First and Last Mile Connectivity for Missourians

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PREPARED BY:

Alvaro Villagran

Peter Lauer

Hani Shamat

Luba Guzei

Nicky Althoff

Shared-Use Mobility Center

PREPARED FOR:

Missouri Department of Transportation

Construction and Materials Division, Research Section

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16. Abstract

By closing gaps in transit systems or by complementing transportation services, first-last mile transportation services are integral in enabling access to employment opportunities as well as other key destinations. This research study examined first-last mile service programs across the United States and assessed existing conditions in Missouri to learn about the challenges and opportunities in providing first-last mile options supporting access to employment. This study showed that first-last mile services can address gaps in transportation systems, that different modes of transportation offer first-last mile service options to match local contexts and needs, and that partnerships between public agencies, mobility providers and local employers are key to develop first-last mile services supporting access to employment.

To inform how first-last mile services can support Missourians' access to employment, the team conducted a scan of over 50 first-last mile services across the United States, produced 15 case studies, and conducted 5 in-depth interviews with mobility providers. To understand what current conditions are affecting first-last mile issues in Missouri, the team developed an existing conditions analysis mapping transit and mobility services in Missouri, conducted in-depth interviews with 2 local transit agencies, and hosted a virtual forum with Missouri's transportation stakeholders. The team summarized the findings from these research activities and presented recommendations to inform how State departments of transportation, local governments, and transit agencies can support first-last mile services for Missourians.

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By
Alvaro Villagran
Hani Shamat
Peter Lauer
Shared-Use Mobility Center

Luba Guzei
Nicky Althoff
Via Strategies

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The Project Team consisted of:
Lead: Shared-Use Mobility Center

- Principal-in-Charge: Colin Murphy, Director of Research and Consulting
- Principal Investigator: Alvaro Villagran, Director of Federal Programs
- Researcher: Pete Lauer, Program Manager
- Researcher: Hani Shamat, Program Coordinator

Consultant: Via Strategies

- Project Manager: Luba Guzei, Director
- Researcher: Nicky Althoff, Associate Principal

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- Christy Evers, Administrator of Transit
- Troy Hughes, Administrator of Railroads

Special thanks to Jenni Hosey (Senior Research Analyst, MoDOT) and Jen Harper (Research Director, MoDOT), for their support managing this project.

Cover image credit: Crawford Area Transportation Authority

Table of Contents

List of Tables

List of Figures

List of Abbreviations and Acronyms

ACS	American Community Survey
ATS	Clinton Area Transportation Service
BTS	Bloomfield Transit System
Cal-ITP	California Integrated Travel Project
CalSTA	California State Transportation Agency
CGCTA	Cape Girardeau County Transit Authority
CMO	Clean Mobility Options
DCTS	Dunklin County Transit Services
DelDOT	Delaware Department of Transportation
DOT	Department of Transportation
EDSTS	El Dorado Springs Transit Services
FCTS	Franklin County Transit System
FTA	Federal Transit Administration
GCRTA	Greater Cleveland Regional Transit Authority
HCTS	Harrison County Transit System
HTS	City of Houston Transit System
JeffTran	Jefferson City Transit Division
KCATA	Kansas City Area Transportation Authority
MAPS	City of Joplin Metro Area Public Transit System
MCTS	Mississippi County Transit System
MET	Mountain Empire Transit
MEE NC	Mobility for Everyone, Everywhere in North Carolina
MHTC	Missouri Highways and Transportation Commission
MnDOT	Minnesota Department of Transportation
MoDOT	Missouri Department of Transportation
MPTA	Missouri Public Transit Association
NCDOT	North Carolina Department of Transportation
NTD	National Transit Database
PSTA	Pinellas Suncoast Transit Authority
RCT	Ray County Transportation
RCTS	Ripley County Transit
SCAT	St. Charles Area Transit
SCTS	Scott County Transit System
SMTS	Southeast Missouri Transportation Services
SUMC	Shared-Use Mobility Center
TAC	Transportation Advisory Committee
TATS	Truman Area Transportation Service
VDRPT	Virginia Department of Rail and Public Transportation
WisDOT	Wisconsin Department of Transportation
WPTS	West Plains Transit System

Executive Summary

Reliable transportation is critical to access employment, education, healthcare, social services, and other key destinations. Gaps in service coverage or service hours can negatively impact users' ability to make these necessary trips. First-last mile transportation services aim to connect communities to transportation networks by providing a link between fixed-route transit and travelers' origins and destinations. Without adequate first-last mile services, many of these trips may not take place at all, hindering people from accessing services and opportunities.

This research study, supported by the Missouri Department of Transportation (MoDOT), follows a recommendation by the Missouri Supply Chain Task Force to explore the development of dedicated microtransit programs for employment centers. This project expands that recommendation by increasing understanding of first-last mile connectivity challenges and potential solutions among Missouri stakeholders and decision-makers. This report discusses first-last mile transportation with a focus on employment needs in Missouri.

The Project Team, composed of the Shared-Use Mobility Center and Via Strategies, examined the existing transportation landscape in the state and engaged stakeholders to explore key transportation challenges facing Missourians. The Project Team also examined first-last mile transportation services in other states in a variety of contexts.

This report describes the results of the Project Team's analysis, which consisted of the following project components:

- A series of 15 case studies on first-last mile services and employment transportation programs in a variety of contexts across the US
- In-depth interviews with five transportation providers and state departments of transportation (DOTs) about their approaches to first-last mile and employment transportation
- In-depth interviews with two Missouri transportation providers about their services and the landscape of transportation in Missouri
- A virtual forum with stakeholders to discuss challenges and opportunities for first-last mile transportation within the state of Missouri
- An existing-conditions analysis and needs assessment to understand the current landscape of Missouri transportation, consisting of transit network analyses, commute pattern analyses, commute typology, and demographic analyses

This project contributes to a better understanding of how state and local transportation agencies can support first-last mile connections to facilitate access to employment, and how

first-last mile projects from around the country can inform more mobility options for Missourians.

Below is a summary of six key findings and their associated recommendations:

- **First-last mile transportation is a workforce development opportunity**
    - Recommendation 1.1: Develop interagency partnerships
    - Recommendation 1.2: Connect with state and federal workforce development agencies
- **Implementing first-last mile solutions requires a thorough understanding of demographic, economic, and geographic contexts**
    - Recommendation 2.1: Ensure that core transit services are reliable and effective
    - Recommendation 2.2: Evaluate the demographic, economic, and geographic context of a community to most effectively implement first-last mile services
- **Effective partnership building is integral to first-last mile services and employment transportation**
    - Recommendation 3.1: Pursue partnerships with local employers
    - Recommendation 3.2: Explore partnerships with a variety of organizations
    - Recommendation 3.3: Provide directed support to local transportation providers on partnership building
- **First-last mile transportation services need community support to thrive**
    - Recommendation 4.1: Plan for a targeted marketing and promotion campaign
    - Recommendation 4.2: Seek out project champions
- **There are significant gaps in knowledge about Missouri's transportation needs and opportunities**
    - Recommendation 5.1: Perform community transportation needs assessments
    - Recommendation 5.2: Develop knowledge-sharing resources for transportation providers about first-last mile transportation services
    - Recommendation 5.3: Support research about first-last mile options
- **State DOTs can play several key roles in supporting first-last mile transportation initiatives**
    - Recommendation 6.1: Support first-last mile feasibility studies
    - Recommendation 6.2: Establish first-last mile connectivity grant programs
    - Recommendation 6.3: Invest in statewide or regional technology infrastructure development to promote multimodal transportation

Chapter 1. Introduction to First-Last Mile Transportation

The first-last mile problem refers to situations when travelers cannot use transit (usually fixed-route public transit) because a stop is too far away from their origin or destination, or the service does not run frequently enough at useful times. Many communities in the United States are designed for private automobile ownership, meaning that they are low or medium density and it is often not feasible to implement fixed route networks with sufficient coverage and frequency. In many places, it is difficult for travelers to make a complete trip if they lack access to an automobile.

A complete trip is the full journey from origin to destination. A complete trip on public transit may involve multiple legs and may require using multiple modes. Fixed-route public transportation may make up the central leg(s) of the trip, but a traveler will often have to use other modes of transportation (walk, bike, bikeshare, shared e-scooters, carshare, ride hail, or microtransit, for example) to get to the nearest transit stop from their origin, or to get to their destination towards the end of the trip. Though these trip legs can be relatively short, if there are no suitable options to complete them, it may cut people off from a transit network completely, isolating them from employment opportunities, education, healthcare, and other important destinations. Even if public transit is efficient, frequent, and robust, the first-last mile problem poses a significant barrier to transit access.

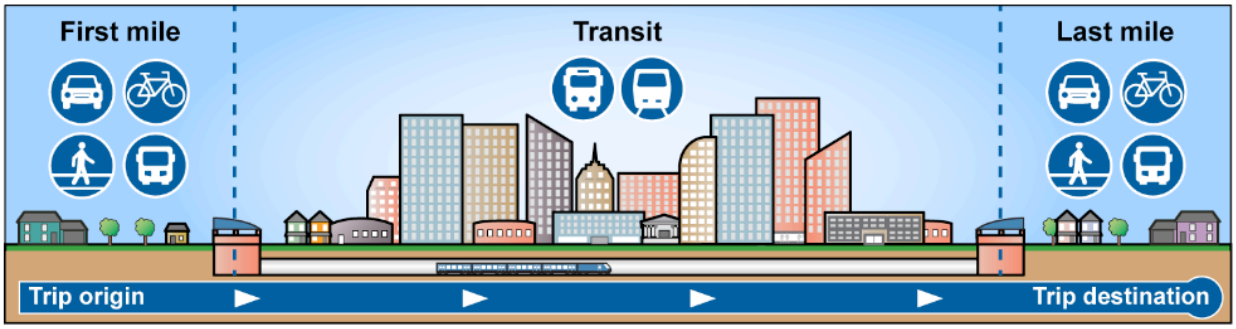

Figure 1 Concept of first-last mile transportation. Source: United States Government Accountability Office

Cities, transit agencies, and other mobility providers have approached first-last mile solutions in a variety of ways, which differ depending on density, walkability, and other aspects of the urban context.

For a variety of geographies, walking or rolling is the most obvious first-last mile solution. But this requires complete and unobstructed sidewalks, in good repair, available for the entire route to facilitate the connecting trip. In another common example, transit agencies run local feeder bus routes, develop on-demand microtransit services, or sponsor ride hail trip vouchers to connect people to high-frequency trunk routes. Cities and transit agencies of different sizes

have promoted bikeshare or shared e-scooter services in partnership with micromobility operators to help people connect to public transit using active modes.

In low-density, suburban, or rural areas, first-last mile transportation can take the form of microtransit, which is an on-demand shared transportation service to bridge the first-last mile gap—often many miles in these environments. Some rural transportation providers reframe the conversation as a first and last *five* mile problem, noting unique challenges relating to facilitating access to transportation services in expansive, sprawling areas where workplaces or other destinations are rarely clustered together.

These first-last mile solutions differ depending on the context, community needs, and capacity of mobility providers in the region. For instance, a community might be a major hub for intercity travel and focus on first-last mile transportation to and from airports, Amtrak rail stations, or intercity bus terminals. These long-distance modes may efficiently and effectively connect different cities, but provide less benefit to travelers (and local workers) if the stations themselves are difficult to access. Another community may recognize a need to facilitate first-last mile connections between a business park and a nearby commuter rail station, a park-and-ride location, or a bus stop.

This report explores first-last mile transportation services in different contexts around the United States, with a focus on first-last mile transportation for employment. It also examines the transportation landscape of Missouri, focusing on first-last mile and employment transportation challenges and opportunities around the state.

Chapter 2. Research Activities

The Project Team, Shared-Use Mobility Center and Via Strategies, conducted this research project and prepared this report to support the Missouri Highways and Transportation Commission (MHTC) and Missouri Department of Transportation (MoDOT) in pursuing opportunities to improve access to employment through first-last mile connectivity across the state.

This research project consisted of five components:

- 15 Case studies of first-last mile services across the United States
- 5 In-depth interviews with public agencies and private transportation providers
- 2 In-depth interviews with Missouri transit agencies
- 1 Virtual forum on first-last mile transportation with Missouri stakeholders
- Existing conditions analysis and needs assessment

Details of these activities are below.

2.1 Case Studies

For the first phase of the research, the Project Team produced 15 in-depth case studies of first-last mile transportation services from around the country. The goal of this initiative was to illustrate how transit agencies, state DOTs, and other transportation providers are addressing first-last mile challenges in a variety of contexts. The selection of cases involved an initial scan of over 50 first-last mile transportation programs nationwide. The project team developed a matrix of key selection criteria, which included region of the US, organizational structure, land use type, service model, partnership configurations, primary service use case, funding source, and fare structure. This matrix allowed the Project Team to determine which 15 cases would be most worthwhile for in-depth case studies, based both on diversity of criteria and relevance to Missouri. The 15 cases chosen were:

Table 1 Case study details

Organization	Program Name	Location	Location in Report
Village of Bedford Park	Connect2Work	Bedford Park, IL	Appendix A
Brightline	Brightline Neighborhood Electric Vehicles	South Florida	Appendix B

Organization	Program Name	Location	Location in Report
Crawford Area Transportation Authority	CATAGo	Titusville, PA	Appendix C
Delaware Transit Corporation (a division of the Delaware Department of Transportation)	DART Connect	Newark, Georgetown, and Millsboro, DE	Appendix D
Greater Cleveland Regional Transit Authority (GCRTA)	ConnectWorks	Cleveland, OH	Appendix E
Kansas City Area Transportation Authority (KCATA)	IRIS	Kansas City, Gladstone, Riverside, and Liberty, MO	Appendix F
King County Metro	King County Vanpool and Vanshare	King County, WA	Appendix G
City of Lone Tree	Link On Demand	Lone Tree, CO	Appendix H
Mountain Empire Transit (MET)	METGo!	Wise and Norton, VA	Appendix I
MobiliSE	FlexRide	Milwaukee, WI	Appendix J
North Carolina Department of Transportation (NCDOT)	Mobility for Everyone, Everywhere in North Carolina (MEE NC)	11 communities throughout North Carolina	Appendix K
Pace Suburban Bus	PACE Connect	Suburbs of Chicago, IL	Appendix L
Pinellas Suncoast Transit Authority (PSTA)	TD Late Shift	Pinellas County, FL	Appendix M
SouthWest Transit	SouthWest Prime	Suburbs of Minneapolis, MN	Appendix N
West Central Missouri Community Action Agency	New Growth Transit	16 counties in Missouri	Appendix O

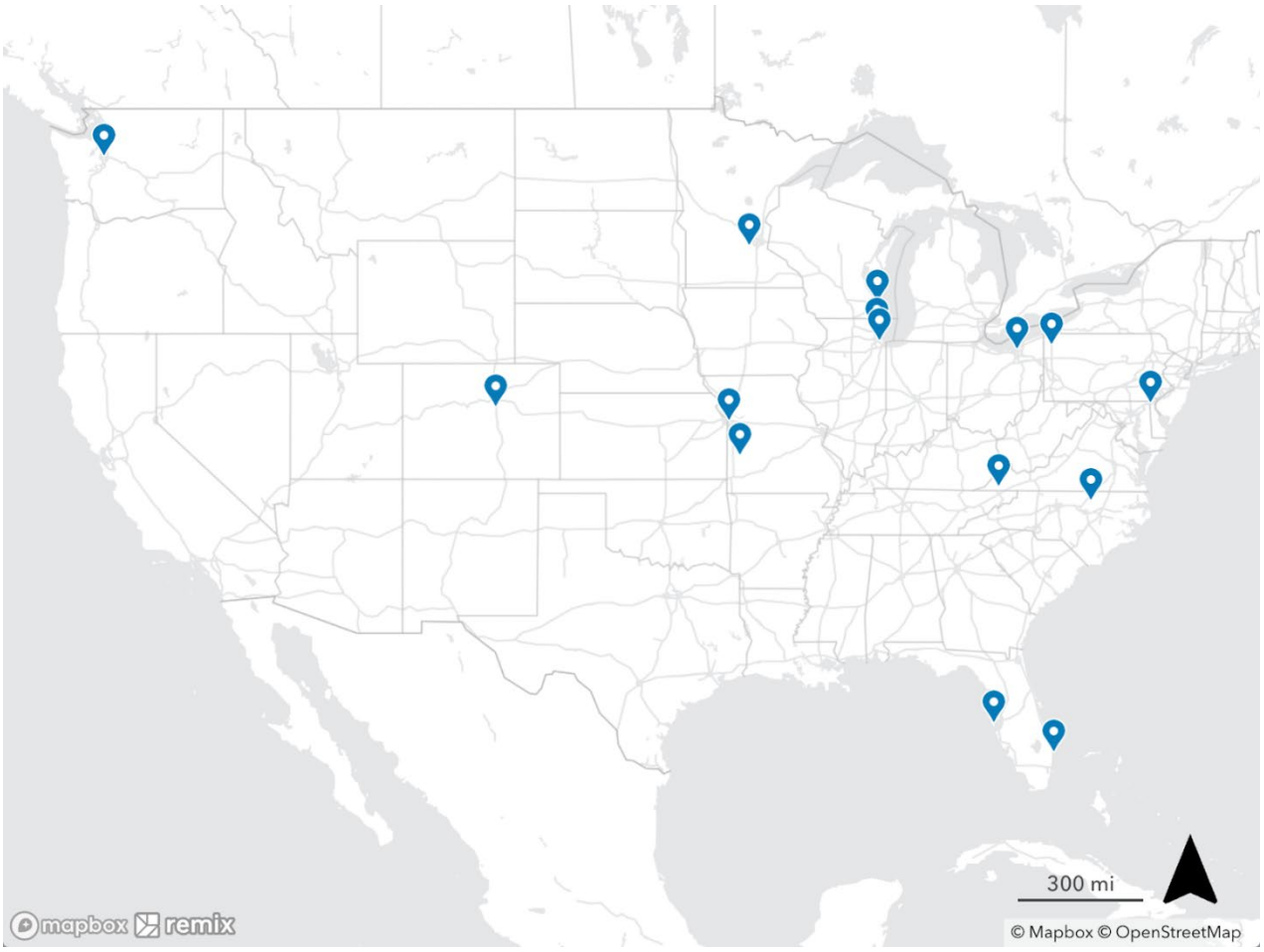

Figure 2 Map showing the locations of programs selected for in-depth case studies. Source: Via Strategies

Each case study provided an overview of the first-last mile service, as well as details on key demographics, program design and operations, lessons learned, and additional resources.

2.2 Interviews with National Cases

In June 2024, the Project Team conducted a series of five in-depth interviews with representatives from state DOTs, transit agencies, and private transportation providers to explore how agencies around the country are addressing the first-last mile problem; implementing microtransit, bikeshare, car share, and on-demand mobility services; and facilitating access to employment.

Each interview was roughly one hour long and conducted via Zoom. The interviews followed a standard set of questions (see Appendix P.2) but remained conversational. For each interview, the Project Team expanded on the standard questionnaire with questions addressing specific issues, challenges, or characteristics of that interviewee's service.

Interviewees were selected based on the analysis performed during the development of the case studies in Chapter 1. Of the roughly 50 cases initially examined, the Project Team selected 15 to examine more closely with in-depth case studies. Of these 15 cases, five were selected for in-depth interviews. This selection was based both on the programs' relevance to this project and on the diversity of locations, contexts, organizational backgrounds, and experiences that the cases provided.

The interviews were with the following organizations:

MobiliSE, a nonprofit organization in Southeast Wisconsin which operates FlexRide, a zone-based, employment- focused microtransit service (Appendix P.4).

North Carolina Department of Transportation (NCDOT), which partnered with 11 transit agencies in North Carolina for Mobility for Everyone, Everywhere in North Carolina (MEE NC), an initiative to accelerate the deployment of on-demand pilots throughout the state (Appendix P.5).

Delaware Department of Transportation (DelDOT), a state Department of Transportation (DOT) that operates DART Connect, a county-wide microtransit service that was launched as a solution to provide access to employment centers in Sussex County, Delaware (Appendix P.6).

Greater Cleveland Regional Transit Authority (GCRTA), the transit agency serving the Cleveland, Ohio, metropolitan area. GCRTA operates ConnectWorks, a first-last mile connector for employees traveling between fixed-route transit stops and their workplaces in suburban employment centers (Appendix P.7).

Brightline, a privately owned and operated intercity passenger rail provider in Southern Florida. Brightline partners with mobility providers around rail stations and nearby downtown areas for first-last mile services (Appendix P.8).

2.3 Interviews with Missouri Transit Agencies

To form a comprehensive understanding of the transportation landscape in Missouri, the Project Team conducted in-depth interviews with representatives from two Missouri transportation providers to learn about their needs, challenges, and opportunities. In particular, the interviews intended to explore each agency's approach to addressing the first-last mile problem and connecting people with employment.

Each interview was roughly one hour long and conducted via Zoom. The interviews followed a standard set of questions (see Appendix Q) but remained conversational. For each interview,

the Project Team expanded on the standard questionnaire with questions addressing specific issues, challenges, or characteristics of that interviewee's service.

The interviews were with the following agencies:

Jefferson City Transit Division (JeffTran) is the transit agency serving Missouri's capital, Jefferson City, a mid-size city exploring changes to its transit network service and considering potential implications to first-last mile connectivity options. JeffTran operates 6 fixed routes and 3 "Tripper" routes—specialty routes during the school year intended to transport students to and from school—as well as its paratransit service Handi-Wheels. (Appendix Q.3)

OATS Transit is a nonprofit corporation providing a diversity of service options (including deviated-fixed routes, intercity express, and senior transportation) and broad coverage in mostly rural areas across 87 counties in Missouri. The organization operates on a mix of revenue sources, including Federal Transit Administration (FTA) formula funds and private contracts. (Appendix Q.4)

2.4 Virtual Forum on First-Last Mile Transportation

On July 18, 2024, the Project Team hosted a Virtual Forum on First-Last Mile Transportation with Missouri stakeholders to discuss first-last mile challenges and employment transportation within the state of Missouri. The Forum was an opportunity for the Project Team to learn directly from experts on the ground about the transportation landscape in the state and workshop solutions to key transportation challenges.

2.4.1 Agenda

The 90-minute virtual Forum included various workshop activities and discussion topics to foster dialogue among participants. Below is a copy of the Forum agenda:

- Introductions
- Warm-Up/Missouri Trivia
- Project Background
- Open Discussion
    - Question 1
    - Question 2
    - Question 3
- Breakout Groups
    - Urban
    - Rural
- Full Group Discussion and Wrap-Up

2.4.2 Participants

The Project Team invited representatives from a variety of public, private, and non-profit organizations to participate in the Forum. In addition to transportation providers and mobility advocacy groups, the Project Team sought the perspectives of large business, business development organizations, educational institutions, and human services providers. Of the 17 stakeholders invited to the forum, ten representatives participated (not including members of the Project Team) from the following organizations:

- Kansas City Area Transportation Authority (KCATA)
- Jefferson City Transit Division (JeffTran)
- Amtrak
- Missouri Public Transit Association (MPTA)
- OATS
- Southeast Missouri Transportation Services (SMTS)
- BikeWalkKC

Details of the Virtual Forum are available in Appendix R.

2.5 Existing Conditions Analysis

The Project Team conducted an existing conditions analysis and needs assessment consisting of the following:

- **Transit network analysis** to document current first-last mile service, urban fixed-route services, long-distance fixed-route services, other transit services, and human service agency transit service offerings in the state.
- **Commute pattern analysis** to better understand commuter behavior in the state, including employment patterns, commute distance, and transportation mode to work.
- **Demographic analysis** to identify where populations with the greatest need for transit are located.
- **Commute typology definition**, to provide a framework to understand types of commute patterns and provide a way to explore first-last mile solutions for different geographies.

The full Existing Conditions Analysis and Needs Assessment report is available in Appendix S.

Chapter 3. Findings and Recommendations

This chapter presents key findings from this research, each followed by recommendations and examples of first-last mile and employment transportation services implemented across the country. The recommendations are designed to guide transit agencies, state DOTs, and local governments in developing effective, reliable, and context-sensitive first-last mile solutions.

Finding 1: First-last mile transportation is a workforce development opportunity

Some transportation services around the United States are approaching first-last mile services primarily as workforce development initiatives. Reframing the services in this way can help agencies define service goals and performance metrics, focus marketing efforts, and tap into new and innovative partnership opportunities. Additionally, considering the workforce development aspects of transportation investments presents an opportunity to unlock additional sources of funding, build interagency partnerships, and build community support—even among employees and business owners who do not rely on the service.

Recommendation 1.1: Develop interagency partnerships

Interagency collaboration can be a powerful tool to address transportation priorities. Through partnerships, agencies can share experience, resources, and capacity to effectively address transportation challenges. MoDOT and local agencies can partner with state agencies focused on workforce issues to help advance first-last mile and employment transportation initiatives. Potential agencies to partner with in Missouri may include the Missouri Department of Economic Development, the Missouri Department of Higher Education & Workforce Development, the Missouri Department of Social Services, and the Missouri Veterans Commission.

Example

Several state DOTs have partnered with state-level workforce development agencies to bolster both sectors. The New Mexico Department of Transportation is partnering with the New Mexico Department of Workforce Solutions for the Industry Credential Pipeline Program, an initiative that helps connect job seekers to career opportunities within the transportation industry. Though this program does not specifically address facilitating employment transportation, it highlights how interagency collaboration can support solutions in both agencies' interest.

Example

In addition to providing customers with intercity rail travel, Amtrak facilitates first-last mile connections within certain destination cities. In California, Amtrak's Capitol Corridor service offers free transit transfers connecting with 9 local and regional transit agencies. Similarly, Amtrak's Pacific Surfliner service ran a pilot program selling discounted day-passes for LA Metro

as well as providing free transfers to 12 transit services along the train route, funded by a California State Transportation Agency grant.

Recommendation 1.2: Connect with state and federal workforce development agencies

Transit agencies and local municipalities should look to state and federal workforce development agencies as potential sources of funding for employment transportation initiatives, in addition to transportation-specific funding. Some of these organizations may have grant opportunities that can be applied to transportation projects.

Example

MobiliSE, the non-profit organization operating FlexRide in Milwaukee, WI, partners with the Wisconsin Department of Workforce Development and the Wisconsin Economic Development Corporation, a public-private agency supporting business development initiatives. FlexRide does not receive funding from state or federal transportation agencies; the majority of funding comes from a Workforce Innovation Grant from the Wisconsin Department of Workforce Development.

Finding 2: Implementing first-last mile solutions requires a thorough understanding of demographic, economic, and geographic contexts

No two communities are the same, and there is no one-size-fits-all solution to first-last mile transportation or employment transportation. Before pursuing any transportation project, implementers must carefully consider the unique aspects of their community or communities and what specific needs the transportation service will address. This includes analyzing demographic patterns, employment density, current commute patterns, and existing transportation services in the area.

Recommendation 2.1: Ensure that core transit services are reliable and effective

Transit agencies and local governments should ensure that fixed-route transit services (or scheduled and on-demand services when an agency does not operate fixed routes) are reliable and effective to secure multimodal connections and enable a complete trip. If they are not, transportation providers should prioritize investments in fixed-route transportation before exploring how first-last mile solutions can complement and supplement those services. While first-last mile services are critical for connecting people to employment, education, and other necessary destinations, they are only effective if they connect with reliable, efficient, and available transit services.

Example

For CapMetro's Pickup service in Austin, TX, the agency developed operational typologies for determining how the on-demand service would address specific transportation challenges. One

of these typologies was used specifically to address first-last mile transportation needs, while another typology was used to address areas with underperforming feeder bus services. This analysis has helped CapMetro design Pickup to fill in gaps and connect travelers to more reliable fixed-route services.

Recommendation 2.2: Evaluate the demographic, economic, and geographic context of a community to most effectively implement first-last mile services

Fixed-route and first-last mile solutions should be tailored to the residential and employment patterns in each location. The Commute Typologies Matrix presented in the Existing Conditions Analysis (Appendix E) highlights different considerations needed for different land-use contexts. Transit agencies should carefully consider the demographic characteristics, employment concentration, travel patterns, and geographical conditions to determine how to most effectively implement first-last mile transportation services. The Commute Typologies section within the Existing Conditions Analysis offers a framework for structured decision-making based on these factors and presents examples of transportation services that can best serve in different contexts.

Example

The Virginia Department of Rail and Public Transportation (VDRPT) led an initiative to bring microtransit services to two rural communities in the state. Prior to these services launching, VDRPT's analysis included a guide to evaluating rural microtransit sustainability. The below decision tree helps agencies evaluate the level of existing transit service in a service area and was used to determine which service applications and use-cases are most appropriate.

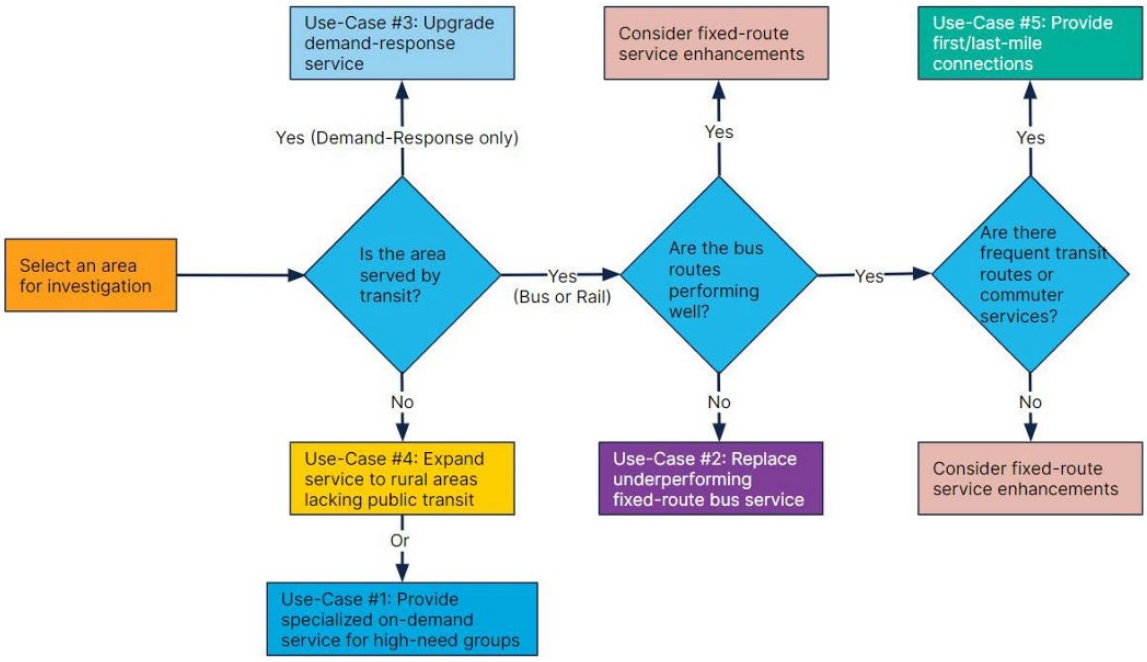

Figure 3 Decision tree to evaluate existing transit service and determine which service applications are most appropriate. Source: VDRPT

Example

The North Carolina Department of Transportation (NCDOT) recognized that the 11 communities taking part in its MEE NC program had different and unique needs and capacities for supporting microtransit programs, and categorized participating communities into three tiers to better support them throughout the project. Tier 1 communities already have much of the infrastructure and staff to accommodate a microtransit program; Tier 2 communities need significant investments to be able to plan for and operate on-demand services; Tier 3 communities are areas demonstrating a very high level of need, where turnkey on-demand solutions may be the best fit. This categorization helps NCDOT determine how to most effectively direct support to the communities.

Finding 3: Effective partnership building is integral to first-last mile services and employment transportation

A common theme among nearly all transportation providers working on first-last mile or employment transportation services is the role of partnerships in developing and sustaining these programs. The nature and extent of each partnership varies based on the service and community needs, but transit agencies, cities, and transportation providers should always prioritize forming and leveraging partnerships with local businesses, human services providers, elected officials, and other community stakeholders to ensure adequate funding and support for first-last mile services.

Recommendation 3.1: Pursue partnerships with local employers

Local employers, especially large or regionally significant ones, as well as business park owners or business improvement districts, can be key partners for transit agencies–for funding, marketing, or program design–and transit agencies should engage with local employers early on in the project to determine how they can most effectively partner to facilitate employment transportation. Note that whether these partnerships are formal or informal, they can be delicate to navigate, especially since employers may be reluctant to support transportation programs in heavily car-centric communities.

Example

The Greater Cleveland Regional Transit Authority (GCRTA) partners directly with local employers to fund its ConnectWorks microtransit program. Costs for ConnectWorks are split 50-50, with GCRTA contributing half and employers paying the other half. While this configuration comes with its own set of challenges, GCRTA believes that it also helps build community buy-in. Because of the financial contributions, participating employers are invested in the program and its success.

Example

Link On Demand in Lone Tree, CO began as a zero-fare, first-last mile, workforce-focused shuttle service that transported people between a Denver Regional Transportation District light rail station and several large employment centers, including a Charles Schwab & Co. campus, the Sky Ridge Medical Center, and the Park Ridge Corporate center. The City of Lone Tree partnered with these business centers to form a consortium which helped fund the service.

Example

Brightline, a private rail service in South Florida, partners with several large corporate clients through the Brightline for Business program. As part of these partnerships, companies can purchase tickets in bulk for their employees for a reduced price. This setup allows employees to more easily use Brightline's services to commute. Brightline has a web dashboard as part of the corporate partnership program where employees can book tickets, which come out of their employer's ticket bank. Depending on the employer and the package, these tickets can be reduced in price or free for the employee. The Premium service option includes a $10 Uber voucher aiming to facilitate first-last mile connections to the train service.

Recommendation 3.2: Explore partnerships with a variety of organizations

Employers can be powerful partners, but it can be difficult to form or maintain these partnerships due to changes in employers' priorities or the context of the service. To adequately fulfill first-last mile needs, agencies should pursue partnerships from a variety of sources. Agencies can explore how partnerships with human services organizations, business development organizations, or local transportation advocacy groups can help further first-last mile goals.

Example
In Wake County, NC, the Wake County Department of Health and Human Services partnered with local senior centers and the Kramden Institute, a non-profit focused on building technological literacy, to help community members access GoWake SmartRide NE, a new microtransit program. Together, the partners developed classes for seniors on key computer skills including how to access the microtransit service through a mobile app or computer. As a result, the partnership helped foster critical technology skills and improved community access to transportation services.

Example
Cecil Transit, in Cecil County, MD, launched the COMPASS microtransit pilot program in 2021 to facilitate access to employment, social services, healthcare, and shopping for people recovering from drug abuse. Cecil Transit recognized that people in recovery are often prevented from having a driver license and driving a vehicle, and that having access to public transit service for complete trips is essential to support their recovery and fulfill all their transportation needs. For this pilot, Cecil Transit partnered with several addiction recovery houses in the area.

Recommendation 3.3: Provide directed support to local transportation providers on partnership building

MoDOT, metropolitan planning organizations, and FTA technical assistance providers can assist local transportation providers with forming and managing partnerships, and can convene interagency partnerships to further help cities and transportation providers.

Example
The Village of Bedford Park's Connect2Work and Pace Suburban Bus's Pace Connect programs are both part of the Regional Transportation Authority's broad support of first-last mile pilots in different contexts in the Chicagoland region. Connect2Work involves discounted ride hail rides and a zero-fare shuttle service to help employees from across the region access large, three-shift employment centers in suburban Bedford Park, IL, as well as nearby Midway Airport in Chicago. Pace Connect is a late-night, zoned, on-demand service for off-shift workers. The Regional Transportation Authority was a key partner for both services and facilitated partnership-building between transportation providers, local governments, and technology providers.

Finding 4: First-last mile transportation services need community support to thrive

Implementing effective first-last mile and employment transportation services requires significant community engagement. The level of community support for a transportation program can impact funding, planning, marketing, and many other operational and

programmatic factors. Strategies to build political and community support are essential for any developing program.

Recommendation 4.1: Plan for a targeted marketing and promotion campaign

First-last mile connectivity impacts employment access, healthcare access, access to education, and access to countless other necessary services. Discussing first-last mile transportation programs in terms of how they impact communities comprehensively may help garner support from community members who might otherwise be uninterested in public transportation improvements.

Example

MobiliSE intentionally markets FlexRide as a workforce development program, which helps the service get support from elected officials and community organizations who might otherwise be reluctant to use public funds on a transportation program.

Example

In 2015, SW Transit in suburban Minneapolis launched the SW Prime microtransit service aiming to connect suburban communities with existing transit options in the region. Over the following years, SW Transit has expanded SW Prime, creating an umbrella of first-last mile services tailored to a variety of community transportation needs. These expansions were undertaken in partnership with employers and key local destinations. SW Prime now offers services aiming to serve trips to the airport (SW Prime MSP Airport), a suburban business area (SW Prime Edge), access to grocery stores (SW Prime Essential), and non-emergency medical transportation (SW Prime MD).

Example

The Crawford Area Transportation Authority (CATA) in Meadville and Titusville, PA, launched a bikeshare program in an effort to facilitate first-last mile connections to fixed-route bus service as well as access to recreational trails in partnership with the State Parks Department. Additionally, CATA operates CATAGo, a microtransit service providing first-last mile connections to fixed-route buses and serving as a first-last mile option for travelers using the municipal airport.

Recommendation 4.2: Seek out project champions

Project champions are vital in promoting transportation initiatives, engaging community members and elected officials, advocating for funding or support, and keeping projects on track. Whenever possible, it is good practice to seek out a local champion to help move transportation projects forward. This champion can be a public official or a particular member of the community invested in a project's success.

Example
Greater Cleveland Regional Transit Authority recognized a number of project champions that helped develop its ConnectWorks employment-focused microtransit program. Early in the project's development, a suburban mayor convened a Mobility Task Force consisting of local elected officials and business leaders to help move the project forward. Additionally, a state senator was integral in efforts to create a set-aside in the Ohio state transportation budget for workforce mobility projects.

Finding 5: There are significant gaps in knowledge about Missouri's transportation needs and opportunities

Despite transportation providers' best efforts, there are gaps in knowledge of transportation needs throughout the state, particularly for Missourians without access to a car, without a driver license, or for whom the rising costs of owning and operating a car makes personal vehicle ownership unattainable. This is especially relevant post-COVID, where providers recognize that peoples' transportation habits have changed significantly, but do not fully understand the shape or extent of the changes. Transportation providers recognize that there are likely needs that they are not addressing, and thorough community needs assessments can help agencies determine how best to adjust and improve their services.

Recommendation 5.1: Perform community transportation needs assessments

Transit agencies and local governments should undertake community needs assessment studies to address gaps in transportation services and increase awareness of transit needs in their communities. State DOTs can provide support through funding opportunities, workshops, guides, technical assistance, or other resources to help with community needs assessments.

Example
As a program supported by the California Air Resources Board, the Clean Mobility Options (CMO) transportation voucher program requires that projects develop a Community Transportation Needs Assessment study as the initial planning step to develop and implement first-last mile services. This statewide program also provides a dedicated funding line to support communities conducting their Community Transportation Needs Assessment studies. Several projects have developed through the CMO program that focus on first-last mile transportation, including the Chula Vista Community Shuttle.

Recommendation 5.2: Develop knowledge-sharing resources for transportation providers about first-last mile transportation services

Transportation providers in Missouri can benefit from more education on first-last mile transportation in general, including what these services can entail and what benefits they can provide to their service areas. Many rural providers rarely consider first-last mile transportation at all, since the majority of their services are door-to-door, but a clearer focus on first-last mile

transportation can help facilitate inter-city travel and other gaps in rural transportation. MoDOT can help by developing and providing resources on first-last mile options and how to implement them.

Example
The Minnesota Department of Transportation supports knowledge-sharing among agencies throughout the state through workshops, peer exchanges, encouraging local agencies to participate in state and national conferences, and providing resources on shared mobility.

Recommendation 5.3: Support research about first-last mile options

MoDOT should continue supporting research into first-last mile transportation, employment-focused transportation, and the unique transportation characteristics, challenges, and opportunities in Missouri. MoDOT should also continue to support research for services connecting to employment in contexts where transit service is limited or non-existent and where services that might otherwise serve the first or last mile provide transportation for the whole trip from origin to destination.

Finding 6: State DOTs can play several key roles in supporting first-last mile transportation initiatives

State DOTs take on various roles in supporting first-last mile transportation. In most instances, a state DOT supports first-last mile transportation through funding opportunities, research, and resources for local agencies. In other cases, like with Delaware DOT's DART Connect, a state DOT can serve as a transportation provider itself. State DOTs can support first-last mile transportation and employment transportation by providing resources to local agencies, helping them address federal requirements in their projects, and acting as a liaison between agencies and FTA. State DOTs can further provide guidance and authority early in projects, develop standardized procedures for agencies to follow related to contracting, data sharing agreements, or procurement, and provide assistance in navigating federal regulations. State DOTs are exploring a variety of different roles in how they can best support first-last mile transportation services in local jurisdictions.

Recommendation 6.1: Support first-last mile feasibility studies

MoDOT can provide funding and technical support for first-last mile feasibility studies. These feasibility studies can help transit agencies evaluate design, permitting, and implementation needs to launch and maintain a first-last mile transportation program.

Example
As part of its MEE NC program, NCDOT launched the Integrated Mobility Division Feasibility Studies Program, an initiative to evaluate microtransit project feasibility before full-scale pilot implementation. This program allowed transit agencies to fund planning and analysis activities to evaluate technology needs, undertake stakeholder engagement activities, explore funding

mechanisms, develop strategies for service operations, and determine new microtransit projects' potential impact on existing services.

Recommendation 6.2: Establish first-last mile connectivity grant programs

State DOTs can establish grant programs that invest in the implementation of first-last mile or employment-focused transportation pilots. Specific and focused transportation programs can encourage local agencies and cities to recognize transportation barriers that they may not have considered previously and work towards solutions for accessible, connected transportation systems.

Example

The Washington State Department of Transportation administers a First Mile/Last Mile Connections grant program that funds transit connectivity projects throughout the state. These projects include shuttle, vanpool, and vanshare pilots, active transportation projects, parking management, and public education initiatives.

Example

In 2023, the Ohio state legislature established the Workforce Mobility Partnership Program as part of the state's transportation budget. The competitive grant program supports transit related projects that improve workers' ability to travel to employment centers in both urban and rural communities.

Example

The Moving Greater Minnesota Forward incubator grant program from MnDOT focuses on the shared transportation needs of rural and small urban areas. The program has three phases. During the first phase, MnDOT works with awardees on early idea development to create an implementable project. Once the project idea is developed, MnDOT funds and supports real world pilot testing for the second phase. When the third phase begins, MnDOT will work with project implementers on developing strategies to scale the pilot, find sustainable funding, and establish partnerships. Moving Greater Minnesota Forward highlights how state DOTs can support focused initiatives to improve transportation access.

Recommendation 6.3: Invest in statewide or regional technology infrastructure development to promote multimodal transportation

Technology-based programs and platforms are a major step in integrating different transit services and improving the user experience to facilitate first-last mile transportation

Example

The Vermont Agency of Transportation, through a Mobility on Demand Sandbox grant from FTA, developed the Go! Vermont trip planning tool, which shows travelers route options and connections between fixed-route and flexible transit services across the state. In addition to scheduled transit, the platform allows users to discover and plan trips that include dial-a-ride

and other flexible services that publish data via the General Transit Feed Specification Flex (GTFS-Flex) standard. This project is particularly focused on rural travelers, helping provide them with a complete picture of their mobility options beyond fixed-route transit.

Example
In 2020, MnDOT used an Accelerating Innovative Mobility grant from FTA to develop a regional trip planning platform that allows travelers to discover transit and shared mobility options and to directly book and pay for these services inside a mobile app. MnDOT recognized that many transit agencies (mostly in rural areas and small towns) lacked the digital infrastructure for real-time trip planning information, and offered considerable technical assistance to these communities. At the end of this pilot, MnDOT developed a replicable framework to bring this platform to other communities.

Example
The California Integrated Travel Project (Cal-ITP) is a statewide initiative within the California Department of Transportation that aims to improve transit access and intermodal connectivity by developing trip planning and payment systems across mobility services throughout California. The project emphasizes developing robust data infrastructure so that agencies can share real-time trip and eligibility data, implement contactless payment systems, and improve operational efficiency.

Chapter 4. Conclusion

For those who rely on public transportation, the first and last mile of a trip can pose significant barriers. Even if fixed-route services are efficient, reliable, and form the majority of a trip, travelers who cannot easily access those modes on both ends of their trip are cut off from essential destinations. Transportation providers have developed various strategies to address the first-last mile problem, and these strategies differ depending on the community context.

This report examined first-last mile transportation and how these services can help connect people with employment in Missouri. The Project Team sought to address this topic through in-depth case studies of first-last mile services around the country, semi-structured interviews with transportation providers within and outside of Missouri, a virtual forum with Missouri stakeholders, and an analysis of the existing transportation landscape in the state, which included analyses on commute patterns, demographics, transit networks, and land use.

The scan of cases of first-last mile programs provided the Project Team a broad spectrum of first-last mile services implemented in different contexts across the country. The initial scan of over 50 cases and the selection of 15 cases for in-depth case studies revealed the wealth of initiatives that local and state governments and their partners are implementing to address gaps in transit service to access employment opportunities. First-last mile services are multimodal by design. First-last mile options vary based on geographic and demographic context, and what is effective for one community may not always be effective for others. This study shows how agencies addressing gaps in transit services to facilitate access to employment can learn from a wide array of service models, partnerships, vehicles, and technologies to successfully plan first-last mile services.

The Project Team's interviews with state DOTs and local transportation providers expanded on the information gained from the desk-based research about their programs, and provided more detail about the programmatic, operational, and managerial challenges and opportunities associated with these services. Planning and implementing first-last mile services is a learning process that often requires going through multiple iterations. Additionally, first-last mile services are susceptible to broader changes in the transportation needs of a community. For example, a service intended to close the gap on first-last mile access to employment in pre-pandemic times may not be as well suited to address the needs of an increasingly remote workforce. Also, agencies and providers may need to adjust their first-last mile services to meet users' preferences as they respond to changes in workforce's needs.

In an effort to learn more about how transportation providers in Missouri understand and perceive first-last mile transportation, the Project Team also interviewed transit agencies representing rural and small urban communities. First-last mile services can be challenging to implement in rural contexts with longer distances to cover, or in small urban settings with

limited transit service. In these cases, first-last mile services can perform a broader role than just connecting to transit, as they can complement transit in reaching key destinations directly.

Following these interviews, the Project Team hosted a virtual forum with Missouri transportation providers and stakeholders to discuss specific challenges and opportunities around first-last mile transportation in the state. These activities provided multifaceted insights about current challenges in transportation services in Missouri, whether these services are rail, bus, vanpool, or bikes. Some Missouri transportation providers are still unsure of what first-last mile options can entail, and how they can specifically improve their services. When learning about what other agencies with similar challenges across the country are doing, stakeholders in Missouri recognize the opportunities that first-last mile services can provide.

To learn more about the transportation landscape in Missouri, the Project Team performed an existing conditions analysis and needs assessment study. This included research on all existing fixed route systems, a review of commute patterns, and an analysis of the demographics of the state and larger urban centers. The research showed that Missouri only has two major urban centers with a robust and frequent fixed route network complemented by first-last mile solutions - Kansas City and St. Louis. Other smaller cities have smaller networks without first-last mile connectivity or lack fixed route networks entirely, offering opportunities to invest further in both fixed route and first-last mile services. Although there are some long-distance services in the state run by entities such as Amtrak and Greyhound, most long-distance connections are currently infrequent and would need significant additional investment before first-last mile solutions for employment would be required.

Following this research, the Project Team developed six typologies for different contexts in Missouri based on the density of residential land use (rural, suburban, rural) and the distribution of job centers (concentrated and dispersed). For each, the Project Team examined how different first-last mile service options could be suitable for different communities based on existing levels of transit. The aim was not to provide prescriptive solutions, but rather a framework to use when developing potential first-last mile solutions in different areas of the state.

The insights gained from these activities contributed to key takeaways and recommendations for MoDOT to most effectively support first-last mile transportation initiatives.

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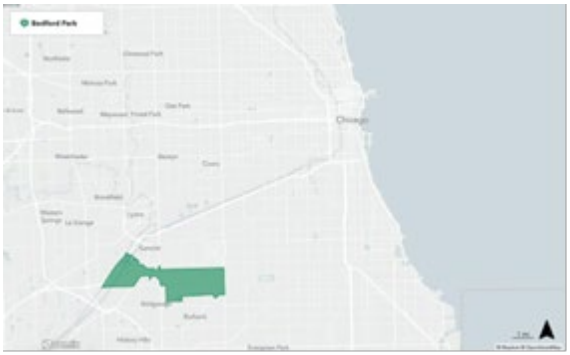
Appendix A. Connect2Work Case Study

Overview

Lead Organization: Village of Bedford Park
Program Partners: Cook County government, Regional Transportation Authority (RTA), Uber, Via, Moovit, Antero Group, Shared-Use Mobility Center
Primary use case: Free shuttle service (discontinued in May 2022). Discounted Uber rides to and from public transit during rush hour (still operating).
Service model: Mobility-as-a-Service (one app connected to discounted Uber rides through Uber's app and free shuttle rides provided by Via)
Connection to other modes: Amtrak, Metra trains, Chicago Transit Authority (CTA) Bus and Rail, Pace Suburban Bus, and Midway Airport
Funding: Funded by the Village of Bedford Park, Cook County, and RTA (see below for details).
Link: Connect2Work webpage

Location



Location: Bedford Park, IL
Land Use Type: Suburban, industrial
Major population center(s): The southern (between 77th and 87th streets) and northern (between Midway Airport and Summit Station) portions of the service map are residential.

Key Demographics

Population: 4,200 people
Area: 6 mi²
Population Density: 700 people/mi²
Jobs: 23,000 jobs
Employment Density: 3,800 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 2,100 (50%)
People living below the poverty line: 380 (9%)
Major employment centers:
Ford City Mall, Home Chef, Midway Airport

Service Details

Table 2 Connect2Work service details

Service Details/Type of Service	Free Shuttle	Last Mile	Late Night
Service hours	Monday-Friday: 6:00am - 10:00am 3:00pm - 7:00pm	Monday-Friday: 6:00am - 9:00pm	Monday-Friday (service map expands to anywhere in Cook County): 9:00pm - 6:00am
Reservation type	On-demand	On-demand	On-demand
Fare	Free	Subsidized 50% of the ride up to $7 (riders pay the balance)	covered by Uber and subsidized at 50% of the ride up to $7 (riders pay the balance)
Technology provider	Moovit (app) Uber, Via (service providers)	Moovit (app) Uber, Via (service providers)	Moovit (app) Uber, Via (service providers)
Operator	Via	Uber	Uber
Vehicle details	Sedan featuring Connect2Work branding stickers	Standard Uber fleet	Standard Uber fleet
Ridership	Ridership details can be found in the Connect2Work RTA report	Ridership details can be found in the Connect2Work RTA report	Ridership details can be found in the Connect2Work RTA report

Service Area Map

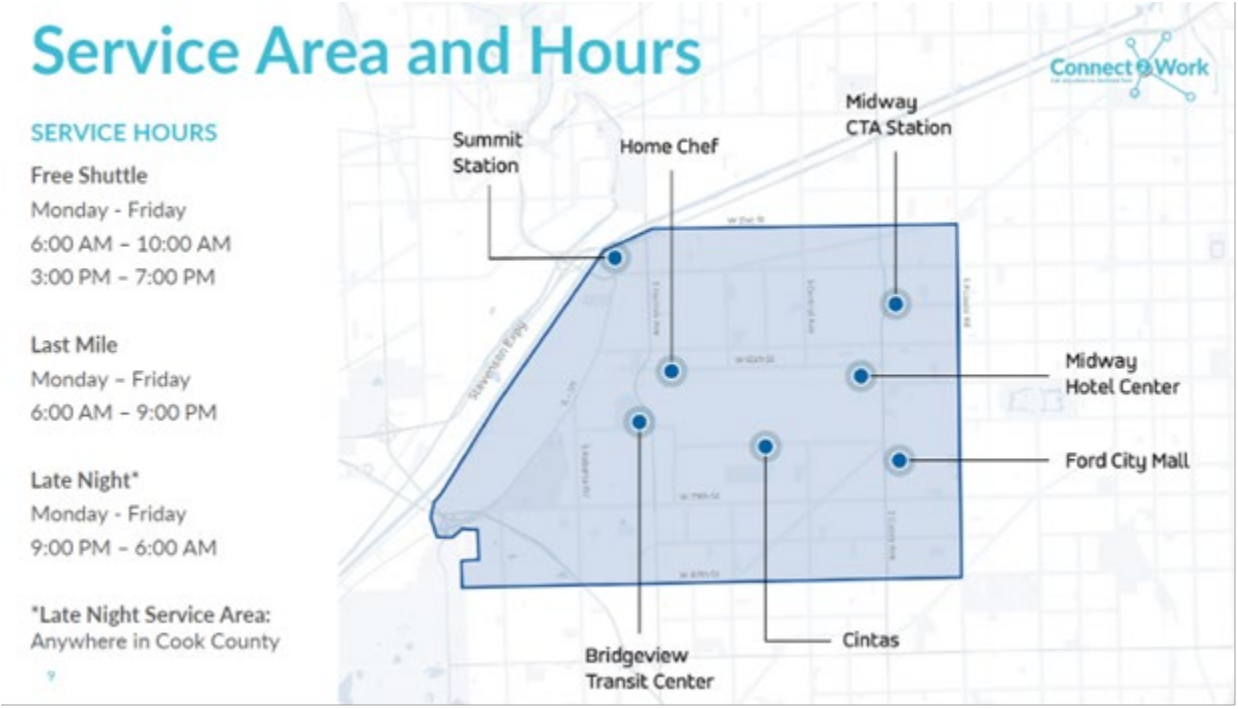


Figure 4 Bedford Park service area. Source [Connect2Work]

Note: Late night Uber rides that start in Bedford Park can go anywhere in Cook County and still be subsidized at the same rate by this program. Connect2Work covers up to 50% of these late night rides or $7, whichever is lower.

Program Design and Operations

Connect2Work is a pilot first-last mile program launched in 2020 by the Village of Bedford Park (a near-southwest suburb of Chicago, just outside Midway Airport) in partnership with the Regional Transportation Authority (RTA). The Village had been interested for years in the question of first-last mile mobility challenges for commuters. Their efforts culminated in July 2019 with their publication of the 226-page Last Mile Mobility Study - Phase I Report. The toolkit of solutions at the end of this report led directly to the Village's investment in Connect2Work.

The Village of Bedford Park initially provided $200,000, alongside an Invest in Cook County grant worth an additional $200,000. This funded pilot operations, and discussions were subsequently held with the RTA for an additional $200,000 contribution, which funded the Moovit contract for up to two years, while Village and Cook County funding covered TNC and on-demand services, marketing, and administration costs.

At launch, Connect2Work was devised as a Mobility-as-a-Service (MaaS) app for connecting residents and workers in Bedford Park to affordable mobility options. The Connect2Work app (developed by Moovit) linked users to two separate mobility solutions: potential riders were able to sign up for both free shuttle rides provided by Via in a Connect2Work-branded van as well as subsidized Uber rides.

The Village of Bedford Park wanted to increase access to/from transit and the Bedford Park-Clearing Industrial Area while decreasing traffic congestion. The Village's goals also included increasing the workforce access for local employers, reducing user costs, and providing data to evaluate the performance of first-last-mile solutions.

Lessons Learned

Fare payment integration challenges: When the program launched, the Village had hoped to incorporate fare payment integration into the Connect2Work app, but encountered reluctance from both Via and Uber. Discussions with RTA, Moovit, Via, and Uber during early operation pursued this integration to ensure customers could seamlessly book trips without leaving the C2W app, making it a functional MaaS app. Despite Moovit's successful experience with such integration in other markets, both service providers (Uber and Via) were hesitant from the outset. The providers wanted to directly engage with customers in their own apps—Via used a secondary Connect2Work Free Shuttle app while Uber offered the subsidized bookings through their own regular Uber app. Neither wanted to have those riders book trips in one app which showed both services (and their prices) side-by-side. In the pilot work plan, configuring the Connect2Work app for payment would be addressed subsequent to booking integration discussions, but all of those discussions ended in April, 2021. Because both providers required

users to switch from the Connect2Work app to their own app for trip booking, eventually, use of the central Connect2Work app declined due to lack of this integration. This led to the discontinuation of the app in February, 2022. The Connect2Work Shuttle provided by Via operated until May 27, 2022, when the initial grant funding from Cook County ran out. Riders are still able to sign up for the Uber option.

Takeaways from the free shuttle service: The Connect2Work pilot demonstrated a market for first-last mile trips in the Bedford Park area. While the free shuttle's ridership was higher than previous RTA pilots, the ridership was not enough to be cost sustainable for Bedford Park and employers. A report on the program from RTA included the following lessons learned:

- "First/Last Mile service provided to industrial areas needs buy-in from local businesses.
- MaaS apps are most successful in areas where there is not a lot of competition.
- The municipality (client) has to be upfront with Level 2 [Payment] integration."

References and Additional Resources

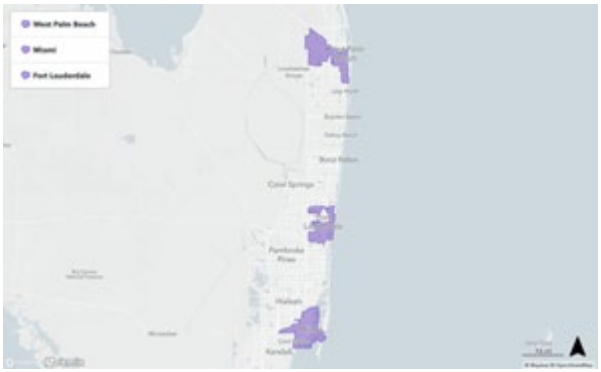
- Connect2Work webpage
- Village of Bedford Park Last Mile Mobility Action Plan
- Mass Transit Magazine: How the Village of Bedford Park and Uber Connect People to Jobs
- Village of Bedford Park RFQ Announcement
- RTA Report on Connect2Work from December 2022
- Moovit Press Release

Appendix B. Brightline Neighborhood Electric Vehicles Case Study

Overview

Lead Organization: Brightline, a privately owned and operated intercity passenger railroad
Program Partners: Circuit
Primary use case: First-last mile services around three Brightline stations and the nearby downtown areas.
Service model: On-demand shuttle
Connection to other modes: Service is designed to be used with Brightline intercity rail travel. West Palm Beach and Miami service areas also include nearby CitiBike bikeshare rentals. Certain Brightline packages include $10 Uber vouchers. Miami and Fort Lauderdale feature airport connector shuttles through Brightline+ service, which extend to MIA or FLL airports.
Funding: Funded by partnerships and assistance provided by cities and private companies. Circuit advertises on its fleet for additional funding.
Link: Circuit-Brightline webpage

Location



Location: South Florida
Land Use Type: Urban, suburban
Major population center(s): Miami, Fort Lauderdale, West Palm Beach

Key Demographics

Population: 750,000 people
Area: 150 mi²
Population Density: 5,000 people/mi²
Jobs: 520,000 jobs
Employment Density: 3,500 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 570,000 people (75%)
People living below the poverty line: 135,000 people (18%)

Service Details

Table 3 Brightline service details

Service/Location	West Palm Beach	Fort Lauderdale	Miami
Service hours	Daily, 7:00am - 9:00pm	Monday - Wednesday, 6:30am - 10pm Thursday, 6am - 10pm Friday, 6am - 11pm Saturday, 8am - 11pm Sunday, 8am - 8pm	Monday - Friday, 6am - 10pm Saturday - Sunday, 9am - 10pm
Reservation type	On-Demand	On-Demand	On-Demand
Fare	Between $0.00-$8.00 depending on pick up and drop off locations and number of passengers. As of November 6th, 2023, trips that start or end outside the borders of the city of West Palm Beach have an additional fee of $4 plus $1 for each passenger. Rides in high-demand areas have an additional fee of $2 per rider	Between $0 and $10.00 depending on pick up and drop off locations and number of passengers.	None
Technology provider	Circuit	Circuit	Circuit
Operator	Circuit	Circuit	Circuit
Vehicle details	Polaris GEM e6 all-weather electric vehicles	Polaris GEM e6 all-weather electric vehicles	Polaris GEM e6 all-weather electric vehicles
Ridership	Over 250,000 trips from October 2021 to October 2023, including 19,111 passengers in September 2023		

Service Area Maps

Figure 5 West Palm Beach service area

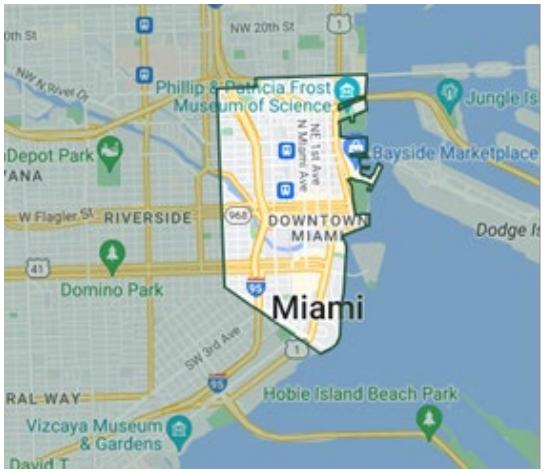


Figure 6 Miami service area

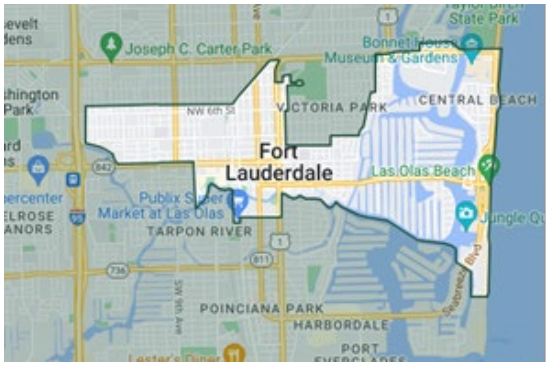


Figure 7 Fort Lauderdale service area

Program Design and Operations

Circuit is a short-range electric shuttle solution that provides first-last mile connections to Brightline services in South Florida. The service aims to connect riders in South Florida to and from Brightline service using sustainable, all-electric vehicles that aid in efforts to remove polluting single-occupancy vehicles from city roads. Riders can hail rides from the geofenced service areas, each of which are three-mile radii surrounding the West Palm Beach, Fort Lauderdale, and Miami Brightline stations. Riders can book rides through the Brightline smartphone app or hail a ride as they would a cab. Rides must be booked to or from a Brightline train station, ensuring that the service is used for first-last mile connections to Brightline services.

The Fort Lauderdale service reported ridership of around 200,000 in 2023. The West Palm Beach service reports ridership of around 15,000 rides per month in its 16-vehicle service. Partnerships with the City of West Palm Beach and the WPB Downtown Development Authority (DDA), Brightline, Discover the Palm Beaches, the Hilton Hotel, The Ben Hotel, and Parkline Apartments enable Circuit to provide affordable rides throughout West Palm Beach.

Ridership of the service consists entirely of riders that are connecting to and from the Brightline service, which caters to commuters, local travelers, and tourists, and expects to see continued growth in ridership over the next several years.

Lessons Learned

Building partnerships: Circuit has successfully leveraged partnerships with local community organizations to fund services either directly or through advertising. The service has used fares to strategically alter rider behavior; the service in West Palm Beach was originally fare-free, but in 2023, fares were added to a portion of the service area to reduce wait times and improve service efficiency across the city. However, rides are never more than $4 for single riders or $8 for groups.

References and Additional Resources

- Circuit-Brightline webpage
- Circuit's 2023 Year in Review
- Circuit: Connecting West Palm Beach One Partner at a Time
- Polaris GEM e6 electric vehicle details
- Downtown West Palm Beach: West Palm Beach DDA Implements Changes To Circuit Downtown Rideshare Program

Appendix C. CATAGo Case Study

Overview

Lead Organization: CATA
Program Partners: Titusville Area Hospital, Spare
Primary use case: CATAGo replaced previous fixed-route services in the city in favor of on-demand microtransit for broader coverage and more responsive service.
Service model: On-demand microtransit that riders can request to and from any of 75 stops in the city.
Connection to other modes: Titusville-to-Meadville Lifeline Route, CATA Shared Ride Service, Titusville airport. CATA also operates fixed-route bus service throughout the region and the Meadville Bikeshare
Funding:
Funded through grants from the Pennsylvania Department of Transportation and Titusville Area Hospital
Link: CATAGo webpage

Location

Location: Titusville, PA
Land Use Type: Rural
Major population center(s): Titusville, Meadville

Key Demographics

Population: 5,314
Area: 2.9 mi²
Population Density: 1,832 people/mi²
Jobs: 2,100 jobs
Employment Density: 724 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 191 (4.4%)
People living below the poverty line: 1,140 (22.7%)
Major employment centers:
Titusville Area Hospital, University of Pittsburgh at Titusville

Service Details

Table 4 CATAGo Service details

Service hours	Monday - Friday, 7:30am - 7:30pm Saturday, 12:00pm - 5:00pm
Reservation type	Reservations made through the CATAGo mobile app, or through the phone
Fare	$1.50 per ride (seniors and children under 6 ride for free)
Technology provider	Spare Labs
Operator	CATA
Vehicle details	3 ADA accessible vehicles
Ridership	8,000 trips as of December, 2023

Program Design and Operations

CATAGo launched in June 2023 in Titusville, PA as a replacement for the city's two fixed bus routes, the Blue and Green Routes. These routes used a single CATA bus and had headways of up to an hour. Replacing the city's fixed routes with on-demand service allowed CATA to broaden its coverage area in the city and significantly reduce wait times. CATAGo riders can request a trip through CATA's smartphone app, and a CATAGo vehicle will arrive at one of 75 predetermined stops throughout Titusville. Many of these predetermined stops are previous Blue or Green route bus stops, reducing the impact of discontinuing the fixed-route service.

With the launch of CATAGo, CATA also discontinued its paratransit service in Titusville. Since CATAGo uses ADA-accessible vehicles, CATA was able to easily fulfill paratransit needs through CATAGo. The agency engages directly with community members who rely on paratransit to educate them on changes that came with CATAGo and on how to use the service. Ultimately, CATA was able to fulfill ADA paratransit needs and incorporate the service into its microtransit program, helping to reduce agency costs.

Lessons Learned

Pursuing innovative solutions to integrate transit options: CATA is a relatively small rural transit agency but is innovative in its approach to integrating different transportation modes. For instance, in Meadville, CATA partnered with local businesses and formed its own 501(c)(3) to create a bikeshare system, which the agency has integrated into its services. CATAGo is another example of CATA promoting multimodal connections through innovative solutions to the first-last mile problem. CATAGo replaced Titusville's fixed-route bus with on-demand

microtransit which users can request at 75 stops within the city. This change allows for more reliable service to more destinations, and more effective connections to CATA's Meadville-Titusville intercity route, as well as the Titusville Airport.

Accessing data to improve service: Transitioning to a microtransit model also allowed CATA to analyze trip data in a way they were unable to previously. CATA can access data on ridership, pickup and dropoff locations, and other aspects of the service through Spare's platform, helping the agency more efficiently direct resources and allocate drivers.

References and Additional Resources

- CATAGo webpage
- Spare Labs profile on CATAGo

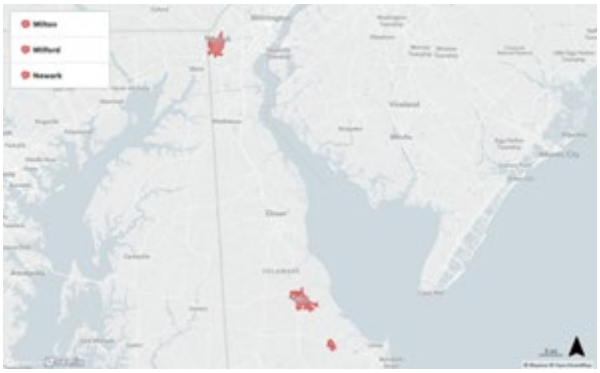
Figure 8 Flier for CATAGo promoting connections to the Titusville Airport. Source CATA

Appendix D. DART Connect Case Study

Overview

Lead Organization: DTC, a division of the Delaware Department of Transportation
Program Partners: Via, First Transit, public carriers/local taxi companies, DTC's Get a Job/Get a Ride program participants
Primary use case: Created as a solution to provide access to large employment centers in Sussex County
Service model: County-wide microtransit service
Connection to other modes: In Georgetown and Millsboro, DART Connect replaced DART Flex Routes 901 and 902. In Newark, DART Connect replaced the Unicity bus route.
Funding:
Initially funded through a $317,692 FTA Accelerating Innovative Mobility (AIM) grant. Post AIM grant, funded from DTC's operations division
Link: DART Connect webpage

Location



Location: Newark, Georgetown, and Millsboro, DE
Land Use Type: Rural
Major population center(s): Georgetown, Millsboro, Newark

Key Demographics

Population: 50,000 people
Area: 24 mi²
Population Density: 2100 people/mi²
Jobs: 32,000 jobs
Employment Density: 1300 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 19,000 people (38%)
People living below the poverty line: 9,500 people (19%)
Major employment centers:
Mountaire Poultry Farms, Sussex Correctional Institution

Service Details

Table 5 DART Connect service details

Service Details/Location	Georgetown and Millsboro	Newark
Service hours	Monday - Friday, 5:45am - 8:00pm	Monday - Friday, 6:00am - 8:00pm
Reservation type	Reservations made through the DART Connect mobile app or through the phone	Reservations made through the DART Connect mobile app or through the phone
Fare	$2 per ride, with pass options available	$2 per ride, with pass options available
Technology provider	Via	Via
Operator	First Transit	First Transit
Vehicle details	3 wheelchair-accessible cutaway buses	5-7 wheelchair-accessible vehicles
Ridership	Not publicly available	Not publicly available

Service Area Maps

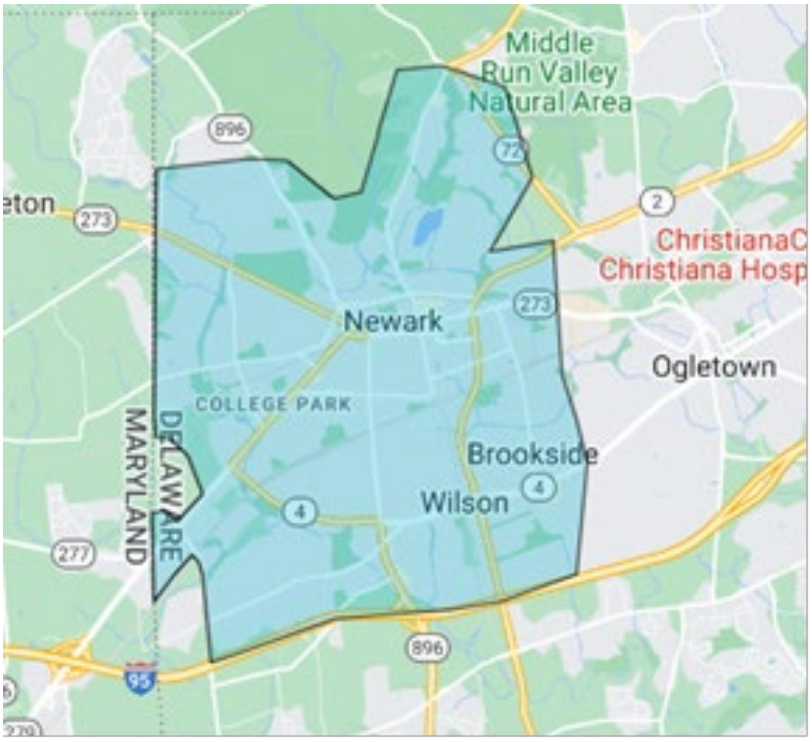


Figure 9 DART Connect Newark Zone. Source: DTC

Figure 10 DART Connect Sussex County Zone. Source: DTC

Program Design and Operations

DART Connect first launched in Georgetown and Millsboro in 2021, since Georgetown is a Federal Opportunity Zone, or a designated low-income area that has suffered from historical disinvestment, and both Georgetown and Millsboro are key employment and health services hubs with strong agricultural and manufacturing sectors. DART Connect replaced two low-performing fixed routes in the region and was launched with the goal to increase transit access for local employees, residents, and visitors who may lack access to transit or traditionally rely on fixed-route service to travel to jobs, medical facilities, and social services in the region. Given the success of the program, service expanded to Newark in 2023. DART Connect also partners with local organizations, such as Mountaire Farms and Sussex Correctional Institution, to provide on-demand transportation and pre-scheduled shuttle services for employees and work release program participants, respectively.

The service also aims to facilitate first-last mile connections to fixed-route service with the goal of enabling a fully integrated intermodal transit system. In the future, using the DART Connect app, riders will be able to plan and book a trip on DTC's fixed-route network in addition to microtransit rides, making it the first app in Delaware to enable customers to plan, book, pay, and track rides in one seamless experience.

While Via provides the technology for the service, DART Connect is operated by DTC, so the agency is responsible for procuring its own vehicles and drivers to operate the service.

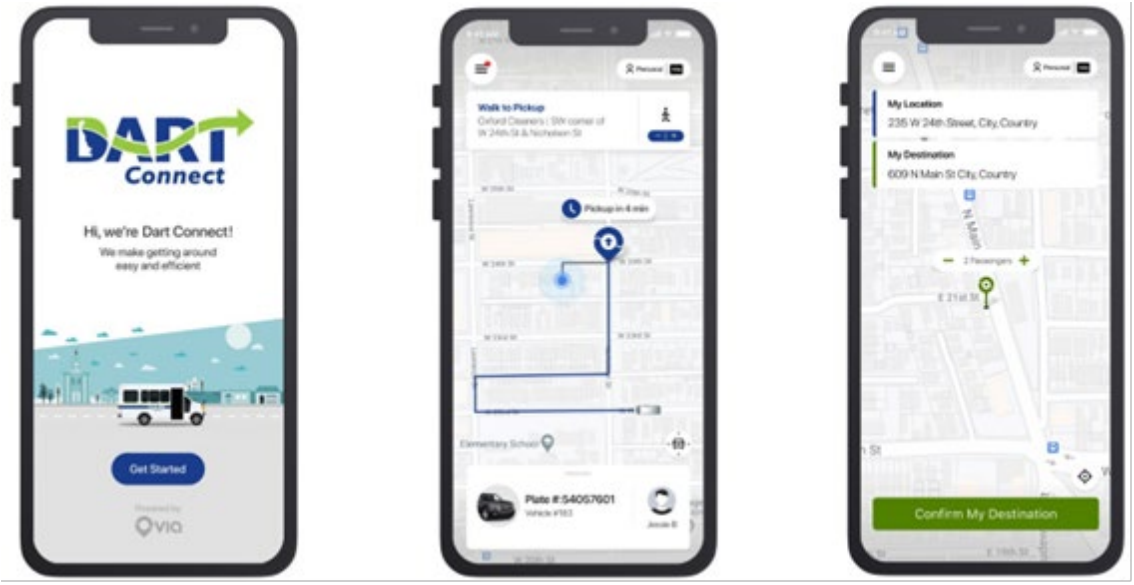


Figure 11 Screenshots of the DART Connect on-demand mobile app. Source: DTC

Lessons Learned

Dealing with inadequate equipment: When DART Connect first launched, each vehicle was equipped with a tablet to access the Via platform and get information on trips and riders. These tablets are integral for maintaining efficient service. However DTC operations staff realized that some of the tablets installed on buses had issues connecting to the internet, particularly in rural areas. After communicating with other agencies, DTC realized that smartphones worked better than tablets at connecting to the internet, but the tablets had already been permanently installed on the vehicles.

Having a contingency plan in cases of technology outages or other emergencies: The DART Connect platform runs using Amazon Web Services (AWS). Though rare, AWS sometimes has outages, which can effectively disable the DART Connect app. DART Connect staff recognized the need for a detailed emergency response plan to temporarily handle ride requests without computers after staff first experienced an outage. The service now has a contingency plan where operations staff works directly with call center staff to handle ride requests and maintain service operations.

Keeping open lines of communication with partners: Open lines of communication between the agency, vendor, and all other project partners ensure that every entity understands the service area geography, restrictions, vehicle capabilities, and other aspects of the service. In the case of DART Connect, DTC had to ensure that all vehicles, including the vehicles provided by public carriers during off-peak hours, could adhere to rider requests, like wheelchair accessible vehicles. DTC recognized the importance of communicating goals, capabilities, and requirements with its project partners, and made sure to capture and integrate those aspects into the DART Connect platform.

References and Additional Resources

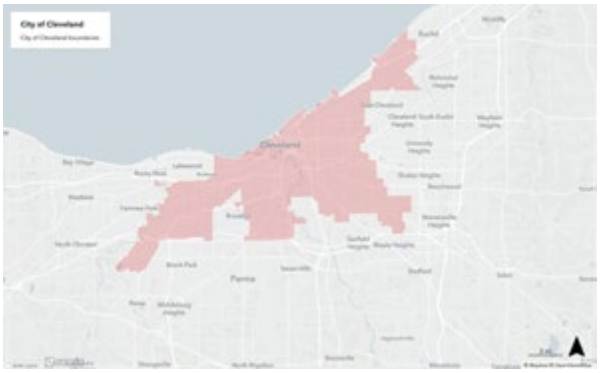
- DART Connect webpage
- Shared-Use Mobility Center case study on DART Connect
- Delaware News article: Delaware Transit Corporation Launches DART Connect Micro Transit Service

Appendix E. ConnectWorks Case Study

Overview

Lead Organization: GCRTA
Program Partners: SHARE Mobility
Primary use case: ConnectWorks aims to connect employees from public transportation stops on GCRTA to their workplaces. The service connects employees from GCRTA's Southgate Transit Center in Maple Heights to employers in Solon and from GCRTA's Brookpark station to workplaces in the Aerozone Alliance Region
Service model: Offers first-last mile connections between transit hubs and Cleveland area employers.
Connection to other modes: Fixed-route GCRTA services: Bus Routes 19, 40, and/or the Waterfront Line in the Solon and Bedford Heights area; Bus Routes 54, 78, 86, and the Red Line In the Aerozone region
Funding: Funded through a grant awarded by Ohio Department of Transportation and partnerships
Link: RTA Press release: Connectworks Mobility Solution Ribbon Cutting Ceremony

Location



Location: Greater Cleveland region, OH
Land Use Type: Urban, suburban, commercial, industrial
Major population center(s): Cleveland

Key Demographics

Population: 440,000 people
Area: 130 mi²
Population Density: 3,400 people/mi²
Jobs: 190,000 jobs
Employment Density: 1,500 jobs/mi²
People who are non-white or of
Hispanic/Latino origin: 180,000 people (41%)
People living below the poverty line: 70,000 people (16%)
Major employment centers:
Solon, Bedford Heights, Aerozone

Service Details

Table 6 ConnectWorks service details

Service hours	Monday to Friday, 7:00am - 6:00pm
Reservation type	On-demand through either a mobile app or a web-based booking tool https://rta.sharemobility.com/signup
Fare	$2.50 flat fare for individuals Companies participating in the partnership program can access a different fare structure per trip based on the monthly package they purchase: • $2.25 per trip for 222 trips included in a $500 per month package. • $2.00 per trip for 500 trips included in a $1000 per month package. • $1.75 per trip for 857 trips included in a $1500 per month package. For all packages, each additional trip costs $2.50. Participating companies are invoiced at the end of each month for rides taken.
Technology provider	SHARE Mobility
Operator	SHARE Mobility
Vehicle details	Ford Transit vans
Ridership	Not publicly available

Service Area Map

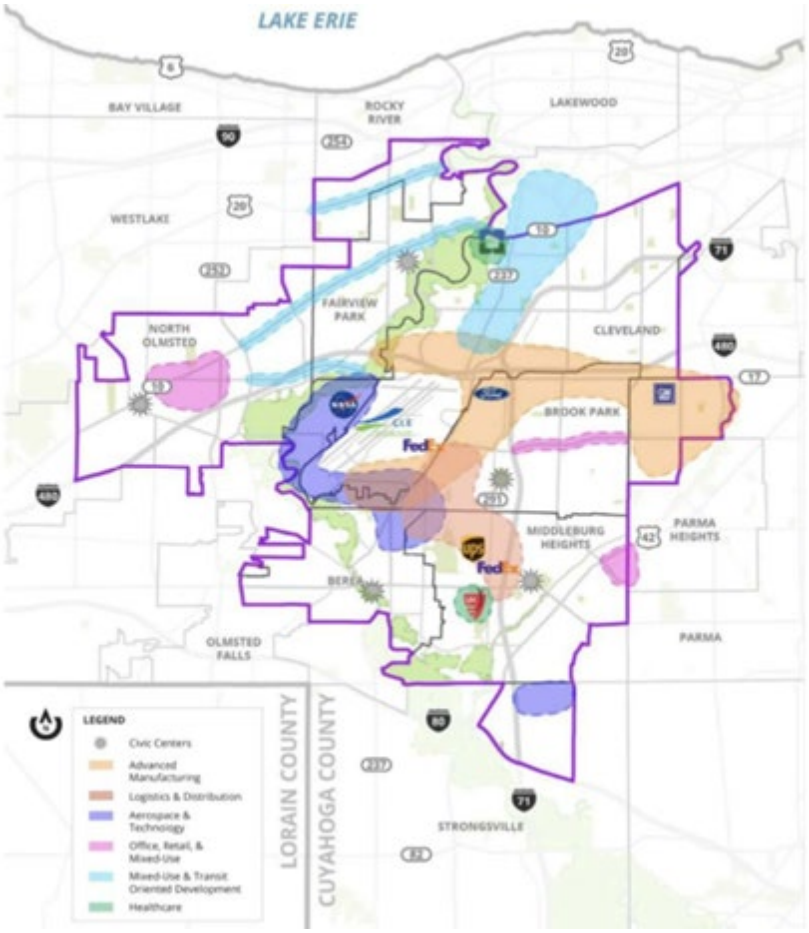


Figure 12 ConnectWorks service areas. Source: RTA

Program Design and Operations

The ConnectWorks program provides first-last mile connections for employees in the Greater Cleveland region between fixed-route transit hubs and their places of employment. The program is designed to bridge the gap between bus stops and workplaces for the modern commuter. First launched in 2023, ConnectWorks initially operated as a single-zone service, offering connections from the Southgate Transit Center, which connects to Routes 19, 40, and the Waterfront Line, to employers in the Solon and Bedford Heights region. The service has since expanded to include a second zone that offers connections between the Brookpark Transit Center, which serves Routes 54, 78, 86, and the Red Line, and the Aerozone District.

The service is a door-to-door service, enabling convenient connections for riders to and from their places of work. Given the program's focus on providing service for employees, employers can also sign up to provide ConnectWorks as a benefit to their employees. The program offers a subscription option starting at $3 per month per employee.

The service operates with Ford Transit vans, but fleet size is not currently publicly available. Ridership consists entirely of local workers connecting to their jobs, and GCRTA hopes to continue expanding the program to additional locations in the future.

The ConnectWorks program also offers a 24/7 emergency ride home program in partnership with Uber. Riders are eligible for the emergency trip program once they have completed their first ride with the RTA ConnectWorks. Once eligible a rider may redeem a $20 emergency ride credit once a month for any trip from work if the RTA ConnectWork routes are not available, and $10 credit to get to work once every 6-months, to help with any late arrival emergencies.

GCRTA also acknowledged the ongoing support to the ConnectWorks program provided by the labor union, represented by the Amalgamated Transit Union, Local 268.

Additional funding information: The service is funded in part by its partnerships with local companies, which can sign up to provide rides for employees starting at $3 per month per employee. The GCRTA funds 50% of the microtransit service cost (up to $300,000), with funding support from a grant awarded by Ohio Department of Transportation's Ohio Transit Partnership Program (primarily funded through Federal Flex Dollars). The remaining 50% portion of the microtransit service cost is funded by the SHARE Mobility team with contributions from participating employers.

Lessons Learned

Partnership building with businesses: GCRTA has found that businesses are strong supporters of the program and have used the program as a compelling benefit to offer their employees. The agency perceives the program as impactful for developing local businesses, potentially serving as a driver of public support and policy changes.

References and Additional Resources

- RTA blog post: ConnectWorks: Bridging the Gap Between Home and Work
- RTA Press release: Connectworks Mobility Solution Ribbon Cutting Ceremony
- Share Mobility ConnectWorks Page
- Share Mobility ConnectWorks pricing
- PR Newswire article: GCRTA Introduces New Microtransit Service Targeted for the Aerozone Alliance Region

Appendix F. IRIS Case Study

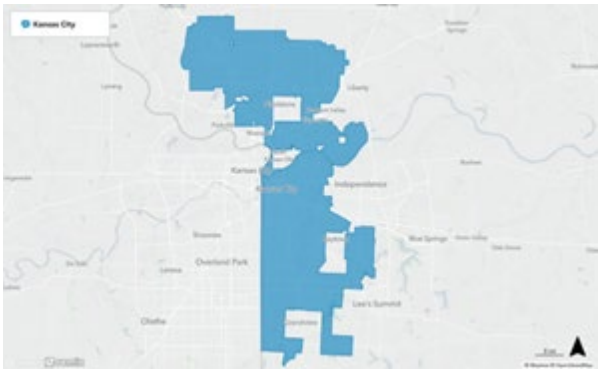
Overview

Lead Organization: KCATA
Program Partners: zTrip and RideCo
Primary use case: First-last mile to transit; access to the airport; access to key entertainment destinations; access to destinations within service area
Service model: Microtransit served by a local taxi company. All IRIS drivers must pass a background check and complete appropriate training. Additional screenings, such as drug and alcohol testing are also performed
Connection to other modes: Fixed-route buses at stops and transit centers, bike share, Amtrak at Union Station, airplanes at Mid-Continental International (MCI) Airport
Funding:

- Kansas City: Local Funding through 1/2 Cent Tax and Local Contracts
- Gladstone, Riverside, and Liberty: contracting with KCATA

Link: IRIS webpage

Location



Location: Kansas City, Gladstone, Riverside, and Liberty, Missouri
Land Use Type: Urban, suburban (residential, commercial, and industrial)
Major population center(s): Kansas City, MO

Key Demographics

Population: 510,000 people
Area: 320 mi²
Population Density: 1,600 people/mi²
Jobs: 315,000 jobs
Employment Density: 1,000 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 230,000 people (45%)
People living below the poverty line: 77,000 people (15%)

Service Details

Table 7 IRIS service details

Service hours	7 days a week, 4:00am - 11:00pm
Reservation type	Mobile app: IRIS app (by RideCo) Web trip booking: https://book.iris.rideco.com/ Book by phone: 816-205-8221
Fare	• Free fare when connecting to the zone's designated IRIS transfer point. See map for locations. • $3 per person per trip within a zone • $4 per person when traveling between Northland Zones • Introductory $5 per person when traveling to entertainment districts, such as downtown or Zona Rosa • Introductory $10 to/from MCI airport from/to any Northland Zone. This applies to multiple people in the same trip booking going to the airport. A trip may have 1 or more passengers traveling together.
Technology provider	RideCo
Operator	zTrip
Vehicle details	Sedan cars and vans. Some IRIS vans are equipped with bike racks
Ridership	Average Daily (Dec 2023): 646 Monthly Ridership (Dec 2023): 20,030

Service Area Map

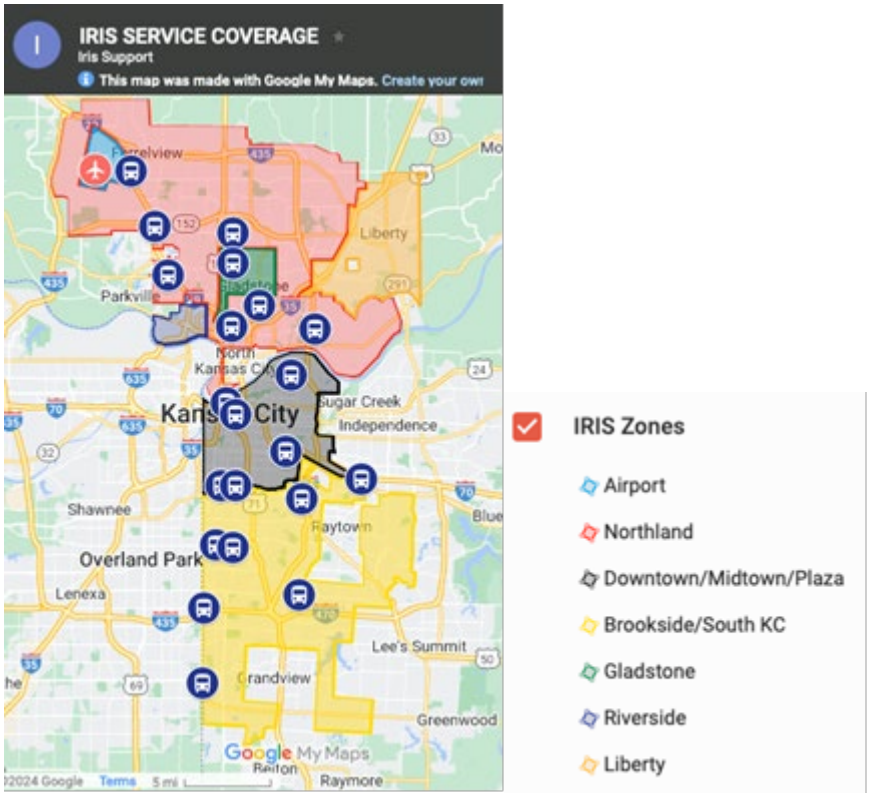


Figure 13 IRIS Service Zones with transfer points to fixed route bus service. Source: RideKC

Program Design and Operations

The service utilizes an on-demand dynamic routing model which picks up and drops off riders in locations within one quarter mile of their request. IRIS operates in a network of designated stops within the pilot service area. Stops could include existing RideKC stops or other locations set up for IRIS (the service is not door-to-door). IRIS virtual stops do not have a physical sign to designate where they are. The IRIS app provides instructions via text or app updates about where a pickup stop is located when a customer books a ride. Virtual stops are located within .25 miles of most areas of the Northland including neighborhoods, stores, restaurants, workplaces, and community centers. Virtual stops are places where drivers can safely pull over to board passengers.

Each service zone has designated transit transfer hubs. IRIS vehicles can accommodate wheelchairs and scooters. IRIS pick up locations remain on a designated stop basis. People with disabilities needing door-to-door service use RideKC Freedom and RideKC Freedom on Demand services. Children, ages 0-7 must be accompanied by a fare- paying parent, guardian or responsible person aged 16 or older. They must bring and install an appropriate car seat or booster seat per Missouri law. Children should be booked as a Rider. Other passengers can

book up to 4 seats with the regular Rider option and all passengers in 1 booking need to travel at the same time and get picked up and dropped off at the same stops.

Additional funding information:

- Initial contract (January 25, 2023): $2,716,371
- Phase 1 (January 15, 2023 – March 14, 2023): $24,900 for start-up including software development and planning
- Phase 2 (March 15, 2023 – April 30, 2023): $2,691,47100 for deployment of on-demand transit services
- Additional funds (amendment on May 24, 2024): $5,182,014

Figure 14 A passenger entering an IRIS vehicle. Source: Mid-America Regional Council

Lessons Learned

Expansion: In a December 2023 report to the KCATA Board, staff summarized that:
"The goals established with expanding IRIS into Northland communities have been to (1) reduce overall cost of Kansas City, MO by at least 10%, (2) gain an understanding of service demand and costs across all communities, and (3) build new project partners through the expanded service area.

RideCo and WHC were able to achieve the first goal. The second goal has not been met as the IRIS service continues to grow month after month.

With regards to the third goal, the expanded footprint has allowed KCATA to enter into pilot programs with the non-profit KC Scholars to provide KC Scholars' students rides to and from entry-level employment opportunities. Additionally, KCATA has begun a pilot with Kansas City Public Schools to serve high school students who do not have good access to their schools" (KCATA December 2023 BOC Meeting).

Understanding on-demand performance metrics: The IRIS services in these communities operated under pilots through various portions of 2023. The focus of moving into 2024 is to further understand metrics associated with a fully matured on-demand service.

Popular destinations include transfer points to connect to transit (first-last mile) and access to casinos as destinations (Bally's and Harrah's).

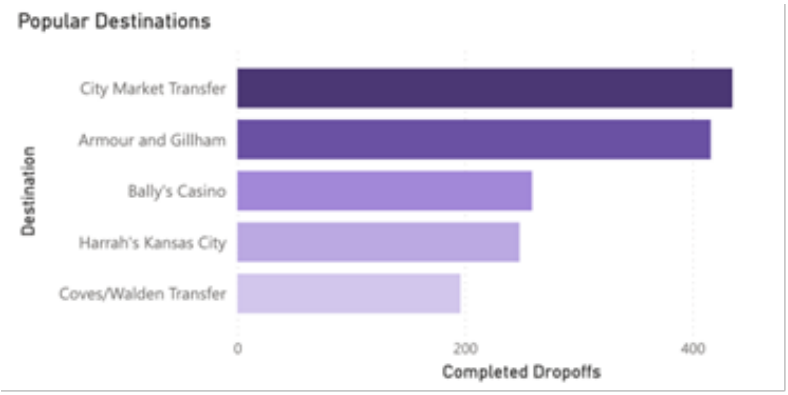


Figure 15 IRIS Popular destinations by complete drop offs, as of December 2023. Source: RideKC

References and Additional Resources

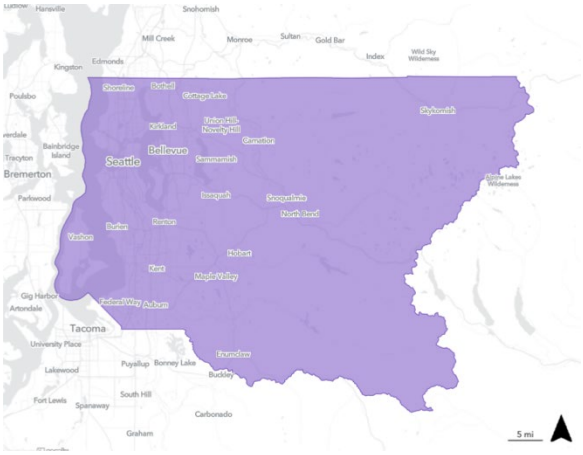
- IRIS webpage
- IRIS FAQ Page
- KCATA, CONTRACT #G22-7038-31A (January 25, 2023)
- KCATA, Amendment #1 #G22-7038-31A (May 24, 2023)
- KCATA January 2023 BOC Meeting
- KCATA December 2023 BOC Meeting

Appendix G. King County Vanpool and Vanshare Case Study

Overview

Lead Organization: King County Metro
Program Partners: No single partner; employers may cover some or all of riders' Metro Vanpool as a transportation benefit.
Primary use case: Riders who want a direct route to work/school/home, or who use transit and need a final connection to work/school/home. Riders. Vanpool Riders can travel anywhere in King County. Vanshare riders can travel 20 miles round trip or less in King County
Service model: King County Metro provides a van and covers fuel, maintenance, insurance, tolls, roadside assistance, and emergency ride home services. Riders can form a new Vanpool/Vanshare or join an existing one as long as they have five members (for Vanpool this must include at least two drivers and one bookkeeper to track mileage and fares). Each group decides routes, schedules, and pick up/dropoff locations.
Link: King County Metro Vanpool and Vanshare webpage

Location



Location: King County, WA
Land Use Type: Urban, Suburban
Major population center(s): Seattle, Bellevue, Kent, Renton, Other cities in King County

Key Demographics

Population: 2,300,000
Area: 2,307 mi²
Population Density: 1,000 people/mi²
Jobs: 1,400,000 jobs
Employment Density: 600 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 1,012,000 people (44%)
People living below the poverty line: 212,500 (9%)

Service Details

Table 8 King County Vanpool and Vanshare service details

Service/ Service details	Vanpool	Vanshare
Service hours	No limitations - can serve full-time, part-time, evening or weekend shifts	No limitations - can serve full-time, part-time, evening or weekend shifts
Reservation type	Standing reservation - expected riders will ride on a regular schedule	Standing reservation - expected riders will ride on a regular schedule
Fare	Ranges from $3 to $20 as a daily rate per rider, depending on distance (for 5 people, 5 days per week the rate would be $778 split among the participants) First month free. Discount provided to residents of Kent who earn <$25/hour (for $49 per month).	$200 per month, split among 5 or more participants
Technology provider	No technology is used for routing. ORCA is used for both rider payments and business subsidy.	No technology is used for routing. ORCA is used for both rider payments and business subsidy.
Operator	Operated by vanpool participants.	Operated by vanshare participants.
Vehicle details	Vans are provided by Metro and can hold 5-15 passengers. Most are ICE vehicles, but as of 2022 Metro had 24 five-passenger Nissan LEAFS that drivers could request as part of its Metropool program (users of these vehicles are also allowed to use them for personal travel outside of the program, in order to encourage drivers to further reduce emissions).	Vans are provided by Metro and can hold 5-15 passengers. Most are ICE vehicles, but as of 2022 Metro had 24 five-passenger Nissan LEAFS that drivers could request as part of its Metropool program (users of these vehicles are also allowed to use them for personal travel outside of the program, in order to encourage drivers to further reduce emissions).
Ridership	As of 2022, the entire program (including Vanpool, Vanshare, and the Metropool zero-emission fleet) had over 1,600 vehicles and over 3.5 million rides per year.	As of 2022, the entire program (including Vanpool, Vanshare, and the Metropool zero-emission fleet) had over 1,600 vehicles and over 3.5 million rides per year.

Service Area Map

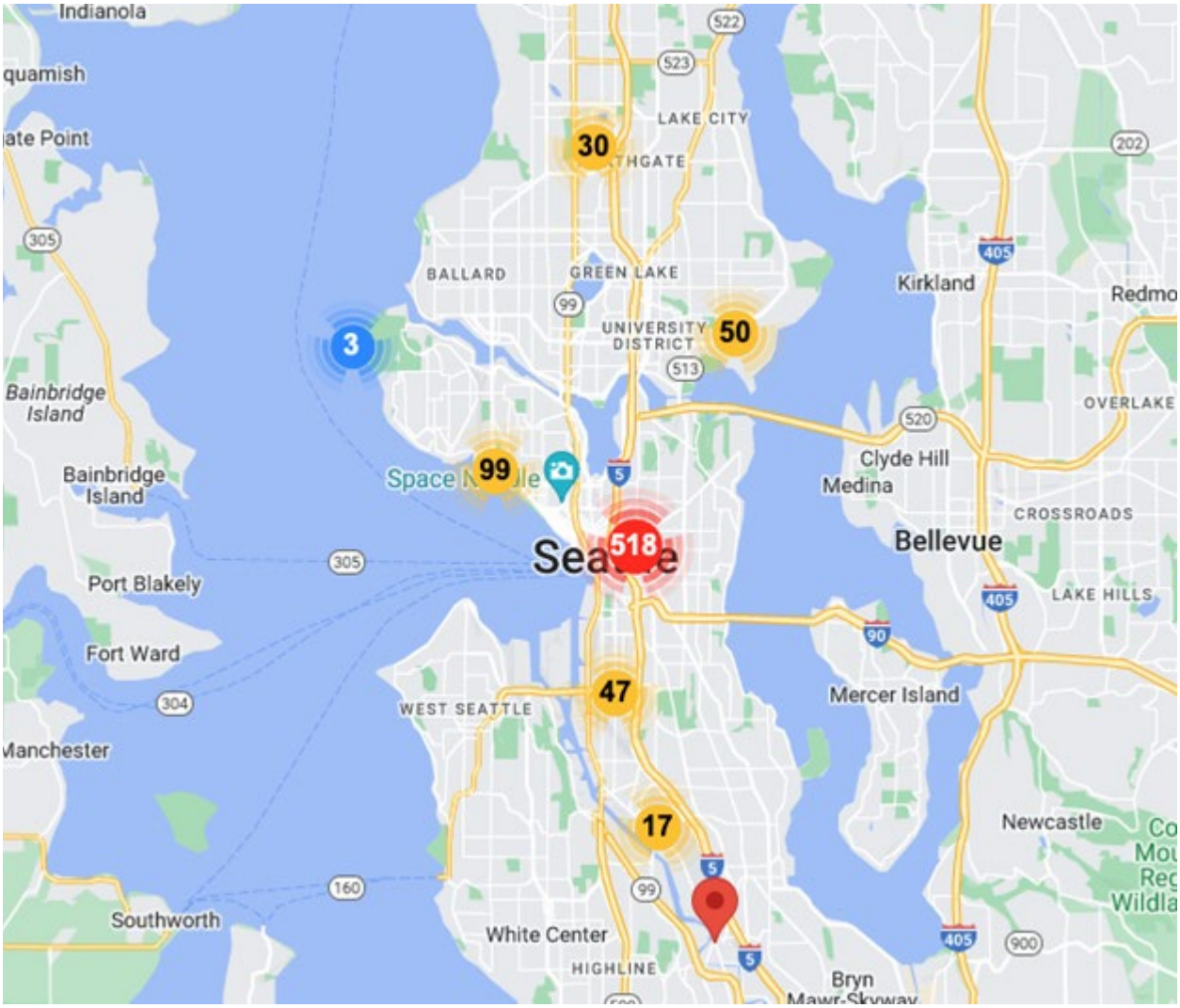


Figure 16 Map showing Puget Sound vanpools commuting to destinations in and around Seattle. Source: RideShare Online

Program Design and Operations

King County Metro Vanpool and Vanshare was launched by King County Metro in 1979 when sharing a ride to work "became a necessary alternative during the 1970s oil crisis." It is the longest running public commuter program of its kind in the US, with 1,600 vehicles and over 3.5 million rides per year.

Commuters pool together in vans that seat 5 - 20 passengers, and pay a monthly fare that covers all vehicle expenses including gas and maintenance (the fare is adjusted based on frequency of ridership and number of commuters pooling into one vehicle). The vehicles are able to use high-occupancy lanes and designated vanpool parking, providing a more convenient

experience for commuters. Additionally, the program saves 3.6 million gallons of gas usage per year, removes 6,000 vehicles from the road, and saves participants $6,000 per year compared to driving alone.

The Vanpool model serves passengers anywhere within King County; each vanpool must have at least five members, including two drivers and one bookkeeper. The vanshare model is a first- and last-mile solution helping commuters connect from home or work to transit services such as a train, ferry, or bus; each vanshare must have at least five members and travel no more than 20 miles in King County.

This is just one of many services operated by King County Metro, which also includes:

- Bus service, including DART (dial-a-ride), Night Owl (runs between midnight and 5 am daily), RapidRide (rapid bus service), and Trailhead Direct (service to expand access to the outdoors).
- Access Transportation, a paratransit rideshare service
- Hyde Shuttle, a door-to-door van service for seniors and adults with disabilities throughout King County
- Community Van, served by volunteer drivers across communities
- Metro Flex, an on-demand service available in select communities across King County
- Train service, including Link light rail, Sounder train, Seattle Center Monorail, and Seattle Streetcar
- Water Taxi, providing water connections to select locations

Figure 17 Vanpool advertisement. Source: King County Metro

Lessons Learned

A study conducted in 2020 had the following findings:

- App-based carpooling showed a few desirable characteristics, e.g., a high level of occupancy and rapid growth during the program period.
- App-based carpooling mostly substituted for single-occupancy vehicles, and this effect was stronger on individuals with greater car access or stronger needs for driving.
- The incentive encouraged people to further switch to app-based carpooling, while the extent of the increase depended on the person's socio-demographic and judgmental characteristics.
- The incentive was effective at reducing regional VMT.
- However, current users of the app-based carpooling skewed toward high-income tech employees, raising the question of whether such a program could benefit the disadvantaged.

References and Additional Resources

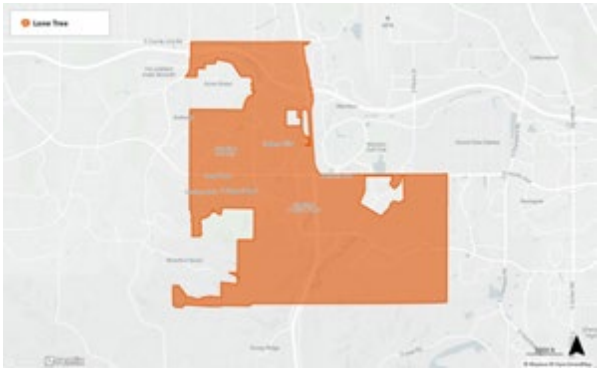
- King County Metro Vanpool and Vanshare webpage
- Examining the Effects of King County Metro Carpool Incentive Fund
- List of vanpools, including a map and an option to search for open vanpools
- Employer participation website (ORCA for Business)
- Commuter Van Program Manual

Appendix H. Link On Demand Case Study

Overview

Lead Organization: City of Lone Tree
Program Partners: Via, Denver South Transportation Management Association, Charles Schwab, ParkRidge Corporate Center, Sky Ridge Medical Center
Primary use case: Initially a first-last mile, workforce-focused shuttle, Lone Tree transitioned the service into a city-wide on-demand microtransit service.
Service model: Lone Tree Link was a circulator that shuttled employees between a RTD station and major employment centers. Link On Demand is door-to-door microtransit anywhere in the city of Lone Tree.
Connection to other modes: RTD's light rail system at Lincoln Station
Funding: Previously funded by a consortium of local business centers
Link: Link On Demand website

Location



Location: Lone Tree, CO
Land Use Type: Suburban
Major population center(s): Lone Tree, Meridian

Key Demographics

Population: 13,701
Area: 9.69 mi²
Population Density: 1,414 people/mi²
Jobs: 7,990
Employment Density: 825 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 3,000 (21.9%)
People living below the poverty line: 561 (4.1%)
Major employment centers:
Sky Ridge Medical Center, Charles Schwab & Co, Park Ridge Corporate Center

Service Details

Table 9 Link On Demand service details

Service hours	Monday - Thursday, 7:00am - 7:00pm Friday, 7:00am - 10:00pm Saturday, 10:00am - 10:00pm
Reservation type	Reservations made through the Link On Demand mobile app or through the phone
Fare	Free
Technology provider	Via (formerly Uber)
Operator	Via
Vehicle details	Two ADA-accessible, 12-passenger shuttles
Ridership	1,000 passengers per week

Service Area Map

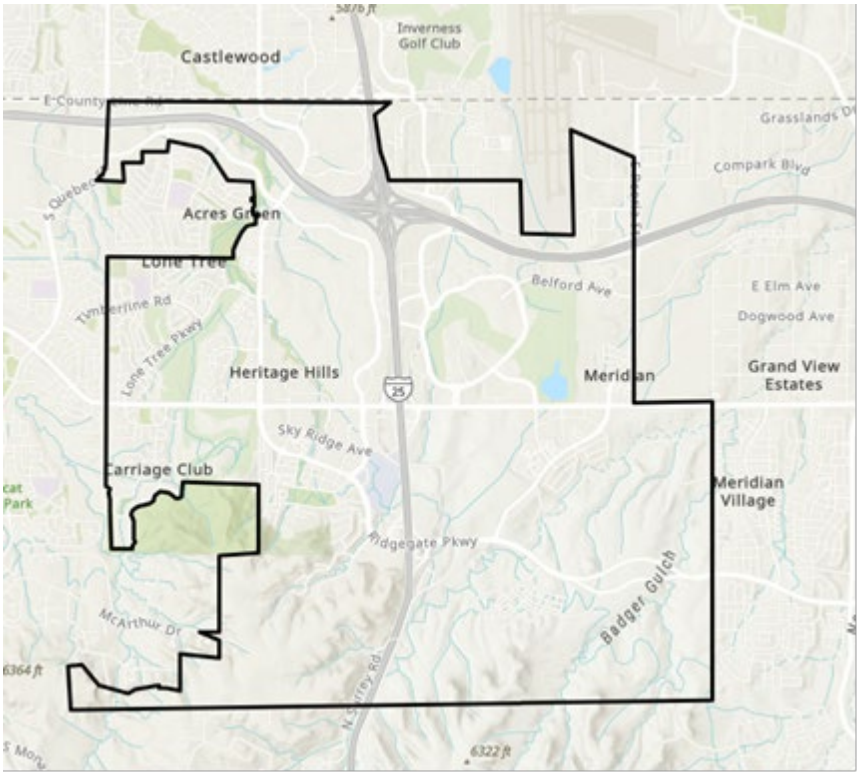


Figure 18 Link On Demand service area. Source: City of Lone Tree

Program Design and Operations

The City of Lone Tree, a suburb of Denver, CO with just over 14,000 residents is a major employment hub for the region, with several large employment centers, including the Sky Ridge Medical Center, a Charles Schwab & Co. campus, and the Park Ridge Corporate Center. In 2014, Lone Tree began exploring first-last mile solutions for these major employment hubs, particularly for employees traveling to and from the nearby Lincoln stop of the Denver Regional Transportation District (RTD) light rail system. To facilitate these connections, Lone Tree piloted Lone Tree Link, a free fixed-route shuttle service that operated mainly along Park Meadows Drive and looped through the Sky Ridge Medical Center, Charles Schwab & Co., and the Park Ridge Corporate Center corporate campuses several times per day. The service was open to the public, however, commuters to these business centers made up about 90% of the approximately 350 daily riders.

In August 2017, the City of Lone Tree launched Link On Demand as a year-long pilot program. In contrast with Lone Tree Link's circulator service model, Link On Demand is a city-wide, door-to-door microtransit service. By implementing Link On Demand, the City of Lone Tree hoped to examine whether the on-demand service model would increase ridership and decrease cost-per-passenger. After the Link On Demand pilot period concluded in December 2018, the City decided to implement the service permanently, and discontinued the Lone Tree Link shuttle. In 2019, Lone Tree transitioned to partnering with Via for the service. Currently, Via is a turnkey provider and handles the operations, management, customer service, and other aspects of the microtransit system.

Figure 19 A Link On Demand vehicle. Source: City of Lone Tree

Lessons Learned

Implementing a call center: For the first several years of the program, Link On Demand was accessible only through a smartphone app. Lone Tree quickly recognized a significant need for a call center, which would make the service accessible to many potential users that do not use or have access to a smartphone. In 2023, Lone Tree implemented a staffed call center to address this issue.

Importance of making services ADA accessible: Though this initiative began as an employment-focused first-last mile solution, the City of Lone Tree recognized a noticeable increase in requests for rides for medical purposes. The Sky Ridge Medical Center is a major destination in the city, and many people visit Lone Tree specifically for medical purposes. Link On Demand already uses ADA-accessible vehicles, but this insight presented opportunities for Lone Tree to explore how to make the service useful for multiple types of users.

Improved ridership and cost-per-passenger: In the case of Lone Tree, transitioning to a fully on-demand microtransit service brought more ridership and better cost efficiency than the previous Lone Tree Link shuttle. In the months after making Link On Demand permanent, ridership grew significantly to nearly 1,000 per week, and the cost per passenger declined by over 30%.

References and Additional Resources

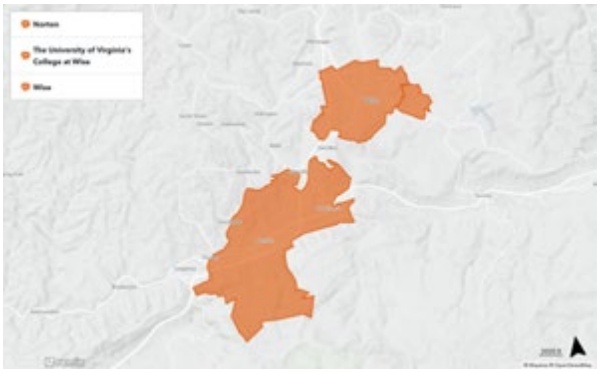
- Link On Demand website
- RFP Announcement
- City of Lone Tree: A New Look for Link
- Via case study

Appendix I. METGo! Case Study

Overview

Lead Organization: Mountain Empire Transit (MET)
Program Partners: Mountain Empire Older Citizens (MEOC), Virginia Department of Rail and Public Transportation (VDRPT), Via
Primary use case: Improve public transit in rural areas for high-need and underserved communities, particularly car-less college students and older adults.
Service model: On-demand microtransit (zone-based)
Connection to other modes: The area does not have a dedicated fixed-route service. MET also operates a curb-to-curb dial-a-ride service in the region that requires pre-booking at least 24 hours in advance and up to 30 days in advance.
Funding: Primarily federal grants. See below for more information.
Link: METGo! webpage

Location



Location: Wise and Norton, VA
Land Use Type: Rural
Major population center(s): University of Virginia - Wise

Key Demographics

Population: 5,400 people
Area: 15 mi²
Population Density: 360 people/mi²
Jobs: 4,400 jobs
Employment Density: 290 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 430 people (8%)
People living below the poverty line: 1,500 people (28%)

Service Details

Table 10 METGo! service details

Service hours	Monday to Friday, 7:00am - 5:00pm
Reservation type	On-demand. Rides can be booked via mobile app or over the phone
Fare	None
Technology provider	Via
Operator	MET
Vehicle details	Mixed fleet, with some Ford Transit vans seating up to 12 general passengers and 2 wheelchair-users, some sedans, and some minivans
Ridership	55,829 total trips as of Aug. 2023

Service Area Map

Figure 20 METGo! service area and popular destinations. Source: MEOC

Program Design and Operations

METGo! is an on-demand microtransit service that operates in the towns of Wise and Norton, Virginia, as well as on the University of Virginia - Wise campus. The service was initially launched as a pilot in 2021, but given its success, has been extended and expanded into a full service. The service is operated by Mountain Empire Transit (MET), Mountain Empire Older Citizens' (MEOC) dedicated transit service. Software for the service is provided by Via.

METGo! operates in a predominantly rural region, where transit options are limited. Prior to the launch of METGo!, the service area had no dedicated rideshare service, making transportation-disadvantaged communities reliant on programs such as the local dial-a-ride service, which requires pre-booking of at least 24 hours in advance, or other options like Medicaid-sponsored transportation to travel to and from doctors' appointments, for instance. Given that most of the service area population is composed of older adults and college students, ridership is mostly made up of these groups. As of August 2023, the service had served over 76,000 riders, with METGo! riders making up 38% of the system's total ridership.

Future plans for the service include expanding to serve another regional university and nearby industrial park.

Additional funding information: In 2021, VDRPT applied for an Integrated Mobility Innovation grant from the Federal Transit Administration (FTA) and was awarded $160,000 to launch two microtransit pilots: one with MET and one with Bay Transit, another regional transit agency. DRPT also awarded METGo! with a Transit Rider Incentive Program (TRIP) grant, enabling the service to operate fare-free. The service also received a grant funding amounting to $52,000 to expand service to a community college in Big Stone Gap and an industrial park in Duffield.

Lessons Learned

Procurement during supply chain issues: METGo! has experienced challenges with securing additional vehicles to operate the service given vehicle supply chain shortages. These challenges make it difficult to match the rising demand for the service.

Securing funding as the program grows: Ridership for METGo! doubled during its first year of operation. Given the high demand for the service to date, MET has had to continually seek out and secure additional funding.

Knowledge sharing: DRPT noted that doing pilots, documenting learnings, and sharing them with other transit agencies can help them find cost-effective and creative ways to increase service and eliminate service gaps. They also found that though some public transit agencies

fear that microtransit may take away from existing fixed-route ridership, DRPT has found that microtransit can be effective in replacing fixed routes when they are underperforming.

References and Additional Resources

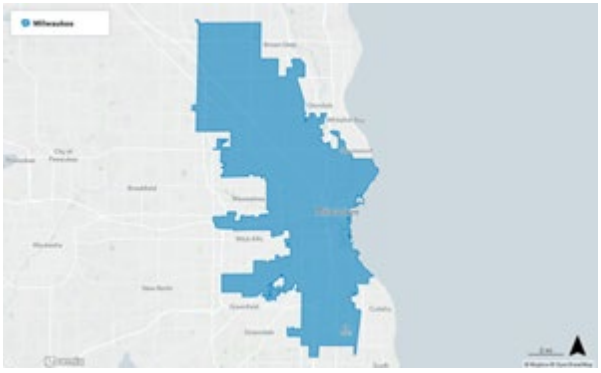
- METGo! webpage
- Virginia Mercury: New microtransit service more than doubled ridership in rural regions
- Federal Transit Administration: Integrated Mobility Innovation

Appendix J. FlexRide Milwaukee Case Study

Overview

Lead Organization: MobiliSE, a non-profit organization working to improve transportation in Southeast Wisconsin
Program Partners: MCTS and local and state organizations. See list below.
Primary use case: Connecting riders to their places of employment.
Service model: Zone-based service model, limiting travel to only permit trips between a particular zone and its associated employment area
Connection to other modes: The service area includes several transit hubs in the region, providing first-last mile connections to fixed-route MCTS service
Funding: Initially funded through a study grant in 2022. MobiliSE subsequently received a Workforce Innovation Grant from the Wisconsin Economic Development Corporation to continue FlexRide Milwaukee services through 2024
Link: FlexRide webpage

Location



Location: Milwaukee, WI
Land Use Type: Urban, Suburban
Major population center(s): Milwaukee, West Allis

Key Demographics

Population: 400,000 people
Area: 73 mi²
Population Density: 5,500 people/mi²
Jobs: 145,000 jobs
Employment Density: 2,000 jobs/mi²
People who are non-white or of
Hispanic/Latino origin: 275,000 people (69%)
People living below the poverty line: 93,000 people (23%)
Major employment centers:
Menomonee Falls, New Berlin, Franklin/Oak Creek

Service Details

Table 11 FlexRide service details

Service hours	24 hours a day
Reservation type	Reservations made through the FlexRide Milwaukee mobile app or through the phone
Fare	• $3 flat fare for trips between neighborhood and employment zones • 50% fare discount for additional passengers, seniors, and riders with disabilities • Free for trips to and from transit hubs, between employment zones, and from 11:30 PM - 4:30 AM
Technology provider	Via
Operator	Via
Vehicle details	Fleet includes 8 7-passenger wheelchair-accessible minivans
Ridership	In 2023, FlexRide delivered over 41,000 rides, or around 200 rides per day. Ridership primarily includes employees using the service to commute to work.

Full List of Project Partners

- MobiliSE
- MCTS
- Employ Milwaukee
- Waukesha County Business Alliance
- New Berlin Chamber of Commerce & Visitors Bureau
- Southeastern Wisconsin Regional Planning Commission
- University of Wisconsin - Milwaukee
- Waukesha County Workforce Development Board
- Waukesha County Center for Growth

Service Area Map

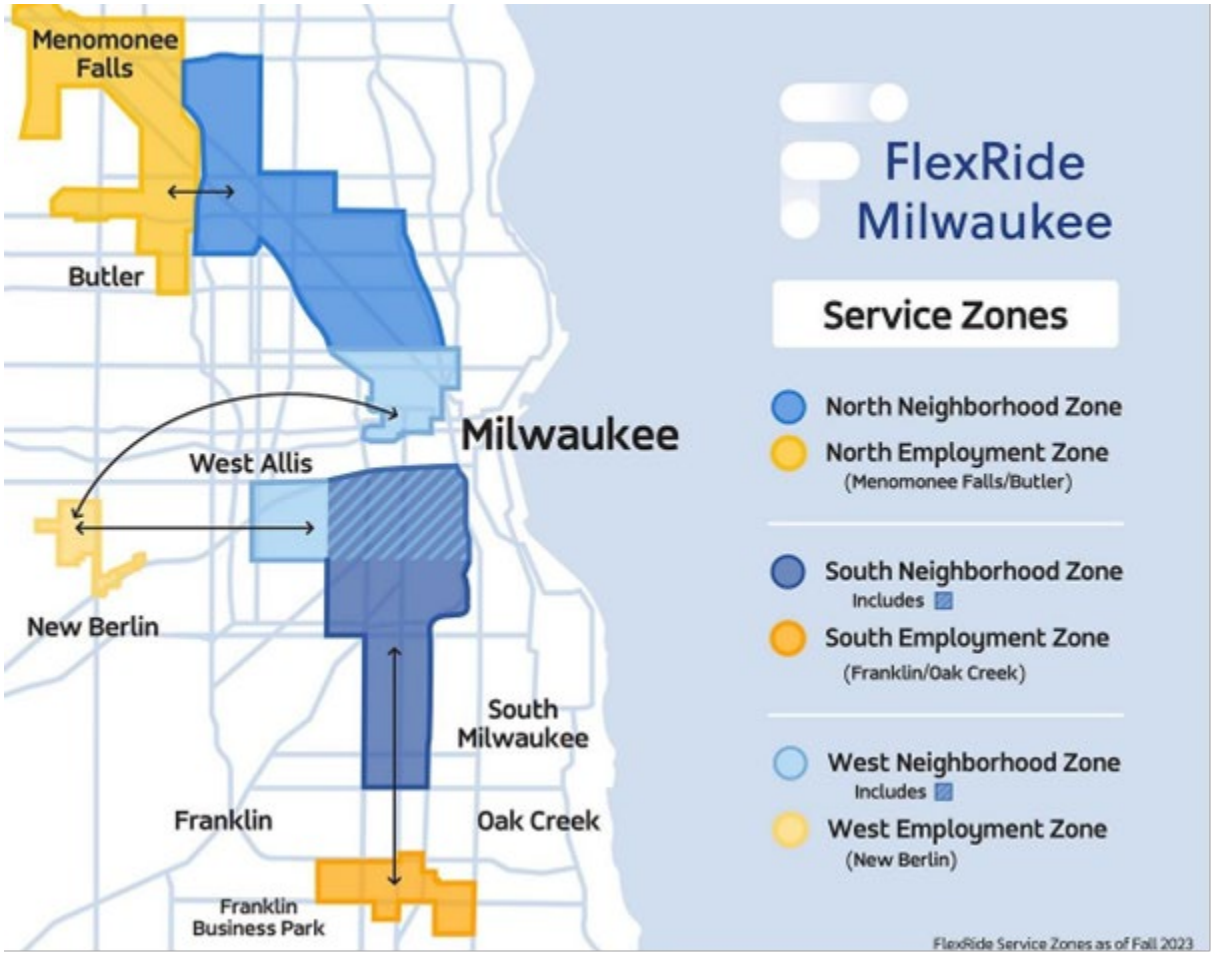


Figure 21 FlexRide service area. Source: [MobiliSE]

Program Design and Operations

FlexRide is a corner-to-corner on-demand microtransit service that operates in Milwaukee and its surrounding areas. The service was originally launched in a collaborative effort between Southeastern Wisconsin Regional Planning Commission, the University of Wisconsin-Milwaukee, MobiliSE, and Via as a pilot study in 2022. The service aimed to connect employees in the North/Northwest Neighborhood Zone with jobs and job opportunities in the Menomonee Falls/Butler Employment Zone. After the pilot ended, MobiliSE received additional funding through the Wisconsin Economic Development Corporation to continue the service and add the West Zone and South Zone. Post-pilot, the service hours were also extended to the current 24-hour service. Milwaukee County later secured additional funding to maintain service, and, given the success of FlexRide service thus far, MobiliSE and its partners are actively pursuing additional funding sources to continue service beyond 2024 and expand the service into additional areas.

The FlexRide fleet consists of eight seven-passenger minivans that bring riders from neighborhood zones to their respective employment zones. Rides between transit hubs and from one employment hub to another are also permitted. Via provides the drivers, vehicles, and software for the service.

In support of its focus on providing transportation for employees in the region, FlexRide Milwaukee partners with several businesses through its Business Membership Program, which it first launched in June 2023. At least three Business Members are required to start or maintain service in a particular employment zone. Business Members are required to cover FlexRide fares for their employees. In return, the business's job openings will be posted on the FlexRide service website and the business will receive other promotional materials to promote the service. According to FlexRide, employers are one of the primary channels for riders to learn about the FlexRide service, serving as a promising channel to grow ridership. FlexRide also offers a specialized program, FlexRide for Working Parents, which offers rides from employees' homes to their children's daycare centers and on to work, provided that the employee works within one of the FlexRide Milwaukee employment zones and the children are enrolled in a YoungStar Approved child care center within one mile of a FlexRide Milwaukee service zone. Ridership generally consists of working adults using the service to commute to and from their places of employment, as well as job applicants traveling to and from job interviews. In 2022, the majority of riders identified as African American and most reported having no access to a vehicle. Additionally, over 60% of riders were younger than age 35, 55% were unemployed, and 59% identified as very low income, with incomes of less than $1,500 per month.[2]

Lessons Learned

Addressing rising program costs: FlexRide has generally been successful, with high ridership and continued demand for additional zone expansion. However, as ridership continues to grow, the service has become increasingly expensive to provide. Cost concerns have resulted in FlexRide's exploration of creative funding solutions, such as its Business Member program, which requires businesses to cover fares. Fares may also increase to be more comparable to Uber and Lyft prices in the region.

References and Additional Resources

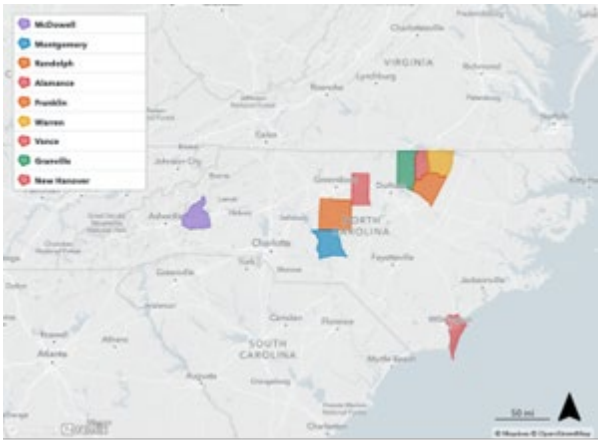
- FlexRide webpage
- MCTS press release: FlexRide Milwaukee Celebrates Its 50,000th Completed Ride
- Universities of Wisconsin: UW-Milwaukee FlexRide proves microtransit can connect unemployed with jobs

Appendix K. Mobility for Everyone, Everywhere in North Carolina Case Study

Overview

Lead Organization: NCDOT
Program Partners: Rural transit agencies and Metropolitan Planning Organizations throughout the state.
Primary use case: MEE NC aims to accelerate the deployment of on-demand transit services to rural and low-income communities throughout the state. There are 11 microtransit pilots involved in this program
Service model: Service models and details vary for each of the 11 areas. For more information, on specific projects, see Project Descriptions below.
Connection to other modes: Various
Funding: $10.4 million through USDOT's Rural Surfaces Transportation Grant Program
Link: NCDOT on-demand microtransit webpage

Location



Location: 11 communities throughout North Carolina
Land Use Type: 7 of the 11 service areas are rural, the remaining 4 are a mix of rural and urban
Major population center(s): Concord, Raleigh, Wilmington

Key Demographics

Population: 807,000 people
Area: 4,300 mi²
Population Density: 190 people/mi²
Jobs: 310,000 jobs
Employment Density: 70 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 360,000 people (45%)
People living below the poverty line: 160,000 people (20%)

Project Descriptions

Table 12 MEE NC project descriptions

Transit Agency	Project Description
Alamance County Transportation Authority (ACTA)	Develop an on-demand service, eliminating the need for 24-hour advance call for existing regional demand responsive service, and improving rural access to businesses and a medical center.
City of Stanford	Develop an on-demand service, eliminating the need for 24-hour advance call for existing regional demand responsive service, and provide transportation service for second- and third-shift manufacturing sector employees.
City of Wilson (RIDE)	Adding hybrid electric vehicles to existing fleet, and filling service gaps in areas not eligible for paratransit service.
Johnston County Area Transit System (JCATS)	Expanding the current paratransit service to provide on-demand mobility and to improve access to Clayton and Smithfield/Selma.
Kerr Area Transportation Authority (KARTS)	Extending service hours of current demand response service and providing a new on-demand service to assist with unmet transportation needs.
McDowell County Transportation	Expanding options to facilitate transportation to work, especially for late shift workers. Also, developing a smartphone app for requesting rides.
Regional Coordinated Area Transportation System (RCATS)	Expanding options to facilitate transportation to work, especially for late shift workers. Also, developing a smartphone app for requesting rides.
Rockingham (ADTS)	Connecting a workforce development training facility with the Rockingham Community College, providing transportation service for second- and third-shift employees, and improving the existing demand response and deviated fixed-route service.
Salisbury Transit System	Integrating microtransit with existing fixed-route service to better support rural communities and to enhance access to employment and services.
Tar River Transit	Providing a flexible on-demand service to address first-last mile challenges.
Wave Transit (RideMICRO)	Expanding service hours and service area and adding additional vehicles.

Program Design and Operations

Mobility for Everyone, Everywhere in North Carolina (MEE NC) an initiative from the Integrated Mobility Division (IMD) of the North Carolina Department of Transportation (NCDOT) to support microtransit pilots throughout the state in partnership with various rural transit agencies to address pressing transportation challenges.

MEE NC builds on several existing microtransit pilot projects in the state, one of which is RIDE, a city-wide microtransit pilot program launched by the City of Wilson in September 2020, which replaced Wilson's limited fixed-route bus system that previously served only about 40% of the area. Wilson received an Accelerating Innovative Mobility (AIM) grant from the Federal Transit Administration (FTA) to fund the pilot. Soon after RIDE launched, the City of Wilson saw a massive increase in transit ridership (over 150%, despite opening during the Covid-19 pandemic).

NCDOT recognized the impact that RIDE had on the City of Wilson and determined that planning and research efforts focused on on-demand microtransit was key to expanding transportation access in disadvantaged communities. Furthering this, NCDOT launched the Integrated Mobility Division Feasibility Studies Program, an initiative to support microtransit studies before full-scale implementation. The purpose of these feasibility studies was to evaluate the design, permitting, and implementation needs to launch a microtransit program in the state. There are 11 mostly rural communities involved in this program:

- Alamance County Transportation Authority (ACTA)
- City of Stanford
- City of Wilson (RIDE)
- Johnston County Area Transit System (JCATS)
- Kerr Area Transportation Authority (KARTS)
- McDowell County Transportation
- Regional Coordinated Area Transportation System (RCATS)
- Rockingham (ADTS)
- Salisbury Transit System
- Tar River Transit
- Wave Transit (RideMICRO)

Recognizing that these different transit systems have unique needs and capabilities, MEE NC employs different models of microtransit tailored to each community's needs, and categorized the communities into three tiers:

- **Tier 1:** NCDOT is implementing a Software-as-a-Service (SaaS) model in these communities, which provides the routing, dispatching, and booking technology, while the agency provides drivers and vehicles and manages operations of the system. These communities already have much of the infrastructure, staff, and capacity that can accommodate a microtransit program.
- **Tier 2:** NCDOT is implementing turnkey solutions in communities where significant investments in planning and operating on-demand mobility services have already been made. In a turnkey model, the vendor manages service operations and provides the technology, vehicles, and drivers for the program.
- **Tier 3:** Tier 3 areas are communities demonstrating a high level of demographic need. NCDOT is also implementing turnkey services in these areas

With support from NCDOT, the cities and transit agencies involved in this program are expanding on the feasibility studies and funding implementation of their microtransit pilots, which is funded mostly through federal grants.

MEE NC is an ambitious initiative from NCDOT to improve mobility in communities throughout the state. NCDOT recognized the mobility and economic challenges in the 11 areas and looked to microtransit as a potential solution. MEE NC demonstrates a unique way that a state department of transportation can support widespread mobility access through microtransit pilots.

Lessons Learned

Mitigating procurement and contracting holdups: Particularly for small, rural agencies with limited staff and capacity, procurement of on-demand software or service providers could potentially be a challenge. IMD has a statewide technology RFP which allows agencies to select from a list of pre-qualified providers in an attempt to ease this burden.

Local match participation: To make use of federal funding opportunities for implementation, each transit agency must commit to local match. This was identified as a potential hurdle for agencies that have limited available resources. Furthermore, agencies would each need approval on local match participation from their respective governing boards. NCDOT proposed mitigating this challenge by committing FTA Section 5311 funds that have been apportioned to NCDOT and not been set aside for other uses towards these local matches.

Addressing unexpectedly high project costs: Due to the COVID-19 pandemic and associated supply chain issues, costs for software, fuel, and other supplies are higher than initially anticipated. NCDOT has revised initial cost estimates and attempted to employ some mitigation

strategies. For example, in some cases, NCDOT worked with agencies to deploy hybrid electric vehicles to be less sensitive to fuel increases.

Project schedule: Even with mitigation techniques, the above challenges pose a risk of affecting the project schedule, which is currently set to continue until the end of 2027.

State DOTs supporting microtransit programs: MEE NC exhibits the important role that state DOTs can play in supporting local microtransit pilot projects. Early on in the process, NCDOT noticed and supported microtransit implementation, and used lessons learned from existing pilots to determine how best to direct its efforts towards transportation accessibility throughout the state. MEE NC is primarily a planning, research, and feasibility study initiative to examine the conditions that are conducive to microtransit and determine how projects can best be supported.

References and Additional Resources

- NCDOT on-demand microtransit webpage
- NCDOT information on projects
- 2022 USDOT Rural Surface Transportation Grant Application

Appendix L. Pace Connect Case Study

Overview

Lead Organization: Pace Suburban Bus, a division of the Regional Transportation Authority (RTA)
Program Partners: Via, local employer destinations
Primary use case: Late-night, on-demand ridehail service for off-shift workers
Service model: On-demand ridehailing (zone based)
Connection to other modes: The first zone connects to the Rosemont Blue Line Chicago Transit Authority (CTA) train station near O'Hare airport.

The second zone connects to Harvey Transportation Center in South Suburban Chicago, which includes a Metra commuter rail station and connections to Pace buses.
Funding: Partly funded by grants from RTA and Cook County
Link: Pace Connect webpage

Location

Location: Suburban Chicago, IL
Land Use Type: Suburban
Major population center(s): Chicago

Key Demographics

Population: 21,000 people
Area: 8 mi²
Population Density: 2,600 people/mi²
Jobs: 30,000 jobs
Employment Density: 3,800 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 18,500 people (89%)
People living below the poverty line: 4,700 people (22%)
Major employment centers:
Various. See below for details

Service Details

Table 13 Pace Connect service details

Service Details/Location	O'Hare Zone	Harvey Zone
Service hours	Daily 11:30pm – 5:30am, including holidays	Tuesday - Friday, 12:00am – 5:00am Saturday, 11:00pm – Sunday, 6:00am Sunday, 11:00pm – Monday, 5:00am
Reservation type	On-Demand	On-Demand
Fare	• $2 per ride • Free transfers to/from Pace Bus • $0.30 transfers to/from CTA when users pay with Ventra Card	• $2 per ride • Free transfers to/from Pace Bus • $0.30 transfers to/from CTA when users pay with Ventra Card
Technology provider	Via	Via
Operator	Via	Via
Ridership	Not publicly available	Not publicly available

Major Employment Centers

Table 14 Pace Connect major employment centers

O'Hare Zone	Harvey Zone
Cargolux Airlines Gate Gourmet Four Points by Sheraton Chicago O'Hare Airport Hampton Inn Chicago O'Hare Airport ISC – South Building (USPS) United Cargo FedEx Ship Center Delta Cargo	Bethlehem Village Amazon IGQ1 UPS Freight – South Holland FedEx Ship Center South Suburban College University of Chicago Medicine Ingalls Hospital

Service Area Maps

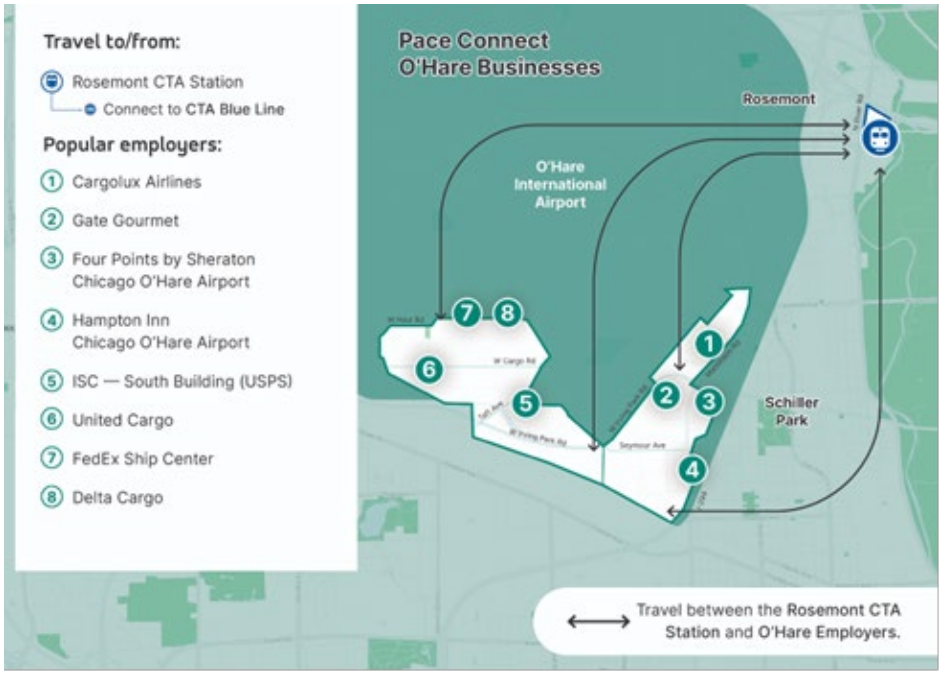


Figure 22 Pace Connect O'Hare Zone. Source: [Pace]

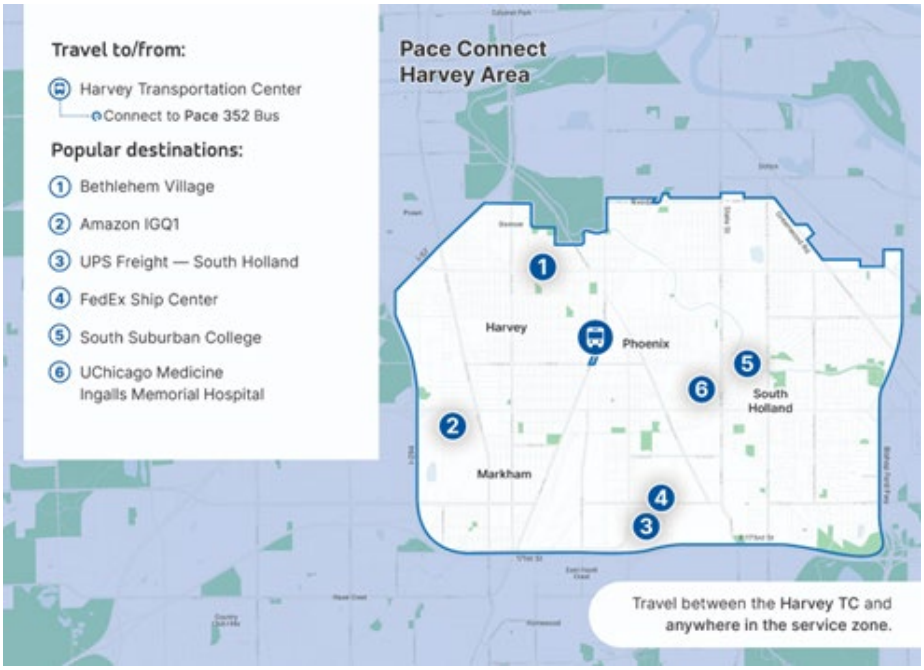


Figure 23 Pace Connect Harvey Zone. Source: [Pace]

Program Design and Operations

Pace Connect is a first-last mile service in suburban Chicago, Illinois, offered by Pace, the regional paratransit and suburban bus division of Chicagoland's Regional Transit Authority. Pace Connect is an on-demand microtransit service operated in partnership with Via through a proprietary app. The service, which launched June 27, 2023, is designed for late shift workers who are normally commuting during off-peak hours, particularly late at night or very early in the morning. With that goal in mind, the service has two zones: one zone is centered around O'Hare International Airport and primarily serves its related employers, while the other zone is located in the southwest suburbs around Harvey, IL near Chicago. The service expands upon the Pace On Demand services (formerly known as Pace Call-n-Ride) offered at the same fare in multiple other zones throughout suburban Chicago. These zones and services have been expanding since their rebrand in 2019.

Pace Connect riders are able to hail trips through the Pace On Demand app, though the agency also offers functionality through the Transit App's trip planning function. The Harvey service offers trips to any address within the service area, while the O'Hare Service Area specifically offers rides between select employers at the O'Hare International Airport cargo area and the Rosemont CTA Blue Line train station.

Figure 24 Pace Connect van. Source: Pace Connect

Lessons Learned

Fiscal cliff: Pace is bound by a state-level requirement that all transit services in the Chicago metro area recover 50% of their operating budgets through farebox revenues. That requirement has been temporarily lifted in recent years due to the COVID-19 pandemic and

associated funding from state, regional, and federal sources. However, this relief will end in 2025 in what has been referred to as a fiscal cliff.

Pace's annual report included limited information about the recently launched Pace Connect program, but Executive Director Melinda Metzger said "We're excited to unveil yet another innovation today. This addition to Pace's family of services provides a new option for third-shift workers, enhancing job access for underserved communities. It is important that Pace continues to explore innovative approaches to providing service as northeastern Illinois' transit system faces a fiscal cliff in the coming years." While Pace Connect is still growing alongside the other suburban on demand services in Pace's portfolio, it is clear that the agency views these innovative offerings as important to their strategy when facing this approaching financial challenge.

Innovative partnerships: The Pace Connect service launched in June of 2023. While the agency has yet to release any formal report covering the service and its challenges or future changes, the initial messaging has signaled a positive attitude from Pace and RTA. In their annual report, Pace's Chairman Rick Kwasneski praised the program as a positive example of innovative transit partnerships, saying "This is yet another example of Pace working with our peers at RTA and Cook County to enhance and integrate service in the south suburbs. Riders can now use Pace, CTA, and Metra service at all hours and still have a way to get from our transportation center to work or to home."

References and Additional Resources

- Pace Connect webpage
- Via webpage on Pace Connect
- Via press release about Pace Connect
- Mass Transit Magazine article about Pace Connect

Appendix M. TD Late Shift Case Study

Overview

Lead Organization: PSTA
Program Partners: Uber, United Taxi, Care Ride (local wheelchair paratransit provider)
Primary use case: Reduced cost transportation for low-income workers, specifically for those with a job that begins or ends between 10pm and 6am.
Service model: On-demand ride hailing trips for low-income, late shift workers.
Connection to other modes: TD Users qualify for reduced fare bus trips, but the TD Late Shift program is designed for users who need transportation outside of normal PSTA bus service hours. The TD Late-Shift package comes as an add-on to a monthly bus pass which covers all PSTA bus service during regular hours
Funding: Ninety percent of the program's funding (around $500,000 per year) comes from the Florida Commission for the Transportation Disadvantaged, with PSTA providing a 10 percent local match
Link: TD Program webpage

Location

Location: Pinellas County, FL
Land Use Type: Urban, Suburban
Major population center(s): St. Petersburg, Pinellas Park, Seminole, Clearwater, Largo, Gulfport, and other cities in Pinellas County

Key Demographics

Population: 960,000 people
Area: 870 mi²
Population Density: 1,100 people/mi²
Jobs: 460,000
Employment Density: 530 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 270,000 people (28%)
People living below the poverty line: 105,000 people (11%)

Service Details

Table 15 TD Late Shift service details

Service hours	Available for workers whose jobs begin or end between 10:00pm and 6:00am
Reservation type	On-demand. Door-to-door service requests must be made at least 48 hours BEFORE service is actually needed
Fare	• $20 for the monthly pass—Qualified TD Users pay $11 monthly for an unlimited bus pass. Late Shift service costs an additional $9 monthly, for a total package of $20/month • TD Late Shift covers $5 of up to 25 TNC trips per user per month
Technology provider	Uber
Operator	• Uber • United Taxi • Care Ride (paratransit)
Vehicle details	Vehicles are provided by United Taxi, Care Ride, or individual Uber drivers
Ridership	From a 2018 report from APTA: “Up to 400 people use the program per month, with an average of around 14 monthly trips per person in September 2018. The program provided as many as 4,730 trips in April 2018 but had to be scaled back due to budget limitations.”

Service Area Map

Figure 25 PSTA full system map. Source: [PSTA]

Program Design and Operations

Pinellas County Transportation Disadvantaged (TD) Program is a state-funded program throughout Pinellas County that provides reduced-cost transportation throughout the county to residents who qualify as "Transportation Disadvantaged." Eligible participants in the TD Program must have a household income below 2 times the Federal Poverty Line (e.g. $30,120 for a single person; $62,400 for a family of 4), and TD-eligible users are able to purchase a monthly bus pass for the discounted rate of $11/month.

TD Late shift was launched by Pinellas Suncoast Transit Authority in August 2016 as a way to expand their existing suite of TD programs and subsidies. TD Late Shift seeks to offer off- shift workers the opportunity to use existing ridehailing services within PSTA's normal transit coverage map during the hours when PSTA transit services are not in operation. The program began with a state-funded grant of $475,000.

TD Late Shift offers participating residents up to 25 free or discounted trips to or from work in a given month, where such rides occur between 10:00pm and 6:00am and begin and end within Pinellas County.

Rides are contracted through private providers including Uber, United Taxi, and local wheelchair-accessible provider Care Ride.

Lessons Learned

Resolving data sharing agreements early in the process: Initially, Uber was hesitant to share origin and destination data for TD Late Shift trips with PSTA, hindering the agency's ability to verify that passengers were using the program for work-related travel as intended. Following media inquiries, Uber began providing the requested data, as outlined in the contract amendment. A senior planner at PSTA expressed regret over the initial issue, stating, "I wish we could have resolved that matter earlier" (source).

Funding: The program sees funding challenges, due to the ongoing nature of the subsidized monthly passes. Approximately 90% of the program's funding, equivalent to around $500,000 per year, is sourced from the statewide Florida Commission for the Transportation Disadvantaged, while PSTA contributes a 10% local match. But the program's popularity led to PSTA halting new applications in 2017. When people change jobs or move outside of Pinellas County, this attrition opens up funding and the program began admitting new participants again in December 2018. The agency has also sought additional funding which would allow it to open up the program to even more users.

Leveraging existing eligibility determination methods: PSTA was able to leverage the existing TD program rather than creating a new eligibility determination system for TD Late Shift. The

TD program already verified prospective users' residency and income eligibility, which allowed PSTA to offer additional benefits like the Late Shift program to those who qualified. PSTA also negotiated with private providers like Uber and United Taxi before launching the program to prevent users from misusing the program outside its intended benefits (e.g. scheduling trips outside the service area). This way, the technology partner was able to prevent such misuse at the platform level rather than have PSTA spending time monitoring the system for such activity.

References and Additional Resources

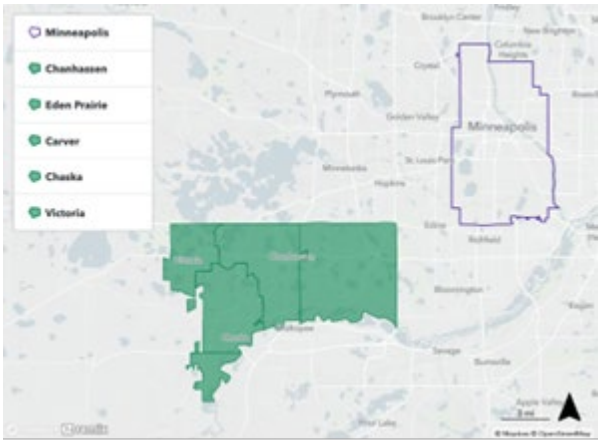
- TD Program webpage
- APTA report on the TD program
- 2018 ridership data

Appendix N. SouthWest Prime Case Study

Overview

Lead Organization: SouthWest Transit
Program Partners: None
Primary use case: SouthWest Prime serves general mobility use cases. It also provides first- and last-mile connections to fixed-route service.
Service model: On-demand, zone-based microtransit. Riders book rides within the specified city boundaries via a mobile app or phone.
Connection to other modes: Service area includes several SouthWest Transit stops that offer connections to downtown Minneapolis, the University of Minnesota, and the surrounding region. Transfers to or from a SouthWest Transit Express bus are free.
Funding: Funded through SouthWest Transit's annual budget (~$450,000 in 2023). Fares are estimated to cover 26% of overall operating costs. SouthWest Transit MD is funded at least in part by an Access and Mobility Partnership Grant from the Federal Transit Administration (FTA).
Link: SouthWest Prime webpage

Location



Location: Suburbs of Minneapolis, MN
Land Use Type: Suburban, residential
Major population center(s): Minneapolis, Saint Paul, University of Minnesota

Key Demographics

Population: 130,000 people
Area: 92 mi²
Population Density: 1,400 people/mi²
Jobs: 100,000 jobs
Employment Density: 1,100 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 30,000 people (23%)
People living below the poverty line: 5,200 people (4%)

Service Details

Table 16 SW Prime service details

Service Details/Service Type	SW Prime	SW Prime MSP Airport and SW Prime MD
Service hours	Weekdays, 5:30am - 7:00pm Saturday, 6:00am - 5:30pm	Weekdays, 5:30am - 7:00pm Saturday, 6:00am - 5:30pm
Reservation type	Exclusively on-demand. Rides can be booked via mobile app or over the phone.	On-demand and can be booked up to 14 days in advance. Rides can be booked via mobile app or over the phone.
Fare	• $5 flat fare • $2.50 for seniors aged 65 and older on Mondays from 9:00 AM - 3:00 PM • Free for children under the age of 5 • Free when transferring to or from a SouthWest Transit Express Bus	• $10 flat fare for SW Prime MSP Airport
Technology provider	Spare	Spare
Operator	SouthWest Transit	SouthWest Transit
Vehicle details	~12 12-passenger vans	~12 12-passenger vans
Ridership	584 average daily riders as of August, 2023	584 average daily riders as of August, 2023

Service Area Map

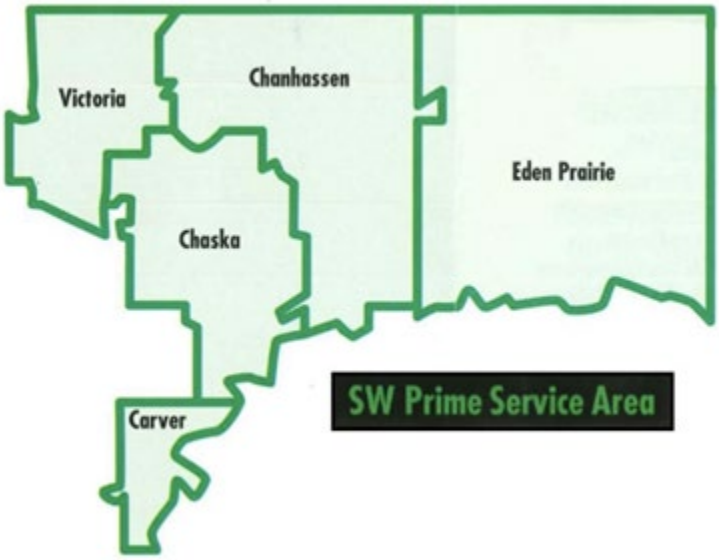


Figure 26 SW Prime service area. Source: [SouthWest Transit]

Figure 27 SW Prime Edge service area. Source: [SouthWest Transit]

Program Design and Operations

SouthWest Prime is an on-demand microtransit service operated by SouthWest Transit. The service operates in Carver, Chanhassen, Chaska, Eden Prairie, and Victoria, Minnesota. SouthWest Prime was originally launched by SouthWest Transit in 2015 as a 3-vehicle service that aimed to supplement existing transit options in the region, provide service to previously unserved and underserved areas, and modernize the agency's transit offerings as a whole. The service has since expanded to include around 12 vehicles in its fleet and has several specialty

microtransit services under the SouthWest Prime umbrella. Post-pandemic, ridership on SouthWest Prime recovered faster than other fixed-route services in the region. It has also replaced several low ridership SouthWest Transit fixed-route services, such as Route 638. Spare provides the software for the service.

- In addition to the original SouthWest Prime service, SouthWest Transit also offers several specialty SouthWest Prime services:
- SW Prime MSP Airport, which provides service to and from MSP Airport for a premium fare of $10 per rider. The service also offers pre-booking of up to two weeks in advance in addition to on-demand service.
- SW Prime Edge, which is a premium service that offers additional service from the SW Prime service area to Edina, the I-494 Corridor (between 78th and 77th Streets in the north and American Blvd. in the south), Mall of America, and Shakopee for $5 per rider.
- SW Prime Essential, which offers discounted rides for $2.50 to and from select grocery stores and pharmacies in the region.
- SW Prime MD, which is a non-emergency medical service that provides medical transportation to any medical facility in Eden Prairie, Chanhassen, Chaska, & Victoria, enabling pre-booking of up to two weeks in advance in addition to on-demand service. Fares are $5 per ride.

SW Prime ridership generally consists of general mobility riders using the service to get to work, run local errands, and/or connect to downtown Minneapolis and the University of Minnesota through transfers to fixed-route service. As of late 2020, the service reported low wait times of under 20 minutes, relatively short ride times of around 15 minutes, and strong daily ridership. Future plans for the service include electrifying its fleet by 2026 as part of SouthWest Transit's goal to convert its entire fleet to zero-emission vehicles by 2050. The agency also listed autonomous demonstrations, suburb-to-suburb service, and mobility as a service for microtransit and fixed-route as future goals.

Figure 28 A SouthWest Prime vehicle. Source: SouthWest Transit

Lessons Learned

In a 2021 Minnesota Public Transit Association (MPTA) conference presentation by SouthWest Transit, the agency listed the following lessons learned:

- Avoid being too restrictive on the service area
- Operating on-demand and scheduled rides together can be problematic
- Negative customer interactions have led to increased admin staff time
- Less staff is required for microtransit service compared to traditional Dial-a-Ride service
- Ensure proper fraud protections are in place
- Ridership demographics are similar to Dial-a-Ride
- Don't let First Mile-Last Mile be the only consideration
- Microtransit can be the public transit form of TNCs (depending on service area characteristics)
- Be willing to take risks, go through the trial and error process, and make changes on the fly

References and Additional Resources

- SouthWest Prime webpage
- 2021 MPTA Conference presentation
- Minnesota Reformer: Local transit agencies mimicking Uber and Lyft are seeing big ridership gains
- Eden Prairie Local News: SouthWest Transit receives vehicle grant

Appendix O. New Growth Transit Case Study

Overview

Lead Organization: New Growth Transit, operated by the West Central Missouri Community Action Agency
Program Partners: The program is modeled on New York's Volunteer Transportation Center (VTC), which has collaborated to share training, processes, and materials.
Primary use case: Enables rural residents (including seniors, individuals with disabilities, and other community members) to access more destinations.
Service model: Volunteer drivers
Connection to other modes: None
Funding: Began with a grant from Health Resources and Services Administration (HRSA) in 2019, has also received funding from the Patterson Foundation (private family foundation), medical entities that partner with NTD for rides to their facilities, Missouri foundation for Health, CARES and CSBG funding, and Missouri state appropriations.
Link: New Growth Transit webpage

Location

Location: 16 counties in Missouri
Land Use Type: Rural
Major population center(s): Major population centers are not a focus of this service.

Key Demographics

Population: 800,000 people
Population Density: 74 people/mi²
Employment Density: 21 jobs/mi²
People who are non-white or of Hispanic/Latino origin: 88,000 people
People living below the poverty line: 97,000 people

Service Details

Table 17 New Growth Transit service details

Service hours	Vary, depending on driver availability
Reservation type	Rides must be scheduled 48 hours in advance via phone call Monday – Friday, 8:00am to 4:00pm
Fare	Free
Technology provider	Drivers use tablets purchased from Verizon and Snap App, developed by VTC that allows drivers to log in, see rides, and track their trip through GPS. Drivers can also use the app directly on their Android phones.
Operator	Volunteer drivers coordinated by NGT, with around 40 drivers as of late 2023
Vehicle details	NGT coordinates trips based on incoming calls and the schedules of volunteer drivers
Ridership	6,000 rides for 3,000 passengers between January and June 2023

Program Design and Operations

New Growth Transit (NGT), a nonprofit organization, coordinates a regional transportation service in west central Missouri, providing trips through a network of volunteer drivers. The program is focused on rural areas and is open to all riders and all destinations, frequently providing service for doctor's appointments, grocery shopping, and community events. The average distance for a one-way trip is 28 miles, with some trips being up to 2 hours in one direction for specialized medical services. All ages use the service, and the average rider age is 63.

The program began with a grant from the Health Resources and Services Administration (HRSA) in 2019 to develop a strategic plan. They rapidly acquired additional funding from federal and state public funds as well as private funding, and launched the network in 2020. To establish the program, NGT worked with New York's Volunteer Transportation Center, an effective volunteer driver program that was able to share training, technology, processes, and materials. NGT leaders reference the relationship "similar to being a franchise," as they have adopted many of VTC's approaches.

NGT recruits drivers through speaking at civic organizations and participating in community events such as health fairs. Drivers are primarily older retirees (average age of 65) who are looking to give back to their communities; many are mission-driven and enjoy the flexibility of the service. Drivers use their own vehicles, which are inspected twice per year, and are reimbursed at the federally-approved rate of $0.67 per mile and the income is non-taxable. The program has a driver handbook and HIPPA policy, as well as tools for drivers such as seat belt extender, first aid kit, etc. NGT provides supplemental insurance and conducts a background and driving record screening.

NGT is one of several organizations with “New Growth” branding that are affiliated with the parent organizations West Central Missouri Community Action Agency. They all serve a variety of needs in rural areas of Missouri focused on improving quality of life in the region.

The service continues to expand quickly, already having implemented its expansion plans from October 2023 (as pictured below) in April 2024.

Figure 29 New Growth Transit expansion plan. Source: NGT

Lessons Learned

In late 2023, NGT hosted the START HERE Webinar about the progress of the program and how it has impacted West Central Missouri. Some of the takeaways discussed included:

- Many trips are long, and generally the distances can be challenging and create long rides
- The number of volunteer drivers is the biggest constraint on the capacity of the service - as NGT looks to expand to new areas they are first looking to create partnerships and recruit drivers. The recruitment must happen on an ongoing basis to make up for driver attrition over time, as well as expanding demand for the program.
- Training drivers on using the tablets and technology must be done thoughtfully, as some of the older drivers are less familiar with technology and may not have used a table on a regular basis.
- Found they needed to have partners at the table for planning for the beginning, including medical providers
- Conducted a data analysis to understand locations where seniors live compared to availability of medical appointments, as well as unemployment and local employers:
- The service provides time for callers to tell their story since they are frequently individuals that may be in crisis. For similar reasons, they confirm appointment times twice, and confirm exact address (this may take time in a rural area) as well as specific physicians they may be visiting to know where to take them to within the medical campuses
- The service tries to pool individuals when possible and get individuals to consolidate appointments; this is done by hand by the coordinators
- Biggest share of trips is medical, followed by food/retail and other. Employment is the least common use but NGT still provides a stopgap solution.

References and Additional Resources

- New Growth Transit webpage
- National Center for Mobility Management: Missouri Volunteer Driver Network Funded Through HHS Grant
- New Growth Transit - START HERE Webinar

Appendix P. Interviews with National Cases

P.1 Introduction

In June 2024, The Project Team conducted in-depth interviews with representatives from transit agencies, state DOTs, and other transportation providers to explore how agencies around the country are approaching microtransit, addressing the first-last mile problem, and facilitating access to employment.

Each interview was roughly one hour long and conducted via Zoom. The interviews were intended to be conversational, but loosely followed a standard set of questions. For each interview, the Project Team expanded on the standard questionnaire with questions addressing specific issues, challenges, or characteristics of that interviewee's service.

Interviewees were selected based on the analysis performed during the development of the case studies in Chapter 1. Of the roughly 50 cases initially examined, the Project Team selected 15 to examine more closely with in-depth case studies. Of these 15 cases, five were selected for in-depth interviews. This selection was based both on the programs' relevance to this project and on the diversity of locations, contexts, organizational backgrounds, and experiences that the cases provided.

The interviews were with the following organizations:

Delaware Department of Transportation (DelDOT), a state Department of Transportation that operates DART Connect, a county-wide microtransit service that was launched as a solution to provide access to employment centers in Sussex County, Delaware.

North Carolina Department of Transportation (NCDOT), which partnered with 11 transit agencies in North Carolina for Mobility for Everyone, Everywhere in North Carolina (MEE NC), an initiative to accelerate the deployment of on-demand pilots throughout the state.

Greater Cleveland Regional Transit Authority (GCRTA), the transit agency serving the Cleveland, Ohio, metropolitan area. GCRTA operates ConnectWorks, a first-last mile connector for employees traveling between fixed-route transit stops and their workplaces in suburban employment centers.

MobiliSE, a nonprofit organization in Southeast Wisconsin which operates FlexRide, a zone-based, employment- focused microtransit service.

Brightline, a privately owned and operated intercity passenger rail provider in Southern Florida. Brightline partners with mobility providers around rail stations and nearby downtown areas for first-last mile services.

P.2 Interview Questionnaire

Below is the interview questionnaire template. Interviews were designed to be conversational, and the questionnaire was customized or adapted based on specific aspects of each program.

Transportation Needs

- What prompted you to launch this service? What community needs does this service address?
- How does the agency engage the community to assess transportation needs?

Planning

- How does this service interact or integrate with other mobility options?
- What are some takeaways from the procurement process?
- What were some of the major barriers that you encountered when implementing this service?
- What outcomes and impacts have you seen from this service?
- What were some of the main challenges and lessons learned from this service?

Relationships with State DOTs

- What was the role of your State DOT in supporting this service?
- How could your State DOT have been more helpful? Is there anything else you wish they did today to support the service?

Connection to Employment

- (If applicable) How did you design this service to facilitate access to employment?
- Do you have any partnerships with local employment centers? How did those relationships come to be?
- What were some of the main lessons learned with making the service facilitate access to employment?
- If you were to launch a service today with the aim of increasing access to employment, how would you approach this?
- What outcomes have you observed or learned from employers/employees?
- How does your agency measure or account for the value your service provides to employers? How is that value communicated to employers, employees, and the public?

Partnerships

- What partnerships have you formed as a part of this service and how did those partnerships come to be?
- What needs were fulfilled in this service by forming partnerships?/How did forming partnerships help achieve specific service goals?
- What challenges do you face in maintaining partnerships?

P.3 Summary of Interviews

Several common topics and issues were discussed during the course of the interviews, particularly in relation to employment access and partnership building. Below are key takeaways, highlights, and themes that were presented by interviewees.

Supporting multimodal connectivity

Projects support multimodal transportation in various ways, but most agencies recognize the value in facilitating first-last mile transportation for high-frequency fixed-route transit.

- NCDOT's MEE NC initiative partly centers on plans for a high-efficiency rail line connecting several cities in the region. NCDOT recognized the value of microtransit in supplementing rail transit and serving as a first-last mile solution for the expected influx of rail travelers.
- Brightline offers regional rail service, and while Brightline's focus is explicitly on rail travel, the organization recognizes the importance of first-last mile connections and seeks partnerships with mobility providers who have the expertise and network to facilitate these trips.
- DelDOT started DART Connect in Sussex County in part to help feed riders into intercounty fixed routes. DelDOT recognized that the eastern part of Sussex County has a significant tourist industry, but a very high cost of living. DART Connect started partially to help service industry workers living in west Sussex County access fixed route buses that could take them to jobs in east Sussex County.

Partnerships with employers

While most agencies discussed partnering with local employers, the nature of employer partnerships varies, as does the formality of these relationships.

- DART Connect in Delaware is an employment-focused service, but DelDOT does not have any official partnerships with employers. Employers see the value in the service and connect with DelDOT, but not in an official capacity.
- GCRTA's ConnectWorks program costs are split 50-50, with GCRTA paying half and employers paying the rest. While this configuration helped create a strong public-

private partnership for the service, it also initially made it difficult for GCRTA to get buy-in from employers.

- Brightline does not specifically focus on employer relationships or employment access, but does offer unique services to large corporate clients. Large corporate clients can purchase tickets in bulk for their employees, who can then use a web dashboard to access the tickets at a reduced fare or for free. Brightline offers different tiers and packages for corporate clients. Additionally, for some large clients, Brightline will adjust train schedules based on the company's needs.

Innovative funding

Funding for these programs come from a variety of sources. Some of these funding sources are unique in that they are marketed as workforce development programs rather than transportation programs.

- FlexRide is funded primarily through funds from the Wisconsin Department of Workforce Development as well as funds from Milwaukee County. Additionally, FlexRide is partially funded through the American Rescue Plan Act. MobiliSE is currently working on getting a stable and permanent funding stream from Milwaukee County.
- GCRTA's ConnectWorks is funded equally by GCRTA and employer partners. On the GCRTA side, funds come from the Ohio Transit Partnership Program, flex funding from the Federal Highway Administration, and the Ohio Department of Transportation general revenue. GCRTA is currently exploring other options to support ConnectWorks, and demonstrating to the state legislature why the program deserves to be a regular part of the state transportation budget.

Role of state DOTs

- The state DOTs included in the interviews vary in their roles and how they support first-last mile transportation projects.
- DelDOT is one of the only state DOTs that operates transit. This means that DART Connect's staff can work closely with other departments within DelDOT to improve access to transit systems.
- NCDOT's MEE NC program is a series of partnerships with local transit agencies around the state. In this setup, NCDOT helps agencies build capacity, provide resources, and navigate federal regulations. NCDOT suggests that state DOTs working on similar initiatives can be most supportive through standardization on how to approach federal policies and acting as liaison between the Federal Transit Administration and local jurisdictions.

Navigating political landscapes

Several agencies discussed building political support and carefully navigating local or state politics to effectively build support for their programs.

- MobiliSE markets FlexRide as a workforce development program rather than a transportation program to garner support from elected officials and organizations who would otherwise oppose using public funds on a transportation program.
- GCRTA found champions in suburban mayors, who helped facilitate conversations with political and business leaders and push ConnectWorks as a way to get people to work at healthcare manufacturing facilities during the COVID-19 pandemic. Through the support of a state senator, Ohio created a set-aside in the transportation budget specifically for workforce mobility projects.
- DelDOT's approach is to maintain consistent communication with both riders and elected officials. Delaware elected officials primarily want to know how DART Connect impacts their constituents, and DelDOT gives regular updates on rider feedback through legislative briefings, quarterly meetings, and reports.

Coalition building

Some agencies discussed how coalition building helped bring mobility services to fruition.

- GCRTA's ConnectWorks began when various suburban mayors recognized a mobility need that was not being met. One mayor convened local businesses, government officials, and other stakeholders to form a mobility task force which helped drive the development, implementation, and refinement of ConnectWorks.
- MobiliSE brought in community stakeholders from the beginning of the process to develop FlexRide. Because FlexRide was largely a community-driven project, it has received significant community support and investment.

P.4 Interview with MobiliSE

Date: June 3, 2024
Participant: Dave Steele, Executive Director, MobiliSE
Program: FlexRide

Interview Takeaways

State partnerships and building political support

MobiliSE formed strong partnerships at the state level for FlexRide, however Wisconsin Department of Transportation (WisDOT) has not been involved with the project at all. At the state level, MobiliSE partners with the Wisconsin Economic Development Commission and the Wisconsin Department of Workforce Development. These state-level partnerships highlight the program's focus on employment access, and in fact, MobiliSE often markets FlexRide as a

workforce development program specifically, rather than a transportation program. This marketing distinction helps MobiliSE build political support from elected officials and organizations who would otherwise oppose using public funds on a transportation program.

Local partnerships and building community support
Fostering community buy-in was integral to launching FlexRide. Community leaders were invested from the beginning in finding solutions that addressed community needs. Because of this, FlexRide was a largely community-driven project, and the development process gave the community a level of ownership over the service. Once FlexRide officially launched, community members were already familiar and supportive of the service, and MobiliSE was seen as part of the community rather than an interloper.

Despite widespread local support, MobiliSE had to manage community expectations about FlexRide. One aspect of this was being clear to the community about how FlexRide operates. For instance, some users initially expected a door-to-door service similar to a TNC, whereas FlexRide operates a "corner-to-corner" service to balance cost and response time. Through this, MobiliSE recognized the importance of open communication and education early on in the process.

MobiliSE also recognized the importance of caution in marketing the service in order to avoid overpromising anything to communities. MobiliSE must manage the balance between ridership and efficiency. Unlike traditional fixed-route services, too many riders can ultimately make FlexRide less efficient and less useful. MobiliSE wants FlexRide to be as helpful as possible, which comes with carefully balancing how the service is marketed.

Funding
FlexRide is funded through funds from the Wisconsin Department of Workforce Development as well as funds from Milwaukee County. Additionally, FlexRide is partially funded through the American Rescue Plan Act. MobiliSE is currently working on getting a stable and permanent funding stream from Milwaukee County.

P.5 Interview with NCDOT

Date: June 7, 2024
Participant: Grady McCollum, Senior Project Manager, NCDOT
Program: North Carolina for Mobility for Everyone, Everywhere in North Carolina (MEE NC)

Interview Takeaways

Supporting multimodal transportation
The Mobility for Everyone, Everywhere in North Carolina (MEE NC) initiative was largely spurred by plans for a high-frequency rail line connecting cities in North Carolina, Virginia, and

eventually Washington, D.C. As many areas in North Carolina are in the midst of significant growth, particularly Charlotte and the Research Triangle region, NCDOT recognized the value of frequent, reliable intercity rail transportation to reduce congestion, connect the region, and make intercity travel more feasible for commuters. This initiative targets transportation for employment, and specifically intercity trips for employment. NCDOT sees microtransit as an important first-last mile solution for the expected influx of rail travelers. In these cases, microtransit will allow workers to travel between train stations and their employment sites.

MEE NC as way to improve local transit systems

Additionally, MEE NC is a way for NCDOT to support the modernization of transit in rural North Carolina areas. Currently, many rural transit agencies in the state operate very limited fixed-route service, dial-a-ride, or paratransit. In many cases, ridership for these services is very low. Modern, tech-enabled microtransit can help expand the ridership of these agencies and replace underperforming fixed-route services.

Challenge in adherence to federal standards

MEE NC is still ongoing, and some grant agreements are not currently finalized as of June 2024. Thus, NCDOT's timeline for the program has been extended dramatically. One of the main challenges is adherence to certain federal standards. Money for this program comes primarily from federal grants, and some small transit agencies have expressed hesitations about complying with some of the federal policies and regulations that go along with receiving these funds. Many small agencies do not have a dedicated team to manage federal projects, and thus face some difficulty navigating these regulations. For instance, an agency may have its own driver training policies, and express concern that adhering to federal standards may limit the pool of drivers and cost the agency time and money.

NCDOT suggests that state DOTs working on similar initiatives can be supportive through standardization of how to handle federal policies, and by being engaged with the Federal Transit Administration (FTA) from the beginning, to be a better source of information for local agencies.

Challenge in data management

Data management and analysis are other important considerations for the future of the MEE NC program. NCDOT is working on navigating the line between gathering good data on how travelers move and protecting customer privacy. MEE NC transit agencies are at different capacities in how they are able to manage data. A specific way that NCDOT or other state DOTs working on similar initiatives can support agencies is through developing a comprehensive plan for data management that agencies can easily follow. This would ensure that all agencies are following the same standard procedures.

P.6 Interview with DelDOT

Date: June 25, 2024
Participants: Cathy Smith, Planning Manager, DelDOT, and Tremica Cherry-Wall, Planner, DelDOT
Program: DART Connect

Interview Takeaways

Origins of the service
DelDOT began DART Connect by examining critical mass origins and destinations in southern Delaware. The east of Sussex County has a very high cost of living, and also a significant resort and tourist industry. DelDOT determined that many people working these service jobs could not afford to live in the area and were traveling from residences in the west part of Sussex County. DelDOT looked to microtransit to feed into transit hubs and supplement intercounty fixed routes to help people travel between east and west Sussex County.

Additionally, DelDOT found that many rural areas had accessibility problems on its fixed-route system, particularly at bus stops. Much of Sussex County is rural two-lane roads with no shoulders or sidewalks. DelDOT saw microtransit as a way to combat these accessibility issues by connecting people directly to transportation rather than relying on inaccessible fixed-route bus stops.

Employment access
Sussex County has several major industries, including many large poultry facilities. DelDOT does not have any official partnerships with these employers but has maintained unofficial relationships. DART Connect brings value to both employers and employees by offering transportation services to major employment centers. There can be high employee turnover at many of the large employment centers, so DelDOT focuses on constant and consistent communication and marketing to make sure new employees are aware of DART Connect and other transit services and can provide feedback.

Role of a state DOT providing transportation
DelDOT is in a unique position as a state Department of Transportation that operates transit. This means that DART Connect's staff can work closely with other departments within DelDOT to improve access to transit systems. DelDOT owns about 80% of the roads in the state, and DelDOT can work to ensure that construction projects also improve access to transit systems.

P.7 Interview with GCRTA

Date: June 26, 2024
Participants: Jose Feliciano Jr., Intergovernmental Relations Officer, GCRTA, and Maribeth Feke, Director of Planning, GCRTA
Program: ConnectWorks

Interview Takeaways

Origins of the service
ConnectWorks started due to political pressure during the COVID-19 pandemic. The Cleveland area has several suburban facilities that manufacture healthcare products like hand sanitizer. Recognizing that many employees were transit dependent, mayors of these suburban cities put pressure on GCRTA to help get people to these facilities to help with the COVID-19 relief effort.

Project champions
GCRTA recognized a number of project champions that set ConnectWorks in motion, helped build community support, and helped source funding for the program. Specifically, the mayor of Solon, Ohio, Edward Kraus, recognized the value that an employment-focused microtransit program could bring, and convened a Mobility Task Force which includes local elected officials and business leaders. Matt Dolan, a state senator, was another integral part of the program's development, particularly in his efforts to create a set-aside in the state transportation budget for workforce mobility projects.

Funding
ConnectWorks is funded equally by GCRTA and employer partners. GCRTA's CEO was intentional about this setup as a way to foster strong public-private partnerships and create meaningful buy-in by employers. However, the 50-50 setup makes it challenging to get employers willing to take part. On the GCRTA side, funds come from the Ohio Transit Partnership Program, flex funding from the Federal Highway Administration, and the Ohio Department of Transportation general revenue. The Ohio Department of Transportation created a set-aside in the transportation budget specifically for workforce mobility projects, which ConnectWorks uses. GCRTA is currently exploring other options to support ConnectWorks, and demonstrating to the state legislature why the program deserves to be a regular part of the state transportation budget.

P.8 Interview with Brightline

Date: June 27, 2024
Participant: Jean Carlos de Jesus, Director of Mobility, Brightline
Program: Brightline Neighborhood Electric Vehicles

Interview Takeaways

Refocusing business/service strategy

Within the past two years, Brightline began refocusing its strategy to more exclusively center around high-speed regional trains. Previously, Brightline had relied on partnerships with other first-last mile mobility providers to help Brightline passengers get to and from the train. With the shift in strategy, Brightline focuses less on partnerships (though it still maintains some formal partnerships with mobility providers) to put more energy into rail service, the company's core business. Brightline will support other mobility services to the extent that they can benefit its customers, but the company's high-level strategy is to partner with mobility companies that already have technology and infrastructure in place to effectively move passengers around with as little input and help as possible from Brightline.

Partnerships and collaborations

One of the mobility companies that Brightline collaborates with is Circuit, which had already operated in many of Brightline's station locations even before Brightline began service. Brightline previously had a formal partnership with Circuit, but has since made the decision to not subsidize its service or provide dedicated parking or charging spots since it updated its business strategy. Brightline still partners with Circuit through marketing and advertising, but there are currently no Brightline-dedicated Circuit vehicles. Circuit vehicles often operate nearby Brightline stations, but independently, as Circuit is aware that passengers will need rides to and from Brightline trains.

Brightline has a formal partnership with Uber to facilitate first-last mile transportation, specifically as a perk for customers with Premium (or first-class) tickets. When purchasing a Premium ticket through Brightline, customers receive a $10 voucher for Uber rides to or from a Brightline station. Aside from offering the voucher, Brightline has no involvement in providing or facilitating the rides; the passenger is in charge of booking the Uber rides themselves through the Uber app. The vouchers come with restrictions to ensure they are used for first-last mile travel: riders can only use the vouchers traveling to or from a Brightline station and riders can only use vouchers up to 3 hours before a departing train or 3 hours after a train arrives. Brightline selected Uber for this service through a Request for Proposals process. Other smaller ridehail companies submitted proposals, but did not have the footprint, technology capabilities, or network to sufficiently meet Brightline's needs.

Additionally, Brightline has a direct partnership with Mears, a shared-shuttle service that transports riders to and from Disney parks in Orlando. Brightline advertises connecting to Mears shuttles in Orlando and offers a discount code for booking shuttles.

Employment access

Brightline does not specifically focus on employer relationships or employment access, but does offer unique services to large corporate clients. Generally, these relationships involve ticket books, where companies can purchase tickets in bulk for their employees for a reduced price. This setup allows employees who live in areas where housing is more affordable than in downtown cores to more easily use Brightline's services to commute. Currently, over 120 companies have signed up with ticket banks, and Brightline offers different tiers and packages for corporate partnerships. Additionally, Brightline has a web dashboard as part of the corporate partnership program where employees can book tickets, which come out of their employer's ticket bank. Depending on the employer and the package, these tickets can be reduced in price or free for the employee. For some large corporate clients, Brightline will even adjust train schedules based on the company's needs.

Appendix Q. Interviews with Missouri Transit Agencies

Q.1 Introduction

To form a comprehensive understanding of the transportation landscape in Missouri, the Project Team conducted in-depth interviews with representatives from two Missouri transportation providers to learn about their needs, challenges, and opportunities. In particular, the interviews intended to explore each agency's approach to addressing the first-last mile problem and connecting people with employment.

Each interview was roughly one hour long and conducted via Zoom. The interviews were intended to be conversational, but loosely followed a set of questions that was prepared for each interviewee.

The interviews were with the following agencies:

OATS Transit is a nonprofit corporation providing a diversity of service options (including deviated-fixed routes, intercity express, and senior transportation) and broad coverage in mostly rural areas across 87 counties in Missouri. The organization operates on a mix of revenue sources, including Federal Transit Administration (FTA) formula funds and private contracts.

Jefferson City Transit Division (JeffTran) is the transit agency serving Missouri's capital, Jefferson City, a mid-size city currently exploring changes to its transit network service and considering potential implications to first-last mile connectivity options. JeffTran operates 6 fixed routes and 3 "Tripper" routes—specialty routes during the school year intended to transport students to and from school—as well as its paratransit service Handi-Wheels.

Q.2 Analysis of Interviews

Several common topics and issues were discussed during the interviews, particularly in relation to agencies' approaches to on-demand microtransit and partnership building. Below are key takeaways, highlights, and themes from the interviews.

Exploring microtransit

Though each agency operates in different contexts, both JeffTran and OATS mentioned exploring microtransit as a possible way to better serve customers. OATS mentioned internal discussions to explore potential microtransit pilot projects around the state to better meet the needs of residents as a response to rider feedback. JeffTran also has explored using microtransit to improve its existing fixed-route service as part of a larger proposed network redesign. The plan would allow JeffTran's fixed-route buses to operate more frequently on main streets, and

use microtransit to connect people to these arterial routes. This plan ultimately was not pursued due to financial limitations. JeffTran is also currently exploring microtransit to get employees to an industrial park about 2 miles outside its regular service area.

Partnerships with employers

Both JeffTran and OATS expressed challenges developing partnerships with area employers, and there are very few formal partnerships for either agency. The majority of OATS's employment transportation is to sheltered workshops for people with developmental disabilities. The agency has only one formal partnership with an employer, Tyson Foods. Tyson Foods does not provide any funding for the service, but OATS provides three exclusive daily routes to the Tyson plant throughout the workday. In JeffTran's case, employers do not see the benefit in partnering with a transit agency in a car-centric community. Despite the efforts of both agencies, employers are unwilling or unable to subsidize public transportation as the vast majority of their employees still drive to work.

Partnerships with human services providers

Both agencies have partnerships with human services organizations. As mentioned previously, a large portion of OATS's service is dedicated to employment transportation to sheltered workshops, and the agency maintains relationships with the sheltered workshops as well as statewide health and human services agencies. In some cases, the sheltered workshops or the guardians of the workshop employees independently identified the need and reached out to OATS to provide service. JeffTran partners with local charities and community organizations, including Aging Best, Landmark Recovery, and Common Ground, who purchase prepaid tickets in bulk for their clients.

Service improvements

Both agencies receive regular feedback from passengers on how they can improve service. JeffTran currently runs fixed-route transit from 6:40am to 6:00pm on weekdays, and commonly hears that customers would benefit from night and weekend service. However, staffing and funding challenges prevent JeffTran from being able to expand service hours. OATS also receives feedback from customers wanting more service, as well as improved service. OATS noted that some riders have requested on-demand microtransit, instead of the current demand-responsive or dial-a-ride service. However, this feedback is anecdotal, not from a survey or formal request to customers.

Recovering from the COVID-19 pandemic

Both agencies expressed how the COVID-19 pandemic impacted service, and expressed difficulties returning to pre-pandemic service levels. JeffTran only recently returned to full service post-pandemic, but had several drivers and a dispatcher quit in 2022 and 2023. To keep service running, JeffTran switched to alternating routes (through this system, buses combined routes and operated at 80-minute intervals, rather than the regular 40-minute intervals), but

that was burdensome to riders as it effectively doubled some wait times. OATS noted that prior to the pandemic, there were groups of volunteers throughout the state who helped with outreach and marketing, a helpful resource that stopped post-COVID.

Q.3 Interview with JeffTran

Date: May 31, 2024
Participants: Gerry Stegeman, Transit Director, JeffTran, and Maurice Burnley, Operations Supervisor, JeffTran

C.3.1 Interview Questionnaire

Current Service

- JeffTran currently operates six routes (resuming all routes in 2023). Can you share more about changing transit needs in the last few years and what you have seen in terms of ridership numbers, rider demographics, and trip types?
- How does JeffTran engage with the community to assess transportation needs?
- What type of feedback do you get from community members most frequently, particularly in regard to employment access?
- How does JeffTran make changes to service?
- Has JeffTran made any service changes recently? If so, why?

Connections to Employment and First-Last Mile Issues

- What portion of trips are for employment? Do these tend to be geographically concentrated based on density or are they distributed across your service area?
- Where are you most successful in providing transit service to employment?
- Do you work with employers or employment centers, either for service adjustment or for expanding awareness of your services?
- Are there any areas where service for employment could be improved? What improvements or supplemental services would be helpful?

Partnerships with mobility providers

- Do you have any partnerships with mobility providers, public or private?
- Do you partner with human services, community services, or medical services to serve specific populations and destinations?
- What needs were fulfilled in this service by forming partnerships?/How did forming partnerships help achieve specific service goals?
- What challenges do you face in maintaining partnerships?

Q.3.2 Interview Takeaways

Currently, JeffTran runs fixed-route service between 6:40am and 6:00pm, and no weekend service. Riders have given feedback that they would appreciate evening and weekend service, but JeffTran is still recovering from staff loss during COVID. In 2022 and 2023, the agency went to alternating routes, which was burdensome on the public and led to a loss of ridership. Only recently has the agency gone back to full pre-COVID service. JeffTran has been exploring the potential of microtransit to improve fixed-route service. To increase frequency on the core system without adding employees, JeffTran could reassign operators from feeder routes to a mix of more frequent arterial service and microtransit for connecting trips from areas previously served by feeders. This plan fizzled because it would end up costing JeffTran more money. At the time, Jefferson City Council was trying to save money, and JeffTran stopped spending time "to figure out something that wouldn't happen."

JeffTran is currently exploring a microtransit option to get people to an industrial park that is about 2 miles out of its regular service area. The companies in the industrial park have varied schedules, with shifts that start at varying times of the day.

JeffTran previously explored a vanpool program for late shift workers, which had some potential. However, funding was the biggest hurdle, and plans fell through when JeffTran began talking with employers who were reluctant to get on board. In a car-centric community like Jefferson City, employers are generally not willing to provide money to get employees transportation. In the hypothetical words of an employer: "We have 100 employees that work for us and 90 of them have cars and drive. Are we going to give them any money to drive to work?"

One larger company in the area (Scholastic) coordinated a vanpool program for its employees, but JeffTran was not involved. It is unclear if the vanpool program is still ongoing.

Q.4 Interview with OATS

Date: June 3, 2024
Participant: Dorothy Yeager, Executive Director, OATS Transit

Q.4.1 Interview Questionnaire

Current Service

- Can you share more about the variety of service models you offer, and how services are provided by agencies across your 87-county service area?
- OATS has eight regional and two satellite offices - are decisions/operations centralized or do different parts of the organizations set different service priorities?

- How does OATS engage with the community to assess transportation needs? What patterns or trends have you seen across your service area since COVID?
- What type of feedback do you hear from community members most frequently, particularly in regard to employment access?
- How does OATS make and decide on service changes?
- Has OATS made any changes recently? If so, why?

Connections to Employment and First-Last Mile Issues

- Your 2023 report says 49% of trips are for employment - do these tend to be geographically concentrated based on density or are they distributed across your service area?
- Where are you most successful in providing transit service to employment?
- Do you work with employers or employment centers, either for service adjustment or for expanding awareness of your services?
- Are there any areas where service for employment could be improved? What improvements or supplemental services would be helpful?

Partnerships with mobility providers

- Do you have any partnerships with mobility providers, public or private?
- Do you partner with human services, community services, or medical services to serve specific populations and destinations?
- What needs were fulfilled in this service by forming partnerships?/How did forming partnerships help achieve specific service goals?
- What challenges do you face in maintaining partnerships?

Q.4.2 Interview Takeaways

OATS does not specifically provide first-last mile service. Depending on the county, OATS provides either door-to-door service or has an express route with various pick-up points along the way. Some express routes are intercity and run from smaller towns into larger cities, where passengers can connect to the larger city's transit services, but OATS does not get any 5307 (urbanized area) FTA funds and is very mindful of how much they encroach into urban areas.

A large portion of OATS's transportation services is for people with developmental disabilities to get to and from work at sheltered workshops around the state. To facilitate this, OATS partners with the Missouri Department of Mental Health. In contrast with many of the trips OATS provides, the rides to and from sheltered workshops are not ad hoc. They are very structured group rides on a tight timeframe.

OATS has a partnership with Tyson Foods, a large employer with several facilities in the state, to pick up and drop off workers. However, Tyson Foods does not provide funding for the service,

employees pay fares. OATS has reached out to other employers to develop partnerships, but has run into barriers. Often, the employers are unable or unwilling to pay for transportation services. In other instances, the service is set up, but ridership is much lower than expected, and the service dies out. Despite feedback from riders indicating a large need, once the service is in place there is not as much uptake as earlier feedback suggested.

Appendix R. Virtual Forum on First-Last Mile Transportation

R.1 Introduction

On July 18, 2024, the Project Team hosted a Virtual Forum on First-Last Mile Transportation with Missouri stakeholders to discuss first-last mile challenges and employment transportation within the state of Missouri. The Forum was an opportunity for the Project Team to learn directly from experts on the ground about the transportation landscape in the state and workshop solutions to key transportation challenges.

R.2 Agenda

The 90-minute virtual Forum included various workshop activities and discussion topics to foster dialogue among participants. Below is a copy of the Forum agenda:

- Introductions
- Warm-Up/Missouri Trivia
- Project Background
- Open Discussion
    - Question 1
    - Question 2
    - Question 3
- Breakout Groups
    - Urban
    - Rural
- Full Group Discussion and Wrap-Up

R.3 Participants

The project team invited representatives from a variety of public, private, and non-profit organizations to participate in the Forum. In addition to transportation providers and mobility advocacy groups, the Project Team sought the perspectives of large business, business development organizations, educational institutions, and human services providers. Of the 17 stakeholders invited to the forum, ten representatives participated (not including members of the Project Team) from the following organizations:

- Kansas City Area Transportation Authority (KCATA)
- Jefferson City Transit Division (JeffTran)
- Amtrak
- Missouri Public Transit Association (MPTA)

- OATS
- Southeast Missouri Transportation Services (SMTS)
- BikeWalkKC

R.4 Key Takeaways

Spatial mismatch

Spatial mismatch refers to the discrepancy between where people live and where employment opportunities are, particularly for low-income households. Discussions about population and employment trends highlighted how this concept applies to Missouri. Participants noted that many jobs were moving to suburbs or exurbs, while Missourians working those jobs were moving to urban cores. Additionally, these jobs are largely unserved by fixed-route services. Missouri, like most midwestern states, often has large swaths of land between communities, exacerbating this issue. Addressing these spatial mismatch issues should be a key priority in helping connect communities to employment.

Community needs assessments

Some transportation providers acknowledged a gap in understanding of on-the-ground mobility issues, even within their service areas. There may be community needs that agencies are not able to address because these perspectives have not been captured. This is especially relevant post-COVID, where providers recognize that peoples' transportation habits have changed significantly, but do not fully understand the extent of the changes. Thorough community needs assessments can help agencies around the state determine how best to reevaluate, adjust, and improve their transportation services.

Education on first-last mile options

The Forum highlighted a need for more education on first-last mile transportation in general, including what first-last mile services could entail and what benefits first-last mile transportation could provide. Rural providers noted that they rarely consider first-last mile transportation at all, since they generally provide full door-to-door service. Discussions about frameworks for first-last mile transportation outside of connections to traditional fixed-route service, such as connecting to inter-city rail or bus or bridging the first-last *five* mile gap, helped to reframe these conversations and elicit more productive ideas.

Addressing the culture of individually-owned vehicles

A major challenge that Missouri transportation providers face is the culture of individually-owned vehicles. This is particularly relevant in rural areas of the state. Providers noted challenges in maintaining employment routes since people often stopped using public transportation as soon as they could afford to purchase their own vehicle. Many Missouri residents see public transportation as slower and less convenient than driving. As a result, a

significant portion of employment-oriented public transportation is for riders with disabilities. There are opportunities to address these beliefs by reexamining some services or routes to make them more convenient, or developing educational campaigns on the benefits of public transportation.

Policy and funding limitations

The Forum highlighted a need to discuss policy and funding limitations that create barriers for first-last mile services from being developed and develop strategies on how to address those barriers. Participants noted funding gaps at the federal level that translate into service gaps. For instance, participants discussed gaps in Columbia's GoCOMO service that could potentially be filled by other regional transportation providers, but federal funding limitations prevent regional providers from effectively serving those areas.

R.5 Summary of Open Discussion

Below are highlights from the group discussion. Each discussion prompt was meant to be a conversation starter, and participants were encouraged to build on each others' ideas.

Prompt 1: *When you hear "first-last mile" what word or phrase comes to your mind?*

For the first prompt, participants were tasked with presenting their immediate thoughts about first-last mile transportation and building on each others' answers. For the first part of the discussion, participants focused on modes of transportation aimed at connecting to fixed-route bus stops in urban settings, like walking, biking, or driving. Participants recognized and emphasized the importance of multimodal connections in these settings, and discussed the multifaceted nature of access as a concept, considering aspects such as pedestrian and bike-friendly infrastructure in urban areas. The discussion highlighted that access can encompass multiple aspects of a transportation service, such as service availability and infrastructure.

Rural providers admitted that the first-last mile concept in general is less relevant in rural areas where door-to-door services or deviated fixed routes are more common. However, this presented an opportunity to reconsider the definition of first-last mile transportation, and apply it to contexts more relevant to rural areas, like expanding the definition to consider the first and last five miles of a trip in sprawling, rural areas, or facilitating connections to intercity transportation. In particular, some conversations highlighted the role of shuttle services connecting rural areas directly to Amtrak stations, which served communities such as the Amish.

Overall, the discussion highlighted the varying definitions and challenges of first-last mile transportation, reflecting the distinct needs of both urban and rural areas. Participants underscored the importance of connectivity and access across different transit modes and the need for tailored solutions to address these issues.

Prompt 2: *How are employment opportunities changing in your communities? How are transportation services evolving or adapting to those changes?*

The second discussion prompt revealed insights into the evolving dynamics of employment and transportation in Missouri. Participants first discussed the "chicken and egg" dilemma of whether to build transit stops and stations first to attract employment or to increase access to existing employment hubs through diverse transit options. There is a growing trend of strategically placing employment and housing near established transit systems, however there is a similar need for aligning transit development with dense employment areas.

Participants highlighted the increase of work-from-home jobs, leading to fewer people traveling for work. However, rural providers recognized that commuting patterns in rural areas have not changed significantly, with residents still needing to travel for jobs. Because of both unreliable public transportation in these areas and a culture of personally-owned vehicles, many rural residents prefer driving to work.

This discussion also highlighted how spatial mismatch was impacting Missourians; in many cases, employment opportunities in manufacturing and service industries are shifting out of urban cores into suburban areas, while people working these jobs are relocating to urban cores. To exacerbate transportation challenges for these people, there is often an additional mismatch between employment shift hours and transit schedules. This trend is not universal, and some Forum participants discussed workers living in rural areas with cheaper costs of living and commuting long distances to urban centers.

There have been some efforts to establish high-employment routes, but many of these have seen low demand, for various reasons including challenges of connecting communities over vast open spaces.

The discussion highlighted the diverse impacts of changing employment patterns on transportation services. It revealed a need for flexible, adaptable transit solutions to meet the varied demands of both urban and rural communities, considering factors like proximity, commuting times, and the evolving landscape of remote work.

Prompt 3: *If you were to implement a first-last mile service, what are some opportunities you would like to see? What are the biggest challenges you would anticipate?*

The third discussion question elicited both innovative ideas for mobility services and potential obstacles. One response explored the possibility of a bike donation program, which could provide affordable mobility to low-income individuals. This built on an existing example of a program at the University of Texas, where donated bicycles help students connect to the campus bus system. This idea could be particularly beneficial for people living on the edges of

fixed-route services in large urban areas. Other responses included leveraging existing bicycle and pedestrian infrastructure to serve public transportation needs, enhancing trail connections to facilitate first-last mile transportation between small towns, and partnership building between intercity transportation providers and local transit agencies to offer free or reduced-price first-last mile transfers, similar to programs in place in other parts of the country, like a program between Amtrak and SEPTA in Philadelphia, PA as an example. These sorts of collaborative efforts have not yet been implemented in Missouri, but there is a significant opportunity on several Amtrak routes, including the River Runner service between Kansas City and St. Louis, which currently operates two round trips per day

Overall, the discussion underscored several promising opportunities for first-last mile services. However, challenges remain, including the need for innovative solutions tailored to both urban and rural contexts and the coordination required to establish effective partnerships between different transportation providers.

R.6 Summary of Breakout Session Discussions

Prior to the breakout sessions, the Project Team introduced area typologies that would drive the conversation. These typologies and their descriptions are noted in the Existing Conditions Analysis section of this report. The group split into two breakout sessions, each focusing on a specific area in Missouri. One breakout session discussed urban Columbia, in central Missouri, and the other breakout session discussed rural Warrensburg, a college town in west Missouri with a population of about 20,000.

Urban

Though the city is not as large as Kansas City or St. Louis, participants agreed that Columbia fits into the urban typology, especially given the city's dense core that houses the University of Missouri (Mizzou) campus. However, the breakout group considered Columbia as fairly suburban outside of the city's downtown and Mizzou campus. Reverse commuting is a common pattern in Columbia, with many jobs outside of the city center, but there are limited ways to get to suburbs. Columbia's GoCOMO bus service is infrequent, running every 60 minutes, and is similar to a hub and spoke service. The group highlighted that even when urban centers are dense, residents can face significant mobility and employment challenges.

Rural

Warrensburg was highlighted as an example of a rural area, but most participants acknowledged that it fit better within a suburban typology. Warrensburg jobs are generally concentrated around the medical center and the University of Central Missouri. The City of Warrensburg works with OATS to operate the Old Drum Bus, a deviated fixed-route system which runs daily. However, riders must make a reservation a day in advance, making the service ill-suited for the working community. The breakout group discussed the opportunity for the City

of Warrensburg to improve access to this service as well as to other destinations in the city by prioritizing pedestrian and bicycle infrastructure, particularly around the University of Central Missouri campus and other key locations. Participants also acknowledged that more data and research on travel patterns would be helpful to better understand how to improve transportation in the community.

R.7 Summary of Final Discussion

To conclude the forum, participants were asked a final question to consider: *what initiatives would they like to see implemented at the state or local level to improve transportation access?* The conversation brought forth various perspectives and highlighted key areas for improvement throughout different regions of Missouri.

Participants emphasized the importance of improved coordination and recognized the opportunities for partnerships between intercity transportation providers, local transit agencies, and other modes of transportation to enhance connectivity. Strong partnerships and mobility management initiatives can bridge service gaps throughout the state, and it is worthwhile for policymakers to both support existing transit providers and explore unconventional partnerships to tackle these challenges creatively.

Participants also recognized several obstacles to accessible transportation, including land use planning, funding gaps, and regulatory challenges, though most of the regulatory challenges come from the federal government. Examining the existing transportation providers across the state, leaning on local support, and working between agencies can help address these gaps and overcome obstacles.

The final Forum discussion highlighted several key initiatives to improve transportation access in Missouri, including enhanced coordination and partnerships, better land use planning, targeted funding mechanisms, and addressing both local and federal regulatory challenges. These efforts aim to support existing transit providers and create new opportunities for connectivity and mobility management across the state.

Appendix S. Existing Conditions Analysis and Needs Assessment

To understand the current transit landscape in Missouri and effectively inform recommendations on improving first-last mile connections for employment, the project team conducted an existing conditions analysis and needs assessment consisting of the following:

- **Transit network analysis** to document current first-last mile service, urban fixed-route services, long-distance fixed-route services, other transit services, and human service agency transit service offerings in the state. For each type of service, the analysis includes a description of the service and (when applicable) a coverage map and hours of operation. Each section identifies services that offer opportunities for new or additional first-last mile services to expand access to employment via public transit.
- **Commute pattern analysis** to better understand commuter behavior in the state, including employment patterns, commute distance, and transportation mode to work. The commute pattern analysis will better enable future first-last mile services to target commuter needs.
- **Demographic analysis** to identify where populations with the greatest need for transit are located. The team analyzed several key demographic and socioeconomic factors that are closely correlated with increased transit usage to determine where demand for transit may be highest in the state.
- **Commute typology definition**, to provide a framework to understand types of commute patterns and provide a way to explore first-last mile solutions for different geographies.

S.1 Transit Services in Missouri

As of 2022 National Transit Database (NTD) reporting, Missouri has 12 fixed-route transit services and 22 rural transit services. The state is also served by private and nonprofit providers of both long-distance and local transit who do not report to the NTD. Coverage, service type, and availability of transit services varies heavily across the state, with more service concentrated in the more densely populated eastern and western regions of the state in and around St. Louis and Kansas City. For the purposes of understanding how services relate to first-last mile options, this analysis classified these services into five types:

- **First-Last Mile Services:** First-last mile services help riders connect into a fixed-route system, bridging the gap between the rider's origin or destination and the fixed-route stop. Existing first-last mile services in Missouri include microtransit services in Kansas City and St. Louis, which feed riders who live in medium-density areas into the fixed route network. First-last mile also includes active modes such as walking and biking; both Kansas City and St. Louis have bikeshare and/or scooter share programs.
- **Urban Fixed-Route Services:** Fixed-route services serve predetermined stops on a fixed schedule and set route within a given city or larger urbanized area. Missouri has 12 such

systems, of which ten are currently operating and serving the general public. These types of systems are prime opportunities to implement first-last mile services to expand the reach of the existing networks.

- **Intercity Fixed Routes:** Intercity fixed routes provide connections between smaller cities and sometimes into larger urban centers; services include Amtrak and regional routes operated by various regional transit providers. Stops along long-distance routes provide opportunities for first-last mile service, allowing riders to leave their car at home and conduct their entire trip via public transit.
- **Other Types of Transit Services:** Other types of transit services include regional dial-a-ride, countywide or city-wide dial-a-ride, and ADA paratransit. These services do not operate on a fixed timetable or route; instead, each day's service is based on pick-up and drop-off requests collected over the preceding days ("pre-booked" service). Service may be open to the general public or limited to specific groups such as seniors, persons with disabilities, and/or persons requiring transportation to work. These services are available across both urban and rural areas, with the type of service varying by location and use case. These services typically provide door-to-door service and therefore do not require first-last mile connection.
- **Human Service Agencies:** This term describes a range of agencies that serve targeted groups - often individuals requiring medical care, older adults, or persons with disabilities. In Missouri, several agencies operate transportation services for their clients across both urban and rural areas. These services typically provide door-to-door service and therefore do not require first-last mile connection.

The map below shows the coverage and location of full and partial NTD-reporting transit agencies:

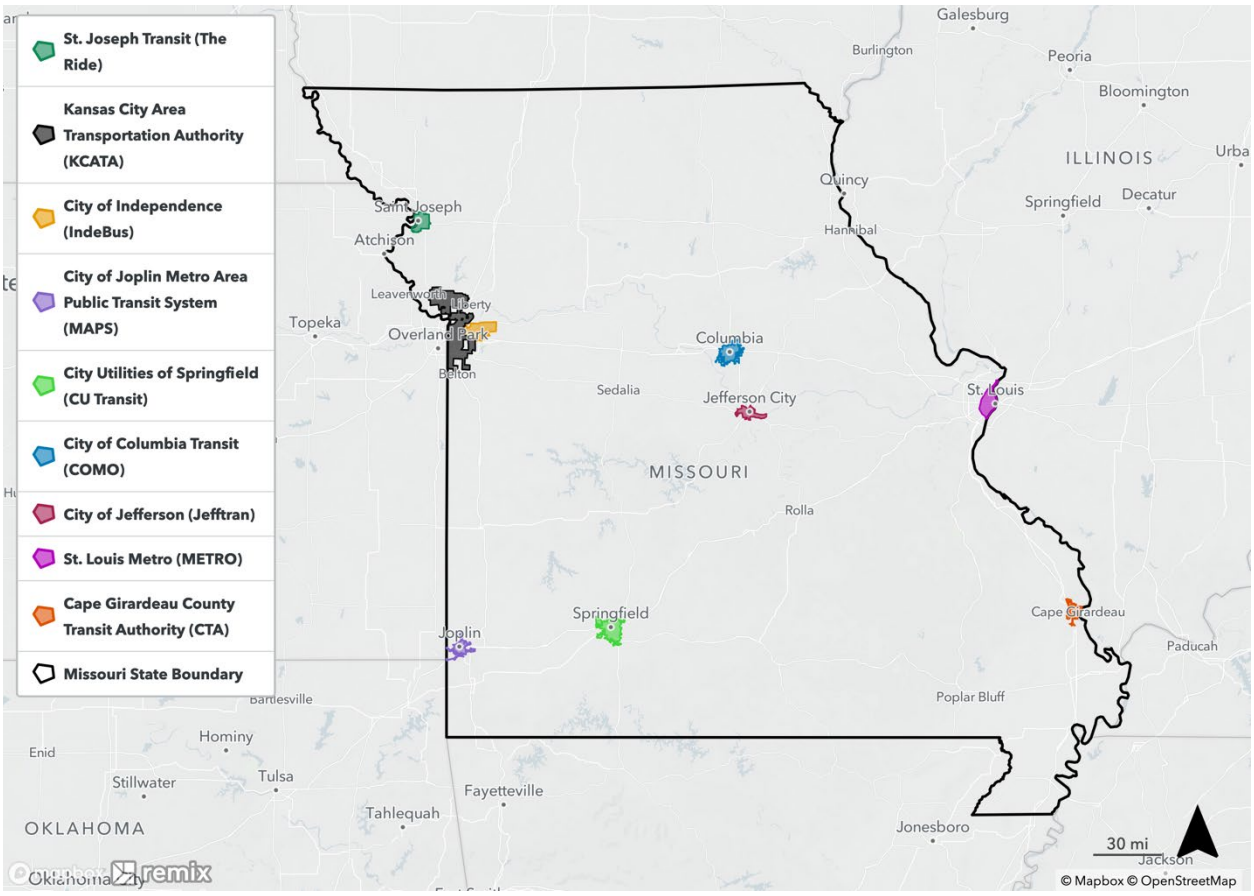


Figure 30 Full and partial NTD-reporting transit providers in Missouri

Urbanized areas, or areas with populations of over 50,000 people as defined by the US Census Bureau[1], tend to have several public transit options available, including fixed-route service. As shown in **Table 18 Public Transit Coverage in Urbanized Areas in Missouri,** the state's largest cities, Kansas City and St. Louis, have several transit options available. Some larger cities and suburbs located in the Kansas City metro area, such as Lee's Summit, and Blue Springs, are covered by Kansas City's transit service and therefore also have several public transit options available. Independence, which is technically within the Kansas City metro area, has its own public transit system that operates within the city. Similarly, Florissant, which lies within the St. Louis metro area, has multiple public transit options available. Cities that are further outside of the St. Louis metro area, such as O'Fallon, St. Charles, and St. Peters, are outside of St. Louis's fixed-route network and therefore do not have as many transit options available.

[1] United States Census Bureau. n.d. The Urban and Rural Classifications. Accessed July 1, 2024. https://www2.census.gov/geo/pdfs/reference/GARM/Ch12GARM.pdf.

Table 18 Public Transit Coverage in Urbanized Areas in Missouri

City	Population	Fixed-Route Service	Dial-a-Ride Service	ADA Paratransit Service	Microtransit Service
Kansas City	500,000	Yes	Yes	Yes	Yes
St. Louis	300,000	Yes	Yes	Yes	Yes
Springfield	170,000	Yes	Yes	Yes	No
Columbia	125,000	Yes	Yes	Yes	No
Independence	120,000	Yes	Yes	Yes	No
Lee's Summit	97,000	Yes	Yes	Yes	No
O'Fallon	78,000	No	Yes[2]	No	No
St. Charles	70,000	No	Yes	No	No
St. Joseph	70,000	Yes	Yes[3]	Yes	No
St. Peters	58,000	No	No	No	No
Florissant	52,000	Yes	Yes	Yes	Yes
Blue Springs	51,000	Yes	Yes	Yes	No
Joplin	50,000	No[4]	Yes	No	No

S.1.1 First-Last Mile

S.1.1.1 Microtransit

Microtransit, also known as on-demand transit, includes flexible routing and scheduling of vehicles. Customers can generally request a ride by using either a smartphone app or by calling a dispatcher, and vehicles are dynamically routed to pick them up near their location and drop them off near their destination. Rides are shared with other passengers. Missouri has two microtransit services, one in Kansas City and the other in St. Louis. The services provide general transportation services, but also supplement existing fixed-route transit in the cities, serving as first-last mile connections to fixed-route transit. Via Metro STL's North St. Louis County zone operates a special late-night service to cater to late-night shift workers in the region, directly connecting them to their places of employment.

[2] Dial-a-ride service is only available for older adults and riders with qualifying disabilities.
[3] Dial-a-ride service is only available for older adults and riders with qualifying disabilities.
[4] Note that Joplin traditionally has a deviated fixed-route service, but as of the time of writing this report, service has been suspended due to driver shortages.

Table 19 Microtransit Services in Missouri

Service	Agency	Area Served	Hours of Operation	Eligible Riders
IRIS	KCATA	Kansas City	4:00 AM – 11:00 PM, 7 days per week	General Public
Via Metro STL	Metro STL	St. Louis County	South and West Zones: 5:00 AM – 10:00 PM, 7 days per week North St. Louis County Zone: 5:00 AM – 1:00 AM for all day zone, 7 PM – 1:00 AM for evening zone	General Public

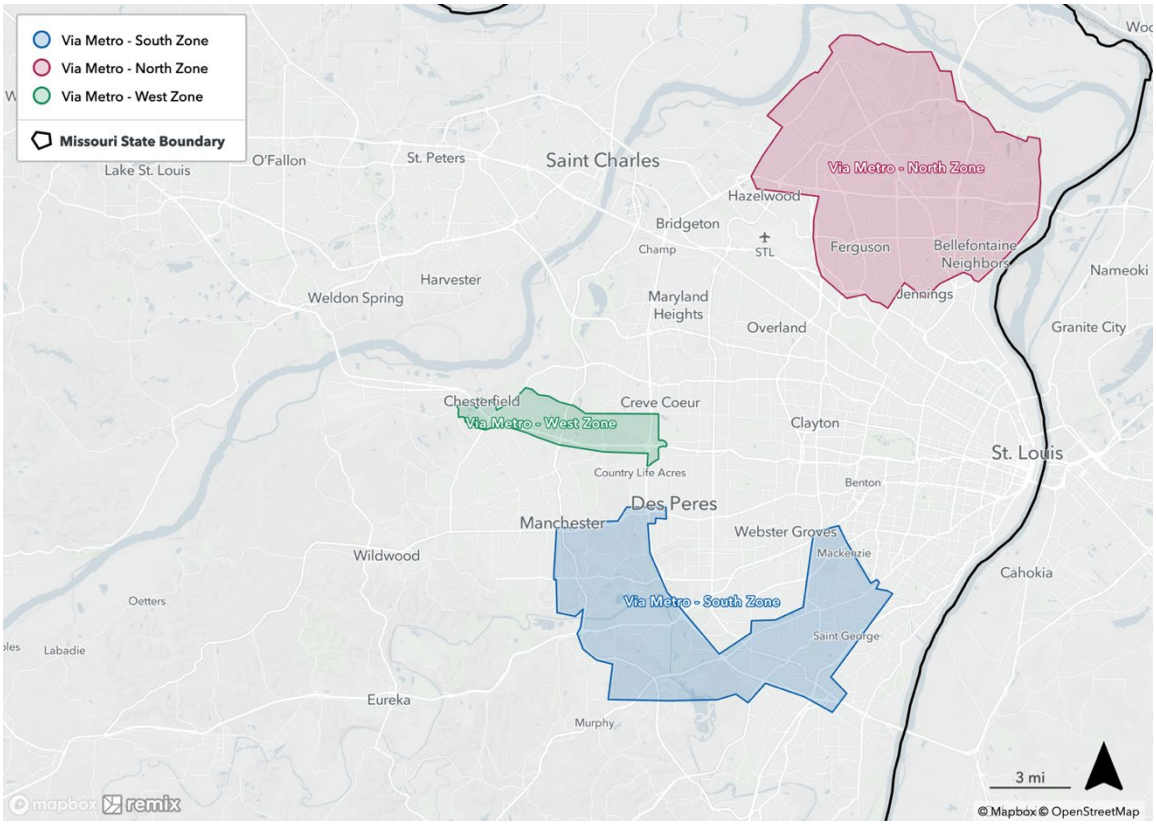


Figure 31 St. Louis Metro microtransit service in St. Louis, MO

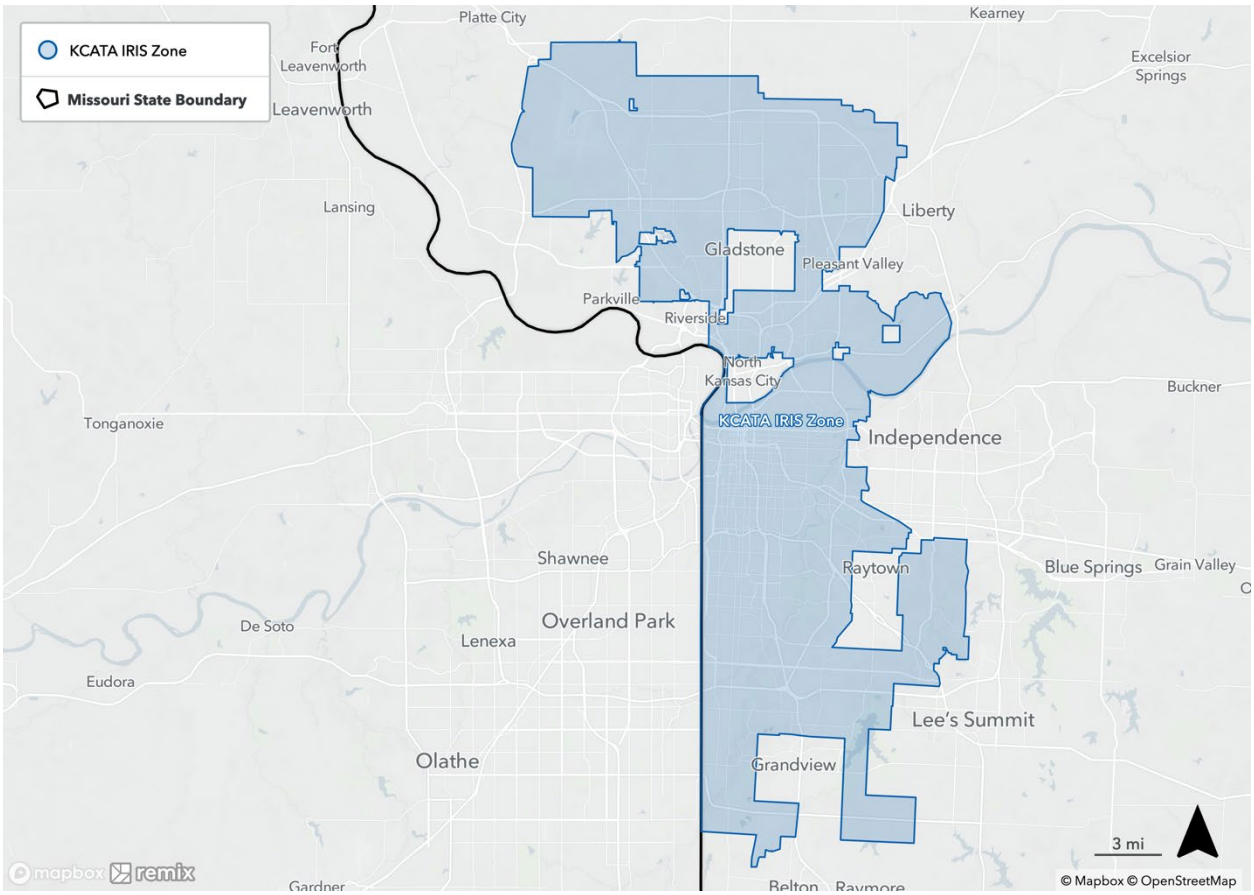


Figure 32 KCATA IRIS microtransit service in Kansas City, MO

Micromobility and Active Transportation

Walkability: According to the Environmental Protection Agency's National Walkability Index,[5] Kansas City and St. Louis are both considered walkable in their city centers (and cities within the greater metro areas also have relatively high walkability scores). Columbia, which is home to the University of Missouri, also has pedestrian infrastructure in its downtown area to support walkability given its student population, which may not have access to cars. Jefferson City has a few walkable blocks in its downtown, but similar to many small cities and towns, has relatively low walkability scores across the entire city and surrounding region. Cities with fixed-route transit and low walkability scores could benefit from improved sidewalk and pedestrian safety infrastructure to expand access to transit.

Bikeshare Programs: Kansas City has two bike share programs operated by BikeWalkKC, including pedal-powered and e-powered bikes.[6] St. Louis has a bike and scooter permit

[5] Federal Transit Administration, n.d. 2022 Agency Mode Type of Service. Accessed July 31, 2024. https://www.transit.dot.gov/ntd/data-product/2022-annual-database-agency-mode-service.

[6] RideKCBike. n.d. About RideKCBike. Accessed May 15, 2024. https://ridekcbike.com/.

program, allowing private companies to provide bikes and scooters to the public.[7] Both cities have invested in some bike lane infrastructure, but protected lanes have not yet been widely adopted across either city.

S.1.2 Urban Fixed-Route Services

As of 2022 (their most recent NTD reporting year), Missouri has 12 fixed-route transit providers that report to the NTD. Six of these are full reporters, meaning they operate 30 or more vehicles, and six are partial reporters, meaning that they operate less than 30 vehicles across all modes.

Understanding fixed-route services — and any gaps in the fixed-route network — is critical to ensuring recommendations for first- and last-mile solutions complement the fixed-route network and foster integrated transit solutions. Walkable areas well covered by a frequent, accessible fixed-route transit network are generally a lower priority for adding additional transit, as these areas are considered well served by transit. Areas near frequent fixed routes (but not well served by the fixed-route system system) often indicate an opportunity for first-last mile service to connect to fixed routes.

Most of Missouri's urbanized areas offer fixed-route bus service. Urbanized areas with fixed-route bus service include St. Louis and its surrounding area, Kansas City and its surrounding area, Jefferson City, Columbia, Springfield, and St. Joseph, with fixed-route service provided by St. Louis Metro, Kansas City Area Transportation Authority (KCATA), Jefferson City Transit Division (JeffTran), Columbia Transit System, The Bus, and St. Joe Transit, respectively.

Not all services are relevant for first-last mile analysis – Joplin's fixed-route service is not currently operational, while Southeast Missouri State University exclusively serves students.

Details around each of the fixed-route transit services in Missouri are included in **Table 20 Fixed-Route Transit Services in Missouri** below.

Table 20 Fixed-Route Transit Services in Missouri

Service	Reporter Type	Urban Areas Served	Rides per year[8]	Relevant for First-last Mile
St. Louis Metro	Full Reporter	St. Louis, Florissant	11.7 million	Yes

[7] St. Louis-MO Gov. n.d. Shared Bike and Scooter Permit. St. Louis-MO Gov. Accessed July 31, 2024. https://www.stlouis-mo.gov/government/departments/street/permits-inspections/small-vehicle-sharing-permit.cfm.

[8] Federal Transit Administration, n.d. Complete Monthly Ridership (with adjustments and estimates) 2022 NTD Data. Accessed July 31, 2024. https://www.transit.dot.gov/ntd/data-product/monthly-module-adjusted-data-release.

Service	Reporter Type	Urban Areas Served	Rides per year[8]	Relevant for First-last Mile
Loop Trolley Transportation Development District (St. Louis Loop Trolley)	Full Reporter	St. Louis	4,000	Yes
Kansas City Area Transportation Authority (KCATA)	Full Reporter	Kansas City, Independence, Lee's Summit, and Blue Springs	10.2 million	Yes
Kansas City, City of Missouri (Kansas City Streetcar)	Full Reporter	Kansas City	1.7 million	Yes
City of Independence (IndeBus)	Full Reporter	Independence	N/A	Yes
City of Springfield (CU Transit, The Bus)	Full Reporter	Springfield	910,000	Yes
City of Columbia (Go COMO)	Reduced Reporter	Columbia	1 million	Yes
City of Joplin (MAPS)	Reduced Reporter	Joplin	N/A	No - Service is currently suspended due to a lack of transit drivers.
City of St. Joseph, Missouri (The Ride)	Reduced Reporter	St. Joseph	N/A	Yes
Southeast Missouri State University	Reduced Reporter	Cape Girardeau	N/A	No - University service for students only.
Cape Girardeau County Transit Authority	Reduced Reporter	Cape Girardeau	N/A	Yes
City of Jefferson (JeffTran)	Reduced Reporter	Jefferson City	N/A	Yes

St. Louis Metro

St. Louis Metro provides both fixed-route bus and Metrolink light rail service to the city of St. Louis and its surrounding areas (note that while service operates in both Missouri and Illinois, this study focuses only on the routes operating within Missouri state boundaries). Frequencies vary across the service area, with just over half of routes operating at frequencies of 30 minutes or greater, and the remaining routes operating at frequencies of 15 – 30 minutes. St. Louis Metro bus routes are shown in **Figure 31 Frequency of St. Louis Metro Fixed-Route Service** below.

Some populous urban areas within the St. Louis metro area such as O'Fallon, St. Charles, and St. Peters are outside of St. Louis Metro's fixed-route network coverage. To enable first-last mile connections to nearby fixed-route services, St. Charles offers a commuter bus service, known as Ride STC, that operates five days a week (M – F), connecting residents to and from the nearest St. Louis Metro Route 34 stop across the Missouri River. The service serves as a prime example of commuter first-last mile connections that can complement existing transit service in the state.

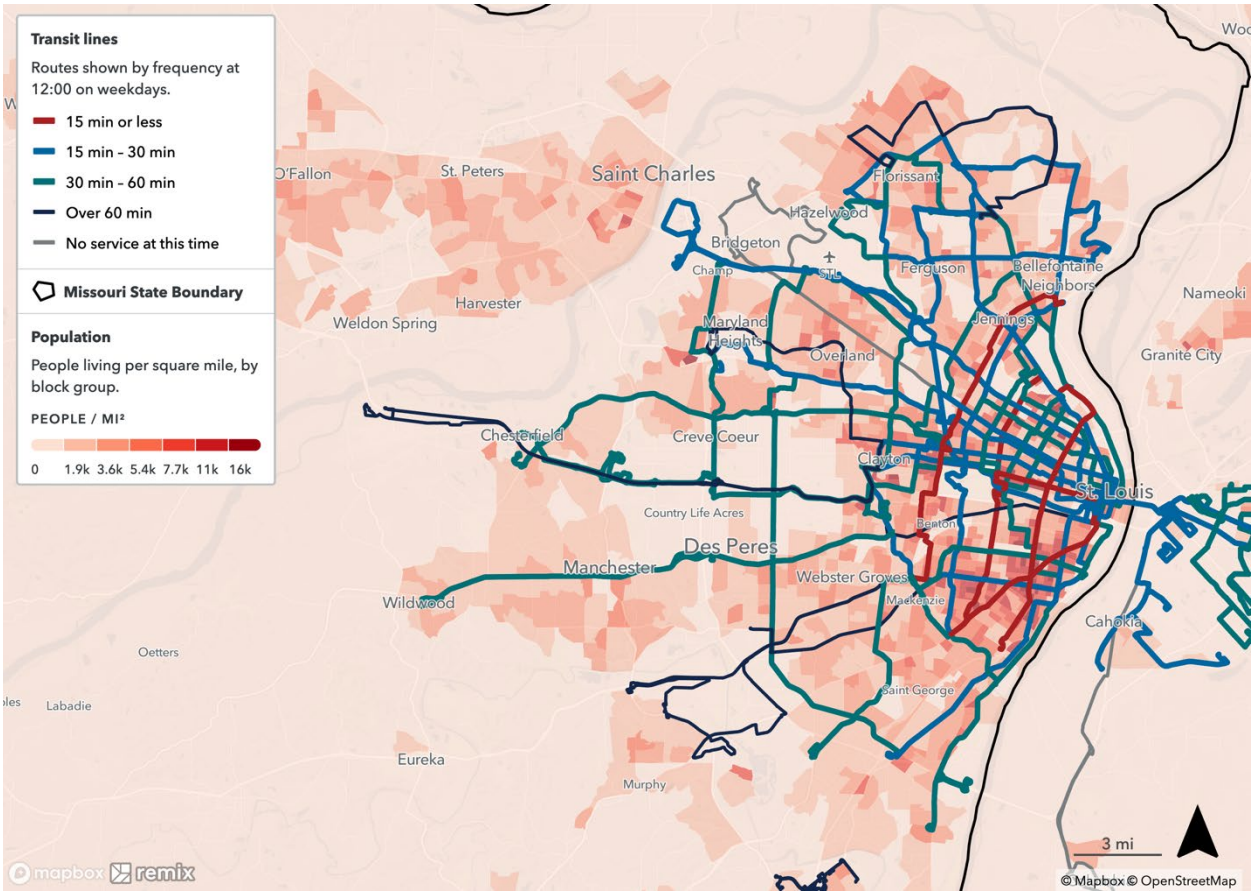


Figure 33 St. Louis Metro fixed-route lines by frequency

St. Louis Metro's 38-station MetroLink light rail system consists of two lines, both of which operate at 15-minute frequencies. The Red Line is a 38-mile line that connects Lambert Airport to downtown St. Louis and East St. Louis, IL. Seven of the Red Line's 18 stops within Missouri are outside of St. Louis city limits. The 24-mile Blue Line alignment connects Shrewsbury, Missouri, to Fairview Heights, Illinois. Eight of the Blue Line's 19 stops located in Missouri are outside of St. Louis city limits. As fewer Metro bus routes operate outside of St. Louis city limits, MetroLink stops outside of the city offer opportunities for first-last mile connection to help residents outside of St. Louis to commute into the city.

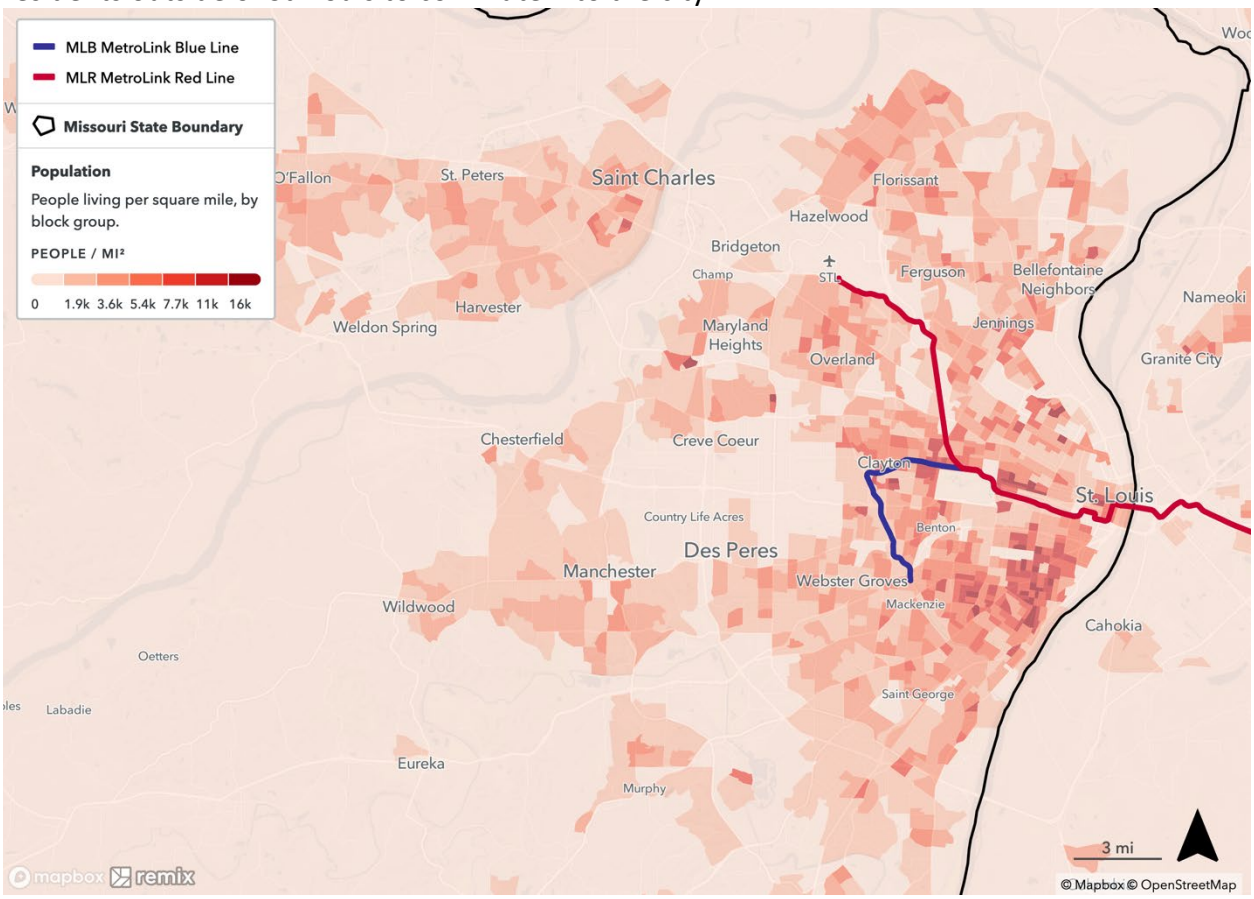


Figure 34 St. Louis Metro MetroLink Light Rail route

St. Louis Loop Trolley

The St. Louis Loop Trolley is a 2.2-mile, 10-station streetcar line in the city of St. Louis. The fixed-route trolley operates at hourly frequencies on and around the Delmar Loop, from the St. Missouri History Museum in Forest Park to the University City Library in University City. Service is operated by St. Louis Metro. The trolley operates from Thursdays to Sundays from 11 am to 7 pm and is fare-free. Trolley operation is seasonal, from late April through late October, as the car is open-air with no air conditioning or heat. Given the short route of the trolley, it does not present strong opportunities for first-last mile services.

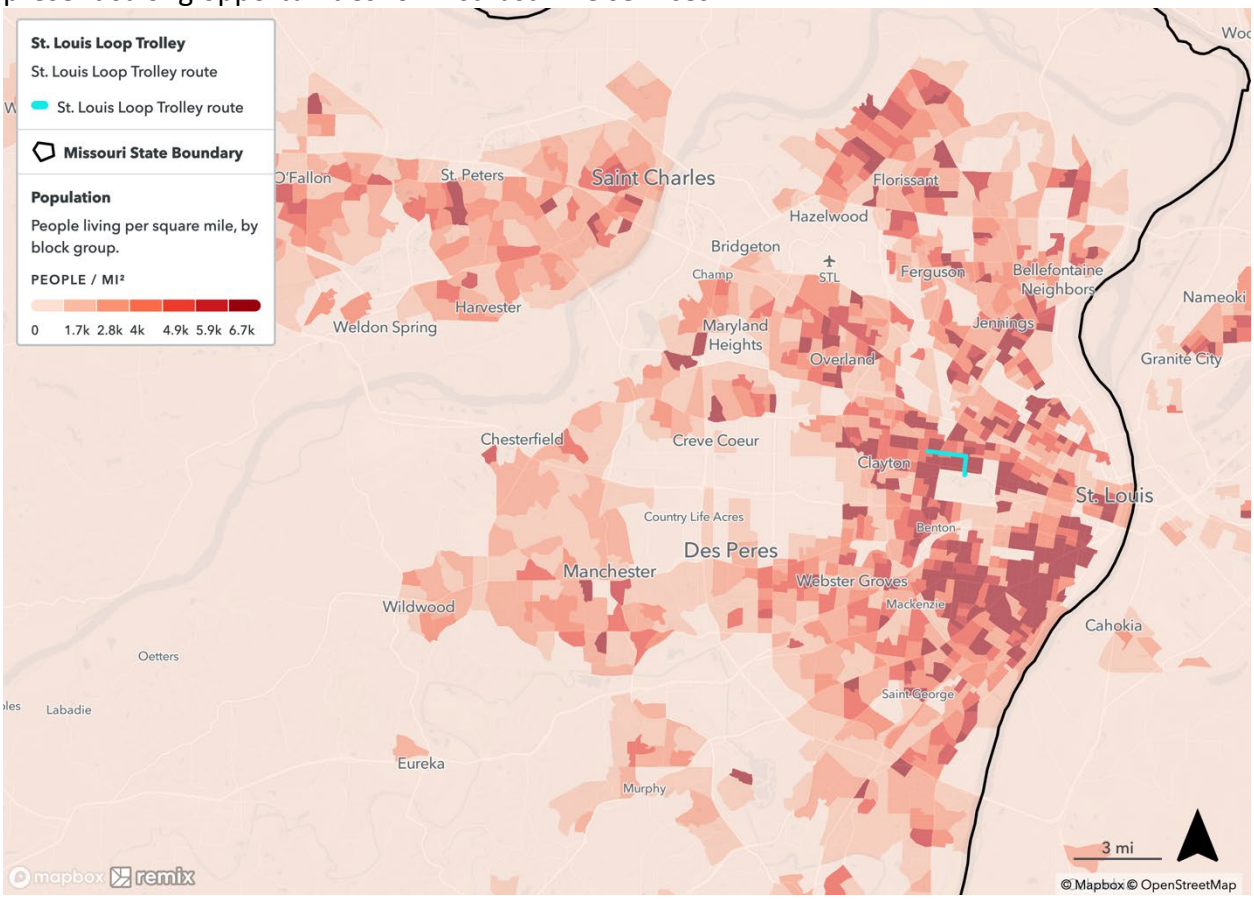


Figure 35 Loop Trolley route

Kansas City Area Transportation Authority (KCATA)

KCATA provides fixed-route transit service in Kansas City and its surrounding regions (similar to Metro, KCATA's service area straddles two states, Missouri and Kansas, and this study addresses only the lines that operate within Missouri state boundaries). Most routes operate at frequencies of 30 minutes or less, with just two high-frequency routes operating at frequencies of 15 minutes or faster. Routes tend to be most densely clustered around the city center, with fewer routes and lower frequency routes operating in the outskirts of the city into its surrounding suburbs. Stops not currently served by microtransit offer an opportunity to provide additional first-last mile services.

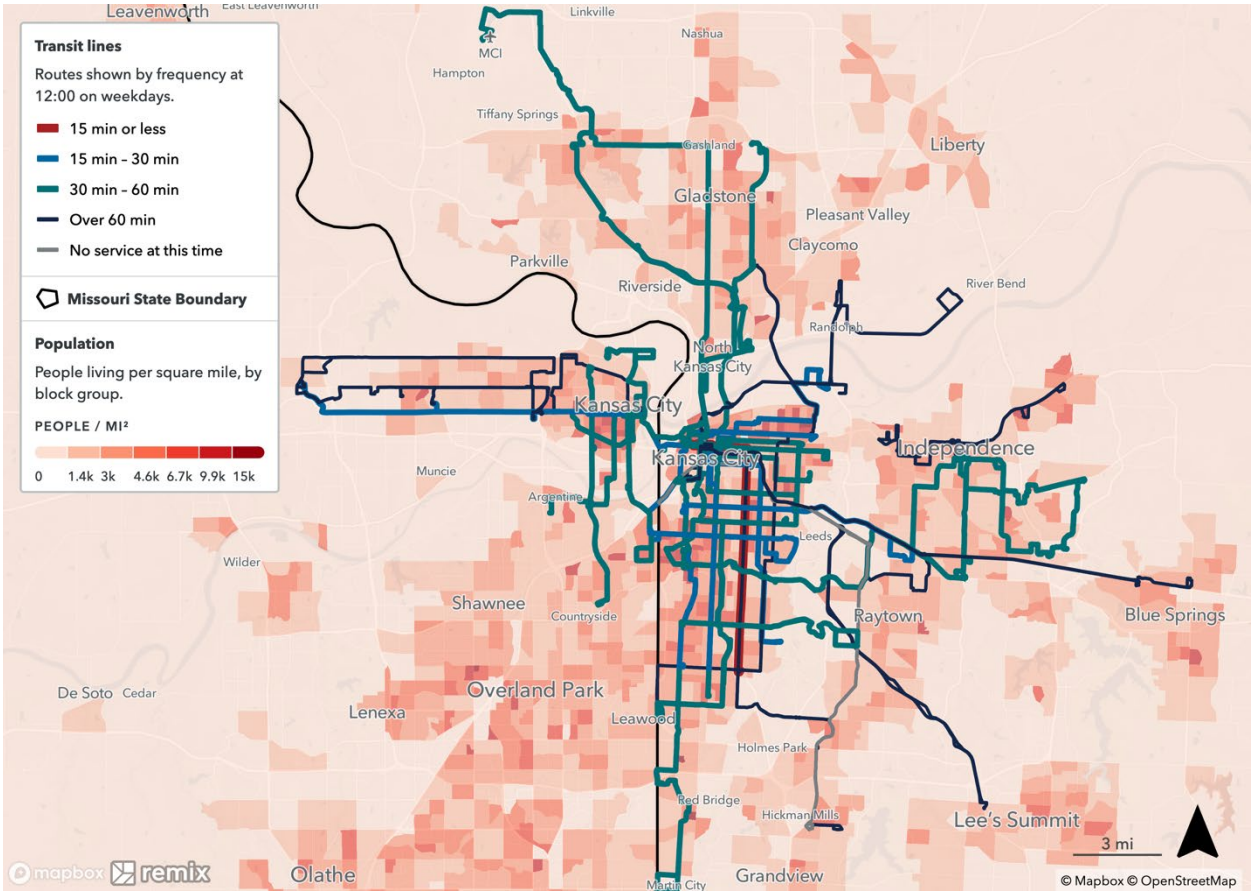


Figure 36 KCATA fixed-route lines by frequency

Kansas City Streetcar

The Kansas City Streetcar operates along a 2.2-mile route between the River Market and Union Station in downtown Kansas City. The 16-station line runs seven days per week, operating every ten to fifteen minutes during peak periods and every twelve to eighteen minutes during off peak hours. The service is fare-free. Given the short route of the streetcar, it does not present strong opportunities for first-last mile services.

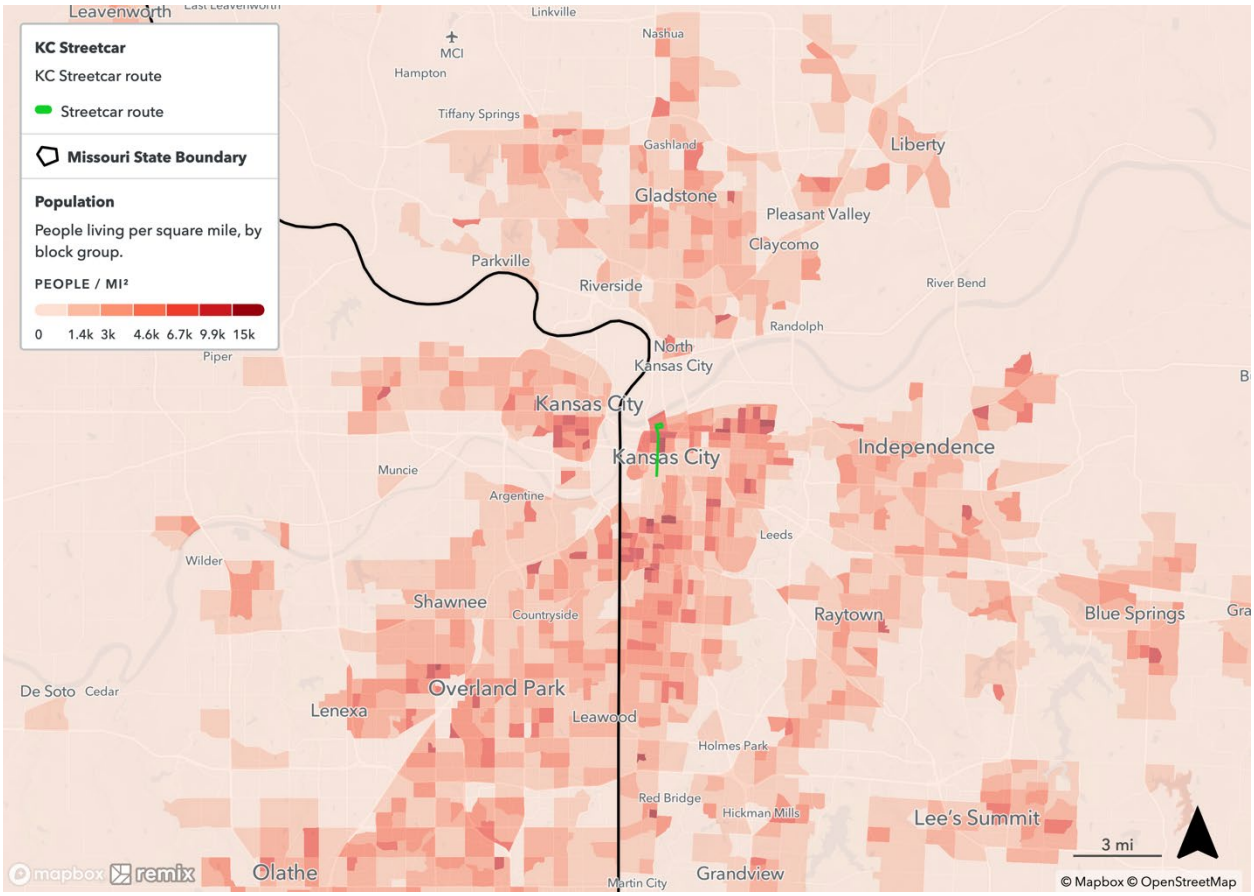


Figure 37 Kansas City Streetcar route

City of Independence (IndeBus)

IndeBus serves Independence with six bus routes. Service operates at hourly frequencies and greater for six days of the week (Monday through Saturday). Routes primarily serve central Independence, branching west to Blue Ridge Crossing.

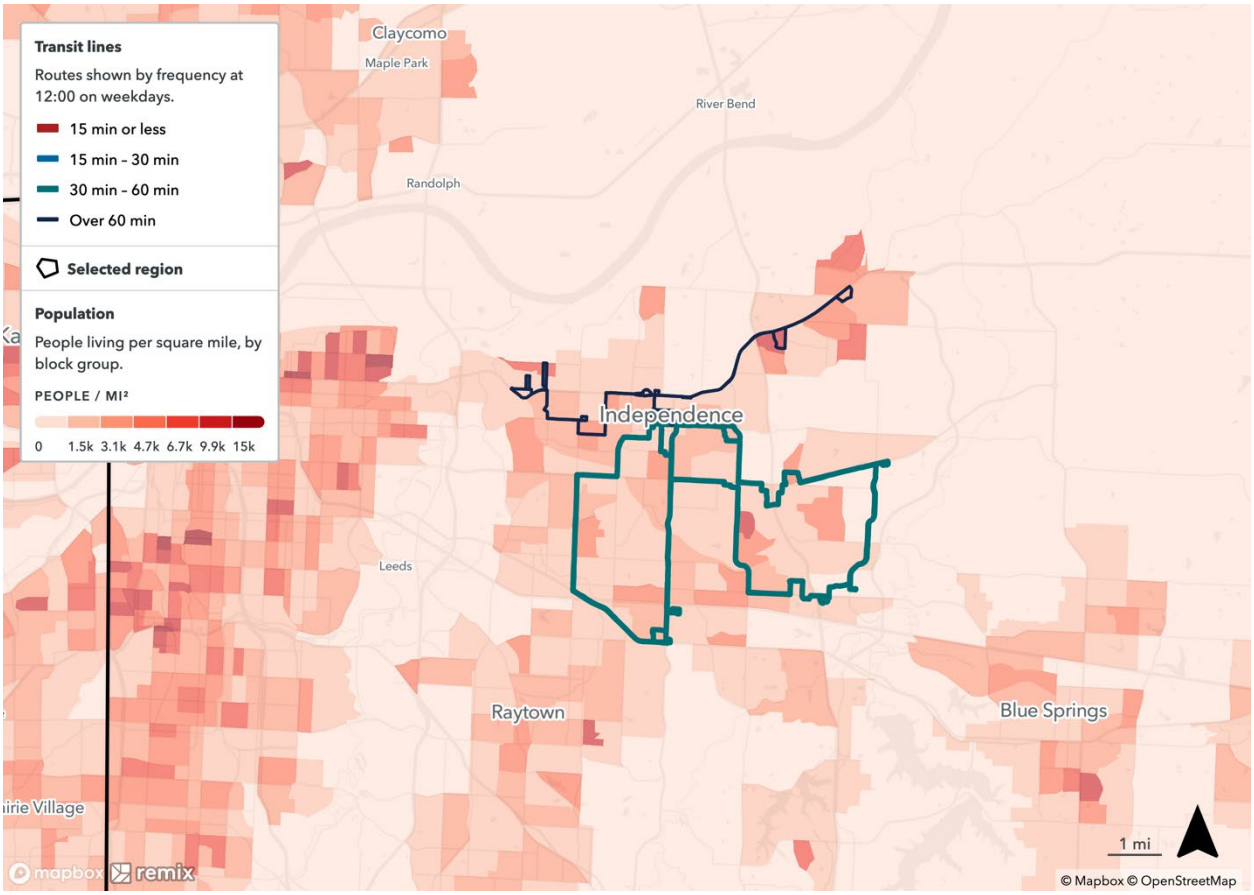


Figure 38 IndeBus fixed-route lines by frequency

City of Springfield (CU Transit, The Bus)

The Bus operates fixed-route transit in Springfield, Missouri. Sixteen routes run east-west and north-south throughout the city. Routes run at frequencies of up to 27 minutes at the most frequent and 60 minutes at the least frequent, with four routes that only offer service on weekends.

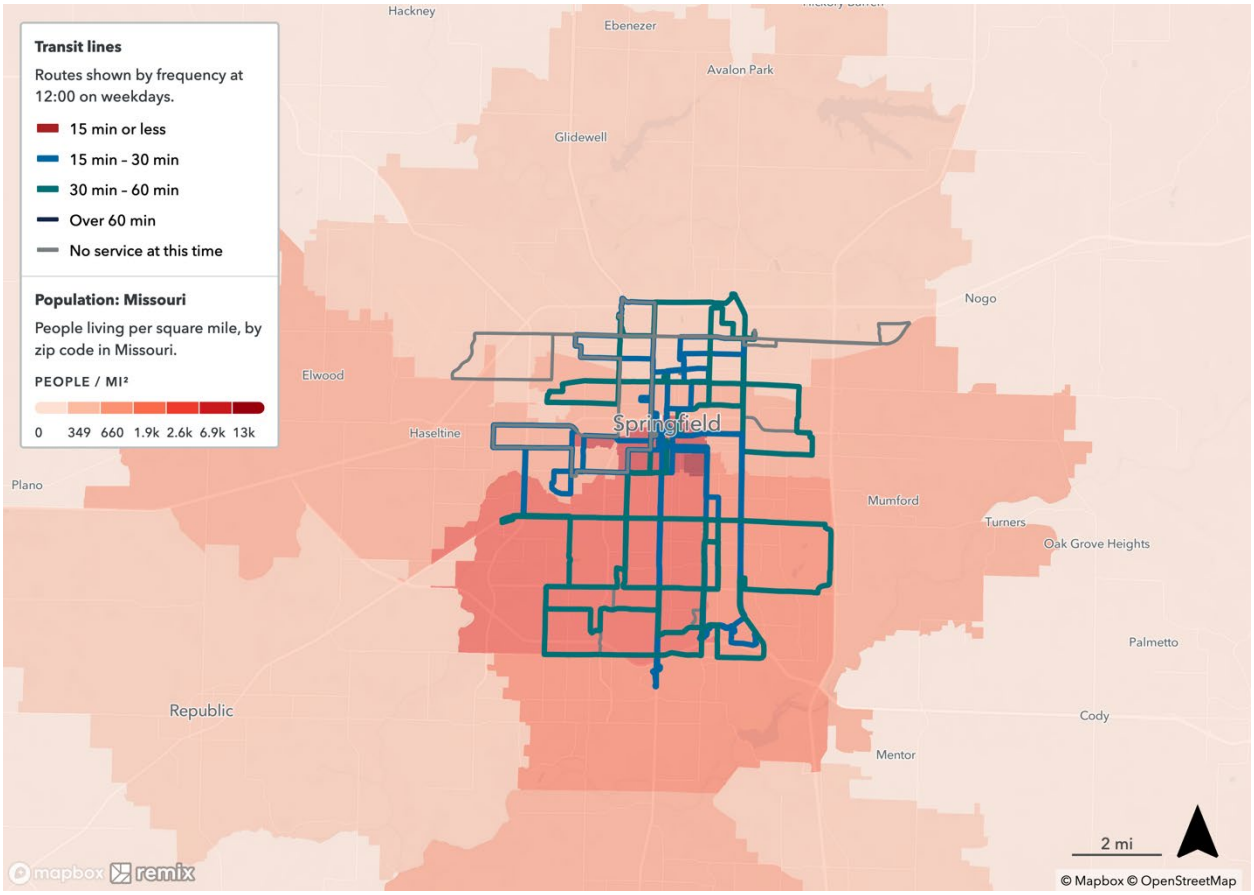


Figure 39 The Bus fixed-route lines by frequency

Go COMO

Go COMO operates six fixed-route bus lines in Columbia, Missouri, serving the city center and its surrounding areas, including the University of Missouri, which serves as a key destination and demand generator for the service. Routes operate six days per week (Monday through Saturday) at very low frequencies of 60 minutes and greater.

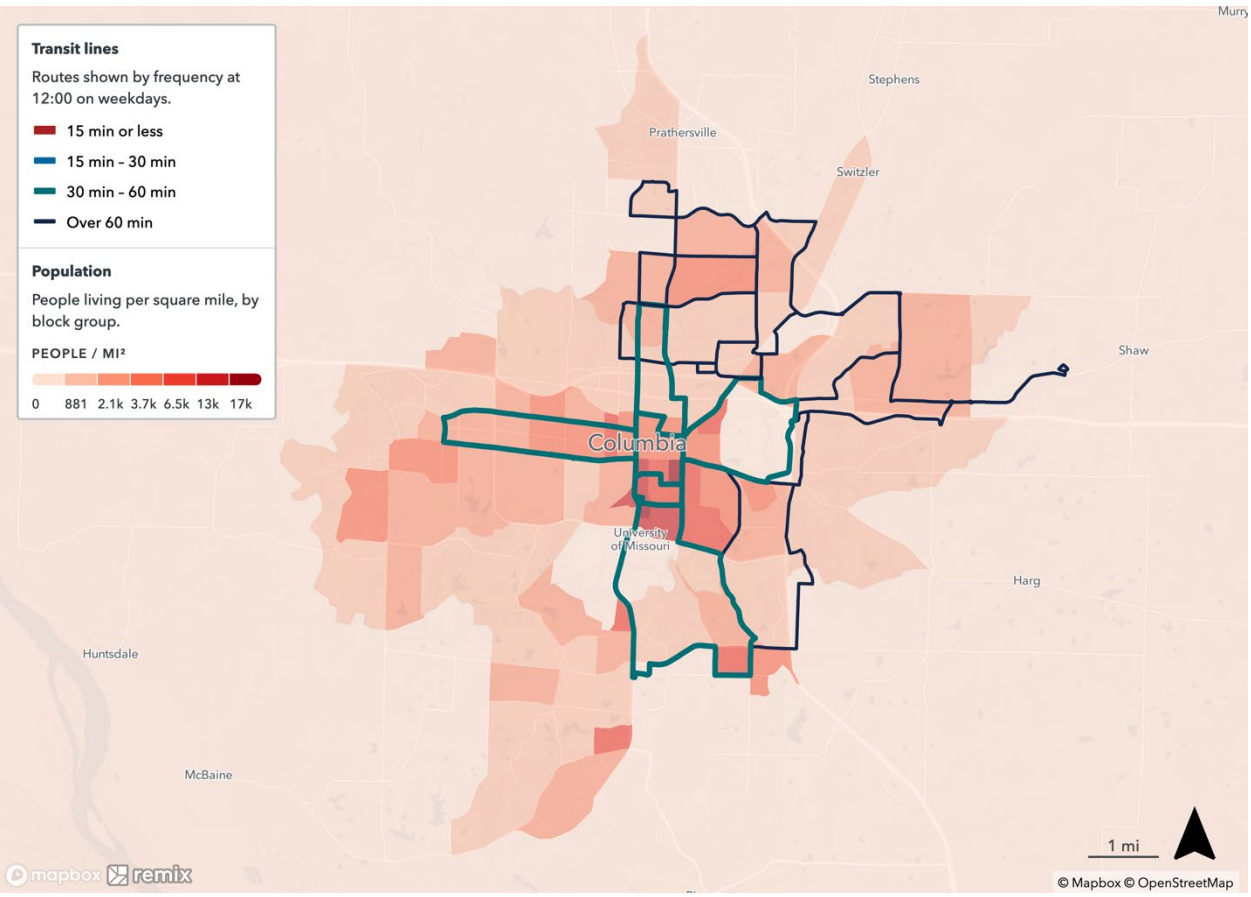


Figure 40 Go COMO fixed-route lines by frequency

Go St. Joe

St. Joseph Transit currently serves eight fixed routes encompassing the St. Joseph city limits as well as Elwood, Kansas. While the service has pre-set stops throughout the city and operates on a predetermined fixed-route schedule, it can also operate as a deviated fixed route, allowing curb-to-curb route deviations on a pre-scheduled or on-demand basis.

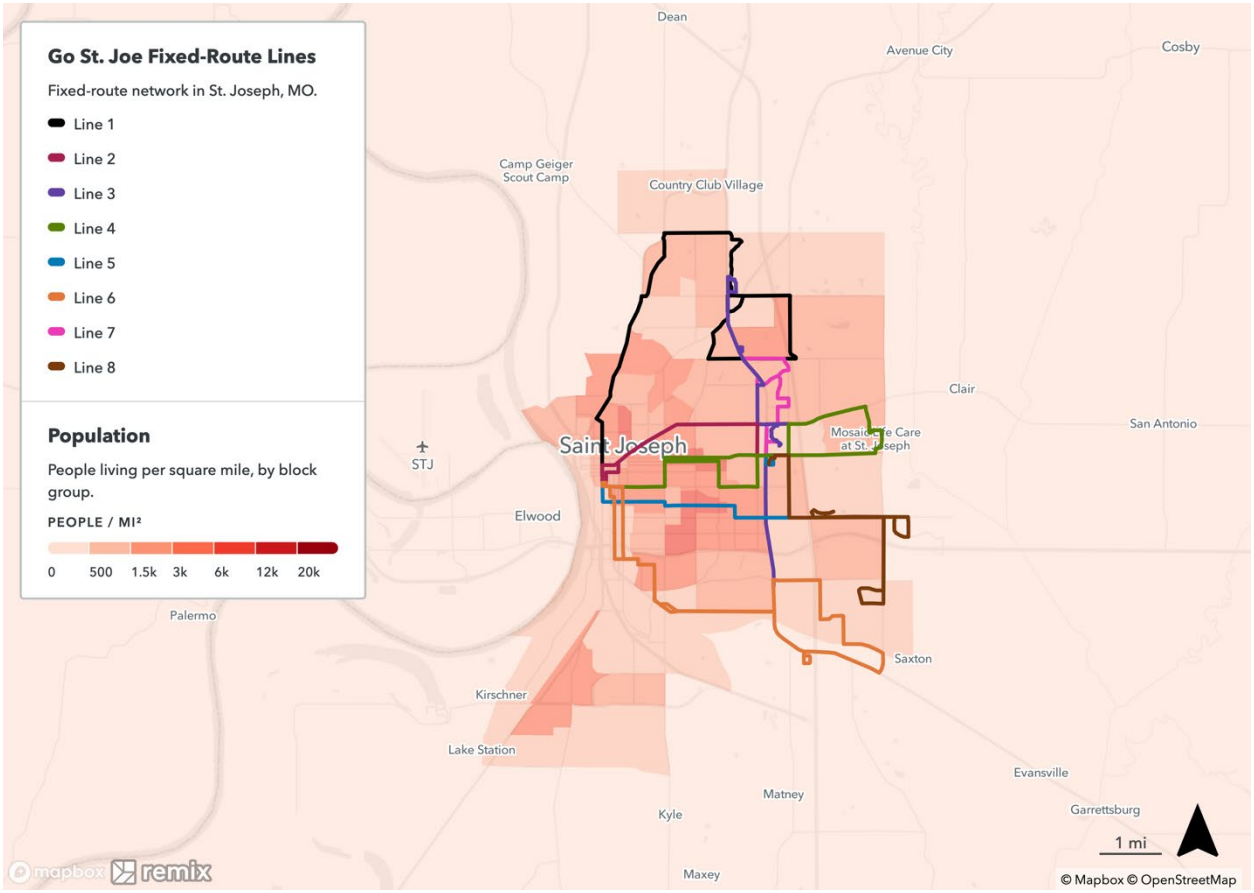


Figure 41 Go St. Joe fixed-route lines

Cape Girardeau County Transit Authority

Cape Girardeau County Transit Authority (CGCTA) operates two fixed-route bus lines in Cape Girardeau. The Red Route runs east-west from the CGCTA offices to the Town Plaza, while the Blue Route runs east-west from the CGCTA offices to the Southeast Hospital. Service operates from around 8 am to 3 pm from Monday to Friday and is fare-free.

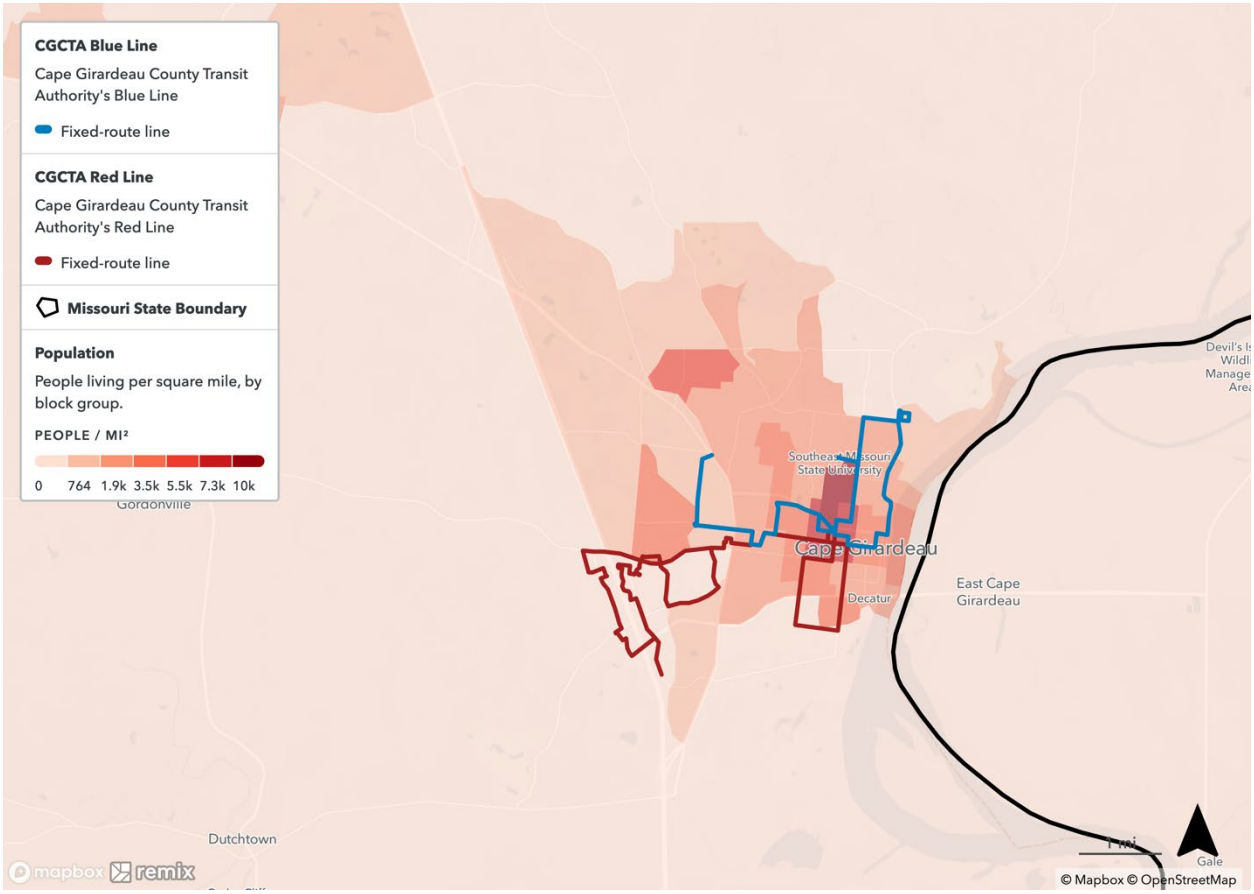


Figure 42 Cape Girardeau fixed-route line routes

Jefferson Transit (JeffTran)

The city of Jefferson City, Missouri, has six fixed-route lines, all of which are operated by JeffTran and run at frequencies of 40 minutes. The routes offer coverage in the city center and surrounding areas, spanning a total area that is roughly nine miles from east to west and up to four miles from north to south. Relative to services in Kansas City and St. Louis, the service has a smaller service area and much lower-frequency routes that may result in long travel times for passengers looking to transfer to the service from other transit services.

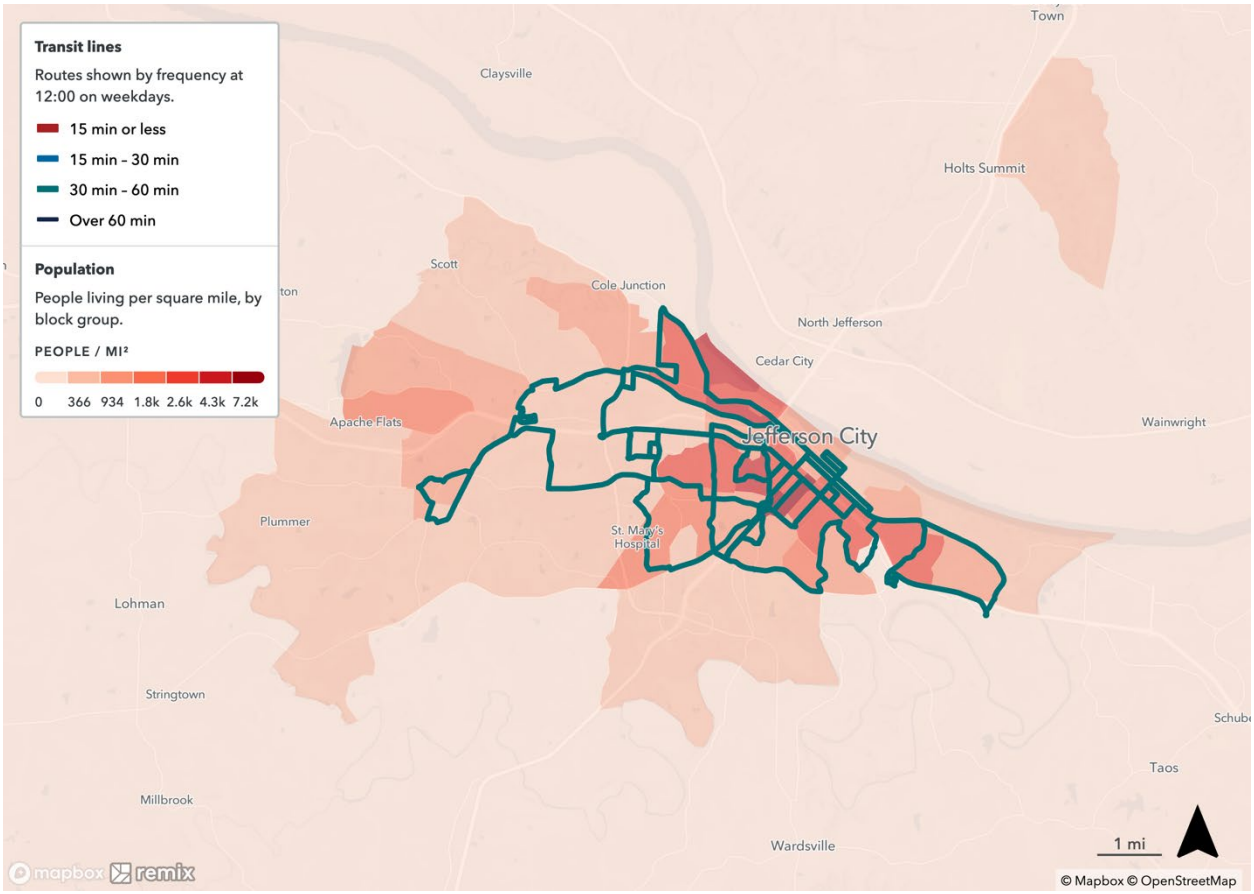


Figure 43 JeffTran fixed-route lines by frequency

S.1.3 Intercity Fixed Routes

Amtrak

Amtrak, the United States' national passenger rail operator, operates more than 30 train routes throughout the US.[9] Missouri's eleven Amtrak stations located in Hermann, Independence, Jefferson City, Kansas City, Kirkwood, La Plata, Lee's Summit, Sedalia, St. Louis, Warrensburg, and Washington serve as stops along key routes across the state and country. Hermann, La Plata, Sedalia, Warrensburg, and Washington, all located in the central region of the state between Kansas City and St. Louis, lack traditional fixed-route service. Through OATS Transit, Sedalia and Warrensburg offer deviated fixed-route services, while Hermann, La Plata, and Washington all have limited dial-a-ride service also provided by OATS Transit. However, operating hours and coverage of these services are limited, indicating an opportunity for improved first-last mile connections to Amtrak stops throughout the state.

Table 21 Amtrak routes in Missouri

Service	Route	Stops in Missouri	Trains per Day
Lincoln Service	St. Louis – Chicago	St. Louis	6
Missouri River Runner	St. Louis – Kansas City	Kansas City, Independence, Lee's Summit, Warrensburg, Sedalia, Jefferson City, Hermann, Washington, Kirkwood, St. Louis	2
Texas Eagle	Chicago – Los Angeles	St. Louis, Arcadia, Poplar Bluff	2
Southwest Chief	Chicago – Los Angeles	La Plata, Kansas City	1

Greyhound

Greyhound is the largest provider of intercity long-distance bus transportation in the US, serving around 2,300 stations across North America.[10] Buses operate between a wide range of cities and states, with routes running throughout the day. Missouri has several Greyhound stations located throughout the state in Bowling Green (Ayerco), Leavenworth, Hannibal, Joplin, Columbia (Wabash Station), Jefferson City, Osceola, Springfield CU Transit Center, Warrensburg

[9] Amtrak, n.d. Amtrak Facts. Accessed July 31, 2024. https://www.amtrak.com/about-amtrak/amtrak-facts.html.
[10] Greyhound, n.d. About Greyhound. Accessed July 31, 2024. https://www.greyhound.com/company/about.

Chamber of Commerce, Collins (Pilot Travel Center), Berryville (Rancho Latino), Kansas City, Rich Hill, and St. Louis (Lambert Field).[11]

Jefferson Lines
Jefferson Lines provides daily long-distance intercity bus service to fourteen states in the Heartland region of the US: Washington, Idaho, Montana, Wyoming, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Minnesota, Iowa, Missouri, Arkansas, Wisconsin, and Tennessee. Several Jefferson Lines routes run through Missouri in the north-south direction, connecting Missouri with both neighboring states such as Kansas, Iowa, and Arkansas, as well as states further north and west like Minnesota and North Dakota. Kansas City serves as a critical transfer point for all routes that run through Missouri.[12]

Burlington Trailways
Burlington Trailways is a privately owned and operated coach bus company that provides regional and national intercity bus service. Several Burlington Trailways routes operate in Missouri, with stops located in Bowling Green, Canton, Hannibal, St. Louis, and Troy.[13] Buses run as fixed routes, but passengers must call Burlington Trailways at least 24 hours in advance of travel to ensure that a bus will stop at a given stop location.

Other long-distance routes
OATS Transit and Southeast Missouri Transportation System (SMTS) offer long-distance fixed-route service to connect smaller towns and cities. The majority of these routes run only several days of the week and must be reserved ahead of time. In general, long-distance routes of this nature do not serve commuters who require regular, direct fixed routes to commute to places of employment on a daily basis.

- OATS Transit primarily operates as a dial-a-ride service in rural areas in Missouri. However, the agency also offers four intercity express routes during limited weekdays, all of which must be reserved in advance.[14] Buses will deviate up to five miles from the fixed route to pick up people outside of the predetermined pickup and dropoff points, and are as follows: MidMO Missouri Express Routes, with stops in Camdenton, Osage Beach, Eldon, and Jefferson City; Northeast Missouri Express Routes, with several stops along the route between Northeast Missouri, Columbia, and St, Louis; Northwest Missouri to St. Joseph and Kansas City Express Routes, which has stops between Northwest Missouri, St. Joseph, and Kansas City; and the Southwest Missouri to

[11] Greyhound, n.d. Bus Route Overview. Accessed July 31, 2024. https://www.greyhound.com/bus-routes.
[12] Jefferson Lines, n.d. Missouri Bus Stops. Accessed July 31, 2024. https://www.jeffersonlines.com/bus-stops/missouri/.
[13] Burlington Trailways, n.d. Fixed Route: Missouri. Accessed July 31, 2024. https://burlingtontrailways.com/locations/missouri/.
[14] OATS Transit, n.d. Bus Schedules. Accessed July 31, 2024. https://www.oatstransit.org/schedules.

Springfield Express Routes, which consists of multiple stops between Southwest Missouri and Springfield.

- SMTS, another rural transit agency, offers long distance service in all 20 of the southeastern Missouri counties that it serves; however, areas served and hours of operation of long-distance service vary greatly between counties.[15] Iron County, Washington County, St. Francois County, Ste. Genevieve County, Perry County, and Madison County offer long-distance service five days of the week, but locations served vary between days. All other counties offer long-distance service one to four days per week or on variable days throughout the month, such as the second Tuesday or every other Thursday. Though long-distance routes vary between days of the week and between counties, locations served include St. Louis, Columbia, Rolla, Cape Girardeau, Sikeston, Poplar Bluff, Springfield, West Plains, Thayer, Alton, Festus, St. Francois County, Farmington, Park Hills, and Jefferson County. SMTS also operates three deviated fixed route bus services, known as CONNECT, in Farmington (St. Francois), Poplar Bluff, and Rolla (Phelps County). Buses have several predetermined stops in addition to stops that can be requested while onboard. Route deviations must be requested a day in advance and allow riders to board or alight the bus within ¼-mile of the fixed route. Deviated fixed-route service does not operate on weekends.

S.1.4 Other Transit Services

Missouri has several types of demand-response transportation, or transportation that operates based on trip requests rather than a fixed route or schedule. The most common form of demand-response transit in Missouri is dial-a-ride service, which generally serves rural communities with low population density. These communities often have widely dispersed key destinations and population centers that are not conducive to using fixed routes and schedules. Other dial-a-ride programs serve small cities and urbanized areas, supplementing existing fixed-route options. Demand-response services cover much of the state, ensuring that service is provided to areas that do not have a traditional fixed-route service.

Regional Dial-a-Ride Service

Several demand-response transit services operate at the regional level, offering service to multiple counties throughout the state.

OATS Transit: OATS Transit operates demand-response transit, shuttles, and/or deviated fixed-route service for the general public in 87 counties in Missouri. Service type and scope varies between counties, but generally requires a reservation at least 24-hours in advance for demand-response services. Demand-response services generally operate as door-to-door services, bringing riders directly to and from their requested destinations. Some areas offer shuttle services in lieu of or in addition to door-to-door dial-a-ride services. Unlike traditional dial-a-ride service, shuttle services only offer rides to and from predetermined destinations. Depending on the area, service available may vary based on existing services, rider age, and/or

[15] SMTS, n.d. Service Area. Accessed July 31, 2024. https://ridesmts.org/service-area/.

rider accessibility requirements. For example, in Buchanan County, dial-a-ride service is available to anyone, regardless of age, if traveling within the county but outside of St. Joseph city limits, since fixed-route service is provided within the city limits. However, older adults and individuals with disabilities can use dial-a-ride service within the city of St. Joseph as well as throughout Buchanan County. Some areas of the state may also offer deviated fixed-route service, which operates on a fixed schedule with fixed stops and allows riders to prebook off-route drop-offs within a predefined radius.

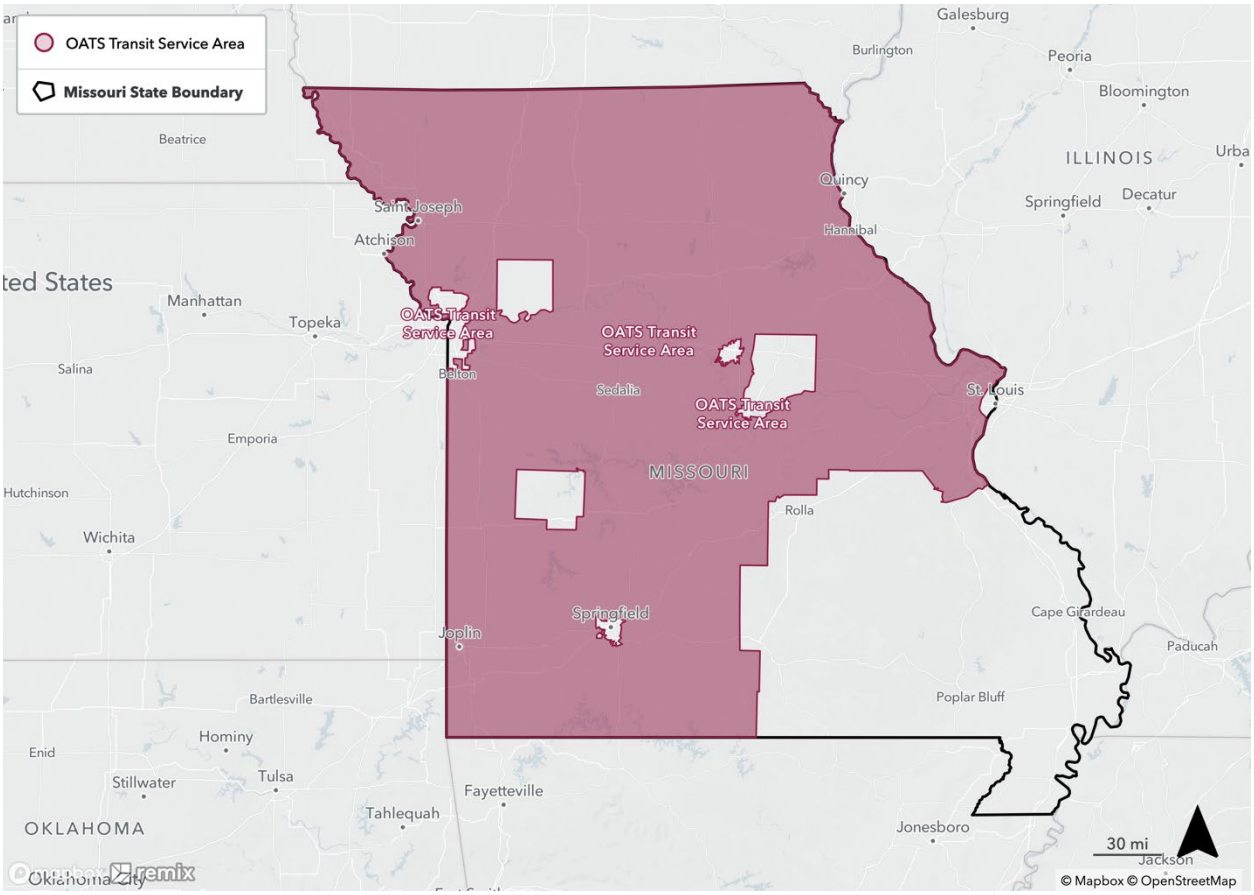


Figure 44 OATS Transit service area

Southeast Missouri Transportation System (SMTS): SMTS provides dial-a-ride service to 20 counties in the southeastern region of the state. Rides must be requested by noon the day before service is needed. Service varies by county, with each county offering a combination of in-county door-to-door service in addition to long-distance shuttle service to other neighboring cities and counties. In general, door-to-door dial-a-ride rides can be requested from anywhere to anywhere within a given county.

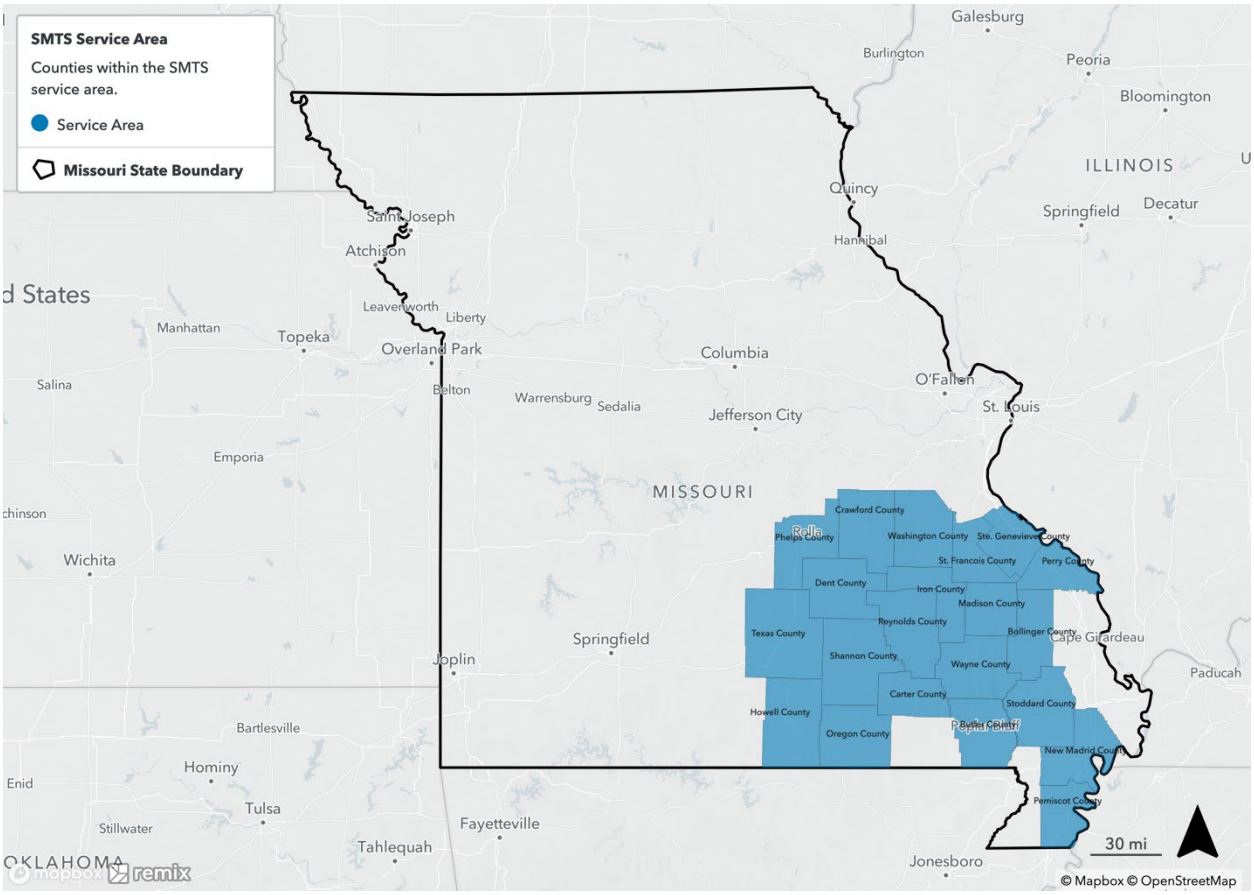


Figure 45 SMTS service area

Countywide and City-wide Dial-a-Ride Service

Other demand-response transit services in Missouri provide countywide transportation. These are still demand-response services, albeit on a smaller scale than the regional demand-response services provided by OATS and SMTS. Services generally operate as dial-a-ride services, enabling riders to pre-book rides at least 24 hours in advance. Given the sizeable service areas, these services tend to have longer trip times and may see higher costs per trip than services that operate in smaller geographies. Missouri's nine countywide demand-response services are listed below.

Missouri also contains several dial-a-ride transit services that operate in small cities and towns. These services are distinct from those in larger urban transit services, as they do not serve densities significant enough to warrant a fixed-route system. Services generally operate within city and town limits but may offer long-distance shuttle services to neighboring towns.

Table 22 Countywide and city-wide dial-a-ride services in Missouri

Service	County Served	Operator	Weekend Service?
County-wide Services			
Cape Girardeau County Transit Authority (CGCTA)	Cape Girardeau County	CGCTA	Yes
Dunklin County Transit Services (DCTS)	Dunklin County	DCTS	No
Franklin County Transit System (FCTS)	Franklin County	OATS Transit	No
Harrison County Transit System (HCTS)	Harrison County	OATS Transit	No
The Linc	Lincoln County	OATS Transit	No
Mississippi County Transit System (MCTS)	Mississippi County	MCTS	No
Ray County Transportation (RCT)	Ray County	RCT	No
Ripley County Transit (RCTS)	Ripley County	RCTS	No
Scott County Transit System (SCTS)	Scott County	SCTS	Yes
SERVE Tran	Callaway County	SERVE Tran	No
Town- and City-wide Services			
Kirk-Tran	Kirksville	OATS Transit	No
Truman Area Transportation Service (TATS)	Truman	OATS Transit	No
El Dorado Springs Transit Services (EDSTS)[16]	El Dorado	EDSTS	Yes
Clinton Area Transportation Service (ATS)	Clinton	ATS	No
West Plains Transit System (WPTS)	West Plains	WPTS	No
City of Joplin Metro Area Public Transit System (MAPS)	Joplin	MAPS	No
St. Charles Area Transit (SCAT)	St. Charles	SCAT	No
Bloomfield Transit System (BTS)	Bloomfield	BTS	No
City of Houston Transit System (HTS)	Houston	HTS	No

[16] EDSTS lists their service as a taxi service.

ADA Paratransit

Per Title VI of the US Civil Rights Act and the Americans with Disabilities Act (ADA), persons with disabilities may not be denied the benefits of federally funded services, including public transit. To maintain equitable transit access, agencies are required to operate accessible paratransit service in the vicinity of fixed-route services. In urbanized areas in Missouri that have fixed-route services, the regions' transit agencies operate paratransit services as required by the ADA. Although not technically considered ADA paratransit, providers of demand-response services throughout the more rural regions of the state, such as OATS Transit, frequently also provide accessible service for older adults and adults with disabilities. Similarly, other specialty health and human service agencies also provide transportation services for older adults and adults with disabilities throughout the state (see below).

S.1.5 Human Service Agencies

Several human service agencies provide client transportation services in Missouri. These agencies serve a range of client types, from seniors to veterans to people with disabilities, with diverse transportation needs. The scale of each program varies from issuing vouchers to operating fleets of several dozen vehicles, underscoring the complex nature of providing services that meet client needs. Most human service agencies provide transit service on a relatively small scale or only serve specific populations; however, several serve the general population within their service area.

New Growth Transit: New Growth Transit is a volunteer driver program that serves sixteen counties in Missouri.[17] Service is commissioned by the West Central Missouri Community Action Agency. Rides must be scheduled at least 48 hours in advance and are dependent on whether drivers are available at the time of the request.

EZMO Transportation: EZMO Transportation is a volunteer driver program that provides free transportation to residents of Jefferson County and Franklin County traveling within county boundaries.[18] The service is commissioned by the Jefferson Franklin Community Action Corporation and requires riders to schedule rides at least 48 hours ahead of their requested pickup time.

[17] New Growth Transit, n.d. New Growth Transit. Accessed July 31, 2024. https://www.newgrowthmo.org/transit.
[18] Jefferson Franklin Community Action Corporation, n.d. EZMO Transportation. Accessed July 31, 2024. https://www.jfcac.org/ezmo.html.

S.2 Commute Patterns

S.2.1 Employment

Across the state of Missouri, there are roughly 2.7 million jobs as of 2022.[19] Jobs are primarily located in the St. Louis metro area (1.1 million jobs) and Kansas City metro area (580,000 jobs), which, combined, account for more than half of employment opportunities throughout the state. The city of St. Louis has the highest job density in the state (3,500 jobs/mi²), followed by Springfield (1,700 jobs/mi²). According to the US Census Bureau, as of 2022 predominant job industries in Missouri are education, health care and social assistance (24% of jobs), manufacturing (12% of jobs), retail trade (11% of jobs), and professional, scientific, management, and administration (10% of jobs).[20] Rural parts of Missouri have comparatively low job density, as shown below.

Table 23 Employment in Missouri cities and metro areas

City	Population	Jobs	Density (Jobs per sq. mi.)
State-wide			
Missouri	6.2 million	2.7 million	39 jobs/mi²
Metro Areas			
St. Louis (Metro Area in Missouri)	2.1 million	1.1 million	300 jobs/mi²
Kansas City (Metro Area in Missouri)	1.3 million	580,000	100 jobs/mi²
Cities with Fixed-Route Transit Services			
Kansas City	500,000	315,000	1,000 jobs/mi²
St. Louis	300,000	220,000	3,500 jobs/mi²
Springfield	170,000	145,000	1,700 jobs/mi²
Columbia	125,000	80,000	1,200 jobs/mi²
Independence	120,000	40,000	500 jobs/mi²
St. Joseph	70,000	40,000	850 jobs/mi²
Jefferson City	40,000	45,000	1,200 jobs/mi²
Cape Girardeau	40,000	25,000	850 jobs/mi²

[19] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

[20] U.S. Census Bureau, n.d. OnTheMap: Missouri. Accessed July 13, 2024. https://onthemap.ces.census.gov/.

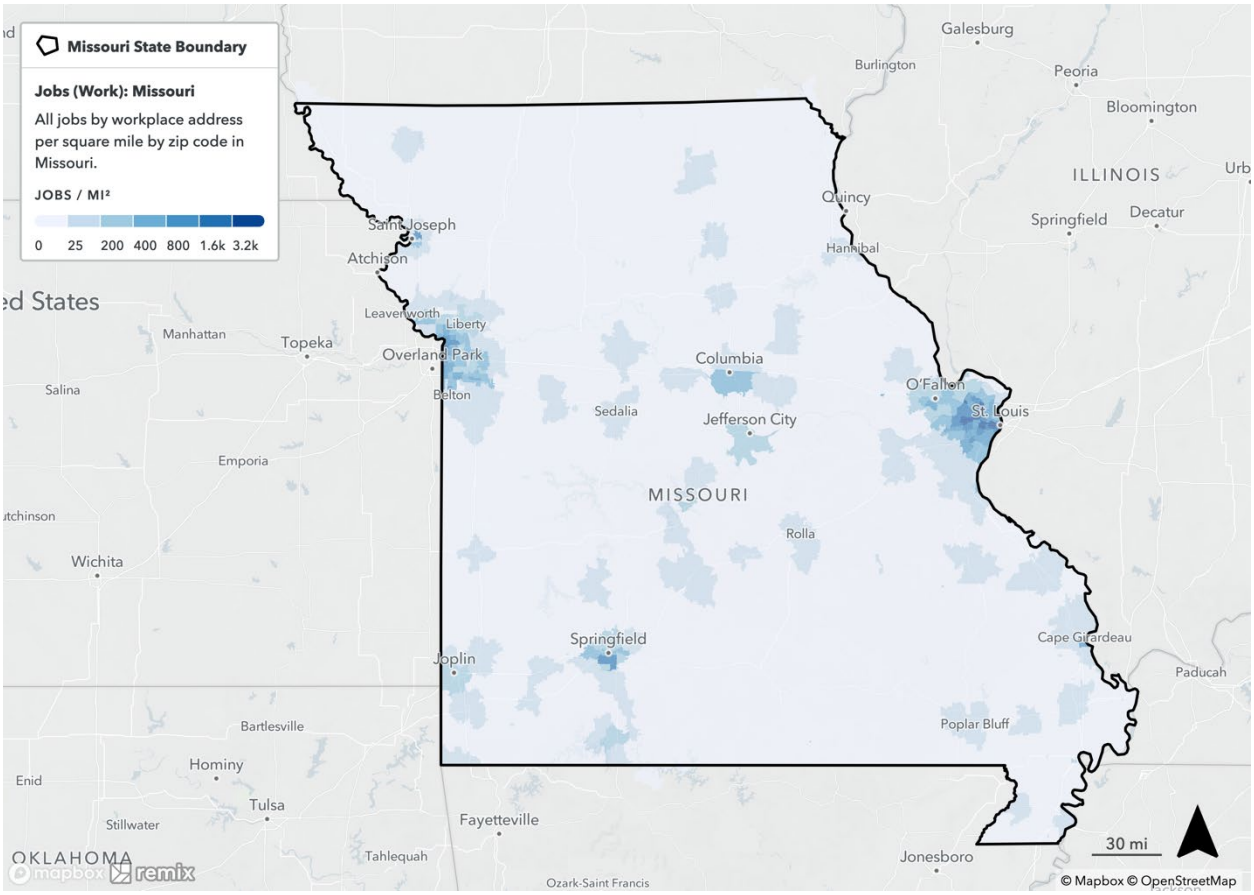


Figure 46 Employment density in Missouri[21]

Top Employers in Missouri

Large employers in Missouri account for a significant portion of commuting trips in Missouri. Understanding where workers are traveling to work most frequently relative to where existing transit networks provide coverage is crucial to filling gaps in commuter transit services and driving mobility for the employed population of the state. Some employers have one or several main facilities, with most employees commuting to a single location. Others, like Walmart or various healthcare systems, have offices across the state that may be located in less densely populated areas and employ fewer people at each location.

[21] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

Table 24 Largest private sector employers in Missouri[22]

Rank (Based on Number of Employees)	Employer	Industry	Number of Employees	Percent of Employment	Region
1	Walmart	Retail	48,000	1.5%	State-wide
2	BJC Healthcare	Healthcare	25,000	0.8%	State-wide
3	Washington University	Higher Education	21,000	0.7%	St. Louis and surrounding
4	Mercy Health System	Healthcare	20,000	0.6%	State-wide
5	Boeing	Manufacturing	17,000	0.5%	St. Louis and surrounding
6	SSM Healthcare System	Healthcare	13,000	0.4%	State-wide
7	Lester E. Cox Medical System	Healthcare	12,000	0.4%	Southwestern Missouri
8	Oracle Corporation	Computer Software	12,000	0.4%	St. Louis and surrounding
9	Schnuck Markets	Retail	8,000	0.2%	State-wide
10	St. Luke's Hospital System	Healthcare	6,000	0.2%	St. Louis and surrounding, Kansas City and surrounding

S.2.2 Commuting Distance

Commuting distance is an important measure of commute patterns. Distance traveled by commuters indicates where commuters may be traveling to and from and pinpoints areas of improvement in transit options throughout the state. Longer commutes are more common in rural areas than in urban areas in general, and therefore simply reflect standard area commute patterns in which rural residents travel to population centers or throughout rural regions for work. Patterns of longer commutes in less rural areas present an opportunity to increase transit

[22] IBISWorld, n.d. Missouri – State Economic Profile. Accessed June 30, 2024. https://www.ibisworld.com/united-states/economic-profiles/missouri/.

options to enable faster and more direct connections between areas of high demand, particularly in areas with high proportions of commutes over 60 minutes in length. However, as demonstrated in **Figure 44 Commute time by geography in Missouri (in minutes)** below, very few Missouri residents commute for over an hour.

In 2022, Missourians had an average 23.7 minutes of travel time to work, which is nearly three minutes less than the national average of 26.4 minutes.[23] Missourians reported an average one-way commute of 17.6 miles in 2022, which is below the national average (18.1 miles), according to the U.S. Census Bureau. Counties in the northwest and west central regions of the state experience some of the longest commutes in the state (over 35 miles one-way, on average). Long commutes in these regions may be explained by fewer direct transit routes and regional tendencies to commute to nearby cities for work, such as St. Joseph or the Kansas City metro area from northwest Missouri and Springfield and Sedalia from west central Missouri.[24]

Notably, fewer Missouri residents have reported commuting to work in general over the last several years since the COVID-19 pandemic, with 25% of Missouri households reporting someone working from home at least one day per week in 2023 relative to 23% of households in 2022, according to the U.S. Census Bureau. Work from home trends suggest smaller commute distances traveled by Missouri residents and lower demand for transit services amongst commuters as a whole.

[23] U.S. Census Bureau, n.d. "S0801: Commuting Characteristics by Sex." American Community Survey (ACS) 5-year (2022-2018). Accessed July 1, 2024. https://data.census.gov/table?q=S0801:+COMMUTING+CHARACTERISTICS+BY+SEX.

[24] Krohm, Justin, and Spell, Alan. November 20, 2023. "Commuting Patterns and Hybrid Work." Missouri Economy Indicators, Vol. 4, Iss. 14. Accessed July 14, 2024. https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/ExCEED/Docs/MissouriEconomy_Commuting_20Nov2023.pdf.

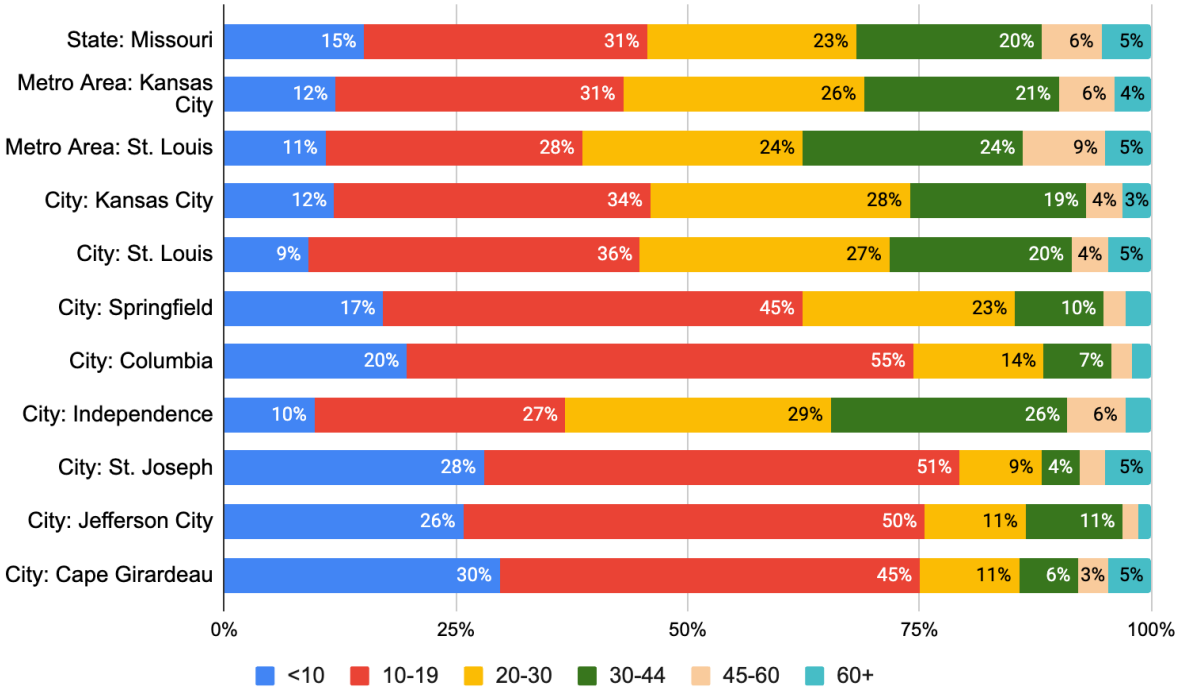


Figure 47 Commute time by geography in Missouri (in minutes) [25]

S.2.3 Transportation to Work

Given that much of the state is rural and lacks frequent fixed-route transit service, over three-fourths of Missouri employees drive alone to work. Another 10% work from home, and 8% carpool. Less than 5% of the population take public transportation, walk, bike, or take a cab to work, per the U.S. Census Bureau.

The highest populations of residents that take public transit to work are located in the state's two most populated cities, St. Louis and Kansas City, which are also home to the state's highest frequency fixed-route transit systems. Columbia also has a relatively high portion of the population that walks to work at 6%, which can likely be attributed to the high population of students in the city.

[25] U.S. Census Bureau, n.d. "S0801: Commuting Characteristics by Sex." American Community Survey (ACS) 5-year (2022-2018). Accessed July 1, 2024. https://data.census.gov/table?q=S0801:+COMMUTING+CHARACTERISTICS+BY+SEX.

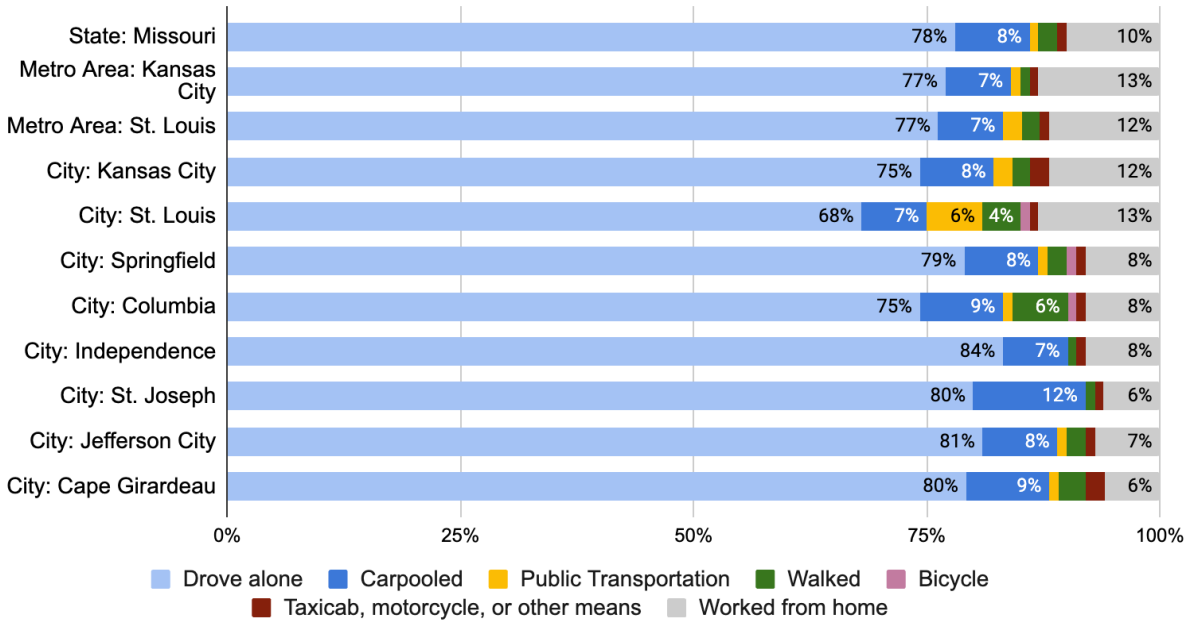


Figure 48 Means of transportation to work in Missouri[26]

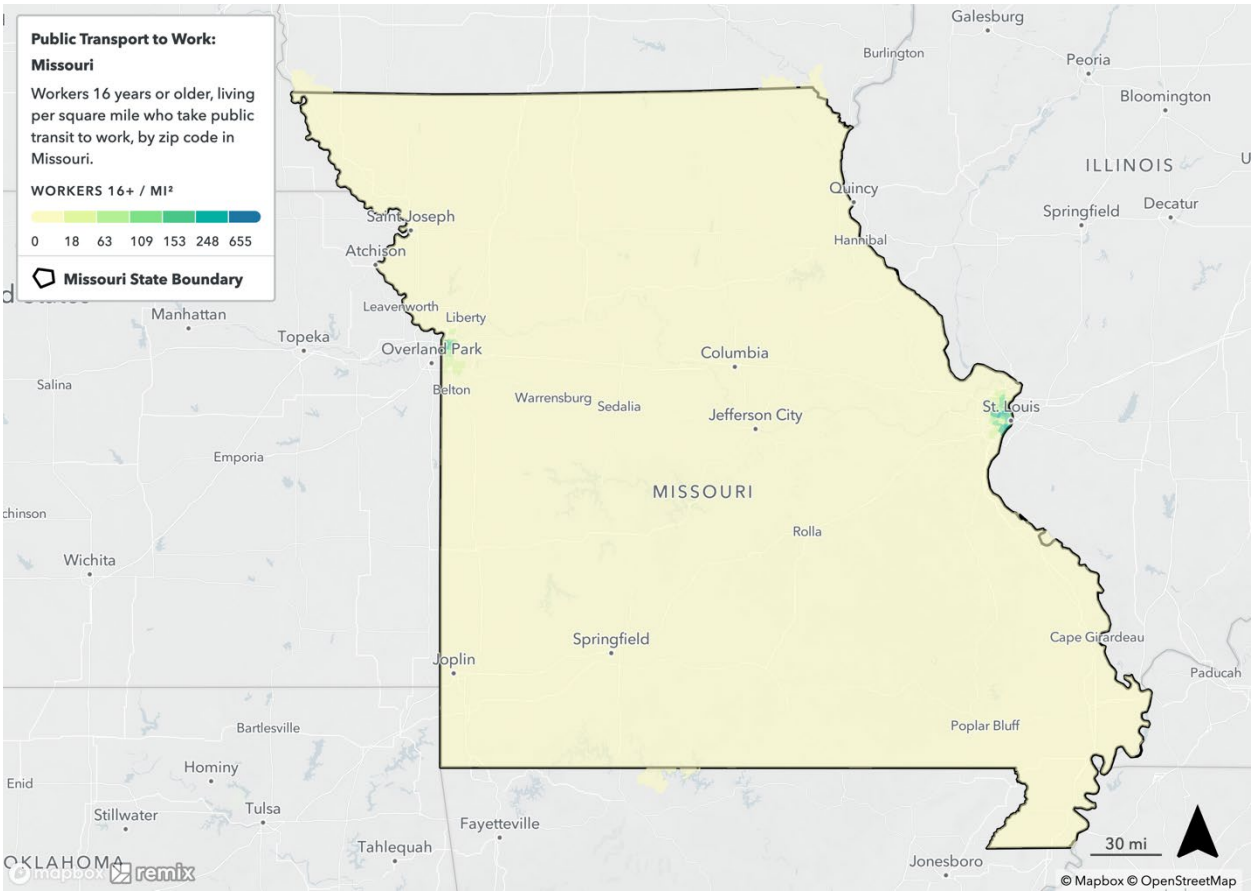


Figure 49 Public transport to work in Missouri

S.3 Demographic Analysis

In the United States, several demographic and socioeconomic factors are positively correlated with transit usage. Mapping these factors helps illustrate which areas have higher transit need, and therefore may require additional transit services in order to serve all residents who may have unmet mobility needs.

Key takeaways from the demographic analysis are as follows:

- Larger towns and cities throughout the state have the highest populations and the highest number of individuals that are most likely to use transit, making them hubs for employment and key destinations that are likely to drive demand for transit throughout the state.
- Rural, lower-density areas have lower population densities and fewer individuals that are more likely to use transit on average. This is often due to a lack of walkability, bikeability, and transit services and infrastructure; most residents may simply not have access to any means of transit beyond a personal vehicle. This means that the residents who don't own a vehicle may not have access to any type of mobility, making these areas high priority candidates to serve with public transit.
- Missouri has high rates of poverty on average relative to the United States as a whole. While poverty rates are high in urban areas where population density is highest, rural areas like Poplar Bluff and Moberly report some of the highest rates of poverty in the state, suggesting a high need for additional transit service.
- Rates of car-free households are low compared to US averages, higher in cities, which tend to have more walking and biking infrastructure as well as public transit services available. Rates of single-car households are more than double that of car-free households, indicating a strong use case for supplemental transit service to ensure no loss in mobility for multi-person households if one car is in use.

S.3.1 Population Density

As of 2022, Missouri had a population of around 6.2 million people across the state.[27] The state's population density is around 88 people per square mile, making it the 28th most densely populated US state as of 2024.[28] Population density is low throughout most of the state, with the densest clusters located in the state's two largest cities on the eastern and western borders of the state, Kansas City and St. Louis, respectively. Though the city centers themselves are the most densely populated, the Missouri-based portions of the surrounding Kansas City and St. Louis metro areas are also densely populated relative to more rural areas of the state.

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[26] U.S. Census Bureau, n.d. "S0801: Commuting Characteristics by Sex." American Community Survey (ACS) 5-year (2022-2018). Accessed July 1, 2024. https://data.census.gov/table?q=S0801:+COMMUTING+CHARACTERISTICS+BY+SEX.

[27] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

[28] World Population Review. n.d. U.S. States by Density 2024. Accessed July 15, 2024. https://worldpopulationreview.com/state-rankings/state-densities.

Combined, the two metro areas make up more than half of the state's population. Other higher-density areas in the state include Springfield in the southwestern region of the state, as well as Columbia and Joplin in the central region of the state. The state's low-density rural communities make up most of Missouri's geographical area. As of the 2000 census, 97.4% of the state's land area was classified as rural.[29] Rural communities in Missouri are home to roughly 2.1 million people, or 33% of the state's population.[30]

Table 25 Population density of largest Missouri cities and metro areas[31]

Region	Size	Population	Population Density
State-wide			
Missouri	69,000 mi^2	6.2 million	88 people/mi^2
Cities with population over 125,000			
Kansas City	320 mi^2	500,000	1,600 people/mi^2
St. Louis	65 mi^2	300,000	4,600 people/mi^2
Springfield	85 mi^2	170,000	2,000 people/mi^2
Columbia	65 mi^2	125,000	1,900 people/mi^2
Metro Areas			
Kansas City (Metro Area in Missouri)	5,100 mi^2	1.3 million	250 people/mi^2
St. Louis (Metro Area in Missouri)	3,900 mi^2	2.1 million	550 people/mi^2

[29] Missouri Census Data Center, n.d. Ten Things to Know About Urban Vs. Rural. Accessed May 17, 2024. https://mcdc.missouri.edu/help/ten-things/urban-rural.html#:~:text=97.4%25%20of%20the%20land%20area,about%202.6%25%20of%20the%20land.

[30] Missouri Department of Health & Senior Services. n.d. Health in Rural Missouri: Biennial Report, 2022-2023. Accessed May 13, 2024. https://health.mo.gov/living/families/ruralhealth/pdf/biennial2022.pdf.

[31] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

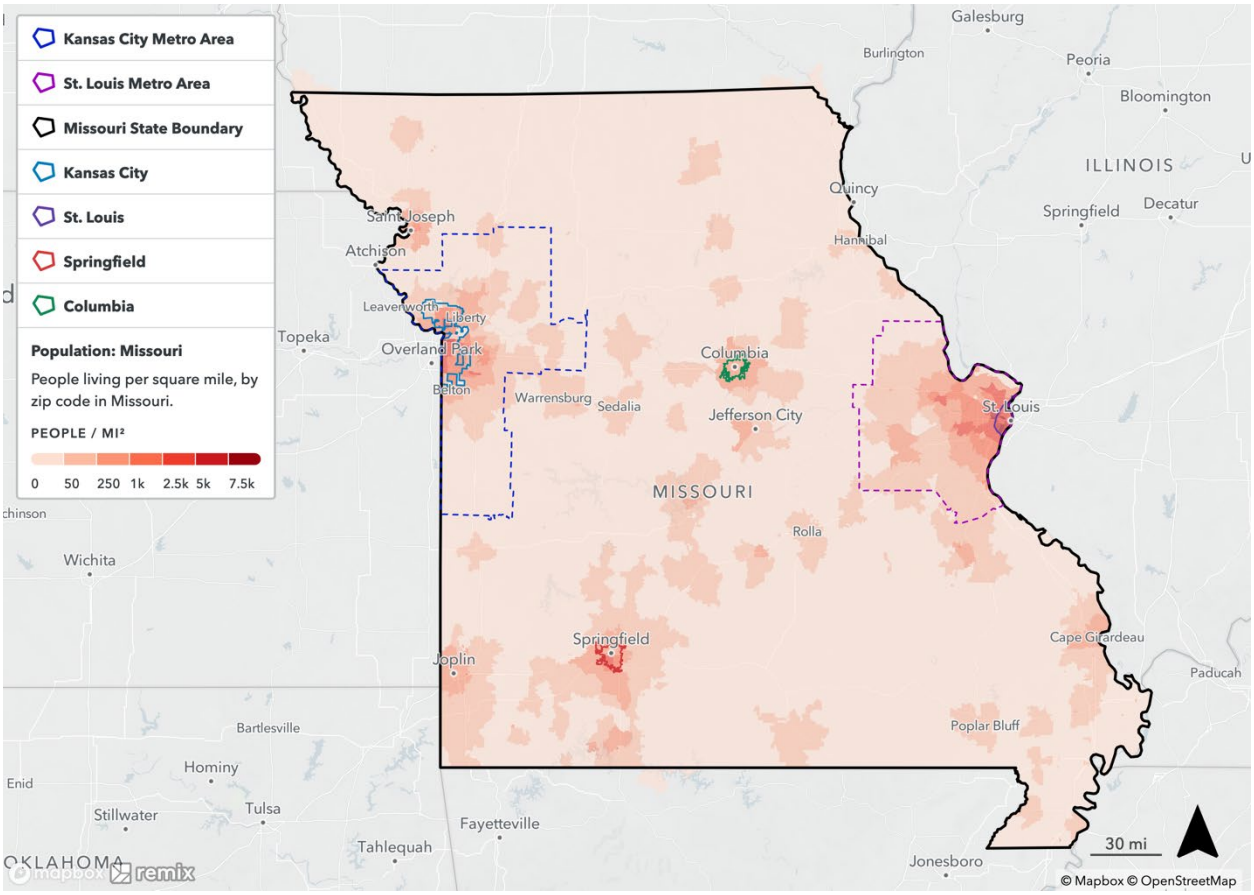

Figure 50 Population density of largest Missouri cities and metro areas[32]

S.3.2 Older Adults

Adults aged 65 and older tend to rely on public transit at higher rates, on average, than the general public, as they may lose the ability to drive with age. Around one million older adults (17% of Missouri's population) reside in Missouri as of 2022.[18] The population of older adults is diffuse across the state of Missouri; however, the largest population of older adults is in Kansas City (71,000 people). The highest density of older adults in the state is in Columbia, followed by St. Louis and its surrounding metro area, and Springfield. Older adult population patterns may be explained by medical services and additional resources catered to older adults that exist in cities relative to more suburban and rural areas. Cities also tend to have more existing public transit infrastructure than rural communities, which may be helpful for adults aged 65 and older who no longer drive.

[32] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

Table 26 Population of older adults in largest Missouri cities and metro areas[18]

Region	Older Adults	Percent of Older Adults
State-wide		
Missouri	1 million	17%
Cities with population over 125,000		
Kansas City	71,000	14%
St. Louis	42,000	14%
Springfield	27,000	16%
Columbia	14,000	12%
Metro Areas		
Kansas City (Metro Area in Missouri)	200,000	16%
St. Louis (Metro Area in Missouri)	350,000	17%

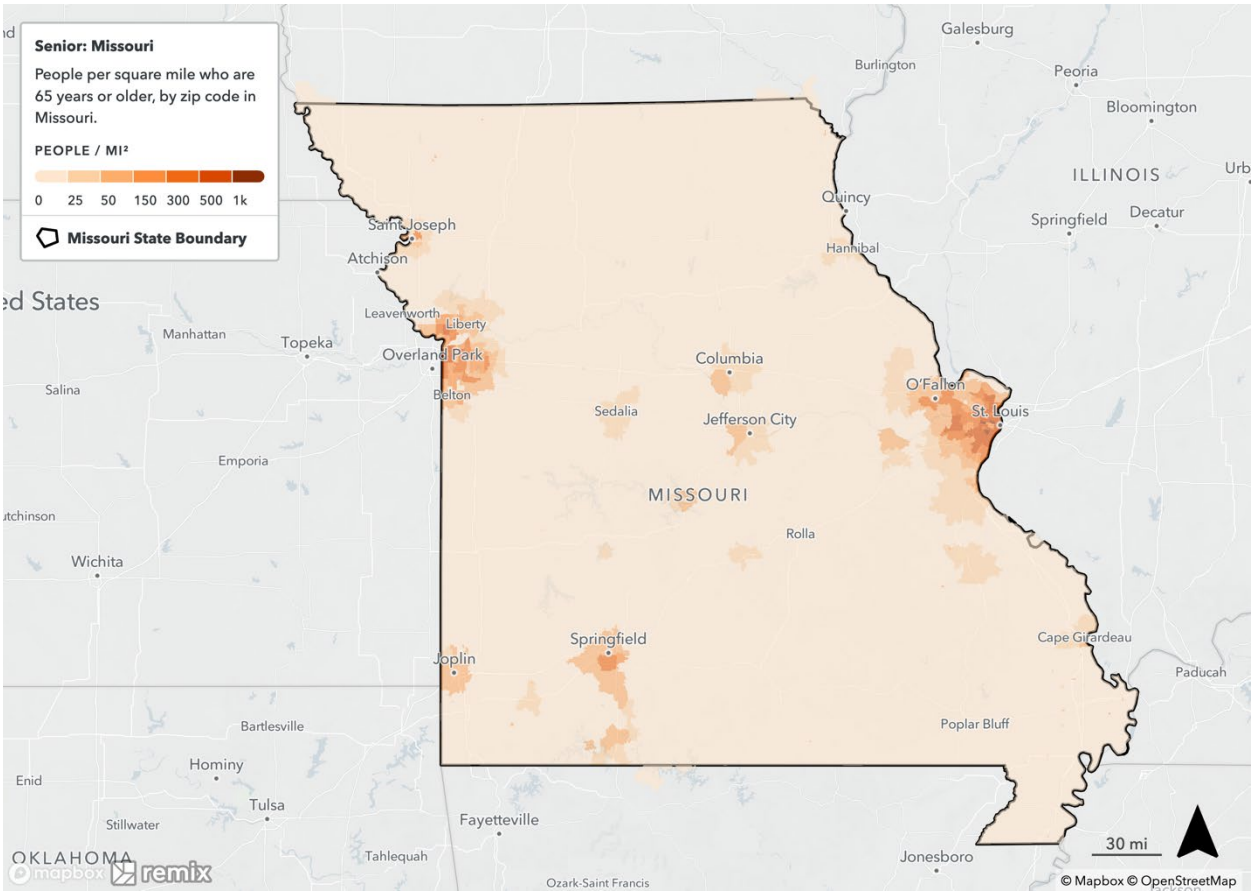

Figure 51 Adults aged 65 and over in Missouri[33]

[33] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

S.3.3 Poverty

Households below the poverty threshold are more likely to use public transit, on average, than the general public, as public transit is generally less expensive than driving or using taxis or rideshares. 13% of Missouri's population, or roughly 800,000 residents, are considered below the poverty line in Missouri as of 2022. As of 2022, the average rate of poverty in the US was around 11.5%, placing Missouri poverty rates slightly above the national average.[34] Overall, the density of residents below the poverty line is diffuse throughout the state but higher in more urbanized areas of the state. Several of Missouri's largest cities report poverty rates that are nearly double the national average poverty rate. Nearly 22% of Columbia residents were reported as living below the poverty line, followed by St. Louis (20%) and Springfield (20%). Residents below the poverty line are particularly densely clustered in the southern and central region of the state. Poplar Bluff, in southwest Missouri, reports a poverty rate of 27%, for example, while Moberly, just north of Columbia, reports a poverty rate of 26%.

Table 27 Residents below the poverty line in largest Missouri cities and metro areas[35]

Region	Residents below Poverty Line	Percent of Residents below Poverty Line
State-wide		
Missouri	800,000	13%
Cities with population over 125,000		
Kansas City	75,000	15%
St. Louis	60,000	20%
Springfield	35,000	20%
Columbia	25,000	22%
Metro Areas		
Kansas City (Metro Area in Missouri)	140,000	11%
St. Louis (Metro Area in Missouri)	200,000	10%

[34] Shrider, Emily A., and Creamer, John. September 12, 2023. Poverty in the United States: 2022. United States Census Bureau. Accessed May 15, 2024. https://www.census.gov/library/publications/2023/demo/p60-280.html.

[35] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

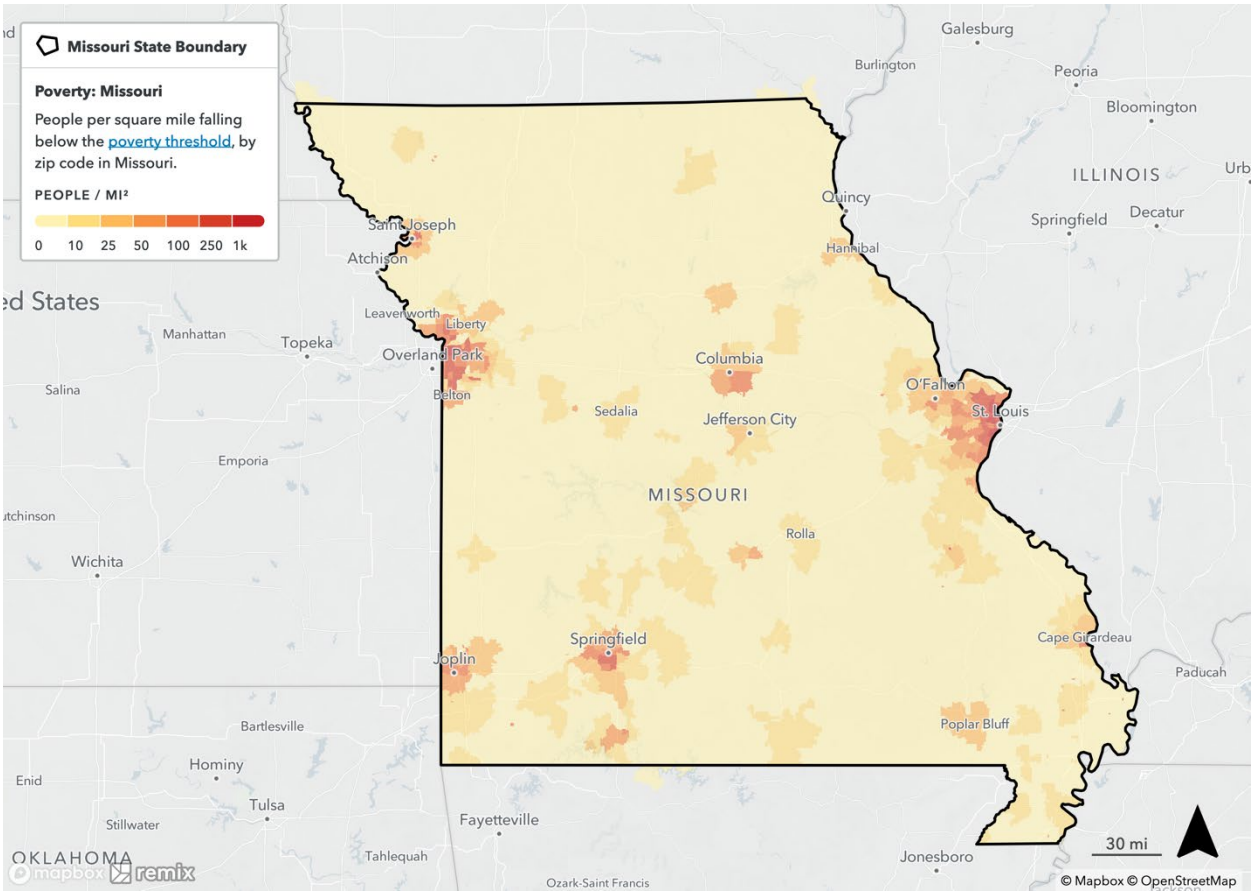

Figure 52 Residents below the poverty line in Missouri[36]

S.3.4 Car-free and Single Car Households

Not owning a car is one of the strongest predictors of public transit usage in the US. Lacking a private vehicle can correlate with higher rates of poverty and make residents dependent on public transit for mobility. If public transit is unavailable, people who do not own cars may rely on rides from friends and family, taxis, or rideshare services to travel around a given region, or otherwise may not be able to travel at all. Across the state of Missouri, around 160,000 households do not have access to a personal vehicle, or almost 7% of households.[22] The cities of St. Louis and Springfield have the highest rates of car-free households in the state (18% and 10%, respectively). In general, more urban areas with higher population density tend to have higher rates of car-free households, as these areas have more public transportation as well as better infrastructure for walking and biking. Percentages of car-free households, therefore, are slightly lower in Missouri's metro areas relative to its cities with populations greater than 125,000 people, as shown in **Table 4. Car-free Households in Largest Missouri Cities and Metro Areas** below. Rates of car-free households are lowest in rural areas, which, given their low

[36] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

density and lack of infrastructure, tend to be more difficult to navigate without a personal vehicle.

Though less strongly correlated with public transit usage than not owning a car, single car households are also more likely on average to rely on public transit than two car households, particularly when more than one household residents are employed and must commute to work. Rates of single car households in Missouri are highest in St. Louis (46%) and Springfield (44%).

Table 28 Car-free and single car households in largest Missouri cities and metro areas[37]

Region	Car-free Households	Percent of Car-free Households	Single car Households	Percent of Single car Households
State-wide				
Missouri	162,000	7%	800,000	33%
Cities with population over 125,000				
Kansas City	20,000	9%	87,000	40%
St. Louis	26,500	18%	66,000	46%
Springfield	7,500	10%	34,000	44%
Columbia	3,400	8%	18,000	40%
Metro Areas				
Kansas City (Metro Area in Missouri)	33,000	6%	177,000	34%
St. Louis (Metro Area in Missouri)	65,000	7%	298,000	34%

[37] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Car-free and single car households. Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

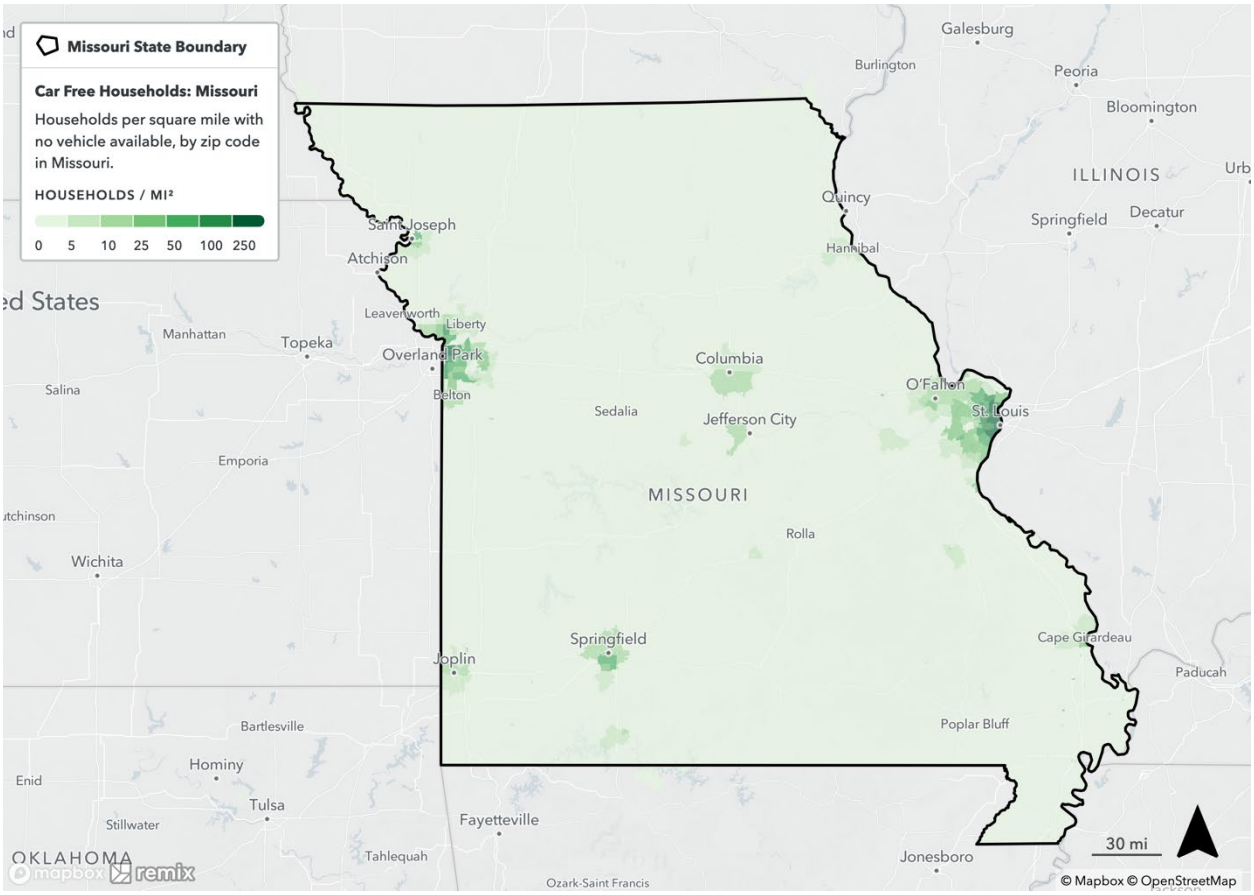

Figure 53 Car-free households in Missouri[24]

S.3.5 Nonwhite and Hispanic/Latino Populations

With lower incomes and vehicle ownership rates than white residents in most of the US on average, nonwhite and Hispanic/Latino communities have a higher tendency to use public transit. Nonwhite and Hispanic/Latino communities have historically faced disadvantaged access to public transit due to underinvestment in infrastructure and services in their communities. Across the state of Missouri, 22% of the population, or around 1.4 million people, identify as nonwhite or of Hispanic/Latino.[38] Nonwhite and Hispanic/Latino residents of the state tend to be clustered in the state's most populous cities: St. Louis (55%), Kansas City (45%), and Columbia (26%) consist of rates of people who are nonwhite or of Hispanic/Latino origin that are above the state average. Both the Kansas City metro area (29%) and the St. Louis metro area (30%) also consist of above average percentages of people who are nonwhite or of Hispanic/Latino origin.

[38] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

Table 29 People who are nonwhite or of Hispanic/Latino origin in largest Missouri cities and metro areas[24]

Region	Number of people who are nonwhite or of Hispanic / Latino Origin	Percent of people who are nonwhite or of Hispanic / Latino Origin
State-wide		
Missouri	1.4 million	22%
Cities with population over 125,000		
Kansas City	230,000	45%
St. Louis	164,000	55%
Springfield	27,000	16%
Columbia	30,000	26%
Metro Areas		
Kansas City (Metro Area in Missouri)	370,000	29%
St. Louis (Metro Area in Missouri)	640,000	30%

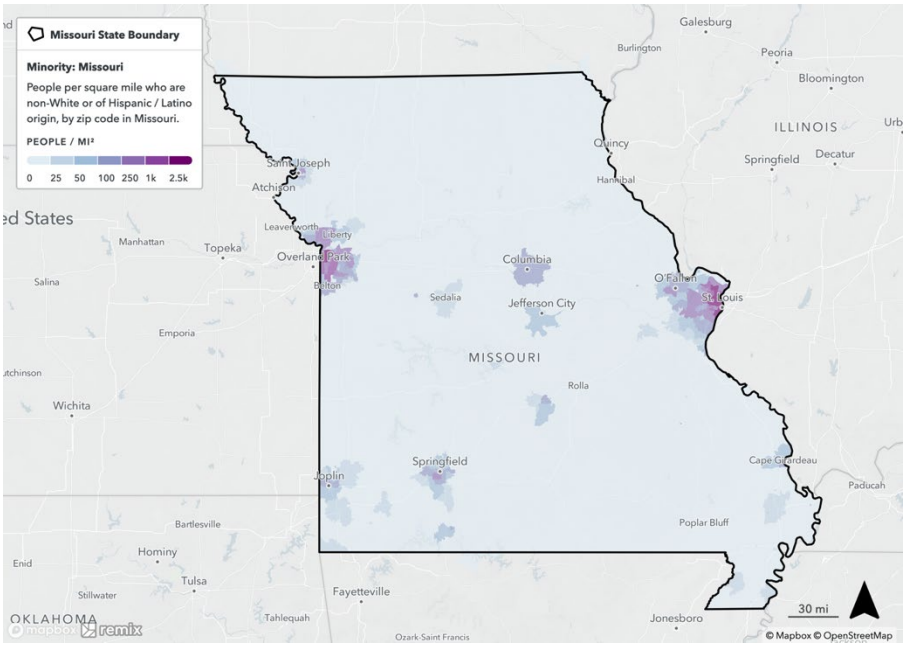

Figure 54 Nonwhite and Hispanic/Latino populations in Missouri[39]

[39] U.S. Census Bureau, n.d. American Community Survey (ACS) 5-year (2022-2018). Accessed June 30, 2024. https://www.census.gov/programs-surveys/acs/data.html.

S.4 Commute Typologies

The most effective type of first-last mile service for a given area depends on a variety of factors spanning demographics, existing transit, and commute patterns. The Project Team developed the Commute Typologies Matrix to distill complexity and create a framework for structured decision-making. The Matrix has two axes: population density (urban, suburban, and rural) and employment density (concentrated and dispersed). Population density informs the spread of origin locations for commutes, the types of industries present in an area, and the type(s) of existing transit. Employment density informs destinations of commutes and whether there is one (or more) main corridor with a high-volume of commute travel. Together, these factors create a matrix that informs which types of first-last mile solutions are most likely to successfully serve both commuters and employers.

Table 30 Commute typologies matrix

	1. Urban Areas	2. Suburban Areas	3. Rural Areas
a. Concentrated Employment Centers	**1a. Urban areas with one or more core employment center**(s) that are generally well-served by fixed-route transit. Employees either already live in this area or commute from suburban areas into this urban area.	**2a. Suburban areas with one or more employment hubs**. Employees either already live in the area or commute from a nearby suburban or urban community. May have some transit connections, but likely less frequent connections than in urban areas.	**3a. Rural areas that have one or more dominant employer hub(s**) or employer(s) in the area. Employees likely live in the area. May have some transit service, but generally low frequency.
b. Dispersed Employment Centers	**1b. Urban areas that have no clear employment center(s) or district(s).** Employees either already live in the urban area or commute into the area from suburban areas. May be well-served by fixed-route transit or could lack sufficient fixed-route service.	**2b. Suburban areas with widely dispersed employment opportunities**. Employees either already live in the area or commute from a nearby suburban or urban community. May have some transit connections, but less frequent connections than in urban areas.	**3b. Rural areas that have widely dispersed employers,** with no clear hub(s). Employees likely live in the area. May have some transit service, but generally low frequency.

S.4.1 Typology 1a. Urban Areas with One or More Core Employment Centers

Geography Description: Urban areas (large or small cities) with one or more core employment centers usually have denser downtowns and surrounding areas, with a concentration of many employers in one or several locations. On average, cities have more jobs in sectors such as finance, insurance, business management, science, technology, and real estate compared to rural areas (both types of locations have an equal proportion of jobs in recreation, food services, retail, health services, and the public sector).[40] The types of jobs present in urban centers often require less space, so many industries can coexist in proximity and require travel for workers of many income levels and sectors to a central location. Many urban locations are surrounded by less dense suburban areas – commute considerations for the populations living in these areas are described in typology 2a.

Locations with quality fixed-route service:

- **Description:** Dense areas with quality fixed-route service (frequency of 30 minutes or less; key destinations located within 0.25 miles, about a five-minute walk, of bus stops) do not usually require additional first-last mile connectivity. As both homes and employers are located within walking distance of a frequent fixed-route connection, these types of locations are successful at aggregating passengers along major corridors without additional service.
- **First-Last Mile Options:** This type of travel pattern is best served by fixed-route service and can be improved by increasing frequency or adding additional fixed-route lines, rather than providing additional types of service. These locations usually have good walkability and may consider investing in biking infrastructure if it does not already exist.
- **Missouri Example:** Downtown St. Louis, which has a concentration of employment and multiple fixed routes operating every 30 minutes or more frequently.

Locations with infrequent or insufficient fixed-route service:

- **Description:** Many cities and towns have some fixed-route service, but it either does not cover the entire geography or runs infrequently (less than every 30 minutes) and therefore requires supplemental first-last mile service in the areas that are underserved. Other cities may have quality fixed-route service in portions of the city, while other neighborhoods remain underserved due to reasons such as rapid growth.
- **First-Last Mile Options:** In such locations, running frequent, direct fixed routes along high-traffic corridors, accompanied by first-last mile service at one or both ends, can provide a high quality of service for commuters. Such services will need to pick up riders in a larger area and bring them to a single destination at which they will connect to fixed-route transit. First-last mile options for this include shuttles, microtransit, and vanpool.

[40] United States Department of Agriculture, Economic Research Service. November 16, 2016. Differences between Rural and Urban Economies Reflect Differences in Their Industrial Composition. Accessed July 14, 2024. https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=80851.

- **Missouri Example:** South St. Louis County, including parts of Manchester, Twin Oaks, Valley Park, Keyes Summit, Fenton, Sunset Hills, Sappington, Concord, Affton & Shrewsbury. This area connects to the fixed route service but is not well served by it, and therefore has the Via Metro STL on-demand service for first-last mile connection.

Lack of fixed-route service:

- **Description:** Some cities and towns with medium density lack a fixed route service due to insufficient density either of residents or employers, local/state funding or politics, administrative complexity, or other factors.
- **First-Last Mile Options:** High density areas (over ~18,000 people per square mile) should consider implementing fixed route services, while locations with medium density can be well-served by on-demand microtransit, vanpool, or shuttles.
- **Missouri Examples:** Saint Charles and St. Peters, cities close to St. Louis where many workers have jobs either within the cities or commute into St. Louis, do not have any fixed route service.

S.4.2 Typology 1b. Urban Areas that have no clear employment center(s) or district(s).

Geography Description: Some urban areas (large or small cities) have many employment hubs or scattered employment throughout the urban area. Such locations usually have workers from a mix of industries and income levels commuting across the city in a diffuse pattern. While there may be some corridors with heavier traffic, usually there are no clear corridors because workers are traveling in every direction to reach their place of employment.

Locations with quality fixed-route service:

- **Description:** Dense areas with diffuse employment can still have quality fixed-route service (frequency of 30 minutes or less; key destinations located within 0.25 miles, about a five-minute walk, of bus stops), but these routes are sometimes less effective at serving high volumes of commuters. When employment areas are dispersed, many commuters have long journey times on fixed route transit because they cannot take a fast, direct bus and instead need to make a transfer or ride a circuitous route which aims to cover a large area.
- **First-Last Mile Options:** Such locations can benefit from streamlining fixed-route services to provide fast, frequent service and supplementing with on-demand transit in less dense areas. Microtransit, vanpools, or shuttles can also be implemented at a city-wide scale to provide coverage for travel patterns that fixed routes cannot serve, as long as they do not compete with fixed route service.
- **Missouri Example:** Springfield, the third largest city in the state, has a fairly dispersed employment pattern along with an existing fixed route service that covers the city in a grid-like pattern.

Locations with insufficient or lack of fixed-route service:

- **Description:** Many areas with dispersed employment do not have any fixed-route transit or have insufficient fixed routes that cannot cover a meaningful portion of jobs in a cost-effective manner. Implementing new fixed routes may not be an effective solution because they would not get sufficient ridership.
- **First-Last Mile Options:** In smaller and medium-size cities, a city-wide microtransit, vanpool, or shuttle would provide a good starting point for commute solutions. Data from these services can be gathered to determine whether there are unexpected corridors of heavier travel where a fixed route could be implemented to streamline commuting.
- **Missouri Example:** Joplin, a city with 50,000 residents and dispersed employment, does not currently have any fixed route service due to driver shortage.

S.4.3 Typology 2a. Suburban areas with one or more employment hubs.

Geography Description: Suburban areas with one or more employment hubs may see most of its employees commuting into the downtown core of a nearby city or town, or even have their own business district where many commuters work. In general, medium density residential areas mean that any transit service will need to cover a larger residential area but will be able to travel down key corridors to deposit commuters at a few key employment hubs. Residents are more likely to own a vehicle compared to more urban areas, as they need it to navigate their neighborhood and run errands. This can make it harder to incentivize workers to use transit if they can drive to work without high volumes of traffic and transit services are perceived as comparatively inefficient.

Locations with fixed-route service connecting to employment hubs (including corporate shuttles):

- **Description:** Suburban areas with fixed-route service usually have a service that runs directly between the dense employment hub and the suburban area, either terminating at a park-and-ride or continuing on to provide a circuitous loop through the medium-density residential area.
- **First-Last Mile Options:** This type of commute pattern is perfect for first-last mile service in the suburban area, providing connection to fixed routes and allowing residents to leave their car at home entirely. On-demand microtransit and vanpools are both good options; in areas with good sidewalks or biking infrastructure, additional support for active modes can also be helpful for the temperate months. Microtransit or active transportation would also allow residents to run errands and move about their neighborhood without requiring them to use their personal vehicle.
- **Missouri Example:** Blue Springs, a city of 50,000 on the outskirts of Kansas City, has one fixed-route commuter bus connection Kansas City that takes 45 minutes. Adding additional frequency and a first-last mile connection could help incentivize more widespread use of a commuter service.

Locations with very poor or no fixed-route service:

- **Description:** Many suburban areas lack any access to fixed-route transit, or transit comes so infrequently that it is only used by transit-dependent commuters.
- **First-Last Mile Options:** In such areas, fixed route continues to be a good solution for a longer-distance connection to an employment hub and should be implemented coupled with a first-last mile option as in the example above. If the employment hub is in the suburban area itself and is less than a 10-minute drive from most of the residents, a first-last mile solution alone may be sufficient to provide good transit service to residents.
- **Missouri Example:** Warrensburg, a city located about an hour drive east of Kansas City with about 20,000 residents and 8,000 local jobs. The city has one Amtrak station with twice-daily service that takes 1.5 hours to get to Kansas City and a deviated fixed-route service operated by OATS which runs once an hour and must be reserved the previous day. There are two major employers in the area: the University of Central Missouri and Western Missouri Medical Center.

S.4.4 Typology 2b. Suburban areas with widely dispersed employment opportunities.

Geography Description: A suburban area with dispersed employment may be a suburb of a larger city with meaningful employment within the suburb itself, or a general medium-density area like a small town that does not have a central business district. Unlike Typology 2a, suburban areas with dispersed employment are unlikely to have only a few corridors of travel, but they may have meaningful travel volumes that can sustain a fixed route coupled with an effective first-last mile service. Similar to Typology 2a, residents are more likely to own a vehicle compared to more urban areas which can make it harder to incentivize workers to use transit unless it is relatively fast and direct.

Locations with fixed-route service and/or at least one large employer:

- **Description:** Suburban areas may already have a fixed-route service or a large employer who provides a corporate shuttle.
- **First-Last Mile Options:** These locations could benefit from a complementary transit service that provides coverage in areas not served by fixed routes. Rather than being true first-last mile service, these services would provide direct connection between areas with workers and areas with residents, making sure not to disrupt productive routes if they already exist. If there are numerous but dispersed major employers, a vanpool program could also be a good option.
- **Missouri Example:** Wildwood, a city on the periphery of St. Louis with 35,000 residents and 9,000 jobs (but low overall density of both), has dispersed employment within the city itself but does have a bus that runs every 30-60 minutes into St. Louis.

Locations with no fixed-route service:

- **Description:** Many suburban locations and small, medium-density towns do not have fixed-route service of any kind.
- **First-Last Mile Options:** Similar to the option above, these locations could benefit from an area-wide service such as microtransit. It may be prudent to work with local employers to see if there is interest in starting a program focused on bringing workers to a few select hubs.
- **Missouri Example:** Rolla, a city with about 15,000 residents, has about 8,000 jobs that are scattered throughout the city and could benefit from an areawide service.

S.4.5 Typology 3a. Rural areas that have one or more dominant employer hub(s)

Geography Description: Rural areas with one or more dominant employment hubs may include areas surrounding small towns and villages, or rural areas with towns and villages that have a population below ~2,000. Such areas can be sizable, spanning an entire county or multiple counties. On average, rural areas have more jobs in sectors such as agriculture, mining, and manufacturing compared to suburban and urban areas.[41] This may mean that there are a few large agricultural or manufacturing locations that provide a large portion of jobs in the area, or that residents commute for longer distances to nearby urban centers with concentrated employment. Rural areas usually have very high rates of vehicle ownership, and it is important for transit programs to be clear about use cases in order to concentrate efforts on the populations that are most vulnerable and/or most in need of transit.

Locations with long-distance fixed-route service:

- **Description:** Many rural locations have a dial-a-ride service, and some also have long distance fixed routes that connect smaller villages to each other, major employers, and/or larger nearby towns.
- **First-Last Mile Options:** Frequent, direct buses or trains can be supported by pre-booked microtransit (an update to the dial-a-ride model) to connect rural residents to fixed route buses to carry them to employment centers.
- **Missouri Example:** There are few frequent long-distance connections to rural areas in Missouri; some small cities and towns have connections on Amtrak and/or are served by OATS or SMTS that operate several times per day or must be pre-booked.

[41] United States Department of Agriculture, Economic Research Service. November 16, 2016. Differences between Rural and Urban Economies Reflect Differences in Their Industrial Composition. Accessed July 14, 2024. https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=80851.

Locations without fixed-route service (may have dial-a-ride service):

- **Description:** Other rural locations may have no transit, or only a dial-a-ride service that must be prebooked hours or, more likely, days in advance.
- **First-Last Mile Options:** As there are no fixed routes to connect with, the best opportunity may be to establish an employee shuttle, a vanpool program, or a pre-booked microtransit service.
- **Missouri Example:** Ava, the only incorporated city in Douglas County, has about 1,000 residents and an equal number of jobs. There is no fixed route service to the city, and most employment is concentrated within a single Census Block.

S.4.6 Typology 3b. Rural areas that have widely dispersed employers

Geography Description:

Rural areas with widely dispersed employment are often the hardest to serve efficiently, as the population is very small and there is little opportunity to aggregate commuters along any travel corridors. Employment may be scattered, and local agriculture or industry may be undeveloped without large employers in the area. Such areas may also be too far away from larger cities or towns for residents to commute effectively, unless there is a very efficient long-distance transit option such as rail. Similar to Typology 3b, it is important to define use cases in order to direct resources at addressing the most pressing mobility issues.

Locations without fixed-route service (may have dial-a-ride service):

- **Description:** Such locations rarely have fixed-route transit and may have either no transit or a dial-a-ride service that must be prebooked hours or, more likely, days in advance.
- **First-Last Mile Options:** These areas are best served by a pre-booked microtransit service to provide connections across the area to a variety of local employers. To prevent very long-distance travel that would render such a service inefficient, service should either have zones that do not exceed the size of one county, have distance caps, or have distance-based pricing.
- **Missouri Example:** Numerous counties across Missouri, such as Shannon County or Wayne County, do not have any major municipalities or employer density. These locations are best served by pre-booked on-demand transit options rather than fixed route due to their low densities.