2023

LYNX Origin-Destination Study

Summary Report

LYNX®

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Contents

1 Background and Purpose

In the Fall of 2022, the Central Florida Regional Transportation Authority (LYNX) conducted an origin and destination (O-D) survey on fixed-route local bus (Link); FastLink limited-stop bus service; Disney Direct bus service, NeighborLink flex service; LYMMO downtown circulator; and SunRail commuter rail. The interviewer administered intercept survey, conducted on tablet computers, asked riders questions specific to their trip that day, as well as additional sociodemographic questions. In total, 7,528 records were completed and weighted to the route surveyed. Of those, 6,521 were identified as having valid beginning to end trip chains.

Large-scale O-D surveys such as this one provide LYNX with information that is not readily available through any other source. The data includes information on current riders' travel patterns, including where they board and alight, access and egress mode, number of transfers, transfer mode, and fare payment. Survey data will also help LYNX ensure that existing services and future service changes do not negatively impact rider populations protected under Title VI of the Civil Rights Act of 1964.

This document summarizes the results of the survey. It includes the following sections:

- **Methodology**, including details on the survey development, pilot test, data collection, data processing, and data limitations.

- Summary of Findings, including information on trip demographics, origin and destination characteristics, travel patterns, access and egress mode, transfer characteristics, and fare usage.
- **Lessons Learned**, provides a high-level summary of the main findings from the report and methodological lessons for future O-D studies.
- **Appendix 1: Rider Profiles,** Profiles for various market segments of riders.
- **Appendix 2: Route Profiles**, Summary statistics for all routes that meet minimum sample size targets.
- **Appendix 3: Survey Instrument**, Copy of survey instruments provided to riders.

2 Methodology

The interviewer administered questionnaire was developed by LYNX staff and the study team. It contained 59 questions, including route-specific questions, and took approximately 10 minutes to administer. The survey was administered in both English and Spanish. The full questionnaire is included in Appendix 3: Survey Instrument of this report. The key topic areas covered in this questionnaire include:

- Route name, number, trip ID/direction, and time of day (automatically recorded based on GTFS database)
- Origin and destination locations, types, and addresses (location and type)
- Trip chain characteristics, including number of transfers made, roues taken and modes used
- Other trip characteristics, including mode of access/egress and type of fare used
- Demographics regarding age, gender identity, income, employment, transit dependency, etc.

For those taking short trips or who felt uncomfortable being interviewed, the study team printed a total of 22,500 paper surveys, with 20,000 English surveys and 2,500 Spanish surveys. In addition, the survey instrument included a web address and QR code for accessing an online version of the English and Spanish surveys. The online version was accessible via smartphone, tablet, or computer. To use the online version of the survey, respondents were required to enter the unique ID number from their paper survey to prevent them from sharing the link and/or completing the survey multiple times for the same trip. This unique ID number was then used to identify the trip where they received that survey.

The survey was programmed so as not to allow invalid routes, range responses or, where applicable, illogical responses. The tablet-based interviewer-administered, and online surveys made use of an online mapping feature to collect address information. This allowed the study team to collect more precise geocoding rather than relying on riders' ability to accurately provide addresses or intersections. In addition, the programmed survey included a drop-down list of all stops by route as well as a map that could be used to confirm addresses.

2.1 Sampling Plan

The study team aimed to collect a sampling of at least 10 percent of trips from an average weekday, Saturday, and Sunday. Through this sampling plan, the study team was able to generate a statistically valid sampling of the following:

- Overall System
- By Weekday, Saturday, and Sunday
- Route
- Time period (Early Morning/AM Peak, Midday, PM Peak, Evening) for Weekday

Using ridership and schedule data provided by LYNX staff, the study team assembled trip-by-trip schedules. To develop a list of possible survey trips, the study team examined trip patterns to eliminate unrepresentative trips based on ridership and trips that deviate from usual patterns. The following attributes were considered when selecting trips:

- Trips that provided a mix of travel times throughout the day.
- Trips that were from the same block to eliminate the need for field staff to switch between vehicles, reducing the likelihood of missed trips.
- Trips that would generate the largest number of completed surveys.

The survey team collected a total of 7,528 surveys systemwide, providing data with an overall margin of error of ±1.1 percentage points at the 95 percent confidence level. Note that this is for the system as a whole, and individual routes, time periods, and demographic segments may have higher margins of error based on the number of completed surveys.

2.2 Survey Methodology

Data collection occurred during a fall and spring fielding period. The fall fielding period ran from November 2nd to December 14th, 2022, while the spring fielding period ran from January 9th to March 19th, 2023. Survey distribution was conducted by professional research interviewers from WBA Research. One interviewer was assigned to each sampled bus and two interviewers to each sampled SunRail train. For NeighborLink, one interviewer was assigned to a small sampling of NeighborLink trips, while two interviewers were stationed at marked NeighborLink pickup locations to survey customers as they waited for their NeighborLink.

2.3 Data Cleaning and Quality Control

2.3.1 Trip Chain Validation

Trip validation is an important early step in the data processing procedure. Respondents to an O-D survey may, intentionally or not, provide inaccurate information about their trip; however, inaccurate information about the route(s) a respondent uses for a trip will impact both survey weighting and analysis. Validating the route(s) used by each respondent will help ensure only accurate responses are included in the survey sample.

To validate responses, all survey responses were passed through a program that suggests one or more alternative transit itineraries to serve that respondent based on their origin and destination locations. If the respondent's reported route or route trip chain matches one of the suggested itineraries, the response will remain in the survey sample, if not, the response will be flagged for further demographic analysis, and weighted based on the reported route.

For the purposes of this survey, the study team validated responses using LYNX's GTFS feed. Typically, GTFS feeds are effective for several months and reflect changes to service during the course of the week and on holidays. LYNX's GTFS feed was used in conjunction with an Open Trip

Planner server. The street network was based on the Open Street Map network as of the start of the survey period.

2.3.2 Data Cleaning & Geolocation Validation

The survey tool was designed to minimize the amount of data cleaning needed for coded and geolocational responses. For open-ended responses, a codebook was developed and all responses to open-ended questions were reviewed, cleaned, and where applicable assigned a code. As the majority of survey data was collected via a program, responses could be validated in real time. For example, a respondent could not board at a stop that was not on one of their indicated routes. In the data cleaning phase, additional edits were made. The team modified records that appeared misspelled or illogical but closely matched a logical response (i.e., address matched to incorrect addresses, such as Central Ave and N Garland Ave, Takoma Park, MD, instead of Central *Blvd* and N Garland Ave, Orlando, FL). Individual records were edited where possible to ensure they represented an actual and complete trip.

2.3.3 Survey Expansion

A data expansion factor was developed to expand the data to represent total ridership. First, the average number of passengers who traveled on each route on an average Weekday, Saturday, and Sunday from November 3rd, 2022 to March 19th, 2023 was provided by LYNX in the form of Weekday, Saturday, and Sunday average per hour by route. For Weekday, those averages were further divided into the average riders for the weekday time periods of Early Morning/AM Peak, Midday, PM Peak, and Evening. Then, the average ridership for each route, daypart (Weekday, Saturday, or Sunday), and weekday time period was divided by the number of records from that route, daypart, and time period to calculate the expansion weight. This weight represents an average Weekday, Saturday, or Sunday trip for that LYNX route. Additionally, a secondary weight was created to account for the proportion of weekdays to weekend days during the fielding period, which was 77 Weekdays, 16 Saturdays, and 16 Sundays, accounting for the removal of all federal holidays. This Combination Weight (COMB_WEIGHT) counts are representative of the fielding period, and percentages are representative of an average week of ridership.

2.4 Data Limitations

While the results of the survey provides LYNX valuable information, the data is not without its limitations. First, not all survey respondents answered all questions. As a result, response rates vary by question. The same weights were applied to all answers in a survey response, such that the weighted sums of a specific question do not necessarily equal the weighted sum of trips the survey represents. For this reason, percentage statistics are a more accurate reflection of survey results than absolute totals.

Second, the margin-of-error varies based on the specific question and the combination of attributes reported. The systemwide margin-of-error error is ±1.1 percentage points, with many systemwide statistics having a margin-of-error less than ±1.0 percentage point. At the same time, certain results have larger margins-of-error due to smaller sample sizes. Since margin of error increases as sample size decreases, this survey report does not provide statistics for any sample sizes below 50 validated responses.

Finally, despite the survey team's effort to minimize bias, there are still some likely underrepresented groups in the sample. For example, the survey team has limited ability to gather surveys from minors, so statistics for riders under 18 years of age are not representative of the rider population.

In addition, the COVID-19 pandemic may have had a lingering impact on response patterns. Following the lifting of social distancing restriction, there may have been a continuing desire to maintain distance, which may have impacted the willingness of an individual to engage with the survey staff and complete an interview.

2.5 Final Survey Totals

At the end of the survey, as shown in **Table 1** below, 37 percent of the responses were identified as qualified responses. The survey report in the following sections only processed the qualified responses.

For the intercept portion of the survey, responses were categorized into one of the following groups. The responses went to the data reporting were the combination of Qualified Intercept Responses, Qualified Partial Intercept Responses, the Total Paper Completes and Total Web Completes.

- **Qualified Intercept Responses**, or responses that completed the full survey.
- **Qualified Partial Intercept Responses**, or responses that completed up to the cut-off point for a partial complete (finishing the trip chain questions, up to Q12).
- **Unqualified Partial Intercept Responses**, or responses that did not complete up to the cut-off point for a partial complete.
- **Language Barrier Refusals**, or responses where the interviewer attempted to start an interview and was unable to complete it due to a language barrier.
- **General Refusals**, or responses where the interviewer attempted to start an interview and was refused by the respondent.
- **Total Refused Responses**, or the combined count of language barrier and general refusals.

Table 1: Response of the Survey Summary

	Response Count	Response Percentage
Qualified Intercept Responses	**7,114**	**37%**
Qualified Partial Intercept Responses	375	2%
Unqualified Partial Intercept Responses	2,741	14%
Language Barrier Refusals	2,355	12%
General Refusals	6,459	33%
Total Refused Responses	8,814	46%
Total Intercept Responses	**19,083**	**100%**
Total Paper Completes	25	
Total Web Completes	14	
Total Qualified Responses	**7,528**	

3 Summary of Findings

This section summarizes the results of the O-D survey at the systemwide and route level. All statistics, unless overwise noted, represent average unlinked weekday LYNX trips rather than unique LYNX riders since the same individual may be surveyed multiple times on different routes as part of the same linked trip. The survey collection occurred in the Fall of 2022 and Spring 2023.

To help quickly compare data across columns in each table, the highest value in each column is bolded pink. Unless otherwise specified, trip information will be presented systemwide and by the following LYNX modes:

- Link
- FastLink
- Disney Direct
- LYMMO
- NeighborLink
- SunRail

Figures by default are presented as a percentage of the sampling frame. Due to rounding, totals in a column may not exactly add up to 100 percent.

3.1 LYNX Customer Base

3.1.1 Trips by Central Florida Residents
The survey asked riders "Are you a current Central Florida resident? If so, what county are you from?" The majority of trips on LYNX (75 percent) are taken by residents of Orange County, as shown in **Table 2**. NeighborLink and SunRail are the only modes where fewer than 50 percent of trips are taken by Orange County residents.

Table 2: Home County Distribution of Trips by Central Florida Residents

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Orange	**75%**	**77%**	**64%**	**77%**	**95%**	**47%**	24%
Osceola	11%	11%	23%	7%	< 1%	21%	**25%**
Seminole	7%	6%	5%	3%	2%	20%	22%
Volusia	1%	< 1%	1%	< 1%	< 1%	2%	15%
Lake	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	0%
Polk	1%	< 1%	1%	1%	< 1%	7%	7%
Other Central Florida County	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	1%
I am Not a Central Florida Resident	5%	5%	7%	12%	3%	2%	7%

3.1.2 Home ZIP Code or Hotel ZIP Code

The survey asked riders to provide their home or local address (including ZIP code), and the resulting top 10 most common home ZIP codes are shown in **Table 3**.

Table 3 Top 10 Most Common Home ZIP Codes by Distribution of LYNX System Weekday and Weekend Trips*

	Systemwide	Link	FastLink	Disney Direct	LYMMO	SunRail
1	32801 (Downtown Orlando)	32805 (Orlando, Clear Lake)	32824 (Orlando, Boggy Creek / South Port)	32808 (Orlando, Seaboard Industrial, Pine Hills)	32801 (Downtown Orlando)	34741 (Kissimmee)
2	32805 (Orlando, Clear Lake)	32801 (Downtown Orlando)	34741 (Kissimmee)	32839 (Orlando, Park Central)	32805 (Orlando, Clear Lake)	32771 (Sanford)
3	32808 (Orlando, Seaboard Industrial, Pine Hills)	32808 (Orlando, Seaboard Industrial, Pine Hills)	32837 (Orlando, Hunter Creek)	24551 (Forest VA)	32803 (Orlando, Colonial Town Center)	34725 (Enterprise)
4	32839 (Orlando, Park Central)	32839 (Orlando, Park Central)	32809 (Orlando, Florida Mall)	34741 (Kissimmee)	32808 (Orlando, Seaboard Industrial, Pine Hills)	32824 (Orlando, Boggy Creek / South Port)
5	32809 (Orlando, Florida Mall)	32809 (Orlando, Florida Mall)	34744 (Kindred)	32835 (Orlando, Metro West)	32824 (Orlando, Boggy Creek / South Port)	32713 (Debary)
6	32811 (Orlando, Florida Center North)	32811 (Orlando, Florida Center North)	32801 (Downtown Orlando)	32811 (Orlando, Florida Center North)	32806 (Orlando, South Orange)	32789 (Winter Park)
7	34741 (Kissimmee)	34741 (Kissimmee)	34758 (Kissimmee, Poinciana)	32819 (Orlando, Florida Center)	32804 (Orlando, College Park)	34759 (Oak Hill)
8	32819 (Orlando, Florida Center)	32819 (Orlando, Florida Center)	34769 (Saint Cloud)	32806 (Orlando, South Orange)	32819 (Orlando, Florida Center)	32801 (Downtown Orlando)
9	32818 (Hiawassee, Pine Hills)	32818 (Hiawassee, Pine Hills)	32805 (Orlando, Clear Lake)	32805 (Orlando, Clear Lake)	32714 (Altamonte Spg, Forest City)	34746 (Kissimmee, Campbell
10	32804 (Orlando, College Park)	32804 (Orlando, College Park)	32832 (Orlando, Crosby Island)	32801 (Downtown Orlando)	32811 (Orlando, Florida Center North)	32750 (Longwood)

* Not enough survey entries for NeighborLink to report on individual home zip codes with statistical significance

Figure 1 through **Figure 7** present maps of the top ten most common home/lodging ZIP codes among LYNX riders by mode. Note that these locations do not necessarily represent trip origins or destinations as many trips may not include one's home as a start or end location.

Systemwide, respondents reside at the highest prevalence in Downtown Orlando area, near the theme parks, and Orlando International Airport. SunRail differs most from systemwide statistics, with a concentration of riders living or staying in Osceola and Seminole counties.

Figure 1: Top 10 Most Common Home ZIP Codes by Distribution of LYNX System Weekday and Weekend Trips – Systemwide

Figure 2: Top 10 Most Common Home ZIP Codes by Distribution of LYNX System Weekday and Weekend Trips – Link

Figure 3: Top 10 Most Common Home ZIP Codes by Distribution of LYNX System Weekday and Weekend Trips – FastLink
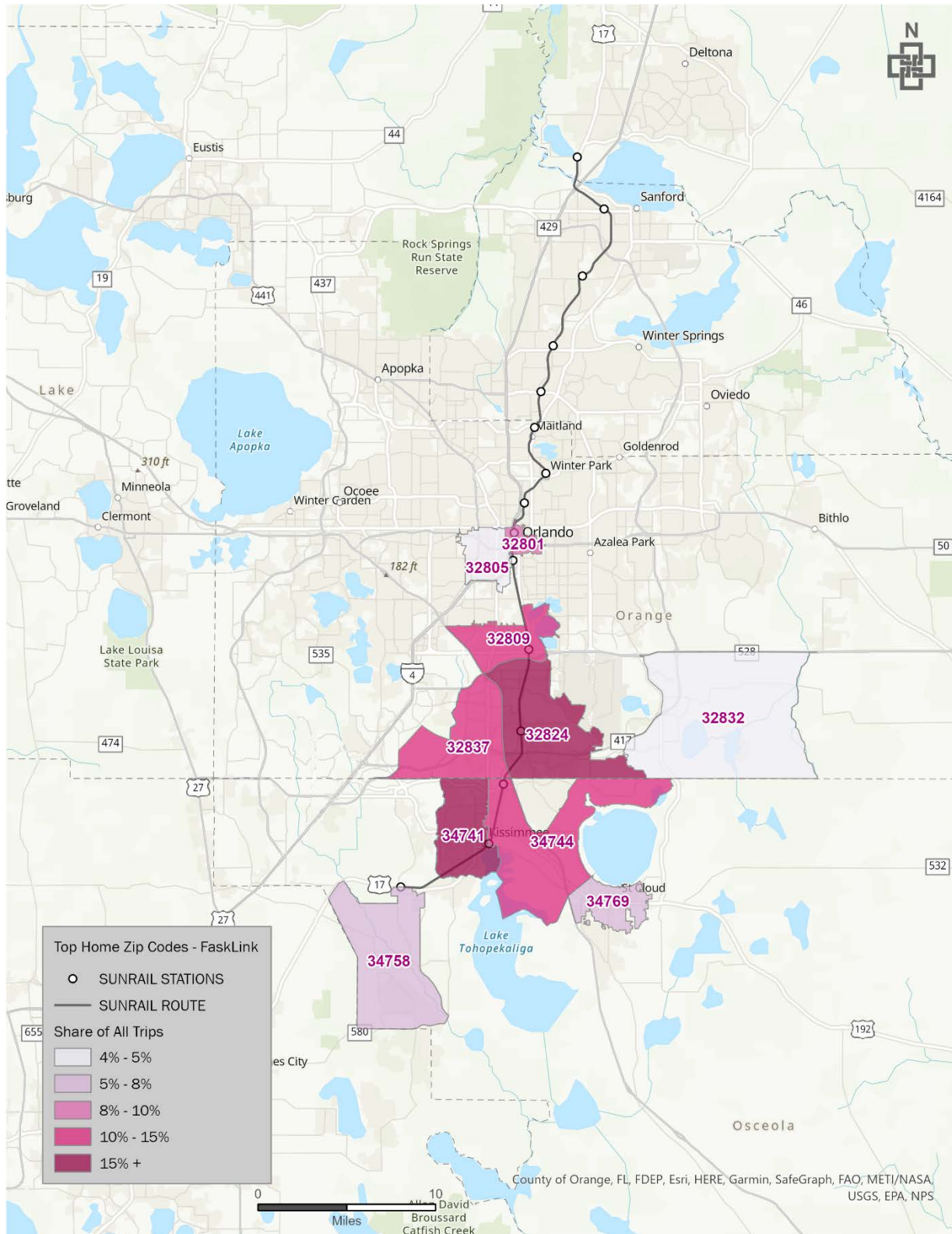
Figure 4: Top 10 Most Common Home ZIP Codes by Distribution of LYNX System Weekday and Weekend Trips – Disney Direct
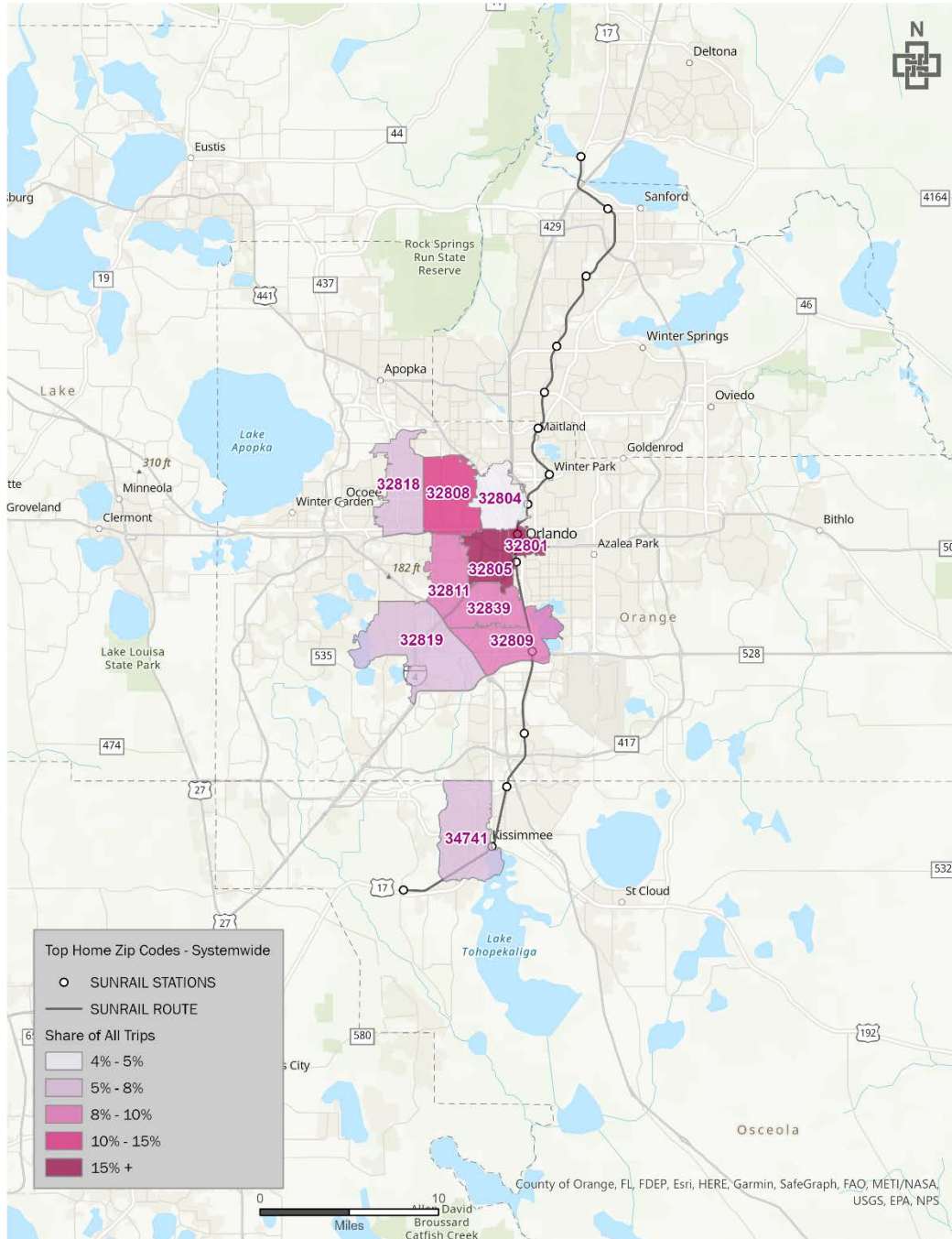
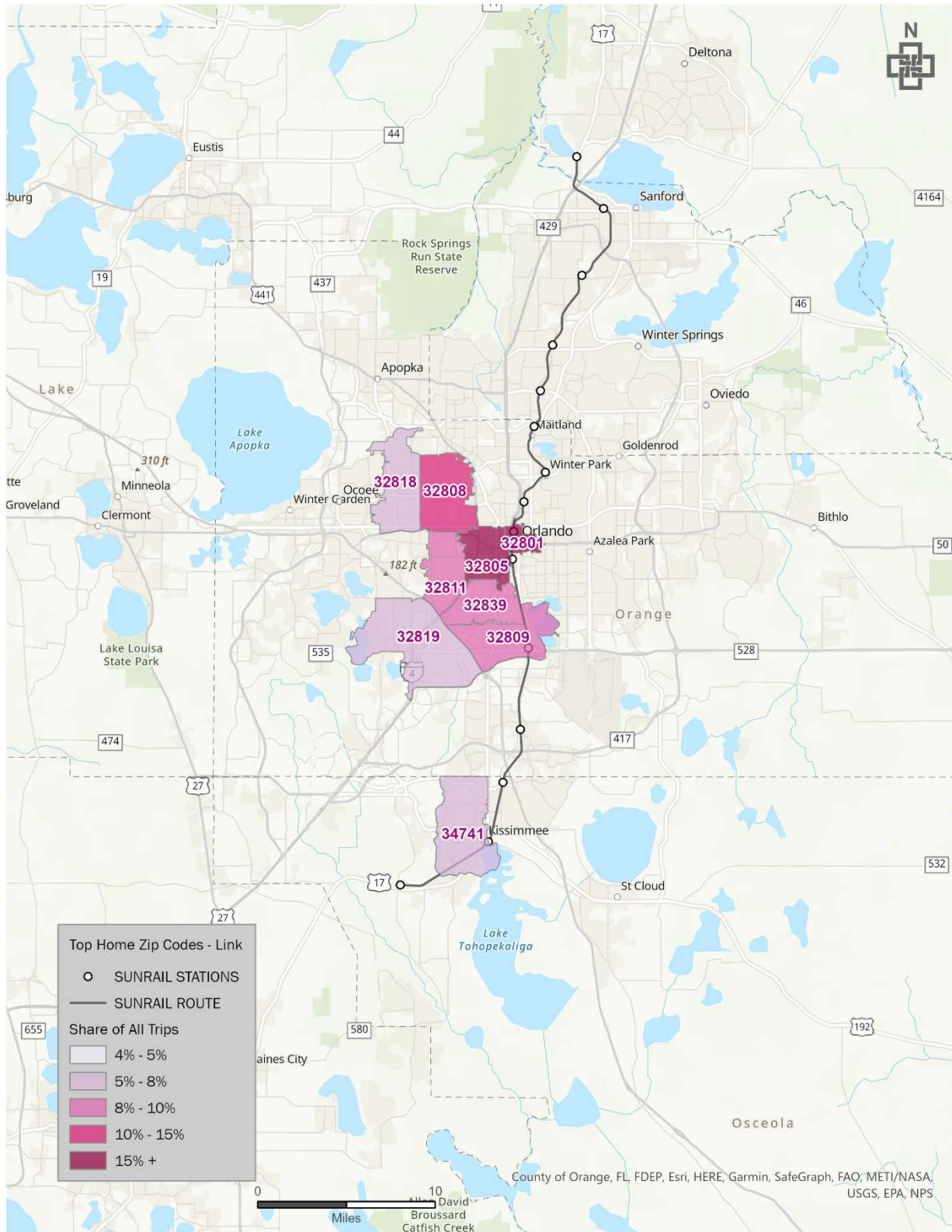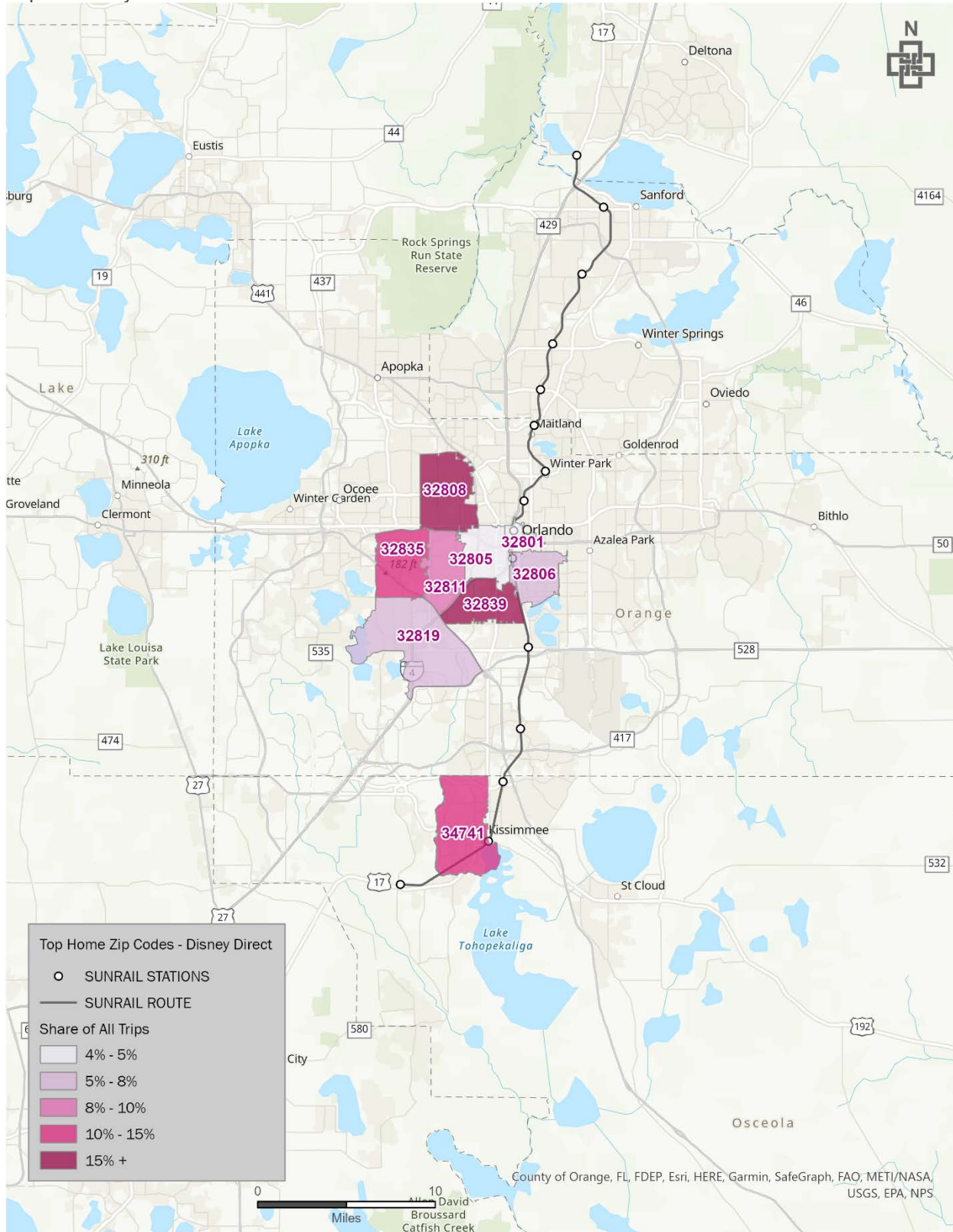Figure 5: Top 10 Most Common Home ZIP Codes by Distribution of LYNX System Weekday and Weekend Trips – LYMMO
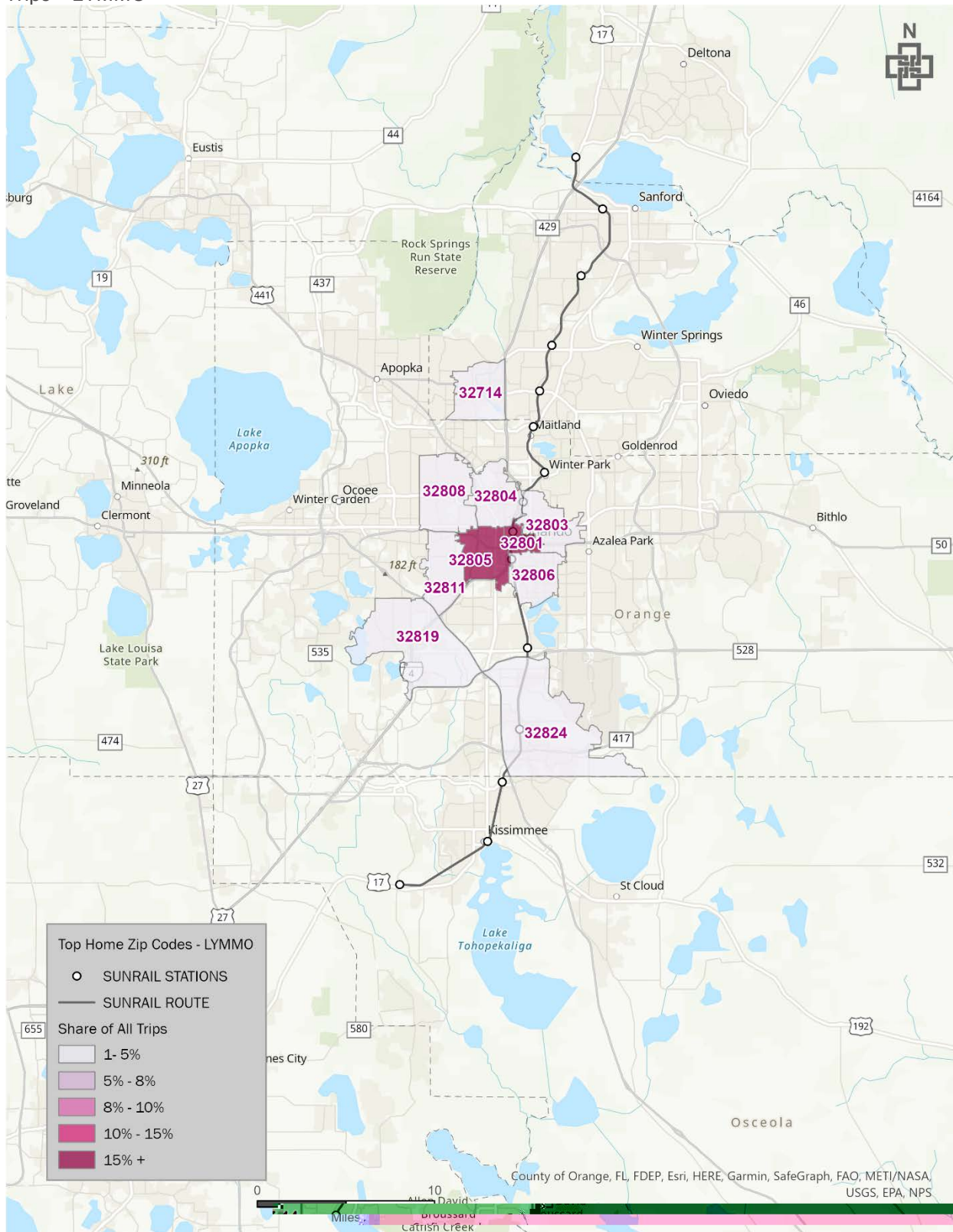
Figure 6: Top 10 Most Common Home ZIP Codes by Distribution of LYNX System Weekday and Weekend Trips – NeighborLink
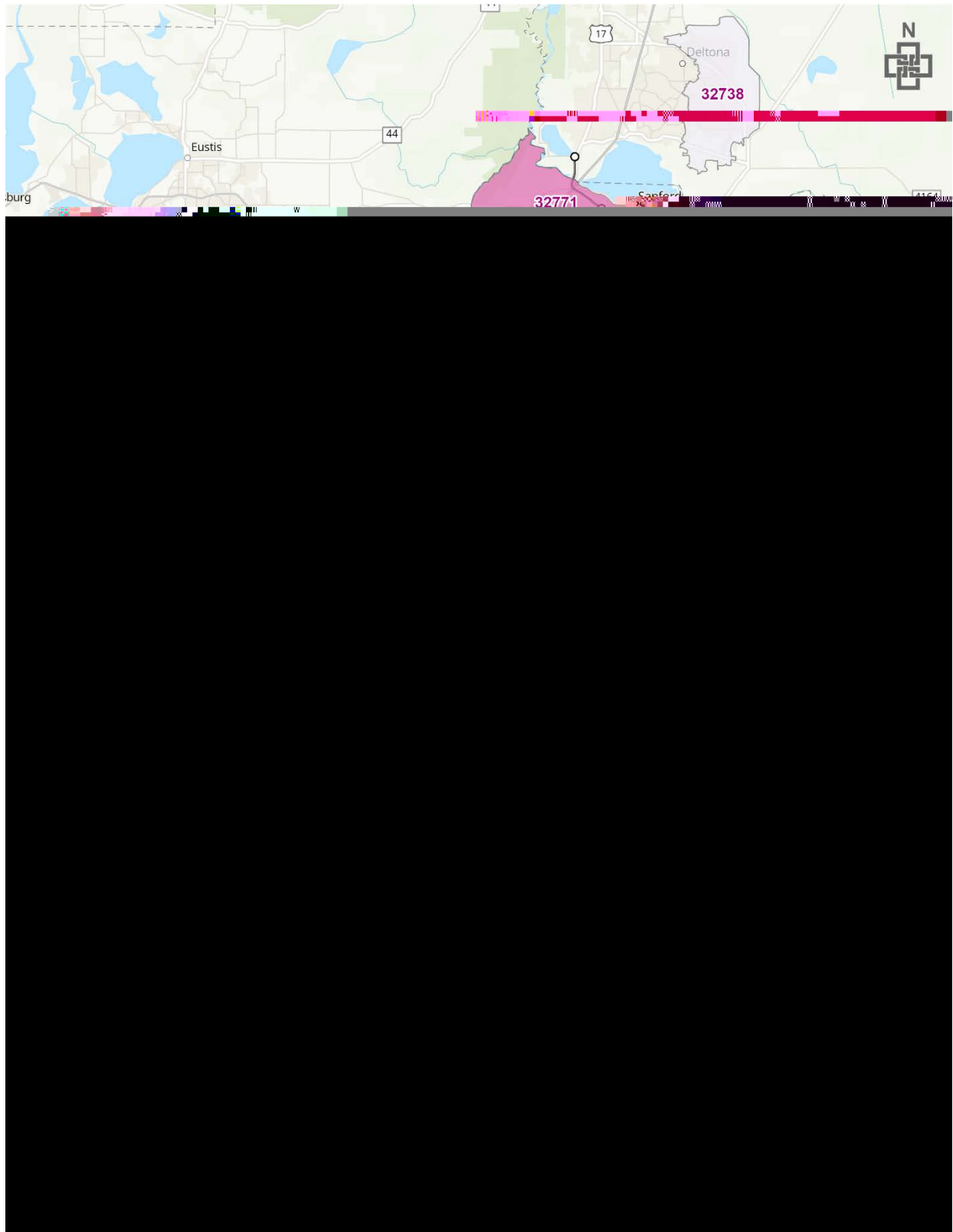
Figure 7: Top 10 Most Common Home ZIP Codes by Distribution of LYNX System Weekday and Weekend Trips – SunRail
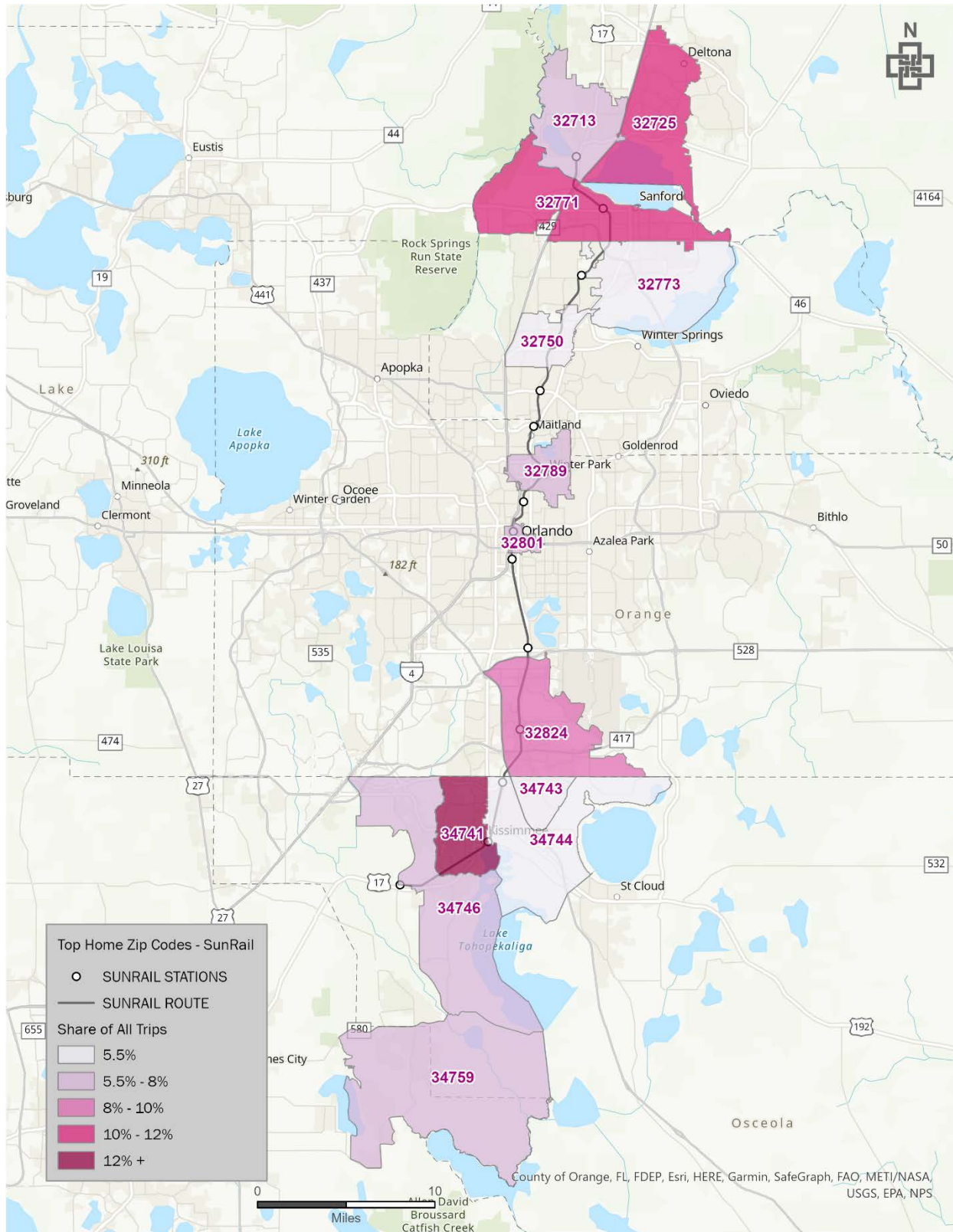
3.2 Trip Demographics

The survey asks riders to respond to a variety of demographic questions, including race and ethnicity, age, gender, household income, employment status, student status, household size, the language spoken at home, English proficiency, access to a vehicle, access to a smartphone, access to a debit/credit card, and possession of a driver's license.

The section reports demographics by trip for the entire LYNX system and individual LYNX modes. Note that some columns in this section may add up to slightly more or less than 100 percent due to rounding.

3.2.1 Race and Ethnicity

Table 4 presents distribution of trips by the self-identified race or ethnicity of LYNX riders. The data separates out Hispanic and Latino riders into its own category because the Census identifies Hispanic/Latino as a stand-alone ethnicity rather than a race.

Overall, Black/African-American riders account for the plurality of trips on the system, followed by Hispanic/Latino riders. Most of the individual modes follow the same trend, except FastLink and SunRail, where Hispanic/Latino and White riders respectively take the plurality of trips.

Table 4: Race and Ethnicity Distribution by Unlinked LYNX and SunRail Weekday and Weekend Trips*

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Asian	2%	2%	6%	5%	1%	2%	3%
Black/African-American	**42%**	**43%**	23%	**41%**	**49%**	**52%**	21%
White	20%	18%	24%	20%	31%	8%	**45%**
Hispanic/Latino	29%	29%	**36%**	28%	14%	33%	29%
Am. Indian/Alaska Native	1%	1%	3%	1%	1%	< 1%	1%
Multi-Racial	2%	2%	4%	3%	1%	3%	1%
Other	4%	5%	4%	3%	4%	2%	1%

Respondents who selected multiple responses were added to the Multi-Racial category. Other race/ethnicity include Native Hawaiian or Pacific Islander, Middle Eastern, and other self-reported races and ethnicities. To be consistent with the US Census, Hispanic/Latino respondents were categorized as Hispanic/Latino regardless of race.

3.2.2 Age

Table 5 indicates the distribution of LYNX and SunRail trips by rider age. Riders between 25 to 44 years of age are the largest age cohort among LYNX and SunRail systemwide trips. SunRail skews older – riders between 45 to 64 of age are larger than the system average. Disney Direct skews younger, with trips by riders between 19-24 more common than the systemwide average. Note that riders under 18 are likely underrepresented due to the limitations in how they can be surveyed.

Table 5: Age Distribution by LYNX and SunRail Weekday and Weekend Trips

	Systemwide	Link	FastLink	Disney Direct	LYMMO	NeighborLink	SunRail
Under 12	< 1%	< 1%	1%	< 1%	< 1%	< 1%	< 1%
13-18	4%	4%	5%	3%	1%	1%	2%
19-24	17%	18%	19%	19%	19%	14%	9%
25-44	**44%**	**44%**	**45%**	**48%**	**43%**	**47%**	**39%**
45-64	27%	27%	23%	25%	27%	20%	35%
65 Or Older	8%	7%	7%	4%	10%	18%	13%

3.2.3 Gender

Table 6 shows the breakdown of LYNX and SunRail trips by the gender of riders. Males account for a greater share of trips (55 percent systemwide) than female riders (45 percent systemwide). This difference is even more pronounced on some individual LYNX modes: on LYMMO, males account for 68 percent of trips. SunRail is the only mode where females account for the majority of riders.

Table 6: Gender Distribution by LYNX and SunRail Weekday and Weekend Trips

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Female	45%	45%	39%	48%	33%	48%	**53%**
Male	**55%**	**55%**	**60%**	**52%**	**68%**	**52%**	47%
Non-Binary / Other / Multiple Response	< 1%	< 1%	4%	< 1%	< 1%	< 1%	1%

3.2.4 Household Income

Table 7 reports the distribution of trips by household income. The average income of LYNX and SunRail riders is significantly below the region-wide average, with a median household income of $22,660. According to the US Census American Community Survey, the 2022 median annual household income of Orange County was $65,784. The low-income threshold, defined as at or lower than 80 percent of the median annual household income, was $52,627.

By comparison, thirty percent of trips on the system are by riders with a household income of less than $15,000 per year; this proportion is highest on LYMMO and NeighborLink, where 56 percent of trips are by households earning less than $15,000 a year. Ninety-three percent of trips are taken by households annually earning $50,000 or less, and this number for LYMMO and NeighborLink are 98 percent and 100 percent, respectively. SunRail riders have the highest median income among LYNX modes.

Table 7: 2022/2023 Household Income Distribution by LYNX and SunRail Weekday and Weekend Trips (Median Income Bolded)

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Less Than $15,000	30%	31%	27%	22%	48%	**56%**	8%
$15,000 To Less Than $26,500	**30%**	**32%**	**29%**	**32%**	**19%**	13%	10%
$26,500 To Less Than $40,000	25%	25%	17%	28%	24%	21%	19%
$40,000 To Less Than $50,000	8%	7%	11%	7%	7%	9%	**19%**
$50,000 To Less Than $65,000	4%	3%	3%	9%	2%	< 1%	12%
$65,000 To Less Than $100,000	2%	1%	7%	2%	< 1%	< 1%	19%
$100,000 Or More	2%	1%	5%	1%	< 1%	< 1%	13%

3.2.5 Employment Status

Employment status for riders is detailed in **Table 8**. Systemwide, 74 percent of trips were taken by either full-time or part-time workers. Eighty-eight percent of trips on Disney Direct are made by riders who work full-time or part-time. LYMMO has the lowest proportion of trips taken by employed riders.

Table 8: Employment Status Distribution by LYNX and SunRail Weekday and Weekend Trips*

	Systemwide	Link	FastLink	Disney Direct	LYMMO	NeighborLink	SunRail
Full-Time	**57%**	**57%**	**51%**	**68%**	**34%**	**46%**	**64%**
Part-Time	17%	17%	22%	20%	12%	26%	10%
Homemaker	1%	1%	2%	< 1%	1%	< 1%	1%
Freelancer/Self	3%	3%	4%	3%	8%	1%	4%
Retired	8%	8%	8%	1%	12%	9%	12%
Students	4%	5%	4%	3%	1%	17%	4%
Not Employed	9%	9%	9%	4%	32%	1%	4%

Note there was a discrepancy in the proportion of riders who selected "student" when asked their employment status compared to when asked their student status. As respondents were asked to pick the employment status that best applies, part-time students may have defaulted to selecting another response.

The employment status of riders is detailed in **Table 9**. The Food Services/Restaurant, Hospitality, and Retail industries are the top three most popular employment industries for LYNX and SunRail riders. This trend stays the same through the individual mode, except the SunRail, which most trips are made by the riders in Educational Services and Technical Services.

Table 9: Employment Industry Distribution by LYNX and SunRail Weekday and Weekend Trips

	System-wide	Link	FastLink	Disney Direct	Lymmo	Neighbor - Link	SunRail
Arts/Entertainment/Recreation	5%	5%	12%	5%	14%	4%	1%
Call Center/Customer Service (Not Specific)	1%	1%	3%	0%	0%	0%	1%
Cleaning/Janitorial Services (Not Specific)	1%	1%	0%	1%	0%	4%	0%
Construction/Laborer	2%	2%	3%	1%	3%	0%	4%
Educational Services/Health Care/Social Assistance	9%	8%	15%	3%	6%	17%	**26%**
Finance/Insurance/Real Estate Rental And Leasing	2%	2%	5%	1%	3%	4%	10%
Food Services/Restaurants	**25%**	**26%**	**17%**	26%	**30%**	**38%**	7%
Government	0%	0%	2%	0%	1%	0%	3%
Hospitality/Hotels/Theme Parks	19%	18%	**17%**	**51%**	10%	5%	7%
Other	1%	1%	0%	0%	0%	0%	1%
Other Service	1%	1%	0%	0%	0%	0%	2%
Retail Trade/Wholesale Trade/Warehouse	16%	16%	17%	6%	18%	21%	9%
Sales (Not Specific)	0%	1%	0%	0%	0%	0%	0%
Security/Security Guard (Not Specific)	1%	1%	0%	0%	0%	0%	0%
Technical Services/Professional/Scientific/Management/Administrative	7%	6%	3%	4%	2%	2%	22%
Transportation	2%	2%	0%	1%	1%	0%	2%
Waste Management/Utilities/Manufacturing/Landscaping	8%	8%	6%	1%	13%	6%	4%

3.2.6 Student Status

Respondents were also asked about their student status. **Table 10** shows that systemwide, two percent of trips were taken by K-12 students, and another eight percent of trips were taken by students enrolled in post-secondary schooling. NeighborLink and Disney Direct serve more students than the system average, and FastLink serves more College/University students than the system average. Note, however, that the proportion of trips taken by K-12th graders are likely underrepresented due to limitations on surveying children.

Table 10: Student Status Distribution by LYNX and SunRail Weekday and Weekend Trips

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor -Link	SunRail
Student In K-12th Grade	2%	2%	2%	1%	< 1%	1%	1%
Student In College / University / Community College	**7%**	**7%**	6%	**14%**	**4%**	**17%**	**11%**
Student In Vocational/Technical/Trade School/Other	1%	1%	**7%**	1%	< 1%	2%	1%
Not A Student	89%	90%	85%	85%	95%	80%	87%

3.2.7 Access to a Vehicle

Riders were asked how many working vehicles were available in their households. **Table 11** shows that 65 percent of trips were taken by riders without access to any vehicles in their household. NeighborLink and SunRail were the only two modes where the majority of trips are taken by riders with access to a vehicle.

Table 11: Vehicle Access Distribution by LYNX and SunRail Weekday and Weekend Trips

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
No Vehicle	**65%**	**68%**	**62%**	**54%**	**87%**	**44%**	14%
1	22%	21%	22%	28%	8%	36%	**37%**
2	10%	8%	12%	12%	2%	14%	35%
3	3%	3%	2%	4%	1%	3%	9%
4	1%	1%	< 1%	1%	1%	1%	3%
5 or More	1%	< 1%	1%	2%	1%	1%	3%

3.2.8 English Proficiency

Riders were surveyed on how well they spoke English. **Table 12** reports that 91 percent of trips were taken by native English speakers. For Title VI purposes, the Federal Transit Administration (FTA) defines "Low-English proficiency (LEP) as anyone who speaks a language other than English at home and self-reports speaking English less than 'Very Well'"[1]. Under this definition, nine percent of LYNX and SunRail riders qualify as LEP.

The study further drilled down into the data to identify which languages were most commonly spoken at home among riders who speak English less than very well (**Table 13**). In multi-lingual households, English may be a language spoken at home but not necessarily one spoken by the individual being surveyed. As such, the study team isolated the most common languages other than English spoken among riders with Limited English Proficiency (LEP). This data can be used to identify language communities that would most benefit from communication in their native tongue.

Weighted by trips, the most common language spoken at home among riders with limited English proficiency was Spanish at 8 percent of trips; Haitian-Creole and Vietnamese exceeded 1 percent of respondents for some LYNX modes.

Table 12: English Proficiency Distribution by LYNX and SunRail Weekday and Weekend Trips

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Native Speaker	**91%**	**90%**	**84%**	**84%**	**100%**	**100%**	**98%**
Very Well	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Well	1%	1%	< 1%	< 1%	< 1%	< 1%	1%
Less Than Well	3%	3%	3%	6%	< 1%	< 1%	1%
Not At All	5%	5%	13%	9%	< 1%	< 1%	1%

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[1] FTA (December 2005), https://www.govinfo.gov/content/pkg/FR-2005-12-14/html/05-23972.htm

Table 13: Most Common Languages Spoken by LEP Riders by LYNX and SunRail Weekday and Weekend Trips

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Spanish	**8%**	**8%**	**10%**	**10%**	< 1%	< 1%	**2%**
Haitian-Creole	2%	1%	4%	6%	< 1%	< 1%	< 1%
Vietnamese	< 1%	< 1%	2%	< 1%	< 1%	< 1%	< 1%
Other	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
High English Proficiency or Native Speaker	91%	90%	84%	84%	100%	100%	97%

*English is not counted in the tally for riders who indicated they speak English "less than well". Note that totals add up to more than 100 percent due to some respondents speaking multiple languages at home. Other languages include Arabic, Hindi, Portuguese, Chinese, French, Japanese, and Russian.

3.2.9 Household Size

Almost an even share of LYNX and SunRail trips are taken by households of one, two, three, four, and five or more people (**Table 14**). LYMMO stands out as having a high proportion of single-household riders. The household size on the FastLink and NeighborLink skews larger, with 4-person and 5 or more-households forming the largest cohort at each individual mode.

Table 14: Household Size Distribution by LYNX and SunRail Weekday and Weekend Trips

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
1	17%	17%	11%	13%	**41%**	11%	13%
2	**26%**	**25%**	22%	**24%**	29%	19%	**36%**
3	23%	23%	20%	**24%**	12%	23%	22%
4	18%	18%	23%	18%	14%	**38%**	16%
5 or More	16%	17%	**24%**	21%	5%	9%	13%

3.2.10 Possession of a Driver's License

As shown in **Table 15**, half of trips across LYNX and SunRail's system are taken by riders without a valid license. This distribution is almost same for the Link, FastLink, Disney Direct, and NeighborLink. SunRail stands out as the vast majority of riders have a valid driver's license.

Table 15: Driver's License Possession Distribution by LYNX and SunRail Weekday and Weekend Trips

	Systemwide	Link	FastLink	Disney Direct	LYMMO	NeighborLink	SunRail
Yes	49%	48%	46%	49%	30%	41%	**86%**
No	**51%**	**52%**	**54%**	**51%**	**70%**	**59%**	14%

3.3 Trip-Making Characteristics

Trip characteristics surveyed for each mode include the address and type of location at the origin and destination for each trip. This section compares the types of locations accessed via each mode and identifies common origins, destinations, and origin-destination pairs systemwide. Locations were aggregated by Census Tracts.

Note that as the surveys were conducted throughout the day, and because round trips are common, origins and destination results tend to be highly interchangeable; factors like sampling distribution or response rates by time of day can result in the distribution of origins and destinations appearing different in the data. To help better visualize travel behavior, the study team categorized origins and destinations in terms of trip production and attraction.

3.3.1 Origin and Destination Types

A majority of trips began at a place of home or work, as shown in **Table 16.** Other than the trips produced by home and work, the next two common types of origins were shopping/restaurant and social visit/family/friends. Most of modes follow the similar breakdown of the trip productions, except for NeighborLink, which College/University are a key trip production source, and LYMMO, which Religious/Community is another major generator of the trips. Airport passengers predominantly take FastLink to depart from the airport.

Table 16: Percent of Trips by Origin Type and Mode

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Home	**50%**	**49%**	**52%**	**53%**	**49%**	**41%**	**58%**
Work	28%	28%	27%	35%	11%	24%	25%
Shopping/Restaurant	7%	7%	2%	3%	11%	12%	4%
Social Visit/Family/Friends	4%	4%	4%	2%	7%	1%	4%
Medical/Doctor/Clinic/Hospital (Non-Work Only)	2%	2%	3%	< 1%	1%	2%	1%
Attractions/Recreation/Theme Park/Sightseeing	2%	2%	1%	6%	3%	4%	4%
College/University (Students Only)	2%	2%	1%	< 1%	2%	16%	1%
Personal Business/Errands (E.G., Bank, DMV, Library)	1%	1%	4%	< 1%	3%	< 1%	< 1%
School (K-12) (Students Only)	1%	1%	1%	1%	< 1%	< 1%	1%
Airport (Passengers Only)	1%	1%	5%	< 1%	< 1%	< 1%	< 1%
Religious/Community	1%	1%	< 1%	< 1%	9%	< 1%	< 1%
Sporting Or Special Event	1%	< 1%	< 1%	< 1%	3%	< 1%	1%
Gym/Exercise	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Child's School/Daycare/Activity	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Other	< 1%	< 1%	< 1%	< 1%	1%	< 1%	< 1%

A majority of trips end at home or work, as shown in **Table 17**. Other than the trips attracted by home and work, the next two common types of destinations were shopping/restaurant and social visit/family/friends. Most modes follow a similar breakdown of trip attractions, except the LYMMO, for which personal business/errands is another key trip attractor.

Table 17: Percent of Trips by Destination Type and Mode

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Home	**44%**	**45%**	31%	**46%**	**36%**	**44%**	**38%**
Work	27%	27%	**34%**	37%	16%	19%	30%
Shopping/Restaurant	10%	10%	14%	5%	11%	33%	11%
Social Visit/Family/Friends	7%	8%	5%	3%	10%	0%	6%
Medical/Doctor/Clinic/Hospital (Non-Work Only)	2%	2%	6%	< 1%	2%	1%	2%
Attractions/Recreation/Theme Park/Sightseeing	2%	2%	1%	6%	3%	< 1%	5%
College/University (Students Only)	2%	2%	2%	1%	0%	< 1%	3%
Personal Business/Errands (E.G., Bank, DMV, Library)	2%	2%	1%	< 1%	12%	< 1%	1%
School (K-12) (Students Only)	1%	1%	2%	< 1%	< 1%	1%	< 1%
Airport (Passengers Only)	1%	1%	2%	< 1%	< 1%	< 1%	1%
Religious/Community	1%	1%	1%	< 1%	6%	2%	< 1%
Sporting Or Special Event	1%	1%	< 1%	1%	4%	< 1%	1%
Gym/Exercise	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Child's School/Daycare/Activity	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Other	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%

3.3.2 Trip Type

All trips taken were categorized into one of five trip types, defined in **Table 18** Home-based work (HBW) and home-based school (HBS) trips include home as one trip end and work or school, respectively, as another trip end. These two trip types are especially prevalent during the morning and evening peak periods. Home-based other (HBO) trips begin or end at home and include any other type of location. Non-home-based work (Non- HBW) trips involve one work-related trip end and any non-home type of origin or destination. Non-home-based other (Non-HBO) trips include all other trip types, such that each trip surveyed only falls into one category.

Figure 9 summarized the trip type by the time period of the day. The definition of the time periods are:

- Early AM – 3AM to 4:59 AM
- AM Peak – 5AM to 9:59 AM
- Midday – 10AM to 2:59 PM
- PM Peak – 3PM to 5:59 PM
- Evening – 6PM to 2:59 AM

Table 18: Trip Type Categories

Trip Type	Trip Ends	Description
Home-Based Work (HBW)	• Home • Work	Includes any trip where one trip end is home, and the other trip end is work.
Home-Based School (HBS)	• Home • College/University (Students Only) • School/K-12 (Students Only)	Includes any trip where one trip end is home, and the other trip end is school.
Home-Based Other (HBO)	• Home • Medical/Doctor/Clinic/Hospital • Shopping/Restaurant • Attractions/Recreation/Theme Park/Sightseeing • Social Visit/Family/Friends • Personal Business/Errands (E.G., Bank, DMV, Library) • Airport (Passengers Only) • Religious/Community • Sporting Or Special Event • Gym/Exercise • Child's School/Daycare/Activity • Other	Includes any trip where one trip end is home, and the other trip end is any place other than work or school.
Non-Home-Based Work (Non-HBW)	• Work • College/University (Students Only) • School/K-12 (Students Only) • Medical/Doctor/Clinic/Hospital • Shopping/Restaurant • Attractions/Recreation/Theme Park/Sightseeing • Social Visit/Family/Friends • Personal Business/Errands (E.G., Bank, DMV, Library) • Airport (Passengers Only) • Religious/Community • Sporting Or Special Event • Gym/Exercise • Child's School/Daycare/Activity • Other	Any trip that includes one nonhome end and one work end. Can include trips between work and social, shopping, medical, or school destinations. This group includes trips where both origin and destination are work-related.
Non-Home-Based Other (Non-HBO)	• College/University (Students Only) • School/K-12 (Students Only) • Medical/Doctor/Clinic/Hospital • Shopping/Restaurant • Attractions/Recreation/Theme Park/Sightseeing • Social Visit/Family/Friends • Personal Business/Errands (E.G., Bank, DMV, Library) • Airport (Passengers Only) • Religious/Community • Sporting Or Special Event • Gym/Exercise • Child's School/Daycare/Activity • Other	Includes any trip where neither trip end includes home or work.

Figure 8 shows the distribution of trips by type and mode. Home-based work trips made up a plurality of trips systemwide, closely followed by home-based other trips. The Link, FastLink, and SunRail follow a similar pattern as the systemwide breakdown. Disney Direct primarily serves home-based work trips. The LYMMO is popular for home-based other trips and non-home-based other trips. NeighborLink stands out with home-based school trips.

Figure 8: Percent of Trips by Type and Mode
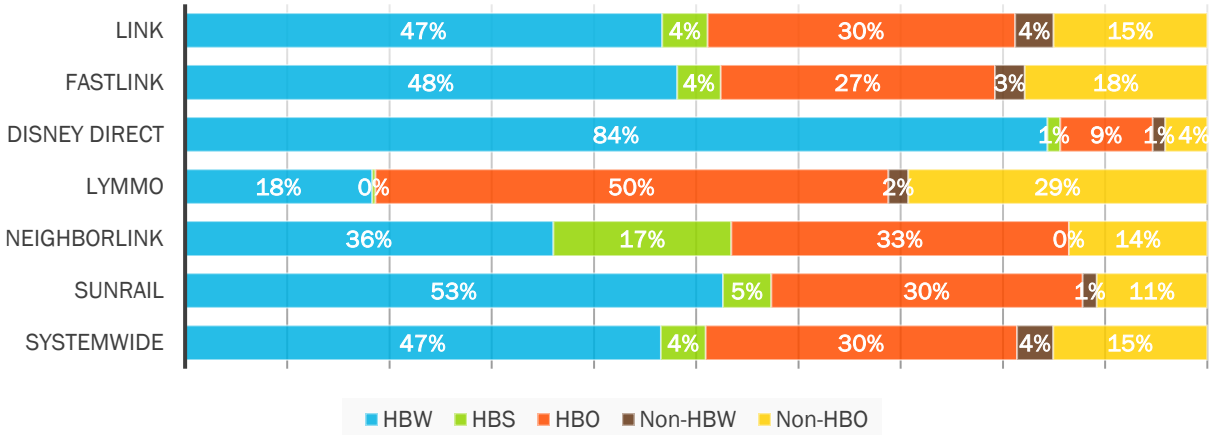
Figure 9 shows the distribution of trips by type and time of day. With the exception of midday, a plurality of trips at all time periods are home-based work trips. Home-based work trips are especially prevalent in the early morning (83 percent of trips) and also constitute a majority of trips in the AM peak and at night. Midday is the most common time period for home-based other trips (38 percent) and non-home-based other trips (18 percent). The high prevalence of home-based other trips in the midday, PM peak, and evening continue to support the notion that LYNX services are valuable not only for commuters but also for people going to restaurants, medical appointments, shopping, and other non-work destinations.

Figure 9: Percent of Trips by Type and Time of Day
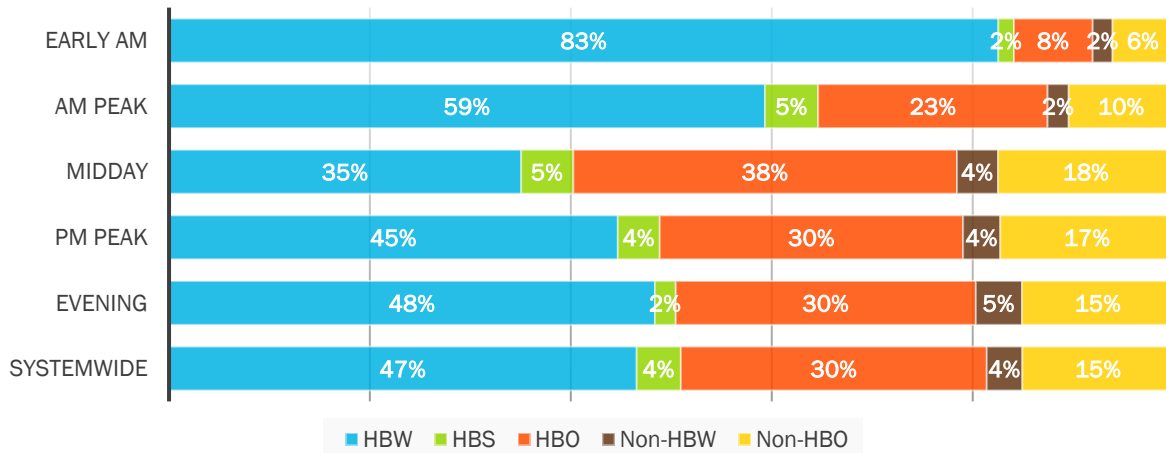
3.3.3 Trip Production and Attraction

Survey result origins and destinations were transformed into productions and attractions to better summarize trip behavior and control for the fact origins and destinations will flip depending on time of day. Trip production locations represent where a roundtrip is created, typically one's home location. Attraction locations are the reason one makes a round-trip, such as travelling to and from work or shopping.

Origins and destinations of each trip were categorized into trip attractors and producers by the following methodology:

- If one endpoint was home or local lodging, that place was categorized as a production area, and the other end as an attraction area.
- If the trip did not meet the above criteria, but one of the ends was work or work related, that place was categorized as an attraction area, and the other end as a production area.
- If the trip did not meet the above criteria, then the origin was categorized as a production area, and the destination as an attraction area.

Figure 10 and **Figure 11** shows production zones across the study area that represented at least 0.25 percent of all trips. These zones are based on US Census Bureau Census Tracts.

Figure 12 and **Figure 13** shows attraction zones across the study area that represented at least 0.25 percent of all trips.

Both production and attraction are concentrated within the City of Orlando, especially in Downtown and adjacent neighborhoods. Theme parks, Orlando International Airport, and the area around the Convention Center all stand out as major trip attractors.
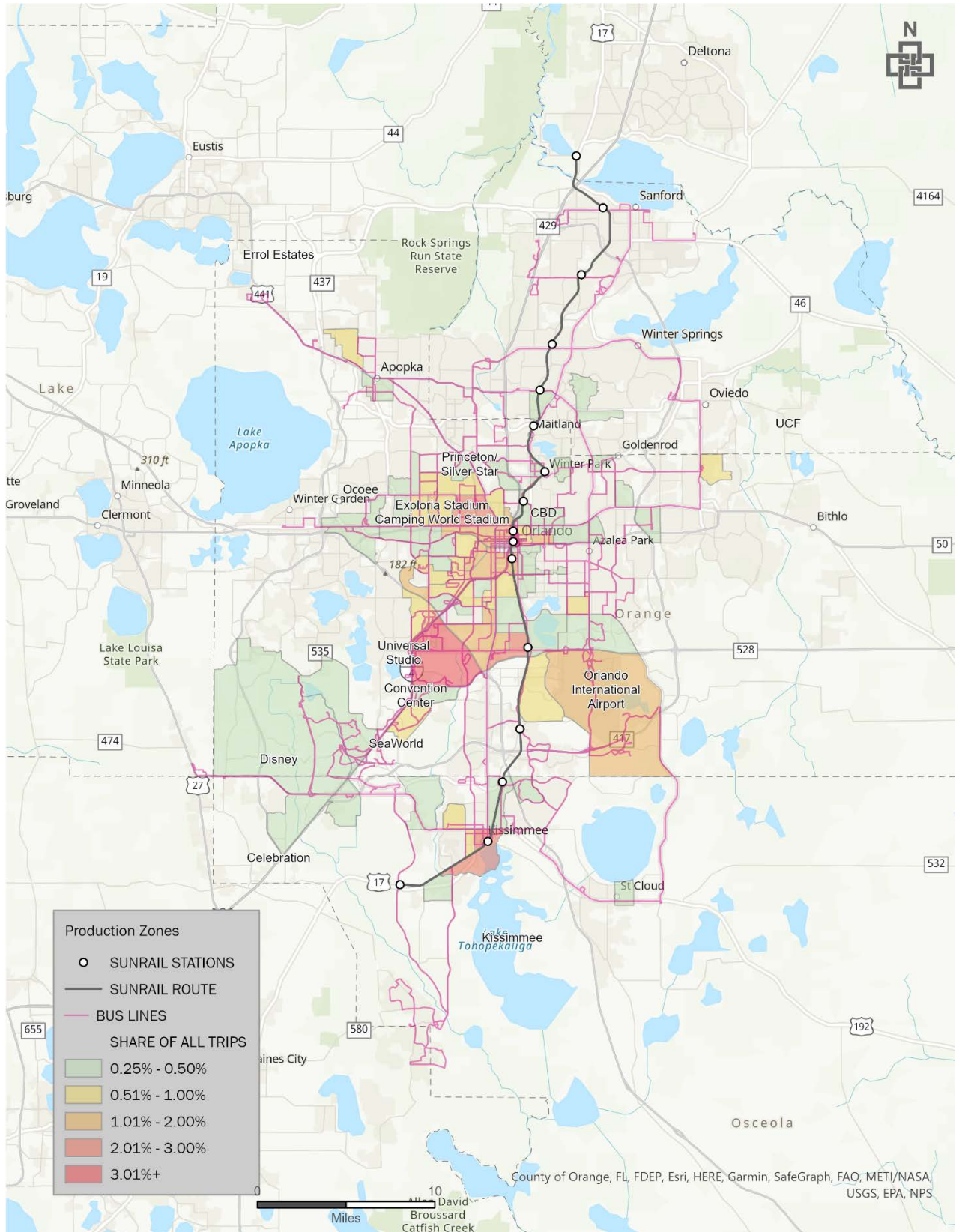
Figure 10: Production Zones – Regional
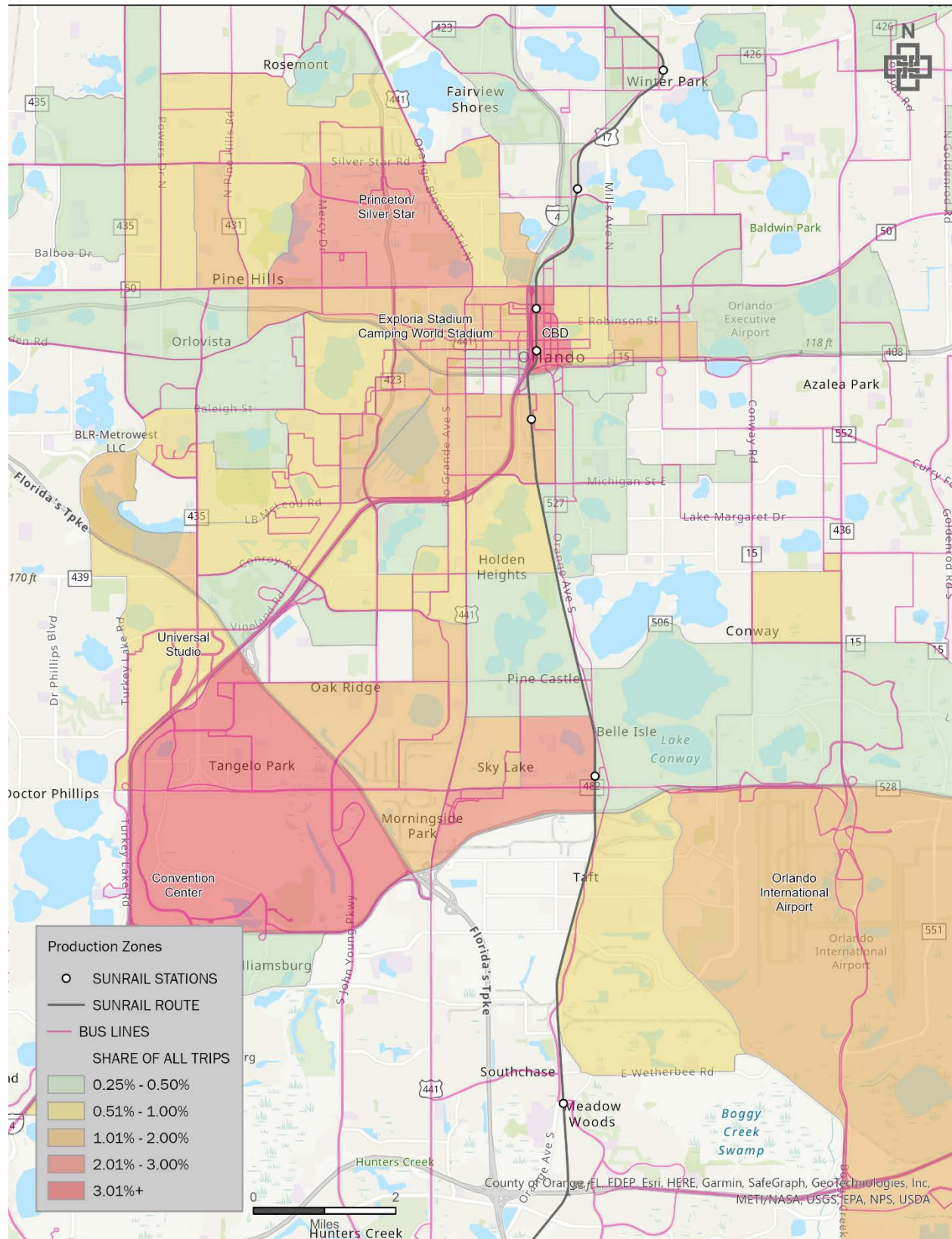
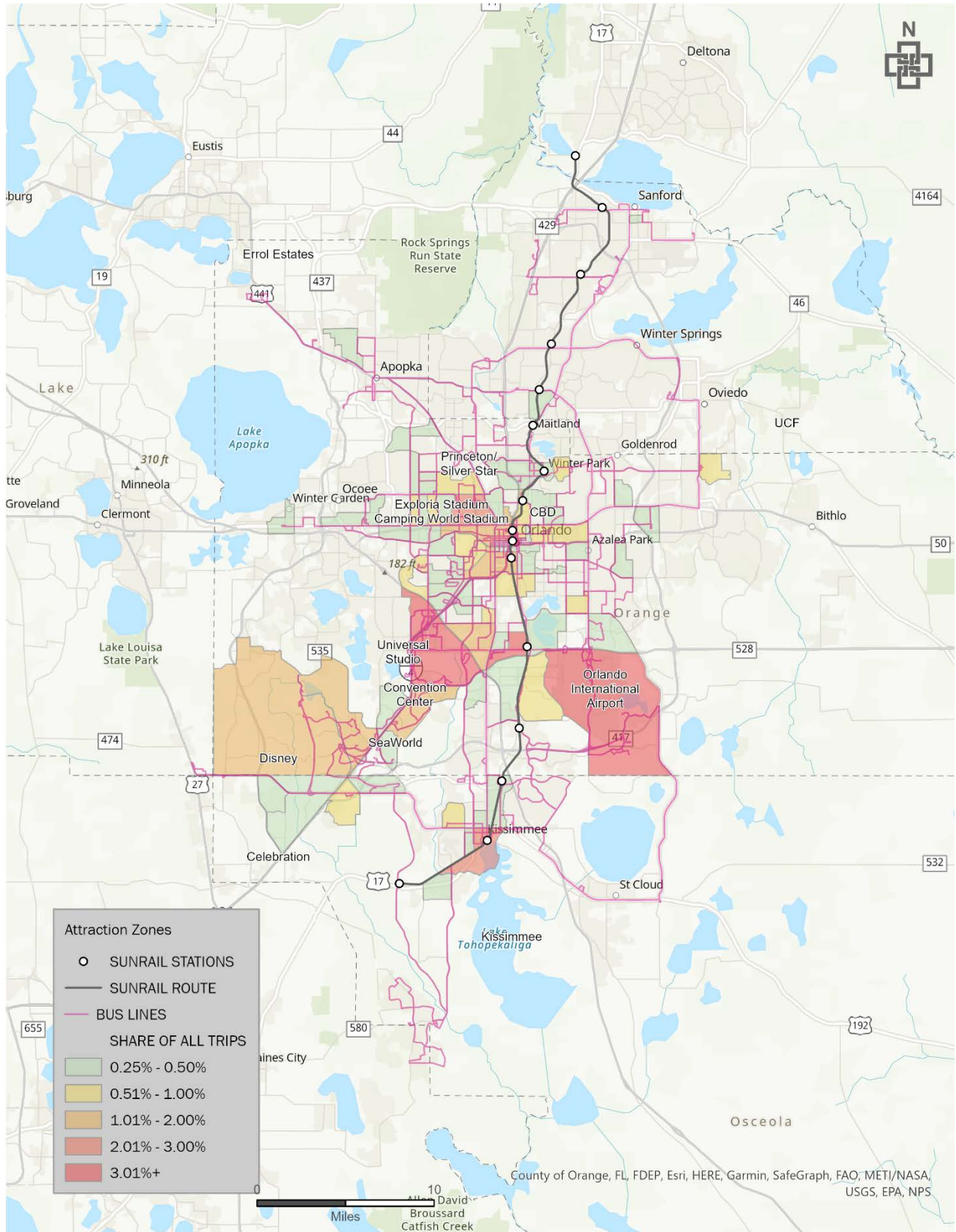Figure 11: Production Zones – Orlando

Figure 12: Attraction Zone – Regional

Figure 13: Attraction Zone – Orlando
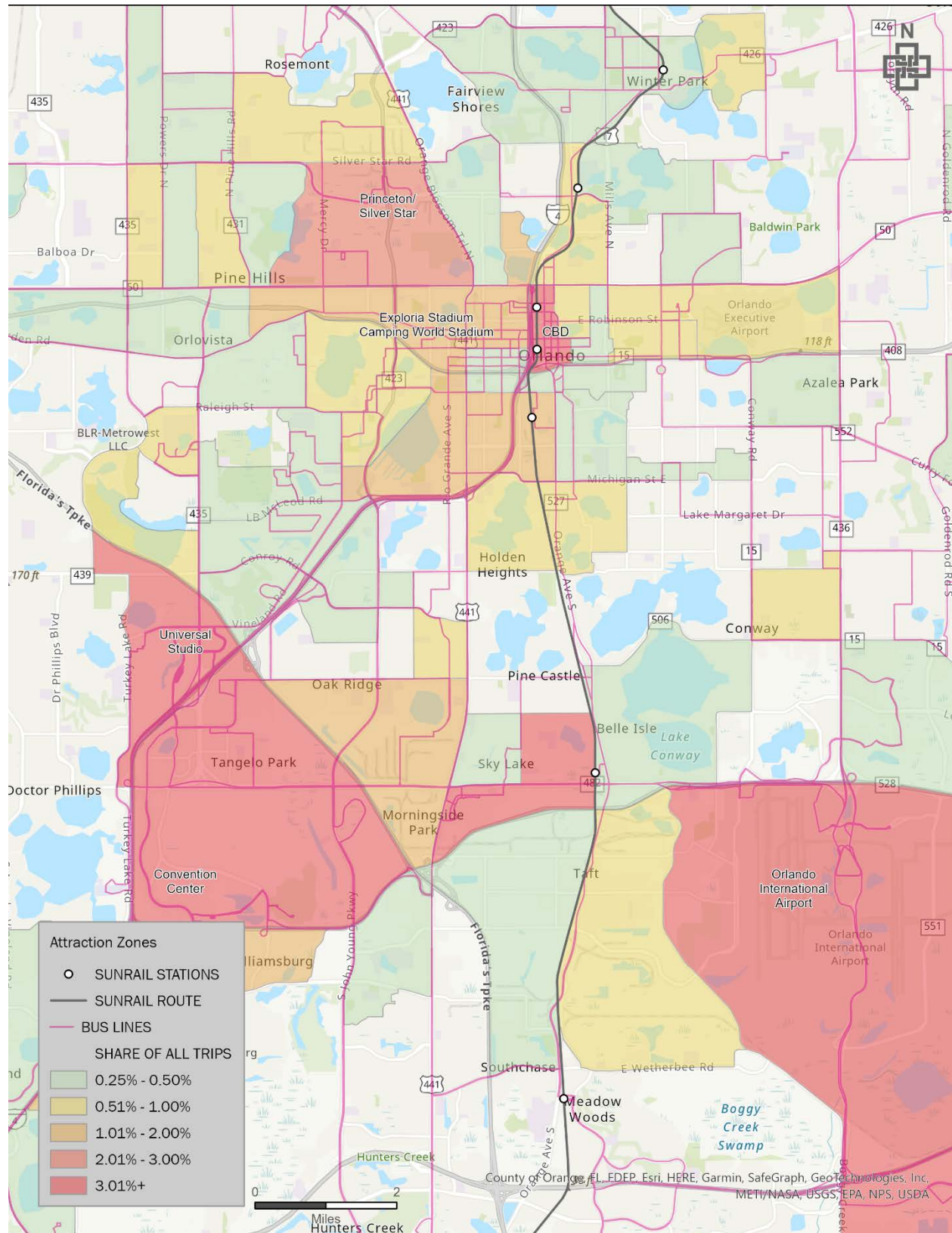
3.3.4 Most Common Production and Attraction Pairs

Surveys that included both an origin and destination address were analyzed to determine the most common travel flows in the region.

Figure 14 shows all origin-destination pairs that represented at least 0.15 percent of all systemwide trips. For example, if there are 10,000 unlinked trips in the system, and unlinked trips from Location A to Location B total 10, then this link will not be presented in the figures below because it accounts for only 0.1 percent of all unlinked trips, which is less than the 0.15 percent mapping threshold. However, if the unlinked trips between Location C and D amount to 20 trips, representing 0.2 percent of all unlinked trips, they will be presented in the following figures as green lines. Trips that both start and end in the same Census Tract are depicted as circles, while trips that begin and end in different Tracts are shown as lines. The most significant travel flows include those within the Central Orlando CBD (Central Business District), Kissimmee, neighborhoods close to the Orange County Convention Center and Epic Universe, as well as the trips between the two.

The origin-destination pairs for Link are similar to the systemwide distribution. However, the trips made by FastLink, Disney Direct, LYMMO, NeighborLink, and SunRail are not large enough to account for more than 0.15 percent of all unlinked trips, making it difficult to discern any trends. Consequently, they will not be presented on the map.

Table 19 shows the top 10 origin-destination pairs systemwide and the percent of trips they accounted for. Three percent of all trips in LYNX and SunRail happened within the Orlando CBD area. The others three pairs of origin-destination within the LYNX and SunRail system are trips within the neighborhoods adjacent to the Convention Center, the trips between Orlando CBD and neighborhoods adjacent to the Convention Center, and the tips between Orlando CBD and Florida Mall area.

Table 19: Top 10 Origin-Destination Pairs Systemwide

Rank	Point 1	Point 2	Share of Unlinked Trips
1	CBD	CBD	3%
2	Convention Center	Convention Center	1%
3	CBD	Convention Center	1%
4	CBD	Florida Mall	1%
5	Convention Center	Florida Mall	<1%
6	CBD	Callahan	<1%
7	Kissimmee	Kissimmee	<1%
8	Convention Center	International Airport	<1%
9	CBD	International Airport	<1%
10	International Airport	International Airport	<1%

Figure 14: Systemwide Travel Flows
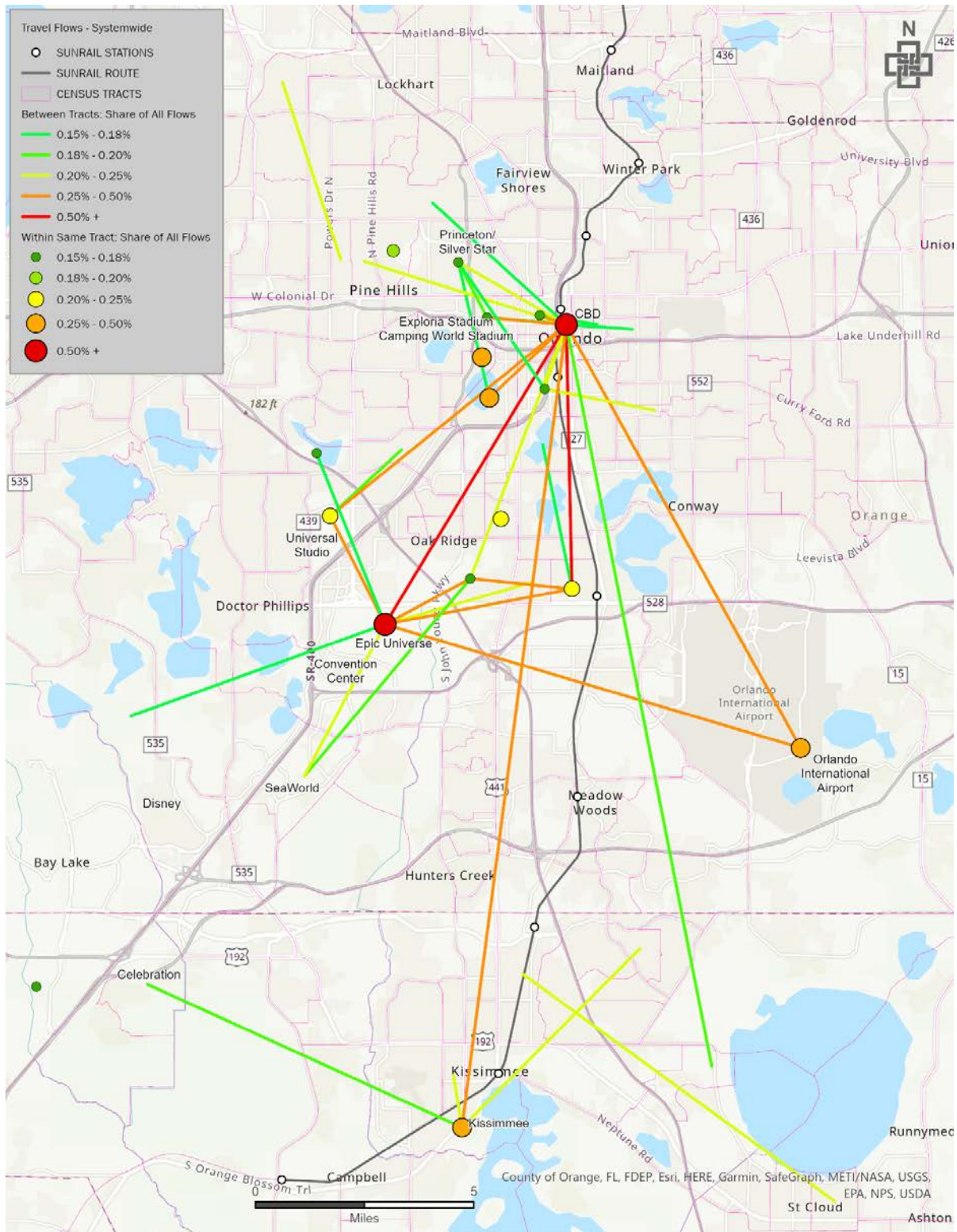
3.3.5 Trip Frequency

The survey included two questions related to trip frequency: "How often do you use LYNX services", and "How often do you use SunRail services".

Table 20 shows the frequency of LYNX trips. Systemwide, 63 percent of riders use LYNX five or more days a week. This pattern is consistent across most modes. LYMMO respondents rode LYNX the most frequently, while SunRail respondents rode LYNX the least frequently; just over half of SunRail trips are taken by passengers who never ride LYNX.

Table 20: Frequency of LYNX and SunRail Trip by Mode

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
7 Days Per Week	22%	23%	16%	23%	**35%**	8%	4%
6 Days Per Week	11%	11%	14%	12%	9%	10%	1%
5 Days Per Week	**30%**	**32%**	**30%**	**34%**	21%	**36%**	14%
4 Days Per Week	10%	10%	11%	11%	17%	8%	6%
3 Days Per Week	10%	11%	8%	8%	14%	29%	4%
2 Days Per Week	6%	6%	10%	3%	2%	3%	5%
1 Day Per Week or Less	4%	4%	4%	4%	2%	5%	10%
First Time Riding	3%	3%	7%	4%	< 1%	1%	4%
Never	4%	1%	1%	1%	1%	< 1%	**53%**

As shown in **Table 21**, SunRail is infrequently used among riders of most LYNX modes. Among SunRail riders, the plurality ride the service five days a week but an equal proportion report having ridden SunRail either less than once a week or for the first time ever.

Table 21: Frequency of SunRail Trip and SunRail by Mode

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
5 Days Per Week	6%	4%	10%	3%	4%	7%	**34%**
4 Days Per Week	2%	1%	1%	1%	3%	1%	11%
3 Days Per Week	3%	3%	2%	2%	1%	11%	9%
2 Days Per Week	4%	4%	2%	5%	7%	< 1%	6%
1 Day Per Week Or Less	11%	10%	13%	11%	16%	6%	23%
First Time Ride	2%	1%	4%	2%	0%	5%	13%
Infrequent Rider	**73%**	**77%**	**69%**	**76%**	**69%**	**69%**	4%

3.3.6 Alternative Mode

Table 22 presents the alternative mode that a rider would choose to use to make the surveyed trip if the existing mode is not available. Systemwide, Uber/Lyft is the most commonly stated alternative mode. 20 percent of the trips would not occur if transit service were unavailable. LYMMO operates across the downtown area, and as the result, 50 percent of LYMMO trips would be replaced by walking. The major alternative mode for NeighborLink is driving themselves or being dropped off by someone else. The major alternative mode for SunRail is driving.

Note that long-term disruption to transit service would likely change transportation behavior more than stated by respondents in this question. For example, while Uber and Lyft may be a viable

alternative mode during a service disruption, they are likely not cost-effective as a long-term solution for riders who lose transit access.

Table 22: Alternative Mode by Mode

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Walk	11%	11%	4%	4%	**49%**	8%	3%
Bicycle/Scooter	7%	7%	9%	3%	11%	1%	2%
Drive Own Vehicle	7%	3%	3%	6%	1%	**35%**	**57%**
Car Share (e.g., Zip Car, etc.)	< 1%	< 1%	1%	< 1%	< 1%	< 1%	1%
Dropped Off By Someone Else	10%	11%	10%	11%	9%	**35%**	4%
Ride With Someone Else Who Parked	5%	5%	9%	4%	4%	< 1%	5%
Borrow Vehicle	3%	2%	1%	3%	5%	1%	2%
Uber, Lyft, etc.	**46%**	**49%**	**56%**	**57%**	19%	32%	17%
Taxi	3%	4%	5%	2%	2%	6%	2%
Would Not Make This Trip	20%	20%	13%	20%	21%	3%	16%
Other	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%

3.4 Access and Egress to Transit

Respondents were asked how they traveled to the point where they first boarded a LYNX and SunRail service, as well as how they reached their final destination after alighting from LYNX and SunRail service. This section summarizes their answers by mode.

3.4.1 Mode of Access

Table 23 breaks down the percent of all trips by the mode that was used to first access transit service. Systemwide, 85 percent of trips started by walking or wheelchair. This trend applies to all the rest of the individual modes, other than SunRail, where driving alone is the most common access mode, following by Walking/Wheelchair. NeighborLink has the highest prevalence of trips accessed by pick-up and drop-off, possibly reflecting the door-to-door nature of the mode.

Table 23: Percent of Trips by Mode Used to Access Transit

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Walk/Wheelchair	**85%**	**88%**	**83%**	**81%**	**94%**	**69%**	29%
Picked Up/Dropped Off	3%	3%	2%	4%	< 1%	13%	7%
Drive/Ride with Others	2%	1%	1%	1%	< 1%	2%	14%
Drive Alone	3%	1%	< 1%	1%	< 1%	13%	**35%**
Personal Bike/Scooter	4%	3%	2%	2%	4%	1%	5%
Shared Bike/Scooter	1%	1%	2%	1%	1%	< 1%	1%
Taxi or Ride hailing	4%	4%	9%	8%	< 1%	< 1%	8%
Disney/Employee Bus/Work/School Shuttle	< 1%	< 1%	< 1%	1%	< 1%	< 1%	1%

3.4.2 Mode of Egress

Table 24 breaks down the percent of all trips by the mode that was used to egress transit to one's final destination. The table shows the same general pattern as access by mode: Most trips made within the system end by walking/wheelchair.

Table 24: Percent of Trips by Mode Used to Egress Transit

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor Link	SunRail
Walk/Wheelchair	**89%**	**92%**	**85%**	**86%**	**97%**	**67%**	**47%**
Picked Up/Dropped Off	2%	1%	3%	3%	< 1%	16%	9%
Drive/Ride with Others	1%	1%	1%	1%	< 1%	< 1%	8%
Drive Alone	1%	< 1%	1%	1%	< 1%	13%	18%
Personal Bike/Scooter	3%	3%	6%	2%	2%	< 1%	5%
Shared Bike/Scooter	< 1%	< 1%	3%	< 1%	< 1%	1%	1%
Taxi or Ride hailing	3%	3%	1%	5%	< 1%	3%	10%
Disney/Employee Bus/Work/School Shuttle	< 1%	< 1%	< 1%	2%	< 1%	< 1%	1%

3.4.3 Average Distance to Transit

Riders travelling by walking/wheelchair, by bike, or by scooter were asked how far they traveled to reach their first transit stop from their origin, and how far they traveled to reach their destination from their final transit stop. **Table 25** and **Table 26** provide a breakdown of these responses by mode.

Riders accessed or egressed transit by walking/wheelchair, personal bike/scooter, and shared bike/scooter were asked to provide a distance estimate, so the tables in this section represent the access or egress distance by these three modes, breaking down by the service type. Note that respondents had a choice to provide the distance in estimated miles or blocks. To help standardize responses, the study team has assumed an average block distance of 0.1 miles.

As shown in **Table 25**, 79 percent of the systemwide trips made to the first transit stops by walking or wheelchair are less than 0.5 miles. Those accessing LYNX or SunRail by personal bike or scooter and shared bike or scooter travel significantly further.

Table 25: Percent of Trips by Mode and Distance Traveled to Access Transit (Median Distance Bolded Mode)

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Walk/Wheelchair	**0.20**	**0.20**	**0.25**	**0.20**	**0.25**	**0.20**	**0.20**
Less than 0.5 miles	79%	79%	76%	82%	75%	65%	70%
0.5 to less than 1 mile	9%	9%	12%	8%	6%	8%	18%
1 to less than 2 miles	7%	7%	5%	8%	8%	21%	7%
2 to less than 3 miles	2%	2%	4%	1%	4%	6%	3%
3 miles or more	3%	3%	3%	1%	6%	< 1%	1%
Personal Bike/Scooter	**0.60**	**0.60**	**0.50**	**1.00**	**0.60**	**0.50**	**1.00**
Less than 0.5 miles	35%	38%	< 1%	39%	35%	< 1%	12%
0.5 to less than 1 mile	20%	18%	69%	0%	65%	100%	18%
1 to less than 2 miles	13%	12%	< 1%	24%	< 1%	< 1%	24%
2 to less than 3 miles	7%	7%	< 1%	< 1%	< 1%	< 1%	12%
3 miles or more	25%	24%	31%	37%	< 1%	< 1%	35%
Shared Bike/Scooter	**1.00**	**0.70**	**NA**	**0.30**	**6.00**	**NA**	**3.00**
Less than 0.5 miles	35%	40%	< 1%	100%	< 1%	< 1%	< 1%
0.5 to less than 1 mile	12%	12%	< 1%	< 1%	< 1%	< 1%	20%
1 to less than 2 miles	26%	30%	< 1%	< 1%	< 1%	< 1%	20%
2 to less than 3 miles	5%	7%	< 1%	< 1%	< 1%	< 1%	< 1%
3 miles or more	21%	11%	< 1%	< 1%	< 1%	< 1%	60%

As shown in **Table 26**, the systemwide average distance one walks/uses a wheelchair from their last transit stop to their destination is similar to the access distance.

Table 26: Percent of Trips by Mode and Distance Traveled to Egress Transit (Median Distance Bolded by Mode)

	System -wide	Link	FastLink	Disney Direct	LYMMO	NeighborLink	SunRail
Walk/Wheelchair	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.10**	**0.20**
Less than 0.5 miles	80%	80%	75%	83%	74%	92%	78%
0.5 to less than 1 mile	9%	9%	14%	10%	10%	5%	13%
1 to less than 2 miles	6%	6%	3%	4%	10%	3%	6%
2 to less than 3 miles	2%	2%	6%	1%	2%	< 1%	3%
3 miles or more	3%	3%	2%	2%	4%	< 1%	1%
Personal Bike/Scooter	**0.50**	**0.50**	**25.00**	**0.30**	**3.00**	**NA**	**1.50**
Less than 0.5 miles	46%	48%	< 1%	75%	31%	< 1%	37%
0.5 to less than 1 mile	13%	16%	< 1%	< 1%	7%	< 1%	< 1%
1 to less than 2 miles	15%	15%	34%	< 1%	< 1%	< 1%	16%
2 to less than 3 miles	11%	10%	13%	25%	< 1%	< 1%	16%
3 miles or more	16%	12%	54%	< 1%	62%	< 1%	32%
Shared Bike/Scooter	**0.70**	**0.70**	**0.00**	**NA**	**NA**	**6.00**	**12.65**
Less than 0.5 miles	39%	38%	100%	< 1%	< 1%	< 1%	50%
0.5 to less than 1 mile	19%	22%	< 1%	< 1%	< 1%	< 1%	< 1%
1 to less than 2 miles	18%	21%	< 1%	< 1%	< 1%	< 1%	< 1%
2 to less than 3 miles	6%	6%	< 1%	< 1%	< 1%	50%	< 1%
3 miles or more	17%	13%	< 1%	< 1%	< 1%	50%	50%

3.5 Transfers

3.5.1 Riders by Number of Transfers

Approximately 30 percent of all trips involved at least one transfer, and 8 percent involved at least two (**Table 27**). FastLink and Disney Direct have the highest proportion of trips involving a transfer. FastLink, Disney Direct, and NeighborLink have the largest proportion of trips that require 2 or more transfers.

Table 27: Percent of Trips by Number of Transfers and Mode

	Systemwide	Link	FastLink	Disney Direct	LYMMO	NeighborLink	SunRail
0	**62%**	**61%**	**47%**	**34%**	**74%**	**63%**	**85%**
1	30%	30%	27%	51%	23%	19%	11%
2	8%	8%	19%	13%	3%	18%	3%
3 Or More	1%	1%	6%	2%	< 1%	< 1%	1%

3.5.2 Most Frequent Transfer Pairs

Riders provided the routes they took on their trip from start to finish (their "trip chain"). This section uses riders' trip chains to provide a more detailed breakdown of transfers on LYNX services, including the most common transfer pairs.

As noted above, about one-third of all trips on LYNX and SunRail services involved at least one transfer. However, the breakdowns of the most common route transfer pairs in **Table 28** show that no single route pair dominates transfer activity. No route pair accounts for more than 2 percent of all trips involving a transfer.

Table 28: Top 10 Route Transfer Pairs

Rank	Route Pair	Portion of all Trips Involving a Transfer
1	107 -South Us441/ Florida Mall **and** 108 -South Us441/Kissimmee	1%
2	8 - W Oakridge Rd/Int'l Dr **and** 350 -Destination parkway/SeaWorld/Disney express	1%
3	102 -Orange Ave/South 17/92 **and** 103 -North Us17-92sanford	1%
4	42 – Int'l Dr/Orlando int'l airport **and** 108 -South Us441/Kissimmee	1%
5	8 - W Oakridge Rd/Int'l Dr **and** 42 – Int'l Dr/Orlando int'l airport	< 1%
6	42 - Int'l Dr /Orlando int'l airport **and** 112 - 436s- South Sr 436	< 1%
7	8 - W Oakridge Rd/Int'l Dr **and** 37 – Pine Hills/Kirkman Rd/ Florida Mall	< 1%
8	56 – West US 192/Magic Kingdom **and** 300 – Disney/ Orlando Express	< 1%
9	42 – Int'l Dr/Orlando Int'l Airport **and** 107 -South Us441/ Florida Mall	< 1%
10	55 – West US 192/Four Corners **and** 108 -South US441/Kissimmee	< 1%

Although no single route pair dominates transfer activity, some routes did produce and receive more transfer activity than others. **Table 29** and **Table 30** demonstrate this with breakdowns of which routes riders transferred from (i.e., the most common routes taken immediately before a surveyed route) and which routes riders transferred to (i.e., the most common routes taken immediately after a surveyed route). Multiple routes that appear among the most common transfer pairs also appear in these breakdowns, such as Routes 8, 102, 107, 108, etc. Overall, Route 8 and Route 107 appear to be particularly common generators and recipients of transfers.

Table 29: Top 10 Routes Riders Transferred From, To a Surveyed LYNX System

Rank	Route	Portion of all Trips Involving a Transfer
1	8 - W Oakridge Rd/Intl Dr	6%
2	112 - 436s- South Sr 436	5%
3	107 -South Us441/ Florida Mall	4%
4	102 -Orange Ave/South US 17/92	4%
5	104 – East Colonial Dr/UCF	4%
6	106 -North Us441/Apopka	4%
7	38 -Downtown Orlando/Intl Dr	3%
8	125 -Silver Star Rd Crosstown	3%
9	48 – W Colonial Dr/Powers Dr	3%
10	113 - 436n- North Sr 436	3%

Table 30: Top 10 Routes Riders Transferred To, From a Surveyed LYNX System

Rank	Route	Portion of All Trips Involving a Transfer
1	112 - 436s- South Sr 436	5%
2	8 - W Oakridge Rd/Intl Dr	5%
3	108 -South Us441/Kissimmee	4%
4	107 -South Us441/ Florida Mall	4%
5	21 -Carver shores	3%
6	37 - Pine Hills/Kirkman Rd/ Florida Mall	3%
7	102 -Orange Ave/South US17/92	3%
8	11 – S Orange Ave/Orlando intl Airport	3%
9	106 -North Us441/Apopka	2%
10	105 – West Colonial Dr/Wintergarden	2%

Table 31 presented the top 14 LYNX routes that transferred to or from the SunRail trips. For all the trips that transferred from SunRail, Route 26 received 10 percent of these trips. For all the trips that transferred to SunRail, Route 113 received 16 percent of these trips.

Table 31: Top 14 Routes Riders Transferred To, From SunRail

| Rank | Transfer From SunRail to the Routes below | | Transfer To SunRail from the Routes below | |
	Route	Share of All Trips Transferred from SunRail	Route	Share of All Trips Transferred to SunRail
1	26	10%	113	16%
2	55	7%	8	8%
3	418	7%	26	7%
4	34	6%	107	5%

Rank	Transfer From SunRail to the Routes below		Transfer To SunRail from the Routes below	
	Route	Share of All Trips Transferred from SunRail	Route	Share of All Trips Transferred to SunRail
5	104	6%	42	5%
6	434	6%	418	5%
7	102	4%	45	4%
8	113	4%	350	4%
9	8	3%	56	4%
10	13	3%	55	4%
11	21	3%	34	3%
12	57	3%	125	3%
13	108	3%	106	3%
14	300	3%	15	2%

3.6 Fares

The survey also included questions about how respondents bought their fare and what type of fare they bought. This section analyzes the responses to those questions, broken down by mode and various demographic categories. In addition, the proportions reported in this section will differ from farebox data, which is based on actual fare purchases. This report uses survey data, which is subject to self-report and response error.

3.6.1 Fare Type

Riders have multiple fare payment options on LYNX and SunRail services. Cash payment is used for the plurality of trips (38 percent systemwide, as shown in **Table 32**). The second most popular fare method is an All-Day Pass and monthly fare. This trend also applies to the individual modes, other than LYMMO, which does not charge a fare and SunRail, which offers its own fare products, as shown in **Table 33**.

Note that a portion of SunRail riders also checked paying in "Cash" in addition to their SunRail Pass option, so there is still value within the "Cash" type. However, unlike LYNX fixed-route services, the riders cannot pay onboard SunRail.

Table 32: Fare Type Distribution by LYNX Weekday and Weekend Trips

	LYNX System	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link
Cash	**35%**	**37%**	**32%**	**28%**	NA	**37%**
Single Ride	11%	12%	7%	13%	NA	1%
All-Day Pass	15%	15%	17%	11%	NA	19%
7-Day Pass	14%	14%	20%	15%	NA	5%
30-Day Pass	16%	16%	18%	24%	NA	20%
Bus Transfer	<1%	<1%	<1%	<1%	NA	<1%
Student ID Free Fare	4%	4%	6%	7%	NA	14%
No Fare	3%	1%	<1%	1%	**100%**	3%

Table 33: Fare Type Distribution by SunRail Weekday and Weekend Trips

	SunRail
SunRail One-Way Trip	10%
SunRail Round-Trip	**28%**
SunRail Weekly Passes	5%
SunRail Monthly Passes	1%
SunRail Annual Pass	2%
SunRail Reloadable Pass	5%
Cash	26%
Bus Transfer	20%

Table 34 cross-tabulates fare usage by income for LYNX system. Table 35 cross-tabulates fare usage by income for SunRail. Cash is the most prevalent payment mode among trips taken across all reported income cohorts. Notably, all-day and 30-day pass prevalence declines as incomes go up within LYNX system, while the multi-day passes percentage increase as income go up in the SunRail.

Table 34: Percent of Trips by Fare Purchase Method and Income – LYNX System

	System-wide	<$15K	$15K <26.5K	$27.5K <$40K	$40K <$50K	$50K <$65K	$65K <$100K	$100K+
Cash	**35%**	**35%**	**32%**	**38%**	**36%**	**33%**	**28%**	22%
Single Ride	11%	10%	11%	12%	20%	16%	14%	**35%**
All-Day Pass	15%	15%	17%	13%	10%	13%	13%	7%
7-Day Pass	14%	10%	18%	15%	11%	15%	11%	14%
30-Day Pass	16%	17%	16%	16%	18%	15%	13%	10%
Student ID Free Fare	4%	6%	3%	2%	2%	4%	8%	5%
Bus Transfer	1%	1%	1%	1%	1%	<1%	1%	<1%
No Fare	4%	6%	3%	2%	2%	4%	8%	5%

Table 35: Percent of Trips by Fare Purchase Method and Income – SunRail

	System-wide	<$15K	$15K <26.5K	$27.5K <$40K	$40K <$50K	$50K <$65K	$65K <$100K	$100K+
SunRail One-Way Trip	10%	**28%**	9%	5%	12%	11%	2%	3%
SunRail Round-Trip	**28%**	22%	14%	**28%**	**17%**	14%	22%	**32%**
SunRail Weekly Passes	5%	6%	5%	5%	7%	11%	7%	16%
SunRail Monthly Passes	20%	11%	**18%**	14%	14%	**25%**	**31%**	19%
SunRail Annual Pass	2%	<1%	<1%	<1%	<1%	<1%	7%	3%
SunRail Reloadable Pass	5%	6%	9%	2%	5%	7%	4%	13%

Table 36 cross-tabulates fare type with race and ethnicity for LYNX System, and **Table 37** cross-tabulates fare type with race and ethnicity for SunRail. For riders using LYNX system, there is little differentiation among race and ethnicity by fare type, other than the Asian has higher interest of using Student Free Fare but less 30-day Pass, and Native Hawaii/Pacific Islander are more in favor of using All-Day Pass and 7-Day Pass but less Single Ride. For riders using SunRail, Asian has higher interest of using Reloadable Pass, and White is more interest of using SunRail Route-Trip Pass.

Table 36: Percent of Trips by Fare Purchase Method and Race/Ethnicity – LYNX System

	System-wide	Am. Indian/ Alaska Native	Asian	Black/ African-American	Hispanic/ Latino	Native Hawaii/ Pacific Islander	White	Other	Multi-Racial
Cash	**35%**	27%	**30%**	**34%**	**42%**	15%	**31%**	**28%**	**27%**
Single Ride	11%	10%	17%	12%	9%	6%	12%	14%	14%
All-Day Pass	15%	**26%**	14%	14%	14%	32%	15%	9%	16%
7-Day Pass	14%	20%	12%	14%	13%	**38%**	12%	20%	12%
30-Day Pass	16%	12%	9%	16%	16%	5%	18%	24%	16%

	System-wide	Am. Indian/ Alaska Native	Asian	Black/ African-American	Hispanic/ Latino	Native Hawaii/ Pacific Islander	White	Other	Multi-Racial
Student ID Free Fare	4%	1%	16%	4%	3%	<1%	3%	4%	7%
Bus Transfer	1%	<1%	1%	2%	<1%	<1%	1%	1%	2%
No Fare	3%	1%	<1%	4%	2%	3%	5%	<1%	3%

Table 37: Percent of Trips by Fare Purchase Method and Race/Ethnicity – SunRail

	System-wide	Am. Indian/ Alaska Native	Asian	Black/ African-American	Hispanic/ Latino	Native Hawaii/ Pacific Islander	White	Other	Multi-Racial
SunRail One-Way Trip	10%	NA	**22%**	9%	12%	NA	7%	<1%	17%
SunRail Round-Trip	**28%**	NA	**22%**	17%	18%	NA	**39%**	**50%**	**50%**
SunRail Weekly Passes	5%	NA	<1%	7%	6%	NA	5%	<1%	17%
SunRail Monthly Passes	20%	NA	11%	**22%**	**23%**	NA	15%	50%	<1%
SunRail Annual Pass	2%	NA	<1%	3%	<1%	NA	3%	<1%	<1%
SunRail Reloadable Pass	5%	NA	11%	3%	3%	NA	7%	<1%	<1%

3.6.2 Reduced Fare Usage

This section briefly discusses several breakdowns of the use of reduced fares by mode and demographic categories. Several types of reduced fare can be used on LYNX services—riders can qualify for reduced or free fares if they are disabled, if they are seniors, or if they are recipients of various types of social assistance.

Table 38 shows the discounted fares that riders were using during the survey. Systemwide, 90 percent of the riders do not use the discounted fare, and the rest of modes generally follow the same ratio, except for SunRail, which all trips are made through full-fare type. NeighborLink has the highest Senior discount fare usage, and FastLink has highest Youth Pass usage. **Table 39** shows the discount fare usage by income level. Interestingly, the lowest income cohort utilized standard fares at nearly the same prevalence as the highest income cohort, showing a weak relationship between income and reduced fares.

Table 38: Discounted Fare Type Distribution by LYNX and SunRail Weekday and Weekend Trips

	System-wide	Link	FastLink	Disney Direct	LYMMO	Neighbor-Link	SunRail
Standard	90%	90%	92%	95%	97%	85%	100%
Advantage Fare Program For Senior (65+)	4%	5%	3%	1%	2%	12%	NA
Advantage Fare Program For Persons With Disabilities	3%	3%	1%	1%	1%	< 1%	NA
Advantage Fare Program For Eligible Persons	2%	2%	1%	< 1%	< 1%	2%	NA
Youth Pass (10-18)	2%	2%	3%	2%	1%	1%	NA

Table 39: Discounted Fare Type Distribution by Income

	System-wide	Less Than $15,000	$15,000 To Less Than $26,500	$26,500 To Less Than $40,000	$40,000 To Less Than $50,000	$50,000 To Less Than $65,000	$65,000 To Less Than $100,000	$100,000 Or More
Standard	90%	86%	90%	94%	92%	96%	94%	88%
Advantage Fare Program For Senior (65+)	4%	5%	5%	2%	4%	3%	4%	4%
Advantage Fare Program For Persons With Disabilities	3%	4%	3%	2%	2%	1%	< 1%	7%
Advantage Fare Program For Eligible Persons	2%	2%	1%	1%	2%	1%	< 1%	2%
Youth Pass (10-18)	2%	2%	1%	1%	< 1%	< 1%	2%	< 1%

4 Lessons Learned

This section outlines key recommendations to optimize the survey methodology and streamline the data collection process. To improve the survey's effectiveness and ensure accurate results, consider the following points:

Survey Methodology Enhancements:

- Explore the feasibility of translating future surveys into Haitian Creole and Vietnamese to broaden participation and engagement. Language barriers were the reason for 25 percent of survey refusals.
- Evaluate the implications of allowing respondents to provide multiple responses to certain questions, such as those related to mode of access, egress, and fare payment methods.

Efficient Data Collection Strategies:

- Maintain continuous and sustained communication with customers throughout the data collection period. This strategy not only ensures data productivity but also informs operators about the ongoing study, fostering their awareness and cooperation. This outreach initiative can also serve as a platform to address queries from both customers and operators regarding the survey's nature and objectives.
- Initiate direct communication with operators early in the process, introducing them to the study's purpose and clarifying areas where the collected data will not be utilized, such as operator performance evaluations. By addressing operator inquiries at an early stage, this approach is anticipated to garner greater support from operators while minimizing potential confusion.
- Prioritize the deployment of survey teams on routes with limited trips during the initial field phase, and strategically making sure the low-productivity routes received enough responses to be statistically significant. This strategic sequencing allows ample time for reevaluation and adjustments, ensuring a smoother data collection process.

Optimizing Ridechecking Approach:

- Precisely determine the required amount of ridechecking necessary for certifying Automatic Passenger Counting (APC) units and fulfilling LYNX operational requirements. This precision-driven approach ensures that only essential data is collected, minimizing extraneous data. By implementing these recommendations, the survey methodology can be refined, data collection efficiency can be enhanced, and potential issues can be proactively addressed to yield more accurate and actionable results.

Appendix 1: Rider Profiles

Appendix 2: Route Profiles

Appendix 3: Survey Instrument