to the planning process, and to gather feedback on the approach. Phase 2 of the public engagement process focused on reporting the results of the scenario planning and presenting transit scenarios. A list of events in each phase can be found in Table 2.2.

TABLE 2.2 ENGAGEMENT CALENDAR

PHASE	DATE	AUDIENCE	SUBJECT
Phase 1	July 16, 2020	SAG	SAG 1: Kickoff
	September 1, 2020	TAG	Workshop: Funding
	September 29, 2020	General Public	Public Meeting 1: Project Background
	November 19, 2020	SAG	SAG 2: Existing Conditions
Phase 2	January 28, 2021	SAG	SAG 3: Scenario Development
	March 25, 2021	General Public	Public Meeting 2: Scenarios
	June 3, 2021	SAG	Report-Out 1: Rural
	June 4, 2021	SAG	Report-Out 2: Outer System/Future Extension
	June 11, 2021	SAG	Report-Out 3: Central City/Self-Sufficient

Engagement events were conducted using Zoom teleconference software. The software allowed for transcription, live polling, direct messaging/chatting, and the presentation of slides (Figure 2.1).

FIGURE 2.1 ENGAGEMENT EVENT PURPOSE SLIDE

## Study Purpose

**Identify, analyze, prioritize and develop a comprehensive approach to planning and implementing transit services outside of transit authority services areas.**



**Implement Strategic and Near-Term Strategies**



**Review Transportation Options**



**Identify Funding Options**

A summary of engagement events is found in Table 2.3.

TABLE 2.3 ENGAGEMENT EVENT SUMMARIES

MEETING OR EVENT	PURPOSE AND AGENDA
<p><b>SAG Meeting 1</b> July 16, 2020 1:30–3:00 PM</p> <p><b>Attendance:</b> 31</p>	<p>A virtual meeting was held to kickoff the Tarrant County Transit Study, review the study background, purpose, timeline, overview of Tarrant County, as well as gather advisory group feedback and input.</p> <p>The meeting began with an introduction from Shannon Stevenson, followed by a PowerPoint presentation given by Scott Boone, covering the following topics:</p> <ul style="list-style-type: none"> <li>• SAG + TAG Roles + Responsibilities;</li> <li>• Study Background + Purpose + Timeline;</li> <li>• Public Engagement; and</li> <li>• Tarrant County Numbers.</li> </ul> <p><b>Key takeaways included:</b></p> <ul style="list-style-type: none"> <li>• Leverage the strengths of Tarrant County: a strong community (businesses and NGOs); strong growth, and a willing partner in Trinity Metro.</li> <li>• Many services work well already: bikeshare, public-private partnerships, and TOD.</li> <li>• Keep in mind who is in the room—advocates for disabled users, low-income areas, and areas without existing service.</li> <li>• Future options depend on a number of factors: COVID recovery, funding availability, technology, and commute patterns.</li> </ul>
<p><b>TAG Funding Meeting</b> September 1, 2020 1:30–2:30 PM</p> <p><b>Attendance:</b> 19</p>	<p>A virtual meeting was held to discuss the three tiers of transit funding strategies (local/grassroots, state, Federal), introduction to the process, receive feedback on the planned approach and seek to discover if there are any missing elements.</p> <p>The meeting began with an introduction from Shannon Stevenson, followed by a PowerPoint presentation given by Scott Boone, outlining the following topics:</p> <ul style="list-style-type: none"> <li>• Transit Funding Process;</li> <li>• Review of Opportunities (Federal, State, Regional, Local);</li> <li>• Recommendations Direction; and</li> <li>• Reflection Discussion.</li> </ul> <p><b>Key Takeaways included:</b></p> <ul style="list-style-type: none"> <li>• Many discussions on various options for funding and the history of transit funding in the region.</li> <li>• Sales tax is vulnerable to economic conditions, and most communities do not have the ability to allocate any additional sales tax funds to transit.</li> <li>• Land use, transit-oriented development, and municipal/Government coordination all have a large impact on the success of transit, but are often outside of a transit agency’s ability to directly control.</li> <li>• Private partners, both as transit providers or development/workforce entities, can have a huge impact.</li> <li>• Success needs to be measured in ways other than ridership. Quality of life, equity, and economic development are big holistic components.</li> </ul>

MEETING OR EVENT	PURPOSE AND AGENDA
<p><b>Public Meeting 1</b> September 29, 2020 6:00–8:00 PM</p> <p><b>Attendance:</b> 51</p>	<p>A virtual public meeting was held to kickoff the Tarrant County Transit Study, give an overview of the project, review the project background, goals, focus areas, outcomes, gather public feedback and how the public can get involved.</p> <p>The meeting began with an introduction from Dan Kessler and Shannon Stevenson, followed by a PowerPoint presentation given by Scott Boone, Toni Leathers, Jim Baker, Brad Lonberger, and Marlene Connor, outlining the following topics:</p> <ul style="list-style-type: none"> <li>• Project Overview + Background + Goals;</li> <li>• Project Focus Areas;</li> <li>• Project Outcomes;</li> <li>• Public Feedback + Get Involved; and</li> <li>• Open Q&amp;A.</li> </ul> <p><b>Key takeaways included:</b></p> <ul style="list-style-type: none"> <li>• Cities need to change the transit narrative—many people have negative associations with transit without realizing what the benefits are.</li> <li>• Accessibility is a huge issue. Sidewalks and station accessibility need to be enforced.</li> <li>• The Tarrant Transit Alliance’s Transit Academy is a good resource for learning more about transit issues.</li> </ul>
<p><b>SAG Meeting 2</b> November 19, 2020 1:00–3:00 PM</p> <p><b>Attendance:</b> 15</p>	<p>A virtual meeting was held to review the Tarrant County Transit Study background, market analysis, public engagement, scenario development, funding and finance, as well as gather advisory group feedback and input.</p> <p>The meeting began with an introduction from North Central Texas Council of Governments (NCTCOG) Representative—Shannon Stevenson, followed by a PowerPoint presentation given by Cambridge Systematics—Scott Boone, outlining the following topics:</p> <ul style="list-style-type: none"> <li>• Market Analysis;</li> <li>• Public Engagement;</li> <li>• Scenario Development Plans; and</li> <li>• Funding and Finance.</li> </ul> <p><b>Key Takeaways included:</b></p> <ul style="list-style-type: none"> <li>• The group supported a balance between short-range and commuter/ regional trips.</li> <li>• The group had a preference for equity-based service planning over general travel.</li> <li>• The group supported the identification of new revenue sources over existing revenue levels.</li> <li>• The group preferred partnerships with existing transit agencies and municipalities over private providers.</li> <li>• On-demand service helps meet equity goals, especially in areas where equity groups do not align with density.</li> <li>• Service planning comes after long-range planning in many communities, especially when they do not have existing transit service.</li> <li>• Capital investments are easier than funding operations.</li> </ul>

MEETING OR EVENT	PURPOSE AND AGENDA
<p><b>SAG Meeting 3</b> January 28, 2021 2:00–3:30 PM</p> <p><b>Attendance:</b> 33</p>	<p>A virtual meeting was held to review the Tarrant County Transit Study scenario development, market analysis, funding and finance, as well as gather advisory group feedback and input.</p> <p>The meeting began with an introduction from Scott Boone, followed by a PowerPoint presentation by Brad Lonberger and Jim Baker, outlining the following topics:</p> <ul style="list-style-type: none"> <li>• Team and Study Background Review.</li> <li>• Scenario Development.               <ul style="list-style-type: none"> <li>» Baseline Assumptions;</li> <li>» Service Components;</li> <li>» Scenarios; and</li> <li>» Discussion.</li> </ul> </li> <li>• Funding Strategies.               <ul style="list-style-type: none"> <li>» Municipal Typologies;</li> <li>» Funding Mechanisms; and</li> <li>» Discussion.</li> </ul> </li> <li>• Next Steps.</li> </ul> <p><b>Key Takeaways included:</b></p> <ul style="list-style-type: none"> <li>• Fort Worth spends much less on transit than most Texas cities, including San Antonio.</li> <li>• Transit needs vary dramatically across the region—microtransit can serve both rural areas and help areas like North Richland Hills leverage their rail stations.</li> <li>• Arlington’s program provided a way to fund transit without reallocating sales tax—a useful model for the region.</li> <li>• Equity, land use, and transportation/transit are all interrelated.</li> <li>• COVID-19 added to the uncertainty of how successful transit could be in the near future, especially when many pilots were implemented shortly before.</li> </ul>
<p><b>Public Meeting 2</b> March 25, 2021 6:00–7:30 PM</p> <p><b>Attendance:</b> 41</p>	<p>A virtual public meeting was held to review the Tarrant County Transit Study scenario development, funding strategies, implementation planning, and next steps, as well as gather public feedback and input.</p> <p>The meeting began with an introduction from Shannon Stevenson, followed by a PowerPoint presentation given by Scott Boone, Baird Bream, Ivan Gonzalez, and Jim Baker, outlining the following topics:</p> <ul style="list-style-type: none"> <li>• Team and Study Background Review.</li> <li>• Scenario Development.               <ul style="list-style-type: none"> <li>» Baseline Assumptions;</li> <li>» Service Components; and</li> <li>» Scenarios Funding Strategies.</li> </ul> </li> <li>• Implementation Planning.</li> <li>• Next Steps.</li> </ul> <p><b>Key Takeaways included:</b></p> <ul style="list-style-type: none"> <li>• Several commenters raised the question of availability of regional rail transit.</li> <li>• Other specific locales of interest included destinations in Fort Worth and avoiding specific highway facilities.</li> </ul>

MEETING OR EVENT	PURPOSE AND AGENDA
<p><b>Report-Out 1: Rural</b> June 3, 2021 3:00–4:00 PM</p> <p><b>Attendance:</b> 4</p>	<p>A series of three virtual meetings were held to provide targeted listening sessions and report-outs for the Tarrant County Transit Study. During the meeting there was a review of the study background, discussion of its purpose, a timeline review, an overview of transportation options in central communities of Tarrant County, as well as an opportunity to hear advisory group feedback and input.</p>
<p><b>Report-Out 2: Outer System/ Future Extension</b> June 4, 2021 3:00–4:00 PM</p> <p><b>Attendance:</b> 6</p>	<p>The meetings began with an introduction from NCTCOG Representative—David Garcia, followed by a PowerPoint presentation given by Cambridge Systematics—Scott Boone, outlining the following topics:</p> <ul style="list-style-type: none"> <li>• Team and Study Background Review;</li> <li>• Scenario Options;</li> <li>• Funding Strategies;</li> <li>• Implementation Steps;</li> <li>• Open Discussion; and</li> <li>• Next Steps.</li> </ul>
<p><b>Report-Out 3: Central City/ Self-Sufficient</b> June 11, 2021 1:00–2:00 PM</p> <p><b>Attendance:</b> 1</p>	<p><b>Key Takeaways included:</b></p> <ul style="list-style-type: none"> <li>• An interest in the implications of operating city-based service across county lines (e.g., in Azle).</li> <li>• On-demand service can scale down easily in case of uncertain demand.</li> <li>• The planning horizon of this work is in the near future, and NCTCOG is available to help with planning and limited funding for start-up.</li> </ul>

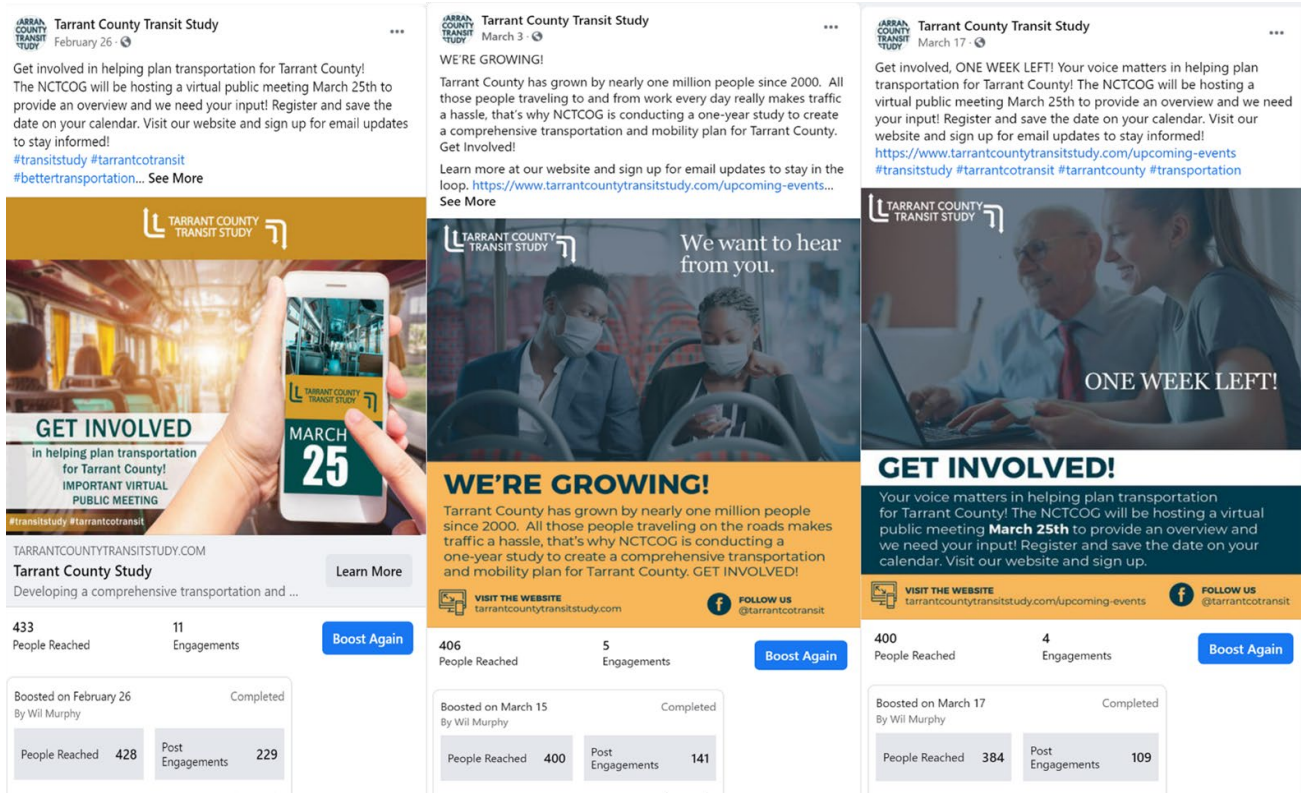
The results of the meetings were twofold. First, the surfacing of issues and the access to project staff allowed the general public and stakeholders to make sure that important factors such as equity were included and centered in the project. For example, vehicle accessibility has an enormous impact on demand-responsive service, especially when that service is contracted through a private company. Second, direct access to the consultant team allowed for open-ended question and answer sessions that helped to build transit knowledge in the community and ensure that consultants had direct access to the public.

Project staff were able to further connect with the community through connections developed during the SAG and virtual public meetings to engage in the broader discussion of transit in the region. Staff from the study engaged in panels, seminars, and working groups, including those for the Tarrant Transit Alliance, the regional Mobility on Demand Working Group, and a community station architecture design group.

## 2.3 VIRTUAL OUTREACH

To advertise and complement the public meetings, a variety of asynchronous virtual tools were used. A project survey helped to provide context to the existing conditions report, the project website acted as a clearinghouse and reference point, and social media and email campaigns helped guide the public to the survey, public events, and website.

**FIGURE 2.2 SOCIAL MEDIA**



## SURVEY

During the study, a survey was conducted to understand the needs of the people within the study area. The survey was developed in Google forms and available in English and Spanish. A special COVID-19 section was added to help understand the effects of the pandemic on peoples' willingness to ride transit.

The input provided helped the team better understand the following:

- » What transit options do residents and businesses have access to?
- » What transit options would the public like to see implemented?
- » What would it take for residents and businesses to participate further?



**Design**

The survey instrument focused on a few key areas. The first segment of the survey asked respondents about their level of access to transit services, including fixed route and demand-responsive services. Respondents were then asked about how they currently access various destinations such as school, work, recreation, or medical trips.

The middle section of the survey asked respondents that have used transit about their preferences for potential demand-responsive services, such as operational characteristics or barriers to access. Respondents were also asked a series of COVID-19-specific questions.

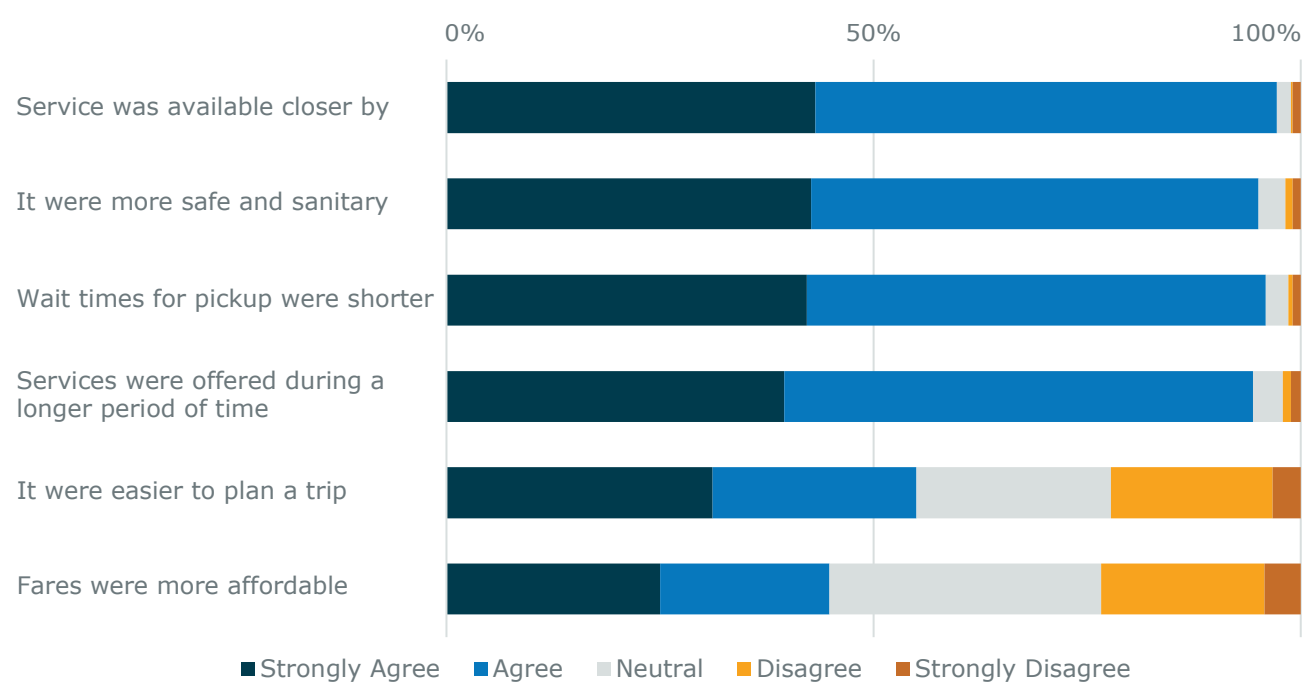
Respondents were then asked a series of demographic questions. A complete database of survey responses can be found in the Appendix.

**Key findings:**

- » Respondents use transit and nonauto modes most for recreation and work trips. They rarely used for medical, shopping, and school trips.
- » Proximity to service, safety and sanitation, vehicle frequency, and service span would support more respondents in using transit and shared mobility services (Figure 2.3). Trip planning and fare affordability are less important factors.

**FIGURE 2.3 BARRIERS TO USE**

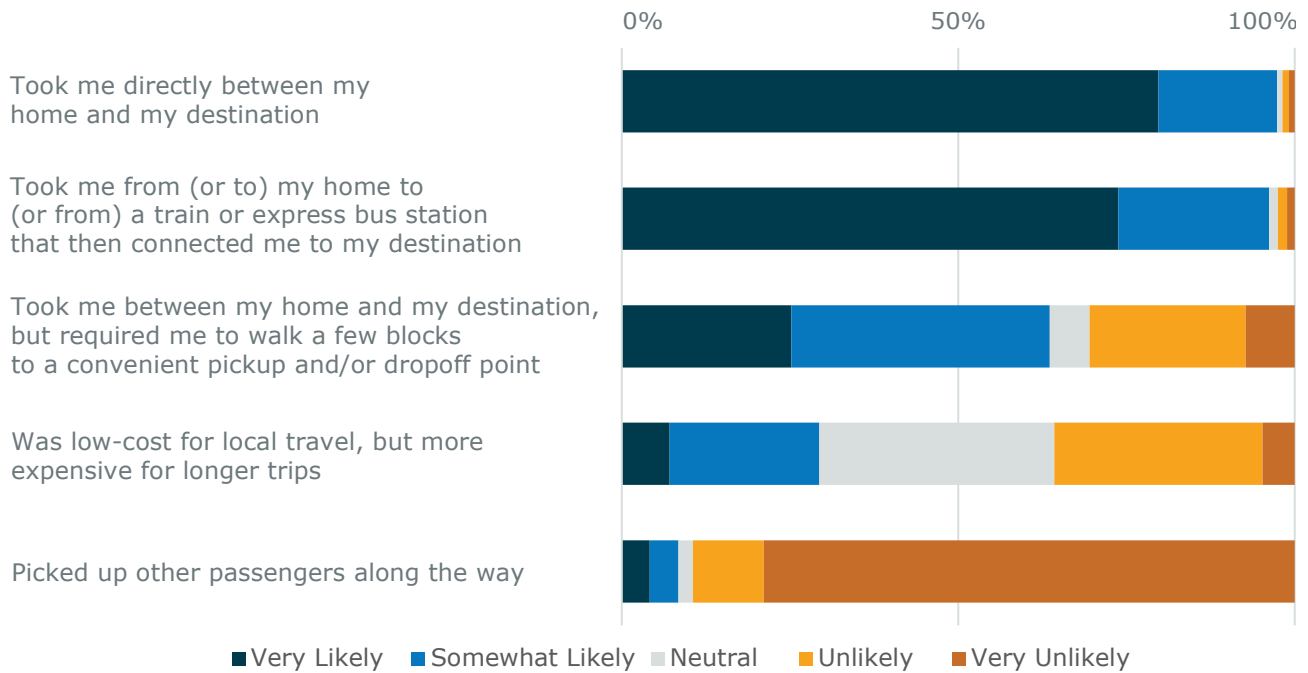
**I would use Shared Mobility services in Tarrant County (Via, ZipZones, ACCESS, and Handitran) more often than I do now if:**



- » More than 90 percent of respondents are dissatisfied with transit and shared mobility options currently available to them. Levels of satisfaction are similar across respondents of different races/ethnicities and genders.
- » Respondents strongly prefer demand-response options that provide end-to-end service, whether being dropped off at their destination or at a connecting transit facility (Figure 2.4). They are less likely to use demand-response options that require them to walk a short distance to pick-up/drop-off locations or that increase in cost as the trip gets longer. Respondents are highly unlikely—at least in the context of COVID-19—to use demand-response services that are shared with other passengers.

**FIGURE 2.4 SHARED MOBILITY PREFERENCES**

**How likely would you be to use the following shared mobility or demand response services if they were available to you?<sup>a</sup>**

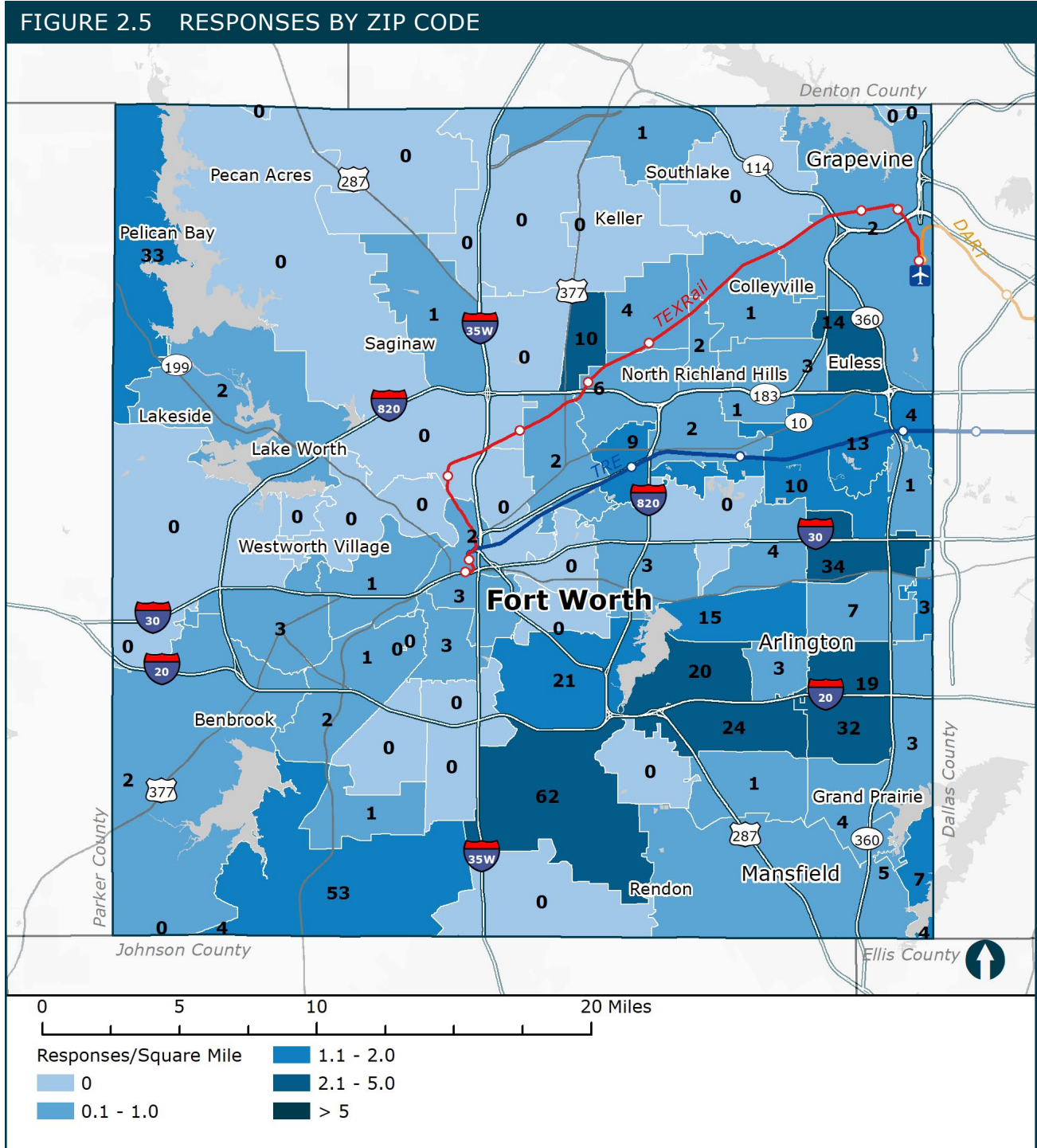


<sup>a</sup> Assume that the service would be available at a lower cost than the same journey on a ridehailing service, like Uber or Lyft.

- » Not enough information is being provided to current and potential transit riders about COVID-19 (with respect to transit use).
- » In the context of COVID-19, social distancing and vehicle cleanliness are the primary issues preventing respondents from riding transit more often. The following actions are most important to ensuring that riders feel safe and healthy on transit: required face coverings for operators and passengers, vehicle occupancy limits, and enforced distance between seated passengers.

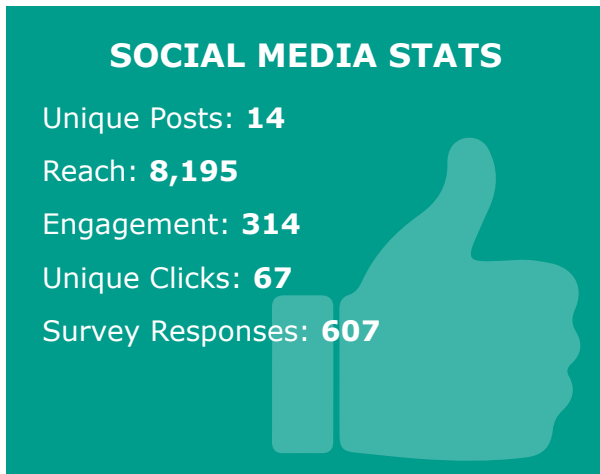
Promotion

The survey was promoted on the project website, social media, email campaigns, as well as by utilizing the SAG/TAG network connections. Survey respondents accessed the survey both directly and through ads posted to Facebook. During the survey period (September 9–October 4, 2020), 607 people responded to the survey. The Cities of Azle, Arlington, and Burleson saw the most responses (Figure 2.5).



Email campaigns were also developed to promote the survey. They specifically addressed Government officials, educators, homeowners associations, religious organizations and nonprofits. The email addresses for this campaign were pulled from a stakeholder list of names that was developed during the study.

## SOCIAL MEDIA OUTREACH



Facebook was the social media channel selected to connect to the public. Over time, the reach of the page grew. Using paid social posts, the study was able to reach a broad audience in Tarrant County. Most traffic to Facebook visited the page during marketing campaigns related to meetings. Social posts had strong *reach and engagement*. Reach is the actual number of people that saw a post to social media. Engagement measures the public shares, likes and comments about a social media post.

## PROJECT WEBSITE

A project website was built to create an online information resource for the project (Figure 2.6).<sup>2</sup> During the study, the website was used to:

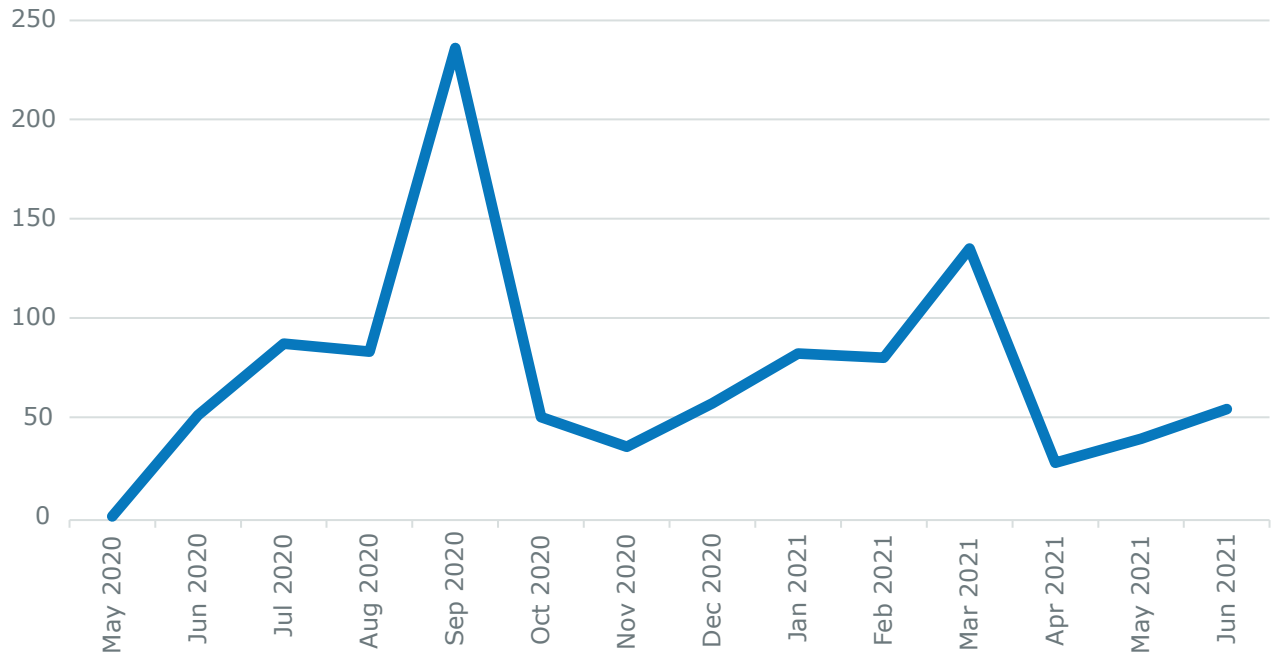
- » Describe the project and explain the purpose of the study;
- » Create a location for the survey that can be accessed from a desktop computer or a mobile phone;
- » Provide a location for reports and presentations; and
- » Answer frequently asked questions about the study.



<sup>2</sup> The website was located at <https://www.tarrantcountytransitstudy.com/>; its materials will be permanently located at <https://nctcog.org/transitstudies>.

During the study, the website gained 540 new followers and averaged about 75 visits per month (Figure 2.7). The site received its highest number of views in the months of public meetings: September 2020 and March 2021. Website traffic was directed to the site to RSVP for events and this led users to explore the site. It was helpful in directing users to study resources.

**FIGURE 2.7 WEBSITE VISITS BY MONTH**



## 2.4 CONCLUSIONS

The public engagement process was useful in connecting the study to transportation users and individuals interested in the study that live in the Tarrant County area. The plan helped map out key meetings with the stakeholder groups including the SAG, TAG, and the public. It provided marketing channels (website, social media channels, email, and digital flyers) and other communication tools to help build engagement with the people in the study area.

SAG and TAG feedback provided guidance on a number of issues, including the balance between regional and local service in the scenarios and the balance between equity-targeted service and general service. Feedback from the public meetings surfaced key concerns, such as access for riders with mobility impairments and the context of this study within overall transit planning in the region (including the Mobility 2045 Long Range Plan).

Having a plan with broad communication options helped keep the study top of mind during the COVID-19 pandemic, which limited in person opportunities during the study period. Participants had options that reduced the impact of not being able to meet in person, such as not needing to find childcare or transportation options, having the opportunity to view video and transcripts of events, and the availability of alternative options such as the survey or reviewing materials from the website.

## LESSONS LEARNED

Interest in the study grew over the study timeline. COVID-19 limitations impacted the normal approach to public engagement by limiting person-to-person interaction. One impact was in the stakeholder building process, because face-to-face interaction helps build connections. Virtual meetings helped bridge the gaps and barriers that COVID-19 created. In the second half of the study, it was found that social media targeting engaged large numbers of people in the study area and followers began giving honest feedback. It created some online ambassadors that shared information about the study organically, which was helpful in conducting the second public meeting and final meetings.

## NEXT STEPS

The content used during the study to communicate with people in the target area will be transitioned to NCTCOG. This includes the website, emails, social media posts, and other communication content. These tools can be used in future studies and as a benchmark for the work that has been done.





# EXISTING CONDITIONS

# 3



AZLE, TX

## KEY ELEMENTS

Key elements of the study include:

- Understanding internal and regional connections;
- Identifying strategic and near-term implementation opportunities;
- Exploring a range of transportation options;
- Determining potential funding options; and
- Finding prospects for private-sector involvement.

## 3.1 INTRODUCTION

### *PROJECT BACKGROUND*

The Tarrant County Transit Study aims to develop a comprehensive approach to planning and implementing transit services within Tarrant County beyond the boundaries of the transit authority service areas. This chapter explores opportunities to improve transit services to better match existing demographic and the travel needs in the study area.

This chapter serves as the foundation for the following study phases, providing an evaluation of travel demand and existing transit services in Tarrant County. The improvements and guidance contained herein will serve as support for the long-term mobility goals described in Mobility 2045, the region’s long-range transportation plan.

## ASSESSING TRANSIT NEEDS

Evaluating the transit needs of Tarrant County residents, employees, and visitors requires not only an understanding of existing transit services and service plans but also the demand for transit services. This report seeks to understand the transit needs by seeking answers to the following questions:

- » **What is the demand for transit services?** (“TRAVEL DATA” on page 3-17)
- » **What transit service currently exists, and how well is it used?** (“THE CURRENT STATE OF TRANSIT” on page 3-40)
- » **What transit services are being planned and improved in the next 5 to 10 years?** (“RECENT PLANNING EFFORTS” on page 3-72)
- » **What are the gaps between the current and planned transit system and the transit demand?** (“CONCLUSIONS and NEXT STEPS” on page 3-77)

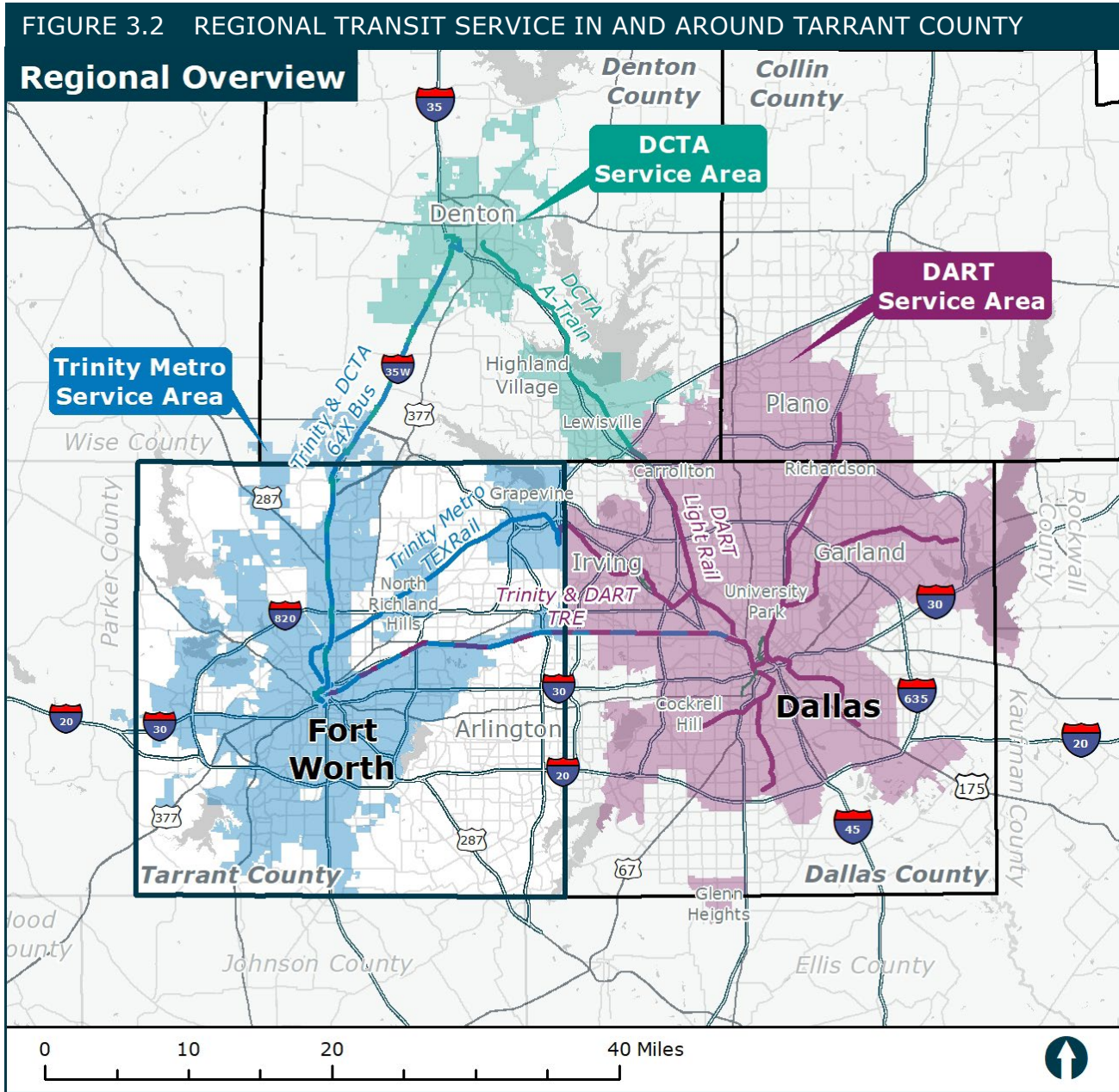
Within more densely developed portions of Tarrant County—namely Fort Worth with some additional regions in northeastern Tarrant County—many residents, employees, and tourists have access to the region’s commuter rail lines and fixed route transit. Beyond the city limits of Fort Worth, transit service is limited. There are several on-demand shared mobility services available in certain areas—notably, Trinity Metro’s ZipZones and the Via Arlington service, as well as paratransit services available to many residents of the county—but these services are limited in terms of geography or populations eligible for the service.

While the need for and usage of transit services is constantly changing, the COVID-19 pandemic drastically altered the landscape of transit demand and forced reevaluations of previously held assumptions about the future of the travel market. Travel patterns after the pandemic will take time to be understood; in the meantime, travel patterns from recent years can be used to analyze existing services and develop opportunities for adjusting transit service to meet demand. Section 3.3 of this report provides an analysis of travel patterns based on location-based service data from cellular phones, which provide a deep set of data for understanding travel behavior and need.



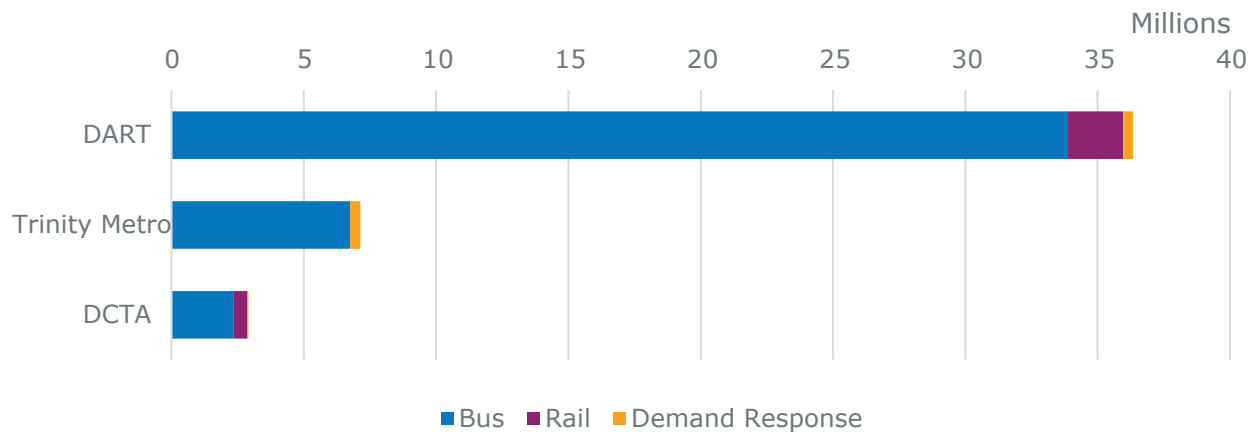


Trinity Metro is the second-largest transit provider in the region, primarily serving the cities of Fort Worth, Blue Mound, Grapevine, and North Richland Hills (Figure 3.2). The commuter rail and bus routes operated by Trinity Metro are complemented by on-demand transit services, including Trinity Metro’s ZipZones and Via Arlington, as well as various services operated by nonprofit organizations such as Catholic Charities of Fort Worth.



Denton County is served by the Denton County Transportation Authority (DCTA), which provides the cities of Denton, Highland Village, and Lewisville with bus lines, a commuter rail line, and demand-response services. Collin County is served by DART rail and bus service and has a taxi voucher transit program. The service areas of these three fixed route providers are shown in Figure 3.2. Transit ridership on DART services makes up over half of the overall transit ridership in the region (Figure 3.3). Trinity Metro and DCTA make up smaller amounts of regional ridership.

FIGURE 3.3 AVERAGE ANNUAL RIDERSHIP FOR TRANSIT AGENCIES



Source: National Transit Database (2014–2018).

## TARRANT COUNTY

At the center of Tarrant County is the City of Fort Worth, whose central business district is characterized mostly by commercial office buildings with few residences. In the portions of Fort Worth inside the beltway (formed by I-820 and I-20), fixed route transit service can efficiently provide mobility options to many compact and walkable neighborhoods. Transit routes have served these areas for decades, and these routes represent much of the transit ridership in Tarrant County.

Outside of these older neighborhoods (and mixed with adjacent commercial areas), most housing developments consist of single-family houses on lots at least a quarter of an acre in size. Suburban developments are typically built as a complete unit with internal street networks largely disconnected from adjacent development and are designed to funnel automobile traffic to a small number of access points along major arterials and precluding efficient access by other forms of travel. These residential neighborhoods and their nearby commercial developments are much more difficult to efficiently serve with transit.

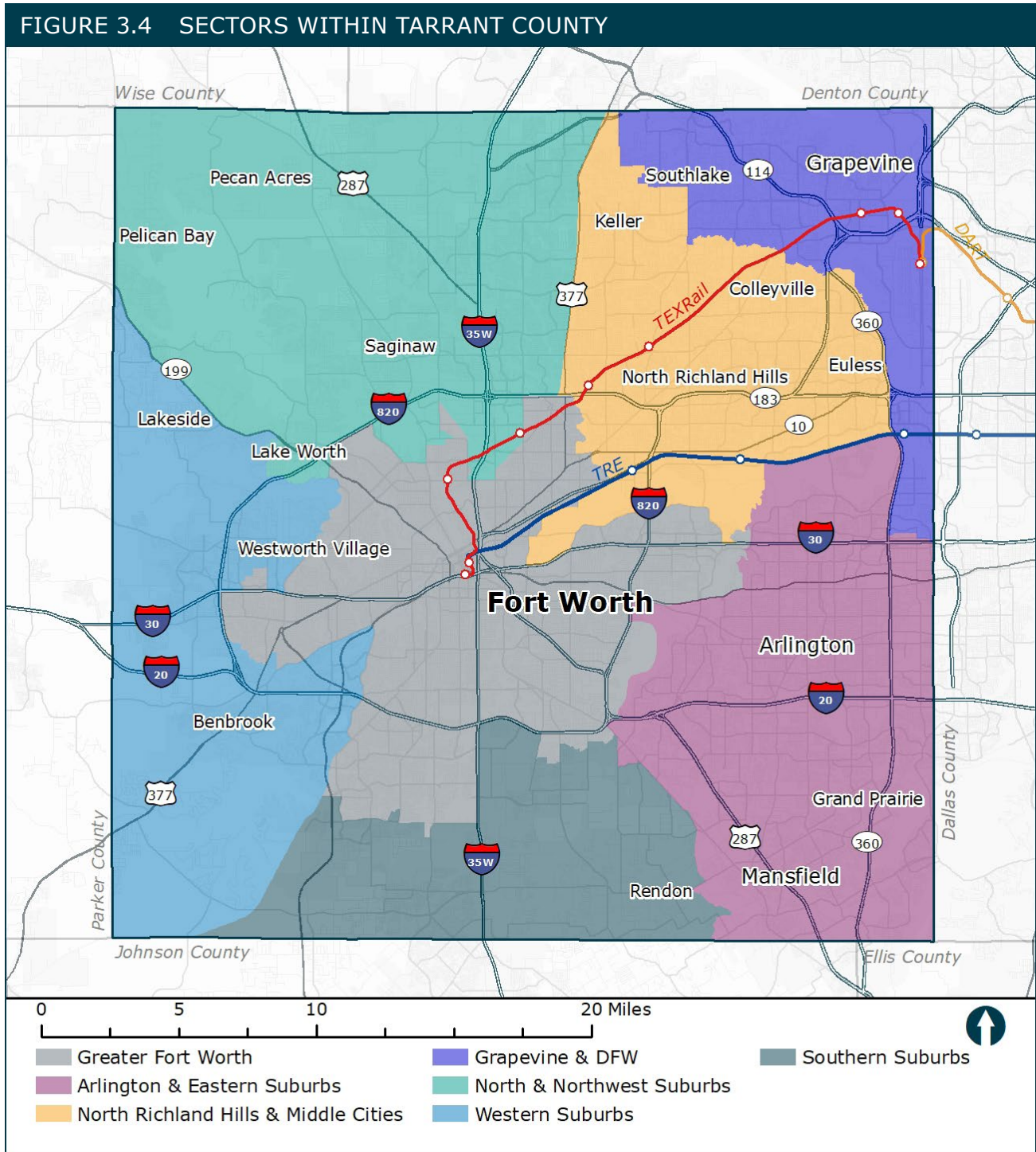
## Sectors of Travel

Certain sectors of Tarrant County form natural groupings of neighborhoods with similar travel patterns. For the purposes of analysis at a finer scale of detail, the county was divided into seven sectors. Greater Fort Worth is generally thought of as existing within the beltway, but travel patterns reveal an extension of the Greater Fort Worth both south and east of the beltway in some areas. Greater Fort Worth transitions into other sectors within the beltway on both the north and west sides.

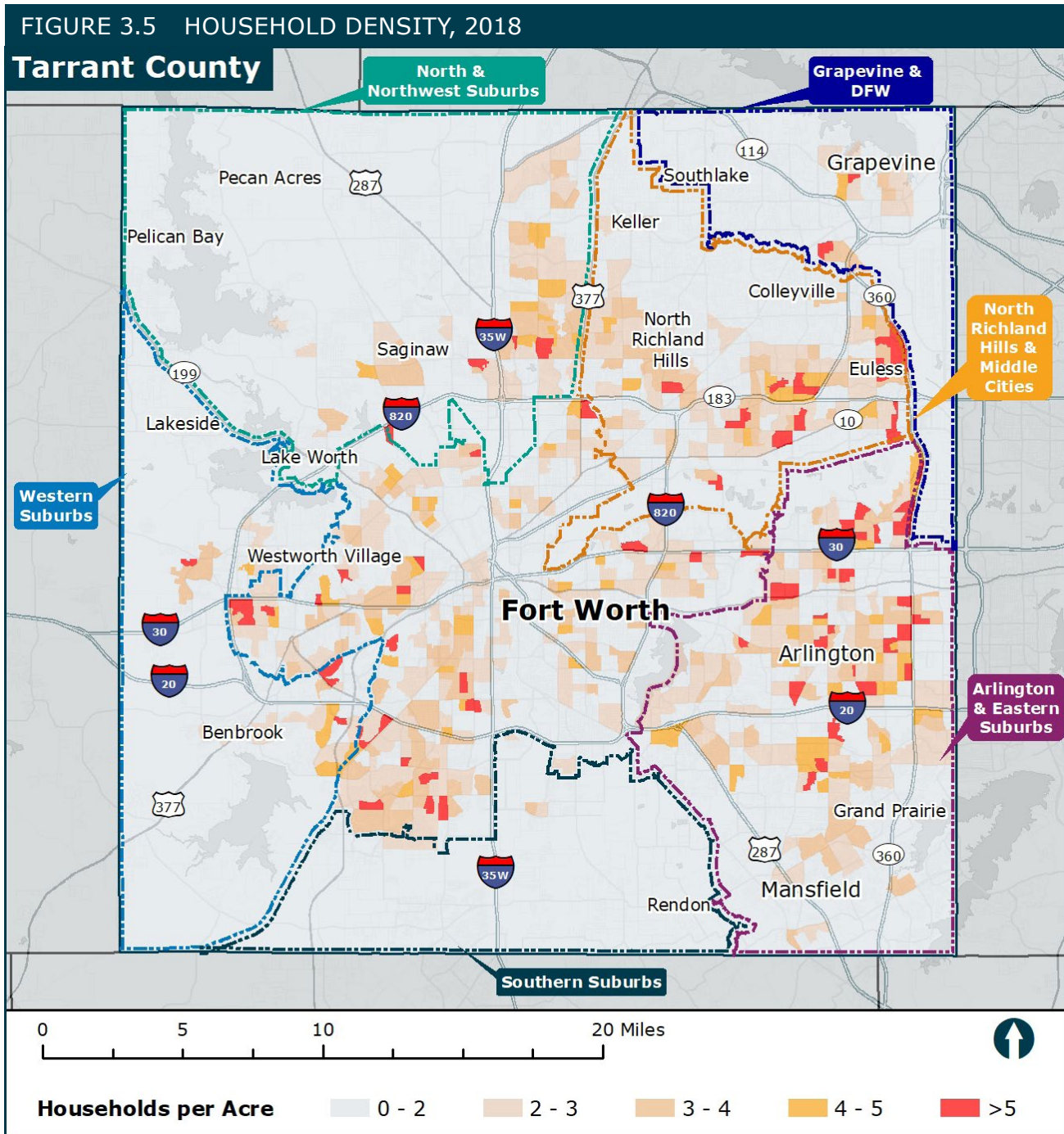
In examining the travel patterns in Tarrant County, the county has been geographically divided into these seven sectors (Figure 3.4):

- » **Greater Fort Worth.**
- » **Arlington and the Eastern Suburbs,** including Grand Prairie and Mansfield.
- » **North Richland Hills and the Middle Cities—**Hurst, Euless, and Bedford.
- » **Grapevine and Dallas/Fort Worth International Airport (DFW Airport).**
- » **Northern and Northwestern Suburbs,** including much manufacturing and warehousing.
- » **Western Suburbs,** including Benbrook.
- » **Southern Suburbs.**

These different sectors of Tarrant County were differentiated to understand any differing travel patterns and the specific potential for approaches to transit service to each area based on its travel patterns. Greater Fort Worth includes much of the Trinity Metro Service Area, though some routes do extend beyond the Greater Fort Worth area, including four express routes and a few local routes. Route 16 heads north into the northern suburbs. Route 46 ends just west of Greater Fort Worth, in the northwestern suburbs. Route 32 loops into the western suburbs to reach Texas Health Harris Methodist Hospital.



Tarrant County land development patterns range from urban to rural (Figure 3.5). Much of the county is characterized by suburban development. Rural areas, located to the north, south, and west, include Pelican Bay, Azle, Lakeside, and Blue Mound.



Source: American Community Survey (2014–2018).



In general, compact and walkable neighborhoods are most supportive of transit use. A 2019 study entitled “The WalkUP Wake Up Call: Dallas-Fort Worth” cataloged various compact and walkable neighborhoods within the region, termed in that study as WalkUPs (“Walkable Urban Place”).<sup>3</sup> Within Tarrant County, the study identified Downtown Fort Worth, the Cultural District, Texas Christian University (TCU)/West Berry, Camp Bowie—The Bricks, and Camp Bowie—Ridglea as WalkUPs; all of these are within Greater Fort Worth and served by transit.

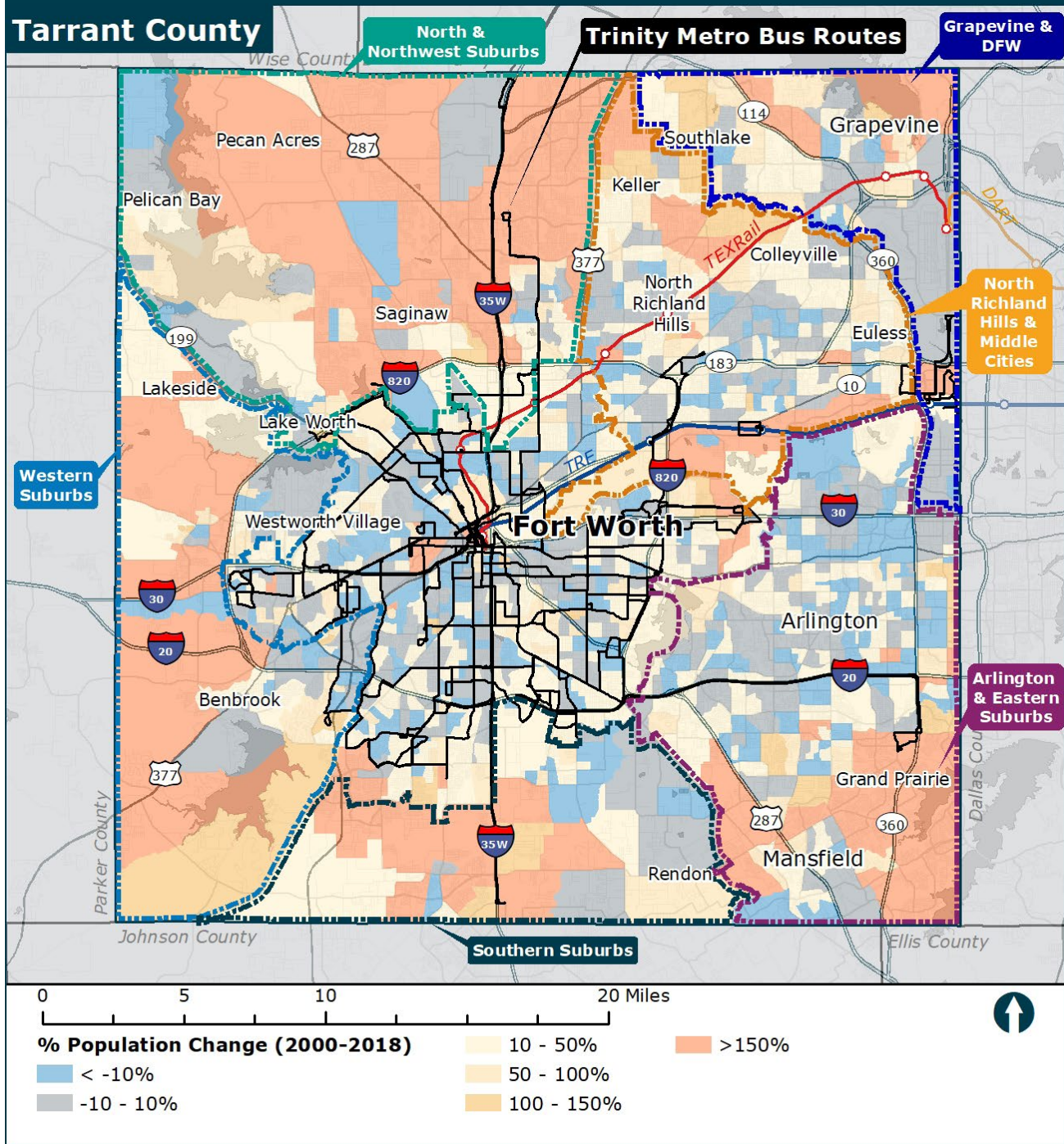
In the Grapevine and DFW sector, there are two WalkUPs: Southlake Town Center, which has no access to transit service, and Grapevine Main Street, which includes the Grapevine Station on the TEXRail line and enables regional travel connections for this compact and walkable neighborhood. In the Arlington and the Eastern Suburbs sector, two areas are designated in the report as emerging WalkUPs, including Downtown Arlington/University of Texas Arlington, served by Via Arlington on-demand transit service, and Downtown Mansfield which has no access to transit service.

### Demographics

The population changes of the last two decades have created a challenging environment to provide transit services because the densest residential areas are located throughout the county dispersed from the central core in Greater Fort Worth (Figure 3.6). Greater Fort Worth grew by approximately 66,400 people between 2000 and 2018, while the outer sectors grew by approximately 508,000 people. Around 88 percent of the growth in Tarrant County during that period occurred in areas not well served by existing transit (Figure 3.7).

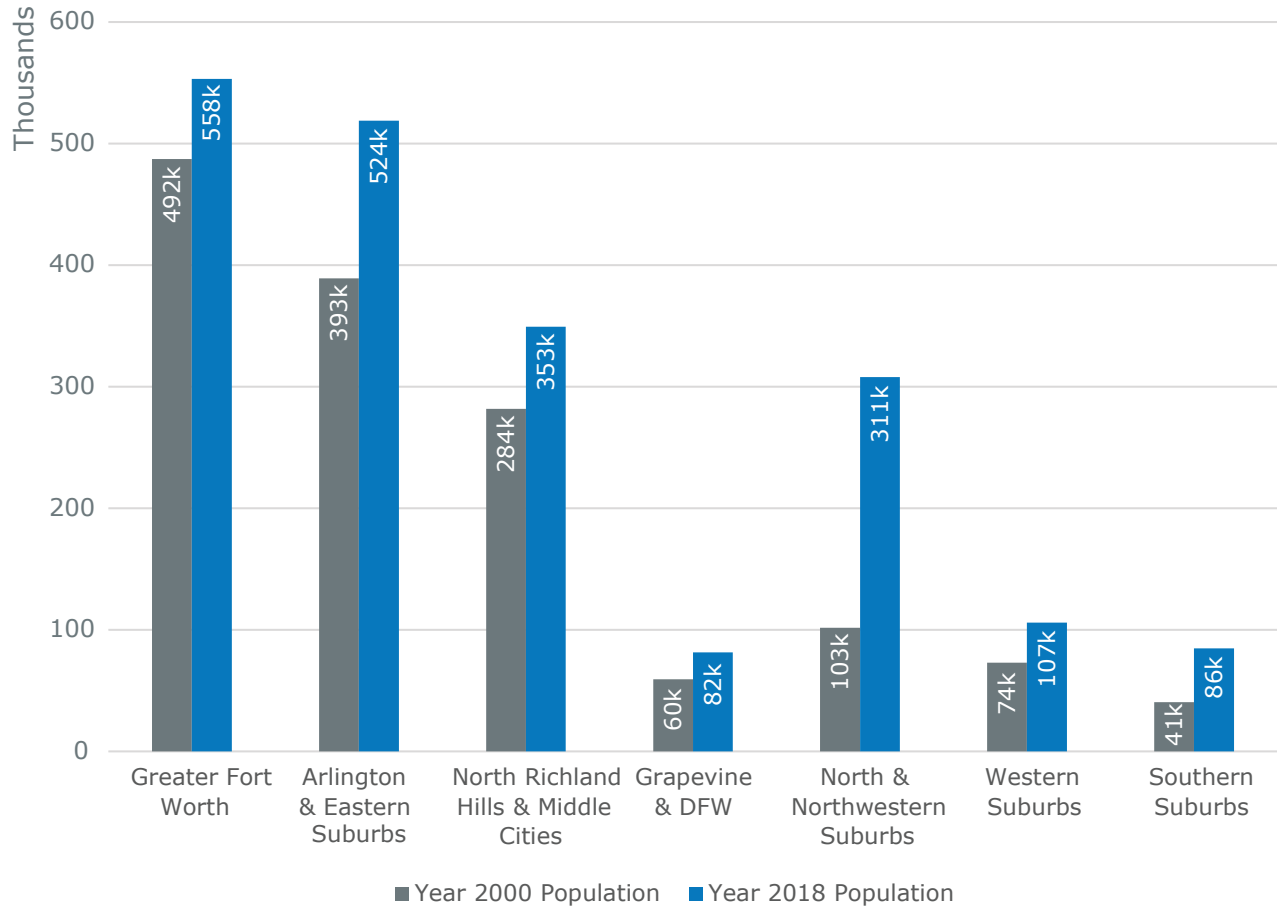
<sup>3</sup> The WalkUP Wake Up Call: Dallas-Fort Worth, the Center for Real Estate and Urban Analysis at the George Washington University, Tracy Hadden Loh, Ph.D., and Christopher B. Leinberger.

FIGURE 3.6 POPULATION CHANGES, 2000–2018



Source: American Community Survey (2014–2018).

**FIGURE 3.7 POPULATION CHANGE IN TARRANT COUNTY COMMUNITIES (2000–2018) BY SECTOR**



Source: American Community Survey (2014–2018).

### Equity Populations

Equitable analysis requires consideration of specific demographic groups for whom transit is a critical—and sometimes the only—transportation option. Throughout the United States, equity populations are moving from inner, more urban areas to more suburban areas. This trend is important for the provision of transit service, as populations that previously relied on transit services are moving to locations with less transit service than the more centralized neighborhoods they are leaving.

For the purposes of this travel analysis, those populations will be referred to as “equity populations,” specifically referring to:

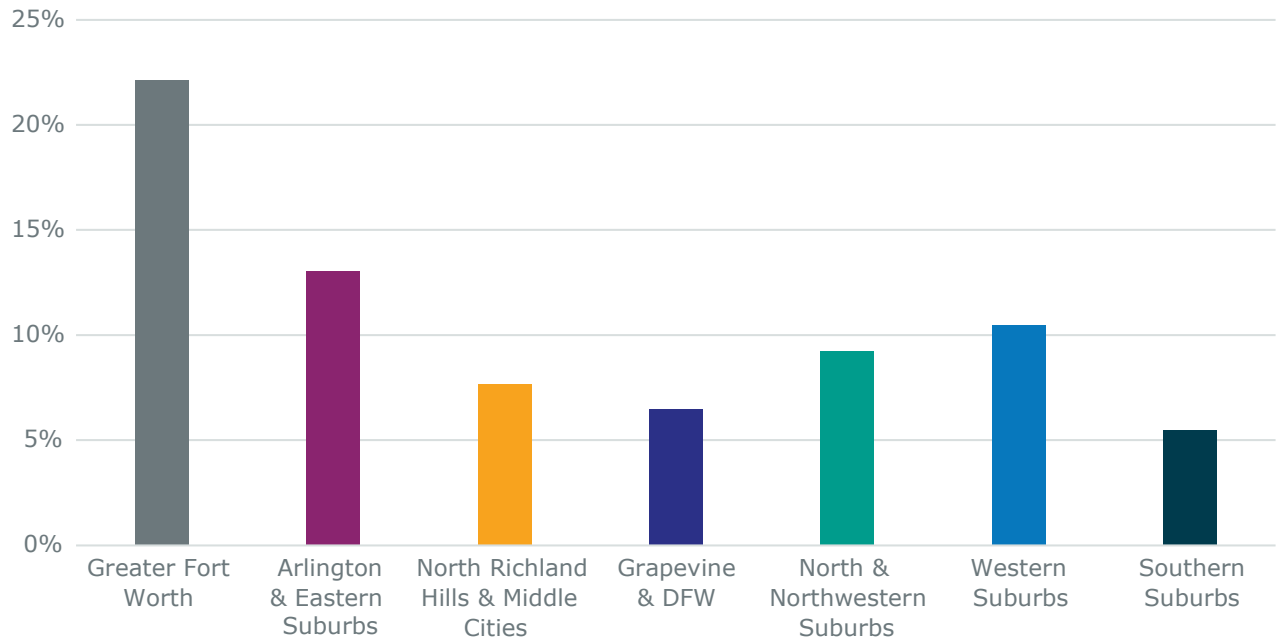
- » Low-income households.
- » Minority (Hispanic or nonwhite) persons.

Other equity groups will be considered on a more qualitative basis in the planning and scenario development process, such as seniors, persons with disabilities, zero-car households, and institutionalized populations.



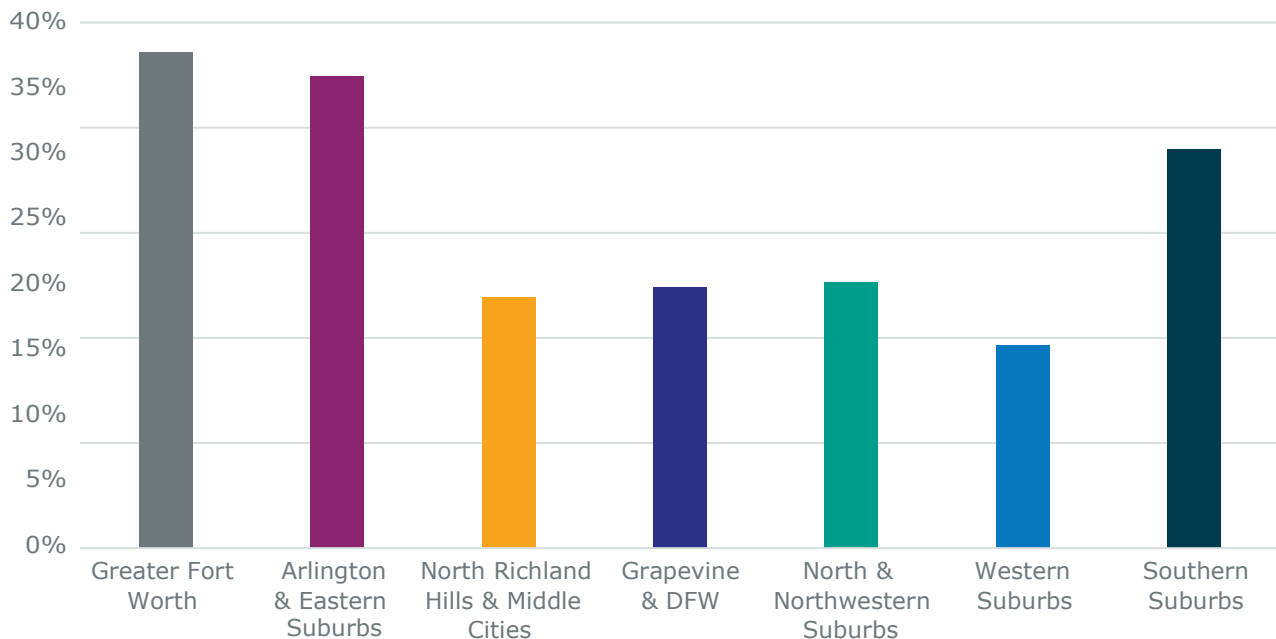
While the Greater Fort Worth sector contains a greater proportion of equity populations than the other county sectors, large portions of equity populations exist in areas without much transit service, such as the Western Suburbs and the Southern Suburbs (Figure 3.8, Figure 3.9, and Figure 3.10).

**FIGURE 3.8 PERCENT OF POPULATION BELOW POVERTY LINE**



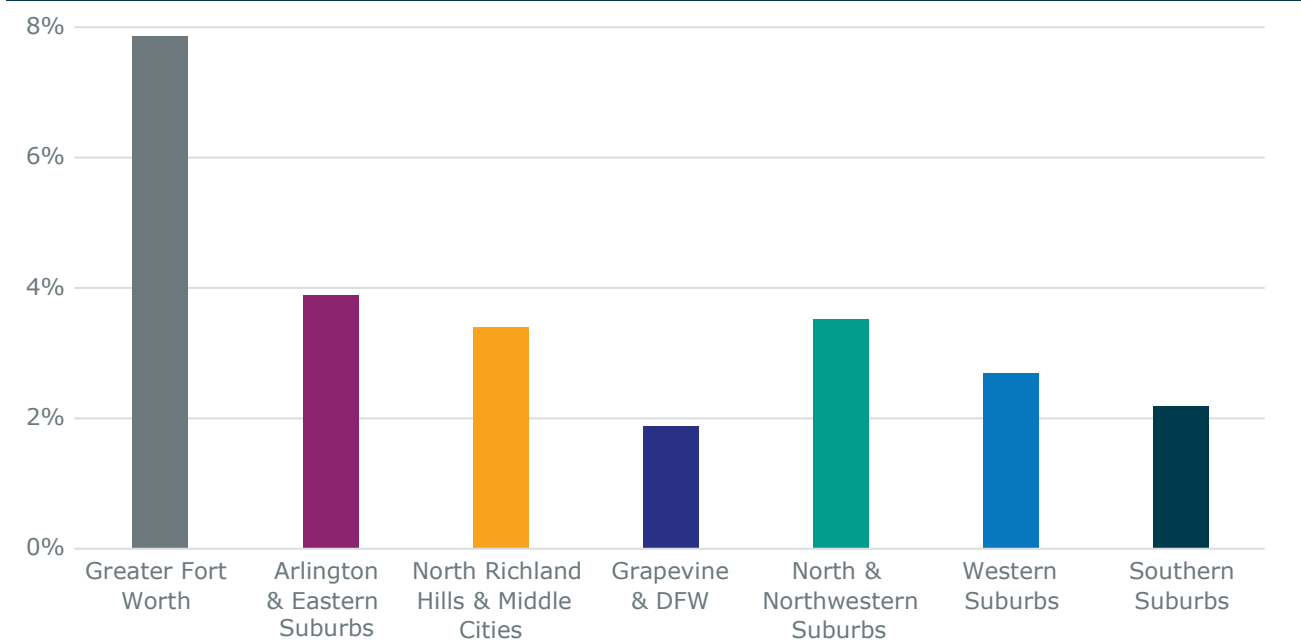
Source: American Community Survey (2014–2018).

**FIGURE 3.9 PERCENT HISPANIC OR NONWHITE POPULATION BY SECTOR**



Source: American Community Survey (2014–2018).

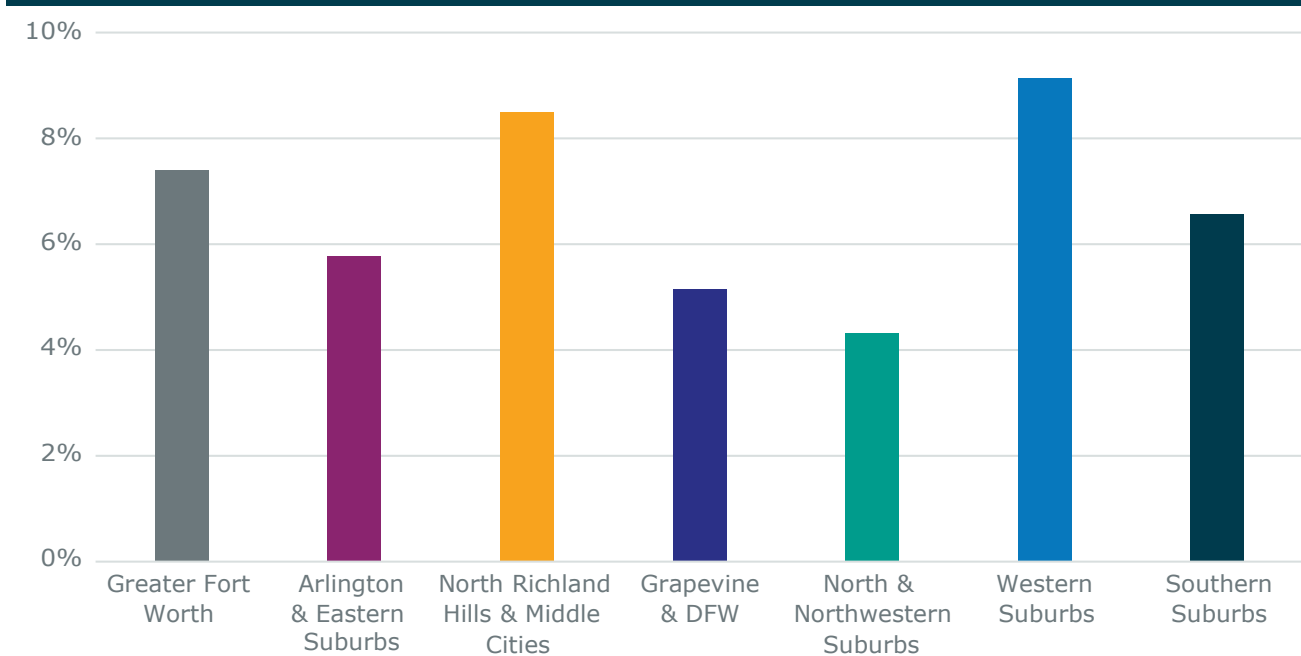
**FIGURE 3.10 PERCENT OF HOUSEHOLDS WITH NO CAR BY SECTOR**



Source: American Community Survey (2014–2018).

Like other equity populations, seniors of age 70 and above make up a similar proportion of the population in each of the sectors, between 4 and 10 percent of each sector. Seniors living in North Richland Hills and the Middle Cities are well served by demand-response services that explicitly serve seniors, but the Western Suburbs sector lacks the same availability of service while having a higher proportion of seniors living there (Figure 3.11).

**FIGURE 3.11 PERCENT SENIORS (AGE 70+) BY SECTOR**



Source: American Community Survey (2014–2018).

The analysis of these special populations is essential for identifying disadvantaged communities and geographic areas that are disproportionately affected by changes to public transit services. These underserved communities have a high stake in the outcome of any change to the bus network, as many rely on the bus network for access to food, childcare, employment access, and urgent health care issues. Many daily bus riders who use Trinity Metro come from these groups, and the high cost of car ownership limits the ability for these populations to adjust to changes that might include the discontinuance of their regular bus route.

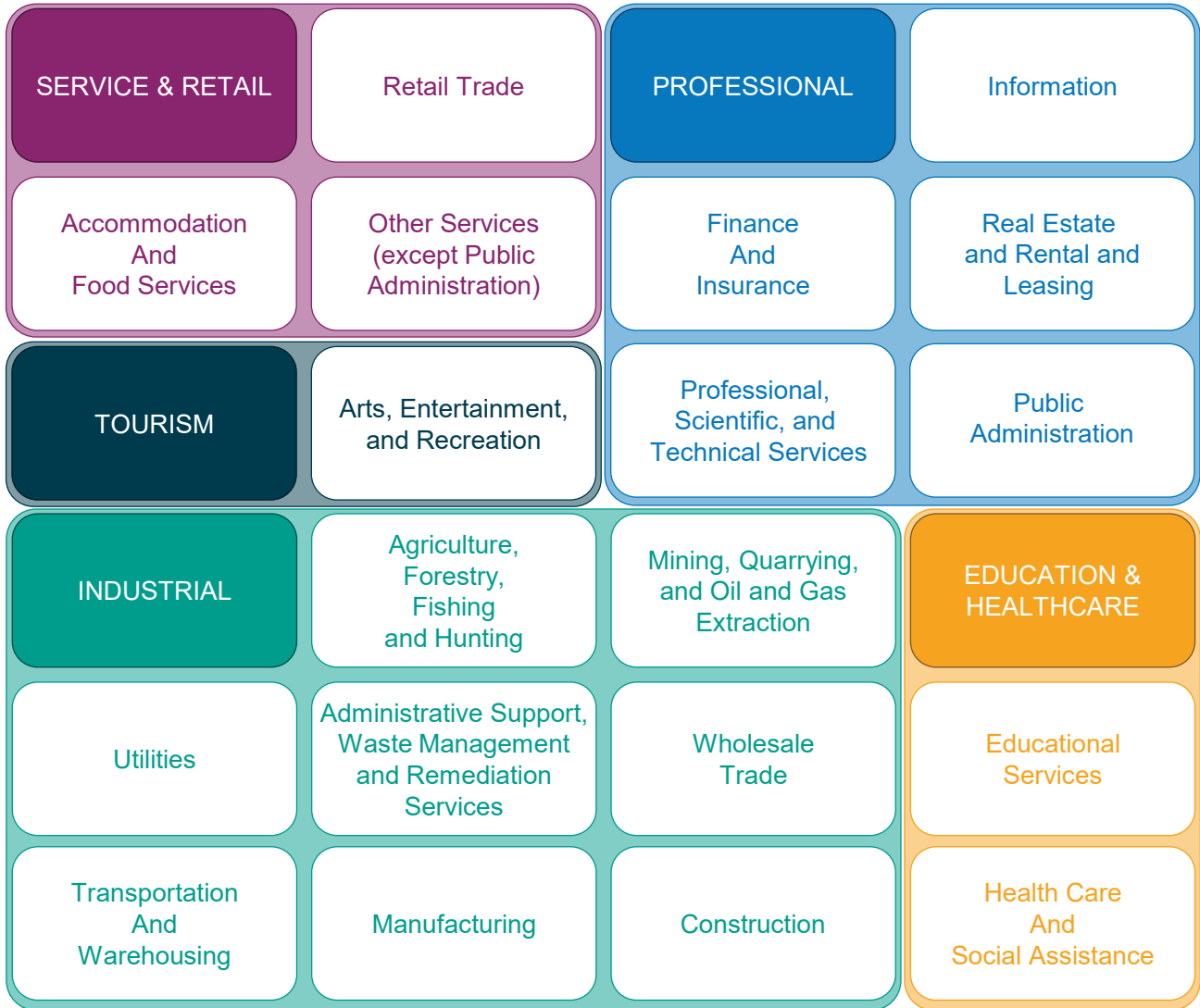
Analyzing transit access in disadvantaged communities extends beyond the evaluation of level of transit service or direct fare costs. Travel times on circuitous bus routes or transfers across multiple routes can create long commutes that require low-income residents to secure childcare for longer periods of time. For residents with mobility challenges, many of which correlate with higher levels of poverty or neighborhood disinvestment, accessing transit service may be difficult due to a lack of transit amenities, such as bus shelters or benches, that require riders to stand or be exposed to the elements for long periods of time. The travel patterns of these populations are an essential part of the consideration of any change to established transit services.

## Land Use and Employment in Tarrant County

Tarrant County has residential neighborhoods distributed throughout the entire county, continuing to fill in available parcels with more houses as the population grows. Employment centers are focused on a few corridors, with many important employers focusing travel to a few specific locations.

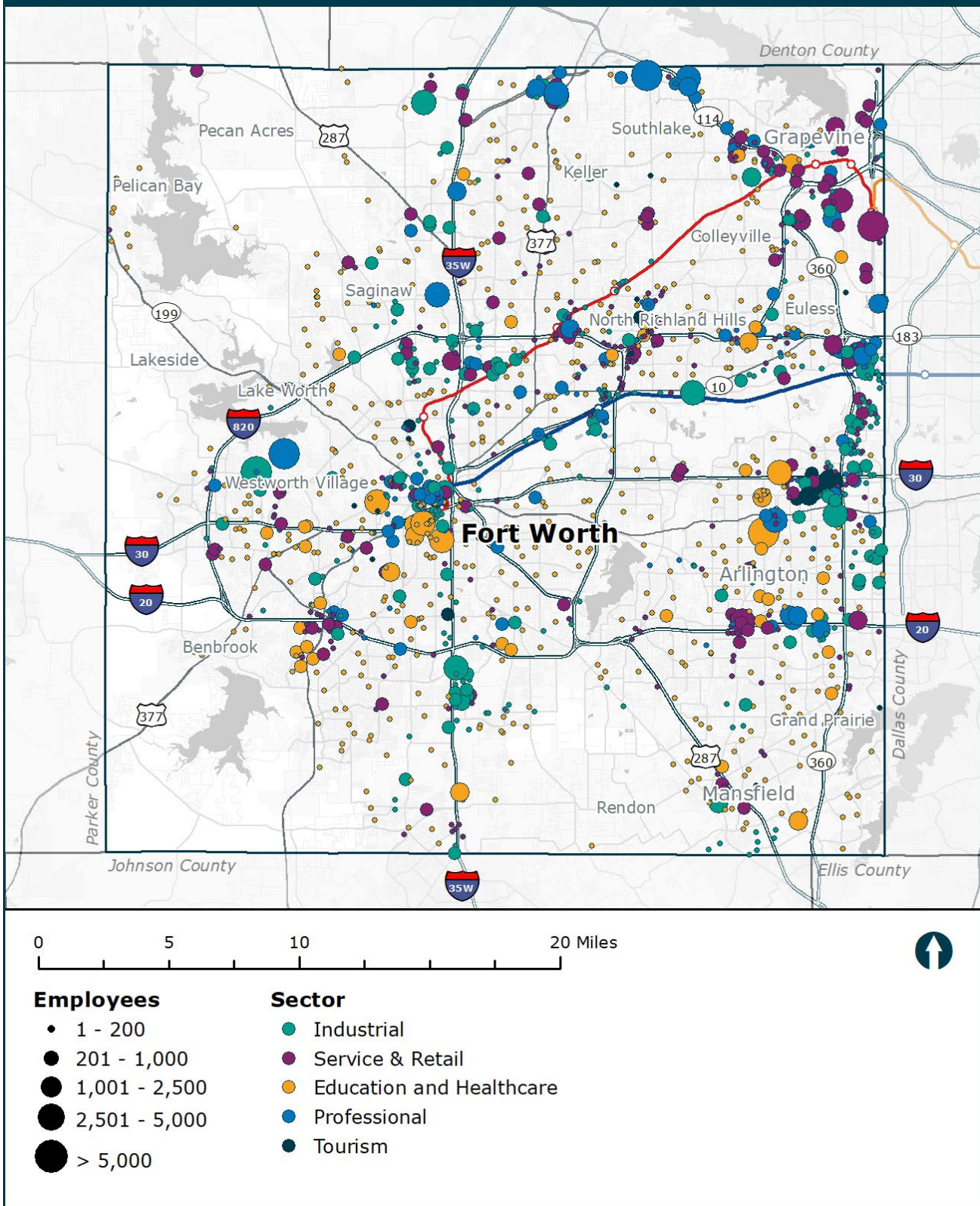
The North American Industrial Classification System (NAICS) assigns codes to specific job clusters that help to differentiate the type of work occurring in various locations throughout the county. Jobs were analyzed according to five groupings of NAICS codes: Service and Retail, Tourism, Professional, Industrial, Education and Health Care (Figure 3.12 and Figure 3.13). The Industrial NAICS grouping includes warehousing and manufacturing, such as in Carter Industrial Park south of the beltway, as well as throughout portions of Arlington and the suburbs north and west of Greater Fort Worth. The Education and Healthcare grouping shows clear clustering on the near south side of Fort Worth at the Near Southside Medical District, as well as specific clusters around the hospitals throughout the county.

**FIGURE 3.12 NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM EMPLOYMENT SECTORS**



The overall distribution of large employment centers shows a strong north-south orientation in and around Fort Worth, as well as a cluster in Arlington and one along SH 114 in Grapevine. Major employers such as Lockheed Martin, American Airlines, Bell Helicopter, and Naval Air Station Joint Reserve Base Fort Worth stand out on the map as easily identifiable destinations. The Northern and Northwestern Suburbs sector has many businesses related to the Alliance Fort Worth Airport and the Fort Worth Meacham International Airport, and many of the manufacturing operations in the area use three shifts of workers. These three shifts are somewhat different from typical commute patterns of the 9-to-5 worker or the afternoon and evening worker, complicating the provision of transit service.

FIGURE 3.13 MAJOR EMPLOYERS BY SECTOR AND NUMBER OF EMPLOYEES



Source: NCTCOG (2019).

## 3.3 TRAVEL PATTERNS

Demand analysis and market research of Tarrant County travel utilized a combination of Census data, transit ridership data, model outputs, and location-based services (LBS) data. In particular, the use of LBS data at a granular level by time of day and day of week can help to develop thoughtful service plans that best match travel demand.

The primary dataset for assessing travel patterns in the region and throughout Tarrant County is the processed and analyzed LBS origin-destination (O-D) trip flows, aggregated to the Census Block Group level to ensure privacy. These trip flows are segmented by time of day, day of the week, trip purpose, and Texas resident and visitor.

### TRAVEL PATTERNS

- Travel patterns in Tarrant County vary by each sector's relationship to Greater Fort Worth.
- Much travel is local, with many trips remaining in the sector of the county where they begin.
- Arlington and the eastern suburbs share few trips with Greater Fort Worth.
- Residents traveling from neighborhoods north of Greater Fort Worth are often traveling east-to-west or vice versa, as opposed to south into Greater Fort Worth.
- Regional travel includes long trips into Downtown Fort Worth, but otherwise trips are often short.

## LOCATION-BASED SERVICES DATA

Since the 1970s, the household travel surveys underlying most travel analysis have largely remained unchanged. While surveys collect rich information about the traveler and their travel behavior, they are expensive and time consuming and sample sizes are typically small. Practitioners have also noted declining participation rates in traditional surveys.

Location data collected passively from mobile devices, on the other hand, are becoming an increasingly valuable source of information about travel patterns. These datasets are massive in size, often containing millions of records collected over a period of months, rather than the typical 1- to 2-day travel diary often collected by travel surveys. Not only does this generate a larger overall sample, travel patterns can be tracked over the course of days, weeks, or even months to capture more frequent travel patterns. Data are then aggregated to protect privacy while retaining the regional insights garnered by such a rich dataset.

Various passive mobile device data collection paradigms exist, including call detail records (CDR), Global Positioning Systems (GPS) data, and LBS data from smartphones. LBS data are the newest type of passively collected cell phone data but is quickly becoming more ubiquitous.

- LBS data are collected by GPS applications running either in the background or foreground on smartphones, where the device user has opted to allow access to the app to track the device's geographic location. The data are anonymized so that information cannot be tracked to a particular mobile phone number.

*(continues on page 3-17)*

## TRAVEL DATA

To understand regional travel, LBS data passively collected from mobile devices were used to provide detailed information about how people are moving, where they are going, and when their travel is occurring. Summary results of the analysis of travel data are presented here, and an interactive dashboard has been prepared to facilitate high-resolution results to support the scenario development task of this study.

Traditional survey methods help complement the travel information from the LBS data set with sociodemographic, attitudes, and modal information. Census data, particularly the American Community Survey (ACS) provides some of those survey-collected data to understand more about the people and their trip-making behavior.



- Cambridge Systematics performed a study for National Cooperative Highway Research Program (NCHRP) to estimate origin-destination (O-D) trip matrices with mobile data. The LBS product, LOCUS, used to support the Tarrant County Transit Study, was developed using analytics developed for the NCHRP study but has been refined to support transit market research.
- The data contain a series of events for each smartphone device, where each event represents a cluster of time and location data points. The spacing of the events in the data is not regular; in some cases, events may be closely grouped with only small time gaps in between, while in other cases, time gaps between events could be several hours or more. Time gaps depend on a variety of conditions, including the frequency with which the device is used and the types of apps running on the device.
- Each event is classified as either a visit or a trajectory, depending on whether the device was moving or stationary. For each event, several data fields exist, including start time, duration, and starting and ending coordinates. We process these events to identify trip stops, measure travel movements, and quantify transit demand.
- LOCUS has been applied to support transit system redesigns in Los Angeles, Boston, Denver and now for the North Central Texas Council of Governments (NCTCOG) region. The analytical framework, described below in greater detail, is underpinned by the data and the experience gained specifically from using the data for public transit redesigns across the country.

A dashboard showing travel across the region, split by time of day and equity group, was developed as part of this report and used in the development of scenarios in Chapter 4.

## Data

The data used for the NCTCOG region come from a dataset of mobile devices (including residents and visitors) observed in a 13-county region comprising Collin, Dallas, Denton, Ellis, Hill, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise counties in Texas. The data collection period includes the first two quarters of 2019. In total, there were about 34 million travel-days and over 110 million valid trip events observed in the study region. As a consequence of this large sample size, detailed conclusions can be drawn about key aspects of travel, including O-D flows, time of day distribution, day of the week flows, and travel purpose.

## Analysis

Three key analytical steps were applied to take the trip data generated from the LBS dataset to convert into a usable dataset for transit market research. These are described briefly below:

- » **Identify Home and Regular Locations** – The first step in processing the raw location information was to filter trajectory events, identify activity stays, and infer trips. Once activity stays and trips were extracted for each device, home and work locations were inferred based on stay durations and time-of-day/day-of-week frequencies.
- » **Expand to Match Population and Employment Estimates** – Expansion methods were then applied to the processed LBS data to match NCTCOG population and employment estimates for the NCTCOG region. The weighted metrics provide estimates of person trips rather than index scores that could be biased.
- » **Normalize Data to Develop Average Weekday and Weekend Day Travel Patterns** – Devices often provide a different number of valid/usable days. As a final step, multi-day travels were normalized by day of week for each device to capture typical weekday, Saturday, and Sunday daily travel patterns.





## TRIP FLOWS BY SECTOR

Trip flows by sector of Tarrant County show that Greater Fort Worth, the North Richland Hills & the Middle Cities sector, and the Arlington & the Eastern Suburbs sector account for most trips (Table 3.1). Approximately 80 percent of trips within the county on an average weekday originate or terminate in one of these three sectors. Approximately three-quarters of these trips remain within these three sectors, and approximately 86 percent of those trips remain within a single of these three sectors.

TABLE 3.1 SECTOR TRIP FLOWS WITHIN TARRANT COUNTY

Tarrant County Sector		DESTINATION							Share of Total Travel within Tarrant County
		Greater Fort Worth	Arlington & the Eastern Suburbs	North Richland Hills & the Middle Cities	Grapevine & DFW	Northern & Northwestern Suburbs	Western Suburbs	Southern Suburbs	
ORIGIN	Greater Fort Worth	1,129,000	106,000	82,000	108,000	16,000	135,000	56,000	29%
	Arlington & the Eastern Suburbs	106,000	1,167,000	42,000	16,000	34,000	11,000	22,000	25%
	North Richland Hills & the Middle Cities	82,000	42,000	639,000	87,000	79,000	7,000	4,000	17%
	Grapevine & DFW	109,000	16,000	88,000	490,000	20,000	26,000	5,000	8%
	Northern & Northwestern Suburbs	18,000	36,000	79,000	21,000	292,000	3,000	2,000	13%
	Western Suburbs	135,000	12,000	7,000	26,000	2,000	162,000	10,000	6%
	Southern Suburbs	51,000	22,000	4,000	5,000	2,000	10,000	82,000	3%

Source: LOCUS Data (2019).

### Trip Purpose

To analyze travel in the region, trips were segmented into four trip purposes:

- » **Home-based regular** – One trip end is home and the other trip end is a frequently attended location such as either work or school.
- » **Home-based other** – One trip end is home and the other trip end is neither work nor school.
- » **Regular-based other** – One trip end is work or school and the other trip end is not home.
- » **Other-based other** – Neither trips ends are at work, school, or home.

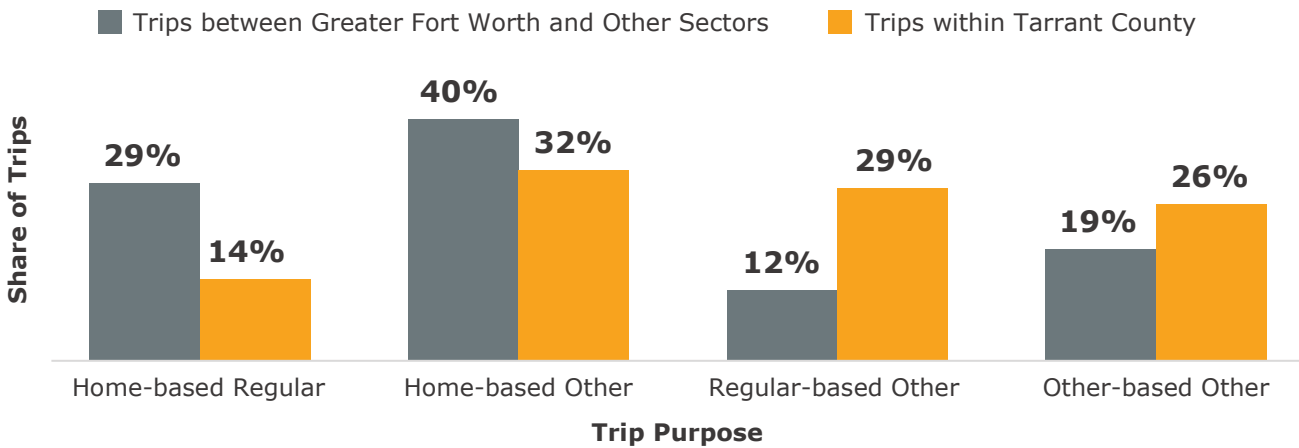
### Greater Fort Worth

Most of the service area of Trinity Metro lies within Greater Fort Worth, especially the bus routes. There are some services between the outer sectors of Tarrant County into Fort Worth, and there are some services that cross county lines and end in the main central business district of Fort Worth north of I-30, west of I-35W, and south of the west fork of the Trinity River (Downtown

Fort Worth). A significant portion of the trips in Tarrant County on an average weekday, 20 percent, remain in Greater Fort Worth.

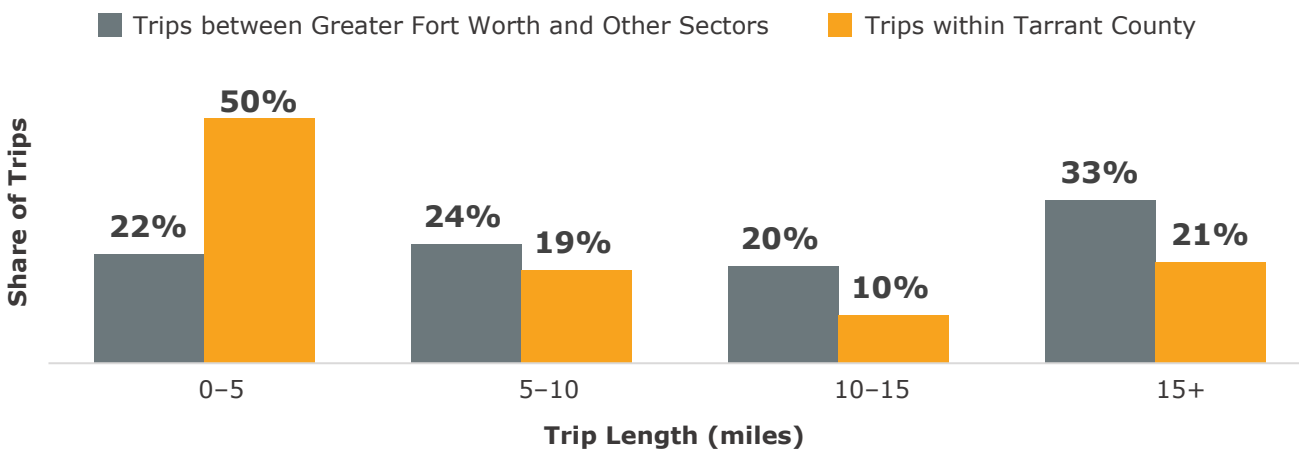
- » More likely to be home-based regular trips (Figure 3.14).
- » More likely to be longer trips (Figure 3.15).
- » While the origins are dispersed, the destinations are concentrated in fewer areas (Figure 3.16).

**FIGURE 3.14 TRIPS BY PURPOSE FOR TARRANT COUNTY AND TRIP BETWEEN GREATER FORT WORTH AND OTHER TARRANT COUNTY SECTORS**



Source: LOCUS Data (2019).

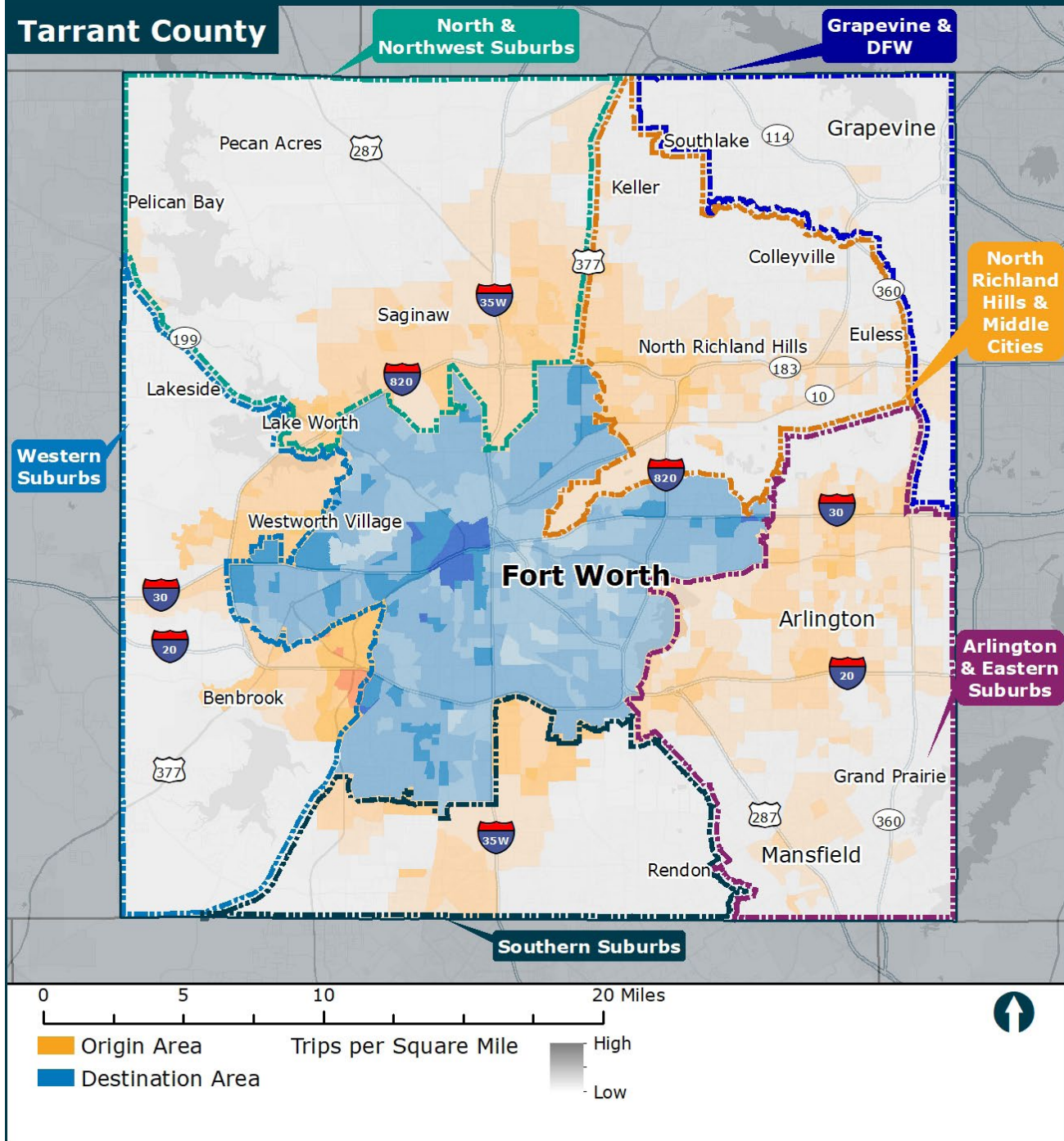
**FIGURE 3.15 TRIPS BY TRIP LENGTH FOR TARRANT COUNTY AND TRIP BETWEEN GREATER FORT WORTH SECTOR AND OTHER TARRANT COUNTY SECTORS**



Source: LOCUS Data (2019).

Within the confines of Tarrant County, travel originating or terminating in the Greater Fort Worth sector is most likely to remain within Greater Fort Worth. Of the 1.63 million daily trips that have a destination in the Greater Fort Worth sector, 1.13 million, or approximately 69 percent began in Greater Fort Worth. The second-most popular origin sector was the Western Suburbs sector, with approximately 135,000 average weekday trips into the Greater Fort Worth sector.

FIGURE 3.16 DESTINATION OF TRIPS FROM WITHIN TARRANT COUNTY BUT OUTSIDE OF GREATER FORT WORTH SECTOR



Source: LOCUS Data (2019).

### ***Arlington & the Eastern Suburbs***

The Arlington & the Eastern Suburbs sector of the county containing Arlington, Mansfield, and the Tarrant County portion of Grand Prairie is an insular location, with very few trips arriving or departing the limits of this sector (Figure 3.17). Only 17 percent of travel goes beyond the borders of this area. The mix of land uses, and the provision of most essential services such as healthcare, education, and entertainment help account for the low number of trips outside the sector. This emphasis on local travel appears to reinforce the planning efforts to provide on-demand transit within the borders of Arlington, since few trips are desired in terms of regional connections.

### ***North Richland Hills & the Middle Cities***

The North Richland Hills & the Middle Cities sector containing North Richland Hills, the Middle Cities, Keller, and Colleyville contain a well-established population that continues to grow despite limited available land to develop compared to other rural areas the same distance from Fort Worth's central business district. The sector had a population growth rate of 24 percent between 2000 and 2018.

Much of the travel remains local within the sector, but the most interesting finding was that travel to the Northern and Northwestern Suburbs just to the west of this sector involved a higher volume of travel than travel into Greater Fort Worth (Figure 3.18). Of the total of approximately 943,000 weekday trips originating in the sector, around 79,000 had a destination within the Northern and Northwestern Suburbs sector, compared to around 82,000 with destinations in Greater Fort Worth. Trips that terminated in the sector comprising Grapevine and DFW had even more occurrences, at over 87,000.

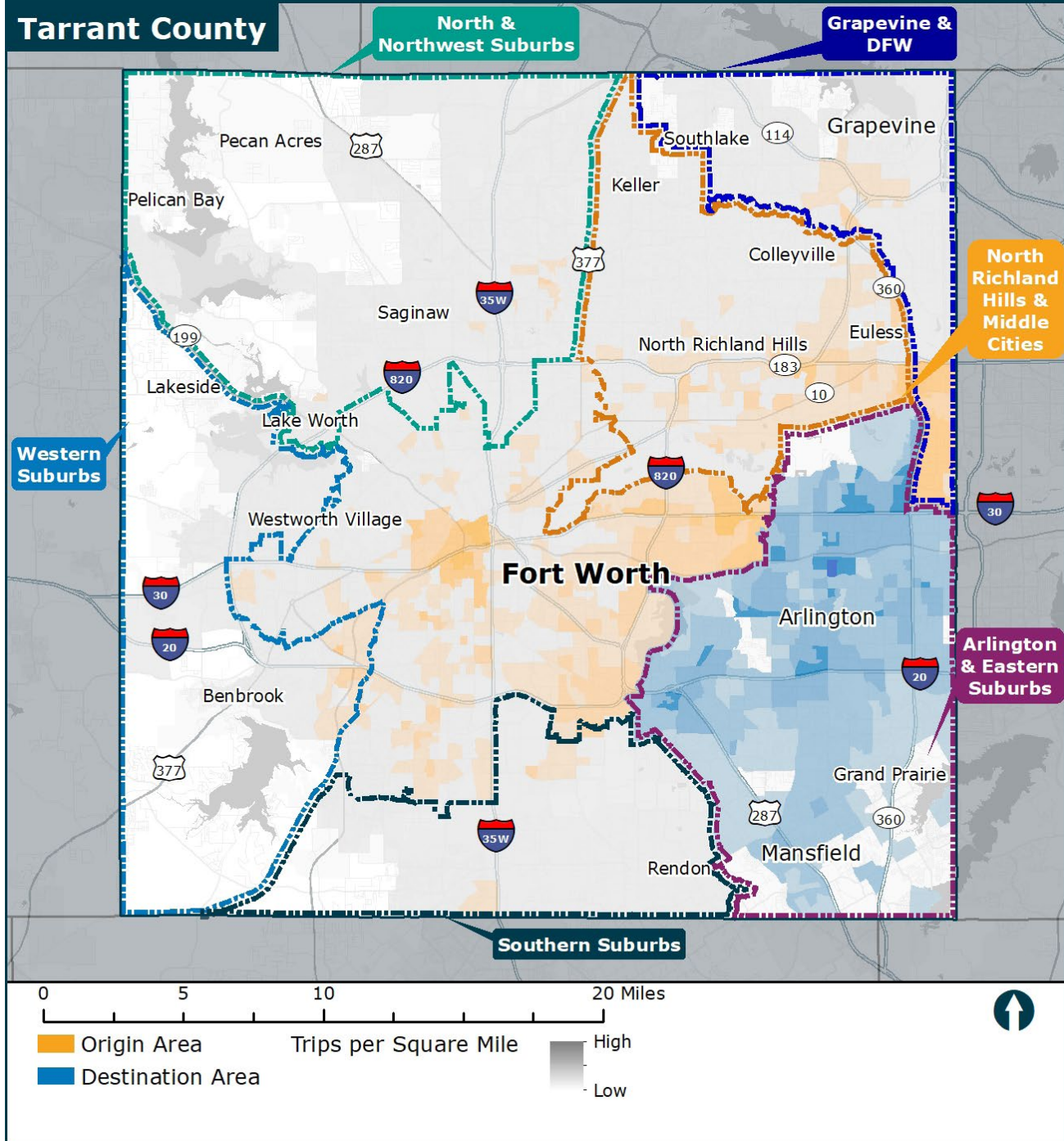
### ***Grapevine & DFW***

Evaluation of travel patterns for the Grapevine & DFW sector is heavily skewed by the presence of DFW Airport. The DFW Corporate Park on the east side of North State Highway 360, just outside of the Arlington city limits, also has a high volume of travel. In addition, the Grapevine Mills shopping center has a high volume of traffic. This sector is differentiated from the North Richland Hills & the Middle Cities sector by orientation to the neighboring counties, Dallas, Denton, and Collin. The Grapevine & DFW sector has a more broadly dispersed set of origins and destinations for its travel than other sectors in Tarrant County, making it more a part of the overall region and less a part of just Tarrant County.

### ***Northern and Northwestern Suburbs***

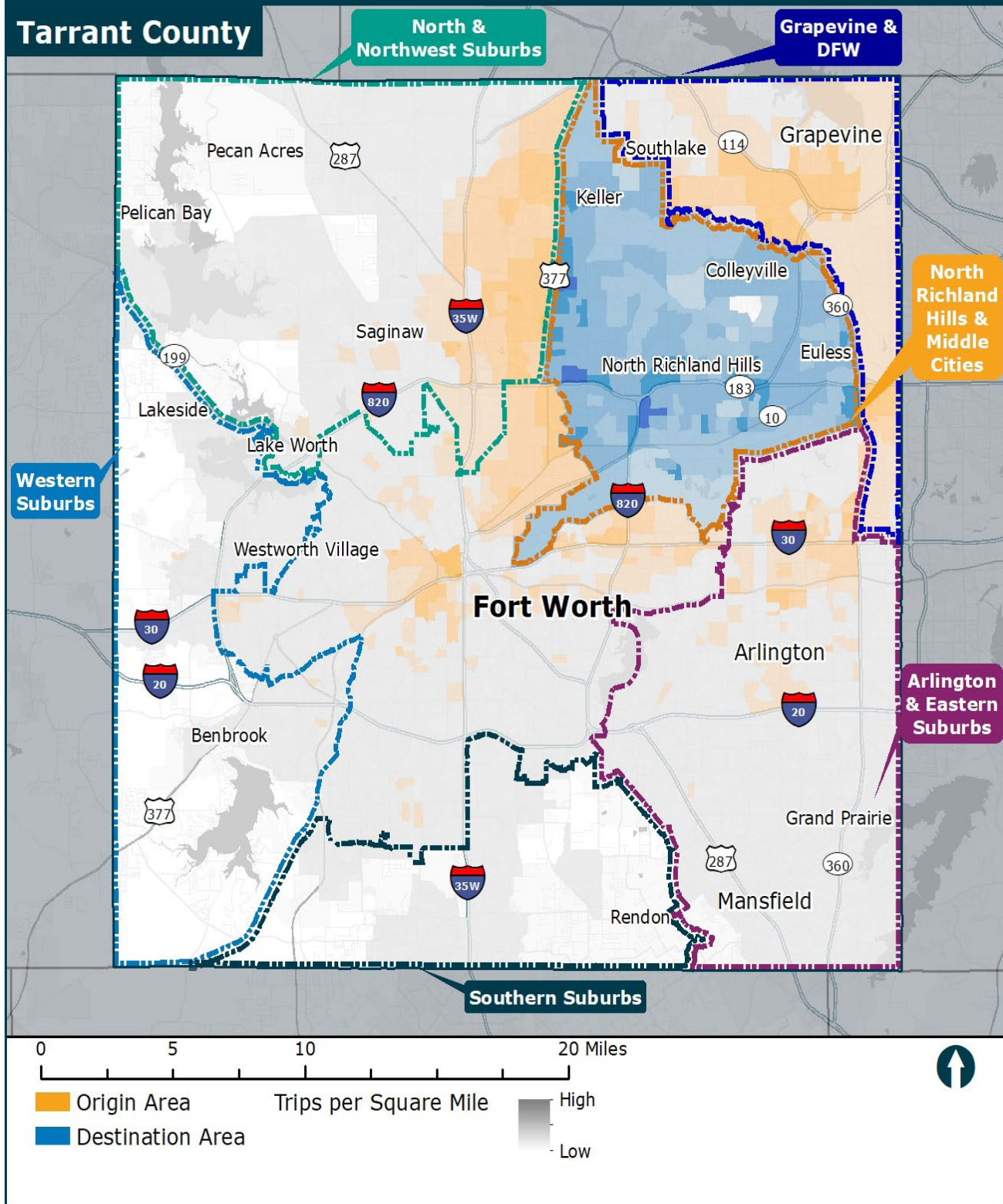
The Northern and Northwestern Suburbs sector of Greater Fort Worth exhibit a strong relationship with the North Richland Hills & the Middle Cities sector. Of the approximately 450,000 average weekday trips, over 18,000 trips terminated in the Greater Fort Worth sector and over 290,000 terminated in the North Richland Hills & the Middle Cities sector. The east-west travel patterns between the two sectors can be attributed to the plethora of jobs located in proximity to I-820, and to the Alliance Fort Worth Airport and the Fort Worth Meacham International Airport. Only around 3,000 trips terminated in the Western Suburbs sector, despite sharing a border of similar length to the North Richland Hills & the Middle Cities sector. The natural boundary created by the Fort Worth Nature Center and Refuge and Eagle Mountain Lake is sufficient to alienate the neighboring communities in the Western Suburbs sectors.

FIGURE 3.17 DESTINATION OF TRIPS FROM WITHIN TARRANT COUNTY BUT OUTSIDE OF ARLINGTON & EASTERN SUBURBS SECTOR



Source: LOCUS Data (2019).

FIGURE 3.18 DESTINATION OF TRIPS FROM WITHIN TARRANT COUNTY BUT OUTSIDE OF NORTH RICHLAND HILLS & MIDDLE CITIES SECTOR



Source: LOCUS Data (2019).

### *The Western Suburbs and The Southern Suburbs*

The Western Suburbs sector saw an increase in population of 45 percent between 2000 and 2018, while the Southern Suburbs sector saw an increase of 109 percent (Figure 3.7). These two sectors represent the strongest relationships with the Greater Fort Worth sector of the various county sectors. Every other sector shows more than half of the trips beginning or ending in the sector as remaining within the sector. These two sectors have only between 45 percent and 47 percent of travel remaining within the sector. The second-strongest origin-destination pair for each is Greater Fort Worth.

However, these trips are made throughout the day and with various purposes. On an average weekday, there are over 51,000 trips made from the Southern Suburbs sector into the Greater Fort Worth sector. However, only approximately 1,600 of these trips are home-based regular trips during the morning peak into Downtown Fort Worth. The twentieth-century standard commute from a single-family house in the suburbs to a dense central business district is apparently no longer a popular commute structure, based on these findings.

## *EQUITY ZONE TRAVEL PATTERNS*

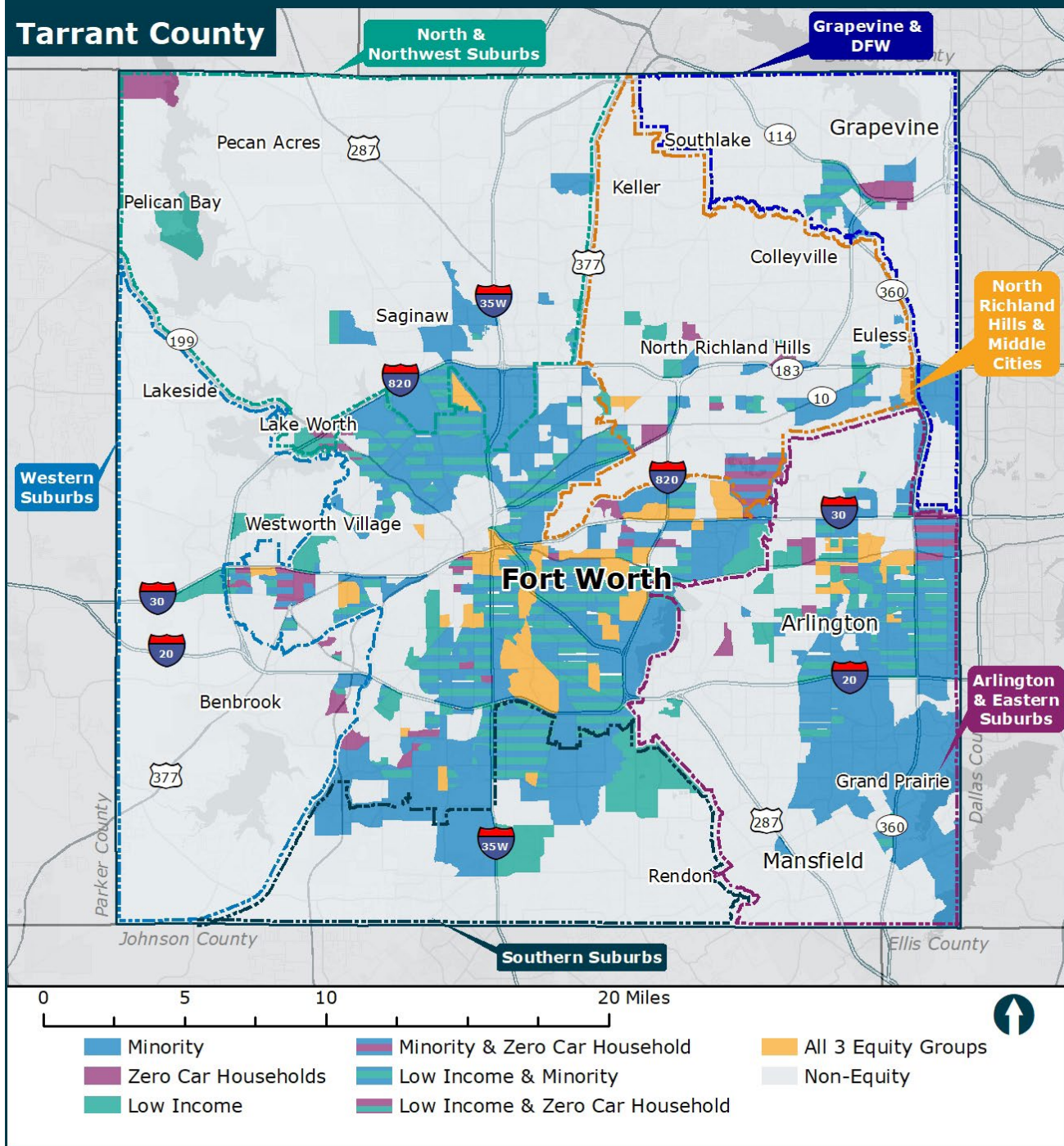
Because there is no personal information attached to individual devices (from which we get LBS data), demographics can only be reasonably assigned based on the characteristics of the Census Block Group data of the device's home location. Thresholds were identified at which a Census Block Group would be considered an Equity Zone, every device that is identified as having a home location in an Equity Zone would be tagged as an Equity device, and all trips made by these devices would be considered trips made by Equity populations. The thresholds for identifying an Equity Zone is any Block Group for which the share of low-income, zero car households, or minority populations were 10 percent higher than the 16-county NCTCOG regional average (Table 3.2).

TABLE 3.2 DEFINITION OF EQUITY ZONES

Equity Characteristics	SHARE OF BLOCK GROUP POPULATION		
	Regional (NCTCOG) Average	Tarrant County Average	Equity Zone
100% or less of the poverty level	13%	13%	23%
Zero cars in the household	5%	4%	15%
Minority population (Hispanic or nonwhite)	53%	53%	63%

This definition of an equity zone results in 43 percent of block groups defined as an equity zone (Figure 3.19). Equity zones capture 63 to 73 percent of all persons in equity populations for the region (Table 3.3). Meaning, if we consider the travel of these devices in these equity zones, we can reasonably infer that we are accounting for the majority of the region's residents who are low-income, have zero cars in the household, or belong to the minority community.

FIGURE 3.19 TARRANT COUNTY EQUITY BLOCK GROUPS



Source: American Community Survey (2014-2018).



TABLE 3.3 EQUITY AND NON-EQUITY POPULATION IN EQUITY ZONES

Equity Characteristics	SHARE OF EQUITY HOUSEHOLDS OR POPULATION IN EQUITY ZONES	
	Regional	Tarrant County
Low-income (less than \$35,000 per year for a household)	72%	73%
Zero cars in the household	72%	67%
Minority population (Hispanic or nonwhite)	64%	63%

Source: American Community Survey (2014-2018).

In total, these zones account for 43 percent of the region's population but only 39 percent of the region's travel, potentially illustrating fewer mobility options in these areas (Table 3.4).

TABLE 3.4 SHARE OF TRIPS BY POPULATION RESIDING IN EQUITY ZONES BY SECTOR

Tarrant County Sector		DESTINATION						
		Greater Fort Worth	Arlington & the Eastern Suburbs	North Richland Hills & the Middle Cities	Grapevine & DFW	Northern & Northwestern Suburbs	Western Suburbs	Southern Suburbs
ORIGIN	Greater Fort Worth	64%	60%	51%	42%	33%	68%	51%
	Arlington & the Eastern Suburbs	60%	50%	56%	32%	33%	39%	56%
	North Richland Hills & the Middle Cities	44%	36%	15%	12%	17%	33%	15%
	Grapevine & DFW	41%	32%	11%	14%	14%	36%	11%
	Northern & Northwestern Suburbs	33%	32%	13%	13%	16%	45%	13%
	Western Suburbs	68%	39%	50%	38%	44%	41%	50%
	Southern Suburbs	64%	60%	51%	42%	33%	68%	51%

Source: LOCUS Data (2019). Table shading shows share of trips for population residing in equity zones (darker shading reflects higher share of trips by population residing in equity zones).

Additionally, it is important to note the share of home-based regular trips by those living in equity zones (Table 3.5). The share of trips by equity populations are more pronounced when looking at home-based regular trips (as compared to Table 3.4).

TABLE 3.5 SHARE OF HOME-BASED REGULAR TRIPS BY POPULATION RESIDING IN EQUITY ZONES BY SECTOR

Tarrant County Sector		DESTINATION						
		Greater Fort Worth	Arlington & the Eastern Suburbs	North Richland Hills & the Middle Cities	Grapevine & DFW	Northern & Northwestern Suburbs	Western Suburbs	Southern Suburbs
ORIGIN	Greater Fort Worth	73%	65%	50%	60%	49%	35%	77%
	Arlington & the Eastern Suburbs	66%	52%	36%	56%	30%	28%	37%
	North Richland Hills & the Middle Cities	51%	35%	12%	11%	9%	12%	44%
	Grapevine & DFW	50%	31%	9%	7%	9%	8%	40%
	Northern & Northwestern Suburbs	36%	27%	13%	10%	9%	8%	51%
	Western Suburbs	76%	38%	40%	55%	43%	48%	40%
	Southern Suburbs	62%	56%	10%	11%	7%	9%	51%

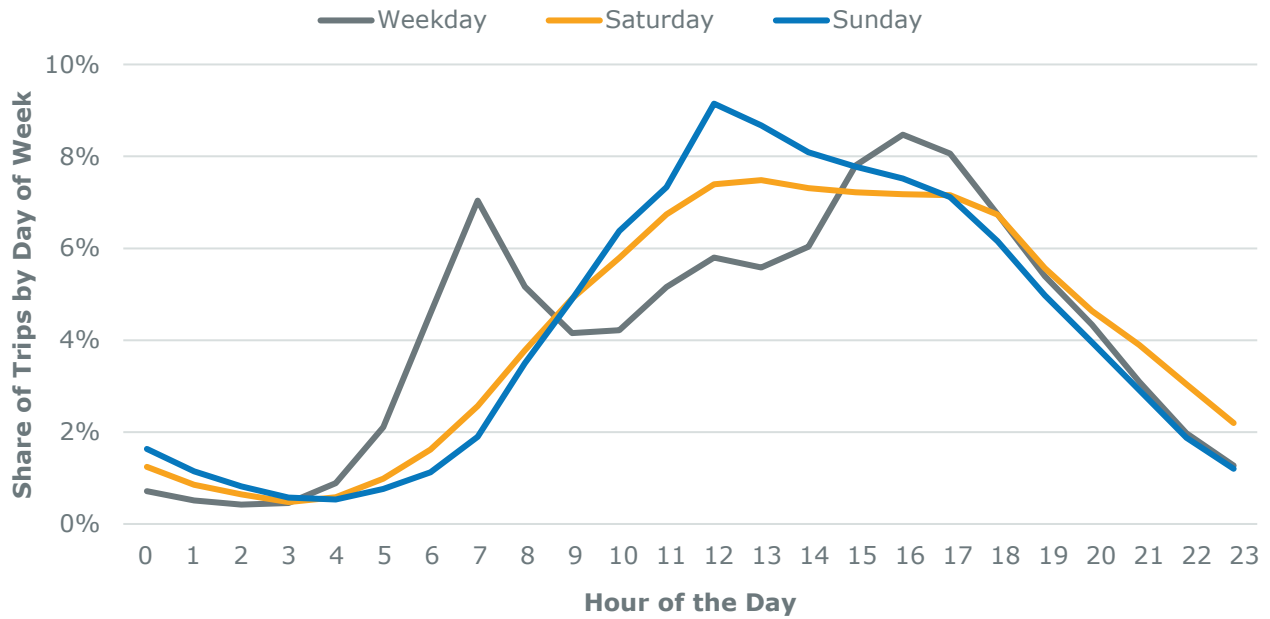
Source: LOCUS Data (2019). Table shading shows share of trips for population residing in equity zones (darker shading reflects higher share of trips by population residing in equity zones).

### TRIP TIME OF DAY AND PURPOSE

Regional travel peaks in the morning and the afternoon on a weekday and in the midday on the weekends (Figure 3.20). Over 30 percent of the region’s weekday trips day are made in just 4 hours, between 7–8 AM and 3–6 PM.

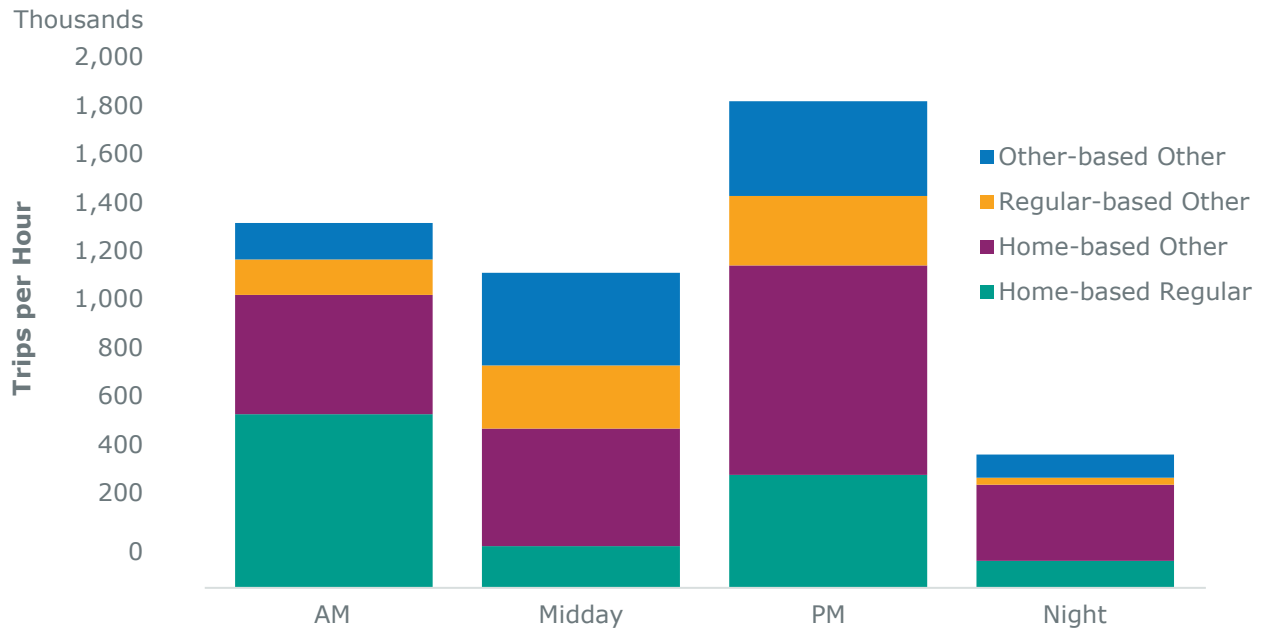
On weekdays, the highest concentration of trips is during the AM and PM peak periods, while on weekends the single peak is in the afternoon (Figure 3.20). During the week, morning travel has the highest share of home-based regular (mostly home-to-work) trips, whereas the afternoon and early evening (PM) travel includes roughly the same amount of home-based regular (mostly work-to-home) trips but also includes a significant amount of home-based other travel, which could include things like going to the grocery store or having dinner with friends (Figure 3.21).

FIGURE 3.20 TRIPS BY DAY OF THE WEEK IN THE NCTCOG REGION



Source: LOCUS Data (2019).

FIGURE 3.21 TRIPS RATE BY TIME OF DAY ON A WEEKDAY



Source: LOCUS Data (2019). Time periods are segmented as AM (6:30 AM to 8:59 AM), Midday (9:00 AM to 2:59 PM), PM (3:00 PM to 6:29 PM), and Night (6:30 PM to 6:29 AM).

Trip purpose does not vary widely regardless of the location of the trips (Table 3.6). The most significant difference is in regular-based other trips; these trips are often mid-day trips between work and some other destination (such as a restaurant for lunch or an offsite work-related meeting), both of which might be more accessible destinations in Greater Fort Worth than other parts of Tarrant County.

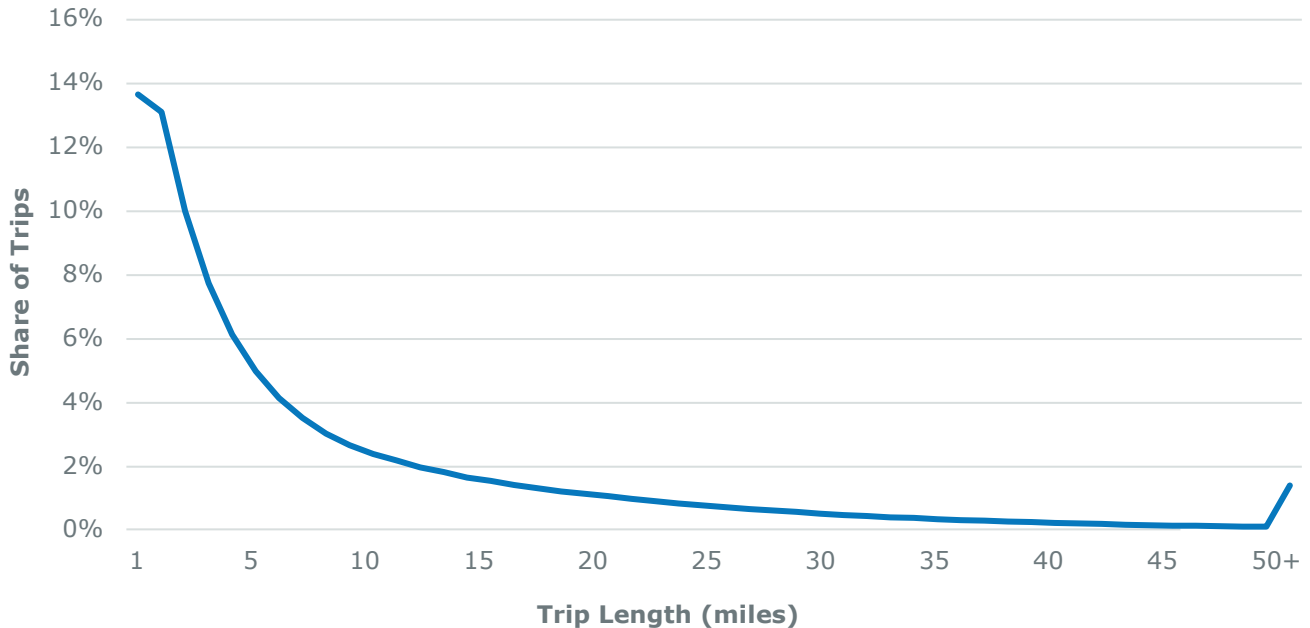
TABLE 3.6 TRIPS BY TRIP PURPOSE

Trip Purpose	Greater Fort Worth (in Tarrant County)	Outside of Greater Fort Worth (in Tarrant County)	NCTCOG Region
Home-based Regular	22%	22%	21%
Home-based Other	42%	44%	42%
Regular-based Other	15%	12%	13%
Other-based Other	21%	22%	24%

Source: LOCUS Data (2019).

Within the NCTCOG region, most trips tend to be short (Figure 3.22). Trips under 5 miles account for almost half of all trips.

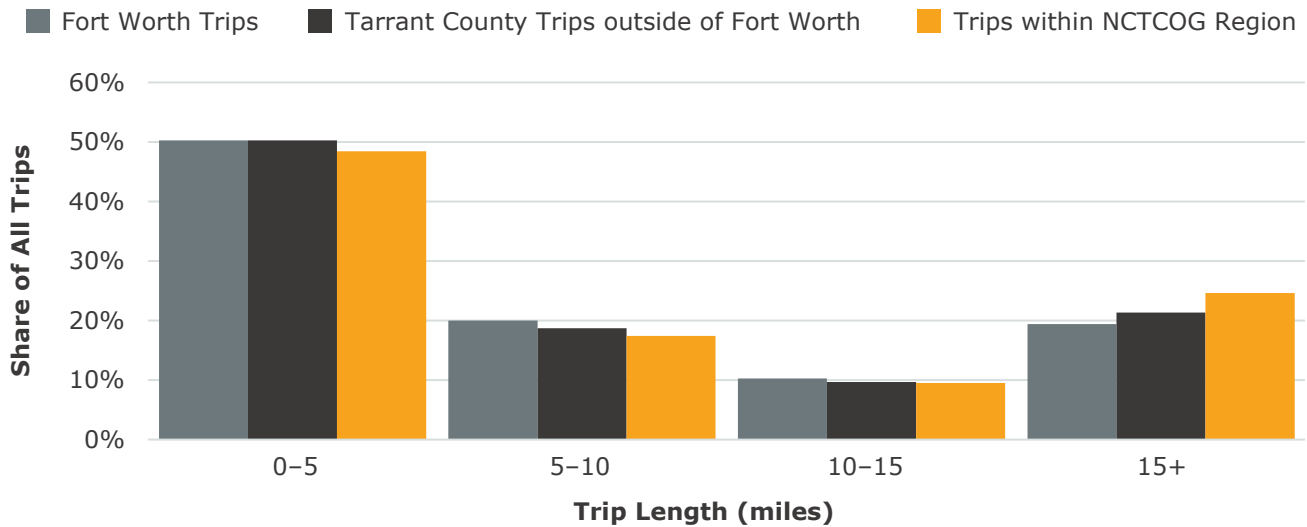
FIGURE 3.22 TRIP LENGTH FREQUENCY DISTRIBUTION



Source: LOCUS Data (2019).

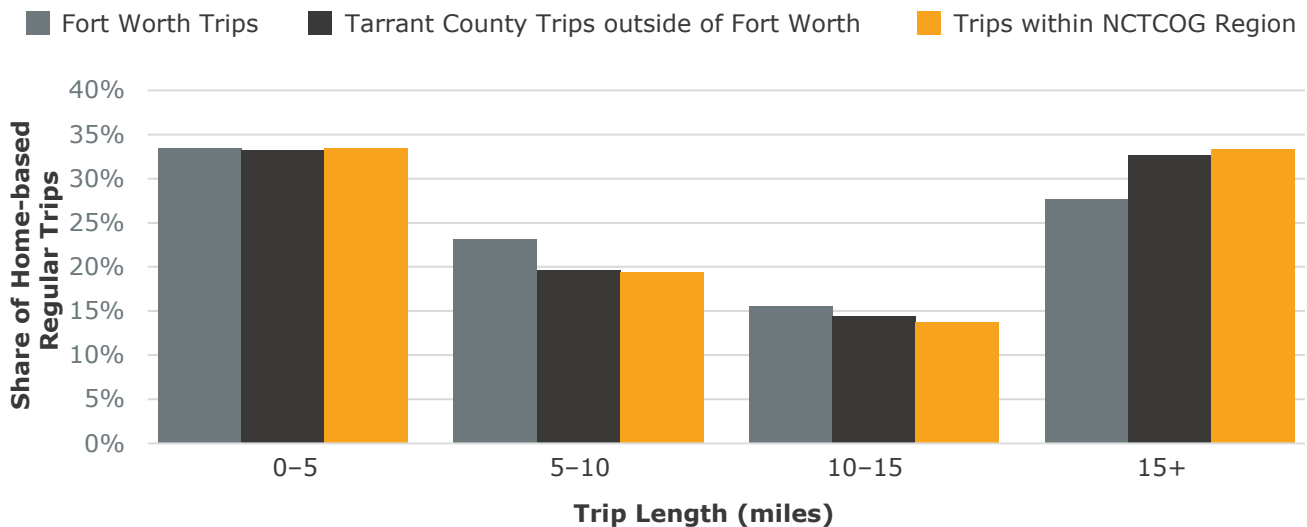
Like trip purpose, trip lengths are similar across the NCTCOG region (Figure 3.23), with the biggest observed difference in longer trips (of 15 or more miles). The difference in longer trips is attributed primarily to home-based regular trips (Figure 3.24), with Greater Fort Worth having a smaller share of longer-distance home-based regular trips.

FIGURE 3.23 TOTAL TRIPS BY TRIP LENGTH



Source: LOCUS Data (2019).

FIGURE 3.24 HOME-BASED REGULAR TRIPS BY TRIP LENGTH



Source: LOCUS Data (2019).

## TRAVEL BETWEEN COUNTIES

In looking at the market for transit travel relative to Greater Fort Worth, the trips to and from Greater Fort Worth and the entire region were summarized (Table 3.7). There are over 1 million daily trips between Fort Worth and other parts of Tarrant County, and approximately 325,000 additional trips outside of Tarrant County.

TABLE 3.7 TRIP FLOWS TO/FROM GREATER FORT WORTH

County/Sector	Trips to/ from Greater Fort Worth	Share of Trips to/from Greater Fort Worth	Area (square miles)	Trip Density
Greater Fort Worth	1,128,800	46%	147	7,675
Western Suburbs	270,900	11%	125	2,175
North Richland Hills and the Middle Cities	164,400	7%	110	1,493
Arlington and the Eastern Suburbs	212,200	9%	149	1,428
Southern Suburbs	113,400	5%	88	1,286
Northern and Northwestern Suburbs	217,300	9%	178	1,222
Grapevine and DFW	33,600	1%	67	498
Dallas County	132,000	5%	909	145
Johnson County	55,400	2%	734	75
Parker County	51,800	2%	910	57
Denton County	37,000	2%	953	39
Hood County	10,200	0%	437	23
Collin County	15,500	1%	886	17
Rockwall County	1,500	0%	149	10
Ellis County	9,000	0%	952	9
Wise County	8,300	0%	923	9
Kaufman County	2,200	0%	808	3
Hill County	2,200	0%	986	2
Hunt County	700	0%	882	1

Source: LOCUS Data (2019).

Of the total travel in the region, 20 percent of the trips cross county lines (Table 3.8). Much of this travel takes place over short distances, where development patterns fall across county lines. Of longer trips, some can be accommodated by the Texas Railway Express (TRE) service between Dallas and Fort Worth, but many of these trips ends are too dispersed to be effectively served by transit. Equity populations have lower levels of travel into neighboring counties (Table 3.9).

Approximately 960,000 trips on an average weekday originate outside of Tarrant County and end in Tarrant County in one of the six sectors outside of Greater Fort Worth (excluding DFW Airport). The destinations are dispersed throughout the entire county, with few block groups showing significant attraction for travel other than the Grapevine Mills mall, which is located near two other counties and can account for the popularity of cross-county travel.

Approximately 190,000 trips on an average weekday begin outside of Tarrant County and end in Greater Fort Worth, with approximately 24,000 ending in Downtown Fort Worth and the Upper West Side. It is doubtful that investment of resources into serving regional travel between counties could perform well and attract ridership beyond the services that already exist.



TABLE 3.8 COUNTY TO COUNTY TRIP FLOWS

County	Dallas	Tarrant	Collin	Denton	Ellis	Johnson	Parker	Rockwall	
<b>Dallas</b>	7,120,000	535,000	489,000	297,000	75,000	11,000	5,500	66,000	
<b>Tarrant</b>	533,000	5,713,000	50,000	146,000	27,000	107,000	75,000	3,600	
<b>Collin</b>	489,000	54,000	2,450,000	219,000	3,300	900	700	16,000	
<b>Denton</b>	302,000	149,000	217,000	1,860,000	2,100	1,700	2,100	1,900	
<b>Ellis</b>	75,000	27,000	3,000	2,100	384,000	7,200	500	500	
<b>Johnson</b>	12,000	107,000	900	1,700	7,100	325,000	2,700	100	
<b>Parker</b>	5,800	74,000	700	2,100	500	2,700	286,000	80	
<b>Rockwall</b>	65,000	3,600	16,000	1,900	600	100	80	210,000	
<b>Kaufman</b>	60,000	4,900	4,600	1,600	2,500	300	200	9,200	
<b>Hunt</b>	16,000	1,800	11,000	1,100	300	90	70	16,000	
<b>Wise</b>	3,400	21,000	600	11,000	200	400	7,400	40	
<b>Hood</b>	1,800	12,000	300	400	200	4,000	5,700	30	
<b>Hill</b>	1,900	3,000	300	200	2,400	5,600	200	30	
<b>Total</b>	<b>8,683,000</b>	<b>6,705,000</b>	<b>3,243,000</b>	<b>2,545,000</b>	<b>505,000</b>	<b>466,000</b>	<b>386,000</b>	<b>323,000</b>	

Source: LOCUS Data (2019).



	County	Kaufman	Hunt	Wise	Hood	Hill	Total	Share of Total	Trip Density (trips per square mile)
	Dallas	61,000	15,000	3,100	1,700	2,000	8,680,000	36%	9,553
	Tarrant	5,100	1,800	21,000	12,000	3,100	6,698,000	28%	7,423
	Collin	4,600	11,000	600	300	300	3,250,000	14%	3,667
	Denton	1,600	1,100	11,000	400	300	2,550,000	11%	2,676
	Ellis	2,500	300	200	200	2,500	504,000	2%	530
	Johnson	300	90	400	4,000	5,600	467,000	2%	635
	Parker	200	60	7,400	5,700	200	385,000	2%	423
	Rockwall	9,400	17,000	40	20	30	324,000	1%	2,175
	Kaufman	229,000	4,700	50	80	200	317,000	1%	392
	Hunt	4,700	224,000	40	10	30	275,000	1%	312
	Wise	60	40	144,000	200	50	188,000	1%	204
	Hood	80	10	200	142,000	200	167,000	1%	383
	Hill	100	30	50	200	72,000	86,000	0%	87
	<b>Total</b>	<b>318,000</b>	<b>276,000</b>	<b>188,000</b>	<b>167,000</b>	<b>86,000</b>	<b>23,892,000</b>		

TABLE 3.9 SHARE OF COUNTY TO COUNTY TRIP FLOWS BY POPULATIONS IN EQUITY ZONES

County	Dallas County	Tarrant County	Collin County	Denton County	Ellis County	Johnson County	Parker County	
Dallas	64%	55%	31%	31%	35%	32%	27%	
Tarrant	55%	39%	25%	20%	24%	19%	14%	
Collin	31%	24%	14%	15%	15%	14%	15%	
Denton	30%	19%	15%	18%	19%	17%	14%	
Ellis	35%	23%	17%	16%	16%	14%	12%	
Johnson	30%	19%	15%	16%	13%	13%	12%	
Parker	26%	14%	11%	13%	11%	11%	6%	
Rockwall	25%	26%	8%	16%	8%	22%	9%	
Kaufman	30%	30%	16%	18%	18%	22%	18%	
Hunt	31%	27%	16%	21%	19%	20%	16%	
Wise	24%	16%	8%	12%	19%	8%	18%	
Hood	29%	19%	22%	16%	16%	13%	9%	
Hill	28%	15%	4%	15%	4%	5%	3%	
<b>Grand Total</b>	<b>60%</b>	<b>39%</b>	<b>17%</b>	<b>19%</b>	<b>19%</b>	<b>15%</b>	<b>8%</b>	

Source: LOCUS Data (2019).

	County	Rockwall County	Kaufman County	Hunt County	Wise County	Hood County	Hill County	Grand Total
	<b>Dallas</b>	25%	30%	33%	25%	28%	29%	<b>60%</b>
	<b>Tarrant</b>	26%	30%	29%	16%	19%	16%	<b>39%</b>
	<b>Collin</b>	9%	15%	16%	10%	20%	5%	<b>16%</b>
	<b>Denton</b>	15%	19%	21%	12%	18%	13%	<b>19%</b>
	<b>Ellis</b>	9%	18%	15%	13%	17%	5%	<b>19%</b>
	<b>Johnson</b>	24%	20%	17%	10%	13%	5%	<b>15%</b>
	<b>Parker</b>	16%	17%	9%	18%	9%	3%	<b>8%</b>
	<b>Rockwall</b>	12%	18%	14%	27%	9%	2%	<b>15%</b>
	<b>Kaufman</b>	18%	22%	19%	21%	27%	11%	<b>24%</b>
	<b>Hunt</b>	14%	19%	31%	36%	18%	16%	<b>29%</b>
	<b>Wise</b>	14%	12%	31%	13%	8%	14%	<b>14%</b>
	<b>Hood</b>	12%	24%	20%	6%	13%	7%	<b>13%</b>
	<b>Hill</b>	7%	12%	11%	6%	6%	2%	<b>3%</b>
	<b>Grand Total</b>	<b>15%</b>	<b>24%</b>	<b>29%</b>	<b>14%</b>	<b>13%</b>	<b>3%</b>	<b>39%</b>

## 3.4 TRANSIT SERVICE IN TARRANT COUNTY

Several transit providers serve Tarrant County with regional, local, and on-demand<sup>4</sup> mobility options. Trinity Metro was established as the Fort Worth Metropolitan Transportation Authority, a State-authorized taxing authority, which enabled residents of member cities to vote to dedicate a portion of the sales and use tax to fund transit services. Trinity Metro services are focused centrally

on Downtown Fort Worth connecting two commuter rail lines, local and express bus routes, paratransit, and on-demand transit (Figure 3.25). The City of Arlington provides on-demand transit service as well as paratransit. Various nonprofits operate demand-response transit services for specific prequalified populations.

### EXISTING TRANSIT IN TARRANT COUNTY

- Trinity Railway Express and TEXRail provide regional rail service.
- Most local bus routes operated by Trinity Metro serve Greater Fort Worth, with few offering service to the other sectors.
- Express bus routes provide access into Downtown Fort Worth.
- On-demand transit services have been rolled out in recent years, in partnership with private transportation companies.
- Demand-response services provide a lifeline for prequalified individuals, but are primarily used in the northeastern part of the county.

Regional transit services available between Tarrant County and its neighboring counties include two commuter rail lines: the TRE between Dallas and Fort Worth, and the TEXRail line between Fort Worth and the Dallas/Fort Worth International Airport. From the airport, TEXRail passengers can transfer to the Orange Line light rail line service provided by DART to make other regional connections. The North Texas Xpress bus (Route 64) provides service between Fort Worth and Denton.

Within Tarrant County are several modes of transit service, both fixed route service and on-demand service (Table 3.10). The two commuter rail lines serve travel within Tarrant County, with stops providing for local and regional connections. Several express buses facilitate movement across large distances within the county and to adjacent counties. Park-and-Rides are located throughout the county to allow commuters to transfer to a bus to then travel within the county. Local buses provide transportation throughout much of the City of Fort Worth, in addition to areas throughout the county outside of the city limits.

Multiple on-demand transit services are available within Tarrant County. Trinity Metro operates four ZipZones which provide first-mile/last-mile access to fixed route transit. In Arlington, a similar service provides on-demand transit throughout a large portion of the city in place of fixed route transit. Paratransit is available complementary to the fixed route bus services as

<sup>4</sup> In this report, the terms on-demand, mobility-on-demand, and MOD are used interchangeably.

required by the Americans with Disabilities Act (ADA) for people who are unable to ride the bus due to disability. In various parts of the county, several demand-response services are available which are either limited to certain populations such as seniors, or for specific trip purposes such as job interviews. Other services such as vanpools also are operated throughout the county.

FIGURE 3.25 OVERVIEW OF TRANSIT SERVICES IN TARRANT COUNTY

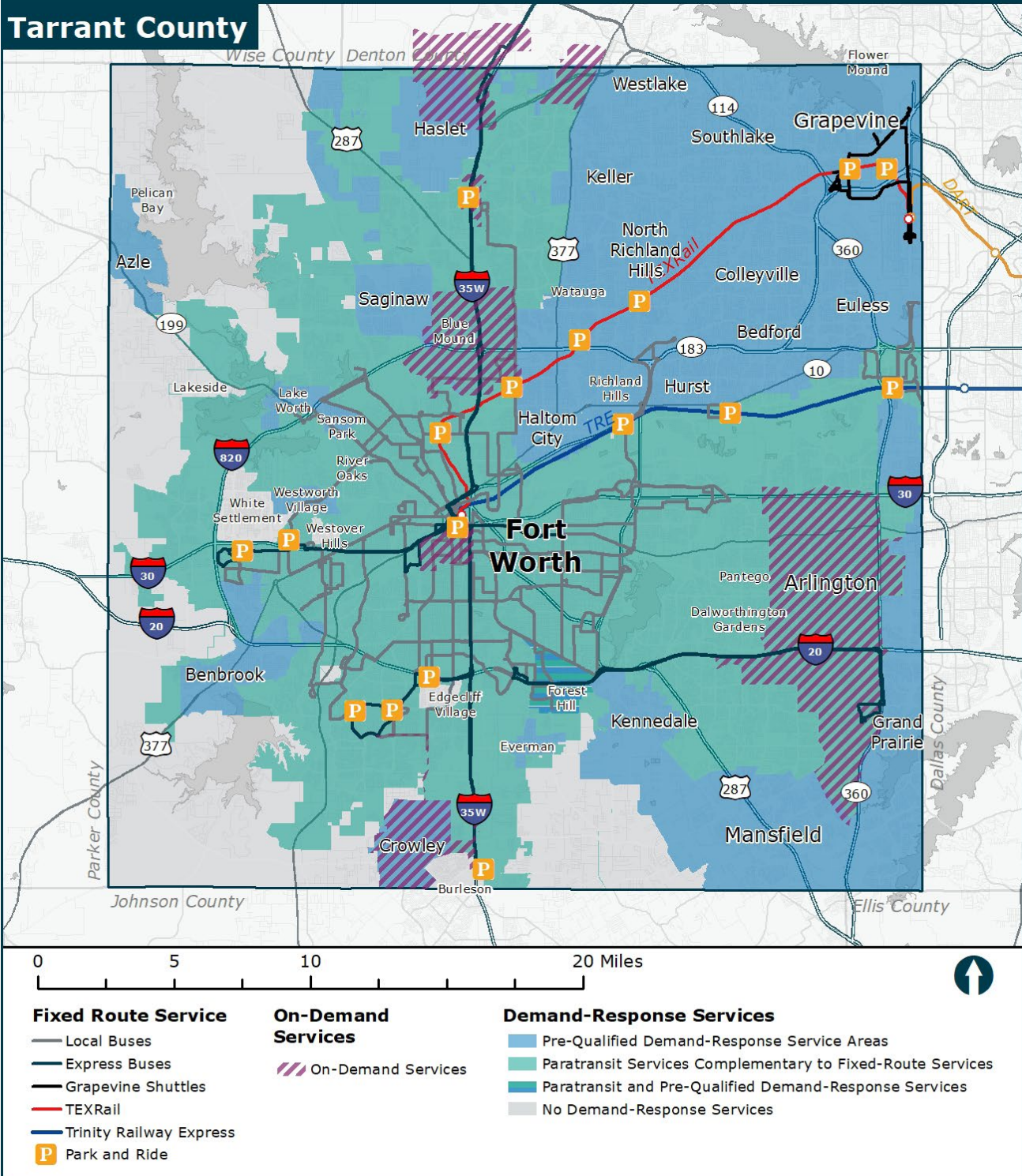


TABLE 3.10 TRANSIT SERVICES IN TARRANT COUNTY

Transit Mode	Service	Transportation Entity	Function
<b>Commuter Rail</b>	Trinity Railway Express	DART	Part Owner
		Trinity Metro	Part Owner
		Herzog Transportation Services	Operator
	TEXRail	Trinity Metro	Owner and Operator
<b>Fixed Route Bus</b>	Various Local and Regional Bus Services	Trinity Metro	Owner and Operator
		North Texas Xpress (Route 64)	Trinity Metro
		DCTA	Part Owner
<b>Demand-Response</b>	Via Arlington	City of Arlington	Owner
		Via Transportation, Inc.	Operator
	Alliance ZipZone	Trinity Metro	Owner
		Lyft, Inc.	Operator
	ZipZones: Mercantile, Near Southside, Crowley	Trinity Metro	Owner
		Via Transportation, Inc.	Operator
	TCTS, NETS, JET, HEB	Catholic Charities of Fort Worth Transportation Services	Owner and Operator
	The Grand Connection	City of Grand Prairie	Owner and Operator
Paratransit	ACCESS Paratransit	Trinity Metro	Owner and Operator
	Handitran	City of Arlington	Owner and Operator
Ride Matching	Vanpools	Trinity Metro	Coordinator

## THE CURRENT STATE OF TRANSIT

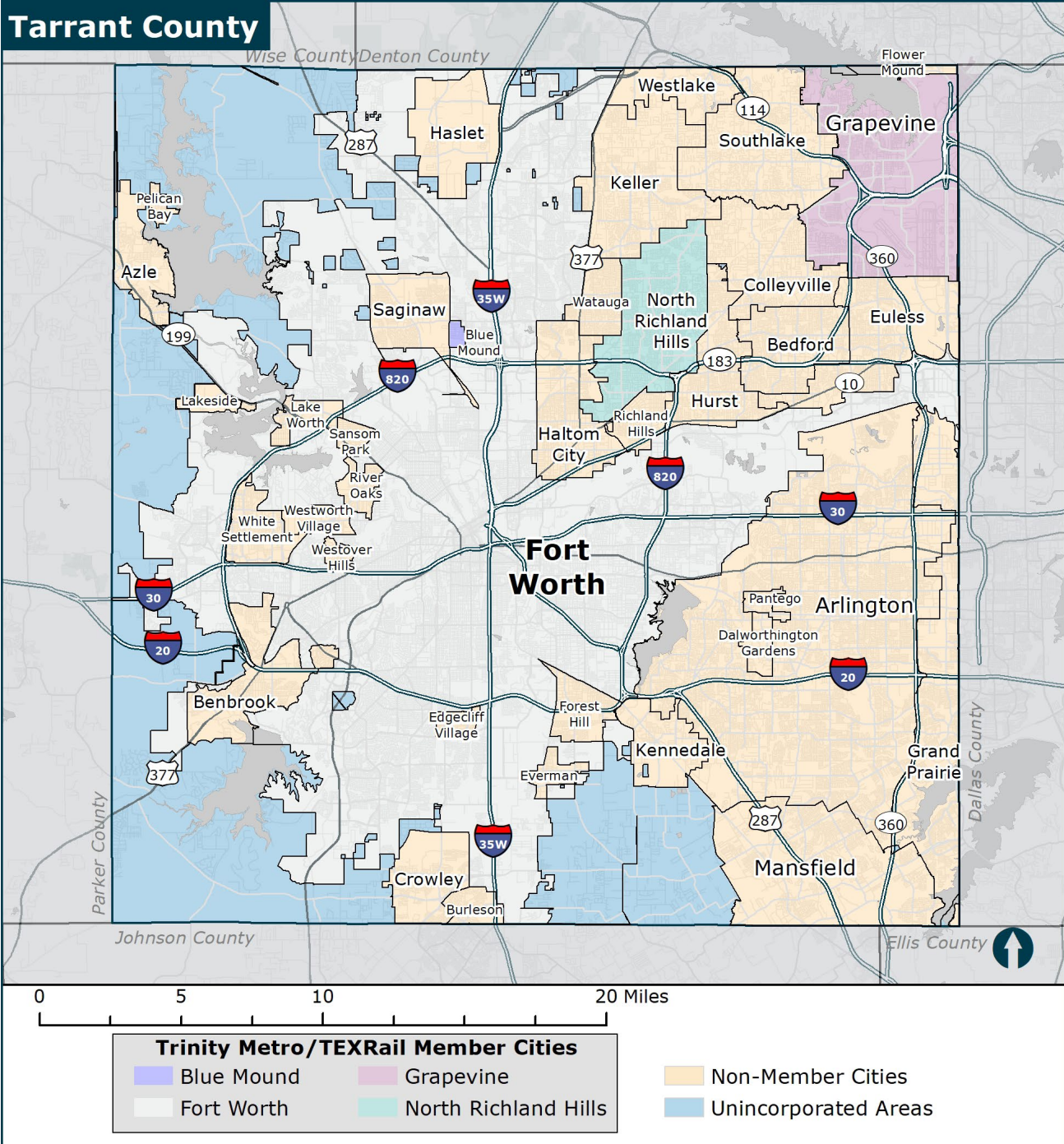
### THE TRINITY METRO SYSTEM MEMBER CITIES

Two cities currently make up the Trinity Metro System, which was formed as a special taxing transportation authority in 1983: Fort Worth and Blue Mound. Other cities can enter into financial agreements for the provision of service without adopting the half-cent transit-specific sales and use tax required to become a member city. North Richland Hills joined into an Interlocal Agreement with Trinity Metro in 2015 for the provision of commuter rail service; Grapevine has a similar arrangement. Forest Hills and River Oaks have funding agreements with Trinity Metro for the provision of fixed route bus service and ACCESS paratransit service. There are many portions of the study area that are unincorporated and are therefore not eligible to join the Trinity Metro system, and there are other cities within Tarrant County that are not part of the system (Figure 3.26).

NCTCOG’s 2014 Tarrant County Transportation Needs Assessment notes that many of the municipalities in Tarrant County already have reached the maximum taxing authority level of 8.25 percent, and thus cannot add additional sales tax to support transit funding.

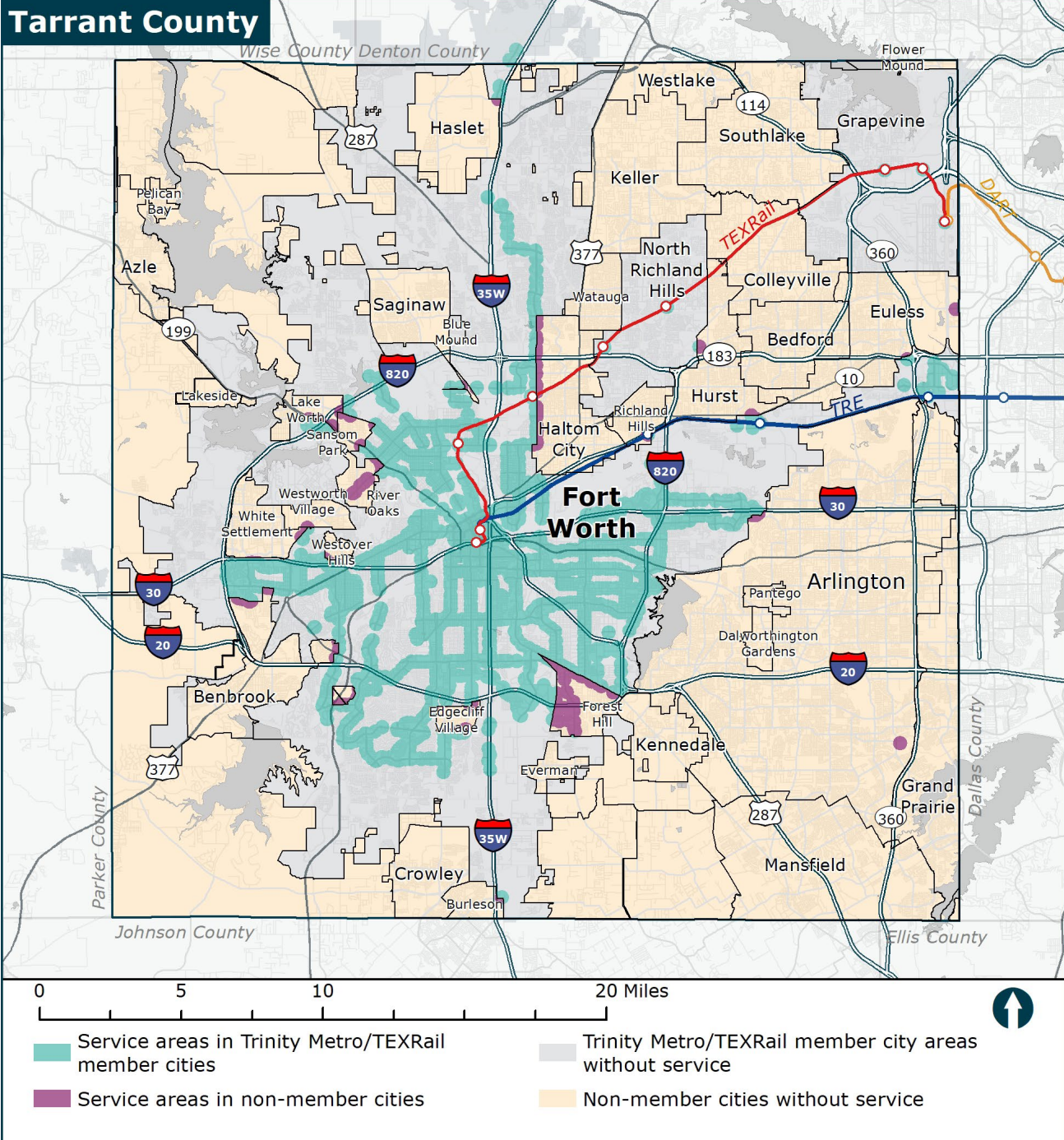
FIGURE 3.26 TRINITY METRO MEMBER CITIES

**Tarrant County**



The City of Fort Worth is served by commuter rail, bus routes, paratransit, and on-demand transit services. Blue Mound does not have fixed route transit, but ACCESS paratransit service is provided. North Richland Hills and Grapevine joined the system ahead of the creation of TEXRail and now have train stations for commuter rail service in their cities (Figure 3.27).

FIGURE 3.27 FIXED ROUTE SERVICE AREAS



Note: Service area is based on one-quarter mile radius around transit stops.

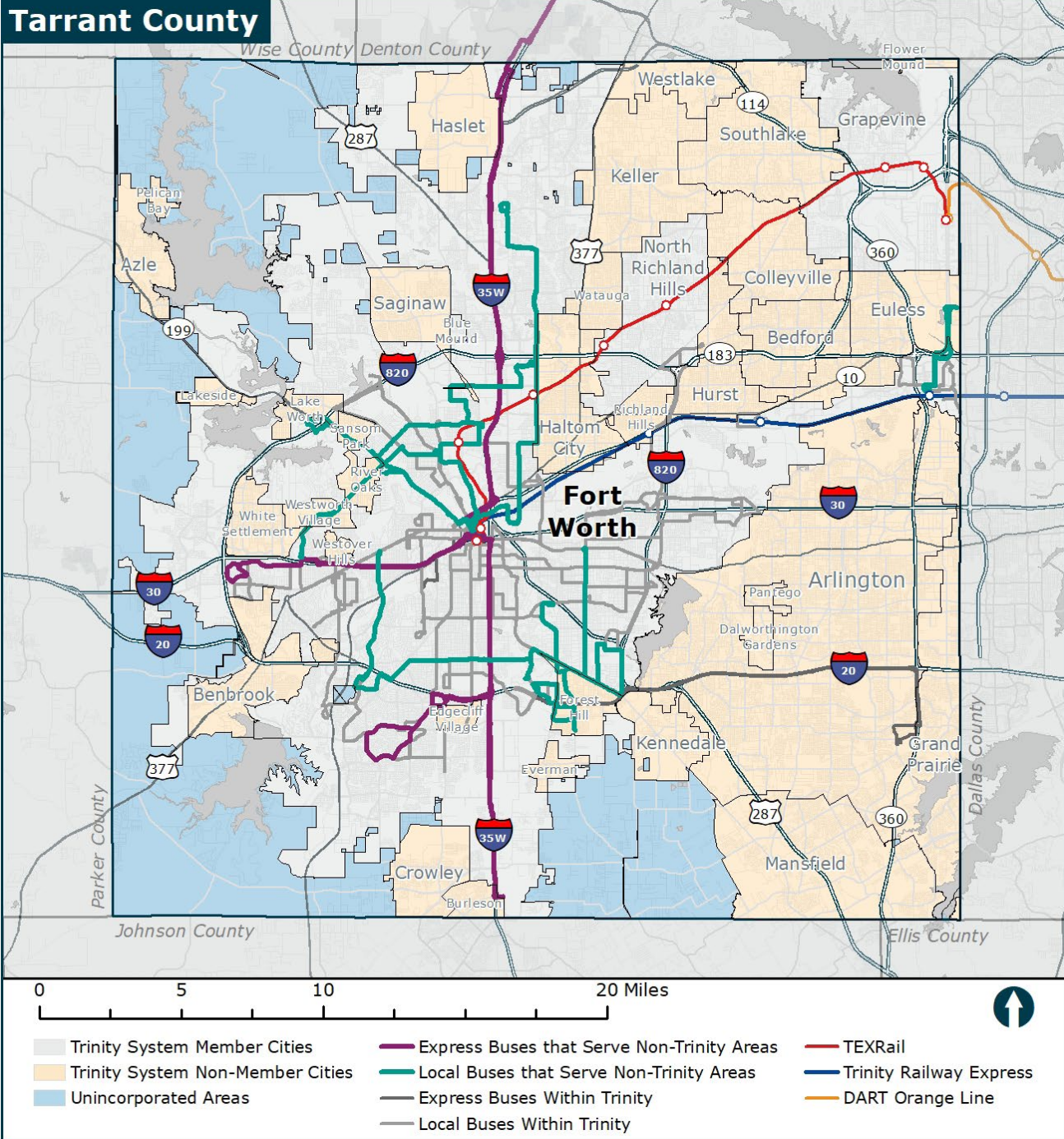
**TRANSIT SERVICE IN THE STUDY AREA**

Within the study area, commuter rail and fixed route bus service are complemented by demand-response transit (Figure 3.28). Both commuter rail lines run by Trinity Metro provide regional service for residents and businesses in the study area. Of the 49 bus routes operated by Trinity Metro, only 15 serve areas within or near the study area. Some Trinity Metro bus



routes traverse areas within the study area between areas of Fort Worth city limits, without providing service in the areas they traverse. Other fixed route systems are closer in characteristics to entertainment district shuttles, including systems in Grapevine and Arlington.

FIGURE 3.28 FIXED TRANSIT SERVICES IN TARRANT COUNTY



Trinity Metro’s half-cent sales tax presents a formidable obstacle to the addition of new member cities. However, the agency has other methods of providing service to cities than sales-tax-based membership.<sup>5</sup>

Trinity Metro has expanded service in the study area in the form of ZipZones, following on the plans for using shared mobility to fill in gaps in lower-density areas. Similarly, the City of Arlington, within the primary study area, has its own shared mobility transit service. The Via Arlington on-demand

service was created in 2017 to replace a fixed route bus service. Vanpools continue to be supported by Trinity Metro.

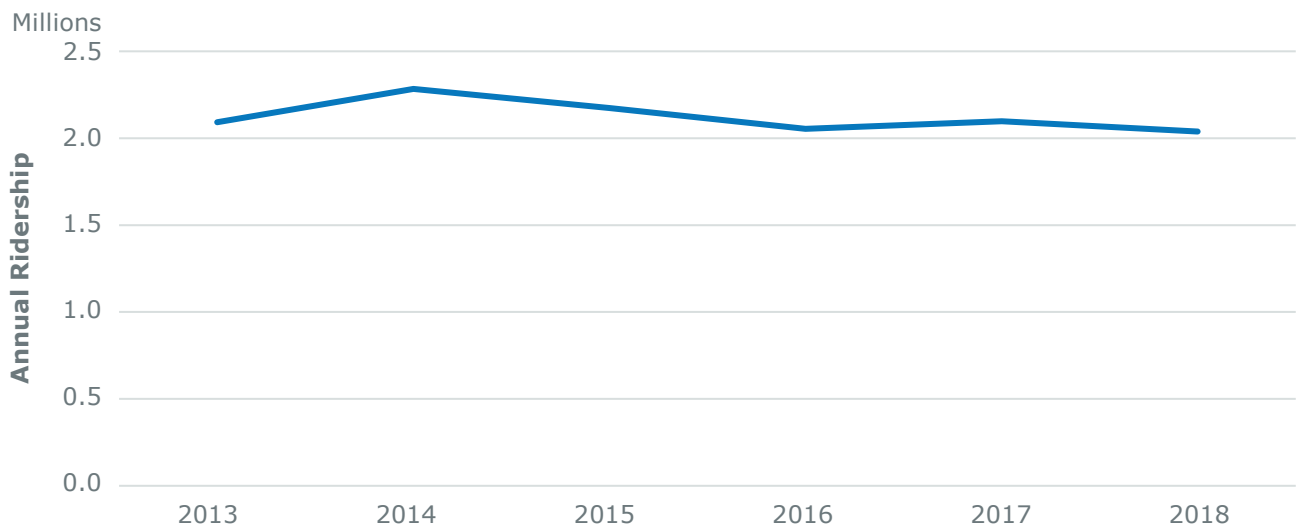
In addition to these on-demand and ride-sharing services that are available to the general public, demand-response transit services are available for specific prequalified portions of the population such as senior citizens or persons with disabilities, or for specific trip purposes such as attending job interviews.

**RECENT TRENDS FOR TRANSIT SERVICES**

In general—across Tarrant County, the region, and the Nation—transit ridership has fallen over the past five years. Many factors contribute to this decline; population growth continues in areas not well served by transit; demographic shifts in areas served by transit change the market for these services; external factors such as the cost of auto ownership and investment in automobile-oriented infrastructure; and general economic conditions.

Ridership on the TRE has been trending down from its high in 2014 (Figure 3.29), which has led to increasing costs per passenger (Figure 3.30). As passengers per revenue hour decline, but service is maintained at or near-constant levels, the cost per passenger increases. The TEXRail commuter service completed its first year of service just as the COVID-19 pandemic disrupted service, limiting the ability for planners to anticipate future ridership on this service.

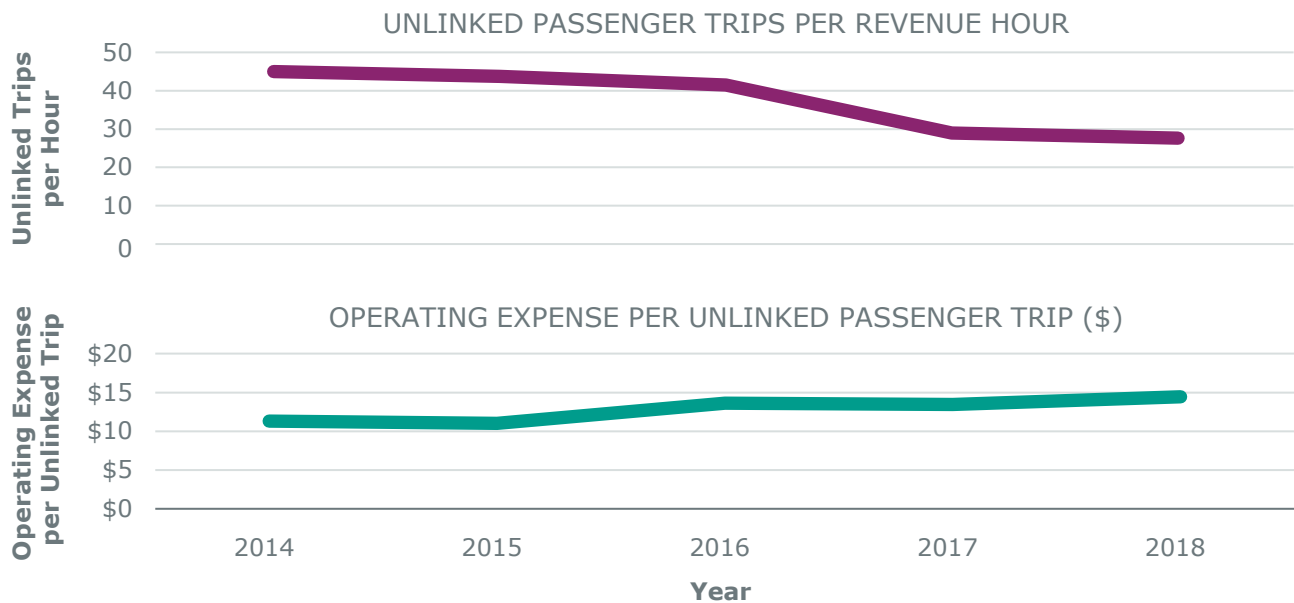
**FIGURE 3.29 TRINITY RAILWAY EXPRESS RIDERSHIP**



Source: National Transit Database (2014–2018).

<sup>5</sup> For a detailed discussions of sales tax and agency membership and/or partnership, see Chapter 5 and Chapter 6.

FIGURE 3.30 PERFORMANCE METRICS FOR THE TRINITY RAILWAY EXPRESS

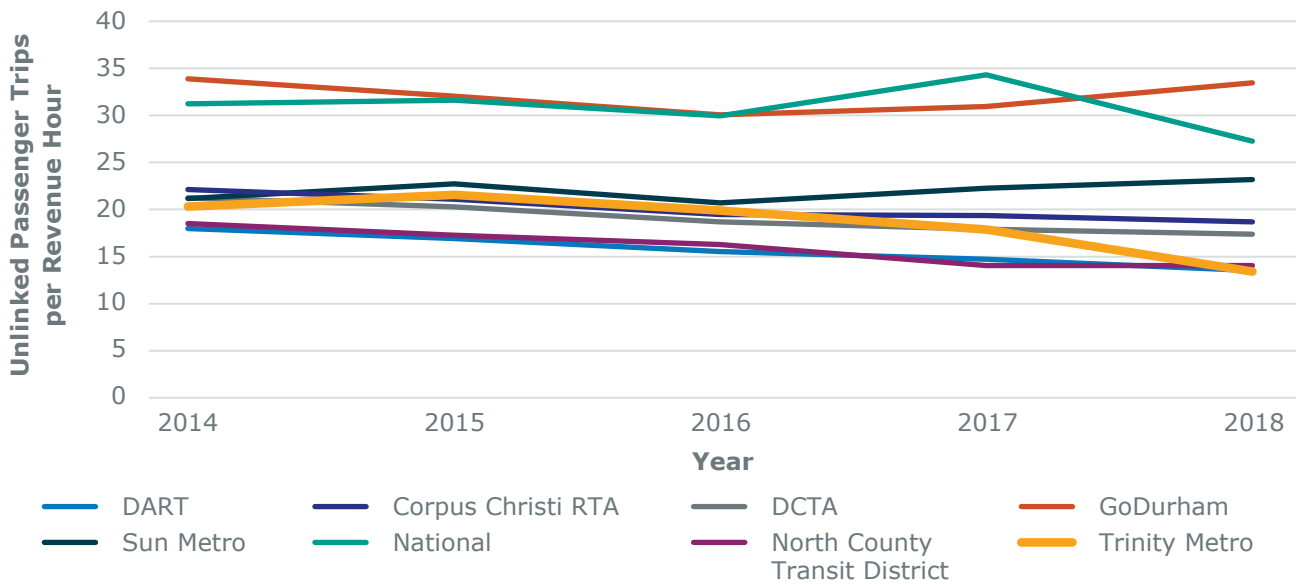


Source: National Transit Database (2014–2018).

In its analysis of ridership on Trinity Metro’s bus routes and transfer centers, the 2019 State of the System report noted that “concentrations of boarding activity occur along frequent transit routes in many of Fort Worth’s designated Urban Villages.” As growth occurs outside of these compact and walkable urban areas, increasing volumes of travel occur beyond the reach of the existing bus routes.

A comparison with other similar transit agencies, both in Texas and across the Nation, shows similar trends. These agencies are similar in size and levels of service and include transit systems in Dallas, TX (DART); Denton, TX (DCTA); Corpus Christi, TX (the Regional Transportation Authority); El Paso, TX (Sun Metro); as well as Durham, NC (GoDurham) and Northern San Diego, CA (North County Transit District). Ridership, as measured as unlinked passenger trips per revenue hour, are falling for most agencies, including Trinity Metro (Figure 3.31).

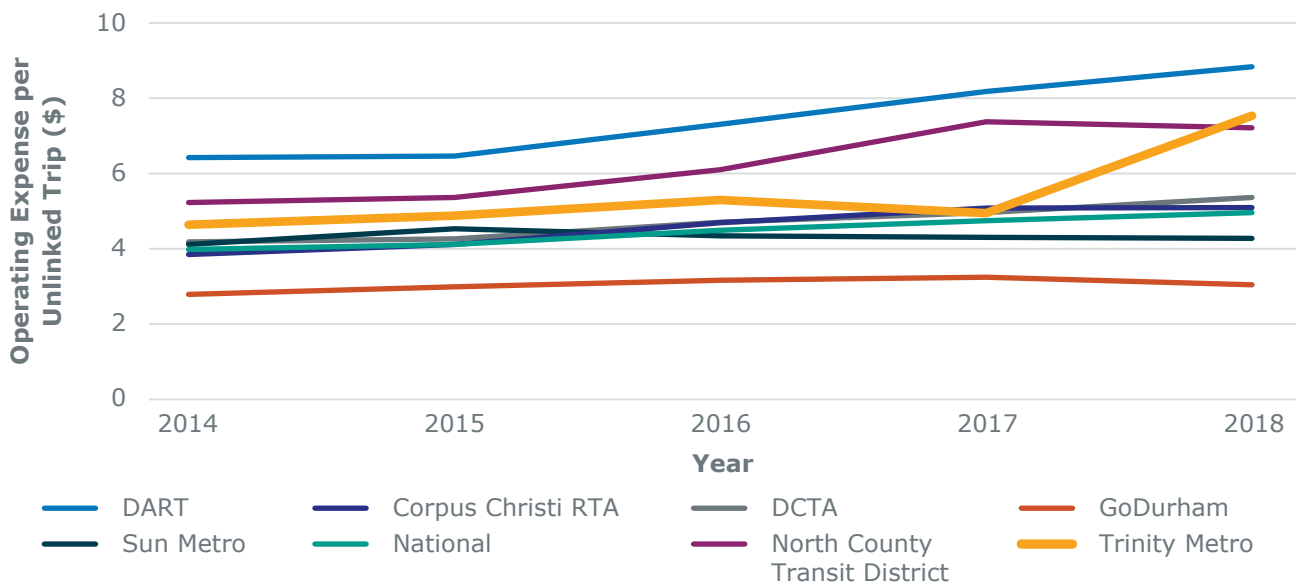
**FIGURE 3.31 BUSES: UNLINKED PASSENGER TRIPS PER REVENUE HOUR**



Source: National Transit Database (2014–2018).

Decreases in ridership present a challenge to transit agencies because the remaining riders still desire transit at frequencies that match their expectations for service. If transit agencies reduce service to match ridership, the result is a “vicious cycle” in which low ridership leads to further cuts in service. Therefore, transit agencies typically try to maintain levels of service at certain levels despite decreasing ridership. This leads to an increase in costs per passenger trip (Figure 3.32).

**FIGURE 3.32 BUSES: OPERATING EXPENSE PER UNLINKED PASSENGER TRIP**

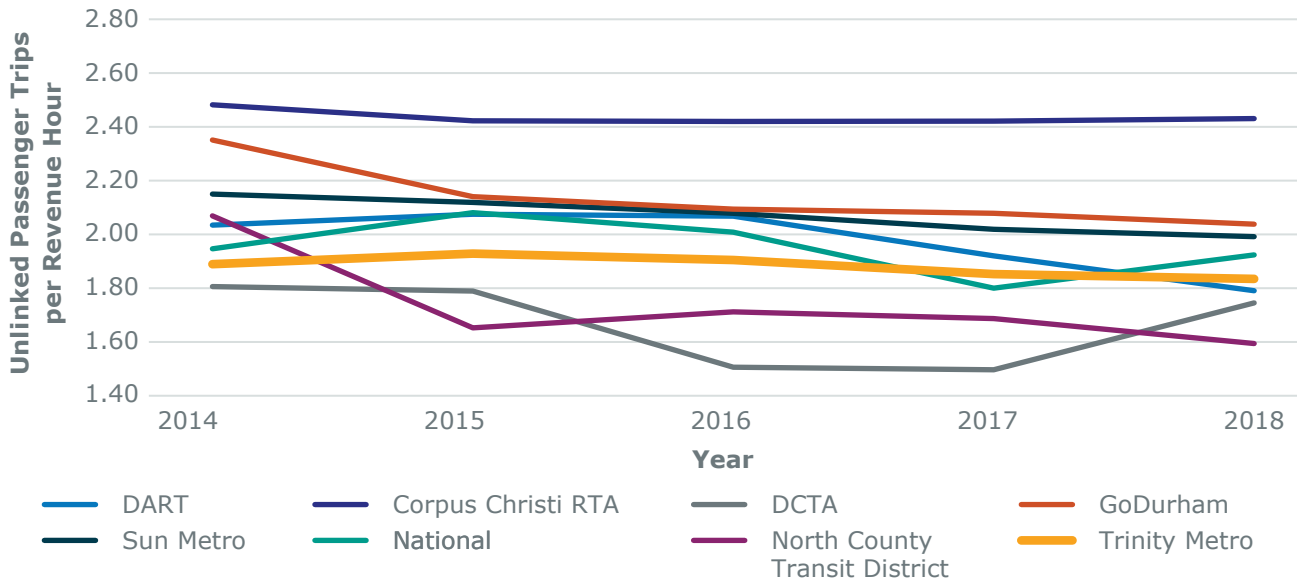


Source: National Transit Database (2014–2018).

While bus ridership is down and operation of bus services becomes less efficient, use of demand-response transit services has been steady during the same period. National Transit Database records for Trinity Metro’s demand-response paratransit service ACCESS shows a rate

of unlinked passenger trips per revenue hour that is slightly decreasing, though not as steeply as the figures for fixed route transit (Figure 3.33). Cost per passenger trip is therefore rising slightly (Figure 3.34).

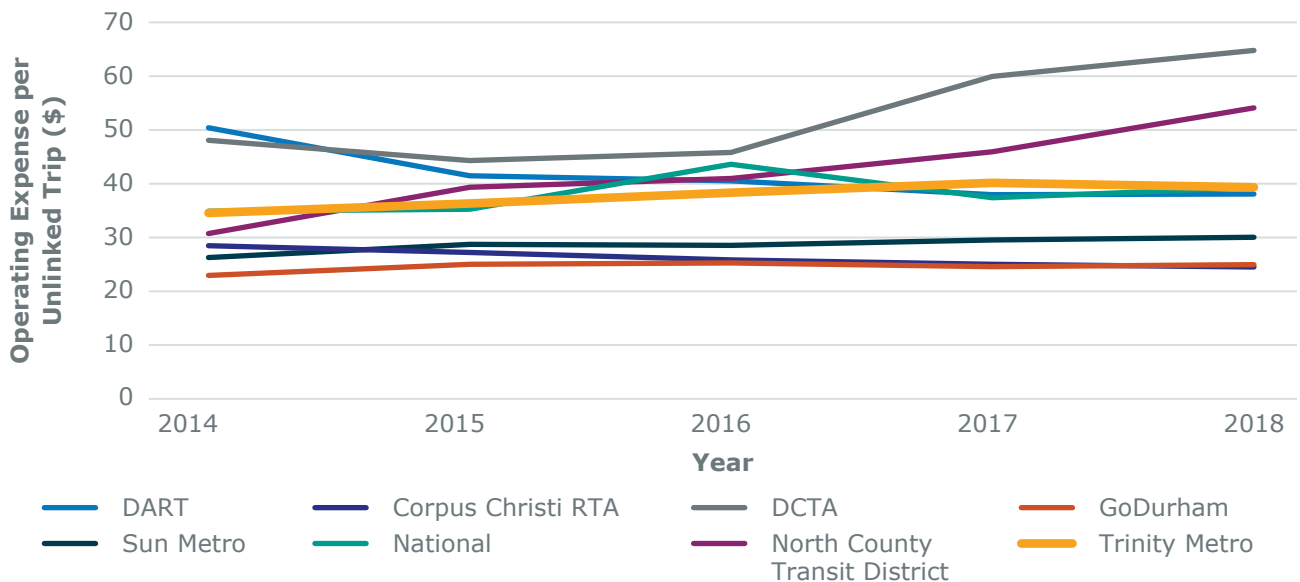
**FIGURE 3.33 DEMAND-RESPONSE: UNLINKED PASSENGER TRIPS PER REVENUE HOUR**



Source: National Transit Database (2014–2018).

Note: For the year 2014, North County Transit District’s demand-response performance metrics include data for demand-response taxi services that were discontinued in the years 2015–2018.

**FIGURE 3.34 DEMAND-RESPONSE: OPERATING EXPENSE PER UNLINKED PASSENGER TRIP**



Source: National Transit Database (2014–2018).

Note: For the year 2014, North County Transit District’s demand-response performance metrics include data for demand-response taxi services that were discontinued in the years 2015–2018.

While these figures represent data from 2014 through 2018, staff observation suggests that data for 2019 would be somewhat similar. 2020, however, will show a drastic difference for all these data. Ridership data show ridership dropping throughout 2020, and it is unknown when ridership levels might return to previous levels.

## REGIONAL TRANSIT SERVICE

The primary regional transit services available to residents of the study area are the two commuter rail lines and the express bus routes that provide travel across Tarrant County and the region. Express bus routes provide service across large distances at relatively fast speeds compared to local bus routes, oftentimes into Downtown Fort Worth. This is accomplished by using long nonstop portions that may utilize highways instead of local roads. Some of the express bus routes run by Trinity Metro exist solely within Fort Worth and are not very useful for residents of the study area because utilizing them would require driving miles into the terminal before boarding the bus, or taking a local bus to transfer to the express bus. However,

some of the express buses do serve residents of the study area.

### TRINITY RAILWAY EXPRESS

The TRE is a heavy rail service run by Trinity Metro and DART between the downtowns of Fort Worth and Dallas, with several stops in between (Figure 3.35). Stops serve portions of the North Richland Hills and the Middle Cities sector, the Grapevine and DFW sector, and the Arlington and the Eastern Suburbs sector, in addition to Greater Fort Worth. This service was established at the end of 1996, but service between the downtowns was only possible beginning in late 2001. The TRE runs on weekdays and Saturdays with a train every hour from beginning before 5:00 AM on weekdays and before 6:00 AM on Saturdays, ending after midnight.

Ridership is highest in and around the downtown areas of Fort Worth and Dallas, with a significant portion of ridership also occurring at CentrePort Station which serves the City of Arlington. Ridership is somewhat steady throughout the year but show a marked increase during October. In addition to professional basketball and hockey games occurring near the eastern terminus in Dallas, the State Fair in October draws large crowds to the train due to the lack of available parking within the vicinity of the fairgrounds (Figure 3.36).



FIGURE 3.35 TRINITY RAILWAY EXPRESS STATIONS

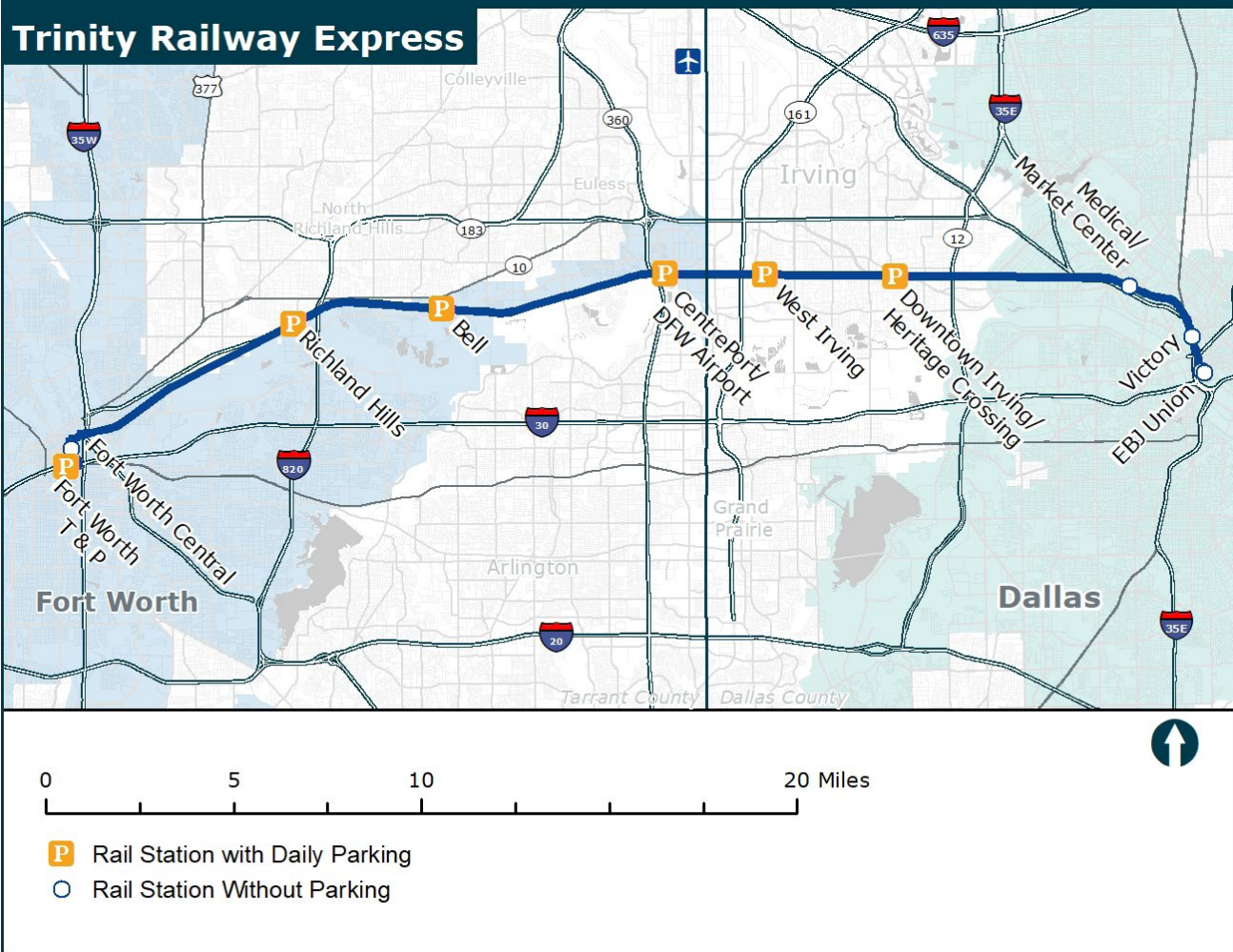
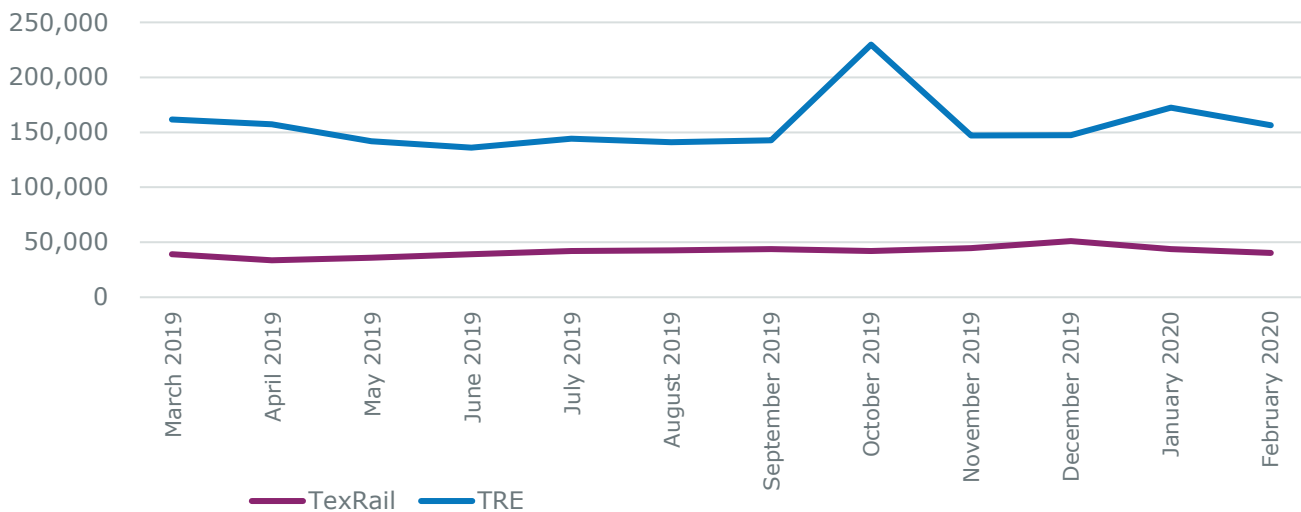


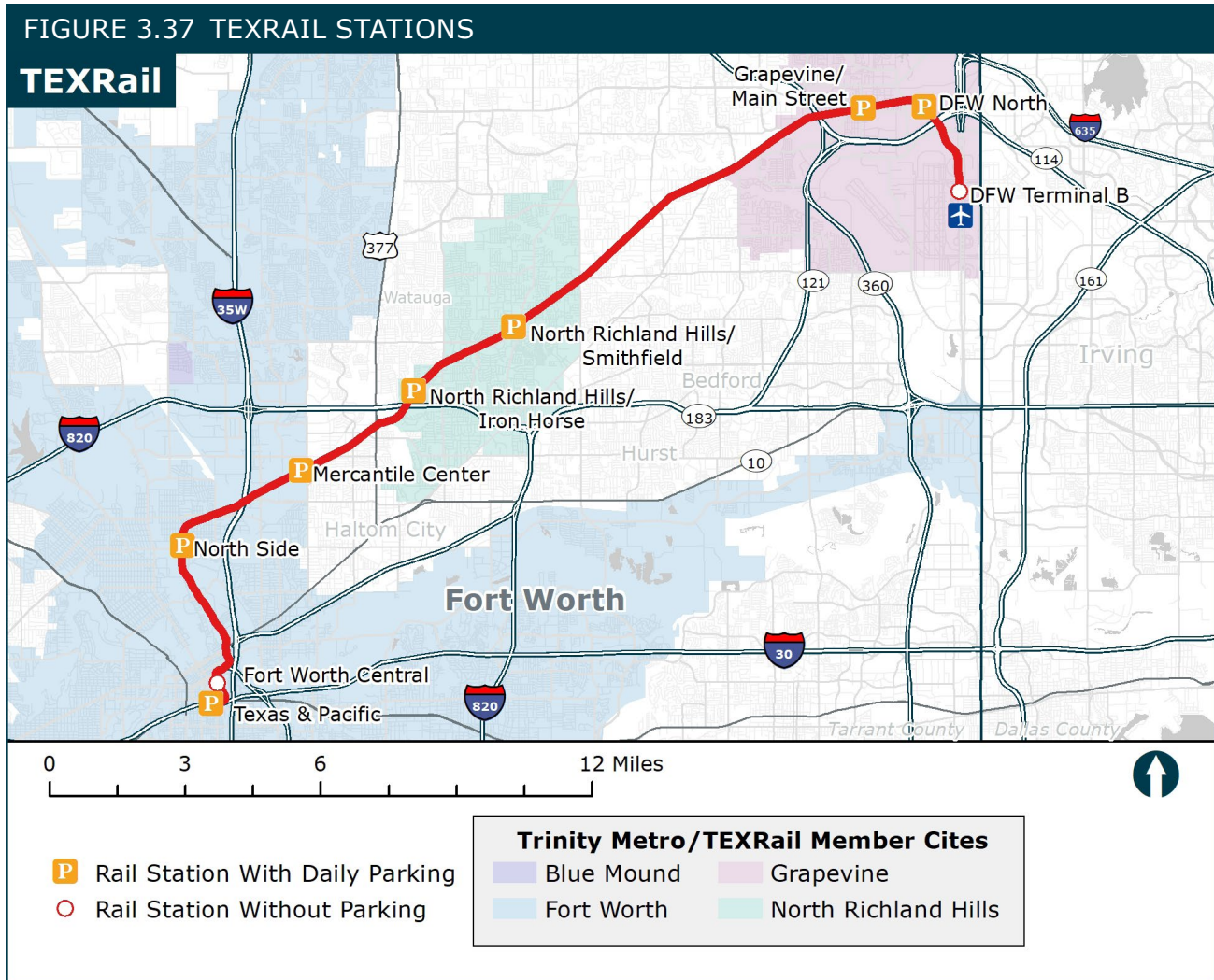
FIGURE 3.36 TEXRAIL AND TRE RIDERSHIP



Source: Trinity Metro (2019–2020).

## TEXRAIL

TEXRail opened in 2019 after years of work, with stops in Fort Worth, North Richland Hills, Grapevine, and Dallas/Fort Worth International Airport (Figure 3.37). The cities of North Richland Hills and Grapevine explicitly joined the TEXRail system to establish stations within their city limits. Neither city has Trinity Metro bus service; some sales tax revenues go to either land use/transit-oriented development investments or shuttle services. This service connects the Greater Fort Worth Sector to the North Richland Hills and the Middle Cities sector, as well as the Grapevine and DFW sector.



TEXRail operates service every half hour for several hours during the morning and evening peak and operates hourly outside of those peaks. The service is provided for all but a few hours overnight. The service is provided the same hours and schedule for Saturdays and Sundays as it is on weekdays, which is rare for a commuter rail line. TEXRail service began in 2019, but in 2020, travel behavior was disrupted by the COVID-19 pandemic. Monthly ridership was steady before the pandemic, hovering around 40,000 passengers, compared to TRE’s ridership hovering around 150,000 (Figure 3.36).



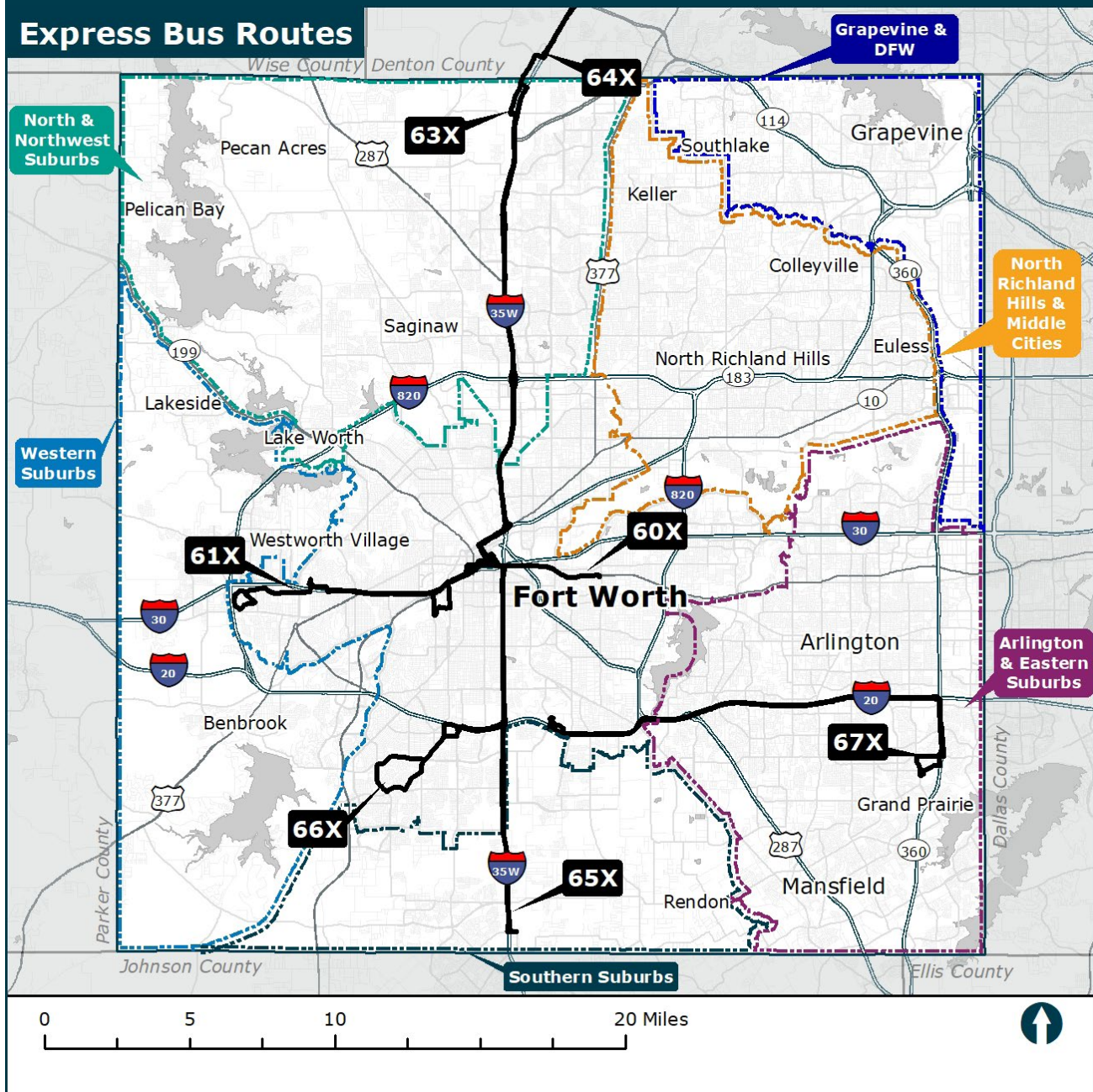
### **EXPRESS BUS SERVICE**

Express bus routes create regional connections, most often solely from outer suburban areas into the downtown of a region. Often these trips ferry passengers inbound in the morning and outbound in the afternoon. These routes often stop multiple times in an outer suburban area or a single transfer center before operating nonstop for some distance before dropping off passengers in the downtown.

Trinity Metro operates six express bus routes into Downtown Fort Worth, one of which begins in Denton, the 64X (Figure 3.38). Trinity Metro also operates an express bus that transports students and staff between two campuses of Tarrant County College, rather than operating into Greater Fort Worth. The 65X route brings passengers in from the southern suburbs. The 63X brings passengers in from the northern suburbs. The 60X, 61X, and 66X exclusively serve the Greater Fort Worth area, with the outer terminal of each route being near the edge of Greater Fort Worth.



FIGURE 3.38 EXPRESS BUS ROUTES



**Route 61X—Normandale Express**

This route operates six times a day and has an average ridership of 70 passengers per day, and average monthly ridership of 1,520 passengers. This route has the highest number of passengers per bus of any of the express buses.

The western terminus for this bus, the Ridgmar Mall Transfer Center, has a large

amount of ridership. There are 570 daily boardings split among 5 bus routes: 2, 26, 27, 61X, and 91. The other stops along the western part of this route have smaller boarding numbers, ranging from 0 to 50. Most of these stops are shared among other buses such as the 2, 26, and 27. There are only 3 stops that are only served by the 61X, which have daily boardings between 1 and 7 riders.

There is ample parking at the Ridgmar Mall Transfer Station. There are no other park-and-rides or public parking lots along the western part of the route. A number of the streets where the bus runs are adjacent to residential streets, with marked parking spaces for residents. This indicates that if residents of the study area use this route, they are likely accessing the service from the Ridgmar Mall Transfer Center.

The bus stops on the west end of the route are close to the community of White Settlement, roughly a quarter mile away. The 61X also is close to the community of Westover Hills, which is about a half-mile away at the closest point. Westover Hills is a geographically small community, and half of its census tract is in the Trinity service area.

#### **Route 63X—North Park and Ride**

This route has an average daily ridership of 35 people per day, which corresponds to 766 riders per month. This bus runs 5 times a day to and from Downtown Fort Worth (3 times in the morning and twice in the evening) with headways of 50 minutes in the morning and an hour in the evening. This corresponds with an average of 3.5 riders per trip.

This bus runs from the north near Haslet (not a Trinity Metro member) to Downtown Fort Worth. The most-used stop is the North Park and Ride stop, with 20 boardings. This stop is about three-quarters of a mile from the edge of Haslet. Another stop further north at Westport Parkway and Heritage Parkway, is directly on the border with Haslet in the northeastern corner of the city and has about 4 boardings per day. This stop is located outside of a small commercial zone with uses such as a restaurant, a convenience store, and an office building. The third and final stop in the northern part of this bus route is

located at Heritage Parkway and Horizon Drive which is further north of the Westport/Heritage stop. It has roughly three boardings per day. It is located just outside the southern edge of the Fort Worth Alliance airport, which has several office buildings.

#### **Route 64X—North Texas Express**

This route's daily average ridership is about 83 passengers per day or 1,806 passengers a month. There is a fair amount of variability in the month-to-month ridership numbers, with numbers peaking in October and falling in the summer months. This bus runs 10 times a day round trip with long headways of an hour and a half in between all day. That corresponds with four passengers per bus per day on average.

There are five stops in Denton, 8 stops near the Fort Worth Alliance Airport, one stop at the North Park and Ride, and 11 stops in Downtown Fort Worth. The stops in Denton have relatively low average daily boardings. The 8 stops near Fort Worth Alliance Airport have such low numbers of daily boardings that the bus likely skips many of them. All have 4 or fewer boardings per day. The bus then has one stop at the North Park and Ride stop, the same as the 63X. After this stop, it proceeds to Downtown Fort Worth.

#### **Route 65X—South Park and Ride Express**

This route has an average daily ridership of 60 people per day or 1,306 people per month. In the morning it only runs to Downtown Fort Worth and in the evening, it only runs from Downtown, with four buses in each direction with headways ranging from 21 minutes to 59 minutes. This corresponds with 7.5 people per trip.

This route's stops are split into three general areas, which can be classified from north to south as follows: 14 stops in Greater Fort Worth, five stops on

South Freeway near the cities of Edgecliff Village and Everman, and a stop at the southernmost point (the South Park and Ride).

The bus stop most useful to residents of the study area is the southernmost stop at the South Park and Ride. As it is a park and ride, it has ample parking. This stop is on the border with Burleson, which is in the study area. It also is located close to Rendon, which is about a mile away, though residents would have to go around Fort Worth Spinks Airport to get from there to this bus stop. This stop has roughly 28 daily boardings and is only served by the 65X bus.

#### **Route 66X—Candleridge/Altamesa Express**

This bus has an average of 22 passengers per day or 485 passengers per month. It runs twice in the morning only to Downtown Fort Worth and twice in the evening only from Downtown. Headways are 45 minutes in the morning and 35 minutes in the evening. These numbers correspond with about 5 passengers per trip.

## **LOCAL BUS SERVICE**

Fifteen Trinity Metro bus routes serve locations in or near the study area. Some of these areas benefit from proximity to the City of Fort Worth. Cities that are not member cities of the Trinity Metro system can develop funding agreements for the provision of service within their borders, as in the case of Forest Hill and River Oaks. Peripheral areas outside of Greater Fort Worth may receive some access to the rest of the network, but with a lower frequency of local bus service, connectivity across the region is limited.

There are 6 stops for this route that are within a half mile of the north and west sides of Edgecliff Village. These stops have roughly 28 daily boardings total. These stops are located along a commercial corridor, lined with strip malls and parking lots. There is a small parking lot close to the McCart Avenue and Westcreek Drive stops.

#### **Route 67X—Trinity County College Express**

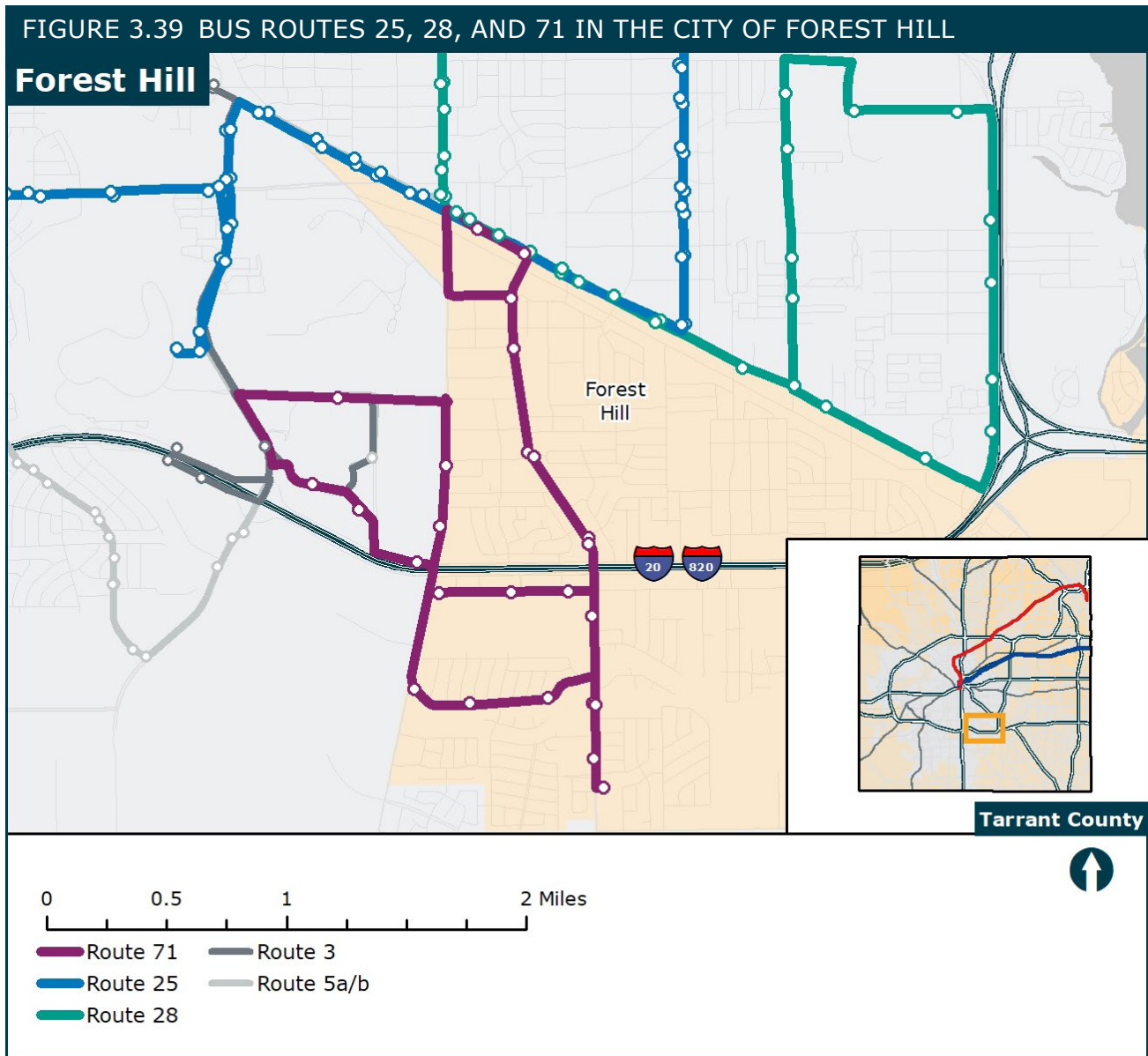
This bus route serves two campuses of Tarrant County College, the South Campus and the Southeast Campus. The travel path between the two campuses is not served, and instead, the bus runs closed-door service through the communities in between without stopping. This bus has an average daily ridership of 15 passengers per day or about 318 passengers per month. This bus runs with headways of an hour and a half from 5:35 AM through 8:55 PM, 22 trips in total. That corresponds with less than one passenger per trip.

### FOREST HILL

Feeder bus route 71 has many stops within Forest Hill (Figure 3.39). Connections exist at each end of the route, at the Foodland on Mansfield Highway and the South Campus of Tarrant County College. Service is hourly from 7:00 AM to 7:00 PM on weekdays and 8:00 AM to 6:00 PM on Saturdays. Route 71 has between 20 and 30 boardings in Forest Hill on an average weekday.

Bus route 28 on Mansfield Highway provides local hourly service, like Route 71. It is only available to Forest Hill residents living near Mansfield Highway. Route 28 has between 50 and 65 boardings in Forest Hill on an average weekday.

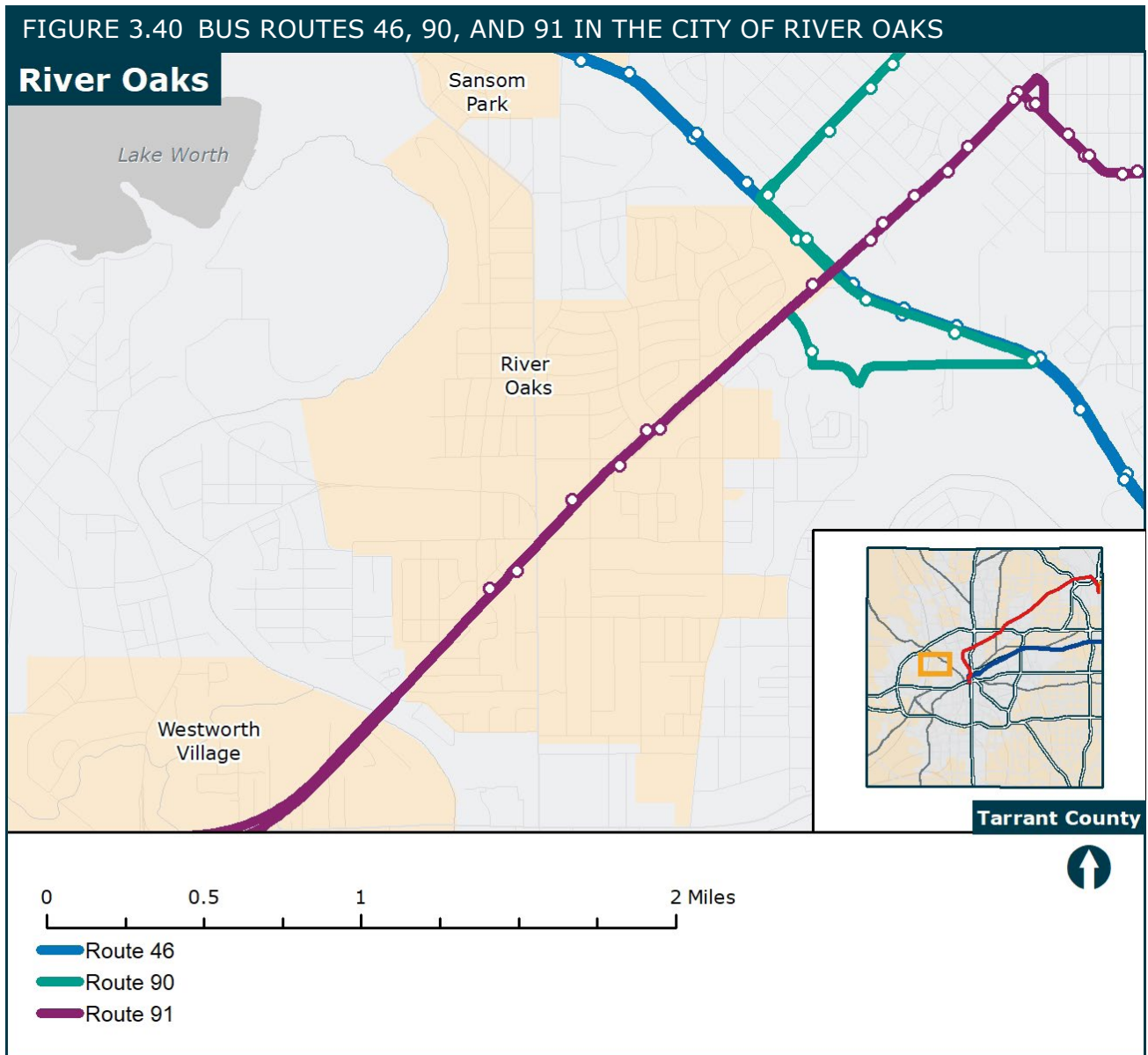
Similarly, available to residents of Forest Hill located near Mansfield Highway, Crosstown bus route 25 provides fair access to other parts of Tarrant County without being oriented towards Downtown Fort Worth. This service operates every half hour during much of the day on weekdays and hourly on weekends. Route 25 has between 1,000 and 1,400 boardings in Forest Hill on an average weekday.



### RIVER OAKS

Crosstown bus route 91 has three stops in each direction along River Oaks Boulevard within the city limits of River Oaks (Figure 3.40). The route provides connections between the Ridgmar Mall bus terminal and the Stockyards. It operates every half hour through much of the day on weekdays, and likewise provides service most of the day on weekends as well. Route 91 has an average of approximately 160 boardings in River Oaks on an average weekday.

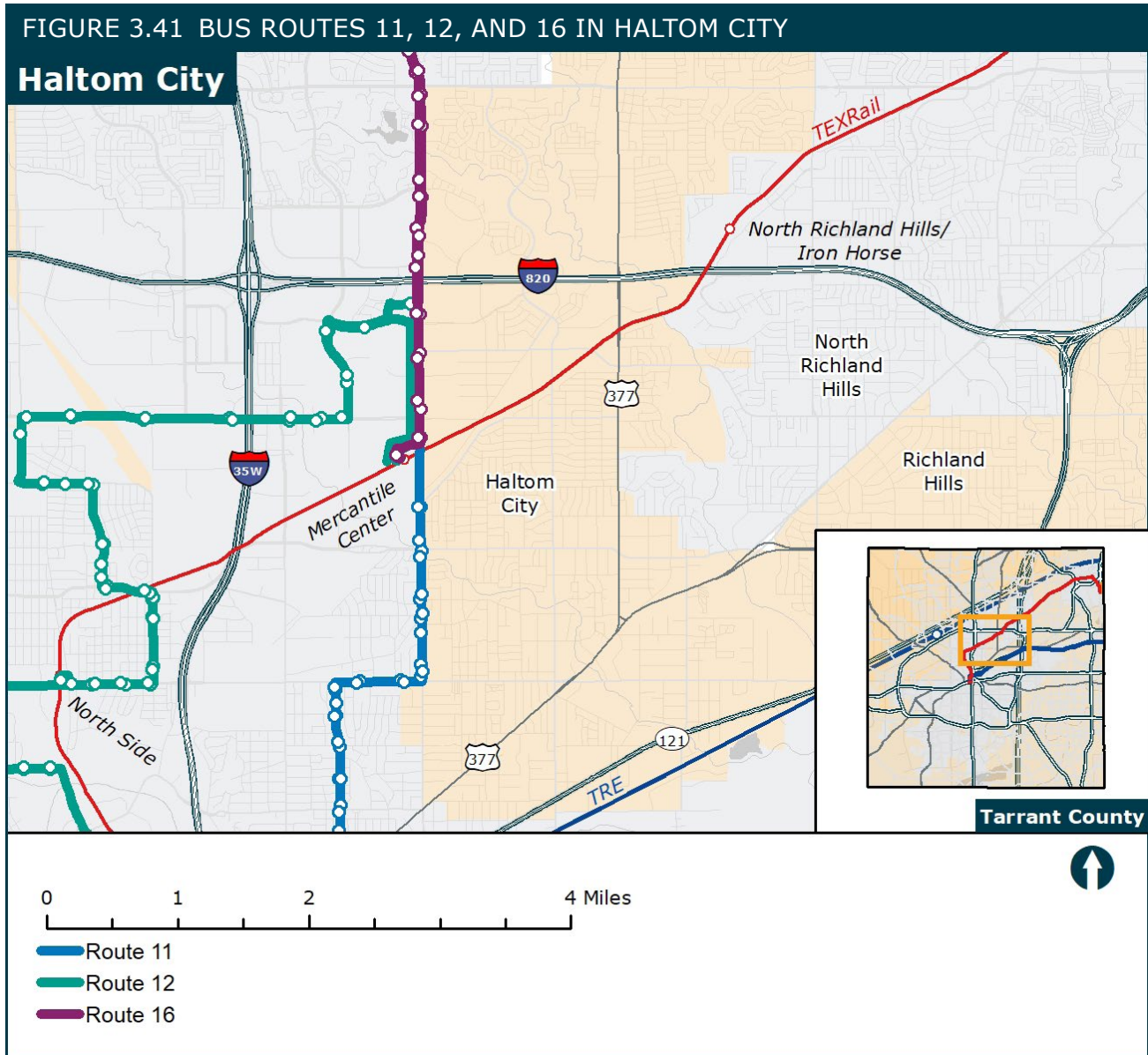
Radial bus Route 46 and crosstown bus route 90 have stops located adjacent to the northeast corner of the city, providing some additional connective service. Route 90 connects from the Walmart just east of River Oaks city limits along Long Avenue to Diamond Hill. Route 46 has an average of approximately 475 daily boardings in the area near River Oaks on an average weekday. Route 90 has an average of approximately 50 boardings in the area near River Oaks on an average weekday.



### HALTOM CITY

Haltom City is not a Trinity Metro member city and does not maintain a municipal funding arrangement with Trinity Metro. The bus service along the western edge of Haltom City consists of routes operating along North Beach Street, the city limits

boundary between Fort Worth and Haltom City. Similarly, the adjacency of the Mercantile Center benefits residents of Haltom City with the presence of the Mercantile Center Station of TEXRail, which provides service into Fort Worth or to Dallas/Fort Worth International Airport (Figure 3.41).



The bus routes that serve Haltom City are all radial routes. Route 11 operates between Downtown Fort Worth and the Mercantile Center every half hour from around 6:00 AM to 10:30 PM on weekdays, and 7:00 AM to 10:30 PM on weekends. It has about 300 boardings per average weekday in and around the Haltom City area. Route 16 operates between Mercantile Center and Alliance Center every half hour from around 5:30 AM to 11:00 PM on weekdays, and 6:30 AM to

11:00 PM on weekends. It has about 75 boardings per average weekday in and around the Haltom City area. Route 12 operates between Downtown Fort Worth and the Mercantile Center every half hour from around 5:30 AM to 11:00 PM on weekdays, and 6:30 AM to 11:00 PM on weekends and has about 200 boardings per average weekday in and around the Haltom City area.

### **OTHER LOCAL BUS SERVICE IN THE STUDY AREA**

One Trinity Metro bus route, which originates at an Albertsons off I-820 and I-30 in eastern Fort Worth, serves the Richland Hills TRE station and then runs nonstop to the Tarrant County College Northeast Campus. A feeder, Route 23 operates hourly from approximately 5:30 AM to 10:30 PM only on weekdays. Residents of the study area near the Richland Hills TRE station can take advantage of the proximity to the station to take advantage of this bus route.

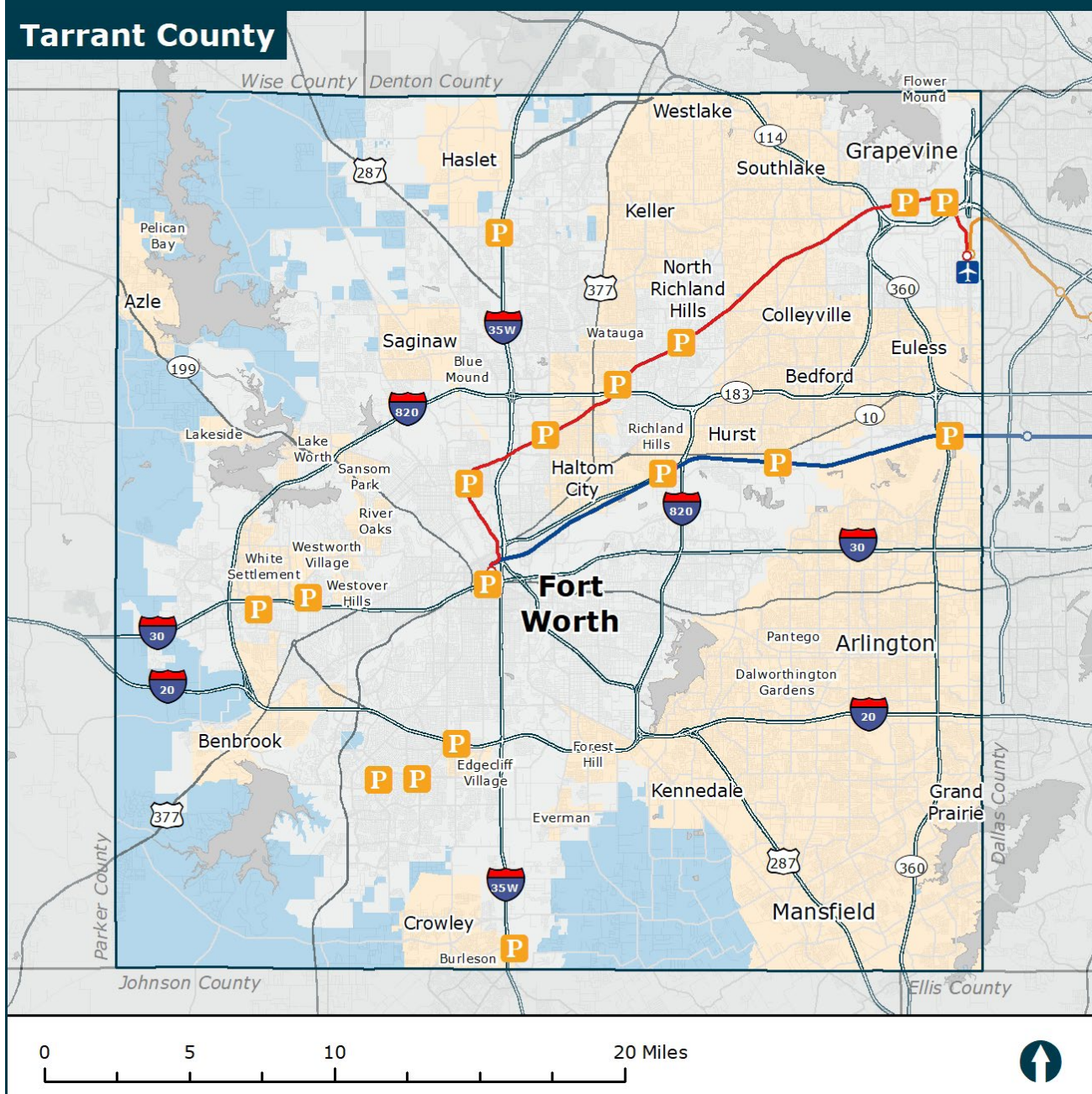
A corner of Benbrook, specifically the Cross Creek Ranch, Greenwood Creek, and Trinity Oaks apartment complexes, is served by Route 32, a Crosstown. Route 32 operates hourly from approximately 7:00 AM to 8:00 PM on weekdays and 7:00 AM to 9:00 PM on Saturdays. Also, where Benbrook borders Western Hills neighborhood, there is a Feeder bus route, Route 26, with service to the Ridgmar Mall Transfer Center. The route operates every half hour from approximately 5:30 AM to 11:30 PM every day.

### **PARK AND RIDE IN SUPPORT OF TRANSIT**

The challenges of serving increasing population growth beyond the area traditionally served by fixed route bus service have led to a focus on longer-distance trips combining bus service with a trip by automobile. Park-and-Ride locations have been established throughout Tarrant County that facilitate trips into Downtown Fort Worth (Figure 3.42). These Park-and-Ride locations exist at many of the stations for the two commuter rail lines, with easy transfers onto the trains. Park-and-Ride locations also exist in areas that are not served by commuter trains but instead express bus routes, designed to create a similarly direct trip into Downtown Fort Worth after having traveled from outer areas to the Park-and-Ride location.



FIGURE 3.42 PARK AND RIDE LOCATIONS



## DEMAND-RESPONSE AND SHARED RIDE SERVICES

Fixed route transit services have been complemented by services that operate with a flexible route and schedule for decades. The most common demand-response service type is paratransit, which is required by the Americans with Disabilities Act (ADA) and the FTA provide service equivalent to noncommute, fixed route bus service. Many social and nonprofit transportation services exist as well, providing rides for people based on age, disability, or income. Federal grants are available for the provision of these services. Ridership on these services have been

steady over the years as they continue to provide essential service to Tarrant County residents. Additional services include the organization of vanpools by matching rides among commuters.

In the last five years, many public transit agencies have taken advantage of the technology and platforms created by Transportation Network Companies (TNC) and microtransit on-demand scheduling software to create new on-demand services that offer first-mile/last-mile enhancements to existing fixed route service or to replace low-performing fixed route services. There have been several on-demand services initiated in the region in recent years, and ongoing transit planning strategies will likely include the introduction of more on-demand service offerings.

There are five zones for on-demand services in Tarrant County (Figure 3.43). Paratransit service is available in Fort Worth, Arlington, River Oaks, Blue Mound, and Forest Hill. Demand-response services are available in many parts of the county, with specific programs for specific areas.

## ON-DEMAND TRANSIT SERVICES

### Overview

On-demand transit services typically include real-time information communicated to customers and provides a variety of trip options. Agencies have expanded the system integration technology capabilities to add mobile payment and ticketing, like the DART GoPass.

Typically, on-demand services are primarily focused on first-/last-mile connections, such as transit stations or places of employment. These services are based on connecting frequency and efficiency goals, such as cost per rider. On-demand services can also support community connections in areas with lower density and public transit demand. The success of these services is gauged by the ability to make connections to schools, health services and overall quality of life mobility.

Many on-demand services are launched as pilots, with agencies gauging their value and deciding whether to commit to ongoing participation. Although grant and short-term funding sources are commonly available, the long-term question is often if these services will continue to be integral mobility components for communities. Important public sector agency considerations are related to equity and accessibility, ensuring

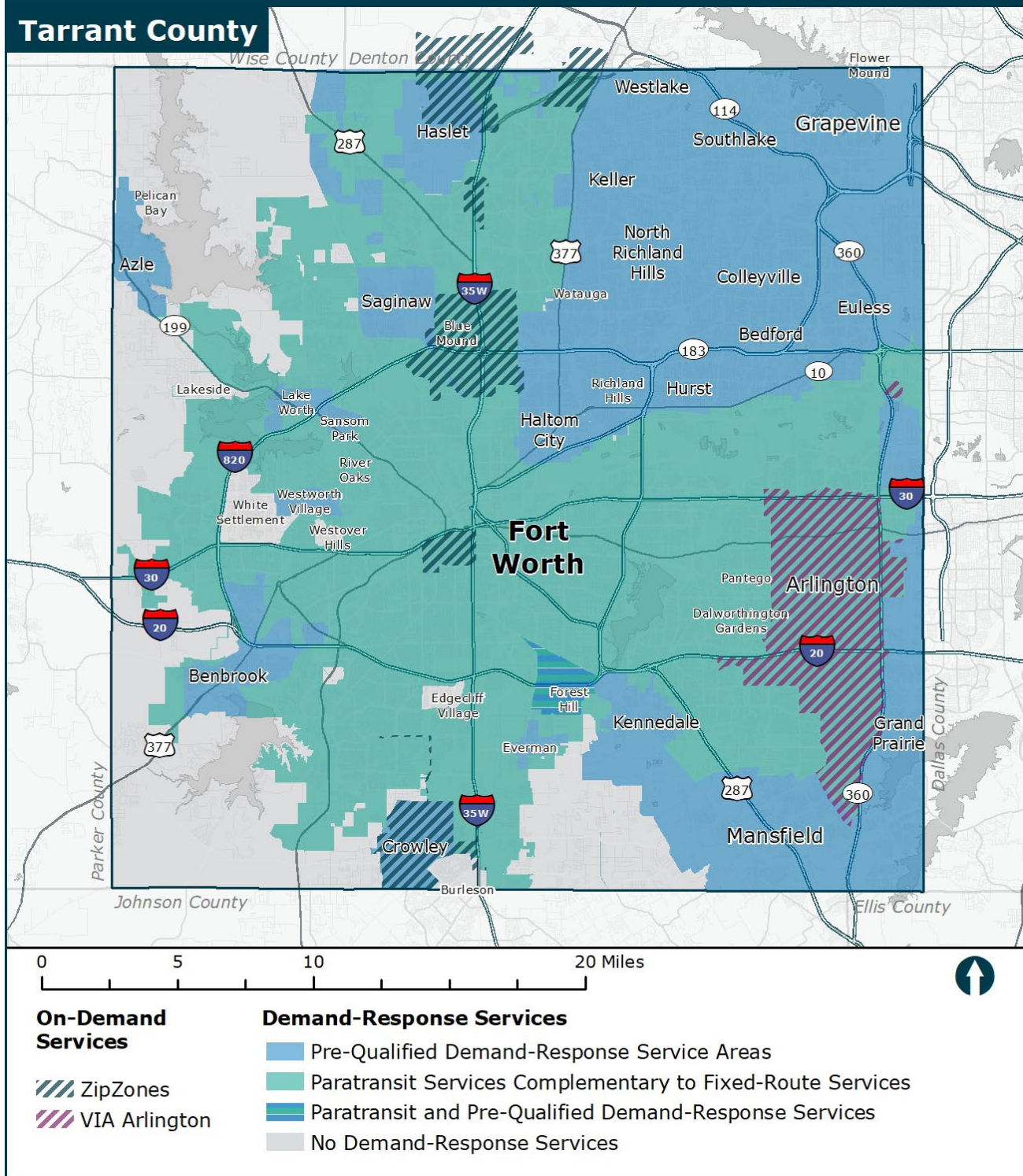
services are available to all, such as those without smartphones or credit cards and persons with disabilities.

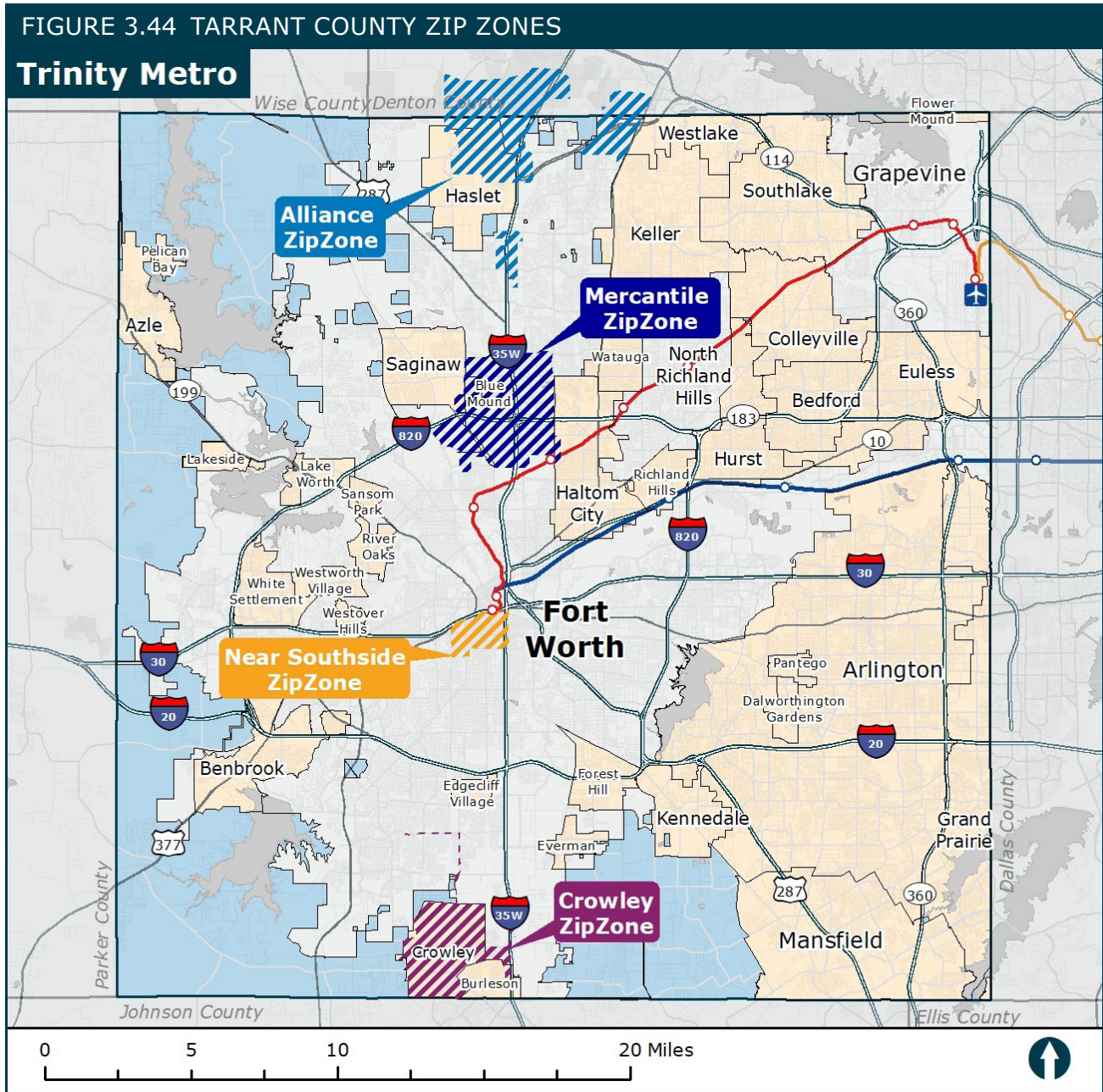
### On-Demand Rideshare in Tarrant County

On-demand transit within Tarrant County is not restricted to prequalified individuals, but rather available to the public, and it is available without advance notice. On-Demand Rideshare currently exists in Tarrant County through two programs: ZipZones operated by Trinity Metro in and around Fort Worth acting as extensions of fixed route transit services, and Via Arlington, which replaced a fixed route service.

There are four ZipZones currently in operation: Alliance, Mercantile, Crowley, and Near Southside (Figure 3.44). These on-demand services are limited to pre-established service areas with specific borders. Within these borders, rides are available by using an application on a smartphone to request a ride. Some are operated as part of other generally available TNC operations, some have dedicated fleets. Some of these on-demand transit services are operated within the Trinity Metro service area, some are operated in the study area, and some cross-city limits and county boundaries. Each ZipZone has a different funding source.

FIGURE 3.43 ON-DEMAND SERVICES IN TARRANT COUNTY

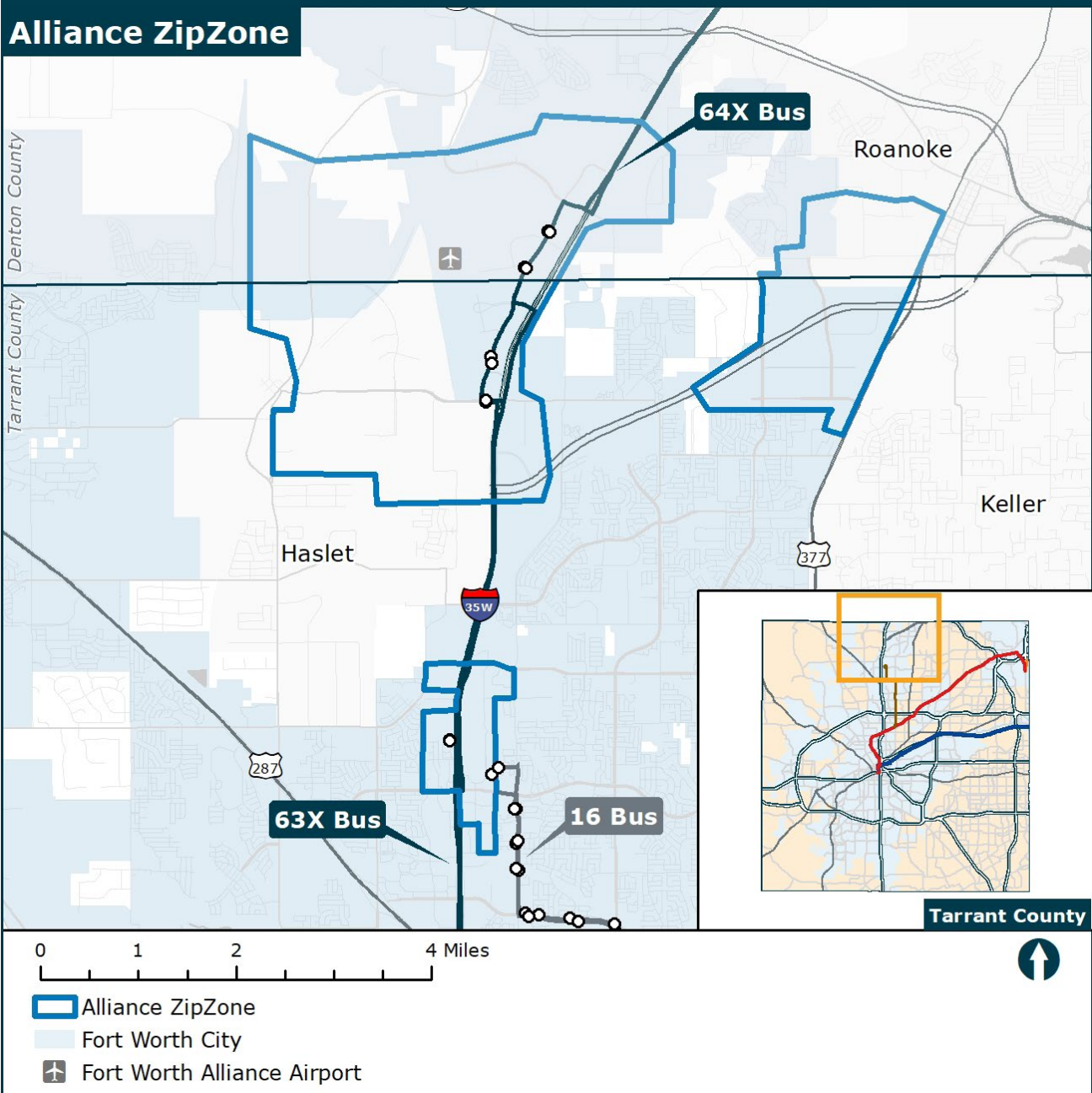




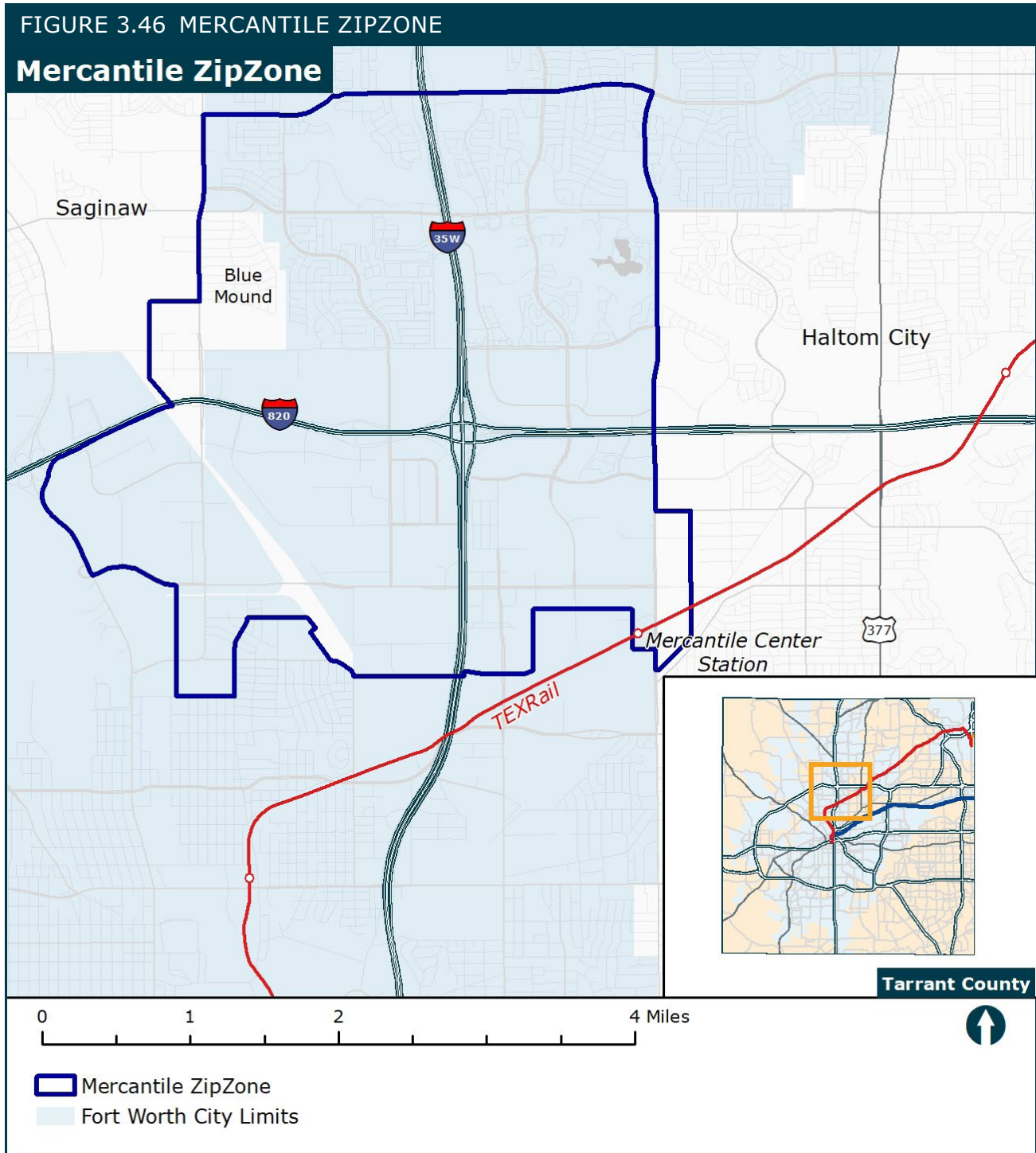
The first ZipZone launched was the Alliance ZipZone, which was launched in February 2019 in the area around the Alliance Airport (Figure 3.45). This first-mile/last-mile solution is run in partnership with Lyft. This ZipZone consists of three noncontiguous areas, with access to the area provided by bus routes 16, 63, and 64. Hours of operation are 4:30 AM to 7:30 PM on weekdays, but only during the peaks on weekends from 5:30 AM to 7:30 AM and 4:00 PM to 7:30 PM Bus riders use the Lyft app once they’ve arrived in the ZipZone to order a ride, which is part of the cost of the transit ticket.

FIGURE 3.45 ALLIANCE ZIPZONE

**Alliance ZipZone**

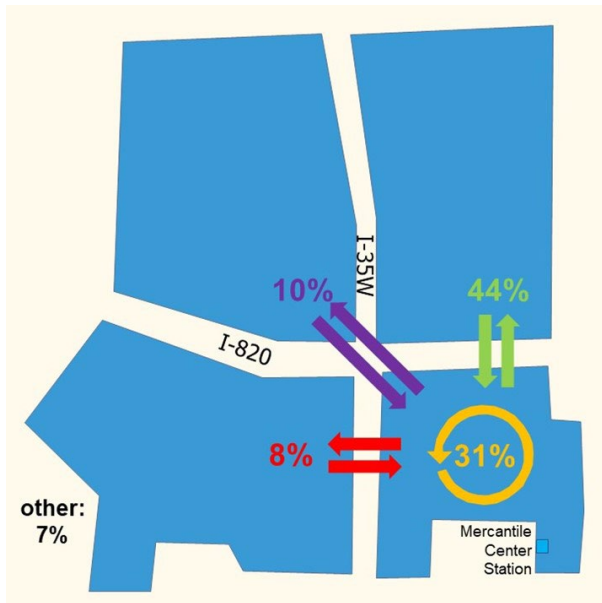


The Mercantile ZipZone was launched in July of 2019. The Mercantile Center Station on the TEXRail line is the focus of the ZipZone, with more than half of the trips (57 percent) taken in the ZipZone beginning or ending there (Figure 3.46). Bus routes 11, 12, and 16 also serve the ZipZone. The hours of operation are 5:30 AM to 9:00 PM on weekdays only. The service is operated by a dedicated fleet of branded vehicles, in partnership with Via Transportation, Inc., a TNC that operates in multiple markets as a transit agency partner providing subsidized first-mile/last-mile services. Requests for a ride are made in the Trinity Metro ZipZone app.



The Mercantile ZipZone is split roughly into four quadrants, split from north-to-south by I-820, and split east-to-west by I-35W (Figure 3.47). The Mercantile Center Station is in the southeast quadrant, and most trips within this quadrant cost \$1.00. All other trips cost \$3.00. The \$1.00 fare is the result of the local developer for this area subsidizing \$2.00 out of the \$3.00 fare for trips within the development.

**FIGURE 3.47 TRAVEL BETWEEN  
MERCANTILE ZIPZONE**

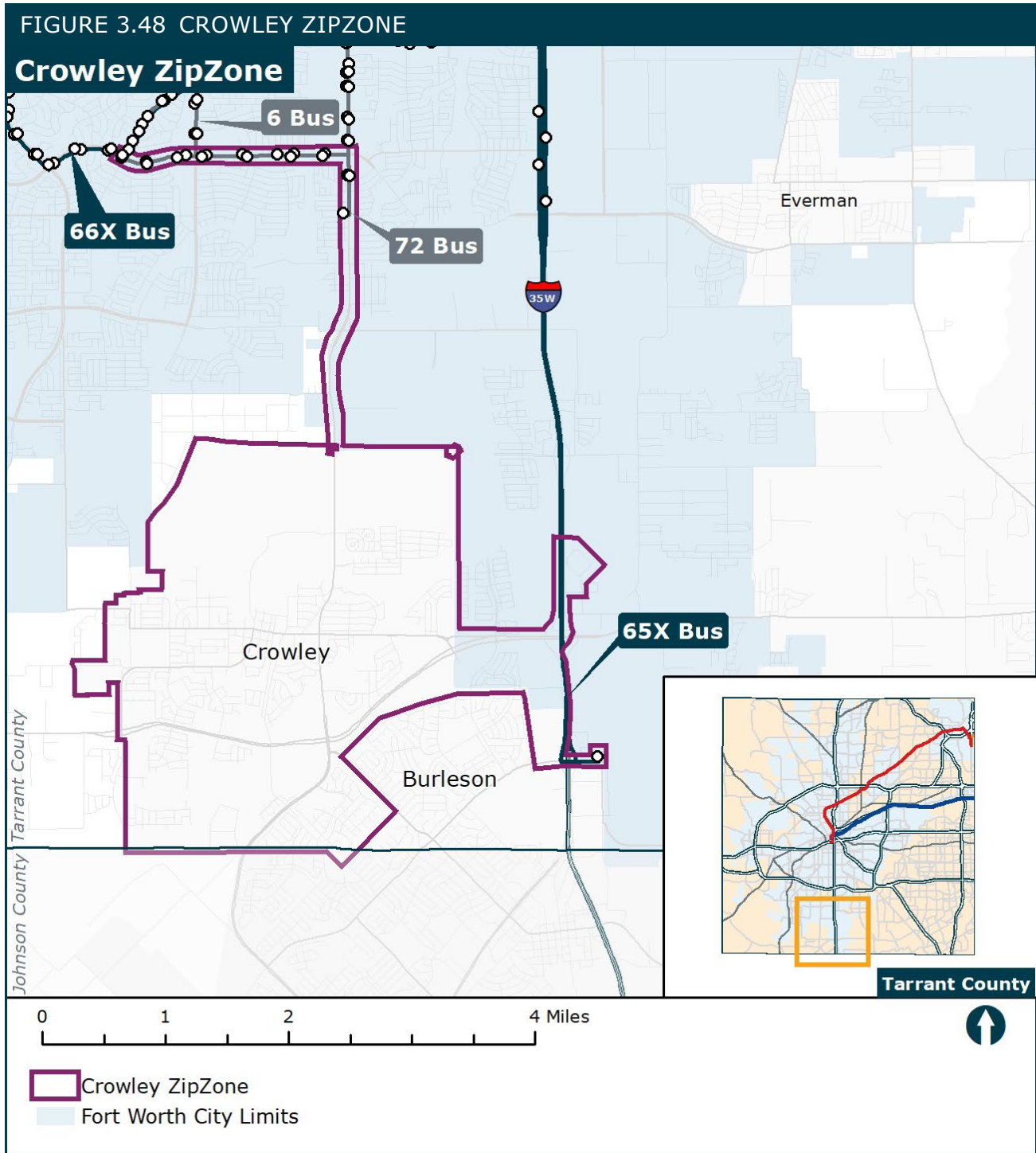


This ZipZone provides first-mile/last-mile connectivity, paired with the regular and somewhat-frequent fixed route rail line launched in 2019, TEXRail. Thirty-one percent of trips in the ZipZone remain in the southeast quadrant with the train station.

Trips among the other three quadrants not involving the southeast quadrant only combine for 7 percent of all travel. Trips within the southeast quadrant, and between the southeast quadrant and northeast quadrant adhere generally to commute-related peaks, but trips between the other quadrants are scattered throughout the day.

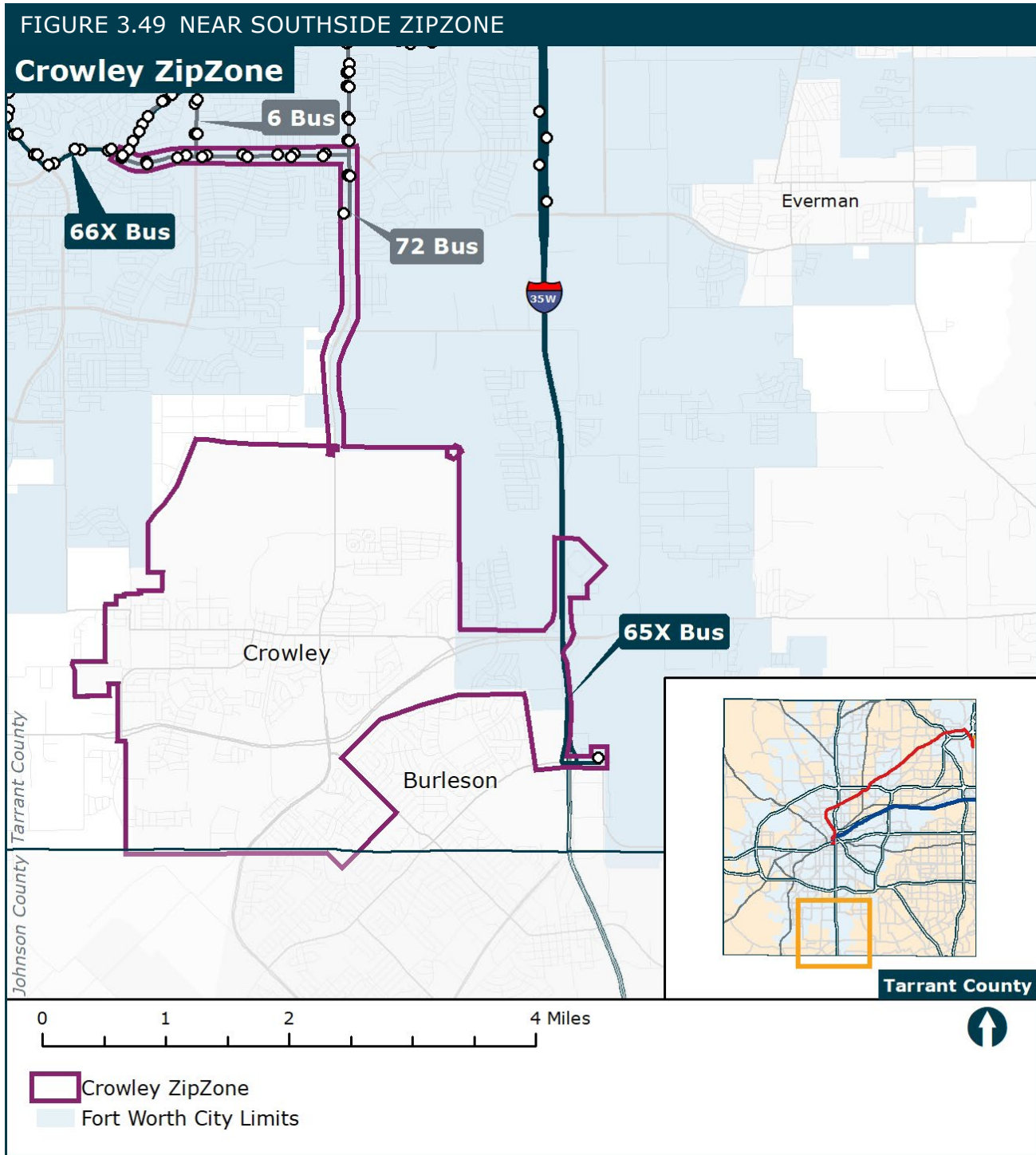
The Crowley ZipZone launched in June 2020 (Figure 3.48). Its boundaries stretch north to Sycamore School Road where it meets bus routes 72, 6, and 66X, and east to the South Park and Ride where it meets the 65X bus. The ZipZone is operated only during weekdays, during the peaks from 6:30 AM to 10:00 AM and 3:30 PM to 7:00 PM. The service is operated in partnership with Via Transportation, Inc. with a dedicated fleet of branded vehicles, and rides are requested through the Trinity Metro ZipZone app. Rides cost \$3.00. This ZipZone is notable for being located outside of the Trinity Metro system, as the City of Crowley does not pay into the system with dedicated sales tax revenue.





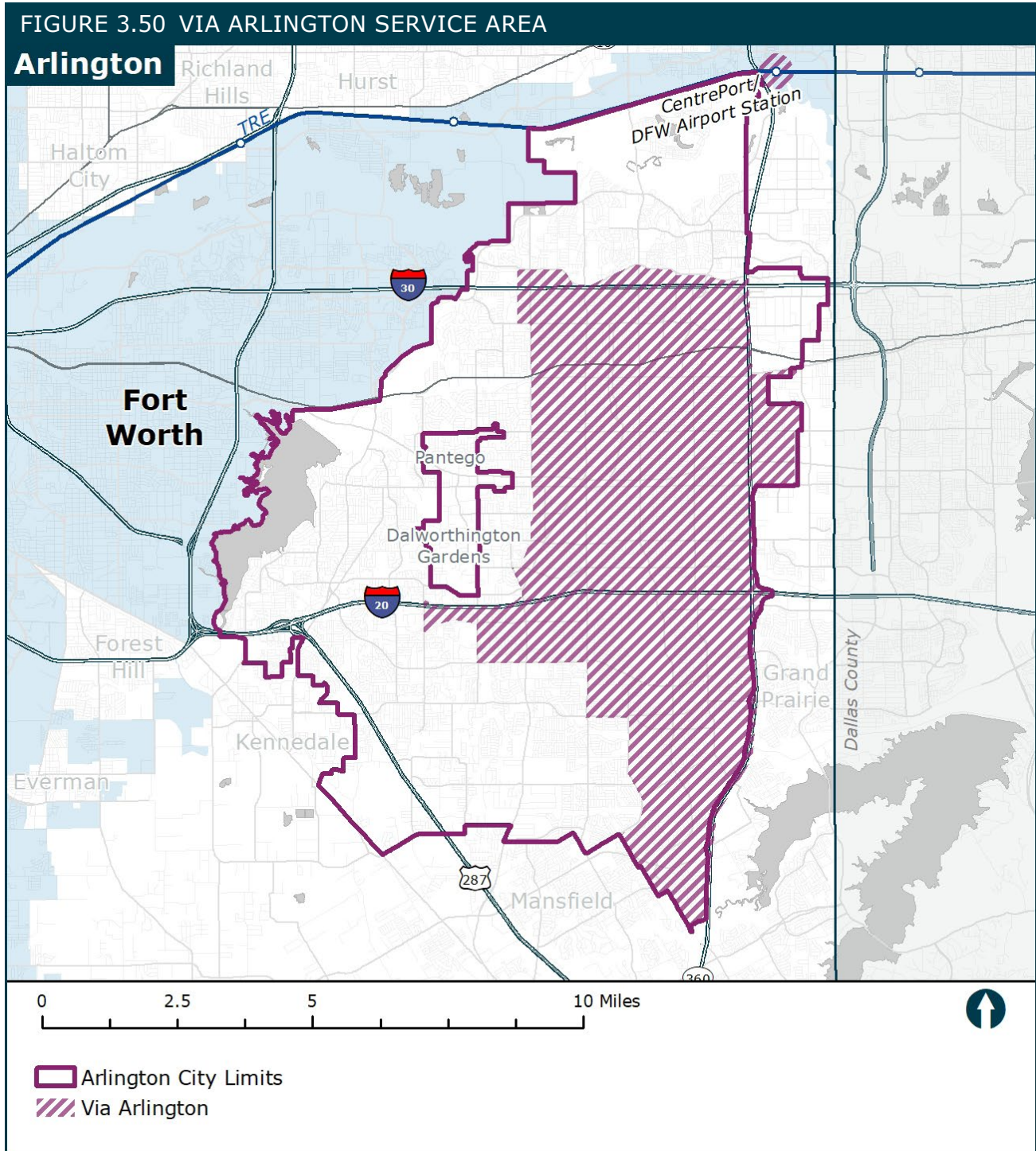
The Near Southside ZipZone launched in July 2020 (Figure 3.49). This ZipZone is south of I-30 and mostly west of I-35W and encompasses the three main healthcare facilities on the south side. The T&P Station, with service on both TEXRail and the TRE, is likely to be an important transfer point for users of the ZipZone service, but connections to the following bus routes also exist: 1, 4, 5a, 5b, 6, 9 and 14. The ZipZone is operated daily from 6:00 AM to 8:00 PM The service is operated in partnership with Via Transportation, Inc. with a dedicated fleet of branded vehicles, and rides are requested through the Trinity Metro ZipZone app. Rides cost \$3.00. This ZipZone is located entirely within the Trinity Metro service area, within the city limits of Fort Worth.





The City of Arlington launched Via Arlington on-demand service in 2017 to replace the pilot fixed route bus service, the Metro Arlington Express. The Metro Arlington Express bus provided service between the CentrePort station of the TRE, Downtown Arlington, and the campus of the University of Texas at Arlington. It was paid for by the City of Arlington and operated by DART, but it was never able to attract more than about 300 riders a day, and so it was discontinued after 4 years in favor of the Via Arlington on-demand service. Via Arlington costs \$3.00 for a ride and is subsidized by the City of Arlington and by a Federal grant. The boundaries of the service zone have been expanded over time, with the boundaries at the time of this writing

occupying somewhat less than half of the total city area (Figure 3.50). In 2021, the City of Arlington expanded the service to include the entire city limits.



## PREQUALIFIED DEMAND-RESPONSE TRANSIT

Demand-response transit services for prequalified individuals fall into two main categories: paratransit service complementary to fixed route service and limited to customers unable to physically use a bus, and demand-response services for customers prequalified based on income, age, or disability.

### Paratransit

Paratransit service is required by the ADA in areas within three-quarters of a mile from noncommute, fixed route transit services. Some agencies provide paratransit services beyond what is required by law. Trinity Metro's paratransit service, ACCESS, provides services complementary to its fixed route bus services, as well as throughout the cities of Fort Worth, Blue Mound, and River Oaks. The City of Arlington provides its paratransit service, Handitran, throughout the city. Advance notice is required to reserve a ride on paratransit. ACCESS operates seven days a week with hours matching local bus service. It costs \$4.00 per one-way trip. Handitran costs \$2.00 per one-way trip.

### Demand-Response Services Based on Income

The two primary demand-response transit services based on income and other qualifications for work-related trips are Hurst-Euless-Bedford Transit service (HEB) and Job Express Transit service (JET), both operated by Catholic Charities of Fort Worth Transportation Services. Both require advance notice to reserve a ride, cost \$3.00 per one-way trip, and operate weekdays between 6:00 AM and 7:30 PM. JET is for residents of Tarrant County Commissioner Precincts 2 or 3, with transportation available within those two precincts or to Hurst, Euless, Bedford, or areas of Arlington not served by Via Arlington. HEB is for residents of Hurst, Euless, or Bedford (in the North Richland Hills and the Middle Cities sector), with transportation available within those

cities and to or from CentrePort Station (in the Grapevine and DFW sector). These areas align generally with the sectors for North Richland Hills and the Middle Cities, as well as Grapevine and DFW, with some parts of Arlington and the Eastern Suburbs and some of the Northern and Northwestern Suburbs.

### Demand-Response Services Based on Age/Disability

Demand-response transit services for prequalified individuals based on age or disability include the Grand Connection in Grand Prairie (in the Arlington and the Eastern Suburbs sector and Dallas County), as well as Tarrant County Transportation Services (TCTS) and Northeast Transportation Services (NETS) in various municipalities and sectors. These trips are not necessarily restricted to specific work-related purposes. The Grand Connection requires advance notice to reserve a ride. The Grand Connection operates weekdays from 7:00 AM to 5:00 PM, with early hours on Mondays, Wednesdays, and Fridays beginning at 4:00 AM. It either costs \$1.00 per one-way trip or is free based on the purpose of the trip. TCTS and NETS operate weekdays from 6:00 AM to 6:00 PM. NETS costs \$3.25 per one-way trip, and serves Hurst, Euless, Bedford, Grapevine, Haltom City, Keller, and North Richland Hills (in the North Richland Hills and the Middle Cities and Grapevine and DFW sectors). TCTS costs \$2.50 and varies which of the following cities it serves based on the day of the week: Azle, Benbrook, Crowley, Everman, Forest Hill, Kennedale, Lake Worth, Mansfield, Saginaw, Sansom Park,

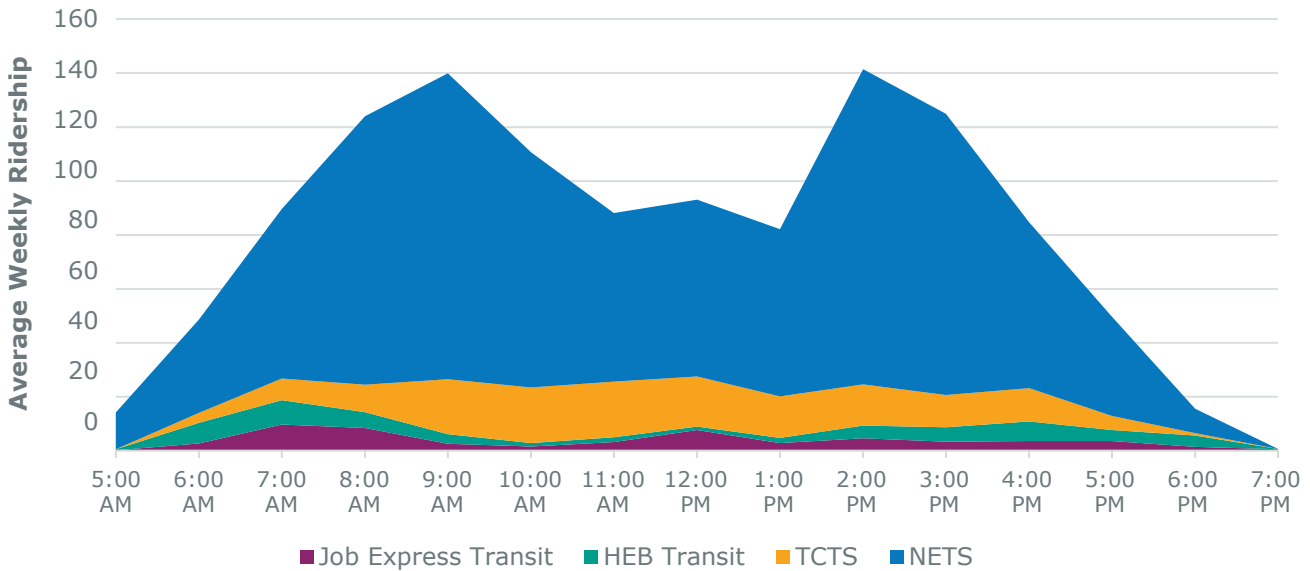
and Westworth Village. NETS requires advance notice, but TCTS does not.

The funding for some of these services comes in part from Federal grants, from fares paid by the riders, as well as subsidies paid by the cities to Trinity Metro and the contractors to operate the service. The 11 cities that contract for TCTS service pay a flat rate annually that is based on their senior population in the 2000 census multiplied by \$2.54. The FTA’s Enhanced Mobility of Seniors and People with Disabilities program (49 U.S.C. Chapter 53, Section 5310) supports this TCTS service. The NETS service is supported by this same program, as well as funding from the Urbanized Area

Formula Funding program, and a Texas State Urban grant. The seven cities that contract for NETS service pay a local per capita rate of \$1.50.

Of these services, NETS is by far the most used, with around 900 trips taken in an average week from October 2019 to March 2020. TCTS, JET, and HEB together account for around 270 trips taken per week during the same period. NETS travel shows a morning peak around 8:00 AM and an afternoon peak around 2:00 to 3:00 PM (Figure 3.51). TCTS shows a steady amount of use throughout the day without peaks. Jobs Express Transit shows peaks around 8:00 AM and 12:00 PM

**FIGURE 3.51 PREQUALIFIED DEMAND-RESPONSE USAGE BY HOUR DURING AN AVERAGE WEEK**



Source: Catholic Charities of Fort Worth Transportation Services (2019–2020).

Most of these trips are short in length. An analysis of almost 28,000 trips using these services shows approximately 4,000 trips beginning or ending in the vicinity of the three hospitals covered by NETS: Medical City North Hills, Texas Health Harris Methodist Hurst-Eules-Bedford, and Baylor Scott & White Medical Center-Grapevine.

Additional providers offer specialized demand-response transportation for seniors, such as Sixty and Better, formerly known as Senior Citizens Services of Greater Tarrant County. According to their 2019 report, they gave over 45,000 rides to senior citizens in 2019, in addition to the other services they provide for seniors.

Other nonprofits and community groups provide transportation for specific groups of individuals, creating a piecemeal network of transportation providers for residents that do not have a vehicle readily available for transportation. Other providers of specialized services include Mid-Cities Care Corps, Senior Movers, Call A Ride of Southlake, and others. Additional details and analysis of these services are contained in the Transit County Transportation Needs Assessment from 2014. Some services have been adjusted in the intervening years, but similar levels of service have been maintained.

Despite the web of providers, NCTCOG's 2018 Access North Texas study noted that "there are some barriers for riders looking to travel between cities with different providers, rural areas and seamless connections into Dallas County." The localized nature of these transportation resources inhibits travel throughout Tarrant County as well as regional travel, for instance when travel might be required to visit a specific medical specialist that is several miles away and possibly in the next county—an easy trip by personal automobile, but difficult for transit users.

Though the report suggested further consolidation and organization of these services, the dispersed and limited nature of the funding does not lend itself to a centralized organization of services that could accomplish longer-distance travel throughout the county and into neighboring counties. A common technology platform and dispatching operations might be achievable with further coordination of efforts.

### **RIDE MATCHING**

Many employees in the region with extended commutes, especially those traveling into Tarrant County or Dallas County for work from outer areas, can take advantage of vanpools. Vanpools are created by matching rides among interested participants based on similar commute patterns. Commuters are required to join groups of five or more and can select various cars available for commuting. Trinity Metro can support vanpools from throughout much of the region, with origins in the following counties: Tarrant, Johnson, Parker, Hood, Montague, Erath, Wise, Palo Pinto and Somervell Counties, and destinations anywhere in the metro area.

Trinity Metro subsidizes vanpools, and as the Transit County Transportation Needs Assessment notes, "The cost of using a vanpool is lower than operating a car for commuting to work." Vanpools also benefit from the use of the North Tarrant Express (NTE) TEXpress lanes on I-820 and NTE 35W TEXpress lanes on I-35W at a 50 percent toll discount due to vanpooling. Being able to use the express lanes and spend less on transportation make the program useful to commuters who have regular commutes with few deviations from a standard commuting schedule.

## RECENT PLANNING EFFORTS

The 2019 State of the System report found only seven routes provide frequent service located within Fort Worth with no access for study area residents and employees. The report is very clear about what it sees as the appropriate approach to transit service in lower-density areas like those that make up most of the study area:

**“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.”**

Changes to these routes located at the edges of the City of Fort Worth may be proposed as part of the upcoming alternative service scenarios during the bus network redesign project.

Additional efforts have gone into creating areas better suited to limit the necessity of a private vehicle for every individual trip. Transit-Oriented Development has been a popular planning strategy, and many of the newer developments built throughout Tarrant County have attempted to locate various retail needs within walking distance of housing, as well as some of the new train stations built for TEXRail.

Several planning documents written in the last decade have developed various approaches to supporting, enhancing, and matching transit services to the changing demand. Many planning efforts have led to service improvements and new services. Some of the recommendations identified have yet to be implemented. Many of the plans and strategies will be affected by the COVID-19 pandemic. The primary documents that have been completed recently and impact the future of transit service in Tarrant County are listed in Table 3.11.

TABLE 3.11 RECENT REGIONAL TRANSIT PLANNING EFFORTS IN TARRANT COUNTY

Year	Agency	Title of Report	Geography	Description	Status & Outcome
2011	NCTCOG	<i>Innovative Finance Initiative: Cotton Belt Corridor</i>	Tarrant County, Dallas County, Denton County, Collin County	Feasibility of establishing passenger rail service, evaluation and comparison of funding strategies	TEXRail established along 27 of 62 miles studied
2014	NCTCOG	<i>Tarrant County Transportation Needs Assessment</i>	Tarrant County	Transit demand, evaluation of service alternatives, analysis of funding issues	Tactical improvement of individual services
2015	Trinity Metro	<i>Master Plan</i>	Tarrant County	5-year recommendations to improve and expand service, branding changes, long-range visioning, costs, implementation issues	New branding implemented, ZipZones implemented
2017	City of Arlington	<i>Connect Arlington Transportation Strategy</i>	City of Arlington	Corridor-specific recommendations, mode option recommendations	Fixed route service replaced by Via Arlington rideshare

Year	Agency	Title of Report	Geography	Description	Status & Outcome
2018	NCTCOG	<i>Access North Texas</i>	All NCTCOG counties	Detailed geographic breakdown of transportation needs of older adults, individuals with disabilities, and individuals with lower incomes, strategies for improvement	Documentation of transit needs of specific populations for intergovernmental policy alignment
2018	NCTCOG	<i>Mobility 2045</i>	All NCTCOG counties	Financially constrained plan detailing the allocation of Federal and State transportation funds	Adopted by Regional Transportation Council
2019	City of Fort Worth	<i>Transit Moves Fort Worth: State of the System</i>	City of Fort Worth	Analysis of existing service provision and ridership, existing and long-term transit demand, possible improvements	Led to development of 3 transit improvement scenarios, draft plan based on 6 "Transit Moves" initiatives
2019	City of Fort Worth	<i>Transit Moves Fort Worth: Transit Improvement Scenarios</i>	City of Fort Worth	Development of implementation strategies based on 3 different levels of investment: Incremental Improvements, Aspirational Outlook, and Visionary City	Led to draft plan based on 6 "Transit Moves" initiatives
2020	City of Fort Worth	<i>Transit Moves Fort Worth: Draft Plan</i>	City of Fort Worth	Developed details of transit improvements through 6 "Transit Moves" initiatives, analysis of costs and funding, implementation steps	(still in draft)
2020	Trinity Metro	<i>A Better Connection: Existing Conditions Report</i>	Tarrant County	Analysis of existing bus service, comparison to demand, integration with rail, ridership, limitations	(still in draft)

Mobility 2045, the region's long-range, fiscally constrained transportation plan, provides the long-term regional investment structure within which Tarrant County's transit planning will fall. A mix of public transportation types—including regional rail, streetcar, first-mile/last-mile connections, high-speed rail, and people movers—represent significant investments in infrastructure that complement local transit service.

Some plans have attempted to make the most of available transit funding by limiting the overall dilution of transit across large swaths of the county. The 2014 Tarrant County Transit Needs Assessment concluded that transit plans should be focused on areas supportive of transit: "Although countywide transportation solutions may be desirable for some stakeholders, targeting transportation programs to specific subregions—primarily older suburbs, urban areas, and lower-income rural areas—may allow resources to be directed to those with the greatest need." The 2019 Transit Moves Fort Worth State of the System report analyzed specific areas and their propensities for supporting transit, and found, for instance: "Most residents [of] Tarrant County north of the



loop have a lower propensity to use transit... as compared to the county average.”

A major objective of the 2015 Trinity Metro Master Plan was to develop a strategy for rebranding the transit agency. The plan, which included multiple strategies for improved service, also noted: “Success requires both a good product and a good brand, and there are few examples where one succeeds without the other.” The former name of the transit system, “The T,” was changed to Trinity Metro, while sub-brands were maintained for special services such as “Molly the Trolley” and the commuter rail lines. The plan includes the opportunity for additional specialized service to be branded separately, especially for high-visibility services, like Bus Rapid Transit.

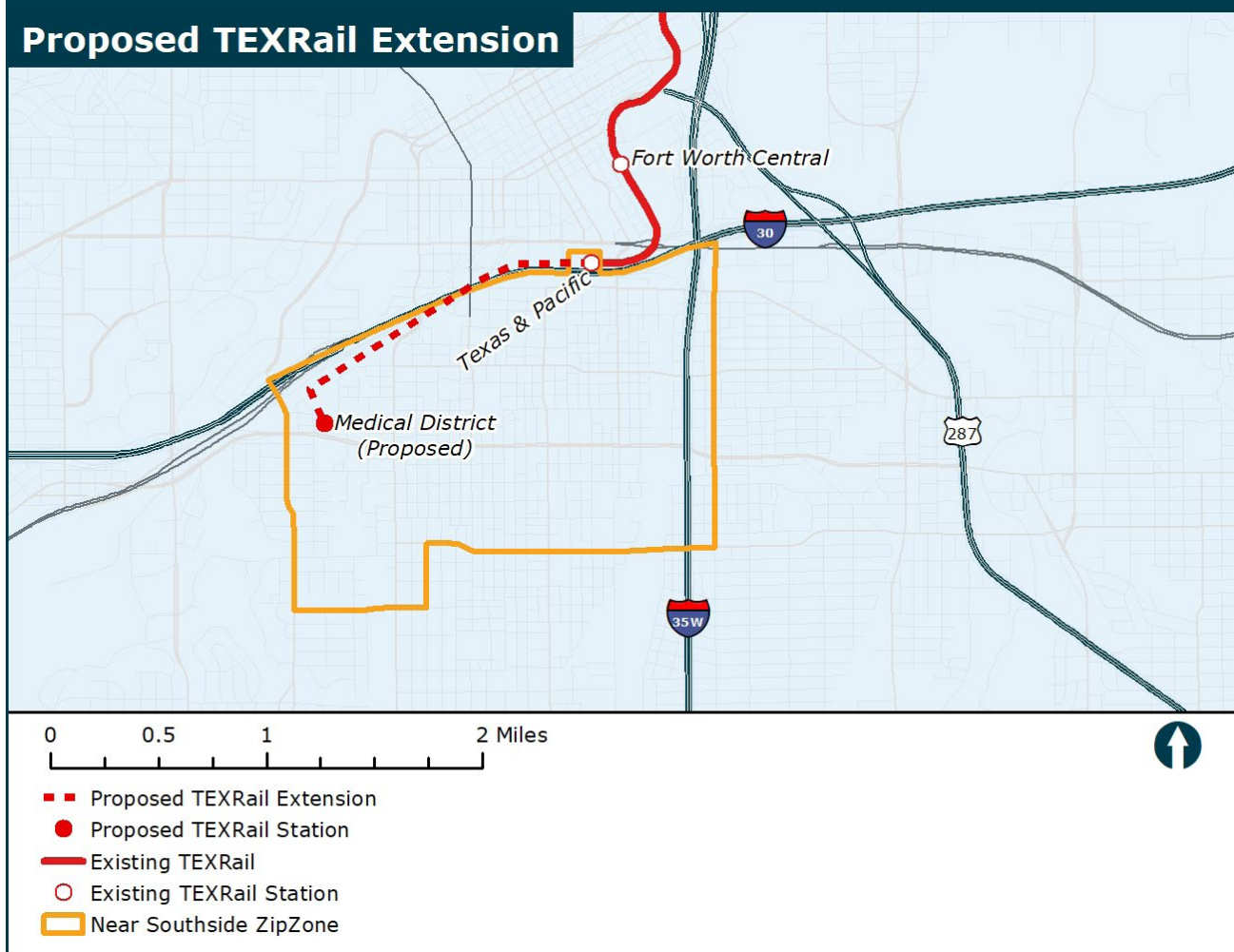
Many planning efforts have sought to prioritize projects so that funding efforts can be focused to enable the successful development of transit projects that require intense capital investment. The “Innovative Finance Initiative: Cotton Belt Corridor” report led to the creation of TEXRail from Downtown Fort Worth to DFW Airport, which covers only a portion of the total corridor evaluated. Further sections both southwest of Fort Worth and northwest of DFW Airport were evaluated.

Currently there are ongoing planning efforts to extend TEXRail south to the Near Southside Medical District. The City of Fort Worth is completing its plan to support transit in the coming years, including evaluating infrastructure investments. Trinity Metro is in the early stages of its plan to comprehensively review and restructure its bus network.

In February 2020, it was announced that \$38.9 million of Federal funding remaining from the construction of TEXRail could be used to extend TEXRail an additional 2.1 miles from the current southern terminus at Texas and Pacific (T&P) station down to the Near Southside Medical District (Figure 3.52). Future extensions could take TEXRail further south to TCU, I-20, and down to Primrose.



FIGURE 3.52 PROPOSED TEXRAIL EXTENSION



*Note: The proposed extension and station location on this map is approximate and subject to change.*

After the launch of TEXRail, Trinity Metro launched the Mercantile ZipZone, based on the 2015 Trinity Metro Master Plan which noted that partnerships with private ride-share companies "... provide the potential to start service more quickly, provide service at lower costs, and better tie expenditures to utilization levels." The plan states that "[Trinity Metro] envisions working with local communities and businesses, and TNCs such as Uber and Lyft, to develop a variety of first-mile/last-mile connections that meet specific needs." This approach continues to be utilized, as two ZipZones were launched in 2019 and two have been launched in 2020.

Trinity Metro also is exploring adjustments to existing ZipZones, such as adjusting

them to allow for residents living nearby to use the service if they also work within the ZipZone. An advantage to the ZipZone approach is that adjustments can be made much more readily than with fixed bus routes, which are difficult to adjust without adversely affecting existing riders.

The Access North Texas report specifically identified connectivity issues related to regional transit. These ZipZones fill gaps in some areas for the first-mile/last-mile solutions that residents need to gain better access to businesses in the region. The report specifically identified lack of access from the TRE station at CentrePort to destinations in Arlington. That connection also

received a first-mile/last-mile solution in the form of the Via Arlington on-demand service.

The City of Arlington's 2017 Connect Arlington Transportation Strategy concluded: "The Committee recommends citywide Demand-Response Rideshare to allow for connections between the six identified corridors." That same year, Via Arlington launched covering a portion of the City that encompasses much of the corridors identified and the connections in between but does not facilitate connections to other areas of the region beyond the connection at CentrePort Station. The City of Arlington has been expanding the service area of this on-demand service since it was started finally encompassing the entire city as of 2021.

Ongoing planning efforts include Trinity Metro's "A Better Connection" bus network redesign project. This project has completed initial existing conditions analyses and will be developing alternative service scenarios in the fall. Actual changes to bus routes would occur in fall 2021. Changes could include transitioning some bus routes with low



ridership and high costs-per-passenger into on-demand transit service areas like the existing ZipZones.

The City of Fort Worth is working to complete its plan entitled "Transit Moves Fort Worth," which sets forth priorities for the city to pursue in support of transit, including funding strategies. The plan is based on six initiatives: Develop High-Capacity Transit Service, Improve Existing Services, Expand Transit to New Areas, Improve Access to Transit, Improve Facilities and Amenities, and Make Service Easier to Use. Capital investments in the future will be prioritized based on the strategies outlined in this document. Three scenarios were developed and presented to the public in the late fall, and the city has been working to refine the plan itself while necessarily re-evaluating some of the assumptions considering the disruptions of COVID-19. The plan itself is ambitious, with capital costs identified of \$2.8 billion over the next 25 years, in addition to almost tripling the annual operating costs.

Currently, improvements planned to impact the transit system in the next 10 years represent strategies that may or may not be implemented based on changes to travel behavior because of COVID-19. Not only were travel patterns disrupted because of the pandemic, but larger systemic impacts are underway. Many funding streams rely on sales taxes, and the economy will be affected by the pandemic for the foreseeable future. Travel patterns cannot return to previous norms because economic issues have caused changes to many businesses, regardless of how many individual employees might change their daily commute patterns or work occasionally from home. The planned improvements represent opportunities to implement changes, should they be considered still valid in this new environment.

## 3.5 CONCLUSIONS AND NEXT STEPS

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The challenge for planning transit services in Tarrant County will be to better adapt to the large volumes of distributed travel behavior in a manner that allows efficient use of resources and that can support continued transit services beyond limited social service.

The Tarrant County Transit Study involves stakeholder engagement, analysis of funding issues, development of service scenarios, and implementation strategies. This report is intended to inform the other portions of the study, especially scenario development. This Existing Conditions report has examined the tension of attempting to serve low-density areas outside of the compact and walkable urban areas located mostly within Fort Worth. Recent planning efforts have led to the launch of TEXRail and multiple on-demand service zones. Scenarios developed during the next stage of this study will lead to opportunities for exploration of service approaches as further adjustments to transit service in Tarrant County occur in the coming years.

- » **What is the demand for transit services?** Many trips are short and local, with much travel within the county staying within individual sectors. Travel between the sectors tends to be limited to an adjacent sector. Travel into the Downtown Fort Worth area from outer areas is not a significant portion of travel behavior.
- » **What transit service currently exists, and how well is it used?** New innovations have been deployed recently to create first-mile/last-mile connections supplemental to existing fixed route services. These services are more appropriate than additional fixed route services for these lower-density areas, especially as ridership on existing fixed route services continues to drop over time.
- » **What transit services are being planned and improved in the next 5 to 10 years?** An extension of existing rail is being planned, but further rollouts of on-demand transit services are likely to outpace any expansion of service requiring large infrastructure investments.
- » **What are the gaps between the current and planned transit system and the transit demand?** There are few, if any, orbital services that allow for travel between sectors outside of Greater Fort Worth. Existing demand-response services for seniors illustrate the value of transit services that do not focus on access into Greater Fort Worth, but satisfying the needs of the increasing number of residents locating outside of Greater Fort Worth will require further expansion of demand-response services. It is unlikely that fixed route services could be operated in the outer areas with lower density, except as regional connections between denser areas.

TABLE 3.12 SUMMARY OF TARRANT COUNTY SECTOR FOCUS AREAS

TARRANT COUNTY SECTOR					
	Greater Fort Worth	Arlington and the Eastern Suburbs	North Richland Hills and the Middle Cities	Grapevine and DFW	
<b>Demographics</b>	<ul style="list-style-type: none"> <li>• Job density extreme in Downtown Fort Worth</li> <li>• Residential density in western areas</li> <li>• Large equity population</li> <li>• Large senior population</li> <li>• Large number of households without a vehicle</li> </ul>	<ul style="list-style-type: none"> <li>• High density of residential compared to Tarrant County overall</li> <li>• Many jobs of various classifications</li> <li>• Large minority population</li> <li>• Lower level of low-income population than Greater Fort Worth</li> </ul>	<ul style="list-style-type: none"> <li>• Residential density along State highways 183 and 10</li> <li>• Growth continues on infill developments</li> <li>• Small equity population</li> <li>• Large senior population</li> </ul>	<ul style="list-style-type: none"> <li>• Low residential density</li> <li>• Jobs focused on State Highway 114</li> <li>• Small populations of minority, low income, seniors</li> </ul>	
<b>Travel Patterns</b>	<ul style="list-style-type: none"> <li>• Mostly internal trips</li> <li>• Strong destination for regional travel (though weak compared to all other travel)</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly internal trips</li> <li>• Very little connection to Greater Fort Worth or other sectors</li> </ul>	<ul style="list-style-type: none"> <li>• Much internal travel</li> <li>• Travel to neighboring sectors as likely to the east or west as towards Greater Fort Worth</li> </ul>	<ul style="list-style-type: none"> <li>• Greater connection to nearby areas in Dallas County, Denton County, and Collin County, than to Greater Fort Worth</li> </ul>	
<b>Existing Service</b>	<ul style="list-style-type: none"> <li>• Two rail lines</li> <li>• Extensive bus lines</li> <li>• Demand-response services</li> <li>• Paratransit service</li> </ul>	<ul style="list-style-type: none"> <li>• Via Arlington on-demand service, Handitran paratransit, access to regional rail</li> </ul>	<ul style="list-style-type: none"> <li>• TEXRail</li> <li>• Multiple overlapping demand-response services</li> <li>• Paratransit service</li> </ul>	<ul style="list-style-type: none"> <li>• TEXRail stations</li> <li>• Paratransit service in some areas</li> <li>• Demand-response service</li> </ul>	
<b>Planned Improvements</b>	<ul style="list-style-type: none"> <li>• Trinity Metro bus system redesign will lead to changes to the bus network in 2021</li> <li>• Extension of TEXRail to the Near Southside Medical Center</li> </ul>	<ul style="list-style-type: none"> <li>• Possible expansion of Via Arlington service area to encompass the entire city</li> </ul>		<ul style="list-style-type: none"> <li>• DART Silver Line</li> </ul>	

TARRANT COUNTY SECTOR			
	Northern and Northwestern Suburbs	Western Suburbs	Southern Suburbs
Demographics	<ul style="list-style-type: none"> <li>Residential density east of I-35 W</li> <li>Many jobs, especially manufacturing, in eastern half of sector</li> <li>Average levels of equity population</li> <li>Lowest level of senior population of sectors</li> </ul>	<ul style="list-style-type: none"> <li>Low residential density</li> <li>Fewer jobs, focused at large employers such as Lockheed</li> <li>Large portion of senior compared to other sectors</li> <li>Small equity population</li> </ul>	<ul style="list-style-type: none"> <li>Very low residential density</li> <li>Few jobs, mainly a bedroom community for Greater Fort Worth</li> <li>Equity populations clustered towards the north near Greater Fort Worth</li> </ul>
Travel Patterns	<ul style="list-style-type: none"> <li>As much east-west travel within sector and to North Richland Hills and the Middle Cities sector as to Greater Fort Worth</li> </ul>	<ul style="list-style-type: none"> <li>Oriented towards Greater Fort Worth, with more travel there than internal</li> </ul>	<ul style="list-style-type: none"> <li>Oriented towards Greater Fort Worth, with more travel there than internal</li> </ul>
Existing Service	<ul style="list-style-type: none"> <li>Bus routes on eastern edge of sector</li> <li>2 ZipZones</li> <li>Paratransit service in some areas</li> </ul>	<ul style="list-style-type: none"> <li>Paratransit service in some areas</li> <li>Demand-response service</li> <li>No real fixed route service except on the periphery</li> </ul>	<ul style="list-style-type: none"> <li>1 express bus (low ridership)</li> <li>New Crowley ZipZone launched in summer 2020</li> <li>Paratransit service in some areas</li> </ul>
Planned Improvements			<ul style="list-style-type: none"> <li>Possible expansion of rail south along I-35W corridor</li> </ul>

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# SCENARIO DEVELOPMENT

4

GRAPEVINE, TX

## KEY ELEMENTS

Key elements of this chapter include:

- The demographic, travel, and equity factors used to determine service needs;
- Three scenarios prioritizing local travel, regional travel, and a blended approach;
- A mix of demand-response and fixed route services; and
- Access, coverage, and ridership estimations for each scenario.

The primary focus of this study is to determine transit service needs in areas of Tarrant County that presently have limited access to transit and shared mobility service options.<sup>6</sup> Chapter 3 of this report presents Tarrant County's current transit and land use conditions; these are used to develop the scenarios presented in this chapter, providing the basis for the financial analysis and implementation processes in following sections of this report.

<sup>6</sup> A service needs assessment was not conducted for areas presently served by Trinity Metro and Arlington Via; rather, the focus of this study was determining service needs outside of existing transit and shared mobility service areas.

To determine transit needs for the residents of Tarrant County, the project team developed three potential transit service expansion scenarios with varying mixes of both local and regional mobility services. Local service needs are determined based on analyses of population, employment, minority population, and low-income households in areas that currently have limited transit service options. Regional service needs are based on employment size and densities at large employment centers in the county, and an analysis of travel patterns to and from those major employment centers. Location-based services (LBS) data, aggregated from anonymized cell phone geolocation data, are used to assess those patterns.<sup>7</sup>

Those needs are then used to develop the three scenarios, with one scenario focused on regional service, another scenario focused on local service, and a third scenario reflecting a more balanced approach. The three scenarios are compared against each other using performance metrics.

The scenarios presented in this chapter are not intended to reflect a single, county-wide plan, but rather reflect a range of what services might look like throughout the county. Individual municipalities or groups of municipalities can choose to move forward with transit service reflecting any of these scenarios independently, and scale service levels up or down to meet local need.

## 4.1 TRANSIT SERVICE NEEDS

This analysis focuses on the study area as defined in Chapter 3: areas outside of Trinity Metro’s service area boundary and areas that currently do not have access to mobility-on-demand services (e.g., Trinity Metro’s ZipZones and Arlington’s citywide Via service). The need for both local and regional transit service needs were assessed. The local service needs analysis identifies areas that may be suitable for on-demand service (similar to Arlington Via) and/or fixed bus route service (similar to Trinity Metro) services. The regional service needs analysis identifies potential new regional bus routes (similar to existing Trinity Metro commuter services) that could connect major employment centers with residential areas.



### LOCAL SERVICE NEEDS

Determination of local transit service needs focuses on the following demographic characteristics:

- » Population and employment densities; and
- » Minority and low-income population densities.

<sup>7</sup> For a more detailed description of LOCUS LBS data, see Chapter 3.



Population and employment density thresholds have been used to identify areas with low, medium, and high needs (Table 4.1). Density determinations are based on census block group information from the American Community Survey (2014–2018); low, medium, and high density thresholds are adapted from the Transit Capacity and Quality Service Manual.

Areas suitable for on-demand or flexible service have densities with less than 8 persons per acre or 4 jobs per acre. Areas suitable for hourly fixed route service have densities between 8 and 16 persons per acre or 4 and 8 jobs per acre. Areas suitable for 30-minute or better fixed route service have densities greater than 16 persons per acre or 8 jobs per acre. Areas below 2 persons or jobs per acre are not considered for transit service expansion in this study.

**TABLE 4.1 POPULATION AND EMPLOYMENT DENSITY INDICATORS (PER ACRE)**

	<b>LOW</b>	<b>MEDIUM</b>	<b>HIGH</b>
Population	2.0–7.9	8.0–15.9	16.0 or more
Employment	2.0–3.9	4.0–7.9	8.0 or more

Minority and low-income population needs are also categorized as low, medium, and high at the census block group level. Tarrant County’s overall average low-income and minority population densities have been used as the benchmark for determining thresholds.

Low transit needs are those areas identified with minority and/or low-income population densities that are at least equivalent to countywide density averages. High transit needs are those areas with twice or more the countywide density averages. Medium needs are identified as areas that are at 50–100 percent of the countywide density averages. Areas below countywide density averages were not included in this analysis.

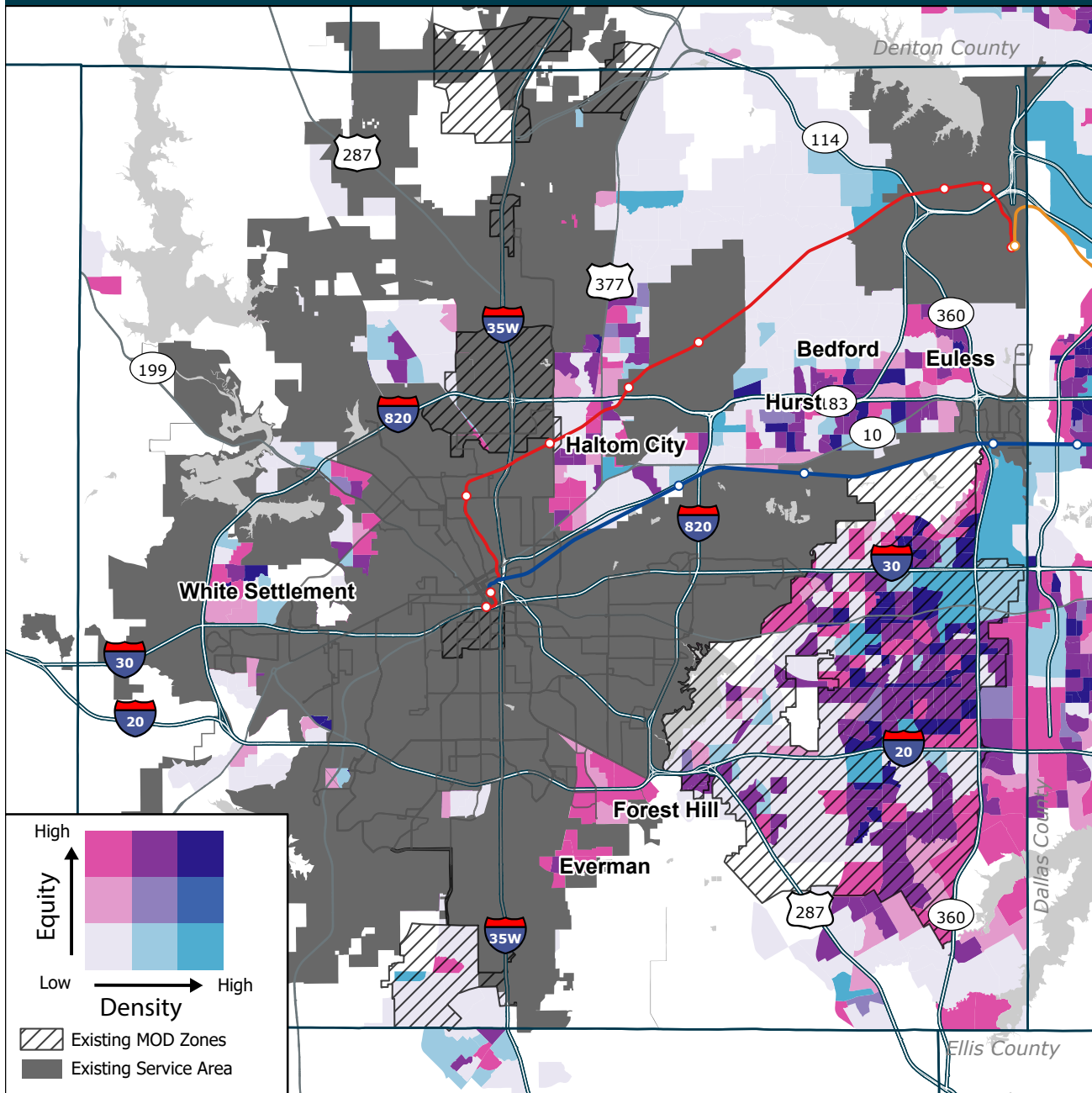
Thresholds used to identify low, medium, and high transit needs based on low-income and minority population densities are presented in Table 4.2.

**TABLE 4.2 MINORITY AND LOW-INCOME POPULATION DENSITY INDICATORS (PER ACRE)**

	<b>LOW</b>	<b>MEDIUM</b>	<b>HIGH</b>
Minority Population	1.20–1.67	1.68–2.23	2.24 or more
Low Income Population	0.14–0.20	0.21–0.27	0.28 or more

Population/employment and low-income/minority thresholds are combined to create a composite needs map (Figure 4.1). This figure illustrates composite needs for all areas outside of the Trinity Metro service area.

FIGURE 4.1 LOCAL SERVICE COMPOSITE NEEDS



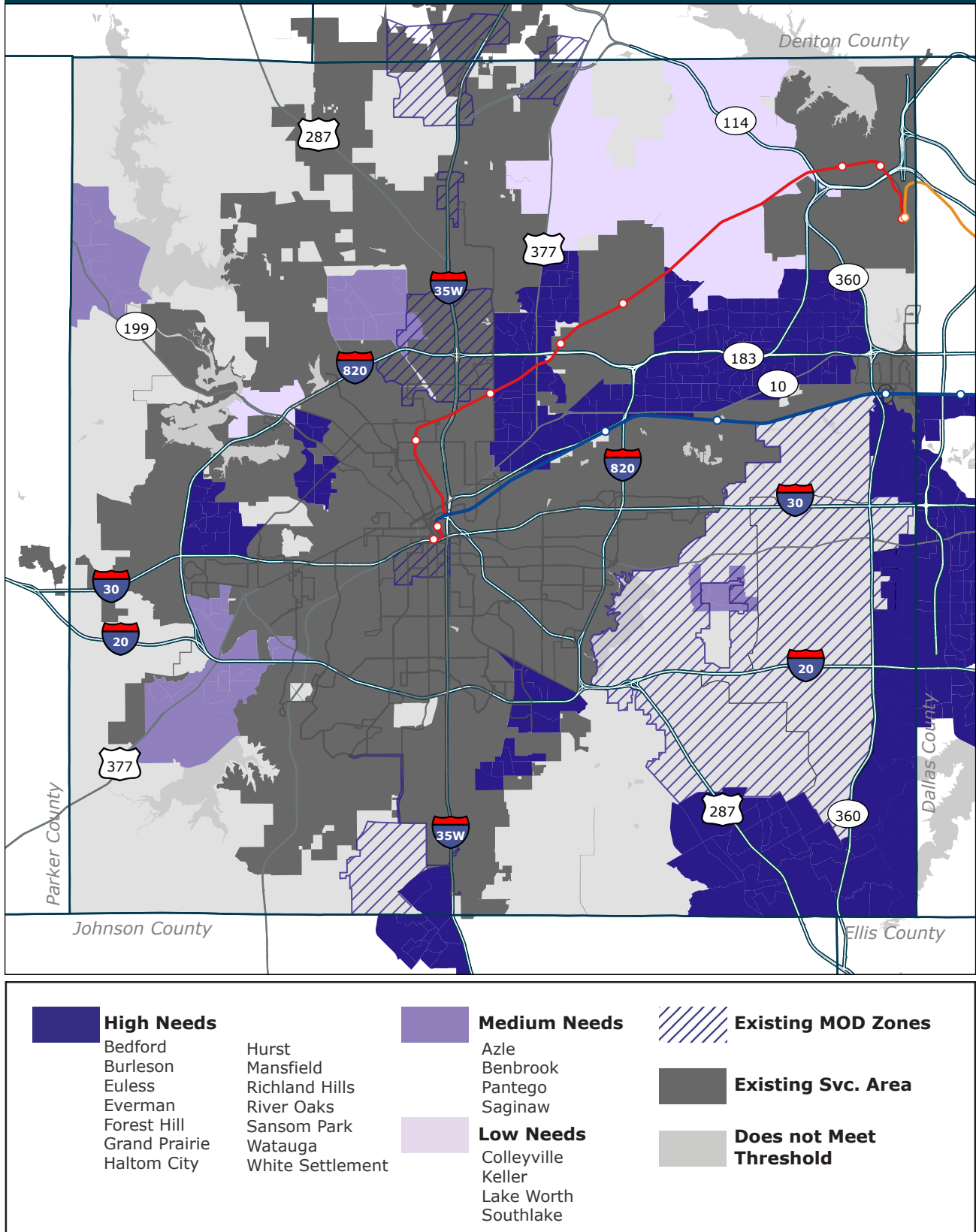
Many of the needs show up in Arlington where there presently is mobility-on-demand (Via) service. Areas that show up with high needs but limited existing transit service include:

- » The Highway 183 corridor through Eules, Bedford, and Hurst; and
- » The Highway 377 corridor through Watauga, and Haltom City; and
- » Areas immediately adjacent to the Trinity Metro service area, such as White Settlement, Forest Hill, and Everman.

Transit service needs have been categorized into high, medium, and low needs, using criteria presented in Table 4.1 and Table 4.2 (Figure 4.2). Areas with existing mobility-on-demand (MOD) service are excluded from the scenario development analysis. There are several municipalities

within Tarrant County that extend into neighboring counties. In those instances, the entire municipality was included in this needs assessment.

FIGURE 4.2 LOCAL SERVICE NEED BY MUNICIPALITY



## REGIONAL SERVICE NEED

This project also evaluated potential regional transit service expansion needs within Tarrant County. The project team identified major employment centers in Tarrant County and existing work commute travel patterns to and from those employment centers to determine if there were additional regional service needs beyond those presently provided by Trinity Metro, Trinity Railway Express, and TEXRail.

Job location data are reviewed to determine areas with high concentrations of employment.<sup>8</sup> Five locations stood out as the major employment centers in Tarrant County with 30,000 or more employees, as shown

Figure 4.3. It should be noted that even though this analysis focuses just on areas that are above the 30,000 employee threshold; areas immediately adjacent to what is shown in Figure 4.3 for downtown Fort Worth add substantially to that area’s employment totals (i.e., Medical District and West 7<sup>th</sup>).

LBS data are used to determine travel movements to/from each of these employment centers. This is then compared to existing Tarrant County commuter transit services to determine where there are potential regional transit service expansion opportunities. Travel characteristics determined from the LBS data for each employment center are presented below (Table 4.3).

TABLE 4.3 LOCUS LBS TRIP DATA TO TARRANT COUNTY EMPLOYMENT CENTERS

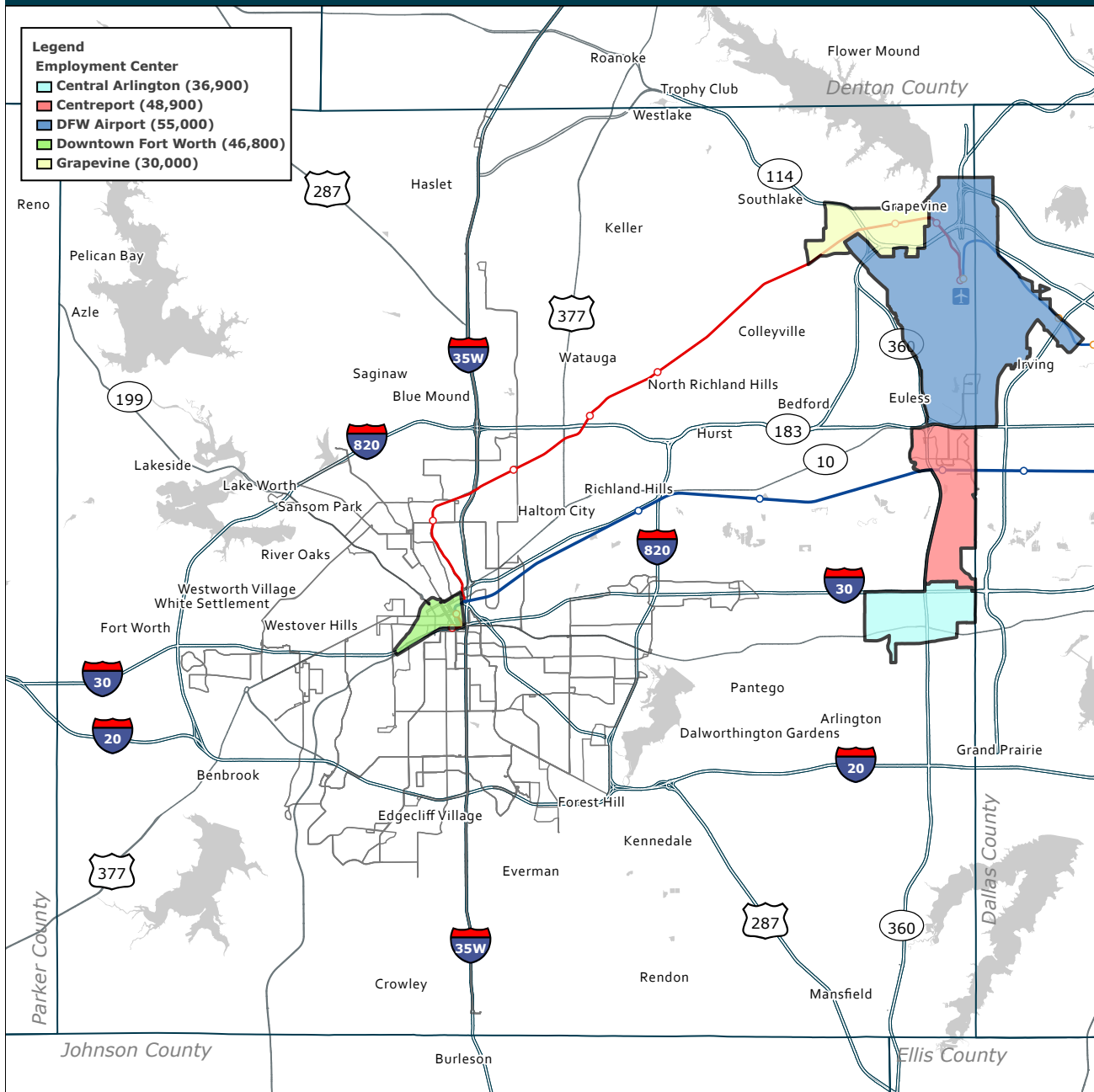
Employment Center	AVERAGE WEEKDAY TRIPS TO EMPLOYMENT CENTER	
	Total	Originating in Tarrant County
Downtown Fort Worth	123,700	82,600
Centreport	71,700	40,800
Central Arlington	78,800	49,300
DFW Airport	192,000	37,000
Grapevine	86,000	47,000

The highest regional service expansion needs are identified for downtown Fort Worth, where there are high concentrations of employment and other characteristics that would encourage transit usage (e.g., paid parking expenses for automobile users). Analysis of LBS data identified the following new origin–destination pairs appropriate for commuter services to and from downtown Fort Worth:

- » Arlington–Fort Worth (36,000+ trips traveling between central Arlington and downtown Fort Worth); and
- » Mansfield–Fort Worth (5,500+ trips traveling between Mansfield and downtown Fort Worth); and
- » Southwest Tarrant County–Fort Worth (10,000+ trips traveling between southwest Tarrant County and downtown Fort Worth); and
- » West Tarrant County–Fort Worth (9,500+ trips traveling between west Tarrant County and downtown Fort Worth).

<sup>8</sup> 2017 LEHD data, retrieved from Remix route planning software.

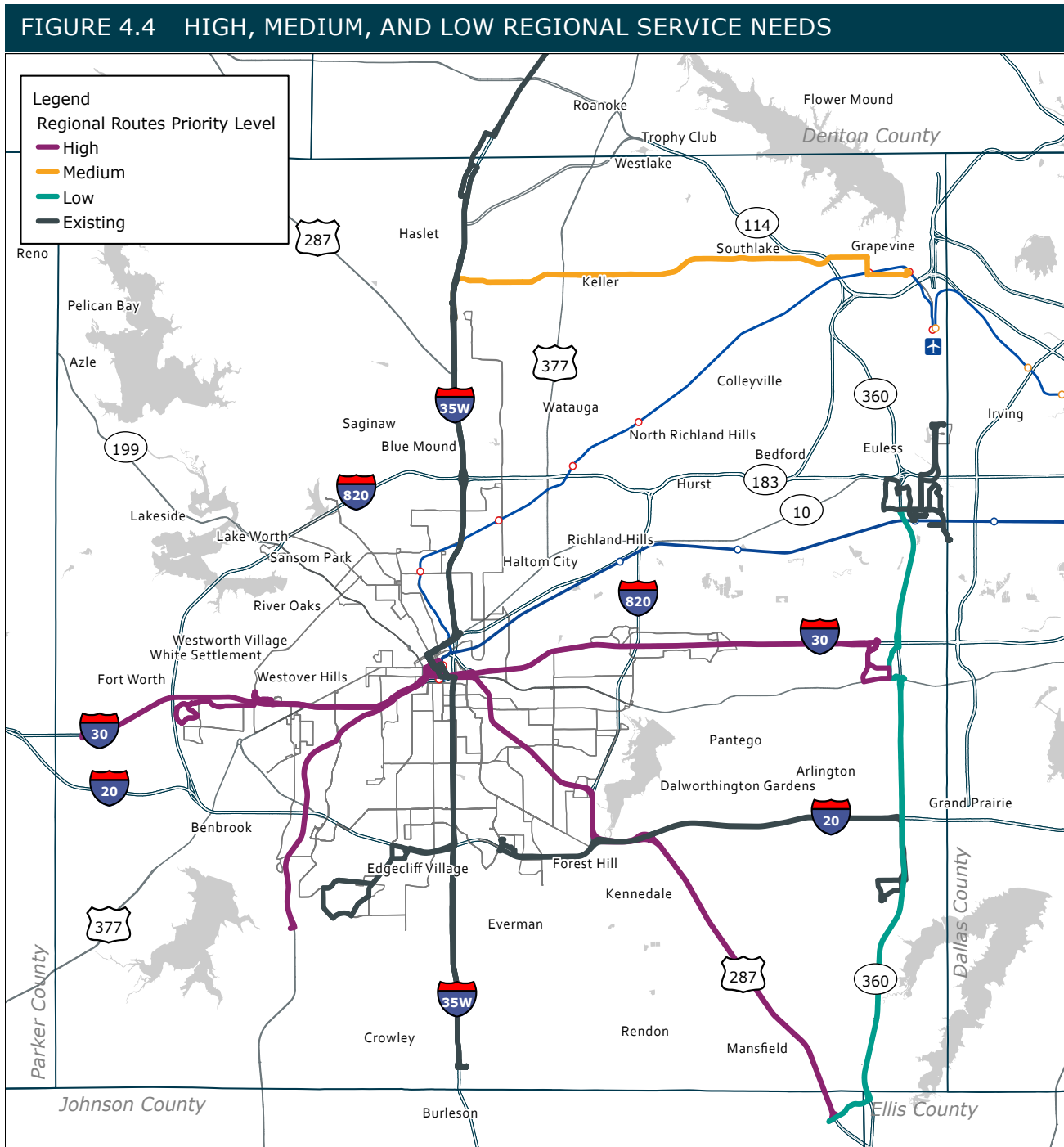
FIGURE 4.3 TARRANT COUNTY MAJOR EMPLOYMENT CENTERS (30,000 OR MORE)



North Central Texas Council of Governments' (NCTCOG) Mobility 2045 Long Range Plan identifies a need for expansion of transit services to and from downtown Fort Worth. That planning effort includes recommendations for high-intensity bus along I-30 between Arlington and downtown Fort Worth and along I-35W north of downtown Fort Worth, a TEXRail extension to Southwest Tarrant County, new commuter rail service between Mansfield, and downtown Fort Worth and new commuter rail service between Burleson and downtown Fort Worth (referred to in Mobility 2045 as the Cleburne line).

The travel market analysis completed as part of this project also identifies regional service needs in the north portion of the county from the Alliance Corridor along I-35W to Grapevine and Dallas-Fort Worth (DFW) Airport (5,000+ trips traveling in this corridor to DFW Airport), and along the Highway 360 corridor, from Mansfield, through Arlington, and to Centreport (7,000+ trips traveling in this corridor to Centreport).

High, medium, and low regional transit service needs identified for this project are illustrated below (Figure 4.4).



## 4.2 TRANSIT SERVICE SCENARIOS

Service needs presented in Chapter 3 were packaged into scenarios of local and regional service improvements to analyze potential countywide benefits of transit service expansion.

As noted in the Introduction of this chapter, these scenarios are not intended to reflect a single, countywide plan, but rather reflect a range of what services might look like throughout the county. Individual municipalities or groups of municipalities can choose to move forward with transit service implementation of any of these scenarios independently, and scale service levels up or down from assumptions made in this planning effort.

### *BASELINE BUDGET ASSUMPTION*

The first step in defining scenarios was to determine an appropriate annual expenditure for proposed new transit services and to hold that assumed expenditure relatively constant between the three proposed scenarios. This was done to understand tradeoffs between local and regional service expansion when constrained to scenarios with similar costs.

The budget assumptions do not represent a recommended or minimum expenditure, but rather a starting place for municipalities to determine the level of transit or shared mobility service available for a comparable per capita budget to other local municipalities currently providing transit services.

Annual per-capita transit expenditures in 2020 for Trinity Metro and for Arlington Via were calculated on a proportional basis using population and job data. The Trinity Metro annual bus transit expenditure averaged \$25.59 and the Arlington Via transit expenditure averaged \$5.48 per capita (prior to citywide Via service expansion). These two cost figures were averaged and applied to the estimated number of unserved residents and jobs in Tarrant County (1.2 million). This results in a target annual budget of approximately \$18.5 million, or \$15.54 per resident and job. Hourly rates for new

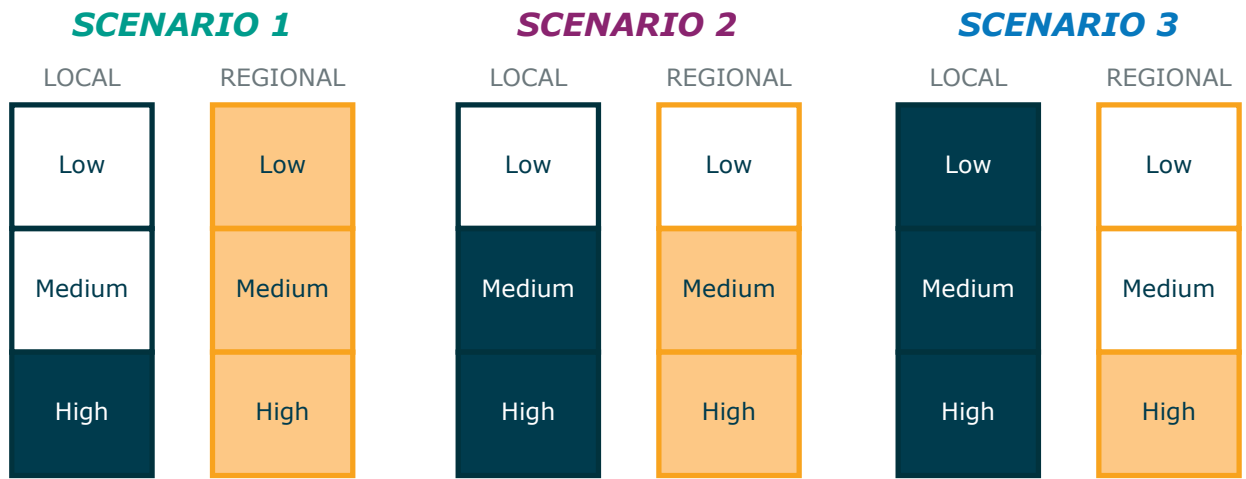
transit services are based on transit cost data for Trinity Metro and are as follows:

- » On-Demand Service: \$55.00 per vehicle revenue hour;
- » Fixed Route Local Service: \$82.84 per vehicle revenue hour; and
- » Regional Route Service: \$135.24 per vehicle revenue hour.

Scenarios were developed to reflect different mixes of local and regional service.

**Scenario 1** addresses all identified high, medium, and low regional service needs, but only the highest identified local service needs. **Scenario 3** addresses all identified high, medium, and low local service needs and only the highest identified regional service needs. **Scenario 2** is a blend that addresses high and medium service needs for both local and regional services. An illustration of the mix of local versus regional service assumptions in each of the three scenarios is illustrated in Figure 4.5.

**FIGURE 4.5 SCENARIO SERVICE MIX ASSUMPTIONS**



Transit services considered for each scenario are described in Table 4.5 on the facing page. Local service expansion includes both on-demand services and expansion of existing fixed route service. Regional services are limited stop express bus services that connect residential areas to high-density employment centers and include park-and-ride facilities.

### SCENARIO 1 SERVICE EXPANSION

Scenario 1 reflects a high investment in regional service expansion, and thus includes all new regional routes previously identified in Figure 4.4. It also reflects the highest identified local service needs previously identified in Figure 4.2.







In this scenario, all local service expansion is assumed to be on-demand service. Figure 4.6 presents the Scenario 1 proposed service expansion. The split of service hours and costs is presented below in Table 4.4.

**TABLE 4.4 SCENARIO 1 SERVICE CHARACTERISTICS**

SERVICE TYPE	ANNUAL HOURS	% OF HOURS	ANNUAL COSTS	% OF COSTS
Local	245,000	88%	\$13.5 million	74%
Regional	34,300	12%	\$4.6 million	26%
<b>Total</b>	<b>279,300</b>	<b>100%</b>	<b>\$18.1 million</b>	<b>100%</b>



TABLE 4.5 SCENARIO SERVICE OPTIONS

Tarrant County Transit Study Service Type	Purpose	Local Examples
Local On-Demand 	Connects lower-density areas; can provide connections to rail or express services 	Trinity Metro ZipZones, Arlington Via, Dallas Area Rapid Transit (DART) GoLink, Denton County Transportation Authority (DCTA) on-demand services
Local Fixed Route Bus Service 	Connects close medium-density areas, for all trip purposes 	Trinity Metro, DART, and DCTA Connect local routes
Regional Fixed Route Bus Service 	Connects far-apart medium-density areas, especially job center 	Trinity Metro and DART express routes

## SCENARIO 2 SERVICE EXPANSION

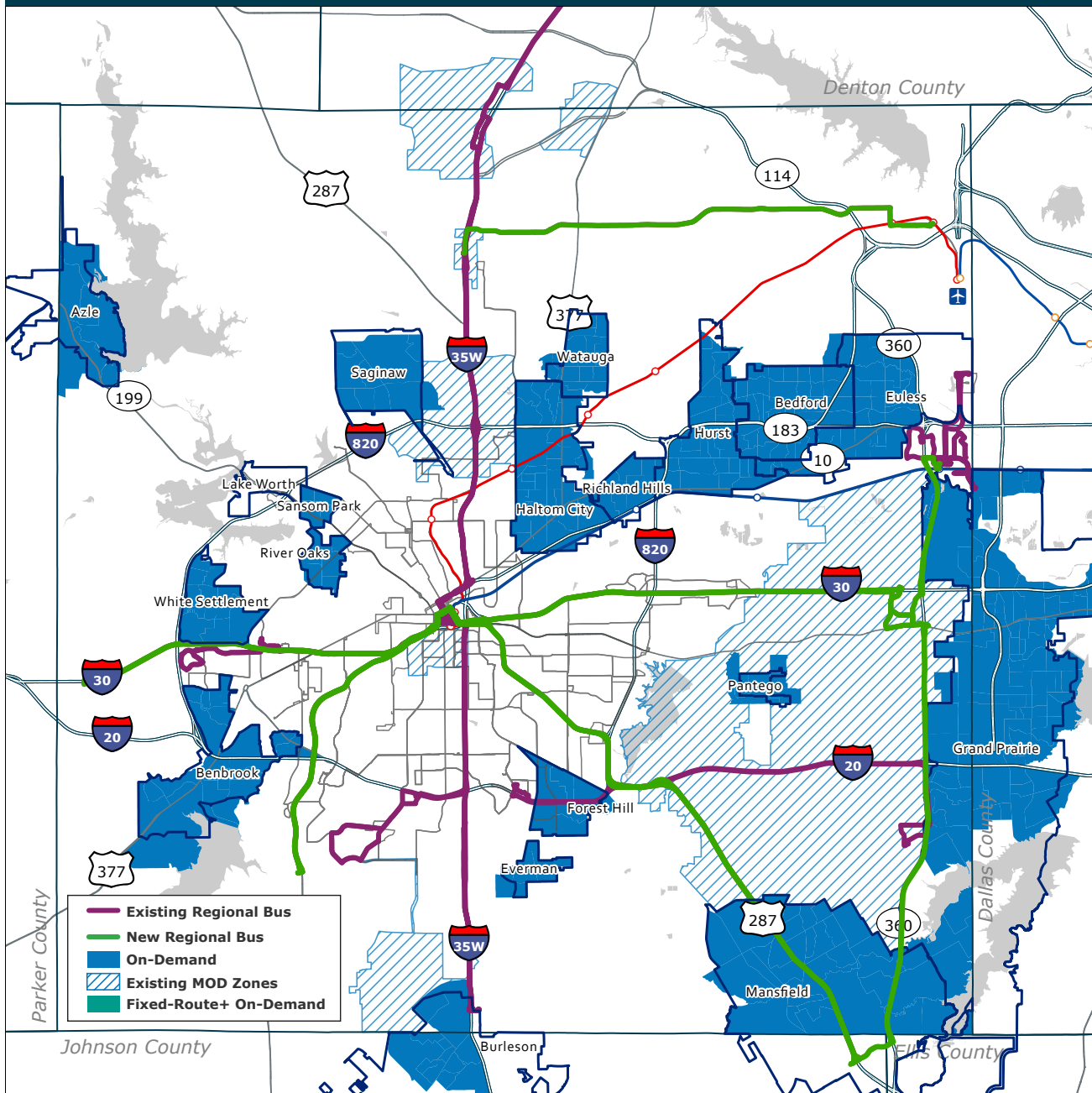
Scenario 2 reflects moderate expansion for both regional and local service. The regional service expansion eliminates the Mansfield–Arlington–Centreport regional route that was included in Scenario 1. The Keller–Grapevine–DFW line was prioritized because of the potential all-day market it could serve with the connection to DFW Airport. Local service expansion reflects further expansion of on-demand service beyond what was proposed in Scenario 1. It also includes modest fixed route service expansion, combined with on-demand service in the highest-density areas adjacent to Trinity Metro’s existing service area boundaries (fixed route service expansion was considered only in these areas to allow for connection opportunities to existing fixed route service). Specifically, fixed route service expansion is reflected in the communities of Forest Hill, Everman, White Settlement, River Oaks and Sansom Park.

Figure 4.7 presents Scenario 2 proposed service expansion. The split of service hours and costs is presented below in Table 4.6. Local service expansion costs are 82 percent of all new costs versus 74 percent in Scenario 1.

TABLE 4.6 SCENARIO 2 SERVICE CHARACTERISTICS

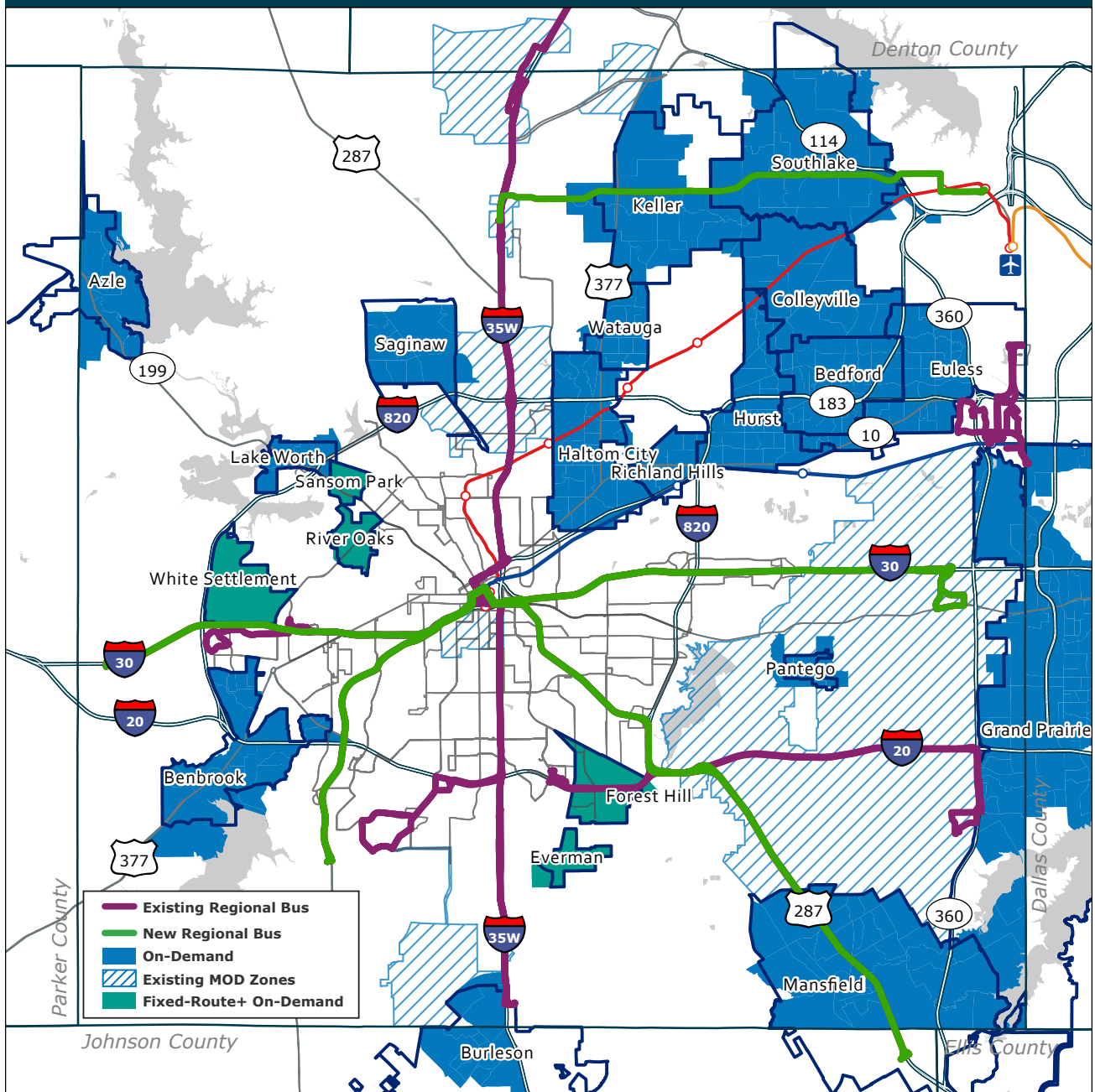
SERVICE TYPE	ANNUAL HOURS	% OF HOURS	ANNUAL COSTS	% OF COSTS
Local	271,000	92%	\$15.1 million	82%
Regional	24,100	8%	\$3.3 million	18%
<b>Total</b>	<b>295,200</b>	<b>100%</b>	<b>\$18.4 million</b>	<b>100%</b>

FIGURE 4.6 SCENARIO 1 SERVICE EXPANSION



Note: Service expansion needs analysis include all areas within Tarrant County and municipalities that lie within both Tarrant County and adjacent counties.

FIGURE 4.7 SCENARIO 2 SERVICE EXPANSION



Note: Service expansion needs analysis include all areas within Tarrant County and municipalities that lie within both Tarrant County and adjacent counties.

## SUMMARY OF SCENARIOS

The three scenarios presented in this report reflect a range of regional, fixed route local and on-demand transit services for municipalities in Tarrant County (Table 4.8). As previously noted, these scenarios reflect a range of what services might look like throughout the county. Individual municipalities or a group of municipalities could certainly move forward with local transit service implementation of any of these scenarios independently, and scale service levels up or down from assumptions made in this planning effort.

Additional detail of each scenario is provided in the Appendix at the end of this report. Tables in this appendix provide a breakdown of hours and costs by municipality for both local and regional services. Local service hours and costs have been allocated based on jurisdiction population and employment totals. Regional service costs have been allocated based on municipalities served by each regional route.

### SCENARIO 3 SERVICE EXPANSION

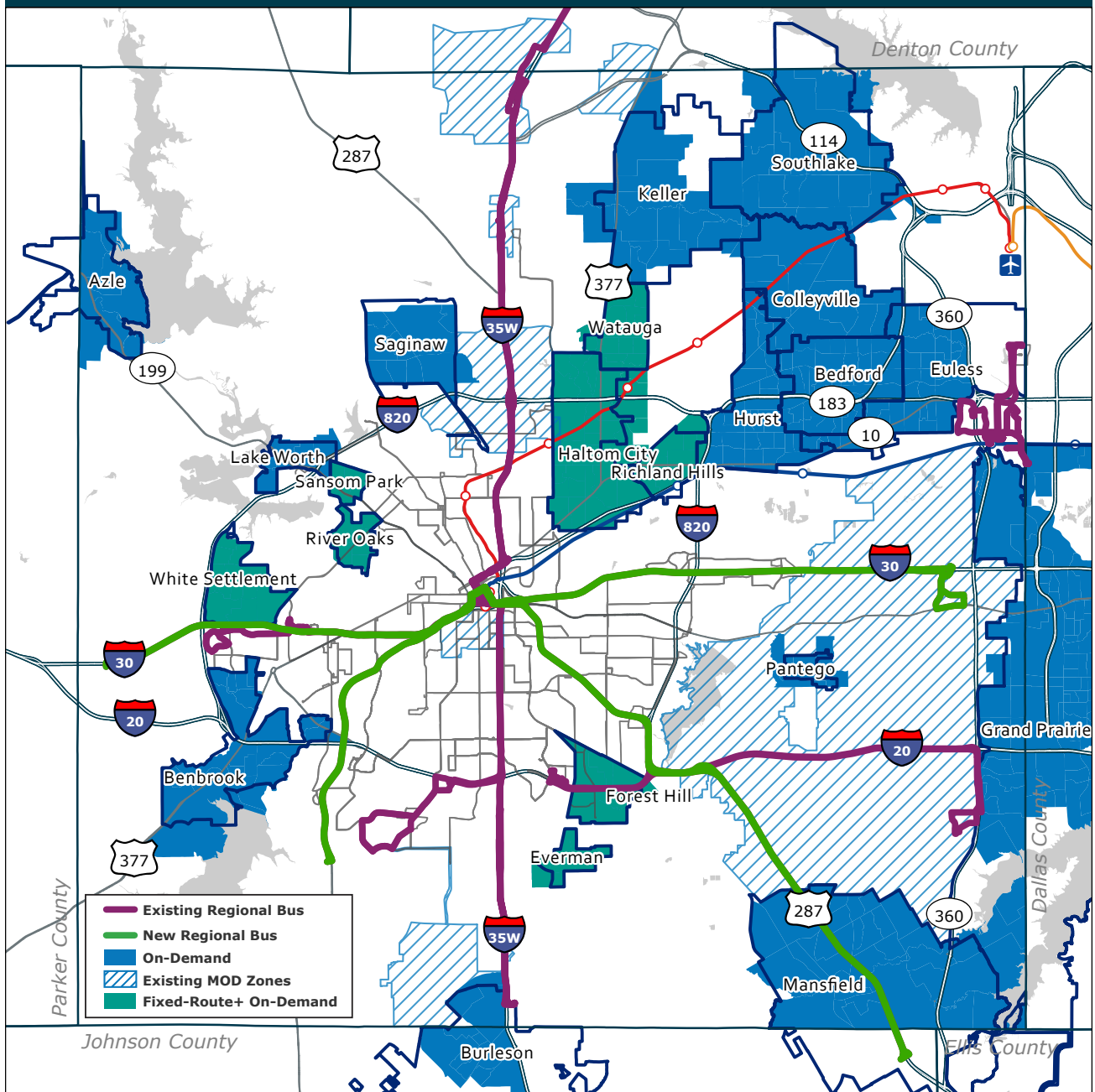
Scenario 3 reflects more significant local service expansion and less regional expansion. The regional service expansion in this scenario only includes the four new regional routes that were identified for downtown Fort Worth. The Keller–Grapevine–DFW regional route in Scenario 2 has been eliminated. Local service expansion includes the same coverage as in Scenario 2 with additional fixed route service expansion in the communities of Watauga, Haltom City, and Richland Hills.

Figure 4.8 presents the Scenario 3 proposed service expansion. The split of service hours and costs is presented below in Table 4.7. Local service costs are 88 percent of all new costs, versus 82 percent in Scenario 2 and 74 percent in Scenario 1.

TABLE 4.7 SCENARIO 3 SERVICE CHARACTERISTICS

SERVICE TYPE	ANNUAL HOURS	% OF HOURS	ANNUAL COSTS	% OF COSTS
Local	276,100	94%	\$16.1 million	88%
Regional	16,200	6%	\$2.2 million	12%
<b>Total</b>	<b>292,300</b>	<b>100%</b>	<b>\$18.3 million</b>	<b>100%</b>

FIGURE 4.8 SCENARIO 3 SERVICE EXPANSION



Note: Several municipalities have boundaries that cross into adjacent counties. In those instances, the needs analysis evaluated needs for the entire municipality. Service expansion recommendations outside of Tarrant County were included in those municipalities if there were an identified need.

TABLE 4.8 PROPOSED NEW TRANSIT SERVICES BY CITY

CITY	SCENARIO 1 74% Local/26% Regional Cost Split	SCENARIO 2 82% Local/18% Regional Cost Split	SCENARIO 3 88% Local/12% Regional Cost Split
Arlington	Regional	Regional	Regional
Azle	On-Demand	On-Demand	On-Demand
Bedford	On-Demand	On-Demand	On-Demand
Benbrook	On-Demand	On-Demand	On-Demand
Burleson	On-Demand	On-Demand	On-Demand
Colleyville	—	On-Demand	On-Demand
Eules	On-Demand	On-Demand	On-Demand
Everman	On-Demand —	On-Demand Fixed Route	On-Demand Fixed Route
Forest Hill	On-Demand —	On-Demand Fixed Route	On-Demand Fixed Route
Fort Worth	Regional	Regional	Regional
Grapevine	Regional	Regional	—
Grand Prairie	On-Demand Regional	On-Demand —	On-Demand —
Haltom City	On-Demand —	On-Demand —	On-Demand Fixed Route
Hurst	On-Demand	On-Demand	On-Demand
Keller	— Regional	On-Demand Regional	On-Demand —
Lake Worth	—	On-Demand	On-Demand
Mansfield	On-Demand Regional	On-Demand Regional	On-Demand Regional
Pantego	On-Demand	On-Demand	On-Demand
Richland Hills	On-Demand —	On-Demand —	On-Demand Fixed Route
River Oaks	On-Demand —	On-Demand Fixed Route	On-Demand Fixed Route
Saginaw	On-Demand	On-Demand	On-Demand
Sansom Park	On-Demand —	On-Demand Fixed Route	On-Demand Fixed Route
Southlake	— Regional	On-Demand Regional	On-Demand —
Watauga	On-Demand —	On-Demand —	On-Demand Fixed Route
White Settlement	On-Demand —	On-Demand Fixed Route	On-Demand Fixed Route




## 4.3 SCENARIO EVALUATION

Once the three scenarios were defined, the next step was defining and evaluating key performance measures to understand potential trade-offs resulting from each scenario's mix of local and regional service expansion. Specifically, the following three performance metrics were considered to better understand the potential benefits of expanded transit service for Tarrant County residents and workers.

- » Transit accessibility measures additional Tarrant County residents and jobs that gain access to transit in each scenario;
- » Trip coverage measures the percent of new trips that can now be completed by transit in each scenario; and
- » Usage estimates the number of new transit riders that can be achieved in each scenario.

All performance measures include additional analyses of impacts to minority and low-income populations. (Table 4.9).

TABLE 4.9 SCENARIO PERFORMANCE MEASURES

PERFORMANCE MEASURE	MEASUREMENT USED	DATA SOURCE
<b>Accessibility</b> 	<ul style="list-style-type: none"> <li>• Overall and Equity Population near transit</li> <li>• Jobs near transit</li> </ul>	<ul style="list-style-type: none"> <li>• ReMix; derived from American Community Survey (2014–2018)</li> <li>• ReMix; derived from Longitudinal Employer-Household Dynamics dataset (2017)</li> </ul>
<b>Trip Coverage</b> 	<ul style="list-style-type: none"> <li>• Percent of trips (start to finish) completable on transit (overall and equity trips)</li> </ul>	<ul style="list-style-type: none"> <li>• Location-based services data</li> </ul>
<b>Usage</b> 	<ul style="list-style-type: none"> <li>• Estimated ridership (overall and equity trips)</li> </ul>	<ul style="list-style-type: none"> <li>• NCTCOG travel demand model and local ridership on equivalent services</li> </ul>

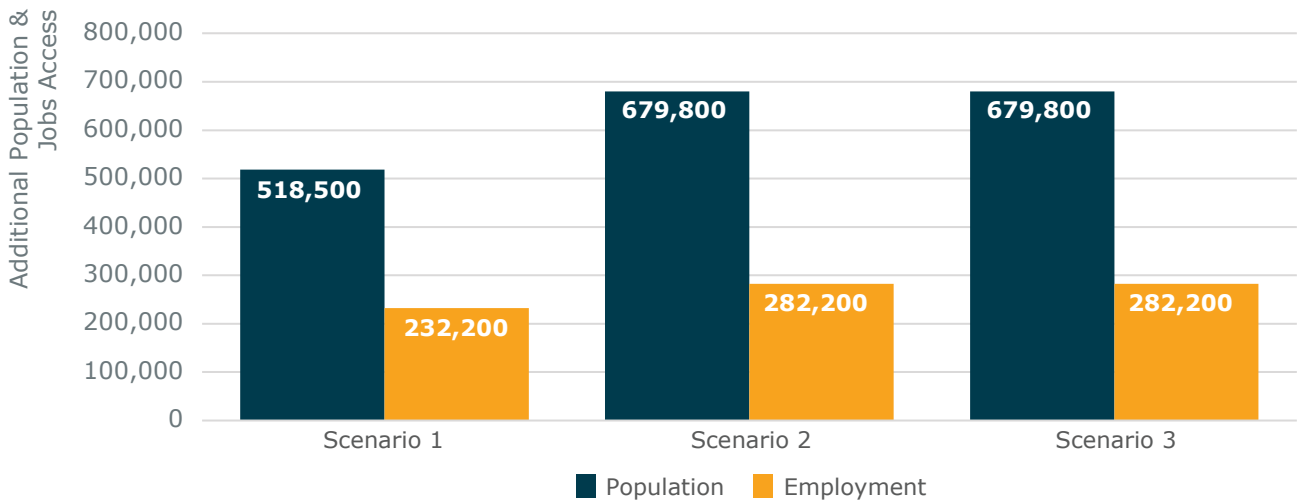
### ACCESSIBILITY

Important objectives for any transit service expansion project are improving overall transit accessibility to community residents and improving transit accessibility to employment opportunities. Accessibility improvements were measured by determining additional residents that have access to local transit, and additional residents that have access to regional employment centers.

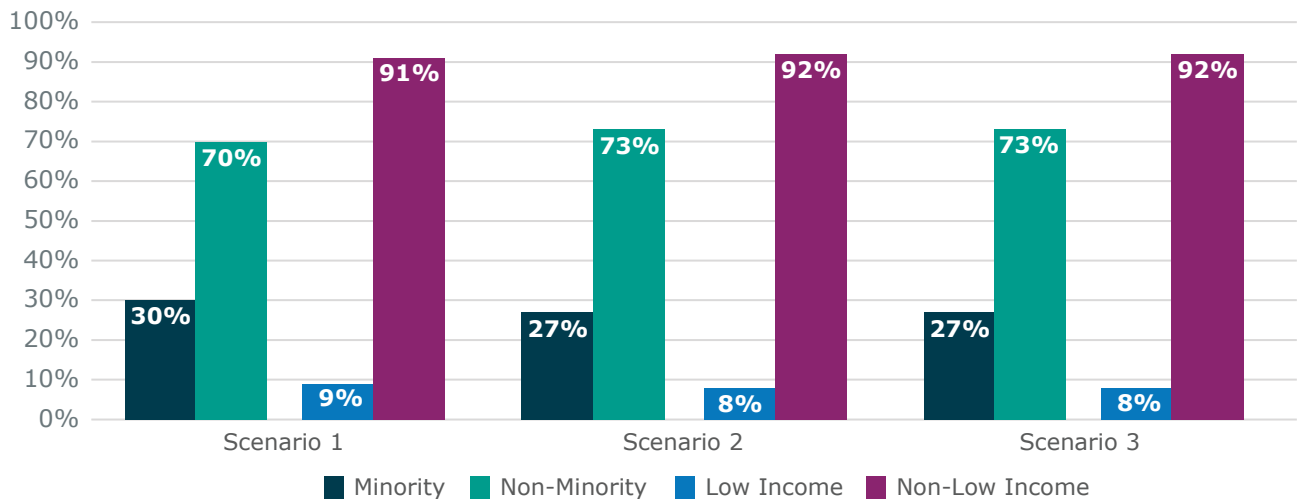
### Local Service Access

The three scenarios include a mix of mobility-on-demand service expansion and local fixed route expansion. The number of new residents and the number of jobs that fall within proposed mobility-on-demand zones and potential new fixed route services (within ½ mile) are presented in Figures 4.9 through 4.12. These figures present both overall population and equity population/ household (minority population and low-income household, as defined by the US Census Bureau’s American Community Survey) expansion accessibility. Scenarios 2 and 3 reflect the greatest level of MOD coverage, with both scenarios assuming the same on-demand coverage. Scenario 1’s expanded population within MOD zones is 30 percent minority and 9 percent low income, versus 27 percent minority and 8 percent low income for Scenarios 2 and 3. Scenario 3 provides a significant increase in population along new fixed route service, with 21 percent of this expanded population identified as minority residents and 10 percent as low-income residents.

**FIGURE 4.9 NEW MOBILITY-ON-DEMAND SERVICE ACCESSIBILITY**

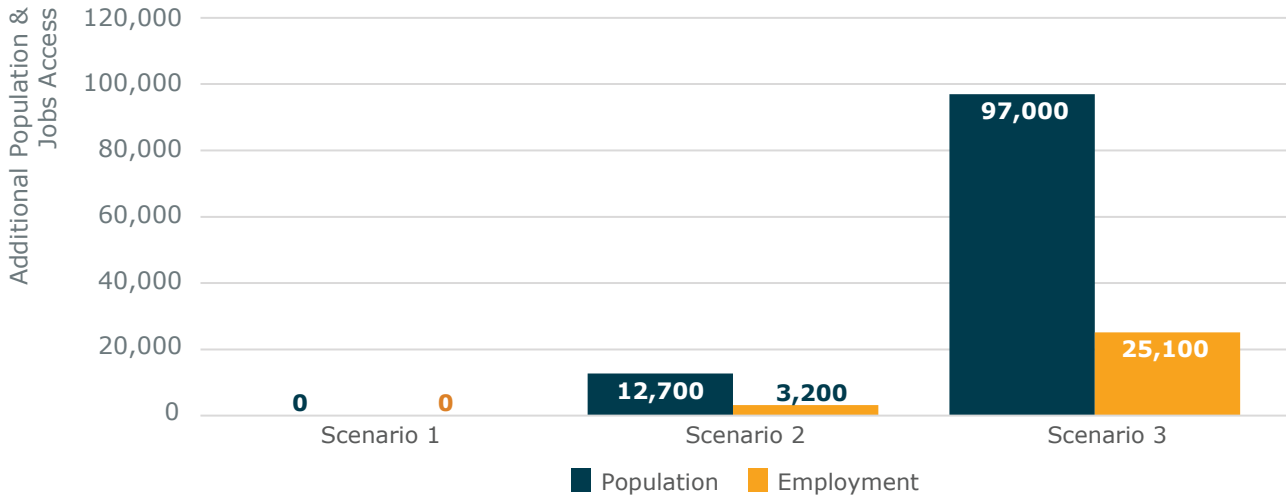


**FIGURE 4.10 NEW MOBILITY-ON-DEMAND ACCESSIBILITY BY POPULATION GROUP**

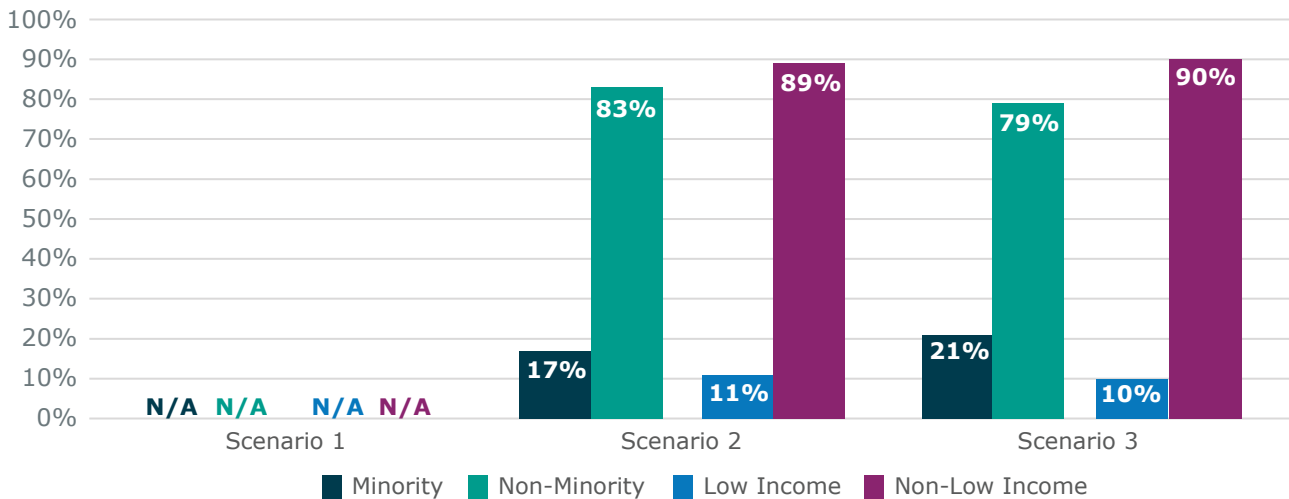




**FIGURE 4.11 NEW FIXED ROUTE SERVICE ACCESSIBILITY**



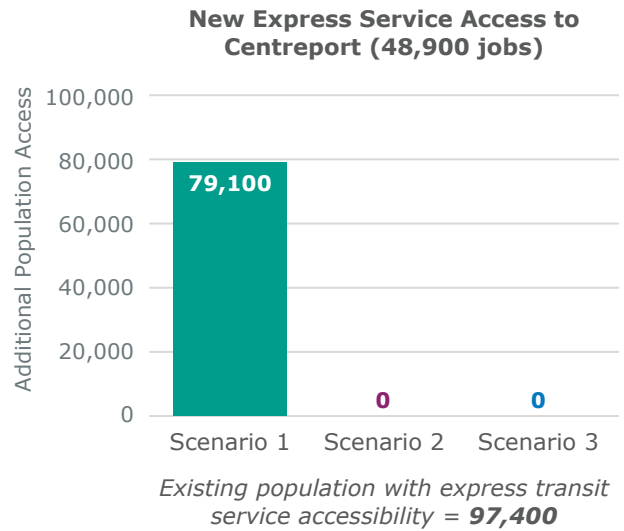
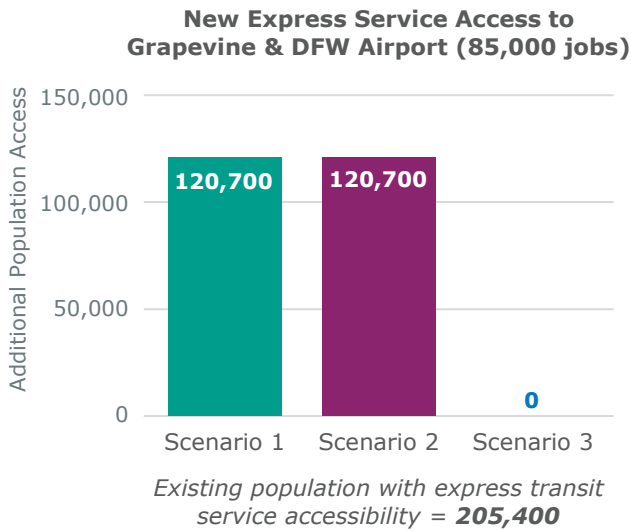
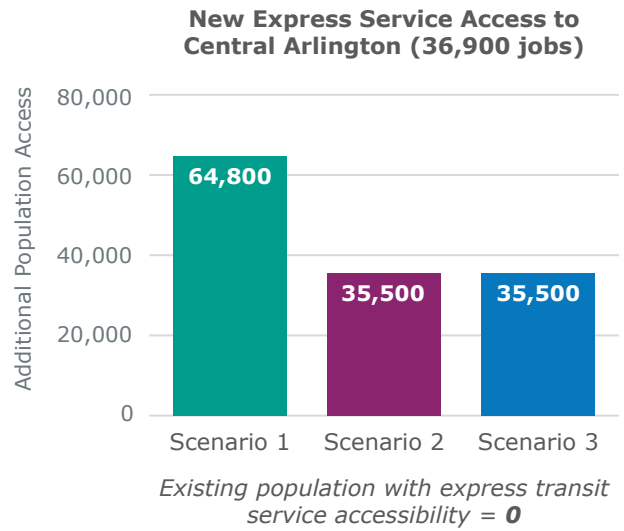
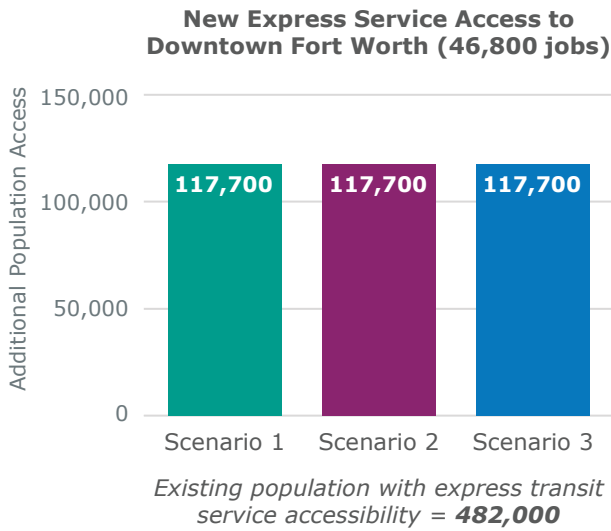
**FIGURE 4.12 NEW FIXED ROUTE SERVICE ACCESSIBILITY BY POPULATION GROUP**



**Regional Service Access**

The three scenarios also reflect regional service expansion to downtown Fort Worth, central Arlington, DFW Airport and Centreport. Additional Tarrant County residents that have access to these major employment centers in each scenario are presented in Figure 4.13. The breakdown of minority/nonminority and low-income/non-low-income residents for this expanded transit access is presented in Table 4.10. All three scenarios include regional service expansion to downtown Fort Worth and central Arlington. Scenario 2 does not include new regional service to Centreport and Scenario 3 does not include new regional service to both Centreport and DFW Airport.

**FIGURE 4.13 NEW REGIONAL SERVICE ACCESSIBILITY**



**TABLE 4.10 NEW REGIONAL SERVICE ACCESSIBILITY BY POPULATION GROUP**

Employment Center	Scenarios	Additional Population Access	Percent Minority	Percent Low-Income
Downtown Fort Worth	All Scenarios	117,700	29%	16%
Central Arlington	Scenario 1 only	64,800	41%	16%
	Scenarios 2 & 3	35,500	35%	22%
Grapevine/DFW Airport	Scenarios 1 & 2	120,700	26%	13%
Centreport	Scenario 1 only	79,100	35%	18%

## TRIP COVERAGE

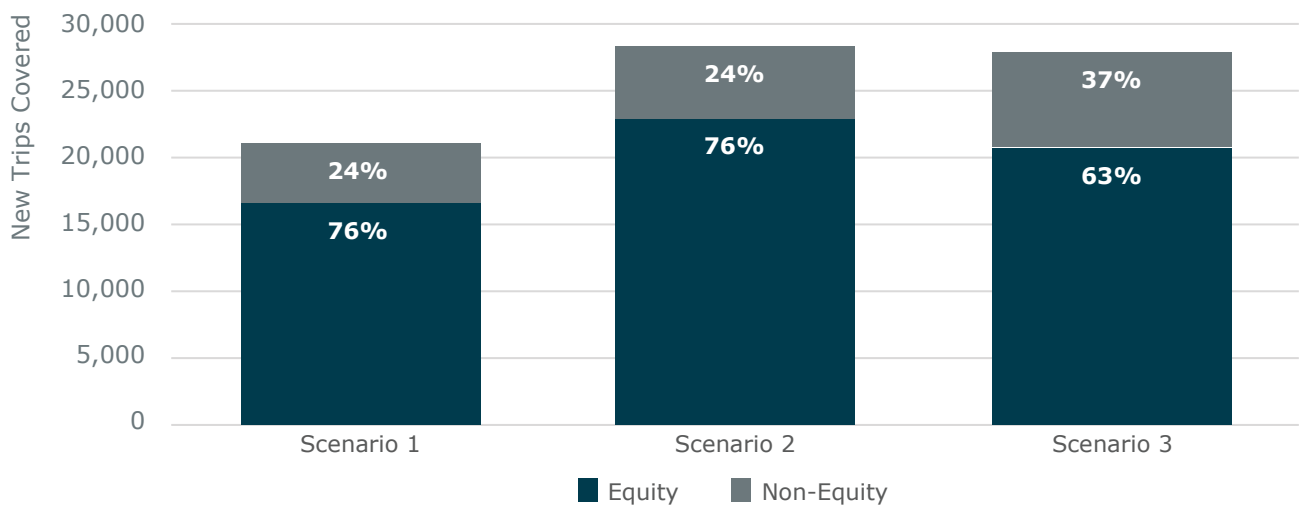
For transit to be useful, transit stops need to be located near potential riders' homes and destinations—be they work, shopping, medical, or other trip types. Residents make decisions on where to live, work, or otherwise spend their time based on the transportation options available to connect those trip ends. For a long-range planning effort such as Mobility 2045, it can be assumed that travelers will, over time, adapt to the available options; many of the users will certainly change residences or jobs over a long-range time period, and may not even currently live in the region.

However, over the short term, it becomes important to consider the present-day journeys being taken, and how well new transit routes or mobility zones align with

those travel patterns. Put differently, trip coverage estimates the number of all new trips that could be conceivably taken by users of new services, with the assumption that some percent will ultimately elect to do so. This analysis uses the same LBS data source used in the Existing Conditions section of this report. Using this data source, trips made by persons whose home location is in a block group containing a high concentration of persons or households meeting the equity criteria are tracked separately.

For mobility-on-demand services, Scenario 2 covers the most trips in absolute terms, with Scenario 3 covering the most equity trips in both proportionate and absolute terms (Figure 4.14).

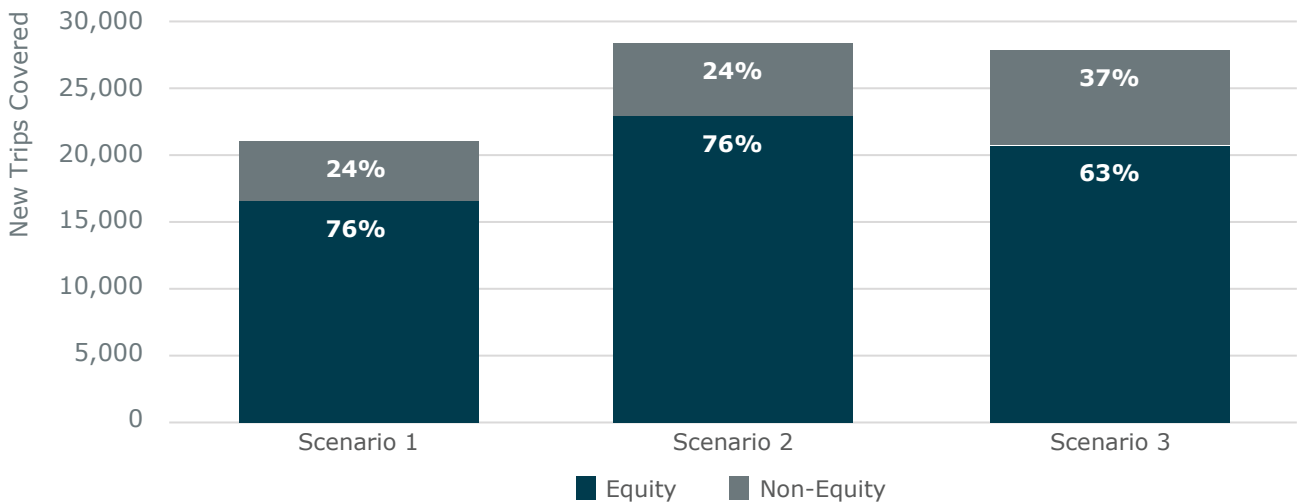
FIGURE 4.14 NEW MOBILITY-ON-DEMAND TRIPS COVERED



Source: LOCUS LBS Data, 2019.

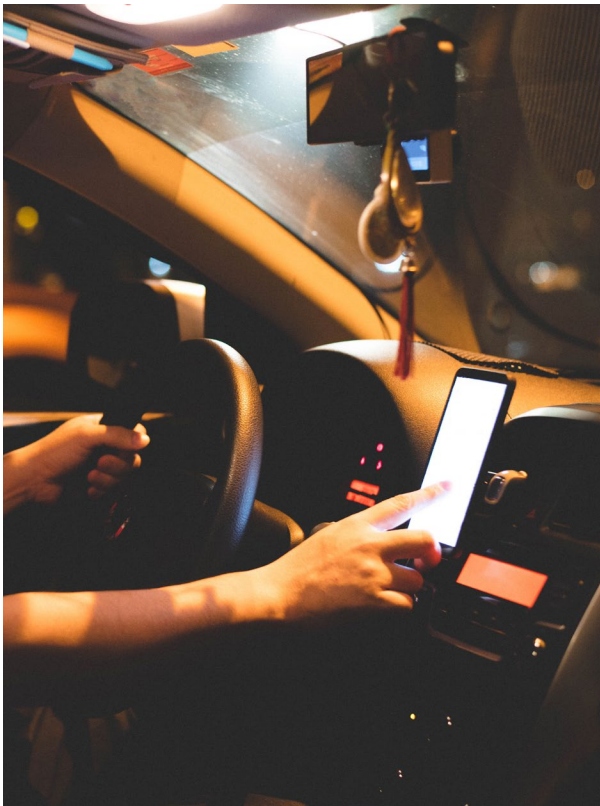
With regards to fixed route trip coverage, Scenario 3 represents the largest increase over existing coverage for trips beginning or ending in the study area. Scenario 3 also reflects the largest increase in absolute terms for equity trips, though not proportionately (Figure 4.15).

**FIGURE 4.15 NEW FIXED ROUTE TRIPS COVERED**



Source: LOCUS LBS Data, 2019.

However, these aggregated numbers conceal a few tradeoffs. Scenario 1’s fixed route services carries a higher proportion of regional travel (26 percent of total cost of service), while Scenario 3 focuses a higher proportion on local travel (with regional making up only 12 percent of total cost of service). The decision between regional trips versus local trips—and the resulting impact on equity group travel—represents a community decision.



**Mobility-on-Demand Services**

Mobility-on-demand services are assumed in this analysis to be operated in zones more-or-less within the bounds of their respective municipalities. This, of course, comes with a few caveats—municipalities may elect to operate services within a subset of their jurisdictions; include access to a commuter rail station nearby, as does the City of Arlington; or combine territories with adjacent zones. The factors affecting these decisions are described in more detail in the Implementation Plan section of this report.

TABLE 4.11 MOBILITY-ON-DEMAND TRIP COVERAGE

ZONE	S1	S2	S3	TOTAL NEW TRIPS	TOTAL EQUITY TRIPS	PERCENT EQUITY TRIPS
Azle	●	●	●	11,800	800	7%
Bedford	●	●	●	48,300	7,200	15%
Benbrook	●	●	●	17,000	1,400	8%
Burleson	●	●	●	35,800	3,300	9%
Colleyville		●	●	24,200	1,000	4%
Euless	●	●	●	46,400	9,100	20%
Everman	●	●	●	3,000	2,700	90%
Forest Hill	●	●	●	6,500	6,000	92%
Grand Prairie	●	●	●	226,700	191,700	85%
Haltom City	●	●	●	31,900	15,800	50%
Hurst	●	●	●	42,800	9,100	21%
Keller		●	●	47,400	2,000	4%
Lake Worth		●	●	9,400	2,000	21%
Mansfield	●	●	●	109,100	16,100	15%
Pantego	●	●	●	9,000	1,900	21%
Richland Hills	●	●	●	2,800	1,100	39%
River Oaks	●	●	●	3,900	1,100	28%
Saginaw	●	●	●	14,500	2,100	14%
Sansom Park	●	●	●	900	400	44%
Southlake		●	●	76,800	5,900	8%
Watauga	●	●	●	15,200	1,600	11%
White Settlement	●	●	●	9,800	1,800	18%

Source: LOCUS LBS Data, 2019.

## Fixed Route Services

Fixed route services, especially those designed as “express” or “premium” routes, often cover long distances across several municipalities, and allow transfers between routes. As such, coverage values here are shown per scenario (including both local and regional fixed route services), with the assumption that riders can transfer between routes to reach their ultimate destination.

TABLE 4.12 FIXED ROUTE TRIP COVERAGE

SCENARIO	TOTAL NEW TRIPS	NEW EQUITY TRIPS	PERCENT EQUITY TRIPS
<b>Baseline</b>	<b>1,126,000</b>	<b>673,000</b>	<b>60%</b>
Scenario 1	49,000	12,000	24%
Scenario 2	75,000	18,000	24%
Scenario 3	166,000	61,000	37%

Source: LOCUS LBS Data, 2019. Baseline trips reflect those trips either beginning or ending within the study area—that is, census block groups that fall within Tarrant County but outside the Trinity Metro service area.

As noted above, each scenario allows not only new routes to be taken, but also for transfers to happen between existing and new routes.

## USAGE

While trip coverage describes the number of trips made possible by new services, usage attempts to estimate the actual number of riders who will elect to use the services as implemented. These values have use in weighing the return-on-investment of implementing new services as well as understanding the potential for farebox revenue.

Ridership was estimated using a variety of methods:

- » For mobility-on-demand service, a per-capita usage estimate based on local examples was used. Low and high estimates are provided;
- » For local fixed route services, a specialized suburban transit ridership estimation tool was used. Low and high estimates are provided; and
- » For regional fixed route express service, the NCTCOG regional travel demand model was used. Point estimates are provided.

## Mobility-on-Demand Services

Demand responsive service usage hinges on a number of factors: cost charged for the trip; length or distance of trip allowed; the times of day or days of the week trips are available; whether or not shared trips are allowed or required; and so forth.

Local examples of these services—most relevantly, Trinity Metro’s ZipZones, and Arlington’s Via service but also DCTA’s on-demand services and DART’s GoLink zones—were implemented recently under dramatically different service models. Several models based on mean trip distance, trip activity, demographics, and operational characteristics were considered, but the simplest and most straightforward approach was to estimate usage on the order of 50 to 100 annual rides per thousand residents.<sup>9</sup>

Local examples of on-demand services that began before COVID and continued providing service throughout the pandemic observed a drop in usage of about 50 percent. Therefore, a more optimistic medium-range (i.e., post-COVID 19) scenario might use 200 annual rides per thousand residents.

Another observed factor was substantially higher ridership for zones that contain access to a regional rail station. This is consistent with information provided by DART staff—access to regional or light rail was an especially high predictor of on-demand service usage; zones containing a rail station or located near enough to an existing or future rail station to be served should expect higher usage. Low and high estimates of potential MOD ridership is presented below in Table 4.13.

## YEAR OF ANALYSIS

As the usage of new transit services is estimated using similar, existing transit services as a guide, it becomes important to consider the “base year” used to make sure ridership forecasts made using different models can be compared directly.

The NCTCOG travel demand model (used to calculate ridership on Express routes) is calibrated to the year 2014, using the background transit routes from the year 2018; the local fixed route model is calibrated to the year 2018; and the demand-response estimates were based on zones implemented between 2019 and 2020.

Because key variables—overall transit usage, demographics and travel, and of course, the effects of the COVID 19 pandemic—make it difficult to define a true “base” year (as one might when adjusting for monetary inflation), and because the three modeling methodologies are based on years within a relatively short timeframe (roughly 2014 through 2020), this work does not attempt to inflate or deflate estimates over this period of time.

Since this document is focused on the near term—less than 10 years, during which the COVID 19 recovery might cause any one of these input variables to vary dramatically—this is reasonable. A long-range planning document focused on a 25-year planning horizon would need to place more emphasis on socioeconomic forecasts.

<sup>9</sup> This estimate is based primarily on Trinity Metro’s ZipZones, as the service parameters—namely the size of the zones—are the closest to those recommended in this document. Data from DART, DCTA, and Arlington’s Via program were used to validate these estimates.

TABLE 4.13 MOBILITY-ON-DEMAND ESTIMATED USAGE

ZONE	S1	S2	S3	POPULATION	ANNUAL RIDES (LOW ESTIMATE)	ANNUAL RIDES (HIGH ESTIMATE)
Azle	●	●	●	10,842	500	1,100
Bedford	●	●	●	49,252	2,500	4,900
Benbrook	●	●	●	23,555	1,200	2,400
Burleson	●	●	●	29,152	1,500	2,900
Colleyville		●	●	27,423	1,400	2,700
Eules	●	●	●	53,881	2,700	5,400
Everman	●	●	●	7,651	400	800
Forest Hill	●	●	●	12,873	600	1,300
Grand Prairie	●	●	●	180,395	9,000	18,000
Haltom City	●	●	●	43,972	2,200	4,400
Hurst	●	●	●	39,330	2,000	3,900
Keller		●	●	43,264	2,200	4,300
Lake Worth		●	●	6,876	300	700
Mansfield	●	●	●	62,610	3,100	6,300
North Richland Hills				70,655	3,500	7,100
Pantego	●	●	●	10,791	500	1,100
Richland Hills	●	●	●	8,897	400	900
River Oaks	●	●	●	8,733	400	900
Saginaw	●	●	●	25,295	1,300	2,500
Sansom Park	●	●	●	5,027	300	500
Southlake		●	●	32,292	1,600	3,200
Watauga	●	●	●	25,036	1,300	2,500
White Settlement	●	●	●	17,135	900	1,700

Source: Ridership based on locally implemented, comparable ZipZones. Population based on American Community Survey five-year estimates (2014–2018).

Notes: North Richland Hills is nominally within the Trinity Metro service area, insofar as that it funds a TRE station and service via sales tax; however, it does not include circulator/ZipZone-style service and could conceivably benefit from such service. Burleson is largely outside Tarrant County, but sides along a key Mobility 2045 high-capacity corridor and is therefore a good candidate for on-demand services.



### Fixed Route—Local Services

Local service usage estimates were generated using a specialized machine-learning-based suburban-exurban ridership model developed by the University of Texas at Austin and administered by NCTCOG. The tool uses a variety of inputs—namely population density, operational characteristics like frequency and number of stops—and outputs a range of estimates of total route ridership based on these factors. The low and high estimates below reflect a conservative ridership forecast based on these values (Table 4.14).

TABLE 4.14 FIXED ROUTE—LOCAL ESTIMATED USAGE

ROUTE NAME	S1	S2	S3	ANNUAL RIDERSHIP (LOW ESTIMATE)	ANNUAL RIDERSHIP (HIGH ESTIMATE)
71 Forest Hill*		●		14,400	14,400
73 White Settlement		●		89,280	152,640
75 Richland Hills–Haltom City			●	120,960	149,760
71A Forest Hill*			●	37,440	74,880
71B Everman*			●	86,400	89,280
74A Watauga–Keller			●	115,200	184,320
74B Watauga			●	123,840	175,680
73 White Settlement			●	129,600	152,640

\* Indicates that the route is an extension of an existing route; estimates reflect additional segments only.

Source: University of Texas machine-learning-based local route ridership estimation tool.

Note: Scenario two contains some minor changes to routes serving Sansome Park, River Oaks, and Everman, but these changes are designed to increase the effectiveness of other routes in the system and were not estimated to generate additional ridership on those routes.

### Fixed Route—Express Services

Express fixed route services were modeled using the NCTCOG Regional Travel Demand Model. Annual ridership estimates are presented in Table 4.15.

TABLE 4.15 FIXED ROUTE—EXPRESS ESTIMATED USAGE

ROUTE	S1	S2	S3	AVG ANNUAL RIDERSHIP
Fort Worth–Arlington	●	●	●	76,200
Keller–Grapevine	●	●		56,100
Linkcrest–Fort Worth	●	●	●	16,500
Mansfield–Centreport	●	●		49,300
Mansfield–Fort Worth	●	●	●	10,500
Fort Worth–Primrose	●	●	●	36,200

Source: NCTCOG Regional Travel Demand Model; socioeconomic data from 2014, transit background network from 2019.

There are a few factors that make uncertainty in usage for on-demand services more palatable than with their fixed route counterparts. Primarily, operating costs scale much more directly with ridership, so while uncertainty in the use of on-demand services is greater, uncertainty in budget, especially with respect to fare recovery, is lessened.

For example: on paper, Azle might budget out \$169k for the on-demand service and collect \$1.6k in revenue (based off of the above low estimate); but this does not mean that Azle is paying \$169k (less \$1.6k) for between 500 and 1,000 rides; rather, they will simply have a substantial operating reserve left over for future MOD service (of course, this depends on their agreement; see Chapter 6, Implementation).

A more pressing question—easily answered—might be phrased as such: can (e.g.) White Settlement, with its budget of (e.g., from Scenario 1) deliver its expected on-demand ridership of 900 to 1,700 annual trips in its budget-allowed 10,300 annual revenue hours? (Yes, with a considerable buffer.) If they could not, they would need to take a policy approach to manage demand.



# FUNDING AND FINANCE

# 5

SAGINAW, TX\*

## KEY ELEMENTS

Key elements of this chapter include:

- Descriptions of five municipal typologies used to classify similar municipalities in Tarrant County;
- An overview of funding options available to support shared mobility services; and
- A gap analysis comparing estimated available funding to the operating and maintenance costs for each of the three scenarios described in Chapter 4.

## 5.1 INTRODUCTION

Municipalities within Tarrant County have both the need and the desire to improve or add transit and shared mobility options to their transportation networks. However, this need must be balanced against available resources. While construction and capital costs often dominate funding conversations for visible, high-investment transit facilities such as transit centers, rail facilities, and rolling stock, it is the recurring, year-over-year operations and maintenance (O&M)

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costs associated with both fixed route and demand-responsive services that require dedicated and/or steady revenue sources.

Tarrant County and its municipalities have many opportunities to identify special financing and opportunities to think innovatively when encountering the need to fund both capital infrastructure and O&M needs; being focused on infrastructure-light options such as extensions of existing bus routes or demand-responsive service, this report focuses on the latter.

In developing this funding strategy, it is recognized that the most important path to resiliency in our communities and county is the local entity's ability to:

- » Assemble funding systems in the community that play to the strengths of local communities and their unique revenue opportunities;
- » Prioritize stable, dedicated revenue options for O&M funding with supplements to sales tax and transit fares;
- » Secure a long-term, residual return-on-investment and provide access to innovative technologies to create flexible and future-proof mobility solutions; and
- » Give citizens the option to choose how they wish to travel.



This report:

- » Shows the total funding need at a county level required to operate the scenarios described in Chapter 4;
- » Evaluates options that are available to Tarrant County communities from Federal, State, regional and local options;
- » Aligns these available options with the strategies that already are in place; and
- » Shows the remaining financial need, to be closed by lessening of service or increasing revenue.

A typology of municipalities was developed to identify specific funding conditions for similar communities based on their transit needs and circumstances of location, proximity to transit and current plans for transit (Table 5.1).



TABLE 5.1 MUNICIPAL TYPOLOGIES

 <p><b>RURAL COMMUNITY</b></p>	<p>A municipality that currently is not served by public transportation. Typically, not adjacent to current transit-served areas. These areas are more remote or have less potential of tackling transit on their own but may realize benefits of transit by teaming up with other municipalities or contracting for service programs with their neighboring community.</p>
 <p><b>SELF-SUFFICIENT COMMUNITY</b></p>	<p>A municipality that has self-managed public transportation within the municipal boundaries. Municipality is not a member of a transit authority but could still benefit in subscribing to regional transit programs as a subscriber to a program and coordinating rider technology with a local transit authority for streamlined services. Arlington is the only community that falls into this category.</p>
 <p><b>CENTRAL CITY</b></p>	<p>A municipality served by transit provided by Trinity Metro, either by full member status or using fee-for-service transit operated by Trinity Metro.</p>
 <p><b>OUTER SYSTEM</b></p>	<p>A municipality that borders a central city where public transportation is easily extended due to proximity to the system. Typically, these areas would benefit from membership due to proximity to rail or bus transit.</p>
 <p><b>FUTURE EXTENSION</b></p>	<p>A municipality that contains a walkable urban place, which will be a priority link in the transit system described in Mobility 2045. May be currently undergoing a rail or bus transit planning process. Extending to these locations would provide additional opportunity for stations or connections along the route to the walkable urban place. Burleson and Mansfield are the two municipalities in this category.</p>

These municipal types organize funding strategies based on type of transit that is appropriate to the system. The typologies also organize the pattern of transit options and the evolution within a type as the transit technology evolves between demand-responsive and fixed route systems. For funding, the municipal types help to organize the potential transit fare revenue from the systems, to determine the potential gap in O&M costs that needs to be generated.

Through a variety of common and innovative (for transit purposes) funding mechanisms, the analysis aimed at setting assumptions on potential participation by municipalities that would receive transit services in the three scenarios and then calculated the potential net new funding that could be attained to pay for the O&M of the services.

A few conclusions can be drawn:

- » **A variety of funding measures are needed** to meet the needs of Tarrant County’s municipalities. An additional sales tax increment of 0.5 percent comes close to fully funding the operations need for some communities, but in other locations, this option is either politically infeasible or insufficient to meet revenue needs. Alternative funding solutions—or lower-cost services—must make up the difference.
- » While services—be they on demand or fixed route—must be flexible and responsive to meet service demands, **they depend on predictable and consistent revenues** to ensure the continued viability of the mobility program.
- » Funding mechanisms based on property value will have **substantial increases over time**, as transit-oriented development occurs within service areas. Public Improvement Districts (PID) and Assessments will continually bring revenue to the table and be a stable income stream.
- » Transit fares have a greater fiscal impact when **fixed route, local service is readily available**.

## 5.2 FUNDING OPTIONS

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Maintaining revenue to meet recurring O&M needs is a core challenge for transit agency funding programs. It is common to observe variability in funding as revenue lags and sways with volatile market conditions. For example, Grapevine, TX reported a drop of nearly 12 percent in sales tax revenues in 2020–2021, while Fort Worth saw a rise in sales tax revenue over the same period.<sup>10</sup> The impact of events like COVID-19 is often not fully realized for many years after, which can have a lasting impact on transit providers.

Capital expenditure (CapEx) funding for new system construction is more consistently available, though State and Federal grant opportunities can be very competitive. These dollars are typically used for new rolling stock (the buses and equipment used for transportation) as well as any major system improvements to existing transit lines. The expense for capital improvements on existing systems also are typically those that can be delayed until funding is available, allowing for flexibility in the funding stream.

Since operations funding cannot be deferred, dedicated revenue to support transit and shared mobility services are a critical focus for municipalities. Fortunately for Tarrant County, there are many local jurisdiction allowances to support O&M through innovative financing initiatives that utilize public-private partnerships, tax-increment financing, and strategic sponsorships in the State of Texas. The key and the emphasis of this section is to identify and recommend those strategies that support the types of municipalities, their capacity for these programs, and the appropriateness of the funding for the transit being provided.

<sup>10</sup> Texas Comptroller of Public Accounts May 2020–2021 Comparison Report.

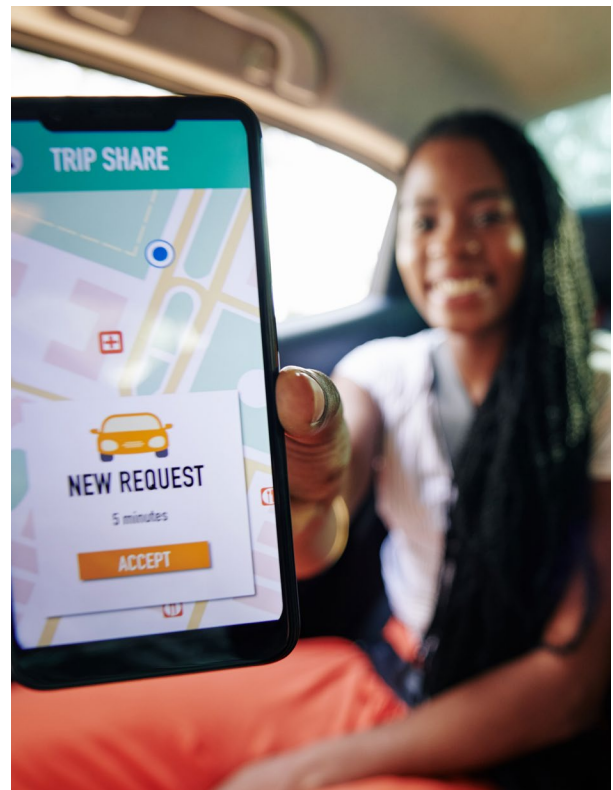
## ENGAGEMENT AND RESEARCH PROCESS

A team of transit policy experts was organized into a think tank to begin the research and alignment of key attributes for funding transit. With an eye towards narrowing funding options to categorically simple organization of Federal, State, regional, and local options, the team reviewed options that are being used across the Nation. The team concluded that there are a strong emphases on the Federal, State, and regional funding options for capital improvements used to enhance the physical construction of existing and new transit systems, while the local and regional funding options were geared towards a blend of these capital improvements, O&M. This coordination resulted in the Funding Options Matrix featured in this document.

The Tarrant County Transit Study initiative is not a stand-alone project; it is working in parallel with a Collin County Transit Study and a South Dallas County Transit Study, each of which have been tasked with supporting this form of funding strategy. To emphasize the need for regional cooperation, the three firms leading the efforts have coordinated their teams to discuss, share and support each report. This supports the North Central Texas Council of Governments (NCTCOG) staff in the creation of recommended steps and policy direction for regional proactivity. Local options for communities in North Central Texas have continuously been supported by NCTCOG staff and the Regional Transportation Council (RTC) to support the local community's options and choices to shape their own path and be self-sufficient, while having common benchmarks for the appropriate use of funds towards transit.

For additional support in the discussion of key funding programs, the Technical Advisory Group (TAG) for the Tarrant County Transit Study offered time and oversight to review and stress concerns with any options or approaches towards transit funding.

With all studies related to transit and transportation, a heavy emphasis on strategies from the Mobility 2045 plan have been reviewed and coordinated through this process. In addition, many ethos of this study, related to innovative financing, are coordinated with the Innovative Finance Initiative. This study focused on innovative programs to privately fund the O&M of the Cotton Belt rail line (now being used at TEXRail and the future Silver Line) and provides a basis for the analysis in this study.



## PRIORITIZATION

With the coordination of the three transit study projects, TAG, NCTCOG staff and the internal think tank, it was decided to prioritize the focus on funding strategies towards local options and those that would directly support transit options for communities in Tarrant County. In addition, coordination of these local options with Federal, State, and regional funding strategies would help to differentiate the various program options and which types of uses these funds would support.

The goals and objectives for this study relates directly to the need to:

- » Align funding needs with the current member city plans (Transit Moves Fort Worth, Trinity Metro Transit Plan, etc.);
- » Bring funding needs for Tarrant County communities in line with preferred transit scenario(s);
- » Coordinate opportunities objectively to align with O&M as a priority analysis, and CapEx to subsidize new construction when O&M needs are met; and
- » Provide a palette of options for a local community to work with, rather than a mandate for a specific path towards funding that may not fit the needs of communities equally.

These goals and objectives are summarized contextually within the funding goals expressed in the Mobility 2045 plan:

- » Pursue long-term sustainable revenue sources to address regional transportation system needs;
- » Provide for timely project planning and implementation; and

<sup>11</sup> Mobility 2045 plan, Chapter 2, Financial Reality.

<sup>12</sup> The State of Texas does not generally provide state funds or planning support towards urban transit systems, though the Texas Department of Transportation (TxDOT)'s transit division does support rural transit agencies, some intercity bus service, and health and human services transportation planning. For more discussion on the role of Texas and TxDOT in funding and/or regulating transit, see Chapter 6.

- » Develop cost-effective projects and programs aimed at reducing the costs associated with constructing, operating, and maintaining the regional transportation system.<sup>11</sup>

## FEDERAL AND STATE FUNDING MECHANISMS

Federal and State funding options identified as appropriate for transit and shared mobility are shown in Table 5.2. The descriptors allocate the name of the funding source or type, range and scale of the funding opportunity, need for local matching funds, applicability towards local matching funds, type of application of the funds (O&M or CapEx), and whether the source or program currently is being used by entities in the region, based on generally available content and engagement input.










Most Federal funding opportunities enhance the capacity of regional or transit authorities and State or local governments to finance new infrastructure or transit projects. The State funding opportunities are typical means for local, regional and transit authorities to finance the funding, or policy providing these entities the ability to manage special financing districts.<sup>12</sup>


## LOCAL FUNDING OPTIONS


Aside from Federal sources, most transit funding in Texas comes from local sources. Historically, the primary funding mechanism for urban transportation is a mix of sales tax, fare revenue, and direct funding from the general fund; however, a variety of options are available (Table 5.3).



TABLE 5.2 FEDERAL AND STATE FUNDING MECHANISMS

NAME	RANGE (RELATIVE TO OTHER FUNDING IN CATEGORY)	LOCAL MATCH NEED	LOCAL MATCH APPLY	OPERATIONS AND MAINTENANCE (O&M)	CAPITAL EXPENDITURE (CAPEX)	EXISTING PROGRAM
<b>FEDERAL</b>						
5307 Urbanized Area Funds	Mid to High	●			●	Yes
5309 Capital Investment Grants	Mid to High	●			●	Yes
5339 Buses and Bus Facilities	Mid to High	●			●	Yes
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grants	Mid to High	●			●	Yes
Accelerating Innovative Mobility (R&D)	Low			●		Yes
Access and Mobility Partnership Grant	Low	●			●	Yes
Congestion Mitigation and Air Quality Program under FAST Act	Mid to High	●			●	Yes
Integrated Mobility Innovation Grant	Low				●	Yes
<b>STATE (TEXAS)</b>						
State Infrastructure Bank Loans 	Mid to High	●			●	
Gas Tax Surcharge 	Low		●	●	●	Yes
Vehicle-Miles Traveled Tax  	Mid		●	●		No
Vehicle Weight Tax 	Mid			●		No
Local Option Tax Rate Election Increase  	Mid		●	●	●	No
Air Quality Surcharge 	Low to Mid			●		No
Transportation Development Credits 	Low to Mid		●		●	Yes

 Recommended funding options based on feasibility and overall benefit

 Requires significant political support or referendum to enact




















 Potentially volatile funding source

TABLE 5.3 LOCAL AND REGIONAL FUNDING MECHANISMS

NAME		RANGE (RELATIVE TO OTHER FUNDING IN CATEGORY)	LOCAL MATCH NEED	LOCAL MATCH APPLY	OPERATIONS AND MAINTENANCE (O&M)	CAPITAL EXPENDITURE (CAPEX)	EXISTING PROGRAM
<b>LOCAL (MUNICIPALITY, TRANSIT AUTHORITY OR COUNTY)</b>							
Sales Tax Contributions		Low to High		●	●	●	Yes
Tax Increment Reinvestment Zone		Mid to High		●		●	Yes
Transportation Reinvestment Zone		Mid to High		●		●	Yes
General Fund Contributions		Low to Mid		●	●	●	Yes
Toll Fee Allocation		Low to Mid		●	●	●	No
Fee for Service (VIA, ZipZone, etc.)		Low to Mid			●		Yes
Development Fees/ Impact Fees		Low			●	●	Yes
Bonds/CIP Programming		Low to Mid		●		●	Yes
Public Improvement Districts		Low to Mid			●	●	Yes
Property Assessments		Low		●	●	●	Yes
Private Participation (Sponsorship by Corporations)		Low to Mid		●	●	●	Yes
Agency Participation (Sponsorship by Institutions)		Low to Mid		●	●	●	Yes
Local Motor Vehicle Registration Fee		Low		●	●	●	Not for transit
Transit Fare Revenue		Low to Mid		●	●	●	Yes
In-Kind Contributions		Low		●	●	●	Yes
Joint Development Agreements/Projects		Low to High		●	●	●	Not under Trinity Metro
Luxury Transportation Tax		Low			●		No
Auxiliary Transit Revenues (Advertising and Concessions)		Mid			●		Yes

	Recommended funding options based on feasibility and overall benefit		Potentially volatile funding source
	Requires significant political support or referendum to enact		Public-private partnership supportive

As noted above, “local option” sales tax revenues are a common means for communities to fund transit. Texas allows municipalities to levy a local sales tax of up to 2 percent (out of a total of 8.25 percent, the remainder of which goes to the State); of this, 1 percent is the maximum allowable for transit. It is common for cities to allocate the remaining portions of their funding, including funding that could otherwise be allocated towards transit—towards other uses. Sales tax allocations are subject to periodic review and renewal, posing an opportunity and an obstacle for continuous and sustainable transit funding.

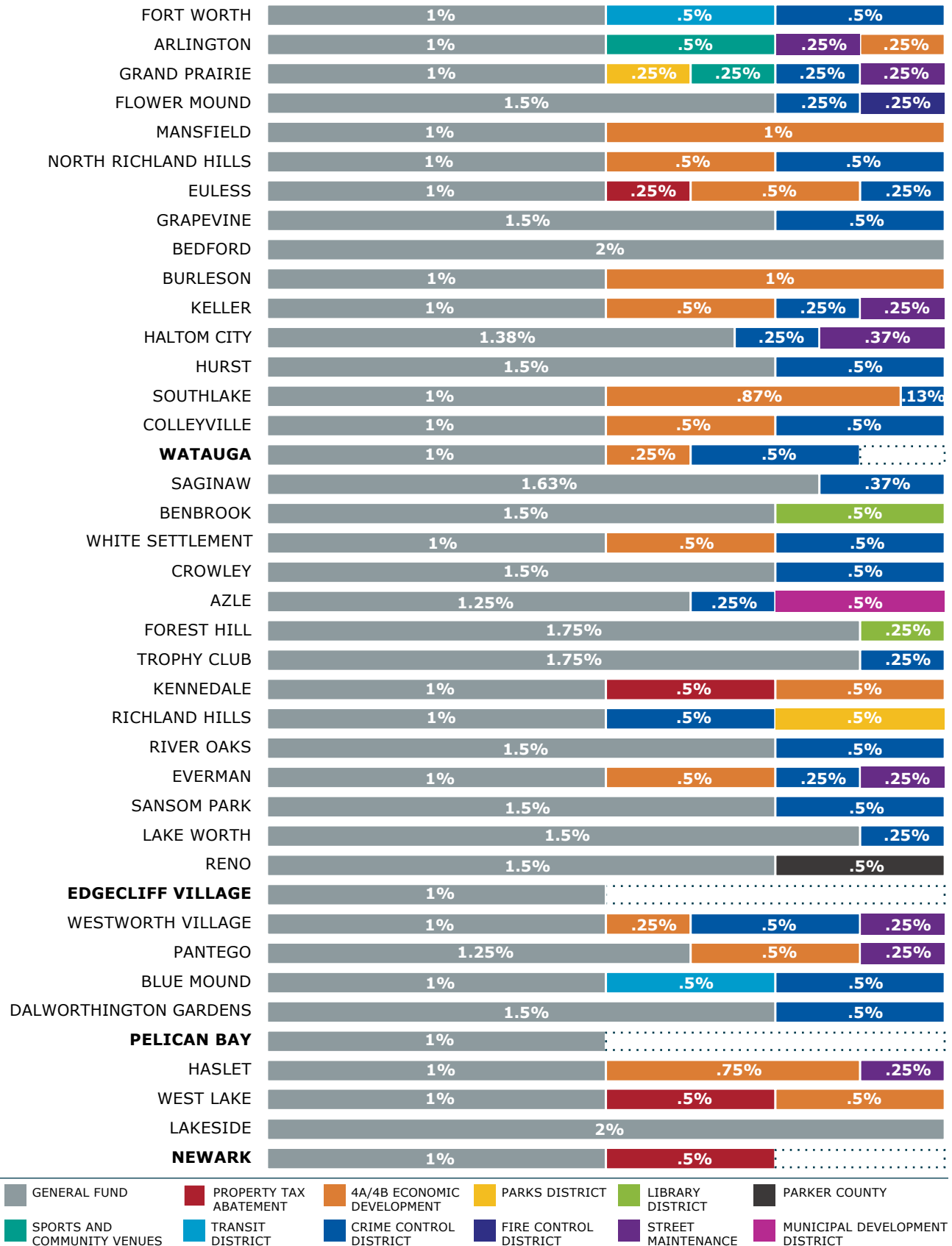
To become a member of a transit agency such as Dallas Area Rapid Transit (DART), Denton County Transit Authority (DCTA), or Trinity Metro, municipalities are typically required to contribute a portion of this sales tax or its equivalent to the authority; DART membership requires a full 1 percent sales tax allocation. Whether or not membership can be obtained through sales taxes, general fund transfers, or other means depends on agency policy—which can vary over time. Some agencies, including Trinity Metro, allow participation via “fee-for-service” models, wherein the agency provides paid transit services to a community without a membership requirement.

In Tarrant County, only two cities (Fort Worth and Blue Mound) contribute a 0.5 percent local sales tax option to Trinity Metro; the other member cities allocate a general fund contribution. Only four municipalities have not used their full local option sales tax allocation:

- » **NEWARK:** Located in the northwest corner of Tarrant County, this community sits outside of many common transit corridors.
- » **PELICAN BAY:** Located on the western edge of Eagle Mountain Lake, this community also sits outside of many common transit corridors.
- » **EDGECLIFF VILLAGE:** Surrounded by City of Fort Worth and due west of Forrest Hill, this community stands to benefit from local transit options, comparable to those services provided to Forrest Hill.
- » **WATAUGA:** Located in north central Tarrant County and is adjacent to Central City municipal types.

The remaining cities in Tarrant County use their local option sales tax revenues for a variety of different programs (Table 5.4—cities with remaining sales tax potential are listed in boldface.). The most common uses of the additional 1 percent are economic development (per Section 4A or Section 4B of the Development Corporation Act of 1979), crime prevention, and property tax abatement; several other community-focused uses are allowed, such as funding for libraries, sports, parks, or street maintenance.

TABLE 5.4 LOCAL OPTION SALES TAX ALLOCATION



Source: Adapted from 2019 State Comptroller Office and individual municipality annual report

## 5.3 MUNICIPAL FUNDING TYPOLOGY

The development of scenarios in Chapter 4 creates an opportunity to explore a few general service mixes available to fund transit in Tarrant County. The following municipal typology categorizes communities based on proximity and relationship to the existing transit services in Tarrant County in order to identify common approaches to funding the service outlined in the scenarios. The categories represent general guidelines; communities may shift in their demographics, community visions, or economic outlook, and therefore the typologies shown here may not represent an ironclad vision of the future.

Recommendations for funding are categorized based on a municipal funding type in the context of each scenario for transit. The goal of the type is to outline what instruments of O&M funding are appropriate for a given municipality, given the scenario that Tarrant County is aiming towards in the future.

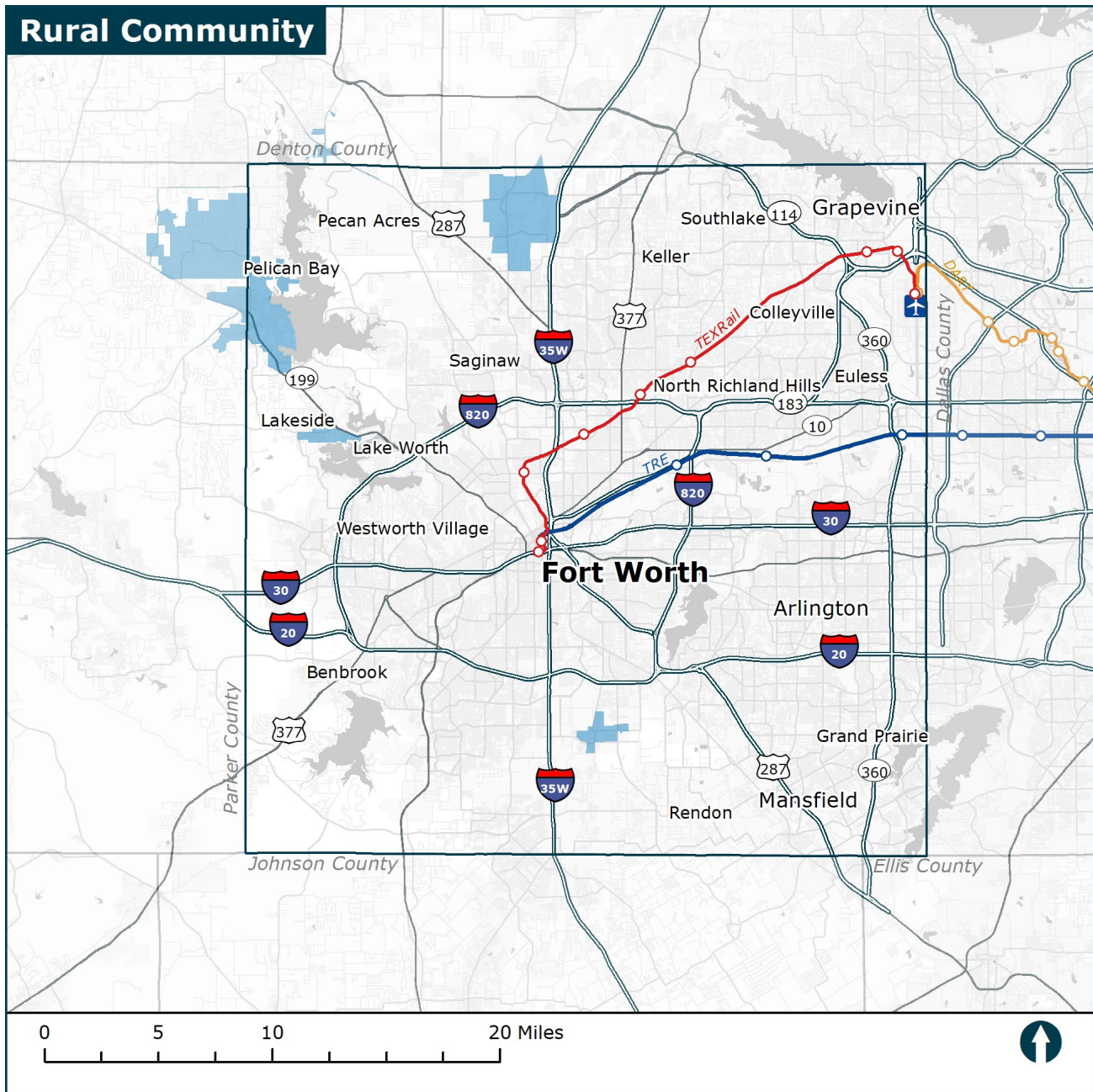
### TRANSIT-ORIENTED DEVELOPMENT

As transit evolves to fixed route and even high-capacity transit, it presents an opportunity to support development around station areas that influence the built environment. These influences, when properly planned and implemented, provide ideal conditions for a variety of benefits that support quality of life and transit use.

There are key aspects of transit-oriented development (TOD) that are summarized as best practices for financial wellness in the field. These include:

- **Creation of Vibrant Hubs** where a mix of uses support each other and promote transit use by their direct adjacency to transit stops;
- **Support of Diverse Housing Options** that are not only directed towards large scale apartments, mixing housing types, scales, price points and programming (veteran, senior, etc.);
- **Support of Existing Residents and Preserving Affordability** through policy and practice by identifying transitions to density, not simply focusing on buffers between uses;
- **Promotion of Efficient Mobility** through pedestrian, bicycle and other first-mile, last-mile connections from the station to a transit rider's origin or destination;
- **Creation of Streets for People**, not just moving cars and transit, specifically providing places to gather and linger-longer; and
- **Creation of Active Public Spaces** directly related to the context of the development around it, public space should always be planned as part of a development or TOD, not an afterthought.

## RURAL COMMUNITY

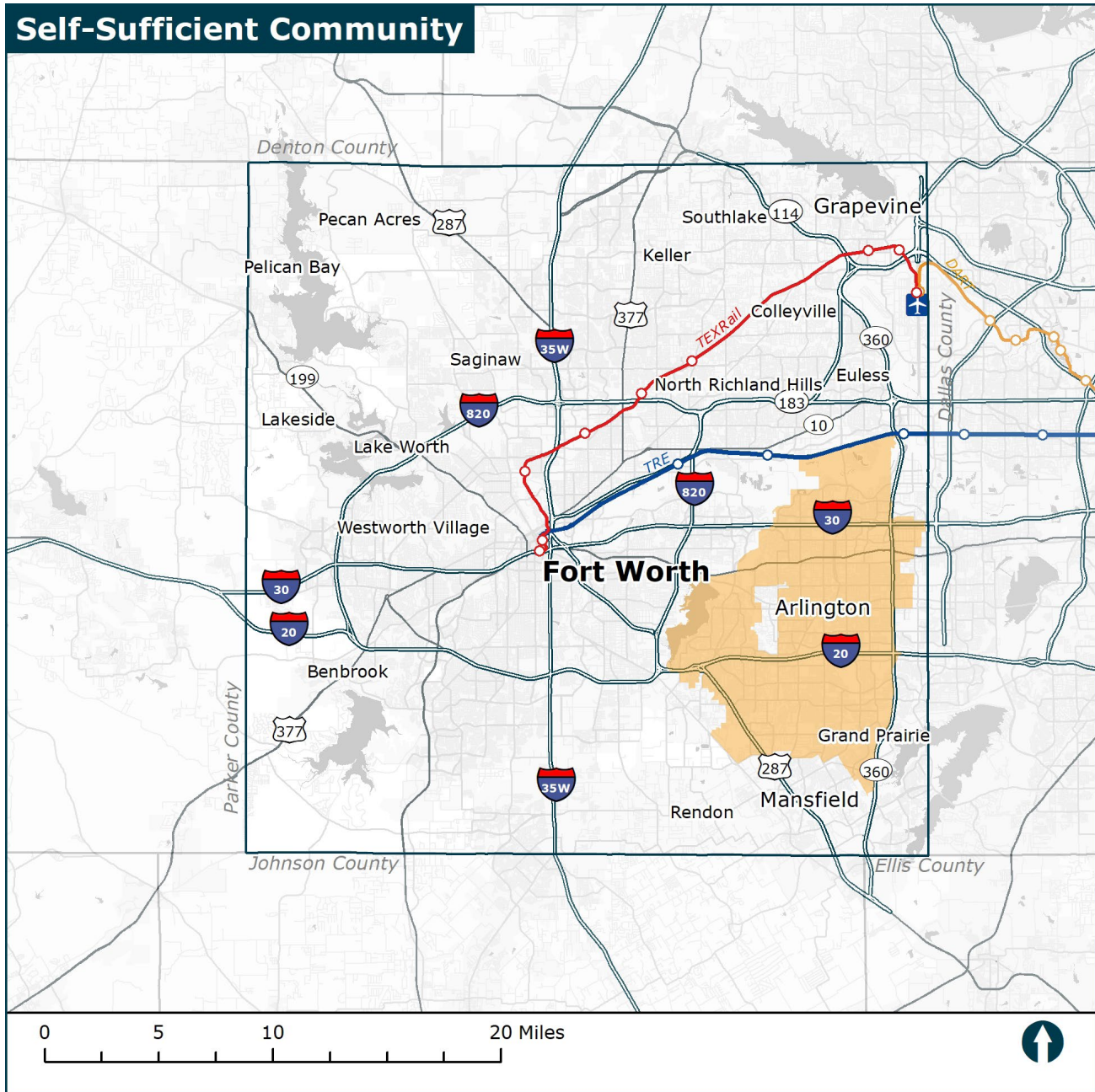


A **Rural Community** is a municipality that currently is not served by public transportation. Typically, not adjacent to current transit-served areas. These areas are more remote or have less potential of tackling transit on their own but may realize benefits of transit by teaming up with other municipalities or contracting for service programs with their neighboring community.

**Municipalities that are considered Rural Communities**  
*Communities in boldface assigned additional shared mobility services in at least one scenario*

<b>Azle</b>	Pelican Bay
Haslet	Reno
Lakeside	Trophy Club
Newark	

## SELF-SUFFICIENT COMMUNITY



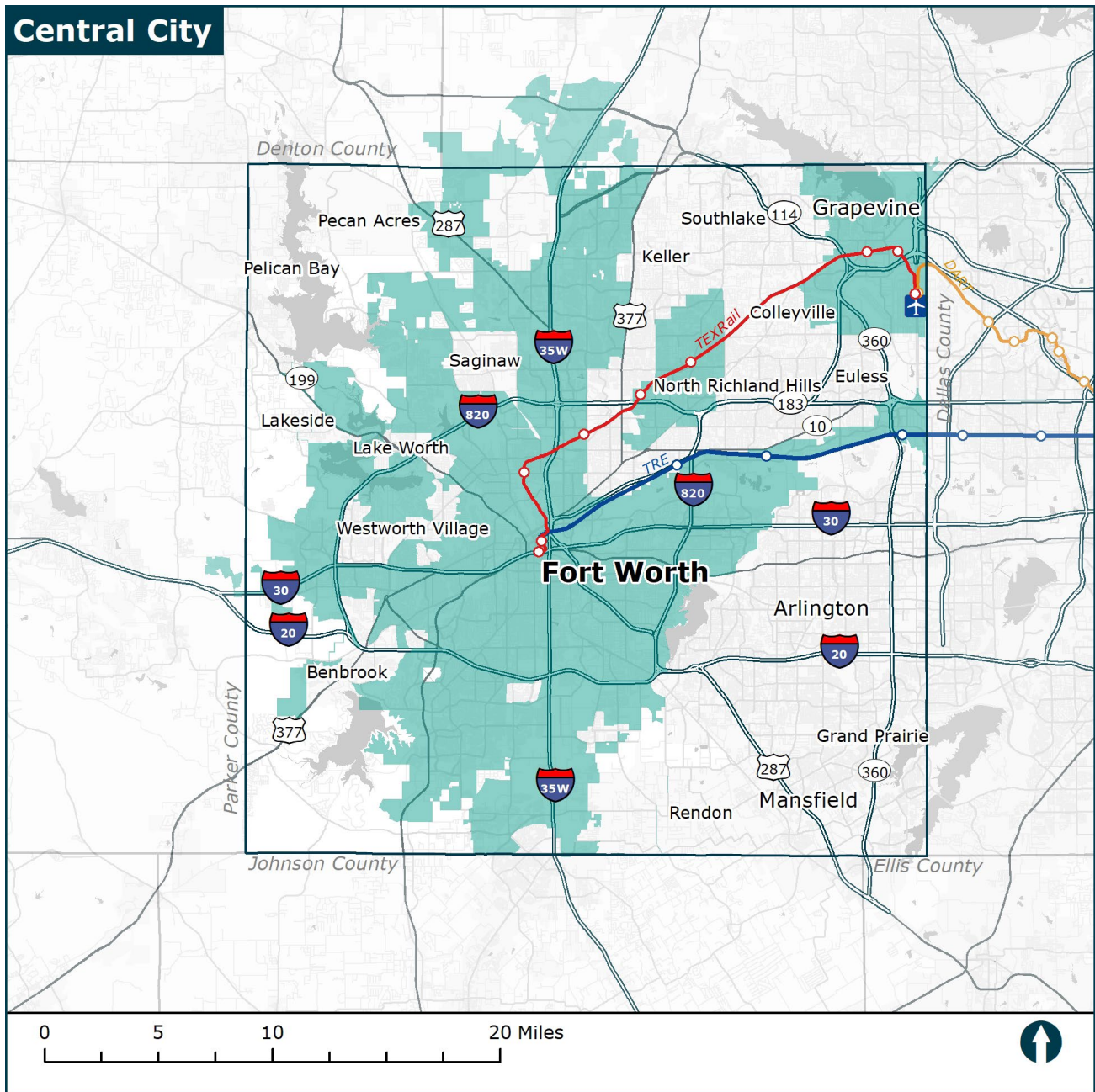
A **Self-Sufficient Community** is a municipality that has self-managed public transportation within the municipal boundaries. Municipality is not a member of a transit authority but could still benefit in subscribing to regional transit programs as a subscriber to a program and coordinating rider technology with a local transit authority for streamlined services.

### Municipalities that are considered Self-Sufficient Communities

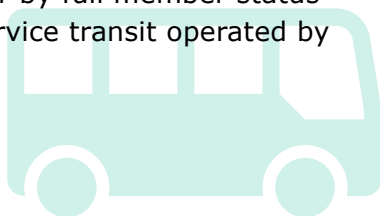
*Communities in boldface assigned additional shared mobility services in at least one scenario*

**Arlington**

# CENTRAL CITY



A **Central City Community** is a municipality served by transit provided by Trinity Metro, either by full member status or using fee-for-service transit operated by Trinity Metro.

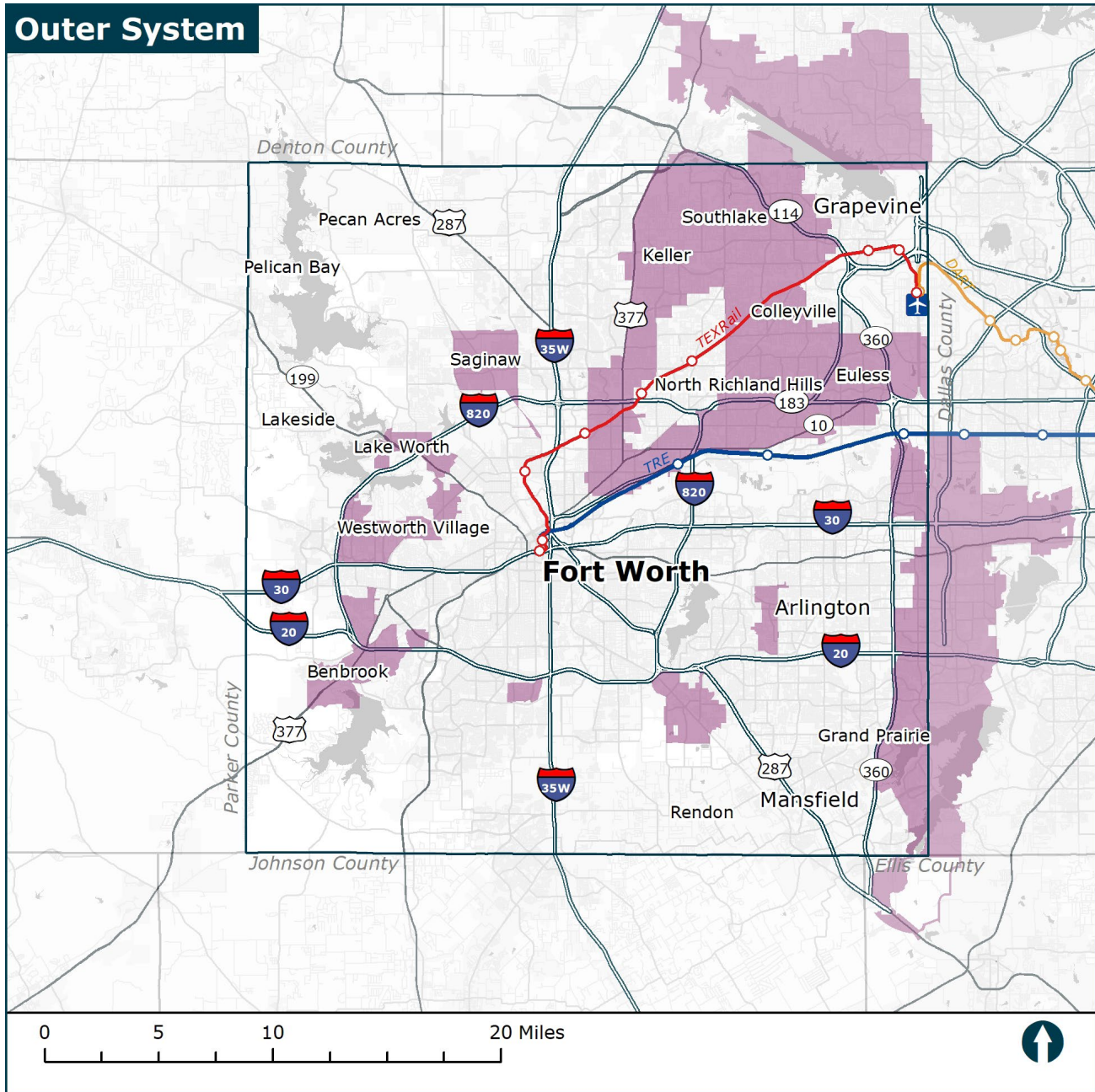


**Municipalities that are considered Central City Communities**  
*Communities in boldface assigned additional shared mobility services in at least one scenario*

Fort Worth	Grapevine
Blue Mound	<b>Forest Hill</b>
North Richland Hills	Crowley



## OUTER SYSTEM



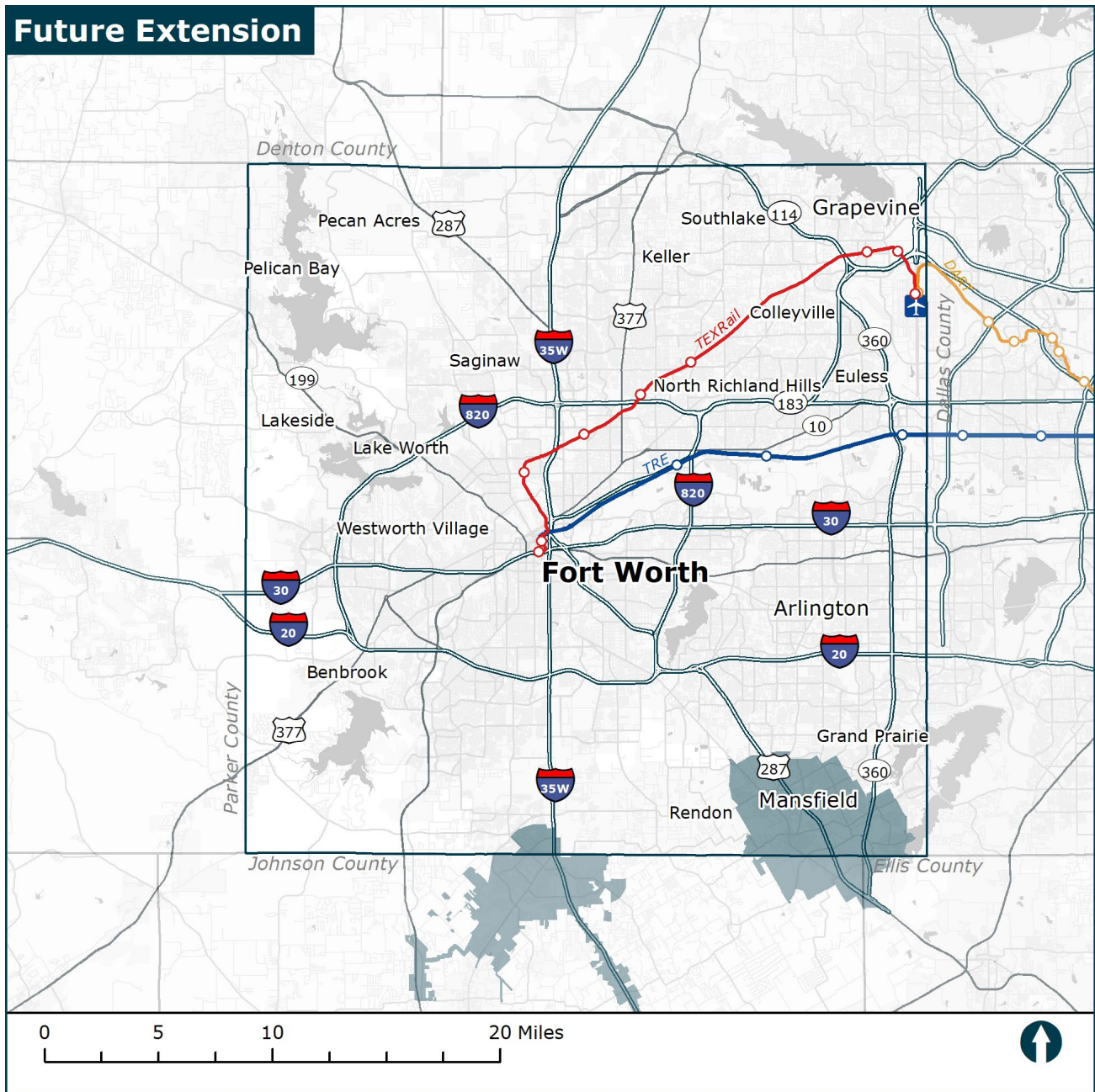
An **Outer System Community** is a municipality that borders a central city where public transportation is easily extended due to proximity to the system. Typically, these areas would benefit from membership due to proximity to rail or bus transit.

### Municipalities that are considered Outer System Communities

*Communities in boldface assigned additional shared mobility services in at least one scenario*

<b>Bedford</b>	<b>Grand Prairie</b>	<b>River Oaks</b>
<b>Benbrook</b>	<b>Haltom City</b>	<b>Saginaw</b>
<b>Colleyville</b>	<b>Hurst</b>	<b>Sansom Park</b>
Dalworthington Gardens	<b>Keller</b>	<b>Southlake</b>
Edgecliff Village	Kennedale	<b>Watauga</b>
<b>Eules</b>	<b>Lake Worth</b>	Westlake
<b>Everman</b>	<b>Pantego</b>	Westworth Village
Flower Mound	<b>Richland Hills</b>	<b>White Settlement</b>

FUTURE EXTENSION



A **Future Extension Community** is a municipality that contains a walkable urban place, which will be a priority link in the transit system. Currently undergoing a rail or bus transit planning process. Extending to these locations would provide additional opportunity for stations or connections along the route to the walkable urban place.

Municipalities that are considered Future Extension Communities	
<i>Communities in boldface assigned additional shared mobility services in at least one scenario</i>	
<b>Burleson</b>	<b>Mansfield</b>

## 5.4 FUNDING MECHANISMS

For each municipal type, there are appropriate funding mechanisms based on the type of transit being proposed in a community: either flexible with on-demand, or structured with fixed route local or regional bus.

### *FUNDING BY TRANSIT TYPE*

Each type of transit includes some considerations and the appropriate funding mechanisms are arranged to reflect those considerations.

#### **FIXED ROUTE TRANSIT**

Fixed route transit, including express and local service—requires the active management of routes, timetables and stops in accordance with the routes. Each of these have infrastructure that require maintenance and additional funds for staffing and operations. The permanency of a given route is by design and usually requires a greater effort to change or remove a route, helping with elements of predictability. Though the predictability of a fixed route system is not to the scale of passenger rail or bus rapid transit, there are some perceived development benefits. For instance, some cities allow for reductions in parking requirements when within a range of a fixed route stop.

#### **ON-DEMAND TRANSIT**

On-demand transit does not have fixed improvements or station areas and becomes less predictable for certain funding mechanisms that require market predictability. In the case of parking reductions, if the on-demand system can easily be removed, then the banking system cannot risk loss of that transit type when considering a project to reduce parking requirements to stay within market needs. This would have a direct relation to the cost of parking and overuse

of parking on the project site, potentially negating the investment by the community.

On the other hand, on demand does have comprehensive availability to all visitors and residents of a municipality. This allows for coverage that is not able to be implemented as quickly or cost effectively as fixed route transit.

#### **COORDINATION BETWEEN TRANSIT TYPES**

In many ways, on-demand transit is ideal as an initial/pilot mobility option for a community. It can be implemented quickly and cost effectively, take pressure off of qualified/paratransit systems that operate at a higher cost, be used to gather origin-destination data of movement of people, and have major routes replaced by fixed route over time as warranted. Evolution in this way can lead to educated decisions with data-driven programs to grow a transit program in new communities.

## FUNDING MECHANISMS

Given the relation between on-demand and fixed route considerations, there are certain mechanisms that relate to municipal types (Table 5.5). The following recommendations also reflect the scenarios provided previously. This affects the appropriate O&M funding mechanism for Rural Community types because neither scenario contains fixed route for that type of community.

TABLE 5.5 ALLOCATION OF O&M FUNDING MECHANISM BY TRANSIT TYPE

LOCAL (MUNICIPALITY, TRANSIT AUTHORITY OR COUNTY) MECHANISMS ANALYZED					
	Rural Community	Self-Sufficient Community	Central City	Outer System	Future Extension
Sales Tax Contributions	O	B	B	B	B
General Fund Contributions	O	B	B	B	B
Development Fees/ Impact Fees	O	B	B	B	B

**O** | On-Demand (O)

**B** | Both Fixed Route and On-Demand

### SALES TAX CONTRIBUTION

A local sales tax allocation dedicated to public transit, representing either an additional or re-allocated portion of the municipality’s sales tax revenues. The range could be from 25 to 50 cents per \$100 of gross sales receipts. This provides significant funding for most of the O&M need; however, this measure faces several challenges in implementation.

In the case of the analyzed municipalities, two options exist for using sales tax as a funding mechanism:

- » Reallocate existing sales tax funding towards transit; or
- » Push for legislation at the State of Texas to create a Local Sales Tax Option for transit funding in addition to the current sales tax cap (that is, allowing locally allocated sales taxes in excess of 2 percent).

Both of these cases require extensive political will and a Local Sales Tax Option for Transit requires a coordinated effort among

other transit service providers in the State to enact statewide. For these reasons, the probability is set low for this analysis in order to set an effective discount of the potential funding capacity that a Local Sales Tax Option for Transit could bring.

If the full funding of an extra 0.5 percent sales tax were permitted and authorized at each of the municipalities, many of the additional funding options below would not be necessary. For this analysis, the sales tax revenue is discounted to an average 5.6 percent probability (94.4 percent discount, based on an average of each municipality’s individual discounting; see Appendix with breakdown of probability) to be available for transit funding. Although COVID occurred during the 2020 tax year, new innovations in sales tax revenues occurred with online sales now collecting sales tax for packages delivered to Texas locations. This involved a new paradigm that will continue to grow as more online sales are taxed in the future (i.e., 2020 serves as an appropri-

ate base year, relative to other years that did not have this new policy enacted).

**Assumptions:** 2020 sales tax revenues<sup>13</sup> for each of the transit-served communities for each scenario was applied an additional ½ cent per \$1 of gross sales receipts, then applied an average 0.056 probability of achieving the tax rate. See Appendix for breakdown of individual municipality probability.

### GENERAL FUND CONTRIBUTION

A general fund contribution is the allocation of a paid subscription or fee-for-service model from the municipal general fund (as opposed to designated sales taxes) for direct services, based on current fixed route subscriptions that are used under Trinity Metro with partner cities. This is a common method of participation in lieu of allocating a sales tax amount; for example, Forest Hill utilizes a general fund contribution for its fixed route service provided by Trinity Metro.

**Assumptions:** Subscription payments per population size, averaging at \$22 per person, with a 0.35 multiplier for probability on average of obtaining this funding allocation from each of the benefitting cities. See Appendix for breakdown of individual municipality probability.

### TOLL FEE ALLOCATION

Toll fee allocation is the overall application of toll users within the TEXPRESS toll lanes in Tarrant County, which could add an additional amount to cover a portion of transit funding. This currently is not used, but would be a regional implementation, which would

include the sharing of the increase among various transportation authorities.

Toll fees are often used to supply funding for other transportation and highway projects; they currently are used by NCTCOG to manage the long-term repayment of major roadway infrastructure in the region. An enhanced approach would be to coordinate a regional initiative to collect additional fees in the tollways on top of the current fees that cover debt payment and maintenance to be used for transit. Funds collected within a certain county would be allocated to that county's transit funding needs. This would require partnership between NCTCOG, TxDOT, North Texas Tollway Authority, the State of Texas, and others involved with allocation decisions for toll revenues for any policy updates that may be required.

**Assumptions:** 20 cents per dollar increase in toll fees incurred within Tarrant County on a regular basis, utilizing 2019 toll fee revenues.

### DEVELOPMENT FEES

As new development occurs in the municipalities, building permit fees could add an additional fee for transit. Development fees already are charged in most of the cities within the analysis (Everman is the only community that does not charge impact fees). Additional charges to support transit operations can be charged within subareas of the community or as a whole.

**Assumptions:** Assumes new development within 1 percent of total municipal acreage, with a 0.3 floor-to-area ratio in net new development. Fee amount assumes adding an additional 1 percent to building permit fees to be allocated to transit, for municipalities only involved with fixed route service.

<sup>13</sup> While COVID-19 likely depressed sales tax revenues in many municipalities, use of that year represents a conservative approach to this potential revenue source.

## PUBLIC IMPROVEMENT DISTRICTS

New major developments within areas with fixed route services can assemble Public Improvement Districts (PIDs) to capture additional value. The improvement district could allocate a portion of assessed dollars to transit services. These already are a common use in the major cities that allow PIDs to support maintenance and operations of streets, landscaping, public parking, etc. Having a line item for transit services, similar to those for bike share or other microtransit programs, would be equally supported. This could be used as a way to provide for marketing through Trinity Metro or allocate specific vehicles for use within the district. This would not be used citywide; rather, it would be for established downtowns or new districts.

**Assumptions:** Assumes new development within 1 percent of total municipal acreage, with a 0.3 floor to area ratio in net new development. Fee amount assumes assessment to allocate 10 cents per \$100 of value to be allocated to transit, for municipalities only involved with fixed route service.

## PROPERTY ASSESSMENT

New development property assessment to support transit, can be attributed citywide, or in specific districts. Property assessments have the same capacity as a PID; however, they are typically for one funding purpose. This assessment would be assessed and collected through the County Appraisal District and would be based on property value. Major roadway improvements have used property assessments to repay bonds for the roadway. An example would be Renfro Road in Johnson County.

With the approval of 2020 Proposition A, 8.75 cents of the City of Austin's property

tax rate revenue will be dedicated to the Austin Transit Partnership to fund implementation of Project Connect. Now approved by voters, the Project Connect portion of the City's property tax rate will become part of the City's property tax rate each year.<sup>14</sup> A property assessment would act in the same way. It can be leveraged to cover strictly capital investment for the new system, like Project Connect, and can also be used for ongoing O&M in perpetuity.

**Assumptions:** Assumes new development within 1 percent of total municipal acreage, with a 0.3 floor to area ratio in net new development. Fee amount assumes assessment to allocate 25 cents per \$1000 of value to be allocated to transit, for municipalities only involved with fixed route service.

## SPONSORSHIPS

Sponsorships can be both corporate, organization and agency sponsorships for advertising or transit pass discounts for employees or members of agency. This is a typical program for Trinity Metro, where buses and inserts within the buses are used for advertising sponsors.

**Assumptions:** Incremental increase between scenarios based on type of local service.

## TRANSIT FARE REVENUE (FAREBOX)

Users of the transit services will pay fares to travel.

**Assumptions:** Relative fare collection based on ridership and varying price points for travel. These are directly related to current fixed route and microtransit transit fare revenues in Tarrant County.

<sup>14</sup> <https://www.capmetro.org/funding>.

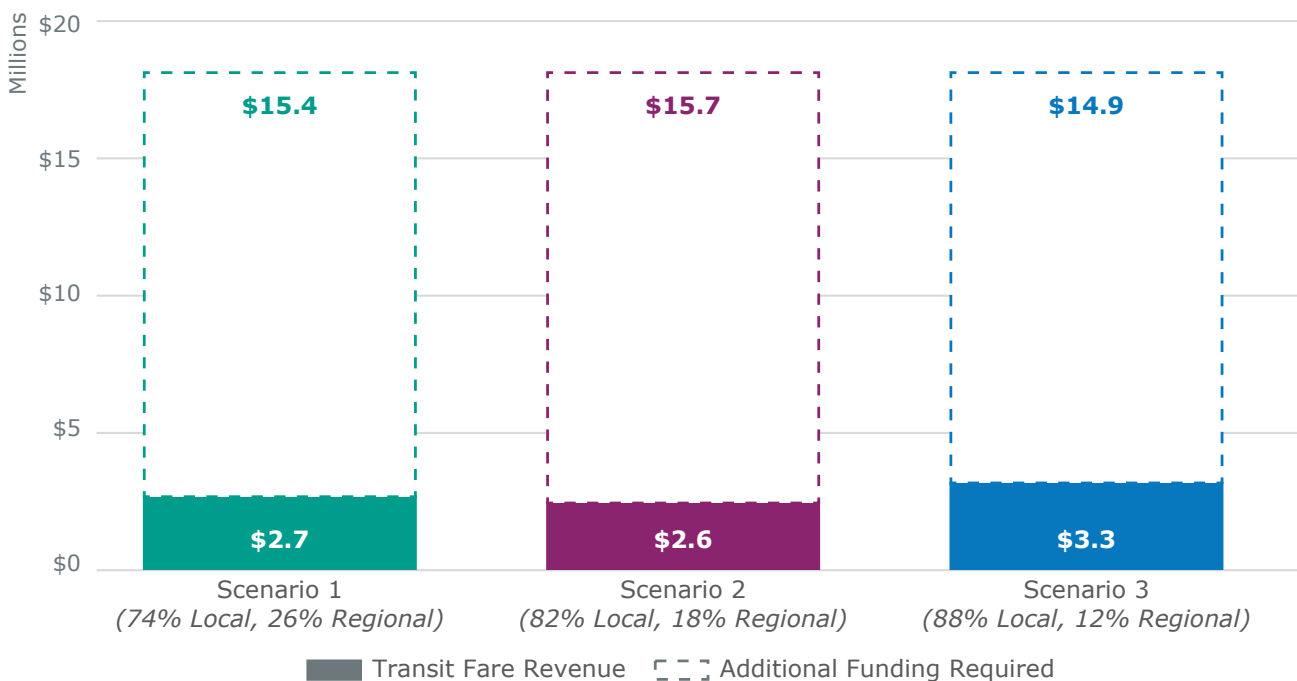
## 5.5 SCENARIO FUNDING ANALYSIS

### SCENARIO FUNDING RESULTS

The scenario O&M costs below are initially discounted by transit fare revenue (farebox revenue), representing a calculated farebox recovery ratio of between 14 and 20 percent. This result is typical; for example, in 2019, Trinity Metro saw a 15 percent farebox recovery ratio for its bus services and a 7 percent farebox recover ratio for its demand responsive services. The result of these leaves a gap in the funding of the scenario systems that present opportunities to examine traditional and alternative funding solutions for these transit services.

The remaining annual revenue gap for the additional services countywide is approximately 14 to 15 million dollars (Figure 5.1). The ratio of local to regional service reflects the ratio of operating costs.

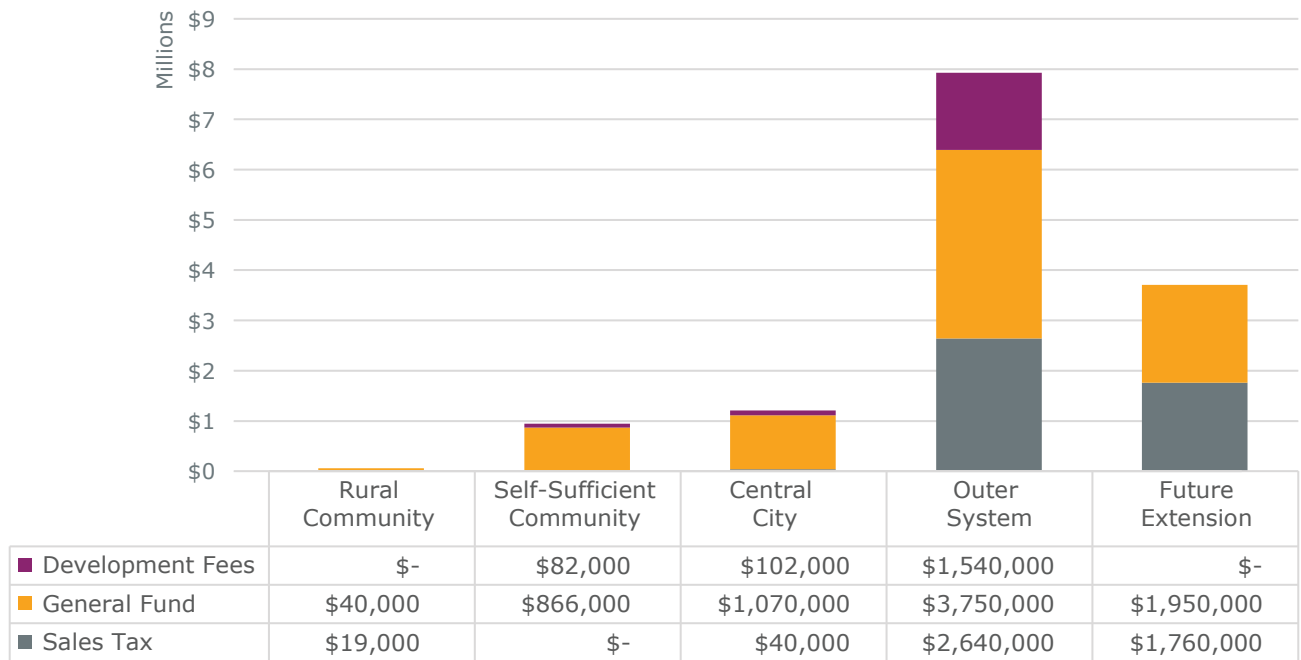
FIGURE 5.1 POTENTIAL ANNUAL REVENUE GAPS BY SCENARIO (\$M)



### CLOSING THE GAP IN FUNDING

Closing the gap in funding can be accomplished both through common transit funding programs and through more innovative approaches that require coordination and partnerships to achieve. In the analyses below, each of these funding mechanisms are attributed to the communities that are being served by each scenario and by certain modes of transit and are only focused on O&M funding mechanisms (Figure 5.2; see Appendix for a community-by-community breakdown of modeled revenue mix). As fixed route is introduced in the scenarios, Central City and Outer System types are assumed to be able to realize certain development fee gains that could be attributed to transit O&M. In scenarios where no fixed route is included, no development fees are included for any municipal type.

**FIGURE 5.2 POTENTIAL FUNDING ALLOCATION BY MUNICIPAL TYPE (\$M)**



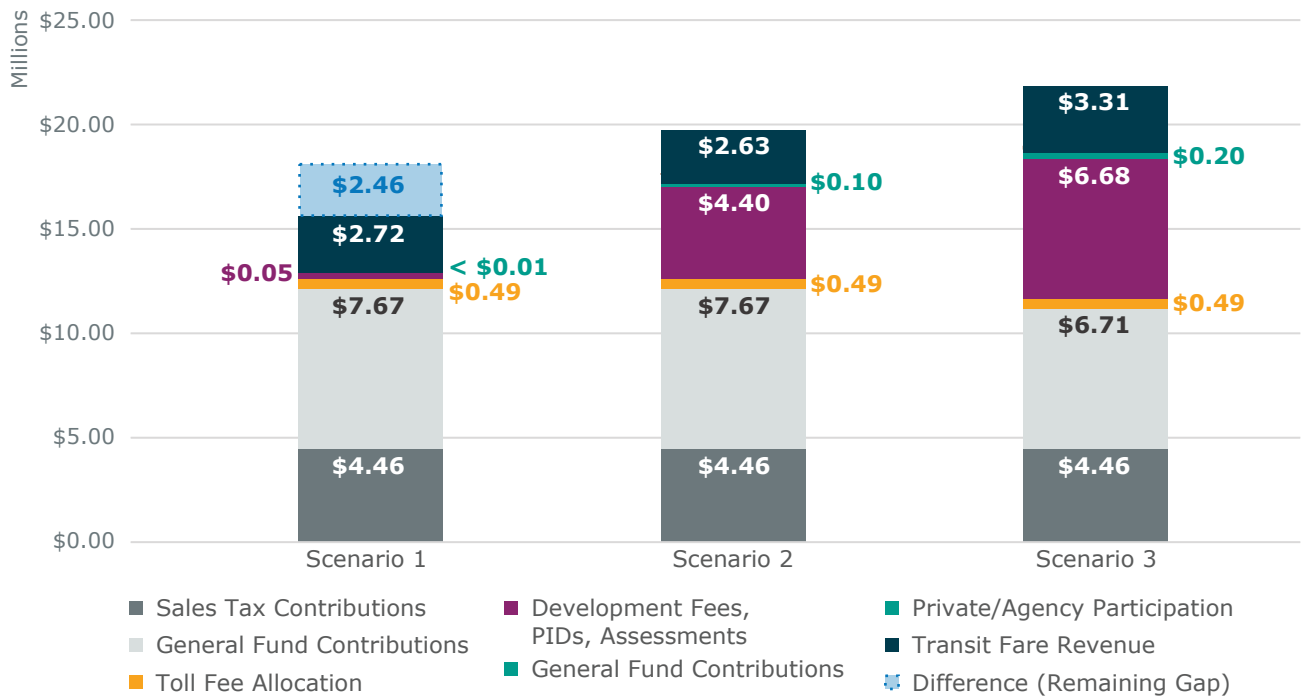
Rural and Future Extension communities do not have development fees attributed in the analysis due to the primary use of on-demand transit only throughout the scenarios. When a future study of rail or high-capacity transit is performed, there will be a need for land-use assessment and potential value capture in order to overcome the cost gap for providing these services in Mansfield and Burleson. Having stops along the route to these destinations will help with that value-capture analysis.

Self-sufficient communities already fund local transit, and are therefore excluded from this analysis of additional transit service (though they may elect to provide such services, either through reallocation of existing funding or through new revenue sources). Regional transit connections to Arlington is assumed to support existing development in the core or entertainment districts, which provide critical links to these places, but may still provide significant development potential outside of these areas even without fixed route linkages to the rest of Arlington. If Arlington allocates some general fund dollars and additional fees from development to regional transit, it can impact the greater gap closure.

When compared with the total countywide funding need, the revenue sources examined were sufficient to meet the needs of Scenarios 2 and 3; however, Scenario 1 has an annual funding gap of about \$2.5 million (Figure 5.3). Scenarios 2 and 3, with a much larger focus on fixed route service, illustrate the impact that development fees and transit fares can have on the revenue gap.



FIGURE 5.3 ANNUAL GAP FUNDING OPPORTUNITIES BY SCENARIO (\$M)



## 5.6 CONCLUSIONS

### FIXED ROUTE SERVICE BRINGS MORE PREDICTABILITY

Though the cost of utilizing on-demand services in communities can be economical, there is a lower level of predictability for the development market that can limit the effectiveness of investment. Without a contractual relationship, commitments by private entities to operate and fund a city-wide, on-demand system can be removed without notice. Tying an on-demand system to a municipality or an existing transit system adds to the predictability and the variety of modes in the system while there is funding allocated to the program.

Fixed route systems allow for additional security for those developers and investors looking for mobility options that will maintain

access for their tenants and support long-term growth strategies. For this reason, long-term investors often see the benefit of supporting the transit program through public-private financing mechanisms, such as development fees, assessments, and private sponsoring, so long as the participation offers opportunities to reduce parking, improves aesthetics of the public infrastructure and supports their bottom line.

Where there are plans or visions (such as those described in Mobility 2045) to bring fixed route in the Outer System Communities, and where there are specific development demands for TOD, a fixed route system is recommended over on-demand where need

and demand exist to support it. This will provide a greater market predictability for long-term investors, businesses or developers and ensure additional support for first-mile, last-mile connectivity for all income levels of riders. Fixed route service scales up well—increases in frequency, vehicle capacity, and technology/infrastructure support all provide more cost-efficient and competitive service as ridership increases.

To minimize the need for sales tax and general fund obligations, there needs to be an innovative and case-by-case partnership with developers. Property assessments, sponsorships, development fees and improvement districts can make a big impact on having residual funds for transit and leverage growing demand on redevelopment in these areas.

## *ON-DEMAND SERVICE BRINGS MORE FLEXIBILITY*

For those communities (such as Rural Communities) that are exploring their transit needs and shared mobility needs for the first time, an on-demand system brings flexibility, a low initial level of investment, and the ability to scale down with uncertain demand for ridership.

Careful consideration for citywide availability and a general citywide sponsorship program should be locked in for a series of years, rather than year by year, so that the implementation of the program is successful. Having multiyear agreements will also support any lack of predictability on the system.

A current user of this type of system is the City of Crowley, which has partnered with Trinity Metro to provide direct access to health facilities through the ZipZone program and an operating grant. This ZipZone area has recently been expanded to South Fort Worth and Everman, providing a general zone of access for underserved areas within the Central City and Outer System Communities area. Having this

access to transit connects residents to major transit corridors and provides greater access to jobs and services.



# IMPLEMENTATION PLAN

# 6



MANSFIELD, TX

## KEY ELEMENTS

Key elements of this chapter include:

- A guide to municipal service models based on the typologies developed in Chapter 5;
- Tradeoffs and key decision questions to help municipalities identify an appropriate service model; and
- A step-by-step implementation checklist to guide the establishment of new shared mobility services.

## 6.1 INTRODUCTION

### BACKGROUND

This section of the Tarrant County Transit Study serves as guidance to establish or expand transit service for municipalities within Tarrant County, providing assistance for selecting models for service delivery and operation across the region. The approaches and tools presented here will help municipalities within the County achieve the long-term mobility goals described in NCTCOG's long-range transportation plan, Mobility 2045: to

improve access for life-essential opportunities, relieve congestion, and improve air quality by providing new service, increasing system capacity, and creating transit lines that connect communities.

This section lays out the next decision points and implementation steps for municipalities to design and deliver transit services that meet their communities’ needs, whether connecting to regional transit systems or developing






standalone community transit programs. As unincorporated areas are governed by their counties and this guidance focuses on local governments, this section does not apply to unincorporated areas within Tarrant County. These tools present an array of service choices with guiding questions and a critical pathway to analyzing options, selecting from among them, and implementing the chosen service.

## MUNICIPAL TYPOLOGIES AND SERVICE PROFILES

In Chapter 5, typologies were defined to estimate ridership and service costs based on the anticipated services that would meet the transit needs of the various municipalities within Tarrant County. Municipal typologies were based on similarities between cities to determine potentially similar approaches to funding strategies based on available mechanisms, funding capacity, and other factors. These typologies were then aligned with transit needs to define which municipalities should establish on-demand or fixed route service under different scenarios.

The typologies are presented in Table 6.1 below.






TABLE 6.1 MUNICIPAL TYPOLOGIES

TYOLOGY	DEFINITION	EXAMPLES	SERVICE MIX
 <b>Rural Community</b>	A municipality that is currently not served by public transportation. Typically, not adjacent to current transit-served areas.	Azle, Lakeside, Pelican Bay, Trophy Club	On-Demand/ Fixed Route
 <b>Self-Sufficient Community</b>	A municipality that has self-managed public transportation within the municipal boundaries and is not a member of a transit authority.	Arlington	Regional
 <b>Central City</b>	A municipality served by transit provided by Trinity Metro; may be a member city of the transit authority or may receive service under a subscription program.	Fort Worth, Blue Mound, Forest Hill, Crowley, Grapevine	On-Demand/ Fixed Route/ Regional
 <b>Outer System</b>	A municipality that borders a central city where public transportation is easily extended due to close proximity to the system.	Bedford, Edgecliff Village, Everman, Lake Worth, Richland Hills, Saginaw, Grand Prairie	On-Demand/ Fixed Route
 <b>Future Extension</b>	A municipality that contains a walkable urban place, which will be a priority link in the transit system; Currently undergoing a fixed route transit planning process.	Burleson, Mansfield	On-Demand/ Regional

However, there are additional aspects of transit service that municipalities will need to consider in designing the transit service to address the mobility needs or meet transit demand within the community. These elements together create right-sized visions for local transit and shared mobility services, defining how, when, and where the service operates and establishing what types of trip purposes the service is designed to serve.

Table 6.2 provides an overview of the elements, the factors they consist of, and examples of the different factors.

TABLE 6.2 SERVICE PROFILE ELEMENTS

ELEMENTS	FACTORS	EXAMPLES
Operating Profile 	Span of Service	Peak-hour (6 AM–10 AM, 3 PM–7 PM); All day
	Service Schedule	Clockface schedule (fixed route); Trip request windows and reservation requirements (demand-response)
	Service Type	Express fixed route + American Disabilities Act (ADA) paratransit, local fixed route + ADA paratransit, demand-response
	Travel Pattern	Local circulator, regional service, first-mile / last-mile connector
Geography 	Zone Based	Defined travel areas oriented around major trip generators, including fixed route station(s), hospitals, employment centers, etc.
	Universal	Anywhere within municipal boundaries
Expected Trip Purpose Mix 	Commuter	Peak-hour commute (9 AM–5 PM), Off-peak commute (7 AM–3 PM)
	Health and Human Services	Non-emergency medical transportation, Veterans transportation
	Interregional Travel	Workforce transportation for large job sites (i.e., Dallas-Fort Worth Airport)
	Student Transportation	Circulator service at college campus, commuter service between campus facilities
	Nonstandard Trips	Shopping, errands
	Late-Night Transit	Third-shift commute (12 AM–8 AM)
Rider Type 	Conditional Eligibility	Seniors, people with disabilities
	Universal	All travelers within service area
Key Performance Indicators 	Customer-Facing Metrics	On-Time Performance, Wait time, Average travel time/length
	Operational Effectiveness Metrics	Total operating cost, operating cost per Vehicle Revenue Mile (VRM)/Vehicle Revenue Hour (VRH), passenger trips per VRM/VRH

Decisions surrounding these elements may be determined by the type and/or amount of funding that the municipality uses to provide its service, the origins and destinations that community members travel between or want to travel between, and the level of transit service that exists within or adjacent to the municipality.

Different elements may be related to or dependent on each other as well. For example, if a municipality determines that travel demand is driven by residents wanting to connect to fixed route stations, then a zone-based service geography and a span of service that aligns with service at the fixed route stations will likely be required for the service to create the greatest value for travelers in the municipality.

While some aspects of service may result from local conditions—a community comprised mostly of older adults may result in a higher need for medical trips than educational trips, for example—many service elements depend on the values, context, and politics of their community. A robust outreach program that gathers input from stakeholders, underserved communities, elected officials, and technical experts alike is a key component of any public investment.

## 6.2 SERVICE MODELS

### SERVICE MODEL OPTIONS AND COMPONENTS

After considering an appropriate Service Profile, a municipality considering implementing a shared mobility program must determine a Service Model that defines how the services will be delivered. There are multiple options for transit service delivery that relate to the four main functions of a transit program: operations, capital infrastructure and assets, maintenance, and administration. Figure 6.1 shows a summary of the Service Model options.

**FIGURE 6.1 SERVICE MODEL OPTIONS**

PROVIDER OPERATING AGREEMENT	PARTNERSHIP WITH TNC	PROCUREMENT WITH CONTRACTED OPERATOR	DIRECT OPERATION
<b>DART</b> <ul style="list-style-type: none"> <li>Member City</li> <li>Interlocal Agreement</li> </ul> <hr/> <b>Trinity Metro</b> <ul style="list-style-type: none"> <li>Fixed-route</li> <li>NETS</li> <li>TCTS</li> </ul>	<b>On-demand source of independent contractors with dedicated platform</b>	<b>Operations</b> <hr/> <b>Capital Infrastructure and Assets</b> <hr/> <b>Maintenance</b> <hr/> <b>Administration</b>	<b>Own</b> <hr/> <b>Operate</b> <hr/> <b>Maintain</b> <hr/> <b>Administer</b>

These options are as follows:

**A municipality that meets DART’s service area requirements can join the agency, though few cities in Tarrant County would be eligible under current rules. Trinity Metro (and for some municipalities with territory in both Tarrant and Denton counties, DCTA) is a more likely partner, especially for the Central Communities adjacent to its current service area.**

**TSP Fee-For-Service—DART Operating Agreement Options**

**MEMBER CITY**

- Municipality joins DART service area (must be adjacent to existing service area)
- Municipality must establish a 1.0% sales tax dedicated to transit via referendum
- Majority of Tarrant County counties have reached State-legislated maximum local sales tax of 2.0%



**INTERLOCAL AGREEMENT**

- Municipality receives service from DART via DART’s Local Government Corporation
- LGC provides agreed-upon level of transit service<sup>15</sup>
- Municipality covers 100% of service costs

**TSP Fee-For-Service—Trinity Metro Operating Agreement Options for Interlocal Agreements**

**FIXED ROUTE SERVICE**

- Municipality pays to receive service access if Trinity Metro travels through the Municipality but does not currently stop
- Municipality must pay for its portion of operating costs and for bench/shelter installation at bus stops
- Municipality must contribute to ADA paratransit service within 0.75 miles of the fixed route corridor

**NORTHEAST TRANSPORTATION SERVICES**

- Demand-response service for the elderly and people with disabilities
- Operating in 7 member cities
- Municipality must cover 100% of operating and maintenance costs for service received

**TARRANT COUNTY TRANSIT SERVICES**

- Demand-response service for the elderly and people with disabilities
- Operating in 11 member cities
- Each member service receives one day of service per week
- Municipalities must cover 100% of operating and maintenance costs for services received

<sup>15</sup> Chapter 431 of the Texas Transportation Code permits local governments—including municipalities and transit agencies, either individually or collectively—to establish Local Government Corporations (LGCs) for the “promotion and development of public transportation facilities and systems by new and alternative means.” LGCs have the same powers as the entity or entities on whose behalf they operate. For the purposes of this report, LGCs should be considered analogous to direct operation by municipalities, with the added flexibility of being able to serve more than one municipality simultaneously.

**Cities have the option of pursuing a direct partnership with a TNC service and outsourcing most aspects of operation to that provider.**

**Partnership with Transportation Network Company (TNC)**

- Because the TNC relies on a framework of independent contractors that are dispatched only when a customer requests a trip, TNC service can scale up or down in direct response to rider demand. This structure can facilitate a simple partnership structure. The municipality may have fewer contract requirements to maintain, and operational risks are often left to the independent contractor.

- The partnership may be branded for the municipality but hosted within the TNC’s platform to allow travelers to use the TNC’s mobile application or phone line for trip requests.

- The partnership may have low visibility within the municipality. Instead of a branded program, the municipality may subsidize a portion of rider costs for TNC trips taken within the municipality. The TNC and/or the municipality may market this as a commuter or community benefit to residents.



**A hybrid approach involves a city outsourcing some aspects of service to a contracted operation, while performing other aspects in-house.**

**Procurement with Contracted Operators—Service Options for Procurement**

OPERATIONS	CAPITAL	MAINTENANCE	ADMINISTRATION
<ul style="list-style-type: none"> <li>• Hiring and training operators to drive vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicles</li> <li>• Equipment</li> <li>• Technology platforms</li> <li>• Call centers</li> </ul>	<ul style="list-style-type: none"> <li>• Staff</li> <li>• Equipment</li> <li>• Vehicle staging areas</li> </ul>	<ul style="list-style-type: none"> <li>• Oversight to ensure standards and performance are met</li> <li>• Brokerage model with other contractors</li> </ul>



**Direct option requires a level of municipal capacity—both fiscal and administrative—that might be difficult for some cities to maintain. Formation of new transit departments and/or agencies is rare, and is nominally precluded by the Texas Transportation Code.<sup>16</sup> However, TxDOT takes no official position on the best options for developing new transit entities/authorities/agencies, and should a municipality wish to pursue this service model, it is worth discussion with Tarrant County and/or NCTCOG.**

#### Direct Operation by Municipality

- The municipality owns, operates, and maintains all aspects of the transit service, functioning as a small transit provider.



With the exception of a Direct Operation model, all service models can be structured as a spectrum of functions that are operated by the municipality or by the partner delivering the service, depending on how many aspects of the service the municipality chooses to outsource and how many it chooses to maintain directly (or, as noted above, through a Local Government Corporation).

In contrast to direct operations, a municipality could implement a turnkey model alternative where the partner operates and maintains service operations (i.e., the operation of the transit vehicles), maintenance, infrastructure and assets (e.g., the vehicles and maintenance equipment), and many administrative components (e.g., scheduling, dispatching, and performance management). In this operating framework, the municipality is primarily responsible for contract administration to ensure that the partner is meeting its agreed-upon standards and performance goals.

Other configurations of the service models bring additional functions under the municipality's control. These functions include scheduling, dispatching, or customer service. Alternatively, a municipality may choose to purchase its own vehicle fleet, but contract out the responsibility for operating and maintaining the vehicles.

Regardless of the Service Model, if the municipality uses Federal funding to support its service, it will be responsible for reporting to the Federal Transit Administration (FTA) and share information regarding its transit service.

<sup>16</sup> Texas Transportation Code chapters: 451–454, 457, 458, 460, and 463.

Table 6.3 provides a breakdown of the different service models, identifying roles and responsibilities for the municipality and the transit service delivery party under each model. Information for this table was drawn from reports produced by the Eno Center for Transportation, the American Public Transportation Association (APTA), the Transit Cooperative Research Program (TCRP) as well as best practice manuals developed by the FTA, as well as fact-finding interviews with DART, Trinity Metro, and TxDOT.<sup>17</sup>

TABLE 6.3 SERVICE MODEL FRAMEWORK

SERVICE MODELS				
TRANSIT SERVICE COMPONENT	TSP FEE-FOR-SERVICE OPERATING AGREEMENT	PROCUREMENT WITH CONTRACTED OPERATOR (CO)	PARTNERSHIP WITH TRANSPORTATION NETWORK COMPANY (TNC)	DIRECT OPERATION BY MUNICIPALITY (MUNI)
<b>Infrastructure/ Assets</b>	<ul style="list-style-type: none"> <li>• Vehicles (TSP)</li> <li>• Scheduling system (TSP)</li> <li>• Call center (MUNI or TSP)</li> <li>• Fixed route stops (MUNI)</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicles (MUNI or CO)</li> <li>• Scheduling system (MUNI or CO)</li> <li>• Call center (MUNI or CO)</li> <li>• Fixed route stops (MUNI)</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicles (TNC)</li> <li>• Scheduling system (MUNI or TNC)</li> <li>• Call center (MUNI or TNC)</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicles (MUNI)</li> <li>• Scheduling system (MUNI)</li> <li>• Call center (MUNI)</li> <li>• Fixed route stops (MUNI)</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>• Trip request application (TSP)</li> <li>• Call Center (MUNI or TSP)</li> <li>• Fare payment system (TSP)</li> </ul>	<ul style="list-style-type: none"> <li>• Trip request application (MUNI or CO)</li> <li>• Call center (MUNI or CO)</li> <li>• Fare payment system (CO)</li> </ul>	<ul style="list-style-type: none"> <li>• Trip request application (TNC)</li> <li>• Call center (MUNI or TNC)</li> <li>• Fare payment system (TNC)</li> </ul>	<ul style="list-style-type: none"> <li>• Trip request application (MUNI)</li> <li>• Call center (MUNI)</li> <li>• Fare payment system (MUNI)</li> </ul>
<b>Training</b>	<ul style="list-style-type: none"> <li>• Operators (TSP)</li> <li>• Maintenance staff (TSP)</li> <li>• Schedulers (TSP)</li> <li>• Customer service staff (MUNI)</li> </ul>	<ul style="list-style-type: none"> <li>• Operators (CO)</li> <li>• Maintenance staff (CO)</li> <li>• Schedulers (MUNI or CO)</li> <li>• Customer service staff (MUNI)</li> </ul>	<ul style="list-style-type: none"> <li>• Operators (TNC)</li> <li>• Schedulers (MUNI or TNC)</li> <li>• Customer service staff (MUNI or TNC)</li> </ul>	<ul style="list-style-type: none"> <li>• Operators (MUNI)</li> <li>• Maintenance staff (MUNI)</li> <li>• Schedulers (MUNI)</li> <li>• Customer service staff (MUNI)</li> </ul>

<sup>17</sup> Eno Center: Contracting for Mobility: A Case Study in the Los Angeles and Puget Sound Regions (2019). APTA: Procurement Handbook: A Guide for Transit Industry Executives (2014). TCRP: Public Transportation Guidebook for Small- and Medium-Sized Public-Private Partnerships (P3), 2017. TCRP: Transforming Public Transportation Institutional and Business Models (2012). FTA: Best Practices Procurement & Lessons Learned Manual (2016). Interview with Rob Smith and Jing Xu, DART GoLink Program (March 5, 2021). Interview with Phil Dupler, Trinity Metro Planning (April 6, 2021).

SERVICE MODELS				
TRANSIT SERVICE COMPONENT	TSP FEE-FOR-SERVICE OPERATING AGREEMENT	PROCUREMENT WITH CONTRACTED OPERATOR (CO)	PARTNERSHIP WITH TRANSPORTATION NETWORK COMPANY (TNC)	DIRECT OPERATION BY MUNICIPALITY (MUNI)
<b>Administration/Oversight for Municipality</b>	<ul style="list-style-type: none"> <li>Contract administration</li> <li>Performance monitoring and evaluation</li> </ul>	<ul style="list-style-type: none"> <li>Marketing, promotion, and communications</li> <li>Contract administration</li> <li>Performance monitoring and evaluation</li> </ul>	<ul style="list-style-type: none"> <li>Marketing, promotion, and communications</li> <li>Contract administration</li> <li>Performance monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Marketing, promotion, and communications</li> <li>Service administration</li> <li>Performance monitoring and evaluation</li> </ul>
<b>Service Cost Structure</b>	<ul style="list-style-type: none"> <li>Agreed-upon service cost sharing</li> <li>Not-To-Exceed (NTE) Program Cost</li> </ul>	<ul style="list-style-type: none"> <li>Payment per service hour</li> <li>Payment per operating hour</li> <li>NTE Program Cost</li> </ul>	<ul style="list-style-type: none"> <li>Payment per trip</li> <li>NTE Program Cost</li> </ul>	<ul style="list-style-type: none"> <li>NTE Program Cost</li> </ul>
<b>Regulatory Requirements for Municipality<sup>18</sup></b>	<ul style="list-style-type: none"> <li>Title VI</li> <li>Financial reporting to FTA</li> </ul>	<ul style="list-style-type: none"> <li>Title VI</li> <li>Financial and service data reporting to FTA</li> </ul>	<ul style="list-style-type: none"> <li>Title VI</li> <li>Financial and service data reporting to FTA</li> </ul>	<ul style="list-style-type: none"> <li>Drug/alcohol testing</li> <li>Vehicle inspection</li> <li>Insurance for operators, vehicles</li> <li>Title VI</li> <li>ADA</li> <li>Financial and service data reporting to FTA</li> </ul>
<b>Data sharing</b>	<ul style="list-style-type: none"> <li>Aggregated service data</li> <li>Performance standards</li> <li>Historical trends</li> <li>Data shared on agreed-upon frequency</li> </ul>	<ul style="list-style-type: none"> <li>Anonymized individual ride data</li> <li>Aggregated service data</li> <li>Performance standards</li> <li>Historical trends</li> <li>Data shared on agreed-upon frequency</li> </ul>	<ul style="list-style-type: none"> <li>Anonymized individual ride data</li> <li>Aggregated service data</li> <li>Performance standards</li> <li>Historical trends</li> <li>Data shared on agreed-upon frequency</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

<sup>18</sup> This defines responsibilities for the municipality to perform directly. Contracted operators and transit service providers are responsible for all other regulatory requirements related to operations, safety, and maintenance.

SERVICE MODELS				
TRANSIT SERVICE COMPONENT	TSP FEE-FOR-SERVICE OPERATING AGREEMENT	PROCUREMENT WITH CONTRACTED OPERATOR (CO)	PARTNERSHIP WITH TRANSPORTATION NETWORK COMPANY (TNC)	DIRECT OPERATION BY MUNICIPALITY (MUNI)
<b>Performance Metrics</b>	<ul style="list-style-type: none"> <li>Ridership</li> <li>Total cost</li> <li>Passengers per trip</li> <li>Cost per trip</li> <li>Subsidy per trip</li> <li>Total service miles</li> <li>Total vehicle miles</li> </ul>	<ul style="list-style-type: none"> <li>Ridership</li> <li>Total cost</li> <li>Cost per trip</li> <li>Subsidy per trip</li> <li>Average fare</li> <li>On-time performance</li> </ul>	<ul style="list-style-type: none"> <li>Ridership</li> <li>Wait time</li> <li>Cost per trip</li> <li>Subsidy per trip</li> <li>Total service miles</li> <li>Total vehicle miles</li> </ul>	<ul style="list-style-type: none"> <li>Ridership</li> <li>Total cost</li> <li>Cost per trip</li> <li>Subsidy per trip</li> <li>Average fare</li> <li>On-time performance</li> <li>Vehicle capacity</li> </ul>

<b>CO</b> Contracted Operator	<b>MUNI</b> Transportation Network Company
<b>TNC</b> Municipality	<b>TSP</b> Transit Service Provider

### NOTE ON DATA SHARING

Data sharing agreements can enable agencies to gather the information they need to properly monitor service performance. In developing a data sharing agreement with providers, agencies should consider requesting information on “who and where” (e.g., granular user data, trip origin and destination, catchment areas), “what, how, and how much” (e.g., mode choice, travel time, payment structures, labor, and vehicle information), and “when” (e.g., time of year, day of week). In an on-demand partnership between LA Metro and Via, the agency was able to establish clear channels for data sharing. Key areas of negotiation involved level of aggregation, timeliness of data (real-time data versus less frequent reporting), concerns about personally identifiable information, and potential disclosure of trade secrets. Metro used the resulting data to answer questions around how and what types of people access stations before and during pilot implementation as well as why, when, and at what costs these trips happen.<sup>19</sup>



<sup>19</sup> “Data on Demand: A Case Study in Los Angeles and Puget Sound Regions.” Eno Center for Transportation, 2020. <https://www.enotrans.org/eno-resources/data-on-demand-a-case-study-in-the-los-angeles-and-puget-sound-regions/>

Each Service Model available to a community has benefits and risks. These benefits and risks represent tradeoffs between program cost and complexity, control over program design, and accountability to the customer base and the general public. Table 6.4 presents an overview of the benefits and risks associated with each service model.

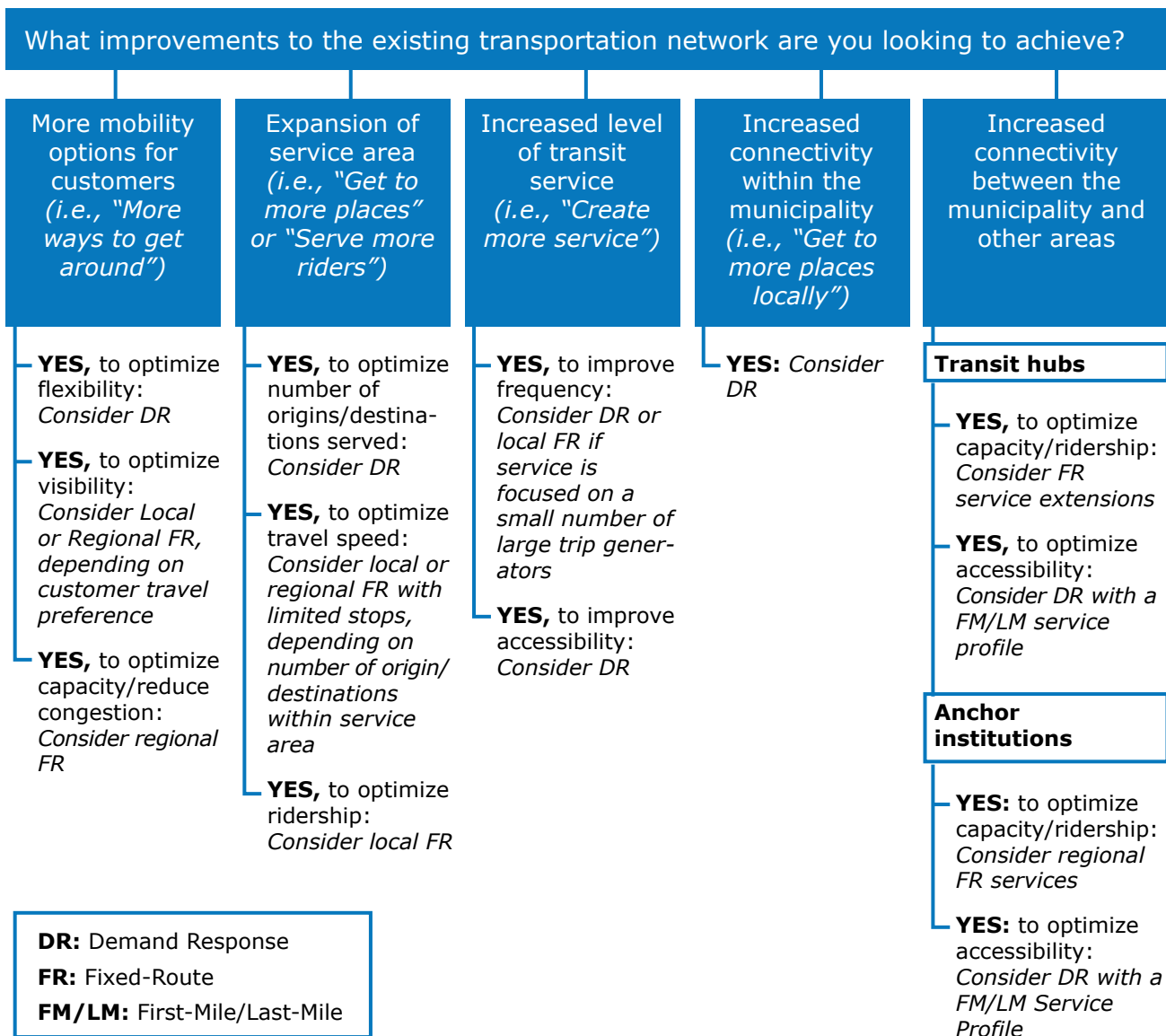
TABLE 6.4 SERVICE MODEL TRADEOFFS

		SERVICE MODELS			
		TSP FEE-FOR-SERVICE OPERATING AGREEMENT	PROCUREMENT WITH CONTRACTED OPERATOR (CO)	PARTNERSHIP WITH TRANSPORTATION NETWORK COMPANY (TNC)	DIRECT OPERATION BY MUNICIPALITY (MUNI)
BENEFITS		<ul style="list-style-type: none"> <li>• Low administrative costs</li> <li>• Existing platform</li> <li>• Familiar brand</li> <li>• Integration into existing service network</li> <li>• Experience with Federal regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Low administrative costs</li> <li>• Low operating costs</li> <li>• Service can scale with demand (assuming available funding)</li> <li>• Experience with Federal regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Existing platform</li> <li>• Familiar brand</li> <li>• Service can scale with demand (assuming available funding)</li> <li>• Low operating costs</li> <li>• Technical assistance for implementation</li> <li>• Platforms generate significant customer data</li> </ul>	<ul style="list-style-type: none"> <li>• Direct control over service design and operations</li> <li>• Clear accountability for public</li> </ul>
	RISKS	<ul style="list-style-type: none"> <li>• Dedication of sales tax necessary to join service area</li> <li>• 100% Cost Recovery standard for Interlocal Agreements (ILA)</li> </ul>	<ul style="list-style-type: none"> <li>• Procurement process can be complex</li> <li>• Bidding process may not yield sufficient or competitive bids</li> <li>• Contract oversight requires administrative capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Independent contractors limit accountability</li> <li>• Demand can surpass budgeted amount without rigorous project controls</li> <li>• Data sharing agreements can be difficult</li> <li>• Wheelchair Accessible Vehicle (WAV) access can be difficult</li> <li>• Contract oversight requires administrative capacity</li> </ul>	<ul style="list-style-type: none"> <li>• High program cost</li> <li>• Procurement process can be complex</li> <li>• Administrative capacity necessary</li> </ul>

To facilitate the consideration of these tradeoffs and the overall decision-making process, this Implementation Plan presents a set of questions for a municipality’s policy-makers and planners to ask about the municipality’s service goals and administrative capacity. These questions are presented as YES/NO questions to streamline the process. However, it is important to recognize that Service Profile factors and each municipality’s administrative structure create a spectrum of criteria to assess the situation. Selecting YES or NO may require the municipality to identify and analyze available resources and to make a judgment call regarding which binary response best reflects its situation.

These questions are not dependent on each other. Instead, a municipality that uses these questions to select a Service Model will have to weigh the significance of each question on the overall service goals that the municipality has defined.

The decision questions are presented below.



Are there major activity hubs in the service area(s) that generate large numbers of trips?

**YES:** Are these activity hubs currently served by other transit agencies, such as DART, Trinity Metro, or DCTA?

**YES:** Consider FR extensions, with local or regional service models depending on customers' travel preferences

**NO:** Consider DR

**DR:** Demand Response  
**FR:** Fixed-Route  
**OA:** Operating Agreement

**YES:** Do these trips occur at specific points of day?

**YES,** peak service: Consider Operating Agreement or turnkey agreement with Contracted Operator

**NO,** all day: Consider Direct Operation or TNC partnership (for lower volumes of trips per hour)

**NO:** Consider turnkey agreement with Contracted Operator or TNC partnership.

**NOTE:** DR services are assumed to be more cost-effective than FR services for service productivity levels below 4 passengers per service hour

Will this system need to scale up to cover a larger geographic area within the next two to five years?

**YES:** Consider TNC partnership or contracted service provider

**NO:** Consider Direct Operation or Operating Agreement

**Will this expanded system achieve ridership greater than four passengers per service hour?**

**YES:** Consider fixed-route service

**NO:** Maintain on-demand service

Will this system need to scale up its capacity to meet demand within a corridor within the next two to five years?

**YES:** Consider Operating Agreement or Direct Operation

**NO:** Maintain on-demand services

**Will this expanded system achieve rider-ship greater than four passengers per service hour?**

**YES:** Consider fixed-route service

**NO:** Maintain on-demand service

Will this system need to scale up its capacity to meet TOTAL demand within the next two to five years?

**YES:** Consider TNC partnership or contracted service provider

**NO:** Consider Direct Operation or Operating Agreement

Does this municipality have capacity for scheduling and dispatching?

**YES:** Consider Direct Operation or agreement with Contracted Operator for operations and maintenance

**NO:** Consider TNC partnership, Operating Agreement, or turnkey agreement with Contracted Operator

Does the service population have widespread access to smartphones?

**YES:** Consider TNC partnership, Operating Agreement, or turnkey agreement with contracted operator

**NO:** Consider Direct Operation or Contracted Operator and establish call center with sufficient capacity to manage call volume based on daily ridership levels

Has this municipality deployed a branded or dedicated smartphone application previously, such as a 311 service or platform for utility platforms?

**YES, with success:** Consider Direct Operation or Contract Operator, while developing a branded trip planning application as a standalone project

**YES, with difficulty:** Consider TNC partnership, Operating Agreement, or turnkey agreement with Contracted Operator

**NO:** Consider TNC partnership, Operating Agreement, or turnkey agreement with Contracted Operator



## 6.3 IMPLEMENTATION PROCESS FOR MUNICIPALITIES

The process of selecting a Service Profile and Service Model should be based on the unique combination of travel demand, community need, land use, geography, available funding, and administrative capacity within each municipality. Each municipality must make the choices that optimize service and meet program goals under both existing constraints and available resources.

However, the steps below will help municipalities to make these choices and provide a process to begin or expand transit service within their respective municipality. This proposed process is outlined below, with examples from across the transit industry to illustrate each step.

Municipalities in Tarrant County are not starting from scratch as they approach transit planning. Many entities in the Tarrant County region have the resources and expertise to provide technical assistance for a more detailed service analysis. These entities include NCTCOG, Trinity Metro, DART, DCTA, and the City of Arlington. Many of these entities have produced planning studies—including this one—that can serve as reference guides to define needs, identify markets, and identify available resources for funding and financing.<sup>20</sup> NCTCOG can play a unique role as a resource coordinator for municipalities throughout the region.

Additionally, Federal, State, and private-sector entities can play important roles with technical assistance, institutional support, funding support, and administrative capacity. Supporting partners are identified for each step in the implementation process.



<sup>20</sup> For a more detailed review of recent planning studies in the region, see Chapter 3.

**LEVERAGE TARRANT COUNTY TRANSIT STUDY TO DEFINE DETAILED SERVICE PROFILE AND PLAN*****Supporting Partners: Regional/Local, Private Sector***

Chapter 4 presents an estimate of transit operating hours and attendant ridership based on a standardized per capita regional operating expenditure. The municipality should conduct a follow-up study to refine its travel demand needs, level of transit service, and operating costs. This effort may involve neighborhood- or site-specific trip estimates to identify transit demand.

The municipality may also need to conduct a Request for Information (RFI) or industry scan to obtain a more detailed estimate of operating costs for the level of transit service needed to meet demand. Conducting an RFI requires a municipality to create a research question or scope of services that the municipality wants to obtain more information about and to advertise the question or scope through media channels, including trade association websites or procurement aggregator websites. This process will allow the municipality to receive information on service provision directly from vendors, but vendors may choose to withhold information in order to maintain leverage in contract negotiations.

An industry scan can provide information on service provision and service performance, either through peer agency feedback or industry-level analyses conducted by advocacy groups or think-tanks. The municipality may choose to conduct the scan directly or review existing resources provided by advocacy groups or think-tanks. The findings of the scan may require additional analysis or evaluation by the municipality to ensure that the findings are relevant to the municipality's specific conditions and needs.

This analysis should address each of the Service Profile components presented in Section 6.2. Based on the findings of the analysis, the municipality should assemble a Service Plan that defines the community's needs, the expected population for the transit system's ridership base, and the type(s) of service that the municipality will use to address the needs for the ridership base.

A key component of the Service Profile and Plan is to identify the service area. The level of analysis required for this task will vary based on the type of service desired; the process is fairly straightforward, for example, when the service is developed to directly complement discontinued or low-frequency fixed route service or is oriented towards seniors or people with disabilities. Defining the service area can be more complex for other types of on-demand programs, particularly first/last mile offerings.<sup>21</sup>

<sup>21</sup> "21 Key Takeaways from Partnerships between Public Transit Providers & TNCs in the United States." Shurna and Schweiterman, 2020.

### ***Examples from Current Practice***

Transit agencies take different approaches towards defining these zones. DART has chosen to limit the size of its GoLink zones to 6–8 square miles in order to limit the volume and distance of trips to those that can be served by a single vehicle while maintaining low wait times for customers. In contrast, Trinity Metro has established relatively larger ZipZones, though the agency recognizes that response times could be adversely affected if demand were to rapidly expand. At the other end of the spectrum, the City of Arlington’s Via service area covers large portions of the city, plus access to a nearby TRE station—a service model on the frontier of TNC partnerships in terms of scale.

National examples abound. In Denver, the Regional Transportation District’s (RTD) Call-n-Ride zones vary in size from one to thirty square miles, with a median of 7.5 square miles.<sup>22</sup> In Austin, Capital Metro’s Via-operated Pickup zones are neighborhood-scale—about 2 square miles—and designed to either backfill changes in service or provide service to low-density member or subscriber cities. In San Antonio, VIA Metropolitan Transit (not to be confused with the Via TNC provider) operates its Link service over a roughly 16 square mile area, using a combination of partners for trip planning and operation rather than a single turnkey solution.

Beyond size considerations, zones are generally established based on sociodemographic analysis. In establishing its Via to Transit program, King County Metro and Sound Transit in Seattle focused on areas with high percentages of low-income residents, people of color, and those with limited English proficiency (LEP). Analysis also considered location of fixed route transit, location of community assets, and the existence of logical boundaries (e.g., major roads and bodies of water).<sup>23</sup> At RTD, agency staff research travel patterns, trip generators, and travel speeds to size the service area and designate checkpoints in new Call-n-Ride zones.

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<sup>22</sup> “Microtransit or General Public Demand-Response Transit Services: State of the Practice (2019).” National Academies of Sciences, Engineering, and Medicine, 2019.

<sup>23</sup> Shurna and Schweiterman, 2020.

## 2 REVIEW PROPOSED SERVICE PROFILE AND PLAN WITH MUNICIPALITY STAKEHOLDERS

### ***Supporting Partners: Regional/Local, Private Sector***

The municipality should conduct a stakeholder engagement and community outreach effort to present and refine the Service Plan. Stakeholder and community groups should include potential or likely transit customers, community advocates, and institutional partners from the private, public, and nonprofit sectors. Engagement and outreach activities should include focus groups, multimedia surveys, and public meetings. Outreach channels, methods, and messaging should consider specific communities' needs and preferences to "meet the public where they are" on issues that matter to them and in environments that are familiar to them.

The municipality should identify limited English proficiency populations within the identified service areas and prepare language assistance resources, such as document translation services and onsite interpretation services, to ensure that the process is accessible to as many residents as possible.

Additionally, the municipality should prepare a socioeconomic profile of the service area and ensure that stakeholder outreach processes include engagement with community organizations representing low-income and/or minority groups within the service area. Doing so will not only ensure a more equitable service profile, but it will provide the municipality with baseline data to compare against future service changes. Under FTA regulations, a transit service provider must conduct a Title VI disparate impact study for any service change to ensure that low-income and/or minority populations do not experience an undue burden in access, travel time, or other aspects of transit system performance as a result of service changes. Making an upfront investment in data gathering and engagement in the planning phase reduces the risk that the municipality violates Title VI regulations in future planning activities.

### ***Examples from Current Practice***

The Sacramento Regional Transit District (SacRT) integrated demand-response technologies, including a smartphone application for riders to schedule and track on-demand trips, into its existing dial-a-ride service and rebranded the service as SmaRT.<sup>24</sup> As part of the program launch, SacRT developed a strategic marketing plan that involved extensive multimedia engagement. In addition to standard community engagement, SacRT created a movie theater ad to run in movie screenings at theaters throughout the Sacramento area. Additionally, SacRT trip schedulers informed customers calling in to the existing dial-a-ride service that the service would be rebranded and that customers would have expanded options for requesting trips.

This effort allowed SacRT to build awareness among its existing customers while reaching a broad array of potential riders. While this effort represents a marketing plan for the chosen service, the tools and strategies identified here could be applied to the fact-finding and feedback activities of a stakeholder engagement strategy during the service planning process.

<sup>24</sup> National Academies of Sciences, Engineering, and Medicine, 2019.

## **IDENTIFY FUNDING SOURCES, DETERMINE FARE STRUCTURE, AND SECURE LOCAL FUNDING FOR TRANSIT SERVICE**

### ***Supporting Partners: Federal, State, Regional/Local, Private Sector***

The municipality should review available local, regional, State, and Federal resources to support transit administration, capital, and operations, including those not controlled by transportation entities (e.g., Veterans Affairs or Health and Human Services grant programs). NCTCOG can play a significant role in funding as the agency is responsible for programming funding from Federal and state resources, all of which can support transit capital and operating expenditures.

As part of this review, the municipality should establish a fare structure for its services that align with the intended goals of the program, including ridership, farebox recovery, and target service populations. Fares can range from free at point of payment with costs covered by institutional payments (e.g., a college providing students, faculty, and staff with transit passes) to being aligned with existing fixed route transit fares to premium fares for specialized services. The municipality should also establish a transfer policy and/or determine if its transit service can be part of a regional fare integration program to facilitate customers' movements between its service and other transit systems within the region.

In addition to the fare structure, the municipality should determine which payment options are available to customers on its transit service. Smartphone applications with stored-value accounts have become increasingly popular ways for transit service providers to collect fares due to the low administrative costs of processing and collecting electronic payments. However, these systems are not available to all customers and may represent a barrier to entry. To ensure accessibility for all users, traditional payment systems, such as stored-value farecards or cash, should also be provided.

Conducting a market assessment of potential and likely riders within the proposed service area can play an important role in answering questions related to fare structure and payment options. The market assessment evaluates community members' travel preferences and patterns, such as the need for transfers between local and regional services. Additionally, the assessment evaluates customers' willingness to use and pay for services and amenities, such as a limited-stop express service that travels the same corridor as local services. Findings on demographic trends such as smartphone ownership can also inform the viability of different fare payment options.

It is critical for the municipality to determine how different funding sources impact eligibility for service structure, trip type/purpose, fare payment, and/or the customer base. Adjustments to the Service Plan may be necessary based on the funding that is most easily available or sustainable for the municipality. Any adjustments should be communicated to stakeholders using the same stakeholder and community outreach channels as in Step 3.

As part of this review, the municipality should conduct financial projections to assess its financial capacity to fund transit service with local resources. This analysis should include contingency planning and the identification of alternative funding sources if the current funding program should change or external sources (e.g., State/Federal grants) expire.

### ***Examples from Practice***

The FTA has been an active supporter of on-demand pilot programs and public agency–TNC partnerships through programs such as the FTA’s Mobility-on-Demand Sandbox Demonstration Program, the Integrated Mobility Innovation Program, and Enhanced Mobility of Seniors and Individuals with Disabilities (Section 5310) funding. At the local level, agencies in Texas must contend with limitations on local sales tax. Understanding that most of its local cities are unable to further raise their sales tax, Trinity Metro has looked for alternative ways to offer service, including offering localities the option to purchase transit service “a la carte” with general fund revenues.

In 2017, Trinity Metro negotiated to provide bus service within River Oaks, a small city entirely bounded by Fort Worth, after a new Trinity Metro bus route traveling through River Oaks was planned. Under this arrangement, River Oaks is responsible for paying for its own bus stops and the complementary paratransit service. Trinity Metro invoices River Oaks for the paratransit service monthly, based on ridership. In all, River Oaks pays approximately \$10,000 per year for Trinity Metro’s fixed route service to make stops in the city and about \$1,500 per month for the complementary paratransit. This local match from River Oaks represents 100 percent of the operating and maintenance costs associated with the service that River Oaks receives.

Local nonprofits and businesses can also play a key role in funding demand-response services. In Connecticut, Norwalk Transit District leveraged funding from a local business to fund its pilot Wheels2U service; a local mall developer contributed \$550,000 to support a circulator bus service during mall operating hours.<sup>25</sup> Engagement with local employers can also generate fruitful partnerships. In Marin County, CA, Marin Transit developed agreements with the two largest employers in the County to subsidize employee trips. Together, the two employers comprise almost half of the on-demand program rides. Marin Transit invoices the employers quarterly for their employees’ trips.<sup>26</sup>

<sup>25</sup> “Case Study: Wheels2U Microtransit Service.” Shared Use Mobility Center, 2019. <https://learn.sharedusemobilitycenter.org/casestudy/wheels2u-microtransit-service-providing-mobility-in-options-in-a-growing-downtown/>

<sup>26</sup> Shurna and Schweiterman, 2020.

## 4 SELECT SERVICE MODEL AND PROCURE NECESSARY COMPONENTS

### *Supporting Partners: Regional/Local, Private Sector*

The municipality should select a Service Model, drawing on the guidance presented in Section 6.2 of this document. This decision should be informed by the findings of the RFI, industry scan, or other fact-finding activities that the municipality used to develop the Service Profile and Plan in Step 1. The selection process should evaluate the costs and benefits of the Service Model options over the lifecycle of the intended Service Profile, including initial procurement costs and ongoing administrative costs, such as contract administration or oversight for regulatory compliance.

The Service Model selection process should consider the timeframe that the municipality has established for implementing the service. Procurement regulations and processes, expected contract negotiations, and conditions associated with different funding sources will influence the amount of time or level of effort that the municipality must expend before it is able to initiate service.

For example, the process for developing, advertising, and evaluating a Request for Proposal (RFP) may be subject to a wide array of local, State, or Federal regulations. Procurement regulations may determine the length of time for which the RFP must be advertised or the media that must be used to advertise the RFP, e.g., a digital post on a municipal website or an advertisement in the newspaper. It may be necessary to obtain additional technical expertise from transit professionals to draft and/or evaluate service proposals from vendors, which will expand the time and resources needed to complete the procurement.

Following the selection of the Service Model, the municipality should initiate the procurement process for vehicles, maintenance equipment, facilities, and/or technology systems, as necessary for the selected Service Model.



### ***Examples from Practice***

In considering Service Models, agencies often face a tradeoff between program cost and the ability to readily access information and set performance standards. Programs serving seniors and people with mobility limitations may tend to favor accessibility and usage in exchange for higher costs. The Boston suburb of Newton, MA, launched a new on-demand transportation service in 2019 designed for older residents. Before launching the program, Newton weighed several responses to its RFP. Lyft offered the lowest-cost option. With Lyft, rides would be available 24/7 and the City would pay a per-ride subsidy. Via's proposal was more expensive, with payment structured around service hour (payment by service hour is typical of Via partnerships across agencies). There would not be 24-hour availability, but Via offered branded fleet of vehicles, in-house customer service, and drivers trained in the unique challenges faced by seniors. Newton ultimately decided that Via's offerings would be a better fit for a senior population less familiar with ridesharing services.<sup>27</sup>

Depending on service model and demand, vehicle procurement may also be necessary. On-demand zones are generally simpler to scale up or down, because they do not require a fixed set of equipment. If localities seek fixed route service, there could be a need to expand rolling stock. Trinity Metro, for example, has so far met demand without increasing the size of its fleet by utilizing unused equipment in its spare fleet.

Technology selection is a crucial component of the procurement process. Some agencies have prioritized in-house software. Ohio's Dayton Regional Transit Authority (RTA) transitioned from riders booking rides directly through TNC applications to offering riders a discount code to use through the Transit app, the authority's own platform. The agency anticipates that the switch will allow the collection of a wider range in mobility data.<sup>28</sup> In Denver, RTD's Flex services operate through Mobility DR, a fully automated scheduling and vehicle management platform; there are not reservationists, schedulers, or dispatchers, and riders book rides directly through their phones or computers. RTD's technology partner developed the platform in close collaboration with the agency.<sup>29</sup>

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<sup>27</sup> Shurna and Schweiterman, 2020.

<sup>28</sup> Shurna and Schweiterman, 2020.

<sup>29</sup> National Academies of Sciences, Engineering, and Medicine, 2019.



## 5 IMPROVE INFRASTRUCTURE TO ALIGN WITH SERVICE PROFILE AND MODEL

### *Supporting Partners: State, Regional/Local*

The municipality should ensure that transit service is safe and accessible for users of all abilities. Ensuring safety and accessibility means providing and maintaining sidewalks, curb cuts, pedestrian crossings, and lighting along corridors and at trip generators where travel demand is estimated to be high.

For fixed route services, the municipality should ensure that signage and lighting are available at all stops, and that amenities such as waste receptacles, benches, and shelters are available at high-demand stops. The municipality should draw on the service and infrastructure design standards used by other fixed route providers in Tarrant County, including Trinity Metro and DART, to provide a more consistent customer environment throughout the region. If the municipality is using an Operating Agreement Service Model, infrastructure will be determined by the transit operator, and the municipality may be responsible for funding.

For demand-response services, the standards for stop infrastructure may be lower since customers expect to receive a higher level of responsiveness and a lower wait time in exchange for a lack of permanent infrastructure and customer amenities. However, certain demand-response service profiles, such as those that use geofenced zones to serve small service areas, may benefit from transit station infrastructure. For example, establishing a transfer station at a trip generator with multiple facilities (e.g., a college campus) can consolidate pick-up/drop-off locations to reduce time spent circulating around a larger site and improve overall trip length and travel time.

For all modes, the development of transit hubs can enhance connectivity to other mobility options, such as TNCs or taxi, micromobility services (e.g., bikeshare, or shared scooters), or parking facilities.

### *Examples from Practice*

The type of service selected will in many cases reflect the nature of existing area infrastructure. The on-demand zone selected by Houston METRO, for example, is characterized by apartments and schools with limited sidewalks, little lighting, a noncontiguous street network, and deep roadside drainage ditches. Due to these conditions, METRO found it difficult to establish fixed route bus stops, and on-demand service was a more feasible option.<sup>30</sup>

When an agency does decide to invest in fixed route infrastructure where existing facilities may be lacking, agencies may be able to negotiate for localities to provide the necessary infrastructure. When Trinity Metro began providing fixed route service to River Oaks, the agency negotiated for the locality to pay for the cost of bus stop installation.

<sup>30</sup> "Microtransit or General Public Demand-Response Transit Services: State of the Practice (2019)." National Academies of Sciences, Engineering, and Medicine, 2019.

## STEP

## 6

**ESTABLISH MARKETING AND PROMOTION CAMPAIGN*****Supporting Partners: Regional/Local, Private Sector***

The municipality should build a marketing and promotion campaign to raise awareness of the transit service in advance of its launch. This campaign should leverage the relationships that the municipality established with stakeholder and community groups in Step 3.

This effort should include promotional partnerships with institutions that serve or represent demographics or geographic areas targeted by the service.

If smartphones are widely used by community members and/or targeted customers, the municipality should establish dedicated social media accounts for promoting the service. These accounts can transition into service information sources when the service launches.

***Examples from Practice***

Agencies often manage marketing and promotion in-house. In Arlington, TX, the City's role in its Via partnership is primarily contract administration and promotion, with Via managing all other aspects of the service. In other cases, marketing responsibilities might be shared with the on-demand provider, with the contractor running on-street promotions and in-app advertising while the public transit agency offers press releases and online resources. Some agencies work directly with on-demand providers to produce marketing materials. In Michigan, the Detroit Department of Transportation (DDOT) found that internal development of marketing materials for its Night Shift pilot led to unsatisfactory products. DDOT's Night Shift team then collaborated with Lyft to develop clearer materials, reporting an immediate uptick in ridership upon release of the updated material.<sup>31</sup>

In developing marketing content, agencies have found success in emphasizing the new service as a component of the larger transit system with which riders are already familiar. In Ohio, Dayton RTA staff engaged directly with customers who would be affected by the discontinuation of a fixed route service. RTA staff sought to frame the new on-demand service's role within the larger system context. A more visual example of this approach is King County Metro and Sound Transit's partnership with Via. The agencies sought to visually incorporate the Via to Transit program by branding the program's Via vehicles such that they display both the Via and King County Metro logos.<sup>32</sup>

<sup>31</sup> Shurna and Schweiterman, 2020.

<sup>32</sup> Shurna and Schweiterman, 2020.

## ESTABLISH PERFORMANCE EVALUATION AND MONITORING FRAMEWORK

### *Supporting Partners: Federal, Regional/Local, Private Sector*

Performance evaluation is critical to ensure that the service is reaching its targeted customer base(s), meeting its goals, and creating value for the municipality's residents. A performance evaluation framework should collect data from the systems used to operate and maintain service, such as onboard vehicle systems, fare payment systems, maintenance equipment, and scheduling and dispatch systems.

While Key Performance Indicators (KPIs) will vary with the Service Profile, the municipality should monitor and evaluate performance on ridership and operating cost at a minimum. These metrics determine if the service is being used as planned (ridership) and how quickly revenues are being spent (operating costs).

To ensure compliance with FTA regulations, the performance evaluation framework should collect and monitor data on service components that have equity implications. The relevant FTA regulations and data types are presented below:

- » **Title VI (Service/Fare Equity Analysis):** Socioeconomic data on service access and fare payment, required to demonstrate that low-income and/or minority populations do not experience an undue burden as the result of a change in service or fare structures;
- » **ADA:** Population data on service access for people with disabilities, required to demonstrate that people with physical or cognitive mobility challenges are able to receive equivalent service to people without mobility challenges;
- » **Customers with no smartphone or internet access:** Socioeconomic data related to call center access to demonstrate that customers without smartphone or internet access are able to access alternative means of requesting trips;
- » **Unbanked customers:** Socioeconomic data related to access to fare payment systems, required to demonstrate that people without debit or credit cards are able to use cash or stored-value payment options to access transit; and
- » **Limited English Proficiency (LEP):** Availability of service information and materials, including call center phone menus, for LEP populations in the service area, required to demonstrate that LEP persons are able to understand and access service options.

### *Examples from Practice*

Performance metrics and evaluation processes for on-demand services differ across regional agencies. DART's GoLink considers performance metrics such as on-time pickup and missed pickups. Program contracts include a provision for "liquidated damages" in the case that contractors fail to meet obligations, and these damages are at times assessed if obligations are not met. Performance monitoring for Arlington's GoLink service is similarly focused on ensuring that customer wait time standards are met throughout the service area.

**OPERATE SERVICE*****Supporting Partners: Regional/Local, Private Sector***

The municipality should initiate its services as outlined in the Service Plan. In advance of fare operations with customers, the municipality should conduct a series of service tests to evaluate all components of the transit service, from vehicle equipment and field communication systems to customer-facing fare payment and trip planning tools.

***Examples from Practice***

When rolling out its new Via partnership, Arlington’s municipal Government first conducted a “soft launch,” running service in a small portion of the full service area during the local university’s vacation month. This allowed the City and partner to address any clear issues during a period of low ridership before the service was expanded. In 2021, Arlington’s partnership expanded further to include self-driving vehicles; this RAPID (Rideshare, Automation, and Payment Integration Demonstration) pilot is the first of its type in the country. Other area transit agencies have looked to scale up on-demand offerings after refining service on a smaller scale. In 2020, Trinity Metro expanded its service in Forest Hill after a successful first year of new service. In 2020, DART, too, expanded its GoLink service by launching two new GoLink zones. In San Antonio, VIA Metropolitan Transit’s Link rollout first operated concurrently with existing fixed route service before phasing it out as customers became comfortable with demand-responsive service.

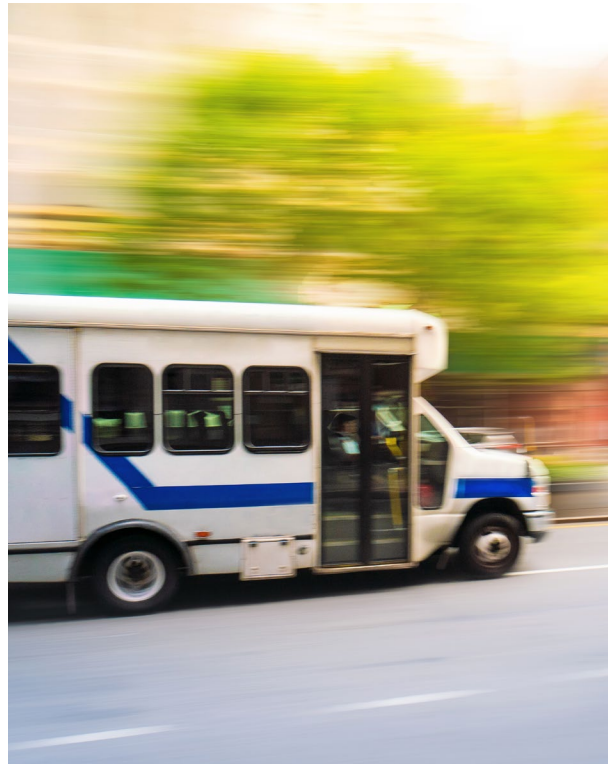


## STEP

## 9

**MONITOR PERFORMANCE AND ADJUST AS NECESSARY*****Supporting Partners: Federal, Regional/Local, Private Sector***

After service implementation, the municipality should monitor service performance based on its established framework and make performance reports publicly available on a regular basis. The municipality should also conduct analyses of travel patterns within the service area(s) to ensure its transit service is meeting travel demand and capturing travel flows. Feedback surveys with riders and with community members are also essential to assess current customer satisfaction and to identify potential gaps in service coverage or other barriers to access that discourage or prevent community members from using transit.

***Examples from Practice***

Performance metrics and reporting mechanisms differ across programs. In the case of Trinity Metro's paratransit service for localities, the agency reports out separately to each of the localities served, providing them with a monthly report indicating ridership and amount spent on the paratransit service. A scan of program leaders at public agencies indicated that two metrics are particularly important in considering the performance of on-demand services: customer satisfaction ratings and share of trips that start or end with a public transit ride. Agencies may find that it takes longer than anticipated in order to stabilize a customer base and begin collecting useful data for assessment; in Marin County, CA, Marin Transit has twice extended its on-demand pilot in order to allow more time to gather data.<sup>33</sup>

<sup>33</sup> Shurna and Schweiterman, 2020.

## 6.4 CONCLUSIONS

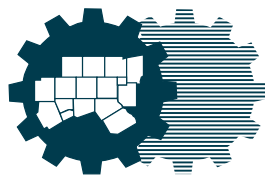
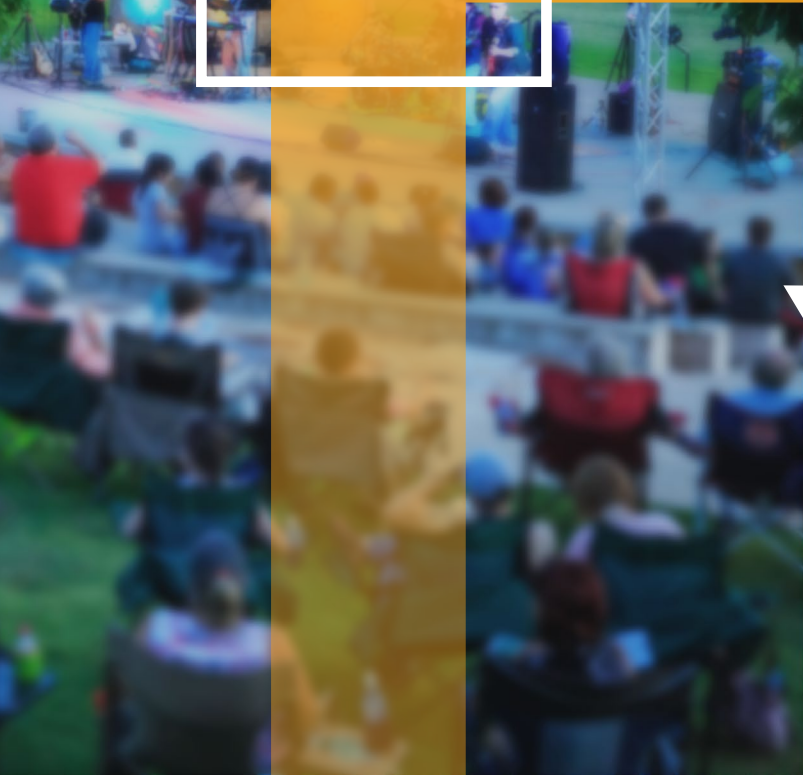
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This Implementation Plan identifies frameworks for different transit service elements that municipalities must define for the transit service typologies established in Chapter 5. A proposed implementation process lays out a series of steps for municipalities to use as guidance for making decisions about how their respective transit services will be structured, funded, administered, and operated.

The process of planning and implementing transit service is complex and relies on a significant amount of analysis. But Tarrant County municipalities have the advantage of making these decisions in a resource-rich environment consisting of multiple institutional partners that have the technical expertise and planning capacity to support these efforts.

In particular, NCTCOG can serve as a resource to help municipalities make decisions and provide data and analytical support. Additionally, NCTCOG's status as a regional organization gives the entity both the perspective and the authority to facilitate coordination across municipalities. This facilitation can reduce redundancies in the planning process and can help municipalities identify opportunities to improve access and connectivity in transit service on a broader geographic scale.

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