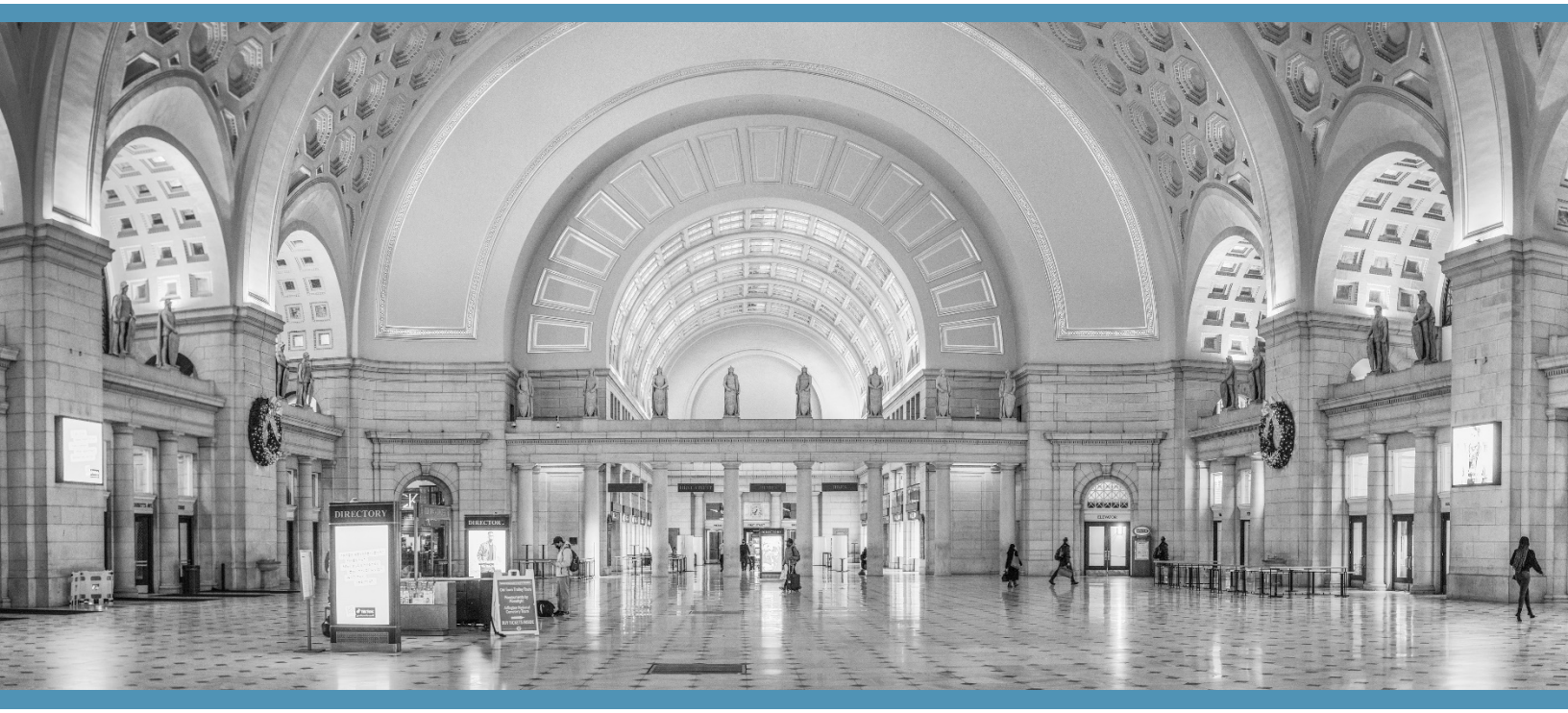
TPB Technical Committee
February 7, 2025
Agenda Item 7

INTERCITY TRAVEL STUDY

Final Report - Draft

January 2025

Summary of the desk research and inventory, big data sources analysis, survey design and implementation details, survey data analysis, and findings and recommendations



National Capital Region
Transportation Planning Board

INTERCITY TRAVEL SURVEY
Prepared with oversight by the TPB Regional Public Transportation Subcommittee

ABOUT THE TPB
The National Capital Region Transportation Planning Board (TPB) is the federally designated metropolitan planning organization (MPO) for metropolitan Washington. It is responsible for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process in the metropolitan area. Members of the TPB include representatives of the transportation agencies of the states of Maryland and Virginia and the District of Columbia, 24 local governments, the Washington Metropolitan Area Transit Authority, the Maryland and Virginia General Assemblies, and nonvoting members from the Metropolitan Washington Airports Authority and federal agencies. The TPB is staffed by the Department of Transportation Planning at the Metropolitan Washington Council of Governments (COG).

CREDITS
Editor: Nitesh Shah, Paula Miller and Medora Benson, ICF Consulting; Reinaldo Germano and Sophia Nelson, Foursquare Integrated Transportation Planning
Contributing Editors: Eric Randall and Pierre Gaunaurd, COG/TPB Staff.
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Thank you to the staff at Amtrak, American Bus Association, and local jurisdictions who supported information collection for this study.

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1 INTRODUCTION

The National Capital Region Transportation Planning Board (TPB) is the region's federally designated metropolitan planning organization (MPO) and is responsible for addressing regional transportation, the environment, and public safety issues. One of the key aspects of regional transportation planning is understanding the intercity travel demand and supply in the National Capital Region (NCR). Intercity travel is defined as travel between the NCR and places outside of the region, such as Baltimore, Philadelphia, New York, Richmond, and beyond. Intercity travel can be made by various modes, including intercity bus, intercity rail, commuter bus, commuter rail, private automobile, and air. This study focuses on intercity bus and rail travel, as well as commuter bus and rail services that travel outside of the NCR.

The purpose of this study is to expand on the previous work done by TPB in 2016 and 2023 to gain a more comprehensive and updated assessment of intercity travel services and patterns. The 2016 study was the first extensive effort in response to updated federal planning regulations, which called for the inclusion of intercity bus facilities in the planning process. That study was limited to intercity bus travel and provided an inventory of intercity bus providers and services in the region. The follow-up desk audit in 2023 expanded the scope of the study and included intercity rail travel on Amtrak. It provided valuable information on the number of intercity bus and rail services, ridership, changes in scheduled services, and impacts of the COVID-19 pandemic and the post-COVID recovery period on travel patterns.

Building upon the previous studies, this project had three main objectives:

1. To meet federal requirements and update previous data on the region's intercity bus and rail travel.
2. To get more information about intercity travel and understand regional travel patterns, such as number of routes and stops, user demographics, and equity considerations.
3. To provide research and understanding of travel patterns that would lead to policy decisions and recommendations for improving intercity travel options and coordination.

To achieve these objectives, this study implemented a combination of the following methods and data sources: desk research, analysis of big data sources, and an intercept survey. The organization of the report is as follows:

- **Chapter 2 – Snapshot of the Region's Intercity Bus and Rail Network:** Provides an overview of the intercity bus and rail network in the TPB region.
- **Chapter 3 – Desk Research and Inventory**: Summarizes findings from the desk research, inventory, and exploration of big data sources.
- **Chapter 4 – Intercept Survey:** Overview of the survey questionnaire designed to address gaps identified in desk research and inventory, along with a summary of survey data analysis.
- **Chapter 5 – Key Findings and Recommendations:** Summarizes the findings of Chapters 2-4.
- **Chapter 6 – Conclusion:** Provides highlights of recommendations and concluding thoughts.
- **Appendix A – Tables and Figures:** Includes the relevant illustrations referenced in the report.
- **Appendix B – Travel Survey:** Includes the *Intercity Travel Survey Methods Memo* and the *2024 Intercity Travel Survey Questionnaire*.

2 SNAPSHOT OF THE TPB REGION'S INTERCITY BUS AND RAIL NETWORK

Intercity bus and rail services are a vital part of the NCR's network, offering surface travel options into and out of the region. Commuter bus and rail systems complement intercity services, which enhance connectivity within the NCR and extend to areas outside its boundaries. These commuter services are crucial for daily travelers, bridging suburban and rural areas with urban centers and, in some cases, between urban areas, such as connections between Washington and Baltimore. In this analysis, an intercity service provider is considered to serve the TPB region if it has at least one stop within any of the 24 TPB jurisdictions, regardless of whether it has a stop in Washington, DC. The study includes a commuter transit service if it serves at least one stop within the TPB region and at least one stop outside. These two services differ in the following key aspects:

- Intercity services typically have *fewer stops* within an urban area, *lower frequency* with one or a few daily vehicle trips, and more *Friday and weekend* trips.
- Commuter services typically have *numerous stops* within an urban area, *higher frequency* with one or a few trips per hour during peak periods or all day, and *limited weekend* services.

As of April 2024, 14 intercity service providers and four commuter transit providers operate in the NCR that meet each criterion, all using different modes of transportation. Of the 24 counties, cities, and districts within the TPB boundary, 14 have at least one intercity stop, highlighting the extensive reach and importance of these services in the TPB region. **Figure 1** shows the 31 intercity stops within the TPB region, with color-coded circles indicating the bus providers serving a given stop and diamonds for Amtrak stations. Union Station is the stop served by the largest number of intercity service providers. Multiple intercity service providers also serve stops, such as Dupont Circle in DC, Silver Spring and Frederick in Maryland, and Rosslyn, Springfield, and Vienna in Virginia. Union Station has between 215 and 280 daily rail and bus intercity trips. It is followed by stations that offer extensive Amtrak service or have multiple intercity operators.

Intercity service providers operate a network that connects the NCR to over 50 cities across 21 states, primarily along the East Coast but also extending west to Illinois and Louisiana (**Figure 2**). Additionally, there are 52 origin-destination pairs with at least one end within the TPB region, without distinguishing between transit operators or directions. The Washington, DC, and New York City, NY, route has the largest volume of intercity vehicle trips. Notably, both the northern extension of this corridor to Boston, MA, and its southern extension toward Atlanta, GA, also experience significant volumes of intercity trips. Furthermore, corridors in Virginia and routes to Chicago, IL, and Orlando, FL, also have multiple daily trips.

Intercity bus and rail ridership decreased due to the pandemic but has been recovering since. As of 2023, Amtrak is near its pre-pandemic highs, though intercity bus ridership has been slower to recover. Chapter 3, Desk Research and Inventory, provides a detailed description of the development of the data inventory, the collection methodology, and takeaways from the data collected for both intercity and commuter transit.

Figure 1: Intercity Service Stops and Providers (April 2024)

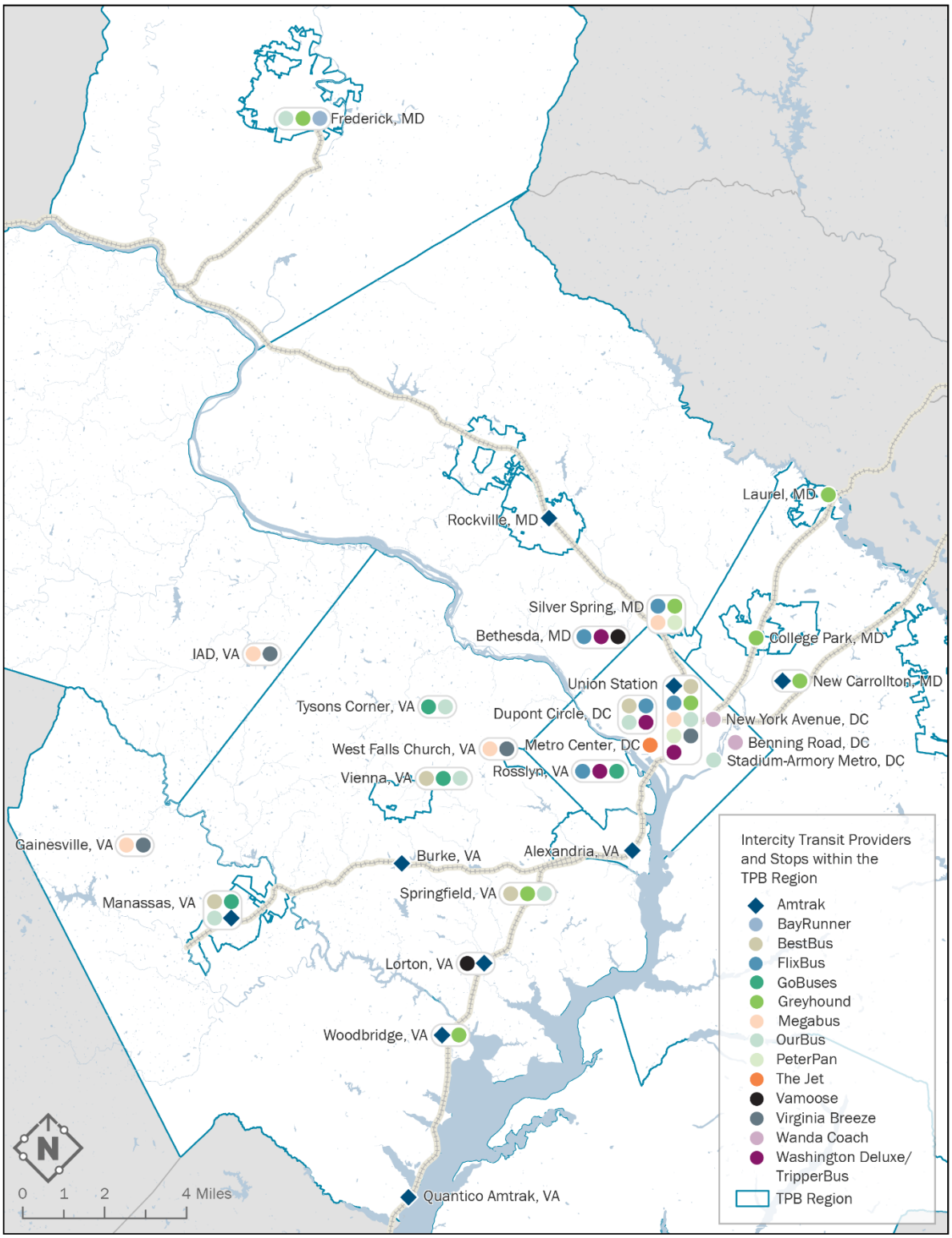
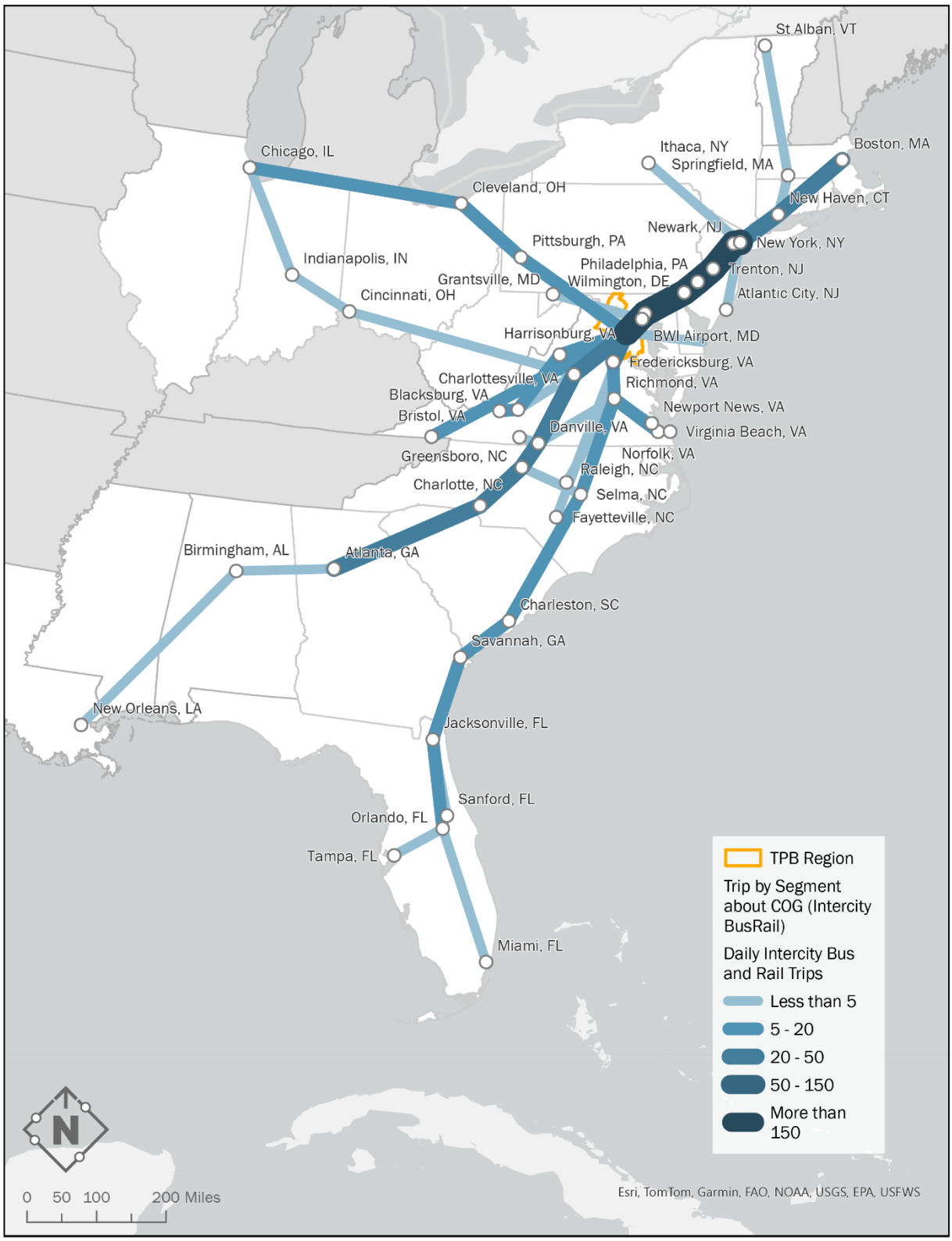


Figure 2: Intercity Bus and Rail Major Corridors and Destinations (April 2024)



3 DESK RESEARCH AND INVENTORY

This chapter provides a comprehensive overview of the NCR's intercity bus and rail services, aiming to update TPB's previous intercity assessment efforts and to inform future transportation planning efforts. The overview was compiled by using two main information collection methods: desktop research and stakeholder engagement. Publicly available General Transit Feed Specification (GTFS) feeds or information available on providers' websites were the basis for the service information. Big data sources included information on ridership, origin and destination, and traveler demographics. Private bus operators, trade groups (e.g., American Bus Association), Amtrak, Union Station Redevelopment Corporation, and other interested parties shared information to complement this inventory on ridership, traveler demographics, origins and destinations, trip purpose, and modes of access to stations and stops.

3.1 Inventory Methodology

A comprehensive data collection effort was the basis of the inventory of intercity and commuter transit services in the TPB region. This process involved desk research, provider engagement, and gathering public GTFS static data. The resulting inventory summarizes the number of vehicle trips by route and providers at each stop and for each day of the week, offering a detailed view of service availability.

This inventory categorizes intercity travel services into four modes based on service types and the primary groups they serve. These modes include Intercity Rail, Intercity Bus, Commuter Rail, and Commuter Bus. The schedules and stops for intercity travel service within the TPB region are summaries of providers' GTFS feeds or came directly from their websites. GTFS is a standardized format for transit schedule data. Transit schedule data comes in several formats, from simple Excel files to complex and proprietary standards often used by advanced scheduling software. GTFS serves as a common standard specification for fixed-route transit schedule elements. Providers with publicly available GTFS feeds included in this analysis are:

- **Intercity Rail:** Amtrak;
- **Intercity Bus:** BayRunner, FlixBus, Greyhound, Peter Pan, and Virginia Breeze;
- **Commuter Rail:** Maryland Transit Administration (MTA), Maryland Area Rail Commuter (MARC), and Virginia Railway Express (VRE); and
- **Commuter Bus:** MTA and OmniRide.

For intercity service providers that offer public GTFS feeds, this analysis summarizes the latest available feed into schedule tables, including only the stops within the TPB region. GTFS feeds provide larger service windows, but their date ranges vary by provider, with some extending to 2025 and others covering only a few months. Additionally, an analysis of holiday vehicle trips was limited to Amtrak, Greyhound, and FlixBus, as these three feeds encompassed a substantial number of trips during the 2024 holidays and provided feeds that covered the remainder of the 2024 calendar year.

The project team manually collected publicly available trip information for intercity service providers without GTFS data. A desk research process identified all providers, routes, and stops within the TPB region. The project team then gathered service and schedule data from each provider's website between April 15 and April 21, 2024.

While the database provides comprehensive insights into intercity and commuter service availability, the database also has limitations, primarily due to the source data and the collection method:

- For providers without GTFS feeds, information gathered was limited to the overall accuracy of these providers' websites and the schedules in place during the data collection window (April 15, 2024–April 21, 2024).
- For providers with GTFS feeds, the data is more complete, but feeds may not be updated regularly and, therefore, may not contain the most up-to-date information. Additionally, differences in service period definitions among different providers make it challenging to aggregate vehicle trips by stop and compare the level of service across periods. Some providers also contract out services to third parties, which may result in differences between actual trip times and scheduled trip times, as reported in the providers' GTFS data.

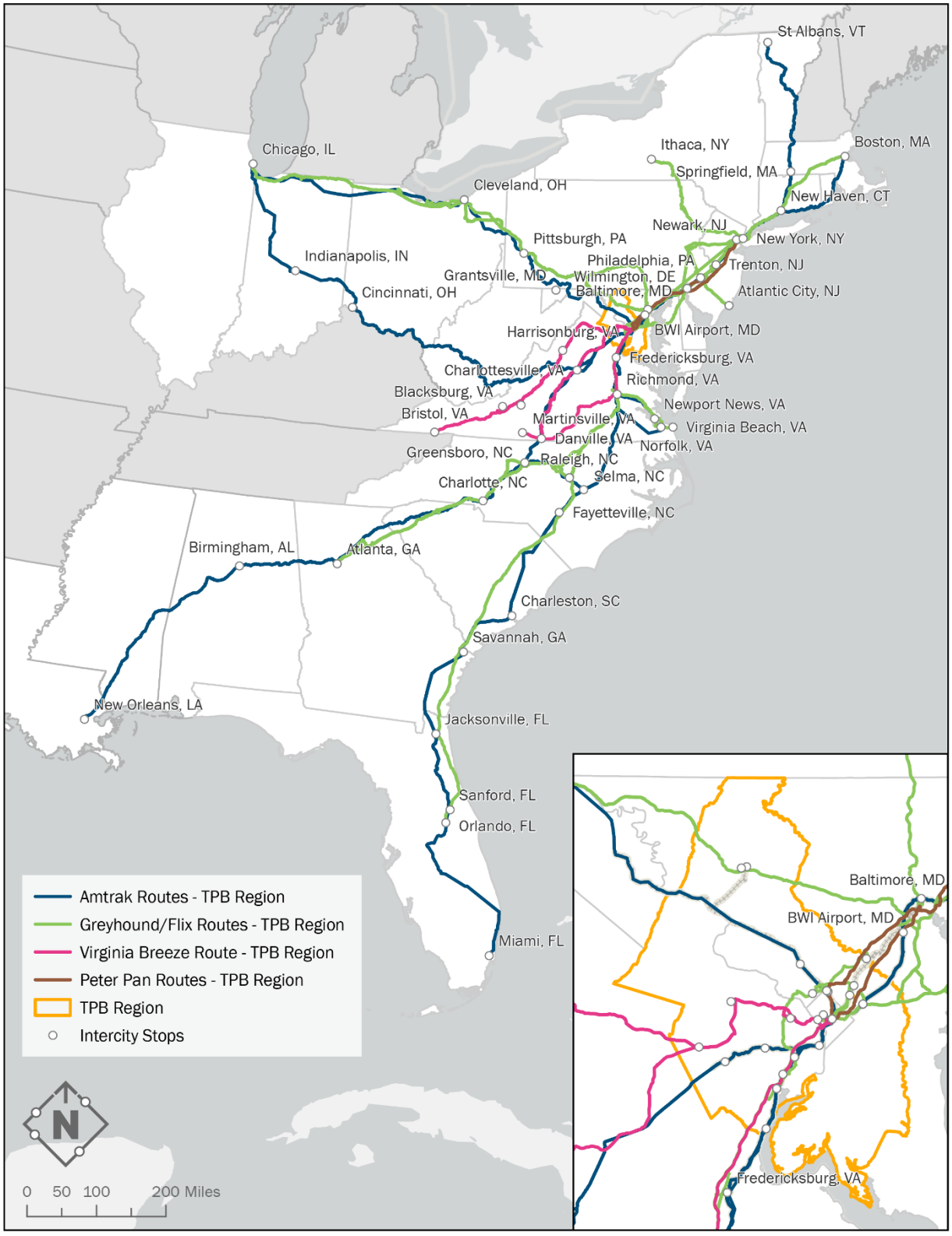
3.2 Existing Intercity Service Network

This section provides a detailed summary of the intercity travel services within the region based on the inventory data. Overall, intercity service is summarized at both the route/corridor and stop levels and disaggregated by service mode, type, and provider. This section includes data, collected from both GTFS and manually from provider websites, for the week of April 15 through April 21, 2024.

Figure 3 illustrates providers serving the TPB region—which also have a GTFS feed—showing the connections available from the TPB region, including locations such as Chicago, IL; New York City, NY; and New Orleans, LA. Amtrak has the most expansive network from the TPB region, connecting the region to destinations like Chicago; New Orleans; Miami, FL; and St. Albans, VT. Greyhound and FlixBus also connect the region with states in the Midwest, South, and Northeast, serving cities like Chicago; New York; Boston, MA; Atlanta, GA; and Orlando, FL. Peter Pan is one of the multiple providers serving the Northeast and connecting the TPB with that region. Lastly, Virginia Breeze provides service throughout Virginia, connecting the TPB region with all major corridors in the Commonwealth.

A complete list of intercity service providers that operate within the TPB region and major destinations as of April 2024 is included in **Table 4**, found in **Appendix A**.

Figure 3: Intercity Travel Service Routes with GTFS (April 2024)



3.2.1 SUMMARY BY STOP

Figure 4 illustrates the weekly intercity trips and the location of the intercity service stops within the TPB region. Union Station is the primary intercity stop with the highest number of intercity trips. Union Station accommodates eight intercity service providers with more than 1,700 vehicle trips per week. Amtrak accounts for over 30 percent of these trips, followed by FlixBus with 21 percent, and then Greyhound and Megabus, each with 15 percent. Among the eight providers serving Union Station, three also serve Dupont Circle. Observations suggest that these three providers use Dupont Circle as an additional stop along their routes, either before or after stopping at Union Station, to expand their one-seat-ride service range.

Additional information on the number of trips and service providers serving each stop is available in **Table 5**, **Table 6**, and **Table 7**, found in **Appendix A.**

Figure 4: Total Weekly Trips by Stop – Intercity Service (April 2024)

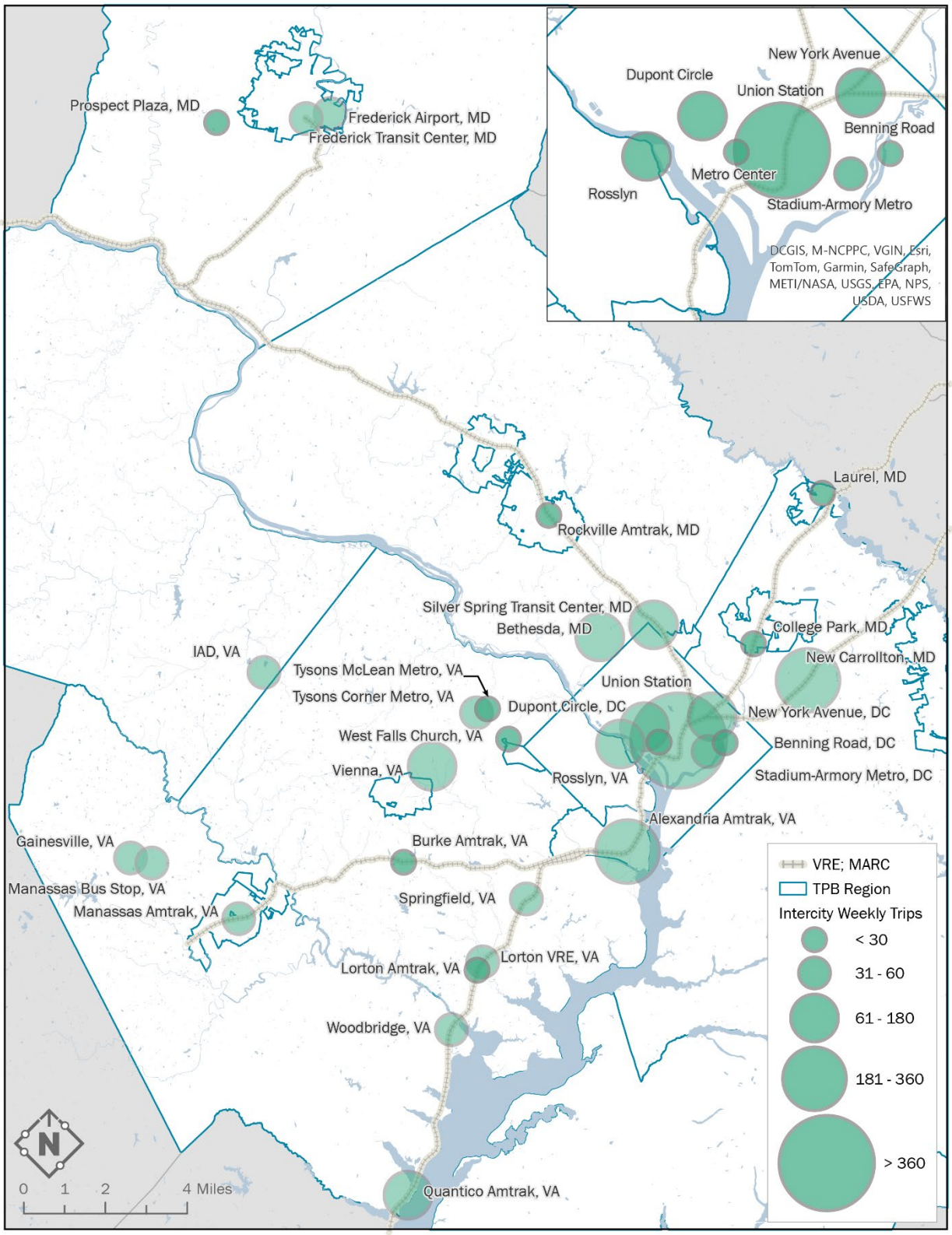
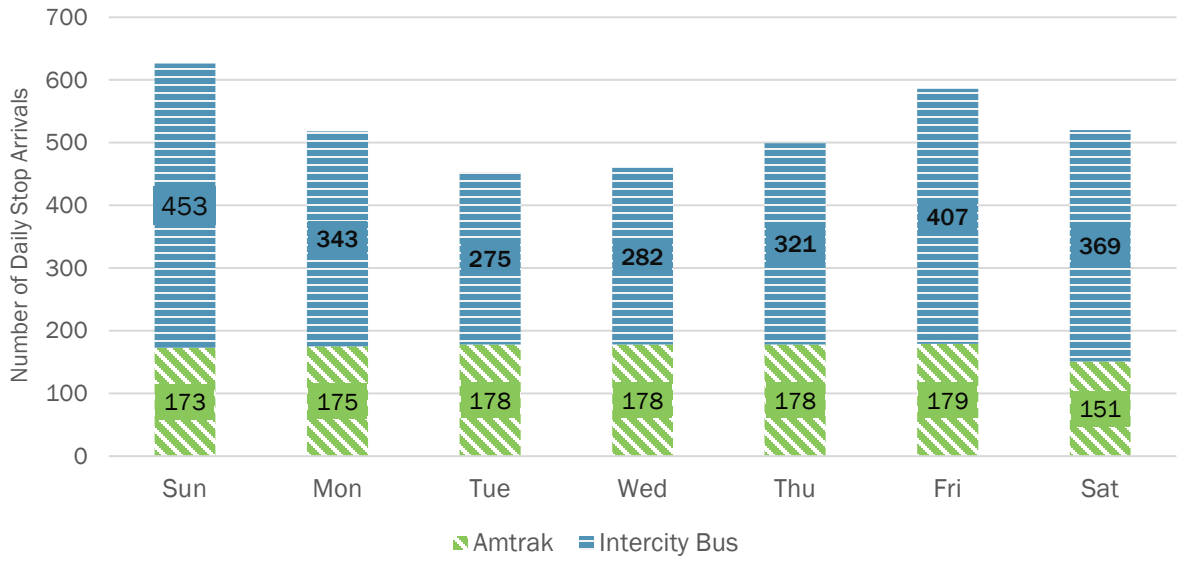


Figure 5 shows how the number of intercity trips varies by day of the week. Overall, Sundays have the highest number of trips, followed by Fridays. The number of trips on Saturdays is similar to Mondays. In comparison, Tuesdays, Wednesdays, and Thursdays have around 100 fewer trips than Sundays. Comparing modes, Amtrak provides a relatively consistent weekly trip distribution across the days of the week, with slightly fewer trips during the weekends. Intercity bus service, on the other hand, peaks on Fridays and Sundays.

Figure 5: Daily Stop Arrivals from Intercity Services by Day of Week – Total within the TPB Region (April 2024)



Holiday schedules may vary from regular schedules, impacting the number of trips a provider offers on a given week. As shown in **Table 1**, among the five providers with GTFS feeds, BayRunner and Greyhound maintain their holiday trips at the same level as their regular trips each week. Amtrak provides almost the same number of trips per week during most holiday weeks as it does during regular weeks, with the exception of Memorial Day when fewer trips are offered. A similar observation can be drawn for Peter Pan, which provides fewer trips during Labor Day week. FlixBus is the only intercity service provider that offers significantly more trips during holiday weeks than during an average week.

Table 1: Holiday Week Stop Arrivals by Provider (April 2024)

Provider[1]	Average Week	Memorial Day	July 4th	Labor Day	Thanksgiving	Christmas
Amtrak	1,212	1,184	1,212	1,212	1,217	1,217
BayRunner	104	104	104	104	104	104
FlixBus	416	418	443	458	470	472
Greyhound	406	406	406	406	406	406
Peter Pan	185	185	185	117	--	--

3.2.2 SUMMARY BY ROUTE/CORRIDOR

This section summarizes intercity services to a route or corridor level based on key origin-destination pairs connecting to the TPB region. This allows for comparing travel opportunities across providers and identifying regions that drive demand for travel to/from the TPB region. Some major corridors have the TPB region as a start/end point, while others travel through the region.

Longer intercity trips that pass through the TPB region are split in this analysis. For example, a route from Atlanta, GA, to New York, NY, is split into two trips: one trip from Atlanta to the TPB region and another trip from the TPB region to New York. A route for another provider that runs from the TPB region to Boston but passes through New York in the process does not get included in TPB region-New York trips, as New York is not the final location. As such, this analysis centers around the origin/terminus for each corridor. Due to the substantial number of Amtrak trips, the average daily trip is summarized by intercity rail (Amtrak) and intercity bus trips.

Figure 6 and **Figure 7** show the average daily trip by key stops for intercity rail and bus services, respectively (connections between cities are drawn directly and do not reflect actual routing). Among all origin-destination (OD) pairs, TPB-New York has the highest number of trips, followed by TPB-Boston. Half of TPB-New York trips are made by Amtrak, whereas 85 percent of trips to/from Boston are by bus. Further, Norfolk and Richmond, Virginia, are also key origins and destinations for the TPB region. Additional information on the OD pairs is available in **Table 8**, found in **Appendix A**.

[1] Virginia Breeze is excluded from this analysis as the GTFS feed is expired and does not line up with the holiday periods examined.

Figure 6: Average Daily Amtrak Round Trips (April 2024)

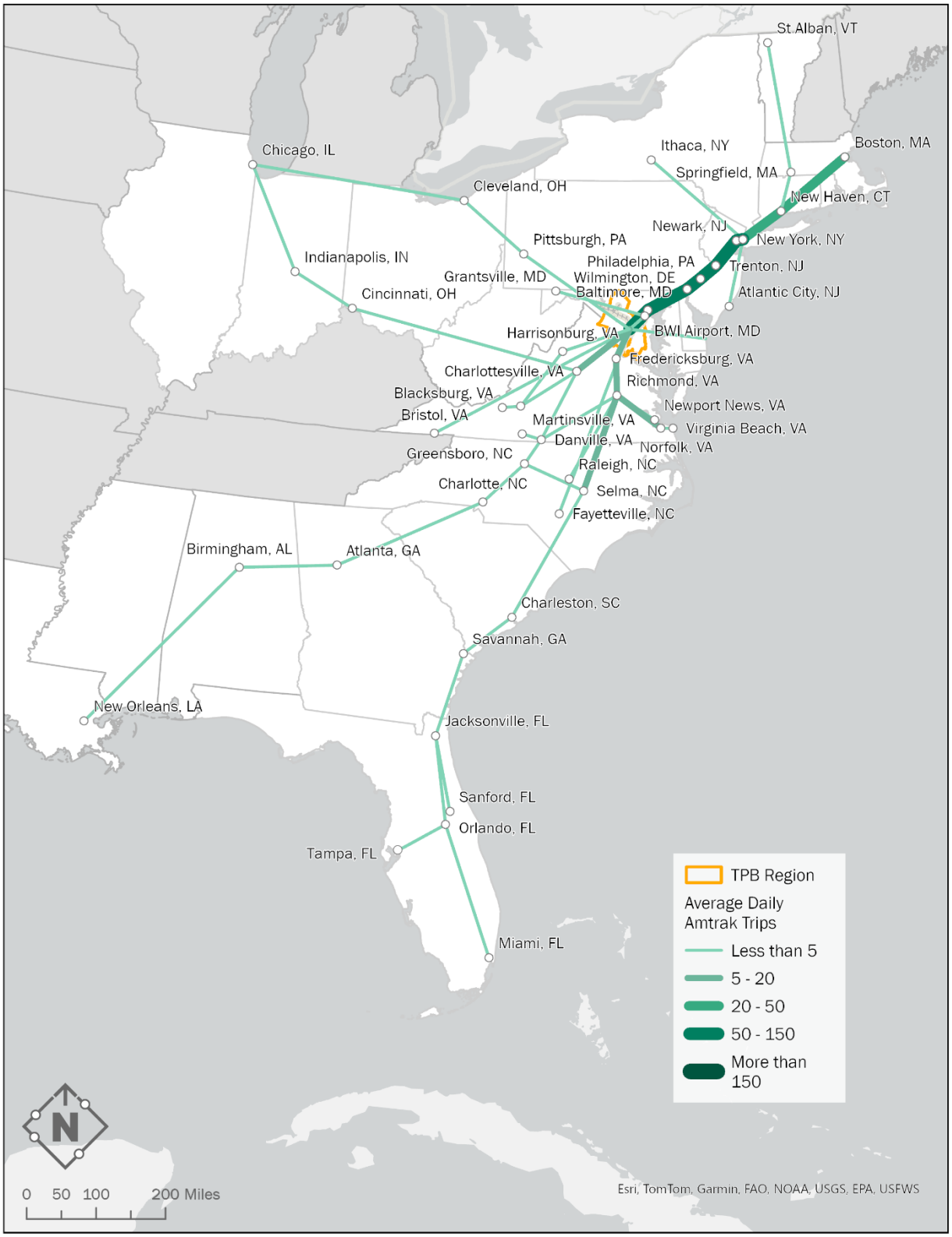
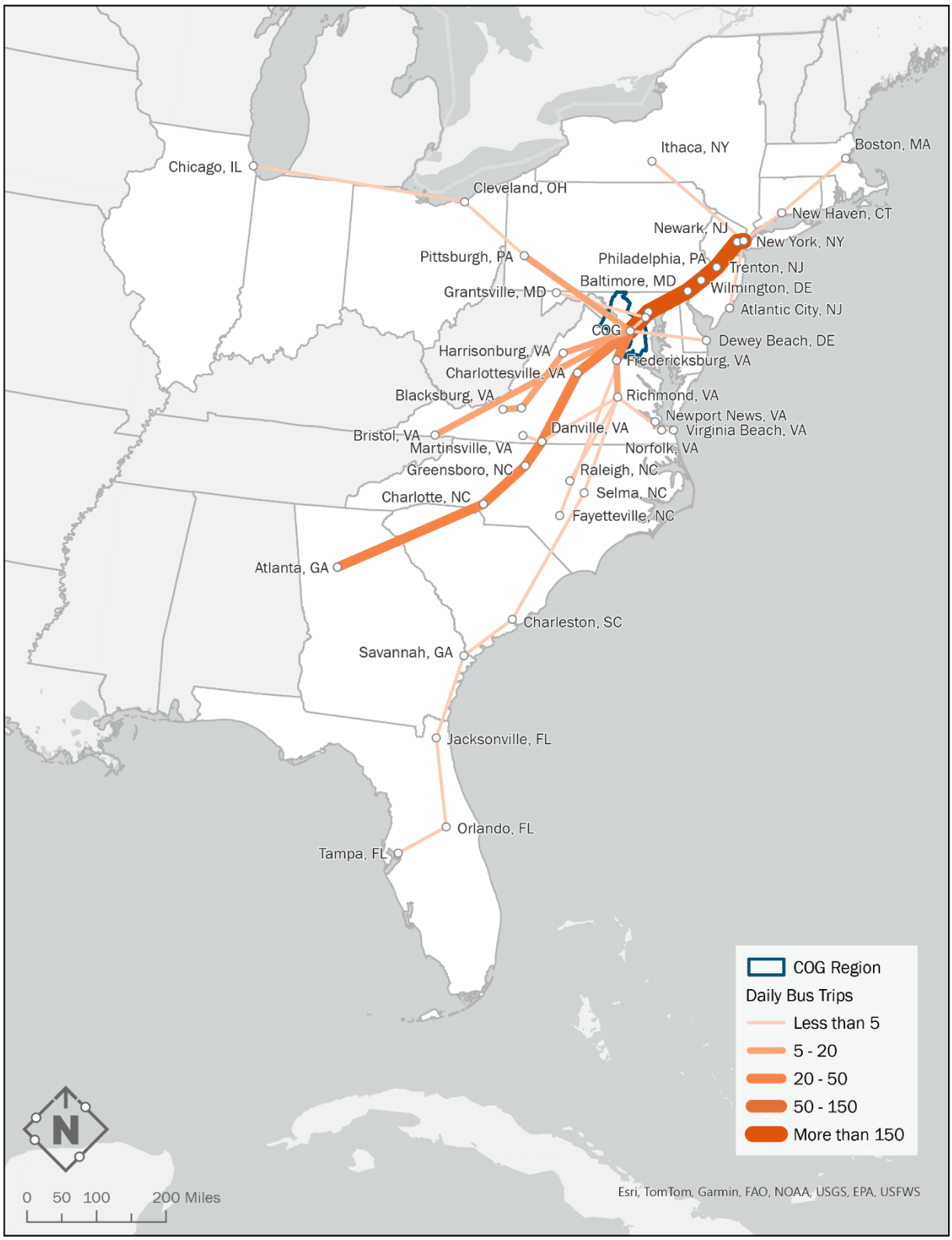


Figure 7: Average Daily Bus Round Trips (April 2024)



3.3 Commuter Services

This analysis evaluates commuter services separately from intercity trip statistics to provide a detailed assessment of each provider. The study includes a commuter transit service if it serves at least one stop within the TPB region and at least one stop outside. Commuter services cater to frequent, often daily, passengers and differ from intercity trips, which are typically longer and for purposes other than work. Five commuter transit service providers connect hundreds of stops in the TPB region to destinations outside the TPB region. Commuter services have significantly more stops within the TPB region compared to intercity services. To keep the focus of this study on intercity services, the project team summarized commuter services primarily at the trip level and at stops with intercity services.

The routes for each provider's commuter service entering the NCR are included in **Figure 8**. Commuter routes provide extensive service throughout the TPB region and beyond, covering all counties within the TPB region. Commuter service connects the TPB region to locations such as Baltimore, MD; Martinsburg, WV; and Fredericksburg, VA. A list of commuter service providers studied in this section is included in **Table 9**, found in **Appendix A**.

Figure 9 illustrates the total weekly commuter trips by intercity stop. Thirteen stops serve both intercity and commuter services, with Union Station and Metro Center having the largest number of weekly vehicle trips. **Figure 10** illustrates fluctuations by day of the week. Overall, weekdays have the highest number of trips and remain static throughout the entire week. As of April (spring) 2024, MARC is the only provider offering service on Saturdays and Sundays at New Carrollton and Union Station. This finding aligns with the definition of commuter service, which primarily serves commuters on weekdays rather than weekends.

Table 10 and **Table 11**, found in **Appendix A**, include additional information on weekly and daily commuter trip totals at intercity stops by commuter service providers.

Figure 8: Commuter Transit Routes Entering the NCR (April 2024)

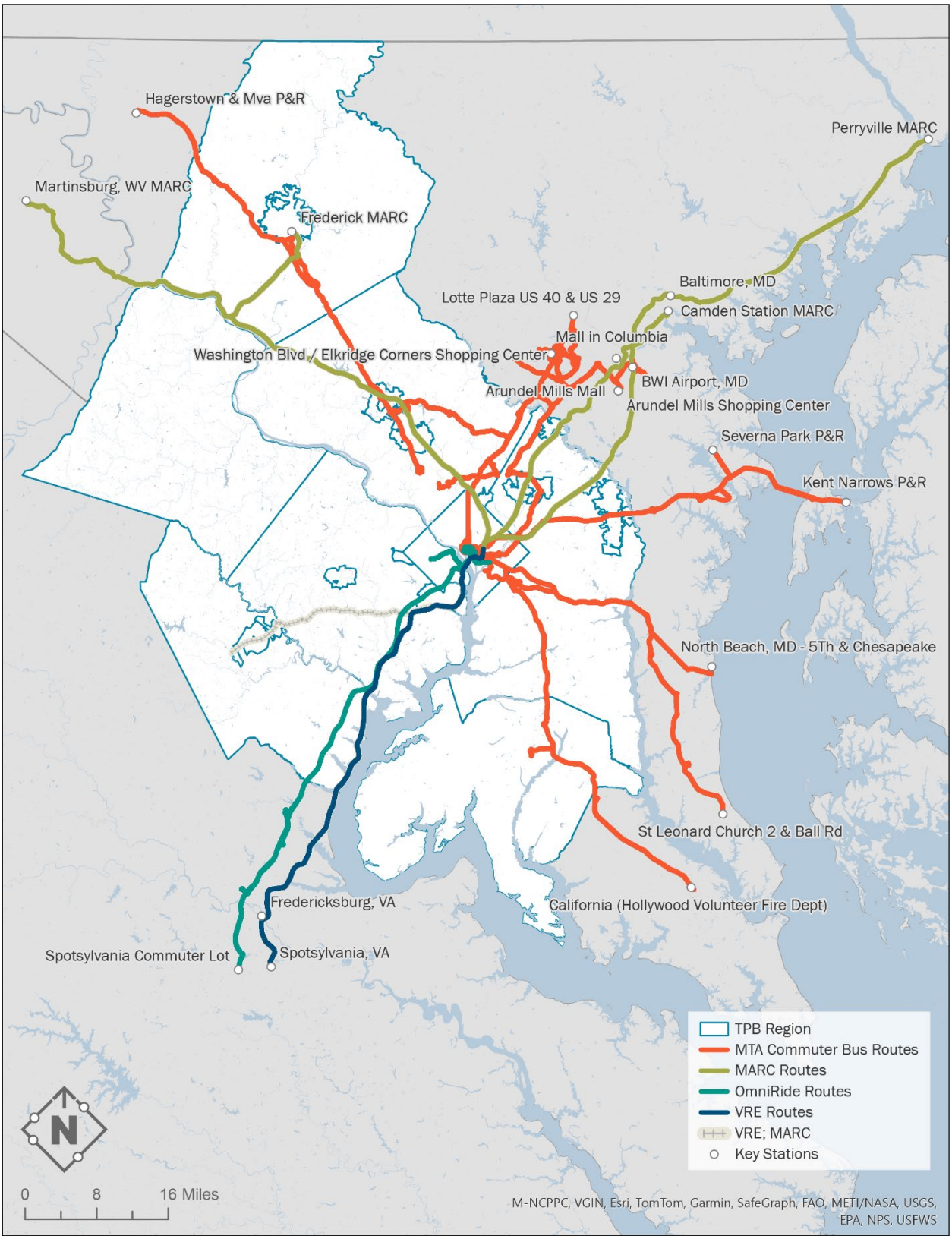


Figure 9: Weekly Commuter Trips by Intercity Stop (April 2024)

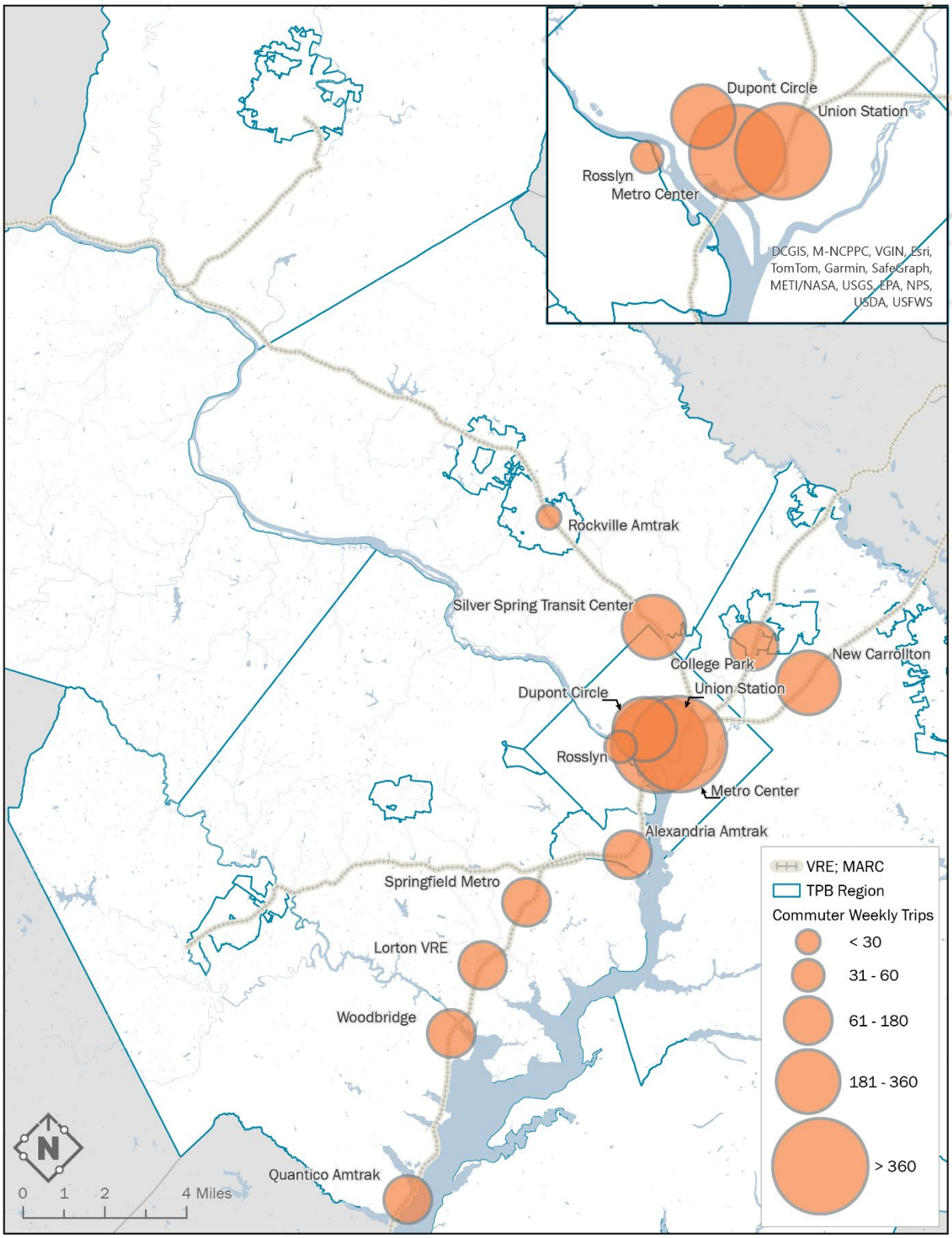
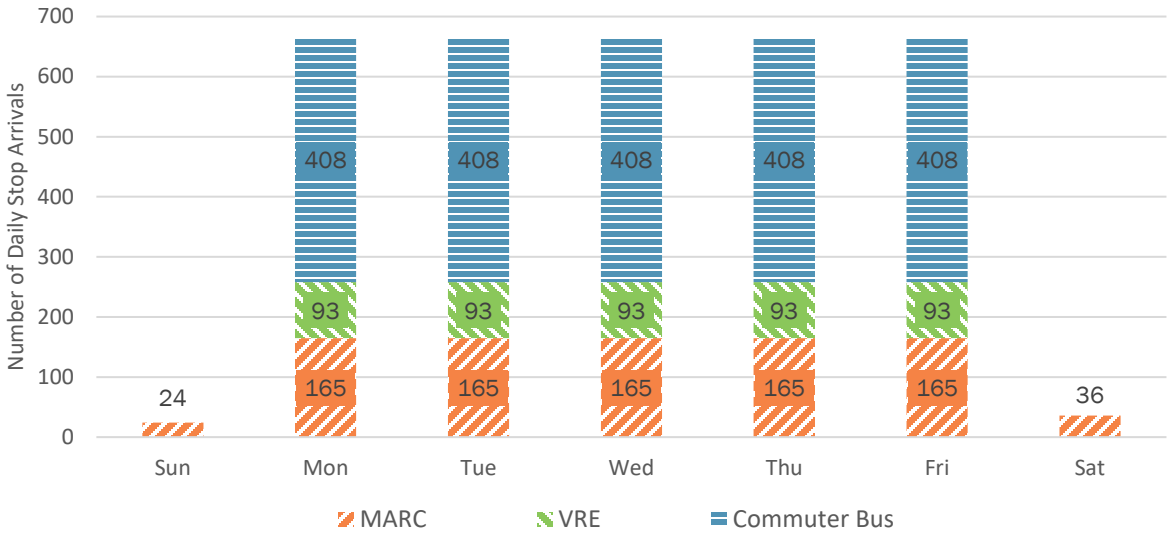


Figure 10: Daily Stop Arrivals from Commuter Services by Day of Week – Total within the TPB Region (April 2024)

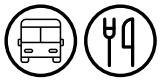
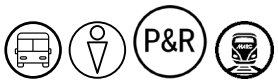
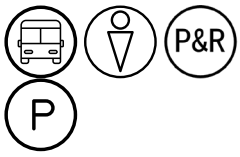


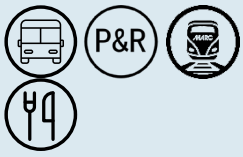
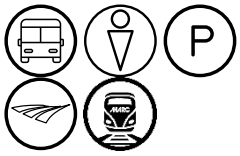
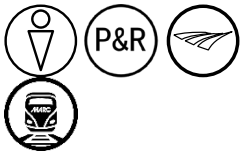
3.4 Intermodal Connections and Integration

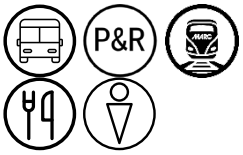
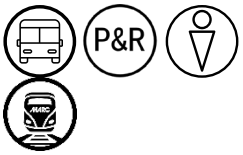
Intermodal connections play a crucial role in improving the efficiency and accessibility of transportation systems, particularly in regions like the TPB area, where multiple transport modes intersect. This section summarizes the characteristics of intermodal transfer points across the TPB region with a focus on the rail stations. Amtrak provides national intercity connectivity, linking the region to major cities across the United States. MARC and VRE primarily serve daily commuters, connecting suburban areas to urban centers like Washington, DC, but also Baltimore, MD.

Intercity service stops have different characteristics across stations, influenced by the array of service providers, the infrastructure available, and the location of each station. An analysis of the stop inventory reveals that 91 percent of stops are located at or adjacent to local transit stops, 44 percent feature passenger facilities such as restrooms or Wi-Fi, and 31 percent include elements of private business. **Table 2** summarizes the intermodal connections available at intercity stops in the TPB region. Stations have a variety of amenities, including connections to transit, parking, and nearby private businesses to provide services.

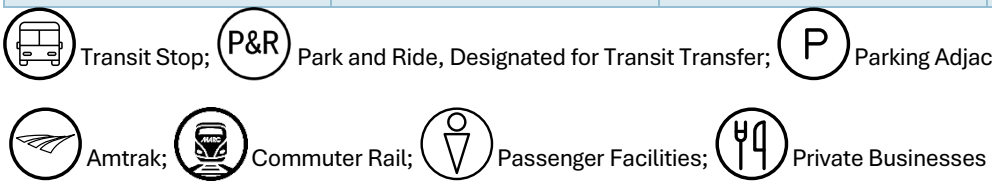
Table 2: Intermodal Connections of Intercity Stops (April 2024)

Stop Name	Stop Location	Intercity/Commuter Services	Stop Characteristics
Alexandria	Alexandria, VA	MARC, Amtrak, VRE	
Benning Road	Washington, DC	Wanda Coach/ Starline Coach	
Bethesda – FlixBus	Bethesda, MD 4550 Montgomery Ave	FlixBus	
Bethesda – Tripper Bus	Bethesda, MD 4681 Willow Lane NW	TripperBus, Washington Deluxe	
Bethesda – Vamoose	Bethesda, MD 7401 Waverly Street	Vamoose	
Burke Centre Amtrak	Burke, VA	MARC, Amtrak	
College Park U of MD Metrorail	College Park, MD	MARC, Greyhound	
Dupont Circle	Washington, DC	FlixBus, Washington Deluxe, BestBus, OurBus	
Frederick Airport	Frederick, MD	BayRunner	
Frederick Transit Center	Frederick, MD	MARC, BayRunner, Greyhound	
Gainesville Park and Ride	Gainesville, VA	Virginia Breeze	
Washington Dulles International Airport	Sterling, VA	Megabus, Virginia Breeze	

Stop Name	Stop Location	Intercity/Commuter Services	Stop Characteristics
Laurel (7-Eleven)	Laurel, MD	Greyhound	
Lorton Amtrak Auto Train Station	Lorton, VA 8006 Lorton Road	Amtrak	
Lorton VRE Station	Lorton, VA 8990 Lorton Station Blvd	MARC, Vamoose	
Manassas Amtrak Station	Manassas, VA 9431 West Street	MARC, Amtrak	
Manassas (Cushing Rd Park and Ride)	Manassas, VA 7313 Cushing Rd	BestBus, Go Buses, OurBus	
Metro Center Station	Washington, DC	The Jet	
New Carrollton Station	New Carrollton, MD	MARC, Amtrak, Greyhound	
New York Ave	Washington, DC	Wanda Coach/ Starline Coach	
Prospect Plaza	Frederick, MD	OurBus	
Quantico Amtrak	Quantico, VA	MARC, Amtrak	
Rockville Amtrak	Rockville, MD	MARC, Amtrak	

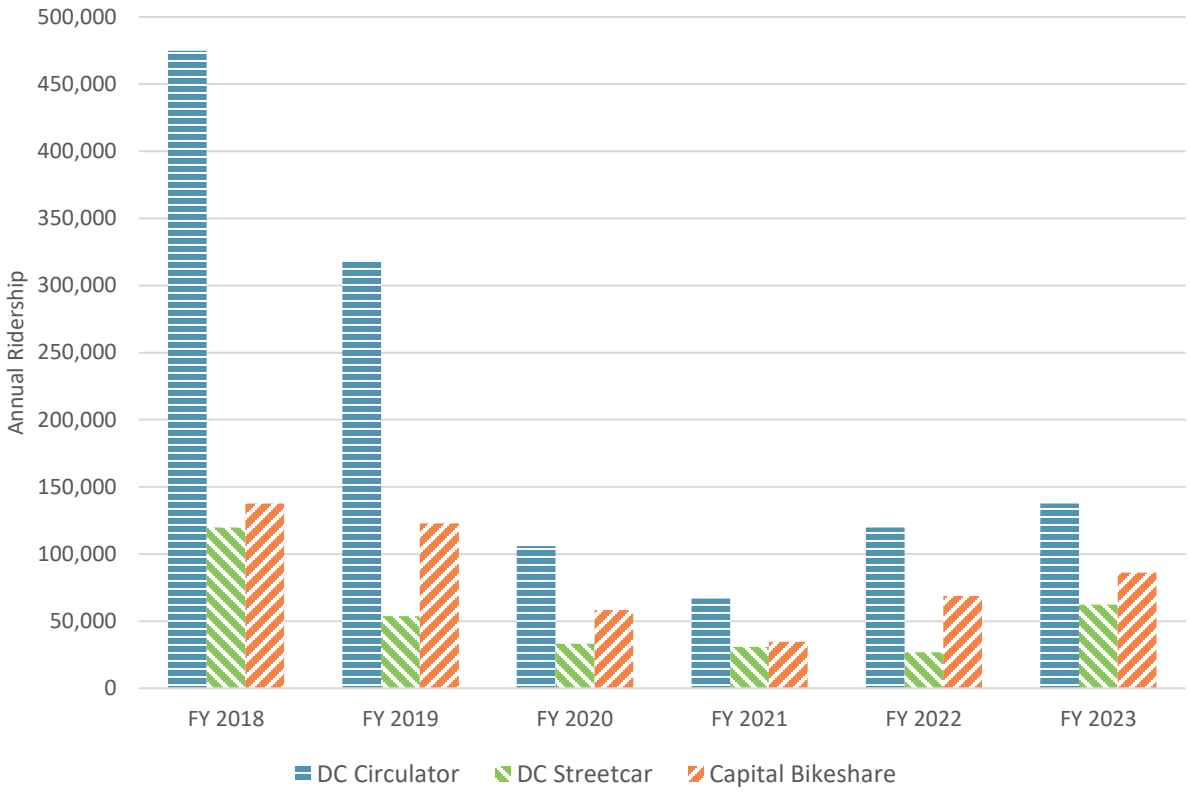
Stop Name	Stop Location	Intercity/Commuter Services	Stop Characteristics
Rosslyn	Arlington, VA	FlixBus, TripperBus, Washington Deluxe, Vamoose	
Silver Spring Greyhound Station	Silver Spring, MD	FlixBus, Greyhound, Peter Pan	
Silver Spring Transit Center	Silver Spring, MD	MARC, Megabus	
Springfield – Backlick North Park and Ride	Springfield, VA	OurBus	
Springfield Metro Station	Springfield, VA	BestBus, Greyhound	
Stadium-Armory Metro Station	Washington, DC	OurBus	
Tysons Corner Metro Station	Tysons, VA	Go Buses	
Tysons McLean Metro Station	Tysons, VA	OurBus	
Union Station	Washington, DC	MARC, Amtrak, FlixBus, Greyhound, Megabus, OurBus, Peter Pan, Virginia Breeze, Washington Deluxe, BestBus, OurBus	
Vienna Fairfax Metro Station	Fairfax, VA	BestBus, Go Buses, OurBus	
West Falls Church Metro Kiss and Ride	Falls Church, VA	Megabus, Virginia Breeze	

Stop Name	Stop Location	Intercity/Commuter Services	Stop Characteristics
Woodbridge Amtrak	Woodbridge, VA	MARC, Amtrak, Greyhound	



Connectivity at locations with intercity and commuter transit services varies across the TPB region and across station types. Union Station in Washington, DC, is distinguished as a primary transportation hub, offering extensive intercity connections through MARC, Amtrak, VRE, and various intercity bus services including Greyhound and Megabus. Union Station also provides multimodal connections, specifically to the DC Circulator, DC Streetcar, the Metrorail Red Line, and Capital Bikeshare, among others. The utilization of each mode at Union Station is illustrated in **Figure 11**. Utilization dropped in Fiscal Year (FY) 2019 due to the COVID-19 pandemic, but it has been steadily recovering since FY 2021, with DC Streetcar and Capital Bikeshare at nearly their pre-pandemic highs.

Figure 11: Multimodal Utilization at Union Station



In contrast to Union Station, several other locations lack intermodal connectivity, critically impacting the efficiency of non-auto first- and last-mile access.

- Locations such as the Vienna Fairfax Metro Station and West Falls Church Metro Station primarily cater to local commuter travel and lack substantial links to the wider intercity rail network.
- Locations, including the Manassas (Cushing Road Park and Ride) and Springfield-Backlick North Park and Ride, lack basic passenger amenities and robust transit or commuter services.

Overall, intermodal connectivity at stops and stations in the region can be summarized as follows:

- Out of 45 stops, 20 provide services exclusively for a single mode of transit and 25 lack passenger facilities.
- A third of the stops in the region (15 stops) have either Amtrak or MARC connections. Seven stations provide access to more than three modes, including three stations in DC; Springfield and Manassas in Virginia; and Silver Spring and Bethesda in Maryland.
- The vast majority of the intercity stops are within proximity to at least one local transit stop. However, three stations, including Lorton Amtrak, Manassas Bus Stop, and Quantico Amtrak (also serving VRE), lack nearby local transit access, impacting the convenience for travelers.

3.5 Big Data Sources

Part of the desk research effort explored how to integrate big data analytics with traditional methodologies, such as travel surveys. Although travel surveys provide detailed insights into travel behavior, they come with high costs and infrequent updates. Automated data sources, including GPS, mobile applications, and sensors, could complement these surveys by delivering granular, real-time information on travel patterns and preferences. For this purpose, the project team evaluated three key datasets: Replica, StreetLight Data, and National Household Travel Survey (NHTS), which is the only publicly available database. These datasets were assessed based on their strengths and limitations in understanding intercity travel.

3.5.1 DATA SOURCES

Replica synthesizes data from diverse sources, including Bluetooth, cellphones, and credit card transactions, to model travel patterns at a "megaregion" level. The platform offers datasets such as "Places," which provides trip and demographic details, and "Trends," which includes longitudinal mobility and expenditure trends. Replica's strengths include granular data, frequent updates, and demographic overlays that allow for nuanced intraregional travel analyses. However, intercity bus data is grouped under "Other" modes, limiting insights into specific modes. Long-distance trip granularity is constrained, and synthesized data may introduce discrepancies.

NHTS offers nationwide data on travel behaviors, capturing long-distance travel through its NextGen origin-destination (OD) program. It provides insights into travel by air, rail, and private vehicles. NHTS' robust methodology ensures reliability, and its comprehensive coverage of travel patterns across geographies and demographics provides detailed long-distance travel insights. NHTS' OD product has limited demographic data, the dataset is updated less frequently, and the granularity of insights lags behind Replica.

StreetLight aggregates anonymized location data from mobile devices and other sources for transportation analysis, focusing on OD patterns and traffic volumes. The platform offers customizable OD analyses, traffic flow evaluation, and congestion pattern insights. Limited validation of intercity bus and rail data and lack of precision of seasonal and longitudinal analyses reduced the utility of the data for this study.

Exploring the initial list of datasets suggested that Replica and NHTS NextGen OD data were the most suitable options for analyzing intercity bus travel to and from the National Capital Region. **Table 3** evaluates Replica and NHTS datasets based on 11 criteria—such as geographic and temporal granularity, available modes, socio-demographics, and data fidelity—highlighting distinct trade-offs. For example, Replica provides customizable granularity, whereas NHTS zones are broader; Replica includes a wide array of modes but lacks detailed intercity bus data; NHTS covers major modes but focuses primarily on air, rail, and vehicle trips. However, no single dataset meets all needs for intercity travel analyses, requiring careful selection and potential integration of multiple sources depending on specific objectives.

Table 3: Dataset Comparison Matrix

Criteria	Replica		NHTS
	Places Dataset	County-to-County Origin-Destination (OD)	NextGen OD
Data Source	Location-based services (LBS)	LBS	Survey
Geographic Granularity	Customizable (down to block group or custom)	City/county	NHTS zones
Temporal Granularity	Hour of day	Average weekday/Saturday	Month totals
Available Modes	Walking, biking, carpooling, commercial, on-demand auto, private auto, public transit, and other travel modes	Private auto, auto passenger, transit, walking, biking, and other	Air, rail, vehicles
Data Span	Fall 2019-Fall 2023	Fall 2019-Fall 2023	1969-2022 (every five to eight years)
Temporal Resolution	Biannual	Weekly	Monthly
Most recent data	Spring 2023	12-day lag	2022
Available Trip Purposes	Home, work, work from home, school, shop, social, recreation, eating, lodging, region departure, and other	N/A	Work/non-work
Socio-Demographics	OD land use, age, sex, race, ethnicity, income, employment, education, household role, subfamily, commute mode, household size, language (only available within a megaregion)	N/A	N/A
Maximum Trip Length (Miles)	12,000	12,000	300+
Maximum Trip Duration (Minutes)	8,000	8,000	N/A
Data Fidelity	Average day in a season	Average day in a week	Monthly
Extract, Transform, and Load (ETL) Process	Direct database access	Flat file data download	Flat file data download
Other Available Information	Activity chain	Expenditures	

3.5.2 FINDINGS FROM DATA ANALYSES

An analysis of sample data from each of the three sources considered provided a deeper understanding of each dataset's inherent characteristics. Sample data showed significant differences exist between datasets for trip volumes from key origin zones. Replica often underrepresents rail trips compared to NHTS, while NHTS lacks granularity for certain modes like intercity buses. Additionally, NHTS provides a more comprehensive mode split, including air and rail, while Replica often aggregates multiple modes under broader categories. Lastly, rankings of high-trip origin zones like Baltimore and Virginia are consistent, but mode share discrepancies suggest calibration challenges. NHTS monthly ridership data proved useful for analysis, while Replica's ridership numbers appeared inconsistent and did not align with observed trends.

3.6 Ridership and Demographic Insights

This section summarizes ridership information and trends based on data availability. This section also discusses travelers' demographics, origins and destinations, trip purpose, and modes of access to stations and stops derived from other studies and surveys.

Figure 12 highlights ridership by year at Union Station for Amtrak and Intercity Bus service. Ridership decreased in FY 2019 due to the pandemic but has been recovering since FY 2021. As of FY 2023, Amtrak is near its pre-pandemic highs, though intercity bus ridership has been slower to recover. **Figure 13** shows a similar trend for commuter service on MARC and VRE, yet those services have been slower to recover than Amtrak.

Figure 12: Intercity Service Ridership at Union Station

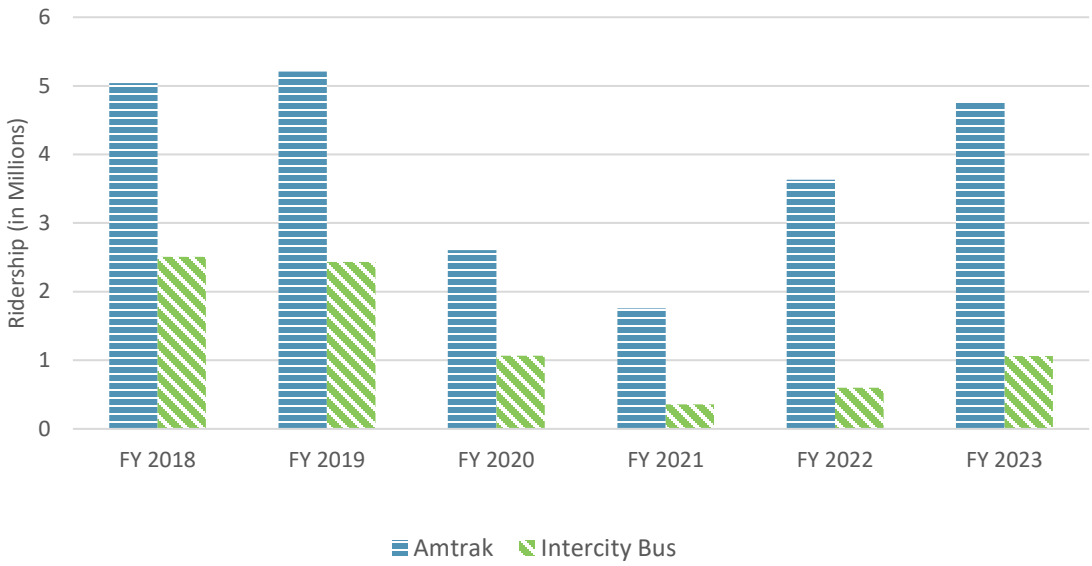
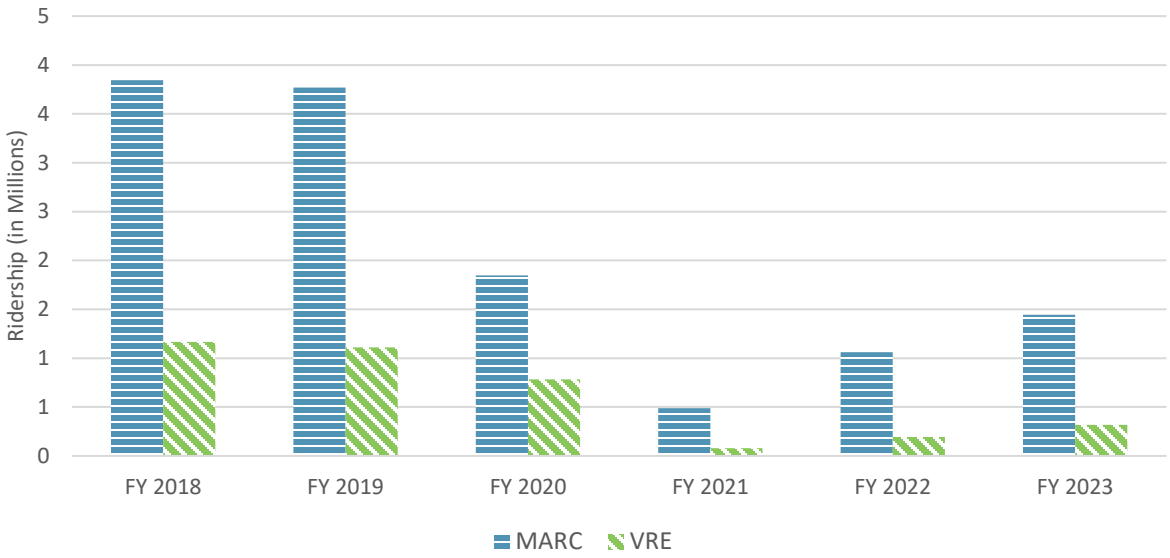


Figure 13: Commuter Service Ridership at Union Station



The analysis of Amtrak demographics and ridership provides insights into the characteristics of travelers and the performance of routes passing through the TPB region during Q1 and Q2 2024. Demographic data highlights variations in income, education, age, and racial composition across different service types, including Acela, Northeast Regional (NER), Auto Train, long distance, and state-sponsored routes.

Income distribution shows that higher-income groups dominate Acela, NER, and Auto Train services, while Long-Distance and state-sponsored services attract travelers with lower income levels. Across all services, the largest share of travelers earns between $50,000 and $75,000 annually. Regarding education, college graduates make up most Amtrak travelers overall, particularly on Acela, NER, and Auto Train services. State-sponsored and long distance routes, however, have a more diverse range of educational backgrounds, including a notable share of high school graduates.

In terms of ridership, the NER and Acela lines have the highest overall ridership, with the New York City–Washington, DC, corridor being the most traveled route. This route consistently leads ridership rankings across Amtrak's services in the TPB region, underscoring its critical role in connecting major urban centers. Adding to this, Amtrak achieved a historic milestone in FY 2024, setting an all-time ridership record of 32.8 million customer trips in the country, a 15 percent increase over FY 2023.

3.7 Planned Service Changes

This section summarizes any known service changes proposed by carriers or agencies that are likely in the coming years (e.g., MDOT reducing several commuter bus routes and adding midday service on the MARC Brunswick Line or VRE adding weekend service). These changes would impact the intercity service to the TPB region.

MDOT MTA Commuter Service Reduction[2]

Due to a reduction in funding and slowly recovering ridership on MDOT MTA Commuter Bus service, commuter service frequency has been reduced for FY 2025 (July 2024), with trips rescheduled to better align with commuter trends. The overall span of service and geographic coverage areas is unchanged, but commuter service across the MDOT MTA commuter bus network has been reduced.

Megabus Bankruptcy[3]

Megabus, a major private intercity bus operator, entered bankruptcy proceedings in June 2024. This bankruptcy is not anticipated to be a complete cessation of operations but will entail a reduction in service and fleet liquidation. This will likely impact the trip volume servicing the TPB region.

Exclusion of DC Circulator from 2025 Budget[4]

The DC Circulator was excluded from the District's 2025 budget, and service ended on December 31, 2024. The Circulator was not an intercity or commuter service but was an important first- and last-mile connector for intercity travelers—particularly those using Union Station.

Amtrak Takeover of Union Station Operations[5]

Amtrak recently assumed control and maintenance responsibilities for Union Station, enabling it to plan and implement facility upgrades and maintenance more effectively. The agency has expressed intentions to improve passenger experience, focusing on enhancements to vehicle boarding and alighting processes, and changes to passenger queuing systems.

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[2] *Mass Transit*. 2024. "MDOT MTA Preserving Commuter Bus Service on All 36 Routes." May 28, 2024. www.masstransitmag.com/bus/press-release/55042755/maryland-transit-administration-mta-mdot-mta-preserving-commuter-bus-service-on-all-36-routes.

[3] Knauth, Dietrich. 2024. "US Bus Company Coach Files for Bankruptcy to Sell Its Business." Reuters, June 12, 2024. www.reuters.com/business/autos-transportation/us-bus-company-coach-files-bankruptcy-sell-its-business-2024-06-12/.

[4] Nguyen, Danny. 2024. "Circulator Bus Service Could End by March 2025, Officials Say." *Washington Post*, April 11, 2024. www.washingtonpost.com/dc-md-va/2024/04/11/circulator-bus-cut/.

[5] Nguyen, Danny. 2024. "Amtrak Just Took Over Union Station. What Does It Mean for Riders?" *Washington Post*, July 29, 2024. www.washingtonpost.com/dc-md-va/2024/07/29/amtrak-union-station-dc/.

4 INTERCEPT SURVEY

While desk research and inventory provided an overview of intercity services in the NCR, these data sources did not have comprehensive information on ridership patterns and travelers' sociodemographic information. The National Household Travel Survey (NHTS) origin-destination (OD) dataset includes intercity rail or air travel, while Replica captures intercity bus services. The project team found that trip volumes aggregated weekly or monthly were the only reliable data elements from these sources. Other data elements, such as trip purposes and socio-demographics, were either unavailable or inaccurate in these sources. To address these gaps, the project team collaborated with the TPB staff to identify and prioritize the most critical information for modeling and analysis needs. This section summarizes the intercept survey design and data analysis of the survey responses.

4.1 Survey Design and Implementation

The project team conducted the 2024 Intercity Travel Survey, also known as the DC Connects Survey, as an in-person intercept survey on intercity bus and rail travel across the 22 jurisdictions of the TPB region in summer 2024. This section provides an overview of the intercept survey design and implementation. Additional details can be found in the full **Intercity Travel Survey Methods Memo**, located in **Appendix B**.

4.1.1 SURVEY DESIGN, SAMPLING, AND QUESTIONNAIRE

Once the project team identified the key topics for modeling and analysis needs, the project team developed the questionnaire and programmed it using the project team's Voxco Web platform. They designed the web survey to be accessible on mobile devices, tablets, and computers. After programming, the team conducted both manual and automated tests and quality checks. TPB staff reviewed and approved the survey program before its launch.

The project team targeted passengers on intercity and commuter bus and rail services traveling through the TPB region, with either their origin or destination outside this region. The project team collaborated with TPB staff to identify a sampling frame of intercity bus and rail stations and routes, including services operated by providers such as BayRunner, FlixBus, Greyhound, Peter Pan, Virginia Breeze, MTA, OmniRide, and Amtrak. The sampling strategy used a stratification approach, primarily by day of the week and secondarily by mode of transportation (bus vs. train). Within each of the 14 substrata (7 days x 2 modes), the team selected three trips, resulting in a total weekly sample size of 42 potential trips. This sample size allowed for the potential dropping of ineligible trips if necessary and provided flexibility to align interviewer staffing with available shifts. Eligible trips had to travel through the TPB region but have either their origin or destination outside this region. Trips during overnight hours (12:00 A.M.- 6:00 A.M.) were excluded due to practical constraints.

The sample file listed all stops as rows for each selected trip, allowing data collectors to strategically plan their interception points. Data collectors decided which stops were most suitable for conducting the intercept surveys based on practical considerations such as travel time, accessibility, and potential passenger volume. Given that transportation schedules and routes change over time, the project team validated and updated the information in the weekly samples. This process involved cross-checking the sample information against the most recent schedules published by each

transportation provider, with special attention given to verifying departure times, route details, and any seasonal variations in service. Alternative routes were selected in case of discrepancies.

The project team designed the survey instrument in English, ensuring it took about five minutes to complete with minimal branching logic to ease the burden on respondents. The full **Intercity Travel Survey Methods Questionnaire** can be found in **Appendix B**. The survey covered several key topics, including traveler origins and destinations (with specific details such as place type, street address, neighborhood, cross streets, or landmarks), trip purpose (e.g., business or personal), modes of access, length of stay in the region, frequency of travel to the region and on the specific route or mode of transit, and traveler demographics.

4.1.2 FIELDING AND ADMINISTRATION

The project team conducted fielding for the DC Connects Survey over a four-week period, starting with data collector training on August 12, 2024, and ending on September 8, 2024. The fielding window was chosen to reflect travel demands throughout the region, including variations due to holidays and seasonal factors. The schedule for data collection staff considered the day of the week and other factors impacting travel demand. Ebony Marketing Systems hired and trained the data collectors and supervised the field staff in coordination with the project team. This supervision included daily scheduling, distribution of assignments, HR functions such as payroll and onboarding, and on-the-ground coordination to ensure coverage of the sampled routes. Training for data collectors consisted of a half-day classroom session to orient them to study materials and protocols, followed by a half-day of field practice on assigned transit routes. Data collectors were assigned to sampled stations during designated shift times based on the Sample Plan, covering different times of the day and rotating weekend days throughout the fielding period.

The project team collaborated closely with intercity operators and station management at 12 stations across the region to secure permission for conducting survey operations on transit property. Most survey operations took place at Union Station, both in the train terminal and bus station, with a team assigned for shifts on most days of the week. They also sampled smaller stations throughout the week to ensure representativeness. This coordination involved obtaining permissions for data collection staff to be present in various station locations and informing intercity agencies about the data collection activities.

After completing their training, data collectors began administering the survey by intercepting passengers on station platforms. A combination of two data collection modes was used: tablets and printed materials with QR codes. Each data collector carried a data-enabled tablet to screen respondents for eligibility and invite them to participate in the survey. Respondents completed the web-based survey on the tablet, with data collectors nearby to assist with any questions or issues. Additionally, data collectors distributed postcard-sized cards featuring a QR code, allowing respondents to complete the survey on their own devices at their convenience. Data collectors screened for eligibility, provided the QR code, and assisted respondents in accessing the survey landing page. The project team collected a total of 1,703 complete responses. All eligible respondents had the option to enter a raffle for one of up to ten $100 gift codes, with the drawing held in October 2024.

4.1.3 LIMITATIONS

The project team originally planned for data collectors to ride on selected routes to interview passengers during their journey. This onboard approach would have provided more time for data collectors to interact with respondents and offered extensive coverage of the DC metropolitan area. While transit agencies were generally cooperative in allowing data collection staff into public areas, they were hesitant to permit data collectors to board vehicles. Operators with leased bus slips at Union Station collectively agreed to allow survey operations in leased spaces, provided the survey team did not board the vehicles.

Although the intercept design produced satisfactory results, data collection staff found it more challenging to intercept passengers who were alighting into the region, as these passengers were often focused on reaching their destinations. In contrast, passengers waiting at a station for a departing route had more time to engage with data collectors. This limitation could potentially be mitigated by allowing data collectors to board vehicles, particularly on routes arriving at the region. However, this would require significant cooperation from intercity operators and substantial investment in building relationships with relevant stakeholders early in the survey design process.

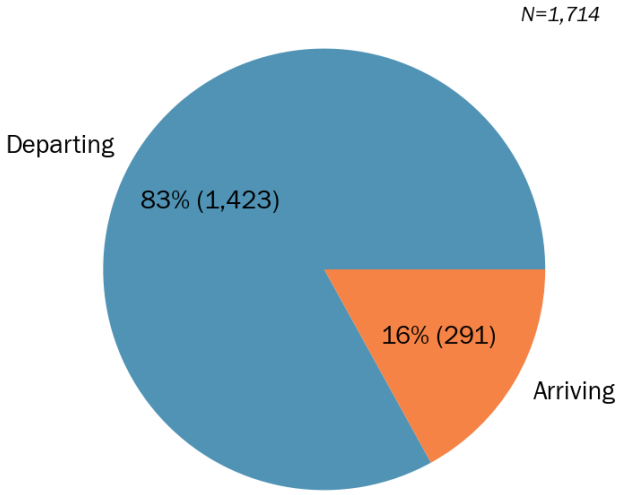
4.2 Data Analysis

This section discusses the findings from the data analysis conducted on the survey responses, highlighting key travel patterns, sociodemographic characteristics, and geographic distribution among individuals traveling to and from the NCR. It should be noted that the survey responses are not weighted by population, and the summary statistics are based solely on the survey responses.

4.2.1 TRAVEL DIRECTION

Figure 14 summarizes the distribution of responses based on whether the respondent was arriving or departing the DC region. Of the participants, 83 percent took the survey before leaving the DC region, while 17 percent of the responses were recorded from those who had arrived in the region. The higher proportion of departing passengers may be explained by having more time to participate in surveys during travel or while waiting to start the next segment of a trip, as opposed to arriving travelers who may be in a rush to reach their next destination or may be too fatigued to engage.

Figure 14: Travel Direction of Survey Respondents



Participation Location

Figure 15 shows the distribution of responses collected across transit stations where the survey was conducted. Over 70 percent of responses were recorded at Union Station, with a considerable number of responses also received at Alexandria and New Carrollton stations. Union Station is a major intercity travel hub in the region, served by both intercity bus and rail services. Alexandria is served by Amtrak rail service, and New Carrollton is served by Amtrak rail and Greyhound buses.

Responses from all other stations, including Franconia-Springfield, Vienna, and Silver Spring Transit Center, combined made up less than 10 percent and were mostly from bus travelers.

Figure 15: Distribution of User Survey Participants Across Transit Stations

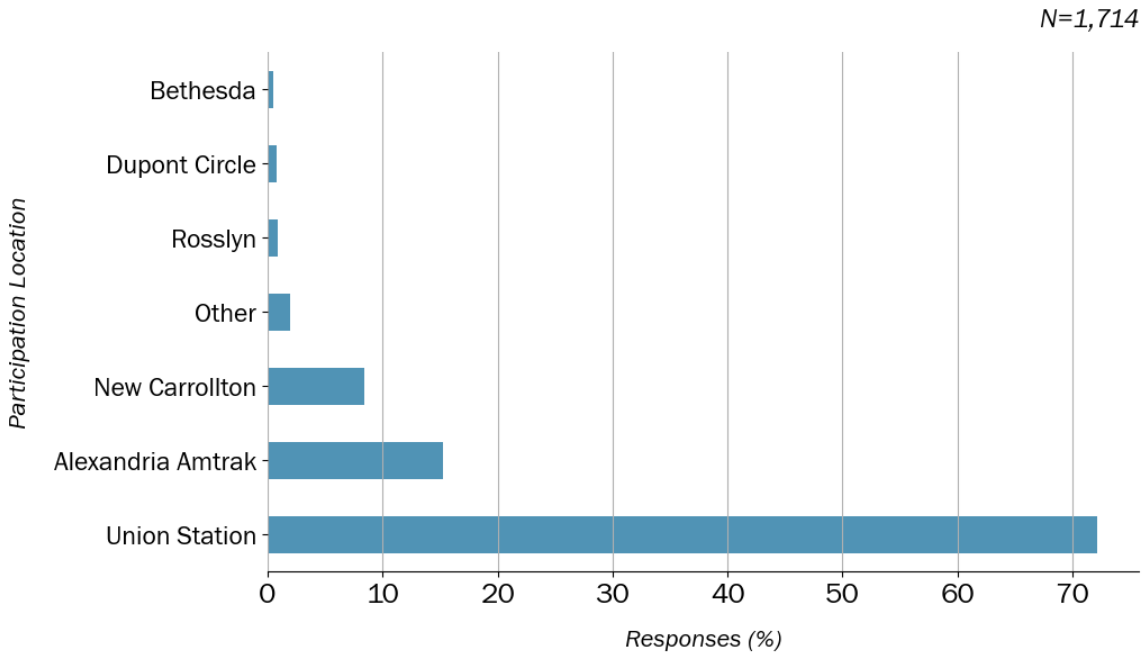
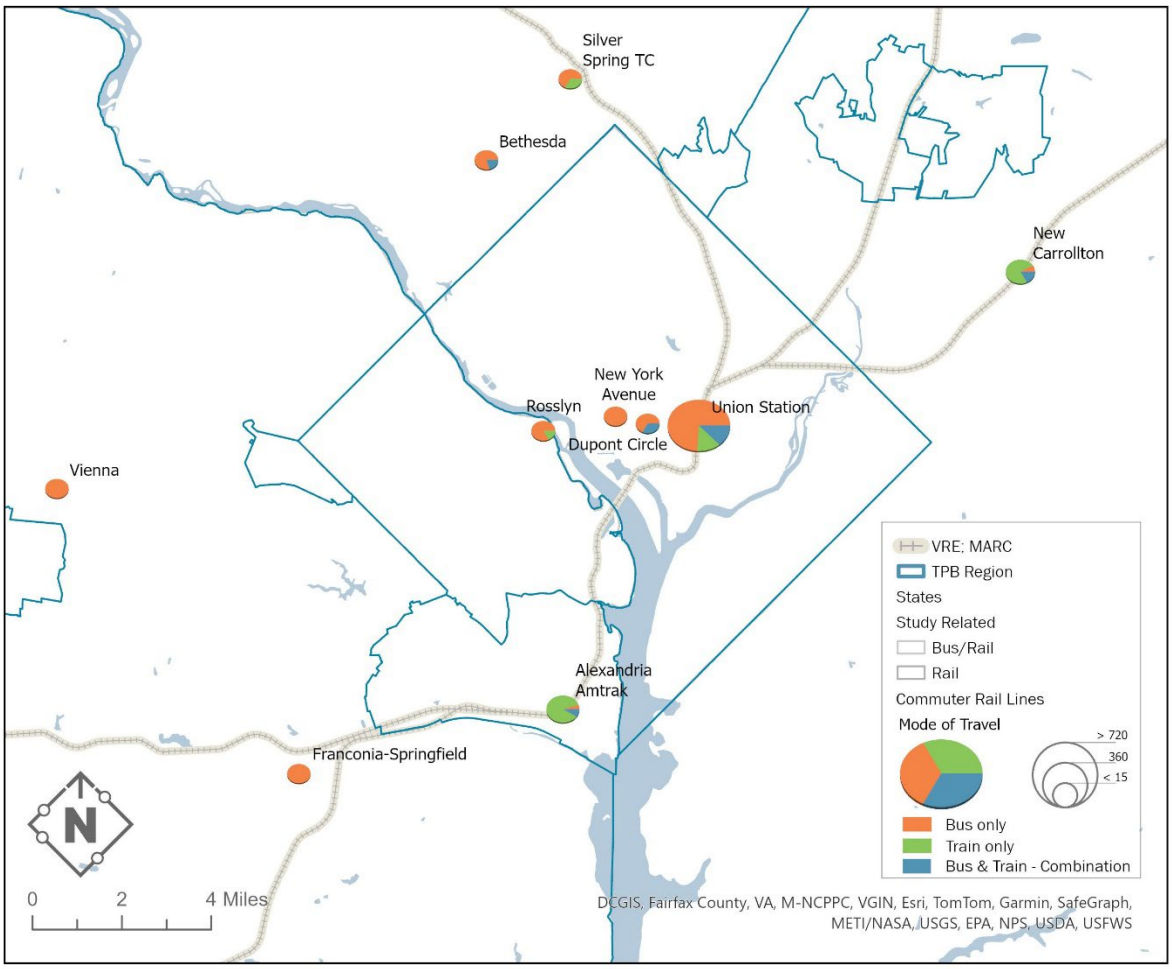


Figure 16 illustrates the transit stations where survey responses were collected, along with the distribution of reported modes of intercity travel. As mentioned, the highest number of responses were recorded at Union Station, with most respondents indicating bus travel. Alexandria and New Carrollton had the next highest levels of participation, with a sizable portion of respondents at these stations reporting rail as their mode of travel.

Figure 16: Distribution of Responses Collected Across Transit Stations



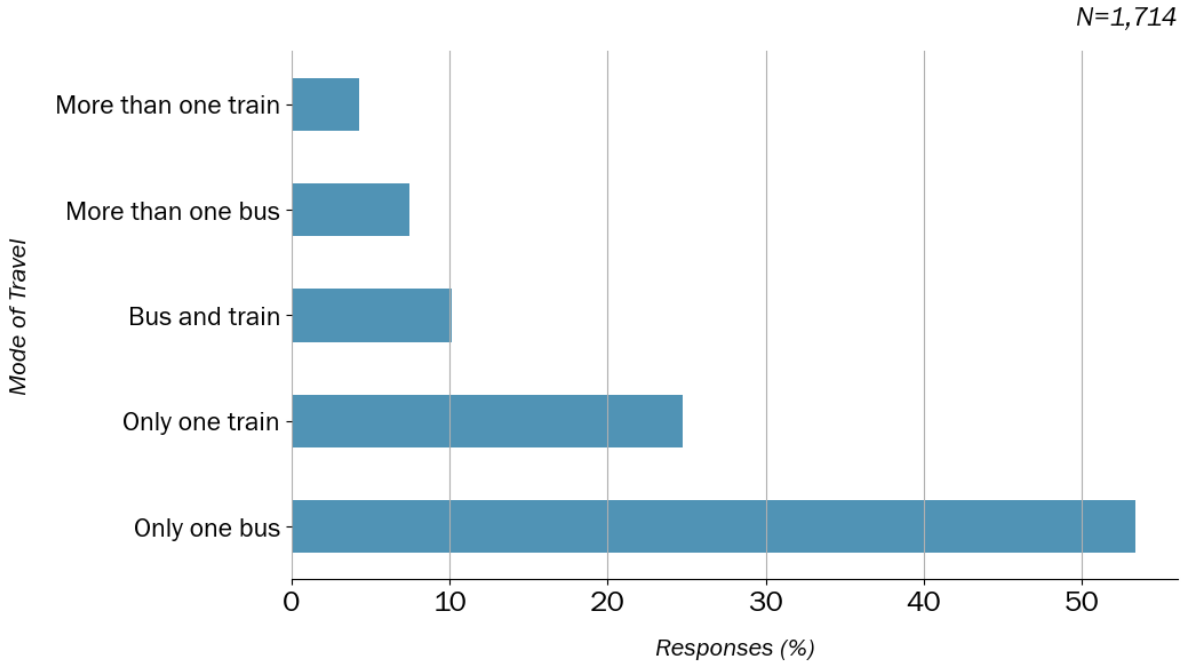
4.2.2 TRAVEL PATTERNS

This section analyzes survey participants' travel patterns, such as mode choice, travel purposes, frequency of intercity travel, and first- and last-mile choices. Understanding these factors can help improve strategic planning and system connectivity.

Mode of Travel

Figure 17 summarizes the mode distribution for intercity travel, showing that a strong majority of respondents relied solely on a single mode. Over 50 percent reported taking only one bus for their intercity travel, and about 25 percent of respondents reported taking only one train. A smaller portion of respondents reported a multi-segmented or multimodal trip in which they used more than one bus, more than one train, or a combination of buses and trains. About 10 percent of respondents reported using a combination of both bus and rail for their trips, about 8 percent reported using multiple buses, and less than 5 percent reported taking multiple trains. It should be noted that respondents might have included their first- or last-mile transit trips in the response, although the questionnaire explicitly asked for intercity travel mode.

Figure 17: Distribution of Mode Choice for Intercity Travel Among Survey Participants



The preference for single-mode travel, particularly for bus routes, suggests that people use the current intercity infrastructure for regional travel. This choice may be influenced by factors such as cost, availability, and convenience. The lower usage of multi-transfer modes suggests limitations in intermodal connectivity.

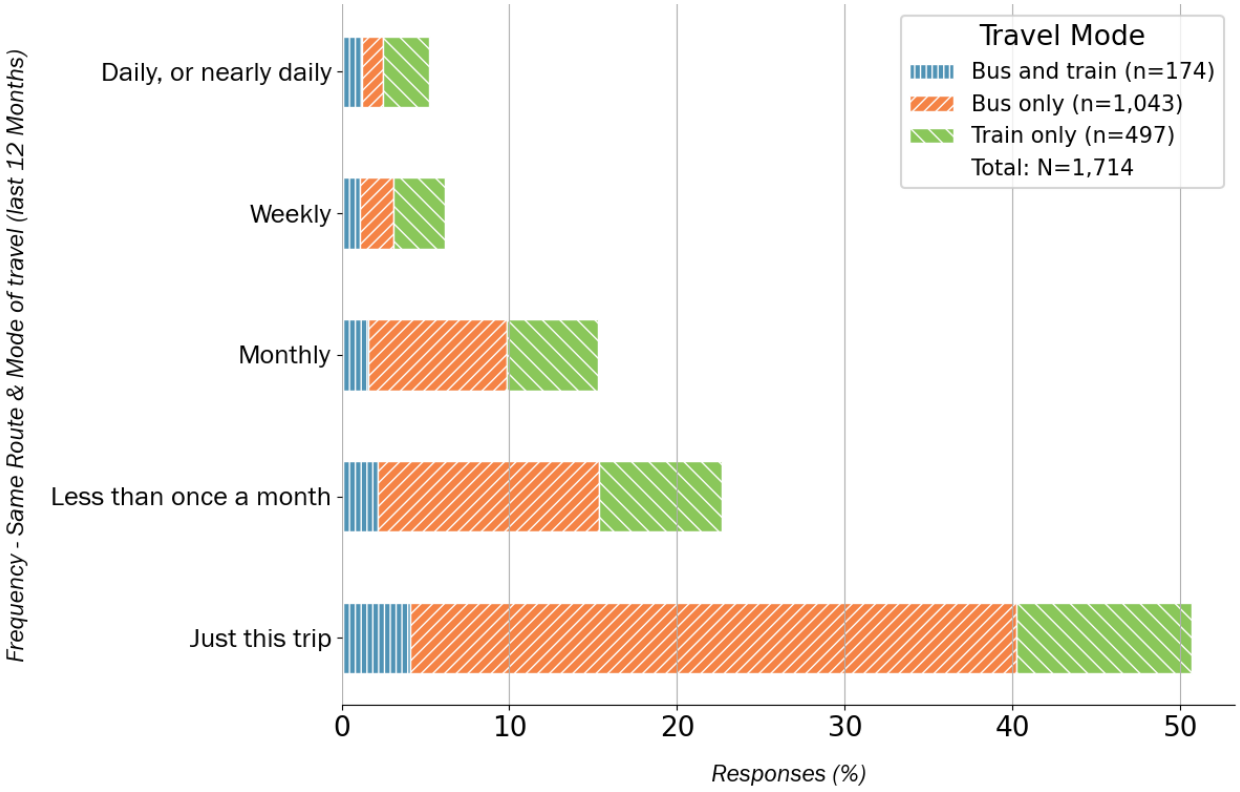
In subsequent sections, the project team recategorized travel modes into three groups: bus only, train only, and bus and train. The project team combined "More than one bus" with "Bus only" and "More than one train" with "Train only" due to insufficient sample sizes. This allows for a focused analysis of the distinctions between different transportation modes.

Frequency of Travel

Figure 18 summarizes the frequency of trips made on the same route using the same mode of travel over the past 12 months. Over half of the respondents said the current intercity trip reported was their only trip, with bus travelers representing the largest share, while train travelers accounted for only 10 percent of all responses. Over 70 percent of participants who reported bus travel indicated that they were either only referring to their current trip or traveled less than once a month.

Conversely, train travel was popular among frequent travelers who reported traveling daily on a weekly basis. Out of all respondents who reported traveling daily or nearly daily, about half traveled by rail, and a similar proportion of weekly travelers rode the train. Multimodal travel accounted for nearly a quarter of daily or nearly daily travelers and about 20 percent of weekly travelers.

Figure 18: Frequency of Travel on the Same Route and Mode (Past 12 Months)



Trip Origin and Destination Place Type

Figure 19 and **Figure 20** show the distribution of responses when each group, those arriving and departing from the NCR, were asked about the type of place where they began their one-way trip. Among those arriving, 58 percent started their trips from their homes. For those departing the region, 48 percent began from their homes within the area. Across both groups, the bus was the most popular mode of choice, but it was more prominent among departures than arrivals.

The residence of friends/family consistently ranked as the second most common type of place trips began. For arrivals, it accounted for about 10 percent of trips, with a significant share using both bus only and train only. The share for departures after visiting friends or family was 20 percent, most of which indicated they were riding the bus. Hotels/lodging as place of origin represents a smaller but consistent portion of trips. Bus services were popular among those leaving from hotels or lodging, with a higher share observed for departures from the NCR compared to arrivals.

The number of respondents reporting their intercity travel to and from their work locations was consistent across both arriving and departing groups. Both groups demonstrated a comparable distribution of transportation modes; however, those departing from the NCR were more likely to be using both bus and train. Trips from school or campus show a different pattern, with a higher proportion of arrivals using a combination of buses and trains compared to departures. A marginal share of responses reported traveling from airports and other transit stations, with bus travel being the dominant mode.

Figure 19: Distribution of Place (Type) of Origin Reported by Those Arriving in the NCR

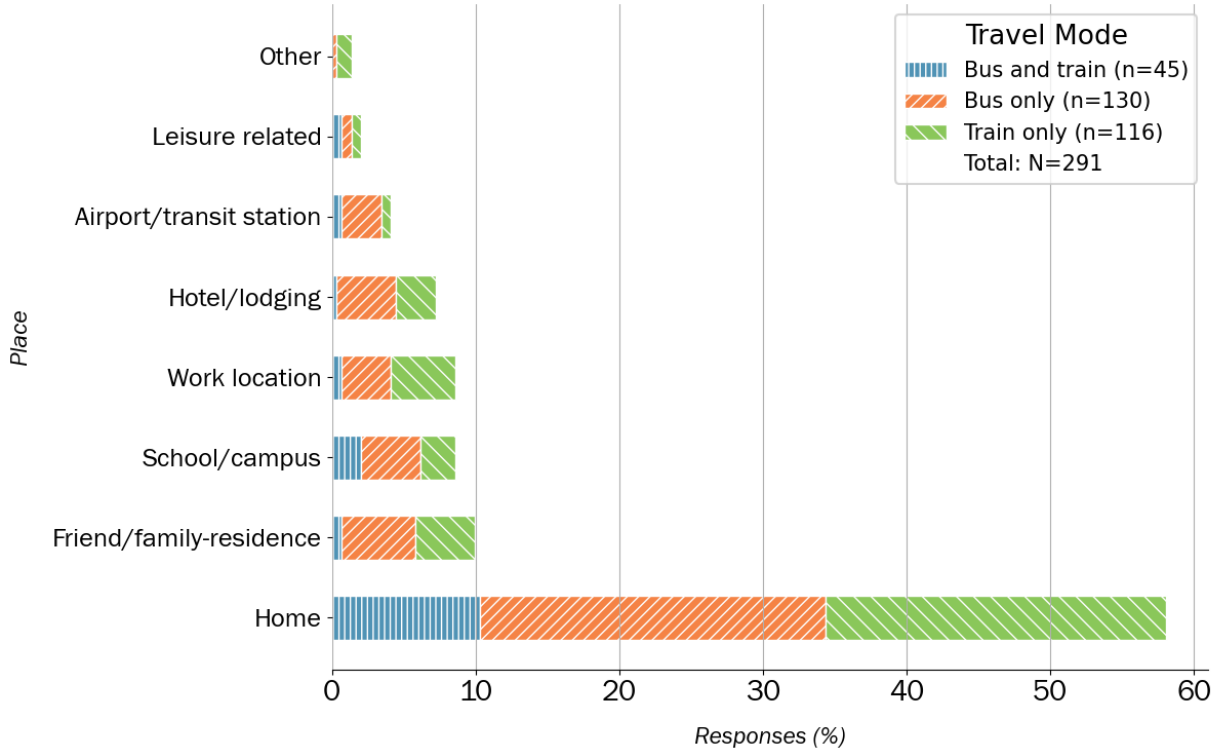
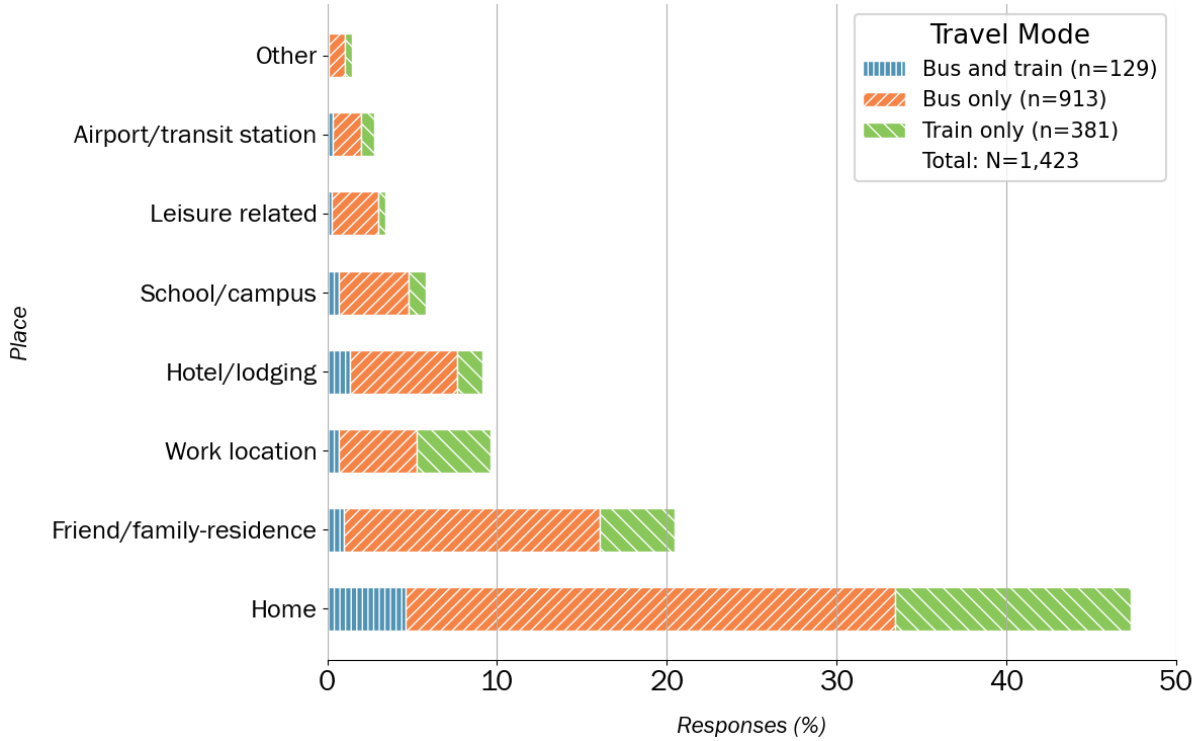


Figure 20: Distribution of Place (Type) of Origin Reported by Those Departing from the NCR



Purpose of Travel

Figure 21 presents the responses on travel purposes categorized into personal/leisure, visiting family/friends, work/business, commuting, school/education, relocation, and other reasons across the three travel modes: bus, train, and a combination of both.

Personal/leisure and visiting family/friends were the most popular reasons for intercity travel. These two reasons collectively represent over 70 percent of all responses. The majority of the trips in both these categories were completed by bus. In contrast, trains were preferred by less than 25 percent of the respondents. Work or business travel shows an even distribution between bus and rail travel modes.

The combination of bus and train travel modes remains marginal across all travel purposes. However, many responses are noted for personal/leisure trips and visiting family/friends, as well as a notable proportion for school/education and work/business travel. Relocation trips exhibit the lowest multimodal share and primarily depend on buses.

Figure 21: Distribution of Travel Modes Across Travel Purpose

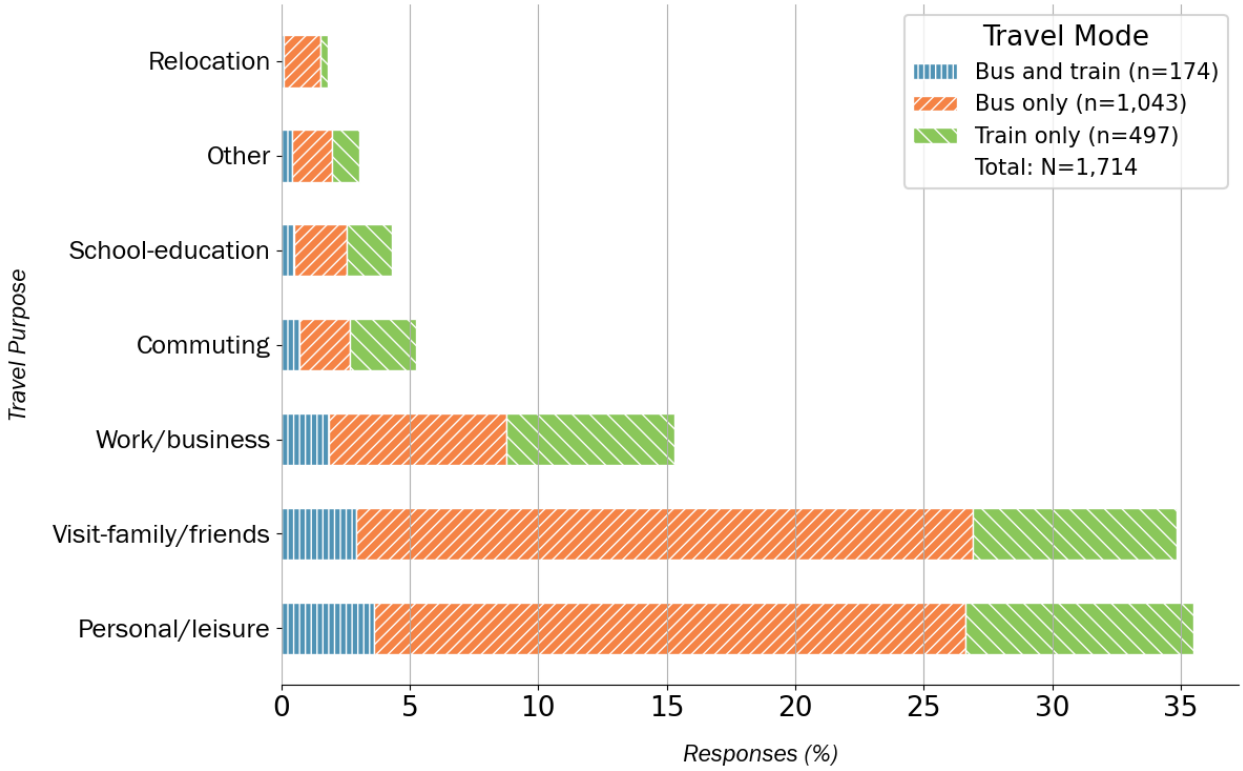
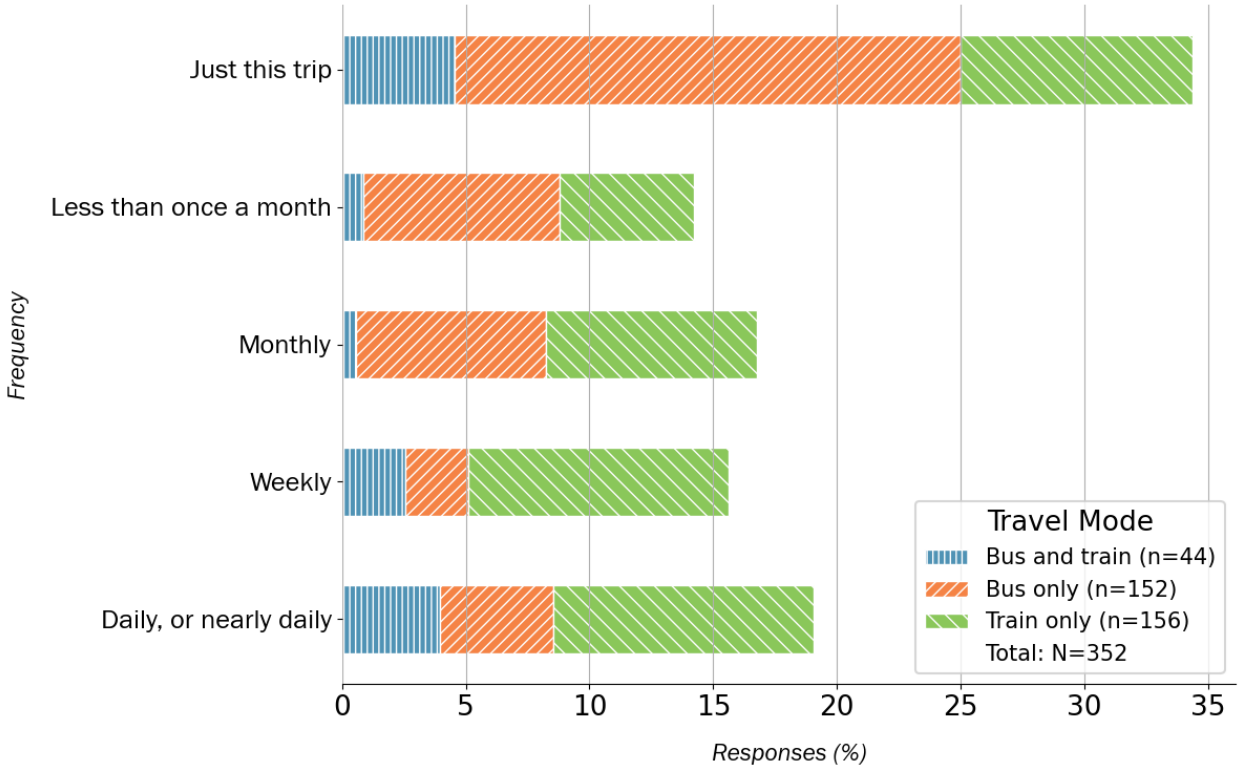


Figure 22 shows the distribution of responses on travel purposes related to work or business, including those who reported their travel as a "commute." Among travelers who reported commuting or work/business-related travel on a daily or weekly basis, over half used trains. A significant share also reported depending on a combination of buses and trains for their intercity travel. Conversely,

infrequent travelers show a significant shift toward buses, with fewer relying on trains or a combination of both modes. This trend stands out, particularly among those indicating “Just this trip,” where a majority show a preference for buses.

Figure 22: Distribution of Responses That Reference Commuting or Work/Business Related Travel Purposes



First- and Last-Mile Travel

Figure 23 shows the distribution of intercity mode choice across different first- and last-mile travel modes. The pie charts of the distribution by intercity travel mode and the first- and last-mile travel mode are included in **Figure 32** in **Appendix B**. Being picked up and dropped off was the top option for accessing the intercity stations, followed by using taxis and ride-share. Metro and local buses are notable contributors to first- and last-mile travel. Two-thirds of those who relied on Metro for first- and last-mile travel used bus services for intercity travel. In contrast, only a small fraction of train users reported using local buses. Both walking and driving alone also have a significantly higher representation of train riders compared to any other first- and last-mile mode. Carpooling and biking are the least represented modes, each making up less than 1 percent of the responses.

Figure 23: Distribution of First- and Last-Mile Mode of Travel

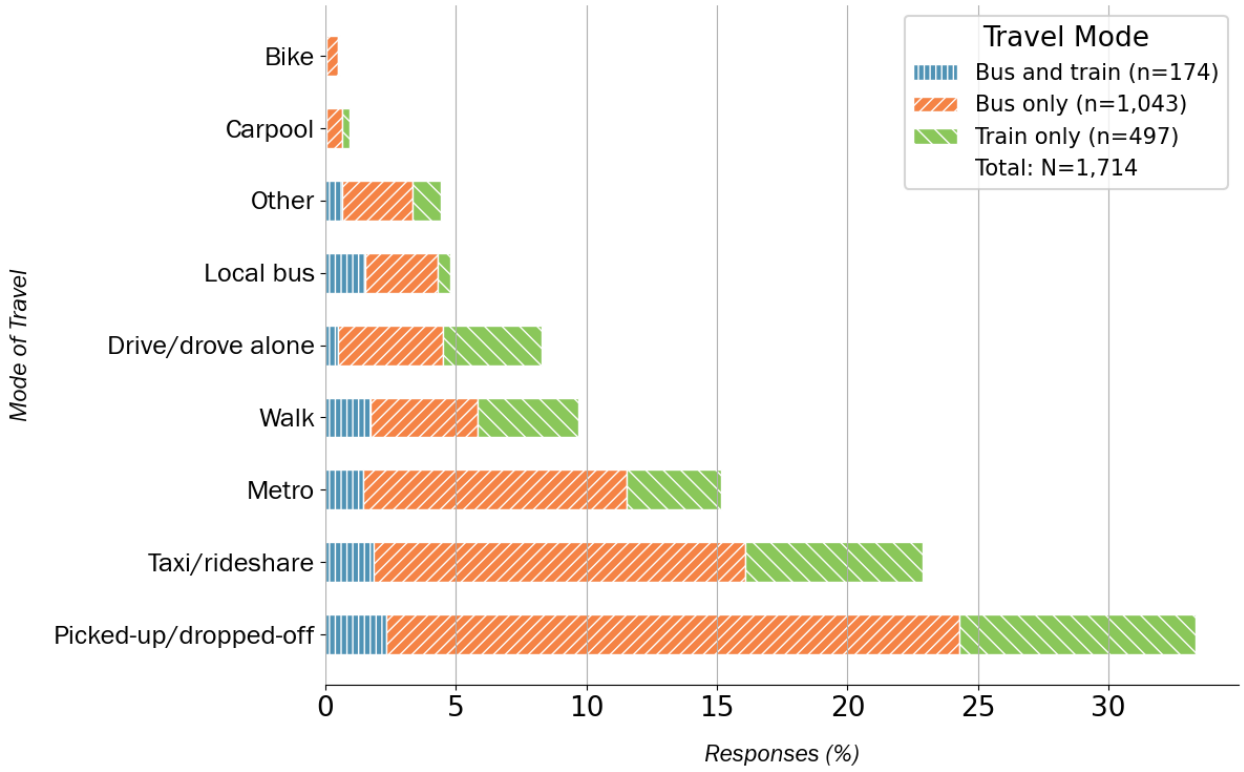
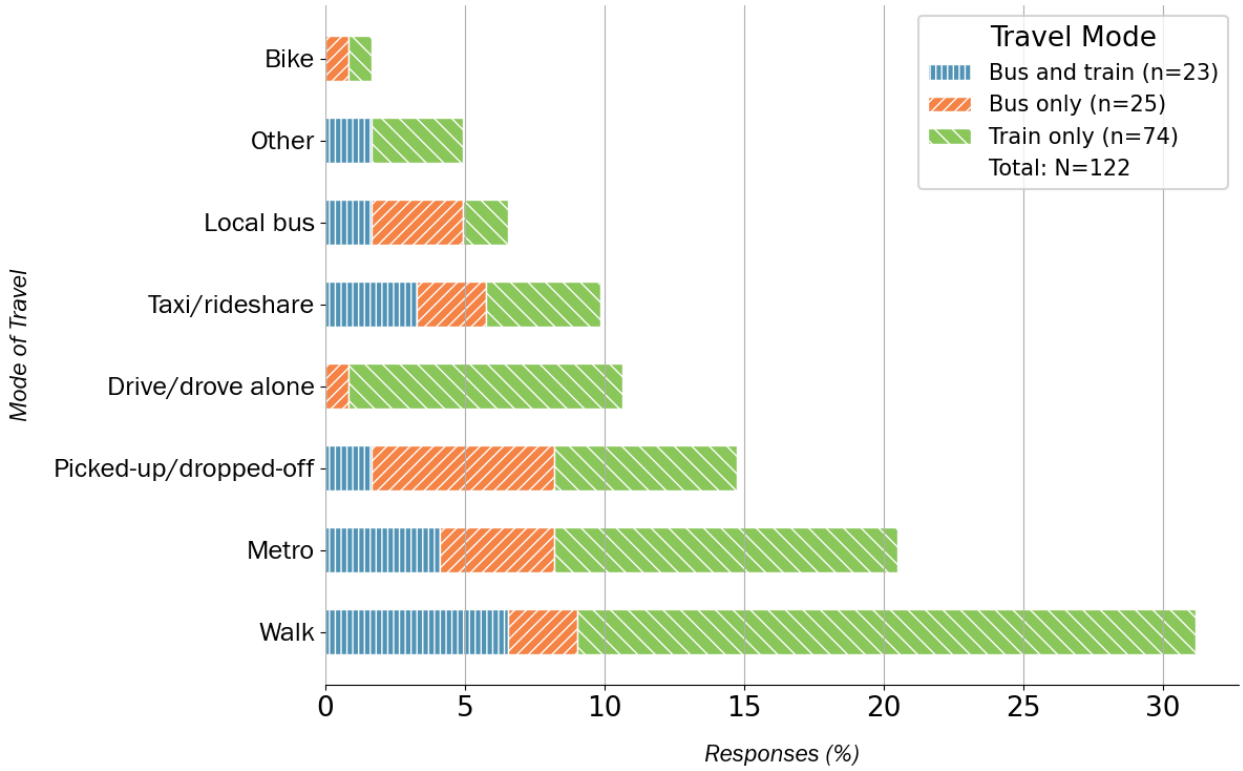


Figure 24 summarizes the first- and last-mile travel for commute and work/business-related daily or weekly trips. The pie charts of the distribution by intercity travel mode and the first- and last-mile travel mode are included in **Figure 33** in **Appendix A**. Despite the small sample size, survey responses reveal that a significant share of intercity rail commuters rely on walking for their first- and last-mile travel. Most travelers drive alone to access intercity trains. A notable portion of train riders also use Metro services, while bus-reliant intercity travelers are more likely to use local buses for connections. Flexible options, such as being picked up or dropped off and using taxis or rideshares, are evenly distributed across the three modes. Being picked up or dropped off and taxi/ride-share showed a balanced distribution across the three modes, while the ride-sharing option was particularly popular among respondents who used a combination of bus and train. Being picked up or dropped off and taxi/ride-share showed a balanced distribution across the three modes, while the

ride-sharing option was particularly popular among respondents who used a combination of bus and train.

Figure 24: Distribution of First- and Last-Mile Mode Choices Among Frequent (Daily, or Nearly Daily, and Weekly) Commuters



4.2.3 SOCIODEMOGRAPHICS

This section summarizes the survey findings of sociodemographic factors for intercity bus and rail travel. Understanding the relationship between race/ethnicity, income, and travel mode preference provides insight into the socioeconomic and racial differences that may influence transportation access and mode choice preferences.

Race/Ethnicity vs. Travel Mode

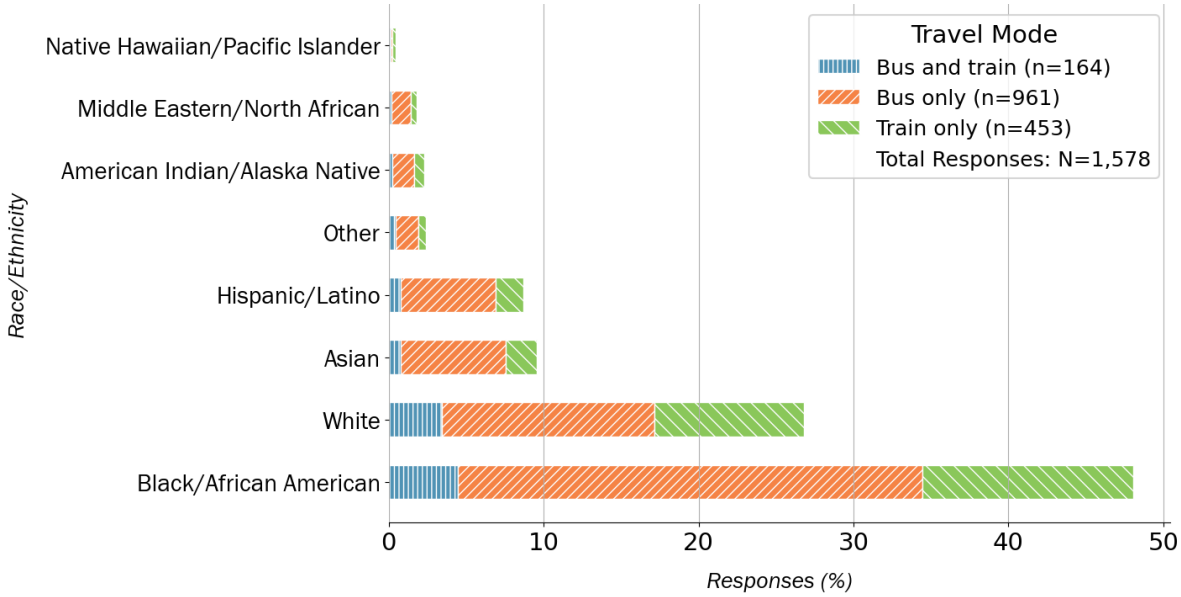
Figure 25 shows the distribution of preferred modes of travel among different racial/ethnic groups. Only 60 percent of respondents identified their race/ethnicity. Bus travel was the majority mode for all groups.

Bus travel constitutes 62 percent of the trips reported by Black/African American respondents, who represent the majority of the total responses. White respondents, who represent the second highest number of responses, made up a lower share (50 percent) of bus travelers.

Most Asian and Hispanic/Latino respondents rely on bus services. It is also a primary mode of transportation for minority groups such as Middle Eastern/North African and American Indian individuals.

White respondents make up 36 percent of intercity train travelers, while Black/African American respondents account for 28 percent. Train usage is much lower among Hispanic/Latino and Asian groups, with only 20 percent of respondents belonging to these groups reporting train travel. Other minority groups also represent a small share of train travelers.

Figure 25: Race/Ethnic Distribution of Survey Participants by Travel Mode

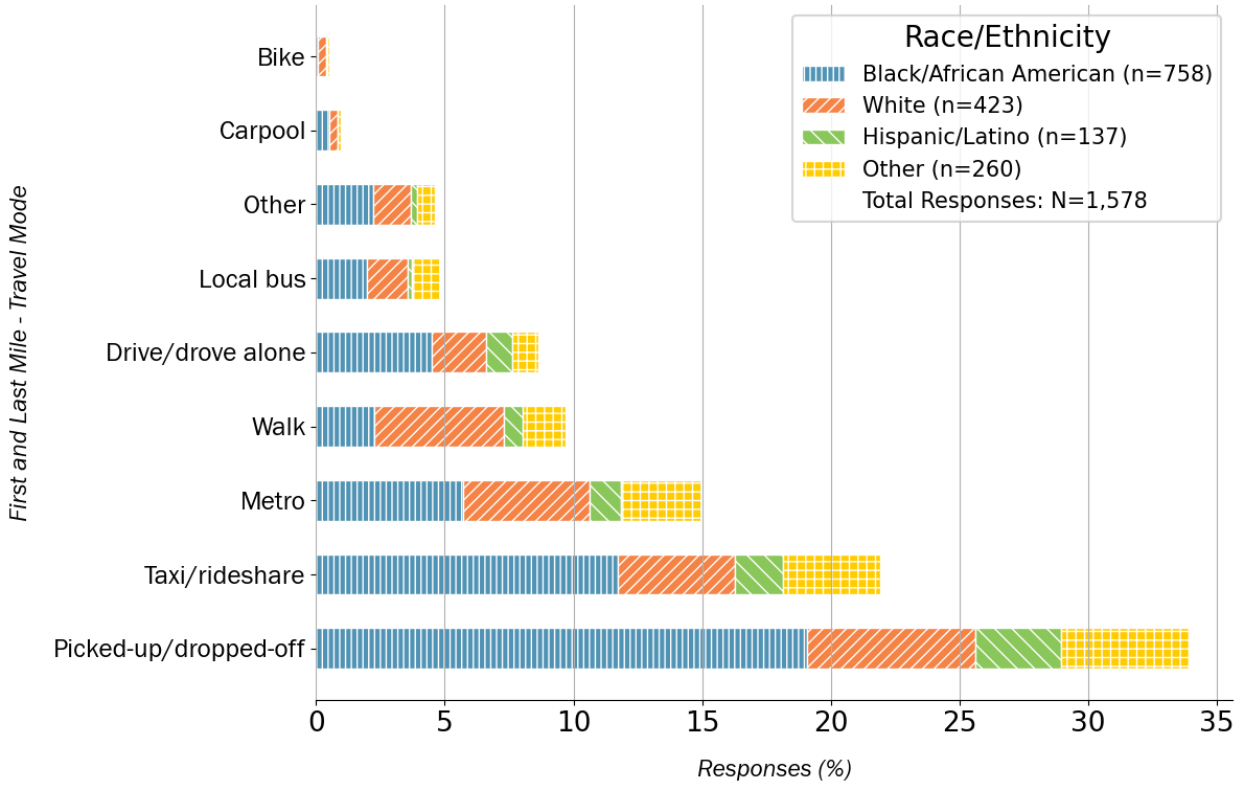


Race/Ethnicity vs. First/Last Mile Mode

Analyzing first- and last-mile travel by race and ethnicity offers insights into transportation accessibility, barriers, and preferences among diverse populations. **Figure 26** summarizes the breakdown of first- and last-mile modes by race/ethnicity. African American respondents showed significant reliance on being picked up or dropped off and using taxi and rideshare services. In contrast, Hispanic/Latino and White respondents relied less on these modes.

White respondents were an overwhelming majority among those who walked to cover first- and last-mile connections. Although biking was minimal, it was particularly popular among white respondents. Both Metro and local bus services showed an even distribution across all groups. However, Hispanic/Latino respondents were underrepresented among those using local bus services. Land use patterns and affordable housing near transit- and walk-accessible areas may significantly affect race/ethnicity trends in first- and last-mile access to intercity travel.

Figure 26: Racial/Ethnic Distribution Based on First/Last-Mile Travel

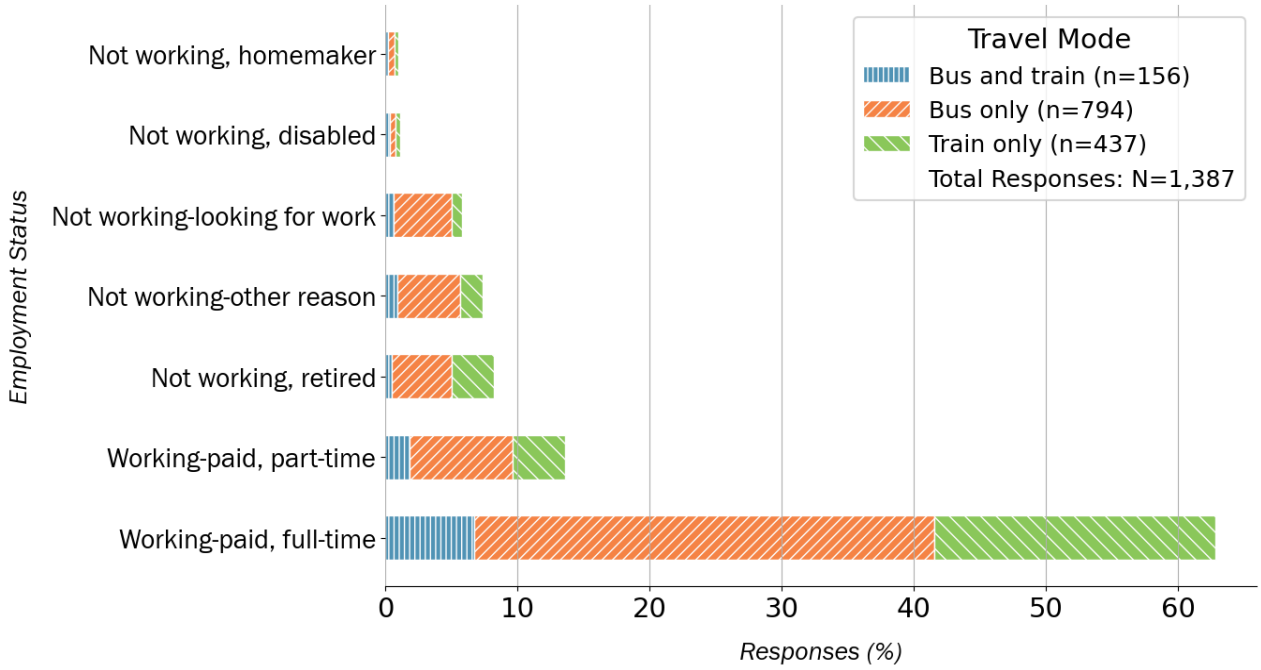


Employment Status vs. Travel Mode

Figure 27 summarizes employment status and intercity travel mode. Full-time workers, who constituted the largest segment, relied equally on bus or train for intercity travel. Part-time workers reported buses as the most common mode of intercity travel and used trains at a lower rate than full-time workers.

Non-working survey respondents, including retirees, homemakers, and those seeking employment, relied on buses for intercity travel. Within this category, retirees stood out for reporting higher train usage than other non-working groups. Although the sample size was small, homemakers and those looking for work chose buses overwhelmingly. Across all non-working groups, the use of multimodal options was consistently small.

Figure 27: Survey Participants' Employment Status by Mode of Travel



Income vs. Travel Mode

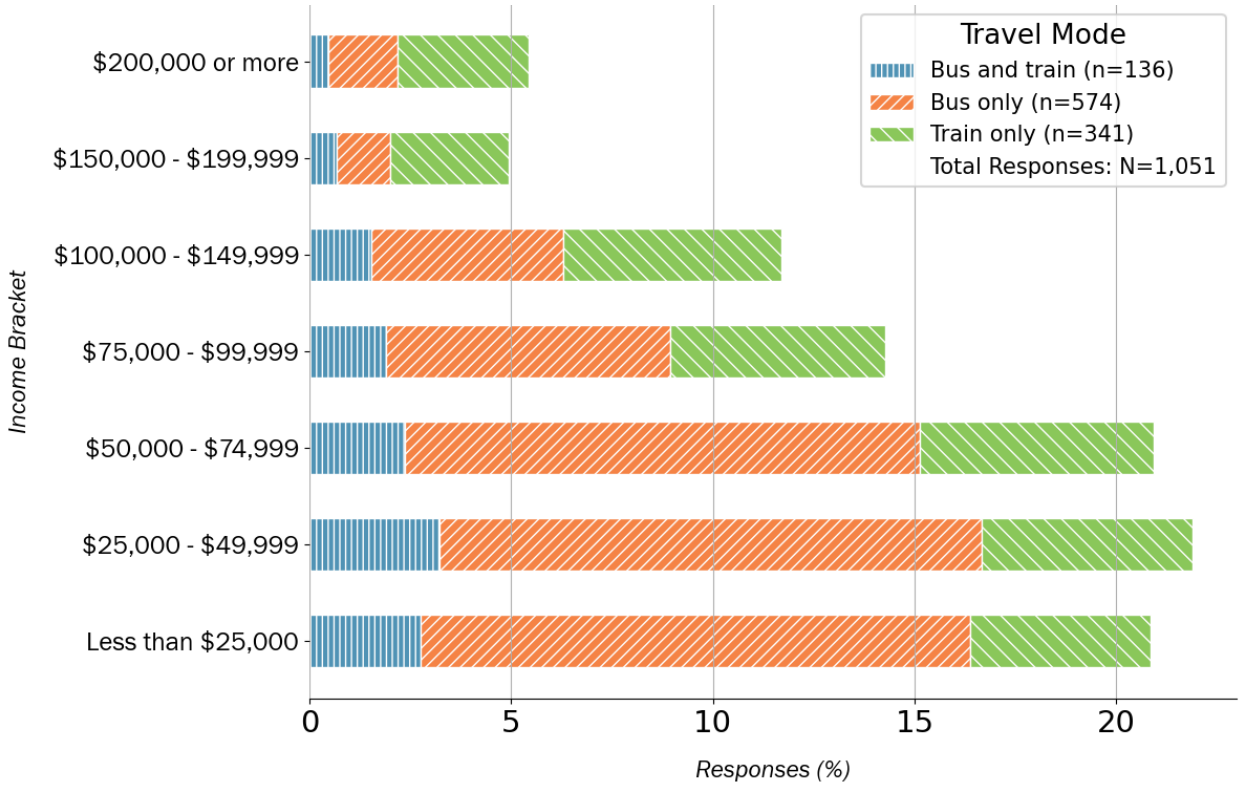
Figure 28 illustrates the correlation between income levels and intercity travel preferences. The income data presented pertains to responses collected regarding total household income before taxes in 2023.

Lower-income groups, comprising individuals with an annual household income of less than $75,000, predominantly reported using buses for intercity travel, with a smaller portion relying on trains. Only a minority of these respondents used multimodal options.

In the middle-income range, consisting of individuals with a household income between $75,000 and $149,999 annually, buses remained the most popular but with a noticeable decline in usage compared to lower-income groups. Higher train usage was reported more by this group, particularly among those at the higher end of this income range. Multimodal travel remained consistent but was still reported by a relatively small segment of respondents.

High-income groups, those with a household income of more than $150,000 or more, reported a clear preference for trains as their primary mode of intercity travel and significantly lower use of buses. A combination of bus and train was the least reported among the higher-income respondents. The use of intercity trains rises with higher household incomes.

Figure 28: Household Income Distribution by Mode of Travel



4.2.4 GEOGRAPHIC DISTRIBUTION

Respondents arriving in the NCR were asked to identify the nearest city from where their one-way trip began, while those departing were asked to identify the closest city to their intended destination. **Figure 29** and **Figure 30** illustrates the travel patterns of intercity travelers arriving at and departing from the NCR region through various intercity stations and modes of transportation.

Most respondents traveled to the NCR from New York, NY, and a significant number of respondents traveled from Philadelphia, PA, and Baltimore, MD. More than half the survey respondents arriving at the NCR used a bus followed by a train. Respondents arriving from Atlanta, GA, and Wilmington, DE, consisted exclusively of bus trips, while those traveling from Charlottesville, VA, and Annapolis, MD, primarily used trains. Those who made their journey using a combination of bus and train mostly arrived from New York, Philadelphia, and Baltimore.

Similar to arrivals, most of the respondents started their journey from Union Station. New York City was the common destination, with notable respondents going to Richmond, VA, Philadelphia, and Baltimore. Significantly fewer respondents reported using trains to depart from the NCR than arrivals (22 percent vs 40 percent). Departures to Richmond and Baltimore showed an even split between bus and rail users. Responses from Alexandria, VA, and New Carrollton, MD, mostly indicated intercity rail travelers. Train travel was popular for those leaving for Fredericksburg and Norfolk, VA, due to Amtrak connections.

Figure 29: Nearest City of Respondents' Trip Origin and Destination Station within the NCR

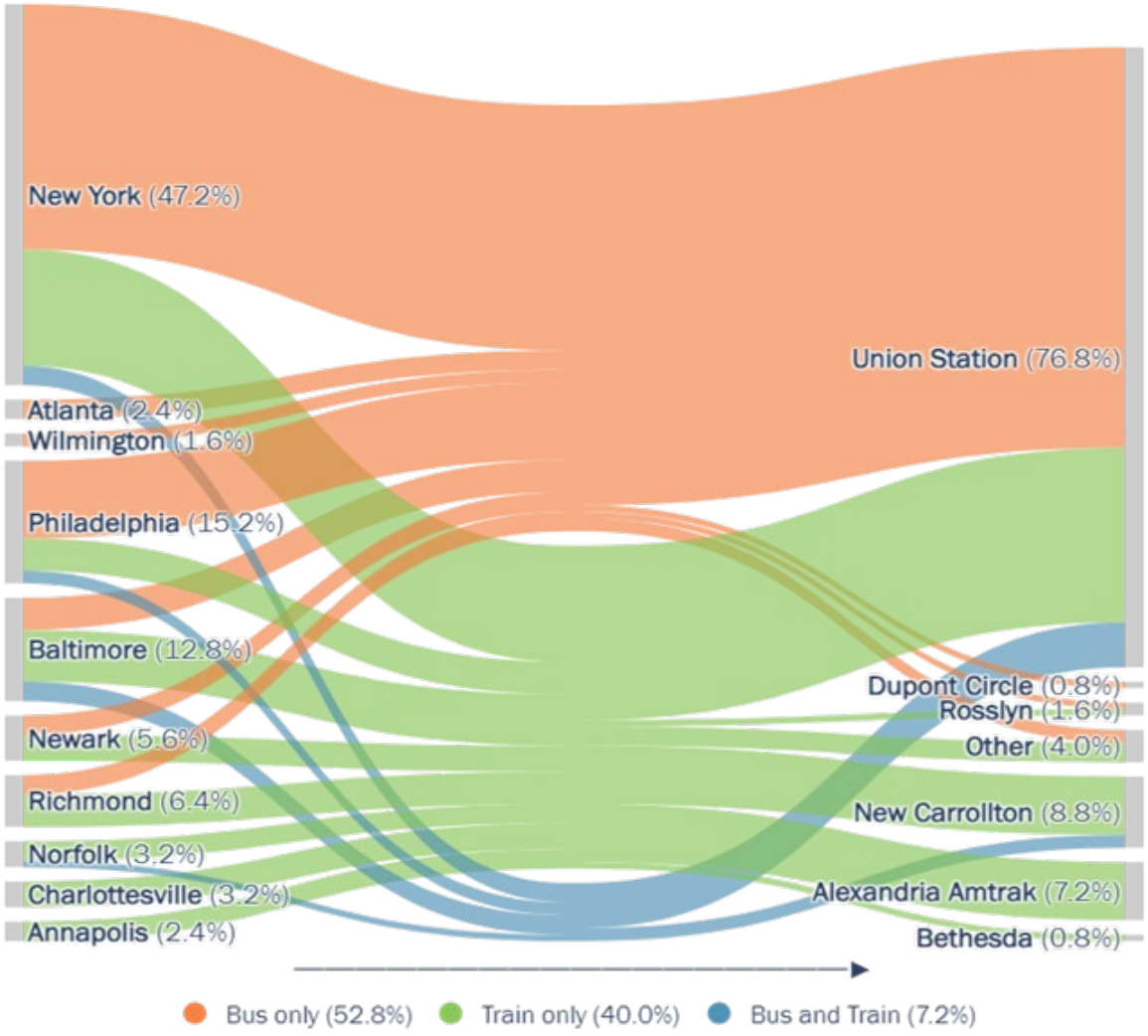
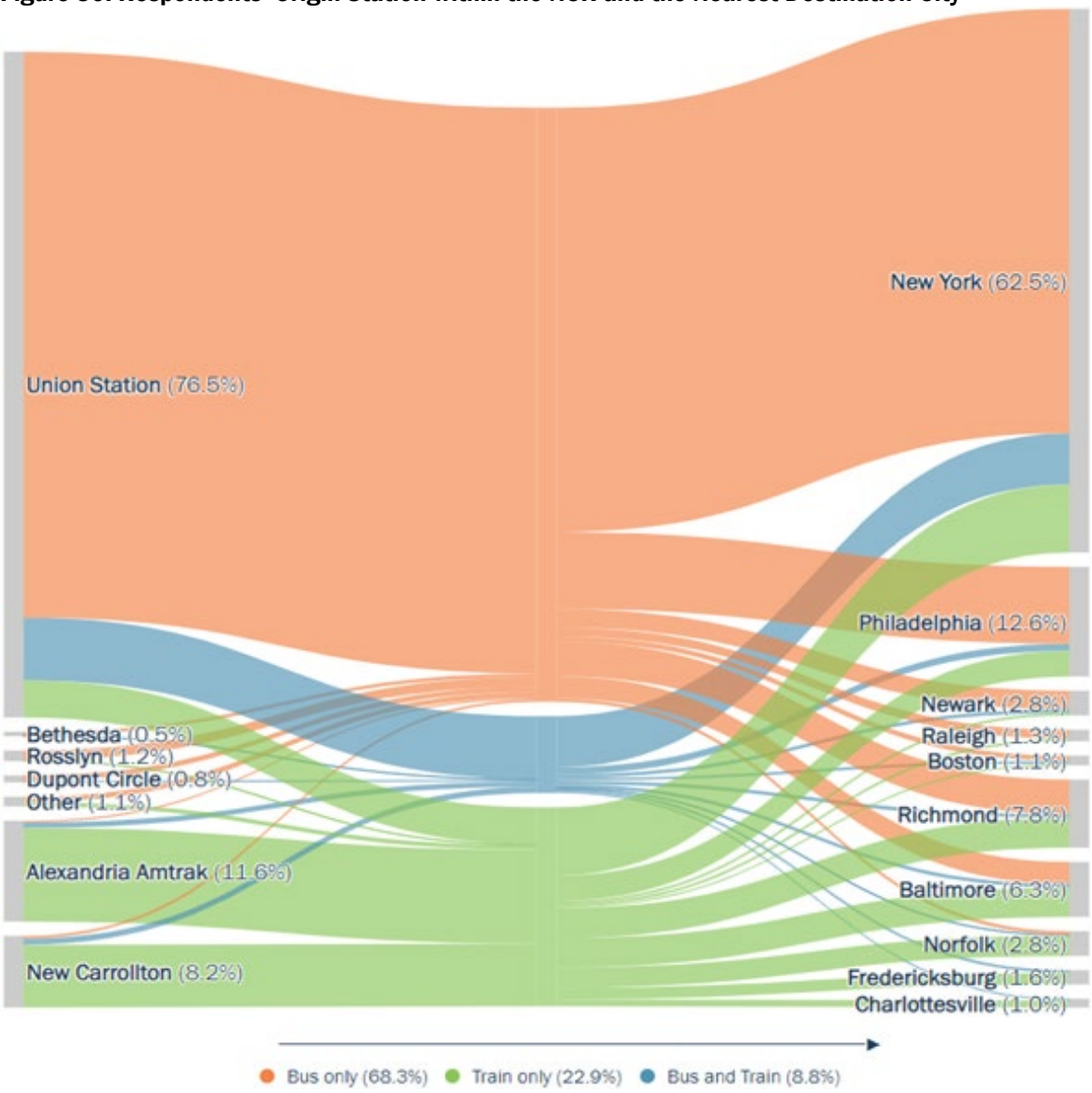


Figure 30: Respondents' Origin Station within the NCR and the Nearest Destination City

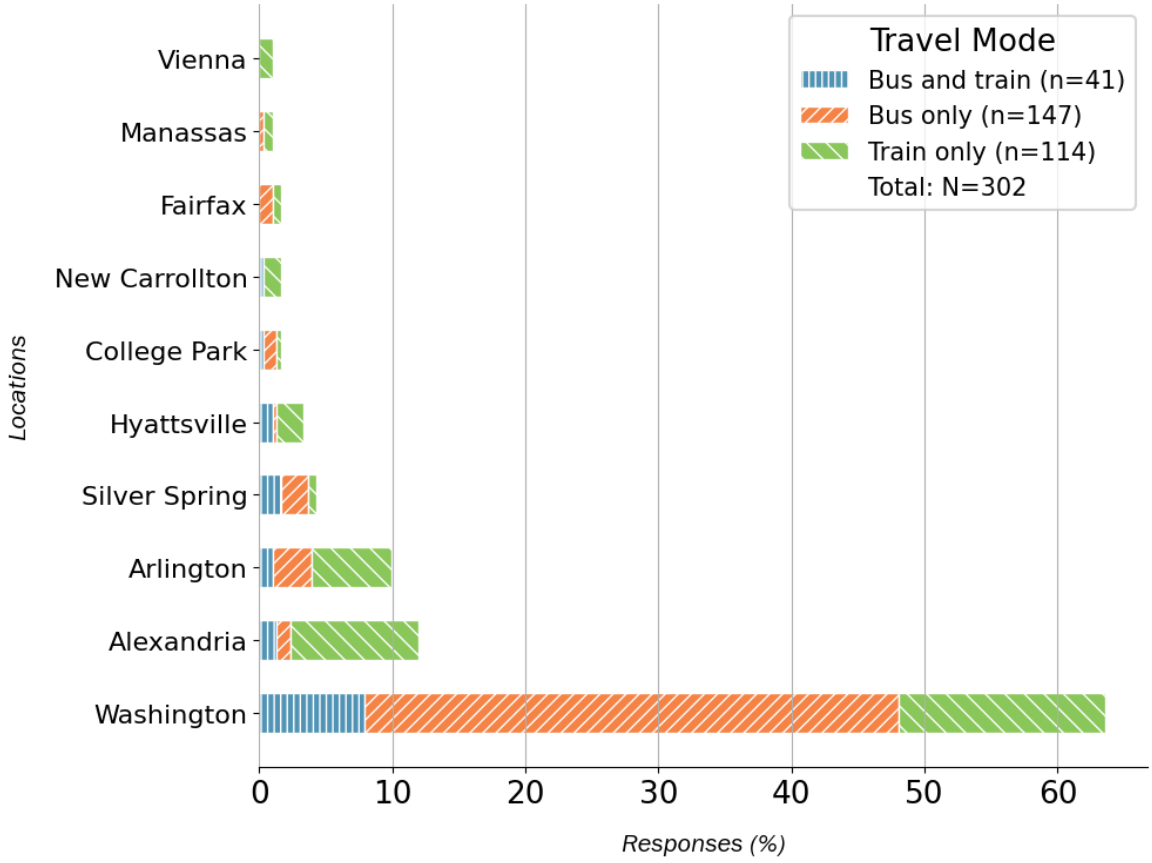


The survey also identified the most frequently mentioned cities reported by respondents as either departing or arriving at the NCR. **Figure 31** summarizes the top 10 cities with origins or destinations in the NCR. Washington, DC, had the highest number of trips reported among all cities. Most of these trips used buses as the sole mode of travel, with a smaller proportion relying exclusively on trains or using a combination of buses and trains.

Alexandria and Arlington in Virginia were the second and third largest places of origin in the region. In Alexandria, most trips reported were made by trains exclusively, with very limited use of buses or combined modes. Amtrak has one of the major stations at Alexandra and New Carrollton. Arlington showed a more balanced split between modes, with trains being the most used, followed by buses and a smaller share of multimodal trips.

Silver Spring, MD, accounted for fewer responses but exhibited a distinct mix of travel modes. Trips to or from Silver Spring used both buses and trains in significant proportions, with fewer respondents relying exclusively on trains. Intercity travel modes varied among smaller cities like College Park in Maryland and Fairfax and Manassas in Virginia. Respondents in Hyattsville and New Carrollton strongly preferred trains as the only mode of travel with minimal bus use.

Figure 31: Top 10 Starting or Destination Locations



5 KEY FINDINGS AND RECOMMENDATIONS

The project team conducted desk research and an inventory of intercity service, along with the intercept survey, to gain a comprehensive understanding of intercity travel in the NCR. The key findings of the study are summarized as follows:

Overall Intercity Network

- Intercity service connects the NCR to more than 50 cities across 21 states, primarily along the East Coast but also extending west to Illinois and Louisiana. The Washington, DC,- New York City, NY, route has the highest trip volume.
- As of April 2024, 14 intercity transit providers and four commuter transit providers operate into the NCR with 31 intercity stops in the region. Of the 24 counties, cities, and districts within the NCR, 14 have at least one intercity transit stop. Union Station in DC hosts the highest number of intercity operators. Several intercity service providers also serve locations such as Silver Spring and Frederick in Maryland, and Rosslyn, Springfield, and Vienna in Virginia.
- Amtrak's intercity service is largely consistent throughout the week, while the number of bus trips peaks on Fridays and Sundays. Most service providers operate with a regular schedule on major holidays. On the other hand, commuter services provider schedules reflect strong commuting patterns with a high number of weekday trips and a very low number on weekends.

Findings

- Amtrak's ridership has recovered to exceed pre-pandemic ridership, while intercity bus ridership is still at about half of it. Amtrak achieved a historic milestone of an all-time ridership record of 32.8 million customer trips nationwide in FY 2024, which is a 15 percent increase over FY 2023.
- Commuter services ridership is recovering to about a third of the pre-pandemic level and is expected to increase with the federal return to in-person work mandate.
- The majority of intercity riders traveled less than once a month or reported only a single intercity trip in the past 12 months. Most of the infrequent intercity travelers traveled by bus, while frequent travelers used trains.
- Personal or leisure was the top reason for intercity trips, followed by visits to family and friends. Comparatively, work/business-related travel represents a smaller share of trips.
- Intercity travelers often depend on someone to provide pick-up or drop-off services for first- and last-mile connectivity. These travelers also use ride-hailing services and Metro systems or walk to access intercity stops.

Traveler Sociodemographic Information

- Intercity travelers with lower income use buses for intercity travel. Train usage increases with income, with high-income travelers primarily relying on trains for their intercity trips.
- Black/African American travelers represent the largest share of respondents in the survey, relying heavily on buses for intercity travel. Asian and Hispanic/Latino respondents also mainly use buses for intercity trips. While many white respondents use buses as well, a higher proportion of white respondents prefer traveling by train for intercity trips.

Other Findings

- Understanding intercity travel requires multiple data sources and methods. Desk research offers service schedules, routes, and stops; big data reveals ridership trends; intercept surveys provide riders' sociodemographic information.
- Intermodal connections and integration at intercity stations vary in connections to transit, parking, and nearby private businesses. Several stations with a high number of bus trips, such as New York Ave, lack adequate facilities.
- The intercity travel operators are undergoing major changes, including bankruptcy, service expansion, reduction, and operational changes.
- Future research could enhance this study by 1) counting the number of boarding and alighting travelers to gather ridership data, and 2) collecting start and end geographic locations in the intercept survey to map the trip start and end points within the NCR. Coordinating with visitors, tourism, and economic institutions can improve data collection.

Based on the findings, the project team has the following recommendations to enhance intercity travel in the NCR:

1. **Promote Bus and Rail for Intercity Travel Options:** Buses and rail, alongside air travel and personal vehicles, are vital for connecting the East Coast with the NCR. These modes serve diverse sociodemographic groups for various trip purposes, including personal travel and work trips. Most stations are in Washington, DC, and Northern Virginia, with few in Maryland's Prince George's and Montgomery Counties. Maryland's Charles County has no intercity bus or rail stations. More robust intercity bus and rail travel options could boost regional connectivity, economic growth, and tourism.

2. **Equity Consideration:** Income and ethnicity/race strongly correlate with the choice of intercity bus and rail travel options. Land use patterns also influence access to intercity bus and rail stations. Given the strong preference for bus travel among lower-income and minority groups, enhancing intercity bus infrastructure and services in the Equity Emphasis Areas[6] could help TPB achieve its regional equity goals.

3. **Intercity Bus and Rail Performance Measures:** Adopting a performance-based planning approach for intercity bus and rail in the NCR can enhance service quality. Key metrics include service coverage, frequency, ridership, and rider satisfaction. This requires collecting schedules, coverage, and ridership data from operators, leveraging ridership trends from big data sources, and implementing periodic intercept surveys of riders. This data collection could be coordinated with visitor and tourism data collection.

4. **Bus Stop Improvements:** Intercity bus stops should be developed with adequate facilities and connections to local transit, parking, and nearby private businesses. Special attention should be given to high-traffic intercity bus stations like New York Ave, which currently lack sufficient

[6] MWCOG. n.d. "Equity Emphasis Areas for TPB's Enhanced Environmental Justice Analysis." Transportation: Environmental Justice. www.mwcog.org/transportation/planning-areas/fairness-and-accessibility/environmental-justice/equity-emphasis-areas/

amenities. Investments in intercity bus stops would improve travel experience and safety, and could attract more ridership.

5. **Enhance First- and Last-Mile Connectivity:** Improving local transit and integrating multimodal transportation are essential for efficient intercity bus and rail travel. Expanding local transit coverage increases accessibility to intercity services, and aligning local transit frequencies with bus and rail schedules reduces travelers' wait times. Enhanced pedestrian, park-and-ride, and ride-hailing pick-up/drop-off facilities at stations could improve system efficiency and user satisfaction.

6. **Invest in Rail Infrastructure:** Train travel is favored by higher-income groups and frequent travelers. Continued investment in rail infrastructure will support the demand and enhance the travel experience for these users. A well-connected and reliable rail network would provide regional travel options, reducing reliance on air and personal vehicles.

7. **Diversify Intercity Service Providers and Modes:** The diversity in providers and travel modes is essential to prevent disruptions in service. In case of operational changes or bankruptcies among providers, other operators should be prepared to modify trips or offer additional services to fill the gaps, ensuring uninterrupted intercity travel.

6 CONCLUSION

This report on intercity travel within the NCR offers a comprehensive analysis of the current state and future potential of intercity bus and rail services. By combining desk research, big data analysis, and an intercept survey, the report identifies key trends, challenges, and opportunities to inform policy decisions and enhance regional connectivity.

The findings underscore the critical role of intercity services in meeting the mobility needs of residents and visitors, particularly in linking suburban and rural areas with urban centers. The extensive reach of intercity services connects the NCR to numerous cities across the East Coast and beyond. The data reveals a strong usage of intercity buses among lower-income and minority groups, highlighting the importance of maintaining and expanding affordable bus services. Conversely, train travel is favored by higher-income groups and frequent travelers. Integrating big data sources with traditional methodologies provides valuable insights into ridership trends, service availability, and traveler demographics, laying the groundwork for informed policy decisions and enhanced regional mobility. Improving first- and last-mile connectivity through better local transit options and multimodal transportation solutions is essential for seamless travel experiences. Enhancing pedestrian, cycling, and public transit access to intercity bus and rail stations could improve overall transportation efficiency and user satisfaction.

The recommendations include prioritizing investments in intercity bus and rail services, enhancing multimodal connectivity, and addressing the specific needs of diverse demographic groups. By implementing these recommendations, the NCR can achieve a more equitable, efficient, and sustainable transportation network that meets the evolving needs of its population. This report provides a robust foundation for future planning and policy-making efforts aimed at improving intercity travel in the NCR. Continued collaboration among regional transportation agencies, local governments, and community stakeholders will be essential in realizing the vision of a well-connected and accessible transportation system for all.

APPENDIX A: TABLES AND FIGURES

Table 4: Intercity Service Providers

Intercity Service Provider	Mode	Major Destinations
Amtrak	Intercity Rail	New York, NY; Boston, MA; Chicago, IL; Roanoke, VA; Newport News, VA; Norfolk, VA; Richmond, VA; Charlotte, NC; Miami, FL; Savannah, GA; New Orleans, LA; Lorton, VA; Sanford, FL; Washington, DC; Springfield, VA; St Alban, VT
BayRunner	Intercity Shuttle	Frederick, MD; Grantsville, MD; BWI Airport, MD
BestBus	Intercity Bus	New York, NY; Washington, DC; Dewey Beach, DE; Manassas, VA; Springfield, VA
FlixBus	Intercity Bus	Richmond, VA; Bethesda, MD; New York, NY; Washington, DC; Rosslyn, VA; Ithaca, NY; Boston, MA; Newark, NJ; Atlanta, GA; Orlando, FL; Virginia Beach, VA
Go Buses	Intercity Bus	New York, NY; Manassas, VA
Greyhound	Intercity Bus	Washington, DC; New York, NY; Chicago, IL; Atlantic City, NJ; Atlanta, GA; Raleigh, NC; Richmond, VA; Pittsburgh, PA
Megabus*	Intercity Bus	New York, NY; Washington, DC; Pittsburgh, PA; Atlanta, GA
OurBus	Intercity Bus	Dewey Beach, DE; Washington, DC; New York, NY; Springfield, VA; Blacksburg, VA; Trenton, NJ; Harrisonburg, VA; Vienna, VA
Peter Pan	Intercity Bus	Washington, DC; Silver Spring, MD; Baltimore, MD; New York, NY; Philadelphia, PA
The Jet	Intercity Bus	New York, NY; Washington, DC
Vamoose	Intercity Bus	New York, NY; Lorton, VA
Virginia Breeze	Intercity Bus	Washington, DC; Danville, VA; Blacksburg, VA; Martinsville, VA; Bristol, VA
Wanda Coach/Starline Coach	Intercity Bus	New York, NY; Virginia Beach, VA; Washington, DC; Atlanta, GA; Fayetteville, NC; Tampa, FL
Washington Deluxe/Tripper Bus	Intercity Bus	New York, NY; Washington, DC

*After this inventory was developed, Megabus services between DC and Richmond, Charlotte, Durham, Atlanta, and New York were cut.

Table 5: Weekly Trips by Stop by Service Providers – Intercity Service (Spring 2024)

Stop Name	Provider	Weekly Count by Provider	Weekly Count by Station
Union Station	Amtrak	538	1,734
	BestBus	54	
	FlixBus	372	
	Greyhound	252	
	Megabus	266	
	OurBus	54	
	Peter Pan	142	
	Virginia Breeze	56	
New Carrollton	Amtrak	269	297
	Greyhound	28	
Alexandria Amtrak	Amtrak	186	186
New York Avenue (NoMa Metro Station)	Wanda Coach	133	133
Dupont Circle	BestBus	46	120
	FlixBus	14	
	OurBus	47	
	Washington Deluxe	3	
	Washington Deluxe/ Tripper Bus	10	
Vienna Metro Station	BestBus	46	125
	Go Buses	33	
	OurBus	46	
Bethesda	FlixBus	16	106
	Vamoose	50	
	Washington Deluxe	4	
	Washington Deluxe/ Tripper Bus	36	
Silver Spring Transit Center	Greyhound	56	99
	Peter Pan	43	
Rosslyn	FlixBus	14	91
	Vamoose	50	
	Washington Deluxe	1	
	Washington Deluxe/ Tripper Bus	26	
Quantico Amtrak	Amtrak	86	86
Springfield Metro Station	BestBus	23	60
	Greyhound	14	
	OurBus	23	
Woodbridge	Amtrak	43	57

Stop Name	Provider	Weekly Count by Provider	Weekly Count by Station
	Greyhound	14	
Frederick Airport	BayRunner	52	52
Frederick Transit Center	BayRunner	52	52
Lorton VRE	Vamoose	50	50
Manassas Amtrak	Amtrak	48	48
Gainesville	Go Buses	32	46
	Virginia Breeze	14	
Manassas Bus Stop	BestBus	46	46
IAD (Dulles Airport)	Virginia Breeze	42	42
Stadium-Armory Metro Station	OurBus	33	33
Tysons Corner Metro Station	Go Buses	33	33
West Falls Church Metro Station	Virginia Breeze	28	28
Metro Center	The Jet	24	24
Tysons McLean Metro Station	OurBus	16	16
Benning Road Metro Station	Wanda Coach	14	14
Burke Amtrak	Amtrak	14	14
College Park	Greyhound	14	14
Laurel	Greyhound	14	14
Lorton Amtrak	Amtrak	14	14
Prospect Plaza (Frederick)	Greyhound	14	14
Rockville Amtrak	Amtrak	14	14

Table 6: Daily Trips by Day of Week by Stop – Intercity Stops (Spring 2024)

Stop Name	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Weekly Total
Union Station	280	252	217	218	235	278	254	1,734
New Carrollton	44	43	43	43	43	43	38	297
Alexandria Amtrak	26	26	27	27	27	27	26	186
New York Avenue (NoMa Metro Station)	19	19	18	18	19	20	20	133
Vienna	28	17	12	12	16	23	17	125
Dupont Circle	28	14	10	10	13	25	20	120
Bethesda	24	14	9	10	14	19	16	106
Silver Spring Transit Center	14	14	14	14	14	14	15	99
Rosslyn	19	13	10	11	11	14	13	91
Quantico Amtrak	13	12	12	12	12	12	13	86
Springfield Metro	16	6	6	6	6	14	6	60
Woodbridge	9	8	8	8	8	8	8	57

Stop Name	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Weekly Total
Frederick Airport	8	8	8	8	8	8	4	52
Frederick Transit Center	8	8	8	8	8	8	4	52
Lorton VRE	11	5	6	6	6	8	8	50
Manassas Amtrak	7	6	7	7	7	7	7	48
Gainesville	10	6	6	6	6	6	6	46
Manassas Bus Stop	9	7	4	4	6	9	7	46
Dulles - IAD	6	6	6	6	6	6	6	42
Stadium-Armory Metro	11	5	-	-	5	8	4	33
Tysons Corner Metro	9	4	4	4	4	4	4	33
West Falls Church	4	4	4	4	4	4	4	28
Metro Center	4	4	-	4	4	4	4	24
Tysons McLean Metro	5	3	-	-	3	3	2	16
Benning Road	2	2	2	2	2	2	2	14
Burke Amtrak	2	2	2	2	2	2	2	14
College Park	2	2	2	2	2	2	2	14
Laurel	2	2	2	2	2	2	2	14
Lorton Amtrak	2	2	2	2	2	2	2	14
Prospect Plaza	2	2	2	2	2	2	2	14
Rockville Amtrak	2	2	2	2	2	2	2	14
Total	626	518	453	460	499	586	520	3,662

Table 7: Daily Bus and Rail Trip Counts for Top 10 Intercity Services

Stop Name	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Weekly Total
Union Station	280	252	217	218	235	278	254	1,734
New Carrollton	44	43	43	43	43	43	38	297
Alexandria Amtrak	26	26	27	27	27	27	26	186
New York Avenue (NoMa)	19	19	18	18	19	20	20	133
Vienna	28	17	12	12	16	23	17	125
Dupont Circle	28	14	10	10	13	25	20	120
Bethesda	24	14	9	10	14	19	16	106
Silver Spring Transit Center	14	14	14	14	14	14	15	99
Rosslyn	19	13	10	11	11	14	13	91
Quantico Amtrak	13	12	12	12	12	12	13	86

Table 8: Top 10 Origin/Destination Pairs by Mode (Spring 2024)

Rank	Amtrak Origin and Destination Pairs	Amtrak Count of Average Daily Trips	Bus Origin and Destination Pairs	Bus Count of Average Daily Trips	Rail and BUs Origin and Destinations Pairs	Rail and Bus Count of Average Trips
1	TPB-New York	34	TPB-New York	229	TPB-New York	263
2	Boston-TPB	30	Atlanta-TPB	27	Boston-TPB	34
3	TPB-Norfolk	6	TPB-Richmond	9	Atlanta-TPB	27
4	TPB-Newport News	4	Blacksburg, VA-TPB	9	TPB-Richmond	11
5	TPB-Miami	3	TPB-Philadelphia	6	Blacksburg, VA-TPB	9
6	Chicago-TPB	3	Bristol, VA-TPB	6	Chicago-TPB	7
7	TPB-Roanoke	2	TPB-Danville	6	TPB-Norfolk	6
8	TPB-Richmond	2	TPB-Delaware	5	TPB-Philadelphia	6
9	Charlotte-TPB	2	Boston-TPB	4	Bristol, VA-TPB	6
10	TPB-Sanford	2	Chicago-TPB	4	TPB-Danville	6

Table 9: Commuter Service Providers

Commuter Transit Provider	Mode	Major Locations Served
MTA Commuter Bus	Commuter Bus	Anne Arundel, Calvert, District of Columbia, St. Mary's, Charles, Prince George's, Howard, Montgomery, Washington, Frederick, Queen Anne's, Baltimore
MTA MARC	Commuter Rail	District of Columbia, Cecil, Harford, Baltimore, Anne Arundel, Prince George's, Howard
OmniRide	Commuter Bus	District of Columbia, Arlington, Stafford, Spotsylvania
Virginia Rail Express	Commuter Rail	Alexandria, Stafford, Arlington, Fairfax, Fredericksburg, District of Columbia, Prince William, Spotsylvania

Table 10: Weekly Trips by Intercity Stop by Service Providers – Commuter Service (Spring 2024)

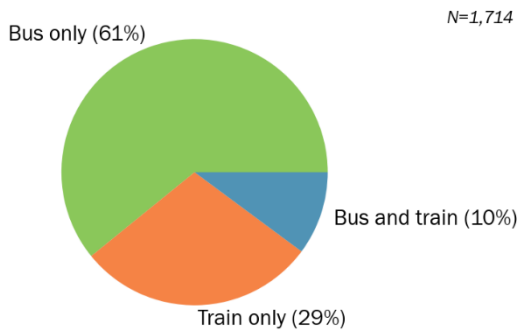
Intercity Stop Name	Commuter Service Provider	Weekly Count by Provider/Station	Weekly Count by Station
Union Station	MARC	440	1,040
	MTA Commuter Bus	520	
	VRE	80	
Metro Center	MTA Commuter Bus	955	1,060
	OmniRide	105	
New Carrollton	MARC	285	285
Silver Spring Transit Center	MARC	30	255
	MTA Commuter Bus	225	
Dupont Circle	MTA Commuter Bus	185	185
College Park	MARC	100	100
Alexandria Amtrak	VRE	80	80
Woodbridge	VRE	80	80
Lorton VRE	VRE	75	75
Quantico Amtrak	VRE	75	75
Springfield Metro	VRE	75	75

Rosslyn	OmniRide	50	50
Rockville Amtrak	MARC	30	30

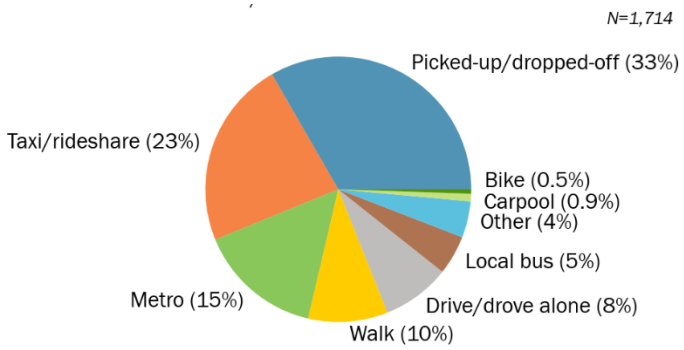
Table 11: Daily Trips by Day of Week by Intercity Stop – Commuter Service (Spring 2024)

Stop Name	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Weekly Total
Alexandria Amtrak	0	16	16	16	16	16	0	80
College Park	0	20	20	20	20	20	0	100
Dupont Circle	0	37	37	37	37	37	0	185
Lorton VRE	0	15	15	15	15	15	0	75
Metro Center	0	212	212	212	212	212	0	1,060
New Carrollton	12	51	51	51	51	51	18	285
Quantico Amtrak	0	15	15	15	15	15	0	75
Rockville Amtrak	0	6	6	6	6	6	0	30
Rosslyn	0	10	10	10	10	10	0	50
Silver Spring Transit Center	0	51	51	51	51	51	0	255
Springfield Metro	0	15	15	15	15	15	0	75
Union Station	12	202	202	202	202	202	18	1,040
Woodbridge	0	16	16	16	16	16	0	80
Total	***24***	***666***	***666***	***666***	***666***	***666***	***36***	***3,390***

Figure 32: Pie Chart of Distribution of First- and Last-Mile Mode of Travel

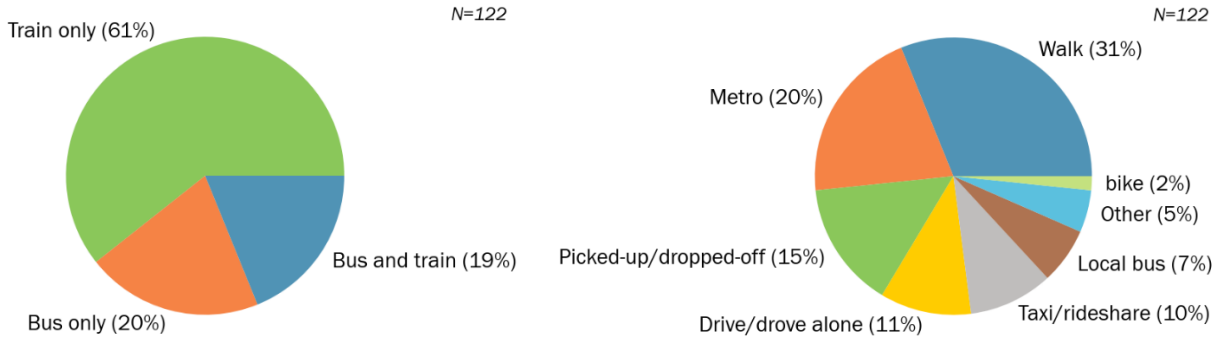


a) **Intercity Travel Mode Share**



b) **First- and Last-Mile Mode of Travel**

Figure 33: Pie Chart of Distribution of First- and Last-Mile Mode Choices Among Frequent (Daily, or Nearly Daily, and Weekly) Commuters



a) Intercity Travel Mode Share

b) First and Last-Mile Mode of Travel

APPENDIX B: TRAVEL SURVEY

Intercity Travel Survey Methods Memo

The 2024 Intercity Travel Survey, known publicly as the DC Connects Survey, is an in-person intercept survey conducted both on board intercity travel modes (bus routes and commuter rail) as well as on the ground in transit stations throughout the 22 jurisdictions comprising the TPB planning region. The purpose of the survey is to gain insight into the travel patterns of those who travel to and from the National Capital Region from external areas.

SURVEY DESIGN

The questionnaire was designed to address gaps in big data sources such as Replica, National Household Travel Survey (NHTS) origin-destination (OD), and StreetLight. Due to the disparities in trip volumes between data sets, no two data sets perfectly align to reconcile travel volumes. Moreover, no single dataset is ideal for all analyses—some data sets include rail or air, while others have catch-all travel modes that can capture intercity bus service. Each dataset carries trade-offs and will be carefully evaluated for suitability for travel analysis.

The project team found trip volume aggregated weekly or monthly, depending on the data source, to be the only reliable data element from the big data sources. NHTS OD data includes monthly or annual flows, while Replica can be aggregated by an average weekday/weekend day based on weekly tranches of data. The project team will report the ridership volume by the OD pairs if applicable. Other data elements, including trip purposes and socio-demographics, were either unavailable in the data source or inaccurate.

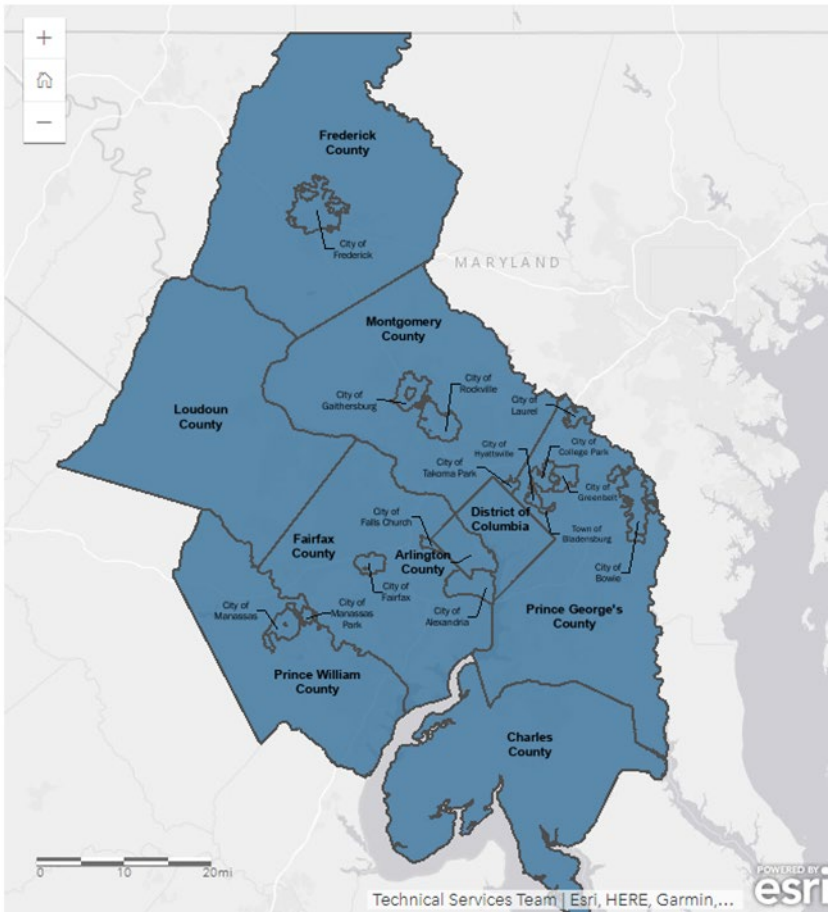
Based on these gaps identified in the data sources, the project team worked with TPB to identify and prioritize the information most critical modeling and analysis. Once the list of topics was identified, the project team's methodologists created the questionnaire. The questionnaire was programmed and approved using the project team's Voxco Web platform. The web survey was accessible by and formatted for mobile devices (smartphones, tablets, etc.) as well as computers and other compatible devices. Following programming, the project team conducted both manual and automated survey tests and quality checks. Each program was provided to TPB for review and approval prior to survey launch.

SAMPLING

The target population for this survey consisted of passengers on intercity and commuter bus and rail services traveling through the TPB planning region (see Figure 34 below), with either origin or destination outside this region. The project team collaborated with TPB to identify a frame of intercity bus and rail stations and routes. This sampling frame includes services operated by the following providers:

- Intercity bus: BayRunner, FlixBus, Greyhound, Peter Pan, and Virginia Breeze.
- Commuter bus: MTA and OmniRide.
- Commuter rail: Amtrak, Maryland Area Rail Commuter (MARC), and Virginia Railway Express (VRE).

Figure 34: TPB Planning Region



The sampling strategy employed a stratification approach.

- The primary stratification was by day of the week (7 days), followed by secondary stratification by mode of transportation (bus vs. train).
- Within each of the 14 substrata (7 days x 2 modes), 3 trips were selected, resulting in a total weekly sample size of 42 potential trips.
- This sample size allowed for the potential dropping of ineligible trips if necessary, as well as flexibility to align interviewer staffing with available shifts.
- The final sample size was dependent on the allocated data collection budget.
- Eligible trips must have traveled through the TPB planning region (comprising 22 jurisdictions) but had either origin or destination outside this region. The trips during overnight hours (12:00 A.M.-6:00 A.M.) were excluded due to practical constraints.
- The sample file listed all stops as rows for each selected trip (blocks of stops), which allowed data collectors to strategically plan their interception points.

- Based on practical considerations such as travel time, accessibility, and potential passenger volume, data collectors were allowed to make decisions about which stops were most suitable for conducting the intercept surveys within each selected trip.

Given that transportation schedules and routes changed over time, it was necessary to validate and update the information in the weekly samples. This process involved cross-checking the sample information against the most recent schedules published by each transportation provider. Special attention will be given to verifying departure times, route details, and any seasonal variations in service. In cases where discrepancies are found, we will select alternative routes.

FIELDING

Fielding for the Intercity Transit Survey was conducted over a four-week period beginning with data collector training on August 12, 2024, and with surveying commencing immediately after. Data collection ended on September 8, 2024. The fielding window was selected to reflect travel demands throughout the region including variations for holidays and time-of-year factors. The schedule for data collection staff took into account the day of the week and other factors that impact travel demand.

Data collectors were hired and trained by Ebony Marketing Systems (EMS) and were supervised by a team of EMS staff who conducted field training as well as day to day management and oversight of the field staff in coordination with the project team. This included daily scheduling; distribution of assignments; HR functions such as payroll, onboarding, and expenses; and coordination on the ground to ensure coverage of the sampled routes. Training consisted of a half-day classroom training to orient the data collection team to study materials and protocols, followed by a half day of field practice on assigned transit routes. Data collectors were assigned to sampled stations during assigned shift times based on the Sample Plan across different times of the day including most weekdays and rotating weekend days throughout the fielding period.

SURVEY ADMINISTRATION

At the conclusion of training, data collectors began survey administration. The survey was administered by data collectors intercepting passengers on station platforms.

Data collectors used a combination of two data collection modes:

1. Tablets handed out to travelers to complete the web-based survey
    a. Each data collector carried one data-enabled tablet. During the intercept, data collectors approached potential respondents, screened them for eligibility and invited them to participate, offering the tablet to the respondent with the survey loaded in a web browser.
    b. Data collectors remained in proximity to the respondent to address any questions or troubleshoot any issues encountered by the respondent, while continuing to engage with other respondents in the meantime to optimize the number of intercepts per assignment.
2. Print materials with a QR code directing travelers to the survey

a. Data collectors also carried postcard-size cards featuring a QR code, which they offered to potential respondents as a second option. Respondents used the QR code on these cards to complete the survey on their own devices immediately or at a later time.
b. Data collectors screened for eligibility, provided the QR code, and assisted the respondent in accessing the survey landing page.

All eligible respondents were given the option to be entered into a raffle for one of up to ten $100 gift codes. This drawing was held in October 2024.

QUESTIONNAIRE

The survey instrument was programmed in English and took approximately five minutes to complete, with limited branching logic to reduce respondent burden. Survey topics included:

- Traveler origins and destinations (with place type and street address if available; other location information such as neighborhood, cross streets, or landmarks if not).
- Traveler trip purpose (e.g., business or personal).
- Traveler modes of access.
- Traveler length of stay in the region.
- Frequency of travel to the region and on this route/mode of transit.
- Traveler demographics.

A copy of the questionnaire is available in the subsequent subsection of Appendix B, titled 2024 Intercity Travel Survey Questionnaire.

The project team coordinated with transit operators and station management in 12 stations throughout the DC metropolitan area to obtain permission to conduct survey operations on transit station property. Survey operations were primarily conducted at Union Station in both the train terminal and bus depot, with a team assigned for a shift most days of the week. Smaller stations were sampled throughout the week for representativeness. This coordination included obtaining permission for data collection staff to be present in various station locations and notifying transit agencies of data collection operations.

LIMITATIONS

The original survey design assumed data collectors would ride on board selected routes to interview passengers en route. The onboard approach offered the advantage of additional time for data collectors to interface with respondents, while also providing broad coverage of the metropolitan Washington area. Transit agencies broadly were willing to cooperate with survey operations by allowing data collection staff into public areas, however, operators proved reluctant to grant access for data collectors to board vehicles. Operators with leased bus slips in Union Station agreed collectively that they would allow operations in leased spaces provided the survey team agreed not to board vehicles. Although the intercept design yielded satisfactory results, data collection staff noted that passengers alighting into the region were more challenging to intercept as they were often more focused on continuing to their destination, versus passengers waiting at a station for a departing route who had more time to engage with data collection staff. This limitation could be

addressed with onboard ridership as data collection staff could be assigned to routes arriving into the region, however, this would require a high level of cooperation from transit operators and significant investment in relationship building with relevant stakeholders early in the design process.

2024 Intercity Travel Survey Questionnaire

PROGRAMMING

- Display one question per screen with vertical response options, unless otherwise noted.
- Do not display headings.
- Questions can be skipped unless otherwise noted. One warning message appears in red after a question has been skipped:
    - "Please try to answer each question so people like you are represented in the survey."
- Message that appears for a Forced/hard validation question:
    - "You skipped this question, and the information is very important for our research. Please provide a response."
- Already completed:
    - Thank you for your interest in the survey. Our records indicate that you already completed the survey. Thank you for your participation. If you believe this is an error, please contact us at support@dcconnects.com
- Suspend text:
    - Your responses have been saved. When you are ready to continue the survey, please return to the link provided in the message you received. You will then be taken to the point where you stopped. You may now exit this page.
- Survey closed:
    - Thank you for visiting the DC Connects Survey. The survey is now closed. If you have questions, please email the help desk at support@dcconnects.com
- Set the survey time-out time to 30 minutes.

CONSENT

[ASK ALL]
[REQUIRED]

Consent

You are invited to participate in the 2024 DC Connects Survey. Your responses to this survey will help improve travel options in and around the DC Metropolitan Area.

Your participation in this survey is completely voluntary and it will take about 5 minutes of your time. As a thank you for fully completing the survey, you may choose to enter a raffle to win one of up to ten $100 gift Amazon cards. All responses will be compiled together and analyzed as a group to protect your confidentiality. Click here for the terms and conditions for the raffle.

This survey is being conducted by the Metropolitan Washington Council of Governments.

Title VI Nondiscrimination Policy

The Metropolitan Washington Council of Governments (COG) operates its programs without regard to race, color, and national origin and fully complies with Title VI of the Civil Rights Act of 1964 and related statutes and regulations prohibiting discrimination in all programs and activities. For more information, to file a Title VI related complaint, or to obtain information in another language, visit www.mwcog.org/nondiscrimination or call (202) 962-3300.

El Consejo de Gobiernos del Área Metropolitana de Washington (COG) opera sus programas sin tener en cuenta la raza, el color, y el origen nacional y cumple con el Título VI de la Ley de Derechos Civiles de 1964 y los estatutos y reglamentos relacionados que prohíben la discriminación en todos los programas y actividades. Para más información, presentar una queja relacionada con el Título VI, u obtener información en otro idioma, visite www.mwcog.org/nondiscrimination o llame al (202) 962-3300.

For questions regarding this survey, please contact our help desk at support@DCConnectsSurvey.com

If you consent to participate, select, "yes, I consent" below.

01. Yes, I consent.
02. No

[IF CONSENT=02]

TERM1. **Thank you for your response.**

[TERMINATE AS SCREENOUT]

SCREENER

[ASK ALL]
[REQUIRED]

SCREEN. **To be eligible to participate, you must be 18 years of age or older. Are you 18 years of age or older?**

01. Yes
02. No

[IF SCREEN=02]

TERM2. **Thank you for your response. You must be 18 years of age or older to participate.**

[TERMINATE AS SCREENOUT]

[ASK ALL]

SCREEN. First, we need to ask you some questions to best understand the transit trip for which you were invited to participate in this study.

What is/was the date of this trip?

[CALENDAR DATE QUESTION]

[ASK ALL]

INTRO1b. **What location are/were you in when invited to participate in this study?**

[DROP DOWN OF LOCATIONS]

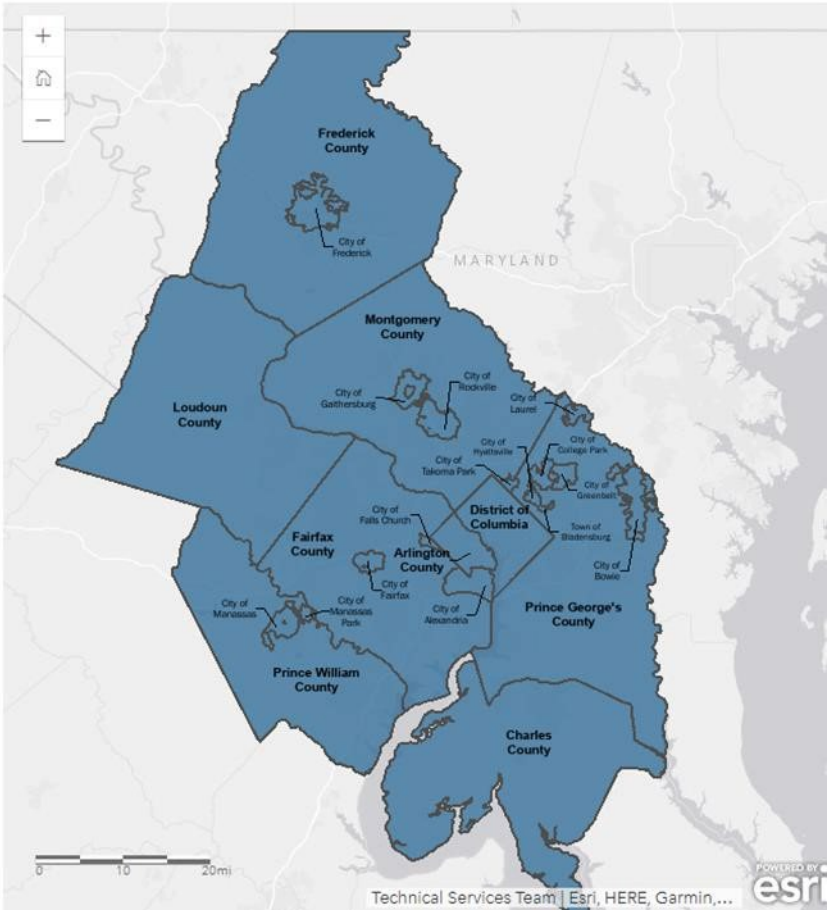
Union Station
New Carrollton
Alexandria Amtrak
New York Avenue
Vienna
Dupont Circle
Bethesda
Silver Spring Transit Center
Rosslyn
Quantico Amtrak
Franconia-Springfield
Other

[ASK ALL]

INTRO2. For the purposes of this survey, a “one-way trip” includes all travel from your original starting location to your final destination, including transfers. That is, make sure to consider all buses, trains, and other modes of transportation you are using, not just the current bus/train you are riding on. Note, this does not include the round-trip (returning) portion of your travel, if applicable.

[ASK ALL]
[REQUIRED]

Q1. Please look at the image below. We’d like you to consider the greater DC metropolitan area as including anything shaded in blue. Areas shaded in gray are outside of this region.



As shown in the image, travel that starts and ends on opposite sides of this boundary is considered **intercity** travel. *Examples often include transit such as Amtrak, Greyhound, Peter Pan, etc. Intercity travel does not include local buses and metro rides.*

From where you started to where you are going on this one-way trip, how many *intercity* buses and/or trains will you use?

01. None
02. Only one bus
03. Only one train
04. More than one bus
05. More than one train
06. A combination of buses and trains

[ASK IF Q1=01]

TERM3. Thank you for your response. You are not eligible for this study.

[TERMINATE AS SCREENOUT]

[ASK ALL]
[REQUIRED]

Q2. Including all buses/trains you just mentioned, are you currently arriving into or departing from the greater DC metropolitan area? *Remember, this region includes the blue area as shown in the image on the last screen.*

01. Arriving
02. Departing

TRIP PURPOSE

[ASK ALL]

Q3. What is the main purpose of this one-way trip? *If you are on your way home, please select the activity you are returning from.*

01. Work/business travel
02. Commuting
03. Personal/leisure travel
04. Visiting family or friends
05. School or education-related travel
07. Relocation
08. Other (Please specify) [TEXT BOX]

ARRIVING TO THE REGION

Start of This One-Way Trip

[ASK IF Q2=01]

ARR1. When you began this one-way trip, what type of place were you *coming from*?

01. Home
02. School or campus
03. Work location
04. Airport or other transit station
05. Hotel or other lodging location
06. Friend/family member home
07. Leisure location (such as a restaurant, store, or other site)
08. Other (Please Specify) [TEXT BOX]

[ASK IF Q2=01]

ARR2. What is the nearest city to the location where you *began* this one-way trip?

[USE GOOGLE API FOR CITY LOOKUP – Boston, Chicago, etc.]

End of This One-Way Trip

[ASK IF Q2=01]

ARR3. When you complete this one-way trip, what type of place are you *going to*?

01. Home
02. School or campus
03. Work location
05. Airport or other transit station
06. Hotel or other lodging location
07. Friend/family member home
08. Leisure location (such as a restaurant, store, or other site)
09. Other (Please specify) [TEXT BOX]

[ASK IF Q2=01]

ARR4. Can you provide the exact address of this place?

01. Yes
02. No

[ASK IF ARR4 = 01]

ARR5. What is the address of your *destination* location?

[USE GOOGLE API FOR STREET NUMBER, STREET NAME, CITY, STATE, ZIP]

[ASK IF ARR4=02]

ARR6. **Please provide information on where this place is located, such as the neighborhood name, nearest cross streets/intersection, city/zip code, major landmarks, or name of the location.**

[TEXT BOX]

[ASK IF Q2=01]

ARR7. **What is the name of the station where you will get off the last intercity bus or train you are using at the end of this one-way trip?**

Station name: [TEXT BOX]

[ASK IF Q2=01]
[MUL=9]

ARR8. **How will you get *from your final station* to the place you are going? Please select all that apply.**

01. Drive myself
02. Get picked up
03. Taxi or ride-share (such as Uber or Lyft)
04. Carpool
05. Metro (Please specify) [TEXT BOX]
06. Local bus (Please specify) [TEXT BOX]
07. Walk
08. Ride bike
09. Other (Please specify) [TEXT BOX]

[ASK IF Q2=01]

ARR9. **After you complete this one-way trip, for about how long do you expect to stay in the greater DC metropolitan area?**

01. Less than 3 days
02. 3 days to less than 10 days
03. 10 days or more
04. I live in DC

[ASK IF Q2=01]

ARR10. In the past 12 months, *about how often* have you traveled to the greater DC metropolitan area from another region?

01. Just this trip
02. Less than once a month
03. Monthly
04. Weekly
05. Daily, or nearly daily

[ASK IF Q2=01]

ARR11. In the past 12 months, *about how often* have you traveled on this *same route* and *mode of transit*?

01. Just this trip
02. Less than once a month
03. Monthly
04. Weekly
05. Daily, or nearly daily

DEPARTING THE REGION

Start of This One-Way Trip

[ASK IF Q2=02]

DEP1. When you began this one-way trip, what type of place were you *coming from*?

01. Home
02. School or campus
03. Work location
05. Airport or other transit station
06. Hotel or other lodging location
07. Friend/family member home
08. Leisure location (such as a restaurant, store, or other site)
09. Other (Please Specify) [TEXT BOX]

[ASK IF Q2=02]

DEP2. Can you provide the exact address of this place?

01. Yes
02. No

[ASK IF DEP2=01]

DEP3. What is the address of your *starting* location?

[USE GOOGLE API FOR STREET NUMBER, STREET NAME, CITY, STATE, ZIP]

[ASK IF DEP2=02]

DEP4. Please provide information on where this place is located, such as the neighborhood name, nearest cross streets/intersection, city/zip code, major landmarks, or name of the location.

[TEXT BOX]

[ASK IF Q2=02]

DEP5. What is the name of the station where you got on the *first* intercity bus or train you used *at the start* of this one-way trip?

Station name:
[TEXT BOX]

[ASK IF Q2=02]
[MUL=9]

DEP6. How did you get from the place you are coming from *to your starting station*? Please select all that apply.

01. Drove myself
02. Got dropped off
03. Taxi or ride-share (such as Uber or Lyft)
04. Carpooled
05. Walked
06. Metro (Please specify) [TEXT BOX]
07. Local bus (Please specify) [TEXT BOX]
08. Rode bike
09. Other (Please specify) [TEXT BOX]

End of this One-Way Trip

[ASK IF Q2=02]

DEP7. When you complete this one-way trip, what type of place are you *going to*?

01. Home
02. School or campus
03. Work location
05. Airport or other transit station
06. Hotel or other lodging location
07. Friend/family member home
08. Leisure location (such as a restaurant, store, or other site)
09. Other (Please Specify) [TEXT BOX]

[ASK IF Q2=02]

DEP8. What is the nearest city to the location where you will *end* this one-way trip?

[USE GOOGLE API FOR CITY LOOKUP – Boston, Chicago, etc.]

[ASK IF Q2=02]

DEP9. Before you began this one-way trip, for about how long were you in the greater DC metropolitan area?

01. Less than 3 days
02. 3 days to less than 10 days
03. 10 days or more
04. I live in DC

[ASK IF Q2=02]

DEP10. In the past 12 months, *about how often* have you traveled *from* the greater DC metropolitan area to another region?

01. Just this trip
02. Less than once a month
03. Monthly
04. Weekly
05. Daily, or nearly daily

[ASK IF Q2=02]

DEP11. In the past 12 months, *about how often* have you traveled on this *same route* and *mode of transit*?

01. Just this trip
02. Less than once a month
03. Monthly
04. Weekly
05. Daily, or nearly daily

DEMOGRAPHICS

[ASK ALL]

INTRO3. **Before we wrap up the survey, we have a few additional background questions about you.**

[ASK ALL]

AGE. **How old are you?**

RANGE 18-100 [NUMBER BOX] years old
999. Prefer not to respond

[ASK ALL]
[MUL=8]

GENDER. **How do you describe your gender?** ***Please select all that apply.***

01. Female
02. Male
03. Transgender, non-binary, or another gender
04. Prefer not to respond [EXCLUSIVE]

[ASK ALL]
[MUL=8]

RACEETH. **What is your race and/or ethnicity?** ***Please select all that apply.***

01. American Indian or Alaska Native
02. Asian
03. Black or African American
04. Hispanic or Latino
05. Middle Eastern or North African
06. Native Hawaiian or Pacific Islander
07. White
08. Other (Please specify) [TEXT BOX]
09. Prefer not to respond [EXCLUSIVE]

[ASK ALL]

EMPLOY. **What is your current employment status?**

01. Working as a paid employee, full-time
02. Working as a paid employee, part-time
03. Not working and looking for work
04. Not working, retired
05. Not working due to disability
06. Not working, homemaker
07. Not working for any other reason

08. Prefer not to respond

[ASK ALL]

INCOME. **Which of the following categories best describes your total household income before taxes in 2023? Your best estimate is fine.**

01. Less than $25,000
02. $25,000 to $49,999
03. $50,000 to $74,999
04. $75,000 to $99,999
05. $100,000 to $149,999
06. $150,000 to $199,999
07. $200,000 or more
08. Prefer not to respond

[ASK ALL]

PEOP. **Including yourself, how many total people live in your household? Please include both adults and children.**

RANGE 1-50 [NUMBER BOX] People
99. Prefer not to respond

[ASK ALL]
[MUL=12]

LANG. **What languages are spoken in your household?** ***Please select all that apply.***

01. English
02. Spanish
03. Chinese
04. Korean
05. Vietnamese
06. Ethiopian
07. French
08. Filipino/Tagalog
09. Arabic
10. Kru
11. Persian/Iranian/Farsi
12. Other (Please specify) [TEXT BOX]
13. Prefer not to respond [EXCLUSIVE]

RAFFLE

[ASK ALL]
[REQUIRED]

RAFFLE. **Do you wish to provide contact information to be included in the raffle for the ten $100 gift cards?**

01. Yes
02. No

[DISPLAY NAME, EMAIL, AND PHONE ON SAME SCREEN]

[ASK IF RAFFLE =01]
[REQUIRED]

NAME. **If you wish to be entered into the raffle drawing, please provide contact information below:**

First and Last Name

[TEXT BOX]

[ASK IF RAFFLE =01]
[REQUIRED]

EMAIL. **Email**

[EMAIL BOX; validate to confirm an email address is entered]

[ASK IF RAFFLE =01]
[REQUIRED]

PHONE. **Phone** (10-digit US numbers only, no dashes or spaces)

[TEXT BOX]

[VALIDATE TO CONFIRM A PHONE NUMBER IS ENTERED]

SURVEY END

[ASK ALL]

END. Thank you for your participation in the 2024 DC Connects Survey. If you have any questions or feedback please reach out to our help desk at support@DCConnects.com. We appreciate your participation! Safe Travels!

TERMINATION

Thank you for your participation. Your response has been submitted.