Loudoun County, Virginia
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At a business meeting of the Board of Supervisors of Loudoun County, Virginia, held in the County Government Center, Board of Supervisors' Meeting Room, 1 Harrison St., S.E., Leesburg, Virginia, on Tuesday, April 16, 2024, at 4:00 p.m.

IN RE: Transportation and Land Use Committee Report: Transit Strategic Plan and Commuter Assistance Program Strategic Plan Approvals (Countywide)

Chair Randall moved the recommendation of the Transportation and Land Use Committee that the Board of Supervisors approve the Transit Strategic Plan and Commuter Assistance Program Strategic Plan, provided as Attachment 1 and Attachment 2 to the April 16, 2024, Board of Supervisors Business Meeting Action Item.

Seconded by Vice Chair Briskman.

Voting on the Motion: Supervisors Briskman, Glass, Kershner, Letourneau, Randall, Saines, TeKrony, Turner, and Umstattd – Yes; None – No.

COPY TESTE:

Jennifer L. Grimmell

_____

DEPUTY CLERK TO THE LOUDOUN COUNTY
BOARD OF SUPERVISORS

Loudoun County
VIRGINIA

Transit Strategic Plan

FY 2025 – FY 2034

For Services Operated by:

LoudounCounty LC Transit

Prepared For:

LOUDOUN COUNTY VIRGINIA | Transit and Commuter Services

Prepared by:

Kimley»Horn

FINAL: March 14, 2024

Attachment 1

Table of Contents

Chapter 1 System Overview and Strategic Vision

This chapter provides a high-level overview of Loudoun County Transit's strategic priorities.

1.1 System Overview

Located along the Potomac River in Northern Virginia and west of Washington, D.C., Loudoun County provides multiple connections to Maryland and West Virginia. The County has a land area of approximately 520 square miles and an estimated population of 434,362 people (2022, U.S. Census Bureau). The County contains seven incorporated towns: Hamilton, Hillsboro, Leesburg, Lovettsville, Middleburg, Purcellville, and Round Hill. Loudoun County is also home to the Dulles International Airport—the 28th busiest airport in the United States and Washington, D.C.'s primary gateway to international destinations.

Loudoun County Transit (LCT) provides local bus service within Loudoun County and parts of Fairfax County, and long-haul commuter bus service to nearby employment centers in Arlington County and Washington, D.C. The LCT Services and Operations manages the transit system with day-to-day operations, supervision, and maintenance provided by Keolis, a private mobility contractor. LCT is currently funded by Loudoun County government local tax funding, the Virginia Department of Rail and Public Transportation (DRPT), Northern Virginia Transportation Commission's (NVTC) Commuter Choice Program, and supplemented by fare revenue and other funding partners such as the Town of Leesburg.

The following subsection describes existing LCT services and regional transportation services.

1.1.1 Services Provided and Areas Served

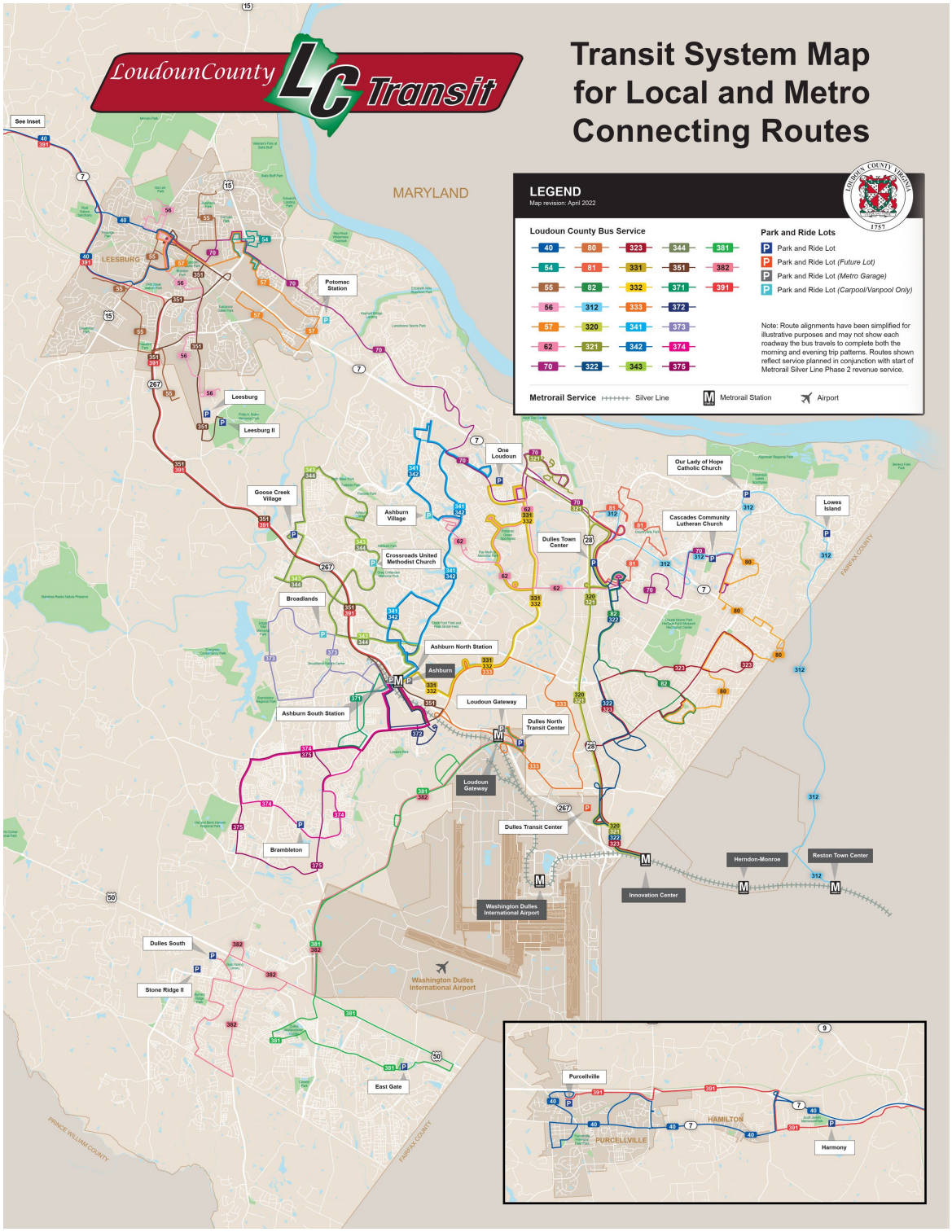
Existing Fixed Route Loudoun County Transit Services

As of the publication of this study, LCT operates the following two fixed route transit services:

- Commuter bus
- Local bus

The local bus routes and park and ride lot locations are shown in **Figure 1-1.** LCT also operates paratransit service within 0.75-mile of local fixed routes. The commuter bus service, local fixed route bus service, and paratransit services are described in further detail below.

Figure 1-1: Loudoun County Transit System Map for Local Routes (Larger Version Available on Web)



Source: https://www.loudoun.gov/DocumentCenter/View/169776/LCT_Transit_SystemMap-Metro-Connect-and-Local_2022-04?bidId=

Commuter Bus Service

LCT operates morning and late afternoon rush hour service from Loudoun park and ride lots to Rosslyn, Crystal City, the Pentagon, and Washington, D.C. The commuter bus service is another mobility option for commuters to access employment centers in the region. Coach buses used for commuter service are equipped with reclining seats, a restroom, reading lights, overhead bins, and fareboxes. The fare for commuter bus service is currently $10 per ride if paying with a SmarTrip card or $11 per ride if paying with cash. LCT operates eight eastbound routes running 23 commuter trips between 5:23 a.m. to 9:48 a.m. and nine westbound route combinations running 27 commuter bus trips between 2:45 p.m. to 8:06 p.m.

The commuter service operates at the following six park and ride lots:

- Harmony Park and Ride (Hamilton)
- Leesburg Park and Ride
- Brambleton Park and Ride (Ashburn)
- Dulles Transit Center (Sterling)
- Dulles South Park and Ride (Aldie)
- East Gate Park and Ride (Chantilly)

LCT's commuter service bus routes and stops in Arlington County and Washington, D.C. are shown in **Figure 1-2.**

Figure 1-2: Loudoun County Transit Commuter Service in Arlington and Washington, D.C.

Source: https://www.loudoun.gov/221/Commuter-Bus

Local Fixed Route Bus Service

LCT mainly serves Leesburg and the County's eastern portion (including Ashburn, Sterling, and Dulles). LCT provides weekday and limited Saturday, local fixed route bus service from Harmony Park and Ride through Leesburg, eastern Loudoun County, and Silver Line Metrorail stations in Fairfax County[1]. Most service operates from 7:00 a.m. to 7:00 p.m., except for Route 70 and Route 82, which continues service until 10:00 p.m. The Silver Line Bus routes typically run longer hours to accommodate commuters' schedules (4:30 a.m. – 11:00 p.m.). Local bus service fares currently cost $1 per ride, and cash or a SmarTrip card is accepted for fare payment. LCT currently operates 30 local fixed routes within the County, 21 of which are Silver Line bus routes.

In compliance with the Americans with Disabilities Act (ADA) requirements, all LCT vehicles are fully ADA compliant. These systems are tested routinely by operations

and maintenance staff to ensure a safe and equitable rider experience for all LCT passengers.

Additional Service

Within the Town of Leesburg, LCT operates Safe T Ride, a free shuttle with continuous service between locations on the east and west sides of the Route 15 Bypass to provide a safe crossing of the major corridor for customers. This service operates from 7:00 a.m. to 7:00 p.m. Monday through Friday and from 9:00 a.m. to 6:00 p.m. on Saturdays and Sundays.

LCT also operates a free shuttle for visitors to the Loudoun County Courthouse complex from 7:15 a.m. to 5:30 p.m., Monday through Friday. The shuttle connects the Pennington and Semones parking lot and parking garage in Leesburg to the courthouse complex on Market Street and Edwards Ferry Road. The service operates at a frequency of every 10 minutes.

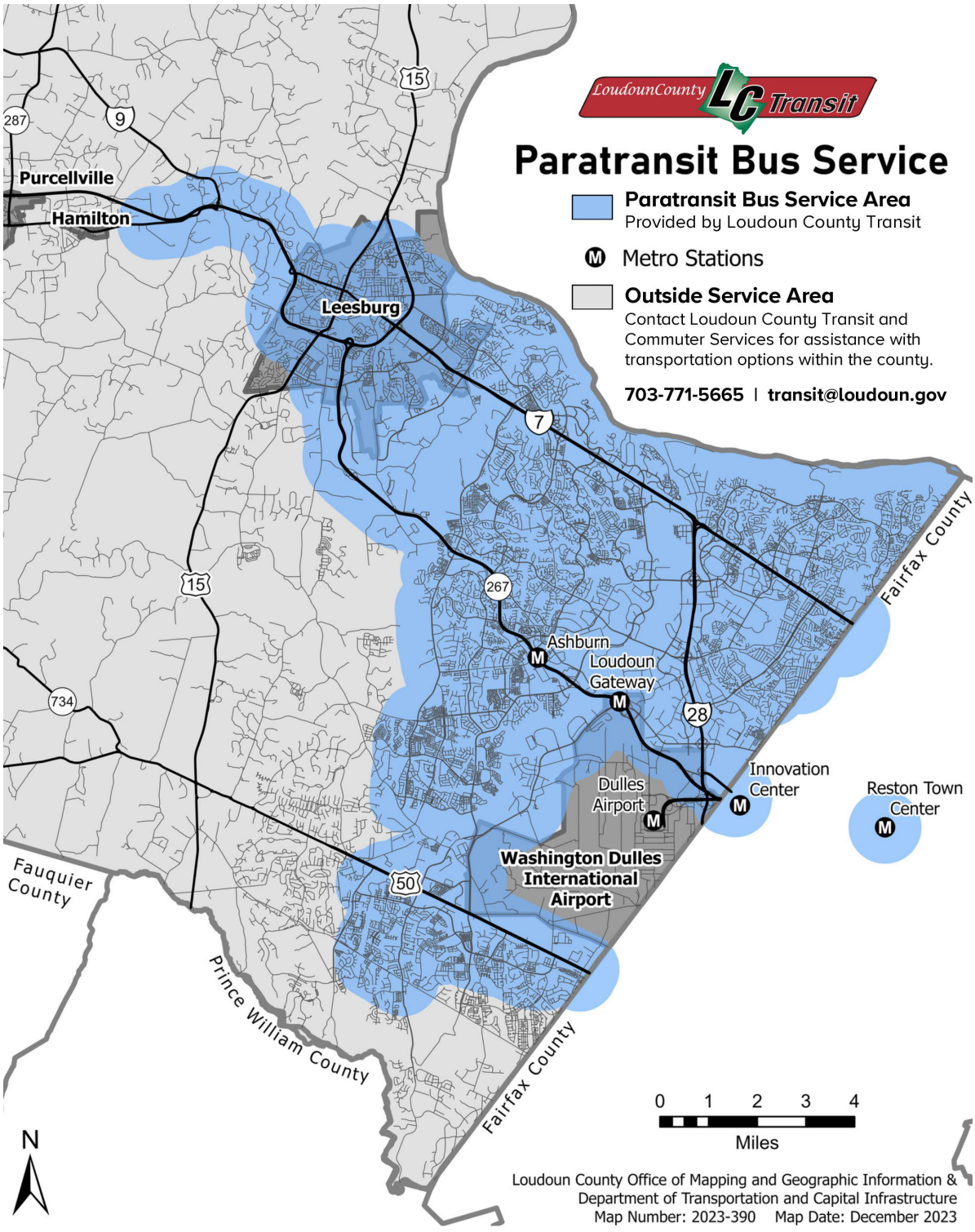
Flexible Service Options in Loudoun County

Paratransit Service

LCT provides paratransit service for qualifying individuals with an origin or destination within 0.75-mile of fixed route service from Leesburg to parts of western Fairfax County. Eligibility is determined by an online application through the County's contractor, ADA Ride. Trips must be scheduled by 5:00 p.m. the day before the trip up to a maximum of five days before the trip. Riders approved through MetroAccess Paratransit are also approved for an ADA Ride. Paratransit service mirrors fixed route operating hours. Paratransit service is currently $2 per ride, and cash or SmarTrip card is accepted for fare payment; punch passes are also available for individuals who qualify. An intuitive mobile app was also created and adapted by RideCo, Inc. for Loudoun County. Riders must be approved via ADA Ride prior to using the app. See **Figure 1-3** which illustrates the service area for paratransit provided by LCT.

Paratransit service outside of the Loudoun County paratransit service area (primarily western Loudoun) is available through Virginia Regional Transit (VRT). Riders must complete an online form for VRT ADA Paratransit bus services. VRT also provides non-paratransit service, which will be described as "Regional Connecting Service".

Figure 1-3: Paratransit Service Provided by Loudoun County Transit



Source: Loudoun County
https://www.loudoun.gov/DocumentCenter/View/170662/Loudoun-County-Paratransit-and-Local-Bus-Service-Map_622

Regional Connecting Partners

Fairfax Connector

The Fairfax Connector, Fairfax County's bus transit service provider, operates four routes that serve stops in Loudoun County near the border of Loudoun and Fairfax Counties. These routes primarily feed into the Silver Line Metrorail and include the following:

- Route 924: NOVA Loudoun–Herndon–Franklin Farm
- Route 952: Sunset Hills–Dulles International Airport
- Route 954: Sterling Plaza–Herndon
- Route 983: Dulles International Airport–Udvar-Hazy Center (Smithsonian)

Washington Metropolitan Area Transit Authority (WMATA)

As of November 2022, Loudoun County is served by the Silver Line Metrorail Extension, operated by WMATA. Three stations in the County – Ashburn, Loudoun Gateway, and Dulles International Airport connect residents of Loudoun County and airport travelers to Fairfax County (including Reston and Tysons), Arlington, Washington, D.C., and Prince George's County (Maryland), with transfers available to the rest of the regional Metrorail network. Metrobus service does not operate in Loudoun County.

Virginia Regional Transit (VRT) On-Demand Bus Service

Areas of the County outside the LCT paratransit service area (origin or destination within 0.75-mile from a fixed route) are served by VRT On-Demand Bus Service. This VRT service serves all residents in rural Loudoun County and residents who are unable to access fixed route bus service because of their disability. Riders must complete an online application for this on-demand service.

1.1.2 Current/Recent Initiatives

This section documents major current and recent initiatives undertaken by LCT. This includes reconfiguring the bus transit network, capital improvement programs, and other initiatives to help achieve goals and objectives outlined in the TSP.

Loudoun County Commuter Services Programs

Loudoun County Commuter Services aims to assist people who live, work, or play in the County with programs that make it easier to get around or commute to work. Loudoun County Commuter Services encourages cost-effective alternatives to driving alone, such as using transit buses, Metrorail, carpools, vanpools, biking, walking, and more.[2] This program is distinct from LCT commuter bus service.

Loudoun County Commuter Services partners with several regional transportation organizations to implement alternative commute modes for residents and employees. One of those organizations is Commuter Connections, a program within

[2] Loudoun County Commuter Services Website

the Metropolitan Washington Council of Governments (MWCOG) that administers two essential commuting programs to the region and incentive programs.

Commuter Connections manages the following two programs which are available to Loudoun County residents and employees to assist with their commute needs. Residents and employees may set up an account with Commuter Connections to register for the following:

- The **Ridesharing Program** enables commuters to find other individuals who share similar commute routes and work hours to join or form a carpool or vanpool.
- The **Guaranteed Ride Home (GRH) Program** supports commuters using alternative transportation at least twice per week. Anyone registered in the program who rides transit, carpools, vanpools, bikes, or walks to work is eligible for up to six free rides home per year during unexpected emergencies, such as personal illness, a sick child, and unscheduled overtime.

In partnership with Commuter Connections, Loudoun County Commuter Services also provides information to commuters on the incentive programs offered in the region. Collectively, the following programs intend to incentivize commuters to try an alternative mode from driving a single-occupancy vehicle:

- CarpoolNow is a real-time mobile app for on-demand carpooling services, connecting drivers offering a ride with passengers seeking a ride. Drivers receive a $10 incentive per trip, up to $600 per year.
- IncenTrip is a multimodal trip planning mobile app that rewards points for each commuter trip during the peak hours of travel for fuel-efficient driving, transit, carpooling, vanpooling, bicycling, and other environmentally friendly travel. Participants can earn up to $10 after completing 10 trips with up to $600 per year.
- Pool Rewards provides cash payments of up to $130 over a 90-day period for those who start or join a new carpool.
- Flextime Rewards provides incentive payments to those who delay traveling in designated corridors in the region during peak congestion periods. Participants receive real-time notifications and are rewarded up to $8 per trip for delaying their departure.

Loudoun County Commuter Services Employer Services Program assists Loudoun County businesses and nonprofit organizations with employee trip transportation challenges. Staff work one-on-one with employers to assist with transportation challenges facing their organization, work to implement new transportation programs and benefits, and encourage behavior change of employees' commute modes.

The program has actively expanded recognition with Best Workplaces for Commuters, a national program recognizing employers who offer environmentally friendly commuting programs and choices. In 2023, seven employers were

recognized as Best Workplaces for Commuters in Loudoun County and two worksites were recognized as Best Worksites for Commuters in Loudoun County.

This plan does not discuss recommendations for the Commuter Assistance Program (CAP). For more information regarding Loudoun County's Commuter Assistance Program, reference the fiscal year (FY) 2025 – FY 2029 Commuter Assistance Program Strategic Plan (CAPSP) document.

Silver Line Bus Service Changes

Prior to the Silver Line Metrorail Extension, all Silver Line bus services transported passengers to the terminus at Wiehle–Reston East Metrorail station. When the Silver Line Metrorail Extension opened in November 2022, service was adjusted to serve the newly opened Metrorail stations in the County. The Silver Line bus service is specifically designed to give Metrorail customers another travel option to the station instead of driving alone to their destination. Silver Line bus service is currently $1 per ride and accepts cash or SmarTrip cards. LCT currently operates 21 Silver Line bus routes that serve the following Metrorail stations:

- Ashburn (13 routes)
- Loudoun Gateway (three routes)
- Innovation Center (Fairfax County) (four routes)
- Reston Town Center (Fairfax County) (one route)

The Silver Line Metrorail Extension (see **Figure 1-4**) opened on November 16, 2022. During the period from November 15 to November 30, 2022, the six new stations saw a total of 61,405 riders entering at these stops; nearly one-third of riders at the new stations were from the Washington Dulles International Airport station alone[3].

Figure 1-4: Metrorail Silver Line Metrorail Extension

Source: WMATA

[3] https://www.wusa9.com/article/traffic/mission-metro/silver-line-extension-racks-up-ridership-dulles-station-stop/65-7468161d-9ce0-4474-8e8a-c77b53c9cf49)

As a result of the opening of the Silver Line Metrorail Extension, LCT phased-in Silver Line bus service. Now, 21 new Silver Line bus routes provide weekday service to and from 156 stops, including Loudoun County park and ride lots and Silver Line Metrorail stations.

LCT routes that now serve the Silver Line Metrorail stations include:

Innovation Center Metrorail Station

- New Routes 320/321: George Washington University
- New Route 322: Atlantic Boulevard Connector
- New Route 323: Sterling

Loudoun Gateway Metrorail Station

- New Route 333: Quantum Park/Pacific Boulevard/Loudoun Gateway
- Route 381: South Riding
- Route 382: South Ridge

Reston Town Center Metrorail Station

- New Route 312: Potomac Falls

Ashburn Metrorail Station

- Route 331/332: One Loudoun
- Route 341: Ashburn Village 1
- Route 342: Ashburn Village 2
- Route 343: Goose Creek Village/Ashburn Farm 1
- Route 344: Goose Creek Village/Ashburn Farm 2
- Route 351: Leesburg
- Route 371: Moorefield Parkway/Old Ryan Road
- Route 372: Westwind Farm
- Route 373: Broadlands
- Route 374: Brambleton 1
- Route 375: Brambleton 2
- New Route 391: Harmony

During the initial deployment of the Silver Line bus service, fares were suspended on LCT Silver Line services until January 3, 2023. This included the accompanying paratransit services that provided access to the Silver Line stations.

Fixed route service that connects to the Metrorail Silver Line is shown in **Figure 1-1.**

Park and Ride Lots

In October 2022, LCT permanently closed the Ashburn North park and ride lot affecting Route 72. Customers were redirected to use the One Loudoun park and ride lot in Ashburn in lieu of the Ashburn North facility.

Prior to the construction of the Silver Line Metrorail Extension, Loudoun County operated three park and ride lots in the vicinity of Metrorail stations: Broadlands South #2 (Broadlands 772), Loudoun Station, and Dulles North Transit Center. Due to the proximity of these park and ride lots (which are free to use) to paid park and ride garages, the County closed the three identified park and ride lots to prevent Metrorail customers from parking in free Loudoun County lots. Two of the paid park and ride garages near the Ashburn and Loudoun Gateway Metrorail stations are owned and maintained by Loudoun County and the remaining garage at Ashburn Metrorail Station is owned and maintained by Comstock.

On December 5, 2022, the Dulles North Transit Center was closed, and the new Dulles Transit Center park and ride lot located in Sterling was opened. The new Dulles Transit Center park and ride lot provides 1,167 total parking spaces, 23 ADA compliant parking spaces, three bus bays, bus shelters with benches, and bicycle lockers.

Currently, Loudoun County, its neighboring peer jurisdictions, and the Virginia Department of Transportation (VDOT) are not charging a fee to park at park and ride lots. As part of the 2021 Park and Ride Lot Study Report discussed at the 2021 Board of Supervisors Transit Summit, the study recommended that park and ride lots should continue to be free of charge to encourage ridesharing and reduce environmental impacts due to congestion. As of February 2024, Loudoun County Transit provides service to the park and ride lots listed in **Table 1-1**.

Table 1-1: Park and Ride Lots Served by LCT (as of Feburary 2024)[4]

Name	Address	Total Parking Spaces
Brambleton	42790 Creighton Road (East of Route 659) Ashburn, VA 20148	100
Cascades	21014 Whitfield Place Palisades Pkwy and Community Lutheran Church Sterling, VA 20165	55
Dulles South (Stone Ridge II)	24281 Millstream Drive Aldie, VA 20105	300
Dulles South (Village Center)	24499 Millstream Drive Aldie, VA 20105	100
Dulles South	42015 Village Center Plaza Stone Ridge Village Center Aldie, VA 20105	250
Dulles Town Center	21020 Atlantic Boulevard Sterling, VA 20166	100
Dulles Transit Center	23114 Pacific Boulevard Sterling, VA 20166	1,167

[4] This list excludes the County's four park and ride lots which are not served by Loudoun County Transit: Broadlands, Crossroads United Methodist Church, Leesburg II, and Potomac Station.

Name	Address	Total Parking Spaces
East Gate	43664 Tall Cedars Parkway Chantilly, VA 20152	218
Goose Creek Village	20785 Century Corner Drive Ashburn, VA 20147	83
Harmony	39464 East Colonial Highway (East of Hamilton) Hamilton, VA 20158	250
Leesburg	41951 Gourley Transit Drive Leesburg, VA 20175	300
Lowes Island	20789 Great Falls Plaza Sterling, VA 20165	65
One Loudoun	20360 Savin Hill Drive Ashburn, VA 20147	500
Our Lady of Hope	46639 Algonkian Parkway Sterling, VA 20165	150

Source: Loudoun County, 2024

Weekend Service

LCT operates limited Saturday service on local fixed routes including Silver Line bus routes and may introduce limited Sunday service in the future as additional funding is available. Currently, Loudoun County commuter bus routes do not run on weekends. As part of initial conversations of this study, the Loudoun County Board of Supervisors and transit staff have expressed interest in expanding local bus service on Saturday and introducing service on Sundays. Studying the feasibility and projected performance of expanded weekend service will be analyzed in Chapter 2.

Bus Stop Upgrades /Bus Shelters

In 2021, Loudoun County began a program to bring the 339 existing bus stops into ADA compliance as part of the ADA Transition Plan. The initial assessment revealed that 34 bus stops were already ADA compliant. As of 2022, many bus stops did not have landing pads or sidewalks to safely access the stop. The Board of Supervisors identified this as a critical program for passenger safety and comfort, especially for senior citizens and people with disabilities. The County is working to upgrade all bus stops by FY 2026.

With the creation of the new bus routes serving the Silver Line Metrorail, Loudoun County began another program to ensure new bus stop locations along new routes would be ADA compliant.

The County has proposed a new program to address standards and implementation for a bus shelter program. The County's FY 2024 – FY 2028 Capital Improvements Program (CIP) includes funding for a three-year cycle of design, land acquisition and construction of 20 bus shelters per year beginning in FY 2026. LCT has developed a hierarchy of priorities for locations of new bus shelters.

Low and Zero Emissions Vehicles

Over the past few years, the bus transit industry has started to adopt alternative fuels to reduce carbon emissions from diesel vehicles. Traditionally, compressed natural gas (CNG) has been the primary choice for reducing emissions. Still, both battery electric buses and fuel cell electric buses (also known as hydrogen fuel cells) have advanced quickly in commercially available technology.

LCT is working through initial pilots of deploying battery electric and CNG vehicles on route which began in FY 2023. This effort will assess the performance of the vehicles within the system service area and develop an understanding of the vehicle capabilities versus the fleet needs. Following this pilot, Loudoun County will assess the feasibility of deploying fleet-wide low- or zero-emissions vehicles. The Loudoun County Board has adopted a policy to purchase CNG transit buses until future low-emission technologies are vetted and reliable.

Electronic Farebox Equipment and Automated Passenger Counters

The County's FY 2024 – FY 2028 CIP includes funding for new electronic farebox equipment that will replace the existing equipment on all transit vehicle types. The County plans for replacement every six years. This round of replacement also included the purchase of ten automated passenger counters that will also be placed on select buses for local service.

1.2 Strategic Vision

On June 20, 2019, the Loudoun County Board of Supervisors adopted the Loudoun County 2019 Comprehensive Plan, which includes the Loudoun County 2019 General Plan and the Loudoun County 2019 Countywide Transportation Plan (2019 CTP).

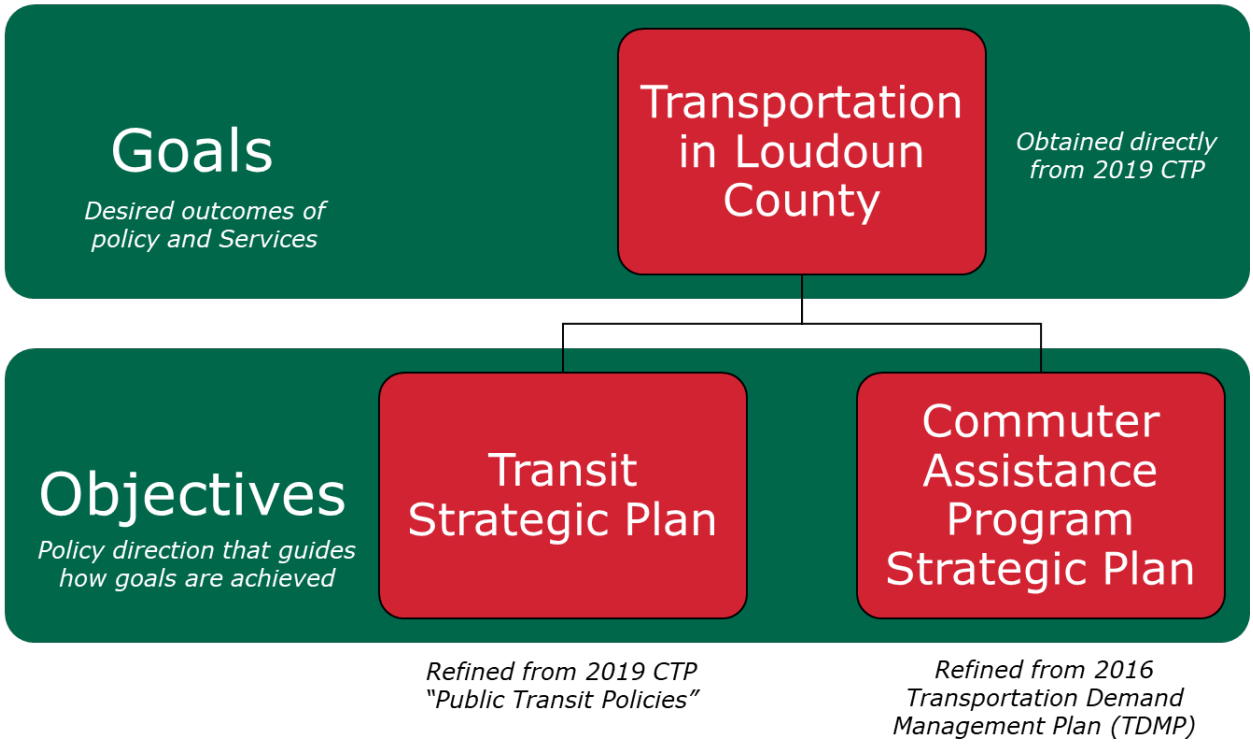
The 2010 CTP provided the basis for the goals, objectives, and strategies that were adopted in the previous 2018–2023 Transit Development Plan (TDP). This section documents the process to update goals and objectives from the previous TDP using a policy diagnostic process to incorporate multiple sources of input.

1.2.1 Goals and Objectives

The 2019 CTP was built upon the 2010 CTP, outlining "a strong framework for modern multimodal transportation planning in the County" (2019 Countywide Transportation Plan). The 2019 CTP was developed to provide policies, guidelines, and implementation steps to address community concerns and interests. The 2019 CTP serves as the basis for developing policy for this TSP.

The relationship between the goals and objectives is illustrated in **Figure 1-5** below.

Figure 1-5: Goals and Objectives Hierarchy and Sources



Source: Loudoun County, 2024

Policy Diagnostic Process

The process for developing the goals and objectives in this TSP originated from the 2019 CTP and incorporated input from multiple sources through a policy diagnostic. The seven 2019 CTP goals directly serve as the shared goals for this FY 2025 – FY 2034 TSP and FY 2025 – FY 2029 CAPSP.

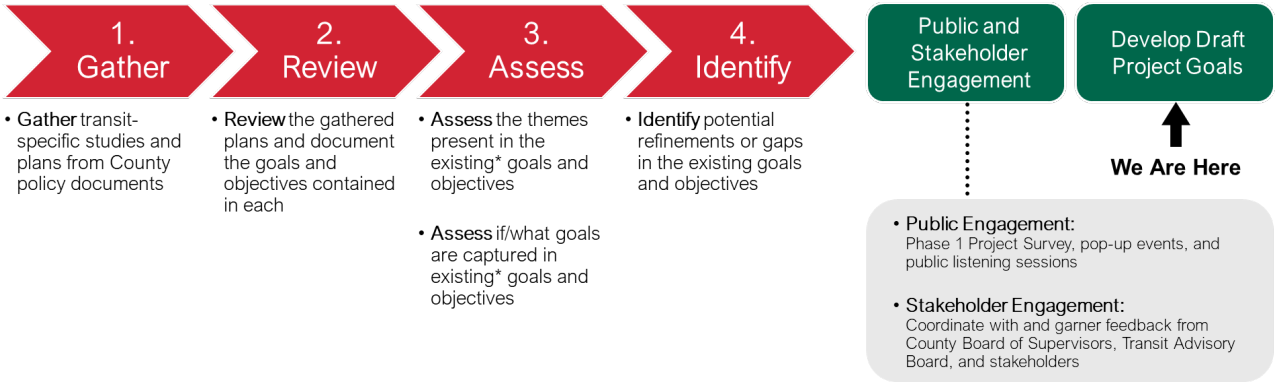
Objectives and strategies for this FY 2025 – FY 2034 TSP were derived from the 2019 CTP *Public Transit Policies*, and incorporated refinements and modernizations based on input from the following sources:

- Past Loudoun County Board of Supervisors Transit Summits
- 2022 Loudoun County Board of Supervisors project team listening sessions
- Public engagement and survey input to date
- Virginia Transit Equity and Modernization Study (2022)
- Loudoun County Comprehensive Plan (2019)
- Loudoun Countywide Transportation Plan (2019)
- Loudoun County Health and Human Services Strategic Plan (2019)
- Long-Range Transportation Demand Management (TDM) Plan - Loudoun County (2016)
- Loudoun County Transit Development Plan (2018)
- Loudoun County Bicycle and Pedestrian Mobility Master Plan (2003)

Objective-level statements from previous planning studies were compared to the 2019 CTP, then refined and reorganized under transit-specific categories.

The diagnostic process for the development of the TSP goals and objectives is shown graphically in **Figure 1-6**. The TSP goals and objectives are described in the following sections.

Figure 1-6: Policy Diagnostic Process



Source: Loudoun County, 2024

Goals

The seven TSP goals are referenced directly from the 2019 CTP as documented below:

1. Enhanced multimodal safety for all system users.
2. A reliable and efficient multimodal transportation network that manages the travel demands of the County while maintaining fiscal and environmental sustainability.
3. Transportation choices that connect people to their communities, employment centers, educational institutions, activity centers, and other amenities.
4. Integration with neighboring jurisdictions to improve regional and statewide connectivity and to attract residents and businesses to Loudoun County.
5. Support the growth and potential of enhanced national and international connectivity including consideration of Dulles International Airport and the Silver Line Metrorail Extension stations.
6. Context-sensitive planning and design that addresses the different characteristics and needs of the urban, suburban, transition, towns, and rural policy areas; towns; and Joint Land Management Areas (JLMA).
7. A transportation network supportive of the County's overall vision to support economic development, create vibrant, safe communities and public spaces, and protect natural and heritage resources.

These goals were referred to in the 2019 CTP as *Transportation Network Goals*, and were developed to achieve the following:

- Access and Mobility – Provide comprehensive access and mobility for residents, workers, and visitors throughout Loudoun County.
- Health and Safety – Protect and enhance health and safety through design, construction, and improvement of quality transportation networks.
- Quality of Life – Promote high quality of life by protecting the integrity and opportunities provided within the County's urban, suburban, transition, and rural policy areas, and supporting each of the incorporated towns within Loudoun County during planning, design, and construction of the transportation network.

The statements above were used to further compare objective statements in the following section and develop relationships between goals, objectives, and the intended outcomes.

Objectives

The project team synthesized objectives from the 2019 CTP and identified refinements based on a review of other planning documents, feedback from the Loudoun County Board of Supervisors, public engagement events, and an online public survey. The resulting objectives from the policy diagnostic are grouped into four categories, as indicated below.

1. Transit and Land Use

- Differentiate transit-priority areas to minimize conflict between pedestrians, cyclists, and transit with automobiles and increase person-throughput.
- Support the Planning and Zoning department in their efforts to achieve a minimum 10 percent non-auto mode split by implementing parking maximums at developments and include reference to available LCT services near developments in zoning applications (and review of zoning application by LCT staff).
- Assess planning, zoning, and route design alternatives related to transit nodes in terms of station access needs, circulation, improvements, pedestrian-friendly design, and other key features related to transit-oriented development (TOD).

2. Transit Service

- Expanding transit services that are responsive to the region's growth, congestion, and air quality demands.
- Align routes and resources with travel demand, including analyzing potential new service types such as microtransit or bus rapid transit (BRT).
- Promote transit-supportive policies in Loudoun County to increase transportation options and reduce automobile dependence.
- Strive to maximize the cost-effectiveness of all transit service programs subsidized by the County through a review of route performance and costs.
- Establish service-based performance standards, and regularly monitor and update services to ensure effective and efficient transportation.
- Prioritize transit service to Title VI populations, multi-family housing, mixed-use developments, business districts, employment centers, and rail stations.

- Work with other regional transit partners to maximize connectivity with the local and regional transit network.

3. Operations, Fleet, and Facilities

- Review and modify locations of park and ride lots that satisfy appropriate land use goals and expand non-SOV access to these facilities.
- Update and maintain bus stop shelters and facilities to increase passenger comfort and accessibility.
- Explore lower-emission fleet replacement including CNG, hydrogen fuel-cell, and battery-electric buses.
- Attract and retain a talented workforce of bus operators, mechanics, and transit personnel.

4. Customer Experience

- Promote and expand educational programs and initiatives to increase awareness and understanding of transit services.
- Provide an inclusive transit experience that is accessible to all users
- Examine opportunities to leverage technology to improve customer experience.
- Provide regular opportunities for the public to provide feedback.
- Partner with local businesses and the community to promote a transit service that is easily recognizable by the public and integrates all transit services under a common brand.

In order to track Loudoun County's progress against these objectives over the horizon of the project, existing and proposed performance measures have been identified below for each objective category. Existing performance measures consist of data the County is already tracking. Proposed performance measures consist of data or metrics that the County will consider tracking in the future.

Table 1-2: TSP Performance Measures

Objective Category	Existing Performance Measures	Proposed Performance Measures
1. Transit and Land Use	• None	• Countywide mode split (based on census) and development specific (based on survey), if possible • Percent of population or employment within ¼ mile of a bus stop • Percent of low-income or minority populations within ¼ mile of a bus stop

Objective Category	Existing Performance Measures	Proposed Performance Measures
2. Transit Service	• Service standards: service span, service frequency, passenger stops spacing • Service guidelines: amenities at bus stops • Performance standards: net cost per boarding, boardings per revenue mile, boardings per revenue hour, vehicle load, headway, on-time performance	• Percent of population or employment with access to "frequent service" • Percent of low-income or minority populations with access to "frequent service"
3. Operations, Fleet, and Facilities	• Number of bus stops upgraded to be ADA compliant • Number of bus stops upgraded to bus shelters • Fleet useful life	• Park and ride lot occupancy • Emissions reduced by operating CNG buses
4. Customer Experience	• Onboard passenger survey results	• Satisfaction survey for employer, residential organization, human service provider, and community organization partners • Trip completion rate for paratransit service

Source: Loudoun County, 2024

1.2.2 Transit Service Standards

Service design standards are benchmarks against which a system and its routes are developed and evaluated to determine if existing services should be modified. Service design standards function as an input to the planning process and address items such as scheduling and route planning, service reliability, system efficiency, safety and security, customer service, multimodal connectivity, and regulatory compliance. When LCT is considering service changes, these service standards presented below will be considered to the extent possible within funding constraints. LCT's service design standards are included below in **Table 1-3**. All service standards are described for fixed route service.

Table 1-3: LCT Service Design Standards

Service Element	Local Bus Standard	Commuter Bus Standard
Frequency of Service (Headways) Source: LCT Title VI 2023-2026 Program	Not to exceed 60 minutes (weekday peak: varies by route, generally 7:00 a.m. to 7:00 p.m.) Not to exceed 70 minutes (weekday off-peak or weekend)	Not to exceed 45 minutes (peak: 5:00 a.m. to 7:00 a.m., 3:00 p.m. to 5:00 p.m.) Not to exceed 60 minutes (off-peak)
Service Availability Source: LCT Title VI 2023-2026 Program	Per Countywide Transportation Plan, Urban Policy area – bus stop should be no less than every 3,000' along route	Available to anyone with access to a vehicle; 97% of households have at least one vehicle

LCT has also developed service policies for transit amenities; these policies, which

provide more qualitative and less formalized guidance than service standards, are found in **Section 4.1.4** of this document. Loudoun County does not have service standards regarding ridership, crowding, or on-time performance. Instead, these metrics fall within the purview of performance standards, which are outlined in the following section.

1.2.3 Performance Measures

Performance measures are metrics developed to create a consistent evaluation for transit service and provide insight into how services should be modified and implemented. Performance Measures differ from Service Design Standards as they quantify how system services are performing and are an output of service provision. The following statistics are monitored by LCT and are required for reporting to DRPT for inputs into annual formula funding applications. Performance monitoring of the service with respect to these targets should be done annually at a minimum. All performance measures are described for fixed route service. LCT's performance measures related to net cost and boardings are guides to identify underperforming routes. Standards for vehicle load, on-time performance, and vehicle assignment are documented and maintained through the County's Title VI program. The program was updated for 2023 with the standards shown in **Table 1-4**. Safety targets are summarized in **Table 1-5**. Standards were developed for this document based on safety and incidents reported to the FTA.

Table 1-4: Loudoun County 2023-2026 Performance Measures

Performance Measure	Local Bus Service	Commuter Bus Service
Net Cost Per Boarding Source: LC TDP, FY 2018 – FY 2028	Routes with a net cost per boarding that is greater than double the average net cost per boarding for the corresponding service are candidates for adjustment or elimination	
Boardings per revenue hour Source: LC TDP, FY 2018 – FY 2028	Routes with fewer than half the average boardings per revenue hour of the corresponding service are candidates for adjustment or elimination	
Boarding per revenue mile Source: LC TDP, FY 2018 – FY 2028	Routes with fewer than half the average boardings per revenue mile of the corresponding service are candidates for adjustment or elimination	
Vehicle Load Source: LCT Title VI 2023-2026 Program	1.25 during the one-hour span that includes the maximum load point; load may not exceed 1.0 more than 25% of the hour-long peak period. 1.0 during all other times	1.0
On-Time Performance Source: LCT Title VI 2023-2026 Program	**Late:** More than 5 minutes behind any scheduled departure time point **Early:** More than 1 minute ahead of schedule of designated time point. **System goal:** 85% On-Time	**Late:** More than 5 minutes behind first scheduled departure point **Early:** More than 1 minute ahead of schedule of designated boarding location **System goal:** 85% On-Time
Vehicle Assignment: Type and Age Source: LCT Title VI 2023-2026 Program	Reference Loudoun's fleet replacement plan per vehicle type, which is guided by FTA's end of useful life values	Reference Loudoun's fleet replacement plan per vehicle type, which is guided by FTA's end of useful life values

Table 1-5: Loudoun County Transit Safety Targets

Safety Standard	Fixed Route Measure
Fatalities (total number of reportable fatalities per year)	0
Fatalities (rate per total vehicle revenue miles by mode)	0
Injuries (total number of reportable injuries per year)	0
Injuries (rate per total vehicle revenue miles by mode)	Less than 0.1 injuries per 100,000 revenue miles
Safety events (total number of safety events per year)	1
Safety events (rate per total vehicle revenue miles by mode)	Less than 0.1 safety events per 100,000 revenue miles
Distance between Major Failures	Data not available
Distance between Minor Failures	Data not available

Source: Loudoun County, 2024

Chapter 2 System Performance and Operations Analysis

Chapter 2 provides an in-depth system performance review, operations analysis, and evaluation of the transit system. Based on analysis of transit, demographic, travel pattern, and public comment data, opportunities for improvement are identified in four sections:

- Transit Market Demand and Underserved Areas
- System Performance
- Operating and Network Efficiency
- Collaboration with Other Transit Providers

Note that this analysis uses the most recently available information at the time of the TSP development, FY 2022 (July 2021–June 2022), prior to the opening of the Silver Line Metrorail Extension stations in Loudoun County and Fairfax County. Opportunities for improvement are subject to change based on changes introduced following this analysis period. Some of the opportunities for improvement may have been addressed since the time of analysis. Bus Routes with an asterisk have changed since the time of analysis.

Summary of Opportunities for Improvement

Throughout this chapter, the developed opportunities for improvement stem from a mix of technical analysis of the existing service, examination of demographic and travel trends, and feedback from engagement. This overview section summarizes the opportunities identified, which will be addressed by solutions in **Chapter 3**, future transit service planning, and the ongoing Comprehensive Operations Analysis study findings.

The following list elaborates on recommended improvements by category for Loudoun County.

Transit Market Demand and Underserved Areas Summary

These findings pertain to where and when LCT should provide service and opportunities to serve new areas with transit.

- Transit demand is expected between future residential density growth and employment centers including urban, suburban, and transitional place types. These place types are centered around Route 7, Route 28, Innovation Center (Loudoun), Leesburg, and the Dulles Greenway. Future population growth is expected west of Brambleton, south of Leesburg, and in Dulles South.
- Improve service frequency, route directness, and Silver Line Metrorail connectivity in areas with high transit potential and propensity, such as Sterling, Brambleton, Lansdowne, and Ashburn.
- Local routes should better serve low-income households from 3:00 p.m. to 7:00 p.m. on weekdays and from 10:00 a.m. to 5:00 p.m. on weekends.
- Improve transit travel times for shopping, dining, educational, and workplace trips to more efficiently serve customers completing these trips, and

therefore improve the modal competitiveness of transit against single-occupancy vehicles.
- On weekdays, some local morning peak service should be reallocated to better serve trip demand during the afternoon and evening peak hours. After 10:00 a.m. on typical weekdays, travel purpose shifts from work and school trips to destinations outside the County, to local retail centers and home destinations inside the County, such as near Dulles Town Center and communities near Ashburn.
- Future transit hubs and transfer stations should be planned in areas with consistent demand during all times of day and across all days of the week, such as Dulles Town Center, Dulles International Airport, Ashburn Metrorail Station, and commercial centers along Route 7 and Loudoun County Parkway.
- Improve connectivity between common origin-destination pairings, which currently require one or more transfers. Current travel time via transit to areas outside Loudoun average over 115 minutes compared to 50 minutes via auto.
- Improve connectivity to destinations outside of Loudoun County by adding connecting service to other regional transit services at major transfer centers outside the County, such as Fair Oaks Mall, Vienna Metrorail Station, or Monument Drive park and ride lot.

Performance Summary

Performance findings relate to an assessment of the previous year's data for the transit service during FY 2022. It should be noted that since this analysis, some of these changes have already been implemented.

- Routes that do not meet any, or miss multiple, of County performance standards for productivity (such as cost per rider), or accessibility should be strong candidates for consideration for elimination.
    - Local Routes 72 and 985, and Commuter Routes 282, 284, 684, and 885 do not meet any performance standards for productivity (such as cost per rider) nor accessibility.
- Other routes that miss some but not all standards that should be evaluated include:
    - Local Route 57 (Saturday)
    - Local Route 84 (Saturday)
    - Metro Connection Route 927
    - Metro Connection Route 990/992
    - Commuter Route 681
- Motor coaches for commuter bus services comprise the largest vehicle category approaching their expected service age. LCT should continue to program replacements for vehicles approaching their expected useful service life.

Efficiency Summary

Operating and network efficiency relates to how well factors such as frequency, span, and ridership during different time periods of the day serve the demonstrated need. Some specific opportunities for improvement include:

- Schedule and operational adjustments such as interlining (allowing buses to run multiple routes), increasing service frequency, schedule improvements, or extending routes could minimize deadheading, operational delay, and improve on-time performance.
- Routes in the 600 and 800 series, which arrive late more often than other routes, should be examined to determine how traffic or other operational factors may be causing bus delays. Reducing the number of early arrivals on Metro Connection and Silver Line service could free up resources to be allocated elsewhere on lower-performing routes. LCCS should consider re-routing or implementing transit signal priority for routes with disproportionate delays.
- Target reallocation of service span for some routes that show uneven distribution or lower ridership averages during specific time periods such as:
    - Route 70 (p.m. late)
    - Route 72 (midday)
    - Route 82 (p.m. late)
    - Route 88 (all day)
    - Route 927 (p.m. peak)
    - Route 931 (p.m. peak)
    - Route 932 (a.m. peak)
- Technology improvements, such as transit signal priority, validating automated passenger counter (APC) information, or more real-time information, could improve on-time performance systemwide, customer experience, and transit trip planning.

Collaboration Summary

While Loudoun County only has jurisdiction over LCT, travel patterns do not stop at locality boundaries. The following are coordination opportunities with other regional or neighboring partners:

- Collaborate with Fairfax Connector to optimize transfers at Reston Town Center, identify potential routes from Fairfax County to serve Metrorail stations in Loudoun County, and identify travel demand patterns from Loudoun County to Fairfax Connector service.
- Collaborate with the WMATA to continuously monitor the performance of Silver Line bus service, to align service schedules with the entire span of Metrorail departures, and to explore weekend tourism-based services from Metrorail stations to destinations such as farms, wineries, or breweries.
- Collaborate with the Maryland Transit Authority (MTA) to operate service over the Route 15 bridge into Maryland, connecting to the Point of Rocks Maryland Area Regional Commuter (MARC) Station.
- Collaborate with local jurisdictions to explore opportunities for commuter bus service and amenities, such as park and ride lots, to better connect workers who live outside the County to workplaces within the County.
- Actively participate in regional coordination efforts for bus service planning. This coordination could result in shared cross-jurisdictional service or cost-sharing agreements for capital improvements. Further regional collaboration

could occur with transit service providers in West Virginia or the northern Shenandoah Valley.

Engagement Feedback Summary

Through community surveys, pop-up events, listening sessions, and targeted outreach, County staff received input on travel patterns, needs, and opportunities from diverse transit users and community leaders. Recommendations for improved transit service include:

- Expand bus service to include early mornings, nights, and weekends, to better align with existing Metrorail service schedules.
- Expand the area of bus service to improve the accessibility and modal competitiveness of bus service in western Loudoun County.
- Enhance communication of transportation resources to improve customer awareness and confidence in using transit services. This could include advertising campaigns, translation services, customer service trainings, or technological enhancements.
- Solicit and respond to feedback from riders, non-riders, and key stakeholders as transit needs and opportunities continue to evolve. This could include targeted outreach to underserved and underrepresented customers or onboard customer feedback to gain firsthand insight into the rider experience and reported concerns.

2.1 System and Service Data

LCT provides local fixed route bus service (local and Silver Line bus service) in the eastern portion of Loudoun County. The service area of local bus routes includes the Town of Leesburg and communities such as Sterling, Brambleton, and Ashburn. The Silver Line bus service area largely overlaps with the service area of local bus routes, emphasizing connections to Metrorail service to the Ashburn, Loudoun Gateway, Innovation Center, and Reston Town Center Metrorail stations. **Table 2-1** presents population and employment characteristics for the system's total service area.

LCT also provides long-haul commuter bus services between park and ride lots in Loudoun County and destinations to the east, including Rosslyn, Crystal City, the Pentagon, and Washington, D.C.

Table 2-1: System Area Characteristics

Category	System Total	Source
Service Area (Square Miles)	520	Loudoun County Website
Population	440,071	Loudoun County Website (2023 Estimate)
Population Density (Per Square Mile)	846	American Community Survey (2021)
Employment	187,700	Metropolitan Washington Council of Governments (2020)
Employment Density (Per Square Mile)	361	Longitudinal Employment and Housing Data (2020)

Source: Loudoun County

For the purposes of this strategic plan, the latest full fiscal year of data available for analysis was FY 2022, spanning between July 2021–July 2022. The following system and service data in this section reflects FY 2022 operations, during which Silver Line service was still designated as Metro Connection service. Note that annual service adjustments incurred route changes in May 2022, and the opening of the Silver Line Metrorail Extension resulted in additional route changes in November 2022.[5]

As of July 2022, LCT operated the following services:

- 12 Local Routes (54, 55, 56, 57, 62, 70, 72, 80, 81, 82, 84, and 985)
- 8 Metro Connection Routes (87, 88, 901, 923, 925, 927, and 931/932, 990/992)
- 17 Commuter Routes (281, 282, 284, 481, 482, 483, 484, 486, 681, 682, 684, 881, 882, 883, 884, 885, and 886)

LCT also operates complementary paratransit services for qualifying individuals with an origin or destination within the paratransit service area, generally defined as within three-quarters of a mile of a local fixed route. Eligibility is determined by application and trips must be scheduled in advance.

LCT's current fleet roster and peak vehicle need is shown in **Table 2-2** as of October 2023. This data is derived from LCT fleet and daily operational reports.

Table 2-2: Revenue Fleet and Peak Vehicle Need (as of October 2023)

Vehicle Mode*	Peak Vehicle Need	Peak Vehicle Need (totals)	Fleet Size
Local Fixed Route	15	40	62 (32 BOC, 30 Transit)
Silver Line**	25		

[5] For a full list of service changes associated with the opening of the Silver Line Metrorail Extension in 2022, see **Section 3.1.1**

Vehicle Mode*	Peak Vehicle Need	Peak Vehicle Need (totals)	Fleet Size
Paratransit (Demand-Response)	7	7	8
Commuter	25	25	45

*Local, Silver Line, and paratransit bus service may use either transit buses or Body on Chassis (BOC) vehicles.
**For purposes of this study, Silver Line Bus Service was previously referred to as Metro Connection

Source: Loudoun County, October 2023

2.1.1 Local and Silver Line Fixed Route Bus Service

LCT's local fixed route and Silver Line (formerly Metro Connection) bus service, including the level of service, operating costs, ridership, revenue hours, total hours, and revenue miles, are from FY 2022. This study combines these two service types for National Transit Database (NTD) reporting. Data sources include NTD reporting and the April 2022 Daily Operations Report produced by LCT. On November 16, 2022, Silver Line bus service replaced all Metro Connection routes and local bus routes 72, 84, and 985 for 21 new or revised routes.

Operating Statistics

LCT provides local fixed route and Silver Line bus service on weekdays, limited fixed route bus service on Saturdays, and only Route 54 service on Sundays.

Most local bus service operates on weekdays from 7:00 a.m. to 7:00 p.m., except for Route 70 and Route 82, which continue operating until 10:00 p.m. On Saturdays, Route 54 operates from 9:00 a.m. to 6:00 p.m., Route 57 operates from 7:00 a.m. to 7:00 p.m., and Route 70 and Route 82 operate from 8:00 a.m. to 10:00 p.m. On Sundays, Route 54 operates from 9:00 a.m. to 6:00 p.m.

Most Silver Line bus service operates on weekdays from 4:30 a.m. to 11:00 p.m., except for Route 391, which operates from 4:30 a.m. until 9:30 p.m., and Route 333, which operates from 6:15 a.m. to 7:30 p.m. On weekends, Route 322 operates from 8:00 a.m. to 10:30 p.m.

Table 2-3 presents a summary of daily operating statistics for local fixed route and Metro Connection bus service during FY 2022.

Table 2-3: Local and Metro Connection Fixed Route Operating Statistics (FY 2022)

Service Day	Total Hours	Revenue Hours	Revenue Miles
Weekday	62,917	62,333	1,257,681
Saturday	4,120	4,120	57,304

Source: Loudoun County, FY 2022

Operating Costs

An analysis of operating expenses and revenues can help evaluate the cost efficiency of LCT's fixed route transit operations. In FY 2022, operating expenses for

local fixed route and Metro Connection bus service totaled approximately $7.6 million, with farebox revenue generating approximately $246,000, covering approximately 3.2 percent of the operational costs.

Annual Ridership

Loudoun County Transit's fixed route and Metro Connection services served an estimated 290,000 trips in FY 2022. Ridership by route is discussed in **Section 2.3**.

2.1.2 Commuter Bus Service

LCT's commuter bus service including level of service, operating costs, ridership, revenue hours, total hours, revenue miles, and directional route mileage from FY 2022.

Data sources include LCT NTD reporting and the April 2022 Daily Operations Report produced by LCT.

Operating Statistics

LCT provides commuter bus service on weekdays, excluding federal holidays. Service operates during mornings and late afternoon ("rush hour"). **Table 2-4** summarizes the daily operating statistics for the FY 2022 commuter bus service schedule.

Table 2-4: Commuter Bus Operating Statistics (FY 2022)

Service Day	Total Hours	Revenue Hours	Revenue Miles
Weekday	22,631	12,531	400,610

Source: Loudoun County, FY 2022

Operating Costs

An analysis of operating expenses and revenues can help evaluate the cost efficiency of Loudoun County commuter bus operations. In FY 2022, total operating expenses were approximately $6.4 million, with farebox revenue generating approximately $1.2 million, covering approximately 18.3 percent of the operational costs.

Annual Ridership

Loudoun County Transit served an estimated 150,000 commuter bus trips in FY 2022. Ridership by route is discussed in **Section 2.3**.

2.1.3 Complementary Paratransit Demand-Response Service

LCT's demand-response service considers the level of service, operating costs, ridership, revenue hours, total hours, revenue miles, and directional route mileage from FY 2022. This study uses the term "paratransit" to describe demand-response service where the origin or destination falls within 0.75-mile of fixed route service by requirement of the Americans with Disabilities Act (ADA). This study uses the term "on-demand" to describe demand-response service where neither the origin nor destination falls within the 0.75-mile radius of fixed route service.

Data sources include LCT NTD reporting and the April 2022 Daily Operations Report produced by LCT.

Operating Statistics

LCT provides paratransit service during the same operating times as fixed route service: weekday service, limited Saturday service, and no Sunday service. ADA Ride, a private contractor, interfaces with local operators to provide paratransit service for qualified riders within 0.75-mile of all other fixed route service. To use this service, qualifying riders who have applied and been accepted must make a reservation by calling the reservation hotline between one and five days before the scheduled trip.

Table 2-5 summarizes the daily operating statistics for the FY 2022 demand-response service schedule. This summary excludes paratransit bus service provided by Virginia Regional Transit (VRT).

Table 2-5: Paratransit Operating Statistics (FY 2022)

Service Day	Total Hours	Revenue Hours*	Revenue Miles**
Weekday	8,549	8,549	103,208
Saturday	483	483	

*As a demand-response service, there is no distinction between revenue and non-revenue hours
**Revenue mileage does not distinguish between weekday and limited Saturday service

Source: Loudoun Demand Response, FY 2022

Operating Costs

An analysis of operating expenses and revenues can help evaluate the cost efficiency of Loudoun County demand-response operations. In FY 2022, total operating expenses were approximately $955,000 with farebox revenue generating approximately $30,000, covering approximately 3.1 percent of the operational costs.

Annual Ridership

LCT served approximately 13,000 paratransit trips in FY 2022.

2.1.4 Description of Existing Route Design and Schedule Standards

Transit service (route) design and performance standards are the benchmark against which a transit system and its routes can be developed and measured for effectiveness. Service design standards function as an important input to the planning process and addresses scheduling and route planning, service reliability, system efficiency, safety and security, customer service, multimodal connectivity, and regulatory compliance. The application of these standards evaluates the effectiveness of current service and assists in identifying opportunities for future service improvements on both a route-level and system-wide basis. **Section 2.3**, **Section 2.4**, and **Section 2.5** of this plan assess these standards in greater detail.

Chapter 1 of this document defines LCT's service design and performance standards. LCT will consider these service standards to the extent possible within funding constraints when planning future service changes.

Table 2-6 summarizes LCT's performance measures. Unless indicated otherwise, both tables reflect fixed route service metrics.

Table 2-6: Loudoun County Transit Performance Standards

Performance Measure	Local Bus Standard	Commuter Bus Standard
Net Cost Per Boarding Source: LC TDP, FY 2018 – FY 2028	Routes with a net cost per boarding that is greater than double the average net cost per boarding for the corresponding service are candidates for adjustment or elimination	
Boardings per revenue hour Source: LC TDP, FY 2018 – FY 2028	Routes with fewer than half the average boardings per revenue hour of the corresponding service are candidates for adjustment or elimination	
Boarding per revenue mile Source: LC TDP, FY 2018 – FY 2028	Routes with fewer than half the average boardings per revenue mile of the corresponding service are candidates for adjustment or elimination	
Vehicle Load Source: LCT Title VI 2023-2026 Program	1.25 during the one-hour span that includes the maximum load point; load may not exceed 1.0 more than 25% of the hour-long peak period. 1.0 during all other times	1.0
On-Time Performance Source: LCT Title VI 2023-2026 Program	**Late:** More than 5 minutes behind any scheduled departure time point **Early:** More than 1 minute ahead of schedule of designated time point. **System goal:** 85% On-Time	**Late:** More than 5 minutes behind first scheduled departure point **Early:** More than 1 minute ahead of schedule of designated boarding location **System goal:** 85% On-Time
Vehicle Assignment: Type and Age Source: LCT Title VI 2023-2026 Program	Reference Loudoun's fleet replacement plan per vehicle type, which is guided by FTA's end of useful life values	Reference Loudoun's fleet replacement plan per vehicle type, which is guided by FTA's end of useful life values

2.1.5 Public Engagement

To ensure the TSP and CAPSP most accurately reflect the mobility challenges and opportunities of Loudoun County, the project team conducted a series of engagement events to solicit feedback from elected officials, key stakeholders, and the public. These engagement opportunities generated important feedback toward defining high-level transit goals and priorities while revealing more specific gaps, needs, and service opportunities. This consisted of community surveys geared towards non-riders in October 2022, community surveys geared towards riders in September 2023, engagement with human service providers, pop-up events, listening sessions, and targeted outreach.

October 2022 Survey

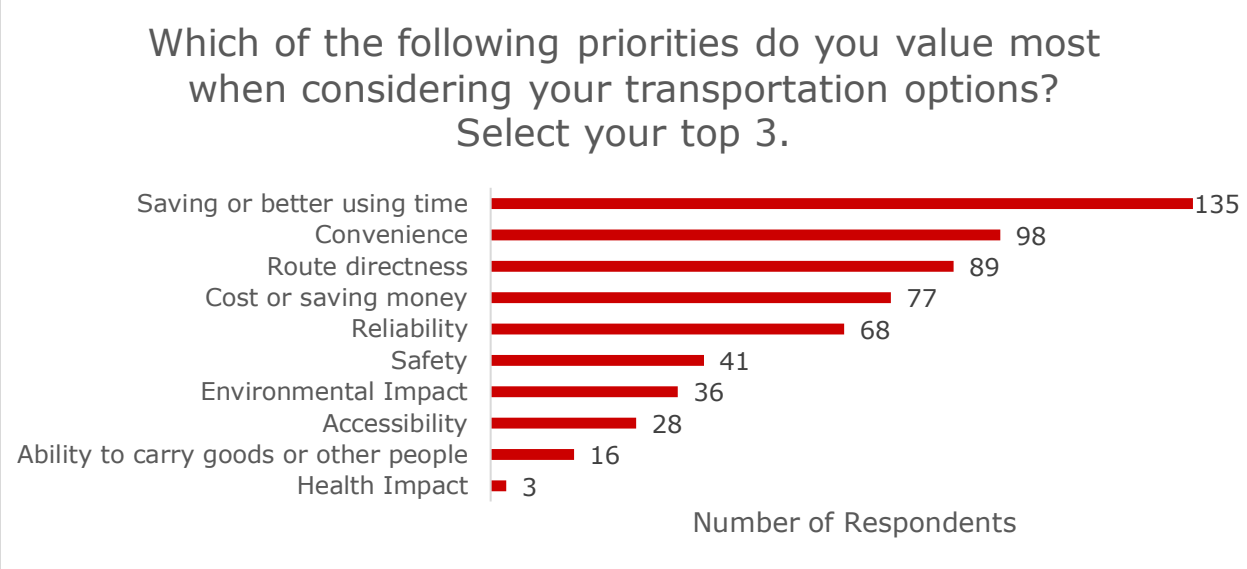
In October 2022, Loudoun County staff launched a virtual project survey to gather input on transit strengths, opportunities, and priorities to, from, and within Loudoun

County for developing this TSP and the CAPSP. The survey assessed common destination-origin pairings, travel modalities, transit needs and priorities, and demographic information. The survey consisted of multiple-choice and short-response questions and was available in English and Spanish. The survey was advertised at pop-up events and public workshops, through printed postcards, and virtually on the project landing page and County social media accounts. The project survey received 198 responses. 196 responses were submitted in English, and two responses were submitted in Spanish.

Despite high rates of access to a personal vehicle (97.4 percent) and the dominance of driving as the most popular travel mode for all surveyed trip purposes, a majority (61.5 percent) of respondents report that they would like to ride LCT more often if improvements were made. To better understand where and how further investments can enable such improvements, the survey asked respondents to select their top three transportation priorities and rank their top three potential service improvements.

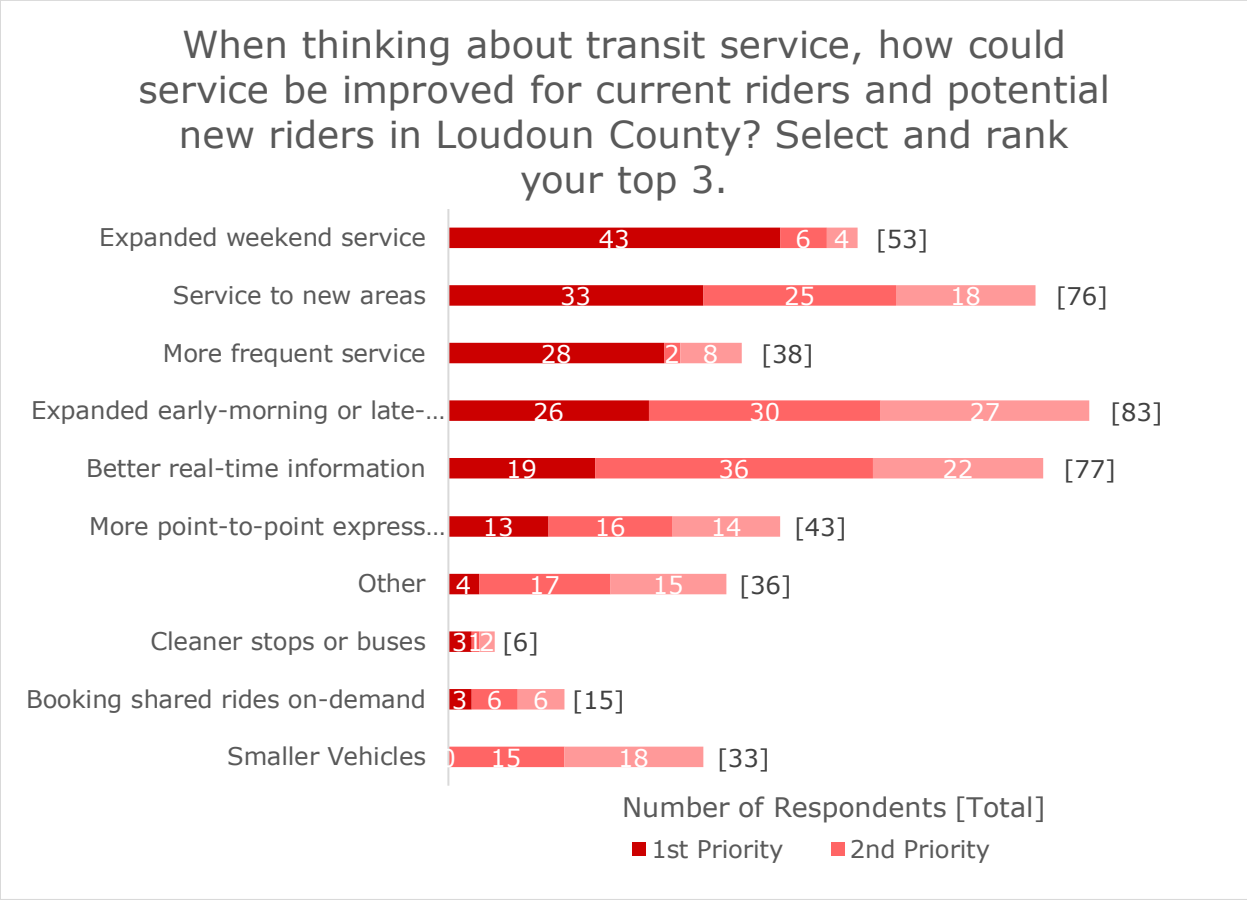
As shown in **Figure 2-1**, respondents value transportation options that are fast, convenient, and direct, even over factors such as safety or reliability. In assessing potential service improvements, respondents demonstrated their interest in expanding service windows on weekends—the most common priority—and both earlier and later in the day, the most common priority to rank among respondents' top three priorities. As shown in **Figure 2-2**, respondents also prioritized service frequency, coverage, and real-time information improvements.

Figure 2-1: October 2022 Survey Results, Transportation Priorities



Source: Loudoun County, October 2022

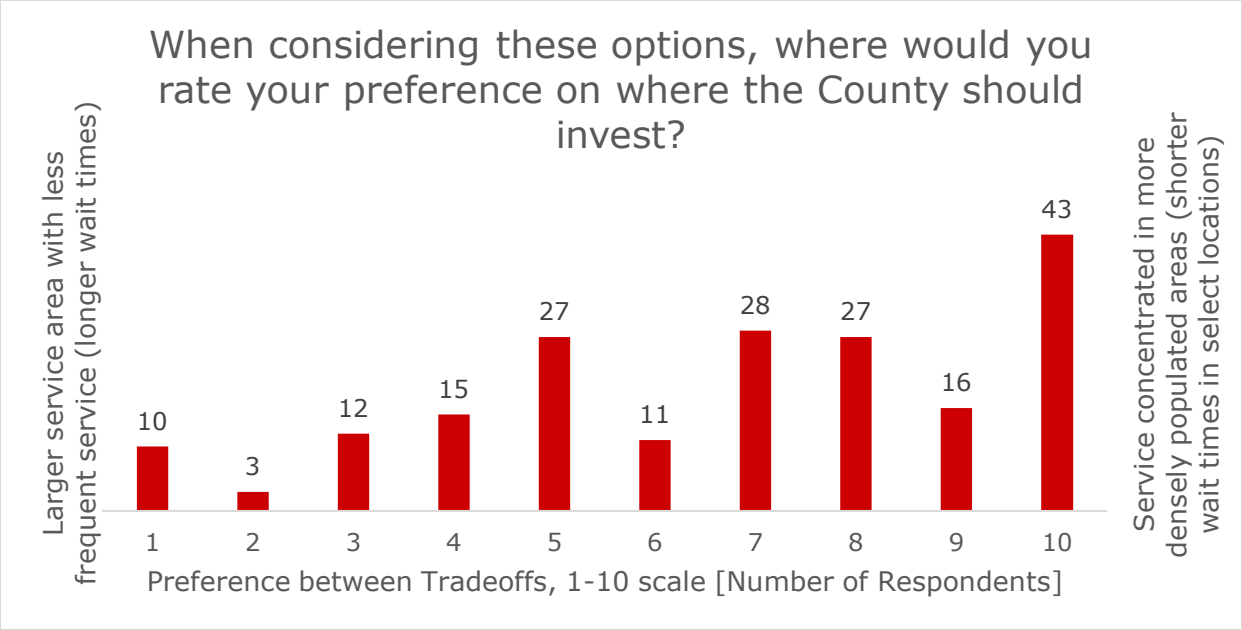
Figure 2-2: October 2022 Survey Results, Transportation Improvements



Source: Loudoun County, October 2022

The survey also included questions that gauged respondents' preferences between common tradeoffs when allocating limited resources in transit service planning. While respondents demonstrated little consensus between tradeoffs such as peak versus off-peak or weekday versus weekend service, **Figure 2-3** illustrates a general preference for more frequent service in a smaller service area compared to less frequent service in a wider service area. These results seemingly contradict the high priority respondents showed for service to new areas in **Figure 2-2**, suggesting instead that users might not prefer an expanded service area if it costs more frequent or expanded service schedule.

Figure 2-3: October 2022 Survey Results, Investment Preferences



Source: Loudoun County

Appendix B contains a complete list of survey questions and responses.

September 2023 Community Transit Survey

From September 11, 2023, to October 2, 2023, outreach staff from Public Affairs and Communications (PAC) and Loudoun County Transit and Commuter Services (Transit) surveyed bus riders on select local bus routes, including Silver Line local bus routes.

The main goal of this survey effort was to gather information from underserved, lower-income, and Spanish-speaking community members in Sterling, Ashburn, Leesburg and Purcellville about their local bus service needs. County staff developed the Loudoun County Community Transit Survey, which was distributed in person on these bus routes by county staff. This survey placed emphasis on community members' knowledge of and familiarity with local bus service.

While County staff conducted the October 2022 project survey almost exclusively virtually, staff conducted the September 2023 survey through in-person engagements. Staff covered various bus routes during morning, afternoon and evening shifts on Monday through Wednesday and Saturday. Using iPads, paper surveys and a flyer with a QR code, which directed the respondent to an online survey, the team surveyed the riders in both English and Spanish and provided survey participants with a giveaway for participating.

Tables were set up at six sites so outreach staff could gain insights from non-bus riders. The sites included three Loudoun County libraries, a food pantry, a local business and a Loudoun County government social services building. Using iPads, paper surveys and a flyer with a QR code, the surveyors collected 48 surveys

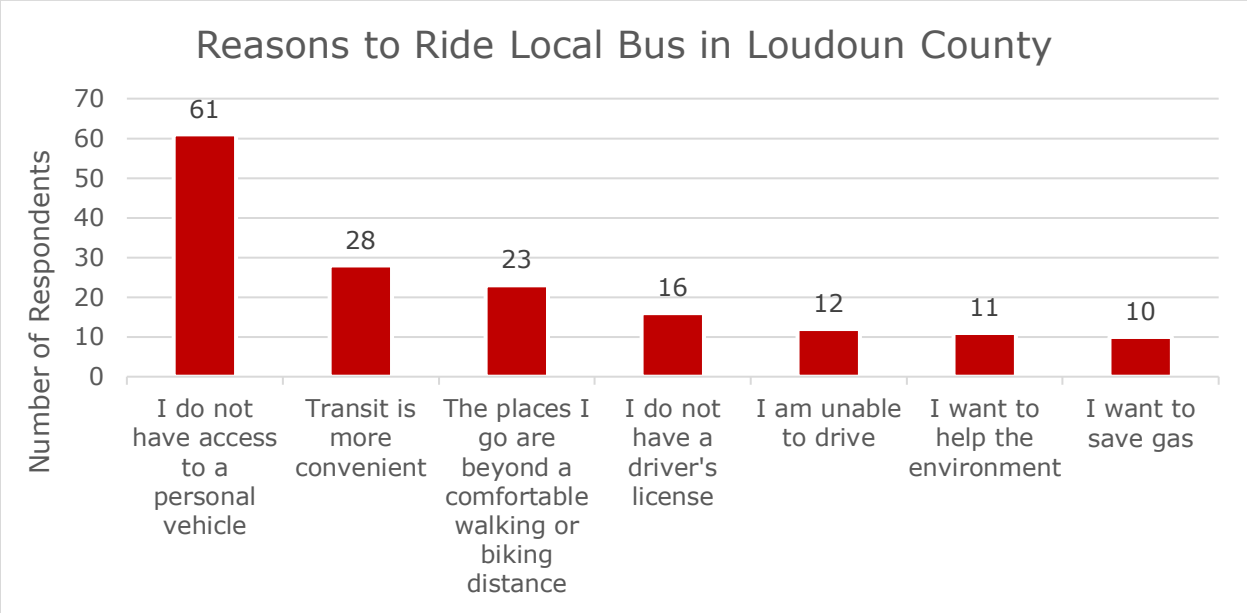
during the time period. The site locations were in Leesburg, Dulles, Purcellville, Potomac Falls and Sterling.

The survey received 138 responses. 104 responses were submitted in English, and 34 responses were submitted in Spanish.

Of community respondents, 58 percent reported using Loudoun County Transit bus service to meet their travel needs within the County. Different customer demographics correlate with different trends in the frequency and purpose of ridership. For example, respondents between the ages of 35 and 44 rode most often, and respondents over the age of 65 reported using transit to shop or attend medical appointments rather than to commute to work. While bus ridership to get to work did not vary across genders, more women reported using transit to get to school, errands, and childcare than men did.

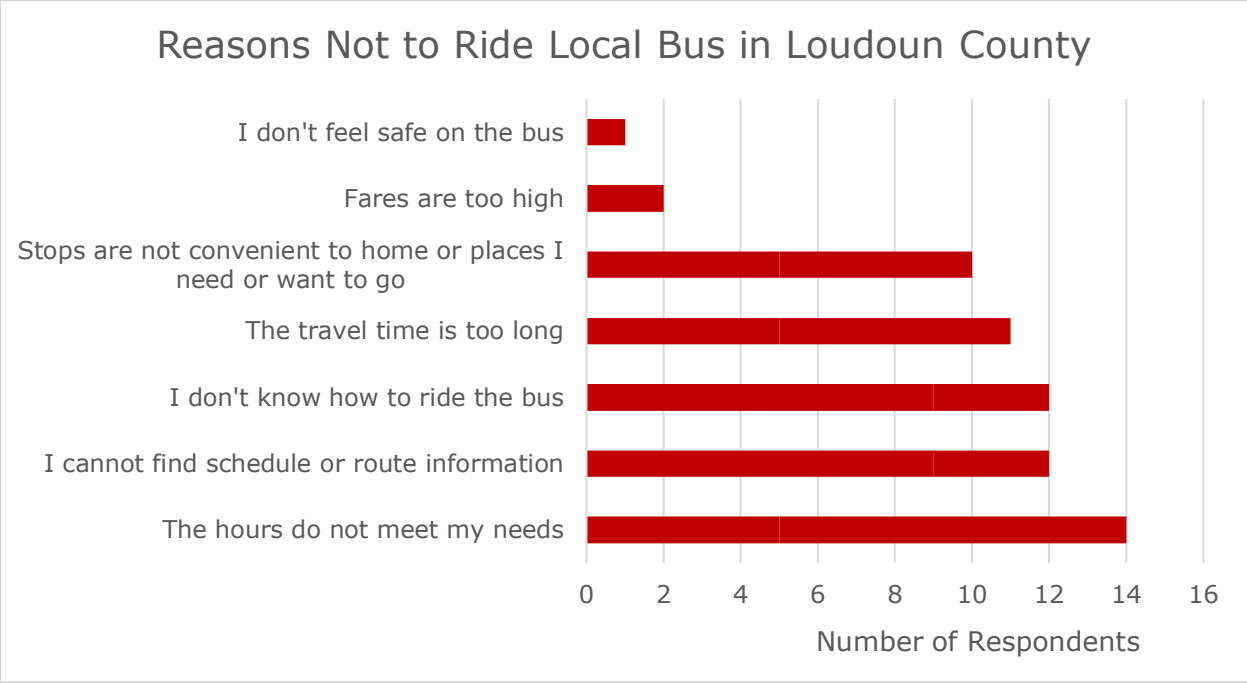
As shown in **Figure 2-4**, 38 percent of these riders cited that they use the bus because they do not have access to a personal vehicle, which is over twice the amount reported than for any other reason surveyed. While this figure suggests that more customers ride the bus out of necessity than out of preference, 67 percent of respondents reported satisfaction with existing bus service options. **Figure 2-5** shows that for respondents who report rarely or never using local bus service in the County, a plurality (23 percent) does not ride because service hours do not meet their needs. Importantly, the following two most common reasons for not riding are a lack of knowledge on how to ride the bus (19 percent) and an inability to find schedule and route information (19 percent). These responses suggest that while a majority of these community members already use and are satisfied with local bus service, those who do not ride might be empowered to do so with a better understanding of service options and schedules.

Figure 2-4: September 2023 Community Survey Results, Reasons to Ride Local Bus



Source: Loudoun County, September 2023

Figure 2-5: September 2023 Community Survey Results, Reasons Not to Ride Local Bus



Source: Loudoun County, September 2023

In agreement with the community members' responses, human service providers indicated that their clients who use local buses do so out of necessity: they do not have access to a personal vehicle, they do not have a driver's license, or they are otherwise unable to drive. In addition to the destinations and trip generators commonly mentioned by community members—such as work, shopping, or school—

human service providers specifically mentioned their clients using the bus to travel to legal appointments. One-third of human service providers reported that they would not be able to direct their clients to find out more about bus services or schedules, echoing a similar lack of information shared by the community members themselves.

Common recommendations for bus service improvements included adding more routes, expanding the service schedule to include evenings and weekends, and promoting more frequent and punctual departures. To narrow existing gaps in understanding of transit services, respondents emphasized translating transit resources into other languages—mainly Spanish—and clarifying the available fare payment options. Providing customer service training to operators could further improve communication and promote a higher quality onboard experience. In conjunction with the feedback gathered from human service providers, soliciting feedback from community members onboard the bus suggests that County staff should continue to ride the bus to gain firsthand insight into rider experience and reported concerns.

Appendix B contains a complete list of survey questions and responses.

September 2023 Human Services Providers Transit Survey

From September 11, 2023, to October 2, 2023, outreach staff from Public Affairs and Communications (PAC) conducted target outreach to human services providers in the County. This outreach gathered information regarding their knowledge of Loudoun County's transit system as well as their knowledge of their clients' experiences with local transit. Public Affairs and Communications staff distributed a survey via email to human services providers in the County, and a total of 25 surveys were returned. In addition, outreach staff set up six tables to gain insights from human services providers who might be working on-site. The sites included three Loudoun County libraries, a food pantry, a local business, and a Loudoun County Government services building. These sites were in Leesburg, Dulles, Purcellville, Potomac Falls, and Sterling.

The level of familiarity with and confidence in local bus transportation varies among the human services providers who responded. Opportunities are evident for providing additional information tailored to the clients of these service providers, as well as developing relationships with provider organizations who can share bus schedules and information. Respondents also provided suggestions for bus service improvements which focused on enhancing accessibility, service coverage, and convenience. These requests include adding more stops, increasing frequency, extending service hours (especially during evenings and weekends), improving information access, and addressing specific area-based needs.

Engagement Feedback Summary

County staff received input on travel patterns, needs, and opportunities from diverse transit users and community leaders. Common recommendations for improved transit service from respondents across all outreach efforts include:

- Expand bus service to include early mornings, nights, and weekends, to better align with existing Metrorail service schedules.
- Expand the area of bus service to improve the accessibility and modal competitiveness of bus service in western Loudoun County.
- Enhance communication of transportation resources to improve customer awareness and confidence in using transit services. This could include advertising campaigns, translation services, customer service trainings, or technological enhancements.
- Solicit and respond to feedback from riders, non-riders, and key stakeholders as transit needs and opportunities continue to evolve. This could include targeted outreach to underserved and underrepresented customers or onboard customer feedback to gain firsthand insight into the rider experience and reported concerns.

In addition to these thematic consistencies, each outreach effort also elicited feedback specific to the unique breakdown of respondents, either as a product of intentionally targeted outreach or unequal participation across demographic groups. For example, the virtual October 2022 project survey reached a more affluent audience of mostly non-riders, so their feedback reflects their desire for improvements to transit services which might encourage their ridership. Conversely, the in-person September 2023 community transit survey targeted riders who are more difficult to reach using mass communications, and their feedback reflects general satisfaction with existing transit services themselves but a need for enhanced information to use these services more confidently. Similarly, the hybrid September 2023 human services provider outreach explored solutions to improve the accessibility and ease-of-use of transit specifically for human services clients. The following sections review the distinct objectives, respondent demographics, and key pieces of feedback from each outreach effort.

2.1.6 Support for Transit

Loudoun County Board of Supervisors

In November 2022, Loudoun County staff organized a series of one-on-one meetings with the Loudoun County Board of Supervisors to inform them of the TSP/CAPSP planning process and to understand the perspectives that elected officials have heard from their constituents. The listening sessions were offered to all members of the Board of Supervisors by email communication from County staff. As informed by the unique geographies and demographics of their urban, suburban, and rural districts, these meetings enabled each Supervisor to share their visions and priorities for transit and commuter services. These meetings equipped elected officials with the ability to address potential project opportunities and impacts with their constituencies more fluently.

While each Supervisor shared perspectives on transit opportunities and needs generally tailored to the district they represent, it reveals consistent support for strengthening transit service in the County. This support includes preserving a high quality of service for existing riders, expanding service to capture potential new riders, and providing incentives to improve the modal competitiveness of transit. Supervisors relayed general satisfaction from existing riders, who appreciate a

balance of commuter service and the modified Silver Line bus service to provide transit connections to points eastward; however, one Supervisor suggested that the opening of Metrorail service may create redundancies with commuter bus routes. Simultaneously, Supervisors shared a need to expand transit service, especially routes serving commuters, to include those with non-traditional travel schedules and "reverse commuters" traveling to rather than from the County. To this end, constituent requests frequently focused on expanding weekend, evening, and on-demand services.

The majority of Supervisors demonstrated interest in enhancing transit service through accessibility improvements, which would better serve current riders and appeal to non-riders. These improvements include prioritizing the physical accessibility of transit infrastructure for senior and disabled populations and the non-physical accessibility of transit information for all users. Supervisors noted that transit access could be further improved by addressing potential gaps in existing transit service and commuter amenities north and west of the Town of Leesburg. Multiple Supervisors endorsed the exploration of multimodal solutions, such as BRT service, to reduce vehicular demand and congestion along the high-traffic corridors for Route 15, Route 7, and Route 9. Recurring feedback also addressed the need for more frequent connections between the Town of Leesburg and Metrorail stations. While numerous workplaces offer private shuttles to fulfill this need, Supervisors encouraged employers to incentivize transit instead. This feedback illustrates widespread consensus among Supervisors to promote a transit-friendly vision for the County's transportation future.

October 2022 Outreach

The project survey launched by Loudoun County staff in October 2022 demonstrates further transit support from its respondents. Independent of their status as transit riders or non-riders, a majority (61.5 percent) of respondents report that they would like to ride transit more often if improvements to existing service were made. Additionally, the necessity of commuter bus service emerged as an area of strong consensus. A greater proportion of respondents ride the bus to commute to or from work than for any other trip purpose, and 45.5 percent of bus riders do so to commute to or from work exclusively. To this end, 71.9 percent of bus respondents use commuter bus service, and 60.1 percent of bus riders use commuter bus service exclusively. This feedback furthers the perspective of several Board of Supervisors members, who communicated their favor of reinforcing and expanding commuter bus service.

In addition to the project survey and stakeholder meetings, four project pop-up events facilitated 1,046 interactions between the project team and the general public. Of these interactions, 72.6 percent took place in English and 27.3 percent took place in Spanish. 981 postcards were distributed, and eight community members completed the project survey at the pop-up events.

Results from these interactive exercises revealed particular interest in faster trips, bus service in new locations, and improved bicycle and pedestrian facilities. The geographic focuses of these responses were mostly centered around Franklin Park

in Purcellville, Harmony Park and Ride, and Washington Dulles International Airport. Community members also shared a desire to use transit services in Loudoun County while expressing frustration with existing service coverage, speed, and frequency. Multiple respondents shared a need for transit service connecting them to areas outside of the County, such as commuter service to Arlington County and Washington, D.C.

September 2023 Outreach: Community Transit Survey and Human Services Providers Transit Survey

The September 2023 engagement collaborations between LCT staff and the Public Affairs Office staff garnered and demonstrated even further support for transit from a broader base of users and potential LCT system users. Feedback from riders, non-riders, and human services providers all emphasize the importance of transit services especially for those who do not have access to a personal vehicle, do not drive, and cannot drive.

More community respondents (58 percent) reported using local buses to travel throughout the County than any other mode, and an even greater proportion of Spanish-speaking community respondents (74 percent) reported using these services. Additionally, 67 percent of respondents reported being satisfied (38 percent) or very satisfied (29 percent) with existing bus service options. Other than a lack of vehicle access (44 percent), the second-most common (20 percent) reason community respondents reported riding the bus was because transit is more convenient than other options. The combination of high modal share, high satisfaction with existing services, and comparative modal convenience indicates ardent support for transit by the community respondents surveyed.

Human service providers reported a similarly strong support for transit, citing a strong client demand for extended service hours during the evening and on weekends to accommodate non-traditional commuting schedules and improve overall system accessibility. Human service providers also suggested offering free or reduced-cost bus passes for qualifying riders to reduce potential financial barriers to their clients fully leveraging transit service. They also identified a strong need for expanded service coverage in the County's western portion, where their clients reported limited transit access and long transit travel times.

2.2 Evaluation of Transit Market Demand and Underserved Areas

Transit market demand is determined by various factors including population and employment density, employment types and commuting requirements, prevalence of parking and alternative transportation options, and the makeup of household travel needs. As Loudoun County's economic and population dynamics evolve, the areas and segments of the population reliant on transit service also shift. This market demand assessment discusses how LCT can increase transportation accessibility for underserved communities and address the future travel needs of residents and visitors.

The first element of this section, **Section 2.2.1**, contains an analysis conducted for LCT's service area to help uncover the dynamics of the travel market and where

likely transit riders are going. Data for developing the transit market analysis and discussing trends in potentially underserved areas include existing planning standards, land use, socioeconomic, employment, and location-based travel data.

The second element of the transit demand analysis, **Section 2.2.2** Opportunities for Improvement, identifies where service may be most effective or needed to improve future service based on the current data. Opportunities for improvement are listed based on the market data source in which it was identified: land use, transit propensity, or travel pattern. These two market analysis sections provide the documentation and justification for targeted improvements for potential network or route-level modifications discussed in **Chapter 3** Planned Improvements and Modifications.

2.2.1 Transit Demand and Underserved Area Evaluation

Existing Transit Priority Areas

Loudoun County's existing transit priority areas can be drawn from previously adopted policy and implementation plans including the 2019 CTP, TDP, and the Transit Infrastructure Plan (TIP), which is part of the CTP. The TIP establishes a plan for transit infrastructure including stations, shelters, park and ride lots, and service facilities. These infrastructure plans, including design guidelines and capital allocation, set the foundation for when and how LCT may be enhanced using the support of transit-specific infrastructure within the County.

Some designated priorities identified by the TIP include transit signal priority, construction of transit hubs, accessible and comfortable station and stop amenities, and coordination with land use planning. Often, these planned improvements are concentrated within specific markets of transit-supportive land use (termed 'corridors') or where most riders are concentrated to maximize the benefit and efficiencies of transit service. These corridors defined in the CTP and other documents include:

- Ashburn Village Boulevard
- Atlantic Boulevard
- Belmont Ridge Road
- Croson Lane
- Davis Drive
- Dulles Greenway
- Gloucester Parkway
- Harry Byrd Highway (Route 7)
- Innovation Avenue
- Loudoun County Parkway
- Mooreview Parkway
- Nokes Boulevard
- Northstar Boulevard
- Old Ox Road
- Pacific Boulevard
- Potomac View Road
- Riverside Parkway
- Russell Branch Parkway
- Ryan Road
- Shellhorn Road
- Sterling Boulevard
- Sully Road (Route 28)
- Tall Cedars Parkway
- Waxpool Road

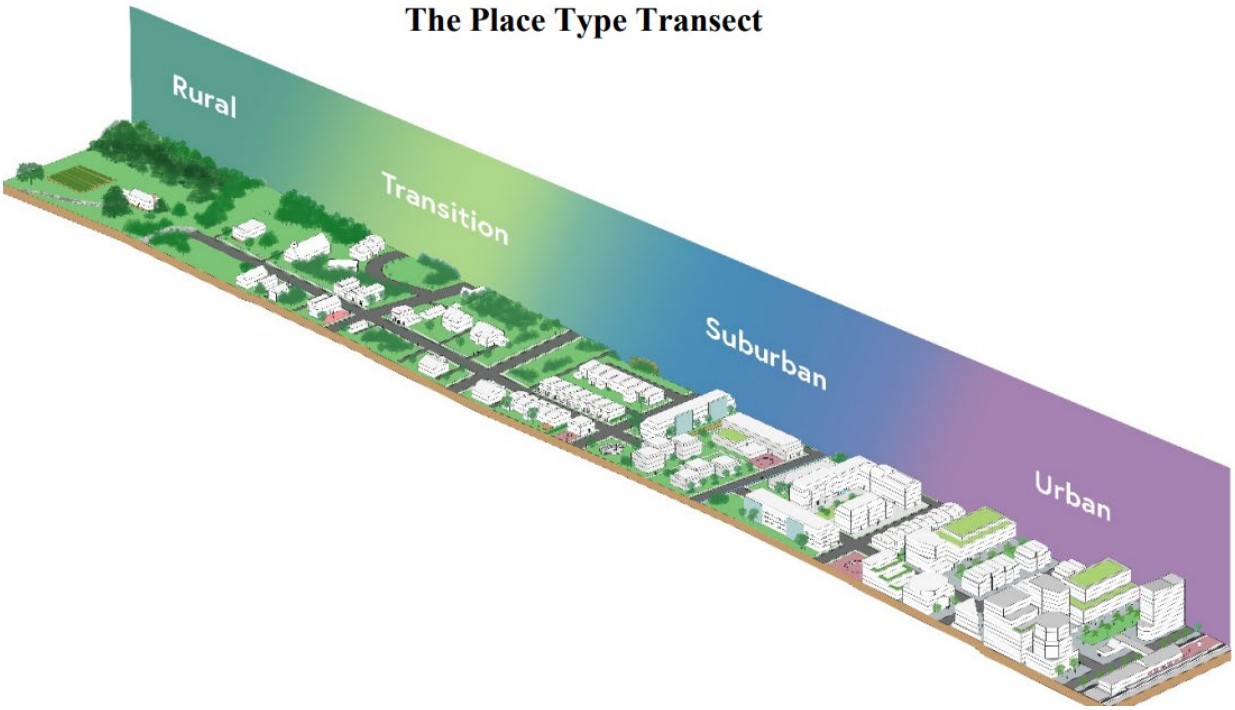
The previous Loudoun County TDP, updated in 2018, defines the operational demographic elements needed to serve markets and the potential to serve transit.

Plan elements identified in the 2018 TDP comprised of service adjustments post-Silver Line Metrorail Extension opening, bus route restructuring, and the prioritization of future improvements. These existing opportunities to address underserved or developing areas in Loudoun County will be updated in this TSP and incorporated into any proposed system modifications.

Land Use

Land use plays a critical role in shaping the long-term success of transit systems. Often organizations other than transit agencies hold responsibility and authority for integrating land use and transit systems. However, when a local government can control its land use and design of its transit system framework, there are opportunities to maximize the benefits to residents through transit-supportive land use and coordinated service. Loudoun County's adopted 2019 CTP outlines several initiatives to integrate land use and transit. The new categories of place types consist of Urban Planning Areas (UPAs) to augment legacy Suburban Planning Areas (SPAs), Transition Planning Areas (TPAs), and Rural Planning Areas (RPAs) as depicted in **Figure 2-6**.

Figure 2-6: The Place Type Transect



Source: Loudoun County General Plan, 2019

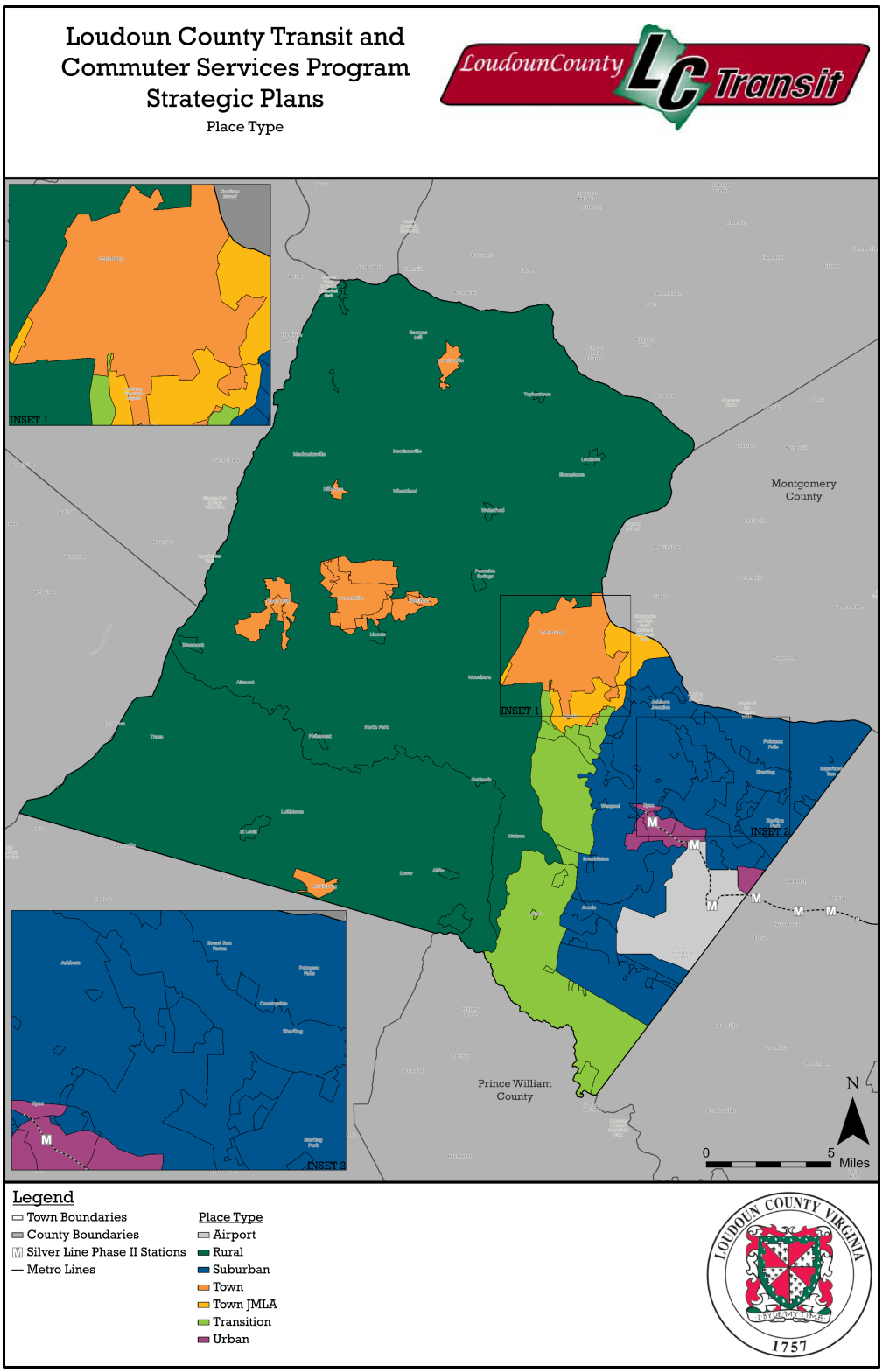
These new land use categories represent a new planning concept in Loudoun County, where mixed-use development and high-occupancy residential units are incentivized around the Silver Line Metrorail Extension stations in UPAs and SPAs. These developing areas attract a population and activities conducive to higher transit service levels due to an increased density of trip generators and

destinations, a reduced reliance on private vehicles, and an increased need for multimodal access.

As high-frequency Metrorail and express bus services support dense, vertical mixed-use development, transit service must also efficiently connect less dense suburban and transition place types. The provision of local bus service in these areas enables potential riders to connect to major employment and activity centers. Loudoun County has made a concerted effort to preserve the rural nature of Western Loudoun County as compared to the increasingly urban nature of Eastern Loudoun County, a distinction which is roughly restricted by Route 15.

All place types in the 2019 Comprehensive Plan possess varying elements of transit service, ranging from high frequency heavy rail service, direct connection to park and ride lots or multimodal centers, to community-based accessibility through local circulator and demand-response. Service recommendations in the TSP will consider where future land use can support varying levels of transit service. The CTP designation of planning and place type categories in Loudoun is found in **Figure 2-7**.

Figure 2-7: Loudoun County Place Type Designations



Source: 2019 Comprehensive Plan

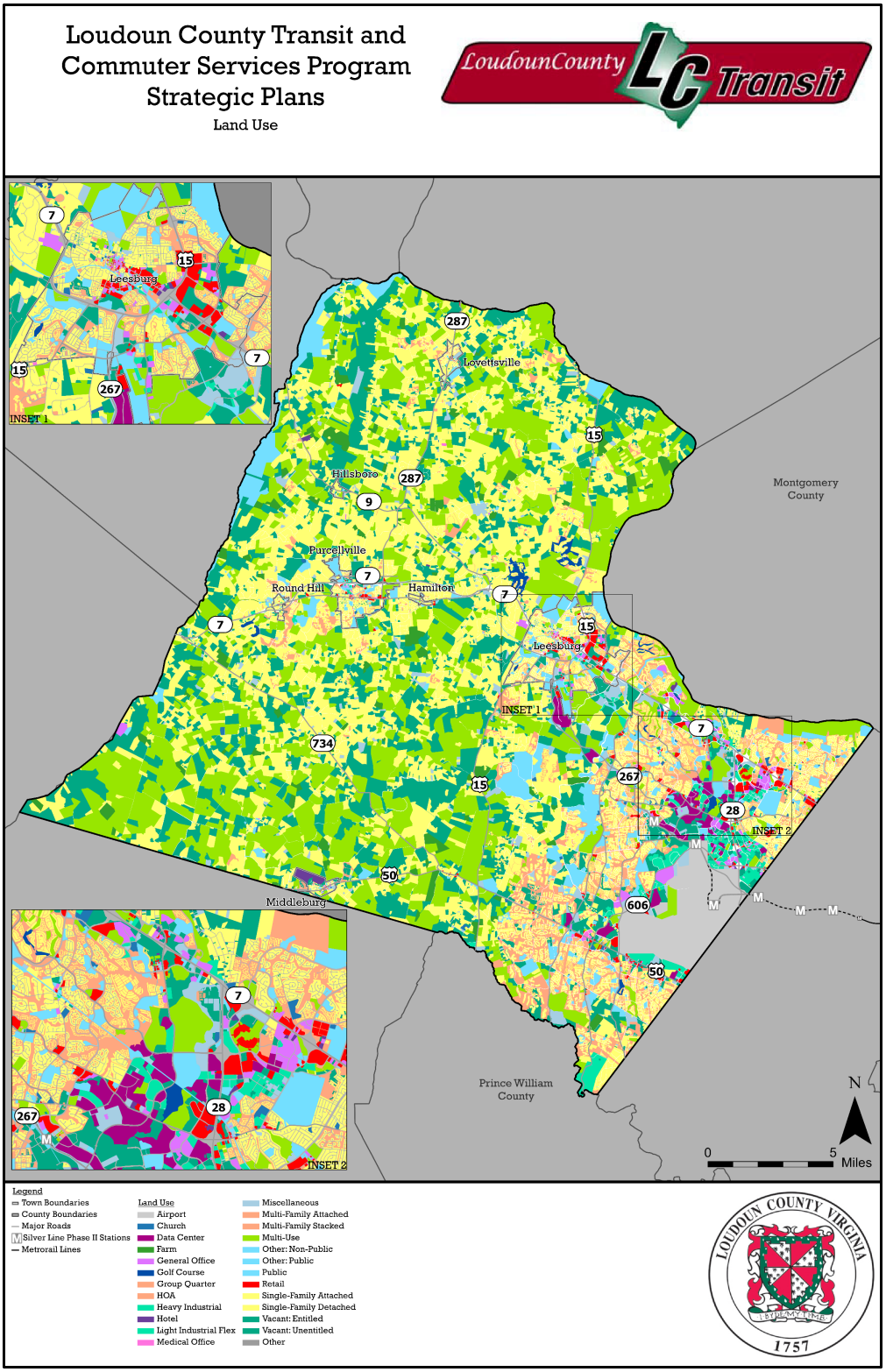
Figure 2-8 shows the existing parcel land use distribution throughout Loudoun County. Green and yellow symbology represents rural and non-dense land use types, while red, purple, and orange represent areas with high-intensity purposes potentially suitable for fixed route transit services. Organized by Place Type, high-level recommendations for transit based on current land use patterns are discussed below:

- Urban Place Types proximal to the Silver Line Metrorail Extension stations have the dominant existing land uses of commercial retail, data centers, vacant land, and offices. Frequent feeder or transit service connecting less dense areas of Loudoun to urban place types and transfers to Metrorail should be considered.
- Suburban Place Types in Ashburn, Arcola, Brambleton, and Sterling feature the highest concentration of single-family residential, but also interspersed commercial centers, and professional offices may be connected via high-frequency transit.
- Town Place Types such as Leesburg and Purcellville feature similar land use composition as greater Loudoun County, albeit at a smaller scale: single-family confined within specific neighborhoods with both multi-family and commercial development focused on a singular corridor running through or located on the periphery of the town. Town place types and their associated land use benefit from circulator routes to bring riders around locations within the town and cross-county routes to connect various neighborhoods along major corridors to amenities within the town area.
- Transition place types such as Upper Broad Run and Foley are designated to be large-lot single-family and multi-family developments, public spaces, and industrial activities with little allotment to commercial or job centers. This may require a transit service that is tailored to serve the travel to these low-density and distributed areas or a flexible-service solution such as a deviated fixed route or microtransit.
- Rural place types largely consist of unincorporated areas to the west of Route 15, including agricultural and forested areas that need more population density and concentration of uses to support fixed route transit service consistently. Here, demand-response transit service can generally accommodate instances of sporadic transit need.

The Loudoun County General Plan features a roadmap to promote Place Types that are intended to provide more diverse neighborhood amenities through transitional and mixed land use types within neighborhoods (thus shortening trip distance requirements). However, there remains a need to connect residents to desired destinations in high-intensity activity centers located around urbanized areas with options such as transit service. Current land development trends may also require transit service to connect travelers located in separated residential neighborhoods to more concentrated areas for shopping and employment activities, both regionally and within their local area.

With continued residential development and related amenity intensities in planned areas, there is an additional transit need to support commercial access to and within the County's expanded Urban and Suburban Place Types. This is the result of the growing Countywide population and increased number of employers, creating travel market demand between areas that are increasingly further away from each other and further away from existing transit services.

Figure 2-8: Loudoun County Land Use by Parcel



Source: 2019 Comprehensive Plan

2019 Population Density

Fixed route public transportation is often most efficient when connected to high-density population and employment centers. Placement of a transit stop within a half-mile of population centers increases the ability of transit to serve various trip needs from residents and increases the attractiveness of the transit stop if more share of a populations' home trips originates close to a stop.

The reach of a transit stop is generally defined as a quarter-mile radius of coverage, following an understanding that riders will not walk further than a quarter-mile to reach a transit stop before considering other modes of travel. However, for park and ride lots served by commuter or express bus as well as heavy rail stations, the reach of transit stops may extend to over a half-mile radius as people drive or are willing to walk further for higher-quality service. The size of a potential transit travel market is directly related to an area's total population, population density, and level of service.

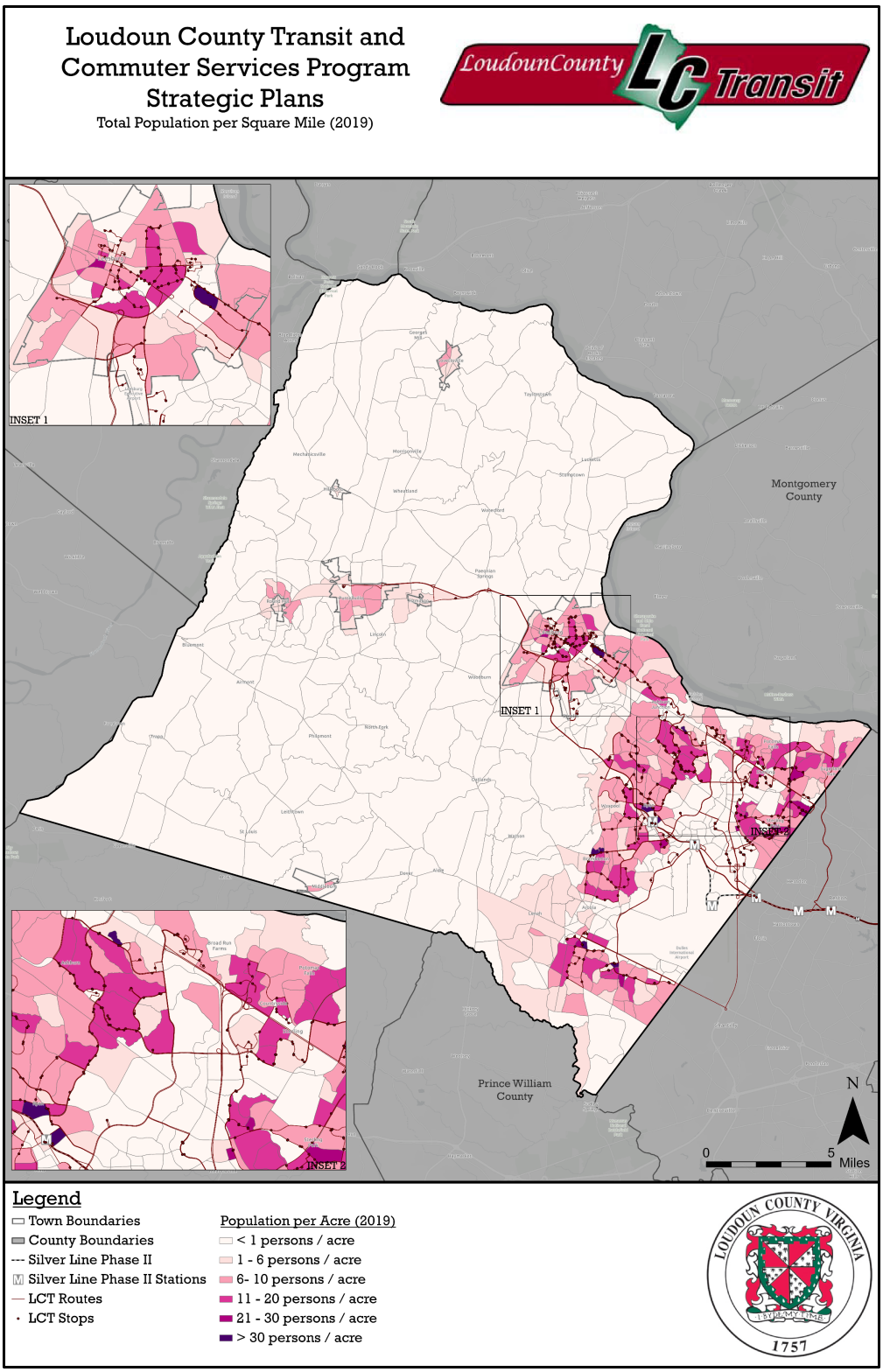
According to the Transit Cooperative Research Program (TCRP) *Transit Capacity and Quality of Service Manual, 2nd Edition*, densities of three households per acre (approximately six people per acre) or four jobs per acre can support fixed route transit service with one-hour headways.

Figure 2-9 shows the 2019 population density at the Traffic Analysis Zone (TAZ) level of geography based on Loudoun County Travel Demand Forecast population and employment growth projections (Loudoun County Travel Demand Model, Version 3). Areas shaded in red indicate places where fixed route service may be feasible; darker areas have the potential to support more frequent service.

Areas with moderate population density are concentrated in eastern Loudoun County within the Suburban and Transitional Place Types, averaging around 15 people per acre. Areas with high population density ranging from 21–30 people per acre are located throughout Sterling, Ashburn, South Riding, and Leesburg and are currently served by local or Silver Line bus routes. Pockets of very high population density TAZs with more than 30 people per acre are currently located next to the Ashburn Metrorail Station and along major road corridors such as Fort Evans Road, Route 7, NorthStar Boulevard, and Tall Cedars Parkway. Most of these higher-density population centers are currently served with LCT bus stops that provide connections from residential areas and local commercial centers to a terminus at Metrorail Stations.

In western, more rural areas of Loudoun County, areas with higher population density are in or nearby towns. The Towns of Lovettsville, Round Hill, Purcellville, and Middleburg all indicate some density of greater than 6 people per acre, indicating potential market for transit customers in outlying areas.

Figure 2-9: Total Population by Square Mile (2019)



Source: Loudoun County Travel Demand Model

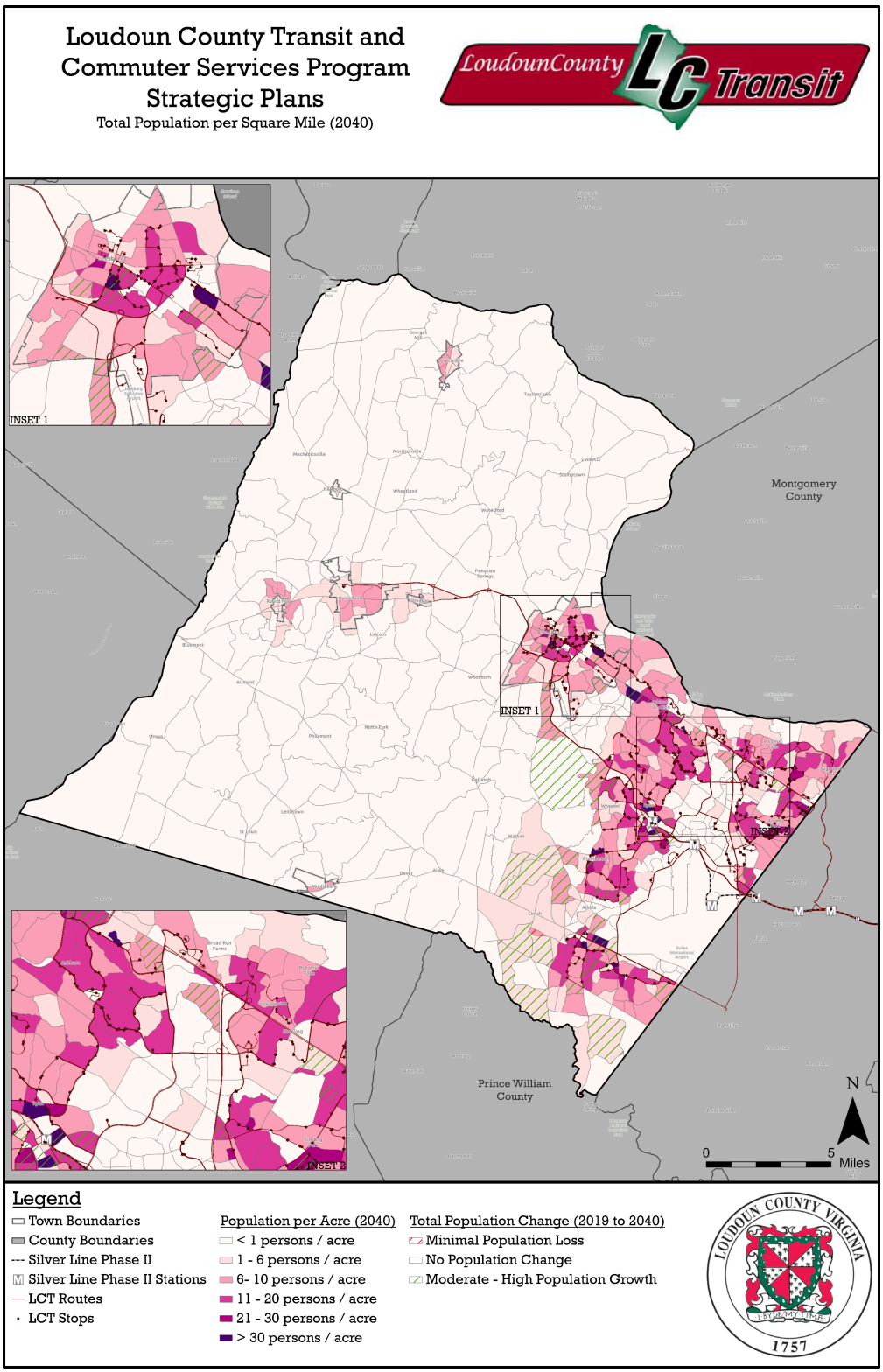
2040 Population Density Growth

Loudoun County's population is projected to increase from 423,046 people in 2019 to 539,247 people in 2040, with a corresponding increase in the Countywide average population density from 4.2 to 5.7 people per acre (Loudoun County Transit Demand Model 2040 Projections). **Figure 2-10** shows the 2040 projected population by Traffic Analysis Zone (TAZ) from the Loudoun County Travel Demand Model (Version 3). Areas hatched with green indicate TAZ with a moderate to significant population increase of more than 10 percent. Areas hatched with red indicate TAZ with a minor population decrease (less than a 5 percent decrease).

Most of the geographic area in Loudoun County remains stable in population, notably in rural areas, towns, and established suburban locations such as Potomac Falls, Lansdowne, and Belmont. Significant growth in existing low-density areas is concentrated in suburban and transitional zones, notably Brambleton/Waxpool, Arcola, and South Riding. These areas are likely to see development in various housing types, including both attached and detached housing. Despite experiencing significant growth, these areas are likely to remain lower in density in the 6-10 person per acre range as compared to areas to the eastern part of the County. Residents of these areas are likely to rely more on commuter and Silver Line bus service to reach employment destinations further away.

Several existing denser areas are forecasted to grow significantly, notably in and around Leesburg, Ashburn Metrorail station, locations adjacent to Route 7, Sterling/Sterling Park, and adjacent to the Innovation Center Metrorail station. These areas are more likely to grow in predominantly attached and multi-family housing, potentially appropriate for fixed route transit service providing connections to employment, recreation, and other diverse trip purposes. The increase in population and density in these specific areas further supports the development of fixed route local transit service, as discussed in **Section 2.2.2** Transit Demand and Underserved Opportunities for Improvement.

Figure 2-10: Total Population by Square Mile (2040)



Source: Loudoun County Travel Demand Model

2019 Employment Density

Demand for transit is dependent on the location and the number of jobs because traveling to and from work accounts for the largest single segment of transit trips in most markets. While the introduction of hybrid and remote work schedules during the COVID-19 pandemic has changed the frequency with which employees report to their in-person workplaces, employment density is still a strong indicator of potential transit demand.

Transit that serves areas of high employment density also provides key connections to job opportunities. As mentioned earlier, the *Transit Capacity and Quality of Service Manual* suggests that an employment density of four jobs per acre or more can typically support base-level fixed route service of one bus per hour. **Table 2-7** correlates population and employment density to transit service level guidelines.

Table 2-7: Service Type and Frequency Guidelines by Densities

Transit Service	Minimum Residential Density	CBD Commercial/ Office Density
Local bus, 1 bus/hr.	4.5 dwelling units/net acre	5-8 million ft^2
Local bus, 2 bus/hr.	7 dwelling units/net acre	8-20 million ft^2
Local bus, 6 bus/hr.	15 dwelling units/net acre	20-50 million ft^2
Light rail, 5-min peak headway	9 dwelling units/net acre in 25-100 mi^2 corridor	35-50 million ft^2 (20 million ft^2 if 100% at-grade)
Rapid transit, 5-min peak headway	12 dwelling units/net acre in 100-150 mi^2 corridor	>50 million ft^2
Commuter rail, 20 trains/day	1-2 dwelling units/net acre	>100 million ft^2

Source: Transit Capacity and Quality of Service Manual, 3rd Edition

According to Loudoun County Economic Development, the top five employers are Loudoun County Public Schools, Loudoun County Government, Verizon, Northrop Grumman, and United Airlines. Loudoun County hosts numerous technology and defense companies that are located within the Dulles Technology Corridor. Within this corridor, Ashburn is known as the "data center capital of the world," with numerous providers operating over 60 data centers throughout the census-designated place[6]. The Loudoun County's major employers labor market trends are further discussed in this chapter.

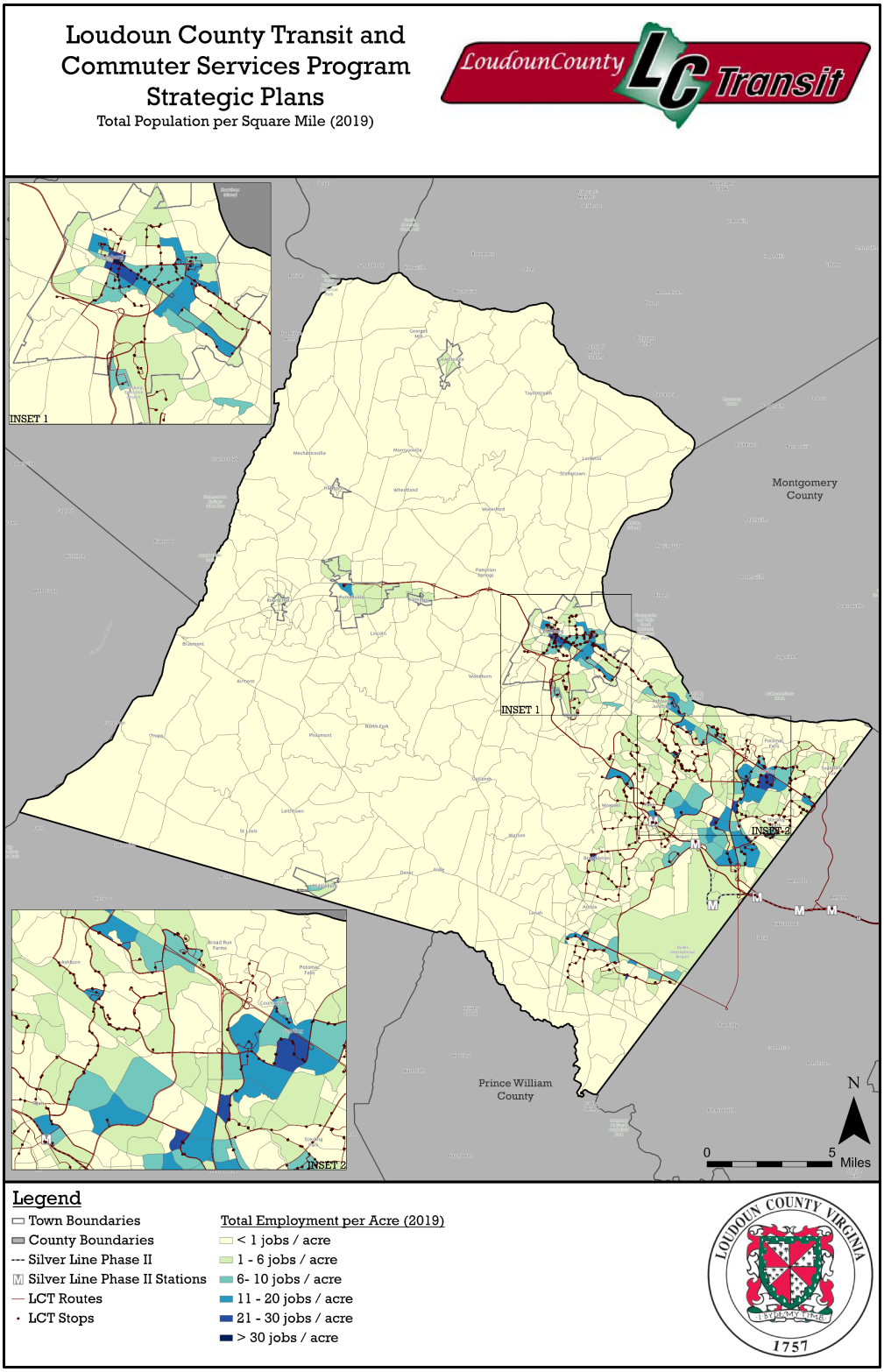
See **Figure 2-11** for the 2019 employment per acre based on the Loudoun County Travel Demand Management (TDM) TAZ (Version 3). Key areas of employment

[6] www.dgtlinfra.com, Dgtl Infra, LLC.

density are concentrated in the eastern portion of the County, including Sterling, Ashburn, north of Dulles International Airport, and Leesburg. Specific TAZs, such as office parks around Dulles Town Center, downtown Leesburg near Government Center, and adjacent to the Dulles North park and ride lot, have high employment densities of more than 20 jobs per acre. These areas also concentrate along arterial roadways including Route 28, Route 7, and Route 267 (also known as the Dulles Toll Road). Other areas with moderate employment density include Brambleton, Arcola, South Riding, Purcellville, and Belmont between one to six jobs or as many as 20 jobs per acre.

As mentioned previously, while concentrations of workplace locations correlate with areas of high population density, workers who live in these areas may commute to a job center other than the one closest to their home. The following sections further explore the relationship between population and employment data in the transit potential analysis and the travel pattern analysis, which examines commuter behavior.

Figure 2-11: Total Employment by Square Mile (2019)



Source: Loudoun County Travel Demand Model

2040 Employment Density Growth

Loudoun County employment is projected to increase from 190,724 jobs in 2019 to 252,470 jobs in 2040, with a corresponding increase in average job density from 2.4 to 3.4 jobs per acre (Loudoun County Transit Demand Model 2040 Projections). **Figure 2-12** shows the forecast for 2040 employment per acre at the TAZ level.

Changes in employment from existing 2019 data are classified as minimal to job loss (-5 percent to 5 percent job gain), moderate (5 percent to 15 percent job gain), and significant (greater than 15 percent job gain).

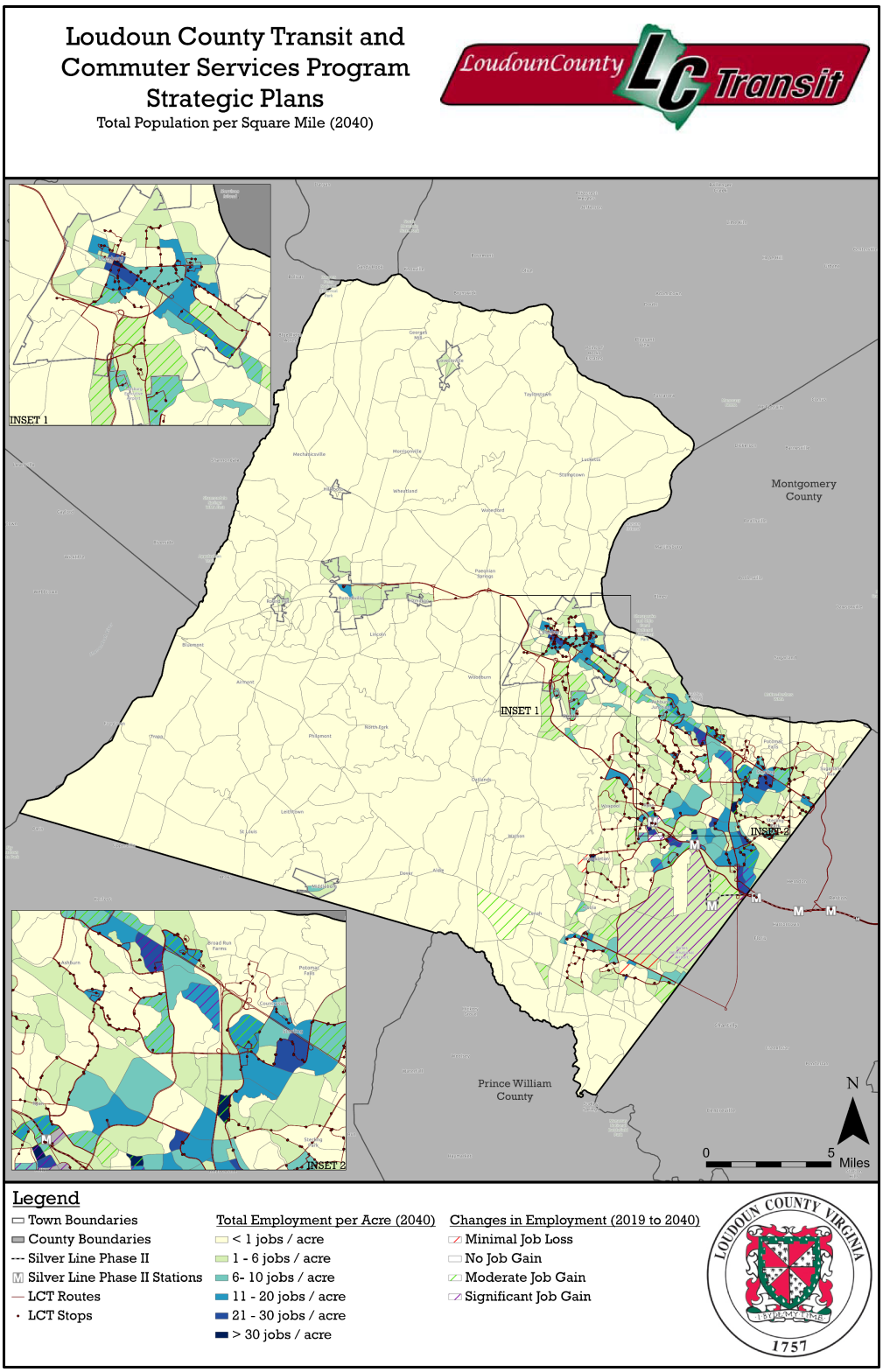
Key areas of employment growth and densification occur along the Dulles Greenway, Route 28, and Route 7 from Leesburg to Sterling. Select areas along major corridors see employment density rise from averages of under 10 jobs per acre in 2019 to over 15 jobs per acre in 2040, which represents significant employment growth.

Significant employment growth (more than 15 percent) is indicated in several TAZ, notably in and around Washington Dulles International Airport, Innovation Center (Loudoun), and both Loudoun Gateway and Ashburn Metrorail stations. Specifically in the vicinity of Dulles Airport, employment growth at Dulles Airport totals 2,160 jobs, plus an additional 1,512 jobs in the TAZ containing Innovation Center.

Similarly to population growth, TAZs in Arcola and South Riding experience moderate growth in jobs but remain relatively lower density, with up to six jobs per acre. This results from relatively minimal employment activity under 2019 conditions, but it still indicates development is continuing slower than other areas of the County in forecast years.

Rural areas in western Loudoun County and towns experience stable employment, with only slight increase in employment density for a TAZ adjacent to Round Hill that increases from less than one up to six jobs per acre.

Figure 2-12: Total Employment by Square Mile (2040)



Source: Loudoun County Travel Demand Model

Transit Potential

Higher residential and employment densities in the same area often correlate with higher transit ridership. Concentrations of both population and jobs in specific locations allow transit to serve residential trip generation, employment, and commercial destinations simultaneously. A combined transit potential evaluation combines the population and employment densities of each TAZ to indicate the viability of fixed route transit service in an area.

Although population and employment density are not the sole factors in selecting where to operate transit, transit is typically most viable in areas with population densities of six people per acre and four jobs per acre. The transit potential model for Loudoun County assumes that regions where people and jobs total more than five per acre are transit supportive according to the *Transit Capacity and Quality of Service Manual, 3rd Edition.* The range for population and job density within Loudoun County was estimated, then categorized into low to high transit potential using equal intervals of people in each category. By localizing the ranges for values of transit potential only within the County, the most densely populated area and job centers within Loudoun County will display for high transit scores, corresponding to where transit riders will be while the areas of least activity will show lower transit potential. The description of thresholds for transit potential is indicated in **Table 2-8**.

Table 2-8: Transit Potential Thresholds

Category	People and Jobs per Acres
Negligible	<1
Low	1-5
Low-Moderate	6-15
Moderate	16-30
Moderate-High	31-60
High	>60

Source: Loudoun County

Figure 2-13 shows transit potential distribution throughout the LCT service area. Areas of high transit potential are concentrated in the eastern part of the County similar to areas previously discussed for high population and employment density. While no other locations outside Leesburg indicate high transit potential exceeding 60 people and jobs per acre, several TAZs in the Town of Leesburg indicate moderate-high transit potential with between 31 and 60 people plus jobs per acre, as do more specific locations consisting of:

- One Loudoun (Ashburn)
- Ashburn Metrorail station
- Brambleton (in the vicinity of the Brambleton Library)
- Stone Ridge
- South Riding Market Square

Areas of moderate transit potential (16 to 30 people plus jobs per acre) are more numerous and clustered in areas with industrial parks, commercial shopping plazas, multi-family residences, and/or attached housing. These TAZs surround the areas of high potential and generally make up areas considered the center of census-designated places such as the following:

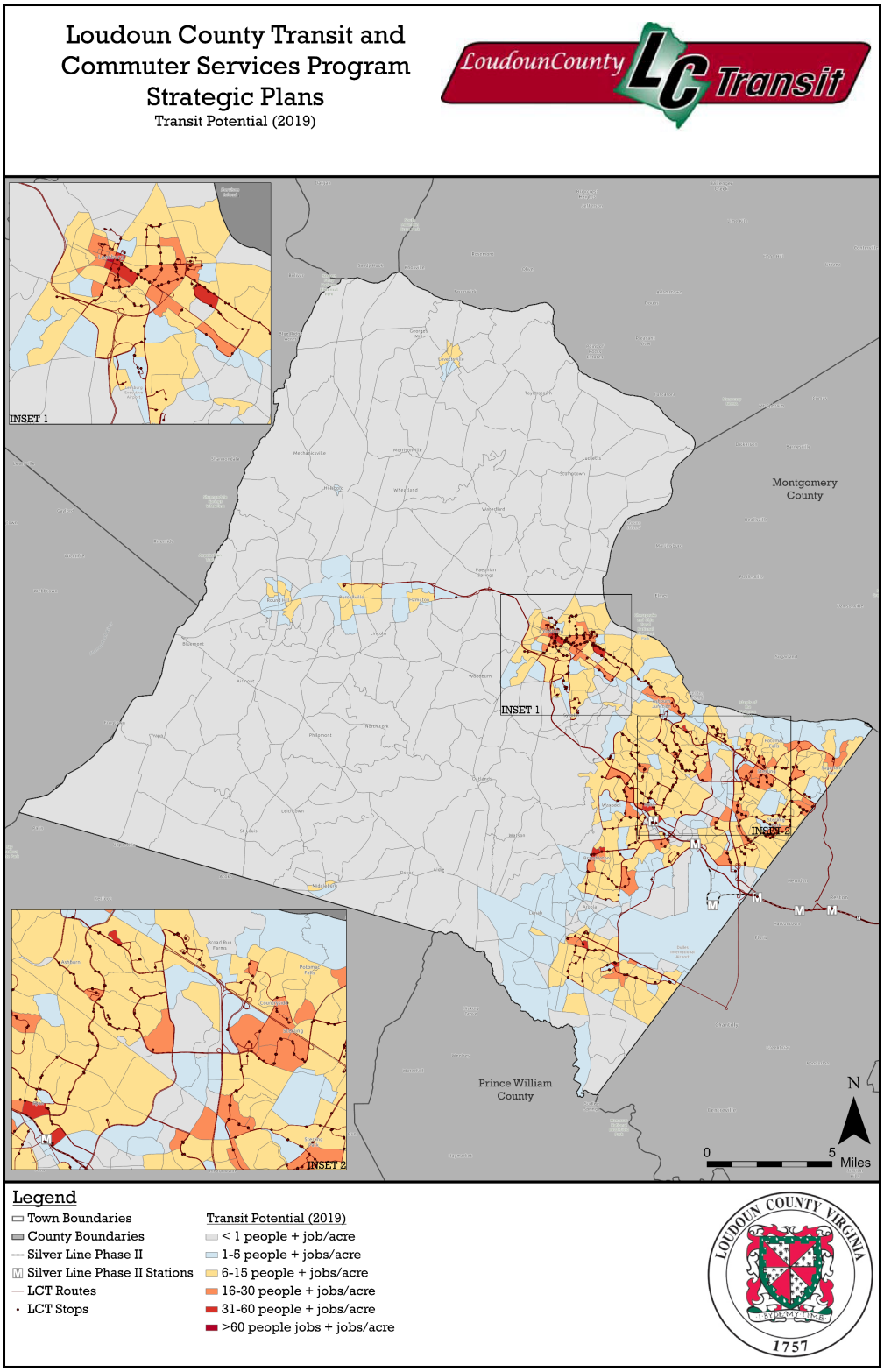
- Downtown Leesburg and nearby corridors of Route 7 and Edwards Ferry Road, NE
- Ashburn Junction (including Inova Loudoun Hospital)
- Sterling and the Dulles Town Center
- Sterling Park
- Broadlands
- Ashburn Metrorail station
- Brambleton
- Stone Ridge
- South Riding Market Square

Areas of low-moderate transit potential infill the areas between the aforementioned places above and may be characterized by either low-density housing interspersed with light industrial developments or moderate to low-density housing. These areas provide 6 to 15 people plus jobs per acre and comprise the majority of TAZ within eastern Loudoun County. Additionally, the core areas of towns in western Loudoun are comprised of this density, with several parcels in Lovettsville, Round Hill, and Purcellville indicating low-moderate transit potential.

Areas of low potential are predominately present in Arcola, Lenah, or rural/protected forest areas adjacent to higher-potential TAZ (such as TAZ adjacent to Broad Run through Sterling). Although Dulles International Airport is also indicated in this category, the density of employment is visually underrepresented based on the size of the airport TAZ.

The Towns of Hamilton and Middleburg both indicate a combination of both low-moderate and low transit potential, though they are immediately surrounded by areas of negligible transit potential with a density of less than one person plus job per acre. The majority of TAZs within rural areas are indicated as having negligible transit potential, with some low potential immediately surrounding towns.

Figure 2-13: Transit Potential (2019)



Source: Loudoun County

Transit Propensity

Similar to transit potential, transit propensity indices use population and employment to determine geographic areas with high demand and need for fixed route transit service. However, a transit propensity index also includes additional demographic and employment statistics to create a model assuming certain demographic subgroups that may be more inclined to use transit. For example, a location with a high number of zero-vehicle households will be more likely to have higher potential transit users than a location with relatively more multi-vehicle households.

The transit propensity index for this study is created using the 2021 U.S. Census American Community Survey (ACS) and data. Within the model, block groups are ranked based on demographic or employment characteristics (such as total population or total jobs). Each block group is subsequently assigned a score for each characteristic based on its rank. Scores are then multiplied by weights associated with each characteristic and combined to generate a propensity score for each block group.

The model developed for this study assumes that areas with higher total population or household densities, as well as higher concentrations of seniors, youth, people living in poverty, households with reduced vehicle access, and people with disabilities, will have a greater propensity to use transit. The weights of each of the factors in the transit propensity index model are listed in **Table 2-9**.

Table 2-9: Transit-Oriented Propensity Index Weighting

Category	Weight
Total Population	30%
Youth Population	5%
Senior Population	5%
Low-Income Households	20%
Zero-Vehicle Households	20%
One-Vehicle Households	10%
People with Disabilities Population	10%

Source: Loudoun County, 2024

The results of the transit propensity index differ from previously presented market assessments based solely on population and employment. Areas where a high transit propensity index aligns with the transit potential analysis include census-designated areas of Sterling, Sterling Park, Arcola, and Ashburn Junction. These areas also have higher density for population and employment, non-native English speakers, low-income households, and youth population.

Figure 2-14 illustrates areas of high-moderate transit propensity that begin to show some deviation from previous analyses. While there is consistency in the eastern portion of the County in areas such as Sterling, Sterling Park, and Arcola,

there are several areas indicating potential for a transit market not previously highlighted. These areas include:

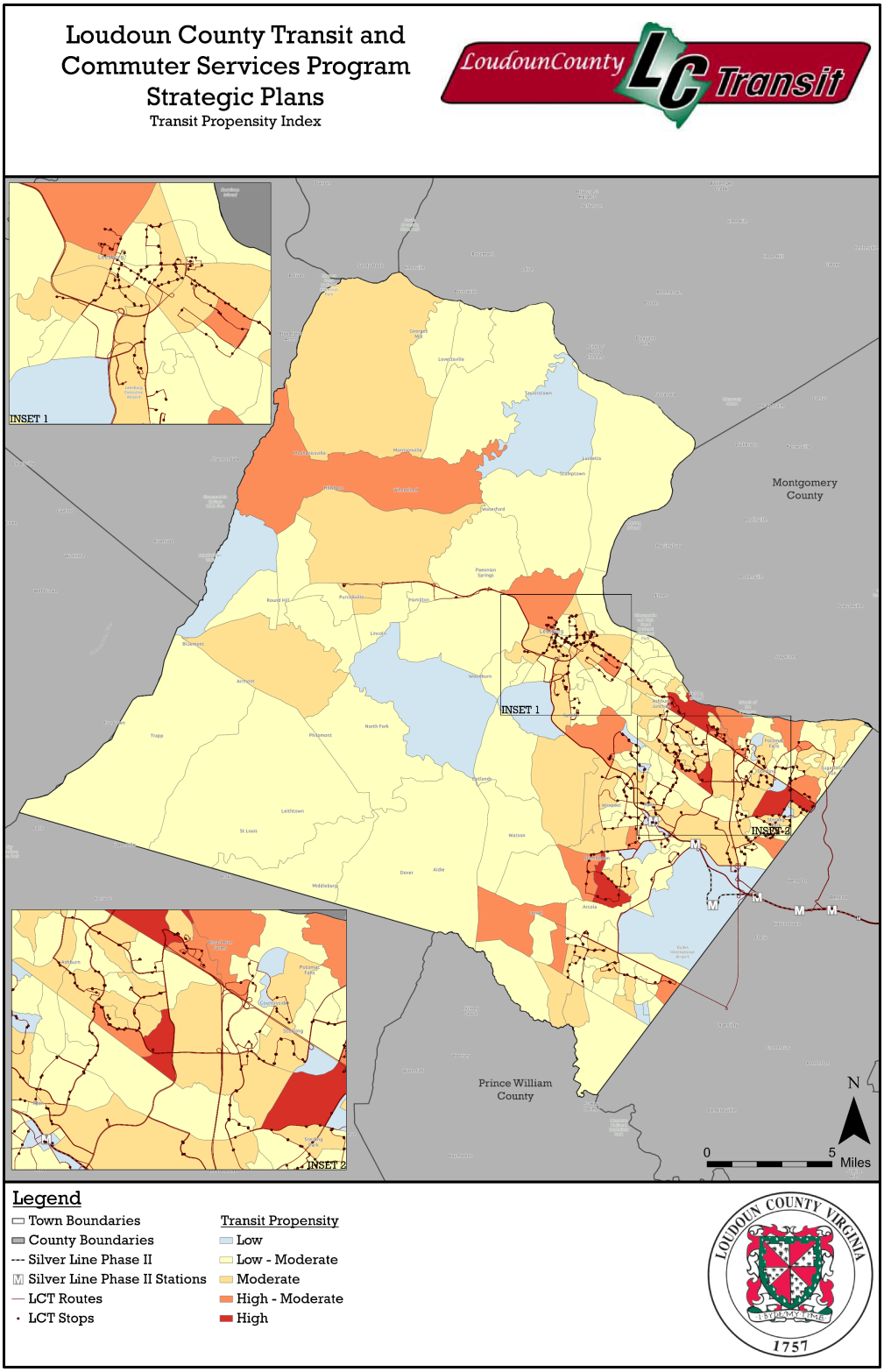
- Northwest Leesburg
- Ashburn in the vicinity of the George Washington University Virginia Science and Technology Campus
- Cascades
- Belmont
- Chantilly

Two additional areas are indicated by high-moderate propensity: Lenah and the area north of Purcellville, including Waterford and Hillsboro. Lenah is likely impacted due to the size of the census tracts which reflects the density of development in Stone Ridge and the influence of the Stone Springs Hospital Center. North of Purcellville, the propensity index is influenced more by the presence of lower-income households than the County as a whole. This, in combination with slightly higher portions of youth, senior, and zero-vehicle households, increases the measure of transit propensity.

Moderate transit propensity census block groups in-fill many of the areas between high and high-moderate census blocks in eastern Loudoun County. This includes many areas currently served by Loudoun County fixed routes as well as areas outside of existing service, such as Waxpool, the area west of Beaverdam Reservoir, and Stone Ridge south of Braddock Road (vicinity of Buffalo Trail Elementary School). Further to the west, the area surrounding Purcellville indicated moderate transit potential, as does the region between Hillsboro and Lovettsville and the region surrounding Airmont. More rural areas' transit potential is driven up by concentrations of low-income, youth, and senior populations rather than zero-vehicle households and population density. These areas with high propensity but low trip activity may be more adequately served by demand response service instead of fixed route bus service.

Each of the areas mentioned above have unique characteristics and differ in the need for transit service. When considering the potential provision of service, the style and type of service should be contextualized to the needs of the riders. Whereas a high frequency fixed route service would work in an area of dense population to meet the schedules of many riders, a demand-response service may provide an optimal service in areas of dispersed population with mobility needs. This provision of service is explored more in **Chapter 3**.

Figure 2-14: Transit Propensity Index



Source: Loudoun County, 2024

Travel Patterns

In addition to the traditional countywide population and employment data described in the previous demographic sections, an analysis of travel behavior, commuting patterns, and consumer preferences often presents further opportunities for transit to fulfill a specific market need. Data on trips taken by transit and non-transit users alike, such as specifics to when and why they travel, is invaluable developing recommendations for systems such as LCT, which serves both inter- and intra-county connections in the greater Washington, D.C. metropolitan region.

This analysis is intended to provide LCT data to supplement public surveys and discern what rider segments and market opportunities transit can serve. The transit travel pattern discussion is organized into sections analyzing the who, when, where, why, and how of the Loudoun County potential transit market. Each section will contain figures explaining the overall travel in Loudoun County, descriptive analysis of the data within the figures, as well as summary bullets at the end of each section explaining the applications of the data to address gaps in existing LCT service. Additional figures and analysis pertaining to each section and opportunities for improvement can be found in Appendix C.

Replica Data for Loudoun County

The tool used to understand and analyze granular travel information for this study is Replica. Replica is a third-party dataset that uses cellphones, GPS, and other anonymized location-based sources such as credit card transactions to estimate travel demand down to the Census Block Group level. Typical trip data contains millions of individual records for Loudoun County and is sourced for Thursdays and Saturdays in Fall 2022. Data is run through a travel demand model and is validated against real-world conditions. The raw data detail enables a categorical breakdown of trips by purpose, length, duration, mode taken, and start and end times that are processed and aggregated for the purpose of this report.

Replica also provides anonymized data on trip takers including household income, age, race, and ethnicity, as well approximate home, work, school location, and employment. Replica distinguishes trips taken by visitors versus full-time residents of Loudoun County; thus, it is useful for transit service network development to serve the needs of various customers. Combined with origin and destination data, this demographic data enables the evaluation of trips through various lenses. With this additional detail, transit service development can be catered to more specific customer needs by location and timing.

Replica provides unique insight into travel patterns within Loudoun County and facilitates the assessment of broader origin and destination travel patterns across the region. Travel data considered in this analysis is separated into two major categories of trips taken: those originating within Loudoun County and those originating outside of and terminating within Loudoun County.

Trips starting within Loudoun County can be further broken into trips that only stay within the County and trips that end externally to the County. Trips starting and

ending within the County might be considered applicable to aligning local bus service with internal travel patterns. Trips starting in Loudoun County and crossing into other neighboring jurisdictions could be considered for commuter service or, depending on location, Silver Line bus service via Metrorail. Trips starting external to Loudoun County and ending internally could be employees or visitors to areas within the County depending on origin.

External trips represent an opportunity for LCT to serve employment and commercial centers if there are no partner regional routes currently serving the external trip markets into Loudoun County. If there are regional providers serving these trips, LCT should coordinate service to ensure coverage of popular destinations within the County while avoiding service redundancy.

Travel Demographics (Who)

This section details the demographics of trip takers starting and ending within Loudoun County (i.e., "who" is traveling). Replica data contains demographic information on trip takers such as individual and household income, household size, race, ethnicity, sex, work from home status, as well as available vehicles. These demographic categories can be correlated with trip travel data to determine the composition of travel markets throughout an area and evaluate whether transit is serving the travel demand of different populations.

Figure 2-15 shows the employment and work from home status of different income levels for trips starting within Loudoun County on a typical weekday. Employment status groupings consist of:

- Employed but not traveling for work
- Those traveling for in-person work
- Those working remotely but traveling not for work
- Those unemployed or under 16

There is a correlation between income level, tendency to telework, number of work related trips, and demand for transit. For all travel in Loudoun County during a typical weekday in 2021, most work-related travel was made by people with in-person working arrangements. This data also shows that most work-related trips starting in Loudoun County were made by individuals with low incomes ranging from $0 to $50K. Individuals with incomes ranging from $50K to $100K made the second highest number of work-related trips, and those who are unemployed or under the age of 16 with incomes below $15K made the third highest number of work-related trips. Individuals with incomes between $100K and $150K made the fewest number of work-related trips and had the greatest amount of remote work options.

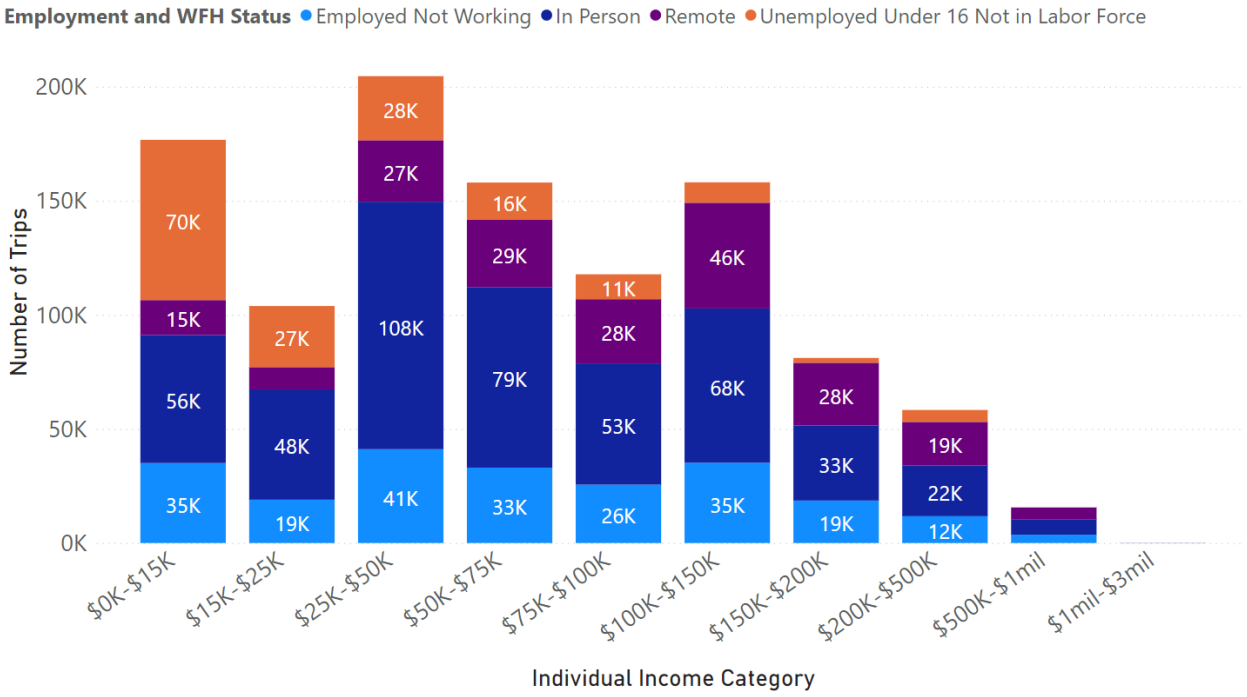
Areas in Loudoun County with higher concentrations of workers earning over $100K, who tend to telework more often, may not be suitable for transit trips aiming to serve commuters all days of the week. Conversely, those in $50K to $99K income groups commute most for in-person work, which may be served by regular

transit. While groups in the $50K to $99K income range who commute most for in person work may benefit from transit.

However, when considering the travel behavior of four-person households, as shown below in **Figure 2-16**, the poverty level becomes $75K per the 2023 Title VI Program. Using this guideline, most trips still fall for those under the poverty line, and the majority of those are in-person work trips.

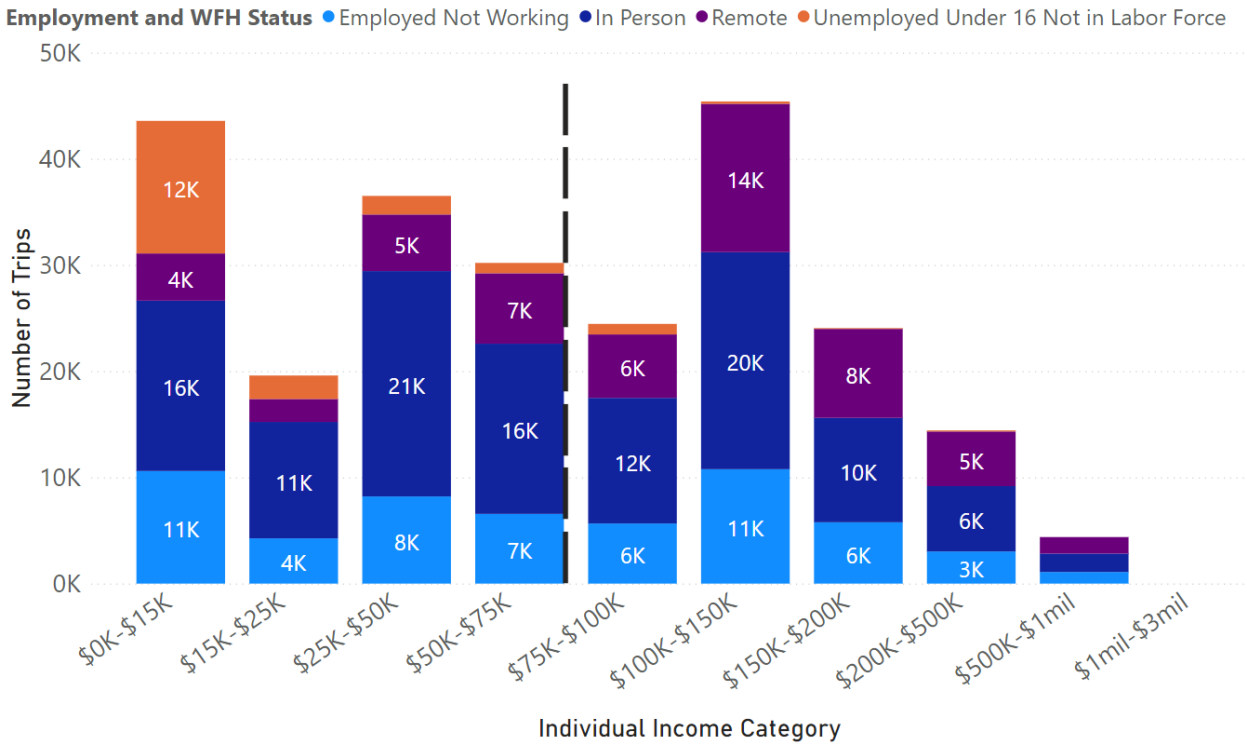
Trip data is not separated by types of classified employment (i.e., service, commercial, or industrial jobs); however, the Origins and Destinations (Where) section of this chapter will analyze the most popular areas of travel for each income bracket and work type within the County.

Figure 2-15: Count of Work Trips by Individual Income and Employment Status



Source: Replica, 2022

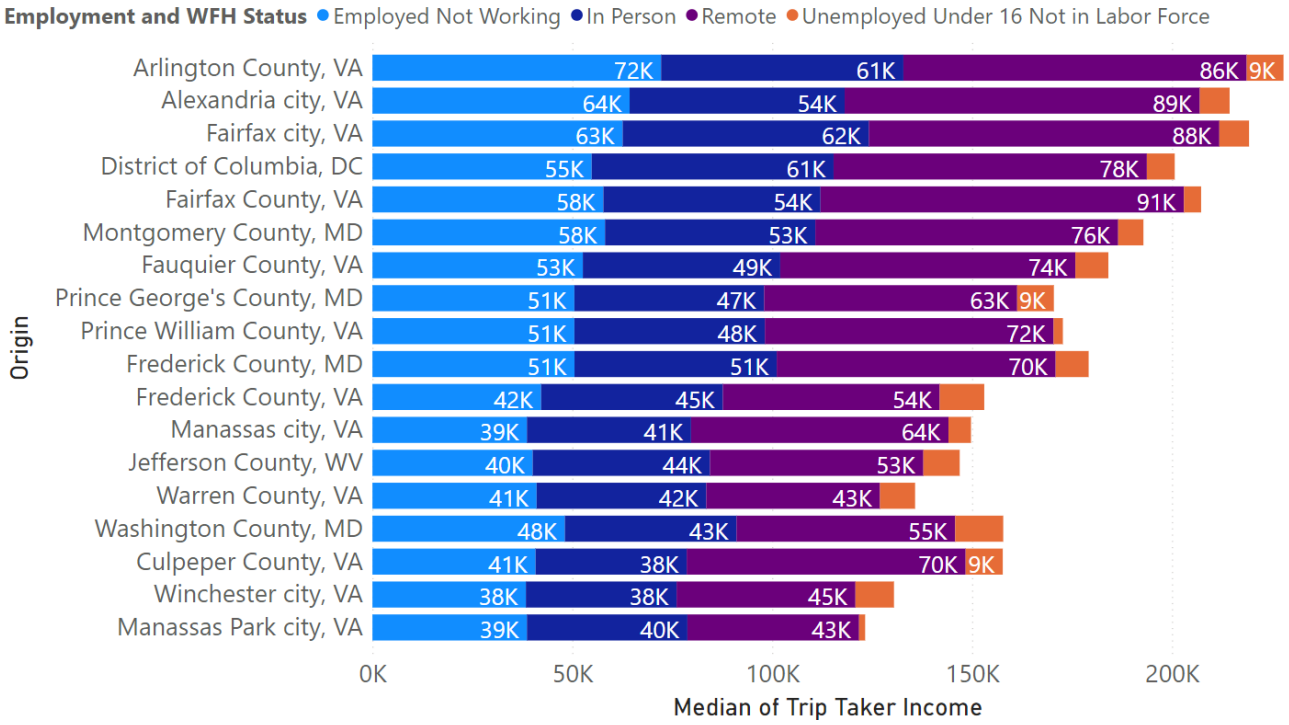
Figure 2-16: Count of Work Trips of Four-Person Household Income by Employment Status



Source: Replica, 2022

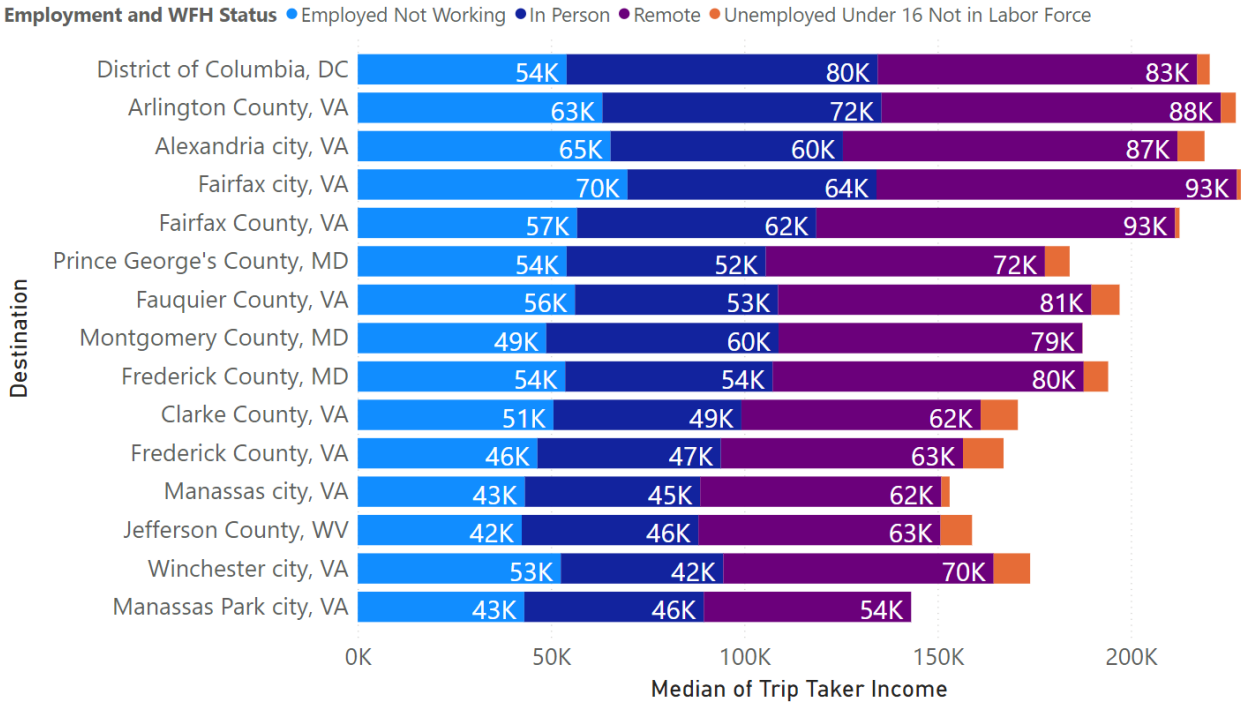
Understanding the demographics of travelers starting in Loudoun County to other external destinations is critical for understanding how transit service can enhance regional connections to social and employment opportunities. **Figure 2-17** shows the median income of travelers from Loudoun County to other jurisdictions broken out by in-person (dark blue) and remote work (orange) status. The figure is also ranked by jurisdiction with the highest median incomes of travelers coming in and out of Loudoun County, with the areas with richer travelers ranking at the top. While Fairfax County accounts for 65 percent of all the trips departing from Loudoun County, it is not the most frequent destination for higher-income Loudoun travelers. Instead, Washington, D.C., Arlington County, and Fairfax City are the destinations that have the highest overall median income ($66K) for Loudoun County residents traveling to work. These destinations for Loudoun County residents also have the greatest difference between median income for in-person ($65K) versus remote work ($89K). For weekday travel into Loudoun County from other jurisdictions, **Figure 2-18** shows Fairfax County remains the top origin, accounting for 54 percent of travel, followed by Prince William County at 8 percent of all trips. However, travel into Loudoun County from jurisdictions such as Arlington County, Fairfax City, and Alexandria City residents yield a higher median income of in-person and remote employment, indicating that residents of these neighboring jurisdictions may be traveling into Loudoun County for higher paying, in-person jobs as well as remote workers traveling to Loudoun County for non-work purposes. This would support enhancing transit to connect regional travel to office from Fairfax City, Prince William County, and Arlington County to high-skilled employment centers at specific locations Loudoun County discussed later in this section.

Figure 2-17: Median Income by Trip Destination from Loudoun



Source: Replica, 2022

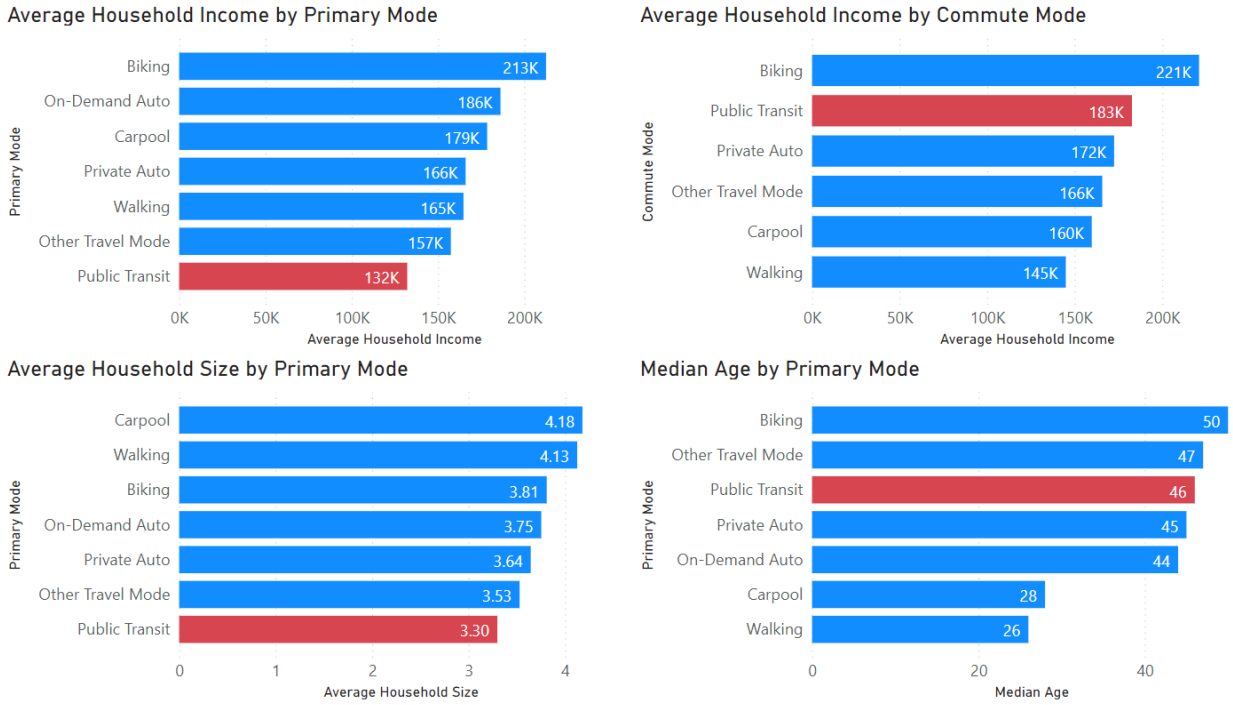
Figure 2-18: Median Income by Trip Origin to Loudoun



Source: Replica, 2022

Figure 2-19 shows the demographics of different modes for trips starting in Loudoun County including average household income, average household size, average age by mode, and average household income by specific commute mode. Travelers using public transportation as their primary mode for all trips have a lower average household income ($132K) and a lower average household size (3.30) than travelers using any other primary mode. These statistics suggest the primary market for transit usage in Loudoun County includes those with lower-incomes and less people per household. However, the average household income of those who commute using public transportation within the County jumps to $183K. This figure suggests that riders who take transit to work have higher-incomes than those who use transit for all other purposes. Other modes, such as on-demand auto, biking, and auto passenger/private auto, have the highest average household income of all modes, more than $165K, and have higher trip share during weekends than weekdays. The median age of travelers using public transit as their primary mode is 46 years old, the third highest of all modes. This median age is partially explained by the concentration of the working age population who ride transit instead of walking, biking, or carpooling, which sees a more diverse distribution among people under 18 years old.

Figure 2-19: Trip Mode by Various Demographics (Loudoun County origin)



Source: Replica, 2022

A cross-analysis of overall County and region-wide travel demographics with the demographics of areas currently served by LCT routes reveals several market dynamics that may be incorporated into transit service development and strategy:

- A majority of trips starting from Loudoun County are made by those in the low-income brackets between $15K to $75K and are more likely to use transit as a primary mode. These income cohorts have less access to personal vehicles, are more racially diverse, have smaller household sizes, and have a lower median age than those Loudoun residents with higher-incomes. As observed in the **Transit Propensity** section, prioritization of LCT service towards this market may provide additional benefits to these travelers because of the reliance on fixed route transit to access key community amenities, education, and service jobs.
- Trips traveling from Loudoun County to other regional destinations can be grouped into two categories: 1) higher-incomes with remote work possible, and 2) moderate income with in-person working arrangements. The top destinations for the first group are Fairfax County, Arlington County, and Washington, D.C., while the top destinations for the second group are Fairfax County, Washington D.C., and Montgomery County, Maryland. Commuter and Metro Connection service may focus on serving the rider segments who commute for in-person work with moderate income in select areas of the region instead of those who have remote work optionality.
- Trips traveling into Loudoun from other regions can be classified into two categories: 1) higher median incomes with high remote-work optionality, and 2) low remote work with moderate to low-incomes traveling into Loudoun. The origins of both high and moderate-income, in-person workers traveling into Loudoun County are in Fairfax County; Prince William County; Montgomery County, Maryland; Jefferson County, West Virginia; Frederick County, West Virginia; and Washington, D.C. Future LCT may consider enhancing connections to in-person employment centers in Loudoun County for those traveling from these other high-volume localities. More specific analysis for the purpose and location of non-resident travel flow into Loudoun County will be detailed in the **Origins and Destinations (Where)** section.

Travel Demand (When)

Determining when travel occurs can provide data points towards adjusting transit service to adequately service riders during peak travel times or shift resources to fill unmet demands. Travel data for Loudoun County is organized by the start and end time of each trip, as well as trip duration and distance in minutes and miles. The number of aggregate trips by demographic category, trip purpose, mode, and other attributes can be identified and totalled to a certain time of day, allowing summarization of demand by hour.

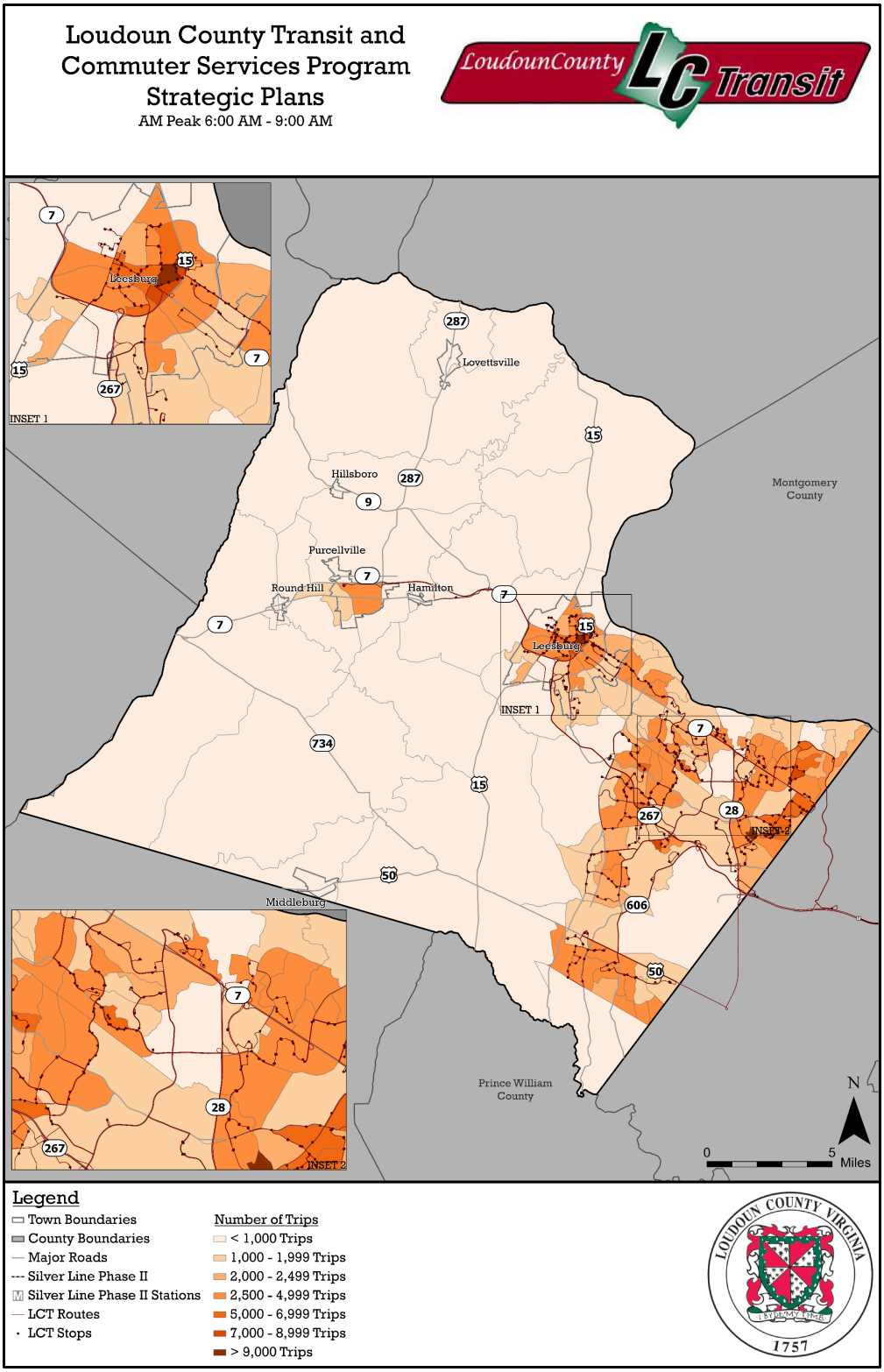
Additionally, travel time data can be linked to trip demographics, which can be used to separate varying travel behaviors by different populations. In the temporal demand and other travel pattern sections, travel time data will be analyzed by trip

purpose and location data to discern exactly what times of day and how long people are willing to travel for different purposes in Loudoun County and how transit can strategize to serve specific segments of this market.

Figure 2-20 and **Figure 2-21** display trip generation by block group for trips starting in Loudoun County during the a.m. (6:00 a.m. to 9:00 a.m.) and p.m. (3:00 p.m. to 7:00 p.m.) on a typical weekday. Initial observations include:

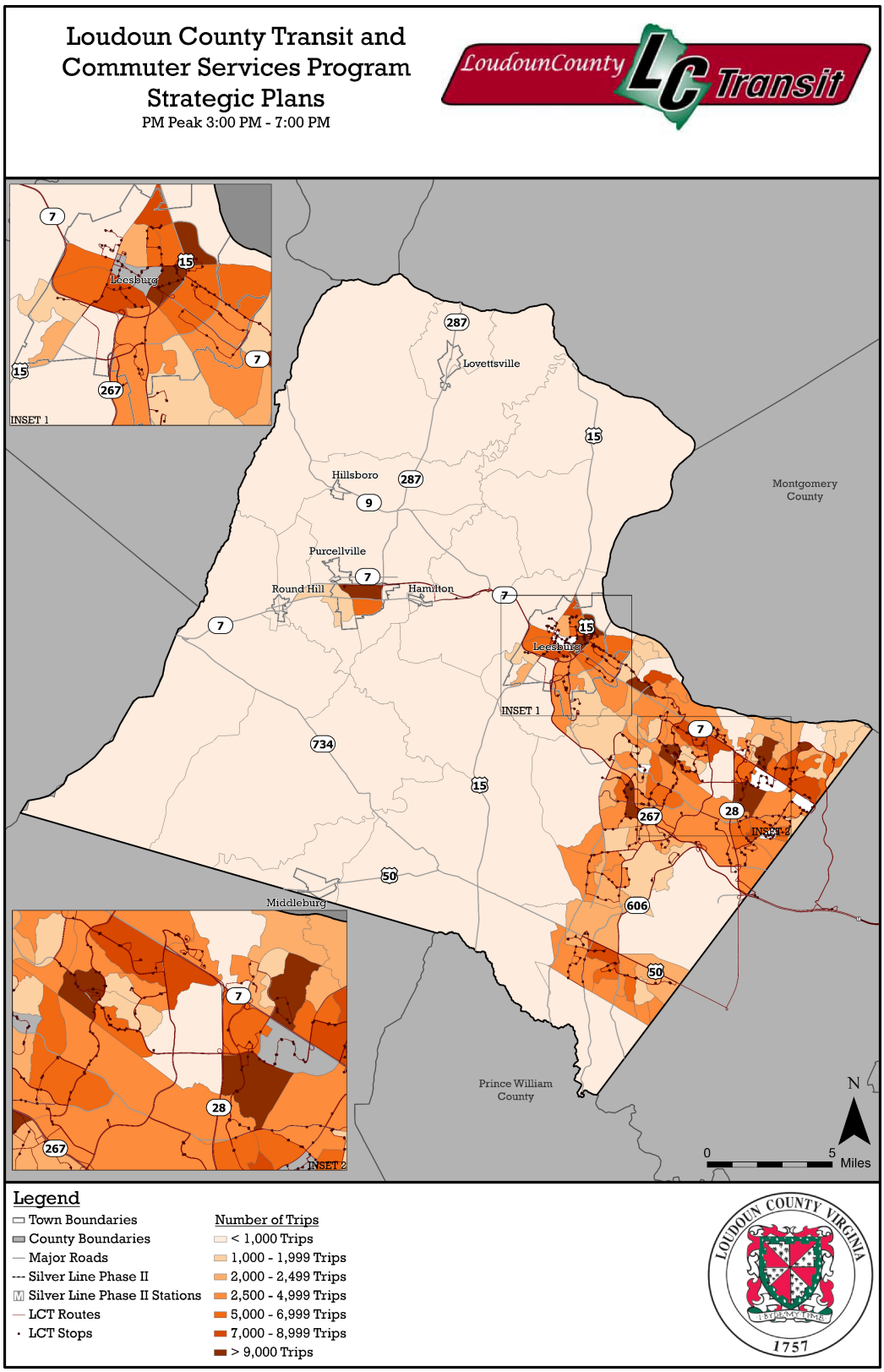
- Significant a.m. peak travel demand occurs in eastern Loudoun County in the residential and commercial neighborhoods adjacent to Route 7 and Route 28, such as Potomac Falls, as well as significant trip generation along Route 846 in Sterling. South Riding also experiences moderate travel demand during a.m. peak hour, which is concentrated in the residential developments surrounding Tall Cedars Parkway. There is also a significant concentration of a.m. trips starting around the hotel lodgings around Route 28 and 606. In Leesburg, morning travel generation is concentrated in areas east of the City along Edwards Ferry Road and adjacent to the Leesburg Bypass.
- Significant p.m. peak travel occurs along Route 7 commercial areas around Dulles Town Center, Potomac Run Plaza, and adjacent office parks. Travel demand is more geographically concentrated in the afternoon compared to the morning, with specific commercial locations such as Ashburn Farm, Ashburn Village Center, and Potomac Run Plaza experiencing more travel demand. Areas in Suburban, Town, and Transitional Place Types that do not see high levels of trip activity in the a.m. peak, experience more trip generation in the p.m. peak. Additionally, p.m. peak travel is concentrated in downtown Leesburg along East Market Street rather than around the periphery.
- **Figure 2-22** illustrates typical weekend trip generation during peak weekend travel times of 10:00 a.m. to 7:00 p.m. Weekend travel patterns are similar to weekday p.m. peak travel demand, where trips are concentrated in commercial areas within Loudoun, instead of throughout residential neighborhoods. Specific areas that see high travel demand during the weekend include downtown Leesburg, Dulles Town Center, Potomac Run Plaza, and the Sterling Park Shopping Mall.

Figure 2-20: Peak 6:00 a.m. to 9:00 a.m. Trip Activity



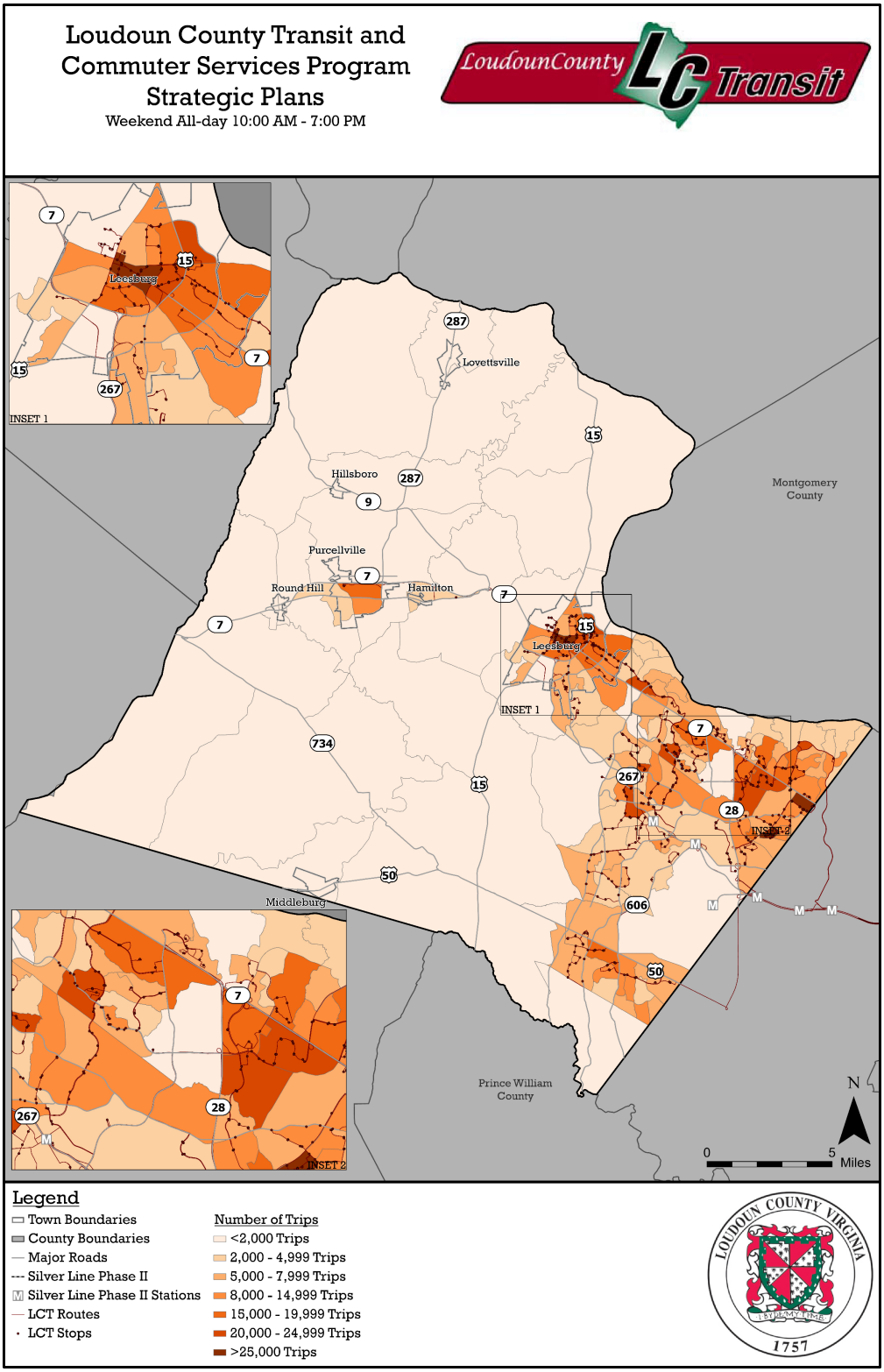
Source: Replica, 2022

Figure 2-21: Peak 3:00 p.m. to 7:00.p.m. Trip Activity



Source: Replica, 2022

Figure 2-22: Weekend All-day 10:00 a.m. to 7:00 p.m. Trip Activity



Source: Replica, 2022

Table 2-10 illustrates the relationship between the duration of the trip from Loudoun County traveling to popular destination jurisdictions within the greater Washington, D.C. region. Trips starting and ending within Loudoun County average 14 minutes under all modes of travel, but around 38 minutes for public transportation trips. Trips to nearby adjacent employment and commercial centers such as Arlington County, Fairfax County, and Washington, D.C. average around 100 minutes of travel via public transportation, three times longer than the median trip duration of private auto or carpool to these locations. Additionally, trips to regional jurisdictions such as Manassas, Prince William County, and counties in Maryland such as Montgomery County and Frederick County, which are adjacent to Loudoun County but do not possess direct transit connections, have significantly higher trip durations via transit in excess of 150 minutes. The **Origins and Destinations (Where)** section of this chapter will analyze the frequency of travel to areas with longer trip durations to specific areas with jurisdictions in Maryland and Virginia to determine whether there is adequate rider demand to warrant improvements to transit travel time.

Table 2-10: Median Trip Duration by Destination City and Mode (minutes)

Area	Biking	Carpool	On-Demand Auto	Private Auto	Public Transit	Walking	Median
Alexandria city, VA		53	48	51	113		64
Arlington County, VA		45	43	41	99		55
District of Columbia, DC		49	46	48	97		60
Fairfax city, VA		33	31	31	110		45
Fairfax County, VA	28	26	22	23	94	24	32
Fauquier County, VA		51	41	51		37	39
Frederick County, MD	24	43	42	41	223	27	64
Frederick County, VA		58	47	53			62
Jefferson County, WV	27	46	37	44	250	52	71
Loudoun County, VA	16	13	12	12	38	10	14
Manassas city, VA		38	40	40	153		60
Manassas Park city, VA		35	34	35	187		63
Montgomery County, MD		51	47	51	152	715	159
Prince George's County, MD		68	62	66	150		83

Area	Biking	Carpool	On-Demand Auto	Private Auto	Public Transit	Walking	Median
Prince William County, VA		42	38	39	161	86	64
Warren County, VA		71	67	70			76
Washington County, MD		74	74	74	209	22	92
Winchester city, VA		53	46	49			56
Median	**24**	**47**	**43**	**46**	**145**	**122**	**64**

Source: Replica Travel Pattern Data, Fall 2022

Table 2-11 shows the median trip duration by mode and by purpose. This data represents how long trips starting in Loudoun County typically take via different transportation options. For example, Loudoun work trips take an average of 24.5 minutes by private auto, 33 minutes by carpool, and 105 minutes by public transit. Travel for work has the highest overall trip time regardless of mode at a median duration of 25.95 minutes, indicating workers travel longer and farther than for work than other trips such as eating, socializing, and shopping, which could be made locally. This data will be used to analyze the tolerance of LCT riders towards total trip times for certain purposes but is also used to strategize which modes and purposes LCT can compete and provide better service to, such as retail centers or school trips.

The highest trip duration via transit specifically is home and school destinations, suggesting that transit riders traveling to home or educational settings may face longer duration trips than other purposes—travel time via transit to these sites takes 80 minutes longer than average than trip duration via other modes. Other trip purposes taken by Loudoun County travelers, such as shopping or eating, also have lower trip duration for private auto than public transportation averaging 15 minutes compared to 105 minutes, indicating that many residents may take shorter trips via their own private vehicles rather riding longer on transit for non-work trips. The lowest median trip time via transit is riders traveling for lodging and eating purposes, indicating that there may be slightly better coverage of hotels and restaurants land use types via fixed route service than other location types.

Table 2-11: Median Trip Duration by Purpose and Mode (minutes)

	biking	carpool	on-demand auto	private auto	public transit	walking	Median
eat	17	17	15	13	86	4	22
home	20	14	15	14	106	15	29
lodging	24	16	18	15	67	7	21
maintenance	16	20	19	15	92	5	24

	biking	carpool	on-demand auto	private auto	public transit	walking	Median
other activity type	18	19	21	16	100	7	26
recreation	14	19	18	15	99	7	25
Region departure	58	26	28	25	117	20	47
school	15	13	37	25	124	16	41
shop	13	17	14	13	96	8	23
social	13	22	18	17	96	5	24
stage				55			55
work	18	30	35	20	100	2	31
Grand Total	21	19	22	20	98	9	28

Source: Replica Travel Pattern Data Fall 2022

The locations of travel between certain origins, destinations throughout the day and during peak travel will be further evaluated in the **Travel Purpose (Why)** section of Chapter 2. However, based on the overall trip duration and aggregate demand data, LCT has several opportunities to adjust its service to improve travel time accessibility for key markets. These potential findings include:

- Loudoun County travel demand during a typical weekday follows conventional peak hour commuting times, with the majority of trips made by transit-dependent riders (working age, low-income, zero-single vehicle households) occurring between 6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m. LCT should seek to expand service and outreach to areas with low-income (<$50K) and the middle-aged population (35 to 49 years) who comprise a majority of travel during this these peak times. Identification of specific locations where these peak hour commuters are traveling to and from will be included in the **Origins and Destinations (Where)** section of this chapter.
- Off-peak travel demand in Loudoun County is higher than traditional commuting hour travel. During a typical weekday in Loudoun County, travel demand grows throughout the day and peaks at 3:00 p.m., an earlier peak than observed elsewhere in the Washington, D.C. metropolitan area. LCT should consider adjustments to midday and off-peak service to address the higher volume of needs of travelers during these times; these travelers are, on average, higher-income and older. As described in **Travel Purpose (Why)**, off-peak travelers may desire different services than those commuting. Thus, different transit services may be warranted to address shorter, more local, and non-work trip purposes.
- Currently, the average travel time to work within Loudoun County for bicycle, private automobile, and carpool users remains below 30 minutes, whereas trips to work via transit average 61.6 minutes. LCT may explore improvements to local transit service trip duration by route restructuring,

more direct connections, and lessening wait times for Loudoun County residents seeking travel to employment centers within the County.

- Public transit trips within the County for non-work purposes (home, eating, shopping, and social) average around 53 minutes in length compared to 15 minutes via private auto. While transit may not provide countywide travel time accessibility competitiveness to non-work destinations versus private car, there are opportunities to improve local route coverage to speed and trip times of community access to shopping and commercial centers, as well as decrease transit travel duration for work trips.
- There are opportunities to improve commuter travel time to regional activity centers, especially those not currently served by high-capacity or dedicated transit lines, such as in Prince William County and Montgomery County, Maryland. Current travel time via transit to employment dense and commercial areas in jurisdictions outside Loudoun County averages over 115 minutes via public transportation whereas auto and carpool transport options average trip times are just over 50 minutes.
- Transit trip duration for those traveling from Loudoun to employment and commercial centers in Virginia, such as Prince William County, Stafford County, and Manassas Park, and in Maryland, Montgomery and Frederick Counties, face travel times of over 150 minutes because of lack of a direct transit service. Waiting for connections to transfer between multiple service providers can significantly increase transit travel time. Future LCT service may consider coordination with local providers to provide connection or minimal transfer wait times to transit accessible destinations within these neighboring jurisdictions while also providing coverage to key areas within Loudoun County itself.
- Transit service may consider service adjusted to the more diffuse travel demand during the weekend as there is not a single service period or income market that demands a concentration of service such as during the weekdays. Transit service can serve more income groups during the weekends, as travel within low-income and high-income cohorts is more spread out during the day, whereas weekdays see peak low-income and working population travel during the morning and evening commuter peaks.

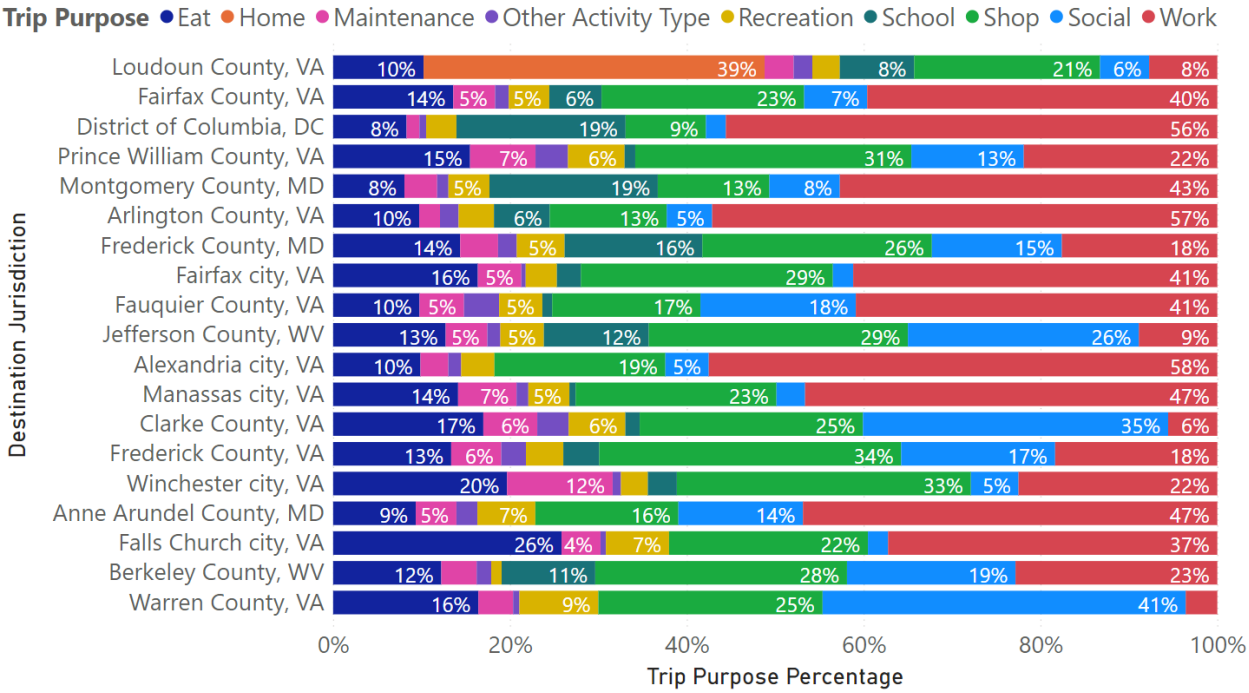
Travel Purpose (Why)

This section builds upon the foundations of the **Travel Demographics (Who)** and **Travel Demand (When)** findings to present the unique trip purposes of populations traveling throughout Loudoun County. Each trip observed in Loudoun County's Replica data is tied to each traveler's unique socioeconomic attributes and their trip purpose. This information includes categories such as home, work, commercial, shopping, eating, school, social, recreation, commercial, and lodging. Individual trip purpose data may also be attributed to origin and destination land use, which determines the flow of people traveling from homes to offices, education, healthcare, retail, and other land use types.

In this analysis, travel purposes in Loudoun County are broken down by their demographic attributes and travel time preferences to determine how LCT can serve different traveler needs throughout a typical weekday and weekend. Travel purpose is also examined by time of day to determine when peak activities occur. Finally, county and regionwide trip purpose and land use data are spatially analyzed to discern the exact locations within Loudoun County where certain trip purposes are most prevalent. This process allows LCT data to augment their public survey by analyzing travel needs through millions of trips. This informs the **Chapter 3 Planned Improvements** requirements to develop opportunities for transit to serve the desired trip purposes and locations.

Figure 2-23 displays purpose of travel starting from within Loudoun County taken by County residents. Only 7.71 percent of all trips starting and ending within Loudoun County are taken for work purposes, while residents mainly travel intra-county for home-based (38.6 percent) trips, eating (10.2 percent), and shopping (21 percent). Travel to Loudoun's neighboring jurisdictions such as Fairfax County, Prince William County, Montgomery County, Clark County, and Washington, D.C., see a diversity of trip purposes by Loudoun County residents, mostly dominated by work travel share at averaging over 30 percent of trips, but also including high shares educational, shopping, and social travel. External destinations connected by high-capacity transit such as Metrorail and dedicated commuter bus such as downtown Washington, D.C, Arlington County, and the City of Alexandria also indicate a high share (over 40 percent) of Loudoun County residents traveling to them for work and commercial and business purposes. This signals LCT's focus on external transit network connections bringing residents directly to employment and retail in the metropolitan urbanized and suburban activity centers is appropriate.

Figure 2-23: Trip Purpose for Regional Destinations from Loudoun



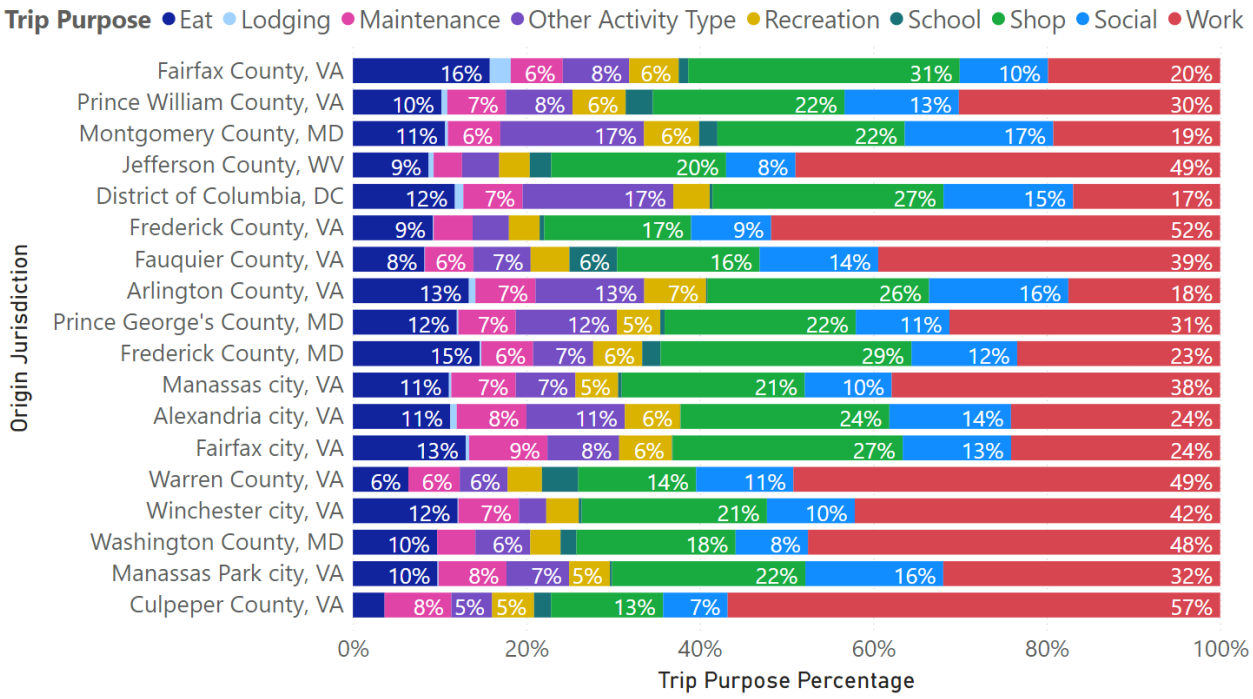
Source: Replica, 2022

Figure 2-24 shows the purpose by sharing trips starting from other jurisdictions and ending within Loudoun County. To illustrate other reasons for visitor travel into Loudoun County, residents have been excluded from this figure and home-trip types will not appear. Trip purpose in Loudoun is more concentrated on shopping (29 percent), work (24 percent), eating (14 percent), commercial and freight (11 percent), and social trip (10 percent) types. As previously discussed in the **Travel Demographics (Who)** section, work trips by non-residents traveling into Loudoun County are also concentrated on the middle to low-income population segment, whereas visitors to Loudoun County with incomes greater than $150K traveling less for work and slightly more for shopping (32 percent) and eating (15 percent).

Neighboring Fairfax County has the highest number of trips traveling into Loudoun County made by non-Loudoun County residents, at 82,000 trips during a typical weekday. Of those trips made from Fairfax to Loudoun, 25,000 are for shopping, 16,000 are for work, 12,000 are for eating, and 11,000 are commercial or freight trips, with other trip purposes comprising the rest of total travel. Typically, travel into Loudoun County from neighboring jurisdictions with high volumes of trips, such as Fairfax and Prince William Counties, see overall trip purposes split between work, shopping, social/eating, and commercial. Jurisdictions away from the urban D.C. core, such as Fauquier County, City of Manassas, Jefferson County, and Frederick County have a higher share of work travel to Loudoun County, often greater than 40 percent of trips.

Travel into Loudoun County from areas with high transit service potential, such as locations in Arlington County, Washington, D.C., Montgomery County, and areas of Fairfax County, may have more diverse travel purposes besides commuting, and LCT still has an opportunity to serve the high volume of external trips going to employment and activity centers in Loudoun County. The corridors and specific locations within Loudoun County where travel demand is occurring will be further examined in the **Origins and Destinations (Where)** section.

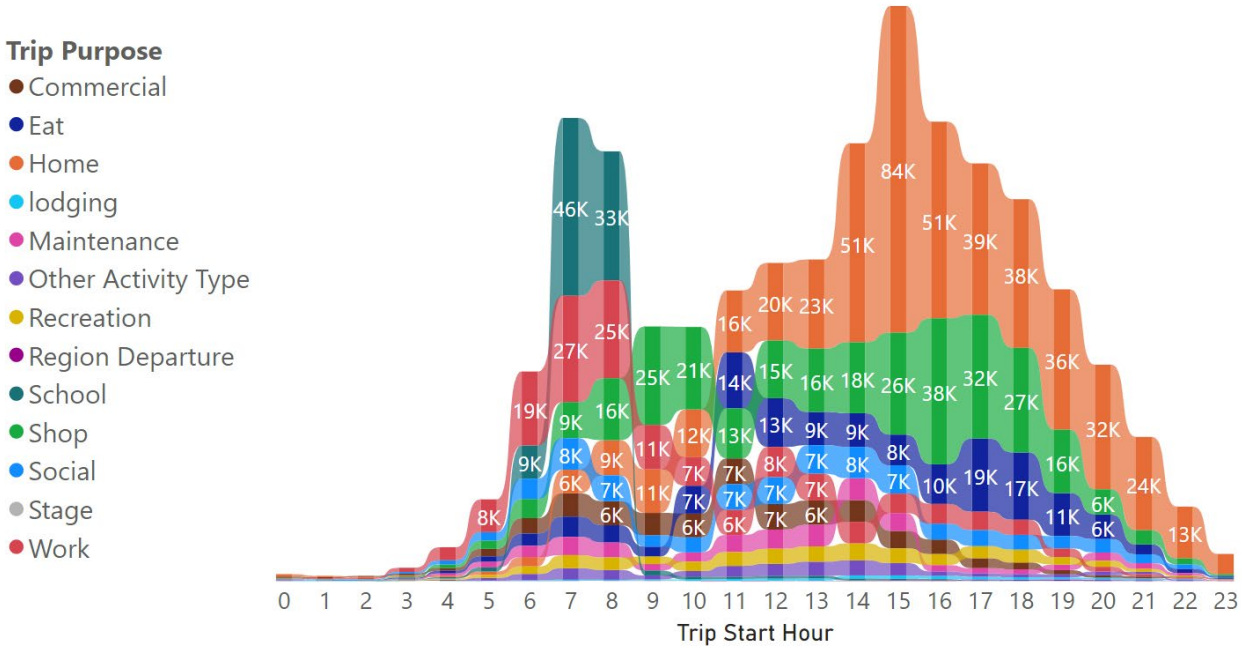
Figure 2-24: Trip Purpose for Regional Origins to Loudoun



Source: Replica, 2022

Figure 2-25 analyzes trip purpose by time of day for trips starting in Loudoun County. The X-axis represents the start time of a trip during a typical weekday by the hour, and the Y-axis, or the height of each color-coded ribbon, shows the number of trips occurring at that time by trip purpose category. The categories on the figure are ranked so that the dominant trip purpose is displayed at the top during a certain time, while less significant trip purposes are displayed underneath. Often, the categories switch rankings based on the time of day, indicating that one trip purpose type becomes more dominant while others decrease.

Figure 2-25: Trip Purpose by Time of Day (Weekday)



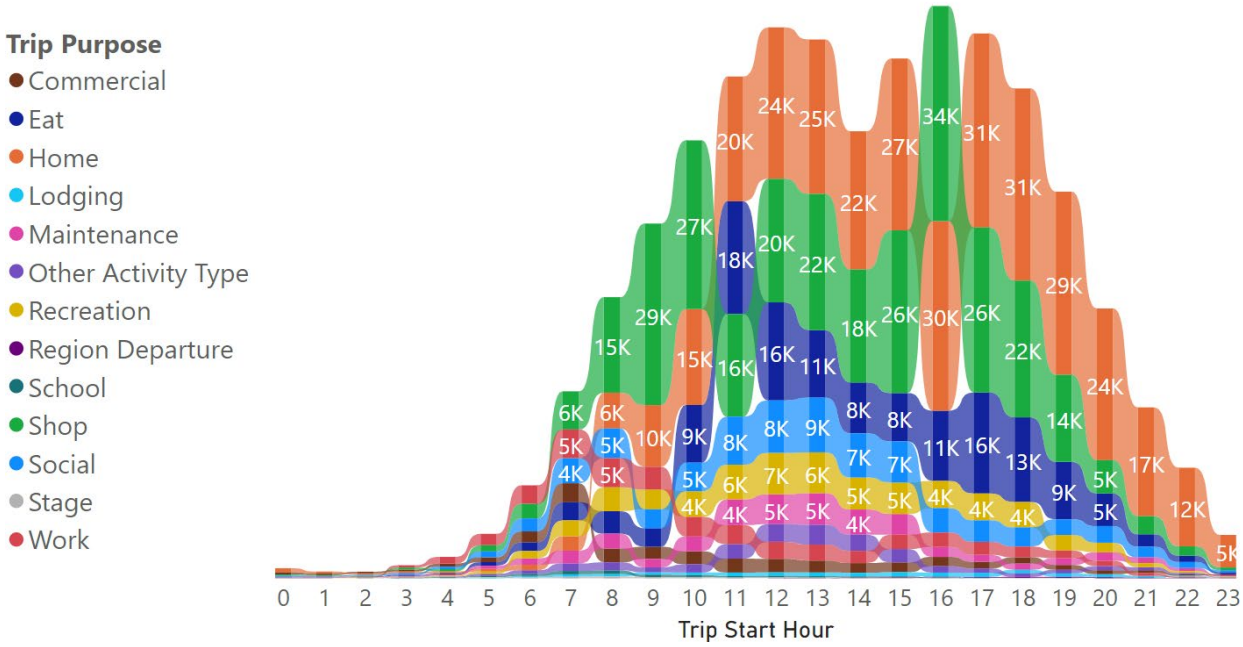
Source: Replica, 2022

Weekday trip purpose in Loudoun County follows the travel start time distribution identified in the **Travel Demand (When)** section, with distinct morning peaks from 7:00 a.m. to 9:00 a.m. followed by a steady increase in trips throughout the mid-afternoon, peaking at 3:00 p.m. and descending until demand decreases significantly after 8:00 p.m. In the a.m. peak, Loudoun County trip purpose is characterized by a surge in work and school trips, accounting for more than 40 percent of all trips taken. LCT is dedicated to providing connections to employment and education in the a.m. peak period, effectively addressing the needs of many weekday travelers.

Weekday mid-morning and early afternoon periods see growth in travel to home and commercial locations, accounting for more than 60 percent of all trips taken. Home trips in particular peak comprise a large share of travel taken at 3:00 p.m. While home trips are not explicitly commuters returning from work, travel to home locations in Loudoun County occurs earlier than other traditional peak afternoon p.m. commuting times, which are more concentrated around a 9:00 a.m. to 5:00

p.m. schedule. Shopping and eating trips in Loudoun County coincidentally start to increase as home trips decrease, starting at 4:00 p.m. and ending at 7:00 p.m. Current transit service that connects commuters or residents to commercial centers around the mid-afternoon peak in retail activity can increase access for riders performing errands or accessing commercial center employment during the weekday. **Figure 2-26** displays trip purpose by the time of day for trips starting in Loudoun County on a typical Saturday. Trip start times during the weekend are more distributed throughout the day, with no major travel peaks and smaller trip volumes than weekdays. The major travel categories include shopping, home, and eating, which are most frequent during midday hours from 10:00 a.m. to 5:00 p.m. Approximately 8 percent of all trips starting in Loudoun during a typical Saturday are work trips, which supports restructuring weekend transit networks to account for commercial trip destinations with consistent service throughout the day instead of concentration transit trips to serve distinct peaks.

Figure 2-26: Trip Purpose by Time of Day (Weekend)



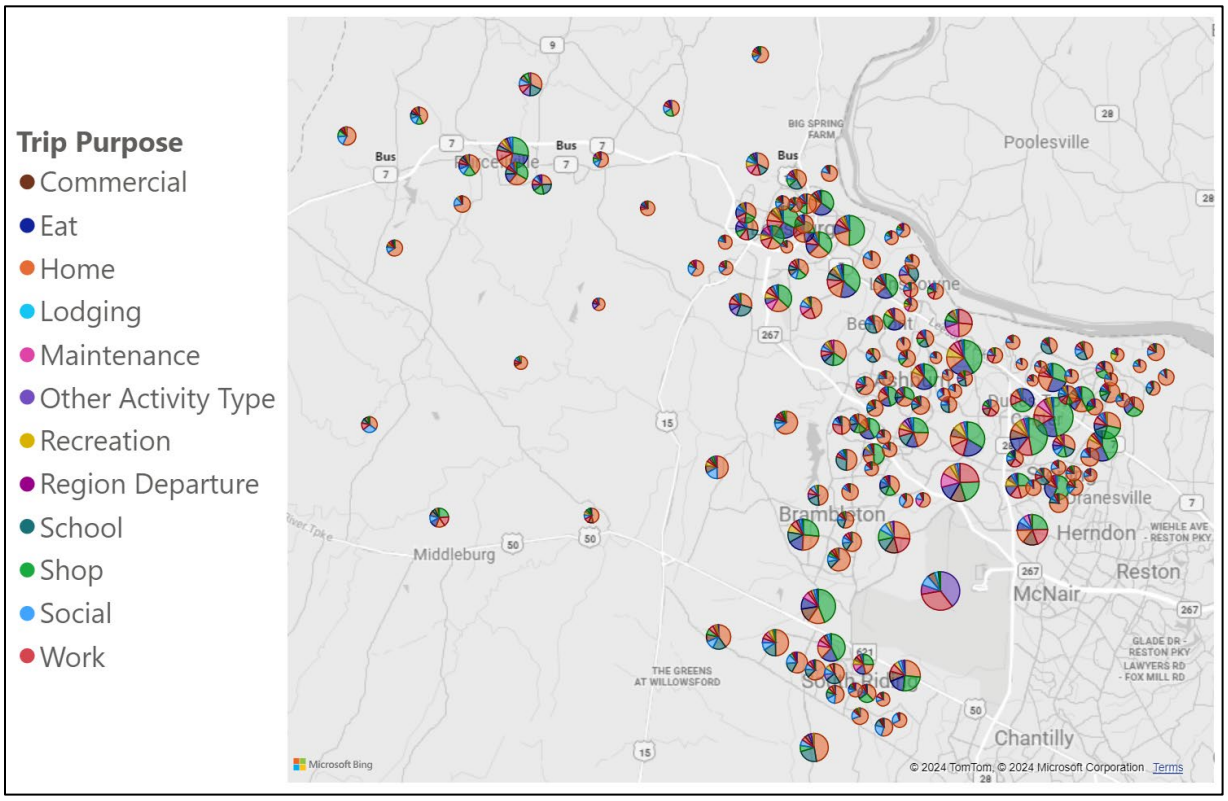
Source: Replica, 2022

Figure 2-27 shows a map of popular block group destinations by travel purpose in Loudoun County during all time periods of a typical weekday. The share of trip purpose at each destination is represented by a uniquely colored slice of the pie graph, while number of trips to each block group is shown in the diameter of each dot. The major trip destinations in Loudoun County by volume are concentrated in travel to Urban and Town Place Types, including areas with major commercial areas such as:

- One Loudoun
- Dulles 28 Centre

- Dulles Town Crossing
- Dulles Town Center
- Potomac Run Plaza
- Dulles Airport

Figure 2-27: Trip Purpose by Time of Destination (Weekday)



Source: Replica, 2022

Table 2-12 shows trip characteristics of popular destinations identified in the map of **Figure 2-27**. These two visuals show there is strong delineation between the trip types and purposes accessing malls and regional shopping centers and the residential areas of the County. Areas in the eastern sections such as One Loudoun, Dulles 28 Centre, and Dulles Town Center are distinctly travelled to for shopping, eating and some work purposes whereas residential areas such as Sterling, Ashburn, Brambleton, Dulles South, and Leesburg have a mix of trip types. This indicates that connections with high separation between residential and commercial activity centers should be enhanced with more direct service that connects residents, would be shoppers and workers to their destination from their home. Areas that have more of an equal mix of shopping, work, and home trips could be targeted for community circulators as residents do not have to travel as far or have more diverse trip activity that is not focused on a commute.

Table 2-12 also shows the percentage of low-income (less than $50,000) and minority trips taken to each unique destination. Areas with greater low-income trip share such as Potomac Run Plaza, Sterling, Leesburg have the same travel

characteristics of those with majority non-low income travel, including peak hour in the mid-late afternoon and higher percentages of shopping and home trips than work. Areas with low-income and high minority trip share such as Potomac Run Plaza, Sterling and South Riding do however have a greater range of peak hours, starting earlier at 3:00 p.m. than other non-minority areas peak at 4:00 or 5:00 p.m. This could suggest that transit service to destinations with high minority and low-income trip share should consider expanded service hours to accommodate this travel demand outside the traditional commuting windows.

Table 2-12: Major Destinations by Trip Characteristic

	Total Daily Trips	% Shop/ Eat Trips	% Work Trips	% Home Trips	% Low Income Trips	% Minority Trips	Daily Peak Travel Hour
One Loudoun	32,000	64%	5.7%	11%	9.5%	39%	3:00 p.m.
Dulles 28 Centre	30,090	54%	13%	9.7%	9.7%	40%	4:00 p.m.
Dulles Town Crossing	35,850	59%	13%	6.2%	9.2%	42%	4:00 p.m.
Dulles Town Center	40,540	66%	10%	8.3%	12%	44%	5:00 p.m.
Potomac Run Plaza	39,130	53%	5%	20.8%	15%	50%	3:00 p.m.
Dulles International Airport	39,280	0.7%	32%	0%	11%	36%	7:00 a.m.
Ashburn Metrorail Station	37,590	38%	7%	31%	8%	44%	3:00 p.m.
Sterling	47,620	25%	4.7%	50%	12%	60%	3:00 p.m.
Leesburg	127,900	40%	11%	29%	13%	35%	2:00 p.m.
South Riding	35,370	20%	5.9%	43%	6.1%	51%	3:00 p.m.
Brambleton Plaza	23,820	43%	6.9%	24%	5.2%	4.9%	7:00 a.m.
Purcellville Center	35,810	51%	9.2%	18.2%	8.9%	20%	3:00 p.m.

Source: Replica, 2022

Work trips to commercial centers have the highest share in two locations: Dulles International Airport and the office parks and retail box stores around the interchange of Route 625 and Route 28. Travel to town centers, such as Leesburg and Purcellville, also feature high shares of shopping trips, but also have more eating, home, and work trip purposes as compared to retail destinations. Areas adjacent to Loudoun Gateway and Ashburn Metrorail stations, slated for future mixed-use development, currently have diverse destination trip purposes, with up to 15 percent of travel occurring for work, commercial, home, maintenance trips, and other non-retail category trips.

Trips to home are more spread out throughout the Dulles South, Brambleton, Ashburn, Sterling, and western Loudoun County and make up the majority of

destination trips in Suburban and Transitional Place Types. While travel to western Loudoun County is primarily home-based trips, some areas such as Wheatland and Purcellville have social, eating, and lodging trips that make up higher travel share and contribute significantly to the overall number of travelers accessing rural locations.

In addition to the findings included with each figure, further opportunities for transit improvement from the **Travel Purpose (Why**) section include:

- Trips starting and ending within Loudoun County are overwhelmingly for non-work trip purposes like shopping, recreation, trips to home, and other types. Work trips within Loudoun County only comprise 14 to 20 percent of all trips during a typical weekday. By contrast, trips from Loudoun County to other regional destinations regularly exceed 35 percent of work trips. LCT may consider focusing on intra-County service (that does not connect to Metrorail) to locations that are not exclusively employment centers to allow a diversity of trip purposes to be fulfilled. Services oriented to serving commuters should focus on external connections and during peak Loudoun County work commuting hours of 7:00 a.m. to 9:00 a.m. while resources can be allocated to other areas during the off-peak and evening to serve other trip purposes.
- The farther away from the regional destination, the more likely the traveler is commuting to work or school. This applies to regional employment centers such as the Washington, D.C., or the Rosslyn-Ballston corridor in Arlington. Travelers from Loudoun County to these external job locations average around 100 minutes of total travel time. LCT should aim to serve trips to these regional destinations within 100 minutes, including wait and transfer times.
- Specific locations in Loudoun County and neighboring jurisdictions generate demand that spans all-time periods: weekday, weekend, peak commuting times, and off-peak. These destinations also include a variety of trip purposes including work and non-work trips. These locations may be suitable for all-day, fixed route service instead of connector or feeder type service, which only serves specific trip purposes and rider segments. These areas include:
    - Dulles Town Center
    - Dulles International Airport
    - Ashburn Metrorail Station
    - Commercial/Retail Centers on Route 7 near Lansdowne
    - Commercial/Retail Centers between Loudoun County Parkway and Stone Spring Road
    - Reston-Herndon (Fairfax)
    - Chantilly (Fairfax)

Origins and Destinations (Where)

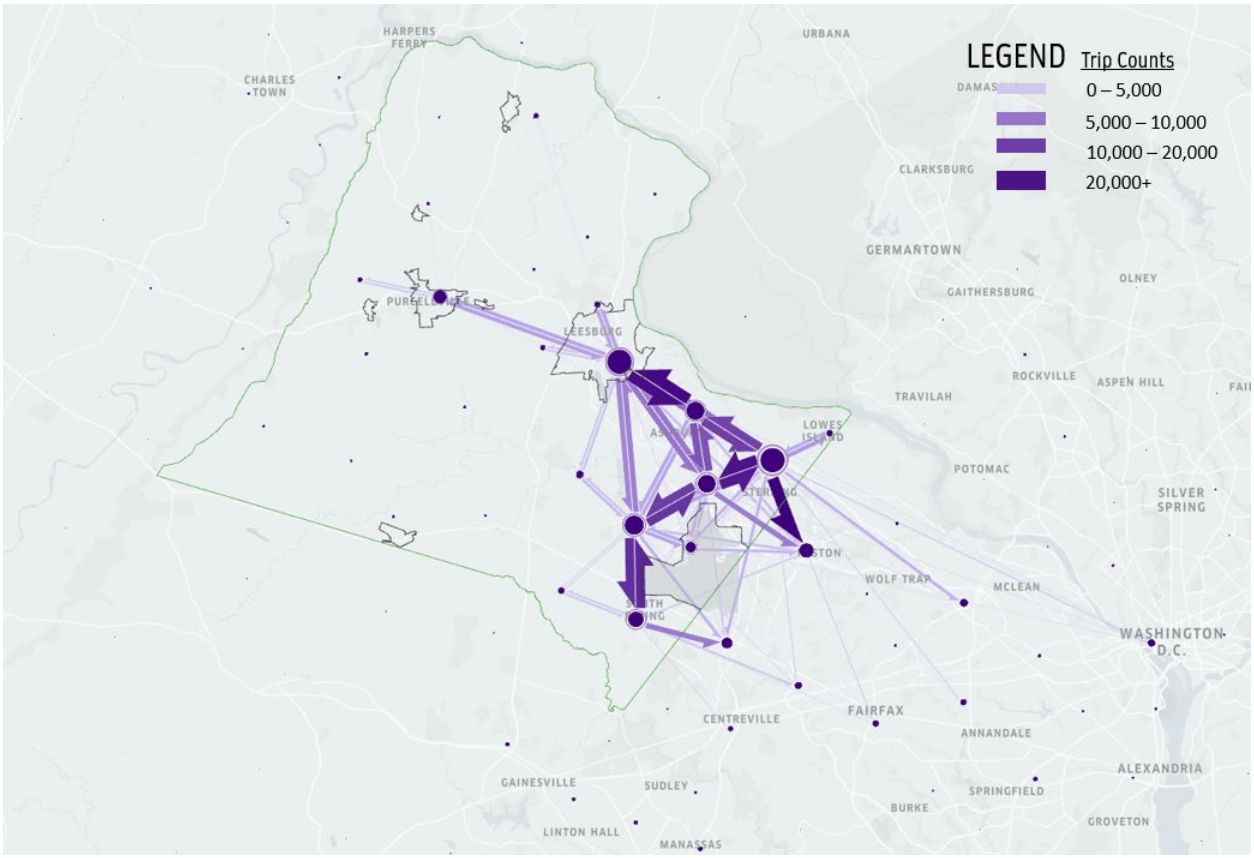
Origin-destination Replica data for Loudoun County builds upon the travel pattern, trip purpose, and temporal and demographic data discussed in previous sections

and visualizes the actual flow of travel throughout the LCT service area. The origin-destination patterns are shown by the total number of trips and categories that relate to transit propensity, such as trips by purpose, zero-vehicle households, low-income, and seniors' travel.

Similar data flow diagrams are also included in the Loudoun County CAPSP, however, the origin-destination analysis in this TSP will be used to analyze how well existing LCT service aligns with physical travel patterns. Origin-destination flows will be overlayed with LCT services and stops with major trip destinations and paths that potential riders may take to conduct a gap analysis. If an existing major travel flow that could be served by transit is not covered by current or planned service, the potential gap and recommendations for service alterations are noted below in **Section 2.2.2** and in **Chapter 3**. **Figure 2-28** and **Figure 2-29** show origin-destination flows for all types of travelers starting in Loudoun County during a typical weekday. The major flows can be grouped into several major corridors with approximate amount of weekday trips:

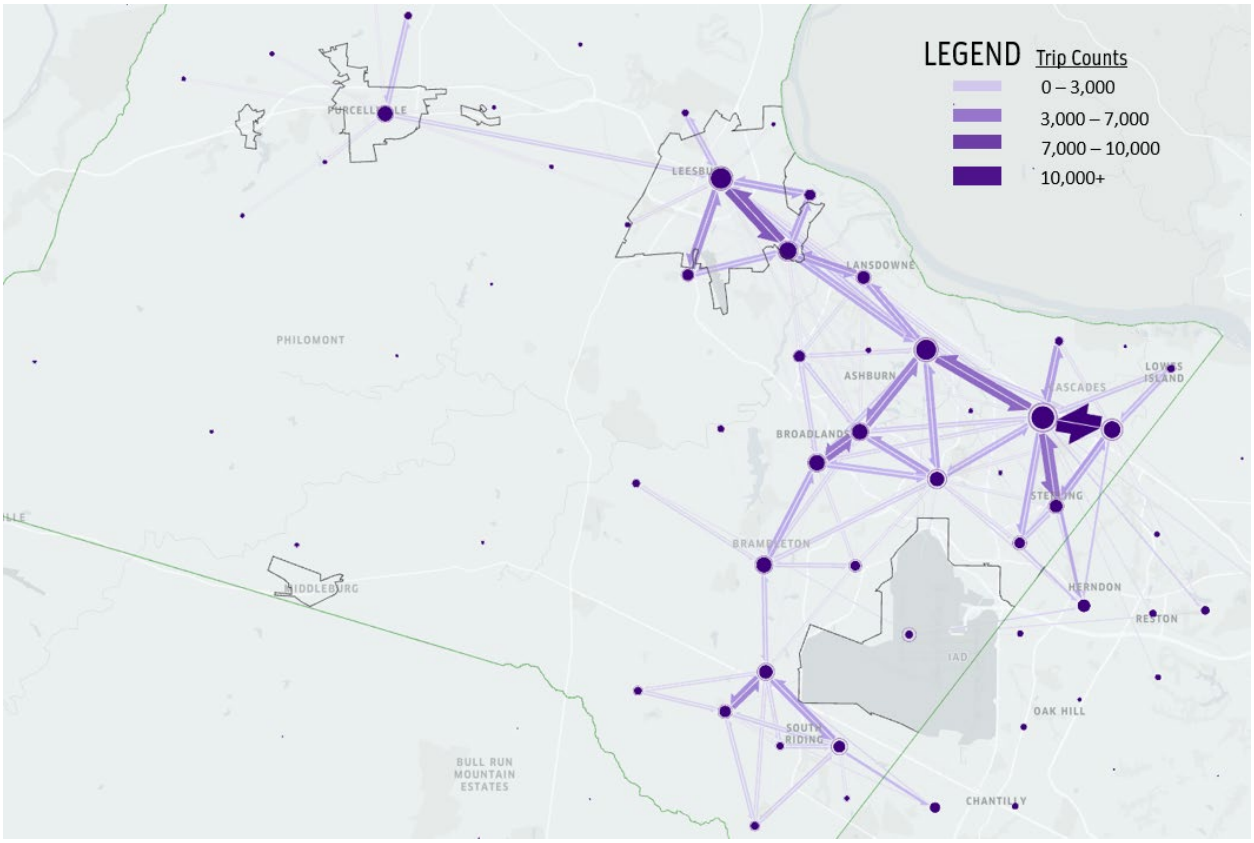
- Route 7 between Leesburg and Battlefield Parkway: 8,200 trips per day
- Dulles Town Center–Cascades–Sterling: 14,800 trips per day
- Dulles Town Center–Route 7 and Loudoun County Parkway: 7,200 trips per day
- Ashburn/Route 7–Broadlands: 7,000 trips per day
- Brambleton–Stone Ridge: 5,700 trips per day
- Stone Ridge–South Riding: 4,500 trips per day
- Ashburn–Herndon: 5,000 trips per day

Figure 2-28: All Trip Origin-Destination Flows (Regional)



Source: Replica, 2022

Figure 2-29: All Trip Origin-Destination Flows (Loudoun)



Source: Replica, 2022

Additionally, activity hubs such as Leesburg and Dulles Town Center, symbolized by dots on the transit flow figures, contain internal or round trips that don't leave the area on a typical day. These internal trips average around 33,000 trips for the larger hubs and may be served by community circulators that run shorter, local routes.

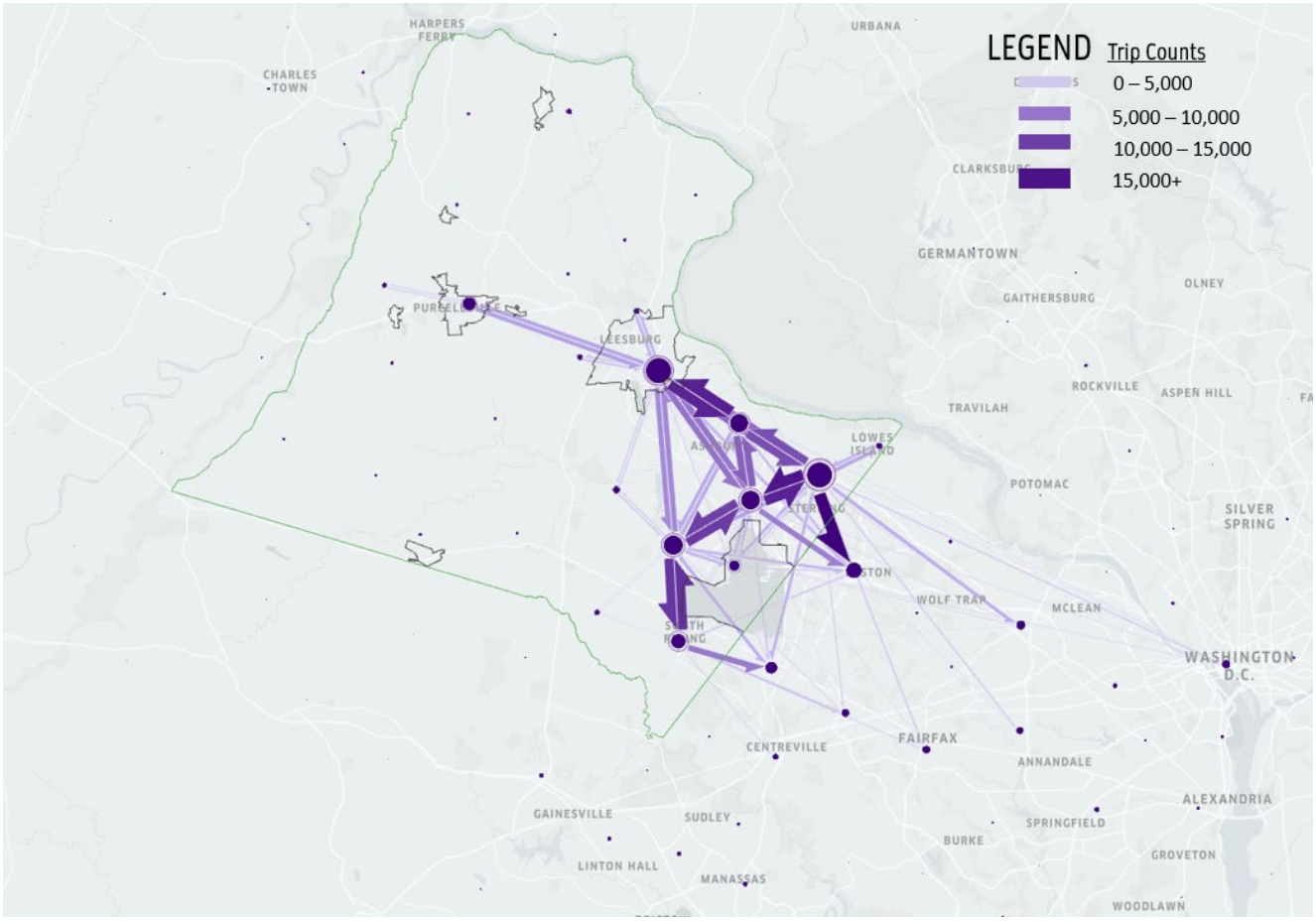
LCT routes cover most of the major travel corridors in the service area; however, there are overall origin-destination flows that could be fulfilled by extending or restructuring of routes to fill service gaps. Potential service area gaps and routes in these areas for further analysis include:

- Connection of Brambleton to Dulles South: Routes 374, 375, 381, 382
- Lack of direct demand between Leesburg and Ashburn North Station along Route 267: Routes 351, 391
- Travel demand from East Sterling to Herndon: Routes 80, 312
- Travel demand from South Riding to Chantilly: Routes 351

Figure 2-30 and **Figure 2-31** show different travel patterns for working-age populations (18 to 64) and seniors (65+). Although the total number of senior trips taken is lower than all other age groups, older populations may rely more on transit for shopping, social, and healthcare trips. While the working-age population travel

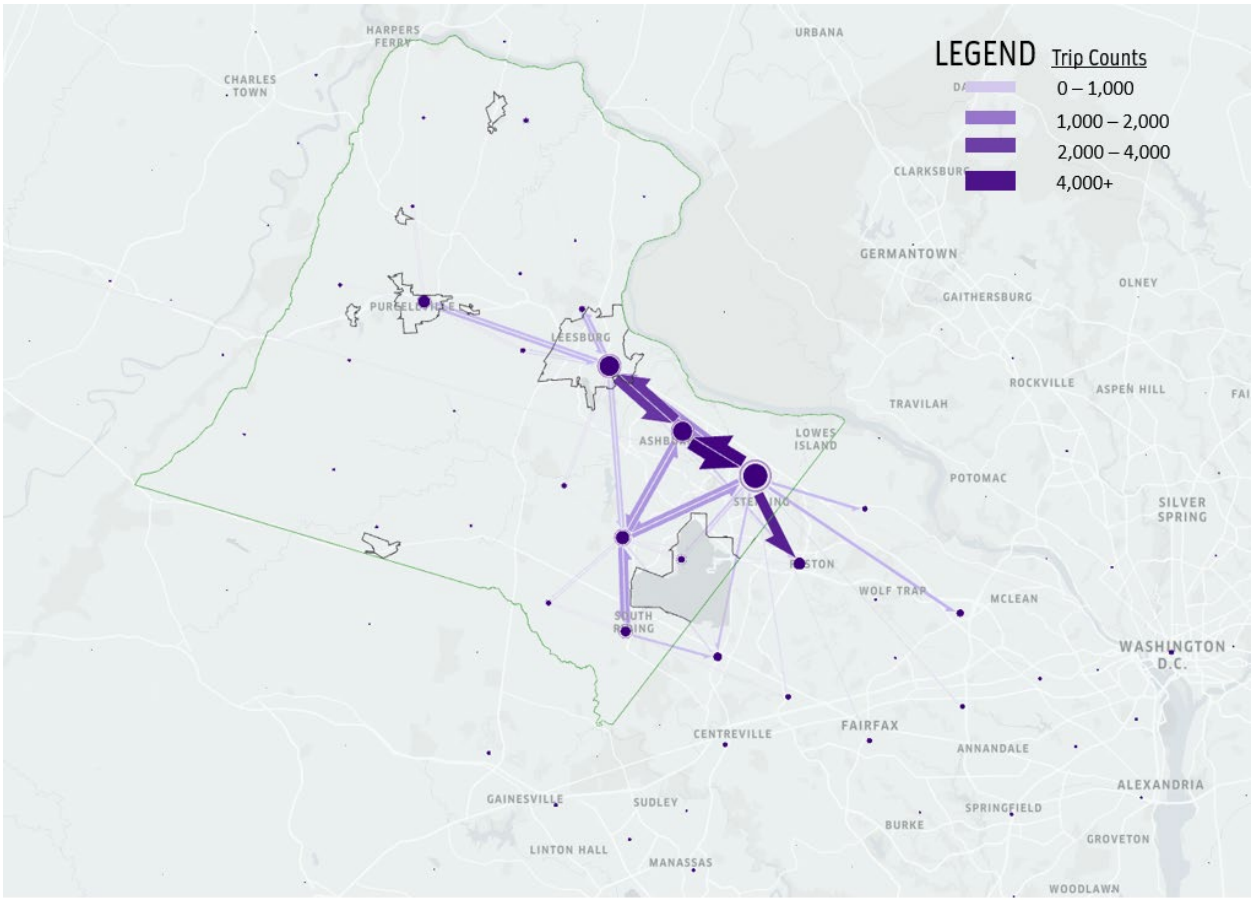
patterns follow the overall trip corridors along Route 7 and from Sterling down to South Riding, seniors' population travel is more concentrated along Route 7 only, particularly between Belmont and Ashburn. LCT local routes 57, 70, and 81 serve the area where the senior population travels most in the County. While transit service aims to accommodate the needs of all age groups and purposes, flexible routing and paratransit service could be concentrated in the northern sections of the County where most senior demand occurs while fixed route service is allocated elsewhere.

Figure 2-30: Working-age Trip (18 to 64) Origin-Destination Flows



Source: Replica, 2022

Figure 2-31: Senior Trip (65+) Origin-Destination Flows

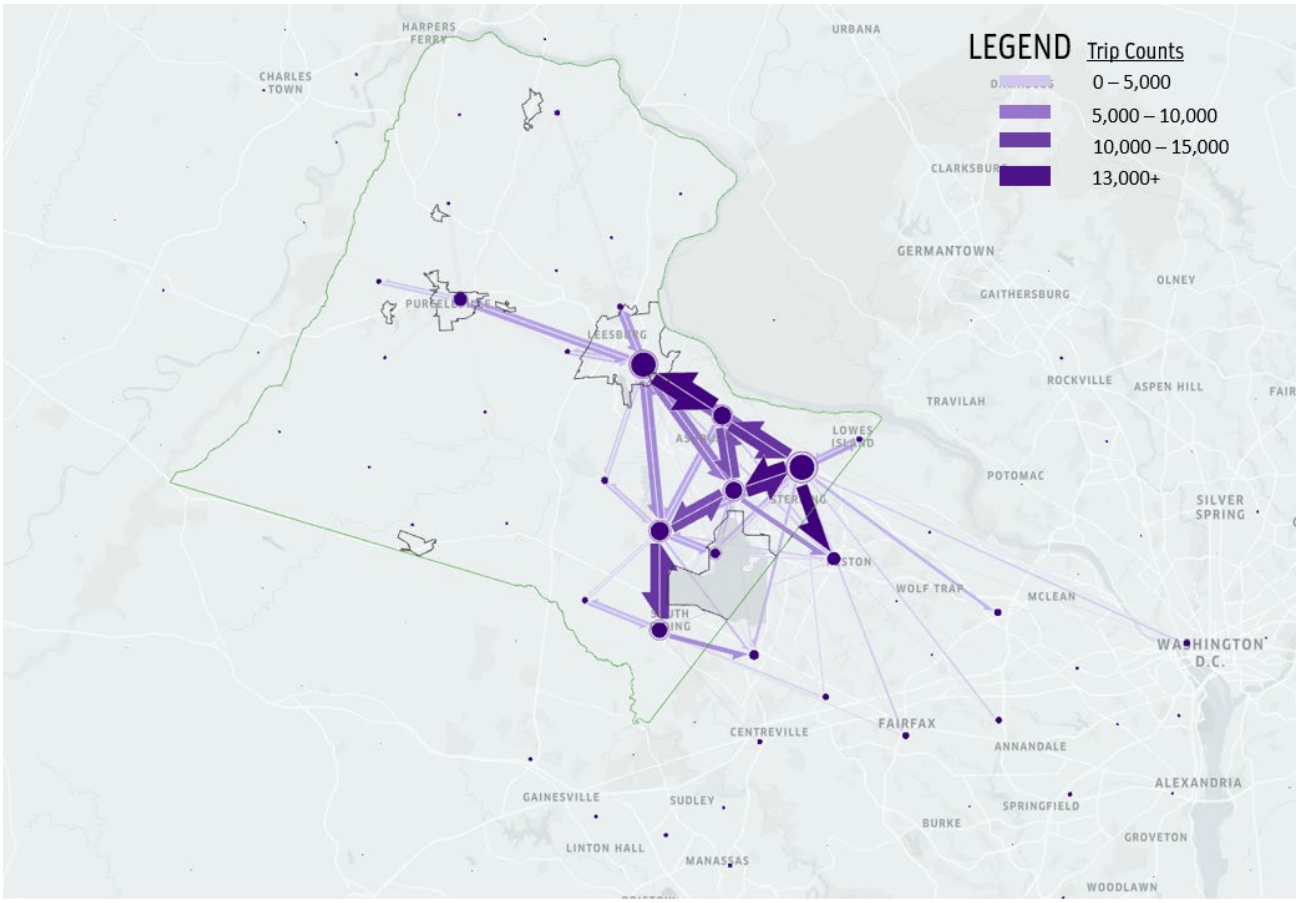


Source: Replica, 2022

Figure 2-32 and **Figure 2-33** compare the travel patterns between those with low-moderate household incomes less than $75K versus those with moderate-high household incomes greater than $150K in Loudoun County. As discussed in the **Travel Demographics** (Who)section, households with lower-incomes are more likely to use transit for non-work-related travel within Loudoun County, whereas those with higher-incomes are more likely to use transit for external trips to regional employment destinations.

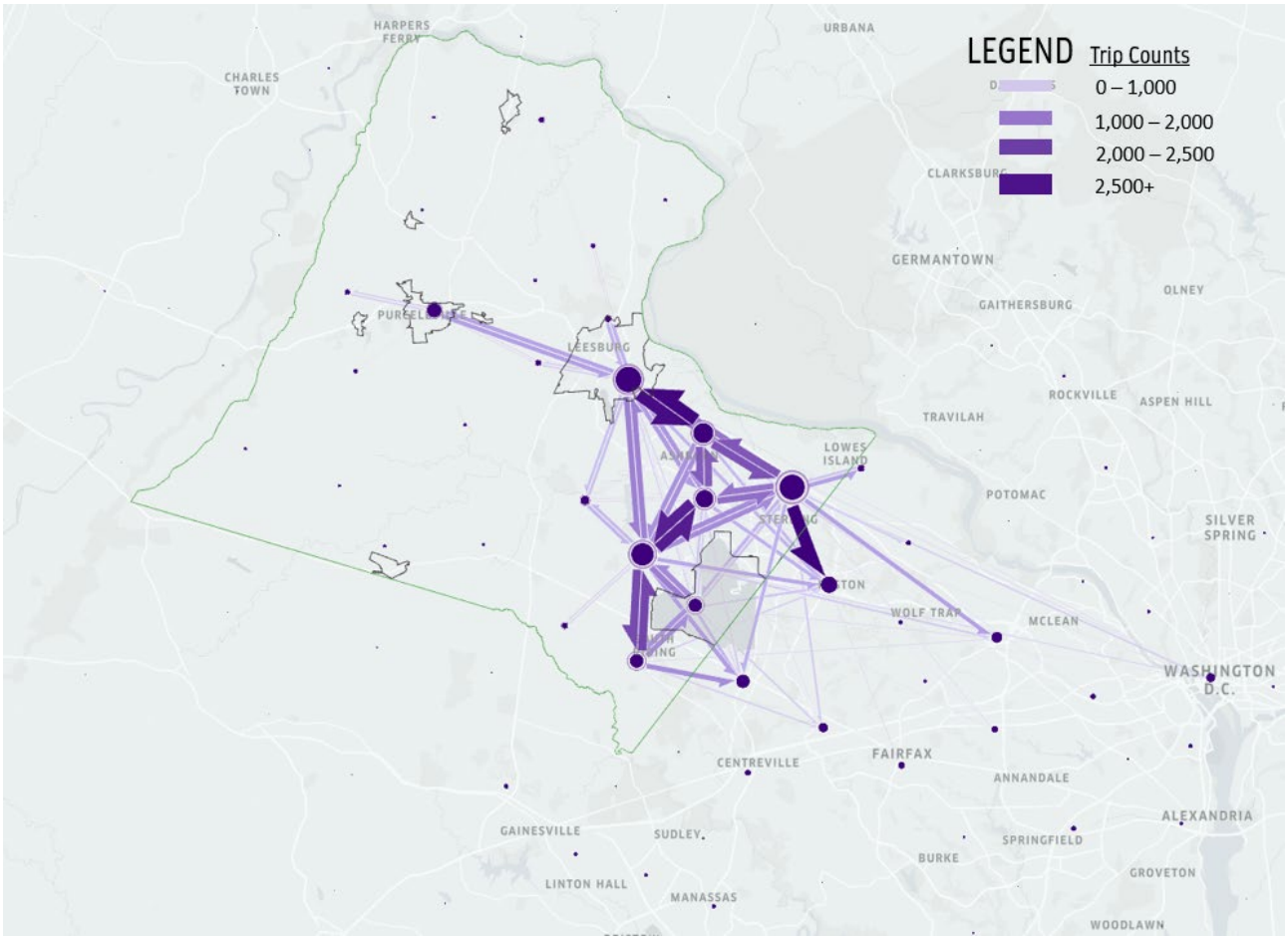
Low-moderate income households travel is concentrated in Sterling and along Route 7, with some flows along Loudoun County Parkway, Herndon, and Central Fairfax County externally. Households with higher incomes concentrate their travel mostly around Leesburg to Ashburn as well as travel south of Route 267 to Arcola. Additionally, higher-income earners do not travel as frequently to the same regional destinations of lower-income workers, such as Prince William County and central Fairfax County. Instead, they travel mostly to Tysons Corner and downtown Washington, D.C., exclusively. Both groups do, however, desire to travel to Reston-Herndon from Sterling.

Figure 2-32: Low-Moderate Income (Household <$75K) Origin-Destination Flows



Source: Replica, 2022

Figure 2-33: Moderate – High-Income (Household >$150K) Origin-Destination Flows



Source: Replica, 2022

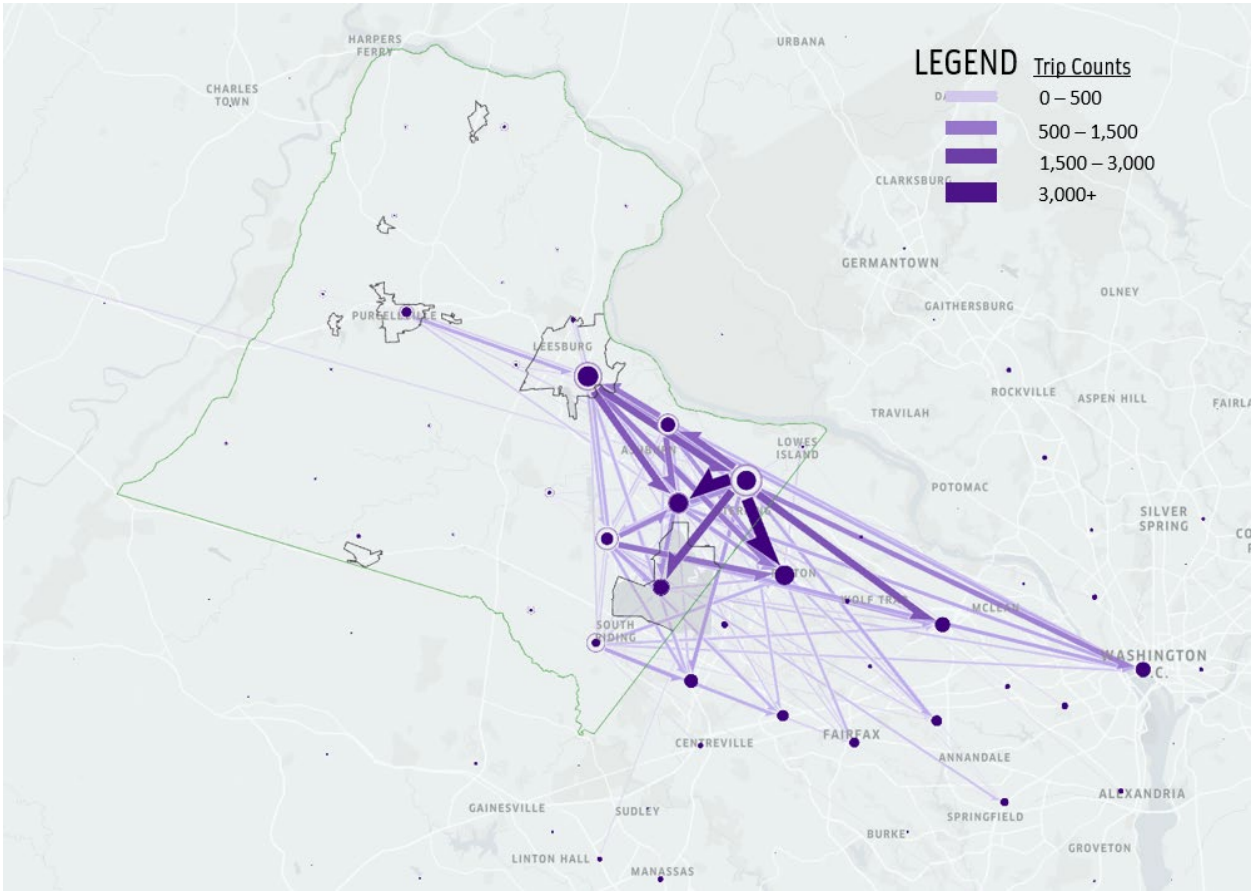
LCT routes cover low- and high-income household travel patterns with appropriate service levels. Local and feeder service is concentrated in the north of the County along Route 7. While Silver Line bus routes tend to serve higher-income geographies in central Loudoun County, two-thirds of September 2023 onboard ridership survey respondents on Silver Line bus routes were lower income, making less than $75K. If future transit strategy places more emphasis on serving transit-dependent populations, potential service improvements could include:

- Add more direct service between Dulles Town Center/Sterling and Ashburn Metrorail Station: LCT 331, 332,333
- Add additional service between East Sterling and Herndon: LCT 312, 80, 323
- Add more direct service between Leesburg/Potomac Station and Ashburn Village: LCT 70

Figure 2-34 and **Figure 2-35** show work and school trip purposes during a typical weekday starting from Loudoun County. As discussed in the **Travel Purpose** (Why)section, work and school trips are concentrated in the a.m. peak from 7:00 a.m. to 9:00 a.m. Major trip flows for work include travel from Sterling to Reston-

Herndon (3,000 daily trips), Sterling to Ashburn (3,000 daily trips), Sterling to Dulles International Airport (2,000 daily trips), as well as Leesburg to Sterling and Ashburn (each 1,800 daily trips). Other work trip flows include the Route 7 corridor in Loudoun to Tysons (1,900 daily trips), Purcellville to Leesburg (800 trips), and Leesburg, Ashburn, and Sterling to Washington, D.C. (each 700 daily trips).

Figure 2-34: Work Trip Origin-Destination Flows



Source: Replica, 2022

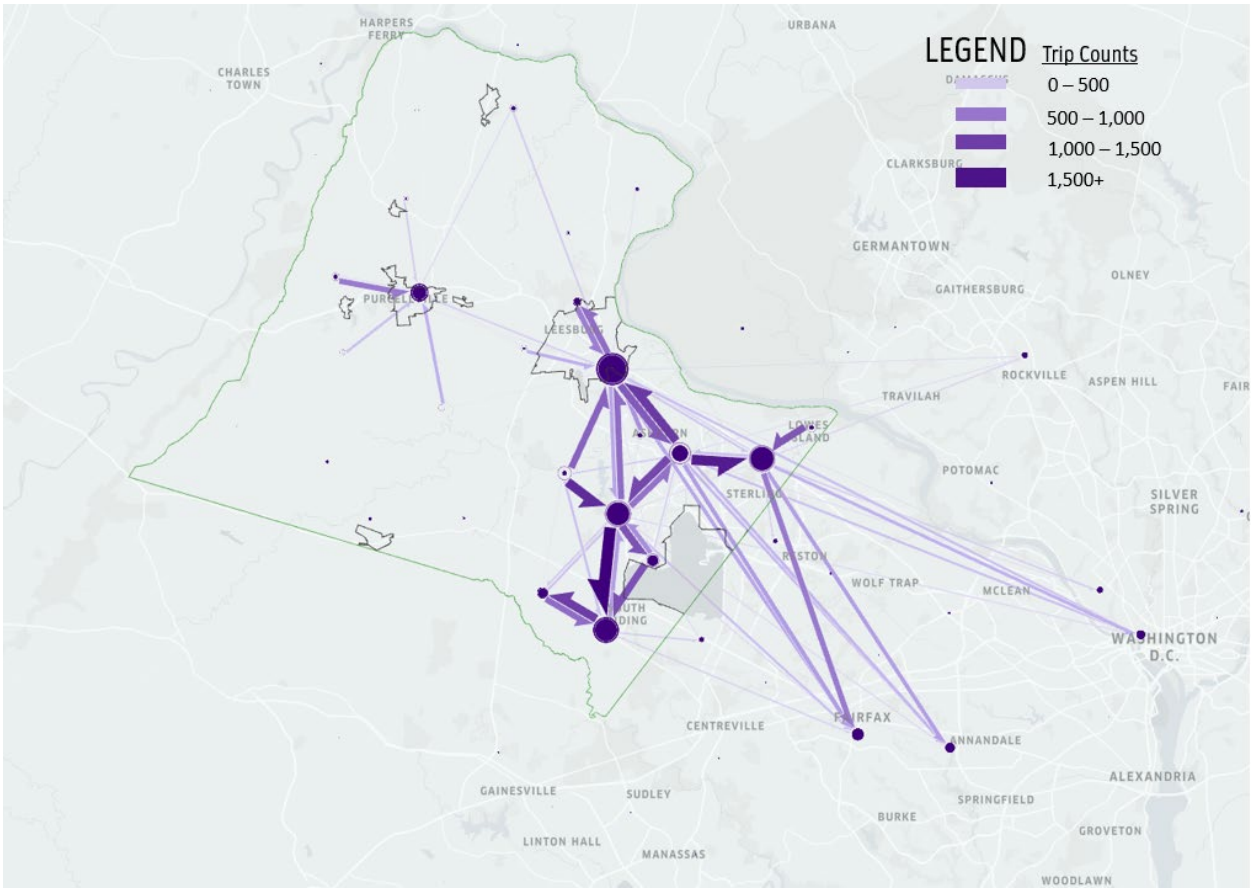
School trips starting in Loudoun County have significantly less volume in the a.m. period than work trips. They are mostly concentrated on the north-south corridor following Loudoun County Parkway and to Leesburg. School trip flows are also concentrated within the County from Brambleton to South Riding. External trips from Sterling and eastern Loudoun County to George Mason University and Northern Virginia Community College in Fairfax County total around 700 trips per day, and school trips to Washington, D.C. total approximately 300.

Additional opportunities for LCT to serve commuting and school travel patterns concentrated in the morning weekday period include:

- Provide a direct connection between East Loudoun/Sterling to Tysons Corner.
- Provide a north-south from Brambleton to Dulles South/Route 50 corridor.

- Connect regional routes to allow transfers to external jobs and school destinations in central Fairfax County.

Figure 2-35: School Trip Origin-Destination Flows



Source: Replica, 2022

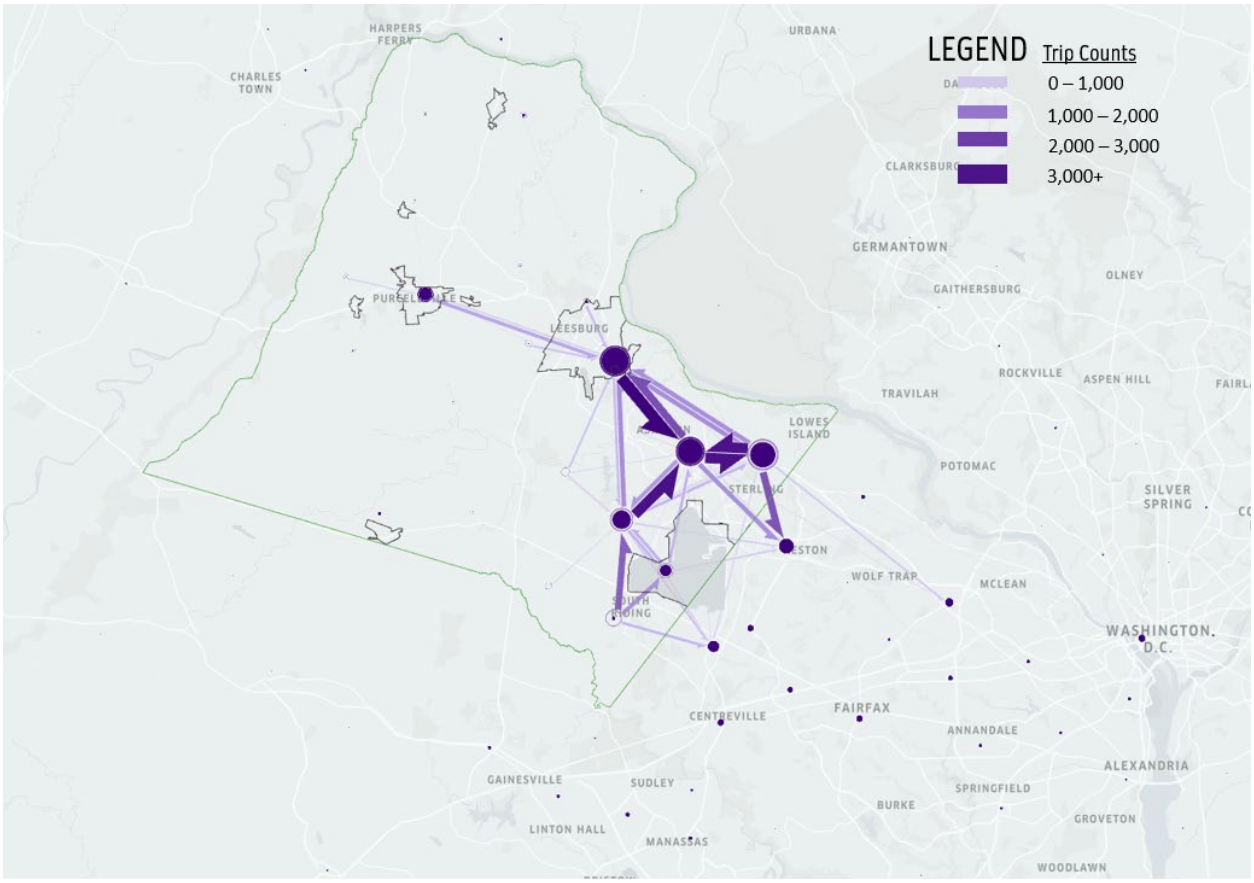
Figure 2-36 and **Figure 2-37** show shopping and eating/social travel in Loudoun County. As discussed in the **Travel Purpose (Why)** section, shopping, eating, and social trips become the most frequent trip purposes for trips in Loudoun County, starting at 1:00 p.m. on weekdays and throughout the day from 10:00 a.m. on weekends. Shopping trips starting from Loudoun County are concentrated in trips between Sterling and Dulles Town Center, with secondary corridors along Route 7 and the commercial centers between Battlefield Parkway and the Leesburg Bypass. Shopping travel also occurs from central Ashburn to retail along Russell Branch Parkway and areas around Pacific Boulevard and Route 625.

Existing LCT routes adequately connect shopping origin-destination flows along Route 7 and the northern parts of the County. Opportunities for LCT to serve additional shopping and retail demand include increasing service during peak shopping periods and providing access from residential neighborhoods for retail and service workers to access the same locations as shoppers for employment opportunities.

Figure 2-36: Shopping Trip Origin-Destination Flows

Source: Replica, 2022

Figure 2-37: Eating/Social Trip Origin-Destination Flows



Source: Replica, 2022

2.2.2 Transit Demand and Underserved Opportunities for Improvement

While more targeted opportunities for improvements are listed under the specific market analysis sections above, this section provides a high-level review of opportunities and themes identified through the existing conditions analysis. The system, area, and route-level findings in this section will be further developed into service recommendations in **Chapter 3.**

- Transit demand between future residential density growth and employment centers should be expected. As discussed in **Evaluation of Transit Market Demand and Underserved Areas** section, population growth in new urban, suburban, and transitional place types in 2040 will require connections not only within their community, but to future employment and commercial centers planned around Route 7, Route 28, Innovation Center (Loudoun), Leesburg, and the Dulles Greenway. Future population growth is also expected west of Brambleton, south of Leesburg, and in Dulles South, some of which have areas yet to be served by LCT routes.
- LCT could improve existing areas of high transit potential and propensity. LCT provides adequate service to areas of high transit propensity including Sterling, Brambleton, and select areas of Lansdowne and Ashburn. Service

frequency, however, could be improved as well as the directness of routes to desired shopping and work destinations for transit-dependent populations, and connections to Metrorail. The network also could be expanded to serve areas with moderate transit propensity, such as in Lenah and northwest Leesburg.

- Travel pattern demographic data shows that Loudoun County households with higher incomes are more likely to use transit that reaches outside the County (Metro Connection local fixed route service and commuter route service) for work and connections to regional destinations, whereas moderate to low-income households are more likely to use transit (other local fixed route service) for connections and errands within the County. LCT may focus more on connecting local routes to low-income households from 3:00 p.m. to 7:00 p.m. during weekdays or 10:00 a.m. to 5:00 p.m. on weekends.
- Travel data for all trip purposes shows that travel time in Loudoun County averages around 98 minutes for public transit compared with an average travel time of 20 minutes for other modes. LCT should improve travel times for routes to desired destinations such as shopping, eating, school, and workplaces to be more competitive with other modes. There is not a set ratio of acceptable transit versus vehicle travel time but research has suggested that one and a half times the vehicle travel time can be competitive.
- Data shows that there is a need to allocate service from serving work and school trip demand during the 7:00 a.m. to 9:00 a.m. peak to also serving other destinations such as retail, shopping, and errands during the 3:00 p.m. to 7:00 p.m. time period. As discussed in the **Travel Patterns** section, trip purposes significantly shift from commuting to home-based trips from the a.m. to p.m. period, which opens an opportunity for LCT to capture some of these trips. On weekends, only 8 percent of trips starting in Loudoun County are work trips, which may require service to be adjusted to serve the needs of the broader population or concentrate service specifically on where these work trips are occurring.
- Areas within Loudoun, such as Dulles Town Center, Dulles International Airport, Ashburn Metrorail Station, and various commercial and retail centers on Route 7 and Loudoun County Parkway, are consistent demand generators during all weekdays and weekends. These areas also are the destination for many trips starting throughout the County including from low-density and multi-family residential. These may be planned as transfer centers or transit hubs where service can be concentrated.
- LCT serves most internal origins and destinations travel with adequate local bus service. However, some opportunities to fill gaps in connectivity, outlined in the **Origins and Destinations** section, include adding more cross-county service on a north-south corridor connecting Dulles South with Brambleton and Ashburn Metrorail station, as well as adding more service between Leesburg and Potomac Station. Additionally, while there are routes connecting Dulles Town Center and Sterling with Ashburn and central Loudoun County, these often require one or more transfers. Adding a direct

route between the Ashburn North park and ride lot area and Dulles Town Center would connect two high-activity areas and locations projected for future growth.

- Areas immediately outside Loudoun County that see high trip demand include Chantilly and the Reston-Herndon area. The **Origins and Destinations** section of this chapter discusses specific routes that may be altered to serve travel from Loudoun County to these external places. Other regional destinations which see frequent travel are Tysons Corner, central Fairfax County (City of Fairfax, GMU, Merrifield) as well as the Rosslyn-Ballston corridor and downtown Washington, D.C. While some of these areas are currently served by commuter bus service or connected via Metrorail, others are not directly served by transit. LCT could consider adding direct service to major transfer centers that connect residents to other regional transit routes, like Fairfax Connector at Reston Town Center, which serves some of these locations.
- Targeted route improvements based on the origin-destination flow analysis include addressing:
    - Connection of Brambleton to Dulles South: Routes 374, 375, 381, 382
    - Lack of direct demand between Leesburg and Ashburn North Station along Route 267: Routes 351, 391
    - Travel demand from East Sterling to Herndon: Routes 80, 312
    - Travel demand from South Riding to Chantilly: Routes 351
    - Add more direct service between Dulles Town Center/Sterling and Ashburn Metrorail Station: Routes 331, 332, 333
    - Add additional service between East Sterling and Herndon: Routes 312, 80, 323
    - Add more direct service between Leesburg/Potomac Station and Ashburn Village: Route 70

2.3 Performance Evaluation

This section evaluates performance in FY 2022 against the performance standards defined at the end of **Chapter 1** (see **Table 1-4**). Performance was evaluated for the following aspects of service: system accessibility, ridership, cost efficiency, safety, reliability, and customer satisfaction. **Table 2-13** contains systemwide averages for the measures evaluated for FY 2022, and comparison to the benchmarks set in **Chapter 1** are included in the following subsections. Performance-based opportunities for improvement are identified in the introduction of this chapter based on this analysis.

Table 2-13: Systemwide Averages for Key Performance Measures, FY 2022

Performance Measure	Local Bus and Silver Line Bus	Commuter Bus
Net Cost Per Boarding	$8.89	$5.96
Boardings per revenue hour	4.38	9.16
Boarding per revenue mile	0.22	0.29
On-Time Performance	70%	57%

Performance Measure	Local Bus and Silver Line Bus	Commuter Bus
Headway	35 minutes	42 minutes

Source: Loudoun County, FY 2022

2.3.1 Performance Evaluation

System Evaluation

This system trend analysis reports on and assesses LCT's routes during five years spanning FY 2018 – FY 2022. Such an evaluation allows for an assessment of transit services over time and sheds light on how development and changing demographics have impacted transit performance and system growth. This analysis examines performance metrics for service area characteristics, operational statistics, ridership, and revenue and cost.

In accordance with DRPT's Performance Based Operating Assistance Allocation Guidance, this analysis includes the following performance metrics:

- Ridership
- Passengers per Vehicle Revenue Mile
- Passengers per Vehicle Revenue Hour
- Operating Cost
- Operating Cost per Vehicle Revenue Mile
- Operating Cost per Vehicle Revenue Hour
- Operating Cost per Passenger

Operational Statistics

A review of operational statistics describes the level of service LCT has provided over the five years from FY 2018 – FY 2022. **Table 2-14** presents the vehicles operated in maximum service as well as the revenue hours and revenue miles operated by LCT during the past five years. As shown in **Table 2-15**, all three operational measures have decreased since FY 2018, in part due to service reductions following the COVID-19 pandemic.

Table 2-14: Trend Analysis Operational Statistics

Operational Statistics	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Vehicles Operated in Maximum Service (VOMS)	91	96	91	46	60
Vehicle Revenue Miles (VRM)	3,064,107	3,268,442	2,885,305	1,734,610	1,818,804
Vehicle Revenue Hours (VRH)	140,401	141,055	125,157	87,144	88,603

Source: FY 2018 – FY 2021 National Transit Database Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

Table 2-15: Trend Analysis Operational Statistics Percent Change

Operational Statistics	FY 2018 – FY 2019	FY 2018 – FY 2022
Vehicles Operated in Maximum Service (VOMS)	+5%	-36%
Vehicle Revenue Miles (VRM)	+7%	-41%
Vehicle Revenue Hours (VRH)	0%	-37%

Source: FY 2018 – FY 2021 National Transit Database Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

Trend Analysis

A review of operational measures across five years describes the cost and fare revenues associated with variable levels of service. **Table 2-16** reveals trends in the cost-effectiveness of this service before and following the onset of the COVID-19 pandemic.

Table 2-16: Operating Measures Five-Year Trend

Operational Measure	2017	2018	2019	2020	2021
Operating Expenses	$12,168,597	$16,935,630	$18,177,156	$16,618,054	$16,353,802
Fare Revenues	$9,241,267	$9,256,949	$9,618,058	$7,342,934	$157,890
Annual Unlinked Trips	1,752,081	1,703,546	1,708,121	1,309,246	333,961
Annual Vehicle Revenue Miles	3,066,062	3,064,107	3,268,442	2,885,305	1,734,610
Annual Vehicle Revenue Hours	137,270	140,401	141,055	125,157	87,144

Source: National Transit Database (NTD), Transit Agency Profiles

Observations from the operational trend analysis include:

- Annual vehicle revenue hours and miles have almost decreased by half between 2019–2021.
- Service was interrupted by the COVID-19 pandemic which led to decreased ridership and operation of the system.
- While costs have decreased, they have not decreased at the same rate as service has, making the system operation less efficient and more costly for the agency.
- Fare revenues had been staying steady around $9.2M USD but due to decreased ridership have dropped to less than $200K.
- In 2019, there were the most unlinked trips at 1,708,121, which decreased to 333,961 in 2021.

A detailed cross-comparison of these operational statistics across a five-year period reveals trends in performance measures such as system efficiency and financial sustainability. **Table 2-17** illustrates the dramatic shifts in these performance measures before and following the onset of the COVID-19 pandemic. **Figure 2-38** and **Figure 2-39** also depict these changes by isolating two measures to compare against one another.

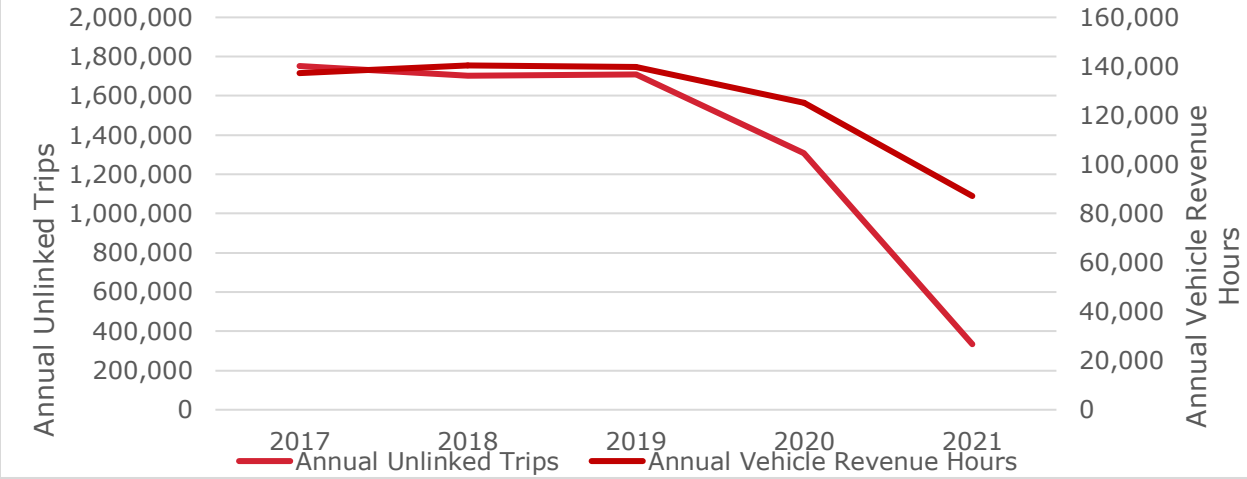
Table 2-17: Performance Measures Five-Year Trend

Performance Measure	2017	2018	2019	2020	2021
Operating Expenses per Passenger Trip	$9.97	$9.94	$10.64	$12.69	$48.97
Operating Expenses per Vehicle Revenue Mile	$5.70	$5.53	$5.56	$5.76	$9.43
Operating Expenses per Vehicle Revenue Hour	$127.27	$120.62	$130.04	$132.78	$187.66
Passenger Trips per Vehicle Revenue Mile	0.6	0.6	0.5	0.5	0.2
Passenger Trips per Vehicle Revenue Hour	12.8	12.1	12.2	10.5	3.8
Farebox Recovery Ratio	47.3%	48.9%	47.7%	37.6%	1.0%[7]

Source: National Transit Database (NTD), Transit Agency Profiles

- Efficiency of the LCT system has decreased dramatically from the onset of the COVID-19 pandemic in 2020. Farebox recovery ratio was 48.9 percent at the peak of the five-year period and in 2021 dropped to one percent.
- Operating expenses have increased from 2017 to 2021 while trips per revenue mile and hour have decreased, indicating the significant decrease in ridership and resultant costly operation of the system.
- Operating expense per passenger trip was $9.97 in 2017 and rose to $48.97 in 2021. Contrastingly, passenger trips per vehicle revenue mile were 0.6 in 2017 and decreased by two-thirds to 0.2 in 2021.

Figure 2-38: Passenger Trips and Revenue Hours Five-Year Trend



Source: National Transit Database (NTD), Transit Agency Profiles

[7] Low farebox recovery ratio as result of COVID fare free service and reduced service

- Trips and revenue hours both fell dramatically in 2020 following the onset of the COVID-19 pandemic.
- The decrease in annual trips exceeds the decrease in revenue hours, reflecting a subsequent 70 percent decrease in trips per revenue hour between 2017 and 2021.

Figure 2-39: Operating Expenses per Passenger Trip and Passenger Trips per Vehicle Revenue Hour Five-Year Trend

Source: National Transit Database (NTD), Transit Agency Profiles

- The onset of the COVID-19 pandemic in 2020 disrupted historic stability in operating expenses per passenger trip and passenger trips per vehicle revenue hour.
- A decrease in post-pandemic trips per hour coincided with increased post-pandemic operating expenses per passenger.
- The coincidence of these shifts in performance measures reveals how the system is more expensive to run while serving fewer riders.

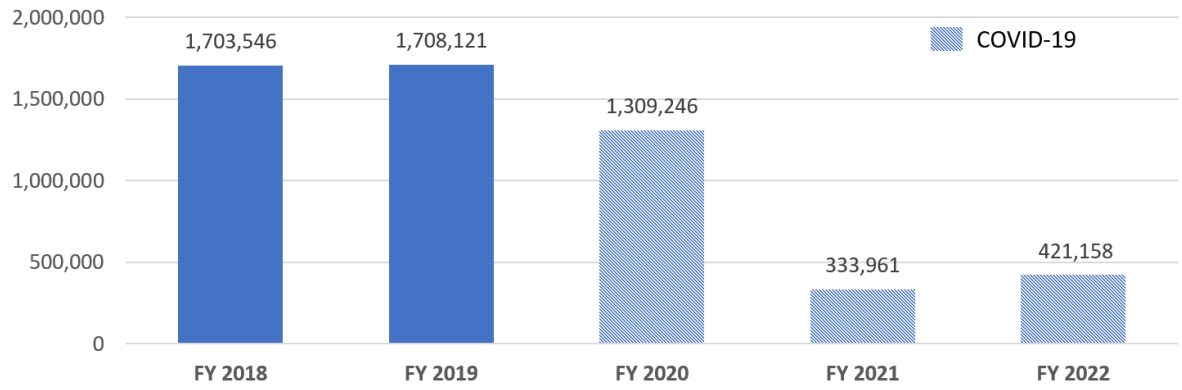
Ridership

A ridership assessment reveals how the usage of LCT services has changed over the five-year analysis period. This analysis looks at unlinked passenger trips, or the total number of boardings on vehicles, regardless of how many transfers were made during any single trip.

As shown in **Figure 2-40,** there has been a significant decrease in ridership since FY 2018. **Table 2-18** shows that between FY 2018 and FY 2019, ridership increased slightly prior to the COVID-19 pandemic. Ridership of LCT has since decreased to 25 percent of pre-pandemic counts. Ridership of LCT has decreased to just half of the average restoration of pre-pandemic ridership counts in Northern Virginia, 50 percent, as reported by the Northern Virginia Transit Commission

(NVTC) and as shown in **Figure 2-41**. This 75 percent decline in ridership far exceeds the 34 percent national average decline in bus ridership when compared to pre-pandemic counts as reported by the American Public Transportation Association (APTA)[8].

Figure 2-40: Trend in Total Ridership



Source: FY 2018 – FY 2021 National Transit Database Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

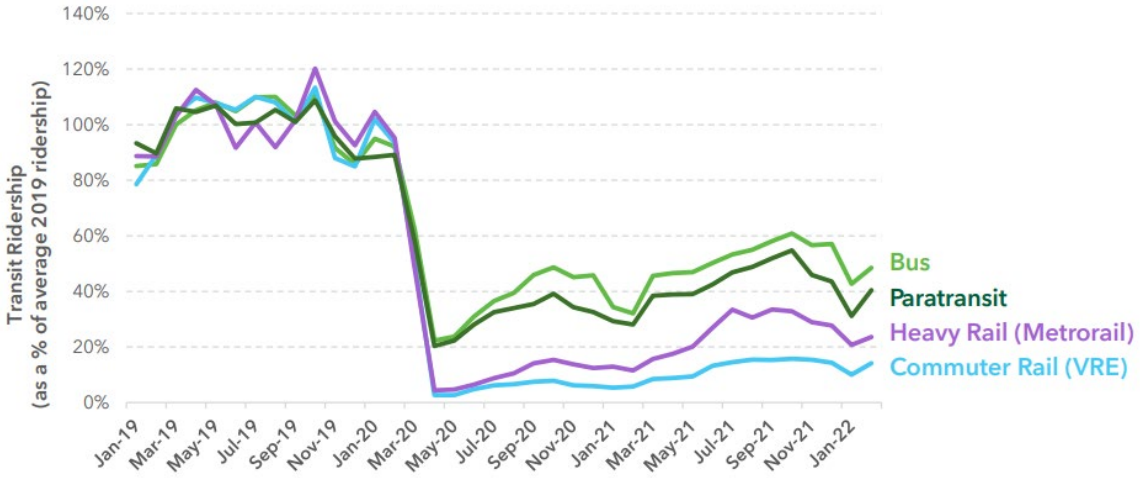
Table 2-18: Percent Change in Total Ridership

Year Range	Percent Change
FY 2018 – FY 2019	0%
FY 2018 – FY 2022	-75%

Source: FY 2018 – FY 2021 National Transit Database Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

[8] https://www.apta.com/wp-content/uploads/APTA-POLICY-BRIEF-Transit-Ridership-09.28.2022.pdf

Figure 2-41: Northern Virginia Transit Ridership (All Modes), Jan 2019 – Jan 2022



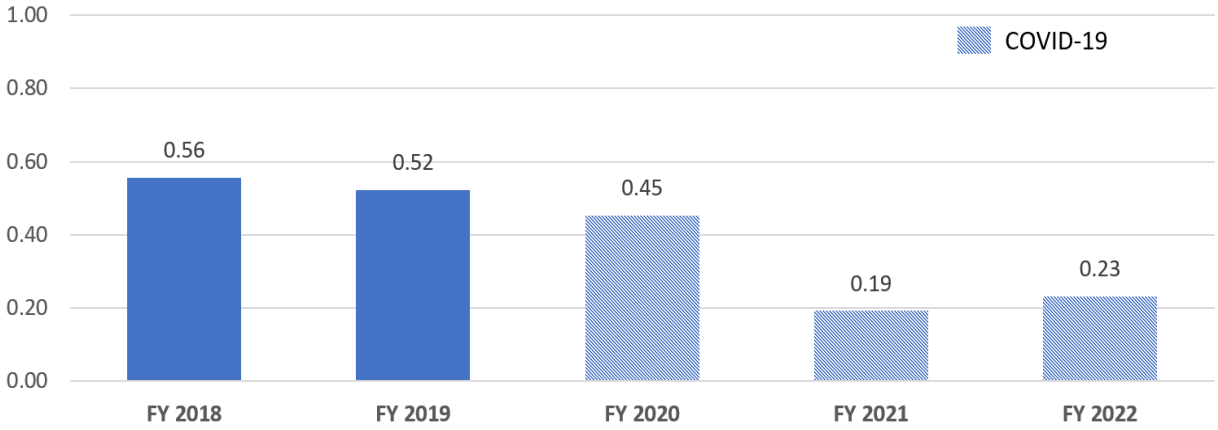
Source: APTA, Northern Virginia Transportation Commission, "Changes to Northern Virginia Transit through the Pandemic" [9]

Passengers per Revenue Mile

Passengers per revenue mile measures the productivity of LCT in transporting its passengers. This measure is often, but not always, linked with trends in total ridership. The quantity of passengers per revenue mile from FY 2018 to FY 2022 over halved, as shown in **Figure 2-42**, but the total decrease was less significant than the decrease in ridership, as shown in **Table 2-19**. This reflects the fact that while ridership decreased—especially between FY 2019 – FY 2021 due to the COVID-19 pandemic—revenue miles decreased more aggressively over the five-year period due to service cuts following COVID-19 impacts.

[9] https://novatransit.org/uploads/presentations/2022-07-06_Pandemic-transit-presentation.pdf

Figure 2-42: Trend in Passengers per Revenue Mile



Source: FY 2018 – FY 2021 NTD Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

Table 2-19: Percent Change in Passengers per Revenue Mile

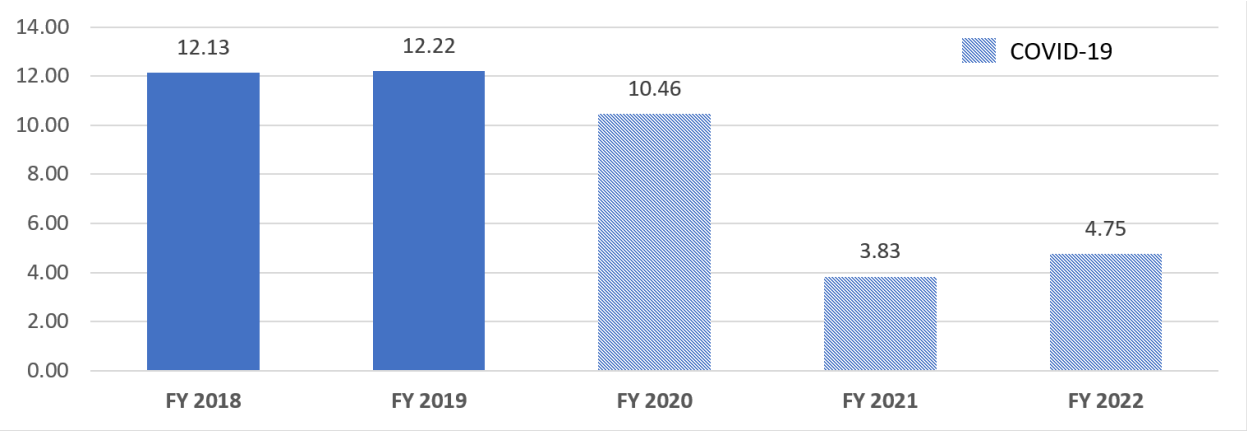
Year Range	Percent Change
FY 2018 – FY 2019	-7%
FY 2018 – FY 2022	-59%

Source: FY 2018 – FY 2021 NTD Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

Passengers per Revenue Hour

Passengers per revenue hour is another metric used to evaluate how productively LCT vehicles spend their time (rather than distance) in service. Between 2018 and 2019 passengers per revenue hours leveled off compared to slight declines in prior years. As with other ridership metrics covered in this section, passengers per revenue hour dramatically decreased between FY 2019 – FY 2021 due to the COVID-19 pandemic, as shown in **Figure 2-43** and **Table 2-20**. Between FY 2018 – FY 2022, the percent decrease in passengers per revenue hour was slightly greater than the percent decrease in passengers per revenue mile.

Figure 2-43: Trend in Passengers per Revenue Hour



Source: FY 2018 – FY 2021 NTD Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

Table 2-20: Percent Change in Passengers per Revenue Hour

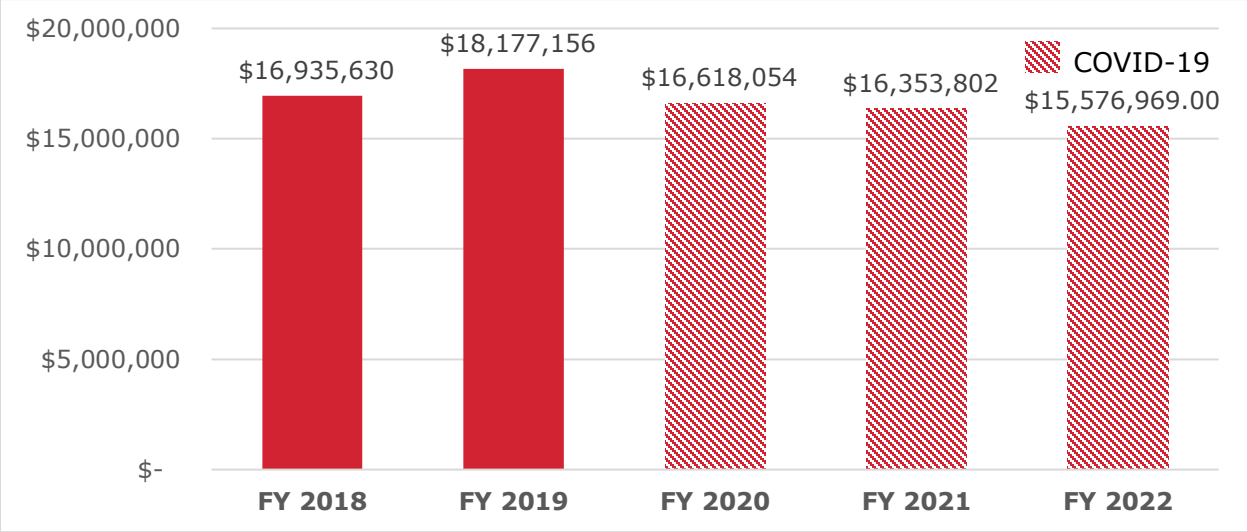
Year Range	Percent Change
FY 2018 – FY 2019	+1%
FY 2018 – FY 2022	-61%

Source: FY 2018 – FY 2021 NTD Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

Revenue and Cost

An analysis of operating expenses over time can elicit an understanding of how much money LCT spends on operating its services each fiscal year. This analysis looked at fully allocated costs to incorporate all costs necessary to provide service were accounted for, including administration and planning costs. Unlike ridership data, the percent change in operating expenses was neither consistently negative nor positive across the five-year analysis time frame, as shown in **Figure 2-44**. Despite a seven percent increase in operating expenses from FY 2018 – FY 2019, due in part to initiating a new service contract, operating expenses have since decreased by eight percent to a five-year low; **Table 2-21** summarizes these changes. Although the onset of the COVID-19 pandemic incurred new costs, such as cleaning, a service reduction outweighs the financial impact of these expenditures.

Figure 2-44: Trend in Operating Expenses



Source: FY 2016 - 2021 National Transit Database Reports, Loudoun County Transit, 2022. Kimley-Horn, 2022.

Table 2-21: Percent Change in Operating Expenses

Year Range	Percent Change
FY 2018 – FY 2019	+7%
FY 2018 – FY 2022	-8%

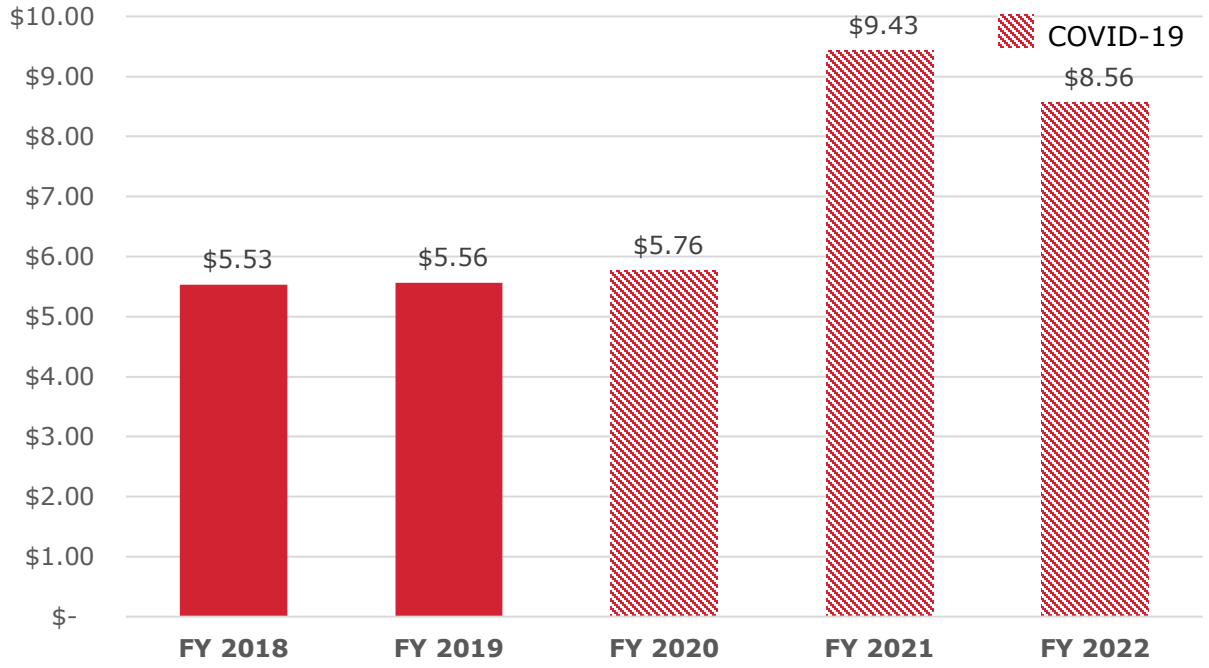
Source: FY 2018 – FY 2021 National Transit Database Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

Operating Expenses per Revenue Mile

Analyzing operating expenses per vehicle revenue mile allows for an evaluation of the productivity of revenue miles operated by the service. While total operating expenses did not vary significantly over this five-year period, reducing the systemwide revenue miles due to service cuts in response to COVID-19 service cuts ultimately increased spending per revenue mile.

Figure 2-45 illustrates a sudden increase in operating expenses per revenue mile beginning in FY 2022. A slight reduction in overall operating expenses for FY 2022 tempers this change to a 33 percent increase in pre-pandemic costs per mile, as shown in **Table 2-22.**

Figure 2-45: Trend in Operating Expenses per Revenue Mile



Source: FY 2016 - 2021 National Transit Database Reports, Loudoun County Transit, 2022. Kimley-Horn, 2022.

Table 2-22: Percent Change in Operating Expenses per Revenue Mile

Year Range	Percent Change
FY 2018 – FY 2019	0%
FY 2018 – FY 2022	+33%

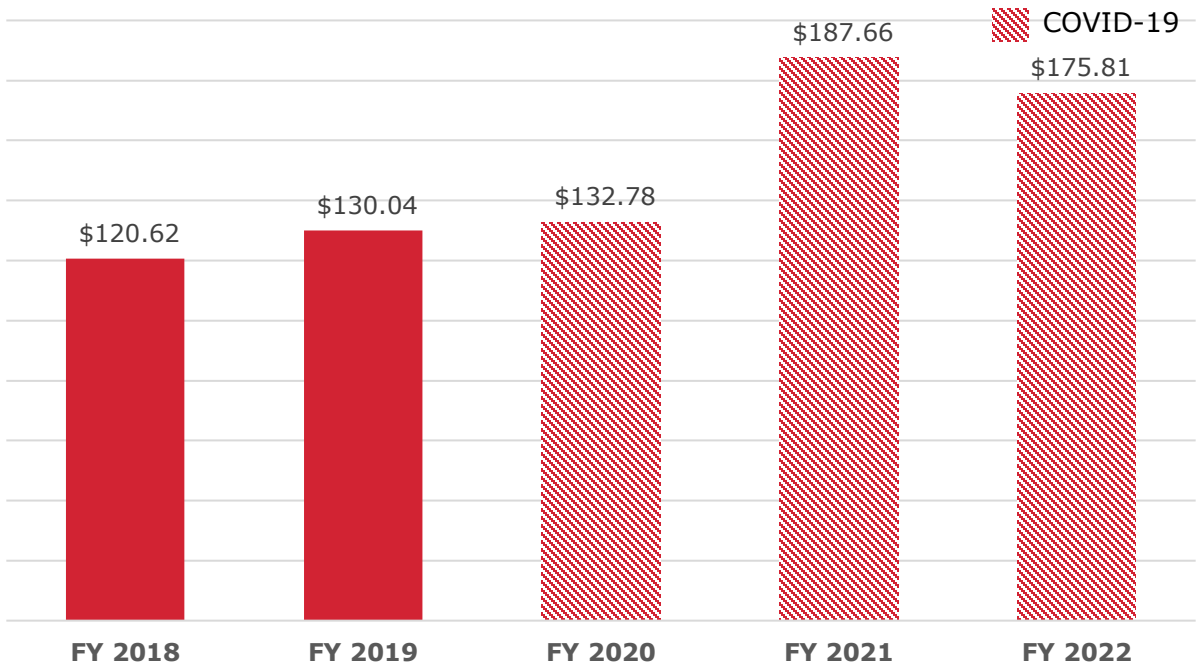
Source: FY 2018 – FY 2021 National Transit Database Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

Operating Expenses per Revenue Hour

Operating expenses per vehicle revenue per hour measures cost-effectiveness similarly to operating expenses per vehicle revenue mile, but it considers the productivity of vehicle time rather than distances traveled. Following the onset of the COVID-19 pandemic, total revenue miles and total revenue hours fluctuated similarly; thus, the operating expenses per mile and hour fluctuated similarly. **Table 2-23** shows a 7 percent increase in operating expenses per revenue hour between FY 2018 – FY 2019, but this rate of increase more than quadruples between FY 2018 – FY 2022.

Figure 2-46 shows that operating expenses per revenue hour peaked in FY 2021, although this expenditure has not yet returned to pre-pandemic levels.

Figure 2-46: Trend in Operating Expenses per Revenue Hour



Source: FY 2016 - 2021 National Transit Database Reports, Loudoun County Transit, 2022. Kimley-Horn, 2022.

Table 2-23: Percent Change in Operating Expenses per Revenue Hour

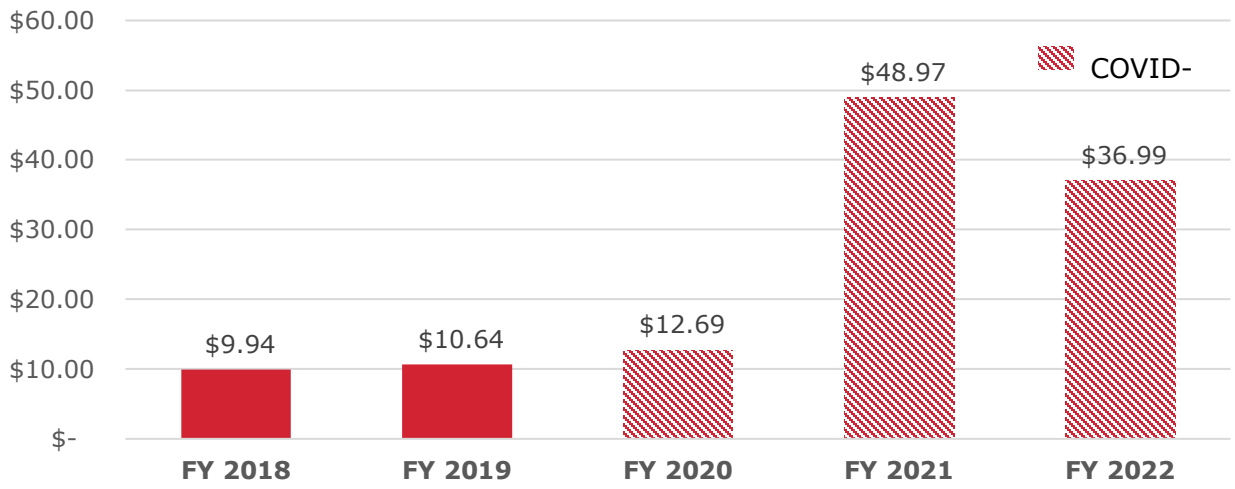
Year Range	Percent Change
FY 2018 – FY 2019	+7%
FY 2018 – FY 2022	+33%

Source: FY 2018 – FY 2021 National Transit Database Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

Operating Expenses per Passenger

Operating expenses per passenger trip provide insight into how efficiently an agency uses its operating resources. This analysis also reveals potential correlations between expenditure and ridership. While operating expenses per passenger had been increasing slightly before the COVID-19 pandemic, **Table 2-24** reveals the dramatic increase in operating expenses per passenger trip from FY 2018 - FY 2022; the rate of increase is over 10 times the previous trend. As shown in **Figure 2-47,** operating expenses per passenger peaked in FY 2021 at $48.79, almost four times the value from the previous year. As ridership, service levels, and operating costs trend towards pre-pandemic standards, this statistic has since started to decrease.

Figure 2-47: Trend in Operating Expenses per Passenger Trip



Source: FY 2016 - 2021 National Transit Database Reports, Loudoun County Transit, 2022. Kimley-Horn, 2022.

Table 2-24: Percent Change in Operating Expenses per Passenger Trip

Year Range	Percent Change
FY 2018 – FY 2019	+7%
FY 2018 – FY 2022	+73%

Source: FY 2018 – FY 2021 National Transit Database Reports. Loudoun County Transit, 2022. Kimley-Horn, 2022.

System Safety

Measurable safety performance targets for LCT are proposed as a benchmark for the overall safety performance of the agency, as illustrated in **Table 2-25**. These targets were based on historical safety data for LCT and aim to set a realistic benchmark that can improve safety standards over time.

Table 2-25: Safety Standards

Safety Standard	Fixed Route Measure
Fatalities (total number of reportable fatalities per year)	0
Fatalities (rate per total vehicle revenue miles by mode)	0
Injuries (total number of reportable injuries per year)	0
Injuries (rate per total vehicle revenue miles by mode)	Less than 1 injury per 100,000 vehicle revenue miles
Safety events (total number of safety events per year)	Less than 2 per year
Safety events (rate per total vehicle revenue miles by mode)	Less than 1 reportable event per 100,000 vehicle revenue miles
Distance between Major Failures	*Standard not yet established*

Safety Standard	Fixed Route Measure
Distance between Minor Failures	*Standard not yet established*

Source: Loudoun County, 2024

Five years of safety performance data (2017-2021) is available for LCT from the FTA's NTD. NTD defines the formal conditions of a reportable incident as a fatality, injuries requiring medical attention away from the scene for one or more people, or property damage greater than or equal to $25,000.

Table 2-26 to **Table 2-29** show the total reportable accident and categories reported LCT to NTD by mode operated. Most reportable events were accidents on Commuter Bus services, however that number sharply declined as utilization paused during the pandemic. Of the major reportable events incurred by LCT, most were non-severe collisions.

Table 2-26: NTD Safety Measures (Commuter Bus)

NTD Safety Measure	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Reportable Events	3	7	1	0	1
Fatalities	0	0	0	0	0
Injuries	1	1	0	0	0

Source: NTD

Table 2-27: NTD Safety Measures (Motor Bus)

NTD Safety Measure	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Reportable Events	0	3	1	0	3
Fatalities	0	0	0	0	0
Injuries	0	2	0	0	3

Source: NTD

Table 2-28: NTD Safety Measures (Paratransit Demand Response)

NTD Safety Measure	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Reportable Events	0	1	0	0	0
Fatalities	0	0	0	0	0
Injuries	0	2	0	0	0

Source: NTD

Table 2-29: LCT Accident and Breakdown Data

Loudoun County Transit Accident and Breakdown Data	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Major Failures	172	183	152	146	120
Other Failures	101	279	191	184	98

Loudoun County Transit Accident and Breakdown Data	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Accidents	(missing)	96	85	31	35

Source: NTD

Fleet and Facility Management Standards

Loudoun County maintains fleet and management standards and asset inventory as part of its operational maintenance and capital improvement plans. This includes a vehicle inventory by type, make, model, and date in service of the fleet of 119 LCT buses.

LCT maintains management standards on its two operational buildings in its facilities: one building for bus maintenance and repair, and the other for offices and administration. Building maintenance is supervised by a Systems Maintenance Chief and a Special Projects manager. Regular and preventative maintenance is logged in a management system and tracked and worked on by on-site technicians. LCT tracks life cycle assets as part of an inventory system as part of its preventative maintenance process.

Table 2-30 shows the regular vehicle maintenance schedule per vehicle type.

Table 2-30: Fleet Maintenance Standards

Fleet Vehicle Type	Service Schedule
• **Paratransit** • **Ford cutaway**	• A service- 5,000 miles • B service- 10,000 miles • C service- 15,000 miles • PM 7-(VA safety Inspection), yearly
• **45' MCI D4500** • **40' Gillig** • **35' Gillig**	• A service- 5,000 miles • B service- 10,000 miles • C service- 30,000 miles • D service-75,000 miles • PM 7-(VA safety Inspection), yearly

Source: Loudoun County

Table 2-31 shows LCT maintains fleet replacement schedule that details replacement criteria based on age in months or miles. **Table 2-32** shows the minimum, maximum and average age of LCT vehicles by model. Several MCI D4500 Motor coaches used for commuter service are approaching the end of the expected useful age of 144 months. E450 and F550 vehicles, which are considered shuttle buses based on capacity and type are all 50 months old, with many starting operations at the same time during September of 2019. Gillig Low-Floor buses, with an expected lifespan of 144 months, average around 52 months ranging from three months old to 116 months old. Five Ford Transit 3500 vans exceed their expected life of 48 months at 50 months. Vehicles that exceed their useful life and mileage should be considered for replacement in upcoming transit capital prioritization.

Table 2-31: Fleet Schedule Replacement

Bus Type	Age (Months)	Miles
Straight Trk, Bus, Shuttle Bus, 24 pass. TMO	84	200,000
Straight Trk, Bus, Transit Bus, 40'	144	500,000
Straight Trk, Bus, Motor Coach	144	500,000
Shuttle Bus, 1 Ton, 15 Passenger	48	100,000
Straight Trk, Bus, Transit, CNG, 35'	144	500,000
Straight Trk, Bus, Shuttle Bus, 16 Pass. TMO	60	150,000
Van, Passenger, Handicapped Access	48	100,000
Straight Trk, Bus, Transit, Diesel, 35'	144	500,000

Source: Loudoun County Fleet Data October 2023

Table 2-32:Vehicle Model Life in Months

Vehicle Model	Number of Vehicles	Minimum of Months Old	Max of Months Old	Average of Months Old
D4500	48	16	140	63
E450	6	50	50	50
F550	26	50	50	50
Low Floor	30	3	116	52
Transit 3500	5	50	50	50
Total	**115**	**3**	**140**	**56**

Source: Loudoun County Fleet Data October 2023

Route Evaluation

LCT fixed route level performance is evaluated to understand productivity at a detailed level. This allows route-specific opportunities for improvements to be compared to performance measures. Routes identified in the evaluation will be targeted to resolve under performance or improve rider accessibility in **Chapter 3**. Note that route evaluations were completed for transit services operating in FY 2022, which is when this planning effort began. The performance evaluation was completed prior to bus route and service modifications implemented in FY 2023 for the opening of the Silver Line Metrorail.

Service Productivity

In **Table 2-33** through **Table 2-36**, the route productivity with categories daily boardings, boardings per revenue hour, boardings per revenue mile, and cost per passenger corresponding to Loudoun County's target performance measures for FY 2022. Loudoun County's performance measures state that routes that underperform compared to the corresponding service are candidates for service adjustment or elimination. If a route fails to meet the performance measures for one or multiple categories, service adjustments to remedy the underperformance will be recommended in **Chapter 3 Planned Improvements and Modifications**.

All service metrics are generated from LCT operations data for FY 2022. Boardings per revenue hour is calculated by dividing the given route's boardings by the number of service hours. Different classes of routes require different levels of

service and concepts to be effective and, therefore, report various levels of efficiency depending on the route demands and number of buses required. Routes that fall below boardings per revenue hour measures include fewer than half of the average boardings of peer routes. A list of routes that fall below the peer average or are approaching underperformance include:

- Local Route 57 (Saturday)
- Local Route 72
- Local Route 985[10]
- Metro Connection Route 927
- Metro Connection Route 990/992
- Commuter Route 282
- Commuter Route 284
- Commuter Route 681
- Commuter Route 682
- Commuter Route 684
- Commuter Route 885

Boardings per revenue mile can vary with the type of service and route requirements of LCT routes. Commuter routes typically have fewer boardings per revenue mile because they have fewer stops than local routes, meaning productivity per mile should not be the only measure of effectiveness for certain types of service. Routes that report boardings per revenue mile below half the average of their peers or are approaching the underperformance threshold include:

- Local Route 57 (Saturday)
- Local Route 72
- Local Route 84 (Saturday)
- Local Route 985
- Metro Connection Route 927
- Metro Connection Route 931/932
- Metro Connection Route 990/992
- Commuter Bus Route 282
- Commuter Bus Route 284
- Commuter Bus Route 682
- Commuter Bus Route 684
- Commuter Bus Route 883
- Commuter Bus Route 885

Net cost per boarding is measured by subtracting the collected fare revenue from the cost of running the route divided by the number of riders (boardings). Some

[10] Some routes noted such as Routes 72, 84, and 985 as of November 16, 2022 have been replaced with new Silver Line Bus service. These routes will still be noted in Chapter 2 falling under Loudoun County Transit performance standard for FY 2022, however, recommendations for planned improvements will not be carried over into Chapter 3.

commuter routes display negative net cost per boarding because the fare revenue collected from passengers exceeds the cost to operate the route. Routes that are greater than double the average net cost per boarding or are close to exceeding the average cost per boarding of their peers include:

- Local Route 57 (Saturday)
- Local Route 72
- Local Route 985
- Metro Connection Route 927
- Metro Connection Route 990/992
- Commuter Route 284
- Commuter Route 682
- Commuter Route 684

Table 2-33: LCT Local Bus Service Productivity (Weekdays)

Route	Daily Trips	Daily Boardings	Boardings per Revenue Hour	Boardings per Revenue Mile	Net Cost per Boarding
55	12	40.16	3.33	0.24	$9.80
56	12	37.09	3.07	0.26	$10.71
57	12	47.93	3.96	0.29	$8.07
62	12	43.12	3.58	0.27	$8.97
70	54	362.09	6.66	0.33	$4.39
72	11	23.40	1.78	0.07	$19.20
80	24	78.41	6.50	0.46	$4.53
81	24	45.45	3.82	0.29	$8.41
82	20	88.53	5.87	0.51	$5.12
84	13	69.07	5.18	0.22	$5.94
985	12	16.84	1.40	0.07	$24.73
54	24	62.27	5.15	0.68	$5.98
Local Route Weekday Total	**230**	**914.36**	**4.75**	**0.28**	**$6.56**

Source: LCT operations data, FY 2022

Table 2-34: LCT Local Bus Service Productivity (Weekends)

Route	Daily Trips	Daily Boardings	Boardings per Revenue Hour	Boardings per Revenue Mile	Net Cost per Boarding
57 (Saturday)	12	25.22	2.34	0.18	$26.06
70 (Saturday)	27	139.02	5.31	0.37	$10.91
82 (Saturday)	14	74.18	5.56	0.44	$10.39

Route	Daily Trips	Daily Boardings	Boardings per Revenue Hour	Boardings per Revenue Mile	Net Cost per Boarding
84 (Saturday)	13	52.08	4.11	0.17	$14.39
54 (Saturday)	18	52.53	5.95	0.80	$9.63
54 (Sunday)	18	48.69	5.52	0.71	$10.47
Local Route Weekend Total	102	194.43	4.86	0.35	$12.02

Source: LCT operations data, FY 2022

Table 2-35: Loudoun County Transit Metro Connection Service Productivity

Route	Daily Trips	Daily Boardings	Boardings per Revenue Hour	Boardings per Revenue Mile	Net Cost per Boarding
87	12	28.95	3.35	0.12	$25.02
88	22	25.47	2.77	0.10	$30.46
901	18	27.09	3.81	0.10	$21.92
923	17	24.74	3.49	0.10	$23.98
925	18	31.64	3.59	0.14	$23.31
927	3	1.77	1.66	0.05	$51.60
931/932	10	13.60	1.88	0.05	$18.12
990/992	8	6.47	1.13	0.04	$30.89
Metro Connection Route Total	**108**	**139.66**	**2.90**	**0.09**	**$16.54**

Source: LCT operations data, FY 2022

Table 2-36: LCT Commuter Bus Service Productivity

Route	Daily Trips	Daily Boardings	Boardings per Revenue Hour	Boardings per Revenue Mile	Net Cost per Boarding
281	4	45.73	6.01	0.21	$14.33
282	2	9.47	3.89	0.11	$27.64
284	2	4.13	2.37	0.05	$51.65
481	4	115.35	14.82	0.49	-$0.13

Route	Daily Trips	Daily Boardings	Boardings per Revenue Hour	Boardings per Revenue Mile	Net Cost per Boarding
482	5	75.50	11.89	0.35	$2.30
483	1	9.97	5.79	0.18	$15.25
484	2	54.33	15.81	0.58	-$0.75
486	2	27.40	9.77	0.39	$4.96
681	4	32.96	4.29	0.17	$24.06
682	2	8.41	2.97	0.09	$39.31
684	2	3.80	1.62	0.05	$80.05
881	2	104.56	14.10	0.49	$0.37
882	6	74.76	10.48	0.28	$3.95
883	1	8.85	5.01	0.15	$19.18
884	2	67.26	12.38	0.42	$1.81
885	2	11.64	3.29	0.11	$34.44
886	2	21.83	7.87	0.31	$8.58
Commuter Route Total	**45**	**468.58**	**9.16**	**0.29**	**$11.92**

Source: Loudoun County Transit operations data, FY 2022

Route Accessibility

Route accessibility or availability is measured through population and employment coverage within a quarter- to half-mile distance of transit stops. Areas with higher population and employment densities are generally associated with greater route accessibility. Routes that cover both areas of high population density and employment density also generally connect riders from their trip origin to more job opportunities as well as other destinations surrounding employment centers.

LCT operates a various fixed route transit services that may not always be compared in terms of stop accessibility. For example, a local bus with many stops and routes through residential neighborhoods may have less population density than a route designed to connect employment centers and Metrorail stations, some of which do not have high densities yet. Similarly, commuter bus routes with limited stops may have imbalances of population and employment as much of the riders it serves drives to park and ride lots in Loudoun County which do not have much natural population within a half-mile. Commuter bus routes are also heavily weighted on the employment densities of their destinations, which are in the high-employment areas of Washington, D.C. and Arlington County.

Additionally, LCT defines accessibility standards by stop spacing. For local route types, stops should be spaced no more than 3,000 feet apart in high density areas where service is provided to ensure riders do not have to walk excessively to reach

stops.[11] For commuter routes, service should be accessible to households with at least one vehicle. This is more difficult to measure because demographic data for who accesses park and ride lot locations does not contain data on drivers. However, the number of households with at least one vehicle can still be displayed at the route level to assess stop coverage immediately around their pickup points.

Table 2-37 and **Table 2-39** show route accessibility metrics by service type. The only LCT routes that exceed the average stop spacing standard are those that connect along Route 267 or another express highway with no stops. These include routes 72, 84, and 985. This skews the average stop spacing and these routes should also be prioritized for restructuring on additional metrics.

Routes that have low population and employment density compared to their peers include:

- Local Route 80
- Local Route 84
- Metro Connection Route 927
- Metro Connection Route 931/932
- Commuter Bus Route 284
- Commuter Bus Route 482[12]
- Commuter Bus Route 684
- Commuter Bus Route 882

Table 2-37: LCT Local Bus Service Accessibility

Route	Average Stop Spacing (ft)	Population	Population Density	Employment	Employment Density
55	2,257	11,706	5,301.6	7,676	3,476
56	2,021	7,993	3,438.4	8,768	3,772
57	1,947	13,895	5,142.7	11,376	4,210
62	2,858	10,583	5,294.4	4,099	2,051
70	2,693	31,858	5,093.8	25,091	4,012
72	15,492	4,656	3,834.6	5,880	4,843
80	2,064	20,060	7,106.2	3,075	1,089
81	2,688	7,226	5,500.7	3,115	2,371
82	1,684	9,128	4,883.1	6,533	3,495
84	4,039	6,009	2,431.3	17,564	7,106
985	6,783	12,009	6,500.2	7,971	4,315
54	1,493	11,706	6,818.0	2,393	2,968

[11] Page 2-38 of the Loudoun County 2019 Countywide Transportation Plan specifies bus stop spacing standards in greater detail: loudoun.gov/DocumentCenter/View/152287/CTP---Combined-with-small-maps-bookmarked

[12] Routes that run to the Pentagon may have lower employment numbers because the ACS 2021 dataset does not include exact Pentagon employment.

Route	Average Stop Spacing (ft)	Population	Population Density	Employ ment	Employment Density
Average Total	**3,835**	**93,655**	**4,803.9**	**59,634**	**3,059**

Source: LCT operations data, FY 2022

Table 2-38: LCT Metro Connection Service Accessibility

Route	Average Stop Spacing (ft)	Population	Population Density	Employment	Employment Density
87	25,335	1,314	2,257.5	4,760	8,178
88	26,701	3,661	3,766.1	4,739	4,875
901	32,350	5,752	5,858.9	910	927
923	30,961	2,212	3,755.2	4,077	6,921
925	26,852	1,882	3,195.0	4,517	7,668
927	24,317	3,280	2,088.4	6,729	4,284
931/932	78,534	1,154	2,257.5	4,394	11,189
990/992	11,027	1,061	3,766.1	10,519	9,762
Average/ Total	**34,564**	**12,037**	**4,803.9**	**17,760**	**3,828**

Source: LCT operations data, FY 2022

Table 2-39: LCT Commuter Bus Service Accessibility

Route	Average Stop Spacing (ft)	Population	Population Density	Employ ment	Employ ment Density	One Vehicle House- holds %*
281	12,037	18,987	7,347.9	272,133	105,315	39.2%
282	27,538	17,401	13,280.7	37,308	28,474	53.4%
284	51,802	4,853	6,842.7	5,803	8,182	50.0%
481	13,145	17,579	6,803.0	272,629	105,507	40.6%
482	30,170	15,993	12,206.1	37,804	28,853	57.2%
483	15,247	17,771	6,877.3	272,840	105,589	40.0%
484	14,959	17,631	6,341.3	272,636	98,058	40.5%
486	11,144	19,023	7,361.9	272,318	105,387	39.5%
681	14,458	17,487	7,178.9	261,175	107,219	39.0%
682	26,287	21,711	13,094.3	46,125	27,819	53.6%
684	74,989	1,414	2,400.5	470	798	44.1%
881	14,245	16,079	6,600.9	261,671	107,423	40.4%
882	33,246	15,701	12,408.4	43,443	34,333	57.9%
883	17,265	16,271	6,679.7	261,883	107,510	39.8%

Route	Average Stop Spacing (ft)	Population	Population Density	Employment	Employment Density	One Vehicle House-holds %*
884	16,860	16,274	5,753.4	262,737	92,886	40.0%
885	15,766	20,876	6,901.3	265,467	87,759	42.0%
886	12,058	17,523	7,193	261,360	107,295	41.0%
Average/Total	**23,601**	**43,301**	**8,458.9**	**339,682**	**66,357**	**45.0%**

*within 0.5 miles of a bus stop

Source: LCT operations data, FY 2022

2.3.2 Performance Based Opportunities for Improvement

The above performance evaluation identifies underperforming routes according to predefined performance targets. This analysis informs potential opportunities to enhance systemwide performance and maximize ridership by reallocating resources to address these deficiencies.

Table 2-40 summarizes deviations from LCT's 2023-2026 Performance Standards for productivity and accessibility, as detailed in **Section 1.2.2** of this document, on a route-by-route basis. Measures that have fallen below the relevant performance standards are highlighted in red. **Section 2.4.1** of this document explores additional opportunities for improvement based on a separate set of efficiency performance standards. Negative values for net cost per boarding mean that revenue exceeds the cost of operating those commuter routes.

Table 2-40: Summary of Deviations from Performance Targets for Productivity and Accessibility

Service Type	Route	Boardings per Revenue Hour	Boardings per Revenue Mile	Net Cost per Boarding	Average Stop Spacing (ft)[13]
Local Bus (Weekday) **Local Bus (Weekday)**	**Standard[14]**	**2.4**	**0.14**	**$13.12**	**3,835**
	55	3.33	0.24	$9.80	2,257
	56	3.07	0.26	$10.71	2,021
	57	3.96	0.29	$8.07	1,947
	62	3.58	0.27	$8.97	2,858
	70	6.66	0.33	$4.39	2,693
	72	1.78	0.07	$19.20	15,492
	80	6.50	0.46	$4.53	2,064
	81	3.82	0.29	$8.41	2,688

[13] Performance standards for average stop spacing do not apply to commuter bus routes, where long stretches of the route may forgo stops, such as along limited access roadways.
[14] LCT performance standard threshold is half average performance metric by route type except for average stop spacing, which does not get adjusted.

Service Type	Route	Boardings per Revenue Hour	Boardings per Revenue Mile	Net Cost per Boarding	Average Stop Spacing (ft)[13]
	82	5.87	0.51	$5.12	1,684
	84	5.18	0.22	$5.94	4,039
	985	1.40	0.07	$24.73	6,783
	54	5.15	0.68	$5.98	1,493
	Average	**4.75**	**0.28**	**$6.56**	**3,835**
Local Bus (Weekend)	**Standard**	**2.43**	**0.18**	**$9.90**	**3,835**
	57 (Sat.)	2.34	0.18	$26.06	1,947
	70 (Sat.)	5.31	0.37	$10.91	2,693
	82 (Sat.)	5.56	0.44	$10.39	1,684
	84 (Sat.)	4.11	0.17	$14.39	4,039
	54 (Sat.)	5.95	0.80	$9.63	1,493
	54 (Sun.)	5.52	0.71	$10.47	1,493
	Average	**4.86**	**0.35**	**$12.02**	**3,835**
Metro Connection	**Standard**	**1.45**	**0.05**	**$33.08**	**34,564**
	87	3.35	0.12	$25.02	25,335
	88	2.77	0.10	$30.46	26,701
	901	3.81	0.10	$21.92	32,350
	923	3.49	0.10	$23.98	30,961
	925	3.59	0.14	$23.31	26,852
	927	1.66	0.05	$51.60	24,317
	931/932	1.88	0.05	$18.12	78,534
	990/992	1.13	0.04	$30.89	11,027
	Average	**2.90**	**0.09**	**$16.54**	**34,564**
Commuter Bus	**Standard**	**4.58**	**0.15**	**$23.84**	
	281	6.01	0.21	$14.33	
	282	3.89	0.11	$27.64	
	284	2.37	0.05	$51.65	
	481	14.82	0.49	-$0.13	
	482	11.89	0.35	$2.30	
	483	5.79	0.18	$15.25	
	484	15.81	0.58	-$0.75	
	486	9.77	0.39	$4.96	
	681	4.29	0.17	$24.06	
	682	2.97	0.09	$39.31	
	684	1.62	0.05	$80.05	
	881	14.10	0.49	$0.37	
	882	10.48	0.28	$3.95	
	883	5.01	0.15	$19.18	
	884	12.38	0.42	$1.81	
	885	3.29	0.11	$34.44	
	886	7.87	0.31	$8.58	

Service Type	Route	Boardings per Revenue Hour	Boardings per Revenue Mile	Net Cost per Boarding	Average Stop Spacing (ft)[13]
	Average	**9.16**	**0.29**	**$11.92**	

Source: LCT operations data, FY 2022

The following routes do not meet any performance standards for productivity nor accessibility:

- Local Route 72
- Local Route 985
- Commuter Route 282
- Commuter Route 284
- Commuter Route 682
- Commuter Route 684

As outlined in the full performance standards in **Section 1.2.3**, the above routes are therefore strong candidates for elimination. Since the introduction of the present service schedule, Local Routes 72 and 985 have been eliminated. Commuter Routes 284 and 684 run each only twice on weekdays, so the negative service impacts of their elimination or consolidation may be less significant.

The following routes miss multiple, but not all, performance standards for productivity and accessibility:

- Local Route 57 (Saturday)
- Local Route 84 (Saturday)
- Metro Connection Route 927
- Metro Connection Route 990/992
- Commuter Route 681

The above routes are also candidates for elimination, although the service adjustment may also improve their performance significantly enough to justify their continuation. Since the introduction of the present service schedule, Local Route 84 (Saturday) has been eliminated, and Metro Connection Routes have been replaced by Silver Line bus service. Eliminating one or multiple trips along these routes may present a more sustainable allocation of resources to preserve continued service.

While the performance standards defined in Loudoun County Transit's Title VI 2023-2026 Program do not include standards for population density nor employment density, of the routes with multiple deficiencies, the following routes also fall below average population density and employment density:

- Local Route 84 (Saturday)
- Metro Connection Route 927
- Commuter Bus Route 284
- Commuter Bus Route 684

Note that none of the Metro Connection Routes meet the performance standard for average route spacing, 3,000 feet or fewer between stops. However, the replacement of Metro Connection bus service with Silver Line bus service in November 2022 begins to address these deficiencies.

2.4 Operating and Network Efficiency Evaluation

The efficiency evaluation considers how the system is performing at a route level and opportunities to improve operational effectiveness. This section includes an analysis of service span and frequency as well as ridership by time of day. These metrics and the travel data by time of day outlined in the **Travel Demand** (When) section, help determine whether appropriate service amounts are run in Loudoun County Transit's daily operations.

Reliability measured by on-time performance (OTP) identifies areas for improvement for Loudoun County Transit scheduling. Routes that arrive too early may be candidates for schedule adjustments or measures to reduce dwell time. Routes that consistently arrive late, resulting in late trips and missed connections, could have travel time built into their schedules.

While metrics like speed and ridership by trip was not provided for Loudoun County Transit, these greatly vary by service type and are not included in the performance standards. The opportunities for improvement section will focus on specific options to improve route-level service reliability.

2.4.1 Efficiency Evaluation

Frequency

Most Loudoun County Transit routes operate on 30-minute or 45-minute headways, although some exceptions are outlined in the tables below. Loudoun County Transit services are broken down into three categories: Commuter, Silver Line (Metro), and Local Service. Each service type has its routes, frequencies, and efficiency. Data by the routes level and service types are shown in **Table 2-41** through **Table 2-43**. It is important to note that the nature of commuter service, which applies to both Commuter and Metro routes, is one that operates during the a.m. and p.m. peak hours to bring passengers to and from work. As a result, these services do not report headways between peak hours.

Span

Loudoun County Transit's regular commuter a.m. service runs from 5:18 a.m. to 9:48 a.m. For commuter p.m. service, the first route leaves back towards Loudoun County at 2:45 p.m. to 8:15 p.m. For the Silver Line Service in the a.m. peak service begins at 4:40 a.m. and ends at 9:51 a.m. The p.m. Silver Line service begins at 3:15 p.m. and ends at 9:44 p.m. Local service is characterized more by routes that operate all day, there are routes (993,994) that operate on a commuter schedule. Most local service routes begin service at 7:00 a.m. and operate until 7:00 p.m. The data presented was sourced from September 2022, so daily operation data may not reflect current service. Bus service span and frequency is shown in **Table 2-41**, **Table 2-42**, and **Table 2-43**.

Table 2-41: Commuter Bus Service Span and Frequency

Commuter Bus Service				
Route	**Service Start**	**Service End**	**Frequency**	**Trips**
281	5:25 a.m.	8:54 a.m.	30 min	5
282	5:50 a.m.	7:32 a.m.	30 min	2
284	5:18 a.m.	8:09 a.m.	120 min	2
481	5:30 a.m.	9:48 a.m.	30 min (Last run is 90 min after penultimate trip)	4
482	5:30 a.m.	8:56 a.m.	30 min	5
483	5:55 a.m.	7:47 a.m.	Runs once	1
484	6:45 a.m.	9:13 a.m.	30 min	2
486	6:47 a.m.	8:54 a.m.	30 min	2
681	3:05 p.m.	7:55 p.m.	30 min until 4:35 then one in 40 min then one in 45 min	6
682	3:19 p.m.	5:36 p.m.	45 min	2
684	2:45 p.m.	6:25 p.m.	30 min	2
881	3:00 p.m.	5:04 p.m.	30 min	2
882	2:50 p.m.	6:45 p.m.	30 min (Last run is 45 min after penultimate tip)	6
883	3:40 p.m.	5:28 p.m.	Runs once	1
884	4:00 p.m.	8:15 p.m.	30 min until 4:30 then one in 100 min	3
885	5:00 p.m.	7:30 p.m.	30 min	2
886	5:00 p.m.	7:01 p.m.	30 min	2

Source: Loudoun County September 2022 Daily Operations Report

Table 2-42: Metro Connection Service Span and Frequency

Metro Connection Service				
Route	**Service Start**	**Service End**	**Frequency**	**Trips**
87	4:40 a.m.	8:08 p.m.	40 min until 9:10 a.m., 5-hour break, then resumes at 50 minutes	7 (a.m.) 5 (p.m.)
88	4:50 a.m.	8:09 p.m.	20 minutes (6-hour break between 9:00 a.m. – 6:00 p.m.)	11 (a.m.) 11 (p.m.)
901	5:05 a.m.	9:21 a.m.	30 min until 5:55 then 40 min	5
902	3:35 p.m.	8:50 p.m.	30 min	9
921	4:46 a.m.	9:00 a.m.	44 min	6

Metro Connection Service				
Route	**Service Start**	**Service End**	**Frequency**	**Trips**
922	3:15 p.m.	7:35 p.m.	40 min	6
923	5:05 a.m.	8:56 a.m.	25 min	9
924	3:25 p.m.	7:04 p.m.	25 min	8
925	4:40 a.m.	9:51 a.m.	25 min	12
926	3:30 p.m.	9:44 p.m.	25 min	13
931	4:45 a.m.	9:30 a.m.	30 min	9
932	3:00 p.m.	7:45 p.m.	30 min	9
990	6:20 a.m.	9:37 a.m.	30 min	4
992	3:30 p.m.	6:10 p.m.	20 min	4

Source: Loudoun County September 2022 Daily Operations Report

Table 2-43: Local Bus Service Span and Frequency

Local Bus Service				
Route	**Service Start**	**Service End**	**Frequency**	**Trips**
55	7:00 a.m.	7:00 p.m.	60 min	24
56	7:00 a.m.	7:00 p.m.	60 min	24
57	7:00 a.m.	7:00 p.m.	60 min	24
62	7:00 a.m.	6:58 p.m.	60 min	24
70	7:00 a.m.	7:28 p.m.	30 min (weekday) 60 min (Saturday)	54 (weekday) 27 (weekend)
72	7:01 a.m.	8:04 p.m.	70 min	22
80	7:00 a.m.	7:00 p.m.	60 min	24
81	6:55 a.m.	6:45 p.m.	30 min	48
82	7:00 a.m.	9:55 p.m.	45 min	40
84	7:00 a.m.	8:14 p.m.	60 min	25
985	7:20 a.m.	7:18 p.m.	30 min	33
993	8:00 a.m.	8:30 a.m.	Runs once	1
994	5:05 p.m.	5:35 p.m.	Runs once	1

Source: Loudoun County September 2022 Daily Operations Report and September 2022 LCT GTFS

Ridership by Time of Day

Ridership by time of day is used to determine if there are any imbalances between when riders most use specific route service. For example, if a significant number of average boardings are observed in the p.m. peak rather than in the a.m. and midday time periods for a particular route, this ridership imbalance might be solved by adding more frequency or service span to a specific time period. Similarly, if two routes that serve similar origins and destinations see a large difference in ridership, steps may be taken to balance ridership between the two routes.

Routes that show relatively uneven distribution or lower ridership averages during certain time periods include:

- Route 70 (p.m. late)
- Route 72 (midday)
- Route 82 (p.m. late)
- Route 88 (all day)
- Route 927 (p.m. peak)
- Route 931 (p.m. peak)
- Route 932 (a.m. peak)

Table 2-44 shows weekday average ridership by time of day per route. The cells are color-coded by route to show red highlights where ridership underperforms compared to other time periods on that route while blue shows periods where ridership is higher. Time periods that show low relative ridership may be candidates for reduction of service or restructuring of nearby routes to cover similar ridership demand.

Table 2-44: Weekday Average Ridership per Route by Time of Day

Route	Time of Day					All day Average
	a.m. Early	a.m. Peak	Midday	p.m. Peak	p.m. Late	
54		59.7	103.6	72.2		**80.5**
55		44.0	93.4	55.5		**64.5**
56		46.1	76.5	69.6		**64.4**
57		36.5	61.8	45.5		**48.6**
62		36.1	106.8	86.8		**76.3**
70		95.9	133.2	135.9	9.7	**102.2**
72		93.3	30.8	53.3		**54.4**
80		36.1	71.6	44.9		**51.4**
81		100.7	151.9	96.8		**116.9**
82		69.1	135.4	135.9	12.3	**91.8**
84		34.1	62.1	67.3		**54.6**
87	0.5	20.7		18.3		**15.4**
88	2.3	6.5		3.7		**4.2**
281	26.4	47.7				**36.9**
282	25.0	67.1				**44.0**
284	13.5	31.2				**22.3**

Route	Time of Day					All day Average
	a.m. Early	a.m. Peak	Midday	p.m. Peak	p.m. Late	
481	43.4	146.9				**98.9**
482	64.3	283.6				**183.9**
483		48.2				**48.2**
484		65.3				**65.3**
486		40.8				**40.8**
681				101.7		**101.7**
682				76.2		**76.2**
684			31.8	36.0		**34.1**
881				190.7		**190.7**
882			140.4	365.7		**272.9**
883				28.1		**28.1**
884				98.8		**98.8**
885				21.0		**21.0**
886				28.3		**28.3**
901	5.5	14.7				**10.6**
902				14.5		**14.5**
923	5.3	14.6				**10.2**
924				22.3		**22.3**
925	2.3	20.8				**13.4**
926				57.2		**57.2**
927				2.9		**2.9**
931	67.2	104.6		39.8		**70.5**
932		35.0		273.3		**154.1**
985		21.3	46.7	53.6		**41.2**
990		33.0				**33.0**
992				35.7		**35.7**
993		698.0	383.0	345.9		**481.3**
Average	**27.4**	**68.1**	**98.9**	**85.5**	**10.5**	**76.6**

Red highlights = ridership underperforms compared to other time periods on that route
Blue highlights = ridership is higher compared to other time periods on that route

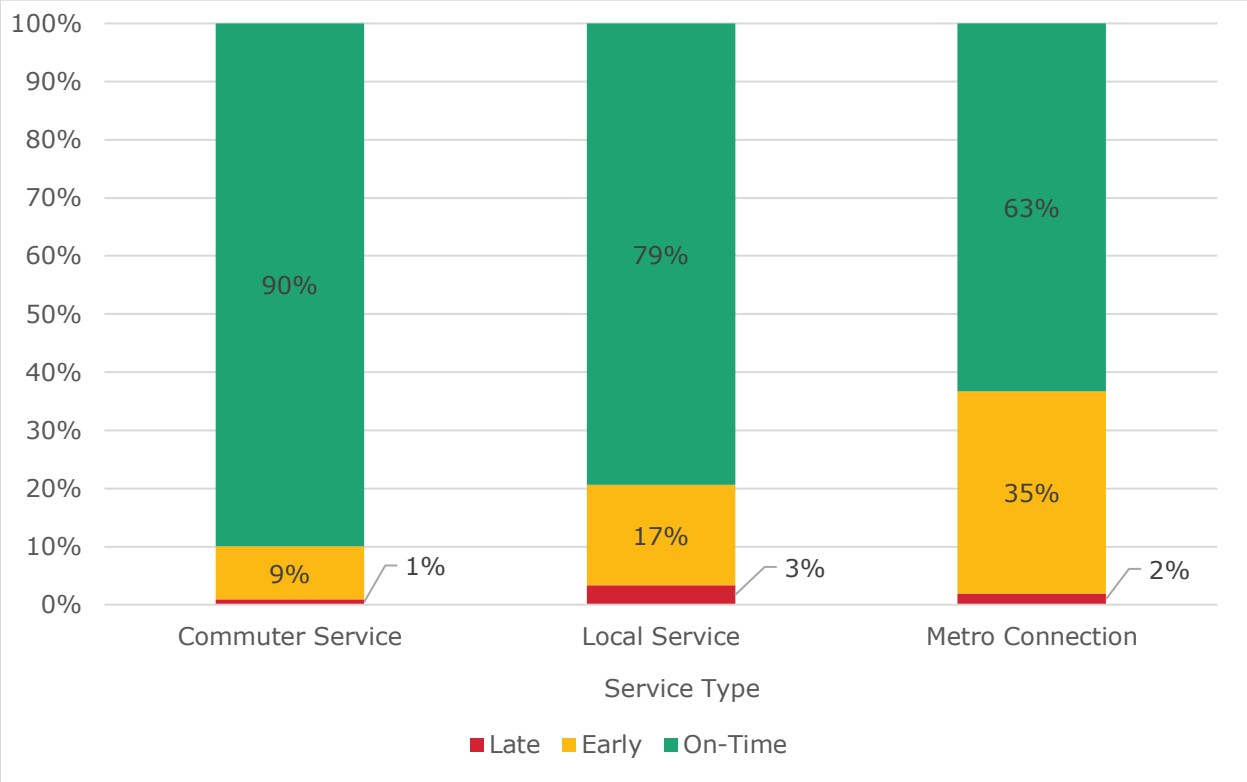
Source: FY 2022 Loudoun County Transit Ridership

Reliability

Reliability, as measured by OTP, is a key indicator of service quality. A vehicle is considered "on-time" if it departs a timepoint between one minute before and five minutes after the scheduled time. LCT's service standard sets a threshold of 85 percent on-time service. This goal is set for both commuter and local routes.

Figure 2-48 shows on-time performance by route type for May 2022.

Figure 2-48: On-Time Performance by Route Type



Source: Loudoun County March - May 2022 OTP Report

Commuter bus service has the best on-time performance at 90 percent while Metro Connection service performs the worst at 63 percent. Metro Connection and local bus service have the largest percent of late arrivals at 3 percent and 2 percent respectively. In contrast, commuter service has only 1 percent of late arrivals, likely because most buses depart the first scheduled timepoint on-time. Metro Connection service also has a large percent, 35 percent, of trips arriving early, which is hurting its OTP. Only commuter bus service meets LCT's OTP of greater than or equal to 85 percent. Routes with trips that arrive early and late that do not meet the OTP standard are included in **Table 2-45**.

Table 2-45: Route On-Time Performance

Route	On-Time Performance	Percent of Trips Early	Percent of Trips Late
Standard	85% or Greater		
55	73.7%	22.7%	3.6%
56	69.8%	23.5%	6.8%
57	71.7%	19.9%	8.3%
62	70.5%	15.0%	14.5%
80	77.3%	6.7%	16.0%
81	76.3%	11.2%	12.5%
82	71.9%	14.4%	13.8%
84	64.6%	17.7%	17.8%
87	68.8%	22.9%	8.3%
88	58.9%	16.5%	24.6%
482	56.9%	39.8%	3.3%
684	75.7%	19.4%	4.9%
901	57.0%	15.2%	27.8%
902	78.0%	9.7%	12.3%
923	86.4%	4.3%	9.3%
924	32.2%	4.1%	63.7%
925	55.0%	34.0%	11.0%
926	52.8%	1.6%	45.6%
931	48.8%	5.9%	45.2%
932	73.6%	6.8%	19.6%
985	47.9%	28.7%	23.4%
990	54.1%	0.5%	45.5%
992	80.8%	6.6%	12.6%

Source: LCT Route On-Time Performance Data March to May 2022

Early arrivals affect OTP significantly. If early arrivals were removed from **Table 2-45**, the number of routes underperforming the OTP standard by arriving both early and late would be reduced to only seven. While many factors out of a transit provider's control can contribute to late performance, early performance can be easily mitigated through operator action—bus operators can pull over at a safe location and momentarily wait to get back on schedule. Any route arriving early more than 15 percent of the time cannot meet the systemwide on-time performance goal of 85 percent; routes with trips that arrive early greater than 25 percent of the time in the LCT's operations data include:

- Route 87
- Route 482
- Route 901

- Route 902
- Route 923
- Route 924
- Route 925

Few LCT routes arrive late because OTP is measured at the first scheduled timepoint, giving operators ample time to prepare for the first trip. However, when measured schedule adherence throughout all timepoints, the following routes have late trips greater than 25 percent of the time:

- Route 84
- Route 481
- Route 483
- Route 681
- Route 684
- Route 881
- Route 883

These routes should be further monitored and considered for any route schedule changes as they arrive later than other comparable routes in the transit system. Controlling early arrival performance and improving service predictability can improve customer experience. Operators are not solely responsible for controlling on-time performance; however, route schedules can be modified over time to bring expected service more in line with the actual service delivered.

2.4.2 Efficiency Based Opportunities for Improvement

Opportunities noted in this section suggest more technological and operational refinements than in **Section 2.2** and **Section 2.3**, which instead focus on planning-level accessibility improvements. Potential improvements to increase LCT service efficiency include:

- Local routes identified as arriving early can be prioritized for scheduling improvements including interlining, increasing service frequency, or extending routes to maximize excess scheduled time. Commuter routes that are not candidates for interlining or have extended deadhead or layover are candidates for schedule adjustment so riders can more accurately predict travel times.
- Routes that arrive late are mostly concentrated in the 600 and 800 series LCT routes that serve East Gate, Dulles North, and Dulles South. Local routing around Dulles South should be examined for commuter and cross-county services to determine whether traffic or operational factors are causing delays in specific segments of these services. If specific segments or areas along these routes are identified as causing major delays for multiple LCT services, rerouting implementing infrastructure improvements such as transit signal priority around major transit hubs should be considered.
- Routes that arrive early and late are candidates for major schedule adjustments, including building more recovery time into the operating

schedule, speed improvements, interlining, and routing adjustments. These routes can also be combined with more productive service to build operational resiliency and operator availability in areas with low OTP and ridership.

- On-time performance can improve with infrastructure, such as transit signal priority, and implementing real-time data on routes that get caught in traffic or delayed. Improvements to LCT automatic vehicle location (AVL) technology and reporting could assist in conducting a more thorough scheduling analysis to identify operational inefficiencies by route.
- Using AVL technology, developing a General Transit Feed Specification (GTFS) real-time feed for Loudoun County Transit would allow riders to track vehicle locations and account for early and late arrival variances. This would augment the web based "LCT BusTime" information by providing riders who use mobile apps for trip planning real time expected arrival for their selected stop while traveling and cannot access a web page helping riders avoid missing trips that arrive early. Developing a GTFS real-time feed for LCT would also enable integration into other third-party trip planning apps and unlock rider communication features such as service notifications.
- On-time performance could be improved through enhanced training and educational opportunities for both new and experienced bus operators. This training could target common driver errors which may impact arrival times, such as poor adherence to speed limits or difficulty merging in and out of traffic.

2.5 Analysis of Opportunities to Collaborate with Other Transit Providers

2.5.1 Collaboration Analysis

Other Service Providers

Other transit providers in nearby and overlapping service areas include the following:

- Bus and Paratransit
  - Virginia Regional Transit (VRT)
  - Fairfax County Connector
- Heavy Rail
  - WMATA (Metrorail)
  - Maryland Area Regional Commuter (MARC)

The sections below describe nearby or overlapping services **Section 2.5.1** describes potential opportunities for improvement.

Virginia Regional Transit

VRT provides two services within Loudoun County: 1) the Purcellville Connector that runs on weekdays from 7:00 a.m. to 7:00 p.m. between Purcellville in the west and Leesburg in the east with complementary paratransit; and 2) on-demand service in

the rural portions of Loudoun County except for areas within 0.75-mile of LCT routes.

Fairfax County Connector

Connector operates fixed route bus service throughout Fairfax County. Three routes enter Loudoun County:

- Route 924 provides service to the Northern Virginia Community College and Franklin Farm Road via the Herndon Metrorail Station.
- Route 952 provides service between Wiehle-Reston East Metrorail Station and Dulles International Airport.
- Route 983 provide service between Dulles International Airport and the Udvar-Hazy Air and Space Museum.

WMATA (Metrorail)

Metrorail provides heavy rail service to Loudoun County via the Silver Line, which opened in November 2022. Three stations are located within Loudoun County (from east to west):

- Dulles International Airport Metrorail Station
- Loudoun Gateway Metrorail Station
- Ashburn Metrorail Station

Immediately following the beginning of rail service to these stations, LCT adjusted fixed route service to connect with each station.

MARC

The MTA operates the MARC Commuter Rail service Brunswick Line between Martinsburg, West Virginia; Frederick, Maryland; and Washington, D.C. While the rail service does not enter the boundaries of Loudoun County, it provides service to Point of Rocks Station, located across the Route 15 bridge in Point of Rocks, Maryland. Depending on the day and schedule, approximately six eastbound a.m. and six westbound p.m. trains serve the Point of Rocks station during peak commuting hours.

Eastern Panhandle Transit Authority

The Eastern Panhandle Transit Authority (EPTA) provides local fixed route and demand-response bus service in Berkeley County, West Virginia, and Jefferson County, West Virginia. The Hagerstown/Eastern Panhandle Metropolitan Planning Organization's Long Range Transportation Plan identified transit service to Northern Virginia and Washington, D.C., as a strong transit priority for EPTA.

Regional Coordination Efforts

Several regional efforts through the Northern Virginia Transportation Authority (NVTA) and the Northern Virginia Transportation Commission (NVTC) also provide collaboration opportunities through planning studies.

NVTA TransAction Plan
The NVTA develops and maintains a long-range plan for Northern Virginia, referred to as TransAction. This plan evaluates regional projects and aligns funding opportunities with member jurisdictions.

The most recent update of the NVTA TransAction plan indicated the intent for NVTA to explore and develop a regional BRT system. As part of this effort, Loudoun County can participate in any planning studies supporting the future updates of TransAction.

NVTC Regional Bus Transit Analysis
Using transit system strategic plans developed by individual transit service providers in Northern Virginia as a foundation, NVTC intends to provide a macro-level assessment of how bus systems are serving the region, regardless of provider.

The plan will:

1. Assess service gaps.
2. Identify opportunities for coordination of service, including the identification of cross jurisdictional high priority transit corridors.
3. Identify opportunities for shared facilities and other infrastructure.
4. Provide a regional-level overview of existing and anticipated financial needs.

This plan allows Loudoun County to collaborate with adjacent jurisdictions on the deploying new service connections and explore service modes such as BRT in a regional context.

NVTC Zero-Emissions Bus Strategic Plan
NVTC, with support from DRPT, has authorized the development of a Northern Virginia Regional Zero-Emissions Bus Strategic Plan.

The goals of the Strategic Plan are to:

- Identify regional zero-emission strategic goals and objectives.
- Document strategies and priorities to achieve the goals and objectives, including how to implement ZEBs to align with regional and agency goals.
- Identify key tasks for NVTC to coordinate its activities with regional partners.
- Identify regional, state, and federal funding to accomplish the goals in the strategic plan.

This plan allows Loudoun County to collaborate with adjacent jurisdictions to deploy low- and zero-emissions vehicles and supporting infrastructure.

2.5.2 Collaboration Based Opportunities for Improvement
This section documents potential opportunities for improvement for LCT through collaboration with other entities.

Virginia Regional Transit (VRT)
Additional coordination and collaboration activities between VRT and LCT to provide more streamlined communication on how the services interact and differ.

Fairfax County Connector

Additional coordination and collaboration activities between Fairfax County Connector and LCT may include:

- Optimizing transfer at the Northern Virginia Community College
- Work with Fairfax Connector to identify potential routes from Fairfax that may serve Loudoun County Silver Line Metrorail stations
- Identify travel demand patterns from Loudoun County to Fairfax Connector not served by Metrorail for potential bus service. While Loudoun County may operate such service, bus bay and operational coordination would be required WMATA

WMATA provides heavy rail service to Loudoun County via the Silver Line, which opened in November 2022. The following three stations are located within Loudoun County (from east to west):

- Dulles International Airport Metrorail Station
- Loudoun Gateway Metrorail Station
- Ashburn Metrorail Station

Immediately following the beginning of rail service to these stations, LCT adjusted fixed route service to connect with each station. Loudoun County should continuously monitor the performance of these routes and evaluate improvements after at least a year of service. Any changes would need to be coordinated with WMATA regarding bus bay capacity and operational considerations. Span of service to align with first and last Metrorail train departures and arrivals should also be considered.

Another potential collaboration area would be to explore weekend tourism-based services from the Metrorail stations to County destinations such as farms, breweries, and wineries to provide non-auto options for visitors who may travel via Metrorail.

MARC

There may be an opportunity for LCT to provide connecting service to the MARC system by operating service over the Route 15 bridge into Maryland, connecting to the Point of Rocks station. Required coordination activities include aligning service schedules between bus and rail and evaluation of the impact from traffic conditions along Route 15 for scheduled service.

Eastern Panhandle Transit Authority

The EPTA Commuter Bus Implementation Plan, published in June 2022, explores opportunities to provide commuter bus service between Martinsburg, West Virginia; Ranson, West Virginia; and the Ashburn Metrorail station in Loudoun County. It recommended that Loudoun County collaborate with EPTA on potential procurement agreements and transfer opportunities as these commuter bus services begin as soon as December 2023.

Regional Coordination Efforts

Loudoun County is recommended to participate in regional coordination efforts for bus service planning actively. Participation will result in potential efficiencies for service operations where there is cross-jurisdictional service and potential funding or shared-cost agreements for capital improvements. For example, capital improvements could be eligible for NVTA Six-Year Plan funding, or collaboration on zero-emission bus purchases or fuel supply generation.

While there are no current services, travel pattern analysis indicates that there may be an opportunity to coordinate with transit service from West Virginia or the northern Shenandoah Valley, which has operated commuter service in the past to Northern Virginia. Potential destinations include Metrorail stations or other employment hubs. Service could be operated by another entity and coordinated with Loudoun County regarding operations and potential connections.

Chapter 3 Planned Improvements and Modifications

Chapter 3 contains a prioritized list of improvements and modifications to existing services and policies pertaining to LCT. The improvements were generated from the needs and opportunities identified through the following sources:

- Goals and objectives identified in **Chapter 1: System Overview and Strategic Vision**
- Public, stakeholder, and Board of Supervisors feedback during outreach periods
- Data analysis included in **Chapter 2: System Performance and Operations Analysis**
- Existing planning and budget documents

Recommendations presented in this chapter are subject to change based on the outcomes of ongoing studies and further analysis of recent bus changes that were implemented following the timeframe of data analysis for this plan. **Section 3.1** describes this approach to service change recommendations in more detail. The chapter sections are described below, consistent with TSP guidelines:

- **Section 3.1 (Planned Improvements)** describes projects grouped into three categories: service changes, capital improvements, and studies. Each project description also discusses how this project fulfills Loudon County's needs and any potential operational changes.
- **Section 3.2 (Prioritization of Planned Service Improvements)** describes prioritizing projects and groups each one into short-term, mid-term, or long-term timeframes. Each of the non-service recommendations is assigned an assumed year.
- **Section 3.3 (Service Development)** shows how the potential service changes will impact overall levels of revenue hours over the 10-year time horizon of the TSP.

For summary purposes, a graphic showing the recommended implementation of all projects is shown in **Figure 3-1**. The sections that follow describe each project in much greater detail.

Figure 3-1: Project Timeline

Source: Loudoun County, 2024

3.1 Planned Improvements

The planned improvements and modifications are grouped into three major categories, and project numbers are prefaced with the abbreviation in parentheses: service changes (SC), capital improvements (C), and studies (S). Numbering restarts for each category. All projects described in this chapter include needs fulfilment and potential associated changes to operations. Needs fulfilment is based on how the projects relate to TSP goals and objectives, input from public engagement and the Board of Supervisors, and findings from **Chapter 2**.

3.1.1 Service Changes

Approach to Developing Service Change Recommendations

During the development of this TSP (November 2023), various ongoing factors in Loudoun County contributed to the necessary higher-level approach to service recommendations described below. These factors include, but are not limited to:

- There is not enough data yet to analyze the newly implemented (as of May 2023) Silver Line bus service changes.
- Loudoun County is conducting an overarching transit Comprehensive Operations Analysis, which may provide policy guidance on performance targets and recommended service levels.
- Loudoun County continues to monitor ridership changes coming out of the COVID pandemic to assess demand for commuter bus services.
- LCT is initiating a bus network optimization effort in FY 2024 and continuing into FY 2025.

Due to these factors, recommendations in this section present high-level potential service changes that will require a more detailed study prior to implementation.

To determine the most appropriate timeframe for each service recommendation, the study team considered whether the change builds off a previous service improvement, the urgency of the need it addresses, the ease of transition from the current service, and the expectations for cost and resource allocation.

While these recommendations are high-level, the project team developed more detailed routing and scheduling improvements to model potential ridership changes. The project team used a tool called TBEST, or Transit Boardings Estimation and Simulations Tool[15], to develop the TSP-required data on potential service changes

[15] TBEST, or Transit Boardings Estimations and Simulations Tool, is a nationally recognized ridership estimation model in the transit industry that allows forecasting of stop, route, and system-level boardings for future transit scenarios. TBEST can test iterative modeling of alternative routes and schedules by directly editing an agency's GTFS within TBEST and applying future socioeconomic growth from MWCOG's Round 9.2 socioeconomic forecasts to generate ridership and accessibility estimates. TBEST has been previously used by agencies like the DRPT in Virginia to obtain ridership estimates for TDPs and for competitive grant programs such as SMART SCALE.

and ridership changes. These models assume that the County will implement each of the identified improvements in each timeframe.

These recommendations and associated service and ridership estimates are subject to change in future updates of the TSP and are based on the outcomes of the other ongoing efforts such as the ongoing Comprehensive Operations Analysis. Staff should use the recommendations in this chapter as a starting point to help guide LCT's long-term development.

Given that the timeframe for analysis in **Chapter 2** was based on FY 2022 data (the most recent available at the time of analysis), and recommendations for this TSP begin for FY 2025, it is also necessary to establish the baseline of significant service. The following section describes these changes that were initiated in November 2022 with the opening of the Silver Line Metrorail Extension and were fully operational by May 1, 2023.

Bus Service Changes Associated with the Silver Line Metrorail Extension Opening

During FY 2023, LCT implemented service changes to better align bus routes and schedules with the opening of the Silver Line Metrorail Extension to the County. On May 1, 2023, LCT replaced all Metro Connection bus routes and some local bus routes with Silver Line bus service. Generally, express routes between park and ride lots and the Metrorail were rerouted to include on-street neighborhood bus stops, and routes previously terminated at a Metrorail station outside of the County were rerouted to terminate at a closer Metrorail station within the County.

A full list of route changes is as follows[16]:

- Silver Line bus Routes 320/321 (George Washington University/Dulles Town Center) and 331/332 (One Loudoun) replaced Local bus Routes 72 (George Washington University) and 87X (Dulles Town Center).
- Silver Line bus Routes 381 (South Riding) and 382 (Stone Ridge) replaced Local bus Route 88X (South Dulles).
- Silver Line bus Routes 343/344 (Ashburn Farm) and Route 374 (Brambleton) replaced Metro Connection Route 923/924 (Goose Creek / Broadlands).
- Silver Line bus Routes 391 (Purcellville-Harmony) and 351 (Leesburg) replaced Metro Connection Routes 921/922 (Harmony-Leesburg) and 931/932 (Purcellville). In July 2023, the Route 391 was modified to terminate at the Harmony park and ride lot.
- Metro Connection Routes 925/926 were eliminated, and Silver Line bus Routes 371 (Moorefield), 372 (Westwind Farm), 373 (Broadlands), and 375 (Brambleton) were added with on-street neighborhood bus stops.
- Silver Line buses, unlike Metro Connection buses, do not serve the Wiehle-Reston East Metrorail station. Instead, Silver Line bus Route 312 serves the

[16] Based on new LCT Silver Line bus schedule https://www.loudoun.gov/5495/Silver-Line-Bus-Routes

Reston Town Center Metrorail station and Silver Line bus Routes 320/321, 322, and 323 serve the Innovation Center Metrorail station.
- Routes previously serving the Dulles North Transit Center, which closed in December 2022, now serve the Dulles Transit Center.
- Routes no longer serve the Loudoun Station park and ride lot, which closed in November 2022 alongside the opening of the adjacent Ashburn Metrorail station.

Bus Service Changes Occurring in FY 2024

During FY 2024, Loudoun County monitored the performance of the newly implemented Silver Line bus routes. In January 2024, adjustments to the route schedules were made based on observed travel times between bus stops along the routes. Route redesign efforts will continue as an extension of the Loudoun County Comprehensive Operations Analysis report. In addition, the Board is considering the long-term impact of reducing the number of long-haul routes and, therefore, commuter buses needed for those routes.

Project SC1: Short-Term Service Changes (FY 2025 – FY 2027)

Project Description

This section outlines potential changes to the route alignments and service schedules of select local buses, Silver Line buses, and commuter bus routes. These service changes seek to better align existing services with evolving travel demands and performance standards while reducing overall operational costs. Through simplification, consolidation, and reallocation of resources, these improvements do not require additional investment, so LCT can readily implement them in the short-term. For FY 2025, LCT is not anticipating any significant changes that would change overall costs or service patterns. These minor changes include:

[schedule and alignment adjustments may occur pending findings from the LCT Comprehensive Operations Analysis currently underway]

The potential changes in FY 2026 or FY 2027 are as follows:

- SC1.1: Add Sunday service for local bus Route 70 Leesburg to Sterling via Leesburg Pike and Route 82 Sterling Connector. On weekends, extend these routes to connect Leesburg to the Ashburn or Loudoun Gateway Metrorail Stations.
- SC1.2: Combine or reallocate underutilized commuter bus routes to better align with commuting patterns.
- SC1.3: Simplify the route alignments of local bus Route 55, Route 56, and Route 57, which serve Leesburg.
- SC1.4: Evaluation of needed resources to provide reduced headways and more hours of operations based on customer demand.

Needs Fulfillment

Serve Demand for Sunday Service in Priority Areas

As shown in **Section 2.2** and the summarized opportunities for improvement, the most significant weekend travel demand in Loudoun County occurs along the Route

7 corridor between Leesburg, Ashburn, and Sterling —currently, local bus Route 70 and Route 82 service this corridor on Saturdays but not Sundays. Adding Sunday service to these two routes will give customers more comprehensive access to the retail centers along this corridor, such as Downtown Leesburg, the Village at Leesburg, Lansdowne Town Center, One Loudoun, and the Dulles Town Center general vicinity. Extending these local bus routes to one or more Metrorail stations will fill gaps in connections for weekend shoppers, service workers, and travelers into the County. With only one Silver Line route operating on weekends to supplement local service, these weekend-only route extensions on Route 70 and Route 82 could significantly improve access to major activity centers.

Potential service change SC1.1 fulfills this need.

Align Commuter Bus Service with Commuting Patterns
The performance evaluation in **Section 2.3** illustrates that commuter bus service constitutes four of the six lowest-performing routes systemwide: Routes 282, 284, 684, and 885. Consolidating services between these underutilized, underperforming, and often redundant services could free up transit resources to serve stronger travel needs elsewhere in the County. The eastbound morning service provided by Route 282 largely overlaps with Route 284, and the westbound afternoon service provided by commuter Route 684 largely overlaps with Routes 681 and 682. Each of these routes picks up and drops off customers at the Dulles South park and ride lot or the East Gate park and ride lot, but the market demand analysis in **Section 2.2** suggests a more robust commuting demand from Leesburg and along the Route 7 corridor. Thus, rerouting a portion of commuter bus service along the Route 7 corridor could better serve more potential customers.

Potential service change SC1.2 fulfills this need.

Note: Any potential Countywide policy changes to commuter bus service may affect this recommendation.

Fulfill Customer Desire for Route Efficiency and Directness
When asked to rank their top three transportation priorities, the October 2022 public survey respondents gave the highest priority to "saving or better using time." Route directness—the efficiency of travel between two points through a few deviations from the shortest path possible—also ranked within the top three. However, on select local bus routes, customers must navigate inefficient and time-consuming detours and transfers to reach their destinations. The circuitous geometry of select local bus routes reduces the point-to-point efficiency of service and correlates with low on-time performance. For example, Route 55, Route 56, and Route 57 require bus operators to make frequent crossings and turns onto busy main streets in downtown Leesburg, increasing the likelihood of traffic delays. By reducing significant deviations from main streets, Loudoun County can run more efficient end-to-end service and satisfy customers' transit priorities.

Potential service change SC1.3 fulfills this need.

Short-Term Potential Associated Changes to Operations and Ridership

If LCT implemented all the potential service changes identified in the short-term, this would increase revenue hours by 15,000 by FY 2027. This is an increase of approximately 3.1 percent per year.

Using the TBEST ridership estimation model (described on page 2), these changes could result in an estimated increase from the existing FY 2023 ridership of approximately eight to 14 percent.

Based on TBEST analysis, when LCT implements all the proposed short-term service changes, it will reduce the number of commuter buses by five and increase the number of local buses by two.

Project SC2: Mid-Term Service Changes (FY 2028 – FY 2031)

Project Description

This section outlines more extensive revisions and expansions to select local buses, Silver Line buses, and commuter bus routes and introduces new service types. These improvements increase the service area and service span and provide additional modal choices to customers. Given the scale of resources needed, these changes have been preliminarily identified as mid-term. This timeframe is subject to change based on future planning and resource availability.

The potential changes are as follows:

- SC2.1: Increase service span and frequency on the most productive local bus routes, Routes 70 (Leesburg to Sterling via Leesburg Pike), Route 80 (Sugarland Run Connector), and Route 82 (Sterling Connector).
- SC2.2: Add weekend service to select Silver Line bus routes. Routes 332 (One Loudoun), Route 351 (Leesburg), and Route 371 (Moorefield Parkway/Old Ryan Road).
- SC2.3: Increase the frequency of service on Route 7, with the optional addition of a new express service on Route 7.
- SC2.4: Extend the length of local and Silver Line routes to provide more one-seat rides across the County. Possible extensions include local Routes 57 (Leesburg Safe T Ride Route), Route 62 (Ashburn Connector), Route 80 (Sugarland Run Connector), and Silver Line Route 374 (Brambleton 1) and Route 375 (Brambleton 2).
- SC2.5: Modify existing local bus service to connect Ashburn Village and Goose Creek Village.

Needs Fulfillment

Increase Service Span and Frequency

When non-riders were surveyed in September 2023 about why they do not use local bus service, the most frequent response was that the service schedule does not meet respondents' travel needs. Similarly, in the October 2022 survey, more respondents ranked "expanded early-morning or late-night service" in their top three transit improvements than any other priority, and "expanded weekend service" was the most common top-ranked priority.

In locations where demand warrants, local and Silver Line bus routes could consider extending service spans to include early-morning and late-night trips, with increased frequency during weekdays and weekends. Mid-term service span expansions should prioritize the most productive routes along the highest-demand corridor, consisting of Routes 70, 80, and 82. All three routes provide critical connections to the Dulles Town Center vicinity, which generates late-night trips for shoppers, commercial, and service workers as well as connections to other routes. Adding weekend Silver Line service aligns the bus service schedule with the Metrorail service schedule, providing enhanced connections to and from the County on weekends.

Increasing service frequency also aligns with the October 2022 survey respondents' top two transportation priorities in modal choice: saving time and convenience. Introducing a new express service on Route 7 could enable more frequent connections between Leesburg and key destinations along the corridor. Travel patterns showed that many are bypassing intermediates stops on Route 7 with travel directly from Sterling or Loudoun Town Center to Leesburg.

Potential service changes SC2.1, SC2.2, and SC2.3 fulfill this need.

Fulfill Customer Desire for Route Efficiency and Directness

As explained in Project SC1, public engagement efforts revealed a strong customer demand for more efficient and direct transit service. In addition to simplifying route geometry, introducing new services between common origin and destination pairs creates more direct connections while efficiently using customer time and transit resources. Emerging travel patterns indicate that more County residents seek to travel between points within the County than to travel to points outside the County. Augmenting existing or introducing new local and Silver Line bus services can fulfill this need by providing more one-seat rides between more activity centers. For example, extending local bus Route 57 westward along Russell Branch Parkway could provide a direct connection between the Village at Leesburg, Inova Loudoun, Ashbrook Marketplace, and One Loudoun. These extensions will enable more efficient travel than the existing series of transfers, which would otherwise be required to connect the same destinations. In other instances, route circuity requires customers to transfer buses when traveling between nearby locations. For example, customers cannot currently connect between local bus services at Ashburn Village and Goose Creek Village without a lengthy transfer. Rerouting portions of existing local bus services could simplify transit connections between these destinations, which are otherwise not far nor hard to reach.

Potential service changes SC2.4 and SC2.5 fulfill this need.

Serve Growing Employment Centers

As economic development continues flourishing in Loudoun County and Northern Virginia, emerging employment centers generate increasingly strong transit demand for commuters. Introducing new transit services will reflect growing employment hubs within the County, such as those along Route 7, and outside the County, such as Tysons.

The Route 7 corridor between Leesburg and Sterling connects a series of existing and expanding employment centers, such as Loudoun County Government Center, Potomac Station, Inova Loudoun, and One Loudoun. New express or limited-stop service along this corridor could link these employment centers both to each other and to additional transit services.

Areas such as Loudoun Station and around the Ashburn Metrorail Station are slated to become urban centers, with a demand for travel from within and around the County. Providing additional connections to the area and increasing the frequency of service in and around this area may increase access to jobs.

Potential service change SC2.4 fulfills this need.

Mid-Term Potential Associated Changes to Operations and Ridership
Implementing all potential service changes identified in the mid-term would result in an increase of 106,000 revenue hours by FY 2031. This is an increase of approximately 14 percent per year.

Using the TBEST ridership estimation model (described on page 2), these changes could result in an approximate change from short-term (FY 2026) ridership of approximately 27 to 34 percent.

Based on TBEST analysis, the mid-term services proposed will increase the number of required buses by 14 from the short-term service changes.

Project SC3: Long-Term Service Changes (FY 2032 – FY 2034)

Project Description
This section outlines further potential service additions and extensions to select local bus, Silver Line bus, and commuter bus routes. As Loudoun County continues to grow, these improvements emphasize connecting areas with projections for high population growth and increased employment density within the next 10 years. As these recommendations anticipate future growth and may require inter-jurisdictional collaboration and financial investment, they are most appropriate for LCT's implementation in the long-term.

The potential changes are as follows:

- SC3.1: Add express service from Leesburg to the Ashburn Metrorail Station via Route 7.
- SC3.2: Add local bus service from Loudoun County to the Brunswick MARC Station during peak periods.
- SC3.3: Add local bus service from Dulles South to Chantilly.
- SC3.4: Explore expansion of commuter bus service including origins outside of Loudoun County.
- SC3.5: Add high-frequency local bus service between Dulles Town Center, Sterling, and Ashburn Metrorail Station.

- SC3.6: Explore the possibility of a microtransit[17] zone in key areas around Metrorail Stations and Leesburg to serve off-peak local travel demand.
- SC3.7: Reroute LCT routes to service the new Dulles Transit Center upon its opening.
- SC3.8: Add new local bus service from Dulles South and Stone Ridge to Brambleton and Ashburn South.
- SC3.9: Add direct commuter bus service to Tysons.

See **Section 3.1.1 Approach to Developing Service Change Recommendations** for details on the basis of these recommendations.

Needs Fulfillment

Serve Demand for Service Expansion to New Areas

When asked to rank their top recommendations for improving transit service for current and future riders, more October 2022 survey respondents selected "service to new areas" as their top priority over all others except "expanded weekend service." Similarly, both human services providers expressed a strong need to expand the provision of transit service west of Route 15 to areas of need. Relocating the terminus of local and commuter bus service, pending County policy determination, westward could fulfill this transit gap. Similarly, the creation of a local bus route from Loudoun County to the MARC Commuter Rail station will serve a growing travel demand and provide alternative commuter connections to Washington, D.C.

Similarly, there is currently no transit service along the Route 50 corridor to connect Loudoun County and Fairfax County. In addition to expanding the transit service area, introducing a local bus route from Stone Ridge into Chantilly, Centerville, and Fair Oaks will provide a direct connection to Fairfax Connector Service. With just one transfer, customers could then ride Fairfax Connector express services to the Vienna/Fairfax-GMU Metrorail Station, the Dunn Loring-Merrifield Metrorail Station, and the City of Fairfax. This potential service also will provide the opportunity to collaborate with Fairfax Connector, as identified in **Section 2.5**.

Tysons, a major retail and employment hub, also currently lacks direct bus service to Loudoun County. Pending County policy determination, introducing express commuter bus service from park and ride lots in Loudoun County to Tysons could

[17] Microtransit is a term used to describe transit service that operates with flexible route structures and schedules enabled by dynamic customer ride requests and trip pairing. Microtransit services usually serve a zone where riders can travel anywhere within the zone and are grouped with other riders traveling the same direction at the same times, and usually provides a target wait time for pickup instead of a scheduled frequency. Typically, microtransit has been used to service gaps in communities' first mile-last mile travel needs where fixed route transit is not accessible. Microtransit also is used to complement traditional transit service during off-peak travel times, or to serve developing areas without established travel behavior that do not yet warrant full fixed route transit.

expand the system service area to include more multimodal travel options for County residents. These bus services would be concentrated in parts of the County without ready access to the Silver Line Metrorail, such as Leesburg, to prevent a redundancy in transit connectivity. This need is also being examined by the Commuter Bus Study.

Potential service changes SC3.2, SC3.3, SC3.4, and SC3.9 fulfill this need.

Support Changing Commute Patterns

As the eastern portion of Loudoun County continues to densify, current traditional commuting patterns into Fairfax County and towards Washington, D.C., may increasingly be replaced by commutes into and across the County instead. This shift holds especially true for Urban Place Types, such as the mixed-use developments around the Ashburn Metrorail Station, where burgeoning transit-oriented developments will include new workplaces. This increased employment density will attract a greater number of commuters from both within and beyond the County. Express bus service from Leesburg to the Ashburn Metrorail Station would more efficiently transport customers between two of the largest employment centers in the County and better connect reverse commuters from points eastward to job opportunities in Leesburg. This service also fills a transit service gap identified by County Supervisors.

As County residents continue to live in increasingly dense, mixed-use, and transit-supportive housing with decreasing access to private vehicles, demand for transit will increase for intra-County commutes. For example, travel demand between Ashburn and Sterling is second in the County only to the Route 7 corridor, but there is currently no direct route that links the Ashburn Metrorail Station to destinations east of Route 28. Introducing a high-frequency local bus route between Sterling and the Ashburn Metrorail Station (Loudoun Station) would more efficiently link areas of increasingly high employment density, population density, and transit access to one another. Similarly, adding new service or extending Silver Line Routes 374 and 375 from Brambleton to Arcola, Stone Ridge, and South Riding would eliminate the need for lengthy intermodal transfers between a series of residential and employment centers.

Section 2.2 indicates that the greatest employment growth in the County in the next 20 years will be concentrated at Dulles International Airport. The development of the new Dulles Transit Center expands opportunities to provide more direct transit connections for a growing number of airport employees. Many of these employees currently commute from within the County, so rerouting local bus routes to Dulles Transit Center could eliminate the need for current transfers outside the County at the Innovation Center Metrorail Station.

Potential service changes SC3.1, SC3.5, SC3.7, and SC3.8 fulfill this need.

Serve Off-Peak Local Travel Demand

While the October 2022 public survey and Board of Supervisor feedback indicated a desire for transit service in new locations, areas with low residential and

employment density generally do not warrant fixed route transit service at all time periods. For example, Transitional Place Types, one of five place types identified in Loudoun's Comprehensive Plan, typically lack sufficient demand for consistent local bus service during midday and late at night. Still, demand for less frequent and more responsive alternatives may exist. Exploring the introduction of microtransit service could assess how this flexible modal option might best serve areas with lower demand or more challenging destinations. Alternatively, studying microtransit zones around emerging Transitional and Suburban Place Types could provide missing connections to nearby Metrorail stations or major commercial centers. This service should not overlap with the service area nor the span of fixed route local and Silver Line buses.

Potential service change SC3.6 fulfills this need.

Long-Term Potential Associated Changes to Operations and Ridership

If LCT implemented all potential service changes identified in the long-term, this would result in an increase of 142,000 revenue hours by FY 2034. This is an increase of approximately 18 percent per year between FY 2032 – FY 2034.

Using the TBEST ridership estimation model (described on page 2), these changes could result in an approximate change from mid-term FY 2030 ridership of approximately 18 to 26 percent.

Based on TBEST analysis, the services proposed will anticipate increasing the number of required buses by 11 from the mid-term service phase.

3.1.2 Capital Improvements

Capital improvement projects involve new or upgraded infrastructure to support transit service. The projects below are from previous County plans, such as the Loudoun County Transportation Technology Plan published in 2017 and the FY 2023 – FY 2028 CIP. These projects have defined capital costs and specific program elements documented in previous plans. These projects may also have ongoing operations and maintenance costs along with capital costs. Potential changes in ridership are not identified for capital improvement projects.

Project C1: Smart Parking Infrastructure Pilot

Project Description

Based on a recommendation from the Transportation Technology Plan, Loudoun County will deploy smart parking infrastructure at a high-occupancy park and ride lot to inform travelers of parking space availability, restrictions on parking, pricing, and aid in wayfinding. Previous studies identified the Leesburg park and ride lot as an initial deployment location but this should be reassessed before beginning the pilot. This infrastructure could include sensors for tracking whether a parking space is available, parking data collection systems, and electronic signage for parking management systems. It also includes an option to integrate with VDOT's statewide active traffic management system (ATMS).

This project will be most effective at high-occupancy lots. As commuter lot demand recovers following COVID-19, occupancy should be monitored to determine an

appropriate timeframe for this pilot. It is not currently in the CIP. The pilot project can guide future recommendations at other garages, lots, or streets produced from the Transit Hub and Park and Ride Investment Strategy Study (Project S5).

Needs Fulfillment

Currently, the County has parking data collection systems installed as part of constructing the County-owned garages at Loudoun Gateway and Ashburn Metrorail Stations. However, other parking facilities lack these data collection systems and lack the capacity to monitor lot usage in real-time. Due to the high capacity of certain park and ride lots, an initial deployment of smart parking infrastructure consisting of parking sensors, a data collection system, and dynamic signage at the Leesburg park and ride lot will provide more insight into improvements, changes, and policies that could be implemented at future locations. The traveler information provided by this system also will save travelers time searching for parking and improve efficiency. This improvement aligns with County Supervisor feedback suggesting enhanced park and ride lot amenities.

Project C2: Multimodal Information Displays Pilot

Project Description

3-2Based on the Transportation Technology Plan recommendation, by installing information displays, Loudoun County will improve traveler information for multimodal options at the Leesburg park and ride lot, One Loudoun, and Ashburn Metrorail station. Traveler information includes first/last mile connectivity options from transit, such as rideshare times or potential bikeshare locations, bus and train arrival times, and walking travel time to popular destinations. Once deployed, these information displays can also show roadway traffic conditions, weather conditions, local news, and advertisements for local businesses.

This project is not currently in the CIP. The pilot project will guide future recommendations at other transit hubs, Metrorail stations, or park and ride lots produced from the Transit Hub and Park and Ride Investment Strategy Study (Project S5).

Needs Fulfillment

In a recent survey conducted in October 2022, 39 percent of respondents said better real-time information was a priority. Through discussion with County Supervisors, the need for increased availability and communication of real-time transit information was identified. Deploying these information displays at key transit locations can improve communications with LCT customers and promote the use of multimodal transportation options.

Project C3: Bus Shelter Program

Project Description

Loudoun County will design and construct 20 bus shelters along local fixed route bus routes annually. The design and construction are funded through the CIP. There will be a three-year production schedule. The first year is for design, the second year is for right-of-way acquisition, and the third year is for construction. Loudoun County has completed a bus stop inventory and assessment and has prioritized a

list of bus stops to upgrade to bus shelters. The specific locations of bus shelters prioritized for design and construction can be found in Phase 1 of the Bus Shelter Standards and Prioritization Plan. This plan evaluated bus stop locations for bus shelters against physical and operation characteristics, such as proximity to transit generation and number of routes served; socio-economic and demographic criteria such as population density and employment labor force; and accessibility, such as proximity to higher transit-dependent population.

Needs Fulfillment

During interviews with members of the Board of Supervisors, interest in enhancing transit service through accessibility improvements to better serve current riders and appeal to non-riders was identified. Installation of bus shelters at key locations will improve customer experience and encourage more Loudoun County residents, employees, and visitors to use LCT services.

Project C4: Bus Stop Installation on New Routes

Project Description

Loudoun County will design construct bus stops for newly-introduced routes based on identified needs. Bus stops for a maximum of two new routes may be constructed annually, taking into consideration a two-year timeline for bus stop planning, construction, and implementation. Each route is estimated to require approximately 30 ADA-accessible bus stops. The design and construction are funded through the CIP.

Needs Fulfillment

As new service is introduced, constructing bus stops with safe and comfortable waiting areas for riders is critical. Pedestrian connections should also be considered in terms of connections to sidewalks. These improvements include prioritizing the physical accessibility of transit infrastructure for senior and disabled populations. As mentioned previously, there was strong Supervisor support for enhancing transit service through accessibility improvements.

Project C5: Fleet Modernization

Project Description

Based on recommendations from a fleet management study, Loudoun County will replace 37 diesel-powered buses with compressed natural gas buses, construct a fueling station, and update its maintenance facility to accommodate the new vehicle type using an FTA grant awarded through the Low- and No-Emission (Low-No) Vehicle Program in 2023. Subsequently, this project will be included in the local CIP and Statewide Transportation Improvement Program (STIP).

Needs Fulfillment

Replacing buses and other Loudoun County vehicles aligns with the County's 2009 Energy Strategy, which calls for a goal of achieving net-zero emissions and a carbon-free grid by 2045. In addition, the current fleet is aging and has different types of buses that only serve one purpose. Loudoun County will use this fleet replacement opportunity to acquire new vehicles that can satisfy existing service needs while also providing the flexibility to accommodate the introduction or

elimination of other service types. Having a fleet with multiple purposes allows the County to adapt easily to demands and service strategy changes. A standardized fleet of smaller, more purpose-built vehicles will also streamline vehicle maintenance and reduce associated costs. This investment also aligns with County Supervisors' feedback encouraging the development of zero-emissions transit technologies.

3.1.3 Studies

Projects listed below are studies generated based on ideas discussed with the public and other stakeholders and from needs identified during data analysis that service changes cannot address. The studies discuss specific transit elements that will be analyzed before providing recommendations. Studies may relate to new technology, different ways to provide service, developing transit-supportive infrastructure, and ways to increase engagement with riders. No associated changes to operations and ridership are directly assumed because of completing the studies.

Project S1: Rebranding and Marketing Plan and Implementation

Project Description

Loudoun County will develop and execute a Rebranding and Marketing Plan to create a more attractive, imageable, clear, and accessible system identity to build one holistic branded program for their transit and commuter services. This plan will refine the system's graphic and visual language by developing a new logo, font, and color standards; vehicle decals and designs; bus stop signage; and digital and print marketing materials. Creating a new copywriting and style guide will promote the clarity and consistency of all communications. This plan will develop strategies for building public awareness, increasing ridership and participation in programs, and identifying messages to reach target audiences.

This comprehensive campaign will include diverse high-tech, low-tech, hands-on, and hands-off communication strategies. This approach balances a more static delivery of key messages at a large scale with strategically tailored one-on-one assistance for high-value customers with specific needs. The plan will achieve its goals by creating opportunities for public involvement, facilitating opportunities for participation from underrepresented or marginalized communities—namely Spanish speakers, riders with disabilities, seniors, and older adults—and offering a variety of analog and digital platforms for customers to learn and provide feedback.

Needs Fulfillment

Loudoun County Transit and Commuter Services' brand has remained unchanged since its inception. The County looks forward to improving its service and customers' experience as it continues to grow in population and economic development. A brand redesign will help Loudoun County better raise awareness for its integrated transit network to its residents, employees, and visitors. This marketing plan will attract new customers and increase participation in commuter incentives and programs, both of which can lead to a reduction of single-occupant vehicles on Loudoun County's roadways. A brand redesign could also enhance the clarity and accessibility of communications between LCT and its customers, a

concern commonly raised by County Supervisors. In addition, with the introduction of new service types in recent years, there must be clear intention and direction to how these service types are integrated and communicated.

Project S2: Pilot Project for Implementation of Commuter Bus Service from Neighboring Jurisdictions into Loudoun County for Employment Opportunities

Project Description

In FY 2024, Loudoun County initiated a study to assess the feasibility and demand for a regional commuter bus service. This study examines potential transit connections for Loudoun County workers traveling to and from surrounding jurisdictions, including communities in Maryland and West Virginia. This study includes Jefferson and Berkeley Counties in West Virginia; Frederick and Montgomery Counties in Maryland; and Frederick, Clarke, Warren, Fauquier, Prince William, and Stafford Counties in Virginia. The study is expected to lead into a pilot project to implement the recommendations for commuter bus services to Loudoun County for up to three routes. The pilot project is planned to occur in FY 2025.

Needs Fulfillment

In November 2023, the Board of Supervisors approved a study of the feasibility, demand, and strategies needed to operate a public commuter bus service connecting workers to Loudoun County employment sites from neighboring jurisdictions. There are a significant number of employees at Loudoun County-based businesses and local government facilities that commute from jurisdictions to the west, north, and south of Loudoun County. Providing commuter bus options to access employment in Loudoun County could help economic development efforts, reduce vehicle trips, and benefit Loudoun County-based businesses in their workforce recruitment efforts.

Loudoun County-based businesses have expressed difficulties in recruiting and retaining employees due to the high cost of living within Loudoun County and other Northern Virginia jurisdictions. There are limited commuting options from areas to the west, north, and south of Loudoun County, as most of these jurisdictions do not currently operate any commuter bus service. Offering commuter bus service into Loudoun County may help increase access to employers in Loudoun County for those living outside of Loudoun County, who may otherwise not seek employment here due to limited access to transportation, rising commuting costs, and traffic congestion. Travel pattern analysis in the **Origins and Destinations (Where)** section also indicated a need for improved connectivity between Loudoun County and regions to the west. Coordinated, regional commuter bus service from West Virginia or the northern Shenandoah Valley, which has previously operated commuter service in Northern Virginia, could also fulfill the need demonstrated by this travel pattern.

Project S3: Bus Network Redesign Study Engagement

Project Description

In FY 2024, Loudoun County began conducting its first route optimization study to develop a plan for updated LCT operations. This study will consider the impacts of

potential service alternatives, such as new bus routes or new service types. To supplement the technical analysis of this study, LCT will follow a comprehensive engagement approach to promote the full involvement of both key stakeholders and the general public. Engagement opportunities will range from a project survey and onboard intercept interviews to tabling events and public workshops. Physical and digital marketing materials will also be created to encourage participation in project surveys and at project events. As new data sources and tools have emerged to identify travel patterns and potential service capacities more robustly, this thorough community engagement approach will provide equally advanced feedback and fill gaps in information which cannot be calculated through this technology alone. Engagement feedback will include community travel needs, preferences for transit resource allocation, and demographic information. This feedback will critically inform the evaluation criteria and scoring of alternatives leading to the final decisions for transit service recommendations. Ultimately, this engagement strategy will advance Loudoun County's commitment to transit equity and allow the County to continue meeting its customers' travel needs. The funding identified in this project is for the engagement elements of the network redesign.

Needs Fulfillment

County Growth and Changing Travel Patterns

Loudoun County's population is anticipated to increase by about 25 percent by 2040, and customers' needs are changing as travel patterns shift. Future population growth is largely expected west of Brambleton, south of Leesburg, and Dulles South, which includes higher concentrations of minority populations. In addition, with the completion of the Silver Line Metrorail extension, the rise of rideshare, and customers' need for bicycle and pedestrian options, customer expectations for transit service are similarly evolving. This engagement effort will support service changes which representatively sample the changing transit preferences and needs of a changing population.

Solicit and Respond to Public Input

Common feedback from both October 2022 and September 2023 engagement efforts emphasizes the necessity of continuously soliciting and directly responding to feedback from the public. While customers may perceive confusion or exclusion from the decision-making processes which generated the existing transit network, this engagement strategy presents a unique upstream opportunity to involve the public in potentially significant service changes. This process will close the information gap between the service provider and the customer and directly respond to the rider experience and reported concerns.

Project S4: Bicycle and Pedestrian Access to Transit Study (led by DTCI)

Project Description

Loudoun County currently works to identify and address missing segments in the existing pedestrian and bicycle network through the Sidewalk and Trail Program in the CIP, which is led by Loudoun County DTCI and VDOT. As of March 2024, there are projects under design at Loudoun Gateway and Ashburn Metrorail stations that aim to improve pedestrian and bicycle accommodations. LCT will build off of this

program and work in collaboration with DTCI to conduct a study to determine where existing non-Metrorail station transit facilities, such as bus stops, park and ride lots, and bus transit hubs could be better served by bicycle and pedestrian infrastructure. This study will evaluate the successes of existing multimodal assets, such as the bicycle lockers at all Silver Line Metrorail Garages and select park and ride lots, and their potential replicability at additional sites to enhance the County's bicycle and pedestrian network.

Needs Fulfillment

The Loudoun Sidewalk and Shared Used Path Prioritization Project, published in 2020, identified 4.5 miles of missing sidewalks and shared use path segments for implementation. This analysis prioritized improvements and new construction in areas expecting to attract a high number of non-motorized users, including the areas within a 3-mile radius of the Ashburn and Loudoun Gateway Metrorail Stations. As the County continues to grow and transit-oriented development attracts more users to key transit hubs, more transit customers will access transit services by walking or biking rather than driving. The proposed study will build upon the findings of the 2020 study with a more acute focus on infrastructure, amenities, and wayfinding improvements at transit hubs. The 2018 CTP suggests more specific opportunities for further analysis, such as identifying locations for bicycle parking installation at transit facilities and improving non-vehicular access to and ADA accessibility within park and ride lots. Recent projects identified in the CIP include the Franklin Park to Purcellville trail, River Creek Parkway Sidewalk, and the Route 7 Shared Used Path. This effort will also align with Supervisor feedback promoting a more walkable, more bikeable, and less auto-centric vision for the County.

Project S5: Transit Hub and Park and Ride Investment Strategy Study

Project Description

LCT will conduct a study to determine new locations or improvements of transit hubs and park and ride lots. The study will consider land use, travel patterns, existing locations, and demographics to understand the demand for these facilities. For example, the implementation of new park and ride lots or improvements to existing ones will be located in areas with a larger concentration of origin travel locations, especially for longer commutes. Transit hubs will be located in areas containing interconnecting services and higher density development. Key transit hub locations for consideration in the study are: One Loudoun, Downtown Leesburg, Dulles South, Northern Virginia Community College–Loudoun Campus, developments north and south of Ashburn Metrorail station (such as Loudoun Station), and commercial centers along Route 7 and Loudoun County Parkway. In addition, this study will examine potential alternative uses for underutilized park and ride lots. Should commuter bus service be eliminated or repurposed, there may no longer be a need for park and ride lots beyond smaller locations for carpooling or vanpooling origins.

Needs Fulfillment

Expand on Previous Plans

In the 2016 TDP, four new park and ride locations were identified, one of which opened in 2019 (One Loudoun). An updated study to identify additional transit improvements to existing transit facilities will help expand upon the previous TDP and address the needs identified in **Chapter 2**. A transit hub study will fulfill several goals set out in the 2018 CTP, which calls for better station design and land use planning as urban place types within Loudoun County develop. This will also fulfill the County's objective to reduce single occupancy vehicles along certain corridors by determining locations for pedestrian access, bike parking, and retail that can serve multiple purposes for transit riders.

Intra-County Travel

Travel patterns and planned future growth documented in **Chapter 2** show that many riders travel or plan to travel between four distinct areas for most of their intra-County travel purposes. This provides an opportunity to concentrate service around these travel centers and increase connectivity by facilitating transfers at these locations. Future transit hubs and transfer stations should be planned in areas including One Loudoun, Downtown Leesburg, Ashburn Metrorail Station, and commercial centers along Route 7 and Loudoun County Parkway. The Loudoun Station area around Ashburn Metrorail station, given its planned land use and Silver Line terminus, is a logical major transit hub. Enhancements to transit service and routing to improve transfers at these locations, particularly at existing service areas of Dulles Town Center, Ashburn, and Downtown Leesburg, could include elements such as better shelters and passenger facilities, increased space for bus layover, improved multimodal access, and service realignment of LCT routes serving different parts of the County.

Regional Commutes

This study complements the Pilot Project for Implementation of Commuter Bus Service from Neighboring Jurisdictions into Loudoun County for Employment Opportunities (Project S2). Recommendations identified in that study will determine if additional facilities are needed to support regional commuter service. Analysis in **Chapter 2** indicates that there may be opportunities to coordinate with transit services from West Virginia or the northern Shenandoah Valley, which have previously operated commuter service to Northern Virginia. It is also important for other longer distance commutes, such as to Prince William County and Frederick County, Maryland, to connect centrally within the County and have access to local routes. There is also an opportunity to improve commuter travel time for common commutes to Prince William County and Montgomery County, Maryland.[18]

[18]The market analysis in Chapter 2.2.1 of this document provides further support for regional commuting origins and destinations outside of Loudoun County, including Prince William County, Virginia; Frederick County, Maryland; and Montgomery County, Maryland.

Project S6: High-Capacity Transit Infrastructure and Service Corridors Study

Project Description

Loudoun County will conduct a study to determine high-priority corridors and perform individual alternatives analysis. The alternatives analysis will examine potential route alignments, transit modes, station locations, and transit service levels in each corridor that may warrant high-capacity transit based on travel patterns and the County's goals of decreasing congestion, reducing cross-county transit travel times, and increasing multimodal options.

The 2019 CTP recommended the following elements for consideration: branding of dedicated corridor service, better-suited vehicle types, better wayside station and stop access and amenities, dedicated transit lanes, specific transit signal priority intersections, and comprehensive land use planning around corridors. An updated study will include potential high-capacity corridor alignments, transit service concepts, and coordination with VDOT Department of Planning, state law enforcement, and other County efforts for managed or transit-only lanes.

The north/south corridors to include in this study are:

- Route 606-Sterling Corridor: Begin south of Route 50 and connect on Old Ox Road from Loudoun Gateway Metrorail Station to Sterling Boulevard.
- Stone Ridge-Loudoun County Parkway-Ashburn Corridor: From the Stone-Ridge park and ride lot to Loudoun County Parkway, connecting to Ashburn Metrorail Station via Mooreview Parkway, with the option to continue up Ashburn Village Boulevard.
- Belmont/Northstar - Ashburn Metrorail Station-Claiborne Parkway: From Evergreen Mills Road, northbound through Brambleton, either using Northstar or Belmont Ridge to connect to Ashburn Metrorail Station. The route continues north of Route 267 with a connection along Belmont to Route 7/Inova Loudoun Hospital.

The east/west corridors to include in this study are:

- Route 7-Route 28-Dulles Corridor: Roads parallel to Route 7 including Russell Branch Parkway and Riverside Parkway. Leesburg to Inova Loudoun Hospital to commercial on Russell Branch to Dulles Town Center. Continuation of corridor on non-local (Route 28) or local (Atlantic Boulevard) routes to Dulles Metrorail Station or Innovation Center Metrorail.
- Tall Cedars/Route 50-Chantilly/Dulles: Tall Cedars Parkway starting at Northstar Boulevard and continuing parallel to Route 50 to South Riding. Continuing from South Riding on Route 50 to commercial developments around Chantilly at the intersection of Route 50 and 657.

Needs Fulfillment

Building upon the transit priority corridors identified in the TDP, the TSP recommends prioritizing five updated, combined corridors for a more in-depth, County-wide, high-capacity transit study based on current travel demand and future population and employment access concentrations. The study will look at two axes with groups of corridors based on County needs: north/south corridors to

connect customers perpendicular to the Silver Line Metrorail and east/west corridors to enhance local and cross-county connections for riders seeking connection to employment and retail locations not specifically connected via the Silver Line Metrorail. Multiple County Supervisors endorsed the exploration of multimodal solutions like BRT service. The NVTA is (as of fall 2023) beginning a Preliminary Deployment Plan for BRT corridors in Northern Virginia, which may present additional potential corridors.

Project S7: Transit and Tourism Study

Project Description

Loudoun County will conduct a study to determine service options for popular tourism locations such as Downtown Leesburg, breweries/wineries, historic sites, and national parks. The service could begin at the Metrorail stations in the County for customers beginning their trip outside the County. Bus service is currently available to a few of these locations. The study will also find opportunities for partnerships with economic development.

Needs Fulfillment

There is a need for LCT to serve its residents and employees for retail and work trips. Still, Loudoun County also has many visitors, and LCT should provide service to those visitors once they enter the County via the Silver Line Metrorail. Data analysis in **Chapter 2** showed that people enter the County via Metrorail to various points of interest. As Loudoun County continues to grow, LCT should support the County's economic development by providing services that aid and support tourism.

In addition, the Board of Supervisors shared a need to expand transit service for reverse commuters, and that many constituents' requests focus on expanding current services and reverse commutes into the weekend. This service will be provided at hours when a full fleet is not utilized, meaning new vehicles would not be required to operate the service.

Project S8: Passenger Surveys (Customer Satisfaction and Title VI)

Project Description

LCT will develop a system of onboard surveys to capture more direct rider feedback on an ongoing, yearly basis and to fulfill the Title VI requirement for this outreach, which is at least every five years. These surveys will collect information on customer demographics, travel patterns, transportation priorities, and suggestions for improvement. LCT staff and members of the Transit Advisory Board (TAB) will continuously ride bus routes to conduct intercept interviews with customers from all services. In addition to in-person interviews, LCT will make physical copies of surveys and printed directions showing how to access an ongoing digital survey available on all buses. The passenger survey would include options to take it in multiple languages.

Needs Fulfillment

This effort will align with the County Supervisors comments that suggested creating additional opportunities for customers to provide feedback to LCT on an ongoing basis. Engagement staff noted that the respondent demographics of the original

project survey did not capture the input of riders as comprehensively as onboard rider surveys. In addition to obtaining customer feedback, regularly riding the buses will provide LCT staff with valuable firsthand insight toward opportunities to improve service. The information will help evaluate operational service and apply to Title VI equity analysis for service changes.

3.1.4 Summary of Needs Fulfillment and Opportunities for Improvement

Table 3-1 summarizes opportunities for improvement identified in **Chapter 2** and the specific planned service change improvement improvements developed to address them. Note, each planned improvement can fulfill multiple opportunities for improvement.

Table 3-1: Opportunities to Planned Improvements Summary

Section	Opportunities for Improvement	Planned Improvement
2.2 Market Assessment	Improve transit connections between future residential growth and employment centers	• SC1.1 – Add Sunday service to Leesburg and Sterling and extend routes • SC2.1 – Increase service on productive local bus routes • SC2.4 – Extend coverage of local and Silver Line routes • SC2.5 – Improve local bus service to Ashburn • SC3.1 – Add express service from Leesburg to Ashburn along Route 7 • S3 – Bus Network Redesign Study Engagement • S6 – High Capacity Transit Corridor Study
2.2 Market Assessment	Align commuter bus service with commuter demand	• SC1.2 – Reallocate commuter service to match demand • SC3.9 – Add direct commuter bus service to Tysons • S2 – Pilot Project for Commuter Bus Service from Neighboring Jurisdictions into Loudoun County for Employment Opportunities • S5 – Transit Hub and Park and Ride Investment Study • S8 – Passenger Surveys • C5 – Fleet Modernization
2.2 Market Assessment	Improve service directness to the Silver Line and areas of high transit propensity	• SC1.3 – Simplify route alignments on Leesburg local bus • SC2.3 – Increase service on Route 7 with optional express routing • SC2.4 – Extend coverage of local and Silver Line routes • SC2.5 – Improve local bus service to Ashburn • SC3.1 – Add express service from Leesburg to Ashburn along Route 7 • SC3.5 – Add high-frequency local bus service between Dulles Town Center, Sterling, and Ashburn Metrorail Station • S3 – Bus Network Redesign Study Engagement • S6 – High-Capacity Transit Corridor Study

Section	Opportunities for Improvement	Planned Improvement
2.2 Market Assessment	Improve service span and coverage	• SC1.1 – Add Sunday service to Leesburg and Sterling, and Extend Routes • SC2.1 – Increase service on productive local bus routes • SC2.2 – Add weekend service on select Silver Line Bus • SC2.3 – Increase Service on Route 7 • S3 – Bus Network Redesign Study Engagement • S4 – Bicycle and Pedestrian Access to Transit Study
2.2 Market Assessment	Improve service for trip types other than work such as shopping, recreation, and social trips especially during off-peak periods	• SC2.1 – Increase service on productive local bus routes • SC2.2 – Add weekend service to select Silver Line routes • SC2.3 – Increase service on Route 7 with optional express routing • S8 – Passenger Surveys • SC2.5 – Improve local bus service to Ashburn • SC3.6 – Explore the possibility of a microtransit zone in key areas around Metrorail Stations and Leesburg to serve off-peak local travel demand. • S3 – Bus Network Redesign Study Engagement • S5 – Transit Hub and Park and Ride Investment Study
2.2 Market Assessment	Concentrate service around future transit hubs and transit stations	• SC1.1 – Add Sunday service to Leesburg and Sterling, and extend routes • SC3.5 – Add frequent service between Dulles Town Center, Sterling, and Ashburn • SC3.6 – Explore the possibility of a microtransit zone in key areas around Metrorail Stations and Leesburg to serve off-peak local travel demand • S5 – Transit Hub and Park and Ride Investment Study • S6 – High-Capacity Transit Corridor Study
2.2 Market Assessment	Improve connectivity to new destinations within and outside of Loudoun County	• SC3.2 – Add local bus service from Loudoun to Brunswick (MD) MARC Station • SC3.3 – Add local Bus service from Dulles South to Chantilly • SC2.4 – Extend coverage of local and Silver Line routes • SC3.4 – Explore expansion of commuter bus service including origins outside of Loudoun County • SC3.9 – Add direct commuter bus service to Tysons • S2 – Pilot Project for Commuter Bus Service from Neighboring Jurisdictions into Loudoun County for Employment Opportunities • S3 – Bus Network Redesign Study Engagement

Section	Opportunities for Improvement	Planned Improvement
		• Collaboration and Coordination Opportunities with Fairfax Connector, WMATA, MARC (Maryland), Eastern Panhandle Authority,
2.3 Performance	Re-evaluate service that does not meet County standards for productivity	• SC1.4 – Right-size service to demand through adjustment of scheduling for peak and off-peak periods
2.4 Efficiency	Implement schedule and operating adjustments to minimize scheduling	• SC1.2 – Reallocate commuter service to match demand • SC1.3 — Simplify Leesburg local routes • SC1.4 – Match level of service to customer demand • SC2.5 – Improve local bus service to Ashburn • S2 – Pilot Project for Commuter Bus Service from Neighboring Jurisdictions into Loudoun County for Employment Opportunities • S3 – Bus Network Redesign Study Engagement
2.4 Efficiency	Optimize routing of buses to reduce delay	• SC1.3 — Simplify Leesburg local routes • SC2.3 – Increase Service on Route 7 with optional express routing • SC2.5 – Improve Local Bus Service to Ashburn
2.4 Efficiency	Readjust service span from low-demand periods to higher demand	• SC1.4 – Match level of service to customer demand • SC2.1 – Increase service on productive local bus routes • S3 – Bus Network Redesign Study Engagement • S8 – Passenger Surveys

3.2 Prioritization of Planned Service Improvements

The proposed projects from the previous sections are prioritized based on cost, project readiness, order of operations, and needs fulfilment. All 16 projects have been included in the 10-year TSP time period and potential funding sources have been identified.

The TSP time period is broken down into three timeframes for implementation:

- Short-term transit improvements (FY 2025 – FY 2027)
- Mid-term transit improvements (FY 2028 – FY 2031)
- Long-term transit improvements (FY 2032 – FY 2034)

Table 3-2 places each project into a timeframe and includes the following information:

- Expected completion FY based on the assigned timeframe (subject to change as funding availability becomes more defined)
- Allocated (federal grants, state, and local operating assistance, CIP) or potential (Technical Assistance, Commuter Choice) external (outside of

Loudoun County) funding sources. Note that funding sources are described in more detail in **Section 5.1**.
- Project source from previous planning documents; engagement with the public, stakeholders, and Supervisors; and data analysis from Chapter 2
- Capital/one-time and annual operations costs (if applicable) expressed in current year dollars.

The operating cost assumptions were derived from the proposed revenue service changes modeled in TBEST. If a route was extended or service hours/ frequency increased, the route geometry and schedule were modeled to calculate the associated change to revenue hours and miles. This change was multiplied by the FY 2022 operating cost per revenue mile reported in LCT's FY 2022 NTD Transit Agency Data. Future-year inflation was not factored into operations cost projections. The annual cost shown for the multiple-year projects is the annual cost by the end of the timeframe, assuming all the components have been implemented. The annual cost does not include non-modified existing services.

- Commuter bus: $8.96 per revenue mile/$282 per revenue hour
- Local bus: $7.59 per revenue mile/$129 per revenue hour

The capital costs associated with service changes were calculated by number of buses required for each proposed recommendation. The schedule, route running time, circulation time, and layover assumptions were analyzed to determine whether additional buses were needed to increase frequency or service route extensions. This change in the number of required buses was then multiplied by the cost of one new CNG transit bus ($628,003) to estimate the capital cost per service change.

The prioritized plan has 10 projects programmed for the short-term, five projects programmed for the mid-term, and one project programmed for the long-term. Many of the short-term and mid-term projects are studies that will result in long-term implementations for the County.

Table 3-2: Summary of Planned Improvements

Timeframe	Fiscal Year	Project Number	Project Name	Project Source/ Document	Potential External Funding Source(s)	Capital/ One-Time Costs	Annual Operations Cost
Short-term	2025-2027	SC1	Short-term Service Changes	TDP	State Operating, Transit Ridership Incentive Program (TRIP)	$1,256,000[1]	$136,500[1,3]
Short-term	2024-2025	S3	Bus Network Redesign Study Engagement	CTP	State Technical Assistance	$450,000	
Short-term	2025	S2	Pilot Project for Commuter Bus Service from Neighboring Jurisdictions into Loudoun County for Employment Opportunities	Stakeholder engagement	County Operating Fund	$600,000	
Short-term	2025	C5	Fleet Modernization	CTP, Energy Strategy	FTA Low-No Program[2]	$13,700,000	
Short-term	2026	S1	Rebranding and Marketing Plan and Implementation	Public and stakeholder engagement	State Technical Assistance	$250,000 (plan) $600,000 (implementation)	
Short-term	2026	C2	Multimodal Information Displays Pilot	Transportation Technology Plan	State Demonstration Grant	$25,000-82,000	$4,000-12,000
Short-term	2026	S7	Transit and Tourism Study	Stakeholder engagement	State Technical Assistance	$75,000-100,000	
Short-term	2027	C1	Smart Parking Infrastructure Pilot	Transportation Technology Plan	State Demonstration Grant	$122,000-208,000	$18,000-31,000
Short-term	2027	S6	High-Capacity Transit Infrastructure and Service Corridors Study	Data analysis, stakeholder engagement	State Technical Assistance	$300,000-400,000	
Mid-term	2028-2031	SC2	Mid-term Service Changes	Data analysis, stakeholder engagement	State Operating, Commuter Choice, TRIP,	$8,790,000[1]	$1,175,000[1,3]

Timeframe	Fiscal Year	Project Number	Project Name	Project Source/ Document	Potential External Funding Source(s)	Capital/ One-Time Costs	Annual Operations Cost
					State Demonstration Grant		
Mid-term	2028	S5	Transit Hub and Park and Ride Investment Strategy Study	Data analysis	State Technical Assistance	$100,000-150,000	
Mid-term	2029	S4	Bicycle and Pedestrian Access to Transit Study (led by DTCI)	Data analysis	State Technical Assistance	$75,000-100,000	
Long-term	2032-2034	SC3	Long-term Service Changes	Data analysis	State Operating, Commuter Choice, TRIP, State Demonstration Grant	6,900,000[1]	$2,367,000[1,3]
Short-term	Annual	S8	Passenger Surveys (Customer Satisfaction and Title VI)	Public and stakeholder engagement	State Technical Assistance	$175,000	$75,000
Short-term	Annual	C3	Bus Shelter Program	CIP	CIP[2]	$12,110,000	
Short-term	Annual	C4	Bus Stop Installation on New Routes	CIP	CIP[2]	$5,000,000	
Short-term	Annual	C6	ADA Transition Plan for Bus Stops	County	Local funding		$336,000

[1]Service change costs were determined using the TBEST model
[2]Committed funding source
[3]Annual operations costs are based on FY 2022 operational contract rates

3.3 Service Development

LCT's service recommendations are based on needs identified from data analysis documented in **Chapter 2** and engagement with the public, stakeholders, and the Board of Supervisors over the 10-year TSP planning horizon. Incremental service changes, capital improvements, and studies recommended in the TSP align with the LCT's high-level approach to changes in the short-term and mid-term. In the short and mid-term, service development focuses on right-sizing transit services to meet demand and adjusting routing to fill existing service gaps.

Long-term TSP recommendations build off service concepts introduced in the mid-term by introducing options for extra service for productive routes and developing new services to serve future travel demand in Loudoun County as demographics and travel patterns grow.

Table 3-3 includes a summary of the impact of projects implemented in the short, mid, and long-term on ridership and revenue per hour. The phase of each service change will show an incremental change from the previous phase. For example, long-term service changes show a difference in ridership and revenue hours from the mid-term service changes. The short-term service changes show the difference in ridership and revenue hours projected from the most recent existing service data, FY 2023. This table intends to give LCT a high-level roadmap of service implementation with anticipated costs and benefits.

3.3.1 Service Levels

Table 3-3 includes potential changes to ridership and service levels should all of the potential service changes be implemented. Ridership and service levels were estimated using the TBEST model, as described in **Section 3.1**.

Table 3-3: Summary of Service Development

Timeframe	Project Number	Description	Annual Ridership Change	Annual Revenue Hours Change	Annual Revenue Miles Change
FY 2022	Analysis Year	Base Service	421,985 (Existing)	82,225 (Existing)	1,833,527
FY 2023	Existing Service	Latest existing service including Silver Line bus changes	512,260	108,350	2,100,262
Short-term (FY 2025 - 2027)	SC1	1. Additional Sunday service on Route 70 and 82 2. Adjustments to long haul commuter bus schedules 3. Simplify Leesburg local Routes 56, 56, 57	+ 6% to 10% Unlinked Trip Change	+ 2,500 Hours	+ 37,804 Miles
Mid-term (FY 2028 - 2031)	SC2	1. Increase service span and frequency on Route 70, 80, 82 2. Add weekend service to Silver Line Routes 332, 351, 371	+ 27% to 34% Unlinked Trip Change	+ 106,000 Hours	+233,050 Miles

Timeframe	Project Number	Description	Annual Ridership Change	Annual Revenue Hours Change	Annual Revenue Miles Change
		3. Add increased service to Route 70 with optional Route 7 express service 4. Extend local Routes 57, 62, and 80 and Silver Line Routes 374 and 375 5. Route 62 extension across Ashburn			
Long-term (FY 2032 - 2034)	SC3	1. Add new express service from Leesburg to Ashburn via Route 7 2. Add local bus service from Loudoun County to Brunswick MARC Station 3. Add local bus service from Dulles South to Chantilly 4. Explore expansion of commuter bus service including origins outside of Loudoun County 5. Add new high-frequency service between Dulles Town Center, Sterling and Ashburn Metrorail Station 6. Explore introducing new off-peak microtransit zones around Metrorail Stations and Leesburg 7. Reroute LCT routes to serve Dulles Transit Center 8. Add new local bus service from Dulles South and Stone Ridge to Ashburn 9. Add new commuter bus service from Dulles South to Tysons	+ 18% to 26% Unlinked Trip Change	+ 142,000 Hours	+331,956 Miles

3.3.2 Title VI Service Considerations

LCT's 2023–2026 Title VI Plan defines a major service change threshold as any alteration that:

- Adds or eliminates a bus route
- Adds or eliminates 20 percent of a route's weekly revenue miles or hours
- Eliminates 15 percent or more of daily ridership

Any major service change necessitates the completion of a Title VI equity analysis, which includes evaluating Disparate Impact and Disproportionate Burden impacts to ensure vulnerable population groups are not being inordinately affected.

The following TSP recommendations that reduce or consolidate service may warrant further Title VI evaluation at the time of implementation:

- SC1.2 Adjustments to Long Haul Commuter Bus Schedules

- SC1.3 Simplify Leesburg Local Routes 56, 56, and 57

The following TSP recommendations which add new service or add 20 percent of an existing route's weekly revenue miles or hours in the mid-term and long-term may warrant completion of a Title VI equity analysis at time of implementation:

- SC2.1: Increase service span and frequency on Route 70, 80, and 82
- SC2.2: Add weekend service to Silver Line Routes 332, 351, and 371
- SC2.3: Add increased service to Route 70 with optional Route 7 express service
- SC2.4: Extend Local Routes 57, 62, and 80, and Silver Line Routes 374 and 375
- SC3.1: Add new express service from Leesburg to Ashburn via Route 7
- SC3.2: Add peak local bus service from Loudoun County to Brunswick MARC Station
- SC3.3: Explore expansion of commuter bus service including origins outside of Loudoun County
- SC3.4: Add new high-frequency service between Dulles Town Center, Sterling, and Ashburn Metrorail Station
- SC3.7: Add new local bus service from Dulles South and Stone Ridge to Ashburn
- SC3.8: Add new commuter bus service from Dulles South to Tysons

These are additional individual route impacts that should be analyzed if chosen to be implemented. The LCT 2023 – 2026 Title VI Plan additionally identifies Minority Routes defined as where at least one-third of the revenue miles travelled are located within a Census Block Group where minority population exceeds the service-area average.

The TSP planned improvements and modifications recommend changes to these routes which could result in effects to minority or low-income riders. The following minority local bus routes and commuter bus runs that are affected by future planned improvements are show in **Table 3-4.**

Table 3-4: Minority Routes and Future Planned Improvements

Minority Route	Planned Improvement Affecting Minority Route
57	• SC1.3 – Simplify route alignments on Leesburg local bus • SC1.4 – Right-size service to demand through adjustment of scheduling for peak and off-peak periods
62	• SC2.5 – Improve local bus Service to Ashburn • SC2.4 – Extend coverage of local and Silver Line routes
70	• SC2.1 – Increase service on productive local bus routes • SC2.3 – Increase service on Route 7 with optional express routing
80	• SC3.6 – Add Frequent Service between Dulles Town Center, Sterling, and Ashburn

Minority Route	Planned Improvement Affecting Minority Route
82	• SC3.6 – Add Frequent Service between Dulles Town Center, Sterling, and Ashburn
84	• SC1.4 – Right-size service to current ridership demand by adjusting schedule for peak and off-peak periods
87X	• SC1.4 – Right-size service to demand through adjustment of scheduling for peak and off-peak periods
Minority Commuter Bus Runs	
281, 282, 284, 481, 482, 486, 681, 682, 684, 881, 882, 886	• SC1.2 – Reallocate commuter service to match demand • SC3.9 – Add direct commuter bus service to Tysons

At the time of publishing there are no outstanding service or other changes recommended by an FTA triennial report. Loudoun County is currently in the process of developing language around Title VI to share with the public.

3.3.3 Project Timeline

Figure 3-2 shows a schedule of TSP proposed projects and projects performed by LCT in FY 2023.

Figure 3-2: Project Timeline

Source: Loudoun County

3.3.4 Goal Alignment

Table 3-5 is a "projects to goals" matrix. Each project was developed and assessed against the following goals, as identified in **Chapter 1**:

1. Enhanced multimodal safety for all system users.
2. A reliable and efficient multimodal transportation network that manages the travel demands of the County while maintaining fiscal and environmental sustainability.
3. Transportation choices that connect people to their communities, employment centers, educational institutions, activity centers, and other amenities.
4. Integration with neighboring jurisdictions to improve regional and statewide connectivity and to attract residents and businesses to Loudoun County
5. Support the growth and potential of enhanced national and international connectivity, including consideration of the Dulles International Airport and the Silver Line Metrorail stations.
6. Context-sensitive planning and design that addresses the different characteristics and needs of the urban, suburban, transition, towns, and rural policy areas; towns; and Joint Land Management Areas (JLMA).
7. A transportation network supportive of the County's overall vision to support economic development; create vibrant, safe communities and public spaces; and protect natural and heritage resources.

Goals and objectives are also stated in **Section 1.2.1**. All proposed projects align with at least two goals.

Table 3-5: Project and Goals Alignment

Project	Goals						
	1	2	3	4	5	6	7
SC1: Short-Term Service Changes		x	x		x	x	x
SC2: Mid-Term Service Changes		x	x	x	x	x	x
SC3: Long-Term Service Changes		x	x	x	x	x	x
C1: Smart Parking Infrastructure Pilot		x	x				
C2: Multimodal Information Displays Pilot		x	x				
C3: Bus Shelter Program	x					x	x
C4: Bus Stop Installation on New Routes	x				x		
C5: Fleet Modernization	x	x	x				
C6: ADA Transition Plan for Bus Stops	x		x			x	x
S1: Rebranding and Marketing Plan and Implementation				x	x		x
S2: Pilot Project for Commuter Bus Service from Neighboring Jurisdictions into Loudoun County for Employment Opportunities		x	x	x	x	x	x
S3: Bus Network Redesign Study Engagement		x	x		x	x	x
S4: Bicycle and Pedestrian Access to Transit Study	x	x	x		x	x	x
S5: Transit Hub and Park and Ride Investment Strategy Study		x	x		x	x	x
S6: High-Capacity Transit Infrastructure and Service Corridors Study		x	x		x	x	x

Project	Goals						
	1	2	3	4	5	6	7
S7: Transit and Tourism Study		x	x	x	x	x	x
S8: Passenger Surveys (Customer Satisfaction and Title VI)	x	x	x		x		x

SC = service change project
C = capital improvement project
S = studies project

Source: Loudoun County, 2024

3.3.5 Policy, Funding, and Infrastructure Needs for Implementation

This section describes some non-service related decisions and other considerations for successfully implementing service changes. Many of these items are included in TSP projects in the preceding sections.

Policy

Loudoun County is currently undertaking the Pilot Project for Feasibility of Commuter Bus Service from Neighboring Jurisdictions into Loudoun County for Employment Opportunities (Project S2). It is still considering an overall policy for the future of commuter bus service in the County, given the funding provided for the Silver Line Metrorail Extension. The outcomes of these ongoing studies and policy changes could impact commuter bus recommendations presented in this plan.

Another topic of ongoing consideration is transit fare policy. In January 2024, a Board item related to fare-free transit is anticipated. Depending on this determination, system revenues may shift, and funding levels may change. This will be discussed more in **Chapter 5**.

Based on the methodology and findings of the Bus Shelter Standards and Prioritization Plan, the County is developing a policy on assessing bus stop and bus shelter requests received from customers or the Board of Supervisors. This includes evaluating the location based on existing ridership, service, and demographics.

Funding

Many of the recommendations presented in this chapter may require increased funding from the existing amounts. Potential funding sources are noted in **Table 3-1**, but additional effort will be required from staff to apply for the grant applications. Lack of funding may result in a delay conducting studies or implementing recommendations.

Some of the applicable funding sources, in addition to the traditional formula based DRPT operating assistance, include:

- DRPT Demonstration Grant
- DRPT Technical Assistance
- DRPT Transit Ridership Incentive Program (TRIP)
- NVTC I-66 Commuter Choice Program
- Federal grants such as the Low-No Program

These programs will be described in more detail in Chapter 5.

Infrastructure

When a service is restructured or added, it is essential to consider associated infrastructure improvements. These can consist of bus stops, bus accommodations at transit hubs, potential new vehicle types, roadway infrastructure such as dedicated lanes or transit signal priority, and pedestrian and bicycle infrastructure.

A more detailed study of these needs is included in capital projects (projects C3, C4, and C5) and studies (S4, S5, and S6).

Chapter 4 Implementation Plan

Chapter 4 details how the existing operations and services are carried out and how the proposed projects in Chapter 3 plan to be implemented. This also includes the Transit Asset Management (TAM) plan, which is the guide for scheduling the replacement or increase of stock and facilities to maintain a State of Good Repair (SGR).

4.1 Asset Management

Virginia Department of Rail and Public Transportation's (DRPT) TAM plan establishes asset inventory, assessment, replacement, and investment policies to ensure all transit agencies in Virginia remain in a state of good repair. DRPT classifies Loudoun County Transit (LCT) as a Tier II agency. This designation includes rural and small urban transit agencies operating fewer than 100 vehicles across all fixed route services. While Tier I agencies must create their own TAM plans, LCT opted to participate in a statewide group TAM plan for Tier II agencies in December 2021.

LCT has developed specific policies for their service, fleet, and facilities. As needed, LCT defers to the overarching asset management procedures and practices defined by DRPT's biannual Virginia Group Tier II Transit Asset Management Plan. At a minimum, each of the following policies reflects and satisfies the standards established in this group TAM plan for FY 2022 – FY 2025.

4.1.2 Vehicle Fleet Replacement, Rehabilitation, Retrofitting, Expansion, and Reduction Policies

Table 4-1 illustrates the performance targets set by DRPT for each asset class represented within LCT's 119-vehicle fleet. As defined by the FTA, the useful life benchmark (ULB) reflects the expected lifecycle for each vehicle type in its operating environment and is based on mid-life overhauls being done. The rightmost column reflects the maximum number of vehicles per asset class, which can exceed the ULB while still meeting performance targets, based upon the number of vehicles per asset class in LCT's fleet in FY 2022.

Table 4-1: DRPT Revenue Vehicle Performance Targets

Asset Class	ULB (Years)	Target %	# in LCT Fleet	LCT Target
Bus	14	15%	16	2
Cutaway	10	10%	37	3
Over-the-Road-Bus	14	15%	66	9

Source: DRPT TAM Plan

In addition to the performance targets established in the TAM plan, **Table 4-2** illustrates LCT's practice of performing vehicle maintenance after a vehicle has reached a specified mileage. Each instance of periodic maintenance includes the maintenance functions of each subsidiary servicing; for example, every 30,000

miles, the maintenance functions performed every 5,000 miles and 10,000 miles also take place. In addition to this mileage-based maintenance, LCT performs an annual preventative maintenance safety inspection in accordance with Virginia motor vehicle safety regulations.

Table 4-2: LCT Fleet Maintenance Schedule

Vehicle Type	Mileage
Paratransit and Ford Cutaway	5,000 mi
	10,000 mi
	30,000 mi
45' MCI D4500, 40' Gillig, and 35' Gillig	5,000 mi
	10,000 mi
	30,000 mi
	75,000 mi

Source: Loudoun County Transit, 2024

Table 4-3 illustrates LCT's criteria for determining fleet replacement needs. While the criteria follows the TAM plan's ULB guidelines, they also introduce a mileage-based schedule for replacement by vehicle type.

Table 4-3: LCT Fleet Replacement Schedule

Vehicle Type	ULB (Years)	Mileage
Straight Trk, Bus, Shuttle Bus, 24 pass. TMO	7	200,000 mi
Straight Trk, Bus, Transit Bus, 40'	12	500,000 mi
Straight Trk, Bus, Motor Coach	12	500,000 mi
Shuttle Bus, 1 Ton, 15 Passenger	2	100,000 mi
Straight Trk, Bus, Transit, CNG, 35'	12	500,000 mi
Straight Trk, Bus, Shuttle Bus, 16 Pass. TMO	5	150,000 mi
Van, Passenger, Handicapped Access	2	100,000 mi
Straight Trk, Bus, Transit, Diesel, 35'	12	500,000 mi

Source: Loudoun County Transit, 2024

4.1.3 Facilities Maintenance and Operations Policies

The TAM plan establishes a performance target of fewer than 10 percent of administrative and maintenance facilities rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) Scale. **Table 4-4** describes this scale in greater detail.

Table 4-4: FTA Transit Economic Requirements Model (TERM) Scale

Term Rating	Condition	Description
Excellent	4.8 - 5.0	No visible defects; new or near new condition; may still be under warranty if applicable
Good	4.0 - 4.7	Good condition, but no longer new; may be slightly defective or deteriorated, but is overall functional
Adequate	3.0 - 3.9	Moderately deteriorated or defective, but has not exceeded useful life
Marginal	2.0 - 2.9	Defective or deteriorated; in need of replacement; exceeded useful life
Poor	1.0 - 1.9	Critically damaged or in need of immediate repair; well past useful life

Source: FTA

As LCT's administrative and maintenance facilities consist of just two buildings—one for bus maintenance and repair and one for administrative offices—neither building can fall below a 3.0 on this scale to satisfy the TAM performance target.

Two staff members from the fleet division of the County's Department of General Services, a Systems Maintenance Crew Chief, and a Special Projects Manager monitor the needs of these facilities. These employees create and place work orders into LCT's management system, and technical repairs are dispatched on an as-needed basis. Preventative maintenance is entered, tracked, and completed by this same process. As part of the preventative maintenance process, an inventory system tracks the life cycle of assets. Critical power is supplied to life safety, select computer equipment, and limited shop equipment via a building generator and uninterruptible power supply (UPS) placement.

4.1.4 Passenger Facilities, Infrastructure, and Amenities Policies

The TAM plan also employs the TERM scale to establish a performance target of fewer than 15 percent of passenger facilities and 10 percent of parking facilities rating below 3.0.

Loudoun County's Bus Shelter Standards and Prioritization Plan documents the procedure for maintaining passenger facilities—namely, bus stops and shelters—in a state of good repair. **Table 4-5** lists County standards for required and preferred features by bus stop or shelter type.

Table 4-5: Bus Stop and Shelter Infrastructure Model Tiers

Bus Stop or Shelter Type	Required Features	Preferred Features
Tier 1 – Bus Stop	• Bus stop signage • ADA-compliant loading pad	• Connected path • Wheelchair access • Bench
Tier 2 - Standard Bus Shelter	• Bus stop signage • ADA-compliant loading pad • Connected path • Wheelchair access • Street Lighting • Standard shelter specification	N/A

Bus Stop or Shelter Type	Required Features	Preferred Features
	• Bench • System and area maps • Trash receptacle	
Tier 3 – Enhanced Bus Shelter	• Bus stop signage • ADA-compliant loading pad • Connected path • Wheelchair access • LED solar-powered lighting • Standard shelter specification • Bench • Real-time information displays • Trash receptacle	• Emergency call boxes
Tier 4 – Larger Enhanced Bus Shelter	• Bus stop signage • ADA-compliant loading pad • Connected path • Wheelchair access • LED solar powered lighting • Customized shelter specification • Bench • Real-time information displays • Trash receptacle	• Emergency call boxes • Bicycle racks

Source: Loudoun County Bus Shelter Standards and Prioritization Plan – Phase 1

The Bus Shelter Standards and Prioritization Plan also prioritizes development of bus stops and shelters by nine criteria: proximity to transit generators (multifamily housing, mixed-use developments, offices, and medical facilities), number of bus routes served, number of bus commuters in the associated census tract, daily ridership by stop, population density, employment rate, household median income, number of low-income households in the associated census tract, and transit-dependent population (disabled population, senior population, and zero-vehicle households.)

Loudoun County's CIP also includes two programs for the ongoing maintenance and construction of bus stops and bus shelters. The Bus Shelter Program provides funding for the design and construction of up to twenty bus shelters along local fixed route bus routes each year. The Bus Stop Installation for New Routes Program provides funding for the construction of new bus stops for a maximum of two new routes each year. The Bus Shelter Standards and Prioritization Plan determines the allocation and prioritization of this funding for maintenance and construction.

LCT's 2023-2026 Title VI Plan includes additional service policies which guide the provision of transit amenities at bus stops, shelters, and park and ride lots. These guidelines provide a basis for the qualitative evaluation of each facility and promote

an equitable distribution of transit amenities throughout the system. These policies are as follows:

- All stops located in the public right-of-way should have clearly marked bus stop signs. Where stops are located on private property, signs should be placed when permitted.
- Transit stops should be located within 30 feet of an overhead streetlight or include lighting within the shelter.
- Benches for passengers waiting for the bus should be provided whenever possible, either freestanding or part of shelter design.
- Shelters at new Local Bus stops should be considered at stop locations central to activity centers, such as hospital, health clinic, education institutions, senior housing facilities, and government buildings, or at transfer points where ridership is anticipated to meet or exceed 20 boardings per day.
- Park and ride lots should include the following amenities and comply with ADA requirements:
    - Convenient and safe bus access
    - Pedestrian access
    - Bicycle racks or lockers
    - Clearly and properly placed signage
    - Schedules, services, and fare information
    - Properly sized bus shelters and benches
    - Well lit, paved, and striped parking areas

These policies draw from, and are consistent with, the Transit Infrastructure Design Toolkit within the 2019 Countywide Transportation Plan. This toolkit includes best practices for bus stop placement, spacing, signage, security, and amenities, which guide but do not dictate the infrastructure standards and policies outlined by this document.

4.1.5 Technology and Intelligent Transportation Systems (ITS) Policies

Loudoun County participates in the Northern Virginia Transit Regional Fare Collection Working Group that coordinates new farebox procurement and implementation. Loudoun County upgrades CAD/AVL, farebox, and other technology infrastructure as needed.

The Transit Infrastructure Plan included in the Loudoun Countywide Transportation Plan includes goals for information signage and Transit Signal Priority technologies. Loudoun County would benefit from developing written policies related to performance monitoring or prioritization programs for ITS.

4.2 Capital Implementation Plan

The following capital implementation plan reflects asset investments required by the TAM plan and projects introduced in Chapter 3 of this document. The proposed expenditures are organized into two investment types: rolling stock and capital needs.

4.2.1 Rolling Stock

This section organizes existing and anticipated rolling stock needs by the following groupings:

- Breakdown of vehicle needs and associated funding sources in relation to the improvement projects recommended in Chapter 3
- Breakdown of buses already slated to be purchased by year
- Breakdown of anticipated bus purchases by year in relation to proposed improvement projects

LCT's fleet consists of three major vehicle types: Body on Chassis (BOC), 40' transit buses, and 40' commuter coach buses.

Proposed Improvement and Expansion Vehicles

Table 4-6 summarizes the necessary vehicle purchases required to execute each of the proposed service improvements as outlined in Chapter 3 of this document by purchase year, fiscal year, and supportive funding strategy. Projects are proposed and assigned the most relevant funding source. If the listed funding source does not become available to Loudoun County, the County may use state formula funds or local funding.

The number of vehicles required for expansion of service was calculated by modeling proposed routes and schedules in Chapter 3 of the TSP and determining if the current fleet could operate additional service or if more resources were needed. Proposed improvements and implementation years were then developed to build up transit service logically over the short, mid, and long-term time periods. For example, express service is not introduced before service to local routes already serving the area is enhanced.

Purchase years for expansion vehicles also precede the year of implementation to allow for purchase and procurement.

Table 4-6: Proposed Improvements and Expansion Vehicle Purchases and Funding Strategy

Implementation Year (FY)	Purchase Year (FY)	Project #	Project Name	Peak Vehicles [1]	Service Type	Funding Strategy [2]
2028	2027	SC2.1	Increase service span and frequency on Routes 70, 80, and 82	4	Local	Local funding
2030	2029	SC2.3	Add increased service to Silver Line Routes 332, 351, and 371	2	Local	DRPT TRIP
2031	2030	SC2.4	Extend service area of cross-county local and Silver Line routes	4	Local	DRPT TRIP
2032	2031	SC3.2	Add bus service from Western Loudoun to Brunswick MARC Station	1	Local/Express	DRPT Demonstration Project Assistance
2032	2031	SC3.3	Add local bus service from Dulles South to Chantilly	2	Local	DRPT TRIP
2032	2031	SC3.5	Add high-frequency bus service between Dulles Town Center, Sterling, and Ashburn	2	Local	I-66 Commuter Choice, Local funding
2032	2031	SC3.1	Add express Leesburg-Ashburn	1	Express	Local funding
2033	2032	SC3.8	Add Local bus from Dulles South to Brambleton and Ashburn	2	Local	DRPT TRIP
2034	2033	SC3.4	Extend service to Western Loudoun	1	Express	DRPT Demonstration Project Assistance
2034	2033	SC3.9	Add direct commuter service to Tysons	3	Express	I-66 Commuter Choice, Local funding

[1]Peak Vehicle Requirements do not include spares, which are added at a 20% spare ratio to Table 4-8

[2]Descriptions of these funding sources can be found in Chapter 5, Section 5.1.1. Funding sources are in addition to standard DRPT operating formula funding.

Source: Loudoun County Transit Strategic Plan Chapter 3 Planned Improvements

Replacement Vehicles (Based on Current Vehicle Schedule)

Table 4-7 shows the replacement schedule for each of LCT's three vehicle types as well as the total cost associated with their replacements. Following the FTA Low-No Grant award, all replacement and expansion vehicle purchases will are assumed powered by compressed natural gas (CNG) and be 29' buses. The assumed FY 2025 cost of a BOC CNG bus is $235,467. The assumed cost of a Gillig CNG transit bus is $628,033. The assumed cost of a Gillig CNG commuter bus is $642,000. Performance evaluation showed that the need for commuter bus service has changed following the COVID-19 pandemic. Project S2: Pilot Project for Implementation of Commuter Bus Service from Neighboring Jurisdictions into Loudoun County for Employment Opportunities and future Board direction will help determine the adjusted need for commuter service. The results of this study and other discussion around commuter bus service may have an impact of the replacement vehicle schedule. The County also currently has a surplus of commuter buses and is actively seeking to reduce this amount to be closer to FTA required spare ratio. The replacement schedule noted below was developed as part of the FY 2025 Fleet Replacement Plan. The replacement plan recommended a "smoothed" approach which balances spending over time. This plan is shown in **Table 4-8.** All costs are given in expenditure year dollar amounts.

Table 4-7. Vehicle Replacement Purchase Schedule (FY 2025 – FY 2029)

Fleet Type	Replacement Year (FY)				
	2025	2026	2027	2028	2029
BOC	7	20	5	0	0
Transit Bus	3	3	4	4	0
Commuter Bus	3	0	0	5	7
Total Vehicles	**13**	**23**	**9**	**9**	**7**
Total Cost ($1000s)	**$5,107**	**$6,042**	**$3,463**	**$6,424**	**$5,828**

Source: Loudoun County FY 2025 Fleet Replacement Plan

Table 4-8. Vehicle Replacement Purchase Schedule (FY 2030 – FY 2034)

Fleet Type	Replacement Year (FY)				
	2030	2031	2032	2033	2034
BOC	6	0	1	20	5
Transit Bus	0	0	2	0	0
Commuter Bus	7	8	6	1	7
Total Vehicles	**13**	**8**	**9**	**21**	**12**
Total Cost ($1000s)	**$7,214**	**$7,044**	**$7,002**	**$6,280**	**$8,021**

Source: Loudoun County FY 2025 Fleet Replacement Plan

Expansion Vehicles (Based on Planned Improvement Requirements)

Table 4-9 shows the procurement schedule of new vehicles to fulfil the operational needs for each service type as well as the cost associated with each procurement by fiscal year. Loudoun County maintains a spare ratio of 20 percent for their entire fleet. The spare vehicle numbers identified below are assuming the amount needed given the total fleet size at the time.

Table 4-9: Vehicle Expansion Purchase Schedule

Fleet Type	Purchase Year (FY)									
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
BOC	0	0	0	0	0	2	3	0	1	0
Spare BOC	0	0	0	0	0	1	1	0	0	0
Transit Bus	0	0	4	0	2	2	4	2	0	0
Spare Transit	0	0	1	0	0	0	1	0	0	0
Commuter Bus	0	0	0	0	0	0	1	0	3	0
Spare Commuter	0	0	0	0	0	0	0	0	1	0
Total Vehicles	0	0	5	0	2	5	10	2	5	0
Total Cost ($1000s)	**-**	**-**	**$3,431**	**-**	**$1,456**	**$2,343**	**$4,248**	**$1,591**	**$3,658**	**-**

Source: Loudoun County Transit Strategic Plan Chapter 3 Planned Improvements

4.2.2 Capital Needs

Passenger Facilities and Amenities

Loudoun County has begun two programs in FY 2024 to install bus shelters and bus stops on new routes. The bus shelter program (Project C3) will construct 20 bus shelters on a three-year production schedule, so bus shelters will need to be purchased each year leading up to the end of the program in FY 2032. Bus Stop Installation on New Routes (Project C4) will install new bus stops as needed. This will include the purchase of necessary bus stop signage. **Table 4-10** shows the costs and purchase years for the two facilities and amenities projects.

Table 4-10: Facilities and Amenities Purchase Schedule ($1000s)

Purchase	Purchase Year (FY)									
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
C3: Bus Shelter Program[1]	$615	$634	$653	$672	$693	$0	$0	$0	$0	$0
C4: Bus Stop Installation on New Routes[2]	$0	$54	$0	$57	$0	$61	$0	$64	$0	$0
Total Cost	**$615**	**$688**	**$653**	**$729**	**$693**	**$61**	**$0**	**$64**	**$0**	**$0**

[1]Bus shelter costs are the average of the estimated cost of a standard, enhanced, and larger enhanced bus shelter, which is approximately $29,000 each from the 2023 Loudoun County Bus Shelter Study

[2]It is assumed that about ten new bus stops will be installed each year at a cost of $4,925 each according to the 2023 Loudoun County Bus Shelter Study

Technology and Intelligent Transportation Systems (ITS)

The costs in **Table 4-11** are for purchasing the ITS devices needed to implement the projects. The Smart Parking Infrastructure Pilot (Project C1) at the Leesburg Park and Ride lot requires the purchase of in/out detection and sensors at multiple access points (6), space-by-space detection at a select number of spaces (30), and parking guide signs with LED insert panels to display parking availability (3). Farebox equipment has a useful life of six years. The equipment was recently replace in FY 2024. The Multimodal Information Displays Pilot (Project C2) requires the purchase of three information displays.

Table 4-11: Technology and ITS Purchase Schedule

Purchase	Purchase Year (FY)									
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
C1: Smart Parking Infrastructure Pilot	$0	$198	$0	$0	$0	$0	$0	$0	$0	$0
C2: Multimodal Information Displays Pilot	$76	$0	$0	$0	$0	$0	$0	$0	$0	$0
Farebox Replacements	$0	$0	$0	$0	$0	$5,493	$0	$0	$0	$0
Total Cost ($1000s)	**$76**	**$198**	**$0**	**$0**	**$0**	**$5,493**	**$0**	**$0**	**$0**	**$0**

Chapter 5 Financial Plan

The financial plan reviews the costs for operations and maintenance as well capital. This include both existing and the costs of proposed projects in Chapter 3. The financial plan identifies these costs over the next 10 years and associated potential funding sources.

Chapter 5 projects the annual operating, maintenance, and capital costs expected from fiscal year (FY) 2025 – FY 2034. The financial plan determines which anticipated funding sources will cover or offset anticipated expenses. Values presented below are from DRPT and Loudoun County staff. Budget amounts for FY 2020 – FY 2024 are based on County provided documents, using actual amounts for FY 2020 – FY 2023 and the adopted FY 2024 budget. These are shown in **Table 5-1**.

Future cost projections draw from forecasts provided by Loudoun County staff, the FY 2024 DRPT Six-Year Improvement Program (SYIP), and the standard escalation rate of three percent. These projections are based upon current operating assumptions and are subject to change over time. The organization of the chapter is as follows:

- **Section 5.1** describes all possible funding sources for Loudoun County and the amount of funding received from each source between FY 2020 – FY 2024.
- **Section 5.2** presents all expected operating and maintenance costs between FY 2025 – FY 2034.
- **Section 5.3** presents all expected capital costs between FY 2025 – FY 2034.

5.1 Funding Sources, Costs, and Revenues

5.1.2 Available Funding Sources

The following sections describe overarching categories for funding sources available to Loudoun County. These sources include federal, state, regional, and local funding as well as internal revenue-generating sources such as fareboxes and advertising.

5.1.2.1 Federal Funding

Loudoun County receives federal funding through its recent award of the Federal Transit Administration's (FTA) Low- or No-Emission Grant in 2023. This award will go towards purchasing compressed natural gas (CNG) buses and be used to replace buses at the end of their service life through FY 2029. This grant also funds a CNG fueling facility, maintenance facility retrofits for the CNG buses, and training for operators and maintenance personnel.

Loudoun County does not currently receive Federal formula funding. Should Loudoun County decide to become federalized, additional funding opportunities could be available. However, accepting Federal funding can be staff time-intensive effort related to applications and reporting. At this time, it is not recommended that Loudoun pursue Federal formula funding.

5.1.2.2 State Funding

Loudoun County can expect to receive state funding through an Operating Assistance grant, one of several MERIT State Aid Grant Programs administered by DRPT. The amount of state funding available is contingent on the performance of LCT's performance compared to other transit systems within DRPT's purview. The funding formula considers agency size and three-year performance trends. Agency sizing metrics include operating cost (50 percent), ridership (30 percent), revenue vehicle hours (10 percent), and revenue vehicle miles (10 percent). Performance metrics include passengers per revenue vehicle hour, passengers per revenue vehicle mile, operating cost per revenue vehicle hour, operating cost per revenue vehicle mile, and operating cost per passenger.

Additional state funding sources include:

- DRPT Transit Ridership Incentive Program (TRIP) Regional Connectivity grant – in FY 2024, Loudoun County used this program to fund its electronic farebox replacement program and four Silver Line bus routes.
- DRPT Capital Assistance grant – This funding opportunity provides for the replacement or rehabilitation of existing assets through State of Good Repair (SGR) or to add capacity through the purchase of additional assets through Minor Enhancement (68 percent state match).
- DRPT Demonstration Project Assistance grant– This funding opportunity provides for new service to an area not currently served by transit or to an area that will provide additional transit connections. It is also a funding opportunity for technology and innovation.
- DRPT Technical Assistance grant – This funding opportunity supports studies that help to improve public transportation services (50 percent state match).

5.1.2.3 Farebox Revenue

Local fixed routes, commuter routes, and paratransit services generate farebox revenue. As of January 2024, the cost of a one-way commuter bus fare is $10 with a SmarTrip card and $11 with cash. The fare for fixed route bus service is $1 for both SmarTrip and cash payments. The fare for paratransit service is $2 for both SmarTrip and cash payments.

At the time of writing this strategic plan, Loudoun County is considering a program to eliminate fares for the local fixed route bus services and complementary paratransit services. The Loudoun County Finance/Government Operations and Economic Development Committee and Board of Supervisors are anticipated to consider the fare free program in late FY 2024.

5.1.2.4 Advertising Revenue

Advertising revenue come from placements of marketing materials on local and commuter buses.

5.1.2.5 Local Funding

Local funding comprises funds from local taxes. Other funding revenue obtained from the Town of Leesburg's local fixed-route bus service contribution and other one-time services are provided upon request.

5.1.2.6 Other Funding

The Commuter Choice program through the Northern Virginia Transportation Commission (NTVC) is a competitive grant that reinvests Express Lanes toll revenues into public transit and other transportation improvements along I-66 and I-395/95 corridors in Northern Virginia. Loudoun County is eligible to receive funds due to its inclusion of the I-66 corridor. As of June 2023, the Commuter Choice program funded the following routes[19]:

- Route 391 from Harmony Park and Ride lot to Ashburn Metrorail station
- Morning peak bus service from Stone Ridge to Pentagon and evening peak service from Pentagon to Stone Ridge
- Morning peak bus service from Purcellville to Washington, D.C. and evening peak service from Washington, D.C. to Purcellville

For FY 2025, Loudoun County applied for funding for the following routes:

- Existing bus service from Harmony Park and Ride lot to Washington, D.C. in the a.m. and vice versa in the p.m. (Route 483 and 883)
- Existing bus service from Stone Ridge II Park and Ride lot to Washington, D.C. in the a.m. and vice versa in the p.m. (Routes 281 and 681)

Commuter Choice funding decisions will be made in January 2024.

For future years, Loudoun County may apply for Commuter Choice funding for the following recommendations:

- SC3.5 – Add new high-frequency service between Dulles Town Center, Sterling, and Ashburn Metrorail station
- SC3.9 – Add new commuter bus service from Dulles South to Tysons

5.1.3 Previous Funding Sources and Revenues

Table 5-1 shows the operational revenue generated from each funding source per year from FY 2020 to FY 2024. These numbers are used to project future revenues from these funding sources. FY 2020 to FY 2024 data was obtained from the County, using actual amounts for FY 2020- FY 2023. FY 2024 information was based on the adopted budget. FY 2024 was used as the baseline for future year projections. This does not include capital funding.

19 https://novatransit.org/uploads/Projects/CommuterChoice/CCReport2023_ProjectStatus.pdf

Table 5-1: FY 2020 – FY 2024 Operational Revenue Funding Sources ($1,000s)

Funding Source	FY 2020 (Actual)	FY 2021 (Actual)	FY 2022 (Actual)	FY 2023 (Actual)	FY 2024 (Adopted)
State Funding	$5,377	$5,483	$7,506	$1,787	$6,740
Farebox Revenue	$7,760	$149	$1,403	$1,897	$2,532
Advertising Revenue	$30	$18	$30	$23	$50
Local Funding	$6,607	$12,167	$5,699	$9,315	$16,973
Other Funding[1]	$479	$315	$300	$335	$425
Total	**$20,253**	**$18,132**	**$14,938**	**$13,357**	**$26,720**

[1]Consists of funding received from the I-66 Commuter Choice Program

Source: Loudoun County Financial Records (FY 2020 – FY 2024)

For a retrospective look into Loudoun County's annual costs, revenue, expenses, and funding sources, see Appendix D.

5.2 Operations and Maintenance

Table 5-3 shows the expected costs associated with the operations and maintenance of existing and proposed transit services from FY 2025 – FY 2034. All costs are the expected costs for the year of expenditure, which was done by considering a three percent annual rate of inflation. Existing operating costs are based on the proposed FY 2025 Loudoun County budget. The cost per revenue hour for each service type is shown in **Table 5-2**. Additional operating costs for service adjustments and additions are based on expected revenue miles and revenue hours.

Table 5-2: Existing Operating Costs Breakdown

Service Type	Cost per Revenue Hour
Commuter bus service	$282
Fixed route bus service	$129
Paratransit service	$106

Source: Loudoun County, 2024

These costs and revenue hours assume that existing operations will continue, that all the proposed service changes in Chapter 3 will be implemented. **Table 5-3** and **Table 5-4** shows the funding sources and their estimated revenues to fund these operations and maintenance costs.

Table 5-3: Operations and Maintenance Revenue Hours and Operating Costs Summary ($1000s)

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Existing Revenue Hours[1]	175,000	108,350	108,350	108,350	108,350	108,350	108,350	108,350	108,350	108,350
Existing Operating Costs[2]	$24,942	$25,690	$26,461	$27,255	$28,072	$28,915	$29,782	$30,675	$31,596	$32,544
Additional Revenue Hours	2,500	2,500	2,500	108,500	108,500	108,500	108,500	250,500	250,500	250,500
Additional Operating Costs	$0[3]	($203)[4]	($210)[4]	$495	$510	$525	$541	$2,848	$2,933	$3,021
Total Revenue Hours	110,850	110,850	110,850	219,350	219,350	219,350	219,350	469,850	469,850	469,850
Total Operating Cost	**$24,942**	**$25,487**	**$26,251**	**$27,750**	**$28,582**	**$29,440**	**$30,323**	**$33,523**	**$34,529**	**$35,565**

[1]Equivalent to FY 2023 revenue hours.
[2]Based on the FY 2025 proposed budget incorporating commuter bus, local fixed-route bus, and paratransit service.
[3]Short-term service changes will not be implemented in FY 2025.
[4]The simplification of routes in the short-term service change recommendations resulted in existing operating cost savings.

Source: Loudoun County, 2024

Table 5-4: Operations and Maintenance Revenue ($1000s)

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
State Funding[1]	$4,690	$4,831	$4,976	$3,846	$3,962	$4,080	$4,203	$5,695	$5,866	$6,042
Farebox Revenue	$2,686	$2,767	$2,850	$2,935	$3,023	$3,114	$3,207	$3,304	$3,403	$3,505
Advertising Funds	$52	$53	$55	$56	$58	$60	$62	$63	$65	$67
Local Funding	$17,097	$17,419	$17,929	$20,470	$21,084	$21,730	$22,382	$23,373	$24,074	$24,810
Other Funding	$417[2,3]	$417[2,3]	$442	$442	$456	$456	$469	$1,089	$1,122	$1,141
Total Revenue	**$24,942**	**$25,487**	**$26,251**	**$27,750**	**$28,582**	**$29,440**	**$30,323**	**$33,523**	**$34,529**	**$35,565**

[1]Includes both Operating Assistance funding and applicable state funding grants. All State Operating Assistance funding is assumed to fund operations and maintenance costs.
[2]Consists of Commuter Choice funding assumed that that funding will continue in future years
[3]Remaining funds for the two routes stated in **Section 5.1.2.6 i**s covered by local funds.

Source: Loudoun County, 2024

5.3 Capital and One-Time Investments

Capital costs consist of fleet, technology and ITS, and facilities and amenities expenses. This section also includes one-time costs for studies.

5.3.2 Fleet

Table 5-5 encompasses bus replacement and expansion over the next decade. This incorporates previously scheduled bus replacements and expansion vehicles in accordance with Chapter 3 recommendations. **Table 5-6** delineates the funding sources for revenues and the overall costs to the County.

Table 5-5: Fleet Costs ($1000s)

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Fleet Replacement	$5,107	$6,042	$3,463	$6,424	$5,828	$7,214	$7,044	$7,002	$6,280	$8,021
SC1: Short-term service changes[1]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SC2: Mid-term service changes	$0	$0	$2,745	$0	$1,456	$2,062	$0	$0	$0	$0
SC3: Long-term service changes	$0	$0	$0	$0	$0	$0	$3,186	$1,591	$2,820	$0
Spare Vehicles	$0	$0	$686	$0	$0	$281	$1,062	$0	$838	$0
Total Cost	**$5,107**	**$6,042**	**$6,894**	**$6,424**	**$7,284**	**$9,557**	**$11,292**	**$8,593**	**$9,938**	**$8,021**

[1]All short-term service changes will use existing or planned replacements fleet.

Source: Loudoun County, 2024

Table 5-6: Fleet Revenue ($1000s)

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Federal Funding[1]	$7,115	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Funding[2]	$1,088	$0	$0	$0	$1,456	$2,062	$869	$1,591	$307	$0
Local Funding[3]	$167	$6,042	$6,894	$6,424	$5,828	$7,495	$9,651	$7,002	$8,375	$8,021
Other Funding[4]	$0	$0	$0	$0	$0	$0	$772	$0	$1,257	$0
Total Revenue	**$8,371**	**$6,042**	**$6,894**	**$6,424**	**$7,284**	**$9,557**	**$11,292**	**$8,593**	**$9,938**	**$8,021**

[1]Federal funding received through the FTA Low-No Grant. FY 2025 assumes a surplus due to the distribution of federal dollars from the FTA Low-No Grant and the year in which the buses need to be replaced.
[2]State funding includes state match for the Low-No Grant and funding from state grants
[3]Local funding includes local match for the Low-No Grant, local match for Commuter Choice, and additional needed local funding
[4]Other funding consists of funding received through the I-66 Commuter Choice program.

Source: Loudoun County, 2024

5.3.3 Technology and ITS

Table 5-7 illustrates the one-time and maintenance expenses associated with the technology and ITS project recommendations proposed in **Chapter 3**. Meanwhile, **Table 5-8** outlines the funding sources and their projected revenues designated for covering the costs associated with these recommendations.

Table 5-7: Technology and ITS Costs ($1000s)

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
C1: Smart Parking Infrastructure Pilot	$0	$0	$227	$35	$36	$37	$38	$39	$41	$42
C2: Multimodal Information Displays Pilot	$0	$87	$13	$14	$14	$14	$15	$15	$16	$16
Farebox Equipment Replacement	$0	$0	$0	$0	$0	$5,493	$0	$0	$0	$0
Farebox Equipment Maintenance	$279	$288	$296	$305	$314	$324	$283	$291	$300	$309
Total Technology and ITS Cost	**$279**	**$375**	**$537**	**$354**	**$364**	**$5,868**	**$386**	**$398**	**$410**	**$422**

Source: Loudoun County, 2024

Table 5-8: Technology and ITS Revenue ($1000s)

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
State Funding[1]	$0	$87	$227	$0	$0	$0	$0	$0	$0	$0
Local funding	$279	$288	$310	$354	$364	$5,868	$386	$398	$410	$422
Total Technology and ITS Revenue	**$279**	**$375**	**$537**	**$354**	**$364**	**$5,868**	**$386**	**$398**	**$410**	**$422**

[1]State funding consists of funding from the DRPT Demonstration Project Assistance Grant

Source: Loudoun County, 2024

5.3.4 Facilities and Amenities

Table 5-9 shows the costs of the facilities and amenities project recommendations proposed in **Chapter 3**. **Table 5-10** shows the funding sources and their estimated revenues to fund the costs of the programs.

Table 5-9: Facilities and Amenities Costs ($1000s)

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
C3: Bus Shelter Program	$844	$1,942	$2,049	$2,049	$2,049	$1,492	$1,177	$0	$0	$0
C4: Bus Stop Installation on New Routes[1]	$0	$823	$0	$873	$0	$962	$0	$983	$0[3]	$0[3]
C5: Fueling Facility	$5,370	$0	$0	$0	$0	$0	$0	$0	$0	$0
C5: Maintenance Facility Retrofits	$2,014	$0	$0	$0	$0	$0	$0	$0	$0	$0
C5: Training	$150	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Facilities and Amenities Cost	**$8,378**	**$2,765**	**$2,049**	**$2,922**	**$2,049**	**$2,418**	**$1,177**	**$983**	**$0**	**$0**

[1]This assumes an average of 10 bus stops every other year will be installed, at $75,305 each for all proposed new routes. Estimates are based on the 2023 Loudoun County Bus Shelter Study.
[2]This is the remaining funds from the FTA Low-No Grant that will be used for facility maintenance.
[3]Program funds do not extend past FY 2032.

Source: Loudoun County, 2024

Table 5-10: Facilities and Amenities Revenue ($1000s)

	FY 2025	FY 2026[6]	FY 2027	FY 2028[6]	FY 2029	FY 2030[6]	FY 2031	FY 2032[6]	FY 2033	FY 2034
Federal Funding[1]	$6,781	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Funding[2]	$603	$0	$0	$0	$0	$0	$0	$0	$0	$0
Local Funding[3]	$151	$0	$0	$0	$0	$0	$0	$0	$0	$0
CIP[4]	$844	$2,942	$2,049	$3,049	$2,049	$2,492	$1,177[5]	$1,000[5]	$0	$0
Total Facilities and Amenities Revenue	**$8,378**	**$2,942**	**$2,049**	**$3,049**	**$2,049**	**$2,492**	**$1,177**	**$1,000**	**$0**	**$0**

[1]Federal funding consists of the FTA Low-No Grant.
[2]State funding consists of state match for the Low-No Grant through DRPT Capital Assistance.
[3]Local funding consists of the FTA Low-No Grant local match and funding used to supplement the cost of the bus stops needed for all proposed new routes.
[4]CIP is the Capital Improvement Plan. These funding amounts are based on the FY 2025 Proposed Budget.
[5]These revenues are based on the Future FYs amount in the FY 2025 Proposed Budget.
[6]Surplus in revenue based on the variance between the CIP documented revenue and the estimated costs of new bus stops for Project C4.

Source: Loudoun County, 2024

5.3.5 Studies

Table 5-11 presents the costs associated with the studies recommended in **Chapter 3**, while **Table 5-12** details the funding sources and their anticipated revenues allocated to cover the studies' costs. These costs and revenues are expressed in expenditure year dollars.

Table 5-11: Studies Costs ($1000s)

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
S1: Rebranding and Marketing Plan	$0	$265	$656	$0	$0	$0	$0	$0	$0	$0
S2: Pilot Project for Commuter Bus Service from Neighboring Jurisdictions into Loudoun County for Employment Opportunities	$618	$0	$0	$0	$0	$0	$0	$0	$0	$0
S3: Bus Network Redesign Study Engagement	$464	$0	$0	$0	$0	$0	$0	$0	$0	$0
S4: Bicycle and Pedestrian Access to Transit Study	$0	$0	$0	$0	$116	$0	$0	$0	$0	$0
S5: Transit Hub and Park and Ride Investment Strategy Study	$0	$0	$0	$169	$0	$0	$0	$0	$0	$0
S6: High-Capacity Transit Infrastructure and Service Corridor Study	$0	$0	$437	$0	$0	$0	$0	$0	$0	$0
S7: Transit and Tourism Study	$0	$106	$0	$0	$0	$0	$0	$0	$0	$0
S8: Passenger Surveys (Customer Satisfaction and Title VI)[1]	$77	$80	$273	$84	$87	$90	$92	$317	$98	$101
Total Studies Cost	**$1,159**	**$451**	**$1,366**	**$253**	**$203**	**$90**	**$92**	**$317**	**$98**	**$101**

[1]Assumes a yearly cost of the customer satisfaction study of $75,000 and a cost every five years for Title VI survey of $175,000.

Source: Loudoun County, 2024

Table 5-12. Studies Revenue ($1000s)

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
State Funding[1]	$270	$279	$683	$127	$101	$45	$46	$158	$49	$50
Local Funding	$888	$279	$683	$127	$101	$45	$46	$158	$49	$50
Total Revenue	**$1,159**	**$451**	**$1,366**	**$253**	**$203**	**$90**	**$92**	**$317**	**$98**	**$101**

[1]State funding consists of DRPT Technical Assistance grant funding. Assume that the state will provide a 50 percent of funds and the County will provide a 50 percent match.

Source: Loudoun County, 2024

5.3.6 Capital and One-Time Investment Summary

Table 5-13 summarizes the funding source revenues necessary for Loudoun County to fund capital and one-time expenditures for existing and additional services and projects that are described in this plan. This sums the revenue sources for fleet, technology and ITS, facilities and amenities, and studies. While this document groups recommended service changes into short-term, mid-term, and long-term timelines for implementation, the costs associated with these recommendations have been spread out across the fiscal years which fall within each range. The categories are summarized into all federal funding opportunities, state operating assistance formula funding, all other state funding opportunities, expected I-66 Commuter Choice funding, farebox revenue, expected advertising revenue, and remaining required local funding.

Table 5-13: Summary of Capital Funding Source Revenues ($1000s)

	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Federal Funding	$13,896	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Funding	$1,961	$312	$910	$127	$1,558	$2,107	$915	$1,750	$356	$50
Local Funding	$1,486	$6,556	$7,887	$6,905	$6,293	$13,408	$10,084	$7,558	$8,833	$8,494
CIP Funding	$844	$2,942	$2,049	$3,049	$2,049	$2,492	$1,177	$1,000	$0	$0
Other Funding	$0	$0	$0	$0	$0	$0	$772	$0	$1,257	$0
Total Revenue	**$18,187**	**$9,810**	**$10,846**	**$10,080**	**$9,900**	**$18,007**	**$12,948**	**$10,307**	**$10,446**	**$8,544**

Source: Loudoun County, 2024

5.4 Additional Information

5.4.2 Obtaining Revenue

This financial plan seeks to identify a diversity of funding sources to account for potential disruptions to any individual funding source. Discretionary grants serve as the primary funding source to address most of the anticipated costs, and pursuing multiple grants at both the federal and state level improves the likelihood of receiving the necessary award. If these grants are not awarded to Loudoun County, these projects can instead be funded through formula funding. If formula grants do not materialize or suffice to cover all expenses, Loudoun County will have to allocate local funds instead. If that funding is not available, the recommendation may be either altered or shifted to a future year.

5.4.3 Planned Fare Changes

The Board of Supervisors will consider a fare free policy for fixed route bus service and paratransit service late in 2024.

5.4.4 Significant Expansion or Reduction of Service

During the course of the TSP, the major points for service expansion are implementation of the bus network redesign. Medium- and long-term service changes also introduce new service. There are no planned significant reductions in service.

5.4.5 Operating and Capital Reserves

The County procures spare vehicles as a contingency reserve for its in-service rolling stock. In alignment with FTA guidance, the County procures one spare vehicle for every five in-service vehicles to maintain a 20% spare ratio. Due to budget constraints, Loudoun County does not maintain a reserve amount of operating funding.

Glossary

ACS	**U.S. Census American Community Survey**
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ATMS	active traffic management system
AVL	Automatic Vehicle Location
BEB	Battery electric buses
BRT	Bus Rapid Transit
CAPSP	Commuter Assistance Program Strategic Plan
CIP	Capital Improvement Program
CNG	Compressed Natural Gas
DDOT	District Department of Transportation
DRPT	Virginia Department of Rail and Transportation
DTCI	The Department of Transportation and Capital Infrastructure
FY	Fiscal year
Fairfax Connector	A fixed route bus service throughout Fairfax County. Three routes enter Loudoun County.
FCEB	Fuel cell electric bus
Fixed route	Transportation services operated over a set route or network of routes generally on a regular time schedule.
GTFS	General Transit Feed Specification
GRH Program	Guaranteed Ride Home Program
ITS	Intelligent Transportation System
JLMA	Joint Land Management Areas
Kiss and ride	A car park or other roadside location at a railway station or airport for brief stops to allow the dropping off and picking up of passengers.
LCCS	Loudoun County Transit and Commuter Services
LCT	Loudoun County Transit
Loudoun County Board of Supervisors	The Board of Supervisors sets county policies, adopts ordinances, appropriates funds, approves land rezonings and special exceptions to the zoning ordinance, and carries out other responsibilities set forth by the State Code.
MARC	Maryland Area Regional Commuter
MDOT	Maryland Department of Transportation
Metro Connection	Loudoun County's bus service prior to the opening of the Silver Line Metrorail Extension. Replaced by the Silver Line bus.
MTA	Maryland Transit Authority
Microtransit	A term used to describe transit service that operates with flexible route structures and schedules enabled by dynamic customer ride requests and trip pairing
MWCOG	Metropolitan Washington Council of Governments
NTD	National Transit Database
NVTA	Northern Virginia Transportation Authority
NVTC	Northern Virginia Transportation Commission
OTP	On-time performance
Paratransit	Transport service for people with disabilities who are not able to ride fixed route public transportation.

Park and ride	A system in which people drive to a place where they can leave their car and get on a bus or train that will take them the rest of the way to where they are going.
Place Type	Categories to classify land use recommendations for different types of planning areas.
Replica	A third-party dataset which uses cellphone, GPS, and other anonymized location-based sources to estimate travel demand down to the Census Block Group level.
Ridesharing Program	Enables commuters to find other individuals who share similar commute routes and work hours to join or form a carpool or vanpool.
SGR	State of Good Repair
SmarTrip Card	SmarTrip® is how to pay for fare on all Metrorail stations in DC, Maryland and Virginia, Metro parking garages and lots, Metrobus routes, MTA, and partner regional bus providers.
SOV	Single-occupant vehicle
SPA	Suburban Planning Area
TAZ	Traffic analysis zone
TBEST	Transit Boardings Estimations and Simulations Tool
TCRP	Transit Cooperative Research Program
TDM	Travel Demand Management
TDP	Transit Development Plan
TIP	Transit Infrastructure Plan
TOD	Transit-oriented development
TPA	Transition Planning Area
TSP	Transit Signal Priority
TSP	Transit Strategic Plan
ULB	Useful Life Benchmark
UPA	Urban Planning Area
VDOT	Virginia Department of Transportation
VRT	Virginia Regional Transit
WFH	Work from home
WMATA	Washington Metropolitan Area Transit Authority
ZEB	Zero-emissions bus

Appendix A : Agency Profile and System Overview

A.1 History

A.1.1 Commuter Bus

Commuter bus operations were initiated in Loudoun County in 1974 with the Sterling Commuter Bus (SCB) service. This service was privately owned and operated, carrying passengers between eastern Loudoun County and destinations in Washington, D.C. Beginning in 1989, the County subsidized the operation with gasoline tax funds, and later, the service was expanded to western Loudoun. In 1993, the service encountered significant financial difficulties that threatened continued operations, and in 1994, Loudoun County assumed responsibility for the operation.

From 1994 to 2003, commuter bus service was operated entirely by contract to the County, with the contractor providing the equipment (buses), fuel, and personnel. Near the end of this period, the contractor was operating a total of 17 buses with approximately 500 riders per day. As the system grew, the disadvantages of the fully contracted model became apparent, including but not limited to:

- Many contractors do not have the resources to purchase or secure leases for a fleet of the scale required by the County.
- Contractors generally provide touring coaches to handle standees on the service, which cannot accommodate electronic fareboxes and are not fully accessible to patrons with various disabilities.

In 2002, County staff members were directed to initiate and complete an analysis using consultant services to determine the most cost-effective program structure for the commuter bus service. The study was completed in May 2002 by the KFH Group, Inc. and defined an integrated and financially achievable program of transit improvements for a 10-year period. The analysis indicated that substantial savings could be achieved through an operating model where Loudoun County would purchase and own the buses, provide the fuel and storage, and the operation and maintenance functions would be contracted to a private transportation company acquired through a competitive procurement process. This transit model was successfully used by other regional jurisdictions including Fairfax and Arlington Counties. Under the publicly-owned fleet model, it was determined that the County could achieve continuing program savings and advantages through the following:

- Access to State Capital and Operating Assistance grants to fund the purchase of equipment, develop transit-supportive infrastructure, and subsidize operating costs
- Lower financing costs for equipment purchases versus private contractors
- No requirement to pay motor fuels tax for County-owned vehicles
- Enhanced ridership potential through a "Loudoun County" brand identity

- A larger pool of potential contractors to bid on operations/maintenance of the service, resulting in more competitive proposals.

The study also made the following recommendations with respect to the delivery of transit service:

- Passenger fare collections should serve as an essential funding mechanism for operating costs
- Commuter route recommendations should include the Loudoun-Fairfax connection (to West Falls Church Metrorail Station) and a reverse commute route from West Falls Church Metrorail Station to eastern Loudoun employment sites
- The initial fixed-route service plan should include the establishment of five routes (Route 7 corridor, Leesburg, Ashburn/Dulles, Sterling, and Countryside)

At the direction of the Board of Supervisors in 2003, the County adopted the current model to acquire and own the buses and obtain fuel from county facilities. In FY 2002, Loudoun County's Office of Transportation Services (OTS) was established, incorporating some former components of the Department of Planning and the Department of General Services. An initial 22-bus purchase was funded through a combination of state transit grants and lease/purchase financing. The buses purchased were Motor Coach Industries (MCI) 45-foot coach models with 55 seats, a restroom, a wheel-chair lift, reading lamps, reclining seats, illuminator signs and the Loudoun County Transit (LCT) logo on the outside of the bus. The projected annual savings from purchasing the buses over long-term leases was projected to be approximately $15,000 per bus. County staff were given responsibility for route and schedule planning and schedule production, grants applications and administration, infrastructure planning, contract administration, budgeting and fare accounting, and all aspects of customer service and communications. A competitive procurement was conducted to select a professional transportation company to provide the service.

In 2003, Metro Connection service was introduced from a proffered park and ride lot in Cascades to the West Falls Church Metrorail Station. Buses completed one trip to the Metrorail station before initiating a later trip from the Dulles North Transit Center (DNTC) to Washington, D.C. Later in 2003, Reverse Commute Service was added, which allowed buses returning from the West Falls Church Metrorail Station to bring riders to employment sites in Eastern Loudoun. In 2005, service was streamlined to shorten rider trip time by providing non-stop service directly from Purcellville and Leesburg into Rosslyn and Washington D.C. In 2007, staff applied for a demonstration grant to acquire seven dedicated buses and to commence service from a proffered 250-space park and ride lot in Dulles South. In response to parking capacity issues at the DNTC, in 2009, the Ashburn North Park and Ride lot was acquired, and the following year an agreement was developed with Christian Fellowship Church on Beaumeade Circle for the donation of additional parking.

In 2011, the Tysons Express Service was introduced as a strategy of Phase I of the Dulles Rail Project's Transportation Management Program (TMP). This service was implemented as a temporary service to reduce traffic congestion through and around the Tysons Corner area while rail was under construction. The service was 100 percent funded by the rail project until construction was completed in late July 2014. Once construction was completed, the agreement was to eliminate the Tysons Express Service and absorb the 4 MCI coaches into the existing Loudoun County commuter bus fleet, which occurred in August 2015.

In FY 2013, the Department of Transportation and Capital Infrastructure (DTCI) was established by merging the majority of the Capital Construction Division, formerly part of the Department of Construction and Waste Management, with the Office of Transportation Services. Currently, DTCI is responsible for matters relating to the County's intermodal transportation system, including road development, pedestrian and bicycle accommodations, traffic improvement implementation, transit and commuter services planning and management, and capital infrastructure planning, design, and construction.

In November 2014, Loudoun County completed the construction and opened the Transit Maintenance and Operations Facility at the Government Support Center. The $12 million facility was constructed with funds from the Commonwealth of Virginia and local funding. In 2014, the Board approved the purchase of three additional motor coach buses to address long haul commuter capacity issues.

With the opening of the Metrorail Silver Line in 2014, Silver Line Metro Connection service started providing service from several park and ride lots to the new Wiehle-Reston East Metrorail station, the westernmost station on Phase I of the Dulles Rail Project. This new service included trips from Loudoun Station, a new park and ride lot on the site of the Ashburn Metrorail Station, completed as part of Silver Line Metrorail Extension opening in fall 2022.

A.1.2 Local Bus

Prior to October 2013, local bus service in Loudoun was operated by Virginia Regional Transit (VRT). On February 1, 2013, the Virginia Department of Rail and Public Transportation (DRPT) confirmed that following the 2010 U.S. Census, Loudoun County fell partially within the Washington, D.C. urbanized area,\ and that effective October 1, 2013, most of the current Loudoun County and Leesburg transit routes operated by VRT would no longer qualify for Federal Transit Administration (FTA) 5311 funding for rural areas. Only the Purcellville Connector fixed-route and the three rural on-demand routes (Ashburn, Middleburg, and Lovettsville) remained eligible for FTA rural funding. VRT's federal funding remained in place through the end of the federal fiscal year, September 30, 2013.

On October 1, 2013, Loudoun County assumed responsibility for the local fixed-route service. On September 4, 2013, the Board authorized (9-0) the Purchasing Agent to award an emergency contract in the amount of $3 million for the continuation of the local fixed-route bus and Americans with Disabilities Act (ADA)

paratransit service for nine months until a competitive bidding process could be completed.

The loss of federal funding in FY 2014 and the assumption of funding related responsibility prompted the County to conduct a comprehensive evaluation of local transit service. Furthermore, the beginning of Phase I operations of the Silver Line Metrorail in 2014 was expected to affect the configuration of the County's transit service. Recognizing the complexity and urgency of the situation, DRPT agreed to fund a consultant-led project to analyze the current local fixed-route operations and make recommendations for service delivery in FY 2015 and beyond. The Town of Leesburg participated in the study as a stakeholder. The resulting Loudoun County Transit Management Analysis Report was presented to the Board on November 15, 2013. The study evaluated route coverage, ridership, operating costs, and user demographics. On December 4, 2013, the Board approved and endorsed the staff-proposed changes to the local fixed-route and ADA paratransit and directed staff to forward those changes to DRPT for inclusion in the 2013 update to the TDP; develop the FY 2015 budget using the endorsed routes; and to proceed with the procurement of a contract to operate the local fixed-route service for a minimum of three years beginning on July 1, 2014. The motion for approval was amended to include a directive for staff to study households in the area bounded by the Greenway to the north, Belmont Ridge Road to the west, Dulles International Airport to the east, and Prince William County to the south to determine the public's interest in additional local fixed transit services.

On May 21, 2014, the Board approved a Memorandum of Understanding (MOU) with the Town of Leesburg to determine the established baseline local transit routes, funding levels, and performance levels of service within the Town limits. The parties to the MOU agreed to the following:

- A revised set of proposed Leesburg bus routes.
- Town funding plan to support the proposed Leesburg routes.
- Town endorsement of the single contract option covering both the County and the Town for the procurement of local fixed-route transit service.
- County transit plans will establish the baseline of service.
- The County will be the designated recipient for all state grant funds in the future and that the FY 2015 state grant awards designate for the Town service were to be re-directed to the County.
- The FY 2015 comprehensive TDP update will plan for all County-managed services, inclusive of those routes operating within Leesburg.
- Responsibilities for ownership and maintenance of bus stop signs and shelters.
- Town responsibility for the fiscal impact of weekend or unique service over and above the baseline recommended service.

On September 1, 2014, MV Transportation initiated operations under the new service provider contract. The local fixed-route bus system provided 14 routes,

three of which were operated within the Town of Leesburg. The local bus system made use of "hub" locations that allow for transfers between two or more routes. The County also operated paratransit service, available to eligible riders taking trips with one end within three-quarters of a mile of a local fixed-route. The paratransit program is fully compliant with the rules and regulations of the Americans with Disabilities Act (ADA). In 2015, Loudoun County first introduced local service in South Riding, Brambleton, and Stone Ridge.

Beginning November 16, 2022, Loudoun County Transit began to phase-in Silver Line Bus service in parallel with the opening of the Silver Line Metrorail Extension and the beginning of passenger service to and from the three new Metrorail stations in the County: Ashburn, Loudoun Gateway and Dulles International Airport. The introduction of 21 new Silver Line Bus routes provides weekday service to and from 156 local stops, including Loudoun County park and ride lots and Silver Line Metrorail stations. All Metro Connection routes and local bus routes 72, 84 and 985—which formerly provided connections to Wiehle-Reston East and West Falls Church Metrorail stations--were replaced with Silver Line bus routes.

A.2 Governance

LCT service is operated by Loudoun County, which is administered by an elected Board of Supervisors. The Loudoun County Board of Supervisors has a Chair At-Large elected by the voters at large and eight other supervisors elected from eight county election districts. All nine members serve concurrent terms of four years. A new term began on January 1, 2024, which will conclude on December 31, 2027. The members of the Board of Supervisors for 2024–2027 are as follows:

- Phyllis J. Randall, Chair At-Large
- Juli E. Briskman, Vice Chair, Algonkian District
- Michael R. Turner, Ashburn District
- Sylvia R. Glass, Broad Run District
- Caleb A. Kershner, Catoctin District
- Matthew F. Letourneau, Dulles District
- Kristen C. Umstattd, Leesburg District
- Laura A. TeKrony, Little River District
- Koran T. Saines, Sterling District

The Board appoints a County Administrator who manages county operations; the Planning Commission, which serves in an advisory capacity on land use issues; and various other boards and commissions that provide recommendations to the Board of Supervisors to assist in its decision making.

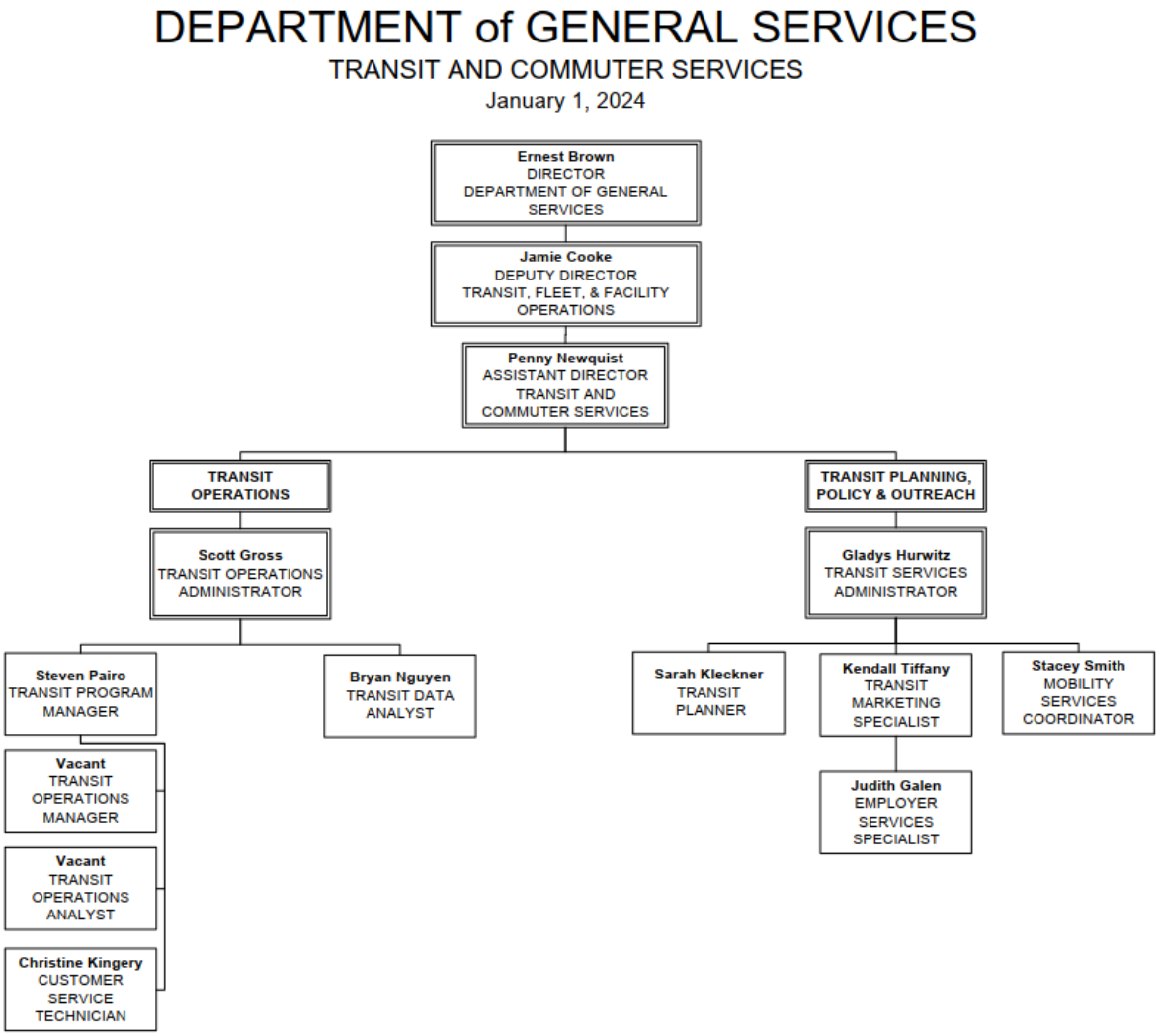
On September 16, 2015, the Board of Supervisors created a Transit Advisory Board (TAB) to replace the previous Commuter Bus Advisory Board. The TAB advises the county staff on matters related to transit service. The new TAB includes 15 voting members: nine members appointed by the Board, one member representing the Disabilities Services Board, one member representing the Loudoun County Chamber

of Commerce, one member representing the Loudoun County Economic Development Advisory Commission, and three members recommended by staff representing each mode of the transit service (long haul commuter, Metro Connection, and local fixed-route). All TAB members serve concurrent terms of four years, aligning with the terms of the Board of Supervisors.

A.3 Organizational Structure

Figure A–1 illustrates an organizational chart for LCT. Funding decisions regarding LCT service are made by the County Board of Supervisors. The planning, day-today oversight of operations and customer service functions are the responsibility of the Transit and Commuter Services, which as of 2023, is part of the Department of General Services.

Figure A–1: Loudoun County Transit, Transportation Services – Organizational Reporting



County staff in the Transit and Commuter Services Division are responsible for route and schedule planning and schedule production, grants applications and administration, infrastructure planning, contract administration, budgeting and fare accounting, and all aspects of customer service and communications. County transportation employees are not represented by a union. A competitive procurement is used to select a professional transportation company to operate the service.

In August 2020, the County issued Request for Proposal No. RFQ 143782 for the operation and maintenance of the commuter bus, local fixed-route, Metro Connection bus, and ADA paratransit bus services for the County. In January 2021, the County awarded a contract to Keolis to operate these services. The award of the Keolis contract replaced and consolidated two separate contracts with MV Transportation for local fixed-route and paratransit bus service and with Transdev for commuter bus service. The initial term of the contract ends on June 30, 2026 with an option for renewal.

A.4 Services Provided and Areas Served

There are two transit operators providing service within Loudoun County. LCT operates commuter express routes and most local service. VRT operates the Purcellville Connector fixed-route and demand response in Western Loudoun. VRT is not the subject of this TDP, and its services are discussed only where they relate to LCT.

A.4.1 Local Bus Service

LCT provides local bus service in the eastern part of the county, specifically concentrated in Sterling, Ashburn, and Leesburg. Some funding is provided by the Town of Leesburg for routes within its jurisdiction. George Washington University contributes to the cost of service to its Loudoun campus. LCT also provides ADA paratransit within a 0.75-mile radius of these routes for those unable to use fixed-route bus. 58 vehicles are used in peak service on these routes, including seven paratransit vehicles. As of December 2022, all local buses are equipped with bike racks.

Local bus service in Loudoun County also includes Silver Line bus service, which provides connections to and from Silver Line Metrorail stations in or near Loudoun County. On November 16, 2022, Silver Line bus service replaced all Metro Connection bus routes and local bus routes 72, 84 and 985 for a total of 21 new or revised routes. While Metro Connection service was considered a long-haul commuter service, Silver Line bus service is considered part of the local bus service type.

A.4.1.1 Local Bus Routes (Non-Silver Line Routes)

Route 54: Leesburg Safe-T-Ride (Town of Leesburg)

This route is a free shuttle service funded by the Town of Leesburg and the County. It provides riders with a safe alternative to crossing the Route 15 Bypass on foot in

the vicinity of Fort Evans and Edwards Ferry Roads. This service runs every 20 to 30 minutes daily.

Route 54: Leesburg Safe-T-Ride	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	7:00 a.m. – 7:00 p.m.	28	28	--
Saturday and Sunday	9:00 a.m. – 6:00 p.m.	28	28	--

Route 55: Exeter - Tuscarora

This route runs between Exeter Apartments and the Leesburg Walmart via the Tuscarora Apartments and the Loudoun County Government Center in Leesburg. Other major stops include the Madison House and the Paxton Campus special education center. Major streets served by the route include King Street, Evergreen Mill Road, and Compass Creek Parkway. This service operates hourly on weekdays only.

Route 55: Exeter-Tuscarora	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	7:00 a.m. – 7:00 p.m.	60	60	--

Route 56: Rust Library/Ida Lee Park – County Complex

This route runs between Rust Library at Ida Lee Park and the County Complex at Loudoun Center Place via the Loudoun County Government Center in Leesburg. Other major stops include Loudoun Free Clinic and the Miller Drive complex. Major streets served by the route include King Street, Harrison Street, and Sycolin Road. This service operates hourly on weekdays only.

Route 56: Library – County Complex	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	7:00 a.m. – 7:00 p.m.	60	60	--

Route 57: Village at Leesburg/Wegmans

This route runs between the Loudoun County Government Center and the Village at Leesburg via Trailview Boulevard. Other major stops include Potomac Station Marketplace, Leesburg Premium Outlets, and the Shenandoah Building. Major streets served by the route include Potomac Station Drive, Russell Branch Parkway,

Fort Evans Road, and Market Street. This service operates hourly on weekdays and Saturdays.

Route 57: Village at Leesburg - Wegmans	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	7:00 a.m. – 7:00 p.m.	60	60	--
Saturday	10:00 a.m. – 9:00 p.m.	60	60	60

Route 62: Ashburn Connector

This route runs between Ashburn Village Center, One Loudoun, and Dulles Town Center. Other major stops include Potomac Green, Wingler House, and Ashby Ponds. Major streets served by the route include Loudoun County Parkway, Gloucester Parkway, and Marblehead Drive. This service operates hourly on weekdays only.

Route 62: Ashburn Connector	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	7:00 a.m. – 7:00 p.m.	60	60	--

Route 70: Leesburg - Sterling

This route runs between the Loudoun County Government Center in Leesburg and the Northern Virginia Community College - Loudoun Campus in Sterling. Other major stops include the Leesburg Outlets, Inova Loudoun Hospital, One Loudoun, the George Washington University (GWU) Virginia Science and Technology Campus, and Dulles Town Center. Major streets served by the route include Fort Evans Road, Riverside Parkway, Russell Branch Parkway, Atlantic Boulevard, and Palisade Parkway. Weekday service operates every 30 minutes during peak and midday hours, and weekday service operates every hour in the evening. Saturday service operates every hour, does not service the GWU Campus, and terminates before central Leesburg at the Shenandoah Building.

Route 70: Leesburg - Sterling	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	7:00 a.m. – 10:00 p.m.	30	30	60
Saturday	8:00 a.m. – 10:00 p.m.	60	60	60

Route 80: Sugarland Run Connector

This route runs between Sterling Park and Sugarland Park via Town Center at Sterling. Other major stops include the Northern Virginia Community College - Loudoun Campus, Cascades Village, and Cedar Lake Plaza. Major streets served by this route include Potomac View Road, Dranesville Road (Fairfax County), Holly Avenue, and Sterling Boulevard. This service operates hourly on weekdays only.

Route 80: Sugarland Run Connector	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	7:00 a.m. – 7:00 p.m.	60	60	--

Route 81: Countryside Connector

This loop route runs between Countryside and Dulles Town Center via Regal Center. Other major stops include Reserve at Tower Center and Countryside Elementary School. Major streets served by this route include Countryside Boulevard, Atlantic Boulevard, and City Center Boulevard. This service operates every 30 minutes on weekdays only.

Route 81: Countryside Connector	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	7:00 a.m. – 7:00 p.m.	30	30	--

Route 82: Sterling Connector

This route runs between Sterling and Dulles Town Center. Other major stops include Northrop Grumman and Sterling Library. Major streets served by this route include Atlantic Boulevard, Sterling Boulevard, Church Road, and Holly Avenue. This service operates every 45 minutes on weekdays and every hour on Saturdays.

Route 82: Sterling Connector	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	7:00 a.m. – 10:00 p.m.	45	45	45
Saturday	8:00 a.m. – 10:00 p.m.	60	60	60

A.4.1.2 Silver Line Bus Routes

Route 312: Potomac Falls

This route operates along Algonkian Parkway and Fairfax County Parkway, and Springs Boulevard between Cascades and the Reston Town Center Metrorail Station. Other major stops include the Lowes Island and Our Lady of Hope park and ride lots.

Route 312: Potomac Falls	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	4:30 a.m. – 11:00 p.m.	30	--	30

Route 320/321: George Washington University

This route operates along Sully Road between Loudoun County Parkway between the George Washington University Virginia Science and Technology Campus and the Innovation Center Metrorail Station. Other major stops include Dulles Town Center. Route 320 only provides southbound service before 7:00 a.m., while Route 321 provides bi-directional service from 7:00 a.m. until 11:00 p.m.

Route 320/321: George Washington University	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	5:00 a.m. – 11:00 p.m.	15	45	30

Route 322: Atlantic Connector

This route operates along Atlantic Boulevard and Davis Drive between Dulles Town Center and the Innovation Center Metrorail Station. Other major stops include Dulles Crossing Plaza and western Sterling.

Route 322: Atlantic Connector	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	7:00 a.m. – 11:00 p.m.	60	60	60

Route 323: Sterling

This route operates along Sully Road, Church Road, and Sterling Boulevard between Rolling Ridge Elementary School and the Innovation Center Metrorail Station. Other major stops include Sterling Town Center, Sterling Park Business Center, and the Sterling Library.

Route 323: Sterling	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	5:00 a.m. – 11:00 p.m.	30	30	30

Route 331/332: One Loudoun

This route operates along Loudoun County Parkway between One Loudoun and the Ashburn Metrorail Station. Other major stops include the Potomac Green Community Center and Ashby Ponds. Route 331 and Route 332 provide service along the same alignment, but with different stop orders. Route 331 does not provide midday service, and 332 only provides service until 9:30 p.m.

Route 331/332: One Loudoun	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	5:00 a.m. – 11:00 p.m.	45	60	45

Route 333: Quantum-Pacific-Gateway

This route operates along Loudoun County Parkway, Waxpool Road, Pacific Boulevard, and Old Ox Road between Quantum Park and the Loudoun Gateway Metrorail Station.

Route 333: Quantum-Pacific-Gateway	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	6:00 a.m. – 7:00 p.m.	15	25	--

Route 341: Ashburn Village I

This route operates along Ashburn Village Drive, Gloucester Parkway, Claiborne Parkway, and Russell Branch Parkway between Belmont Chase and the Ashburn Metrorail Station. Other major stops include Ashburn Village and Ashbrook Marketplace Plaza. This route provides counter-directional service to Route 342 along the same alignment.

Route 341: Ashburn Village	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	5:00 a.m. – 11:00 p.m.	45	--	45

Route 342: Ashburn Village II

This route operates along Ashburn Village Drive, Gloucester Parkway, Claiborne Parkway, and Russell Branch Parkway between Belmont Chase and the Ashburn Metrorail Station. Other major stops include Ashburn Village and Ashbrook Marketplace Plaza. This route provides counter-directional service to Route 341 along the same alignment.

Route 342: Ashburn Village	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	5:00 a.m. – 11:00 p.m.	45	--	45

Route 343: Goose Creek and Ashburn Farm I

This route operates along Belmont Ridge Road, Claiborne Parkway, Broadlands Boulevard, and Waxpool Road between Goose Creek Village and the Ashburn Metrorail Station. Other major stops include Ashburn Farm, Ashburn Library, and Broadlands Center Plaza. This route provides counter-directional service to Route 344 along the same alignment.

Route 343: Goose Creek and Ashburn Farm I	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	5:00 a.m. – 11:00 p.m.	45	--	45

Route 344: Goose Creek and Ashburn Farm II

This route operates along Belmont Ridge Road, Claiborne Parkway, Broadlands Boulevard, and Waxpool Road between Goose Creek Village and the Ashburn Metrorail Station. Other major stops include Ashburn Farm, Ashburn Library, and Broadlands Center Plaza. This route provides counter-directional service to Route 344 along the same alignment.

Route 344: Goose Creek and Ashburn Farm II	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	5:00 a.m. – 11:00 p.m.	45	--	45

Route 351: Leesburg

This route operates along Dulles Greenway between Downtown Leesburg and the Ashburn Metrorail Station. Other major stops include the Loudoun County Government Center and Leesburg I Park and Ride Lot.

Route 351: Leesburg	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	5:00 a.m. – 11:00 p.m.	30	60	30

Route 371: Mooreview Parkway and Old Ryan Road

This route operates along Old Ryan Road, Croson Lane, and Mooreview Parkway between Moorefield Station and the Ashburn Metrorail Station.

Route 371: Mooreview Parkway and Old Ryan Road	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	4:30 a.m. – 11:00 p.m.	30	--	30

Route 372: Westwind Farm

This route operates along Loudoun County Parkway, Centergate Drive, and Claude Moore Drive between the Ashburn HealthPlex and the Ashburn Metrorail Station.

Route 372: Westwind Farm	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	5:00 a.m. – 11:00 p.m.	30	--	30

Route 373: Westwind Farm

This route operates along Belmont Ridge Road, Truro Parish Drive, Wynridge Drive, and Claiborne Parkway between the Broadlands Retail and Office Center and the Ashburn Metrorail Station. Other major stops include Broadlands Marketplace.

Route 373: Broadlands	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	5:00 a.m. – 11:00 p.m.	20	--	20

Route 374: Brambleton I

This route operates along Loudoun County Parkway, Ryan Road, Creighton Road, and Evergreen Ridge Drive between Brambleton Town Center and the Ashburn Metrorail Station. This route's alignment is distinct from Route 375, despite serving similar locales.

Route 374: Brambleton I	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	4:30 a.m. – 11:00 p.m.	30	--	30

Route 375: Brambleton II

This route operates along Loudoun County Parkway, Evergreen Mills Road, Northstar Boulevard, and Ryan Road between Brambleton Town Center and the Ashburn Metrorail Station. This route's alignment is distinct from Route 374, despite serving similar locales.

Route 375: Brambleton II	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	4:30 a.m. – 11:00 p.m.	30	--	30

Route 381: South Riding

This route operates along Loudoun County Parkway, Tall Cedars Parkway, and Old Ox Road between South Riding Market Square and the Loudoun Gateway Metrorail Station. Other major stops include the East Gate Park and Ride lot and the Dulles South Multipurpose Center.

Route 381: South Riding	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	4:30 a.m. – 11:00 p.m.	30	--	30

Route 382: Stone Ridge

This route operates along Loudoun County Parkway, Gum Springs Road, and Stone Springs Boulevard between Stone Ridge and the Loudoun Gateway Metrorail Station. Other major stops include Stone Ridge Village Center and StoneSprings Hospital.

Route 382: Stone Ridge	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	4:30 a.m. – 11:00 p.m.	30	--	30

Route 391: Harmony

This route operates along the Dulles Greenway and Leesburg Pike between the Harmony Park and Ride lot and the Ashburn Metrorail Station.

Route 391: Harmony	Span of Service	Avg. Frequency (minutes)		
		Peak	Midday	Evening
Weekday	4:30 a.m. – 8:30 p.m.	30	--	30

A.4.2 Commuter Bus Service

LCT provides express commuter service from park and ride lots in Purcellville, Hamilton, Leesburg, Ashburn, Brambleton, and Stone Ridge to Arlington and downtown Washington, D.C. The long haul routing and stops in Arlington and Washington, D.C. are shown in Figure 2. Approximately 25 vehicles are needed to provide this service. Because the service is express, peak-period commuter service, no separate ADA paratransit service is provided. The county policy is to provide pedestrian connections from park and ride lots to adjacent sidewalks in suburban areas and to provide bus shelters and bike racks at park and rides. The commuter service does not stop at on-street bus stops. Commuter service operates on weekdays only.

A.4.2.1 Commuter Bus Routes

Route 281/681: Dulles South and East Gate to Washington, D.C.

This route operates from the Dulles South and East Gate Park and Ride lots to downtown Washington, D.C. Route 281 provides inbound service in the morning, and Route 681 provides outbound service in the evening.

Route 281/681	Span of Service	Avg. Frequency (minutes)		
		Morning	Mid day	Evening
Weekday	5:30 a.m. – 8:00 p.m.	30	--	30

Route 282/682: Dulles South and East Gate to Arlington

This route operates from the Dulles South and East Gate Park and Ride lots to downtown Rosslyn, the Pentagon, and Crystal City. Route 282 provides inbound service in the morning, and Route 682 provides outbound service in the evening.

Route 282/682	Span of Service	Avg. Frequency (minutes)		
		Morning	Mid day	Evening
Weekday	6:00 a.m. – 5:30 p.m.	30	--	45

Route 284/684: Dulles South and East Gate to Pentagon

This route operates from the Dulles South and East Gate Park and Ride lots to the Pentagon and Pentagon City. Route 282 provides inbound service in the morning, and Route 684 provides outbound service in the evening. Route 684 does not serve Pentagon City and offers express service to and from the Pentagon.

Route 284/684	Span of Service	Avg. Frequency (minutes)		
		Morning	Mid day	Evening
Weekday	6:00 a.m. – 6:30 p.m.	120	--	45

Route 481/881: Leesburg and Dulles Transit Center to Washington, D.C.

This route operates from Leesburg Park and Ride Lot and Dulles Transit Center to downtown Washington, D.C. Route 481 provides inbound service in the morning, and Route 881 provides outbound service in the evening.

Route 481/881	Span of Service	Avg. Frequency (minutes)		
		Morning	Mid day	Evening
Weekday	5:30 a.m. – 5:00 p.m.	30	--	30

Route 482/882: Leesburg and Dulles Transit Center to Arlington

This route operates from Leesburg Park and Ride Lot and Dulles Transit Center to downtown Rosslyn, the Pentagon, and Crystal City. Route 482 provides inbound service in the morning, and Route 882 provides outbound service in the evening.

Route 482/882	Span of Service	Avg. Frequency (minutes)		
		Morning	Mid day	Evening
Weekday	5:30 a.m. – 7:00 p.m.	30	--	30

Route 483/883: Harmony to Washington, D.C.

This route operates from the Harmony Park and Ride Lot to downtown Washington, D.C. Route 483 provides inbound service in the morning, and Route 883 provides outbound service in the evening. With only one directional departure each day, this route does not have any calculable headways.

Route 483/883	Span of Service	Avg. Frequency (minutes)		
		Morning	Mid day	Evening
Weekday	6:15 a.m. – 5:00 p.m.	N/A	--	N/A

Route 484/884/885: Harmony, Leesburg, and Dulles Transit Center to Washington, D.C.

This route operates from the Harmony Park and Ride Lot, Leesburg Park and Ride Lot, and Dulles Transit Center to downtown Washington, D.C. Route 483 provides inbound service in the morning, and Routes 884 and 885 provide outbound service in the evening. Route 885 serves Dulles Transit Center, while Route 885 does not.

Route 484/884/885	Span of Service	Avg. Frequency (minutes)		
		Morning	Mid day	Evening
Weekday	6:15 a.m. – 5:00 p.m.	30	--	45

Route 486/886: Brambleton and Dulles Transit Center to Washington, D.C.

This route operates from the Brambleton Park and Ride Lot and Dulles Transit Center to downtown Washington, D.C. Route 486 provides inbound service in the morning, and Route 886 provides outbound service in the evening.

Route 486/886	Span of Service	Avg. Frequency (minutes)		
		Morning	Mid day	Evening
Weekday	6:45 a.m. – 7:00 p.m.	30	--	30

A.4.3 Paratransit and Demand Response Service

LCT provides ADA paratransit in the urban half of the county, as shown in Figure X. People who are unable to use fixed-route bus services may complete an application to participate in Loudoun County's paratransit program. Service for those who are eligible is available for trips with an origin or destination within ¾-mile of a fixed-route. Riders are required to schedule their paratransit trips 24 hours in advance. Paratransit offered by Loudoun County matches the service span of the fixed-routes. The one-way fare on this service is $2. In the more rural parts of the county, VRT offers demand-response transit that is open to the general public, and VRT also provides ADA paratransit service within a 0.75-mile buffer of Route 40, the Purcellville Connector. This service also requires a 24-hour advance reservation. VRT does not record how many trips are made by each category, but they estimate that 85 percent of the trips are made by the general public, and 15 percent by those with ADA paratransit eligibility. Service hours for the VRT-operated paratransit and demand response are the same as the hours for local bus service.

A.4.4 Service Accessibility

A.4.4.1 Station Access

LCT has an arrangement with the Town of Leesburg regarding the maintenance of bus stop signs and shelters. In 2014, LCT received a report proposing improvements to bus stops and guidelines for bus stop placement and design. Bus stop accessibility improvements are planned, as described in Chapter 3. Almost all local bus riders walk to and from transit stops. Streets in Leesburg and other urban

areas generally have sidewalks. It is the County policy to provide sidewalks in urban areas. In some places, crossing streets can be difficult for pedestrians. For example, there is no safe crossing of Route 15 at Fort Evans Road in Leesburg, so the Safe-T-Ride shuttle is provided to connect shopping centers on either side of Route 15. In more recently developed areas such as Ashburn, minor intersections along parkways are generally controlled by stop signs rather than traffic signals, and it may be difficult for pedestrians to find a sufficient gap to cross the street.

A.4.4.2 Bus Stop and Shelter Placement Guidelines

Loudoun County Transit's service standards include specifications for bus stops and shelters. These specifications are as follows:

- Bus shelters will be required to serve transfer points, commuter bus stops and other locations where high boarding concentrations are anticipated. A smaller 12-foot-long bus shelter will be provided at locations with fewer passenger boardings.
- Solar lighting will be provided inside bus shelters with both timer and motion detector options. Exceptions may be made when other sources of lighting are available, i.e., an adjacent street light.
- Bus shelters that are erected on private property will be maintained by the property owner with the following guidelines:
    - trash is to be removed at minimum twice a week
    - all graffiti to be removed immediately from shelter
    - landscaping, if applicable, will be kept neat surrounding the shelter
    - lighting will be in working order
- All frames, side panels, roof panels, hardware, and accessories associated with the bus shelters on private property will be the responsibility of the property owner to guarantee repair or replacement of worn-out or defective parts.
- The County will supply appropriate schedules and brochures for placement in shelter display racks.
- The County will seek a vendor to install and maintain bus shelters.

Additional information on bus stop and shelter placement and replacement programs can be found in Chapter 3 under Project C3: Bus Shelter Program and Project C4: Bus Stop Installation on New Routes.

A.4.4.3 ADA Accessibility

All Loudoun County Transit buses are equipped with a lift or a ramp to assist passengers. All buses also have areas where a wheelchair can be secured. In addition to these accessibility enhancements on fixed-route bus services, paratransit service provides another accessible bus service option for customers who are unable to access fixed-route bus service because of their disability. LCT prepares an ADA and Paratransit Rider Guide explaining the scope of services available, eligibility requirements for their use, and guidance on how to employ them.

As of February 2024, Loudoun County Transit is also conducting an ADA Self-Evaluation and Transition Plan. This initiative will identify any potential barriers impeding the participation of individuals with disabilities in the county's transit programs, services, and activities. Subsequently, the County will create an actionable, trackable method for addressing those barriers. The transition plan details any structural/programmatic changes that would be undertaken to achieve access and specifies a time frame for their completion.

A.4.4.4 Travel Training Programs

Loudoun County Transit does not currently offer travel training programs but plans to launch a pilot training program in the 2024 calendar year. The travel training program will walk customer groups through available services and resources and how to use them. Customer groups can include new transit users, older customers, limited English proficiency (LEP) customers, and customers with disabilities. This program will use available staff and a hired consultant team to develop materials for this program and be the educators for the program. These trainings are administered both as group classes and one-on-one instruction. If the pilot program proves to be effective, the County plans to move forward with a full build-out of the program.

A.5 Fare Structures, Payments, and Purchasing

LCT fares vary by service type as described below and as summarized in **Table A-1**.

The one-way fare for commuter bus between Loudoun and Rosslyn, Crystal City, Pentagon or downtown Washington, D.C. is $10.00 with a SmarTrip card or $11.00 in cash. This fare increased from $8.00 to $9.00 in FY2017 and to the current rate of $10.00 in FY2019 with the objective of covering all operating costs with fare revenue, including the cost of vehicle replacement and leases park and ride lots.

The local bus fare is $1.00 per boarding, cash or SmarTrip, with the exception of Route 54, Leesburg Safe-T-Ride, which is free of charge. Paratransit fares are $2.00 in the urban (eastern) part of the county under LCT service. In the western portion, fares vary based on distance. No passes or bulk discounts are offered for any of these services.

Table A-1: Summary of LCT Fares as of February 2024

Service Type	Fare per Boarding	Notes
Long Haul	$10.00	$1 cash surcharge
Silver Line Bus	$1.00	Fare-free before January 3, 2023
Route 54 (Safe-T-Ride)	Free	--
Local Routes	$1.00	--

Service Type	Fare per Boarding	Notes
Route 40 (Purcellville Connector, VRT)	$2.00	Cash only
Paratransit	$2.00	--

A.6 Transit Asset Management – Existing Fleet and Facilities

As a product of the scale of its operations, Loudoun County Transit falls under the categorization of a Tier II agency for TAM reporting to DRPT. Per guidance provided by FTA, Tier II providers may develop their own plans or participate in a group plan. LCT will participate in DRPT's Statewide Tier II TAM Plan through at least FY2025 and will continue to coordinate with DRPT on performance monitoring and reporting.

LCT's current fleet roster and peak vehicle need is shown in

Table A–2 as of October 2023. This data is derived from LCT fleet and daily operational reports.

Table A–2: Revenue Fleet and Peak Vehicle Need

Vehicle Mode*	Peak Vehicle Need	Peak Vehicle Need (totals)	Fleet Size
Local Fixed-Route	25	51	62 (32 BOC, 20 Transit)
Silver Line**	26		
Paratransit (Demand-Response)	7	7	8
Commuter	25	25	49

*Local, Silver Line, and Paratransit Bus Service may use either Transit Buses or Body on Chassis (BOC) vehicles.
**For purposes of this study, Silver Line Bus Service was previously referred to as Metro Connection

Table A-3 illustrates the performance targets set by DRPT for each asset class represented within LCT's 119-vehicle fleet. As defined by the FTA, the useful life benchmark (ULB) reflects the expected lifecycle for each vehicle type in its operating environment. The rightmost column reflects the maximum number of vehicles per asset class, which can exceed the ULB while still meeting performance targets, based upon the number of vehicles per asset class in LCT's fleet in FY 2022.

Table A-3: DRPT Revenue Vehicle Performance Targets

Asset Class	ULB (Years)	Target %	# in LCT Fleet	LCT Target
Bus	14	15%	16	2
Cutaway	10	10%	37	3
Over-the-Road-Bus	14	15%	66	9

Source: DRPT TAM Plan

A.6.1 Bus Maintenance Facilities

In 2014, Loudoun County opened a large vehicle storage and maintenance facility for coach buses in Leesburg near Sycolin Road, operated by Transdev. The commuter bus maintenance facility is located at the end of Loudoun Center Place in Leesburg, VA, behind the County's Vehicle Maintenance Facility located at 42031 Loudoun Center Place and consists of two buildings and two parking lots. The Administration building is a one-story building of approximately 9,000 SF that contains the HVAC and electrical room, main IT room, offices, conference room, bus driver waiting/ready rooms, toilets, showers and locker rooms. There is a movable partition in this building as well as standard office finishes. The other building is a one-story bus maintenance building of approximately 21,000 SF that has five bays for commuter bus maintenance, plus a drive-through bus wash and detail bay, a tire room, parts counter, storage room, administrative offices, reclaim room, lube/compressor room, workbench areas, electrical, IT and HVAC room, and mezzanine. One parking lot can accommodate up to 88 commuter buses; the other is an employee vehicle parking lot.

VRT's facility is located in Purcellville; vehicle storage, maintenance, operations, dispatch and administrative functions occur at this site for VRT fixed-route, demand-response, and paratransit service.

A.7 Transit Security Program

A.7.1 Emergency Protocol

Loudoun reviews the Emergency/Snow Plan schedule every fall for its commuter buses. A new plan for the winter is then created no later than October. Cameras have been installed on the commuter coaches to record accidents; they are tripped automatically when the G-Force on the bus increases, or manually by the driver. Passengers are not filmed, except incidentally. In the case of an incident, the contractor operating the commuter buses has an evacuation plan. The Loudoun County Sheriff's Office randomly patrols and performs checks in the County's park and ride lots. Customers are advised that parking is at their own risk and that Loudoun County is not liable for any theft, towing, or vandalism that may occur. There are not currently security training programs in place for employees, nor public awareness campaigns in place on buses.

A.7.2 Bus Use Policies

Loudoun County Transit documents and publishes its standards for bus use, which includes policies for equal access, denial of usage, and removal and banning individuals from transit service for non-compliance with policies. Prohibited activities include the possession of alcohol or illegal drugs, littering, obstructing access to the vehicle, using threatening or disruptive language, smoking, gambling, soliciting, and boarding with concealed firearms or non-service animals.

A.8 Intelligent Transportation Systems (ITS) Programs

Loudoun County actively incorporates the latest Intelligent Transportation System (ITS) technologies into the commuter bus service. These ITS technologies allow

staff to communicate with riders in multiple ways, collect and process fares electronically, and track the buses. The following is a list of these technologies and their uses:

Communications

The LCT website (www.loudoun.gov/transit) has complete schedule information for long haul commuter bus, local bus, Metro Connection, and paratransit services. The website is updated regularly with special schedules (e.g., prior to holiday weekends) and changes to regular schedules.

Bus Biz

Bus Biz is an email group containing over 3,400 email addresses. Riders sign up for Bus Biz by sending DTCI an email address. Bus Biz is used to email important information to keep bus patrons informed on future schedule changes, temporary bus stop closures, park and ride lot updates, and proposed service changes.

LC Alert/SV Alert

LC Alert/SV Alert is a real-time text messaging system that is used when service is disrupted based on unanticipated road closures, detours, or major traffic delays causing a bus to be more than 10 minutes late. LC Alert/SV Alert is for commuter bus passengers, and SV Alert is for Silver Line Metro connection passengers. Over 4,300 users are signed up to receive these alerts.

Electronic Fare Collection

The Loudoun County commuter buses are equipped with GFI Odyssey electronic fareboxes that accept cash and SmarTrip, the regional transit smart card in the Washington, D.C. area. The local buses have drop boxes that do not count cash or read cards.

Other Intelligent Transportation Systems (ITS) Applications

An ITS suite of applications, including Computer-Aided Dispatch / Automatic Vehicle Location, Real Time, Mobile App, Real Time Website and Automated Vehicle Maintenance, is currently being deployed by Clever Devices on the commuter buses. The Maintenance Management System used is Dossier and is owned and maintained by Transdev. There are automatic passenger counters in use. The local bus service uses Geotab fleet management software and GPS vehicle tracking and uses Fleet Focus for Maintenance Management. This software is owned and maintained by MV Transportation. Loudoun will provide its schedule data in GTFS format and provide the feed to Google, which will permit the public to have trip planning information including LCT service. Loudoun County does not currently have traffic signal priority for transit vehicles or transit information displays.

A.9 Data Collection and Ridership/Revenue Reporting Method

Methodology

Data collected by the electronic fareboxes on commuter buses is used for scheduling, budgeting, and park and ride lot capacity management. Local buses and paratransit vehicles do not have electronic fare collection. Passenger and fare data are collected on Excel spreadsheets, with Hummingbird reporting software extracting the data from the fareboxes. Odometer (hubometer) readings, payroll systems, and driver logs are collected by Transdev. Operating expense data is collected and reported from the County's accounting software, Oracle. Financial audits are performed by an external company, usually once a year. For local buses, all passenger and fare collection data are performed manually and recorded on an Excel spreadsheet. For both local and commuter service, scheduling is currently performed with Excel, although Loudoun is planning to procure scheduling software.

Commuter Bus Data

Passenger counts, extracted using Hummingbird reporting software, are collected from the GFI Odyssey fare boxes configured by Cubic Transportation for SmarTrip. Passenger and fare data are collected on Excel spreadsheets by Transdev. Odometer (hubometer) readings, payroll systems, and driver logs are also collected and reported by Transdev. Operating expense data is collected and reported from the county's accounting software, Oracle. Financial audits are performed by an external company, usually once a year. From a maintenance standpoint, the County's fleet department has oversight regarding all preventative maintenance and repairs. Operational oversight of adherence to standards is done daily and operational meetings between the contractor and county are held at least monthly. There is currently no specialized scheduling software, other than Excel, in use, but the County has plans to consider purchasing new software. The buses equipped with the Clever Devices system have mobile data terminals; however, these are not used for payroll.

Local Bus Data

All passenger and fare collection data is performed manually by bus drivers and then recorded on an Excel spreadsheet by MV Transportation. Operating expense data is collected and reported from the county's accounting software, Oracle. Financial audits are performed by an external company, usually once a year. All the buses on the local service are owned and maintained by the contractor, MV, so the county has no direct oversight of maintenance. Operational oversight of adherence to standards is done daily, and operational meetings between the contractor and county are held at least monthly. There is no scheduling software currently in use, other than Excel, but if the county purchases scheduling software, it will be used for local bus as well.

A.10 Coordination with Other Transportation Service Providers

Loudoun County coordinates closely with VRT regarding the operations of Route 40: Purcellville Connector, as well as the provision of paratransit and demand-response service in the western portion of the County.

On a regional scale, Loudoun County coordinates with Metropolitan Washington Council of Governments (MWCOG), the Northern Virginia Transportation Commission (NVTC), and Washing Metropolitan Area Transit Authority (WMATA) to ensure that the County's vision for public transit is reflected and supported by regional policies. Conversely, this coordination supports the incorporation of regional goals to be reflected in County transit services.

Loudoun County will continue to coordinate with its neighboring peer jurisdictions and the Virginia Department of Transportation (VDOT) regarding the fee standards at park-and-ride lots.

Loudoun County coordinates with WMATA regarding its acceptance of SmarTrip cards as fare media for all bus service types.

Additional opportunities for coordination with other transportation service providers, such as MARC, Fairfax County Connector, and Eastern Panhandle Transit Authority (EPTA), are outlined in Chapter 2.5 of this document.

A.11 Current Initiatives

The Loudoun County Board of Supervisors and transit staff have expressed interest in expanding bus service on Saturday and introducing service on Sundays. Studying the feasibility and projected performance of expanded weekend service is analyzed in Chapter 2 of this Transit Strategic Plan.

The County has proposed a new program to address standards and implementation for a bus shelter program. The County's Fiscal Year 2024 – 2028 Capital Improvements Program includes funding for design and construction of 20 bus shelters per year.

In November 2022, Silver Line bus service replaced former Metro Connection bus service to connect customers to Metrorail Stations in and nearby the County. As travel patterns continue to evolve following the opening of Metrorail service and the shift in local bus service, LCT is also planning to conduct a full network redesign of its bus services beginning in FY2025.

LCT is studying a fare-free policy for potential implementation along fixed-route local bus and paratransit services. This policy would not apply to the county's commuter bus routes. This study will be supported by onboard ridership surveys, as outlined in Chapter 3 of this document.

Loudoun County recently underwent a restructuring that moved Loudoun County Transit and Commuter Services from the Department of Transit and Capital Infrastructure to the Department of General Services. This restructuring also led to the development of a large-scale study known as the Comprehensive Operations Analysis (COA). This study's goal is to provide fresh eyes to recommend

improvements for all aspects of LCT including policy, operations, and capital. Findings from this study may dictate necessary future updates to the TSP.

The County plans to host a transit summit in June 2024 with County leadership. The summit will focus on developing the vision and direction for transit and commuter services offered in the County.

Section 1.1.2 of this document includes a full list of current and recent transit initiatives undertaken by Loudoun County Transit.

Appendix B : Public Engagement Materials

B.1 Phase I Engagement Summary (November - December 2022)

B.1.1 Overview

The project team conducted a series of engagement events to reach target audiences and ensure that the public has an opportunity to contribute input. The information collected informed the project team's understanding of goals and priorities for the Transit Strategic Plan (TSP) and Commuter Assistance Program Strategic Plan (CAPSP), and helped to identify potential gaps, needs, and opportunities for bus service in the focus service areas. This document is intended to provide an overview of the individual events that made up the public outreach approach for the first phase.

B.1.2 Project Purpose

Loudoun County Transit and Commuter Services is updating their 10-year TSP and five-year CAPSP. These updates will incorporate new travel data and public priorities to identify necessary transit service improvements within the existing budget to meet the needs of the service area. These strategic plans will outline future operations and desired changes that will improve service to better serve a larger portion of transit riders in Loudoun County.

B.1.3 Project Survey

Purpose: Gather input on goals, strengths and opportunities for transit, and preferences/priorities.

Audience: Loudoun County and surrounding counties' residents.

Potential avenues for advertising:

- Virtual postcard
  - Project landing page
  - Social media accounts
- Printed postcard provided at pop-up events
- Pop-up events
- Other Countywide channels
- Project stakeholders

Milestone Dates:

- Survey Launch: November 3, 2022
- Survey Close: December 21, 2022
- Survey Summary: January 6, 2023

B.1.4 Pop-Up Events and Public Workshops

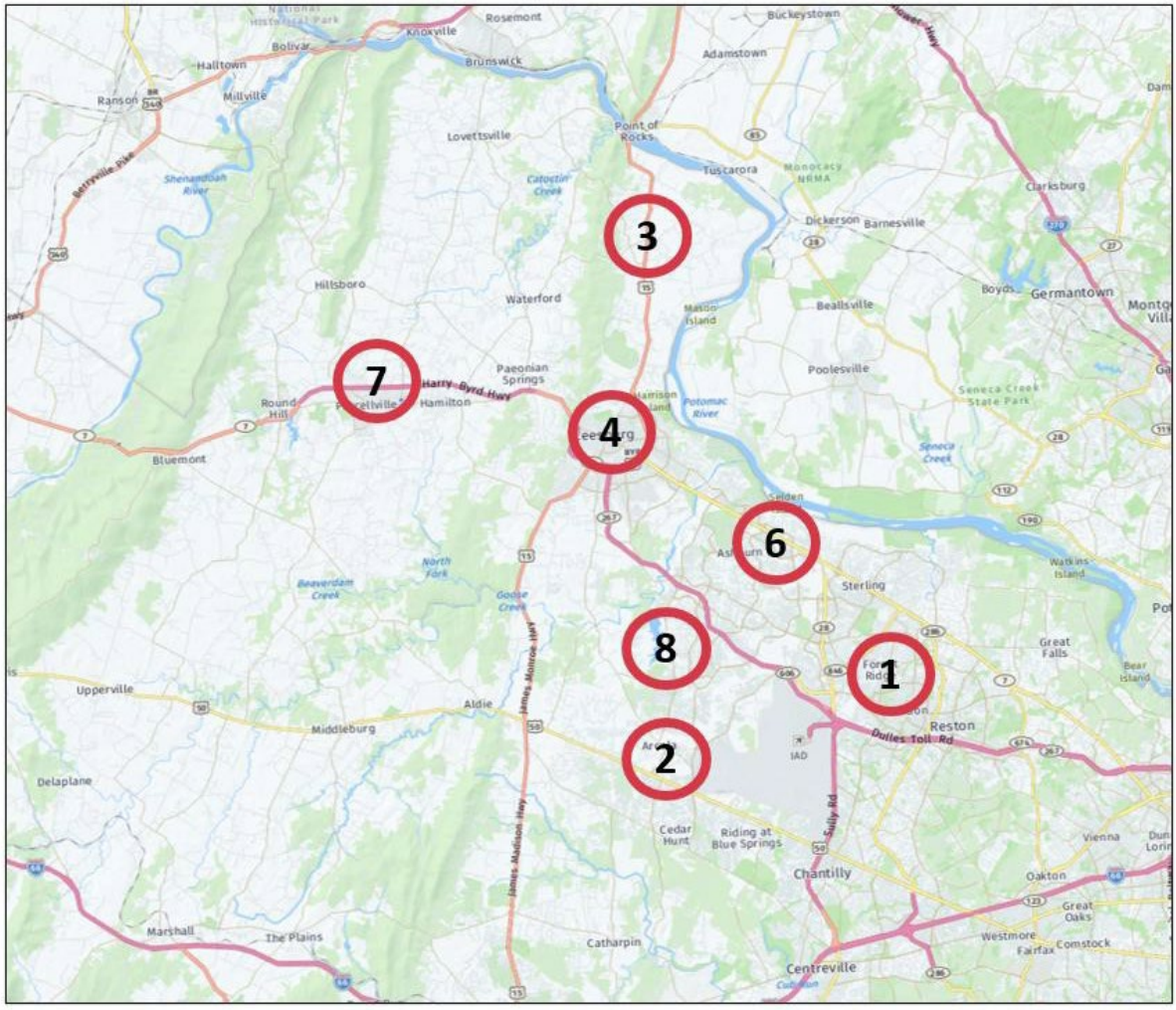
Figure B–1 indicates the proposed county-wide locations for both pop-up events and formal public workshops. **Table B**–1 below indicates the specific location and anticipated format of the event or workshop. The public meetings are aimed at reaching a wide variety of riders and non-riders with geographic and socioeconomic diversity. The following sections describe the approach for each event. Pop-up events are expected to take place November 5, 2022 – December 2, 2022, and public workshops between November 20, 2022 – December 7, 2022.

Table B–1: Pop-up Events and Public Workshop Locations

Number	Event Location	Event Type
1	Sterling (Giant Food at Town Center Plaza, 21800 Town Center Plaza, #226, Sterling, VA) November 5, 12:00 p.m. – 4:00 p.m.	Pop-up
2	Arcola/South Dulles (Walmart Supercenter at Dulles Landing, 24635 Dulles Landing Dr., Dulles VA) November 12 12:00 p.m. – 4:00 p.m.	Pop-up
3	Lucketts/Northern Loudoun (Lucketts Bluegrass Concert, Lucketts Community Center, 42361 Lucketts Rd, Leesburg, VA) November 12, 6:00 p.m. – 9:00 p.m.	Pop-up
4	Town of Leesburg (County Government Center, Dulles Room, 1 Harrison St. SE, Leesburg, VA) November 30, 6:30 p.m. (setup 5:30 p.m.; clean-up by 8:00 p.m.)	Public Workshop
5	Countywide (Virtual/On-line) December 1, 6:00 p.m. (setup 5:30 p.m.)	Public Workshop
6	Ashburn (Holiday Market at One Loudoun, 44578 Atwater Dr, Ashburn, VA) December 3, 9:00 a.m. – 1:00 p.m. (setup 8:15 a.m.; clean-up by 1:30 p.m.)	Pop-up
7	Purcellville (Woodgrove High School, 36811 Allder School Rd, Purcellville, VA) December 5, 6:30 p.m. (setup 5:30 p.m.; clean-up by 8:00 p.m.	Public Workshop

Number	Event Location	Event Type
8	Broadlands-Brambleton (Briar Woods High School, 22525 Belmont Ridge Rd, Ashburn, VA) December 7, 6:30 p.m. (setup 5:30 p.m.; clean-up by 8:00 p.m.	Public Workshop

Figure B–1: Pop-Up Events and Public Workshop Locations[1]



[1] *Event #5 was a virtual meeting*

B.1.4.1 Pop-Up Events

Purpose: Gather input via project survey and interactive exercises. Promote and spread awareness about the project to help residents stay engaged.

Format: Staff and consultant will actively engage with members of the community for discussion/questions, survey postcards, project fact sheets, informative poster boards, and 1-wish exercises.

Materials:

- Tent
- Table/tablecloth
- Survey postcard
- iPads for survey participation
- Project informative posterboards
- 1-wish exercise
- Easels
- County-branded giveaways (if available, not included in Kimley-Horn scope/budget)

Audience: Loudoun County residents and the general public. Focused on both riders and non-riders.

Potential Avenues for Advertising:

- Virtual postcard
    - Project landing page
    - Social media accounts
    - Neighborhood lists/board member channels

Anticipated Timeframe: November 5, 2022 – November 13, 2022

B.1.4.2 Public Workshops

Purpose: *Gather input on goals, objectives, and vision for the plan.*

Format: In-person workshops will consist of an initial informative presentation from Staff and the consultant, followed by interactive poster board walk-around session. The virtual workshop will consist of an initial informative presentation from Staff and the consultant followed by open discussion through guided questions.

Materials:

- Project informative presentation
    - Some slides may differ based on urban/rural context
- AV equipment for PowerPoint presentation
- Project fact sheet
- Project informational posterboards:
- Interactive activities

- Easels
- iPads for survey participation

Audience: Loudoun County residents, employees, and community representatives.

Potential Avenues for Advertising:

- Virtual postcard
  - Project landing page
  - Social media accounts
- Notify Me blog
- News release
- Board of Supervisor newsletter
- Partner venues

Anticipated Timeframe:

As of October 6, 2022, the following dates are available on the County Calendar:

- Tuesday, November 29, 2022
- Wednesday, November 30, 2022
- Thursday, December 1, 2022
- Monday, December 5, 2022
- Wednesday, December 7, 2022

B.2 Project Survey (November - December 2022)

To reach target audiences and provide various opportunities for public input, the project team designed and executed a project survey, public workshops, and pop-up events.

The project team designed and launched a public survey to gather input on transit priorities, strengths, and opportunities from residents of Loudoun County and surrounding counties that frequent Loudoun County. The survey assessed common destination-origin pairings, travel modalities, transit needs and priorities, and demographic information.

The survey, hosted virtually on JotForm, launched on October 14, 2022. The survey consisted of both multiple choice and short response questions and was available in English and Spanish. The survey was advertised at pop-up events and the public workshops, printed postcards, and virtually on the project landing page and County social media accounts.

B.2.1 Project Survey Text

The introductory text and survey questions adopted onto the project survey Jotform are as follows. Where appropriate, question modalities are included in brackets.

B.2.1.1 Introduction

We need your input to help shape the future of bus and commuting services in Loudoun County! Regardless of whether you've ever ridden a bus or taken a carpool

or vanpool in the County, we want to hear from you about your transportation experiences, priorities, and needs.

We're starting a year-long process to outline the next ten years of Loudoun County Transit and Commuter Services, and your feedback will help us make sure the path aligns with the priorities of the community! If you would like to learn more about the project, please visit the project website here: [project website link].

Click aqui para realizar la encuesta en Español: [project website link].

This survey will take about ten to fifteen minutes to complete.

B.2.1.2 General Travel

How often do you travel to work, the grocery store, doctor's appointments, etc in Loudoun County?

- Daily
- Multiple times a week
- Multiple times a month
- Multiple times a year
- Never

What is your home zip code?

What is the zip code of the destination that you most frequently travel to (ex. work, school)? If you do not know this zip code, what is the name of the destination?

Consider the most common purposes of your trips. What type(s) of transportation do you regularly use to complete each type of trip?

- Rows
  - Commuting to or from work
  - Business meetings or other work-related trips
  - School
  - Shopping or errands
  - Visiting family or friends
  - Recreation or entertainment
  - Medical appointments
  - Other
- Columns
  - Driving alone
  - Carpool
  - Bus
  - Metrorail
  - Vanpool
  - Bike
  - Walk

- Other
- I do not travel in Loudoun County for this purpose

If you selected "Other", please describe this transportation mode or trip purpose.

Which of the current bus services provided in Loudoun County do you use? Select all that apply.

- Commuter Bus
- Local Bus
- Metro Connection Bus
- Paratransit Bus

How often do you ride the bus in or to Loudoun County?

- Daily
- Multiple times a week
- Multiple times a month
- Multiple times a year

Which of the following priorities do you value most when considering your transportation options? Select your top 3. [checkboxes]

- Saving or better using time
- Route directness
- Reliability
- Cost or saving money
- Safety
- Health Impact
- Environmental Impact
- Accessibility
- Convenience
- Ability to carry goods or other people
- Other priority

Once the Silver Line opens in Loudoun County, do you plan to change how often you ride the bus? [select one]

- No, I do not plan to ride the bus
- No, I do not plan to change how often I ride the bus
- Yes, I plan to ride the bus more often
- Yes, I plan to ride the bus less often
- I am not sure how the Silver Line will impact how often I ride the bus
- I am not sure if I will ride the bus to connect to the Silver Line

B.2.1.3 Transit

For each of the following statements, please answer with True, False, or Not Sure [checkbox matrix]

- Rows
  - I have ridden Loudoun County Transit at least once
  - I ride Loudoun County Transit regularly (at least once a week)
  - I understand how to ride Loudoun County Transit
  - I would like to ride Loudoun County Transit more often if improvements were made (See following question for potential improvements)
- Columns
  - True
  - False
  - Not Sure

In an earlier question, we asked about transportation priorities. When thinking about transit service, how could service be improved for current riders and potential new riders in Loudoun County? Select and rank your top 3.

- Expanded weekend service
- Expanded early-morning or late-night service
- Better real-time information
- Service to new areas
- More frequent service
- Cleaner stops or buses
- Booking shared rides on-demand
- More point-to-point express service
- Smaller vehicles
- Other [write-in]

Please elaborate upon your selected priorities.

E.g. "I selected 'Expanded weekend service' because I would like to be able to ride the bus on Saturday evenings between 5:00pm and 7:00pm."

Limited resources require staff to make difficult choices about how to use those resources to best meet customer needs. In making these choices, staff must consider transit service options similar to the ones below. When considering these options, where would you rate your preference on where the County should invest? [1-10 scale].

- Larger service area with less frequent service (longer wait times) - Service concentrated in more densely populated areas (shorter wait times in select locations)

- Longer walk or travel to a more frequent bus – Shorter walk or travel to a less frequent bus
- Focus on peak period commute times – Service spread throughout the day
- Focus on weekday service – Service on weekday and weekends

Are there any specific destinations you would like to see served by transit that are not served by transit today? E.g. Gum Spring Library, Dulles Town Center, Leesburg Walmart

B.2.1.4 Commuting Options

Loudoun County Commuter Services assists individuals and employers with commuting choices such as transit, carpools, and vanpools. The Loudoun County website, Loudoun County Commuter Services Facebook page, and customer service phone lines offer information on carpool/vanpool matching, personalized trip planning, park and ride locations, transit route information, incentives, telework, and programs for Loudoun County workplaces.

For these questions, "using the services" means you have contacted customer service for assistance, visited the commuter services web pages, pursued ridematching, or received employer services from Loudoun County.

For the following statements, please answer with True, False, or Not Sure

- Rows
  - I am aware of Loudoun County Commuter Services
  - I have used Loudoun County Commuter Services at least once
  - I understand the programs and services available through Loudoun County Commuter Services.
  - I have accessed commuting information from the Loudoun County website.
  - I receive a financial commuting benefit (e.g., SmartBenefits) through my employer.
  - If my home or work location changes, I would consider using Loudoun County Commuter Services when preparing for a new commute.
  - I would consider riding Loudoun County Transit or pursuing a vanpool if I had a commuting benefit to offset the cost.
  - I would recommend Loudoun County Commuter Services to friends or neighbors in search of transportation options.
- Columns
  - True
  - False
  - Not Sure

Which of these potential transportation services would you be most interested in seeing in Loudoun County? Select and rank your top 3.

- Financial incentives to try alternative transportation

- Ride matching or other carpool/vanpool assistance
- Employer-led commuting
- Improved bicycle and pedestrian facilities
- Bikeshare or scooter-share programs
- Trainings or tutorials on how to ride transit or other multimodal options
- New or expanded park and ride lots
- Clearer information about available transit or other multimodal options
- Other [write in]
- If you selected "Other," please describe this transportation program or strategy.

How many days a week do you currently commute?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7

How many days a week did you commute before the COVID-19 pandemic?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7

Are there any employers or destinations that you want to commute to? E.g., Gum Spring Library, Dulles Town Center, Leesburg Walmart

Your feedback is important to us. Please provide any additional input.

B.2.1.5 Demographics

The following questions are optional and intended to help us understand who we reached with this survey. All information will be kept confidential. Thank you for your input!

How many vehicles are available to you and your household?

- 0

- 1
- 2
- 3 or more
- Prefer not to answer

What is your age?

- 17 or younger
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75 or older
- Prefer not to answer

Do you consider yourself to be Spanish, Hispanic, and/or Latino?

- Yes
- No
- Prefer not to answer

Please choose one or more races you consider yourself to be. Please select all that apply.

- White/Caucasian
- Black/African American
- Asian
- Pacific Islander
- Native American
- Middle Eastern
- Some other race; please type another option here
- Prefer not to answer

What is your annual household income before taxes?

- Less than $10,000
- $10,000 to less than $15,000
- $15,000 to less than $20,000
- $20,000 to less than $25,000
- $25,000 to less than $30,000
- $30,000 to less than $50,000
- $50,000 to less than $75,000
- $75,000 to less than $100,000
- $100,000 to less than $150,000
- $150,000 to less than $200,000
- $200,000 or more

- Don’t know/Prefer not to answer

Are you…?

- Male
- Female
- Transgender
- Non-binary/Gender non-conforming
- Prefer not to answer

What is the highest level of education you have completed?

- High school graduate or less
- Technical/training beyond high school
- Some college
- Bachelor’s degree
- Graduate school (Master’s, Doctoral, Law, Medical Degree, etc.)
- Prefer not to answer

Which of the following best describes your current employment status?

- Paid full-time worker
- Paid part-time worker
- Full-time military
- Full-time student
- Part-time student
- Unpaid worker or volunteer
- Retired
- Homemaker
- Temporarily unemployed or furloughed
- Otherwise not currently working for an extended period of time
- Other employment status; please type other option here
- Prefer not to answer

Do you speak English fluently?

- Yes
- No
- Prefer not to answer

Which language(s) do you speak most at home?

- English
- Spanish
- Some other language(s) please type another option here

B.2.2 Project Survey Responses and Data

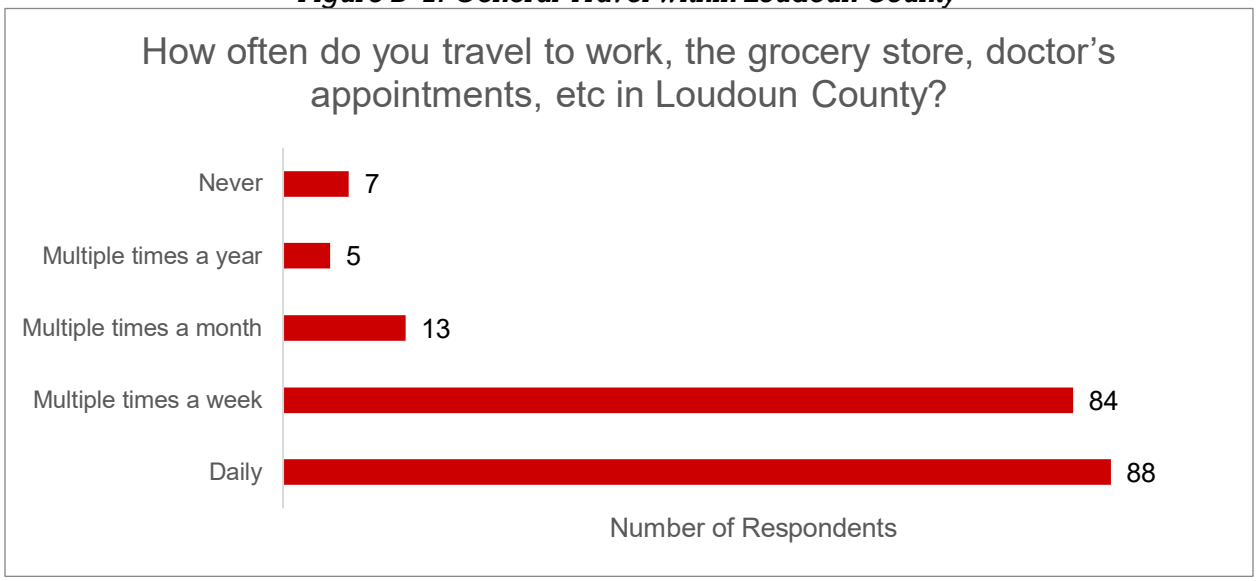
B.2.2.1 Introduction

The project survey received 198 responses. 196 responses were submitted in English, and 2 responses were submitted in Spanish. As no questions were required, the number of respondents for each question varies.

B.2.2.2 General Travel

How often do you travel to work, the grocery store, doctor's appointments, etc in Loudoun County?

Figure B–2: General Travel within Loudoun County



What is your home zip code?

Figure B–3: Survey Respondent Zip Code Map

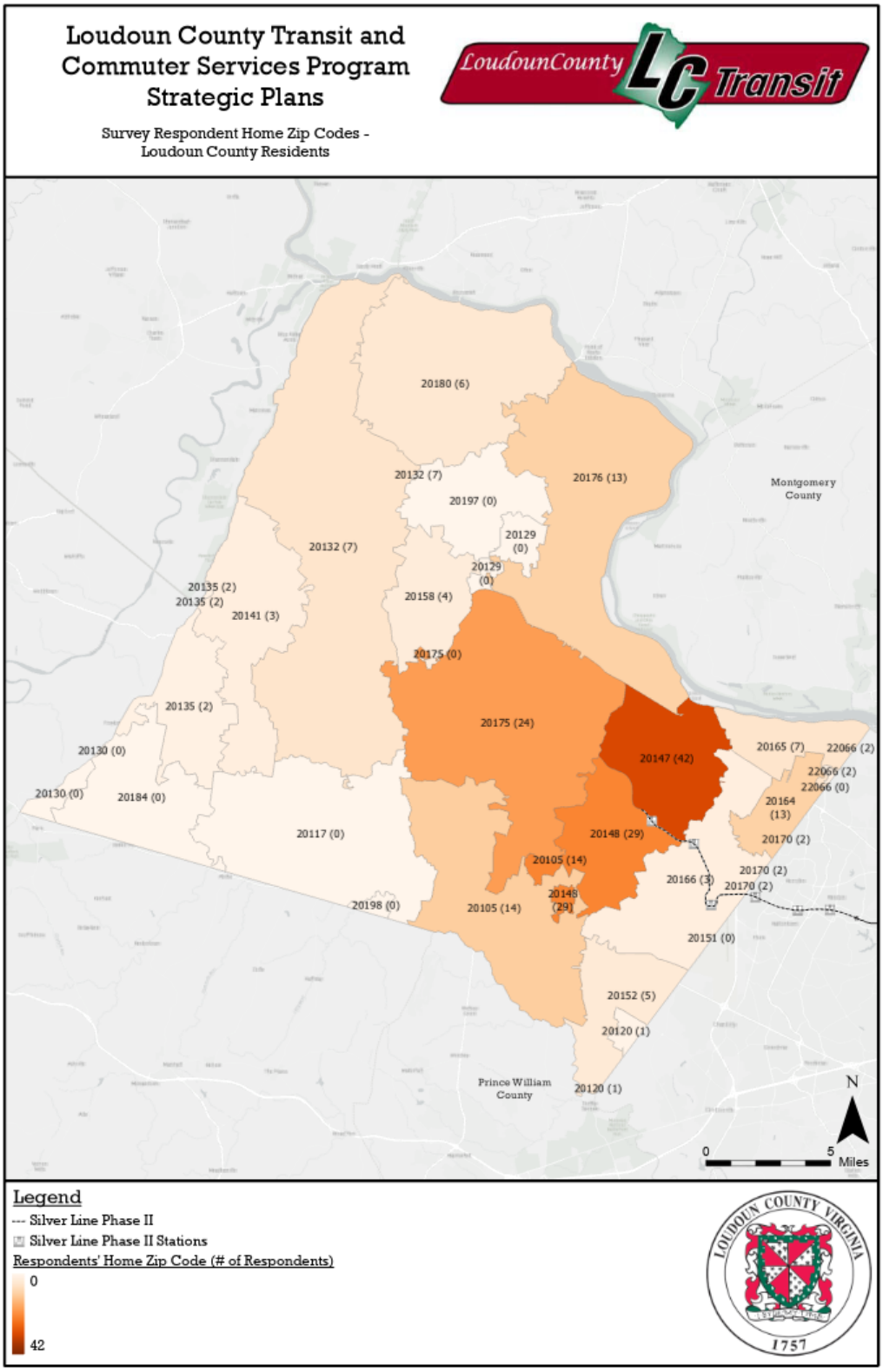
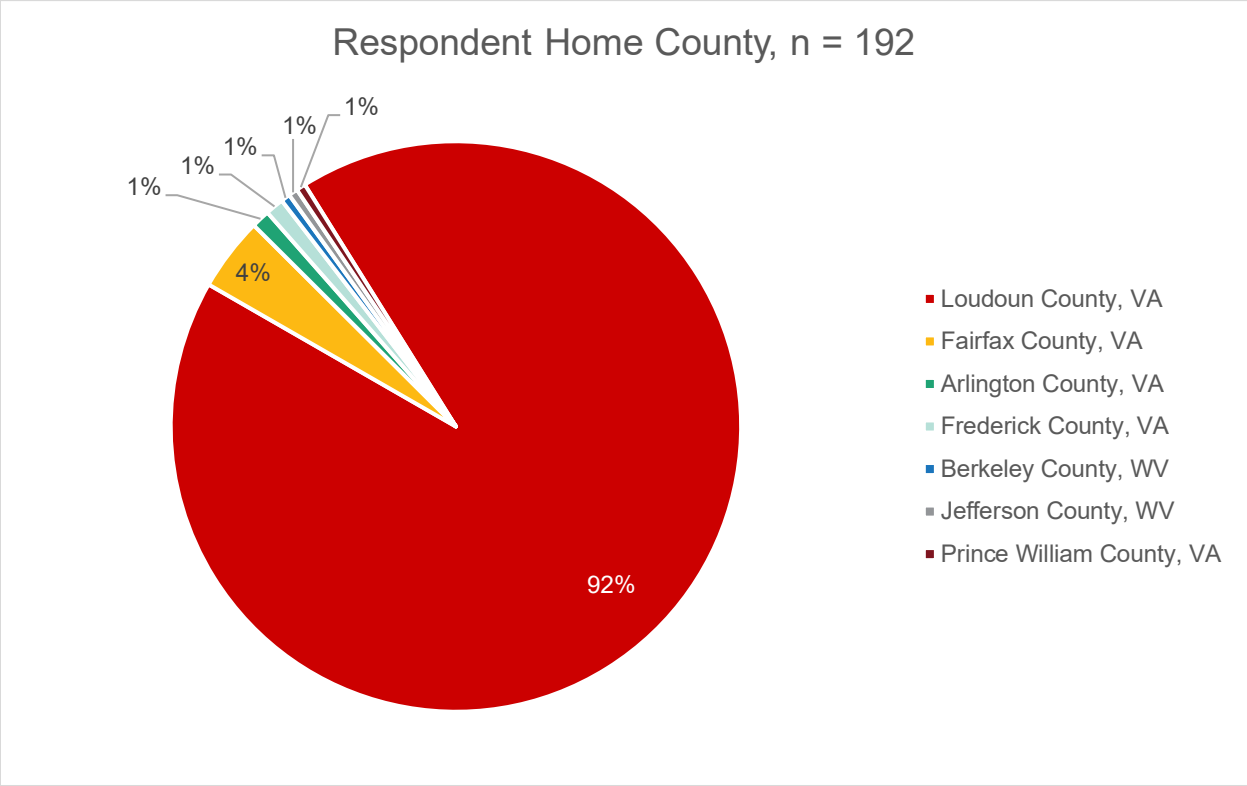


Table B–2: Respondent Zip Codes

Zip Code	# of Respondents
20147	42
20148	29
20175	24
20105	14
20176	13
20164	13
20132	7
20165	7
20180	6
20152	5
20158	4
20141	3
20166	3
20135	2
22066	2
20171	2
20170	2
22656	1
20191	1
20169	1
20190	1
22201	1
22602	1
22182	1
22203	1
25414	1
25403	1
22044	1
20120	1
22601	1
20194	1

Figure B–4: Respondent Home County



What is the zip code of the destination that you most frequently travel to (ex. work, school)? If you do not know this zip code, what is the name of the destination?

Figure B–5: Survey Respondent Work Zip Codes

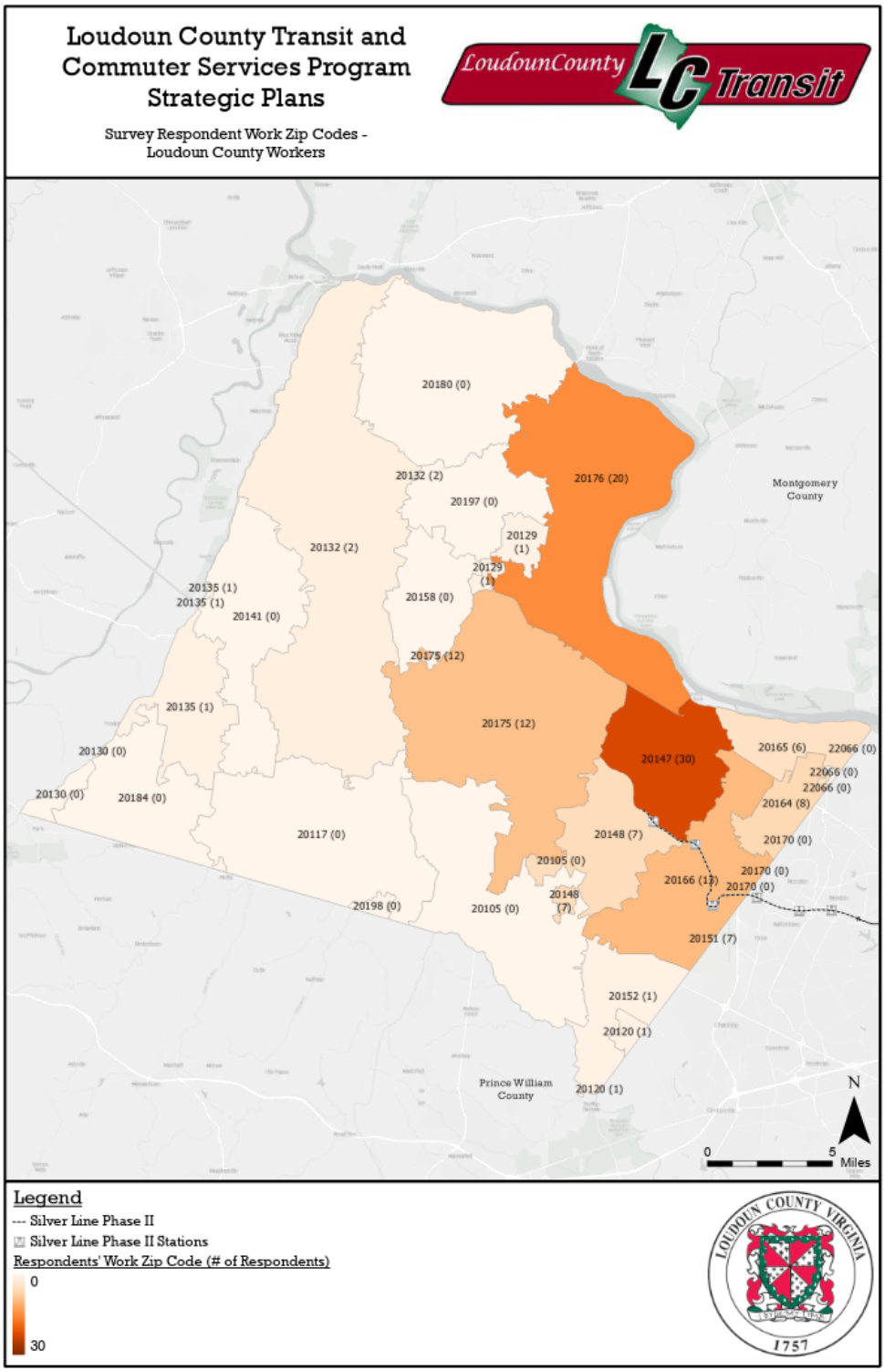
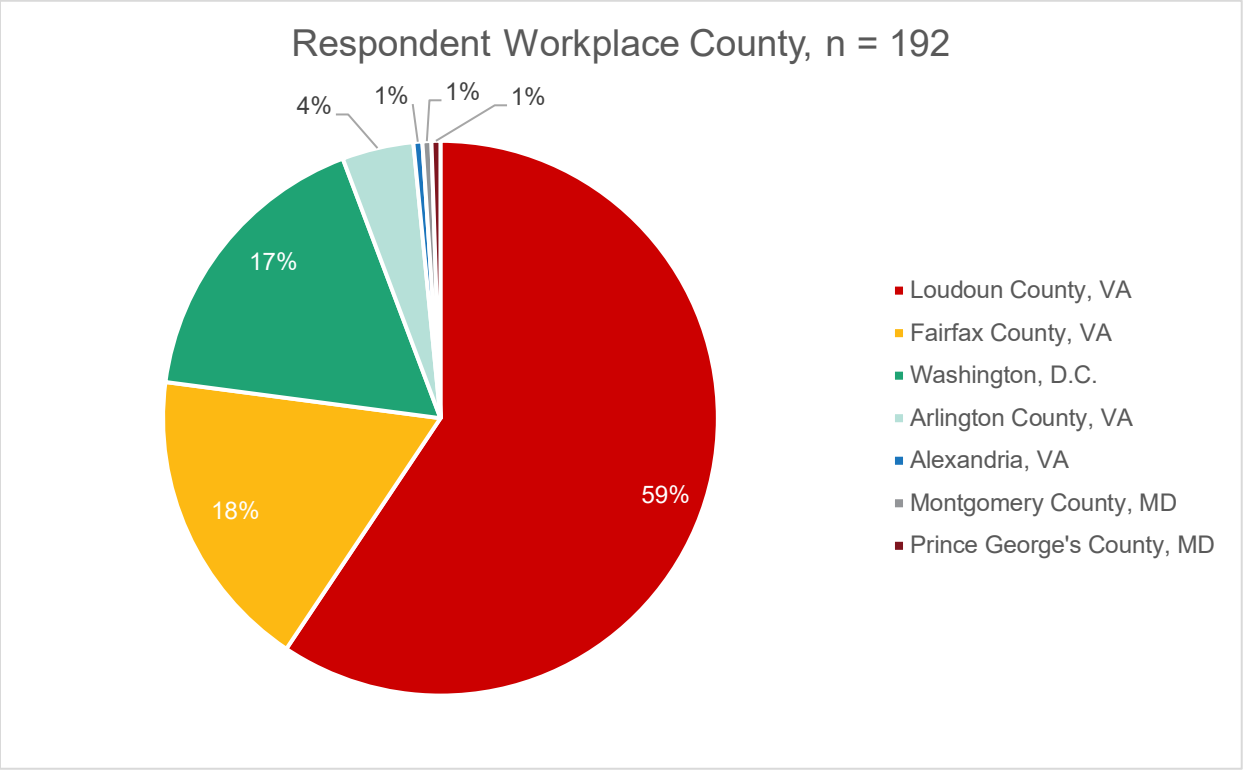


Table B–3: Survey Respondents Work Zip Codes

Zip Code or Place Name	# of Respondents
20147	30
20176	20
20175	16
20166	13
20164	8
20191	8
20148	7
20151	7
20165	6
20520	5
20006	4
20190	4
22202	4
20177	3
22102	3
20001	2
20024	2
20132	2
22170	2
20171	2
22031	2
22182	2
22209	2
20002	1
20005	1
20007	1
20020	1
20036	1
20045	1
20120	1
20125	1
20129	1
20135	1
20152	1
20158	1
20194	1

Zip Code or Place Name	# of Respondents
20433	1
20530	1
20544	1
20590	1
20735	1
20910	1
22042	1
22043	1
22102	1
22106	1
22180	1
22203	1
22314	1
Arlington, VA (Unspecified Zip)	1
Fairfax, VA (Unspecified Zip)	2
McLean, VA (Unspecified Zip)	1
Reston, VA (Unspecified Zip)	4
Washington, D.C. (Unspecified Zip)	10

Figure B–6: Respondent Workplace County



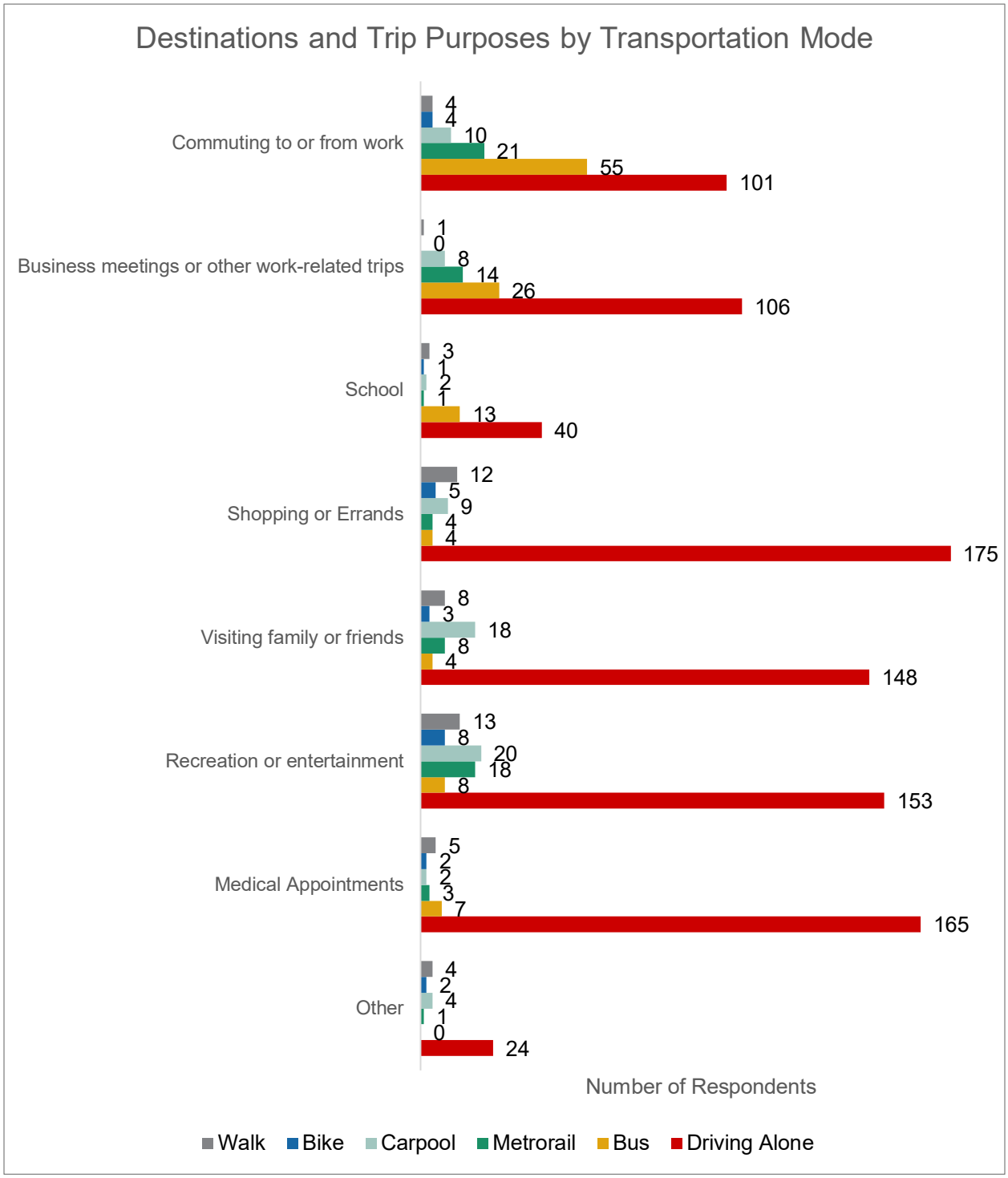
Consider the most common purposes of your trips. What type(s) of transportation do you regularly use to complete each type of trip? [select multiple; data shown in number of respondents]

Table B–4: Respondent Most Common Transportation Mode via Trip Type

*in survey, written as "I do not travel in Loudoun County for this purpose"

	Driving Alone	Bus	Metrorail	Carpool	Vanpool	Bike	Walk	Other	N/A*
Commuting to or from work	101	55	21	10	0	4	4	0	29
Business meetings or other work-related trips	106	26	14	8	0	0	1	2	30
School	40	13	1	2	0	1	3	0	78
Shopping or Errands	175	4	4	9	0	5	12	0	6
Visiting family or friends	148	4	8	18	0	3	8	1	12
Recreation or entertainment	153	8	18	20	0	8	13	2	7
Medical Appointments	165	7	3	2	0	2	5	0	9
Other	24	0	1	4	0	2	4	0	22

Figure B–7: Destination and Trip Purposes by Transit Mode



If you selected "Other", please describe this transportation mode or trip purpose.

Table B–5: Respondents Who Selected Other Transportation Mode and Trip Purpose/Destination

Other Transportation Mode	# of Respondents
Amtrak	1
Flying	1
Connecting to other Transportation Mode	2
Religious Services	3
Travel for Exercise (ex. biking, walking)	4
Volunteering	2

Figure B–8: Respondent Current Bus Loudoun County Bus Service Use

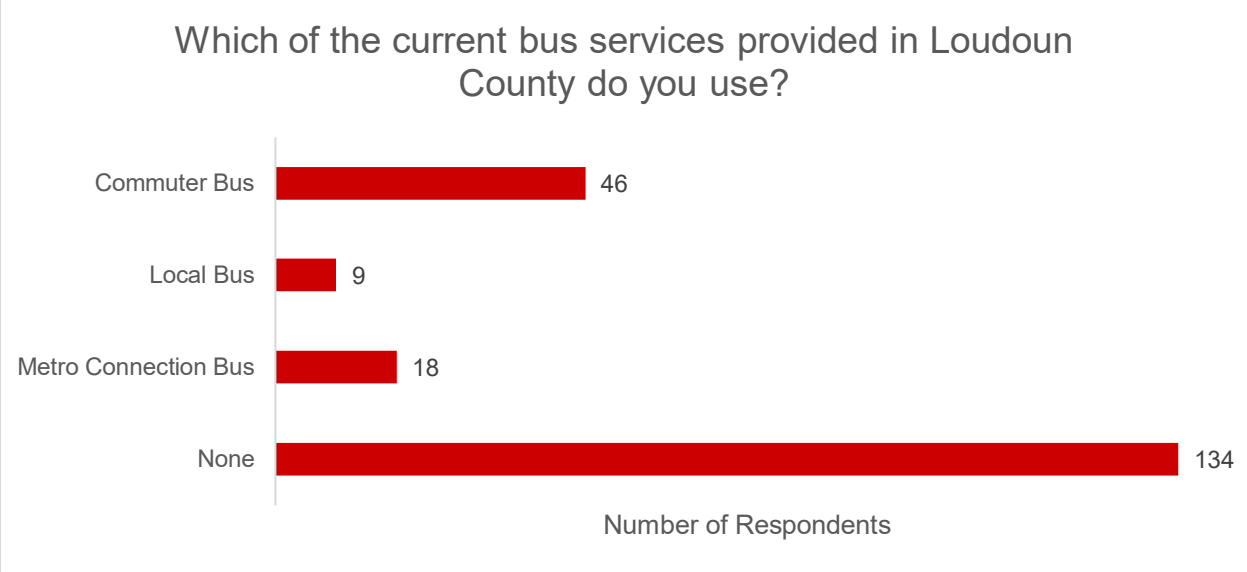


Figure B–9: Respondent Bus Service Use Into Loudoun County

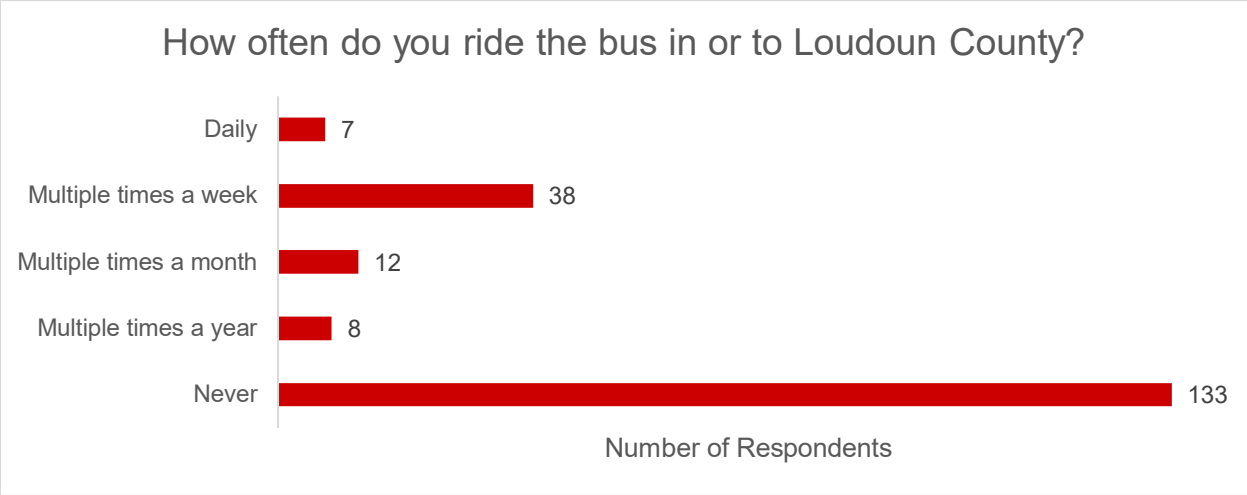


Figure B–10: Respondent Priorities When Considering Transportation Options

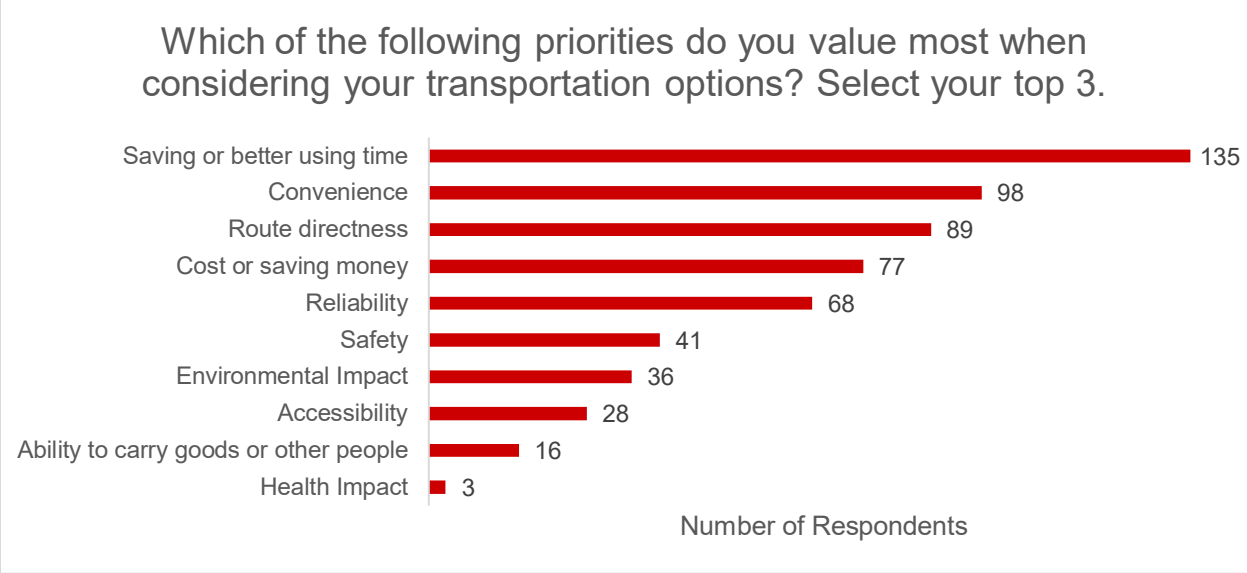
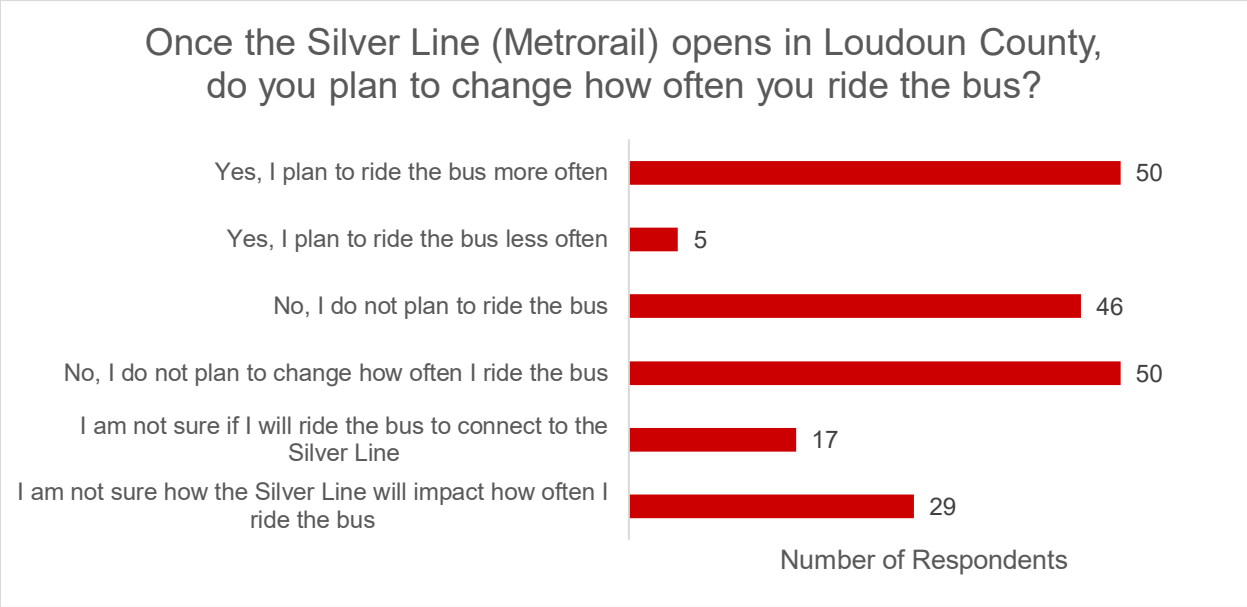


Figure B–11: Respondent Plans With Silver Line Metrorail Extension



B.2.2.3 Transit

Figure B–12: Respondent True or False Questions

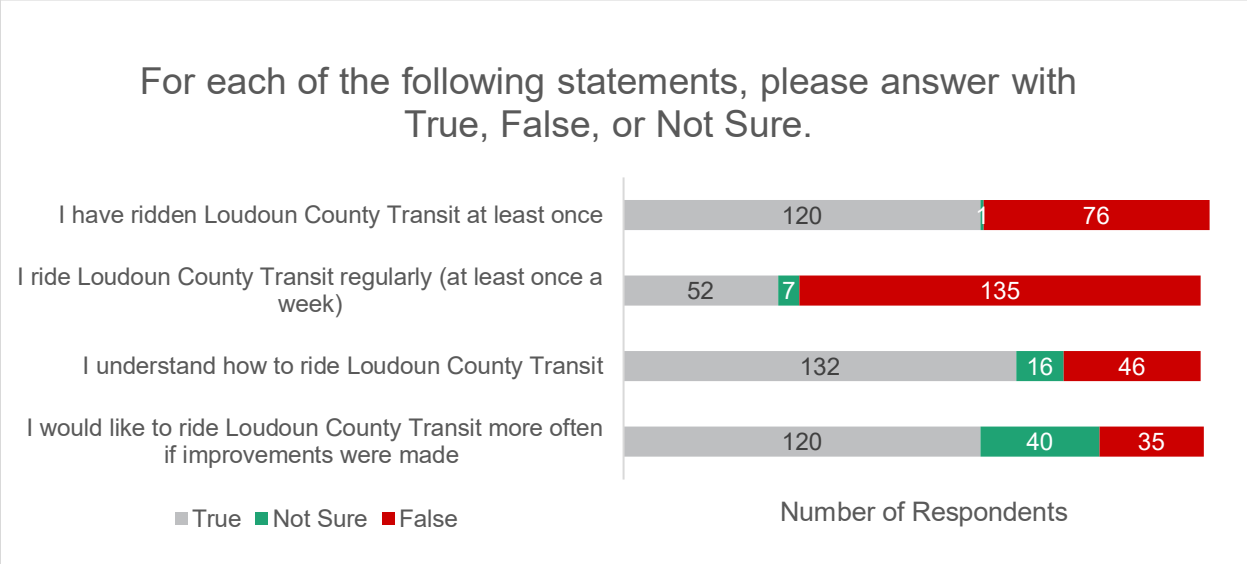
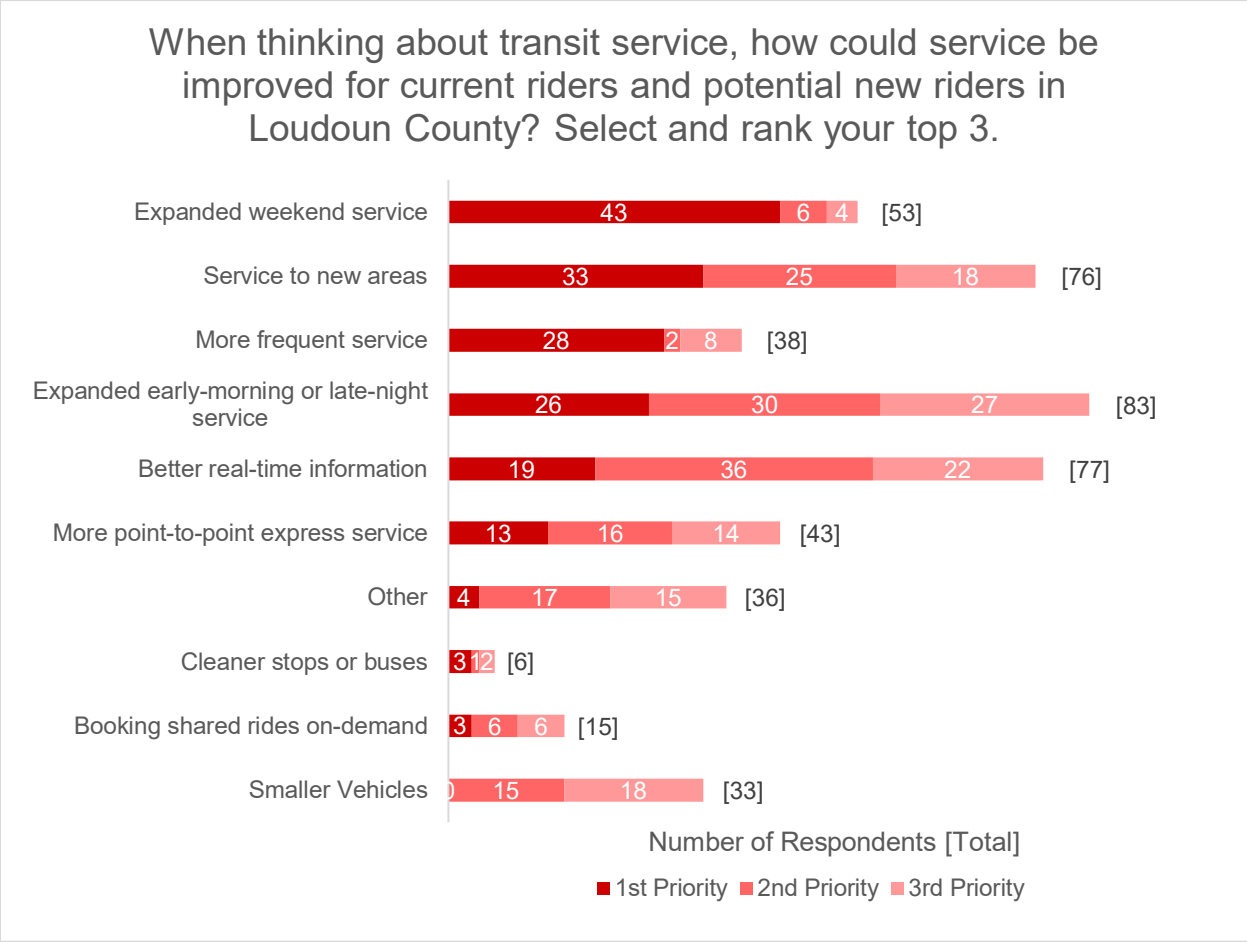


Figure B–13: Respondent Improvement Priorities



If you selected "Other", please describe this transportation priority.

Table B–6: Respondent "Other" Priorities

Other Transportation Priority	# of Respondents
Expanded commuter stops and service, such as to D.C. or Maryland	5
Improved bus stop infrastructure, such as seating or informational signage	3
Additional stops along existing routes	2
Free parking at intermodal connections	1
Expanded education about transit service options	1

Please elaborate upon your selected priorities.

Table B–7: Respondent Comments on Transportation Priorities

Comment on Transportation Priority
I would like to be able to book uber or lyft style rides, even when sharing rides with other people.
A good reason I chose ' Extended Weekend Service' is because a lot times there's a lot of people that are called to work on the weekends and there isn't transportation available as early or to late at night and I imagine how scary it is not to have availability to get home on Saturday night after 11pm because Uber is to expensive or there is lil to non in that specific area/ or to far- weekends are the busiest.
Add bus shelters at all bus stops!!! No one likes waiting in the rain and snow!!!! The lack of bus shelters in some locations is a major deterrent and inhumane. If there were bus shelters everywhere, I would ride the bus daily. When I was parenting a young child, some days, I was unable to ride the bus due to the lack of shelters from sun, wind, rain, and snow. Also, ban smoking and vaping at bus stops. It's frustrating to be at a stop and the person next to you is forcing you to breathe their second hand smoke. The question below is not a question, both are equally important. Invest more money so that both needs can be met.
Add some rural routes to amenities in towns
Additional express bus commuting options between Leesburg and Washington DC for morning and evening commutes
As a parent, time is one of my most valuable resources. Offering expanded early-morning service and more frequent service would allow me to better align my work schedule with my children's school schedule. I live in the county, work in the county, and am grateful to have the local buses for my commute. Unfortunately, the reduced stops on weekends means that our neighborhood does not get serviced; if this changed, we would make more frequent visits to shop and dine in downtown Leesburg, One Loudoun, and other parts of the county.
As traffic increases with more people returning to work, we will see additional riders on the commuter bus. As that happens, we will need to re-think the schedules that were set up during the pandemic. if traffic is slow people may drive, and will not take the Metro from leesburg into DC.
Bus must be within a couple blocks of my home to be of use. If I have to get in my car to drive to a bus stop, then I will just drive all the way to the destination. This is a reasonable request from a potential customer perspective. That said, it likely is not feasible from a practical and cost perspective. That's going to be the dilemma for your planning. Get enough routes close enough to population centers to make riding the bus a desirable alternative to driving. One idea would be to use bike lanes and bike parking lots to centralize bus stops that would perhaps get a bit closer to the goal. With electric bikes, riding up to a mile to a secure bike parking lot/bus stop may work.
Bus service to the Metro ends to early in my opinion. I normally get in between 5:45 to 6:30 pm. The last bus currently departs at 7:30 pm and runs about every 40 minutes. This has often led to a rather extensive wait at the station and a low key fear about missing the last bus if I get held up at work. Missing the bus in the morning guarantees being late. Also I feel local bus service, especially in Ashburn, is woefully inadequate to travel around the area, following a pretty tight and constrained route. I would ride much more often if more plazas and industrial areas were linked.
Continue commuter bus operation to and from DC since the bus is better option than taking the silver line which is much longer commute time.
convenience and point to point service would be great - smaller electric vehicles
Convenience to silver line
couple of more late morning runs 343 344 on work days
currently bus from my home to silver line including walk & wait time is 1.5 hrs vs 1/2 hr to drive. if it gets to 45 mins i would consider it. ped crossing at rte 7 & palisade pkwy / loudoun tech drive.

Comment on Transportation Priority
currently for my work place I have only few busses coming to and fro from Reston Metro. That's too far from my home . More point to point service will help me
Currently, it is not convenient to take public transportation from Leesburg to: either Washington DC, or Fairfax and George Mason University....(there is no way to get to GMU...)
Due to COVID, express buses are gone - they were a huge time savings. Have to go through the whole city - adds a lot more time. Skipping the TR bridge hurt time as well. Buses can be faster than silver line, but less frequency and buses being late more often does not help me using them.
Except for free or heavily subsidized service for the poor and less fortunate who can not afford cars, the riders should pay their full costs. Use smaller, call-up vehicles and individualized services rather than running almost empty buses at all hours
Existing routes do not reach enough areas; it takes too long to walk to routes/stops, which makes bus travel take too long overall. Existing routes have too many stops and/or are too indirect, making bus travel take too long overall. Please add new routes to reach new areas.
Expand on the Bus system. More pick-up locations would be nice. Metro is not a viable option for those commuting within the county. There are too many stops which make the trip time considerably more than the directness of the Bus. The bus system is also much more reliable than Metro and much more comfortable. The price between metro and the LC Bus is not much different and I would gladly pay for the bus. Please do not decrease the bus system, loudoun commuters will not benefit from the Metro as much as local leaders are hoping.
Expanded hours would only be beneficial if the routes actually serve the needs of the public
Expanded Late Night Service: As a commuter from Brambleton to Rosslyn (Arlington) VA, the ride on the silver line train takes around 1 hour. Since the last Metro Connector bus leaves Ashburn station around 7p, this means that I need to leave work between 530 and 600 to ensure I don't miss the bus, which often is not possible. With the train running much later, I could ride the bus more if it ran at least one more hour. Service to new areas (metro connector bus): I would request service be added to Olympia Drive in Brambleton. Service on Olympia Drive was in the original plans published last year but was replaced by duplicative service on NorthStar Blvd. Olympia is a busy street that services the town center and is fed by numerous smaller streets. I would request service be restored or at the very least, a stop by added at the intersection with Creighton. Service to new areas (commuter bus): Before COVID, I regularly rode the commuter bus from the Brambleton Park and Ride to Rosslyn Virginia. Unfortunately, when service was restored earlier this year, the stop in Rosslyn was removed. Rosslyn has many businesses, including the North American HQ of Nestle, and major offices for Gartner and the State Department, plus it is major a commuter hub with a Blue/Orange/Silver line station. Therefore, I would request the stop in Rosslyn be restored. More Frequent Service: For the commuter bus, a large percentage of my total commute time is waiting for the bus, and when I recently missed the bus, it added 30 minutes to my commute time.
Expanded Weekend Service: It would be helpful to have expanded weekend service beginning Friday evenings (perhaps running until 9 or 10pm) and Saturdays and Sundays (perhaps from 9am-9pm) so that there are more opportunities for people to access the silver line and the regional entertainment and dining options. Service to new areas: It would be helpful to have a metro connection stop/park and ride in Round Hill. Perhaps utilizing the parks and rec field area off of Evening Star, or the Neils Poulson Park area, or the Round Hill Center.

Comment on Transportation Priority
More Frequent Service: The line I ride (391) replaced what I believe was a heavily used line going further in. I think that there may be wider adoption of that line if there were more frequent options than are currently offered. For the times that I ride, I would prefer that the 391 arrive at the Ashburn Station metro by 8:15/8:20 vs. 8:31 and depart at 5:15 (close to the current scheduled time).
Expanding weekend service and more point-to-point express service to western Loudoun's winery, brewery, and distillery venue experiences. Less vehicles on the road, and safer roads with less intoxication.
Extended hours lead to increased flexibility. I work in downtown DC at the Department of Commerce. I would like more direct service from Leesburg that does not stop at Dulles North.
faster travel time
Frequency is very important. Who would like to wait for more than 10 min?
Have not used it prior
Having a frequent morning and afternoon, Monday to Friday route schedule from Winchester to Leesburg would influence me to use my car less.

Hello Sir / Madam,

I prefer a point to point service from some park and ride point in Ashburn to Union Station during peak hours (and return service in the evening).

This would save at least an hour of commute for everyone who commute from Ashburn to work in DC.

But then you may not know the exact (or average) daily numbers to positively decide on this requirement. Alas!

Short of a miracle, I wonder if anyone would even be reading this request and/or sharing it with someone else in the board that decides on such matters.

I pray God that someone would read this desperate request and the dire requirement.

Thank you

Comment on Transportation Priority
to a closer silver line metro stop (Reston ideally). I would use this bus route to also get to the Dulles Airport or downtown DC via any closer silver line metro stop.
I have a special needs child. If we cannot get her driving, we will need to move as there is not adequate public transportation to get her to employment or activities in order for her to live an independent lifestyle
I have been riding the Loudoun Commuter bus for over 12 years and used the Navy Yard stop for many of those years. Please add Navy Yard back to the schedule! I am 73 years old and still commute to work in DC. Currently, I have to take the bus to 6th street then walk to the Metro to get to Navy Yard in the morning and then the reverse in the afternoon.
I have difficulty walking long distances so close access would allow me to travel using the bus more.
i have no plans or need to ride the bus or metro
I like riding the bus to metro, but I hate going home. As Metro can be a little unreliable in time planning, especially coming so far, it makes planning to catch a run very difficult, and it sucks to wait upwards of half an hour if you miss one by a minute or two. Frequency would be very helpful.
I live close to where there'll be a bus stop to take me to one of the new Loudoun Stations which could take me to the airport. That accessibility is important to me, as well as the reliability and convenience of taking the bus to the station. I would like expanded weekend service as this would give me more access to entertainment, but accessibility, convenience, and reliability to get me to the airport are the main draws for me.
I live in Hamilton. Reston town center is a 35 min drive down route 7 and 28 with $1.50 in tolls. To take the new silver line I'd have to pay for the Greenway tolls $4.50 plus parking and the metro fare, all while doubling my trip time. I can use tax free commuter plan for metro and parking but not the toll. It's pointless for me to even attempt to ride the silver line
I live in Sterling and work at Tuscarora High School in Leesburg. I would consider riding the bus but it doesn't go that far north.
I live in western Loudoun. Transit service is poor here. Ride on demand would help.
I live in Winchester and work in Leesburg. I would like to have access to daily commuter services that service this route.
I only ride the commuter bus to work in DC. I think the schedule offers enough buses.
I regularly go to Nats Park on the weekends during the baseball season.
I selected "Expanded weekend service" because I would like to ride the bus on Saturdays and Sundays. I selected "Service to new areas" because I would like to ride the bus to Purcellville on the weekends. I selected "More frequent service" because I would like to ride the bus on Saturdays and Sundays.
I selected better real-time information, so I can plan my commute time to my destination.
I selected expanded weekend service as I would use the bus to get to Metro. I would like as much info as possible.
I selected extended weekend because I would like to ride the bus between 5-7 on Sundays. I selected service to new areas because I live in Ashburn farm and there is no bus service.
I selected Weekend service because I would like to take my kids to metro station and visit DC so I don't have to drive. I also selected more frequent service because If I want to go to metro station from my home leaving my car at my parking there's no easy option. There should be bust stop and direct connection. I don't want to waste my time waiting for bus and transfer. Imagine, how can we ride bus during winter? Whoever, is making this decision, they must ride a bus and realize how it feels? Please add direct connection to Dulles Airport from Leesburg.
I take the bus to Crystal City and would like more frequent options throughout the peak hours. 6am to 9am departures from Dulles north. 4pm to 6pm departures from Crystal city.
I think visitors to Loudoun County would like to get a bus at Ashburn on weekends to reach events, shopping and friends.

Comment on Transportation Priority
I try to avoid taking route 7 except on longer trips, not, errands.
I use Loudoun Premium Commuter bus services a few times a week. It's a God-send because it saves me from driving into DC. Additional bus runs to/from Dulles South would be appreciated!
I was a frequent rider of what was then the Metro Connect service (now the Silver Line service, of course) from Cascades area to WFC before the pandemic. I thought then that there should be more frequent and late afternoon/evening service. But, Covid-19 blew all that up understandably. Now, I am required back to work in DC two weeks per month and recently started back with the new Silver Line service, and I really like it. I wish the Cascades service was more frequent and extended further into the evening, because I leave work in DC at 5 and sometimes barely make the last Cascades bus leaving Reston Station. And, if there's a Metro delay? Forget about it. I understand that there's a bus driver shortage, so I don't know what the solution is.
I work at a senior apartment on route 70. The building is between Costco and NOVA. There is no sidewalk along the Costco to that nearest stop. Crossing rout 7 to the NOVA stop is too far and dangerous (I think it JUST got a crosswalk)
I work in an area that is served by Loudoun transit buses, but no stops are within a reasonable proximity to my office even as the bus runs down a main drag near the office. Simply adding more potential stops to get on and off would make a big difference. Smaller vehicles might allow for more service and routes. Using ride sharing tactics might allow for a private sector solution for service when demand is lighter that could be more cost effective then using a Loudoun Transit vehicle and driver.
I work in DC and need to be at the hospital no later than 0600. I could in theory take a bus to Roslyn Metro or a bus to the silver line metro station at Innovation Drive however the bus that runs by my home does not start running until 0700.
I work near the Market St County Bldg stop and find it very hard to see traffic heading out of historic district when buses are parked there. Cars often speed and it's dangerous to even walk in cross walk or attempt to pull out to turn left.
I would be interested in taking the bus more often if there were more routes from Purcellville to where I needed to go. Commute and doctors in Ashburn nearly daily, for example. A bus that made stops to the major shopping centers in Ashburn would be very convenient and an attractive option for me.
I would consider taking the bus to work if it was available from Jefferson County WV
I would like a bus stop near my home, Loudoun View Senior Living Center. It would be nice to able to eat out and shop on Saturday evenings.
I would like buses in Ashburn to go to grocery stores, other retail stores and back near home. Visit to doctors. Visit to one Loudoun and back. Trip to the silver metro station and back. Also trips to Aldie, South riding, Sterling etc.
I would like more bus service to and from the Brambleton park and ride lot.
I would like to have the bus services till 7 pm in the evening and an app to track buses real time would be helpful.
I would like to ride the bus for shopping
I would like to ride the bus on Sat eveings between 5 and 7 am
I would like to see more frequent trips between the Government Center and the new Ashburn Station.
I would like to see more service going to Maryland locations such as Bethesda, Medical Center, Silver Spring, College Park, Largo, Branch Ave. All the transit services seem to serve more into central DC. Some commuters need to bypass DC altogether.
I would like to use the new 331/332 service on weekends in order to access the Ashburn metro station and Dulles airport and also to use the metro to reach DC museums and attractions
I would ride the bus more often if I didn't have to drive to a bus stop. I am willing to walk 10-12 mins to the bus stop. Also would ride more if I can get more direct route to the metro rail station

Comment on Transportation Priority
I would take bus to airport then ride metro to DC. Also take bus to Dulles airport and not have to pay to park my car.
I would use bus service to Silver line more often if the service was offered on weekends and during day between 10 am and 3 pm
If I or those visiting me can get closer to me from the Metro, that would save time getting them to my home.
If the buses schedules were more readily available and how they link to Silver line I may be more inclined to use if they are safe, clean, avoids Covid/Flu with. masking.
It is very stupid that you do not have weekend service or a bus that takes you directly to the Metro now that it is open in Loudoun County. Leesburg's population needs to have a way to get to the Metro. If Fairfax can do it, so can you. Stop being stupid by not having weekend service and late service to return. Idiots run the decisions of what is needed. Buses should be able to run the same as the Metro times. Pure stupidity of people running this as idiots.
It would be nice as a county employee to use transportation to get to and from work.
Knowing exactly when the transportation method will arrive/depart is a priority.
Local bus service to connect South Loudoun Co (Aldie) to Chantilly (Rt 50 / Rt 28)
LTC commuter bus used to pick up from more locations in the county pre-pandemic. If demand increases as more commuters return to the office, it would be great to increase the number of park and ride locations comparable to pre-pandemic.
Many people work late hours and on weekends. Late buses would help the loudoun community. Many people do not have vehicles. If they don't take the bus, they will use Lyft or Uber and loudoun misses out on helping the community. Fairfax connector is a good example of great service to Fairfax county, and loudoun needs to expound on it to there own use of bus service.
More commuter buses to run to the 14tn street area in DC as well as more times in the afternoon and mornings
More frequent service, expanded hours, and express service could increase ridership.
More frequent service, I see that 382 got scaled back already. Time the bus better with Metro rail.
More stops should have a shelter, or at least some benches.
More weekend service would be helpful.
My hours working for Loudoun County government as inconsistent. More trips to and from Winchester would ensure I have a ride to and from work.
Need more availability.
New areas or frequency so I can leave car at home and ride a bus.
Now that the silver line is open, it would be nice if the commuter bus had options to go from Hamilton or Leesburg direct to DC without stopping at Dulles. Maybe smaller busses could be used also if a lot of people switch to metro.
Please start operating the Commuter Bus to DC soon! It takes to long via silver line metro
Point-to-point service: I have to commute into DC periodically. I would prefer a metro station in Leesburg and not have to drive to a bus that will then take me to the closest metro station. Also, there is no efficient public transit between Leesburg & Chantilly.
Priorities indicated provide better convenience and accessibility which makes it more user friendly and increases use.
Real time information would be very helpful on where my next bus is en-route to me.
Ride on Saturday evenings
Right now weekend bus to Ashburn Metro station is not available because of driver shortage. It would be great if that was resolved. In addition, real time information through an app would be helpful.
Sometimes I have meetings in Reston and the bus time does not cover the hours I am at the meeting so if the hours were expanded in the evening until 9:00pm would be helpful.

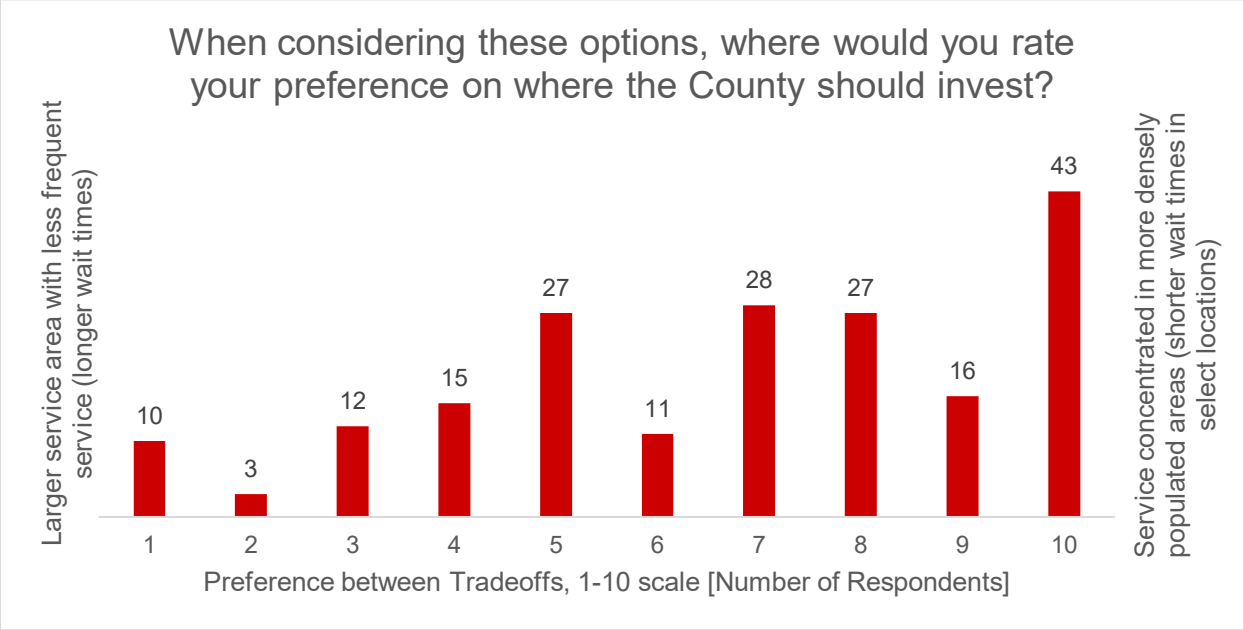
Comment on Transportation Priority
The bus stop on Russell Branch going towards One Loudoun is literally a pole with a Bus Stop Marker on it. Other side of the street has a shelter. For all the money this county wastes catering to Data Centers and covering up abuse in schools, you would think we would have amenities like bus shelters for the commuting workforce the county depends on. One would also think the bike lanes shown on the zoning map actually existed. One might also wonder why there are sidewalks that go nowhere and dead end or why there are corners of side walks at intersections but no actual side walks.
The bus takes a long time to get to the station so it's more convenient to take my car.
The bus to the new Ashburn Metro Station will allow me to get to the airport, not having to pay for parking or Uber is a big savings. I now can take the Potomac Green stop to the Ashburn station.
The majority of routes are currently (April 2023) only Monday-Friday. The 62 route is one of them and it would be extremely useful if it also ran on Saturdays. This would be a major upgrade for Seniors to be able to access shopping and events on the weekend including to being able to transfer at Dulles Town Center to other routes that already do run on Saturday-the 70 route.
The options selected are self explanatory. As a frequent user of Loudoun County transit over the last 4-5 years these are the priorities for me.
The Purcellville and Hamilton buses are critical for Western Loudoun. The metro rail access is fastest via the Greenway - a VERY expensive daily ride. The bus costs me nothing. Driving 30 minutes to Ashburn and parking costs $20 per day and takes longer. Driving to DC is a better alternative to metro rail. Do not make another strike against Western Loudoun residents!!!
The Sliver Line connector bus routes are good but there is no service within Loudoun to/from the metro stations during the daytime hours. This limits ability to use Silver Line for trips to say Reston or Tysons Corner, for medical, shopping, entertainment. I don't always have access to a car so just parking is not a great option for me. I would like to be able to get from Park & Ride lots to Metro stations during the day, not just a.m./p.m. commuter windows.
There needs to be a direct line from Lansdowne woods over 55 (or at least the hospital) to the Ashburn metro station
Time spent on bus
To be truthful I would ride the Silver Line to DC if the occasion arose. Other than that I can't think of a reason I would use public transportation.
To use the Silver line for non-commuting purposes LCTransit would need to run at different times and perhaps more frequently
Transit needs to be where people live and shop. For example: Free shuttle bus service using Rte. 7 between Hamilton and Round Hill.
We need more regular point to point commuter options, especially from Purcellville and west. Arriving to Ashburn metro to get downtown is TIME prohibitive - the six new stops result in over 90 minutes on the metro just to get to the edge of downtown DC. Before the new metro stops were built, the system was workable, taking riders to Whiele / Reston.
Weekend bus service to metro for trips to DC would be great.
Weekend service for work or recreation in DC More frequent service for working half days in DC More point to point b/c my DC commute makes a dozen stops before my stop
Western Loudoun is underserved when it comes to transit. That is why I picked service to new areas.
When the bus was running, there were certain routes during rush hour that were overcrowded.
Will not ride bus or metro in Loudoun County a personal car is so much more convenient. For me all options are of no interest.
wish the lots were closer to my home, or next to a metro so I could combine modes on certain days.
Would like to be able to take the silver line farther out into Loudoun to make for a shorter/cheaper end ride to destination (uber or bus). Buses either dont go where i want or would take too long.

Comment on Transportation Priority
Would like to go to Dulles every afternoon about 3:00 returning to Leesburg after work after midnight, never know exactly when. Including weekends. Also for other routes I would like to know when then bus is coming. Safe T Ride and #70.
Would like to have more afternoon transit options for returning to LC.
would like to use Silver Line, but only if times and service were frequent enough to make it worth my time.
Would love more commuter bus options. And I really need the byses running again. Riding metro from Ashburn to dC is soul-sucking.
would ride the bus more often if picked up within walking distance of my house (have to drive to bus stop now)

When considering these options, where would you rate your preference on where the County should invest? [1-10 scale].

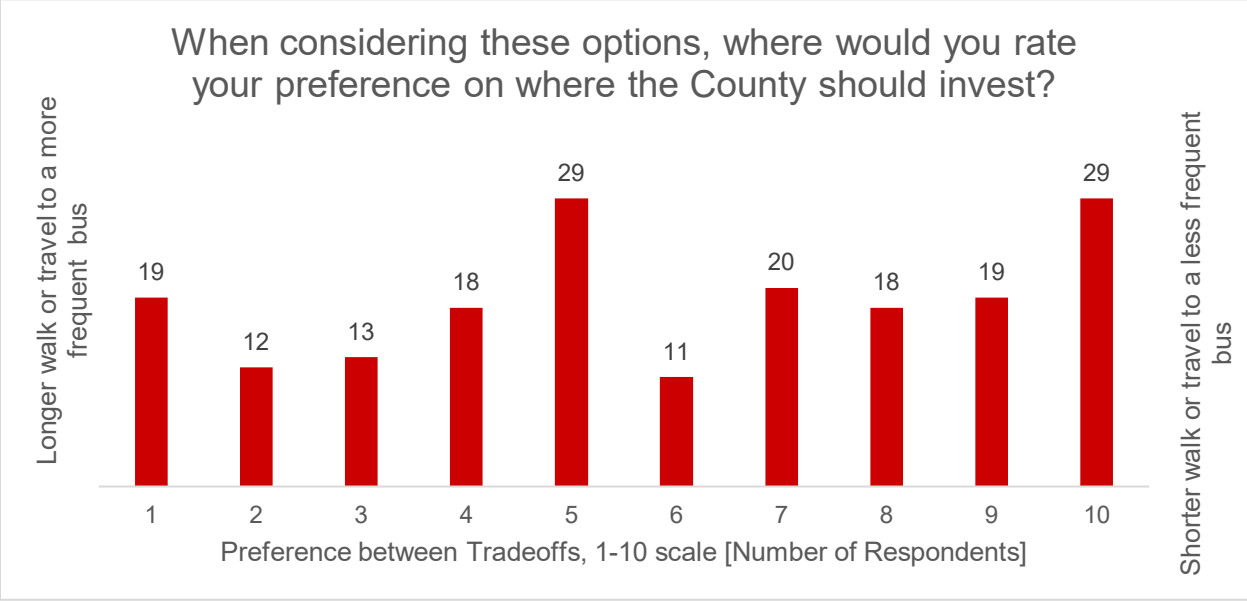
Larger service area with less frequent service (longer wait times) - Service concentrated in more densely populated areas (shorter wait times in select locations)

Figure B–14: Respondent Preferences for Loudoun County Investments



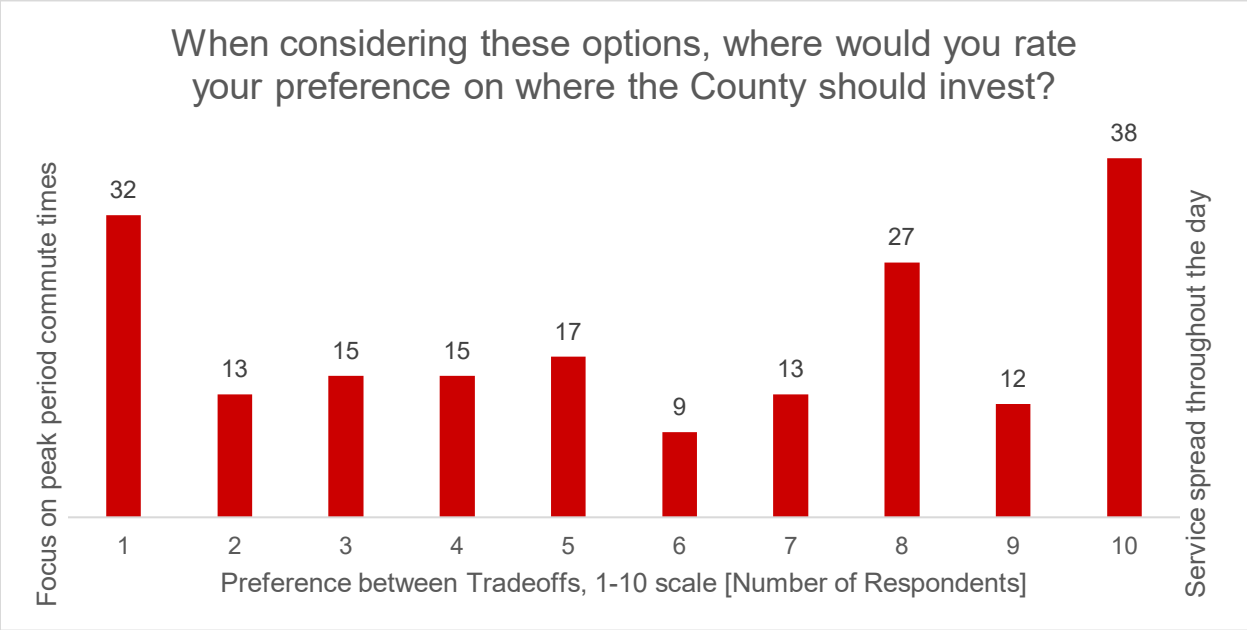
Longer walk or travel to a more frequent bus – Shorter walk or travel to a less frequent bus

Figure B–15: Respondent Preferences for Loudoun County Investments



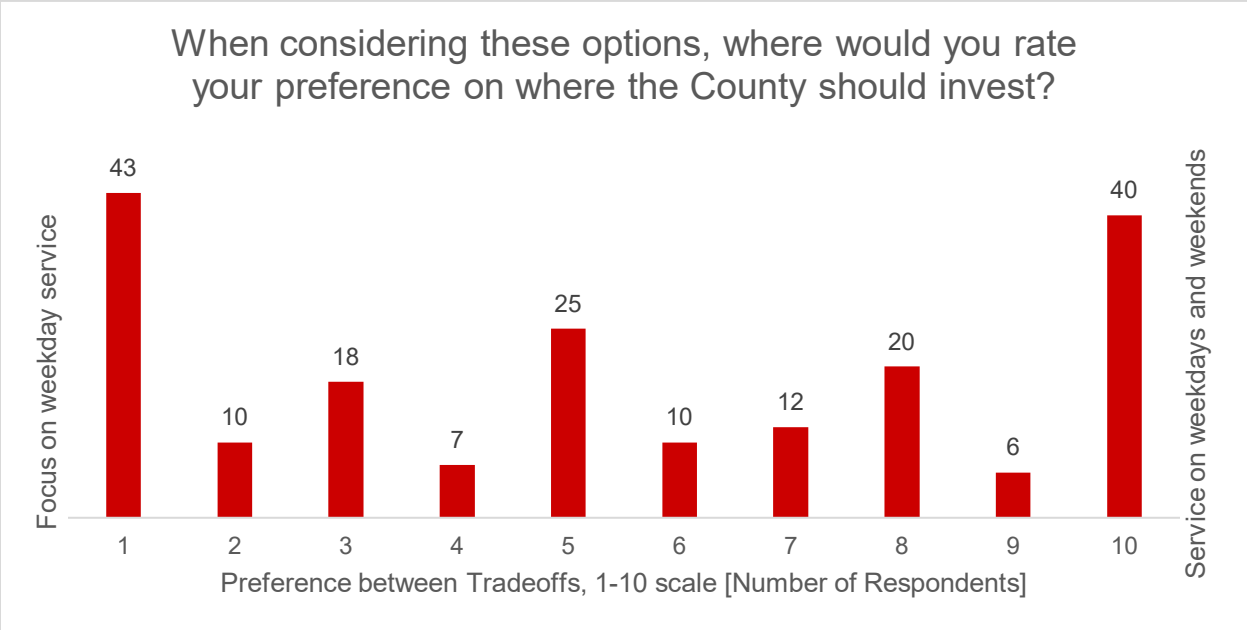
Focus on peak period commute times – Service spread throughout the day

Figure B–16: Respondent Preferences for Loudoun County Investments



Focus on weekday service – Service on weekday and weekends

Figure B–17: Respondent Preferences for Loudoun County Investments



Are there any specific destinations you would like to see served by transit that are not served by transit today?

Table B–8: Respondent Transit Destination Requests

Destinations
Above presupposes a dilemna forced by relying on big buses following fixed routes. Would be less expensive to subsidize taxi service for those in need.
Aldie
Algonqian Parkway
Ashburn metro station
Ashburn Village Center
Ashburn Village Shopping Center
Bear Chase Brewery. Breaux Winery
Brambleton
Brambleton has no transport. More to malls, grocery store, etc
Brambleton Town Center
Broadlands
bus to bus - i.e., local bus to park n' ride and commuter bus options
Cheesecake factory
Commuter buses!
Continued focus on the Metro and major commercial centers.
County parks

Destinations
DC
Direct Route to Leesburg
DMV
Dulles airport
Dulles Landing shopping center! Sterling
Dulles Town Center
Dulles town center target and thrift stores
Dulles Town Center, Dulles Regan Center
Dulles Town Center, Gum Spring Library
Dulles Town Center, Sterling Walmart
Eastern Leesburg to Ashburn
express bus to Independence Ave stops
Frederick Maryland, Winchester Virginia, Warrenton Virginia, Charles Town, West Virginia
from shopping center to shopping center; along rte 7
George Mason University in Fairfax
Goose Creek Village for commuter bus services
Gum Springs Library
Hamilton to Pentagon
Helping disabled people gettng on the bus.
I am thankful to current route options
Ideally one stop per community
Inova fairfax hospital, Ashburn library
Jefferson county wv
Lansdowne Woods
Livettsville
Lovettsville
Lucketts
Make easy and direct connect to the Dulles Airport from Leesburg, Leesburg Walmart, expand the service hours including weekend.
Metro Connector Bus: Olympia Drive (in Brambleton); Commuter Bus: Restore Brambleton to Rosslyn stop
More buses near Harris teeter near to Gum spring library
My number one issue is later bus service and adding weekend bus services.
Navy Yard
Need to accentuate Purcellville as the furthest WEST point - it can collect from populations west of it. need more direct options from Pville.
North Ashburn/Leesburg (for Commuter bus)
One Loudoun
please add shelters at ALL of the bus stops.
Purcellville

Destinations
Round Hill
Service from Potomac Falls to Silver Line
Shopping centers, movie theathers
Silver Line metro stops
Silver Spring Maryland
South Riding, VA
Stone ridge area to Chantilly Rt 50 / Rt 28 area
Supporting Weekend Western Loudoun Tourism
the metro and the bus that runs to the Roslyn Metro station
the NW and SE quadrants are seriously under served
To Silver Line
Tuscarora High School, Smart's Mill Middle School and Frances Hazel Reid Elementary. Many families who live in Leesburg are assigned to these schools but many students and parents are not able to participate in activities at the schools due to lack of transportation.
Tysons
Udvar Hazy
Village of Leesburg
We are happy with route 70 service but would like a stop nearby to minimize walk for the seniors
Weekend service in neighborhoods surrounding the GW campus/University Center area
Wegmans Shopping Center-Sterling; Whole Foods Chopping Center-Ashburn: Ashburn Village Blvd.-from Rt.7 to past the Greenway;
Winchester
Within LC county. All transit takes us out to FFX or DC. How about Dulles South to OneLoudoun and Leesburg

B.2.2.4 Commuting Options

Figure B–18: Respondent True or False Results

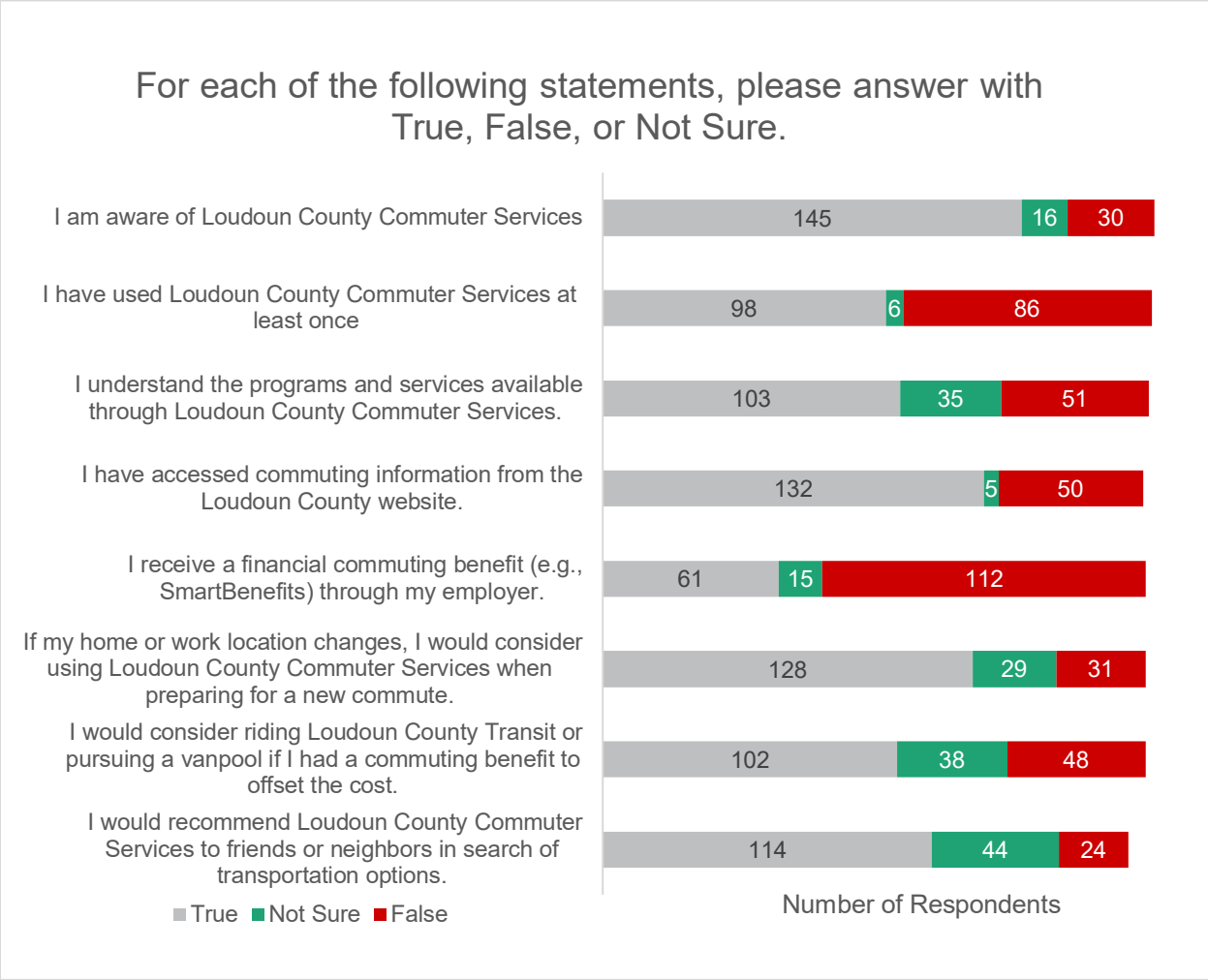
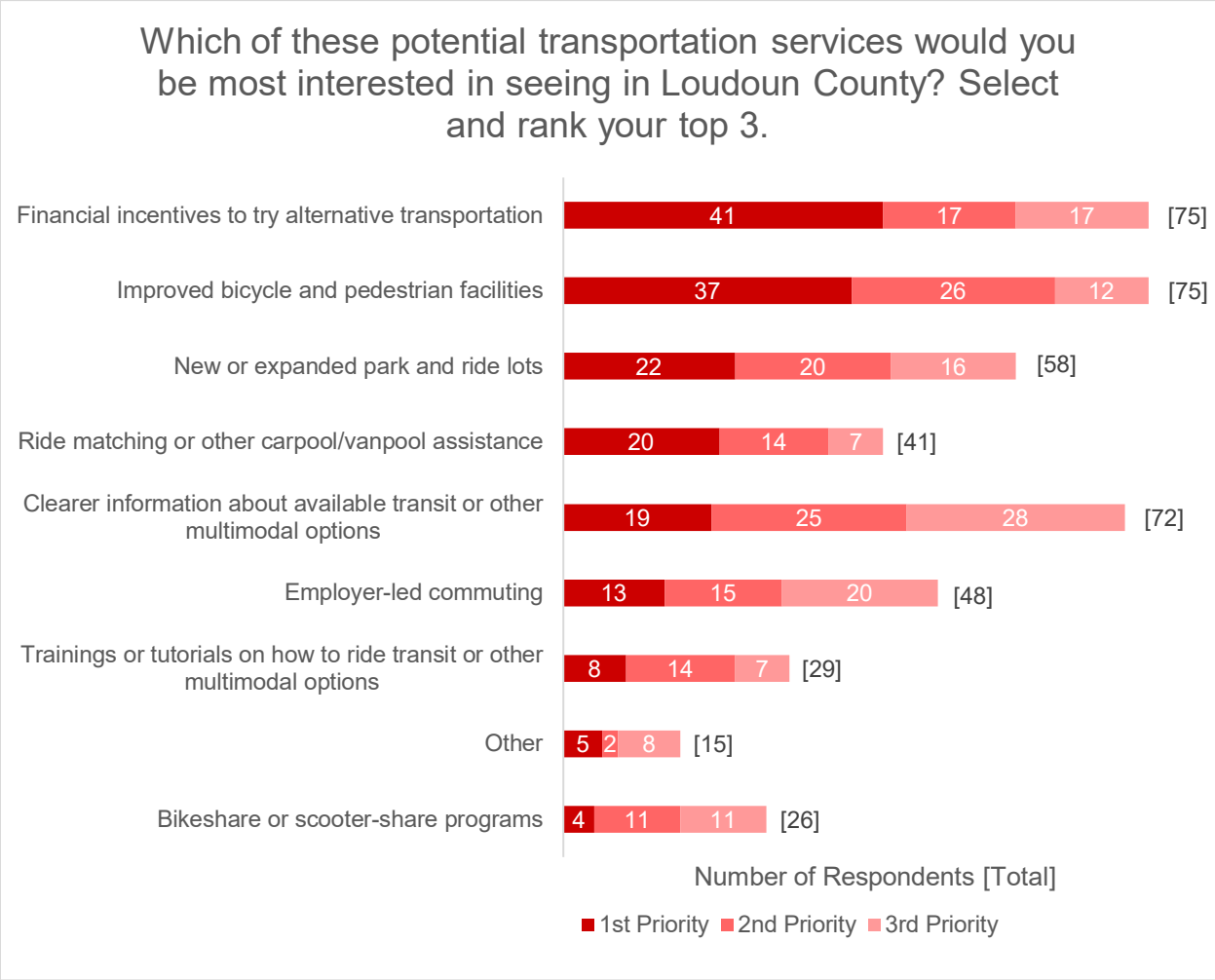


Figure B–19: Respondent Priority Potential Transportation Services for Loudoun County

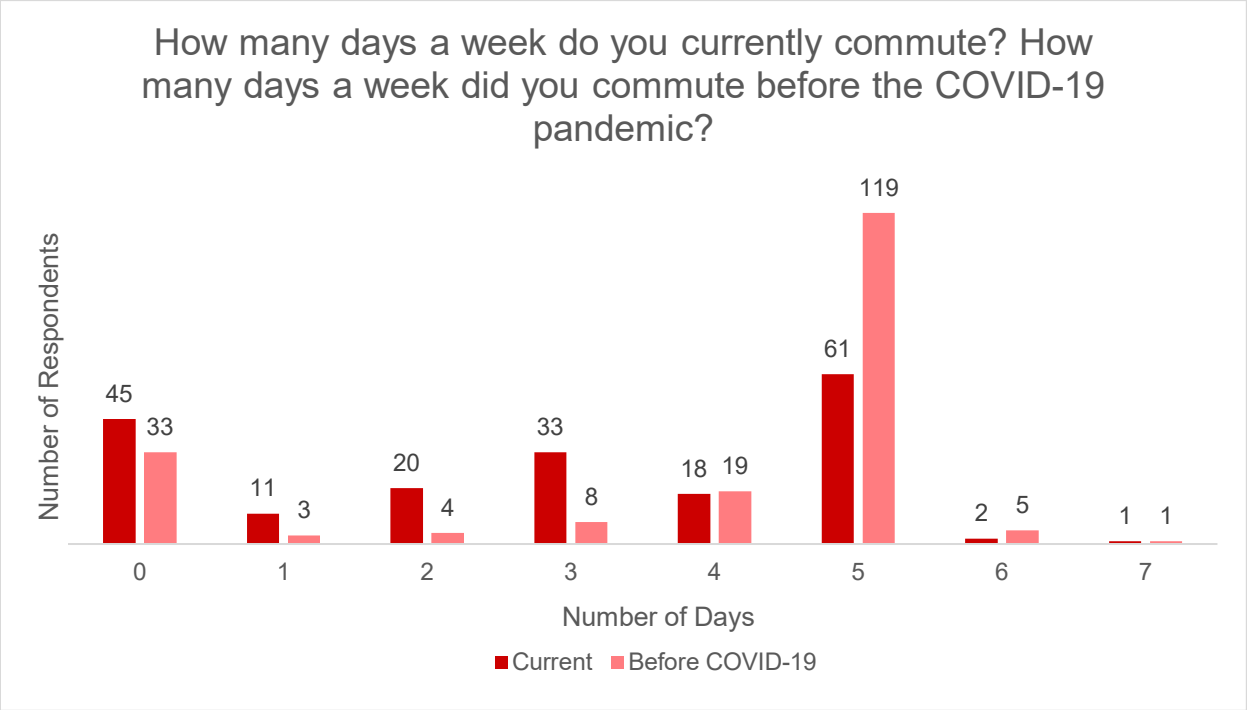


If you selected "Other," please describe this transportation program or strategy.

Table B–9: Respondent Other Priority Transportation Services for Loudoun County

Other Transportation Program or Strategy	# of Respondents
Express transit service to Washington DC	4
New routes to a broader service area	3
Free parking and toll-free access to intermodal connections	2
Evening weekday and weekend service	2

Figure B–20: Respondent Commuting Days Pre and Post COVID-19 Pandemic



Are there any employers or destinations that you want to commute to?

Table B–10: Respondent Requested Commuter Destinations

Employers and Commuting Destinations
Airbus Herndon
Airport
Amazon Crystal city
ASHBURN METRO STATION
Ashburn, Lotte, Ashburn Metro, Dulles Airport, Leesburg Walmart
Brambleton Town Center
Break up DC so Independence and later stops dont have to go through the city
Broad Run High School
Broadlands Village Center area.
Capital one
Chantilly, Washington DC
DC
Downtown DC
Downtown Leesburg
DTC
Dulles 28 Center (Target, Wegmans, etc)
Dulles Airport

Employers and Commuting Destinations
Dulles Town Center
Dulles town center, Leesburg, airport
Dulles Town Center, Walmart in Sterling
Equinix Loudoun Campus (Beaumeade Circle)
Falcons Landing
Federal Reserve
From T-Mobile, Dulles landing/ to Herndon
Harry S Truman Bldg in DC
HHMI
I commute to the State Department now, and I'm happy with the current destination option.
I go to DC only
Ida Lee and Metro
Idemia (Pleasant Valley Rd, Chantilly)
Inova Fairfax hospital
kimley horn reston from aldie
LC Fire and Rescue office on 801 Sycolin
Leesburg
Leesburg City
Loudoun Co Libraries
Loudoun County Government Buildings
Loudoun County Government Center
Lovettsville
McLean
Metro/Dulles Airport
My office, Sycolin Road
North Ashburn/Leesburg (commute from)
One Loudon
Outlet mall
Pentagon
Raspberry Falls
Reston Hospital
Reston town center
Reston Wiehle Metro
Reston, Tysons
Rosslyn, VA; Nationals Park
Round Hill
Sam's club Walmart sterling
Shenandoah Bldng

Employers and Commuting Destinations
Shenandoah Building Leesburg
Shenandoah University Satellite Campus (Lansdowne
Silver Spring Maryland
State Department
Sterling Walmart
To Silver Line
Tysons
Tysons Corner
Union Station
US Department of State
Verizon Business on Fairfax County Parkway
Washington DC
Western Loudoun Tourism
Work in DC
World gate center

Your feedback is important to us. Please provide any additional input.

Table B–11: Respondent Additional Feedback

Additional Feedback
All transit needs to be frequent and cheaper than driving.
As the owner of a western Loudoun Farm, offering additional transit for weekend tourism would help the traffic, make roads safer, and benefit the environment.
Can you please start the bus route in Ashburn farm I would appreciate it thanks
Don't forget about road improvements as a county. Not everyone can get to their office location by using a bike or public transit. Also find a way to tax those using electric vehicles to pay their share of road taxes. The cars are much heavier than gas powered ones of similar in size and cause more wear and tear on the roads.
Everything is great, just need more frequent bus trips and better timing between bus and rail when Metro rail gets back to normal.
Expand on the Commuter Bus system. More pick-up locations would be nice. Metro is not a viable option for those commuting to places like Arlington or DC. There are too many stops which make the trip time considerably more than the directness of the Bus. The bus system is also much more reliable than Metro and much more comfortable. The price between metro and the LC Bus is not much different and I would gladly pay for the bus. Please do not decrease the bus system, loudoun commuters will not benefit from the Metro as much as local leaders are hoping.
Expand service on weekend. Make direct bus to Dulles Airport Make more stops to take to Metro Station. Make a clear and easy to understand bus map and flyer. Your current bus and route information is so confusing. Make an app. Learn from New York City Transit system. You ride yourself first and feel. Do you think Loudoun County Transit system is a viable? Is it easy?

Additional Feedback
I am currently driving more days since the express dc routes went away. It just takes too long using the commuter bus without the express options.
I am retired and would like to be able to take a shuttle bus from Potomac Greene community to the new silver line
I am retired with somewhat limited mobility so I would stay away from stops that include a lot of walking.
I am very disappointed that there is no Silver Line metro station in Leesburg.
I appreciate the Loudoun Commuter Bus. The drivers and office staff have always been very courteous, helpful, and professional. Even though I am rarely riding the bus now I expect to be using it more in 2023. Thank you!
I have been working with my special needs students to teach them how to ride the bus. As I have not ever ridden the bus before this year, I found the process of figuring out where the bus stops are located and reading the bus schedule and map to be very challenging - and I have a master's degree! Unless you ride with someone who has already had experience riding the system, it is very difficult to figure out where to get on the bus, where to transfer and how to tell the driver you want to get off the bus! The maps on the website are not very clear and you cannot enlarge them for better detail. The bus schedule indicates some stops, but not all of them. There is no indication, once you are in the bus, of how to tell the driver you want off. There is no cord to pull and no signage about telling the driver verbally that you want off at the next stop.
I hope that the addition of the silver line in Ashburn will not affect the number of buses available to go to DC. I would not be at all happy to have to drive all the way to the silver line and would likely drive downtown before I would do that.
I love the commuter bus service to Pentagon and Crystal city
I think the loudmouth commuter bus is great. Please don't cut service just because silver line is open. It's 30 minutes to drive and park at Ashburn silver line and then over an hour by train and I have to pay for parking. Takes longer, costs more and is harder on environment vs getting on bus in Hamilton.
I use the Premium Commuter bus routes to/from DC and they're great!
I walk to work, so I don't consider that "commuting."
I work at a senior apartment and for the seniors without cars, having a bus stop would be extremely beneficial. Again, this building is already on Route 70, and we would like a stop along Bartholomew Fair Dr at Mt. Sterling Terrace Rd.
I would appreciate more options in terms of departure times on the various “DC All Stops” routes.
I would like to be able to book uber or lyft style rides, even when sharing rides with other people.
I'd love to see transit options to the Marc trains.
I'd ride in bad weather to keep cars off the road.
If the public transportation cost is more or less the same as taking your car, then it defeats the whole purpose of taking the bus/metro. If on the other hand, it is a reliable service, then people will use it more often. I am thrilled the Ashburn Metro station has opened, but I still have to drive there on the weekend (instead of taking the bus) and pay for parking. If I also have to wait 30 minutes for a train and then ride for over an hour to get to Union station, I have spent close to two hours one way instead of 45 minutes in my car.
I'm glad the Silver Line bus service is up and running. I just wish it were more frequent (Cascades). But I understand with the demand and the bus driver shortage, that may be a challenge.
I'm retired but if I was still working I would have loved to be able to take metro
I'm retired.
Improved bike infrastructure is something that will Surely help. Riding a bike to and from the bus to metro calls for a fast possibility to using transit services

Additional Feedback
Install shelters at all locations. Service is needed on weekends and evenings for shopping and second shift jobs. The bus shouldn't just be for white commuters, it should be for the low income and working class, as well. There needs to be a commuter walkway overpass over rte 15 in Leesburg next to the Outlets for shoppers and employees.
It is critical that the infrastructure is improved to match the level of suburban buses that are available - match Fairfax Connector.
It is very sad to see the county voted number 1st and 2nd in the US per capita and still literally be a backwoods rural place. For all the money this county makes off data centers, Loudoun Economic Biz Dev and the Chamber, you would think it would actually develop a well-rounded municipal plan. The land was a blank slate where roads could have been built to support future development which included sidewalk and bike lanes to keep people safe. Many of the working class depend on these and yet they do not exist. Look at Fairfax County where they had pedestrian vehicular strikes of workers walking to work on roads with no side walks. Sure this county is home to the "elite" but we need to cater to the backbone of the work force, those who do the jobs these elites will not do, nor care about. Too much focus in this county is tax revenue at the expense of the people who actually help run the county.
It would be great to be able to go from my home in Brambleton to the Loudoun County Government Center.
Its hard to get information from your website. You need a centralized map showing all the different Loudoun Transit routes/options, rather than having to pull up each route one by one.
I've opposed Metro and transit for many years as the user population for transit is so small and the costs of running the operations are so huge that it is unfair for all taxpayers formally or indirectly (Meto fares on Toll Road draining more than a billion dollars from Loudoun Commuters. This cost will escalate sharply now that Metro is open and our tax dollars will be used to fix the escalators in Dupont Circle. Plus it has doomed Eastern Loudoun to overcrowded chaos in the next 10 years.
Keep the commuter bus operating to/from DC.
Keep the commuter buses to DC & Pentagon.
Long haul bus will compete with Silver Line for my usage. Bus is faster into town, but longer coming home. If you reinstated express buses, I would switch back to the bus. I like it better than metro
More easily accessible stops would be nice to have.
My apartment is on route 70 but with no accessible bus stop. I would like to ride the city bus if I had a convenient stop. I live in a senior community on a hill and there are no sidewalks to the closest stops
My only comment is from the redirection of the commuter bus because of the construction - during this time it would be helpful to have an AM stop by GWU
Please add more on-road bike lanes (i.e. striped, buffered, or protected; similar to the new lanes on Portsmouth Blvd. in Ashburn). Off-road lanes (i.e. sidewalks/paths along/adjacent to road) are too inefficient; they are not wide enough for walkers and bikers, are too bumpy from tree roots, have too many street crossings where right-of-way between cars and bikers is unclear, and require travel to slow down at intersections. I feel safer and can travel faster by bike using on-road bike lanes. In my opinion, if we want bike commuting in Loudoun County to increase, more on-road like lanes need to be added.
Please add some public transport to Ashburn Brambleton Need transport often to airport. We shell out a lot for uber lyft
Please bring back the commuter buses. Push keolis back to the table.
Please help with the drivers strike!!!! We need them to reestablish commuter bus service to and from DC!! The metro is too unsafe and unreliable.
Please restart the commuter bus. It is so much more convenient, quicker, and accessible to more commuters.
Please start operating the Commuter Bus to DC soon! It takes to long via metro
Please support the hard-working bus drivers' livelihoods and the needs of commuters who live in Loudoun County and push to Keolis to resolve this labor action as soon as possible.

Additional Feedback
Really need bus routes updated to take us to closer silver line metro stops with more frequent bus routes available during commuting hours. Also would be helpful on weekends to expand routes to metro stops to enable Loudoun County the ability to get to DC or the airport via metro on weekends.
Riding the bus is seriously inconvenient in this county. Bring back the trolley with better routing and in both directions instead of an endless loop
Start with links between dense housing locations (apartments, condos, townhouses), major commercial centers and Metro. Over time create commuting hubs in less dense communities (i.e. single family houses) by creating safe bike/walking paths and bike parking lots to start adding to the network of potential users. This can be complimented by additional car park/ride locations spread out throughout the county (spokes) to link into the core hub network (commercial centers and Metro).
Thank you for this survey
Thank you for your services. Not having them during this labor action strike has been awful. Please restore these services and do NOT believe the hype about how the return to work will never happen. It is coming, if not already here. Communities rely on commuter services as a valuable amenity! The RAISE property values and make tourism and progress happen.
Thanks ! Metro connection bus/van routes are convenient
The bus stop signs would be improved by adding both the route numbers that the stop serves as well as numbering the stops to ensure that riders are at the correct stop.
The entire system is not clearly explained who to use Commuter services. There should be an application where I can pick my home and my destination and it will show step.by step instruction where to park with cost and avalability, where to take a bus with cost and schedule and how to take train with cost and schedule. Right now because I know pretty much nothing I can't use any public transportation.
The old free-market private van pools worked better, provided better service to customers, were less expensive, and did not cost the general public anything. Best of all - no government involvement
There needs to be a direct service (no bus change) to the Ashburn Metro station from Lansdowne woods or hospital (not feasible in inclement weather or cold temperatures)
This survey was pretty intense
top priority is pedestrian & bike safe / friendly. next is ability to get to metro / DC quickly & easily, esp returning evening / late. Existing infrastructure is great & THANK YOU for all you do to make Loudoun / VA a great place to live & travel !
Western Loudoun needs more transit
While I want to contribute to lowering congestion and reducing my costs, I will not compromise on my flexibility and total time to commute from home to the destination and back.
Working in D.C is more manageable because of the fantastic Loudoun county transit. I just wanted to say thank you for all that you do. I truly believe Loudoun County Commuter buses are more reliable than the metro rail and would truly prefer not to lose the commuter bus due to the new Silver line extension into Loudoun County.
You should run your bus service like Fairfax County. It is intelligent. There is no intelligence with this stupid bus service. Run the same times as the Metro. STUPID, STUPID, STUPID BY NOT HAVING WEEKEND BUS SERVICE TO THE METRO. BUS SERVICE SHOULD BE LIKE NEW YORK CITY.

B.2.2.5 Demographics

Figure B–21: Respondent Vehicles per Household

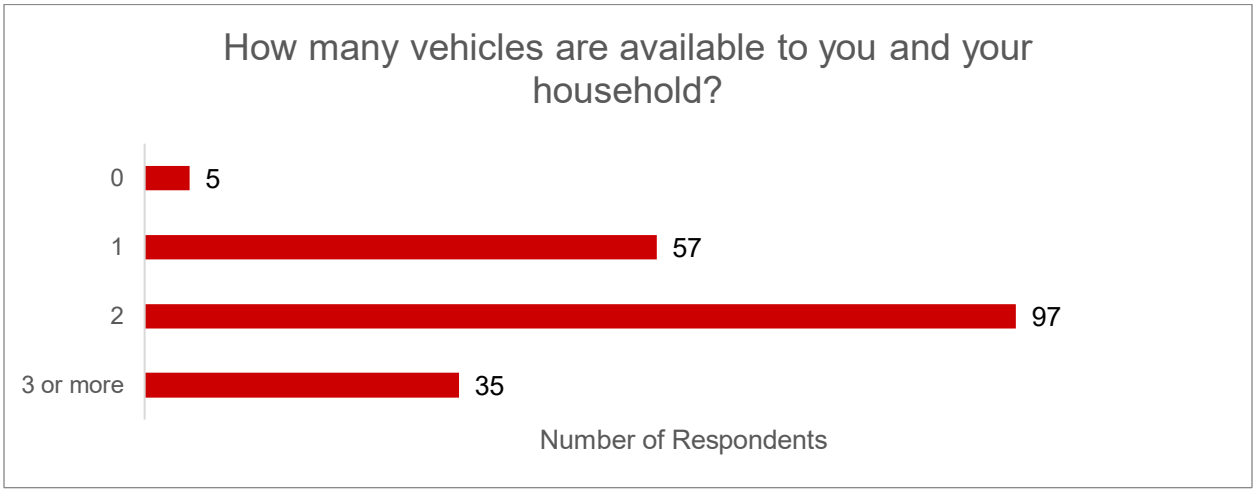


Figure B–22: Respondent Age Demographics

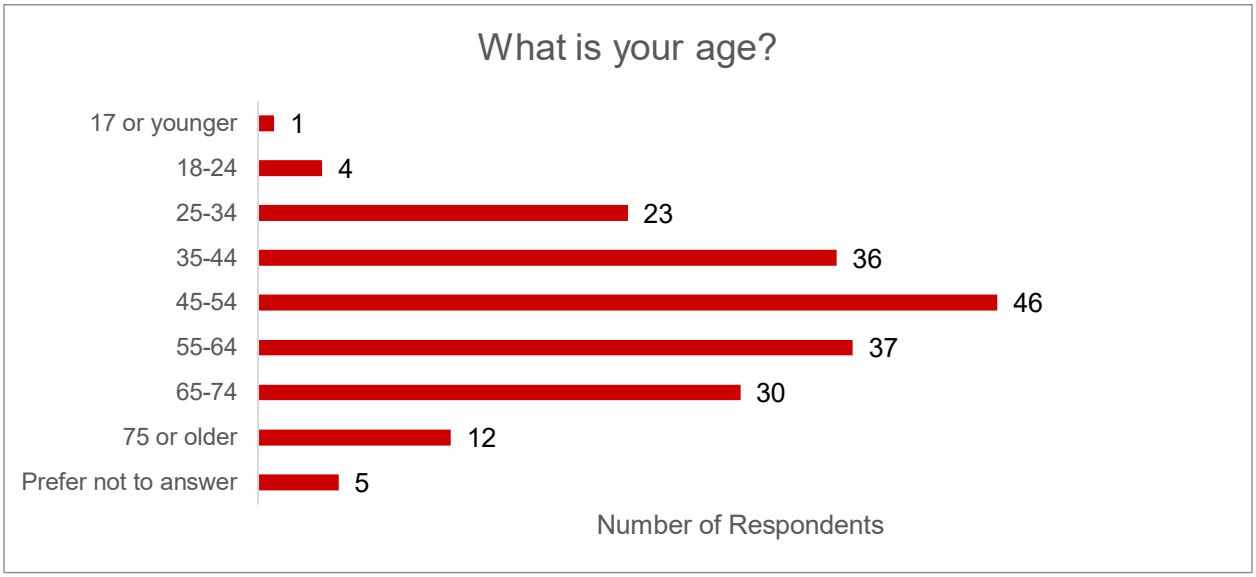


Figure B–23: Respondent Spanish, Hispanic, and/or Latino Demographics

Figure B–24: Respondent Race Demographics

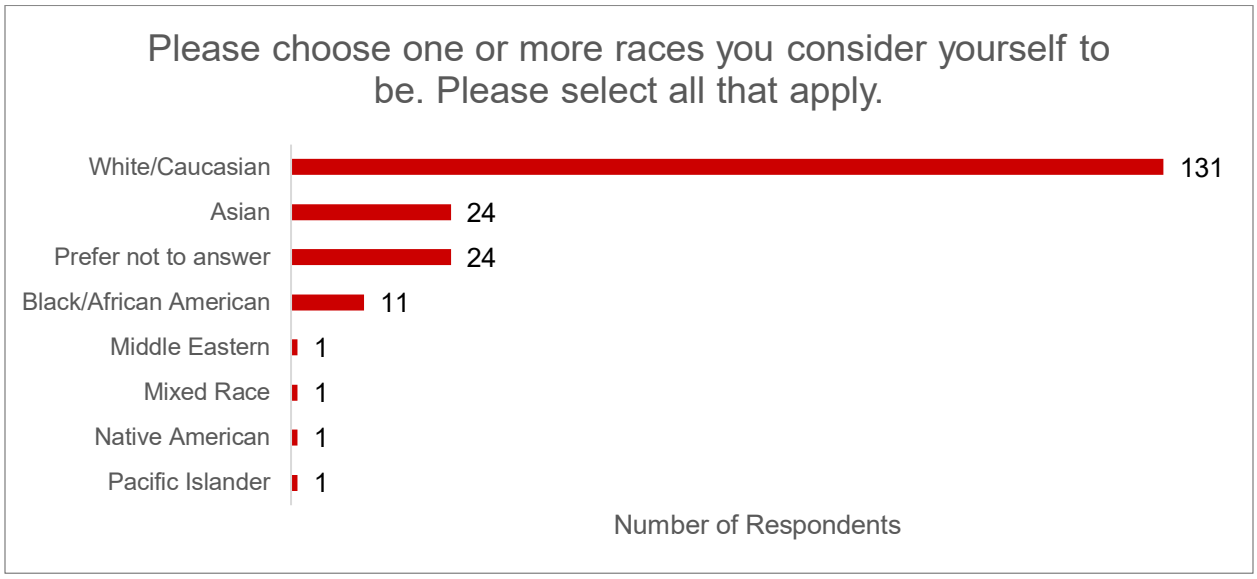


Figure B–25: Respondent Annual Household Income

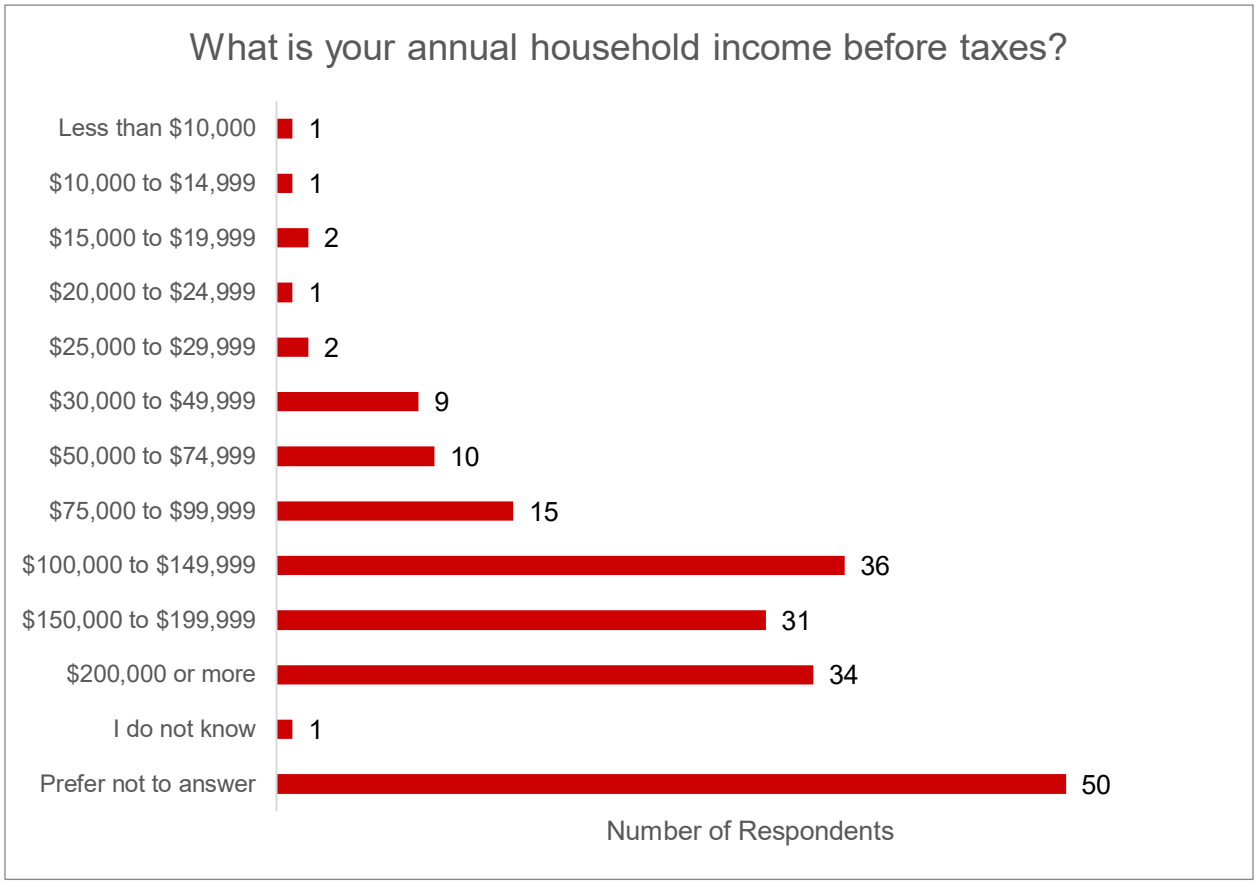


Figure B–26: Respondent Identity Demographic

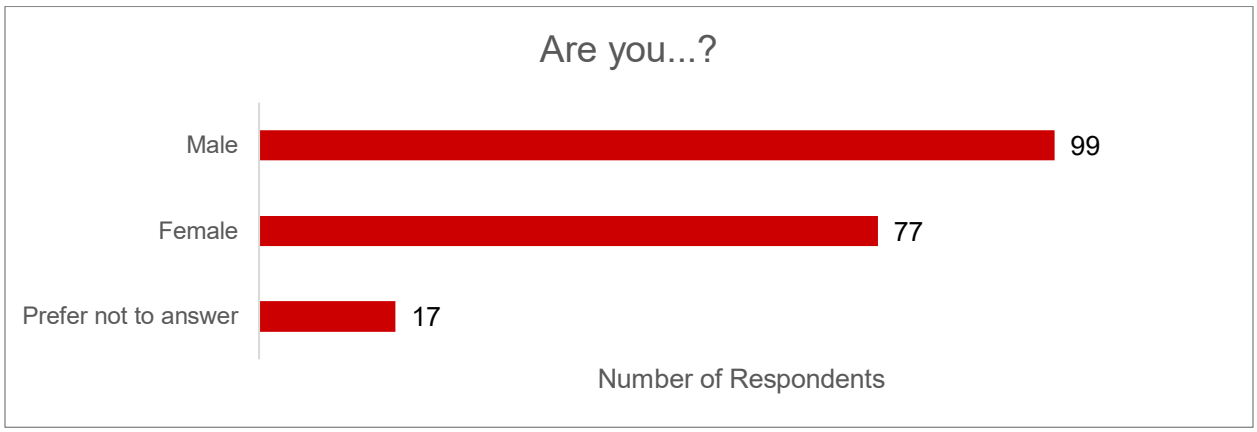


Figure B–27: Respondent Education Level Demographic

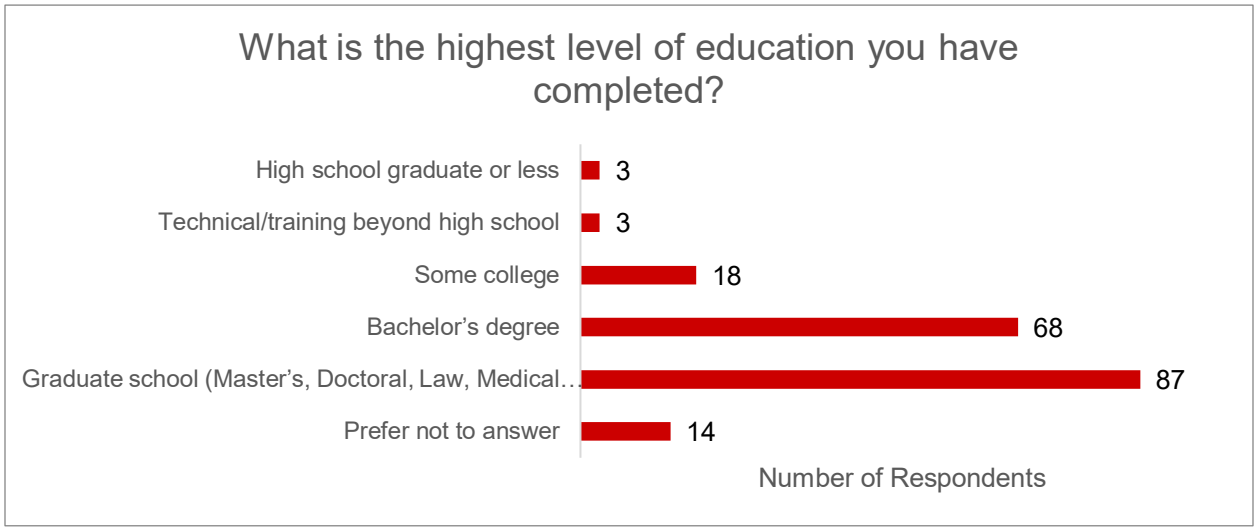


Figure B–28: Respondent Employment Status

Figure B–29: Respondent English Fluency

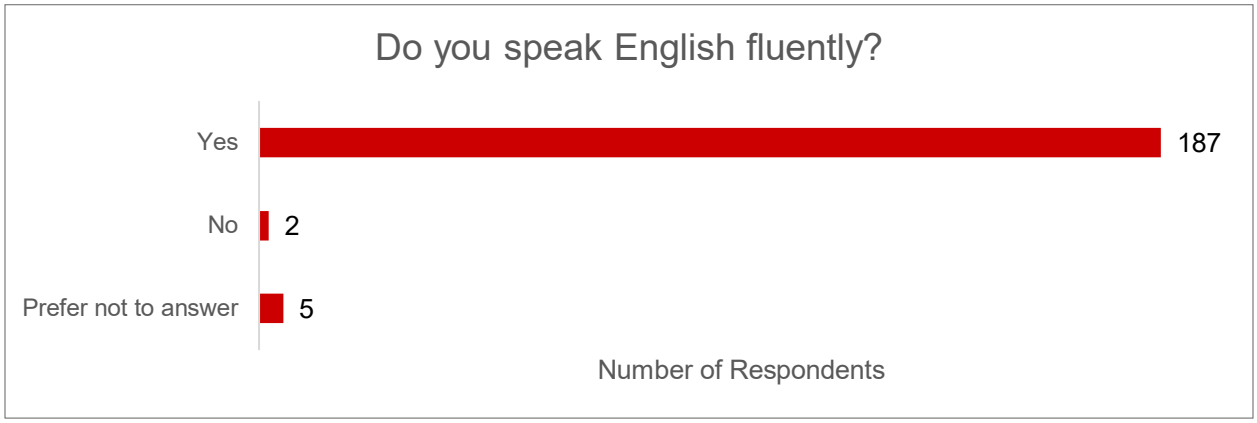


Figure B–30: Respondent English Fluency

Figure B–31: Respondent Languages Most Spoken at Home

B.3 Phase II Engagement Summary (October – November 2023)

B.3.1 Customer Survey

From September 11, 2023 to October 2, 2023, outreach staff from Public Affairs and communications (PAC) and Loudoun County Transit and Commuter Services (Transit) surveyed bus riders on identified local bus routes (two number routes) and Silver Line local bus routes (three number routes that go to Loudoun County and Fairfax County Metrorail stations).

The scope of this project was to gather information from underserved and lower-income communities in Sterling, Ashburn, Leesburg and Purcellville (with an emphasis on Spanish speaking community members) about their local bus service needs. County staff developed the Loudoun County Community Transit Survey, which was distributed in person on these bus routes by county staff. This survey placed emphasis on community members' knowledge of and familiarity with local

bus service. Data collected will be used to identify service improvements and increase ridership.

Another portion of this outreach project was to survey human services provider organizations. The Human Services Providers Transit Survey focused on providers' knowledge of their client's local bus usage. The data analysis of human services provider organizations will be presented in a separate document.

Outreach staff, along with a Spanish interpreter, when available, rode local bus routes between Sterling, Ashburn and Leesburg and routes to Loudoun County and Fairfax County Metrorail stations. Transit staff rode Silver Line local bus routes to and from Loudoun County's Metrorail stations. Staff covered various bus routes during morning, afternoon and evening shifts on Monday through Wednesday and Saturday. Using iPads, paper surveys and a flyer with a QR code, which took the respondent to an online survey, the team surveyed the riders in both English and Spanish and provided survey participants with a giveaway for participating in taking the survey.

Tables were set up at six sites so outreach staff could gain insights from non-bus riders. The sites included three Loudoun County libraries, a food pantry, a local business and a Loudoun County government social services building. Using iPads, paper surveys and a flyer with a QR code, the surveyors collected 48 surveys during the time period. The site locations were in Leesburg, Dulles, Purcellville, Potomac Falls and Sterling.

In addition to tabling to reach human service providers, staff emailed various human services providers, libraries, faith organizations, food pantries, health care clinics and senior living communities. Emails provided links to both the community and human services surveys, paper copy attachments of both surveys and the flyer. A total of 104 emails were sent.

B.3.2 Human Services Survey

From September 11, 2023, to October 2, 2023, outreach staff from Loudoun County's Public Affairs and Communications (PAC) division surveyed human services providers to gather information regarding their knowledge of Loudoun County's transit system as well as their knowledge of their clients' experiences with local transit.

Public Affairs and Communications staff distributed a survey via email to various human services providers within the county. A total of 25 surveys were returned.

In addition, tables were set up at six sites so outreach staff could gain insights from human services providers who might be on-site. The sites included three Loudoun County libraries, a food pantry, a local business, and a Loudoun County government services building, located in Leesburg, Dulles, Purcellville, Potomac Falls, and Sterling.

Data collected will be used to identify areas of improvements and increase ridership; these results also indicate areas in need of additional exploration in focus group conversations with human service providers and faith communities.

B.4 Customer Survey (October 2023)

B.4.1 Customer Survey Text

How do you get to where you need to go in Loudoun County? [Select all that apply]

- Public Transit (bus)
- Personal vehicle
- Public transit (Metro)
- Walk
- Get a ride with a friend/family member
- For-hire vehicle (taxi, Uber, Lyft, etc.)
- Bike
- Paratransit

What is your familiarity with Loudoun County bus service? [Select one]

- Somewhat familiar
- Very familiar
- Extremely Familiar
- Not at all familiar

How often do you take the bus? [Select one]

- Often (Five or more times a week)
- Never
- Moderately (Two-four times per week)
- Sometimes (A few times per month)
- Rarely (A few times per year)

Where do you go when you take the bus? [Select all that apply]

- Work
- Shopping (Groceries, clothes, etc.)
- Medical appointments
- School, college, or university
- Obtaining services from non-profit or government organizations
- Faith community or worship services
- Child care

If you use the local bus in Loudoun County, what are some of the reasons why? [Select all that apply]

- I do not have access to a personal vehicle
- Transit is more convenient

- The places I go are beyond a comfortable walking or biking distance
- I do not have a driver's license
- I am unable to drive
- I want to help the environment
- I want to save gas

Where have you obtained bus schedule or transit information? [Select all that apply]

- On the county website (Loudoun.gov/transit)
- Google or other search tool
- At a county building (government center, library, Shenandoah, community center, etc.)
- From a nonprofit government agency
- None of the above
- I have not obtained this information
- At the library
- From my faith community

If you "rarely" or "never" use the local bus in Loudoun County, what are some of the reasons why? [Select all that apply]

- The hours do not meet my needs
- I cannot find route or schedule information
- I don't know how to ride the bus
- The travel time is too long
- Stops are not convenient to home or places I need or want to go
- Fares are too high
- I don't feel safe on the bus

How easy is it to find bus schedules and information about transit services? [Select one]

- Easy
- Very easy
- Neither easy or difficult
- Difficult
- Very difficult

How satisfied are you with the existing bus service options? [Select one]

- Satisfied
- Unsure
- Very satisfied
- Dissatisfied
- Very dissatisfied

Are you currently taking this survey while riding the bus? [Select one]

- Yes
- No

Which local bus route(s) are you taking on this ride? [Select from list of all local routes]

What local bus route(s) do you usually take? [Select from list of all local routes]

What changes would you suggest to improve bus service in Loudoun County (e.g., operate later at night, change/add)? [Open response]

Which of the following options most closely aligns with your gender? [Select one]

- Female
- Male
- Non-binary

What is your age? [Select one]

- Under 18
- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65+

Which race/ethnicity best describes you? [Select one]

- American Indian or Alaskan Native
- Asian / Pacific Islander
- Black or African American
- Hispanic
- White / Caucasian
- Multiple ethnicity / Other (please specify)

Which of the following categories best describes your employment status? [Select one]

- Employed, working full-time
- Employed, working part-time
- Retired
- Not employed, looking for work
- Not employed, NOT looking for work

Including yourself, how many people live in your household? [Open response]

Respondent Employment Status	Total	Percentage
Employed, working full-time	62	50%
Employed, working part-time	23	18%

Retired	21	17%
Not employed, looking for work	10	8%
Not employed, NOT looking for work	9	7%
Grand Total	125	100%

What is your household income? [Select one]

- Less than $20,000
- $20,000 to $34,999
- $35,000 to $49,999
- $50,000 to $74,999
- $75,000 or $99,000
- $100,000 or above

Do you have any long-term physical or mental disabilities that affect your use of the bus service? [Select all that apply]

- None
- Mobility impairment
- Respiratory problems
- Mental health condition
- Serious long term illness
- Hearing impairment
- Prefer not to say

What is your zip code? [Open response]

B.4.2 Customer Survey Responses

How do you get to where you need to go in Loudoun County?

Figure B–32: Transportation Alternatives by Language Responses

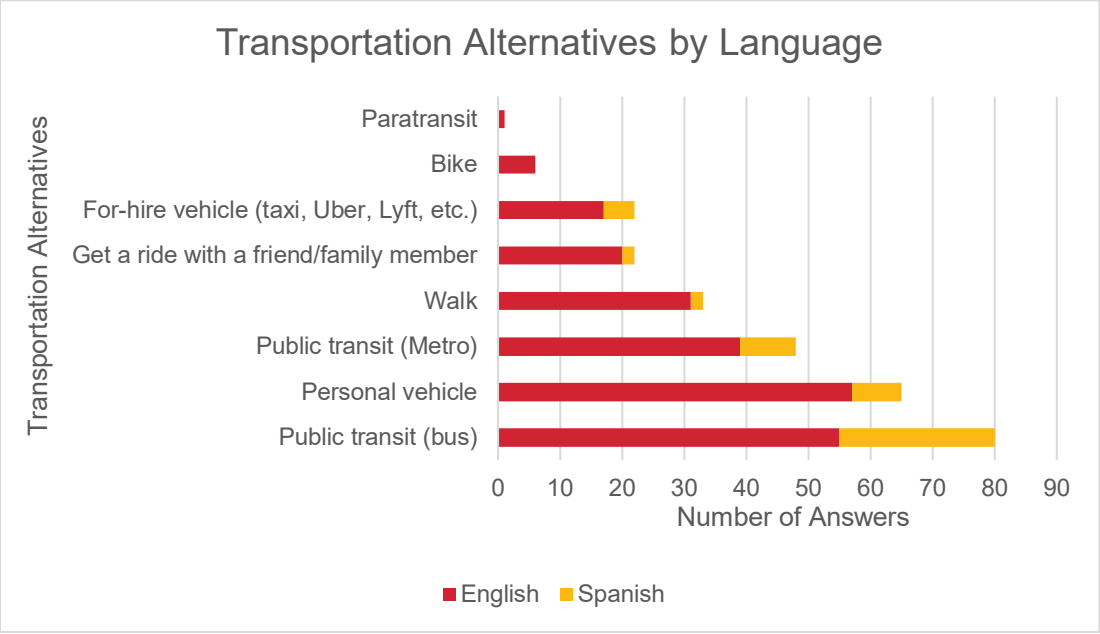
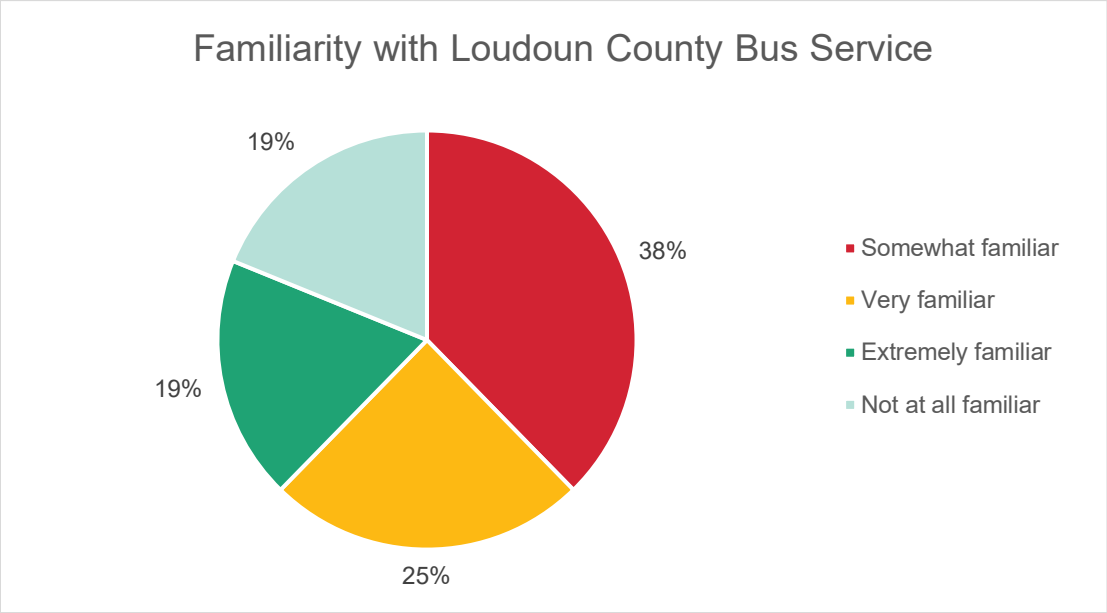


Figure B–33: Familiarity with Loudoun County Bus Service Responses



How often do you take the bus?

Figure B–34: Frequency of Riding the Bus by Gender Responses

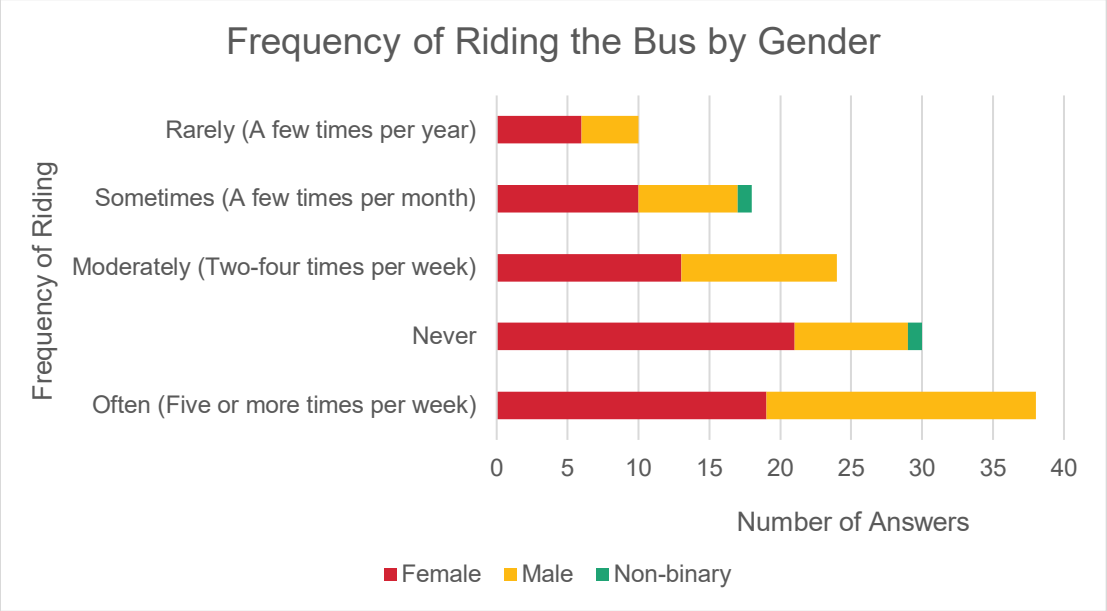
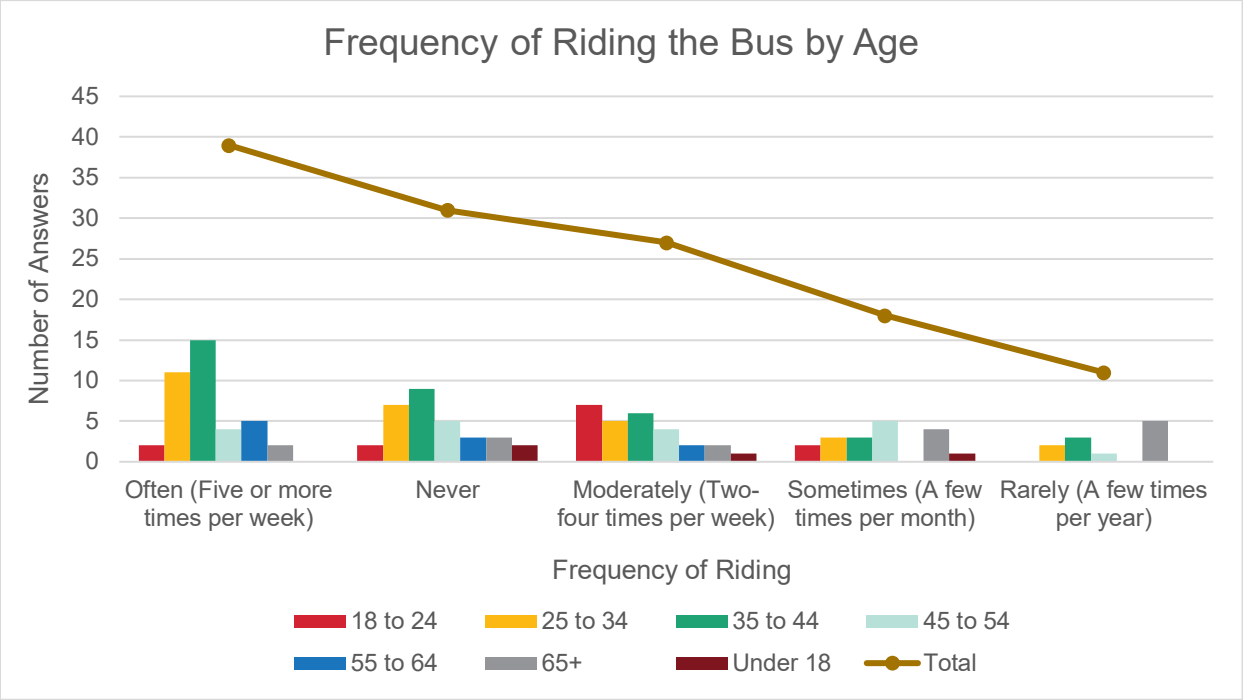
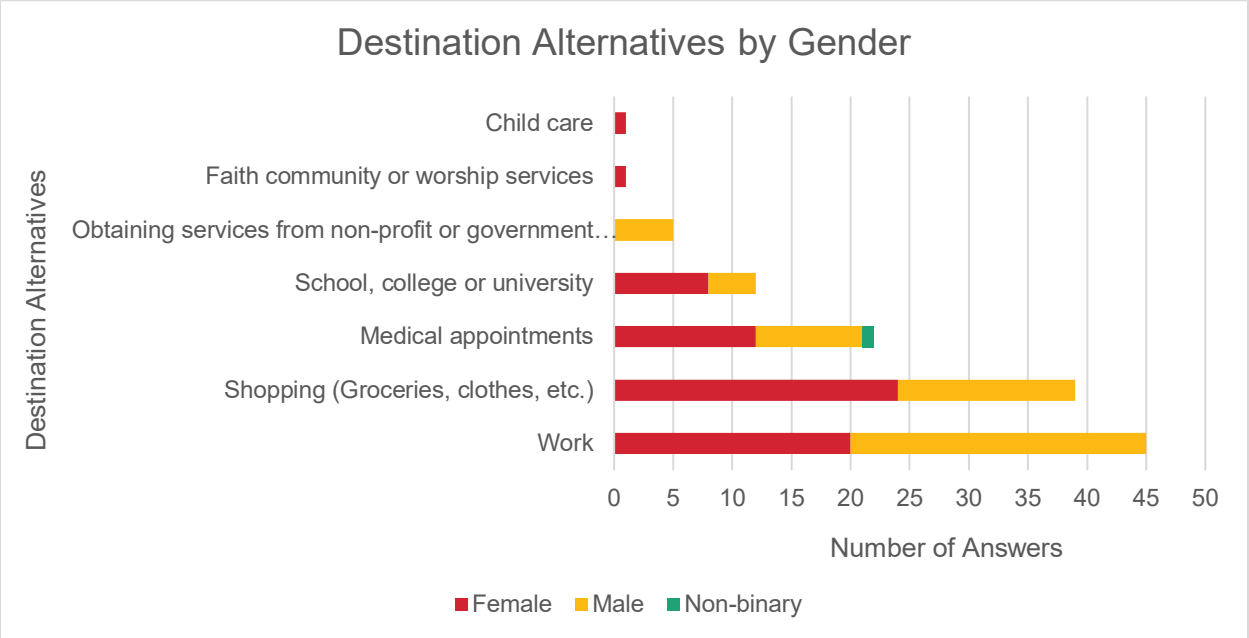


Figure B–35: Frequency of Riding the Bus by Age Responses



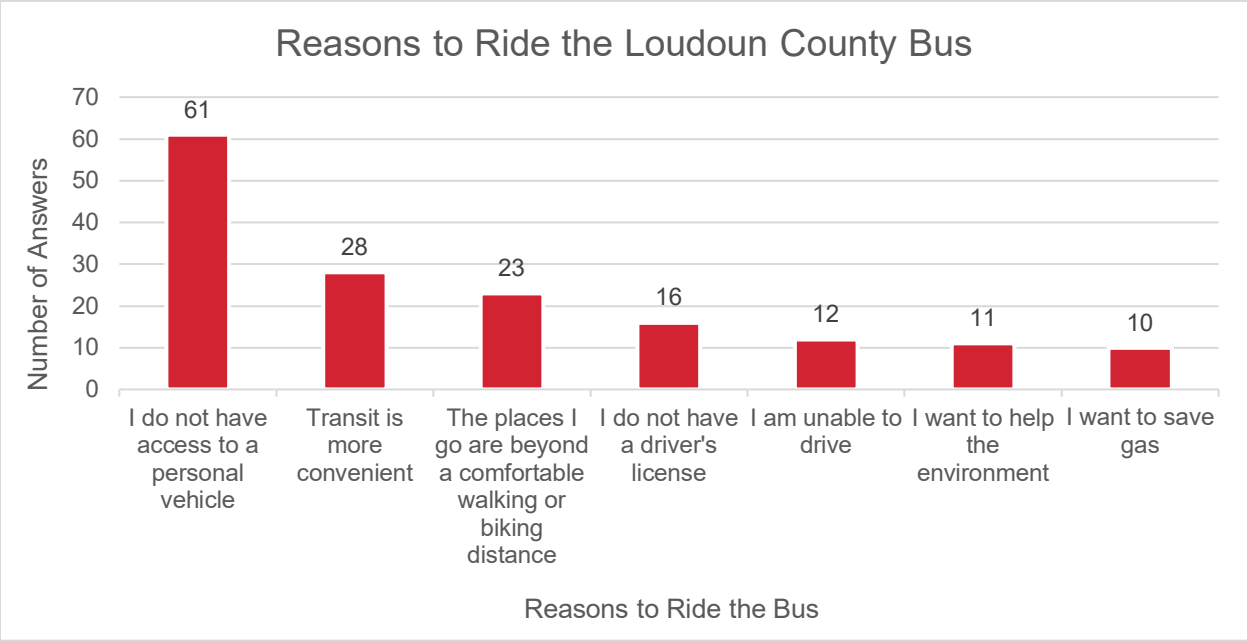
Where do you go when you take the bus [select all that apply]?

Figure B–36: Destination Alternatives by Gender Responses



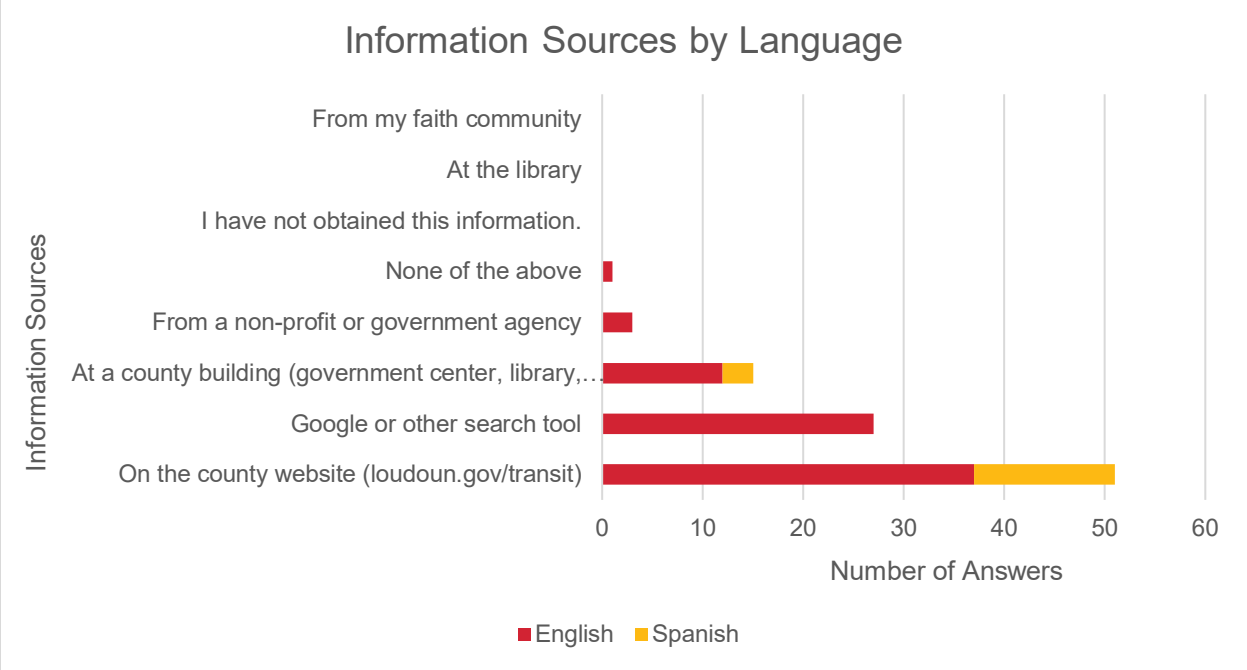
If you use the local bus in Loudoun County, what are some of the reasons why?

Figure B–37: Reasons to Ride the Loudoun County Bus Responses



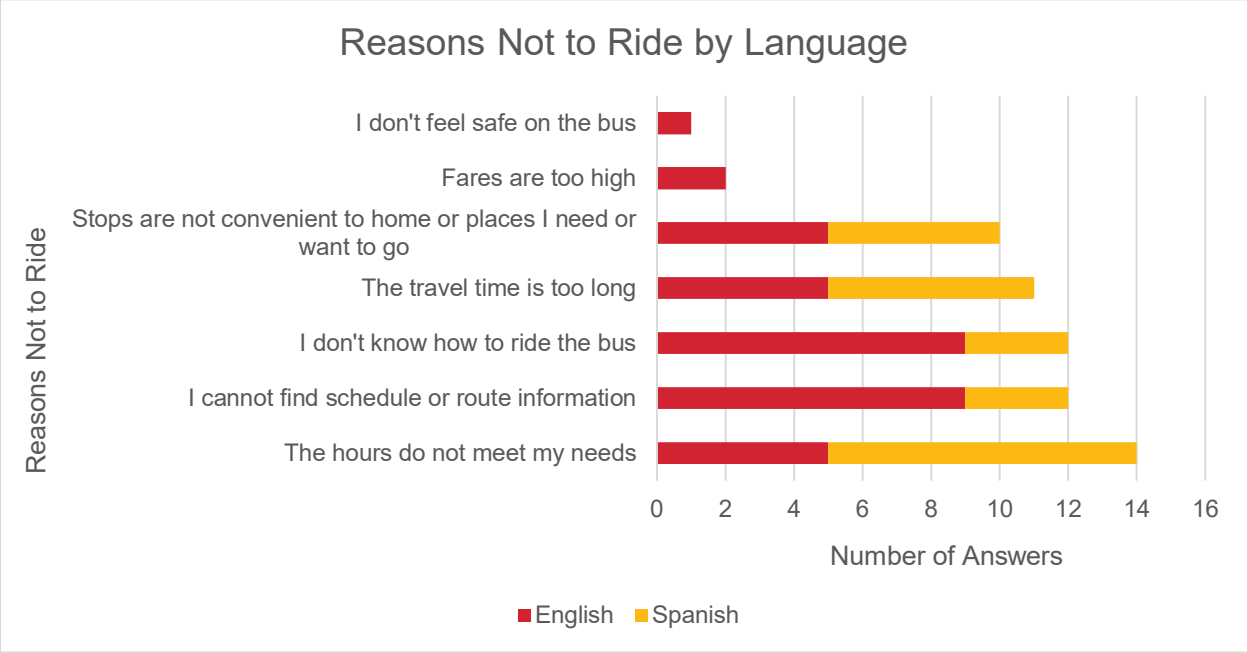
Where have you obtained bus schedule or transit information?

Figure B–38: Information Sources by Language Responses



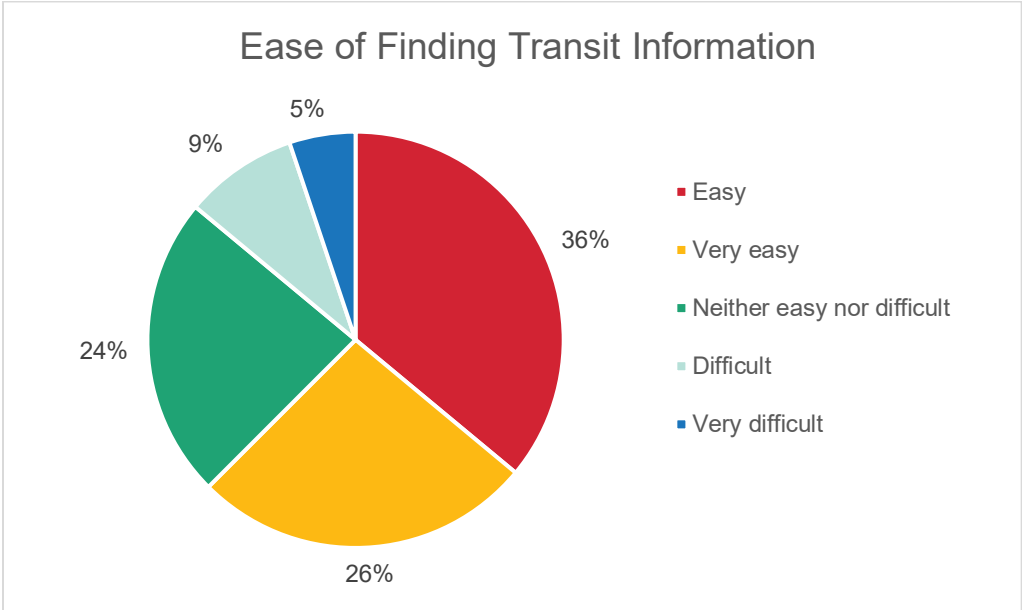
If you "rarely" or "never" use the local bus in Loudoun County, what are some of the reasons why?

Figure B–39: Reasons Not to Ride by Language



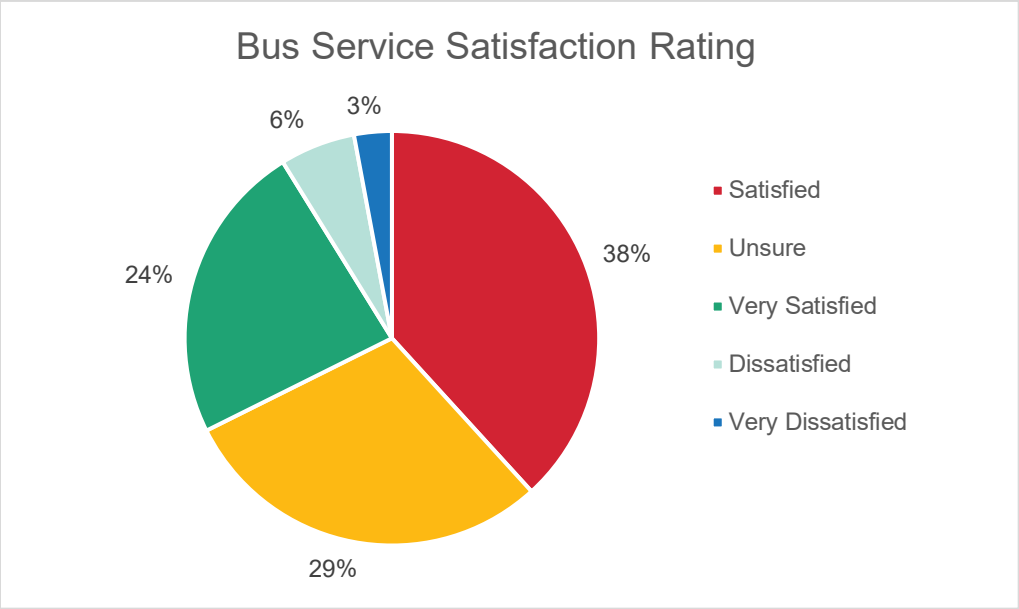
How easy is it to find bus schedules and information about transit services?

Figure B–40: Ease of Finding Transit Information Responses



How satisfied are you with the existing bus service options?

Figure B–41: Bus Service Satisfaction Rating



Are you currently taking this survey while riding the bus?

Table B–12: Bus Rider Responses

Answer	Total	Percentage
Yes	82	60%
No	54	40%

Which local bus route(s) are you taking on this ride?

Table B–13: Current Route Ridership by Language

Current Routes	English	Spanish	Total
Sum of Route 70 (Leesburg to Sterling via Leesburg Pike)	14	6	20
Sum of Routes 55, 56, 57 (Leesburg)	9	4	13
Sum of Route 82 (Sterling Connector)	3	8	11
Sum of Routes 331/332 (Ashburn Metrorail Station: One Loudoun)	9		9
Sum of Route 62 (Ashburn)	7	1	8
Sum of Route 80 (Sugarland Connector)	2	5	7
Sum of Route 81 (Countryside Connector)	3	1	4
Sum of Route 333 (Loudoun Gateway Metrorail Station: Quantum Park/Pacific Boulevard/Loudoun Gateway)	4		4
Sum of Route 341 (Ashburn Metrorail Station: Ashburn Village 1)	3		3

Current Routes	English	Spanish	Total
Sum of Route 342 (Ashburn Metrorail Station: Ashburn Village 2)	3		3
Sum of Route 375 (Ashburn Metrorail Station: Brambleton 2)	1	2	3
Sum of Route 391 (Ashburn Metrorail Station: Harmony)	3		3
Sum of Route 322 (Innovation Center Metrorail Station: Atlantic Boulevard Connector)	2	1	3
Sum of Route 323 (Innovation Center Metrorail Station: Sterling)	2	1	3
Sum of Route 382 (Loudoun Gateway Metrorail Station: Stone Ridge)	1	2	3
Sum of Route 343 (Ashburn Metrorail Station: Goose Creek Village/Ashburn Farm 1)	1	1	2
Sum of Route 344 (Ashburn Metrorail Station: Goose Creek Village/Ashburn Farm 2)	1	1	2
Sum of Route 351 (Ashburn Metrorail Station: Leesburg)	2		2
Sum of Route 373 (Ashburn Metrorail Station: Broadlands)	2		2
Sum of Route 374 (Ashburn Metrorail Station: Brambleton 1)	1		1
Sum of Route 381 (Loudoun Gateway Metrorail Station: South Riding)	1		1
Sum of Route 312 (Reston Town Center Metrorail Station: Potomac Falls)	1		1
Sum of Route 371 (Ashburn Metrorail Station: Moorefield Parkway/Old Ryan Road)			
Sum of Route 372 (Ashburn Metrorail Station: Westwind Farm)			
Sum of Routes 320/321 (Innovation Center Metrorail Station: George Washington University)			
Grand Total	75	33	108

What local bus route(s) do you usually take (select all that apply)?

Table B–14: Route Ridership by Language

Routes	English	Spanish	Total
Sum of Route 70 (Leesburg to Sterling via Leesburg Pike)2	23	14	37
Sum of Routes 55, 56, 57 (Leesburg)	12	6	18
Sum of Route 82 (Sterling Connector)	10	6	16
Sum of Route 62 (Ashburn)	13	1	14
Sum of Route 80 (Sugarland Connector)	6	7	13
Sum of Routes 331/332 (Ashburn Metrorail Station: One Loudoun)	12		12
Sum of Route 81 (Countryside Connector)	6	2	8

Routes	English	Spanish	Total
Sum of Route 341 (Ashburn Metrorail Station: Ashburn Village 1)	7		7
Sum of Route 342 (Ashburn Metrorail Station: Ashburn Village 2)	6	1	7
Sum of Route 375 (Ashburn Metrorail Station: Brambleton 2)	5	1	6
Sum of Route 323 (Innovation Center Metrorail Station: Sterling)	5	1	6
Sum of Route 333 (Loudoun Gateway Metrorail Station: Quantum Park/Pacific Boulevard/Loudoun Gateway)	4	2	6
Sum of Route 351 (Ashburn Metrorail Station: Leesburg)	4	1	5
Sum of Route 343 (Ashburn Metrorail Station: Goose Creek Village/Ashburn Farm 1)	3	1	4
Sum of Route 374 (Ashburn Metrorail Station: Brambleton 1)	4		4
Sum of Route 322 (Innovation Center Metrorail Station: Atlantic Boulevard Connector)	2	2	4
Sum of Route 344 (Ashburn Metrorail Station: Goose Creek Village/Ashburn Farm 2)	2	1	3
Sum of Route 373 (Ashburn Metrorail Station: Broadlands)	3		3
Sum of Route 381 (Loudoun Gateway Metrorail Station: South Riding)	3		3
Sum of Route 382 (Loudoun Gateway Metrorail Station: Stone Ridge)	2	1	3
Sum of Route 391 (Ashburn Metrorail Station: Harmony)	2		2
Sum of Route 312 (Reston Town Center Metrorail Station: Potomac Falls)	2		2
Sum of Route 371 (Ashburn Metrorail Station: Moorefield Parkway/Old Ryan Road)			
Sum of Route 372 (Ashburn Metrorail Station: Westwind Farm)			
Sum of Routes 320/321 (Innovation Center Metrorail Station: George Washington University)			
Grand Total	136	47	183

What changes would you suggest to improve bus service in Loudoun County (e.g., operate later at night, change/add)

Table B–15: Bus Service Improvement Suggestions

Bus Service Improvement Suggestions
None
Reduce fare
Please extend the work hours for 341 and 342 during the workdays from morning to night, now these routes work from early morning to 11am and then from 3 pm to night

Bus Service Improvement Suggestions
More park and ride options west of Hamilton, even outside of Loudoun for commuters
The drivers need training. They're very rude. I saw the one that comes to the senior living community of 7 in Sterling and they wouldn't help the lady get onto the bus. She was on the handicap ramp and they wouldn't help her. Made her come off the ramp. The driver was on the wrong side and made her come around the bus to get on. She was handicapped. It's the new living community on 7. On the hill behind the Harris Teeter. The weekend hours need to be adjusted. They need longer weekend hours. Need hours on Sunday. Some of us like to go to church and we can't because there's no bus. The bus should come up the hill to the shelter. They shouldn't have to go down the hill to the bus stop. Drivers verbally rude. Sometimes late on the route past the outlet mall. They ride the clock. They are late.
Add more routes and have the bus run on Sundays
Nothing, I am satisfied
Add routes
South Riding needs to operate between the AM & PM hours. Too much of a gap in time to get to and from home!
Add routes
Weekend hours. I work on Sundays. Need later evening hours. This bus stops at 7. I have to Uber after that to go somewhere. The metro goes until 10pm
Add routes and make info on routes more easily accessible
None
Add routes and more frequent stops
Operate later in areas where the stores close late.
Add routes, Operate Midday too
Reducing fare and adding routes to make it more convenient for people to take it.
Add stops for some routes, plan better routes, better connecting routes and timely service
Sync bus departures after metro arrivals
Advertise more
Unsure. Don't ride
Another places like Aldie
Add
At night until 10 and Sundays
Need sidewalk and bus from Marietta to Walmart and also to cross over 50 route also need weekend service
At time buses more frequent.
Nothing
Clearer signage for bus numbers
Operate at night and on the weekends. The current schedule is very inconvenient.
Connect cascades to Reston , Leesburg and Tysons
Operate up to midnight
Customer service and the way Hispanics are being treated
Add more route
Punctuality, consistency. 323 bus us not reliable. Doesn't follow time,

Bus Service Improvement Suggestions
Extended lines route
Run on weekends would be nice
Fix the Jan key aaaaa shaking buses with poor suspension
Sunday hours are needed
Fix the mechanical payment and put a warning button on buses
That they will run everyday
for my personal use- i find it very convenient as it is
Time schedules
Free fares and more routes
Want more routes
Have live tracking of the bus (like they do in DC) to be able to tell when it is running early or late. Right now I have to be at the bus stop 10 minutes early just in case and don't know when it is running late.
Extended night hours
Haven't used before
More later
I don't have any suggestions
More service at night
I don't know
Add more direct routes with less waiting time.
No
I don't know
None I can think of
I want bus in my area
Nothing
I would appreciate a bus route that went to the NOVA Community College Loudoun Campus
Operate 24/7 would be great for people who work at night
I would make a lot of changes. Already detailed on a survey. It blanked out in the middle.
Operate later at night and on the weekends. I have to schedule my travel too strictly with the current hours.
Is fine the way it is now
Operate mod-day
It's fine the way it is
Please ensure bus routes stop at all local library locations.
Late operate for student who go to library
Provide alternative routes on the weekend
Let them work more at night
QR codes at the signs for the Transit App, so that more people use it
Let there be buses later in the day.
Reduce the fare, operate late night, update the county website for routes
Make it cheaper

Bus Service Improvement Suggestions
Rude guy to son accusing of son being older and scarring him by questioning the minor asking 8 year old to show proof of age if not he can't ride bus
Make your hours longer
Servicing on weekends
Maybe operate little longer fares are fair and morning extra bus in case we meet to get to work fast
Spread out the times of the 2 buses
More advertisement of available routes
Sunday service
More bus lines for my mom
Take less time for the ride by increase the buses
More buses
That you can pay with debit/credit card
More buses
There should be buses that run a little later, after 8pm.
More buses on weekends
Timing, add routes
More clear signage
Unsure. Don't ride.
More frequency, One every 10 minutes
We need weekend hours for Saturday and Sunday.
More frequent trips
Weekend hours. Longer weekday evening hours.
More frequent would be nice; the frequency improvements after Ashburn opened is appreciated. Later in the evening would be nice too.
Nothing at all very pleased with public transportation services
More hours and Spanish translated
More hours of service on Saturday and Sunday

Which of the following options most closely aligns with your gender?

Table B–16: Gender Responses

Respondent Gender	Total	Percentage
Female	69	57%
Male	50	41%
Non-binary	2	2%

What is your age?

Table B–17: Age Responses

Respondent Age Range	Total	Percentage

35 to 44	36	29%
25 to 34	28	22%
45 to 54	19	15%
65+	16	13%
18 to 24	13	10%
55 to 64	10	8%
Under 18	4	3%

Which race/ethnicity best describes you?

Table B–18: Race/Ethnicity Responses

Respondent Race/Ethnicity	Total	Percentage
White / Caucasian	48	38%
Hispanic	38	30%
Black or African American	17	13%
Asian / Pacific Islander	13	10%
Multiple ethnicity / Other (please specify)	8	6%
American Indian or Alaskan Native	2	2%

Which of the following categories best describes your employment status?

Table B–19: Employment Status Responses

Respondent Employment Status	Total	Percentage
Employed, working full-time	62	50%
Employed, working part-time	23	18%
Retired	21	17%
Not employed, looking for work	10	8%
Not employed, NOT looking for work	9	7%

Including yourself, how many people live in your household?

Table B–20: Number of People per Household Responses

Respondent Number in Household	Total	Percentage
2	19	22%
4	19	22%
1	14	16%
3	14	16%
5	14	16%
6	5	6%
8	1	1%

Respondent Employment Status	Total	Percentage
Employed, working full-time	62	50%
Employed, working part-time	23	18%
Retired	21	17%
Not employed, looking for work	10	8%
Not employed, NOT looking for work	9	7%
Grand Total	125	100%

What is your household income?

Table B–21: Household Income Responses

Respondent Income Ranges	Total	Percentage
$20,000 to $34,999	25	27%
$100,000 or above	22	24%
Less than $20,000	16	17%
$50,000 to $74,999	15	16%
$75,000 or $99,000	7	8%
$35,000 to $49,999	7	8%

Do you have any long-term physical or mental disabilities that affect your use of the bus service [select all that apply]?

Table B–22: Disability Responses

Respondent Potential Impairments	Total	Percentage
None	98	84%
Mobility impairment	6	5%
Respiratory problems	4	3%
Mental health condition	3	3%
Prefer not to say	3	3%
Serious long term illness	1	1%
Hearing impairment	1	1%
Visual impairment	1	1%

What is your zip code?

Table B–23: Zip Code Responses

Respondent Zip Codes	Totals	Percentage
20164	14	13%
20147	13	12%
20148	12	11%
20152	9	8%
20175	9	8%
20176	9	8%

Respondent Zip Codes	Totals	Percentage
20165	9	8%
20166	5	5%
20105	4	4%
20132	3	3%
22206	2	2%
85021	2	2%
20009	2	2%
20170	2	2%
22031	1	1%
20158	1	1%
22204	1	1%
22602	1	1%
22003	1	1%
20151	1	1%
22182	1	1%
20145	1	1%
2165	1	1%
20177	1	1%
20191	1	1%
20002	1	1%
20141	1	1%

B.5 Human Services Survey (November 2023)

B.5.1 Human Services Survey Text

Where are your clients traveling? [Select all that apply]

- Work
- Medical appointments
- Obtaining services from an agency
- Shopping (groceries, clothes, etc.)
- Faith community or worship services
- School, college, or university
- Child care

How do your clients get to where they need to go? [Select all that apply]

- Walk
- Personal vehicle
- Get a ride with a friend/family member
- Public transit (bus, Metro)
- For-hire vehicle (taxi, Uber, Lyft, etc.)
- Bike
- Paratransit

- I don't know
- Other
- None of the above

How familiar are your clients with bus services in Loudoun County? [Select one]

- I do not know
- Somewhat familiar
- Very familiar
- Not so familiar
- Not at all familiar
- Extremely familiar

Do you know where your clients access bus schedule/transit information? [Select all that apply]

- I do not know
- On the county website (Loudoun.gov/transit)
- Google or other search tool
- Loudoun's transit app
- At the library
- Government center/Dulles Town Center Mall
- Other

If your clients use public bus transportation in Loudoun County, wat are some of the reasons why? [Select all that apply]

- They do not have access to a personal vehicle
- They do not have a driver's license
- They are unable to drive
- The services they need are beyond a walking or biking limit
- I do not know
- Transit is more convenient
- Other

How familiar are you and your staff with transit services in Loudoun County? [Select one]

- Somewhat familiar
- Not at all familiar
- Very familiar
- Not so familiar
- Extremely familiar
- I do not know

Do you know where to direct your clients to find out about bus schedules and services? [Select one]

- Yes
- No

How often do you assist with your clients with their transportation needs? [Select one]

- Sometimes
- Rarely
- Usually
- Never
- Always

How likely are you to recommend public transit to your clients? [Select one]

- Probably would
- Definitely would
- Probably would not
- Definitely would not

Where does your typical client live? [Select all that apply]

- Sterling
- Ashburn
- Leesburg
- Aldie
- South Riding
- Lovettsville
- Purcellville
- Hamilton
- Middleburg
- Round Hill
- Hillsboro
- Other

What are some of the reasons why you would not recommend public transit services to our clients? [Select all that apply]

- The hours do not meet their needs
- Stops are not convenient to home or destinations
- The travel times are too long
- Fares are too high
- They cannot locate schedule or route information
- I am not familiar with Loudoun County Transit
- Other (please specify)

What changes would you suggest to improve the transit services offered by Loudoun County? [Open response]

What changes would you suggest improving the transit bus services offered by nonprofit organizations for your clients? [Open response]

Is there anything else we should know to improve transit services? [Open response]

How would you categorize your organization? [Select one]
- Human Services Provider
- Loudoun County Government Agency
- Other

Please share the name of your organization. If you work Loudoun County, please specify what department. [Open response]

What day(s) and time(s) of the week do you provide services to your clients? (e.g., Monday 9am–3pm, Saturday 10am-2pm) [Open Response]

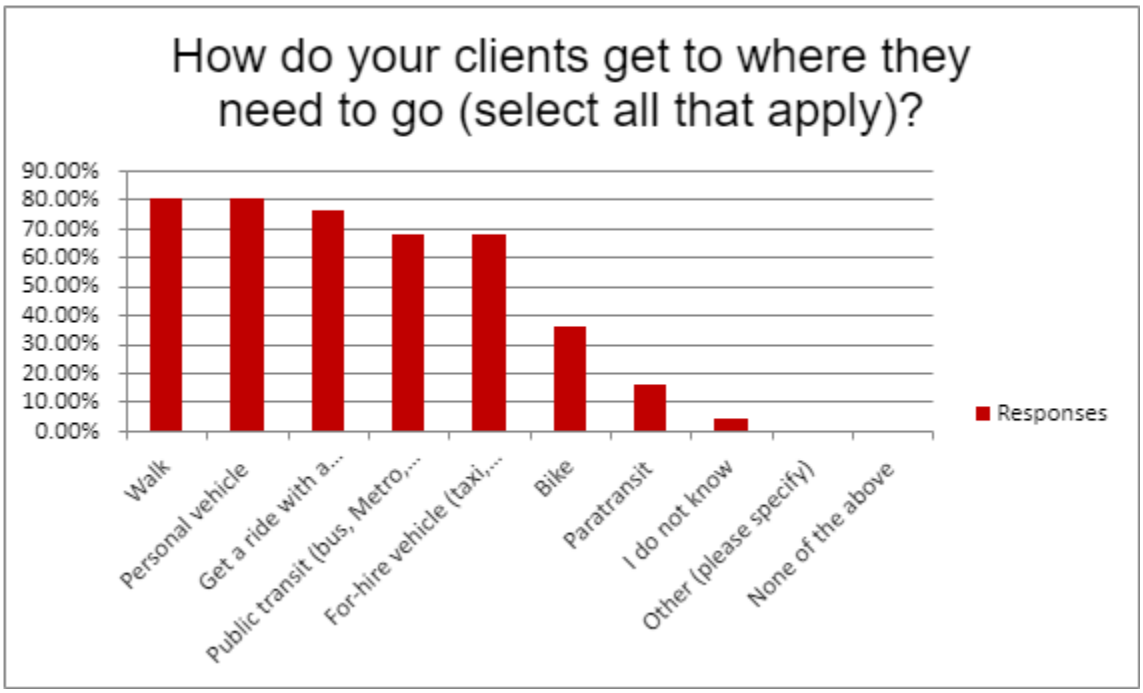
B.5.2 Human Services Survey Responses

Where are your clients traveling?

Figure B–42: "Where are your clients traveling?" Responses

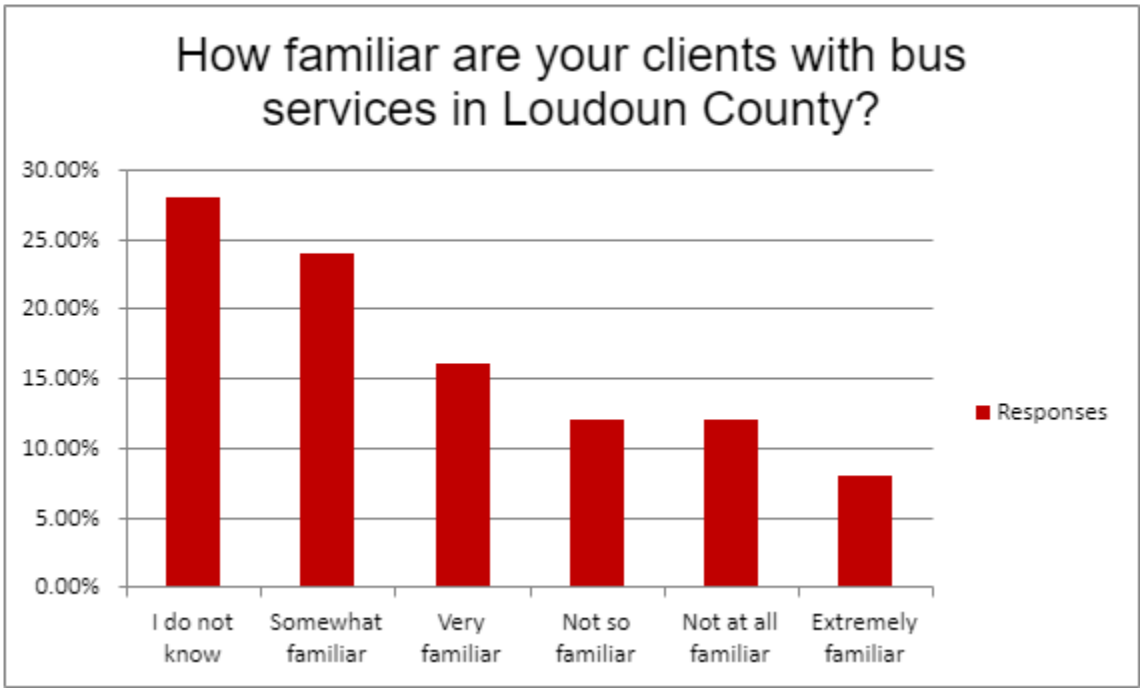
How do your clients get to where they need to go?

Figure B–43: "How do your clients get to where they need to go?" Responses



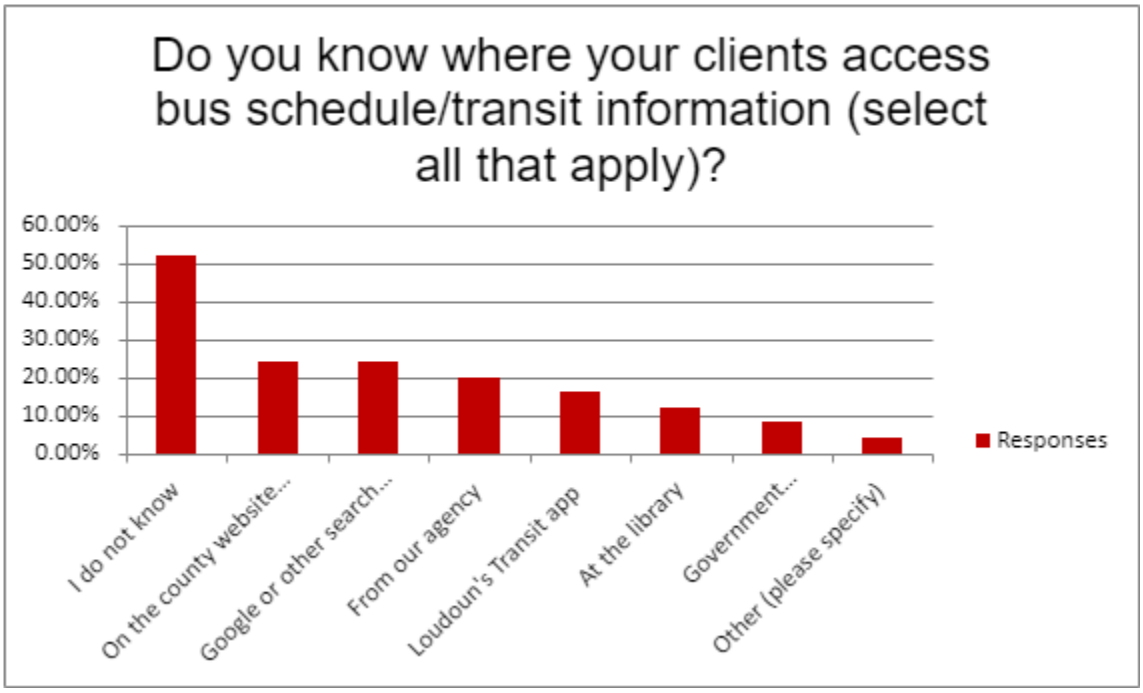
How familiar are your clients with bus services in Loudoun County?

Figure B–44: "How familiar are your clients with bus services in Loudoun County?" Responses



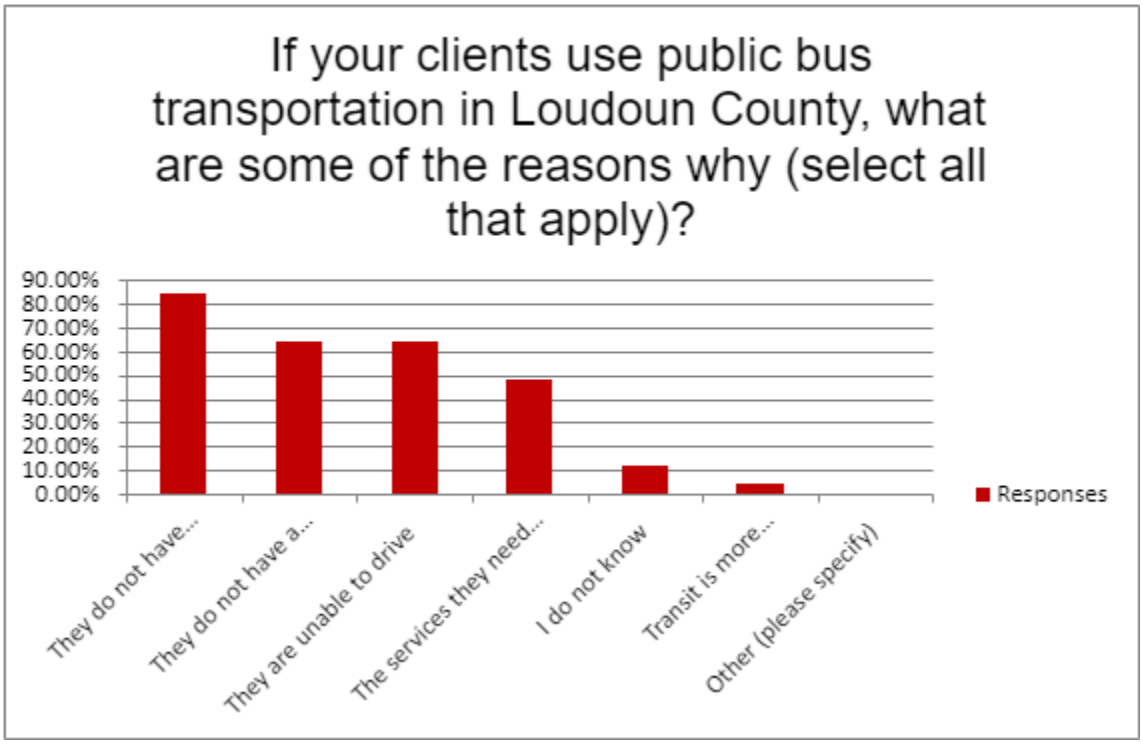
Do you know where your clients access bus schedule/transit information?

Figure B–45: "Do you know where your clients access bus schedule/transit information?" Responses



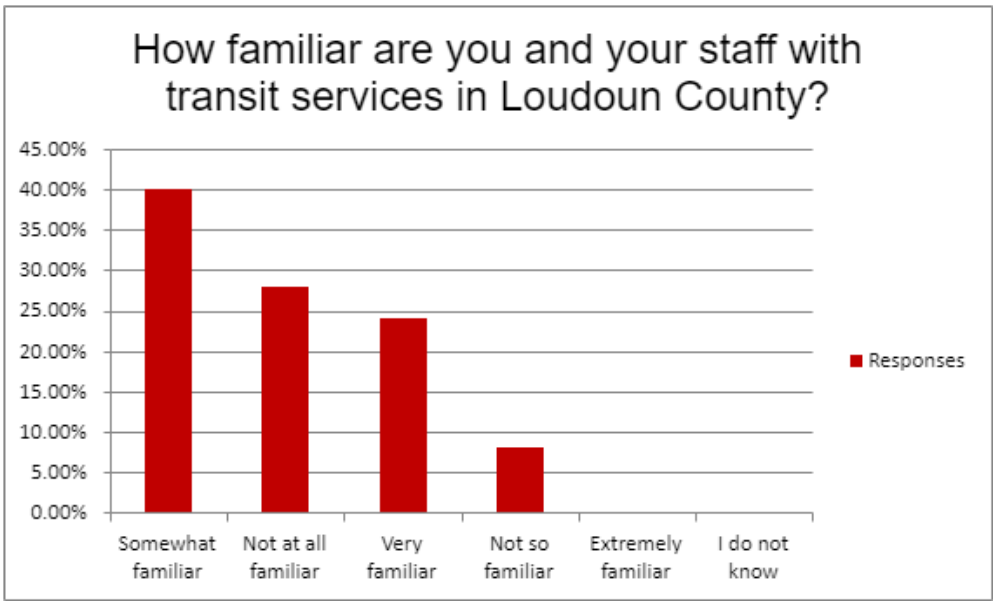
If your clients use public bus transportation in Loudoun County, wat are some of the reasons why (select all that apply)?

Figure B–46: "If your clients use public bus transportation in Loudoun County, what are some of the reasons why?" Responses



How familiar are you and your staff with transit services in Loudoun County?

Figure B–47: "How familiar are you and your staff with transit services in Loudoun County?" Responses

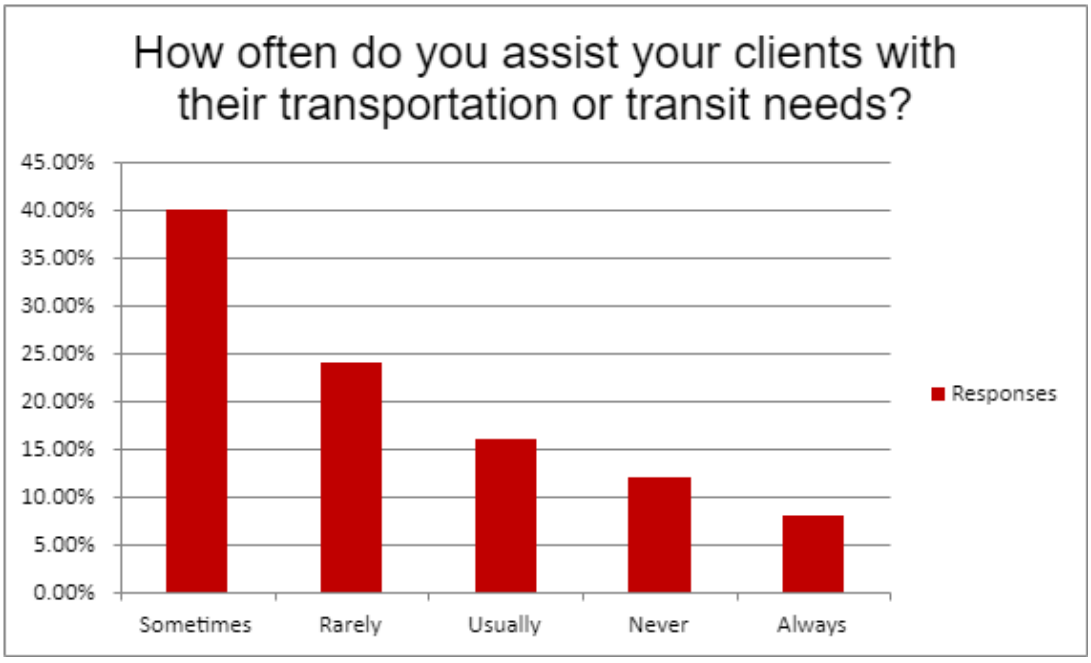


Do you know where to direct your clients to find out about bus schedules and services?

Figure B–48: "Do you know where to direct your clients to find out about bus schedules and services?" Responses

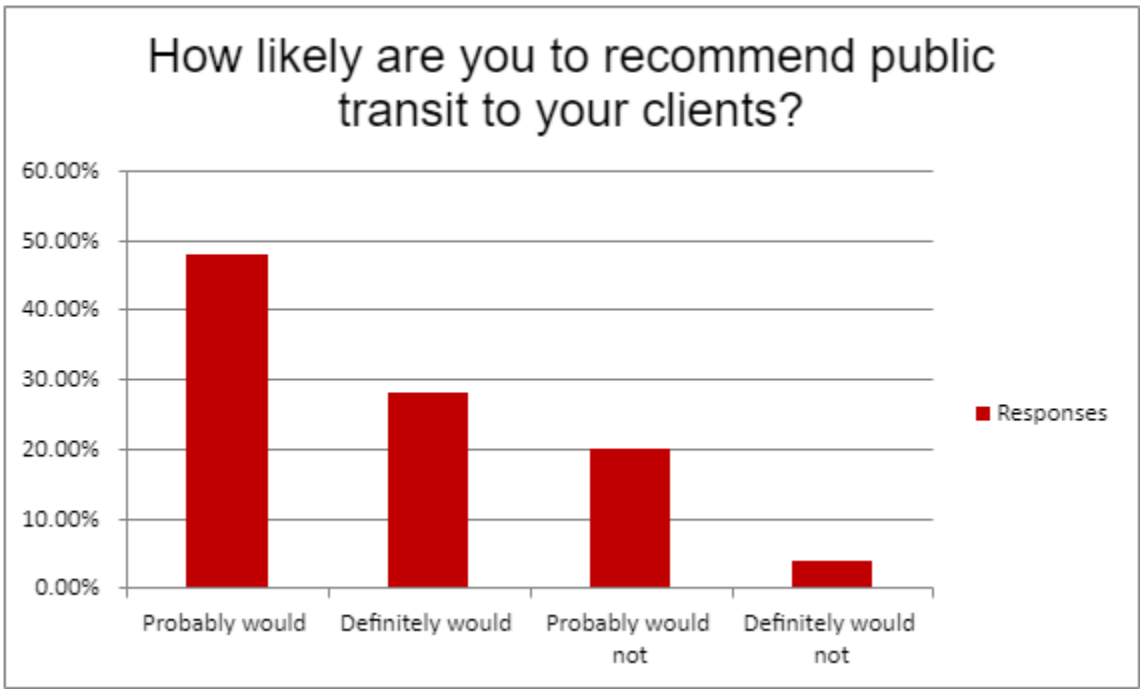
How often do you assist with your clients with their transportation needs?

Figure B–49: "How often do you assist your clients with their transportation or transit needs?" Responses



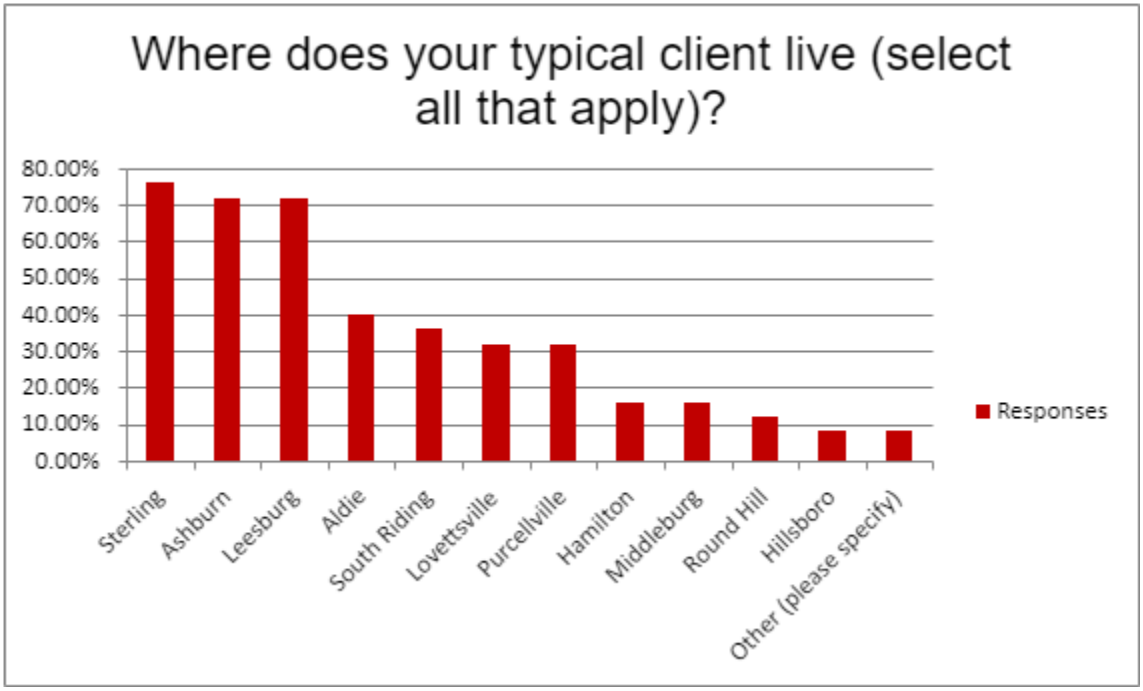
How likely are you to recommend public transit to your clients?

Figure B–50: "How likely are you to recommend public transit to your clients?" Responses



Where does your typical client live?

Figure B–51: "Where does your typical client live?" Responses



What are some of the reasons why you would not recommend public transit services to our clients?

Figure B–52: "What are some of the reasons why you would not recommend public transit services to your clients?" Responses

What changes would you suggest to improve the transit services offered by Loudoun County?

Table B–24: "What changes would you suggest to improvement transit services offered by Loudoun County?" Responses

Responses
Offering more stops and increase the frequency. Clients have limited access to transit in the western part of the county and the travel time can be long.
N/A
Evening and weekend service
Provide longer service hours and extended routes.
Make access to information better known.
Make the information more easily accessible - perhaps by sending schedules/route info to all nonprofits, add stops all over the county
increase scheduled routes/times.
More stops in rural areas
More buses. It is sometimes difficult for people to get a ride because the schedule is full. Longer hours and more weekend routes
on line payment clear and covered bus stops more expansive service

Responses
More bus stops in the Sterling area
more access to free bus passes
Evening hours later. Stopping at 10pm or later for those clients that work late
Offer more stop locations that go into neighborhoods, or off the main streets. Offer times that accommodate shift work to include late evening hours, holidays, weekends. Create less transfers.
have some public transit in western Loudoun. There is nothing in the MIddleburg are.

What changes would you suggest improving the transit bus services offered by nonprofit organizations for your clients?

Table B–25: "What changes would you suggest improving the transit bus services offered by nonprofit organizations for your clients?" Responses

Responses
N/A
Complementary bus passes
There are no bus stops near our non-profit so it's not an option for our guests to get to our location. More promotion of transit services in general would get the information out. Many are not even aware of the options.
Timing and stops be better located.
Provide stops within a few blocks of key nonprofits - ie Food pantries, legal services, job skills training nonprofit centers (Loudoun Hunger new location/Loudoun Cares on 8C South St. SW)
More funding to assist and help fill gaps until public transportation can be extended
Just more availability
I don't even know what that would be or what they do now.
Providing bus tokens
more access to free bus passes
Again increase in hours for the bus service
The use of on demand pick up or ride shares. Offer stops at workplace hubs, strip malls, big box stores.
don't know

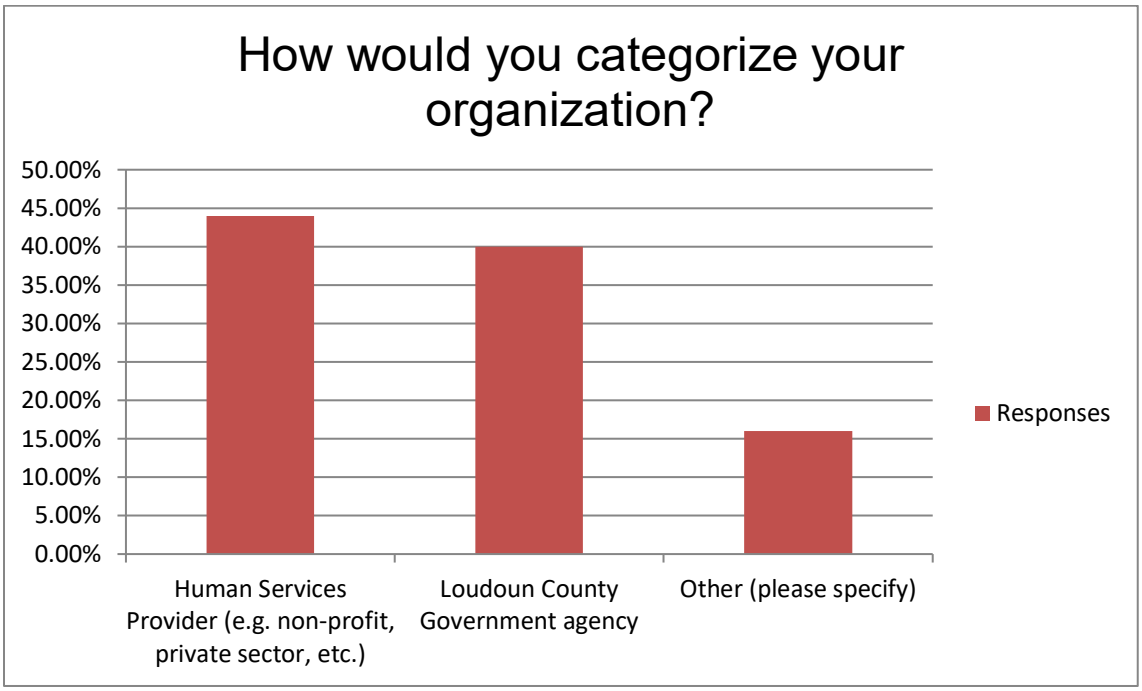
Is there anything else we should know to improve transit services?

Table B–26: "Is there anything else we should know to improve transit services?" Responses

Responses
More widely and readily available information and itinerary data
No
Education and knowledge
You have improved the customer service from the previous provider. Thank you for that!
safety ride across rt 7 at countryside
Have a round table with folks who rely on public transportation to hear some of the stories they have encountered.
until public transit is available throughout the county it is always a question of getting more coverage.

How would you categorize your organization?

Figure B–53: "How would you categorize your organization?" Responses



Please share the name of your organization. If you work Loudoun County, please specify what department.

Table B–27: Organization Name Responses

Name of Organization
MAC
Friends of Loudoun Mental Health
Department of Family Services
Dulles South Food Pantry
The Chris Atwood Foundation
Corpus Christi Catholic Church
Loudoun Cares
OAR Nova
LAWS Domestic Violence & Sexual Assault Services
Loudoun County Health Department
Loudoun County- MHSADS
LOCO gov. -Job Link- MHSADS
Inova Cares Clinic for Families
Dept of Family Services
Reston Bible Church

Name of Organization
Mobile Hope
Emmanuel Episcopal Church

What day(s) and time(s) of the week do you provide services to your clients? (e.g., Monday 9am–3pm, Saturday 10am-2pm)

Table B–28: "What day(s) and time(s) of the week do you provide services to your clients?" Responses

Answer Choices	Responses	
Monday	81.82%	18
Tuesday	86.36%	19
Wednesday	90.91%	20
Thursday	86.36%	19
Friday	81.82%	18
Saturday	50.00%	11
Sunday	54.55%	12
	Answered	**22**
	Skipped	**3**

Appendix C : Available Resources for TSP Development

C.1 Chapter 2 Market Assessment Supplementary Figures

These figures and analyses were originally included with the Transit Strategic Plan (TSP) Chapter 2 to provide additional detail on demographic and travel patterns of Loudoun County residents. While the findings and key takeaways from these figures are still captured in opportunities for improvement, additional data from the TSP document is now included in this appendix as supplementary information.

C.1.1 Demographics

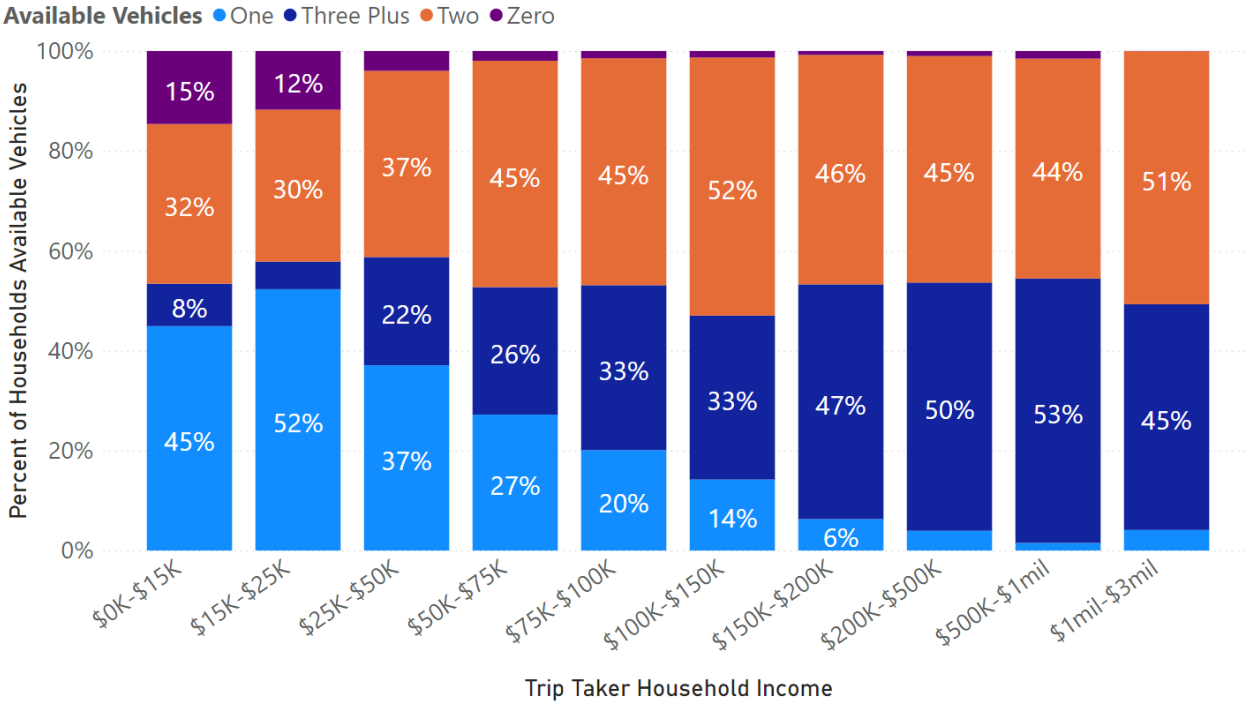


Figure C-1: Average Vehicles per Household Income

Figure C-1 displays percentage of household available vehicles by income level for trips starting in Loudoun. One and zero-vehicle households are most prevalent for Loudoun residents whose income is less than $50K. Zero-vehicle households are concentrated in household income levels less than $25K indicating a high reliance on alternative methods of transport, informal ride sharing, and transit for low-income families within Loudoun County. Conversely, once household income exceeds $75K, the prevalence of single car households decreases as families have more vehicles available to them at higher-income levels—in households exceeding $150K in aggregate income, 90 percent have access to two vehicles or more. Compared with the rest of the region, Loudoun household vehicle availability is higher across all income groups. Data for neighboring jurisdictions such as Fairfax and Prince William Counties show low-income cohorts have higher shares of zero-

vehicle households (20 percent) and single-vehicle households are more common among income groups up to $150K.

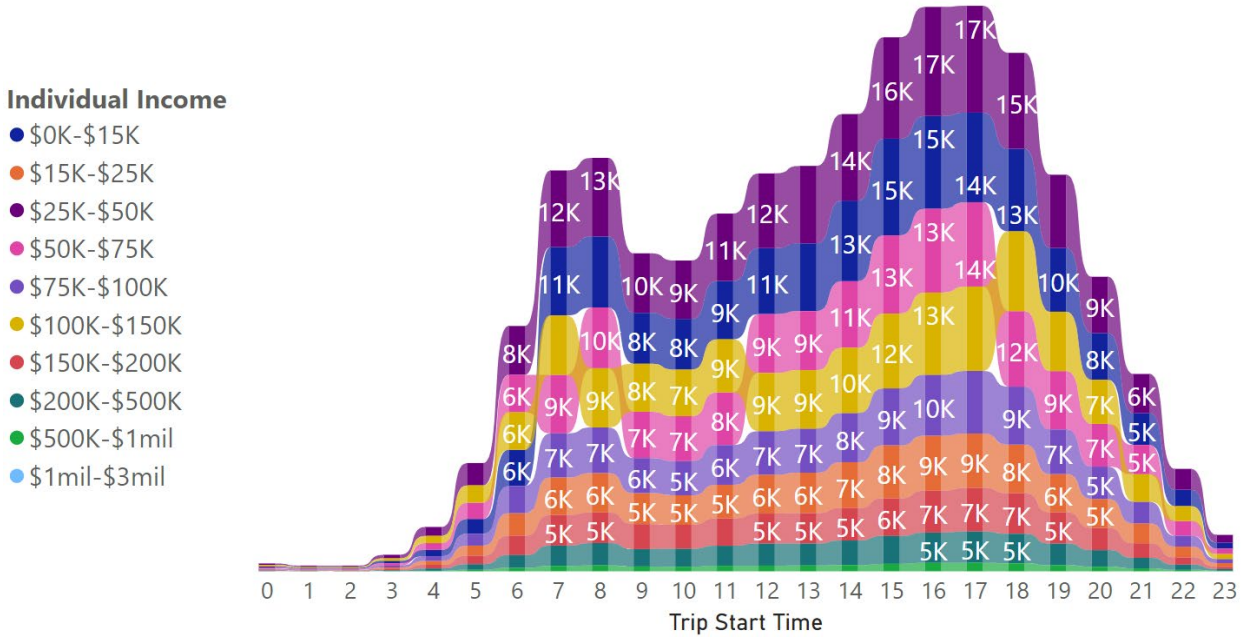


Figure C-2: Individual Income Travel by Trip Start Time (Weekday)

Figure C-2 illustrates travel demand by time of day broken down by individual traveller income categories. The X-axis indicates the trip's start hour, while the Y-axis's height indicates the total trip demand during that specific hour. The colored ribbons of the graph indicate the total trip demand for varying income groups throughout the day. The most prevalent income category for each period is displayed at the top; for example, the $25K to $50K individual income group shown in purple at the top of the stacked graph represents the greatest number of trips across all time periods.

For trips starting within Loudoun, a.m. peak travel demand starts at 6:00 a.m. to 9:00 a.m. and steadily increases throughout the day, with peak number of trips in the 3:00 p.m. to 7:00 p.m. period. Travel distribution is mostly uniform for varying income levels across the day; however, persons with incomes under $50K comprise most trips taken in the early morning, the peak between 7:00 a.m. and 9:00 a.m., and late at night. Moderate- and high-income travel of $100K to $150K (yellow) briefly overtakes those earning $50-$75K (pink) during 7:00 a.m. and off-peak during 9:00 a.m. to 11:00 a.m. and late evening. Peak travel time for higher earners occurs between 3:00 p.m. and 5:00 p.m., while lower-middle-income trips

(under $50k) occur throughout the traditional off-peak commuting periods. After 8:00 p.m., travel from Loudoun drastically decreases across all income groups.

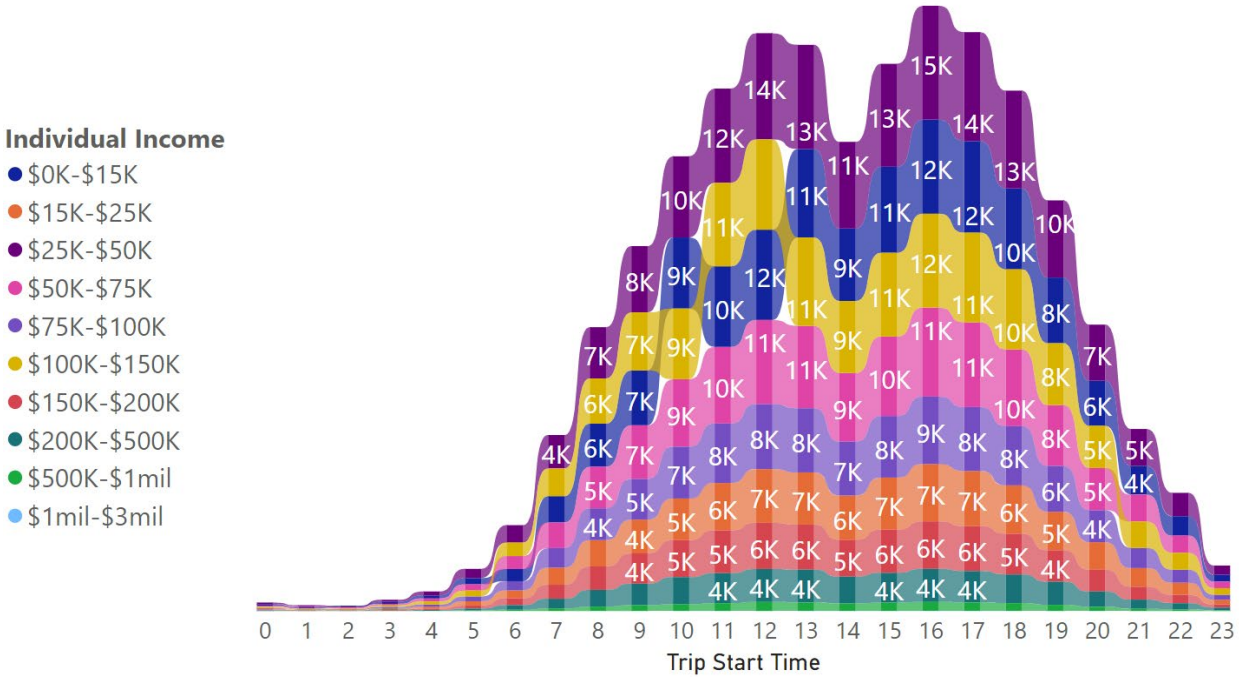


Figure C-3: Individual Income by Trip Start Time (Saturday)

Figure C-3 shows travel start times by income on a typical weekend starting from Loudoun. Travel on Saturdays is more uniform throughout the day and does not experience concentrated peaks of travel in the a.m. and p.m. periods. Overall, travel of different income cohorts mirrors weekday travel in terms of volume, with $25K to $50K comprising the majority of all travel throughout the weekend. Late-night trips and early-morning trips are diffuse similar to weekday service and significant demand decreases after 8:00 p.m.

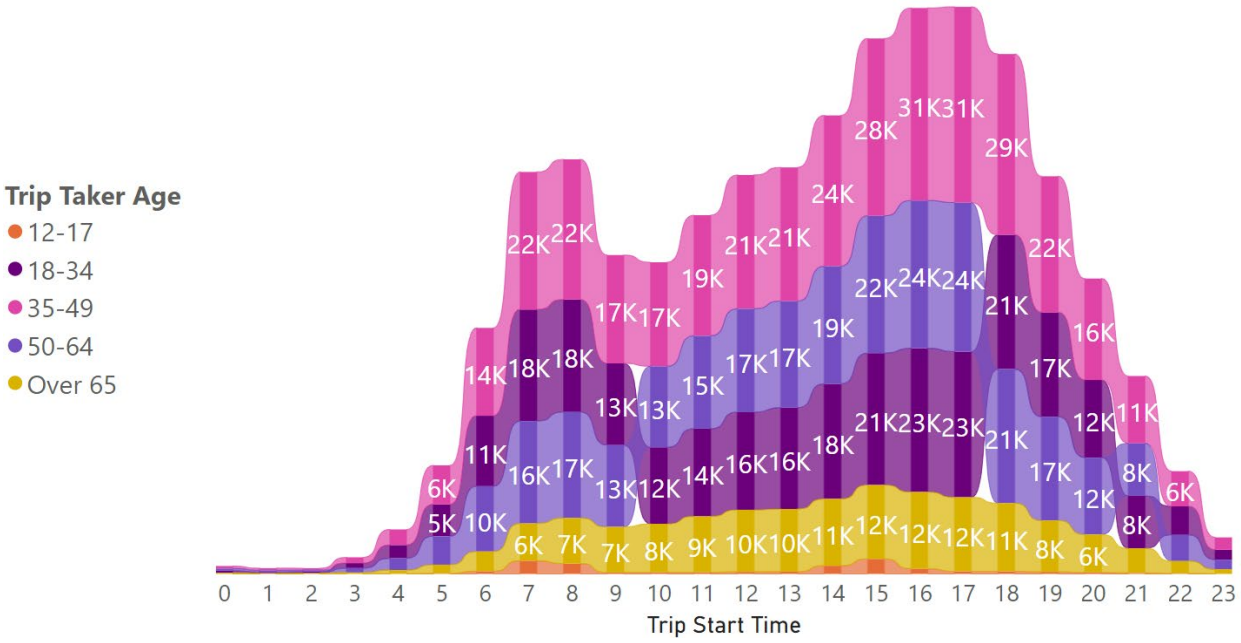


Figure C–4: Age Group by Trip Start Time (Weekday)

Figure C–4 shows the peak travel time by age for trips starting in Loudoun. The highest number of trips are taken throughout the day by persons ages 35 to 49, whose travel mirrors overall peak travel and commute times, with trips increasing at 7:00 a.m. and steadily growing throughout the day. Persons aged 18 to 34, who comprise the second most travel throughout the County, travel most frequently during a.m. and p.m. peak commuting hours. The persons aged 18 to 34 travel segment diminishes throughout midday off-peak hours and is overtaken by persons aged 50 to 64 who make the most trips from 10:00 a.m. to 5:00 p.m. The older population does not experience the travel demand peaks during the mornings and evenings but steadily increases throughout the day, peaking at 3:00 p.m. The under-17 age population travels most at 7:00 a.m. and 3:00 p.m. on weekdays, most likely aligning with school schedules from fall to spring but making up a small portion of overall trips. Trip times for the working versus non-working population generally follow the dichotomy of traditional peak commuting patterns versus off-peak travel for different purposes.

C.1.1.1 Travel Time

Travel data for Loudoun also allows geographic specification of where peak demand occurs throughout different periods. This will allow transit service to be placed near areas with high activity while reducing or restructuring service around areas with relatively less demand. Opportunities for improvement will also focus on areas and times of high demand that match the demographic profile of potential transit riders, such as low-income or working population needs to travel around commuting hours and early afternoons.

Replica travel data also tracks duration and distance per individual trip, which can be combined with socioeconomic, mode, and geographic data to determine how long people are willing to travel for different purposes.

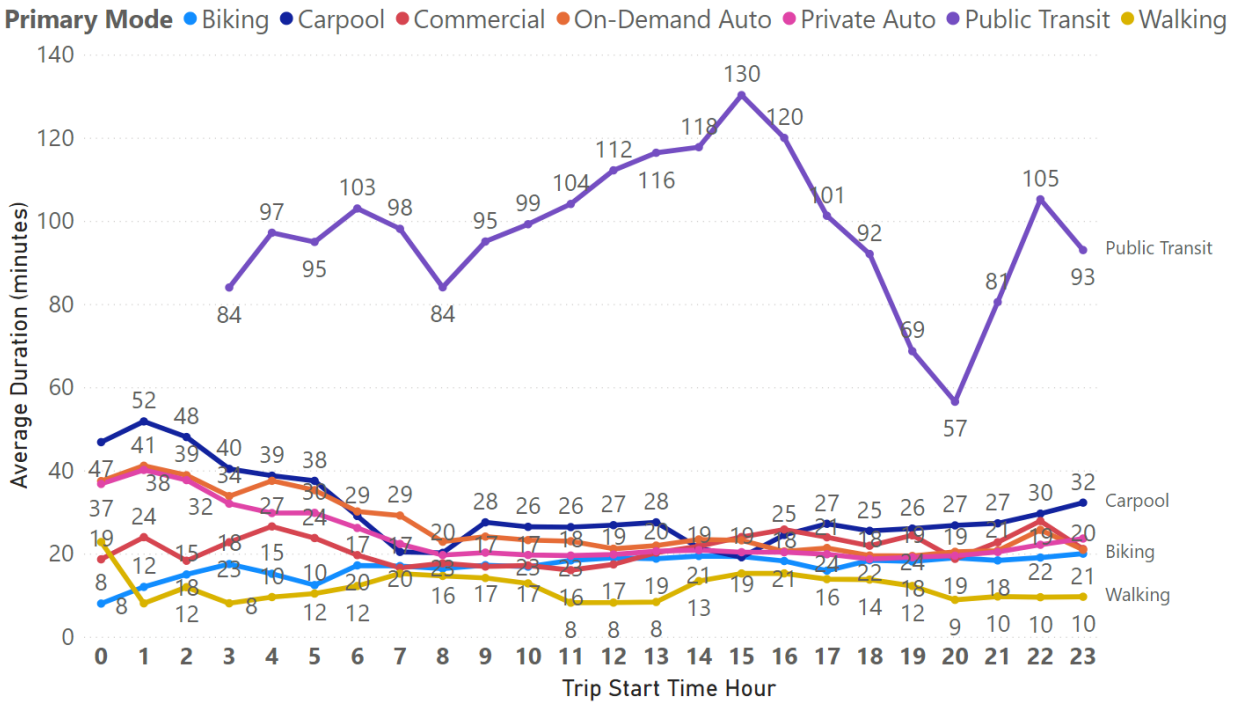


Figure C-5: Average Trip Duration by Mode and Trip Start Time

Figure C-5 shows the weekday trip duration in minutes by mode for trips starting in Loudoun throughout the day. Public transit has significantly higher median trip times (101 minutes) throughout the day compared to other modes such as private auto (15 minutes), biking (16 minutes), walking (10 minutes), and carpooling (17 minutes). Additionally, Loudoun County trip duration for transit use experiences peaks at 103 minutes at 7:00 a.m. and 127 minutes at around 3:00 p.m., whereas travel times via other modes do not.

This indicates that whereas the transit network serving Loudoun is optimized to deliver service around traditional peak hour commute times, off-peak travel incurs higher travel times because transit service is not optimized to provide direct connections for non-work trips. While these longer duration public transportation

trips may be composed of commute trips originating from Loudoun to regional work destinations around specific commuting hours, the travel time is still far more significant compared to modes such as private auto and carpool that may also be used to access both local and external work destinations at all times of the day.

C.1.1.2 Trip Purpose

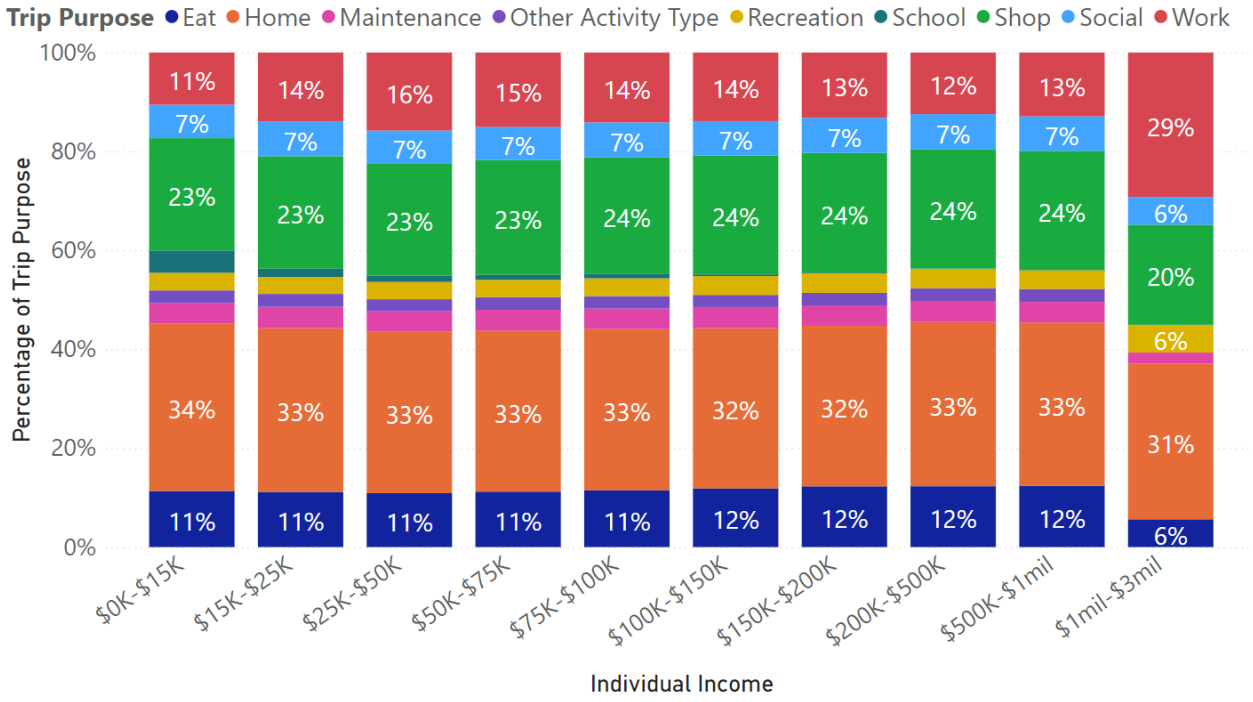


Figure C-6: Trip Purpose Distribution by Income Level (All Modes)

Figure C-6 displays individual income level of all travel starting in Loudoun by trip purpose percentage. The trip purpose is similar across income groups, with home-type trips accounting for around 33 percent of all trips, shopping trips for approximately 22 percent, and work trips for only 14 percent. On weekends, average shopping across all income groups rises to 29 percent, and social and recreation trips also increase to 30 percent, replacing work trips not taken. Weekend travel by those persons in the $25K to $50K income level, which comprises 19 percent of all trips taken within Loudoun, is the only group with a work trip percentage above 8 percent on weekends. This may suggest that many in lower-income groups still travel within Loudoun during weekends for essential jobs, shift work, and other in-person employment, which critical transit connections may serve.

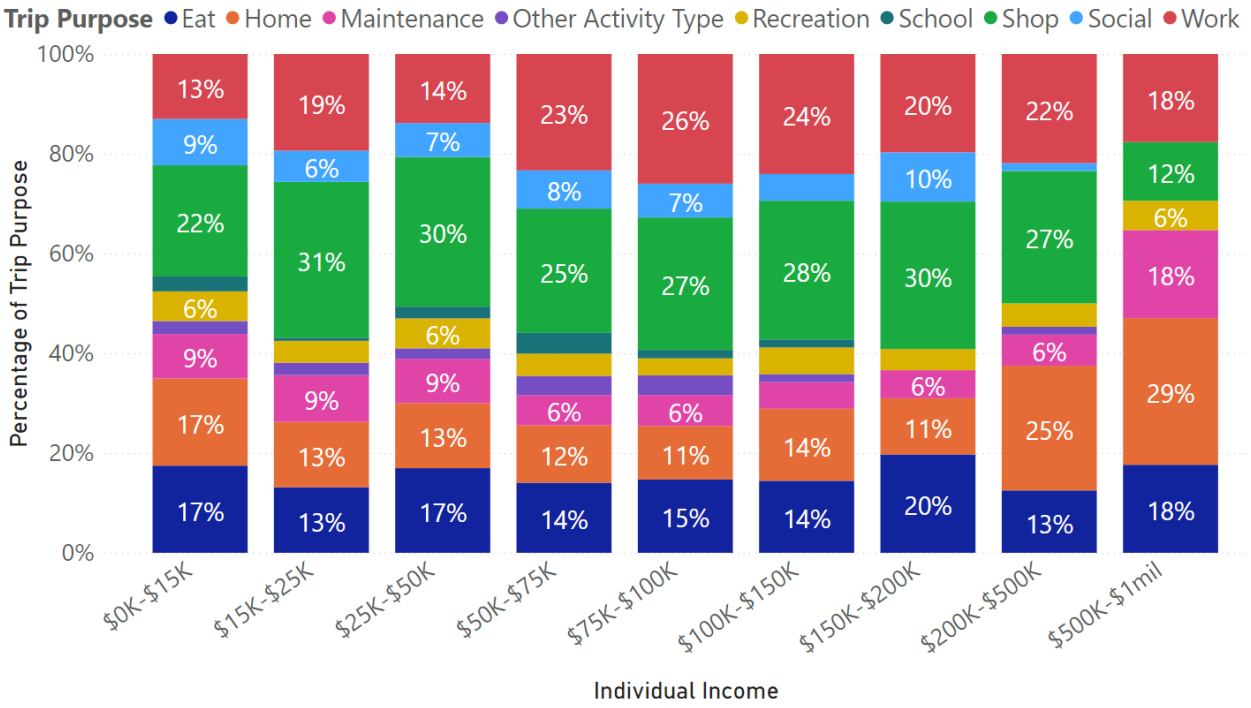


Figure C-7: Trip Purpose Distribution by Income Level (Loudoun Public Transit Only)

Figure C-7 displays a similar individual income level by trip purpose as **Figure C-6** but filtered for only trips in Loudoun County taken by public transit. Trip purpose for public transit riders in Loudoun is more focused on shopping (27 percent), work (20 percent), and eating and social (15 percent) travel for all income levels. Trips to home are also significantly lower for Loudoun public transit users, suggesting the concentration of service on commercial centers and mixed-use corridors.

While trip purpose across all modes is relatively uniform across varying income levels, transit trip purpose specifically changes across income levels. For example, moderate to high-income ($50K to $100K) individuals currently use public transit more for work only (26 percent) than other income groups, who have more diverse uses for transit such as shopping and eating. While this breakdown of purpose by mode gives an overall idea of why Loudoun County Transit (LCT) riders currently use its services, it is important to keep in mind this only captures current users of transit in Loudoun County and should not be used to assume for future riders and their potential use cases.

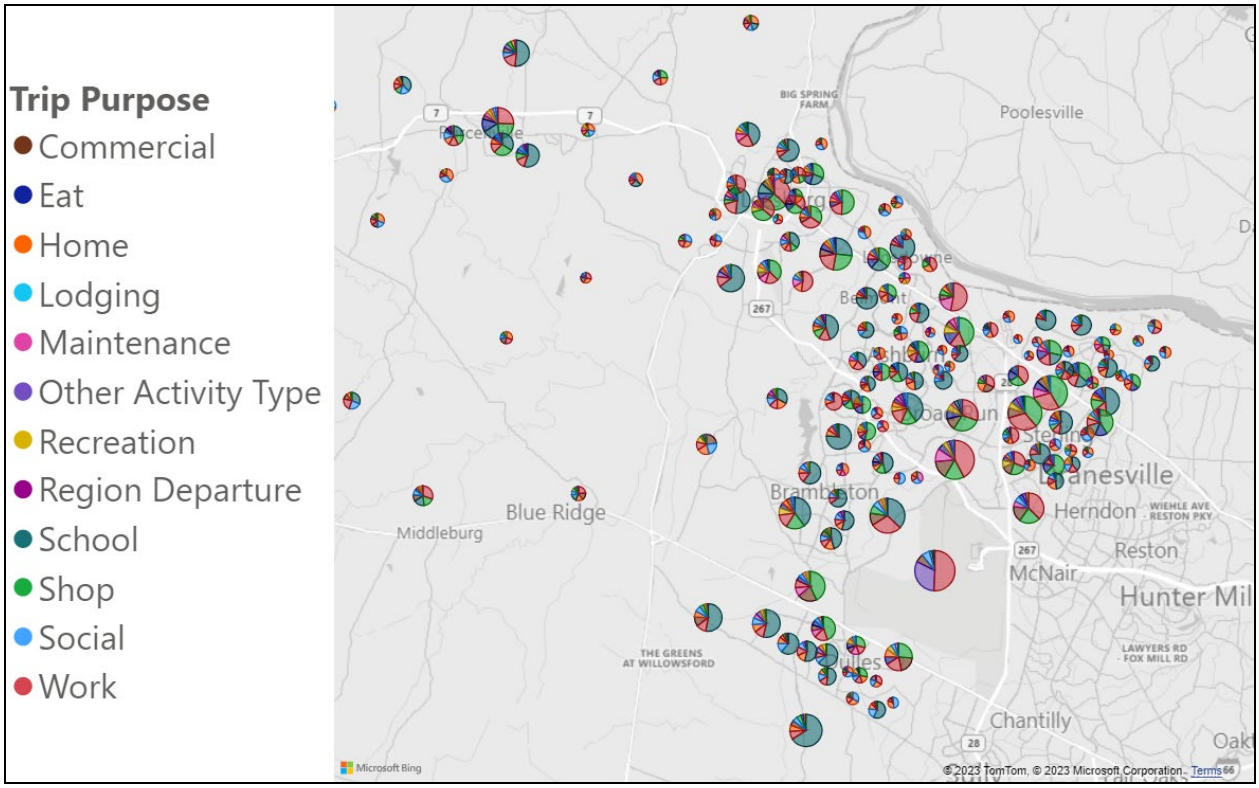


Figure C-8: Trip Purpose by Time of Destination (Weekday)

Figure C-8 shows where trip destination demand is occurring during the weekday a.m. peak (6:00 a.m. to 9:00 a.m.) period within Loudoun. Work and school travel are the prevalent trip purposes during the mornings, with over 40 percent of all trips in Loudoun. Shopping trips start promptly at 9:00 a.m. and are concentrated around the Dulles Town Center and areas around Route 50, such as Route 606. The Dulles International Airport experiences major destination travel in typical a.m. periods with over 9,000 trips comprised of 4,700 work trips, 2,800 regional departures, and other trip purposes. The second highest destinations for work trips occur in the area adjacent to Ashburn and Loudoun Gateway Metro Stations along Route 267 and Loudoun County Parkway, specifically the block groups containing the United States Postal Service (USPS), office parks, distribution warehouses on Pacific Boulevard, and data centers around quantum park. Other notable work trips destinations within Loudoun include:

- Logistics Warehousing near Route 606 and Metrorail Yard
- Professional office parks and light warehousing near Dulles Town Center
- Office parks near Route 606 and Route 28 interchange
- Office and commercial parks adjacent to Route 7, Potomac Farms, and Lansdowne

Appendix D : Three-Year Costing Retrospective

D.1 Operating and Capital Expenses and Revenues, FY2021 to FY2023

This appendix provides a three-year retrospective of Loudoun County Transit's (LCT) operating and capital expenses and revenues. Information from FY 2021 through 2023 is based on actual revenues. FY 2024 was not included due to the plan development occurring during FY 2024. **Table D–1** shows the funding revenues by revenue source for FY 2021 – FY 2023.

Table D–1: FY 2021 – FY 2023 Funding Revenues ($1000s)

Revenue Source	FY 2021 (Actual)	FY 2022 (Actual)	FY 2023 (Actual)
State Funding	$5,483	$7,506	$1,787
Farebox Revenue	$149	$1,403	$1,897
Advertising Revenue	$18	$30	$23
Local Funding	$12,167	$5,699	$9,315
Other Funding	$315	$300	$335
Total	**$18,132**	**$14,938**	**$13,357**

Source: Loudoun County Financial Records – Actual Amounts (FY 2020 – FY 2023)